

**SUMMATIVE EVALUATION FOR *SECRETS OF AGING*
SPRING 2002**

INTRODUCTION

Secrets of Aging, an 8,000 sq. ft. traveling exhibit developed by the Museum of Science, Boston in collaboration with the Science Museum Exhibit Collaborative, explores what the latest scientific research reveals about a process that effects us all. Designed for visitors of all ages and abilities, *Secrets of Aging* addresses four main topics: Body, Mind, Society, and Longevity. This exhibition began its tour in Boston in April 2000.

As outlined in the National Science Foundation grant proposal, the project's main goals were to develop an exhibition and related programs about aging that would:

- introduce a broad general audience to ideas drawn from the latest scientific research on biological, physiological, psychological, and social aspects of aging in an engaging and interactive environment;
- illustrate the relevance of scientific research and ideas to issues in everyday life and public policy for visitors of all ages;
- forge productive partnerships with scientific, community, and corporate organizations that are in the forefront of the aging revolution;
- further science education reform by using the topic of aging to support National Science Education Content Standards;
- provide relevant learning experiences for an intergenerational audience of diverse ethnic and racial backgrounds;
- reflect in design and fabrication techniques the specific accessibility needs of a wide range of visitors;
- reach a large national audience through an exhibit tour and through web and off-site programs; and
- cultivate the potential for lifelong learning by adult audiences in science centers.

The exhibition team also devised the following set of main messages to support these overall goals:

Main message:

We're all aging.

Primary messages:

- Scientists are learning new things about how and why we age.
- There are things you can do to live a longer, healthier life.
- The growing proportion of older to younger people is changing the world.

SUMMARY

Data collection for the *Secrets of Aging* summative evaluation took place from June 6 through August 12, 2000. Data was gathered using both visitor observations (tracking and timing studies as well as exhibition sweeps) and interviews. The evaluation focused on the targeted audiences for this exhibition, which include family groups, adults without children, older adults, and visitors with disabilities.

The following information summarizes the results of this evaluation:

- The average amount of time visitors spent in the exhibition was 27 minutes. This closely corresponds to the time spent in other science exhibitions of similar size and scale. However, the time spent in *Secrets of Aging* is considerably longer than the average time for other exhibitions created at the Museum of Science, including *Mysteries of the Bogs* (17 minutes) and *Two of Every Sort* (16 minutes).
- Only 4% of the visitors stopped at more than 50% of the exhibit components. This is a relatively low percentage as compared to that of other similarly sized science exhibitions. This result suggests that there may have been too many components in the exhibition for the visitors to realistically see during one visit.
- While the percentage of components visited by the visitors was low, visitors spent a long period of time at the components they did visit. The average visitor time was over 2 minutes for 18 different components in the exhibition including 11 interactives, 3 programmatic elements, four videos, and the resource room.
- When asked how they would rate their overall experience, 41 visitor groups (78%) rated the exhibition very good or excellent. 44 groups (87%) also gave high ratings to the exhibition explanations and 44 groups (87%) rated the exhibition design as either very good or excellent.
- When asked what the exhibition was about, 22 visitor groups stated that the exhibit was about “the process of aging” or “how/why aging happens.” Visitors also discussed the effects of aging on the body (12 groups) and on the mind (7 groups). They emphasized that the exhibit addressed human aging, or was “about people” (10 groups).
- Visitor utilization of the exhibition’s components varied greatly from component to component. Results from tracking and timing and exhibit sweeps show that the components most often used by the visitors were Face Aging, the Phone Case, and Look Through My Eyes. Tracking and timing observations show that each of these components was visited by over 50% of the visitors. During the exhibit sweeps, these components were in use over 85% of the time.
- Visitor observations also demonstrate that certain components were consistently under-utilized by the museum visitors. During both the exhibit sweeps and the tracking and timing observations, visitors were

observed interacting with the following components less than 10% of the time: the Mind Panel, the Longevity Panel, the Society Panel, the Credit Panel, the Age Defying Store guest book, and the Cells interpreter cart.

- Results from the visitor interviews also show that visitors preferred certain components. The two components most often mentioned by the visitors in a positive way were Face Aging and Puzzles Keep Your Brain Sharp as You Age.
- Overall, visitors with disabilities reported that they found *Secrets of Aging* to be more accessible than most other exhibitions. There were however, many areas that could be improved. Suggestions for improvements include decreasing the size of the exhibition, decreasing background noise and sound bleeding, and improving access for wheelchair users at a few key components.
- The design of *Secrets of Aging* created a more comfortable environment for senior visitors as compared to the three permanent exhibitions at the Museum of Science that were reviewed as part of a front-end study. During the summative evaluation, older adults reported fewer concerns than they did during the front-end study with design features such as seating, print size, exhibition organization and layout, lighting, height of labels off the ground, and exhibition content. The older adults, however, continued to have difficulty understanding some of the instructions for the interactives.

METHODOLOGY

Data collection for the *Secrets of Aging* summative evaluation took place from June 6 through August 12, 2000. Data was gathered using both visitor observations (tracking and timing studies as well as exhibition sweeps) and interviews. The evaluation focused on the targeted audiences for this exhibition, which include family groups, adults without children, older adults, and visitors with disabilities.

Measuring adult and family learning in *Secrets of Aging*

To evaluate the exhibition's effectiveness with the Museum of Science's main audience, family groups and adults, visitors were randomly selected as they entered the exhibition.¹ Data collectors selected the first group they saw entering the exhibition, targeting the group member over the age of ten closest to them. The data collector then recorded this visitor's path through the exhibition, measuring the amount of time spent at each component. As the visitor exited the exhibition, the data collector approached them for an exit interview. Following the exit interview, the data collector would perform an exhibition sweep, circling the exhibition and recording the number of visitors standing at each component. In total, 67 visitor groups were tracked and timed in the exhibition, 53 of whom were interviewed.²

Data collectors also interviewed 56 visitor groups who had not yet visited *Secrets of Aging*. These visitors were asked questions about their attitudes towards aging. Their responses were then compared with the responses from visitors who had seen the exhibition.

Looking closely older adults and visitors with disabilities

Although older adults and visitors with disabilities were observed visiting the exhibition, the portion of the audience that was over 65 and/ or had a visible disability was not large enough to capture through random sampling. In order to get a better understanding of the experience these visitors had in *Secrets of Aging*, visitors with disabilities and older adults were extended invitations to visit the exhibition and meet with us to discuss their experience. While in the exhibition, visitor actions were observed and recorded. Following their visit, these visitors were interviewed through one-on-one interviews and focus groups.

¹ Visitors were excluded from the evaluation if they were part of an organized group visit consisting of six or more people. Organized groups are defined as camp groups, school groups, or tour groups.

² Fourteen visitor groups declined to be interviewed.

RESULTS AND DISCUSSION

Tracking and Timing

Sixty-seven visitor groups were tracked and timed in *Secrets of Aging*. Tracking and timing results show that the average amount of time visitors spent in the exhibition was 27 minutes. This closely corresponds to the time spent in other science exhibitions of similar size and scale. However, only 4% of the visitors stopped at more than 50% of the exhibit components. This is a relatively low percentage as compared to that of other similarly sized science exhibitions.

Time spent in the exhibition

As stated above, the observed visitors spent 27 minutes in the 8000 sq. ft. *Secrets of Aging* exhibition. Thus, the Sweeps Rate Index or SRI (the square footage divided by the average time in minutes) is 279.3. This is better than the average SRI for science center exhibitions, which is 359.9 (the lower the SRI, the more time spent by the visitors per square foot of the exhibition).³

The amount of time visitors spent in *Secrets of Aging* is what one would expect for an exhibition of this size. The table below shows the average time spent in other science exhibitions of comparable size.⁴ Of the four non-diorama science exhibitions listed in this report with square footage between 7000 and 9000 square feet, two of the exhibitions, *Amber* and *Global Warming*, had average times that exceeded that of *Secrets of Aging*, and two others had average times that were lower.⁵

The average time visitors spent in *Secrets of Aging* was considerably longer than the time spent in traveling exhibitions previously created by the Museum of Science including *Mysteries of the Bogs* (17.1 minutes) and *Two of Every Sort* (15.6 minutes).

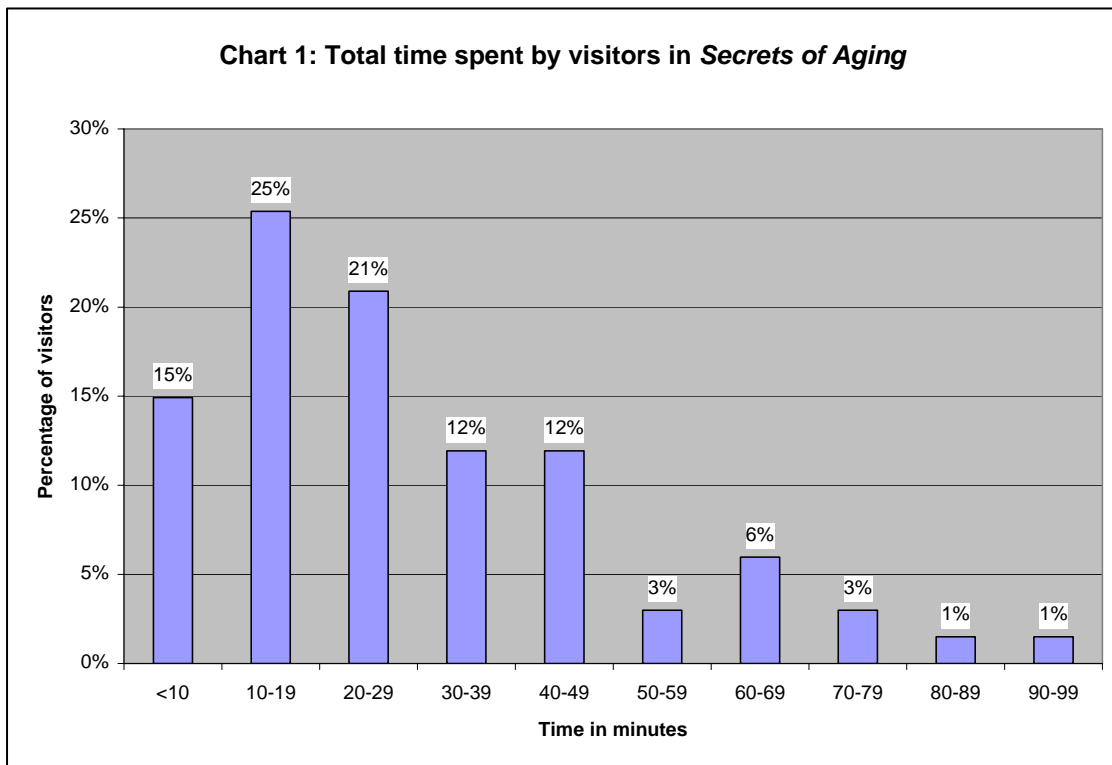
³ Serrell, Beverly, *Paying Attention to Museum Visitors*, American Association of Museums, 1998.

⁴ Ibid. *Paying Attention: Visitors and Museum Exhibitions* is a report that compares visitor statistics from over 110 exhibitions nationwide.

⁵ It should be noted that these four exhibitions were installed in natural history museums, not science centers. In general, the average amount of time visitors spend in science center exhibitions is lower than the average amount of time visitors spend in natural history exhibitions. There were no comparably sized exhibitions in science centers listed in *Paying Attention*.

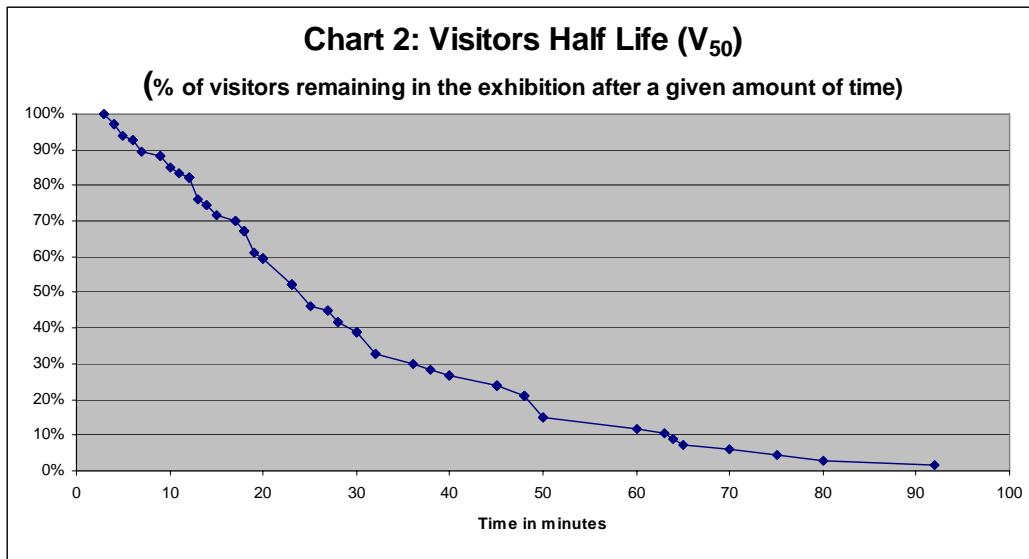
| TABLE 1: AVERAGE TIME SPENT BY VISITORS IN EXHIBITIONS OF COMPARABLE SIZE | | | | |
|---|-----------------|----------------------|---------------------|------------|
| Exhibition | Sq. Feet | # of Elements | Average Time | SRI |
| <i>Amber: Window to the Past</i> American Museum of Natural History | 7,000 | 38 | 33 | 212 |
| <i>Global Warming: Understanding the Forecast</i> Oakland Museum of California | 8,000 | 31 | 29 | 276 |
| Secrets of Aging Museum of Science, Boston | 8,000 | 63 | 27 | 279 |
| <i>Raptors: Hunters of the Sky</i> Denver Museum of Natural History | 8,000 | 93 | 22 | 364 |
| <i>Human Biology and Evolution</i> American Museum of Natural History | 7,000 | 60 | 19 | 368 |

As shown in the bar graph below, the largest percentage of visitors spent between 10 and 19 minutes in the exhibition. The minimum amount of time recorded during the summative evaluation was 3 minutes, while the maximum was 92 minutes.⁶ It should also be noted that a small- but significant- percentage of visitors (11%) spent over an hour in the exhibition.



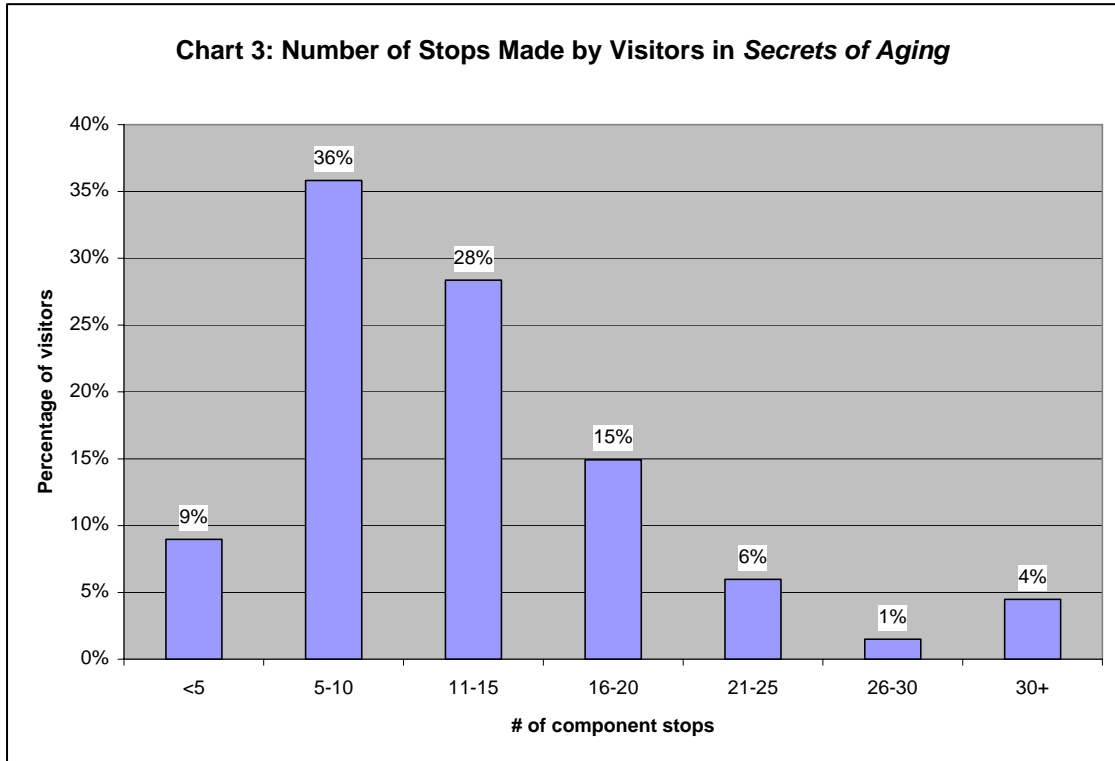
⁶ During the remedial evaluation, one visitor group spent over two hours in the exhibition.

The average visitor half-life (V_{50}) for *Secrets of Aging* (the amount of time spent by at least half of the observed visitors) was 23 minutes. This is slightly less than the average time, which was 27 minutes. This result, combined with the decreased slope past 30 minutes seen in Chart 2, suggests that a disproportionate number of the visitors stayed in the exhibition longer than the average time.



Number of stops

Of the over 50 components available to visitors in *Secrets of Aging*, the average number of components visited by each visitor was 13.⁷ On average, visitors stopped at 22% of the working components. The maximum number of stops made by any visitor group was 36 (63% of the working components); the minimum was 1 (2% of working components). As shown in the chart below, over 50% of the visitors made less than 15 stops in the exhibition.



⁷ The number of working components at any point in time ranged from 53 to 62 components. Some components were out of order, or were in the process of being modified based on the results of the remedial evaluation. Other components, such as the interpreter carts, were only available during certain times of day.

Only 4% of the visitors stopped at 50% or more of the exhibition's components. This is lower than the average for other science center exhibitions, which is 13.5%. The table below compares the percentage of visitors who stopped at least 50% of the components in *Secrets of Aging* (% Diligent Visitors or %DV) to the %DV for other science exhibitions of the same size. Only one of the four exhibitions (*Raptors: Hunters of the Sky*) had a lower %DV. This result suggests that there may have been too many components in the exhibition for the visitors to realistically see during one visit.

| TABLE 2: PERCENTAGE OF DILIGENT VISITORS (%DV) IN EXHIBITIONS OF COMPARABLE SIZE | | | |
|---|-----------------|----------------------|------------|
| Exhibition | Sq. Feet | # of Elements | %DV |
| <i>Amber: Window to the Past</i> American Museum of Natural History | 7,000 | 38 | 86% |
| <i>Global Warming: Understanding the Forecast</i> Oakland Museum of California | 8,000 | 31 | 42% |
| <i>Human Biology and Evolution</i> American Museum of Natural History | 7,000 | 60 | 32% |
| <i>Secrets of Aging</i> Museum of Science, Boston | 8,000 | 63 | 4% |
| <i>Raptors: Hunters of the Sky</i> Denver Museum of Natural History | 8,000 | 93 | 0% |

Visitor time spent at individual components

While the percentage of components visited by the visitors may have been low, visitors did spend a long period of time at the components they did visit. The chart below lists components where visitors spent, on average, 2 minutes or more interacting with the component.

| TABLE 3: COMPONENTS WITH AN AVERAGE TIME OF TWO MINUTES OR GREATER | |
|---|--------------------------------|
| Component Name | Average Time in Minutes |
| <i>Interactives</i> | |
| Face Aging | 9.2 |
| Fluid Intelligence | 2.8 |
| Puzzles | 2.8 |
| Heart Sounds | 2.4 |
| Useful Field of View | 2.3 |
| Personality | 2.2 |
| Age Defying Store | 2.2 |
| Age Defying Guest Book | 2.2 |
| Phone Case | 2.1 |
| Cosmetic Surgery | 2.0 |
| Who Lives the Longest | 2.0 |
| <i>Programs</i> | |
| Theater | 3.2 |
| Hand Cart | 2.9 |
| Demographics Cart | 2.6 |
| <i>Videos</i> | |
| Journey With Me Approx. total time: 20 minutes | 3.0 |
| Grandparent's Video Approx. total time: 15.5 | 2.3 |
| Conversation with Elders Approx. total time: N/A | 2.2 |
| Tai Chi Video Approx. total time: 9 minutes | 2.0 |
| <i>Other</i> | |
| Resource Area | 2.9 |

Visitor path through the exhibition

Secrets of Aging was designed to be a random access exhibition with no defined sequential order for component viewing. However, the exhibit was laid out with an intended path. It was assumed that visitors would enter through the introductory area, move towards the Body section, then on through the Mind, Society, and Longevity sections. The Resource Room was placed in the center of the exhibition so that visitors could access it at any time during their visit if they had questions or were interested in learning more about a specific topic.

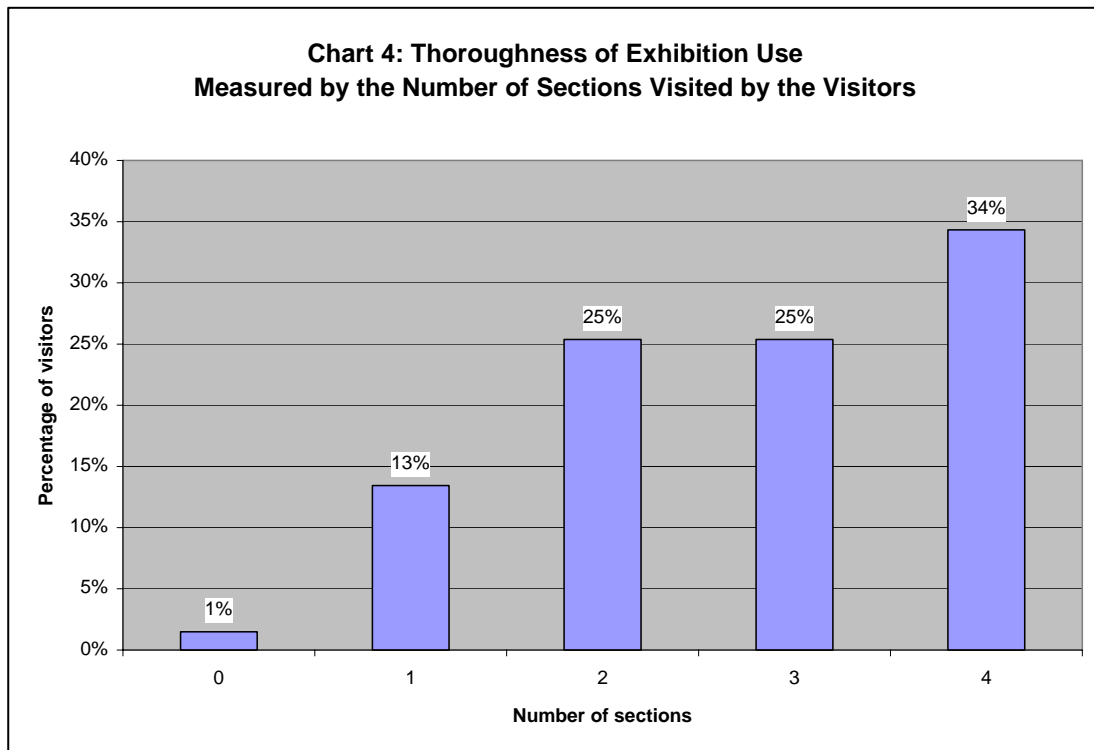
Analysis of the visitor paths through the exhibition shows that most of the visitors did not follow the intended path. Only 32 of the visitor groups (48%) visited the Body section of the exhibition first. Of the remaining 35 visitor groups, 24 (36%) went directly into Society, 9 (13%) entered through the Resource Room, one group walked directly towards the theater, and another only visited the Introductory area.

The placement of the Resource Room in the middle of the exhibition may have caused some confusion for the visitors. Ten visitor groups (15%) only visited components on one side of the Resource Room. As a consequence, these visitors only stopped in 1 of the 4 major sections. Based on these findings, it is recommended that the Resource Room not be placed in the center of the exhibition during future installations.

Section Use

The exhibition was created so that each section highlighted one or two of the primary messages. The three primary messages, therefore, were not represented uniformly within each of the different exhibition sections. Given the low percentage of diligent visitors, there was concern that some of the visitors may have “missed” some of the main ideas of the exhibition if visitors focused their time in the exhibition in just one section. Analysis of the visitor data shows, however, that this was not the case.

As shown in the chart below, most visitors stopped in at least three of the four major sections. The Body section of the exhibition was the most frequently visited, with 58 of the 67 (87%) visitors stopping to interact with at least one component in this section. The second most frequently visited section was Society (50 visitors or 75%), followed by Mind (43 visitors or 64%), and Longevity (35 visitors or 52%).

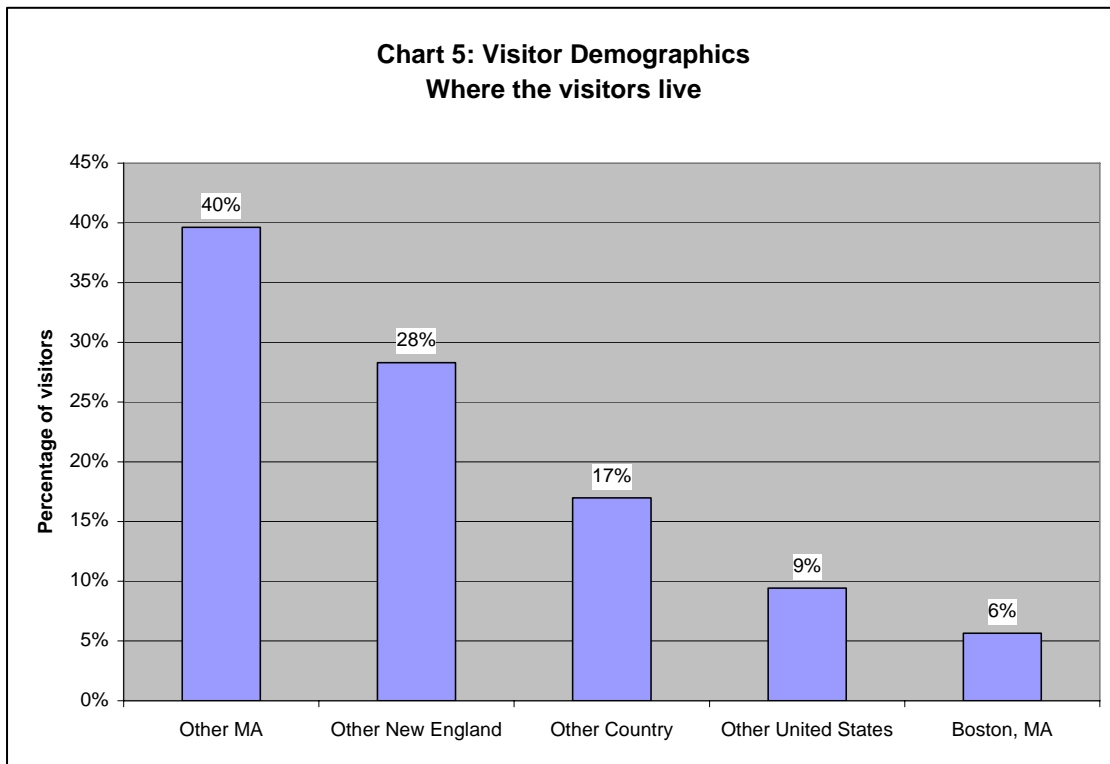


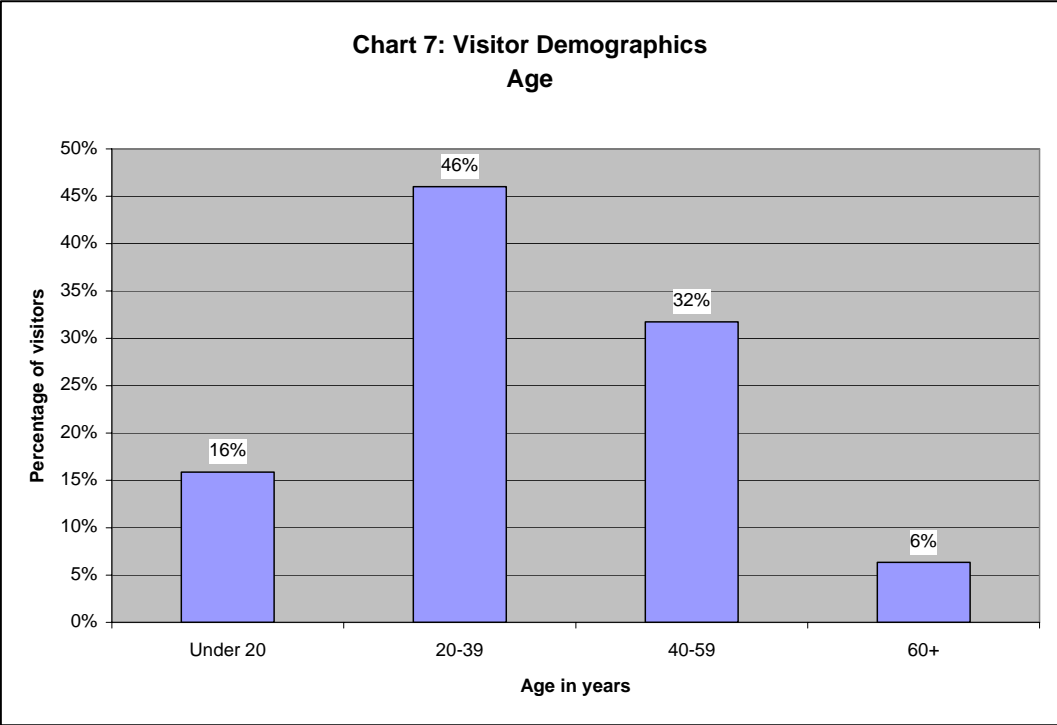
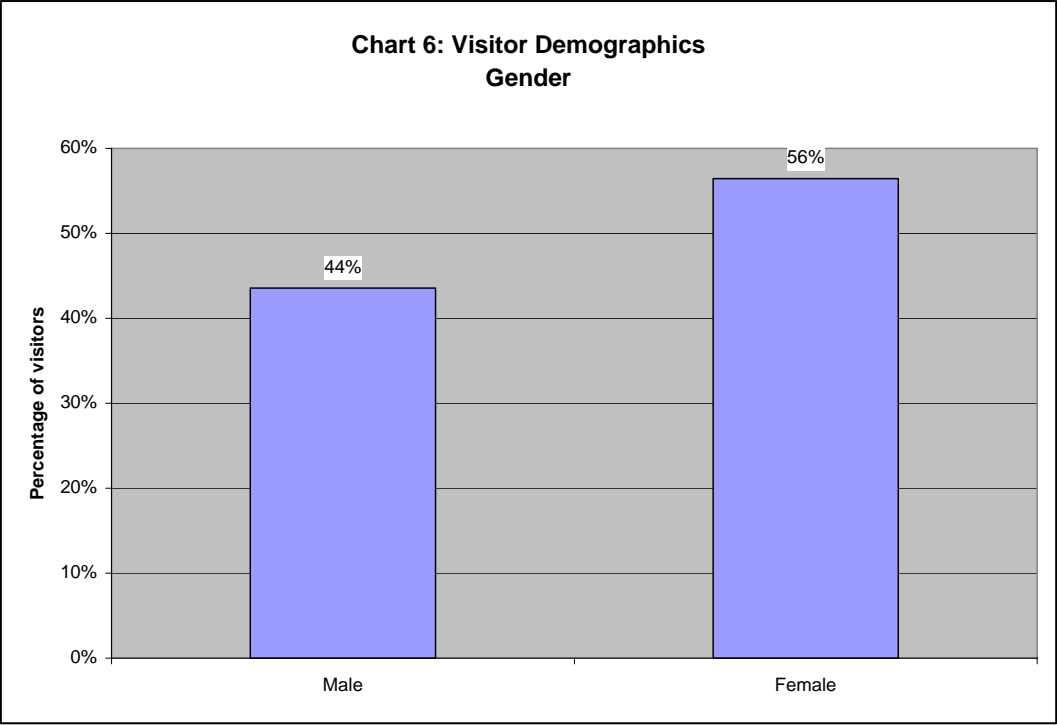
Visitor Interviews

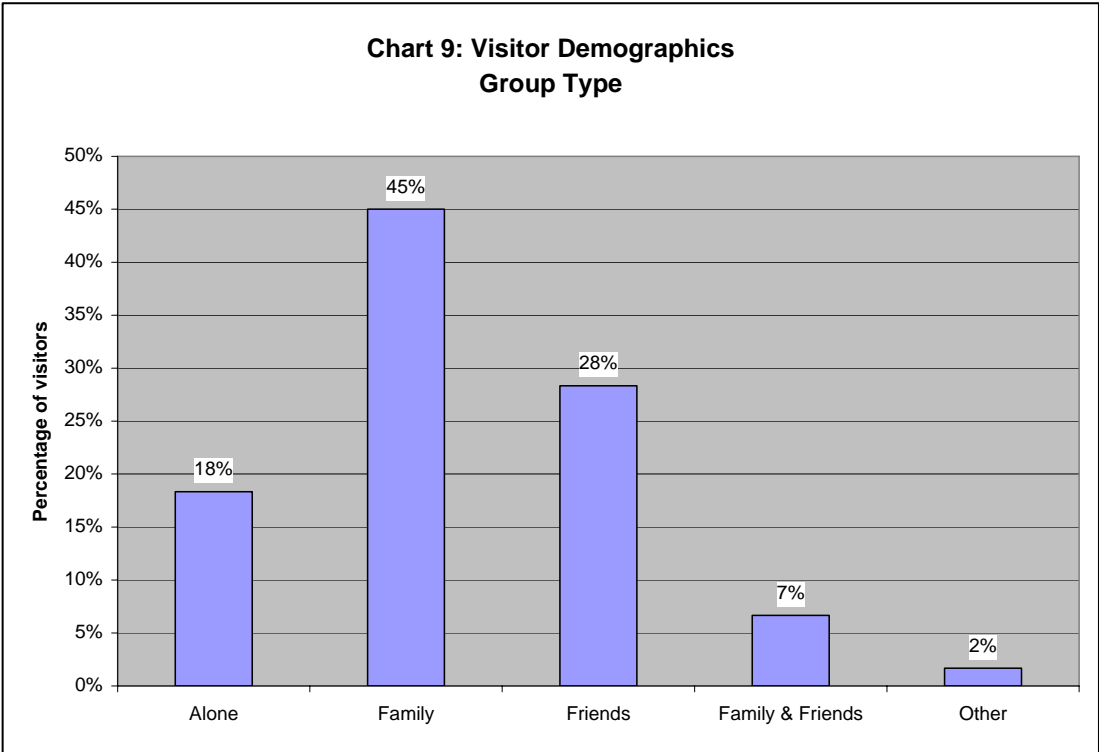
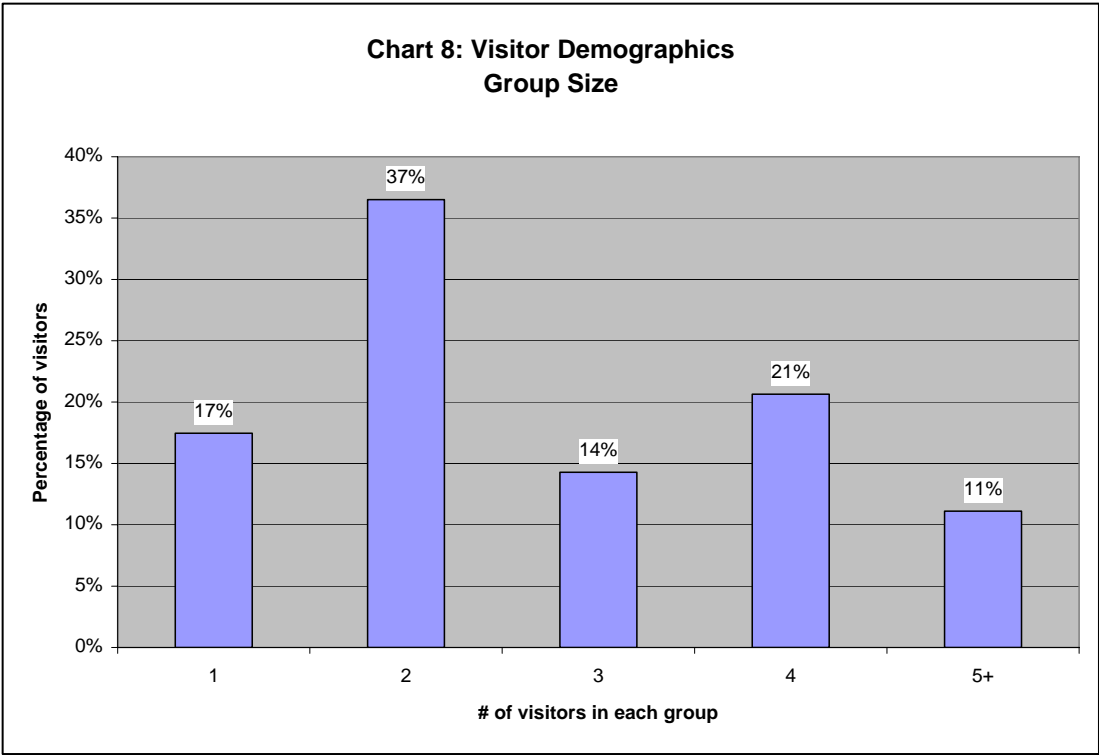
Demographics

The graphs below summarize the demographic profile of the visitors interviewed for this evaluation. This data is not representative of all the visitors that came to the exhibition. This data was collected mostly on the weekends, and organized groups were not included.

Results show that visitors of all ages were observed in the exhibition. The majority of the visitors were under the age of 40. Most of the visitors came to the exhibition either by themselves or with one other individual. Twenty-nine of the visitor groups (43%) were “adults only” groups with no children. In addition, most of the visitors interviewed (66%) were from the New England area. A significant percentage of the visitors (17%) were visiting from other countries. Charts 5 through 9 below provide more details on the demographics of the *Secrets of Aging* visitors.







How visitors heard about *Secrets of Aging*

When asked how they found out about the exhibition, the majority of the visitors (31 groups or 58%) stated that they just “walked in” or “wandered by”. Others (9 groups or 17%) saw signs or brochures advertising the exhibit when they came to the museum that day. Other ways visitors heard about the exhibition was through word of mouth or through an outside organization.

| Visitor Response | # of Visitors | % of Visitors |
|---------------------------------|----------------------|----------------------|
| Walked by/ wandered in | 31 | 58% |
| Saw / brochures in the Museum | 9 | 17% |
| Word of mouth | 7 | 13% |
| Through an outside organization | 4 | 8% |
| Through the newspaper | 2 | 4% |
| Museum of Science Newsletter | 1 | 2% |
| Heard about the play | 1 | 2% |

Visitor expectations

During the interview, visitors were asked what they expected to see in the exhibition before their visit. The majority of the visitors (27 visitor groups, or 51%) stated that they had “no expectations.” Other responses include “someplace where you could take a picture of yourself and see how you age” (9 groups, 17%), “more information than interactive” (6 groups or 11%), and “information on how the body ages” (4 visitor groups or 8%). The table below summarizes the visitor responses to this question.

| Visitor Response | # of Visitors | % of Visitors |
|--|----------------------|----------------------|
| No expectations | 27 | 51% |
| A place where you could age your face | 9 | 17% |
| More science/ information | 6 | 11% |
| How bodies age | 4 | 8% |
| Less interactive | 2 | 4% |
| Boring/ depressing | 2 | 4% |
| About old people | 2 | 4% |
| How to prevent aging | 2 | 4% |
| How humans get older | 1 | 2% |
| How mind and body change throughout time | 1 | 2% |
| More for multiple ages | 1 | 2% |
| Heard about its wide scope | 1 | 2% |

When asked if they found what they expected, many visitors (26 groups or 49%) again stated that they had no expectations. Other visitors stated that the exhibit either met their expectations (12 groups or 23%), or that it was “better than expected” (11 groups or 21%). Only three visitor groups (6%) stated that they did not find what they expected. These visitors expected a place where adults could see their face age.

| TABLE 6: WHETHER VISITORS FOUND WHAT THEY EXPECTED | | |
|---|----------------------|----------------------|
| Visitor Response | # of Visitors | % of Visitors |
| Not sure/ Had no expectations | 26 | 49% |
| Found what they expected | 12 | 23% |
| Exhibition was better/ more than expected | 11 | 21% |
| Did not find what they expected | 3 | 6% |

Exhibition Ratings

When asked how they would rate their overall experience, 41 visitor groups (78%) rated the exhibition very good or excellent. 44 groups (87%) also gave high ratings to the exhibition explanations and 44 groups (87%) rated the exhibition design as either very good or excellent. Charts 10 through 12 below summarize these statistics.

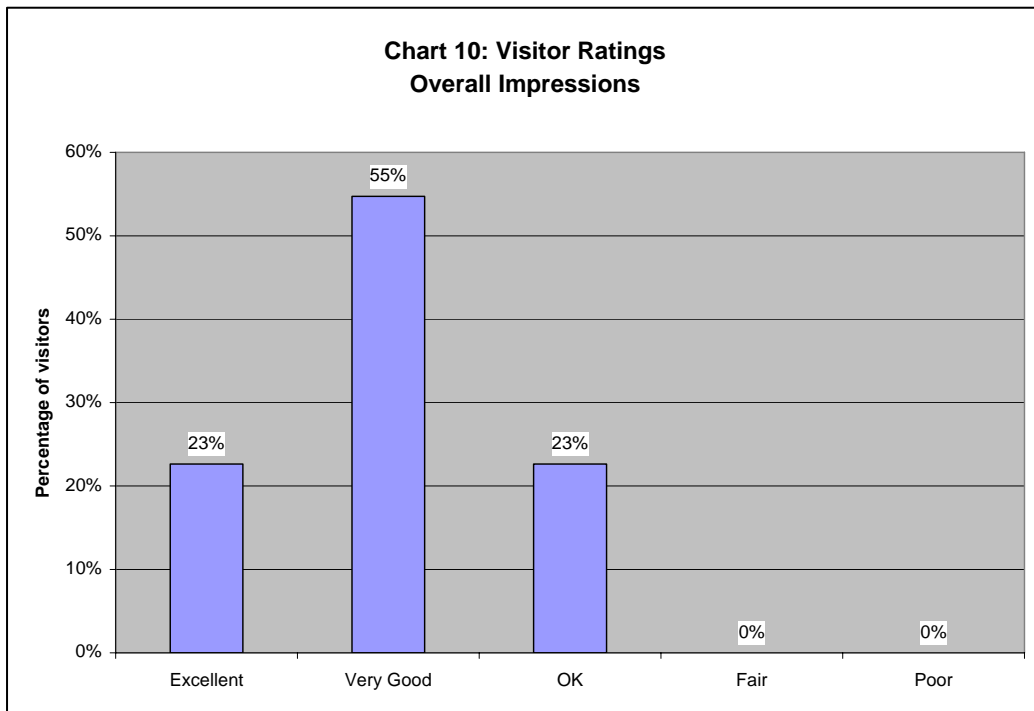


Chart 11: Visitor Ratings Explanations

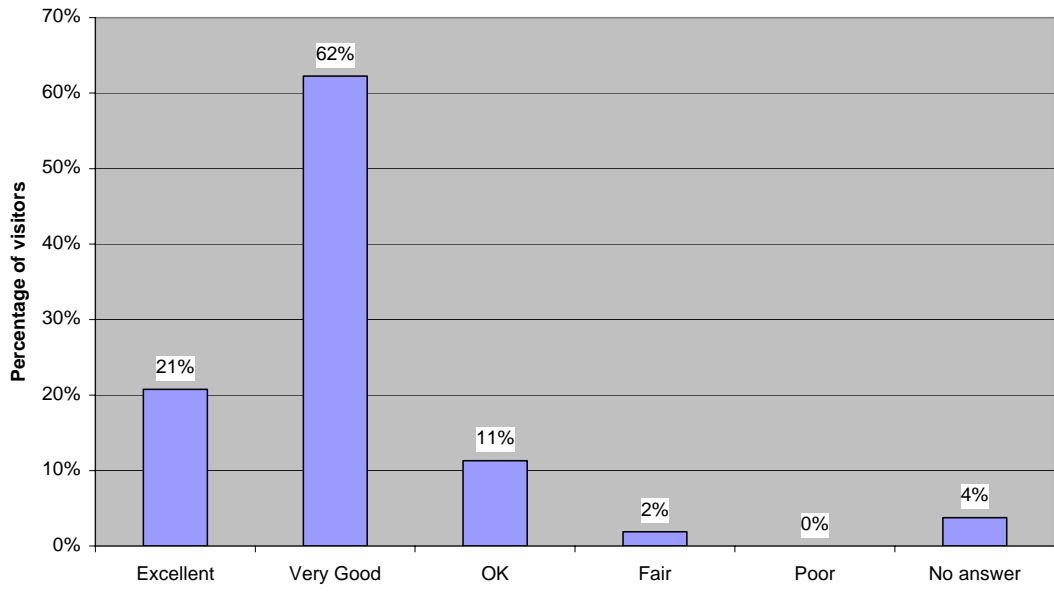
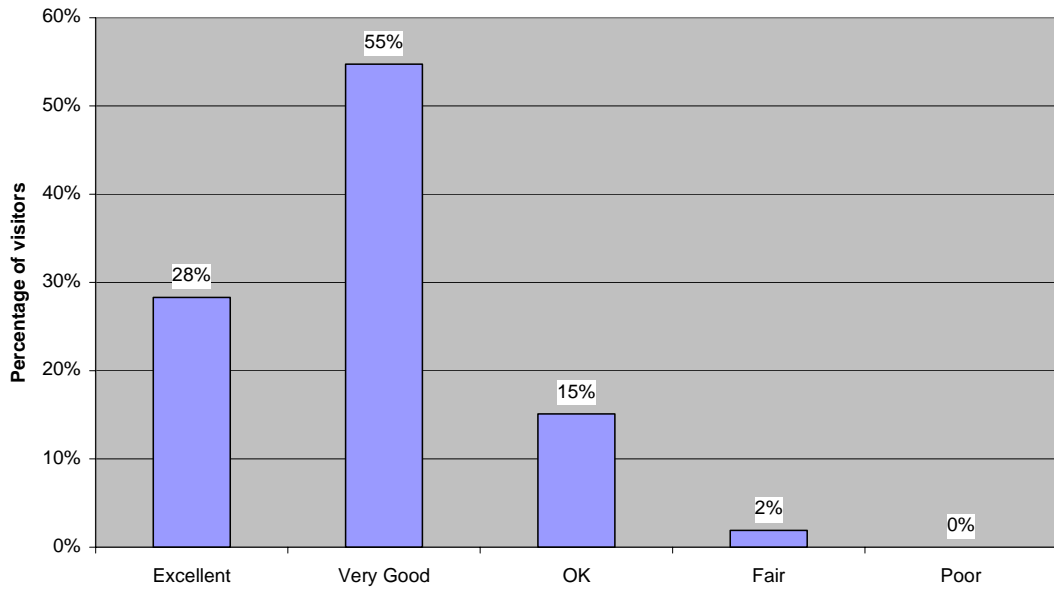


Chart 12: Visitor Ratings Exhibit Design



Visitor recognition of the exhibit organization

During the interview, visitors were asked if they noticed that the exhibition was divided into a number of main areas or groups and to recall the names of each of these groupings. Almost half of the visitors (26 groups or 49%) could name at least one of the sections. Seventeen groups (32%) could name at least 2 sections, while only three groups (6%) could name three or more. The most frequently named sections were Body (22 groups or 42%) and Mind (20 groups or 38%). In contrast to the high number of visitor groups that visited the Society section of the exhibition (50 groups), only five groups recalled the name of this section during the interview. The remaining visitors stated that either there was no difference, or mentioned other specific sub-areas or components in the exhibition.

Visitor thoughts on the exhibition

The table below summarizes positive comments made by the visitors about *Secrets of Aging* during the follow-up interviews.

| TABLE 7: POSITIVE VISITOR REACTIONS TO THE EXHIBITION | | |
|---|----------------|----------------|
| Visitor Response | # of Responses | % of Responses |
| Interesting information/ learned something | 16 | 30% |
| Other positive | 12 | 23% |
| Hands-on/ interactive | 13 | 25% |
| Labels easy to read/ understand | 10 | 19% |
| Fun | 9 | 17% |
| Well-organized/ Good layout | 7 | 13% |
| Worked for kids | 7 | 13% |
| Pleasant look and feel | 6 | 11% |
| Positive about aging | 5 | 9% |
| Scope of the content was greater than expected | 4 | 8% |
| More interesting than expected | 3 | 6% |
| Easy to use | 2 | 4% |
| Liked the chairs | 2 | 4% |
| Changed my perspective | 2 | 4% |
| Surprised | 2 | 4% |

The following visitor quotes exemplify the responses listed in the table above:

"[The exhibit] helps kids learn something they don't think about until they get to be 40 like me"- Male, age 40-49

"You know something's good if you get lost and lose track of time. It was all great"- Male, age 40-49

"[I] liked how [the exhibit] was geared towards everyone, adults and children."- Male, age 30-39

"[This is] the first time I've seen an exhibit like this and it is excellent."- Female, age 59

"[The explanations were] very clear. They didn't use technical language. A person without 'BIO 101' could understand it. They made it simple for us simple people"- Male, age 50-59

"I loved [the design]- if you had a particular concern you could go to that part first because of the signs. I like things that are well-organized..."- Female, 50-59

*"The exhibition handled it very well, a sensitive subject..."
- Female, age 40-49*

The visitors also made references to areas where they thought the exhibition could be improved. The most frequent suggestions were that a better organization or layout was needed ("sometimes I didn't quite know where I was going"- 5 groups), or that they had difficulty operating individual components because they were not working or out of order (8 groups). Other areas for improvement include issues of access (better lighting or larger font- 2 groups), the labels were hard for children to read (2 groups), and that it was boring or didn't grab your attention (2 groups).

Although not explicitly cited by the visitors as a complaint, some visitors (10 groups) made reference to time constraints. The following quotes are taken from the visitor interviews:

*"There is so much in there- pretty overwhelming..."
- Female, age 20-29*

"I want more time here. I have to spend at least 2-3 hours..."- Female, age 84

“I probably didn’t read everything I should have because it had been a long day. I could tell you better if I had spent more time...”- Male, age 40-49

“[Rated the exhibit ‘OK’] only because I couldn’t see everything...”- Female, age 40-49

Comments such as these, combined with the low %DV rate, suggest that the size and depth of the exhibition may have been overwhelming for some visitors. It should be noted, however, that four visitor groups mentioned in their interview that they intended to return to see the rest of the exhibition.

What visitors thought the exhibit was about

“It’s about exploding myths and getting a realistic idea about what aging is about. The exhibition is very affirming...it is a lot about NOT feeling different.” -Female, age 50-59

“One message I found in the exhibit is hope. Getting older is not necessarily falling apart physically and intellectually. There are things you can do to keep feeling well and keep your shape... personality doesn’t change unless you change it.” -Male, age 40-49

When asked what the exhibition was about, 22 visitor groups stated that the exhibit was about “the process of aging” or “how/why aging happens.” Visitors also discussed the effects of aging on the body (12 groups) and on the mind (7 groups). They emphasized that the exhibit addressed human aging, or was “about people” (10 groups). The table below summarizes the visitor responses to this question.

| TABLE 8: "WHAT WOULD YOU SAY SECRETS OF AGING IS ALL ABOUT?" | | |
|--|---------------|---------------|
| Visitor response | # of visitors | % of visitors |
| How/ Why aging happens or "the process of aging" | 22 | 42% |
| The effects of aging on the body | 12 | 23% |
| Human aging/ about people | 10 | 19% |
| What I can do about aging | 7 | 13% |
| What to expect as you age | 6 | 11% |
| Many different aspects of aging | 6 | 11% |
| The exhibit is for kids | 6 | 11% |
| Tells you what an older person goes through/ feels | 6 | 11% |
| Effects of aging on the mind | 5 | 9% |
| Makes you think differently about aging | 5 | 9% |
| Who is aging | 4 | 8% |
| Teaches others about aging | 4 | 8% |
| Science of aging | 2 | 4% |
| Other | 2 | 4% |

Visitors related what they saw in the exhibition to themselves and their own personal experiences. When one young visitor (age 10-15) was asked what he expected the exhibition to be like, he stated "[an exhibit] about old people." When asked if he found what he expected, he responded that the exhibit "[was] about everybody."

The following visitor comments also demonstrate connections made by the visitors to the exhibition's content:

"Basically, I liked learning stuff about MY body..."
 - Male, age 40-49

"[The] changing telephones [station] was interesting. I've seen and used all of them. I remember riding on grandfather's hay wagon. My current hobby is assembling and playing with computers. That represents a lot of change." – Male, age 60-69

"Growing up, I drank a lot of milk. But I wonder if my boys are getting enough, if they'll fall and break their bones..."
 - Male, age 30-39

Visitor perception of what they learned

The majority of the visitors interviewed (27 groups or 51%) stated that "they didn't learn anything new" in *Secrets of Aging*. Some of the visitors who answered "no" to this question would later mention in their interview new facts or information that they learned. For example, one of the

visitors who stated that they learned “nothing new” later said *“I learned stuff there that I didn’t know...like that Italy had the most older people.”*

Twelve of the 27 visitor groups who answered that they “didn’t learn anything new” stated that much of what was in the exhibition “confirmed” knowledge they already had, or “heightened their awareness of” an idea. This response reflects a model for learning in museums that has been advocated by people who uphold the constructivist educational theory. The following is a quote from John Falk and Lynn Dierking’s book *The Museum Experience*:

The reinforcement, consolidation, and reshaping of knowledge are critical aspects of the learning process. Too often, educators focus on introducing “new” knowledge. Most recent studies of learning strongly support the notion that knowledge is personally constructed and is always built on, and consolidated with, previous knowledge. In fact, some evidence suggests that these processes may not even function as well if information is totally new.

The table below lists areas where visitors felt they learned something they didn’t know before in the exhibition. These ideas reflect the main messages of the exhibition. In particular, visitors discuss things they can do that affect their aging process, and the impact of society on aging. However, the primary message “scientists are learning about how and why we age” was not mentioned in any of the visitor comments.

| TABLE 9: WHAT DID YOU LEARN ABOUT AGING THAT YOU DIDN'T KNOW BEFORE? | | |
|---|----------------------------|----------------------|
| Visitor response | # of visitor groups | % of visitors |
| Things I can do that affect how I age | 11 | 21% |
| About exercise | 9 | 17% |
| Thoughts on aging in our society | 9 | 17% |
| Differences between cultures | 7 | 13% |
| Changes to the systems/ body parts with age | 6 | 11% |
| How to prevent changes to the mind | 3 | 6% |
| How my results compare to data | 3 | 6% |
| Aging is bad/ negative | 3 | 6% |
| About Alzheimer’s | 2 | 4% |
| Other | 5 | 9% |

Visitor perceptions of getting older and aging

At the conclusion of the interview, visitors were asked to share their thoughts on the positive and negative aspects of aging and getting older. Their responses were then compared to the responses given by museum visitors who did not visit *Secrets of Aging*. Analysis of the visitor responses shows little difference in the attitudes and perceptions of aging between those that visited the exhibition and those who did not. However, visitors who had not yet visited the exhibition were more likely to mention “end of life” concerns than the visitors who did visit the exhibition. Visitors who attended the exhibition were more likely to mention mental loss as one of the negative aspects of aging and other miscellaneous negative responses, but were also more likely to state that aging is “a state of mind.” Tables 10 through 12 below summarize visitor responses describing their perception of aging.

| TABLE 10: VISITOR THOUGHTS ON THE POSITIVE AND NEGATIVE ASPECTS OF AGING | | | |
|---|--|--|--|
| Response Category | # of Responses for non-visitors | # of Responses for <i>Secrets of Aging</i> visitors | ChiTest Probability⁸ |
| Adult freedoms | 13 | 7 | 0.18 |
| Wisdom | 25 | 20 | 0.46 |
| Experience | 22 | 26 | 0.30 |
| Parenting/ Grandparenting | 5 | 7 | 0.47 |
| Lifestyle changes | 5 | 8 | 0.32 |
| Financial Advantages | 6 | 3 | 0.34 |
| Respect | 6 | 6 | 0.92 |
| Official perks | 3 | 3 | 0.94 |
| Natural Process | 3 | 4 | 0.64 |
| <i>Other positive</i> | 1 | 3 | 0.04 |
| Adult responsibilities | 3 | 3 | 0.96 |
| Loss in physical health | 35 | 30 | 0.66 |
| Changes in appearance | 8 | 10 | 0.52 |
| <i>Loss of mental health</i> | 4 | 11 | 0.04 |
| Loss of Independence | 4 | 2 | 0.44 |
| <i>End of life issues</i> | 13 | 5 | 0.05 |
| Societal stereotypes and disrespect | 2 | 6 | 0.12 |
| Career/ Financial problems | 2 | 1 | 0.59 |
| Negative Attitude | 2 | 0 | 0.16 |
| <i>Other negatives</i> | 0 | 4 | 0.01 |
| Total # of Positive responses | 1.6 (average per visitor) | 1.6 (average per visitor) | |
| Total # of Negative responses | 1.3 (average per visitor) | 1.4 (average per visitor) | |

⁸ A result of 0.05 or less is considered to be significant. A ChiTest Probability of 0.05 suggests that there is a less than 5% probability that the difference between the posttest and the pretest sample happened by chance.

| TABLE 11: VISITOR THOUGHTS ON HOW YOU DEFINE SOMEONE WHO IS "OLD" | | | |
|--|--|--|----------------------------|
| Response Category | # of Responses for non-visitors | # of Responses for <i>Secrets of Aging</i> visitors | ChiTest Probability |
| Attitude | 3 | 1 | 0.34 |
| Positive attitude | 3 | 1 | 0.34 |
| Negative attitude | 7 | 8 | 0.69 |
| Appearance | 23 | 15 | 0.16 |
| Physical limitations | 17 | 20 | 0.42 |
| Mental limitations | 8 | 10 | 0.52 |
| Loss of independence | 2 | 3 | 0.52 |
| Wisdom/ Experience | 1 | 2 | 0.53 |
| <i>State of Mind/ Depends on the Individual</i> | 11 | 20 | 0.04 |
| Generational differences | 1 | 0 | 0.33 |
| Retirement | 3 | 0 | 0.09 |
| Depends on your perspective | 2 | 3 | 0.60 |
| Behaviors | 11 | 8 | 0.53 |
| Slower way of life | 4 | 6 | 0.45 |
| Activity level | 3 | 4 | 0.64 |

| TABLE 12: VISITOR RESPONSES TO THE QUESTION "HOW OLD IS OLD?" | | |
|--|--|--|
| Age | # of Responses for non-visitors | # of Responses for <i>Secrets of Aging</i> visitors |
| 50 | 5 | 1 |
| 60 | 8 | 10 |
| 70 | 14 | 11 |
| 80 | 7 | 8 |
| 90 | 4 | 0 |
| 100 | 2 | 1 |
| No age specified | 13 | 22 |

Individual Component Performance

Visitor utilization of the exhibition's components varied greatly from component to component. Results from tracking and timing and exhibit sweeps show that the components most often used by the visitors were Face Aging, the Phone Case, and Look Through My Eyes. Tracking and timing observations show that each of these components was visited by over 50% of the visitors. During the exhibit sweeps, these components were in use over 85% of the time.

Visitor observations also demonstrate that certain components were consistently under-utilized by the museum visitors. During both the exhibit sweeps and the tracking and timing observations, visitors were observed interacting with the following components less than 10% of the time: the Mind Panel, the Longevity Panel, the Society Panel, the Credit Panel, the Age Defying Store guest book, and the Cells interpreter cart. See the appendix for a complete listing of statistics for the individual components.

Results from the visitor interviews also show that visitors preferred certain components. The two components most often mentioned by the visitors during the interview as their favorite (or otherwise remembered in a positive way) were Face Aging and Puzzles Keep Your Brain Sharp As You Age.

During the interview, visitors were also asked to comment specifically on certain highlight elements of the exhibition, including Face Aging, Journey With Me, the *Aging Puzzle* theater presentation, and the interpreter carts. The following paragraphs summarize the results from that questioning.

Face Aging

The Face Aging booth was a clear visitor favorite. This component was visited by over 57% of the tracked and timed visitors. During exhibit sweeps, Face Aging was in use 97% of the time. During the interviews, 14 groups mentioned this component as their favorite part of the exhibition. In addition, when asked what they expected to see in the exhibition, 9 groups mentioned that they thought “they would see a place where you could age your face.” This suggests that they heard about this component before coming to the museum, either through word of mouth or through the media.

Ten of the visitor groups who had either tried the activity (or watched others try it) stated that they “loved it.”

“We spent a lot of time there. My child seemed really delighted...” -Female, age 30-39

*“Amazing, I can’t wait to tell my friends about it...”
-Female, age 20-29*

There were, however, some visitors who were dissatisfied with the activity as it appeared in the exhibition. These visitors were upset because the did not have access to the component either because the line was too long (8 groups) or because adults could not participate (7 groups). Some groups had a negative reaction to the results they viewed, reporting that the results were unexpected, or they had a negative reaction to their appearance as an older adult.

*“I just hope he doesn’t turn out like that”
 - Female, age 40-49, commenting on her son’s image*

*“One boy didn’t want to take off his hat because he was afraid of losing his hair. And another said ‘Everyone is going to run away from me when I’m 65, but all the girls are going to love me when I’m 21...’
 - Female, age 40-49*

The average amount of time spent by visitors at this component was nine minutes, close to a third of the average time spent by visitors in the entire exhibition. Interestingly, time spent at Face Aging did not appear to take away from time spent in the rest of the exhibition. The average amount of time spent in *Secrets of Aging* by visitors who visited the Face Aging booth was 32 minutes, close to 9 minutes of which was spent at Face Aging, and the rest (23 minutes) was spent in other areas of the exhibition. The average amount of time spent by visitors in *Secrets of Aging* who did not visit Face Aging was 24 minutes.

| TABLE 13: COMPARISON OF AVERAGE VISITOR TIME: FACE AGING VISITORS VERSUS NON-FACE AGING VISITORS | | |
|---|---|--|
| | Total time spent in the exhibition | Time spent in areas of the exhibition other than “Face Aging” |
| Visitors who did not visit “Face Aging” | 24 minutes | 24 minutes |
| Visitors who visited “Face Aging” | 32 minutes | 23 minutes |

Journey With Me

Of the 67 visitors tracked and timed in the exhibition, only 19 (28%) of the visitors stopped at this component. Of those visitors who stopped at this component, only 6 stayed more than three minutes (the amount of time it would take to watch one segment of this 20 minute video). The maximum amount of time spent by visitors at this component was 13 minutes, 7 minutes short of the total length of the video. However, in comparison to time spent at other videos in the exhibition, Journey with Me had the longest average and maximum visitor engagement times (See Table 13). Only two videos were watched in entirety by at least one visitor: Tai Chi and the Heart Cells video.

| TABLE 14: COMPARISON OF VISITOR ATTRACTION AND ENGAGEMENT FOR THE VIDEO COMPONENTS | | | |
|--|--------------------|--------------------|---------------|
| Video Component | Average time (min) | Maximum time (min) | # of visitors |
| Journey with Me Approx. total time: 20 minutes | 3.0 | 12.6 | 19 |
| Conversations with Grandparents Approx. total time: 15.5 | 2.3 | 6 | 4 |
| Conversation with Elders Approx. total time: N/A | 2.2 | 10.5 | 13 |
| Tai Chi Approx. total time: 9 minutes | 2.0 | 9.3 | 22 |
| Complaints of a Dutiful Daughter Approx. total time: 44 minutes | 1.9 | 8.4 | 11 |
| Caloric Restriction Approx. total time: not available | 0.7 | 2.45 | 24 |
| Elder Wisdom, Elder Grace Approx. total time: 21.25 minutes | 0.6 | 1.5 | 5 |
| Future Forecast Approx. total time: not available | 0.6 | 2.0 | 8 |
| Heart video Approx. total time: 1.5minutes | 0.5 | 1.5 | 10 |

Visitor reactions to *Journey with Me* were mixed. While a few thought the video was inspirational and moving, others felt the point of the video was unclear. The following quotes came from visitors who spent more than 3 minutes watching *Journey With Me*:

“It portrays people in a different light. It’s not necessary to be feeble. It was inspirational.” - Male, age 30-39

“What struck me was how the people felt lonely, not having a purpose, and this experience of the dance made them feel better about themselves.” - Female, age 30-39

“Moving. I think it is more for adults in middle age. Very encouraging.” - Female, age 40-49

“Interesting, but I know a lot of adults who are very active. I play bridge with people who used to be my mother’s friends. One woman is 97...” - Female, age 50-59

“I didn’t like it. Where does it come from? The message was there but a little bit unexplained.” - Female, age 50-59

Interpreter Carts

Of the 49 visitor groups observed in the exhibition while interpreters were present, 16 groups (33%) stopped at one or more of the interpreter carts. The most frequently visited interpretation cart was the “Hand” cart, with 10 visitor groups stopping to speak with the interpreter. The least visited interpretation cart was the “Cells” cart. No visitors were observed stopping at this cart during the tracking and timing study. The table below summarizes the statistics for the interpretation carts.

| Cart | Avg. Time (min) | # of visitors (% of times visitors stopped when cart was open) |
|--------------|------------------------|---|
| Hand | 2.9 | 10 (21%) |
| Brain | 1.4 | 5 (13%) |
| Demographics | 2.6 | 3 (7%) |
| Cells | 0 | 0 (0%) |

During the interviews, visitors who were observed interacting with the interpreters were asked to comment on their experience. When asked about their favorite parts of the exhibition, three visitor groups cited their interaction with the interpreters. Three groups also described the interpreters as “knowledgeable.” Another two groups discussed their own performance at the hand cart, stating whether it was “good” or “bad.” The following are some of the quotes from visitors who interacted with the interpreters:

[About their reaction time] “Mine was faster than my 36 year old daughter and granddaughter” - Female, age 50-59

“They are pretty knowledgeable. I know I couldn’t work here.” - Male, age 50-59

“One woman was helpful- she came over and helped the kids with face aging...” - Male, age 40-49

Theater

Of the 67 tracked and timed visitor groups, 19 groups (28%) were observed interacting with the “Aging Puzzle” theater area in some way. When the play was not being performed, visitors would stop by to read the labels, or share one of their “secrets” of aging in the visitor comment box. Of these 19 groups, five groups stayed longer than one minute. The maximum amount of time spent by the visitors in the theater was 25

minutes, the length of the play. The average amount of time spent by the visitors was three minutes.⁹

The overall visitor response to the *Aging Puzzle* theater piece was positive, as exemplified by the following visitor quotes:

“My eldest daughter saw a blurb about the play in the lobby and wanted to see it...exceptional. My daughter’s comment on the actor’s portrayal of different characters was ‘great’.”
- Female, age 30-39

“Humanistic” - Male, age 16-19

“Loved the play” - Female, age 84

“I missed the beginning, yet I enjoyed it...fascinating”
- Female, age 59

For more information about visitor reactions to the play, please see the appended *Aging Puzzle* summative evaluation.

⁹ Most of the tracked visitor interactions with the theater took place when the play was not being performed. This explains why the average time is considerably lower than 25 minutes- the length of the play.

Access

Older Adult testing

Before creating *Secrets of Aging*, older adults were invited to the Museum of Science and asked to review previously existing exhibitions for their accessibility and user friendliness. During this front-end study, a few key issues surfaced as areas for consideration: seating, print size, exhibition organization and layout, lighting, height of labels off the ground, exhibition content, and instructions for the interactives. These issues continued to resurface during the formative evaluation.

Once *Secrets of Aging* opened, older adults were again invited to review the exhibition and comment on the accessibility of the exhibition. The older adults who reviewed *Secrets of Aging* reported few concerns with the design of the exhibition, particularly in those areas addressed during the front-end and formative evaluation.

Seating

The design issue seniors most often reported as a concern during both front-end and formative evaluation was the need for additional seating. Due to these findings, numerous areas for resting were incorporated into the design of *Secrets of Aging*. When the completed exhibition was tested with a senior audience, senior groups no longer mentioned “lack of seating” as a cause for discomfort in the exhibition. When interviewed, the seniors commended the museum for the inclusion of ample seating in the exhibition, citing the presence of stools and “comfy” resting chairs as one of their favorite features.

Print Size

During the front-end evaluation, seniors reported difficulties with the print size used on the labels in our permanent exhibitions. During formative evaluation of exhibit prototypes, the use of small font continued to serve as a barrier for access for the senior visitor. Increasing the font size on one of the prototype labels decreased the percentage of seniors who reported that the interactive instructions were “confusing.” Since the work performed during the formative evaluation helped to identify areas where larger text was needed, the performance of the final exhibition was improved; seniors rarely cited print size as a problem during summative evaluation.

Exhibit Layout and Organization

Another problem area cited by senior visitors during the front-end evaluation is the lack of a clear organizational structure for the exhibition. During summative evaluation of *Secrets of Aging*, the lack of a clear organizational structure and the use of a random access design scheme

continued to be a source of frustration. The seniors did report, however, that the use of “street signs” identifying the major areas of the exhibition was a helpful addition.

Seniors reported during the front-end evaluation that many of our permanent exhibits appeared “too cluttered”. Responses such as “[this exhibition] was too busy with too many things” suggest that the density of components, along with their organization, plays a role in the comfort of the senior visitor in the science center environment. In contrast to these initial results, seniors reported that there was adequate space between the components of the *Secrets of Aging* exhibition.

Spacing components too far apart can also have a negative impact on the senior visitor, particularly for seniors with severe limitations in mobility. When testing the completed *Secrets of Aging* exhibition with seniors from a local assisted living facility, the seniors complimented the exhibition for limiting the amount of space between the interactive components. These seniors felt the relative closeness of the interactives assisted their ability to move from one interactive station (and stool) to another with limited effort.

Lighting

Lighting appeared to play an important role in the seniors’ comfort and in their ability to read the labels in the Museum’s permanent exhibitions during the front-end evaluation. Due to this result, a special effort was made to provide extra lighting for all of the *Secrets of Aging* exhibition labels, especially those using smaller fonts. This appeared to have a positive effect, as seniors did not report significant difficulty with the lighting in the final exhibition.

Height of the Activities and Labels

Results of the front-end evaluation show that senior visitors felt uncomfortable with the height of the components and labels in the previously existing exhibitions. The most frequent complaint was that the labels or hands-on activities were too low to the ground. For the final design, extra care was taken to ensure that the labels and the interactives were placed at a height that was comfortable for seniors. This effort had an impact as the senior visitor did not mention this complaint during the summative evaluation. Instead, seniors remarked that the placement of the labels, slightly below eye level, worked well for people who wear bifocals.

Interactive Exhibits

Most seniors enjoyed working with interactive exhibits during the front-end testing, and often cited particular interactives as their favorite part of the exhibitions. They did experience difficulties, however, operating some of the interactive components. Almost all of the seniors attributed this difficulty to poor labeling.

During formative evaluation of *Secrets of Aging*, seniors were more likely than younger visitors to report that the instructions for the exhibit prototypes were “confusing” or “unclear.” For some prototypes, cultural differences across generations (such as the familiarity with a given expression, or technology) appeared to play a role. For others, increasing the legibility of the labels seemed to decrease the level of confusion. Despite the identification of this problem during formative evaluation, seniors continued to report during summative evaluation that they had difficulty understanding the instructions for the interactives.

Exhibition Content

During the front-end study, most senior visitors reported that the content was a main reason for favoring a particular exhibition. During formative and summative evaluation of the *Secrets of Aging* exhibition, content continued to play an important role in the senior visitors’ enjoyment of the exhibition. Seniors reported that the *Secrets of Aging* exhibition was not just for them, but was also *about* them. The seniors reacted negatively when the content of an interactive did not resonate with aging as they are experiencing it. In contrast, seniors enjoyed the interactives that they found useful (such as exercises for seniors that can be done in the home) and those that closely matched their individual ideas about aging.

People with disabilities

Visitors with disabilities were invited to see to *Secrets of Aging* and provide feedback on how the design of the exhibition helped or hindered their experience in the exhibition. Overall, visitors with disabilities reported that they found *Secrets of Aging* to be more accessible than most other exhibitions. There were, however, many areas that could be improved.

Design features visitors with disabilities found helpful:

- Visitors who are blind preferred exhibit components that combined audio with tactile information, such as *Who Am I* and *Grocery Bags*. Exhibit components that only relied on auditory information were more difficult for them to understand. As stated by one visitor “*I see with my hands.*”
- Visitors who mentioned the audio labels as a useful accommodation included visitors who were blind or had low vision, and visitors with learning disabilities. In addition, some wheelchair users used the audio labels when the label placement made the text difficult to read.
- The exhibition components preferred by the visitors with disabilities differed from those preferred by the general audience. During the follow-up interviews, visitors with disabilities listed the Universally Designed Kitchen and “cultural” components such as the life expectancy histograms, the world demographics map, and the cultural menopause piece as their favorite components in the exhibition. These components were rarely mentioned in interviews with the randomly selected visitors.

Ways the exhibitions could have been improved:

- The exhibition was too large for visitors with visual impairments or with limited mobility to navigate on their own. These visitors tended to remain on the periphery of the exhibition, not stopping to visit the components in the middle. Visitors who are blind also reported a great amount of anxiety navigating through the exhibition, unless a sighted guide accompanied them.
- Visitors who were blind reported that it was difficult to focus their attention in some areas because of conflicting sounds. The area surrounding the Tai Chi component was particularly problematic. The sound of the instructions for the tactile figures and the video overlapped. This made it difficult for visitors who rely on sound for navigation to focus when working on components in the surrounding area. As stated by one visitor “*When you are blind, too much noise can make it difficult to navigate.*”
- Visitors who used wheelchairs reported few difficulties accessing the different components in the exhibition. There were a few components, however, that were not accessible for visitors who use wheelchairs. Look through my Eyes, Smell, and Life Expectancy Histograms each required a vertical range of motion that was greater than that of our

seated visitors. It should be noted, however, that the height off the ground for these components did meet ADA specifications - 28 inches. The other component where wheelchair users reported difficulties was *Elder Wisdom, Elder Grace*. Visitors who use wheelchairs reported that there was no room on either side of the bench, or behind it, for them to sit and remain in the viewing area of the video.

**APPENDIX A:
DATA ON THE PERFORMANCE OF INDIVIDUAL COMPONENTS**

**TABLE A1: TRACKING DATA
AVERAGE VISITOR TIME FOR EACH COMPONENT**

| Component Name | Average Time in Minutes |
|----------------------------|--------------------------------|
| <i>Interactives</i> | |
| Face Aging | 9.17 |
| Fluid Intelligence | 2.83 |
| Puzzles | 2.83 |
| Heart Sounds | 2.42 |
| Useful Field of View | 2.33 |
| Personality | 2.22 |
| Age Defying Store | 2.20 |
| Age Defying Guest Book | 2.18 |
| Phone Case | 2.08 |
| Cosmetic Surgery | 2.03 |
| Who Lives the Longest | 1.98 |
| Hearing | 1.78 |
| Smell | 1.73 |
| Wallpaper | 1.73 |
| Memory | 1.63 |
| Crystallized Intelligence | 1.60 |
| Alzheimer's Guestbook | 1.52 |
| Worms | 1.48 |
| Universal Design Kitchen | 1.47 |
| Twins | 1.35 |
| Menopause | 1.33 |
| Bone Density | 1.25 |
| Aging Poker | 1.20 |
| Alzheimer's Holograms | 1.03 |
| Universal Design Products | 0.97 |
| Look Through My Eyes | 0.95 |
| Stretch | 0.93 |
| Heart Disease | 0.92 |
| How Old Am I | 0.82 |
| Grocery Bags | 0.75 |
| Strength | 0.73 |
| Vision | 0.72 |
| Life Expectancy Histograms | 0.67 |
| Car Seat | 0.62 |
| Tai Chi Figures | 0.37 |
| Telomeres | 0.37 |
| Intro Figures | 0.25 |
| Kid's Audio | 0.25 |

**TABLE A1: TRACKING DATA
AVERAGE VISITOR TIME FOR EACH COMPONENT (CONT.)**

| Component Name | Average Time in Minutes |
|---------------------------|--------------------------------|
| Videos | |
| Journey With Me | 3.03 |
| Grandparent's Video | 2.27 |
| Conversation with Elders | 2.23 |
| Tai Chi Video | 2.03 |
| Alzheimer's Video | 1.90 |
| Caloric Restriction | 0.70 |
| Elder Wisdom, Elder Grace | 0.63 |
| Future Forecast | 0.62 |
| Heart Video | 0.47 |
| Programs | |
| Theater | 3.15 |
| Hand Cart | 2.87 |
| Demographics Cart | 2.58 |
| Brain Cart | 1.42 |
| Cells Cart | 0.00 |
| Panel Text | |
| Aging Women | 1.10 |
| World Map | 0.82 |
| Mind Panel | 0.67 |
| Body Panel | 0.60 |
| Credit Panel | 0.52 |
| Centenarians | 0.47 |
| Society Panel | 0.45 |
| Longevity Panel | 0.40 |
| Intro Panel | 0.22 |
| Alzheimer's Art | 0.17 |
| Other | |
| Resource Area | 2.88 |

| TABLE A2: TRACKING DATA | | |
|---|----------------------|----------------------|
| PERCENTAGE OF VISITORS WHO VISITED EACH COMPONENT¹⁰ | | |
| Component | % of visitors | # of visitors |
| <i>Interactives</i> | | |
| Look Through My Eyes | 79% | 53 |
| Face Aging | 57% | 38 |
| Phone Case | 52% | 35 |
| Grocery Bags | 45% | 30 |
| Smell | 31% | 21 |
| Puzzles | 29% | 16 |
| Bone Density | 28% | 19 |
| Tai Chi Figures | 28% | 19 |
| Fluid Intelligence | 28% | 19 |
| How Old Am I | 28% | 19 |
| Age Defying Store | 27% | 18 |
| Crystallized Intelligence | 27% | 18 |
| Memory | 25% | 14 |
| Cosmetic Surgery | 25% | 15 |
| Who Lives the Longest | 25% | 17 |
| Intro Figures | 24% | 16 |
| Life Expectancy Histograms | 24% | 16 |
| Universal Design Kitchen | 22% | 15 |
| Menopause | 22% | 15 |
| Strength | 21% | 14 |
| Twins | 21% | 14 |
| Stretch | 18% | 12 |
| Universal Design Products | 18% | 12 |
| Vision | 18% | 12 |
| Hearing | 18% | 12 |
| Alzheimer's Holograms | 18% | 8 |
| Heart Disease | 16% | 7 |
| Heart Sounds | 16% | 7 |
| Telomeres | 16% | 11 |
| Useful Field of View | 13% | 9 |
| Car Seat | 13% | 9 |
| Worms | 12% | 8 |
| Personality | 11% | 6 |
| Alzheimer's Guestbook | 10% | 7 |
| Aging Poker | 10% | 7 |
| Wallpaper | 9% | 6 |
| Age Defying Guest Book | 6% | 4 |
| Kid's Audio | 4% | 3 |

¹⁰ % of visitors is the percentage of times when the component was "working" and was visited by a visitor.

| TABLE A2: TRACKING DATA PERCENTAGE OF VISITORS WHO VISITED EACH COMPONENT (CONT.) | | |
|--|----------------------|----------------------|
| Component | % of visitors | # of visitors |
| <i>Panel Text</i> | | |
| Centenarians | 22% | 15 |
| Alzheimer's Art | 13% | 9 |
| Body Panel | 12% | 8 |
| Aging Women | 12% | 8 |
| Intro Panel | 10% | 7 |
| World Map | 9% | 6 |
| Mind Panel | 7% | 5 |
| Longevity Panel | 7% | 5 |
| Credit Panel | 3% | 2 |
| Society Panel | 3% | 2 |
| <i>Videos</i> | | |
| Caloric Restriction | 36% | 24 |
| Tai Chi Video | 33% | 22 |
| Journey With Me | 28% | 19 |
| Conversation with Elders | 19% | 13 |
| Elder Wisdom, Elder Grace | 17% | 5 |
| Alzheimer's Video | 16% | 11 |
| Heart Video | 15% | 10 |
| Future Forecast | 12% | 8 |
| Grandparent's Video | 7% | 4 |
| <i>Programs</i> | | |
| Theater | 30% | 19 |
| Hand Cart | 21% | 10 |
| Brain Cart | 13% | 5 |
| Demographics Cart | 7% | 3 |
| Cells Cart | 0% | 0 |
| <i>Other</i> | | |
| Resource Area | 30% | 20 |

| TABLE A3: TRACKING DATA VISITOR ENGAGEMENT X ATTRACTING POWER | |
|--|---|
| Component | avg. time x % of visitors¹¹ |
| <i>Interactives</i> | |
| Face Aging | 5.23 |
| Phone Case | 1.08 |
| Puzzles | 0.82 |
| Fluid Intelligence | 0.79 |
| Look Through My Eyes | 0.75 |
| Age Defying Store | 0.59 |
| Smell | 0.54 |
| Cosmetic Surgery | 0.51 |
| Who Lives the Longest | 0.50 |
| Crystallized Intelligence | 0.43 |
| Memory | 0.41 |
| Heart Sounds | 0.39 |
| Bone Density | 0.35 |
| Grocery Bags | 0.34 |
| Universal Design Kitchen | 0.32 |
| Hearing | 0.32 |
| Useful Field of View | 0.30 |
| Menopause | 0.29 |
| Twins | 0.28 |
| Personality | 0.24 |
| How Old Am I | 0.23 |
| Alzheimer's Holograms | 0.19 |
| Worms | 0.18 |
| Universal Design Products | 0.17 |
| Stretch | 0.17 |
| Life Expectancy Histograms | 0.16 |
| Wallpaper | 0.16 |
| Strength | 0.15 |
| Alzheimer's Guestbook | 0.15 |
| Heart Disease | 0.15 |
| Age Defying Guest Book | 0.13 |
| Vision | 0.13 |
| Aging Poker | 0.12 |
| Tai Chi Figures | 0.10 |
| Car Seat | 0.08 |
| Intro Figures | 0.06 |
| Telomeres | 0.06 |
| Kid's Audio | 0.01 |

¹¹ % of visitors is the percentage of times when the component was "working" and was visited by a visitor. Time is measured in minutes.

| TABLE A3: TRACKING DATA VISITOR ENGAGEMENT X ATTRACTING POWER (CONT.) | |
|--|--|
| Component | avg. time x %of visitors¹² |
| Videos | |
| Journey With Me | 0.85 |
| Tai Chi Video | 0.67 |
| Conversation with Elders | 0.42 |
| Alzheimer's Video | 0.30 |
| Caloric Restriction | 0.25 |
| Grandparent's Video | 0.16 |
| Elder Wisdom, Elder Grace | 0.11 |
| Heart Video | 0.07 |
| Future Forecast | 0.07 |
| Programs | |
| Theater | 0.95 |
| Hand Cart | 0.60 |
| Brain Cart | 0.18 |
| Demographics Cart | 0.18 |
| Cells Cart | 0.00 |
| Panel Text | |
| Aging Women | 0.13 |
| Centenarians | 0.10 |
| World Map | 0.07 |
| Body Panel | 0.07 |
| Mind Panel | 0.05 |
| Longevity Panel | 0.03 |
| Intro Panel | 0.02 |
| Credit Panel | 0.02 |
| Society Panel | 0.01 |
| Alzheimer's Art | 0.02 |
| Other | |
| Resource Area | 0.87 |

¹² Time is measured in minutes. Percentage of visitors is the % of times when the component was "working" and was visited by a visitor.

| TABLE A4: SWEEPS DATA | | |
|---|--------------------|-----------------|
| % OF TIMES COMPONENT WAS IN USE DURING AN EXHIBITION SWEEP | | |
| Component Name | % of sweeps | # sweeps |
| <i>Interactives</i> | | |
| Face Aging | 97% | 57 |
| Phone Case | 88% | 52 |
| Look Through My Eyes | 85% | 50 |
| Crystallized Intelligence | 80% | 47 |
| Fluid Intelligence | 66% | 39 |
| Grocery Bags | 64% | 38 |
| Hearing | 64% | 38 |
| Memory | 62% | 29 |
| Puzzles | 60% | 28 |
| Universal Design Products | 58% | 34 |
| Smell | 58% | 34 |
| Twins | 56% | 33 |
| Bone Density | 54% | 32 |
| Age Defying Store | 50% | 29 |
| Useful Field of View | 49% | 29 |
| Cosmetic Surgery | 49% | 25 |
| Car Seat | 47% | 28 |
| Aging Poker | 47% | 28 |
| Heart Sounds | 46% | 22 |
| Strength | 46% | 27 |
| Personality | 45% | 21 |
| How Old Am I? | 44% | 26 |
| Heart Disease | 44% | 21 |
| Universal Design Kitchen | 42% | 25 |
| Who Lives the Longest? | 42% | 25 |
| Holograms | 33% | 16 |
| Menopause | 31% | 18 |
| Tai Chi Figures | 31% | 18 |
| Life Expectancy Histograms | 31% | 18 |
| Worms | 29% | 17 |
| Intro Figures | 22% | 13 |
| Vision | 20% | 12 |
| Stretch | 19% | 11 |
| Wallpaper | 17% | 10 |
| Kids Audio | 14% | 8 |
| Telomeres | 12% | 7 |
| Alzheimer's Guestbook | 10% | 6 |
| Age Defying Guest Book | 10% | 5 |

TABLE A4: SWEEPS DATA
% OF TIMES COMPONENT WAS IN USE DURING AN EXHIBITION SWEEP
(CONT.)

| Component Name | % of sweeps | # sweeps |
|---------------------------|--------------------|-----------------|
| Videos | | |
| Tai Chi Video | 71% | 42 |
| Alzheimer's Video | 66% | 39 |
| Conversation with Elders | 64% | 38 |
| Journey With Me | 61% | 36 |
| Caloric Restriction | 42% | 25 |
| Future Forecast | 41% | 24 |
| Grandparent Video | 16% | 8 |
| Elder Wisdom, Elder Grace | 16% | 3 |
| Heart Video | 15% | 9 |
| Panel Text | | |
| Centenarians | 27% | 16 |
| Body Primary Panel | 17% | 10 |
| Aging Women | 17% | 10 |
| Primary Panel | 12% | 7 |
| World Map | 12% | 7 |
| Mind Primary Panels | 8% | 5 |
| Society Panel | 8% | 5 |
| Credit Panel | 5% | 3 |
| Longevity Primary Panel | 3% | 2 |
| Alzheimer's Art | 2% | 1 |
| Programs | | |
| Hand Cart | 67% | 22 |
| Theater | 39% | 22 |
| Brain Cart | 31% | 12 |
| Demographics Cart | 18% | 7 |
| Cells Cart | 8% | 2 |
| Other | | |
| Resource Area | 85% | 50 |
| Benches | 61% | 36 |

| TABLE A5: INTERVIEW DATA COMPONENTS MENTIONED BY THE VISITORS | | | |
|--|-----------------------------|-----------------------------|-------------------------------|
| Component | # Positive Responses | # Negative Responses | # of Neutral Responses |
| Face Aging | 14 | 5 | 1 |
| Puzzles | 14 | 2 | 1 |
| Grocery Bags | 10 | 0 | 3 |
| Tai Chi Video | 9 | 0 | 1 |
| Phone Case | 7 | 2 | 2 |
| Fluid Intelligence | 7 | 0 | 0 |
| Look Through My Eyes | 5 | 1 | 2 |
| Smell | 5 | 1 | 1 |
| Hearing | 5 | 0 | 3 |
| Heart Sounds | 5 | 2 | 0 |
| Bone Density | 4 | 0 | 1 |
| Crystallized Intelligence | 4 | 0 | 0 |
| Theater | 3 | 0 | 1 |
| Journey With Me | 3 | 1 | 0 |
| Cosmetic Surgery | 3 | 0 | 0 |
| Life Expectancy Histograms | 3 | 0 | 0 |
| Age Defying Store | 2 | 1 | 0 |
| Menopause | 2 | 0 | 0 |
| Hand Cart | 2 | 0 | 1 |
| Twins | 2 | 0 | 0 |
| Conversation with Elders | 2 | 0 | 0 |
| Stretch | 2 | 0 | 0 |
| Universal Design Products | 2 | 0 | 1 |
| Vision | 2 | 0 | 3 |
| Alzheimer's Holograms | 2 | 0 | 0 |
| Alzheimer's Video | 2 | 0 | 1 |
| Aging Poker | 2 | 0 | 0 |
| World Map | 2 | 0 | 0 |
| Resource Area | 1 | 0 | 2 |
| How Old Am I | 1 | 1 | 0 |
| Strength | 1 | 0 | 0 |
| Elder Wisdom, Elder Grace | 1 | 1 | 0 |
| Heart Disease | 1 | 0 | 0 |

**TABLE A5: INTERVIEW DATA
COMPONENTS MENTIONED BY THE VISITORS (CONT.)**

| Component | # Positive Responses | # Negative Responses | # of Neutral Responses |
|--------------------------|-----------------------------|-----------------------------|-------------------------------|
| Useful Field of View | 1 | 2 | 0 |
| Brain Cart | 1 | 0 | 0 |
| Aging Women | 1 | 0 | 0 |
| Personality | 1 | 2 | 0 |
| Wallpaper | 1 | 0 | 0 |
| Caloric Restriction | 0 | 2 | 1 |
| Tai Chi Figures | 0 | 0 | 0 |
| Memory | 0 | 0 | 0 |
| Who Lives the Longest | 0 | 0 | 0 |
| Intro Figures | 0 | 0 | 0 |
| Universal Design Kitchen | 0 | 0 | 0 |
| Centenarians | 0 | 0 | 0 |
| Telomeres | 0 | 0 | 0 |
| Heart Video | 0 | 0 | 0 |
| Car Seat | 0 | 0 | 0 |
| Alzheimer's Art | 0 | 0 | 0 |
| Body Panel | 0 | 0 | 0 |
| Future Forecast | 0 | 0 | 0 |
| Worms | 0 | 1 | 1 |
| Intro Panel | 0 | 0 | 0 |
| Alzheimer's Guestbook | 0 | 0 | 0 |
| Mind Panel | 0 | 0 | 0 |
| Grandparent's Video | 0 | 0 | 0 |
| Longevity Panel | 0 | 0 | 0 |
| Demographics Cart | 0 | 0 | 0 |
| Age Defying Guest Book | 0 | 0 | 0 |
| Kid's Audio | 0 | 0 | 0 |
| Credit Panel | 0 | 0 | 0 |
| Society Panel | 0 | 0 | 0 |
| Cells Cart | 0 | 0 | 0 |

APPENDIX B: EVALUATION INSTRUMENTS

**LONG FORMAT INTERVIEW FORM
SECRETS OF AGING
SUMMATIVE/ REMEDIAL EVALUATION**

If the visitors stay less than 10 minutes in the exhibit, ask them the following question:

We noticed that you decided not to spend a long period of time in this particular exhibition. In an effort to improve the exhibits we create at the Museum of Science, we are wondering why you chose not to see the Secrets of Aging exhibit?

- Not interested in topic
- Plan to come back later
- Have seen it before
- Other: _____

1. Where are you from?

- Boston
- Cambridge/ Brookline/ Somerville
- Other Massachusetts. Specify: _____
- Other New England. Specify: _____
- Other United States. Specify: _____
- Other Country. Specify: _____

2. Are you Male Female?

3. What is your age group?

- | | | |
|-----------------------------|-----------------------------|-----------------------------|
| <input type="radio"/> 10-15 | <input type="radio"/> 16-19 | <input type="radio"/> 20-29 |
| <input type="radio"/> 30-39 | <input type="radio"/> 40-49 | <input type="radio"/> 50-59 |
| <input type="radio"/> 60-69 | <input type="radio"/> 70-79 | <input type="radio"/> 80+ |

4. Including yourself, how many people are in your group?

- 1 2 3 4 5 6 or more

5. With whom did you come to visit the *Secrets of Aging* exhibit?

- Alone
- Family

- ρ Friends
- ρ Family and Friends
- ρ Group. Specify: _____
- ρ No answer

6. What would you say the *Secrets of Aging* exhibit is about?

7. How did you learn about the *Secrets of Aging* exhibit?

8. Before visiting the exhibit, what did you expect to see in *Secrets of Aging*?

9. Did you find what you expected?

10. Did you notice that the different components of the *Secrets of Aging* exhibit are divided into a number of main areas or groupings?

ρY ρN

If Y, What are the groupings or areas that you remember?

**11. What exhibit stations in *Secrets of Aging* did you like best?
What did you like about them?**

12. Were there any exhibit stations that confused you or that you found difficult to operate?

If Y, which ones?

What about them made them confusing or difficult to operate?

13. What did you learn about aging that you didn't know before?

14. Did you or anyone else in your group try “Face Aging?”

ρY ρN
If Y, what did you think of it?

15. Did you see the play “The Aging Puzzle”? ρY ρN

If Y, what did you think of it? ρY ρN

Did you feel this connected to other parts of the exhibit?

ρY ρN
If Y, how?

16. Did you see the film “Journey with Me”? ρY ρN
If Y, what did you think of it?

17. Did you see any live demonstrations? ρY ρN
(prompt: talk to museum staff wearing red jackets at carts)
If Y, what did you think of them?

18. How would you rate the *Secrets of Aging* exhibit?

Overall experience:

- Excellent
- Very good
- OK
- Fair
- Poor
- No answer

Explanations (*prompt: the printed information*): :

- Excellent
- Very good
- OK
- Fair
- Poor
- No answer

Exhibit design (*prompt: the style, layout, and appearance*):

- Excellent
- Very good
- OK
- Fair
- Poor
- No answer

Turn Page for more questions™

- 19. In general, do you think of aging as a positive or negative experience?**
ρPositive ρNegative

19. Is there anything that's good about getting older?

20. Is there anything that's bad about getting older?

21. How old is someone who is old?

Prompts:

- a. What is a person this age like?**
- b. How can you tell a person is old?**

**PRE-VISIT INTERVIEW FORM
SECRETS OF AGING
SUMMATIVE/ REMEDIAL EVALUATION**

1. **Have you visited the Secrets of Aging exhibit before?** Y N

2. **Where are you from?**

- Boston
- Cambridge/ Brookline/ Somerville
- Other Massachusetts. Specify: _____
- Other New England. Specify: _____
- Other United States. Specify: _____
- Other Country. Specify: _____

2. **Are you** Male Female?

3. **What is your age group?**

- 10-15
- 16-19
- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80+

4. **Including yourself, how many people are in your group?**

- 1
- 2
- 3
- 4
- 5
- 6 or more

5. **With whom did you come to visit the Museum of Science?**

- Alone
- Family
- Friends

- ρ Family and Friends
- ρ Group. Specify: _____
- ρ No answer

6. In general, do you think of aging as a positive or negative experience?
ρPositive ρNegative

7. Is there anything that's good about getting older?

8. Is there anything that's bad about getting older?

9. How old is someone who is old?

Prompts:

a. What is a person this age like?

b. How can you tell a person is old?

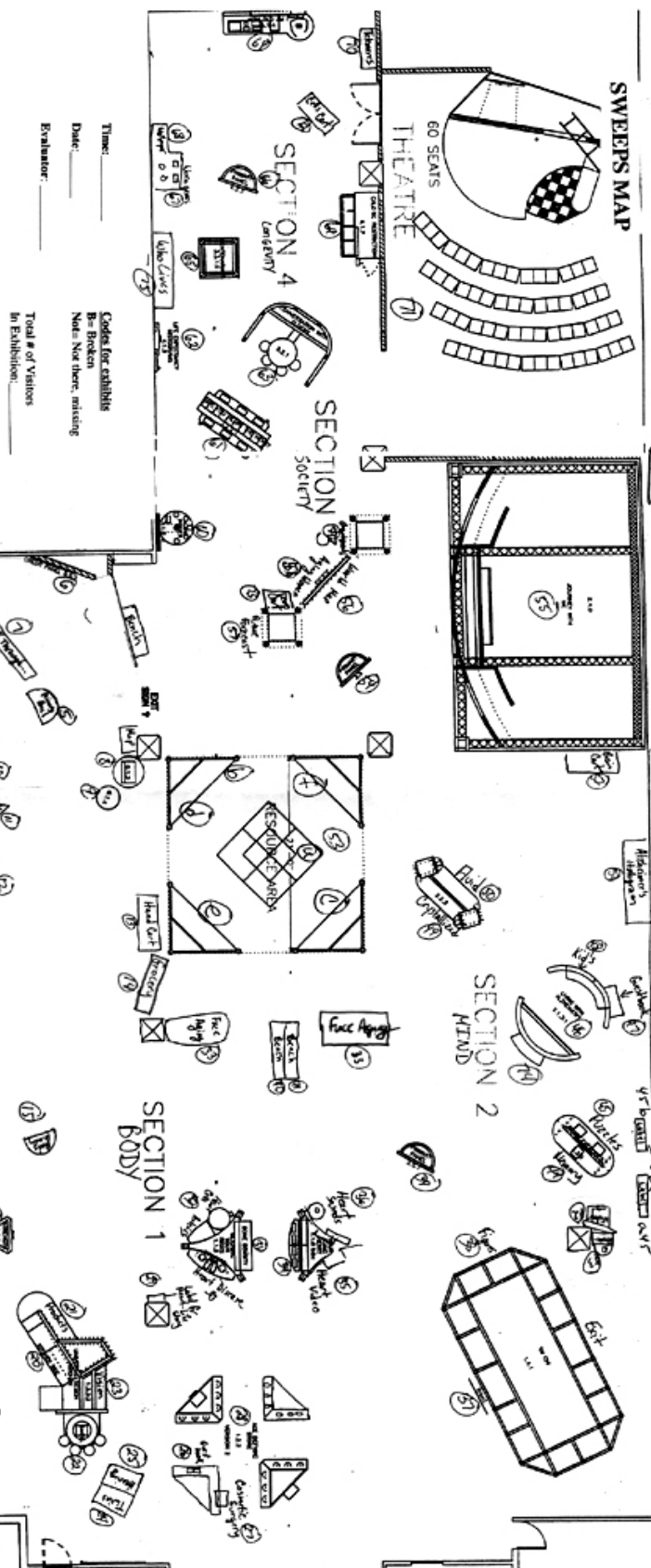
- Exhibit Components:**
- 1: Women-80's
 - 2: Wheelchair Man-80's
 - 3: Reclined Woman-20's
 - 4: Man on Bench-100
 - 5: Introspective Panel
 - 6: Chair Panel
 - 7: Look Through My Eyes
 - 8: More 40's
 - 9: Man and Dog
 - 10: Old and Dog
 - 11: Woman-60's
 - 12: Bench
 - 13: Introspective Hand Cart
 - 14: Open Stage
 - 15: Body Panel
 - 16: Strength Panel

- 17: Speech Panel
- 18: Driving Test
- 19: Car Seat
- 20: Keyboard
- 21: JOD Products
- 22: Steel
- 23: Vestib
- 24: T-shirt
- 25: Hearing
- 26: Overt Book
- 27: Cosmetic Surgery
- 28: Silver Life Story
- 29: Heart Disease
- 30: Heart Cart
- 31: Heart Cart and Address
- 32: Heart Cart and Address
- 33: Face Aging

- 34: Monogram
- 35: Heart Video
- 36: Heart Sounds
- 37: TM CH Video
- 38: TM CH Figures
- 39: Mind Primary Panel
- 40: Bench
- 41: Bench
- 42: Window
- 43: Personality
- 44: Personality
- 45: Personality
- 46: Personality
- 47: Alzheimer's video
- 48: Alzheimer's video
- 49: Alzheimer's video
- 50: Alzheimer's video

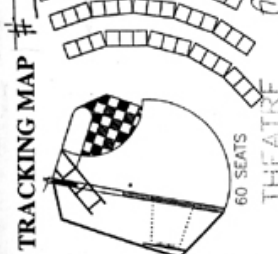
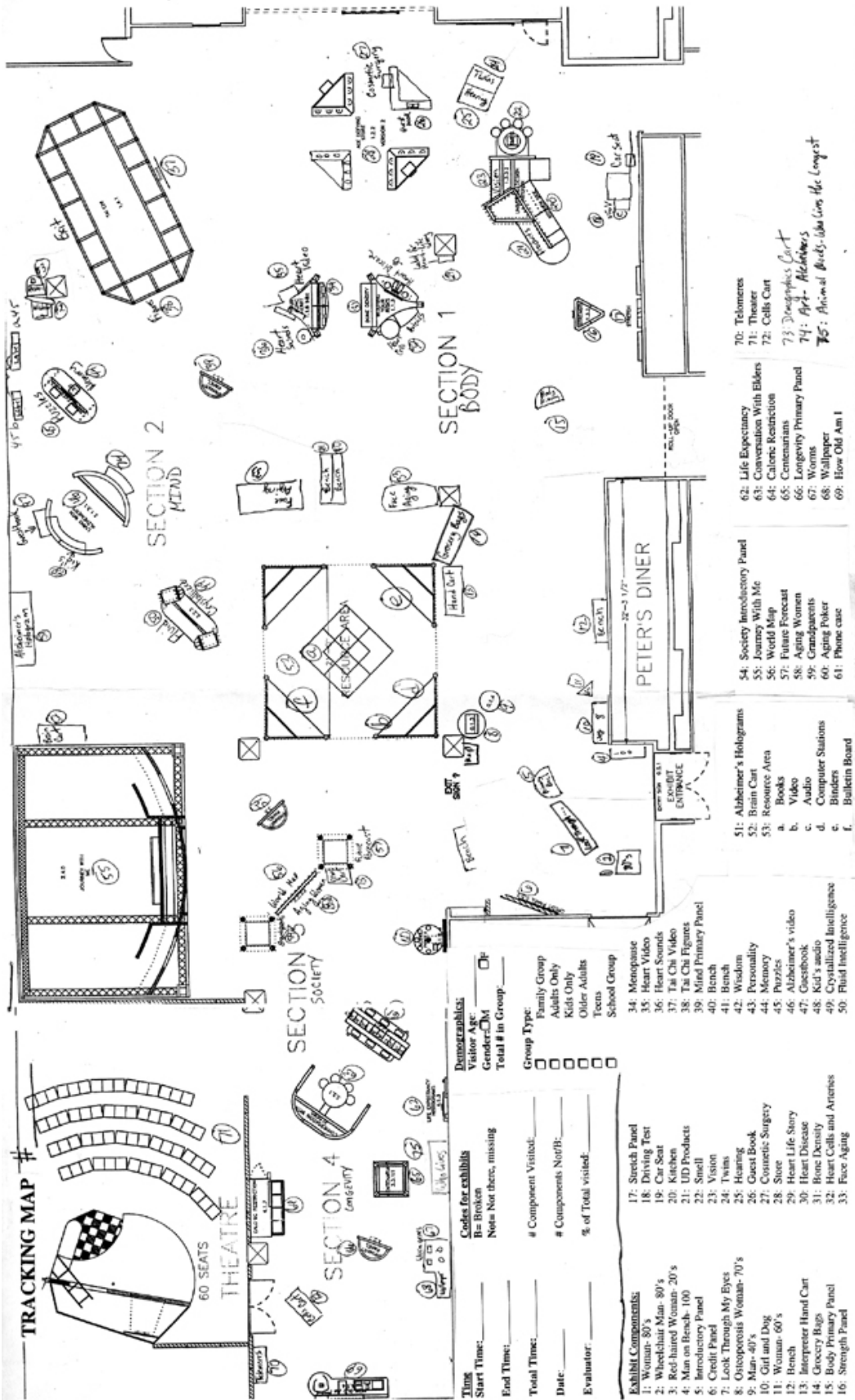
- 51: Alzheimer's Holograms
- 52: Brain Cart
- 53: Resource Area
- 54: Resource Area
- 55: Resource Area
- 56: Resource Area
- 57: Resource Area
- 58: Resource Area
- 59: Resource Area
- 60: Resource Area
- 61: Resource Area

- 62: Life Expectancy
- 63: Conversation With Elders
- 64: Culture Restriction
- 65: Constellations
- 66: Longevity Primary Panel
- 67: Worms
- 68: Wallpaper
- 69: How Old Am I
- 70: Teenagers
- 71: Theater
- 72: Chair Cart
- 73: Synoptics Cart
- 74: Art- Alchemers
- 75: Who lives the longest



Time: _____
 Date: _____
 Evaluator: _____

Codes for exhibits
 Br: Broken
 N: Not there, missing
 Total # of Visitors
 In Exhibition: _____



Democratizable: Visitor Age:
 Gender: M F
 Total # in Group: _____

Group Type: Family Group
 Adults Only
 Kids Only
 Older Adults
 Teens
 School Group

Codes for exhibits: Broken
 Not in there, missing
 Not there, missing

Component Visited: _____
 # Components Not/B: _____
 % of Total Visited: _____

Time: _____
 Start Time: _____
 End Time: _____
 Total Time: _____
 Date: _____
 Evaluator: _____

- Exhibit Components**
- 1: Woman-80's
 - 2: Wheelchair Man-80's
 - 3: Red-haired Woman-20's
 - 4: Man on Bench-100
 - 5: Introductory Panel
 - 6: Credit Panel
 - 7: Look Through My Eyes
 - 8: Osteoporosis Woman-70's
 - 9: Man-40's
 - 10: Girl and Dog
 - 11: Woman-60's
 - 12: Bench
 - 13: Interpreter Hand Cart
 - 14: Grocery Bags
 - 15: Body Primary Panel
 - 16: Strength Panel
 - 17: Stretch Panel
 - 18: Driving Test
 - 19: Car Seat
 - 20: Kitchen
 - 21: UD Products
 - 22: Snell
 - 23: Vision
 - 24: Twins
 - 25: Hearing
 - 26: Guest Book
 - 27: Cosmetic Surgery
 - 28: Store
 - 29: Heart Life Story
 - 30: Heart Disease
 - 31: Bone Density
 - 32: Heart Cells and Arteries
 - 33: Face Aging
 - 34: Menopause
 - 35: Heart Sounds
 - 36: Heart Sounds
 - 37: Tai Chi Video
 - 38: Tai Chi Figures
 - 39: Miral Primary Panel
 - 40: Bench
 - 41: Bench
 - 42: Wisdom
 - 43: Personality
 - 44: Memory
 - 45: Puzzles
 - 46: Alzheimer's video
 - 47: Guestbook
 - 48: Kid's audio
 - 49: Crystallized Intelligence
 - 50: Fluid Intelligence

- 51: Alzheimer's Holograms**
- a. Brain Cart
 - b. Resource Area
 - c. Books
 - d. Video
 - e. Audio
 - f. Computer Stations
 - g. Binders
 - h. Bulletin Board

- 54: Society Introductory Panel**
- 55: Journey With Me
 - 56: World Map
 - 57: Future Forecast
 - 58: Aging Women
 - 59: Grandparents
 - 60: Aging Poker
 - 61: Phone case

- 62: Life Expectancy**
- 63: Conversation With Elders
 - 64: Calorie Restriction
 - 65: Centenarians
 - 66: Longevity Primary Panel
 - 67: Worms
 - 68: Wallpaper
 - 69: How Old Am I

- 70: Telomeres**
- 71: Theater
 - 72: Cells Cart
 - 73: Demographic Chart
 - 74: App- Alzheimer's
 - 75: Animal Models: Who Lives the Longest

**APPENDIX C:
AGING PUZZLE THEATER EVALUATION**

In spring of 2000, the Museum of Science in Boston opened a new traveling exhibition called "The Secrets of Aging," that included a play component titled *Aging Puzzle*. The play was performed three times daily with additional special shows, for the five-month run of the exhibition. Both play and exhibition then went on the Central Ohio Science and Industry Center (COSI) in Columbus, Ohio. The exhibition was created as part of the Science Museum Exhibition Collaborative (SMEC), and was designed to travel to member institutions over the course of several years.

The play was developed by the Science Theater Program at the Museum of Science, which I coordinate. We did a national search for a playwright that had experience creating scripts from oral histories. We hired a local playwright to create a play that would use as its base interviews with elders in the Boston area, as well as elders who contributed as experts to the development of the exhibition, together representing a broad spectrum of ages, ethnicity, and levels of ability. One interview was conducted with a children's school group to include their ideas on aging. The interviews were also part research project, as we were trying to understand what the commonalities or differences might be among different populations of elders. The elders interviewed became the characters of the play and their thoughts, opinions and feelings about the aging process became the script. The children's voices were used in an audio preview to the play.

The goals of the play were developed in conjunction with the goals and messages of the exhibition, which included providing relevant learning experiences for an intergenerational audience of diverse racial and ethnic backgrounds, and introducing a broad audience to ideas drawn from the latest scientific research on aging in an engaging and interactive

environment. Goals specific to the play were to illustrate the personal experiences of real people who were far along in the aging process, and following the collection of interviews, to show how there is no one experience that embodies aging. What the playwright Debra Wise found, and what she used as her guiding theme in putting the play together, is that we all age in different ways, based on biological, sociological and psychological factors. She used the metaphor of a puzzle for how we understand and experience aging.

In the play performance, the actors jump from role to role, using a piece of costuming or a prop, a different voice, and a physical change to indicate that transformation. Images also change behind them. Most of the photographs behind them were the elders who were interviewed. Later in the run of the exhibition, biographical text panels with these photographs were hung around the stage area for people to read before or after the play. It is a highly stylized play, requiring versatile actors. The stage was designed as part of the exhibition, with enclosing walls, but open at the back for visitor movement.

Methods

We decided to use interviews to evaluate the play. Though the numbers would be small, as only one to two people could be interviewed following a show, we felt the depth of information would be better than a survey. A random sampling of visitors who saw the show were interviewed over the course of several months by a variety of interviewers. Many interviews were conducted with several members of a group.

Results

We wanted to know if visitors were connecting the play to the ideas of the exhibition and vice versa. Of

those interviewed (n=32), 38% had not gone through the exhibition yet, but were planning to following the play. These visitors had either just arrived when the play began or came in specifically for the play. 62% of those interviewed had seen some or most of the exhibition. Of this group, 90% felt the play connected to the exhibition. The remaining percentage of visitors did not have an opinion, because they did not feel they had seen enough of the exhibition. No one interviewed felt the play did not connect to the exhibition. When asked whether the play strengthened any aspects of the exhibit, these visitors all felt it did. When asked in what ways, the majority of these visitors mentioned a specific exhibit component, "*had just seen Cronkite interview and it was just like seeing it live;*" or the entire exhibition, "*Gives different perspective, play's statements are ironic versus exhibit, the way they discussed aspects of life in the play that are objects in exhibit gave life to them...*"

We received a wide ranging set of universally positive answers to the question, "What impression about aging does the play leave you with?" No one gave a negative response to this question. The responses varied from the personal, "*makes me think about everyday life-everything connects with family,*" to the hopeful, "*that it's not as bad as you think it's going to be,*" to the inspired, "*that you can learn from aging and older people.*" We were interested to see this range of responses all coming from seeing the same play, though at different times. Rather than that being a negative, because we cannot come out with a strong statement that a large percentage of visitors got one impression from the play, we feel this is a positive aspects of theatre - it provides for a wide range of experiences within one dynamic event.

At the same time, we had been concerned that the play be a balanced view of aging, and that no one view dominated. Some of the interview subjects did have negative experiences, which were included in the play. So, in the evaluation we wanted to see if people felt the play was weighted more positively or

negatively. Respondents fell into 3 categories here: 31 % felt it was weighted more positively, though not in a way that made them feel uncomfortable with the play; 28% felt it was positive with negative parts; and the majority, 41 % who felt it was well balanced and/or realistic.

Because the play was based on real people, we wanted to see if visitors realized this and how this knowledge, or lack thereof, affected their experience. 78% realized the characters were based on real people, though a few mentioned that they only realized at the end of the play; 12% did not realize this; and 10% were not sure. With the majority group, the knowledge that the characters were based on real people made the play more *authentic* and *believable*. These visitors said this knowledge made the play, "*hit home had ring of truth,*" and "*you can associate with each type of person.*"

Several times, the interview subjects who were represented in the play attended shows. It was always thrilling for the actors to speak with them afterward. One woman who is in her 80s had everyone's heart. She admitted in the interview to having an 'association' with a much younger gentleman, a fact that is included in the play. When she attended, she then introduced a man grinning ear to ear as her 'association'! Another subject, a man who is now in a wheelchair as a result of MS, became an inspiration to everyone involved in the project.

The fact that the play was based on real people affected not only the visitors' experience, but also our thinking about what we were trying to do. We are always striving to create real situations and real characters that visitors can relate to and find relevant. With this play, we were especially keen to learn whether visitors could relate to the characters and their views. 100% said yes. Many visitors explained that they saw themselves or others they

knew in the characters. They also felt the play tied in with their life experience or with someone they knew. They shared personal remembrances, "I remember the ice box..." and "My grandmother is Italian ... had home remedies," as well as current feelings it brought up, "I'm scared of getting old, so it calmed me down, not that scared anymore," and "... the line from play "Psychic pain is just as hard,," struck nerve. ."

Finally, we were concerned about whether visitors felt the play reflected current scientific thinking about the process of aging. We asked if visitors found information in the play that they considered scientific. 28% did not find information they considered scientific or were not sure; 72% found information in the play scientific. What they remembered or considered scientific varied. Some people mentioned broad fields, such as psychology or biology, while others pointed out sections from the play: "the brain does grow new connections with increased activity," to "study of... reaction speeds of younger pilots"

From this study, we felt the play achieved the goals we had set for it. People found that basing our play's characters on real people influenced visitors' experiences in a very positive manner - connecting them in a powerful way, not only to the people in the play, but also to the information on aging that we were trying to convey.