Front-end Research for

Current Science

for the

Science Museum of Minnesota

St. Paul, MN

research report prepared by:
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"Front-end" Research for Current Science Exhibits at the Science Museum of Minnesota

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Executive Summary

Why was this audience research needed?
Concept planning studies ("front-end" studies) are useful in finding out "where the audience is starting from" in their perceptions of particular subjects, themes or messages to be communicated in upcoming exhibitions. In this case, the exhibition team needed some clarifications about visitors' awareness, interests, and other perceptions of 'current science.' The priorities for this research were focused on:

- name and recognition of the topic (explore people's reactions to 10 preliminary "titles;" seek examples of topics that they associate with new/current science)
- interest in current science (to be analyzed by visitor characteristics, supplemented with reasons for interest)
- connection to everyday life (do people pay attention to science stories in the news? does current science seem relevant to them? why?)
- basic learning outcomes (awareness of current science in the gallery where visitors are interviewed, do they know basic information about a sample of topics that are in the news? do they think that scientific research produces one answer or can there be multiple perspectives?)

Pursuing these priorities, the questions driving this research included: are people interested in current science? if so, why are they interested? is 'current science' a good name – one that appeals to people and one that they understand? considering that the Museum has assembled a set of prototype exhibits about low-carb diets (the Current Science Central zone), is there a way to put that set of exhibits in context by investigating people's perceptions of that topic in relation to other possible topics? and what do people think of science-in-progress, as most current science is, such as examples of results that scientists may disagree about, or results that may be interpreted in more than one way?

How and where was this research conducted?
Interviews were conducted with randomly selected visitor groups in four science museums: the Science Museum of Minnesota (SMM), representing a large Midwest museum, the Science Museum of Iowa (SCI), representing a smaller Midwest museum, OMSI in Portland OR, representing a west coast museum, and the Maryland Science Center (MSC) in Baltimore, representing an east coast museum and one that has consciously dedicated exhibits to current science (the 'link' areas associated with three permanent galleries). In each group, one adult (age 18 or over) was interviewed using a format that began with general questions about current science (possible ways of describing the topic, rating a level of interest, seeking top-of-mind examples and reasons why a person would be interested in current science), and proceeded to get more specific by asking about some topics that are or might be represented in current science exhibits (e.g., low-carb diets, nanotechnology, water shortages). To explore whether 'current science' perceptions might differ depending on the subject or exhibit gallery where visitors were encountered, interviews were conducted in exhibit galleries representing certain topics at each museum. For example, interviews were conducted in galleries about environmental topics at three of the museums (SMM, OMSI, SCI), in galleries about space at two museums (MSC, SCI), in galleries about the human body at three museums (SMM, OMSI, MSC), physical science at two museums (OMSI,

SCI), and paleontology at two museums (SMM, MSC). The total sample of 402 visitors (approximately 100 per museum) seemed to be reasonably representative of science center audiences, and was sufficient for some in-depth analysis (e.g., comparing perceptions across the four museums, as well as by selected demographics of visitors), but was not sufficient for detailed analyses within each museum.

What are the highlights of the findings?

❖ Visitors to four different science museums expressed similar interests and perceptions about current science. Although there were occasional variations in the patterns of answers (e.g., visitors at two of the four museums were less likely to see the relevance of 'water shortages coming in the 21st century'), there were *many more similarities than differences*. Therefore, whatever strategies are developed for engaging visitors at the Science Museum of Minnesota would be likely to be engaging for audiences at other science museums as well. (This does not mean all visitors are the same; it just means that the character of the audience at SMM – including their level of interest in current science, perceptions among families and adult visitors, college-educated or not, men and women, older and younger adults – is sufficient to represent other visitors at science museums that are smaller, or in a different part of the country where there might be differences in the educational and occupational base.)

❖ There is a reasonably strong interest in the general idea of seeing current science in museum exhibits (52% of the visitors interviewed rated their interest highly, a '9' or '10' on a 10-point scale; most others rated their interest as mildly positive: a '7' or '8' on that scale). Visitors indicated interest in topics such as space exploration, health and medicine, and environmental issues, among a variety of other subjects. Such interest is not limited to one audience segment – there is a similar level of interest among adults visiting with or without children, among people with different levels of education, and across different ages of adults.

❖ Naturally, interest in specific topics is not as high as the general interest in the idea of current science.[1] For example, visitors expressed relatively low interest in Low-carb Diets, SARS virus, Nanotechnology, or West Nile Virus (14%, 14%, 20%, and 20% high interest respectively[2]). However, it's not clear whether this project *needs* to be motivated by topic-specific material, as if people were coming to see a traveling exhibition on Vikings, or Titanic, or Women's Health. There might be several possible ways of appealing to people without worrying about the specific frame of reference of a specific topic – such as *engaging formats of activities* (TV news broadcast, quiz show), or *promoting curiosity* (titles such as "Scientists ask the darn'dest questions" or "Science behind the headlines" were more appealing than "Current science" or other straightforward descriptions), or offering *personal relevance* (e.g., the title "Science for your life" was somewhat popular, and people explained some of their interest in recent/current science in terms of relevance to themselves). Consequently, it would seem that no topic should be excluded based on visitors' perceived

[1] It isn't unusual that interest in a general idea (e.g., taking a vacation, or watching the Olympics) could be high, while interest in a specific choice might be lower (e.g., not everyone wants to take a vacation on tropical beaches, and not everyone who wants to watch the Olympics is interested in beach volleyball).

[2] There were two different interview forms used in this study. Questions about SARS were asked on one form and West Nile virus was asked on the other form, to guard against possible regional differences in awareness of these recent diseases.

interest or lack of interest;[3] people could be engaged with exhibits based on the format, curiosity, or personal relevance.

❖ There is a clear need for information about current science to be communicated to visitors. Even though more than half (61%) of the visitors interviewed say they follow stories about current science in the news at least weekly, they do not feel knowledgeable about the array of five specific topics introduced in this interview – the highest self-reported knowledge was for Low-carb Diets, with 34% indicating high knowledge (an 8, 9 or 10 on a 10-point scale). In addition, even these relatively well-educated audiences at science museums were not fully aware of basic facts about relatively common science topics in the news: one-third did not know what a carbohydrate is, half had no idea about the origin of SARS, almost half had no idea about why the West Nile Virus is unusual, and two-thirds did not know what a watershed is.

❖ At science museums, most visitors do not think they are seeing information that is current or recent. In almost all galleries where interviews were conducted (14 locations across the four museums), a majority of visitors referred to the information they saw as 'well established' science – rejecting the choice of describing the information as 'recent' or 'some of each' (recent and well-established). The clear exception was at the Maryland Science Center, where the Link galleries were perceived as presenting recent science by many visitors (35% said only 'recent science' plus 30% who said 'some of each:' recent and well-established). Perhaps people expect the information in permanent exhibitions to be well-established rather than current or recent, as they expect science museums to be a stable long-term authority on the topics presented. However, considering that most people say they are interested in current science, either strongly or mildly, it seems reasonable to speculate that 'current science' additions to existing galleries would be quite welcome.

❖ Most visitors have a reasonable perspective on scientific research, recognizing that scientists don't always agree and that the results may vary. Many visitors (75%) thought that it's normal and expected if research leads to different results and scientists may not agree on the conclusions or the evidence (although that leaves one-quarter of the audiences who think such differences are confusing or that better research must be needed if there is disagreement about it). Recognizing that there may be different outcomes, slightly more than half of the visitors (62%) did not feel that the science museum should recommend one study as the right or best one; yet some people (26%) are looking for that kind of guidance, and a few (12%) think you should avoid presenting information until there is a reasonable consensus of conclusions about it. These perspectives about science are correlated with visitors' levels of formal education (more education indicates more tolerance for multiple perspectives in interpreting research), suggesting that it would be a good idea to address these issues explicitly if you want to serve an educationally diverse audience.

❖ Relevance is an important dimension of visitors' perceptions of science information. 'Relevance' can be defined in a variety of ways, from a general sense of being educated

[3] This perspective seems reinforced by the fact that there was such low interest in Low-carb Diets (e.g., 61% of visitors at SMM gave that topic a low interest rating), and yet most visitors who stopped at the Current Science Central zone were engaged by the Low-carb prototype exhibits there (86% of adults and 77% of children [age 10-12] found something that they thought was interesting or surprising that they will remember later; data cited in the formative study about Low-carb exhibits). An engaging experience with exhibits does not necessarily depend on pre-existing strong interest in a topic, but it does depend on being attracted to use the exhibits.

about what's happening in the world ('helps me understand the world better' was selected by 86% of these samples of visitors) to more specific connections to everyday life (e.g., the food we eat: gmo's, diets, mad cow disease). We can "unpack" the relevance of current science in these ways:

a) Since people come to science museums for an experience that they expect to be educational as well as fun, it makes sense that they define 'relevance' in terms of broad values such as 'makes me feel smarter, better able to talk about current events with people' or keeping up-to-date on what's happening. In other words, this "first level" of relevance is basically ***curiosity***. As visitors wander around a variety of exhibits in a science museum, their willingness to explore almost anything that seems interesting is part of the relevance of a visit – they find out more about the world than they knew before, adding to their and their family's understanding and knowledge.

b) A "second level" of relevance about current science seems to be a little more focused on ***subjects and issues with some public awareness***. Aside from curiosities that might be engaging regardless of the topic, visitors in this study also defined relevance as being able to find out about topics with pre-existing awareness or public concern: e.g., 'informs me about controversial issues' (selected by 70% of visitors). This explains the relatively high relevance of one topic among the five specific topics presented to people – water shortages coming in the 21st century. The only one of the five topics to be rated notably higher in relevance than interest (51% vs. 36%), this was phrased as an issue of potentially broad concern but not specifically related to individual behaviors or decision-making.

c) The "third level" of relevance seems to pertain to ***individual relevance***, such as decisions that we make in our everyday lives, or personal interests that we pursue (either career-related topics, or specific health concerns, or other strong personal interests), or circumstances that may affect us individually (e.g., diseases or other health threats). For example, in this study 60% of the visitors said that current science information could 'help decide what food to buy,' and 51% chose 'affects my thinking about the fossil fuels I use.' This dimension of relevance appears to be fostered by higher levels of formal education, and in some cases is greater with increasing age.

Based on the variety inherent in the five specific topics (SARS, low-carb diets, etc.), it is clear that 'relevance' is highly correlated with 'interest' (correlation coefficients are extremely high, ranging from 0.61 to 0.76); therefore perceptions of relevance will vary according to the interests and prior experience that individuals carry with them. Interestingly, 'relevance' is also correlated with a person's estimated knowledge (most correlation coefficients on the five topics range from 0.27 to 0.42, with one exception), suggesting that a "starting point" of some knowledge is helpful in supporting a definition of relevance. Fortunately, 'relevance' is not correlated with 'ease of understanding' (correlation coefficients of only 0.01 to 0.10) so there aren't major obstacles in taking on complex topics; perhaps visitors trust science museums to make most subjects accessible and understandable.

A. Interest in Current Science

This section of the report contains findings about the top-of-mind appeal of 'current science' as well as visitors' interest in selected specific topics. Some highlights of the results are:

- There was no clear consensus of popular appeal among the ten suggested titles that were tested.
- Visitors at all four museums expressed moderately high interest in the idea of seeing examples of 'recent science' (52% gave a '9' or '10' rating).
- Interest in five specific topics was considerably lower than the appeal of the concept in general (ranging from 14% to 36% 'high' ratings, with the highest interest in 'water shortages coming in the 21st century'). Space exploration was prominent among visitors' own suggestions of what interests them.

A. Interest in Current Science

A.1. Appeal of terms/titles for 'recent science'

OVERVIEW: Of the ten terms or mock titles to describe recent science, none stood out as a clear "winner." The three most popular choices appear to feature some kind of curiosity: "darn'dest questions," "for your life," or "behind the headlines" – a little bit of mystery, but with a sense that it could be interesting or relevant to me. Additional analyses (shown on the next page) indicate some differences in appeal among men and women, adults and families, and more vs. less educated visitors. 'Science today' was the most appealing title among men, while women preferred 'science for your life.' Adults visiting without kids liked 'science behind the headlines.' Graduate school educated visitors were most likely to choose 'scientists ask the darn'dest questions' while high school graduates liked the term 'new science' or 'science today.'

The idea we want to talk about doesn't have a specific name yet, but these phrases try to describe it. Which of these terms seem most interesting to you? **(pick 2 or 3)**

	Overall (n=402)	SMM (n=111)	OMSI (n=103)	MSC (n=89)	SCI (n=99)
Scientists Ask the Darn'dest Questions	30%	29%	35%	26%	28%
Science for Your Life	27%	20%	32%	27%	31%
Science Behind the Headlines	23%	26%	25%	21%	18%
Science Today	22%	22%	18%	26%	21%
Science in the News	20%	22%	17%	21%	17%
New Science	19%	22%	24%	12%	16%
People Do Science	17%	13%	16%	15%	22%
Current Science	13%	16%	12%	15%	11%
Science Now	12%	12%	9%	14%	15%
Fresh Science	10%	9%	11%	8%	13%

(each column adds to more than 100% because people chose more than one answer)

SMM = Science Museum of Minnesota
OMSI = Oregon Museum of Science
MSC = Maryland Science Center
SCI = Science Center of Iowa

Appeal of titles (continued)

Analysis by audience segments:

	GROUP COMPOSITION			SEX		
	Adults		Families	Men		Women
Scientists Ask the Darn'dest Questions	23%		32%	25%		32%
Science for Your Life	28%		27%	22%	**	**31%**
Science Behind the Headlines	**37%**	**	19%	24%		23%
Science Today	**29%**	++	19%	**27%**	**	18%
Science in the News	23%		19%	18%		21%
New Science	14%		21%	**26%**	**	14%
People Do Science	8%	**	**19%**	14%		18%
Current Science	**20%**	**	11%	**18%**	**	11%
Science Now	8%		13%	12%		12%
Fresh Science	5%		12%	7%		13%

		EDUCATION			
		High School	Some College	College Grad	Graduate School
Scientists Ask the Darn'dest Questions	**	22%	32%	25%	**40%**
Science for Your Life		26%	28%	27%	27%
Science Behind the Headlines		20%	19%	30%	18%
Science Today	++	**32%**	26%	19%	17%
Science in the News		20%	17%	19%	21%
New Science	**	**32%**	21%	15%	17%
People Do Science		13%	19%	14%	21%
Current Science		15%	12%	16%	11%
Science Now	**	6%	10%	**21%**	7%
Fresh Science	**	6%	11%	6%	**17%**

** asterisks indicate statistically significant differences ($p<.05$) between the columns of figures, for example between men and women.
++ plus signs indicate borderline relationships that are not statistically significant ($p<.10$) but that may be intuitively useful in interpreting the pattern of results.
Bold figures indicate the percentages that are *higher* than the others.

A.2. Interest in seeing 'recent science' at the museum

OVERVIEW: Visitors expressed moderately high interest in seeing examples of recent science at the museums (52% gave ratings of 9 or 10). Interest was highest among SCI visitors and women. Level of education was not a significant factor in people's ratings of interest.

On a scale of 1 to 10, how would you rate your interest in seeing examples while you are here of science that is recent or in the news?

	Overall		SMM	OMSI	MSC	SCI
High (9-10)	52%	**	54%	45%	47%	**64%**
Medium (7-8)	38%		40%	40%	39%	32%
Low (1-6)	10%		6%	15%	15%	4%

Analysis by audience segments

SEX

	Men		Women
High	45%	**	**58%**
Medium	42%		34%
Low	13%		7%

EDUCATION

	High School	Some College	College Grad	Graduate School	
High	50%	48%	49%	64%	(not significant)
Medium	36%	42%	40%	29%	
Low	14%	10%	11%	7%	

A.3. Top-of-mind topics of interest to visitors

OVERVIEW: Visitors came up with a variety of topics of interest about 'science that's happening now.' The top four subjects were space exploration, health and medicine, environmental issues, and genetic research. Approximately 10% of the visitors couldn't name anything. Personal relevance was the most often cited reason for interest in a topic.

Tell me something that would interest you about science that's happening now?

SMM	OMSI	MSC	SCI	Overall	
24%	33%	39%	45%	35%	space exploration
23%	24%	22%	24%	24%	health and medicine
16%	20%	19%	15%	18%	environmental issues (alternative energy)
16%	19%	12%	14%	16%	genetics, cloning, stem cell research
9%	14%	4%	7%	9%	food (gmo's, diets, mad cow disease)
8%	3%	6%	9%	6%	weather, tornados, volcanoes, floods
6%	6%	7%	4%	6%	computers, wireless technology
4%	1%	3%	9%	4%	animals, dinosaurs
3%	1%	0	1%	1%	forensic science
2%	0	0	1%	1%	archaeology & history
2%	2%	0	0	1%	ocean exploration
9%	10%	10%	6%	9%	other (evolution, military)
11%	12%	8%	12%	11%	don't know, blank
Why?					
11%	18%	18%	14%	15%	it's relevant to me or may benefit me
14%	12%	7%	13%	11%	it will benefit mankind
3%	7%	2%	16%	7%	just to learn more about it
2%	9%	7%	13%	7%	it's in the news
7%	5%	3%	4%	5%	it's controversial, political
5%	5%	6%	5%	5%	it helps us predict the future
5%	3%	3%	6%	4%	good for kids to understand

A.4. Ratings of interest in five potential topics

OVERVIEW: Visitors were asked to rate their interest in five specific topics on a scale from 1 to 10. The most appealing topic was 'water shortages coming in the 21st century' with 36% 'high' ratings (this is only mildly positive). The other subjects ranged from 14% to 20% 'high' interest. A substantial proportion of visitors at MSC and SCI were unfamiliar with the term 'nanotechnology' (and therefore did not rate it). There are some gender differences (shown on the next page): men are more interested in nanotechnology, while women are more interested in West Nile virus and low-carb diets.

For each topic give me a rating of your interest:

	Overall		SMM	OMSI	MSC	SCI
Water shortages coming in 21st century						
High Interest (9-10)	36%		37%	37%	36%	35%
Medium (7-8)	36%		42%	41%	37%	24%
Low (1-6)	28%	**	21%	22%	27%	**41%**
West Nile Virus						
High Interest (9-10)	20%		19%	11%	22%	29%
Medium (7-8)	32%		38%	38%	24%	26%
Low (1-6)	48%		44%	51%	53%	45%
Nanotechnology						
High Interest (9-10)	20%		22%	21%	16%	19%
Medium (7-8)	21%		22%	24%	18%	17%
Low (1-6)	59%		56%	55%	66%	64%
Don't know/can't rate it	[20%[4]]	**	[9%]	[2%]	[**30%**]	[**41%**]
SARS virus						
High Interest (9-10)	14%		14%	14%	16%	12%
Medium (7-8)	27%		25%	34%	18%	31%
Low (1-6)	59%		61%	52%	66%	57%
Low Carb Diets						
High Interest (9-10)	14%		14%	11%	20%	13%
Medium (7-8)	20%		20%	21%	17%	21%
Low (1-6)	66%		66%	68%	63%	67%

[4] The figures are shown in brackets because some visitors couldn't give a rating of 'nanotechnology' due to lack of familiarity with the term. This happened more often at MSC and SCI. The figures above are based on only those people who are familiar with the term.

Ratings of interest in topics (continued)

Analysis by audience segments

	SEX		
Percent HIGH interest	**Men**		**Women**
Water shortages	34%		37%
West Nile Virus	13%	++	26%
Nanotechnology	**28%**	**	13% (among those who know what it is)
SARS	12%		15%
Low-carb diets	9%	**	**19%**

	EDUCATION			
Percent HIGH interest	**High School**	**Some College**	**College Grad**	**Graduate School**
Water shortages	33%	34%	37%	40%
West Nile Virus	26%	19%	19%	21%
Nanotechnology	16%	14%	23%	23% (if know what it is)
SARS	8%	18%	15%	12%
Low-carb diets	15%	19%	11%	14%

Relationship of knowledge & perceived relevance to interest

Additional analyses show strong relationships between visitors' interest and their ratings of how relevant the topics are to them. Knowledge of a topic also bears significantly on interest, but to a lesser degree (except for nanotechnology where knowledge is just as important as relevance). Perceived ease of understanding the topics was not related to people's interest, except for a mild association with nanotechnology.

	INTEREST IN TOPIC				
Correlation Coefficients[5]	**Water Shortage**	**West Nile Virus**	**Nano-technology**	**SARS Virus**	**Low-carb Diets**
topic's relevance to you	.63 *	.71 *	.61 *	.63 *	.76 *
your knowledge of topic	.43 *	.41 *	.58 *	.43 *	.31 *
ease of understanding topic	.04	.02	.17 *	.12	.10

[5] Visitors also gave ratings on a scale of 1 to 10 for their knowledge of the topics, the relevance of the topic to them, and the perceived ease of understanding the topics. These ratings are presented in later sections of the report (relevance in B.4., knowledge in D.1 and ease of understanding in D.2). The relationships between these other ratings and people's interest in the topics are presented here. The higher the coefficient, the stronger the relationship is between the two variables.

B. Connections to Everyday Life

This section explores the extent to which 'current science' is perceived to be relevant to people's lives. Some highlights of the results are:

- Most science museum visitors follow science in the news on a regular basis and they say it's important to keep up-to-date on what's going on now. They view recent science information as relevant to them intellectually (understanding the world, being informed), and to a lesser extent as affecting their daily lives and decision-making.
- Analysis of the five specific topics show that visitors' ratings of "relevance to me" are highly correlated with their interest ratings. The most relevant topic was 'water shortages' (51% 'high' ratings).

B. Connections to Everyday Life

B.1. How much do visitors follow science in the news?

OVERVIEW: Most of these science museum visitors (61%) say they follow science in the news at least weekly. Visitors over the age of 55 are most likely to "follow the news," while younger visitors are less likely to do this regularly. Minor differences across the four museums were not statistically significant.

How much do you follow stories about current science in the news?

	Overall	SMM	OMSI	MSC	SCI
daily	20%	20%	22%	18%	20%
weekly	41%	47%	36%	42%	39%
monthly	24%	23%	29%	21%	23%
rarely	15%	10%	13%	19%	18%

Analysis by audience segments:

		AGE				
		18-24	25-34	35-44	45-54	55+
daily	**	5%	15%	19%	**26%**	**31%**
weekly		48%	42%	33%	44%	45%
monthly		24%	29%	29%	18%	16%
rarely		24%	13%	19%	12%	8%

B.2. Why is recent science important to visitors?

OVERVIEW: A common reason cited at all four museums for the importance of recent science was "keeping up-to date." Other reasons included "relating to daily life, "learning," "new discoveries," and "to teach kids."

Why is recent science important to you?

SMM	OMSI	MSC	SCI	Overall	[categories from open-ended answers]
25%	23%	23%	19%	23%	keeping up-to-date on what's happening
20%	15%	10%	11%	14%	it relates to our daily lives
19%	11%	13%	13%	14%	to learn, gain knowledge
12%	11%	13%	8%	11%	it's new, new discoveries
11%	10%	6%	15%	10%	to teach kids, inspire kids
8%	10%	2%	3%	6%	it pertains to the future
1%	5%	6%	8%	5%	I like science, all science is important
5%	7%	4%	5%	5%	interested in new technology
3%	5%	8%	6%	5%	hear it on the news, want to be informed
4%	7%	7%	4%	5%	career-related interest
5%	5%	2%	4%	4%	it helps people, cures diseases
3%	2%	6%	4%	3%	medical, relates to personal health
1%	2%	0	4%	2%	it's cool, fun
6%	7%	6%	5%	6%	other reasons
2%	5%	8%	5%	5%	don't know, blank

Sample of answers: Why is recent science important to you?

SMM

Anything new is interesting, I like to learn
I like to know what types of things are going on
Science education, need visuals for examples
I have two kids and I'm a teacher, kids need to see things that are going on today, it keeps them interested
How science relates to our lives, under-reported, need to know what is going on
I like to see what they're figuring out now
Science of today leads to science of tomorrow
Interesting
I can help people
I think kids would like it, I'd like it, important to keep abreast of changes & new discoveries
Stay up on latest advances
A lot of new stuff is being discovered
So I can know more
It's relevant, this stuff affects my life
To see what is going on and what is changing
Relevance to everyday life
Affects our future and the way we live
Helps apply old concepts to new situations
Changes all the time
Anything you can relate to your life is more interesting

OMSI

Knowledge for the future
Most stuff I've learned in school so new things are cutting edge
Interested in technological advance & growth in the modern age
Tendency to look at break-thru findings, good for kids to see the process
See how far we're going technology-wise
Applicable to daily life
Be aware of what's happening, new discoveries
I'm not in school anymore, I want more information
People who are literate about science are literate about the world
I work in science-related field and I like to keep current
New technology, new information
I'm a scientist, I use it to teach
For future generations
Keep up – economic and lifestyle improvements
Affects my life
Good for the future
Rapid development, interesting
Know what's happening in the news, what people are talking about
Good for advancement
Related to health care

Sample of answers: Why is recent science important to you?

MSC

It is important for my general knowledge
New technology
Without it we wouldn't have anything to build upon
Because of its impact on me
I like to learn new things
Helps understand what's going on in the world, how we developed as a culture
Newest breakthroughs, you need to know about them
I know what's going on and keep up with what's going on
Like to keep up, going so fast
Interesting
It's like new stuff is cool and I like the computers
As a teacher, I need to keep up with new science discoveries for the students I teach
It'd be neat to find out what's going on
Direct effects on our life
It would depend on the subject
I want to be well informed
Not a whole lot of interest in what's happened in past
Glimpse into future
Affects your life and happens during your lifetime
I'm an engineer, science becomes technology

SCI

Interested in what's going on, latest discoveries
Makes the world a better place, sparks young people's imagination
What's happening now
Interesting
Keep current of what's happening in the world, expose kids to it
Fun
I may save my life
Follow it in the news
A lot develops from science
It's what's happening
Explains how the world works
More interesting, applicable today
To know where we're going
So we can learn about updates and progress
Relates to our life
I have children
Keep up to date with things
I'm a science teacher
Want children to learn
Betterment of man

B.3. How is recent science relevant to visitors?

OVERVIEW: The majority of visitors agreed that recent science information could be relevant to them in general educational ways (understanding the world, feeling smarter, being informed of issues). Fewer people felt that they would base decisions about food buying or fuel use on such information (although over half said it could relate in this way). The most educated visitors were more likely to say that new information could affect their decision making about food or fuel use.

Do you think that recent science news or information would be relevant to you in any of these ways?

	Overall		SMM	OMSI	MSC	SCI
In general, help me understand the world better	86%		87%	88%	83%	85%
Make me feel smarter, better able to talk about current events with other people	72%	**	**76%**	61%	**72%**	**79%**
Inform me about controversial issues	70%		72%	68%	70%	71%
Help decide what food to buy	60%		68%	53%	58%	57%
Affect my thinking about how much fossil fuel I use	51%		50%	53%	43%	59%

Analysis by audience segments:

EDUCATION

		High School	Some College	College Grad	Graduate School
help me understand the world		85%	85%	89%	84%
make me feel smarter		63%	73%	76%	70%
inform me about controv. issues		67%	67%	74%	70%
help decide what food to buy	**	44%	60%	59%	**68%**
think about how much fuel I use	**	52%	42%	51%	**63%**

SEX

		Men	Women
help me understand the world		87%	85%
make me feel smarter		70%	73%
inform me about controv. issues	**	66%	**74%**
help decide what food to buy	**	56%	**62%**
think about how much fuel I use		53%	50%

B.4. Ratings of relevance of five potential topics

OVERVIEW: The topic with the most relevance to people was 'water shortages coming in the 21st century' (51% said 'high' relevance). The other four topics had very low ratings for relevance (12-18% 'high'). There are some differences among audience segments (shown on the next page): the perceived relevance of low-carb-diets and nanotechnology increase with age.

For each topic give me a rating in terms of relevance to you:

	Overall		SMM	OMSI	MSC	SCI
Water shortages coming in 21st century						
High Relevance (9-10)	51%		45%	54%	52%	53%
Medium (7-8)	28%		39%	31%	21%	21%
Low (1-6)	21%	**	16%	15%	**27%**	**26%**
West Nile Virus						
High Relevance (9-10)	18%		19%	10%	22%	23%
Medium (7-8)	31%		38%	28%	22%	35%
Low (1-6)	51%		43%	62%	56%	42%
Low Carb Diets						
High Relevance (9-10)	16%		18%	14%	20%	12%
Medium (7-8)	20%		21%	19%	18%	20%
Low (1-6)	64%		61%	67%	62%	68%
Nanotechnology						
High Relevance (9-10)	16%		19%	15%	8%	19%
Medium (7-8)	16%		22%	14%	17%	12%
Low (1-6)	68%		59%	71%	75%	68%
Don't know / can't rate it	[26%]	**	[21%]	[11%]	[**33%**]	[**42%**]
SARS virus						
High Relevance (9-10)	12%		13%	4%	18%	12%
Medium (7-8)	16%		18%	18%	14%	13%
Low (1-6)	73%		69%	78%	68%	75%

Relevance of topics (continued)

Analysis by audience segments

		SEX	
Percent HIGH relevance:		**Men**	**Women**
Water shortages		50%	51%
West Nile Virus	**	12%	**23%**
Low-carb diets		14%	18%
Nanotechnology	**	**20%**	12% (among those who know what it is)
SARS		13%	10%

		EDUCATION			
Percent HIGH relevance:		**High School**	**Some College**	**College Grad**	**Graduate School**
Water shortages		41%	47%	58%	49%
West Nile Virus		23%	13%	23%	15%
Low-carb diets		9%	18%	15%	18%
Nanotechnology	**	12%	9%	**24%**	12% (if know what it is)
SARS		4%	7%	18%	10%

		AGE				
Percent HIGH relevance:		**18-24**	**25-34**	**35-44**	**45-54**	**55+**
Water shortages		44%	44%	49%	57%	57%
West Nile Virus		6%	17%	19%	19%	24%
Low-carb diets	**	7%	10%	15%	19%	**26%**
Nanotechnology	++	14%	13%	13%	**22%**	**20%**
SARS		9%	6%	11%	16%	18%

Relationship of knowledge to perceived relevance

Perceived relevance is significantly related to self-rated knowledge of the subjects, especially for nanotechnology. Again, perceived ease of understanding the topics is not an important factor in ratings of relevance.

	RELEVANCE OF TOPIC				
Correlation Coefficients	**Water Shortage**	**West Nile Virus**	**Low-carb Diets**	**Nano-technology**	**SARS Virus**
your knowledge of topic	.27 *	.42 *	.32 *	.60 *	.36 *
ease of understanding topic	.01	.07	.10	.10	.01

C. Opinions about How the Museum Handles Current Science

This section investigates visitors' perceptions of whether museums are currently providing recent science information, and how current research should be presented if there is not a consensus among scientists. The key findings are:

- The majority of visitors to SMM, OMSI, and SCI felt that they were seeing "well-established" science (as a choice contrasted with "current or recent" science) in most galleries, especially physical science areas. MSC visitors were somewhat more likely to say they were seeing some recent science information in the three main galleries and this was even more dramatic in the new Links exhibits.
- The majority of visitors have reasonable awareness that scientists don't always agree and they are comfortable with the idea of being presented with different results even if there is no consensus or "recommendation" of what to believe. However, less educated visitors are more likely to be confused by this approach and to want recommendations.

C. Opinions about How the Museum Handles Current Science

C.1. Is the museum providing recent science information now?

OVERVIEW: Overall, about one-quarter of the visitors felt that the museums were providing recent science in the galleries where they were interviewed. The exception to this finding was at MSC where 65% of visitors interviewed in the 'Links' exhibits (designed to represent "current science") said there was recent information. There are some variations among specific galleries, for example the physical science galleries tend to be perceived as "well-established" science.

Considering this gallery that we're in now, do you think the museum is providing you with "recent science" information about things that are happening now, or is it more like "well-established science" that's interesting but not necessarily new?

	Overall		SMM	OMSI	MSC	SCI
recent	8%	**	4%	6%	**24%**	2%
some of each	21%		23%	17%	27%	16%
well established	67%		68%	73%	44%	80%
don't know	4%		5%	4%	6%	2%

Analysis by galleries/museums: (small numbers per gallery, approx. 25, so less reliable)

SMM:	Miss. River	Human Body	Paleo Hall	Experiment Gallery
recent	4%	8%	0	4%
some of each	32%	32%	21%	11%
well established	64%	60%	79%	86%

OMSI: **	Earth Science	Life Science	Physical Science
recent	9%	6%	3%
some of each	**34%**	3%	19%
well established	56%	91%	78%

MSC: **	Dinosaurs	Space	Body	Links
recent	21%	13%	7%	**35%**
some of each	29%	20%	27%	30%
well established	50%	60%	53%	35%

SCI: **	Environment	Planetarium	Zing
recent	3%	0	3%
some of each	12%	**35%**	3%
well established	85%	65%	94%

Examples of recent science at SMM

Well-established=lock and dam, recent=sewer system
Crime science with maggots
Recent=barges, well established=aquatic stuff
Recent=mussels, landscape=well established
Barge traffic exhibit, where's the lock & dam exhibit? So relevant
Peregrine falcon, aquatic invaders
Film, Forces of Nature
Omni theater

Mississippi River Gallery

Genetics are old, culture is cool and new
Display on aerodynamics is historical; medical display in Human Body is current
Alzheimer's disease
The DNA area
Stem cell science
In heart is current; perception
Well, hand eye coordination I haven't seen that one before
I see it as current because information is from last two years
Blood pressure

Human Body

Forces of Nature (omni film), low-carb diets
Updating "Brontosaurus" information
Dinosaurs carry tails in air vs. on ground, evidence that maybe warm blooded
Timeline not up to date, focus on dinosaur findings in China
Volunteer removing fossils from field jacket, recent, still learning

Paleo Hall

Experiments (weather), Mars and Robots
Well established=dinosaurs; recent=Robots
Wave lengths, sound

Experiment Gallery

Examples of recent science at OMSI

Earthquakes, El Nino
Sewage exhibit
Computers, satellites
El Nino, sewage
Radiation exhibit
El Nino, watershed lab
Sewage exhibit, Hanford exhibit
Earthquakes
Sewage exhibit, Hanford exhibit
Cleaning up Hanford, sewage exhibit
El Nino

Earth Science

Ultra sound exhibit
Embryo of baby
Wrinkle face machine
Computer room

Life Science

Acid rain
Recycling exhibit

Chemistry

Fuel cells
Disk with laser light

Physics

Examples of recent science at MSC

I never knew there were dinosaurs in Antarctica, the dinosaurs in MD are new
New T-rex, the dig pit is old style science
Its all new stuff we come to see; didn't know about dinosaurs in MD
Pangea break up will be new for many but it's a well-established concept
Life long ago to help us now
Discovery of dinosaurs is old but new
Movies about finding fossils

Dinosaurs

Cassini
Solar system graphic, staff interaction, Hubble space telescope
Pictures of Hubble are recent, solar system established
Hubble deep field
New images from space

Outer Space

HIV and DNA stuff on wall
Neurons presentation current

Your Body

Smartwatch; colon pill
Glucometer watch
Colon pill, glucowatch
Videos new; genetics not new but important
Info about smoking in front of Body Link
Aiming genetics at children
Projector screens
Video monitor has some great stuff

Body Link

Map (tilty table)
Storm forming, go to own neighborhood, see satellite pictures
Bay, weather, this is a way to handle it -active science
Tanks with crab, fish and camera
Core sample of Bay
Weather LCD scans, core sample
Climate shifts, magic planet

Terra Link

Shots of deep space, looks back hundreds of years
Headline news
Space station model
Giving interactive web links
See day to day
Like to see the Cassini project and the Mars rovers
Showing that space station stuff

Space Link

Examples of recent science at SCI

Tornado exhibit, insect collection
Butterflies-up & coming, and snakes

Environmental Center

Space information
Learning center
Computer
Planetarium - established but always changing
Challenger is new
Mars
Planetarium, night vision

Planetarium

Sports teams (basketball) is current

Zing

C.2. How should the museum handle lack of consensus by scientists?

OVERVIEW: Three-quarters of the visitors understand that scientists don't always agree and that it's normal for different studies to yield different results. The proportion who find this 'confusing' is small, but higher among less educated visitors (19%). The majority of visitors also feel that it's okay for the museum to present results from several studies without recommending one as the best conclusion (see next page). Less educated visitors are slightly more likely to want a recommendation.

What do you think about situations where scientists don't agree on the conclusions or evidence? Is that . . .

	Overall	SMM	OMSI	MSC	SCI
Normal & expected: research can lead to different results	75%	81%	72%	74%	70%
They probably need better research; there should be agreement if it's been studied enough	15%	8%	20%	16%	18%
It's confusing – a reason why we don't know what to believe	10%	11%	8%	10%	11%

Analysis by audience segments

	High School	Some College	College Grad	Graduate School
**				
Normal & expected	66%	67%	**80%**	**81%**
Need better research	15%	20%	13%	12%
It's confusing	19%	13%	7%	7%

How should the museum handle lack of consensus? (continued)

If current science research on a topic has not reached a conclusion, what do you think the Science Museum should do?

	Overall	SMM	OMSI	MSC	SCI
Present 2 or 3 different studies or conclusions WITHOUT RECOMMENDING one of them	62%	68%	56%	65%	58%
Present the variety of studies but RECOMMEND one as the best conclusion so far	26%	24%	26%	22%	33%
WAIT to present something until there's a reasonable consensus	12%	8%	18%	14%	9%

Analysis by audience segments

	EDUCATION			
	High School	Some College	College Grad	Graduate School
++				
Present studies w/out recommending	53%	59%	**65%**	**64%**
Recommend one	36%	21%	25%	29%
Wait for consensus	11%	19%	10%	7%

D. Knowledge of Specific Topics

This section presents information about visitors' basic understanding of five specific topics. Highlights of the results are:

- Visitors were somewhat confident in their knowledge of Low-Carb Diets, although only 34% said they were 'highly' knowledgeable. People felt less knowledgeable about SARS, West Nile Virus and Water Shortages. Visitors rated themselves as much less knowledgeable about nanotechnology, and in fact, many visitors were completely unfamiliar with the term (41% at SCI and 28% at MSC).
- About 60% of the visitors showed at least a basic understanding of carbohydrates (based on two open-ended questions). Understanding of the other four topics was lower – 30% of visitors were aware that the SARS virus was originally contracted from animals; 40% knew that the West Nile Virus is transmitted across species; 40% knew that nanotechnology refers to very small machines; and 30% gave a reasonable definition of 'watershed.'

D. Knowledge of Specific Topics

D.1. Ratings of knowledge

OVERVIEW: Visitors feel most knowledgeable about Low-carb Diets (34% rated their knowledge 'very high'), and least knowledgeable about Nanotechnology and West Nile Virus (4%, 7%). There are some differences between the four museums: higher knowledge of Low-carb Diets at OMSI and SCI, higher knowledge of West Nile Virus at SCI, and higher knowledge of water shortages at OMSI. Additional results (shown on the next page) suggest that level of education is a factor in perceived knowledge about SARS and Nanotechnology, while awareness of Water Shortages increases with both age and education.

For each topic give me a rating in terms of <u>your knowledge</u>:

	Overall		SMM	OMSI	MSC	SCI
Low Carb Diets						
High Knowledge (8-10)	34%	**	29%	**37%**	29%	**41%**
Average (5-7)	45%		40%	48%	51%	42%
Low (1-4)	21%		**31%**	15%	20%	17%
Water shortages coming in 21st century						
High Knowledge (8-10)	18%	**	13%	**25%**	16%	20%
Average (5-7)	45%		49%	54%	47%	28%
Low (1-4)	37%		38%	21%	37%	**52%**
SARS virus						
High Knowledge (8-10)	11%		11%	14%	11%	8%
Average (5-7)	39%		36%	34%	48%	40%
Low (1-4)	50%		53%	52%	41%	52%
West Nile Virus						
High Knowledge (8-10)	7%	**	2%	4%	4%	**20%**
Average (5-7)	47%		61%	43%	49%	33%
Low (1-4)	46%		37%	53%	47%	47%
Nanotechnology						
High (8-10)	4%		3%	6%	2%	4%
Average (5-7)	14%		18%	16%	11%	12%
Low (1-4)	62%		70%	77%	58%	42%
don't know/can't rate	** 19%		9%	2%	**28%**	**41%**

Ratings of knowledge (continued)

Analysis by audience segments

		SEX	
Percent HIGH knowledge:		**Men**	**Women**
Low-carb diets	**	28%	**39%**
Water shortages		20%	18%
SARS		10%	11%
West Nile Virus		6%	8%
Nanotechnology		6%	2%

		EDUCATION			
Percent HIGH knowledge:		**High School**	**Some College**	**College Grad**	**Graduate School**
Low-carb diets		26%	34%	35%	38%
Water shortages	++	15%	15%	19%	**24%**
SARS	**	4%	7%	11%	**21%**
West Nile Virus		7%	2%	11%	8%
Nanotechnology	**	0	1%	5%	8%

		AGE				
Percent HIGH knowledge:		**18-24**	**25-34**	**35-44**	**45-54**	**55+**
Low-carb diets		30%	32%	35%	28%	43%
Water shortages	**	14%	13%	19%	18%	**25%**
SARS	++	0	6%	13%	19%	11%
West Nile Virus		11%	5%	10%	3%	10%
Nanotechnology		2%	4%	3%	9%	1%

D.2. Perceived ease of understanding topics

OVERVIEW: Low-carb Diets are considered the easiest to understand among these five topics, especially at SMM and OMSI. Nanotechnology is perceived as the hardest topic to understand (52% of those who are familiar with the term rated it 'hard'). Additional analyses (presented on the next page) show some gender differences (women think nanotechnology and water shortages are harder to understand) and only one difference by level of education (water shortages rated harder by non-college graduates).

For each topic give me a rating in terms of how hard you think it is to understand:

	Overall		SMM	OMSI	MSC	SCI
Low Carb Diets						
Hard (8-10)	10%	**	10%	5%	9%	**17%**
Medium (5-7)	23%		15%	25%	28%	26%
Easy (1-4)	67%		**75%**	**70%**	63%	57%
West Nile Virus						
Hard (8-10)	12%		12%	10%	18%	10%
Medium (5-7)	40%		36%	36%	34%	53%
Easy (1-4)	48%		52%	54%	48%	37%
Water shortages coming in 21st century						
Hard (8-10)	15%		18%	15%	13%	13%
Medium (5-7)	30%		22%	30%	34%	37%
Easy (1-4)	55%		60%	55%	53%	50%
SARS virus						
Hard (8-10)	20%		24%	13%	25%	17%
Medium 5-7)	43%		43%	48%	36%	46%
Easy (1-4)	37%		33%	39%	39%	37%
Nanotechnology						
Hard (8-10)	52%	**	54%	47%	**71%**	39%
Medium (5-7)	32%		32%	37%	24%	32%
Easy (1-4)	16%		14%	16%	5%	29%
Don't Know	[26%]	**	[16%]	[14%]	[**35%**]	[**43%**]

Ratings of ease of understanding topics (continued)

Analysis by audience segments

		SEX	
Percent HARD TO UNDERSTAND:		**Men**	**Women**
Low-carb diets		13%	9%
West Nile Virus		15%	11%
Water shortages	**	10%	**19%**
SARS		18%	20%
Nanotechnology	**	45%	**59%** (among those who know what it is)

		EDUCATION			
Percent HARD TO UNDERSTAND		**High School**	**Some College**	**College Grad**	**Graduate School**
Low-carb diets		12%	11%	10%	10%
West Nile Virus		12%	23%	6%	9%
Water shortages	**	**20%**	**22%**	12%	10%
SARS		36%	11%	21%	15%
Nanotechnology		62%	57%	47%	49% (if know what it is)

		AGE				
Percent HARD TO UNDERSTAND		**18-24**	**25-34**	**35-44**	**45-54**	**55+**
Low-carb diets		9%	12%	10%	4%	15%
West Nile Virus		0	17%	13%	10%	12%
Water shortages		14%	17%	15%	13%	15%
SARS	++	21%	25%	21%	11%	19%
Nanotechnology		64%	48%	58%	42%	52%

Relationship between knowledge and ease of understanding

Perceived ease of understanding is correlated (a weak relationship but statistically significant) with knowledge on three of the five topics (Low-carb Diets, SARS, and Nanotechnology). This means that the higher a person's knowledge on those three topics, the easier they think it is to understand.

	KNOWLEDGE OF TOPIC				
Correlation Coefficients	**Low-carb Diets**	**SARS Virus**	**West Nile Virus**	**Nano-technology**	**Water Shortage**
ease of understanding topic	.15*	.24*	.02	.23*	.06

D.3. What do visitors already know about these topics?

OVERVIEW: Nearly everyone agrees that the body needs carbohydrates. About 60% of the visitors have at least a basic understanding of carbohydrates as providing energy, fuel or sugar. About one-third of the overall sample was unclear about what a carbohydrate is.

What is a carbohydrate?

SMM	OMSI	MSC	SCI	Overall	
30%	43%	40%	37%	38%	sugars/food that breaks down into sugar
25%	23%	20%	29%	24%	food that provides fuel, energy
17%	38%	16%	14%	22%	starches, pasta, breads
6%	0	2%	6%	4%	a unit of measurement
4%	0	11%	4%	4%	fat, turns to fat
23%	2%	18%	8%	13%	other/unclear (a part of food, a food group)
8%	19%	22%	16%	16%	don't know, blank

Does your body need carbohydrates or not really?

SMM	OMSI	MSC	SCI	Overall	
96%	98%	95%	98%	97%	YES, the body needs carbohydrates
Why?					
67%	56%	47%	58%	58%	energy, fuel, sugar
21%	20%	9%	10%	15%	a balanced diet
0	0	0	4%	1%	stamina
2%	14%	27%	8%	12%	other/unclear
2%	12%	9%	20%	10%	don't know, blank

Understanding of topics (continued)

OVERVIEW: The idea that SARS was originally contracted from animals was mentioned by 30% of the visitors, although most of these people were referring to wild animals. About half of the visitors were not sure about the origins of SARS.

How did people originally contract SARS?

SMM	OMSI	MSC	SCI	Overall	
19%	24%	20%	20%	21%	wild animals, birds, rodents
26%	14%	23%	12%	19%	air-born virus, caught from other people
24%	16%	25%	6%	18%	from China/Asia
12%	4%	11%	8%	9%	domestic animals (chickens, cats, pigs)
0	2%	0	2%	1%	developed in laboratory
3%	8%	11%	6%	7%	other/unclear
38%	48%	25%	56%	42%	don't know, blank

Understanding of topics (continued)

OVERVIEW: About 40% of the visitors had some awareness that West Nile Virus is unusual because it is transmitted across species (mosquitoes, horses, birds, humans). Approximately 40% of the visitors couldn't answer the question about the West Nile Virus. People at OMSI had somewhat lower awareness than visitors at the other four museums (maybe it has had less publicity on the West Coast, so far?).

Why is the West Nile virus unusual?

SMM	OMSI	MSC	SCI	Overall	
28%	21%	20%	39%	27%	transmitted by mosquitoes
13%	8%	18%	8%	12%	affects humans, horses, birds
15%	6%	16%	12%	12%	foreign, traveled from Africa to here
8%	11%	18%	10%	12%	new, scary, kills people
6%	4%	0	6%	4%	affects different people differently
9%	13%	9%	8%	10%	other/unclear
28%	43%	29%	31%	33%	don't know, blank

Understanding of topics (continued)

OVERVIEW: Approximately 40% of the visitors knew that nanotechnology refers to small machines, but only about one-quarter understood it as being on a microscopic level.

What is nanotechnology?

SMM	OMSI	MSC	SCI	Overall	
19%	24%	23%	20%	21%	technology of small things, machines
33%	24%	5%	12%	19%	technology at microscopic / atomic level
3%	0	5%	4%	3%	computers, electronics (no mention of size)
2%	0	4%	4%	2%	other /unclear
43%	52%	64%	60%	54%	don't know, blank

How small do you think tiny motors could be?

SMM	OMSI	MSC	SCI	Overall	
30%	25%	33%	20%	27%	microscopic, molecular, nanometers
26%	26%	9%	22%	22%	size of dime, thumbnail, BB, or larger
25%	23%	11%	12%	18%	size of pinhead, pencil tip, millimeters
4%	8%	11%	14%	9%	very small (no specifics)
2%	2%	9%	0	4%	other/unclear
13%	19%	29%	31%	23%	don't know, blank

Understanding of topics (continued)

OVERVIEW: About 30% of the visitors gave a reasonable definition of a 'watershed' and few (14%) knew the size of their watershed. SCI visitors expressed lower awareness of watersheds. The top three reasons that people gave for potential water shortages were consumer waste, pollution, and high demand/more people. There was higher awareness of population growth issues at SMM and OMSI.

Why would there be less water?

SMM	OMSI	MSC	SCI	Overall	
33%	26%	41%	36%	34%	over-use, consumer waste
34%	36%	25%	24%	30%	pollution, less clean water
34%	**40%**	18%	10%	26%	population growth, more demand
16%	18%	18%	28%	18%	global warming, evaporation
10%	6%	16%	6%	9%	weather, less rain & snow, droughts
3%	2%	4%	4%	3%	No, there won't be a shortage
5%	6%	9%	8%	7%	other/unclear
5%	10%	7%	14%	9%	don't know, blank

What is a watershed?

SMM	OMSI	MSC	SCI	Overall	
34%	34%	31%	16%	29%	reasonable answer (area where water drains)
19%	19%	16%	14%	17%	storage place, reservoir (man-made)
9%	9%	13%	6%	10%	underground water table, aquifer
11%	4%	2%	8%	7%	run-off
11%	19%	18%	10%	15%	other/unclear/wrong
15%	17%	22%	**45%**	24%	don't know, blank

How big is the watershed you live in?

SMM	OMSI	MSC	SCI	Overall	
11%	21%	16%	10%	14%	reasonable specific answer
11%	6%	18%	8%	10%	very big
4%	0	4%	8%	4%	other/unclear/wrong
75%	75%	64%	78%	73%	don't know, blank

E. Characteristics of the Samples

Approximately 100 visitors were interviewed at each of the four museums, yielding a total sample of 402. There are some similarities and some differences between the four different audiences.

- The audiences are similar with respect to level of education and science-related careers.

- There are differences in these samples in terms of familiarity with the museums, group composition, gender and age. The OMSI and SCI samples include more repeat visitors (~63%); at SMM more adult-only groups were interviewed (31%); the SCI sample included a high proportion of women (72%) and groups with children (92%).

- These samples of visitors may or may not be representative of the audiences at each of the four museums, nor do they need to be. The point of the research strategy was to obtain a sample with sufficient diversity (adults, families, older, younger, highly-educated, not so much higher education, men, women, etc.) so that we could explore possible relationships between visitor characteristics and current science issues. With random sampling of visitors, however, it appears that these samples are reasonably typical of science museum audiences, and therefore represent a good basis for the analyses presented in this report.

E. Characteristics of the Samples

SMM: This summer sample includes equal proportions of first-time vs. repeat visitors, out-of-area vs. local residents, and men vs. women. About two-thirds of the groups included children. The proportion of college graduates is 56% and 19% have science-related careers.

OMSI: A majority are repeat visitors and 82% of the groups included children. There are equal proportions of men and women of various ages, and 62% are college graduates (28% with science careers).

MSC: This summer/fall sample includes a fairly equal proportion of first-time vs. repeat visitors, in-state vs. out-of-state residents and men vs. women. Most of the groups included children (79%). The proportion of college graduates is 63%.

SCI: This summer sample consists primarily of repeat visitors (61%), groups with children (92%), women (71%), Whites (96%), and younger adults (76% under 45).

		SMM (n=111)	OMSI (n=103)	MSC (n=89)	SCI (n=99)
Familiarity with Museum	**				
first-time visitors		47%	35%	45%	39%
repeat visitors		53%	**65%**	55%	**61%**
Residence	**				
metropolitan area		49%	44%	28%	40%
other in-state		18%	24%	26%	39%
out-of-state		33%	32%	**46%**	20%
Group composition	**				
adults only		**31%**	18%	21%	8%
family with children		65%	81%	78%	80%
school/tour group		4%	1%	1%	12%
Gender	**				
men		49%	49%	44%	29%
women		51%	51%	56%	**71%**
Age	**				
teens		2%	0	1%	3%
18-24		10%	9%	6%	12%
25-34		19%	21%	19%	20%
35-44		24%	32%	35%	41%
45-54		23%	18%	23%	4%
55-64		16%	15%	14%	7%
65+		5%	5%	2%	12%

		SMM	OMSI	MSC	SCI
Ethnicity	++				
White		86%	87%	84%	**96%**
African American		5%	1%	9%	1%
Asian		3%	1%	3%	1%
Hispanic/Latino		2%	5%	2%	1%
other		4%	6%	1%	1%
Education					
high school		20%	7%	11%	16%
some college		23%	31%	25%	25%
college graduate		32%	40%	44%	35%
graduate school		24%	22%	19%	25%
Occupation					
science career		19%	28%	16%	18%
some science courses		33%	34%	31%	43%
interest, no training		37%	32%	43%	29%
not really interested		11%	7%	10%	10%