

**NASA Science Mission Directorate  
Science Education and Public Outreach Forums  
Informal Educator National Survey Results**

**June 2014**

*Authors, in alphabetical order:*

**Lindsay Bartolone, The Adler Planetarium**

**Minda Borun, The Franklin Institute**

**Lisa Brochu, Heartfelt Associates**

**Bradford Davey, TLC, Inc.**

**Hilarie Davis, TLC, Inc.**

**Suzy Gurton, Astronomical Society of the Pacific**

**Andrea Jones, Lunar and Planetary Institute**

**Anita Krishnamurthi, Afterschool Alliance**

**Keliann LaConte, Lunar and Planetary Institute**

**Andi Nelson, The Adler Planetarium**

**Michelle Nichols, The Adler Planetarium**

**Laura Peticolas, University of California, Berkeley**

**Theresa Schwerin, Institute for Global Environmental Strategies**

**Stephanie Shipp, Lunar and Planetary Institute**

**Denise Smith, Space Telescope Science Institute**

## **Table of Contents**

|                                                                              | <b>Page Number</b> |
|------------------------------------------------------------------------------|--------------------|
| Executive Summary                                                            | 2                  |
| Background                                                                   | 10                 |
| Past Efforts                                                                 | 11                 |
| Survey Procedures                                                            | 11                 |
| Survey Timeline                                                              | 11                 |
| Survey Distribution                                                          | 12                 |
| Determining Survey Sample Size                                               | 13                 |
| Respondent Total                                                             | 14                 |
| Survey Segmentation                                                          | 14                 |
| Respondent Demographics                                                      | 15                 |
| Survey Results                                                               | 17                 |
| Appendix A: Recruitment Text and Survey for Informal Education Professionals | 73                 |
| Appendix B: Complete Listing of Conferences Attended by Respondents          | 85                 |
| Appendix C: Listing of All Included Tables and Figures                       | 88                 |

## **Executive Summary**

As a part of the strategy to reach the NASA Science Mission Directorate (SMD) Science Education and Public Outreach Forum Objective 1.2: Provide resources and opportunities to enable sharing of best practices relevant to SMD education and public outreach (E/PO), the Informal Education Working Group members designed a nationally-distributed online survey to answer the following questions:

1. How, when, where, and for how long do informal educators prefer to receive science, mathematics, engineering, and/or technology content professional development?
2. What are the professional development and material resources that informal educators prefer that could be provided by current and future NASA SMD Education and Public Outreach (E/PO) efforts?

The results of the survey will be used to help NASA's SMD E/PO community better meet those needs and plan future opportunities for the informal education community. This survey was distributed in October and November 2013. Recommendations from the Informal Education Working Group, or the Working Group, on how E/PO professionals should use this information when planning their programs are included on <http://smdepo.org>.

The Working Group members identified existing NASA informal educator networks and other informal education communication outlets that could be used to distribute the survey information and link. Special emphasis was made to achieve distribution among a wide variety of informal education professionals, as well as nationwide representation in the responses. Survey distribution outlets included newsletters, email lists, list-servs, and other communication tools. Through the careful selection of distribution outlets, this effort encouraged survey responses from individuals who did not necessarily have an existing relationship with NASA SMD E/PO programs.

The following institution segmentations were used to consolidate survey results to provide specific recommendations by audience:

- Science/technology museums/centers
- Non-science museums/sites
- Parks
- Public libraries
- Community/afterschool centers
- Other, including other nonprofit
- Government agencies

## **The Respondents**

A total of 1,073 educators responded to the survey with 714 educators (66%) completing the entire 29-question survey. Most of the respondents (88%) were paid informal educators, leaving a small amount identifying as volunteer (10%) or not reporting their status (2%). The majority of the respondents indicated that they have worked in informal education for at least 6 years (70%), with more than half of that having more than 10 years experience (42%). 19% had more than 20 years experience. By comparison, only 30% of the respondents indicated having 5 years or less experience working in informal education, with 3% having less than a year, 7% 1-2 years and 20% with 3-5 years experience. When asked about their roles in their position, 358 (33%) reported themselves as front-line staff/implementer/interpreter, 87 (8%) as having multiple roles, 22 (2%) having some other role, 260 (24%) as program developers, 309 (29%) as staff managers/decision makers, and 37 (3.4%) as trainers. When asked how many years of experience they had in providing or facilitating science, technology, engineering, and mathematics (STEM) activities, almost half responded to having 5 years or less and the rest having 6 or more, with the greater amount of responses being in the middle range of 3-5 years (25%) and 6-10 years (20%).

## **STEM Programming**

The majority of the respondents (90%) indicated that their institution offers STEM programs at some point during the year, with only about 26% saying they conduct STEM activities everyday. While frequency of offerings did have a correlation to the type of institution, only 10% of respondents claimed to never offer STEM programs. The STEM topic covered most widely is Earth Science and the STEM topics covered the least widely are Engineering and Mathematics. Respondents whose centers do not offer STEM programs gave not having resources/materials on hand for STEM programs, STEM programs do not fall within their institutions' missions, and not having funding available to offer STEM programs as the most popular responses. This indicates areas of need that could be supported by NASA SMD programs and resources. When asked about program evaluation, the greatest percentage of respondents across all institution segments are responsible for evaluating their own programs, resources, and/or materials, with the exception to this being the Other Non-Profit Organizations segment. The second-largest percentage of respondents use in-house evaluation services. Twenty-six percent of the respondents from public libraries and other non-profit organizations indicated that they do not formally evaluate their programs.

## **Professional Development**

For almost all of the institution segments, the greatest percentage of respondents

indicated that attending professional development sessions is a required part of informal educator job duties. Overall, respondents preferred professional development sessions that they can attend in person (rather than access remotely), last up to one day in length and can be on a weekday that does not coincide with a holiday. The exception to the length of time was the Other Non-Profit institution segment, where a larger number preferred to attend professional development sessions that are two days in length. Respondents across all institution segments indicated that they preferred mornings for professional development sessions lasting for part of a day, followed by afternoon and evening respectively.

When considering where they attend professional development sessions, the highest percentage of respondents in both the science/technology museums/centers and the non-science museums/sites reports only travelling within their home states for professional development, and the second highest response was travelling regionally. For all other audience segments the most frequent response was that they travel regionally.

Regarding the availability of funding for informal educators to attend professional development sessions, there was not a clear consensus among the answers across all segments. The need for an outside source of funding varied from 14% to 40% of respondents, and 15% to 41% of respondents indicated that their organizations have sources of professional development funding available.

Well over half of all respondents in all institution segments, ranging from 60%-90% indicated that they would be likely or very likely to train others on topics, techniques, or content learned in workshops and professional development sessions.

## **Resources**

As far as resources received at professional development sessions, the most preferred resource by respondents (rated as “Important” or “Very important”) found in the top three across all institution segments is lesson plan/activity facilitation instruction. This correlates with responses indicating lessons that are already aligned to the Next Generation Science Standards (NGSS) as the most important available resource needed by most institutions. The other two professional development resources that were identified with a large percentage of “Important” or “Very important” responses across almost all of the institution segments are background information about session content and access to community of practice including attendees, facilitators, experts.

The following are further results for each institution segmentation:

### **Science/Technology Centers/Museums**

- Sixty-one percent offer STEM programming every day.
- The three types of programs offered most often by these institutions are school field trip programs, programs in schools, and guided activities in public spaces.
- The top three audience segments served by STEM programs offered by Science/Technology Museums/Centers are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) school groups in grades 6–8.
- The content areas addressed most often by STEM programs at Science/Technology Centers/Museums are earth, space, and life sciences.
- Their top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, resources that utilize real scientific data/images, and resources that utilize new or cutting-edge science.
- Respondents from Science/Technology Museums/Centers said they align, or plan to align, their informal education resources to their individual state standards (65%), followed by alignment to the Next Generation Science standards (55%), and the Common Core State Standards for Mathematics (33%) and English/Language Arts (32%).
- Educators from these institutions prefer to attend professional development sessions in September, January, and February.
- The conference that educators from these institutions attend that was identified most often is the Association of Science-Technology Centers annual conference (19%).

### **Non-Science Museum/Site**

- Thirty-two percent offer no STEM programming, 28% offer STEM programming a few times per year.
- The three types of STEM programs offered most often are school field trip programs, guided activities in public spaces, and summer/holiday day camp programs.
- The top three audience segments served by STEM programs offered by Non-science Museums/Sites are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) family groups.
- The content areas addressed most often by STEM programs at Non-Science Museums/Sites are earth sciences, technology, and the applications of science.
- Their top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, pre-produced text/images that an institution can print and display, and downloadable posters/colorful handouts.
- Respondents from Non-Science Museums/Sites said they align, or plan to align,

their informal education resources to their individual state standards (60%), followed by the Common Core State Standards for Mathematics (40%), and Common Core State Standards for English/Language Arts (25%).

- Educators from these institutions prefer to attend professional development sessions in January, February, and August.
- The conference that educators from these institutions attend that was identified most often is the American Alliance of Museums (AAM) annual conference (15%).

### **Parks**

- Twenty-six percent offer STEM programming a few times per month.
- The three types of STEM programs offered most often are school field trip programs, guided activities in public spaces, and programs in schools.
- The top three audience segments served by STEM programs offered by Parks are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) family groups.
- The content areas addressed most often by STEM programs at Parks are earth, space, and life sciences.
- Their top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, pre-produced text/images that an institution can print and display, and pre-assembled kits of lesson plans with all materials included.
- Respondents from Parks said they align, or plan to align, their informal education resources to their individual state standards (43%), followed by the Next Generation Science Standards (23%), and the Common Core State Standards for English/Language Arts (17%).
- Educators from these institutions prefer to attend professional development sessions in January, February, and November.
- The conference that educators from these institutions attend that was identified most often is the National Association for Interpretation (NAI) national workshop (17%).

### **Public Libraries**

- Fifty percent offer STEM programming a few times per year.
- The three types of STEM programs offered most often are scheduled classes/enrichment programs for children, afterschool programs/clubs, and public lectures by a subject/content matter expert.
- The top three audience segments served by STEM programs offered by Public Libraries are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) Pre–K groups.
- The content areas addressed most often by STEM programs at Public Libraries

are earth and space sciences, technology, and the applications of science.

- The top three informal education resource needs are pre-assembled kits of lesson plans with all materials included, lesson plans for informal education activities with embedded assessment tools, and pre-produced text/images that an institution can print and display.
- The largest group of respondents (37%) from Public Libraries said they do not plan to align their informal education resources to standards. Of those that do, they align or plan to align their informal education resources to the Common Core State Standards for English/Language Arts (27%), Common Core State Standards for Mathematics (25%), and their individual state standards (24%).
- Educators from these institutions prefer to attend professional development sessions in February, January, and March.
- The conference that educators from these institutions attend that was identified most often is the American Library Association (ALA) annual conference (26%).

### **Community/Afterschool Centers**

- Thirty-seven percent offer STEM programming a few times per week.
- The three types of STEM programs offered most often are afterschool programs/clubs, scheduled classes/enrichment programs for children, and summer/holiday day camp programs.
- The top three audience segments served by STEM programs offered by Community/Afterschool Centers are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) school groups in grades 6-8.
- The content areas addressed most often by STEM programs at Community/Afterschool Centers are engineering, technology, and mathematics.
- The top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, pre-assembled kits of lesson plans with all materials included, and downloadable posters/colorful handouts.
- Respondents from Community/Afterschool Centers said they align, or plan to align, their informal education resources to the Common Core State Standards for Mathematics (40%), Common Core State Standards for English/Language Arts (36%), and their individual state standards (35%).
- Educators from these institutions prefer to attend professional development sessions in November, January, and February.
- The conference that educators from these institutions attend that was identified most often is the National Afterschool Association (NAA) annual conference (14%).

### **Other/Non-Profit Organizations**

- Thirty percent offer STEM programming a few times per month.
- The three types of STEM programs offered most often are programs in schools, programs at community organization sites/events, and scheduled classes/enrichment programs.
- The top three audience segments served by STEM programs offered by Other organizations, including other non-profit organizations not represented by the other groupings, are 1) school groups in grades 6–8, 2) school groups in grades 3–5, and 3) school groups in grades 9–12.
- The content areas addressed most often by STEM programs at Other/Non-Profit Organizations are earth and space sciences and the applications of science.
- Their top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, pre-assembled kits of lesson plans with all materials included, and resources that utilize real scientific data/images.
- Respondents from Non-Profit Organizations said they align, or plan to align, their informal education resources to their individual state standards (49%), the Next Generation Science Standards (38%), the Common Core State Standards for Mathematics (28%) and the Common Core State Standards for English/Language Arts (26%).
- Educators from these institutions prefer to attend professional development sessions in January, July, and August.
- The conference that educators from these institutions attend that was identified most often is the National Science Teachers Association (NSTA) national meeting (21%).

### **Governmental Organizations**

- Twenty-seven percent offer STEM programming a few times per week.
- The three types of programs offered most often activities in public spaces, school field trip programs, and programs in schools.
- The top three audience segments served by STEM programs offered by Governmental Organizations, including national parks, are 1) school groups in grades 3–5, 2) school groups in grades 6–8, and 3) school groups in grades 9–12.
- The content areas addressed most often by STEM programs at Governmental Organizations are earth sciences, life sciences, and the applications of science.
- The top three informal education resource needs are lesson plans for informal education activities with embedded assessment tools, resources that utilize real scientific data/images, and pre-produced text/images that an institution can print and display

- Respondents from Governmental Organizations said they align, or plan to align, their informal education resources to their individual state standards (59%), the Next Generation Science Standards (44%), Common Core State Standards for English/Language Arts (35%), and the Common Core State Standards for Mathematics (32%).
- Educators from these institutions prefer to attend professional development sessions in February, January, and November.
- The conference that educators from these institutions attend that was identified most often is the National Science Teachers Association (NSTA) national meeting (21%).

Detailed results for each survey question begin on page 16.

## **Background**

There are four NASA Science Mission Directorate (SMD) Science Education and Public Outreach Forums (SEPOFs; also called Forums) funded through a NASA Cooperative Agreement Notice<sup>1</sup> in 2009, one for each SMD Division: Astrophysics, Earth Science, Heliophysics, and Planetary Science. The Forums are charged by SMD with supporting SMD Education and Public Outreach (E/PO) community members in their efforts. The SMD E/PO community includes those who are contracted or granted to conduct E/PO activities using NASA Earth and space science content, expertise, and facilities relating to SMD unmanned spacecraft assets, such as the Hubble Space Telescope, the Mars Science Laboratory “Curiosity” rover, the Solar Dynamics Observatory, and the Landsat satellites, to name a few, as well as unmanned spacecraft missions developed by other space programs in which NASA has a contribution, such as the European Space Agency’s Planck spacecraft, and others.

The Forums organize the efforts of SMD E/PO mission and granted programs to increase the overall coherence of SMD E/PO programs leading to more effective, sustainable, and efficient utilization of SMD science discoveries and learning experiences. Implementation Teams and audience-based Working Groups further support the community, Forums, and SMD. There are three audience-based Working Groups: Higher Education, K-12 Education, and Informal Education. Each Working Group includes one member of each Forum team and four to six members external to the SMD E/PO community that represent a specific audience. The Working Groups help SMD and the community better understand the needs of the audiences and how to leverage community efforts to meet those needs.

The Informal Education Working Group focuses on audiences that are distinct from those targeted by the efforts of the Higher Education and K-12 Education Working Groups. While learning can occur in many different ways outside of the classroom, for the purposes of this document, informal education is defined as:

**Informal Education:** *Free-choice learning opportunities provided outside of the classroom, based on education standards or content-focused learning objectives, created and/or conducted by qualified informal education practitioners, benefitting people of potentially any age and promoting life-long learning.*

To identify the needs of informal education practitioners (hereafter referred to as “informal educators”), members of the SEPOF Informal Education Working Group developed and administered an online survey that was distributed to a wide variety of informal education (e.g., out-of-school time) professionals in the United States. The

---

<sup>1</sup> NASA Award Number: NNH09ZDA004C

informal educator community is categorized in terms of institutional segments that reflect the types of audiences each group works with beginning on page 14.

### **Past Efforts**

In the past, there have been other efforts to survey specific informal educator audience types. For example, the Afterschool Alliance has released a number of reports since 2007 with information about the state of afterschool education in the content areas of science, technology, engineering, and mathematics (STEM).<sup>2</sup> The 2005 NASA-funded Explorer Institute program<sup>3</sup> also identified areas in which NASA could support STEM programming in informal education settings; these were focus group programs with several dozen participants, and a comprehensive report was issued that outlined the results of each of the focus groups.<sup>4</sup> There has been no previous comprehensive nationwide survey performed by NASA's Science Mission Directorate to characterize STEM-related professional development preferences and resource needs of informal educators, as an entire audience. Additionally, there have not been previous efforts to use that information to identify how SMD E/PO professionals and grantees can better meet the needs of informal educators in terms of the content topics that NASA addresses.

### **Survey Procedures**

The SEPOF Informal Education Working Group<sup>5</sup> members designed the survey to answer the following questions:

1. How, when, where, and for how long do informal educators prefer to receive STEM content professional development?
2. What are the professional development and material resources that informal educators prefer that could be provided by current and future NASA SMD E/PO efforts?

To provide answers to these questions, the Working Group members developed a survey composed of 29 questions to be distributed through informal education outlets and networks nationwide. The platform for the survey was SurveyMonkey.<sup>6</sup> The questions are included in Appendix A of this report, beginning on page 73.

---

<sup>2</sup> <http://www.afterschoolalliance.org/researchReports.cfm>

<sup>3</sup> [http://www.nasa.gov/audience/foreducators/informal/features/F\\_NEI\\_CAN.html](http://www.nasa.gov/audience/foreducators/informal/features/F_NEI_CAN.html)

<sup>4</sup> Gibbons, H., et al. (2005). Bringing NASA into Focus: Improving Effective Use of NASA Resources within the Informal Science Education Community. (*Note: This report is internal to NASA and was not published publicly.*)

<sup>5</sup> Hereafter in this report, the text "Working Group" will refer to the "Informal Education Working Group."

<sup>6</sup> <http://www.surveymonkey.com>

## **Survey Timeline**

The survey was developed according to the following timeline:

- Development of survey questions: February to July 2013
- IRB approval received: September 2013
- Survey distribution: September 2013 to November 2013
- Data analysis: November 2013 to January 2014
- Report publicly distributed: June 2014

## **Survey Distribution**

The Working Group members identified existing NASA informal educator networks and other informal education communication outlets that could be used to distribute the survey information and link. Special emphasis was made to achieve distribution among a wide variety of informal education professionals, as well as nationwide representation in the responses. Survey distribution outlets included newsletters, email lists, list-servs, and other communication tools such as the following:

- American Alliance of Museums list-serv<sup>7</sup>
- Association of Science-Technology Centers list-serv<sup>8</sup>
- National Association of Interpretation newsletter<sup>9</sup>
- Dome-L list-serv<sup>10</sup>
- Astronomical Society of the Pacific's *Astronomy from the Ground Up* program email list<sup>11</sup>
- Earth to Sky list-serv<sup>12</sup>
- Science on a Sphere network email list<sup>13</sup>
- Visitor Studies Association list-serv<sup>14</sup>
- Afterschool Alliance email list<sup>15</sup>
- American Library Association email list (and other related library professional email lists)<sup>16</sup>
- Individual organizational contacts via NASA-funded programs such as Afterschool Universe.<sup>17</sup> These organizations included the National Girls

---

<sup>7</sup> <http://aam-us.org/>

<sup>8</sup> <http://www.astc.org/>

<sup>9</sup> <http://www.interpnet.com/>

<sup>10</sup> A list-serv sanctioned by the International Planetarium Society, Inc., <http://www.ips-planetarium.org/>, but privately run

<sup>11</sup> <http://www.afguonline.org/>

<sup>12</sup> <http://earthtosky.org/>

<sup>13</sup> [http://sos.noaa.gov/What\\_is\\_SOS/index.html](http://sos.noaa.gov/What_is_SOS/index.html)

<sup>14</sup> <http://visitorstudies.org/>

<sup>15</sup> <http://www.afterschoolalliance.org/>

<sup>16</sup> <http://www.ala.org/>

<sup>17</sup> <http://universe.nasa.gov/au/>

Collaborative Project,<sup>18</sup> Girls, Inc.,<sup>19</sup> Boys and Girls Clubs of America,<sup>20</sup> park district organizations, YMCA,<sup>21</sup> Boy Scouts of America,<sup>22</sup> Girl Scouts,<sup>23</sup> and others.

The text of the email sent to all of the above is found in Appendix A.

Through the careful selection of distribution outlets, this effort encouraged survey responses from individuals who did not necessarily have an existing relationship with NASA SMD E/PO programs. This would provide a pool of results that were representative of the informal education community as a whole, not necessarily the informal education community who already has a stake in SMD E/PO efforts. By casting a broad net, an effort was made to be inclusive of both those who did not have a prior relationship with SMD E/PO programs and those who do.

### **Determining Survey Sample Size**

The target number of respondents for the survey was 500 individuals. To obtain this quantity, the survey team estimated the number of informal education professionals (including volunteers, where appropriate) who work in in four main areas: museums (all types), afterschool programs (all settings), libraries, and parks/park districts. This range covers all of the major targeted survey distribution outlets.

- There are approximately 17,500 museums in the United States.<sup>24</sup> The Working Group estimates that there are approximately 1.5 educators per museum employed in the area of informal education,<sup>25</sup> for an approximate estimation of 25,000 educators.
- According to the American Library Association, there are 17,000 public libraries and bookmobiles in the United States.<sup>26</sup> The estimate used is that there is one person per library<sup>27</sup> who would be responsible for some aspect of informal education, for a total of 17,000 educators.
- According to the Afterschool Alliance, there are 166,480 paid staff and volunteers

---

<sup>18</sup> <http://www.ngcproject.org/>

<sup>19</sup> <http://www.girlsinc.org/>

<sup>20</sup> <http://bgca.org/>

<sup>21</sup> <http://ymca.net/>

<sup>22</sup> <http://www.scouting.org/>

<sup>23</sup> <http://www.girlscouts.org/>

<sup>24</sup> American Alliance of Museums: <http://aam-us.org/about-museums/facts> (data retrieved in July 2013)

<sup>25</sup> No documented statistics for this number could be found. This is the estimate used in the IRB application submitted to the University of California, Berkeley.

<sup>26</sup> <http://www.ala.org/tools/libfactsheets/alalibraryfactsheet01> (data retrieved in July 2013)

<sup>27</sup> No documented statistics for this number could be found. This is the estimate used in the IRB application submitted to the University of California, Berkeley; IRB approval was obtained in September 2013.

who participate in afterschool education in a variety of settings.<sup>28</sup>

- Finally, determining the number of park and park district educators employed in the field of informal education was much more difficult, as the Working Group was not able to locate published totals. The National Recreation and Park Association represents a membership of over 30,000 individuals and organizations.<sup>29</sup> If an estimation of 25% of this number is used, assuming that the entirety of this organization's membership does not consist of park and park district educators, that number is 7,500.

Adding all of these numbers, Working Group members thus estimated the total number of informal educators in the U.S. as 225,000. With this number as the total, to obtain a confidence level of 95% and a confidence interval of +/- 5% for survey results covering the entirety of the informal educator population would require a target sample size of 383 completed surveys.<sup>30</sup> To account for expected segmentation of results, the total sample size target was increased to 500 completed surveys.

### **Respondent Total**

A total of 1,073 respondents completed at least part of the survey, with 714 respondents completing the entire survey. Those who accessed the survey were only required to agree to the terms of the survey (for question wording, see Question 1 in Appendix A on page 73) and identify the state or territory in which they worked (for question wording, see Question 2 in Appendix A on page 73). For subsequent questions, the level of completion for each of the questions varied; item non-response tended to increase towards the end of the survey, presumably due to survey fatigue. Where respondent numbers are provided in the rest of this report, they refer to the numbers of respondents for those specific questions.

The confidence level and confidence interval stated above (95% confidence, +/- 5%) refers to the total number of survey responses. This report includes results separated into different institution segments (described below); the confidence interval is wider (i.e., less precise) for the individual segments.

### **Survey Segmentation**

Further segmentation of results beyond just the informal educator community, as a whole, was anticipated. The following institution segmentations were used to consolidate survey results to provide specific recommendations:

- **Science/technology museums/centers:** includes natural history museums,

---

<sup>28</sup> [http://www.afterschoolalliance.org/21st%20CCLC%20Fact%20Sheet\\_5\\_3\\_12\\_FINAL.pdf](http://www.afterschoolalliance.org/21st%20CCLC%20Fact%20Sheet_5_3_12_FINAL.pdf) (data retrieved in July 2013)

<sup>29</sup> <http://www.nrpa.org/About-NRPA/Organization/> (data retrieved in July 2013)

<sup>30</sup> Sample size calculated in July 2013 using online calculator:  
<http://www.surveysystem.com/sscalc.htm>

science/technology centers or museums, nature centers, botanic gardens, arboretums, planetaria, observatories, zoos, and aquaria

- **Non-science museums/sites:** includes art museums, history museums/houses/sites, tribal museums and centers, and youth/children’s museums<sup>31</sup>
- **Parks:** state parks, park districts, city parks, and other park sites
- **Public libraries**
- **Community/afterschool centers:** public schools that provide afterschool experiences, community centers, and afterschool sites or centers
- **Other, including other nonprofit:** nonprofit organizations, professional societies, astronomy clubs, and respondents whose organizations did not fit any of the other categories
- **Government agencies:** federal, state, county, local agencies that provide educational programs but are not covered by any of the other audience segments *[Note: This group may not be fully represented in the survey results due to government employee survey restrictions.]*

Several of the following summaries include abbreviations for the institution segments identified above. The abbreviations used in the report are the following:

**Table 1: Abbreviations Used in This Report**

| <b>Audience</b>                             | <b>Abbreviation</b> |
|---------------------------------------------|---------------------|
| <b>Science/technology museum/center</b>     | STMC                |
| <b>Non-science museum/site</b>              | NSMS                |
| <b>State park, park district, city park</b> | PARK                |
| <b>Public library</b>                       | PUBL                |
| <b>Community/afterschool center</b>         | CASC                |
| <b>Government agency</b>                    | GOVT                |
| <b>Other/nonprofit</b>                      | ONON                |

<sup>31</sup> While these organizations do often provide STEM-based programs and/or experiences, it was necessary to segment them to provide a representative sample of institutions whose main focus or mission is generally not STEM-related.

## **Respondent Demographics**

Survey question #2 asked respondents to identify the state in which they work. This information was only used to confirm that at least one person from each state responded to the survey, not to make any conclusions or recommendations that are limited to individual states or regions of the country. There was at least one survey respondent from each state in the U.S., as well as the Commonwealth of Puerto Rico. In addition, this question eliminated survey respondents from other countries. Due to the federal funding that was used to support the development and distribution of the survey, as well as analysis and distribution of the results, only U.S. residents were able to answer survey questions #3 through #29.

The survey results begin on the next page and are separated by question.

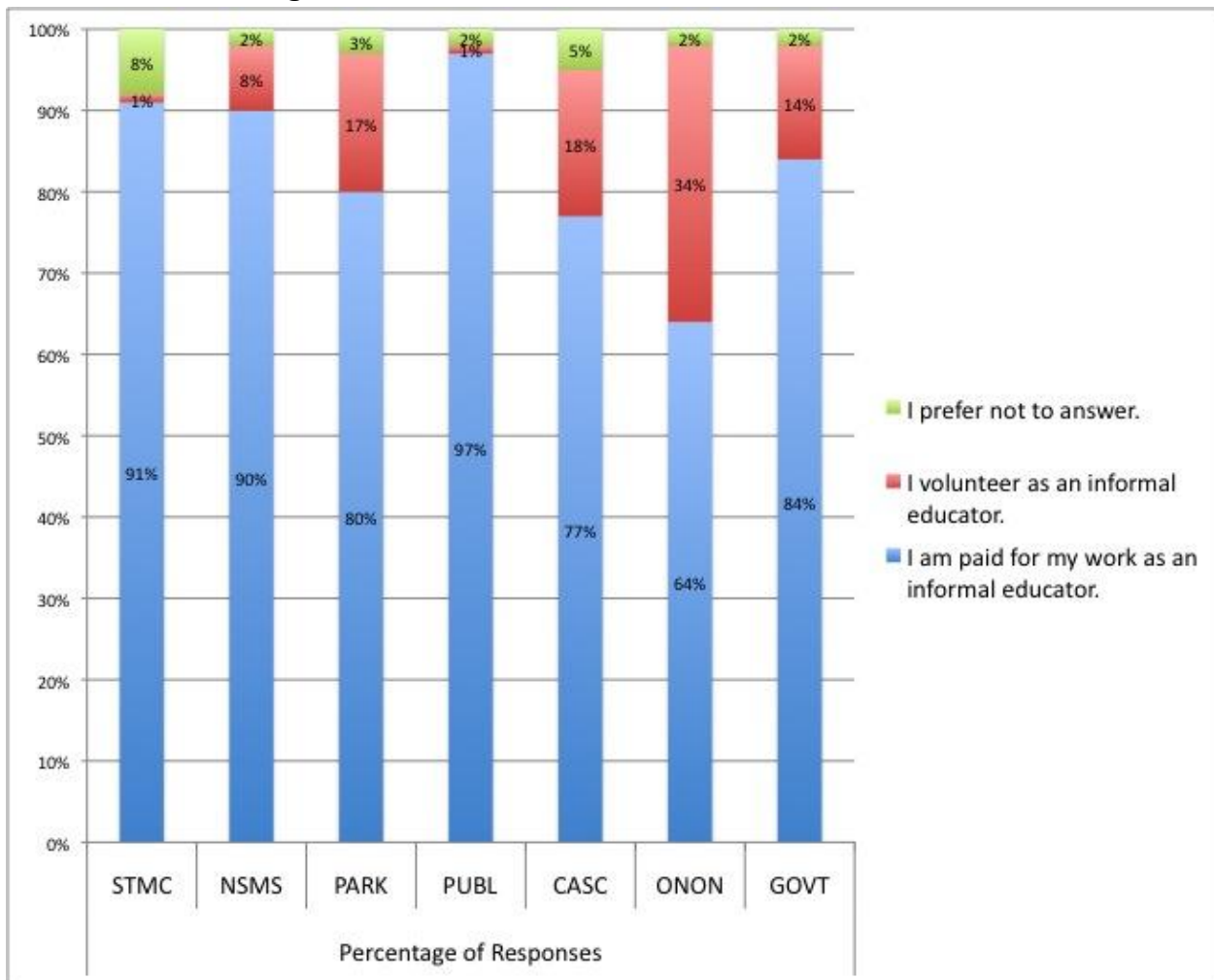
## Survey Results

**Question #3: Are you paid for your work as an informal educator or are you a volunteer? Select one answer.<sup>32</sup>**

- I prefer not to answer.
- I volunteer as an informal educator.
- I am paid for my work as an informal educator.

The chart below shows the number of respondents as a percentage of the total respondents for each institution segmentation:

**Figure 1: Informal Educators, Paid vs. Volunteer**



Educators from public libraries who are paid for their work (i.e., not volunteer)

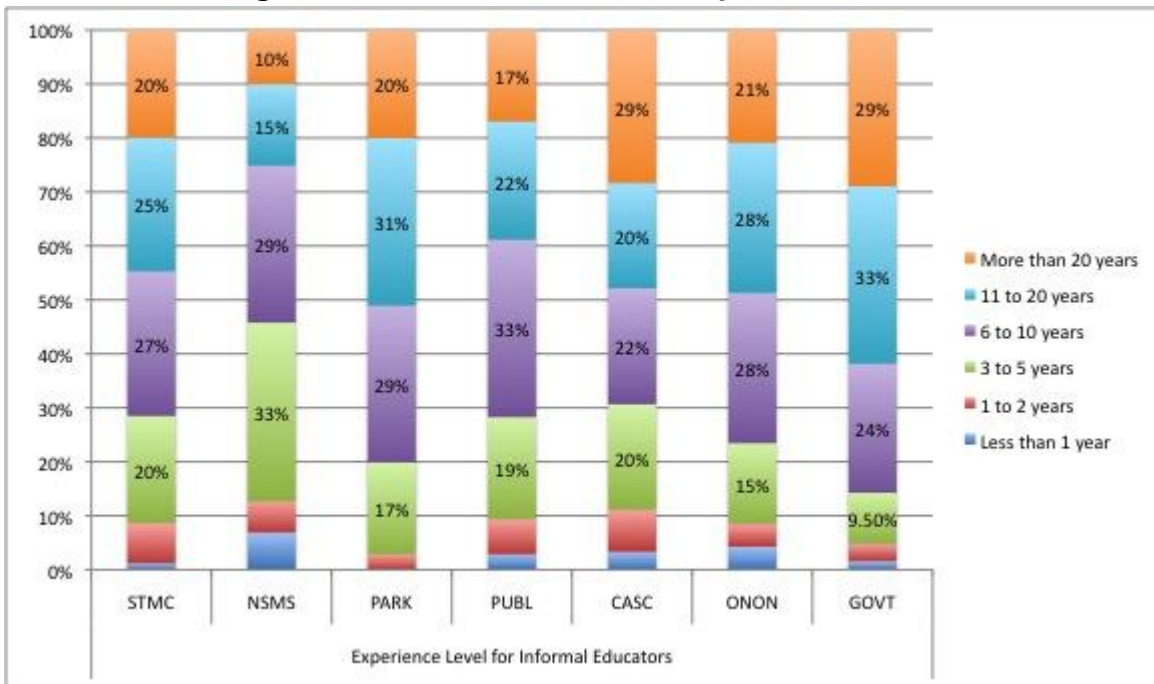
<sup>32</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

had the greatest proportion of paid people among the respondents at 97%. Respondents in the Other Non-Profit audience segment (defined as nonprofit organizations, professional societies, astronomy clubs, and other organizations) had the largest number of individuals by percentage who self-identified as a volunteer in their informal education positions, 34%.

**Question #4: How long have you worked and/or volunteered in the field of informal education? Select one answer.**<sup>33</sup>

- More than 20 years
- 11 to 20 years
- 6 to 10 years
- 3 to 5 years
- 1 to 2 years
- Less than 1 year

**Figure 2: Informal Educators, Experience Level**



The results for this question show a mix of responses. The highest number of responses in each audience segment, by percentage, is as follows:

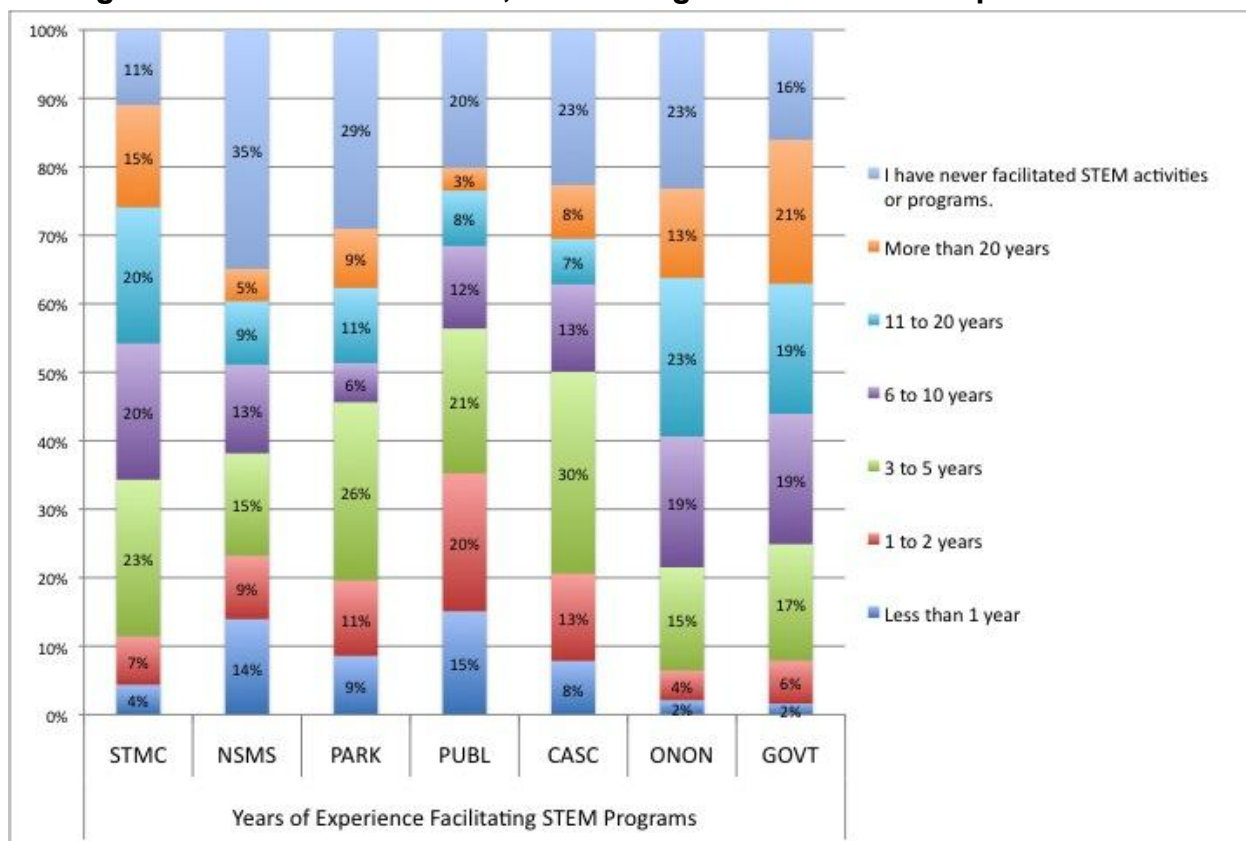
- Science/technology museums/centers: 6 to 10 years
- Non-science museums/sites: 3 to 5 years
- State parks, park districts, city parks: 11 to 20 years
- Public libraries: 6 to 10 years
- Community/afterschool centers: More than 20 years
- Other non-profit organizations: 6 to 10 years and 11 to 20 years
- Government institutions: 11 to 20 years

<sup>33</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #5:** How many years of experience do you have facilitating or providing STEM (Science, Technology, Engineering, and/or Mathematics) activities or programs? Select one answer.<sup>34</sup>

- I have never facilitated STEM (Science, Technology, Engineering, Mathematics) activities or programs.
- More than 20 years
- 11 to 20 years
- 6 to 10 years
- 3 to 5 years
- 1 to 2 years
- Less than 1 year

**Figure 3: Informal Educators, STEM Program Facilitation Experience Level**



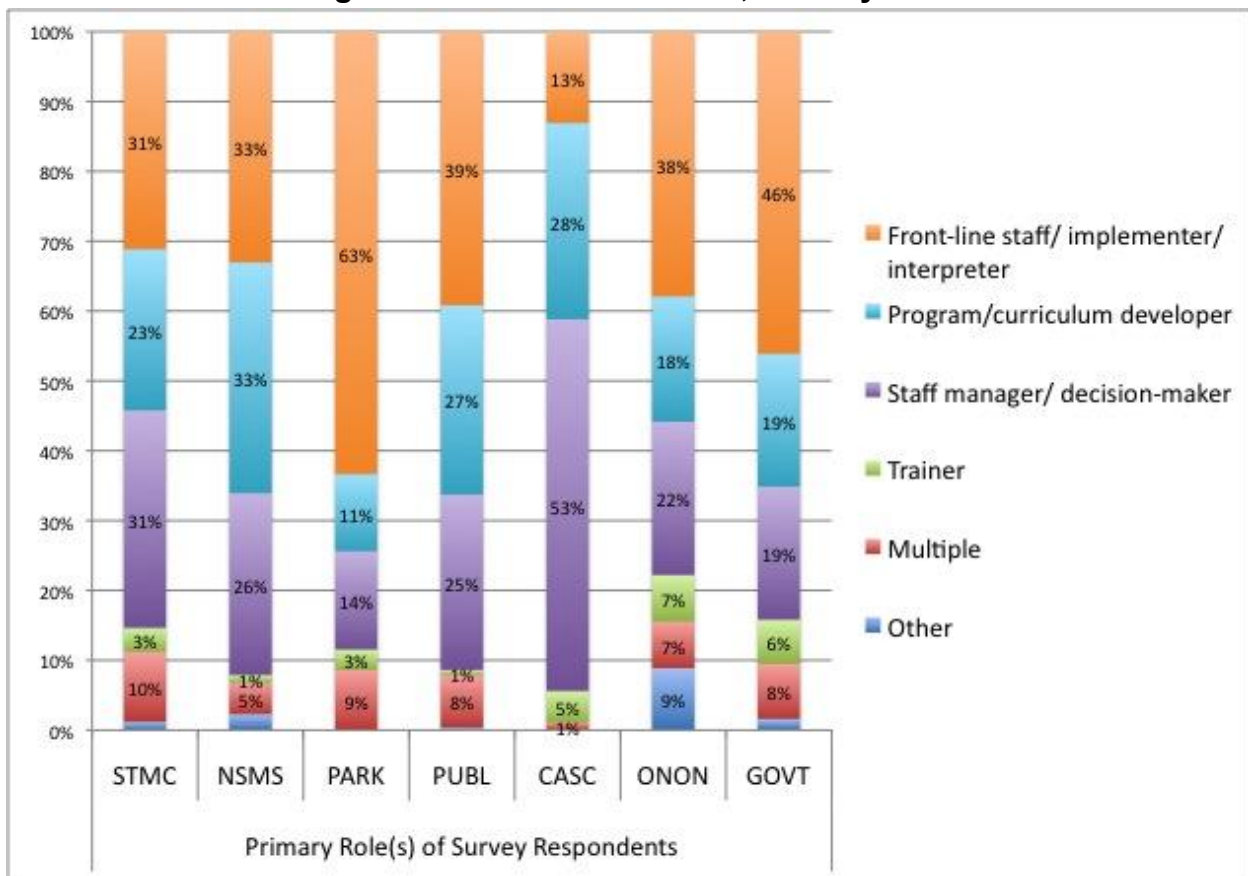
The STEM programming facilitation experience levels of informal educator respondents varied depending on audience segmentation. Sixty-five to eighty-nine percent of respondents in all of the audience segmentations have prior experience facilitating STEM programs.

<sup>34</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #6:** What is your primary role within your institution or organization? Please select one option that you most closely associate with your current informal education position.<sup>35</sup>

- Front-line staff/implementer/interpreter
- Program/curriculum developer
- Staff manager/decision-maker
- Trainer
- Other (please identify)

**Figure 4: Informal Educators, Primary Role**



These results indicate how survey respondents categorized their informal education positions. Respondents indicated a wide range of job types. In most of the audience segmentations, the largest percentage of respondents indicated that they are front-line, implementation, or interpretation staff. An additional response, called “Multiple,” was added during data analysis. “Multiple” was added because a number of

<sup>35</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

respondents identified in the “other” category box that they are responsible for more than one of the individual role categories. Please note that because instructions in the question did not require all respondents to do this, these results are not necessarily reflective of the entire informal educator community. If given the option to identify more than one role category, others might have done so. This set of results should be thought of as reflective of just the survey respondents who chose to self-identify with more than one job type.

**Question #7:** Please select one type of institution or organization from this list that you most closely associate with your current informal education position.

- Art museum
- Youth/children’s museum
- Science/technology center or museum
- Planetarium/observatory
- History museum, house, or site
- Zoo or aquarium/marine biology institute
- Federal agency (NPS, NWS, etc.)
- State park, park district, or city park
- Public library
- Tribal library, archive, or tribal museum
- Community center or afterschool education center
- 4-H, Girl Scouts, Boy Scouts
- University
- Nature center, botanic garden, or arboretum
- Other (please identify)

The responses were consolidated into institution segments to provide more reliable conclusions and recommendations. The total number of responses for each segment were as follows, out of 921, total:

- **Science/technology museums/centers<sup>36</sup>**: 321 (35%)
- **Libraries<sup>37</sup>**: 279 (30%)
- **Non-science museums/sites<sup>38</sup>**: 88 (9%)
- **Community/afterschool centers<sup>39</sup>**: 88 (9%)
- **Government agencies<sup>40</sup>**: 63 (7%)
- **Other, including other nonprofit<sup>41</sup>**: 47 (5%)
- **Parks<sup>42</sup>**: 35 (5%)

---

<sup>36</sup> Natural history museums, science/technology centers or museums, nature centers, botanic gardens, arboreta, planetaria, observatories, zoos, and aquaria

<sup>37</sup> Public libraries

<sup>38</sup> Art museums, history museums/houses/sites, tribal museums and centers, and youth/children’s museums

<sup>39</sup> Public schools who provide afterschool experiences, community centers, and afterschool sites or centers

<sup>40</sup> Federal, state, county, local agencies that provide educational programs but are not covered by any of the other audience segments

<sup>41</sup> Nonprofit organizations, professional societies, astronomy clubs, and respondents whose organizations did not fit any of the other categories

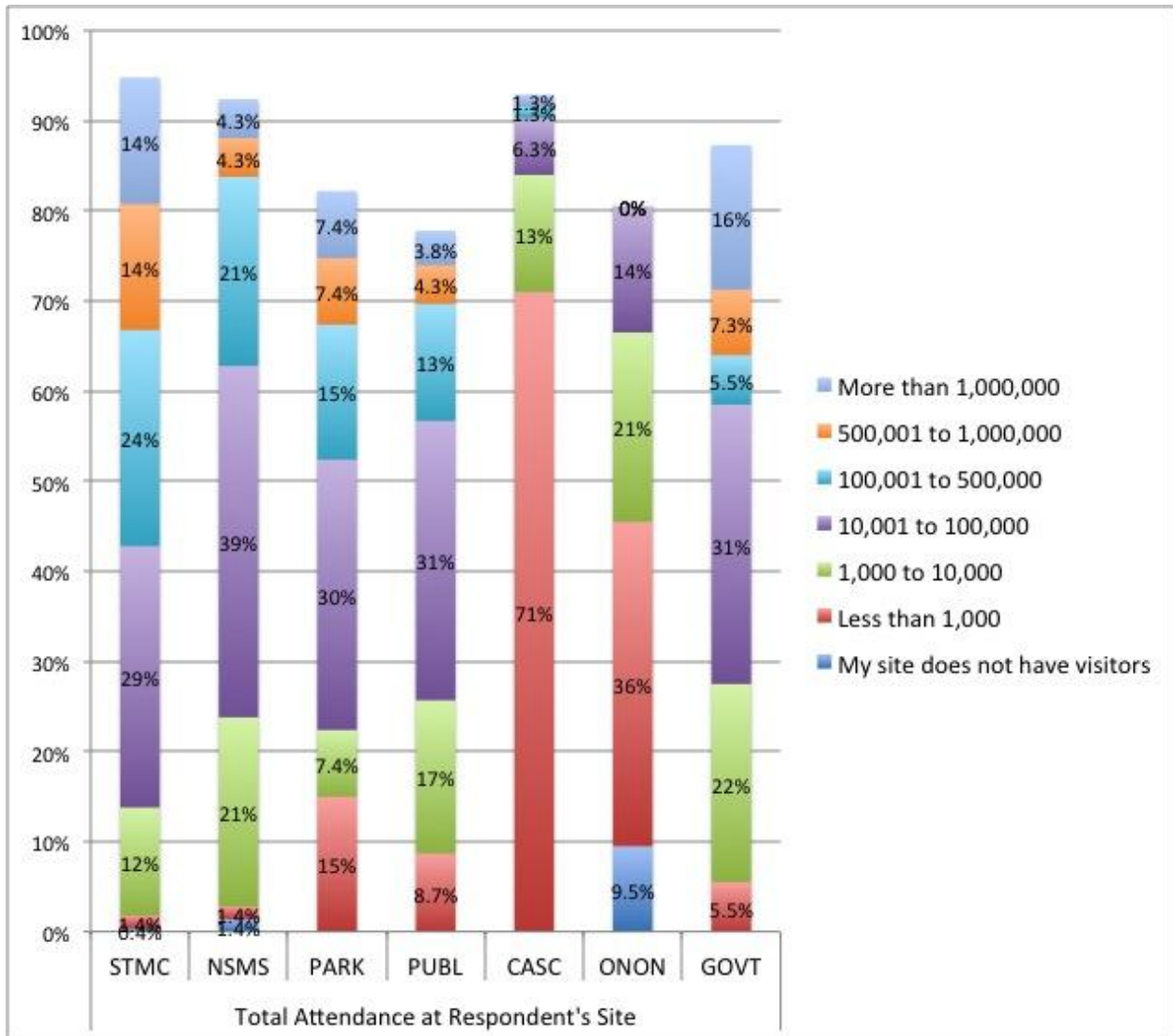
<sup>42</sup> State parks, park districts, city parks, and other (non-federal) park sites

**Question #8:** What was your site's total attendance last year (or in the last year for which you have information)?

- (type in number)

Each of the responses was placed into one of six attendance categories. The results are as follows:<sup>43</sup>

**Figure 5: Institutional Attendance**



Several respondents either did not know the total attendance at their site or did not report this information. Those total percentages are below and were not included in the graph above.

<sup>43</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Table 2: Institutional Attendance, Unknown**

|         | <b>STMC</b> | <b>NSMS</b> | <b>PARK</b> | <b>PUBL</b> | <b>CASC</b> | <b>ONON</b> | <b>GOVT</b> |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Unknown | 5.4%        | 7.1%        | 19%         | 22%         | 7.6%        | 19%         | 13%         |

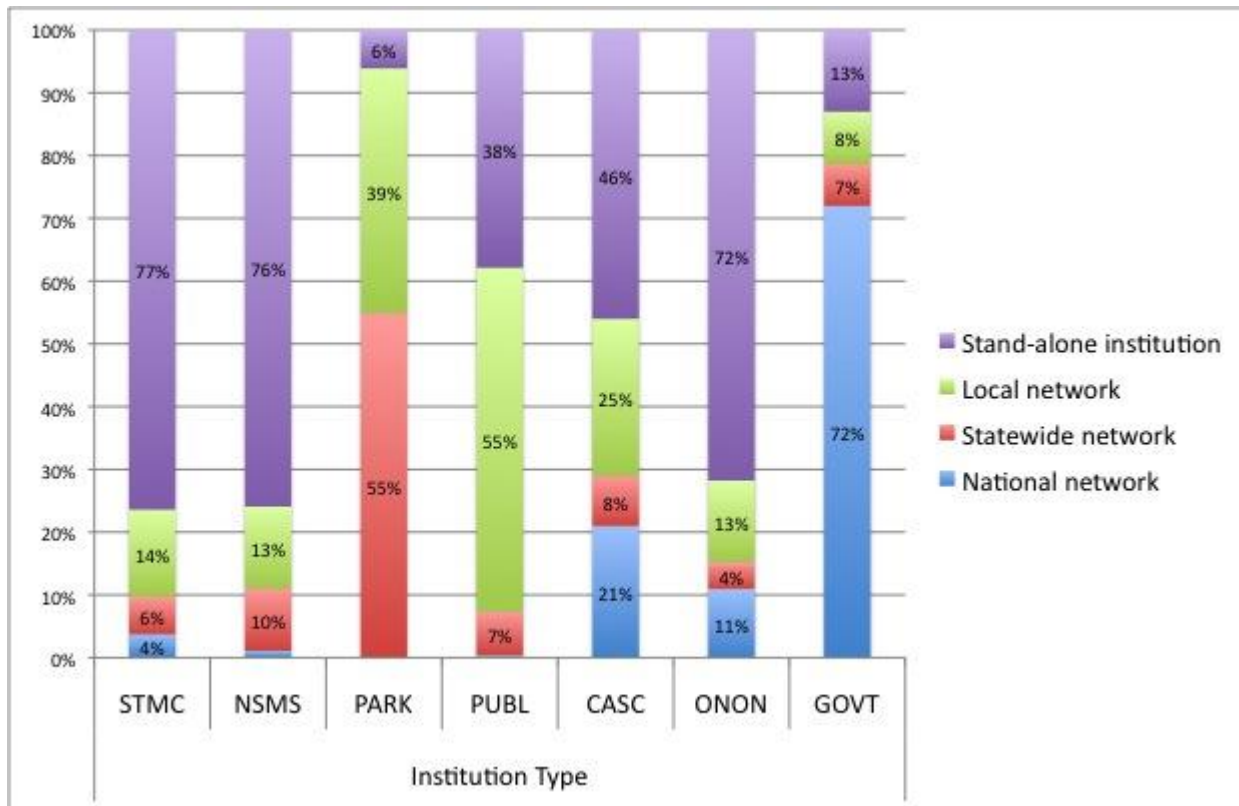
Collectively, the institutions represented by the respondents indicated a wide range of annual attendance totals, with the exception of community/afterschool centers that had a large majority of their attendance fall into the “Less than 1,000” attendees category. The Other/Non-Profit group also reported smaller annual attendance figures.

**Question #9:** What is the size and scale of your organization or institution? Select the option that best fits your institution’s situation.<sup>44</sup>

For example, a museum with its own governing body would be a "stand-alone institution." A city park district site would be part of a "local network." A state park site would be part of a "statewide network." A youth-serving club that is part of a larger nationwide organization would select "national network."

- My institution/organization is a stand-alone institution.
- My institution/organization is part of a local network.
- My institution/organization is part of a statewide network.
- My institution/organization is part of a national network.
- (optional) Please briefly describe (for privacy, you do NOT need to identify your organization by name):

**Figure 6: Institutional Size and Scale**



The “optional” response box was used to more accurately categorize responses.

<sup>44</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

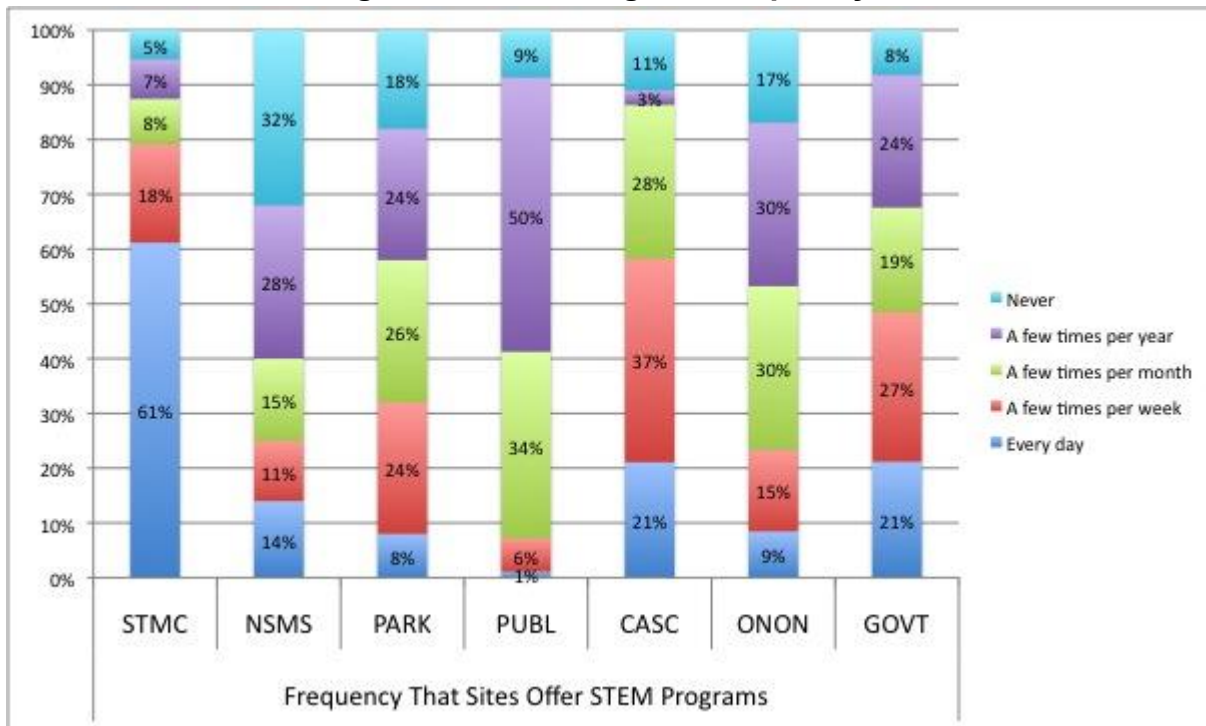
To protect the privacy of respondents, this information will not be reported.

Most of the institution segments had representation in all of the different levels of networks. The two expected exceptions were public libraries and parks, as designated by our audience segments. Public libraries are usually stand-alone institutions or part of local or state networks. Parks institutions are also stand-alone or part of local or state networks. Parks that are part of the National Park Service were included in the government audience segment.

**Question #10:** How often does your site offer STEM (Science, Technology, Engineering, and/or Mathematics) programs? Select the one answer that best represents your situation.<sup>45</sup>

- Never (if selected, skip to question #11)
- A few times per year (if selected, skip to question #12)
- A few times per month (if selected, skip to question #12)
- A few times per week (if selected, skip to question #12)
- Every day (if selected, skip to question #12)

**Figure 7: STEM Program Frequency**<sup>46</sup>



A large number of respondents indicated that their science-based institutions offer STEM programming every day. Non-science institutions have largest segment in which no STEM programs are offered. A large percentage of all other institution segments offer STEM programs at least a few times per month.

<sup>45</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

<sup>46</sup> Due to rounding, some of the percentages in this graph total just above or just below 100%.

**Question #11:** If your site does not offer STEM programming currently, why not? Please select all that apply.

Note that the responses below include four responses that were not originally included in the response list and were typed in by the respondents into the “Other” text box. Those responses were categorized accordingly.

**Figure 8: Reasons Institutions Do Not Offer STEM Programs**



Of the respondents who indicated that their institutions do not offer STEM programming, the following is a breakdown of the types of institutions reported:

- **Science/technology museums/centers:** 17
- **Libraries:** 25
- **Non-science museums/sites:** 28
- **Community/afterschool centers:** 9
- **Government agencies:** 6
- **Other, including other nonprofit:** 8

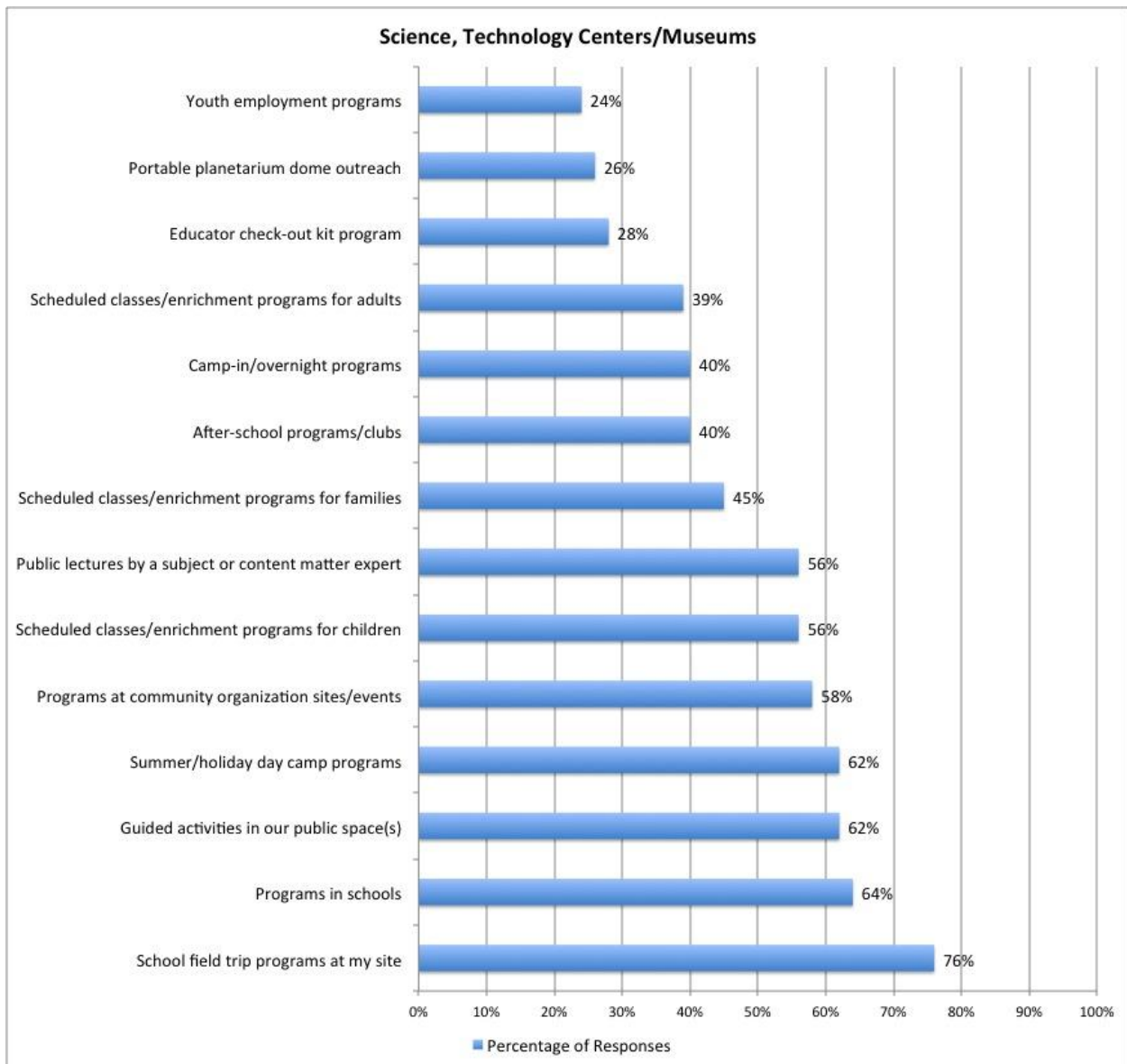
- **Parks: 6**

Several respondents who reported that their institutions do not offer STEM programs also indicated that STEM does not fall within their institutions' missions. For others, the reasons they gave for not providing STEM programming have potential solutions that could be addressed by educator professional development programs, making materials more widely available, and through other means. Of the science centers who report they do not offer STEM programming, nearly half (47%) report it is because they do not have the resources and materials on hand, 41% report not having the funds, and 36% report it is an issue with limited staffing (note, centers could choose more than one response).

**Question #12:** Which types of STEM programming does your site offer now?

The responses below have been separated by institution type. Because respondents could choose more than one answer, the percentages in each of the charts below total more than 100%.

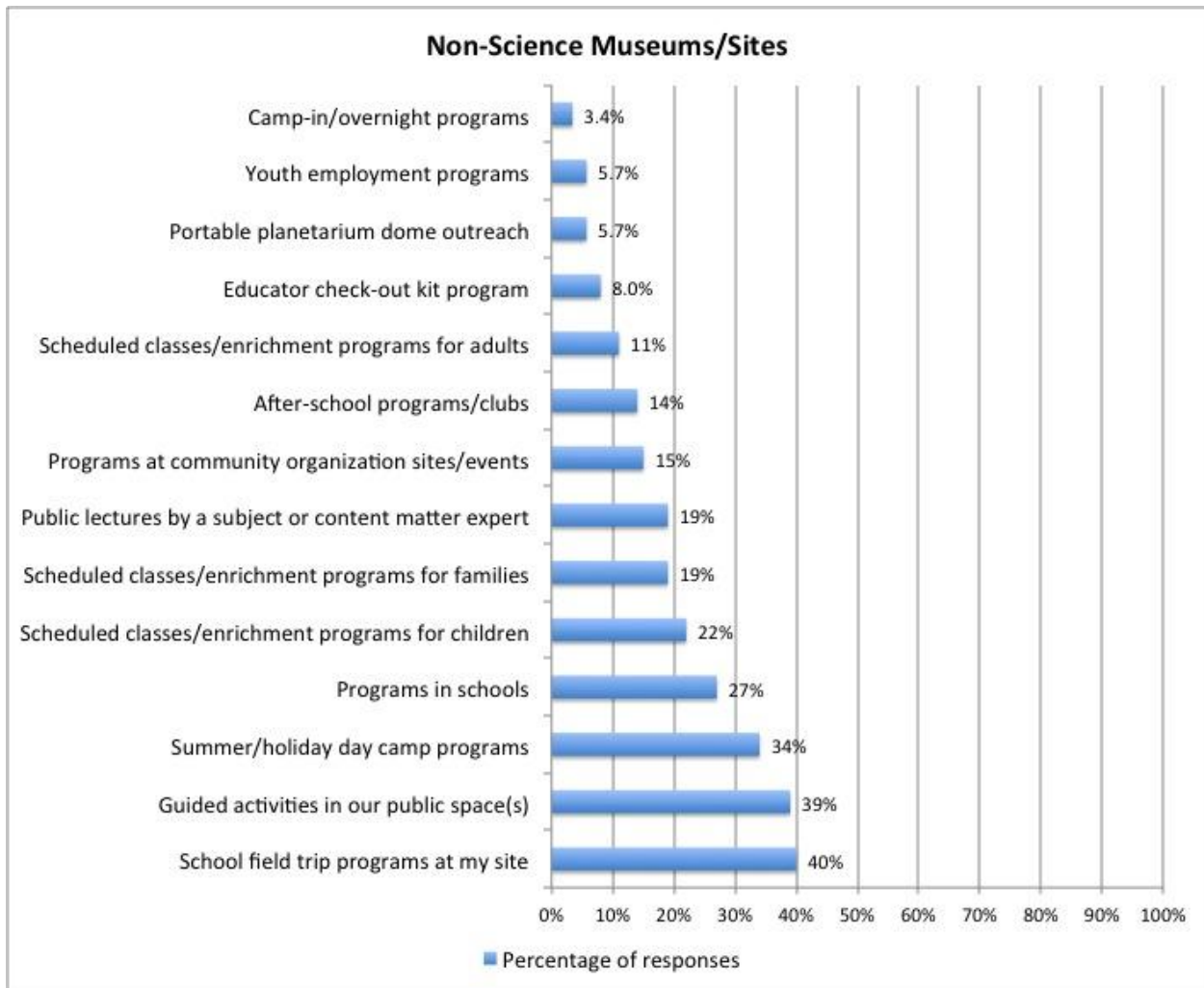
**Figure 9: Types of STEM Programs Offered by Science, Technology Centers/Museums**



The three types of STEM programs offered most often by Science, Technology Centers/Museums are school field trip programs, programs in schools, and guided activities in public spaces. The three program types offered least often by this audience segment are youth employment programs, portable planetarium dome outreach

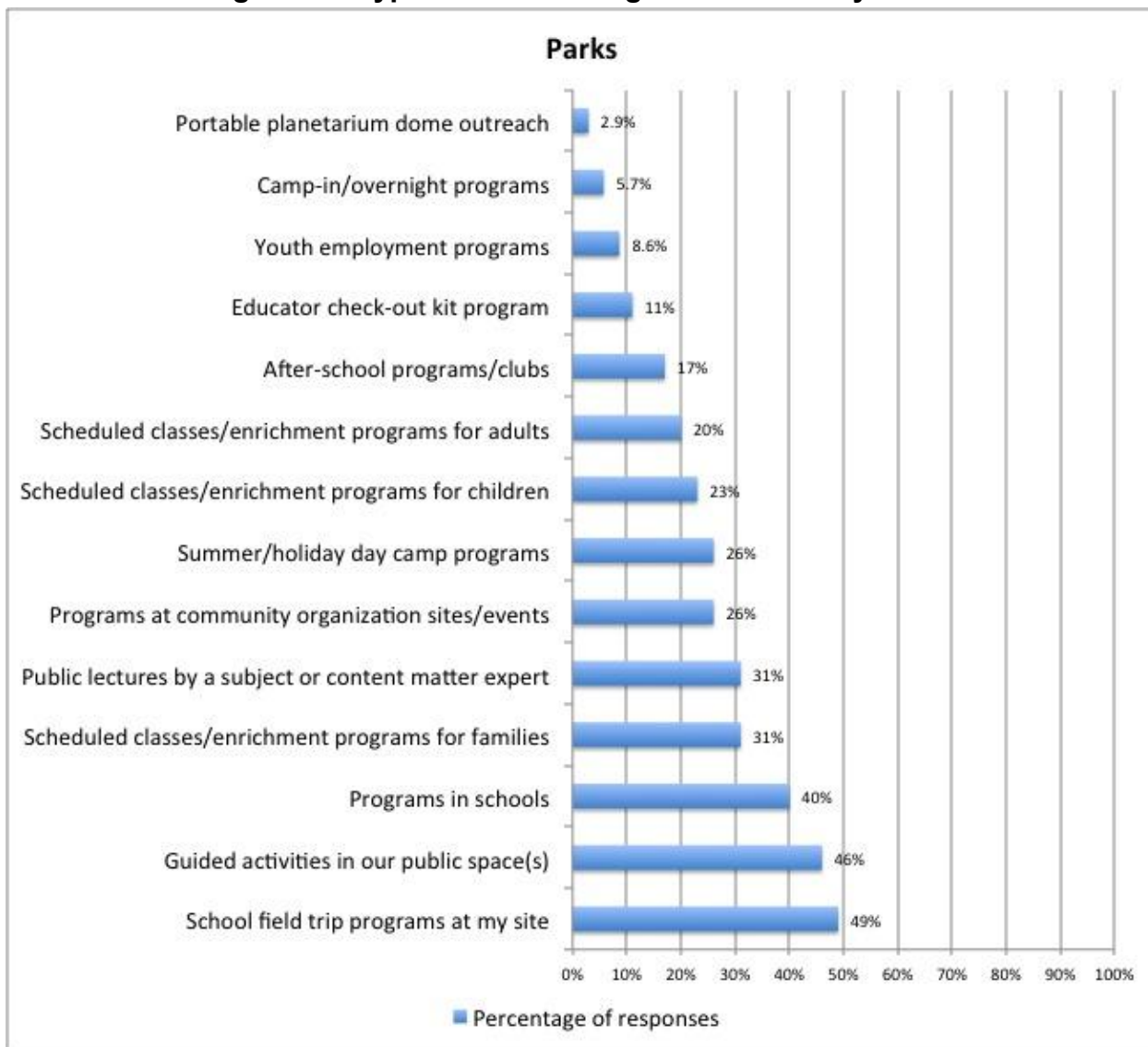
programs, and educator check-out kit programs.

**Figure 10: Types of STEM Programs Offered by Non-Science Museums/Sites**



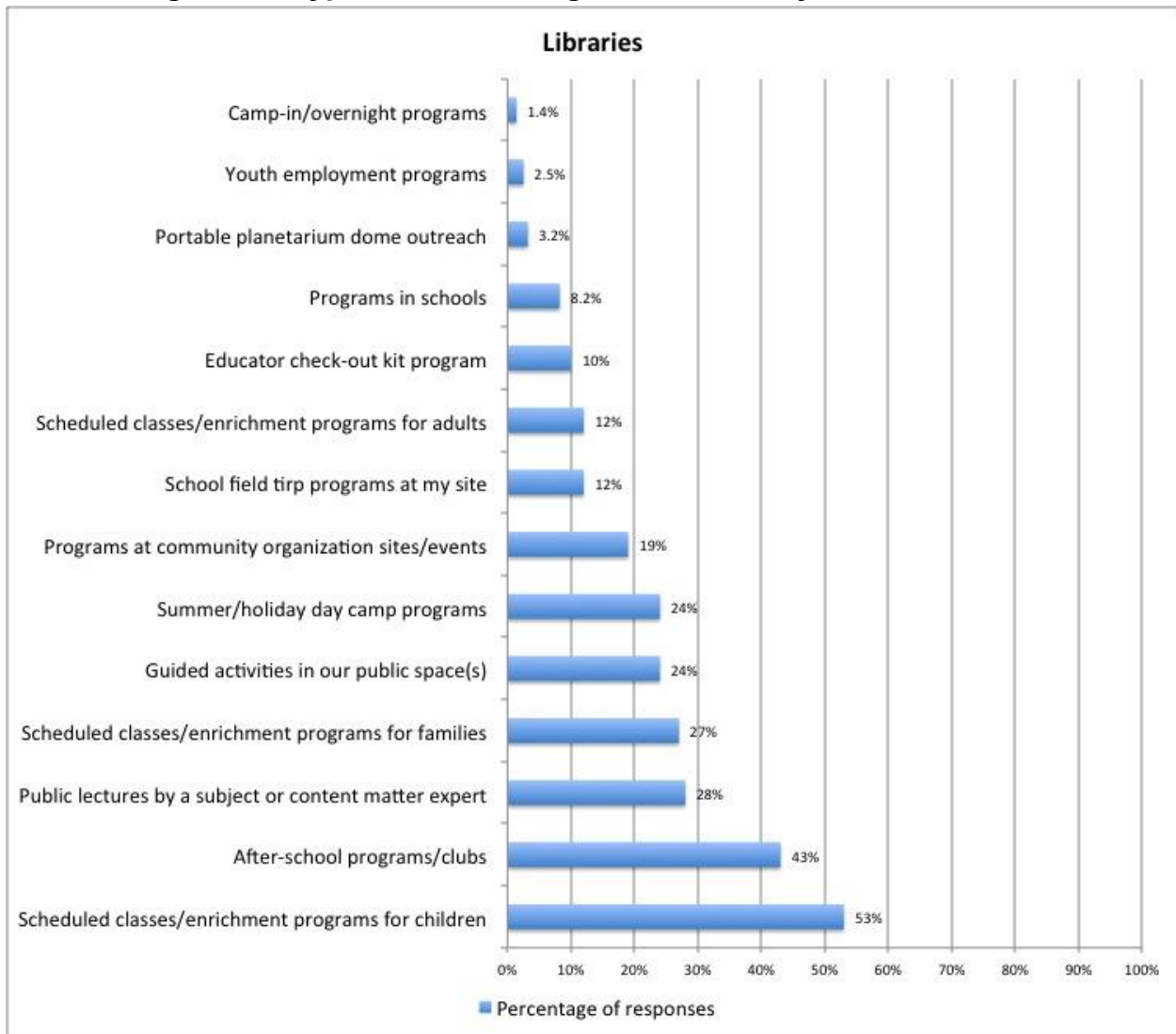
The three types of STEM programs offered most often by Non-Science Museums/Sites are school field trip programs, guided activities in public spaces, and summer/holiday day camp programs. The three program types offered least often by this audience segment are camp-in overnight programs, youth employment programs, and portable planetarium dome outreach programs.

**Figure 11: Types of STEM Programs Offered by Parks**



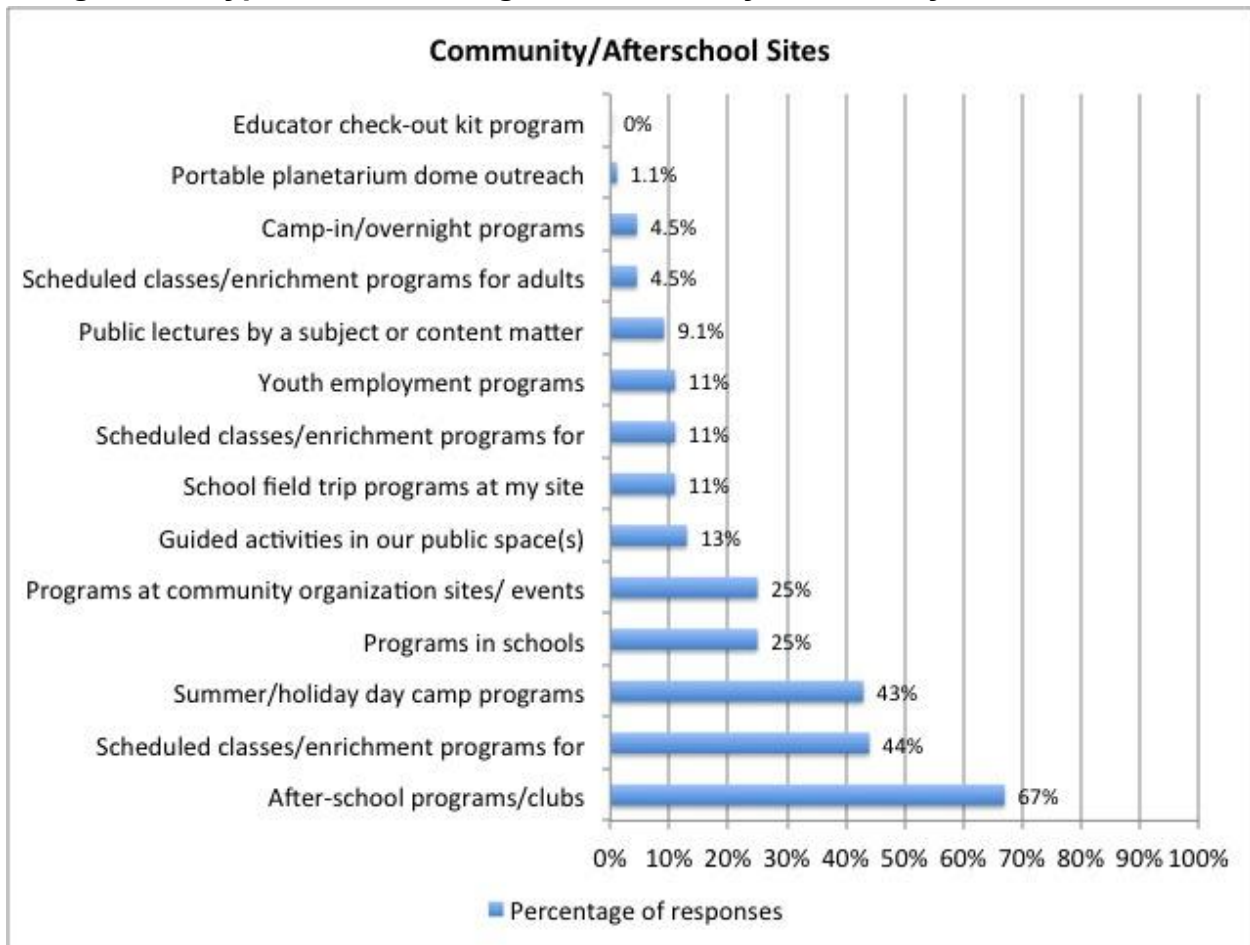
The three types of STEM programs offered most often by Parks are school field trip programs, guided activities in public spaces, and programs in schools. The three program types offered least often by this audience segment are portable planetarium dome outreach programs, camp-in overnight programs, and youth employment programs.

**Figure 12: Types of STEM Programs Offered by Public Libraries**



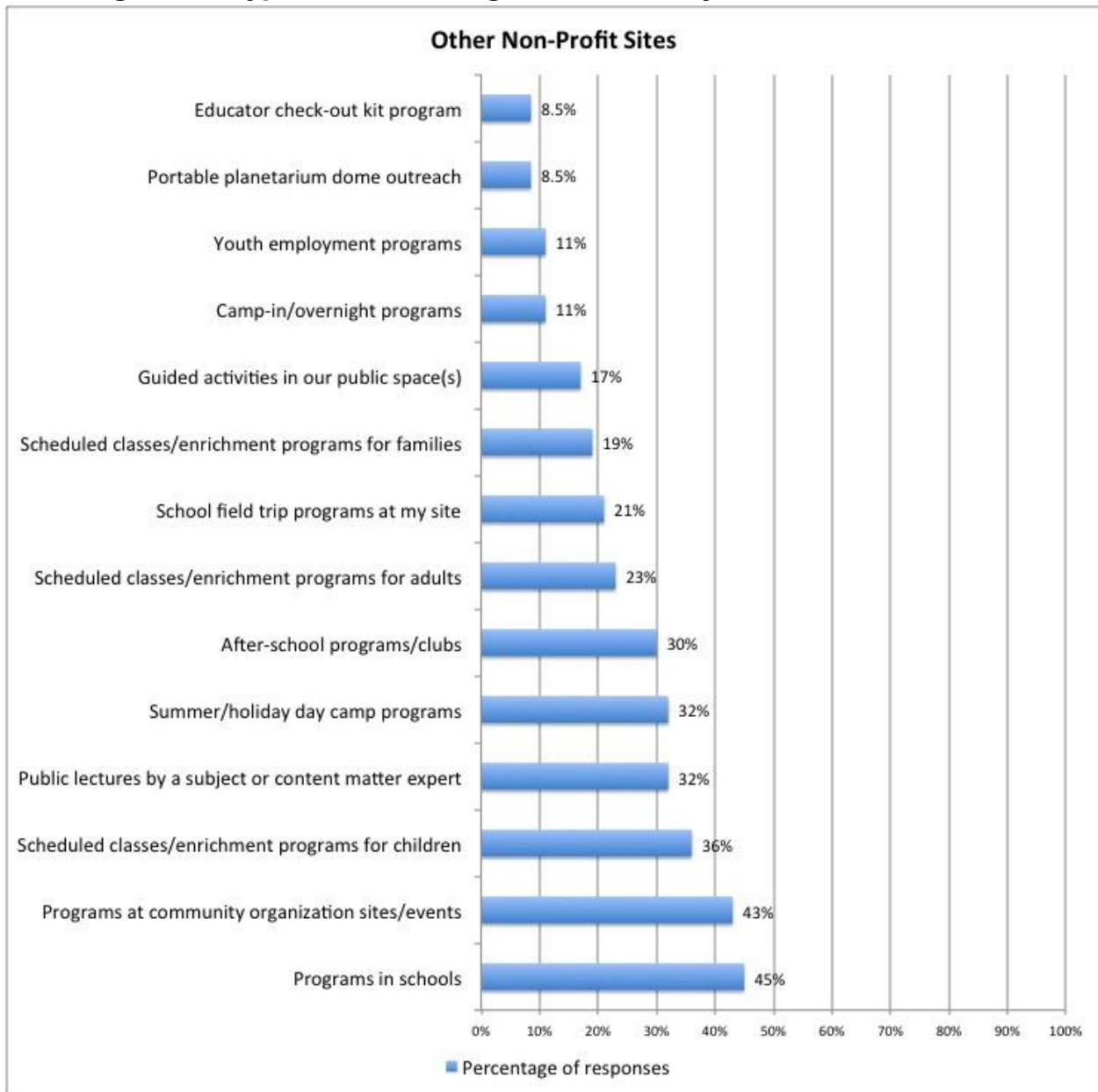
The three types of STEM programs offered most often by Public Libraries are scheduled classes/enrichment programs for children, afterschool programs/clubs, and public lectures by a subject/content matter expert. The three program types offered least often by this audience segment are camp-in overnight programs, youth employment programs, and portable planetarium dome outreach programs.

**Figure 13: Types of STEM Programs Offered by Community/Afterschool Sites**



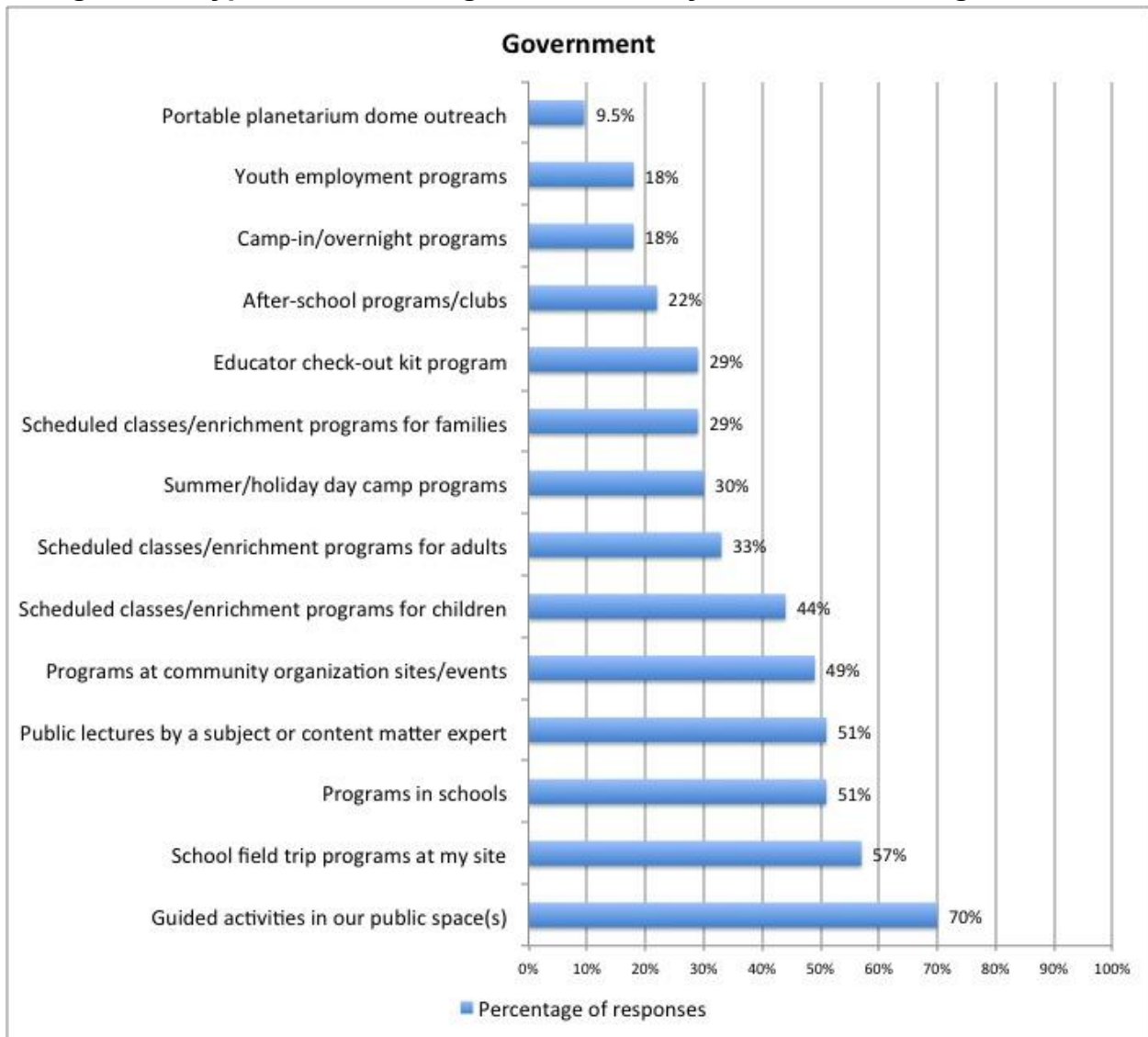
The three types of STEM programs offered most often by Community/Afterschool Program Sites are afterschool programs/clubs, scheduled classes/enrichment programs for children, and summer/holiday day camp programs. The three program types offered least often by this audience segment are educator check-out kits, portable planetarium dome outreach programs, and camp-in overnight programs.

**Figure 14: Types of STEM Programs Offered by Other/Non-Profit Sites**



The three types of STEM programs offered most often by the Other/Non-Profit organizations are programs in schools, programs at community organization sites/events, and scheduled classes/enrichment programs. The three program types offered least often by this audience segment are educator check-out kit programs, portable planetarium dome outreach, and youth employment programs.

**Figure 15: Types of STEM Programs Offered by Governmental Organizations**



The three types of programs offered most often by Government institutions are guided activities in public spaces, school field trip programs, and programs in schools. The three program types offered least often by this audience segment are portable planetarium dome outreach, youth employment programs, and camp-in/overnight programs.

**Question #13:** Which are your site's largest audience(s) for STEM informal education programming? Please rank from among the choices below.<sup>47, 48</sup>

**Table 3: Largest Audiences for STEM Informal Education Programming**

|    | STMC     | NSMS     | PARK                  | PUBL     | CASC     | ONON     | GOVT     |
|----|----------|----------|-----------------------|----------|----------|----------|----------|
| 1  | Gr 3–5   | Gr 3–5   | Gr 3–5                | Gr 3–5   | Gr 3–5   | Gr 6–8   | Gr 3–5   |
| 2  | Gr K–2   | Gr K–2   | Gr K–2                | Gr K–2   | Gr K–2   | Gr 3–5   | Gr 6–8   |
| 3  | Gr 6–8   | Family   | Family                | Pre–K    | Gr 6–8   | Gr 9–12  | Gr 9–12  |
| 4  | Family   | Gr 6–8   | Gr 6–8                | Family   | Pre-K    | Family   | Gr K–2 T |
| 5  | Pre–K    | Pre–K    | Pre–K                 | Gr 6–8   | Gr 9–12  | Gr K–2   | Family T |
| 6  | Gr 9–12  | Home     | Home                  | Home     | Family   | Adults   | Adults   |
| 7  | Home     | Gr 9–12  | Adults                | Gr 9–12  | Minority | Home     | Pre–K    |
| 8  | Adults   | Adults   | Gr 9–12               | Adults   | Home     | Hi Ed    | Home     |
| 9  | Hi Ed    | Hi Ed    | Hi Ed T <sup>49</sup> | Hi Ed    | Hi Ed    | Pre–K    | Hi Ed    |
| 10 | Minority | Minority | Older T               | Minority | Adults   | Minority | Older    |
| 11 | Older    | Older    | Minority              | Span     | Span     | Span     | Minority |
| 12 | Phys     | Phys     | Span                  | Older    | Phys     | Phys T   | Span     |
| 13 | Span     | Span     | Phys                  | Phys     | Older    | Older T  | Phys     |

In this question, respondents were asked to rank audience types from 1 to 13, where a ranking of 1 identified the largest audience type served by the respondent's institution with regards to STEM programming, and 13 identified the smallest audience type

<sup>47</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

<sup>48</sup> Abbreviations used in this chart: Pre-K school groups (Pre-K), Grades K-2 school groups (Gr K-2), Grades 3-5 school groups (Gr 3-5), Grades 6-8 school groups (Gr 6-8), Grades 9-12 school groups (Gr 9-12), Families with children of any age (Family), Homeschool groups (Home), Adult groups (Adult), Undergraduate/Graduate Higher Education groups (Hi Ed), Programs for minorities (Minority), Older adults/seniors (Older), Programs for people with physical impairments (Phys), Programs for Spanish-speaking individuals (Span).

<sup>49</sup> T = ranking is a tie

served by the respondent's institution with regards to STEM programming.

- The top three audience segments served by STEM programs offered by Science/Technology Museums/Centers are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) school groups in grades 6–8.
- The top three audience segments served by STEM programs offered by Non-science Museums/Sites are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) family groups.
- The top three audience segments served by STEM programs offered by Parks are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) family groups.
- The top three audience segments served by STEM programs offered by Public Libraries are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) Pre–K groups.
- The top three audience segments served by STEM programs offered by Community/Afterschool Centers are 1) school groups in grades 3–5, 2) school groups in grades K–2, and 3) school groups in grades 6–8.
- The top three audience segments served by STEM programs offered by Other organizations, including other non-profit organizations not represented by the other groupings, are 1) school groups in grades 6–8, 2) school groups in grades 3–5, and 3) school groups in grades 9–12.
- The top three audience segments served by STEM programs offered by Government organizations, including national parks, are 1) school groups in grades 3–5, 2) school groups in grades 6–8, and 3) school groups in grades 9–12.

Please note that there is no way to quantify the difference between rankings for each of the results above. To illustrate this issue, please consider the survey responses from a fictional respondent. She ranked each of the audience types from 1 to 13, as requested. Her institution primarily provides STEM programming for tens of thousands of individuals in grades 6–8 school groups and thousands of individuals in grades 3–5 school groups, and she gave these audience types a ranking of 1 and 2, respectively. The audience types in the rest of the list are served by STEM programs at her institution significantly less often, only serving a few hundred individuals apiece, and she ranked those in order from 3 to 13, respectively. However, because the only data collected through this survey is the ranking of audiences served and not the differences between the rankings, the scale of the audiences served by each of the rankings cannot be inferred from the rankings alone.

**Question #14:** Which of the following STEM content areas do you use in your programming?<sup>50</sup>

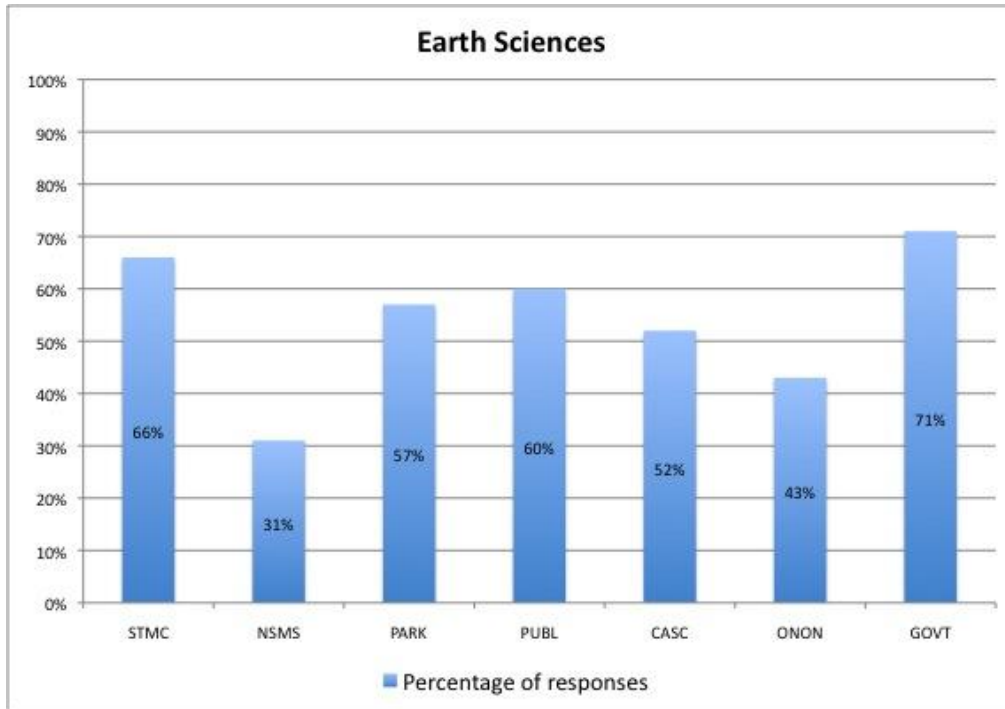
- Earth sciences
- Space sciences
- Life sciences
- Engineering
- Mathematics
- Technology
- The nature of science
- Applications of science

Because respondents could choose more than one answer, percentages can total more than 100% across all content areas for each audience segment. The graphs below separate responses by content area and audience segment. Following all of the graphs, results for each audience segment are highlighted on page 44. The graphs begin on the next page.

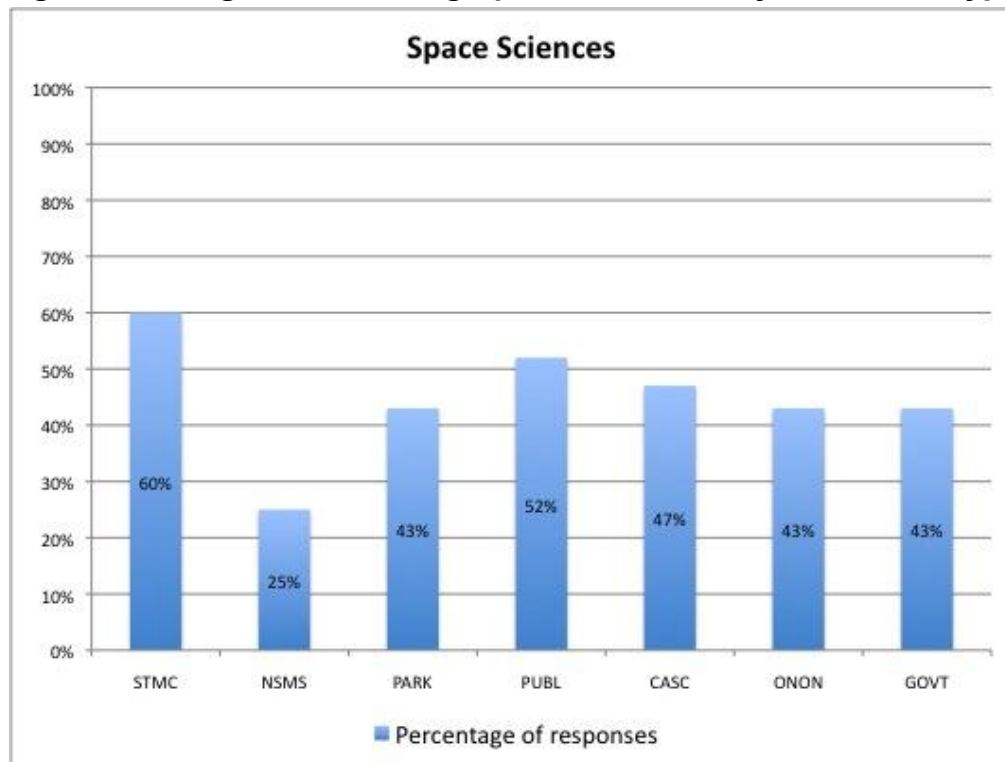
---

<sup>50</sup> The institution segmentation abbreviations used in these charts are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

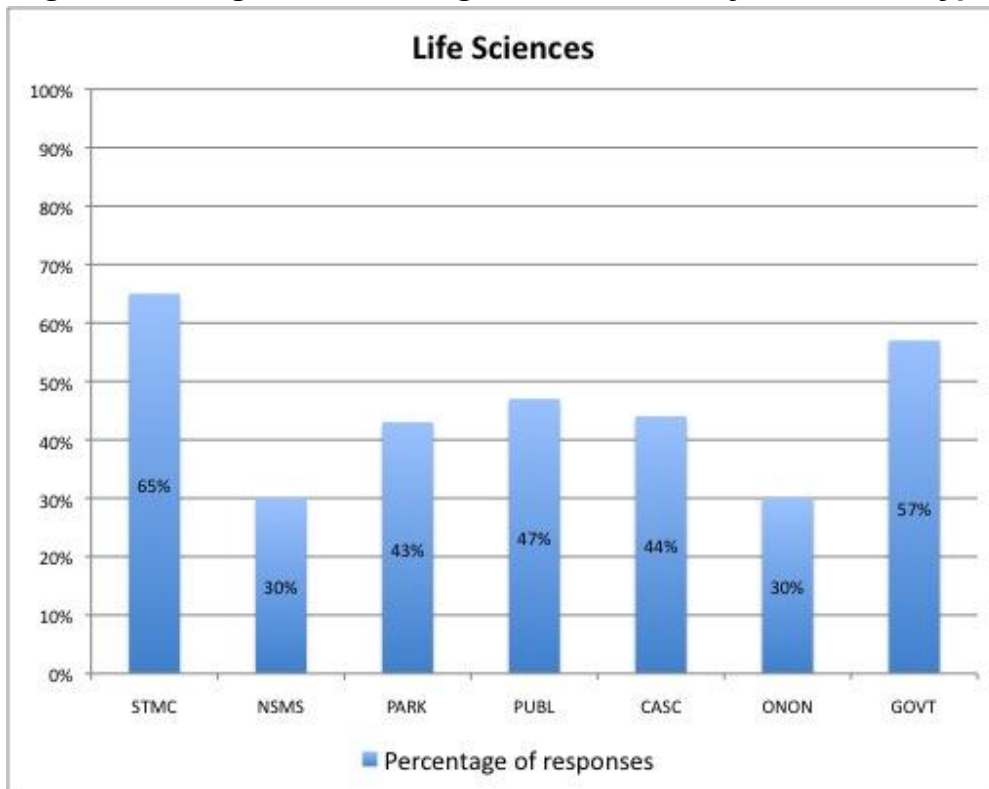
**Figure 16: Programs Involving Earth Sciences, By Institution Type**



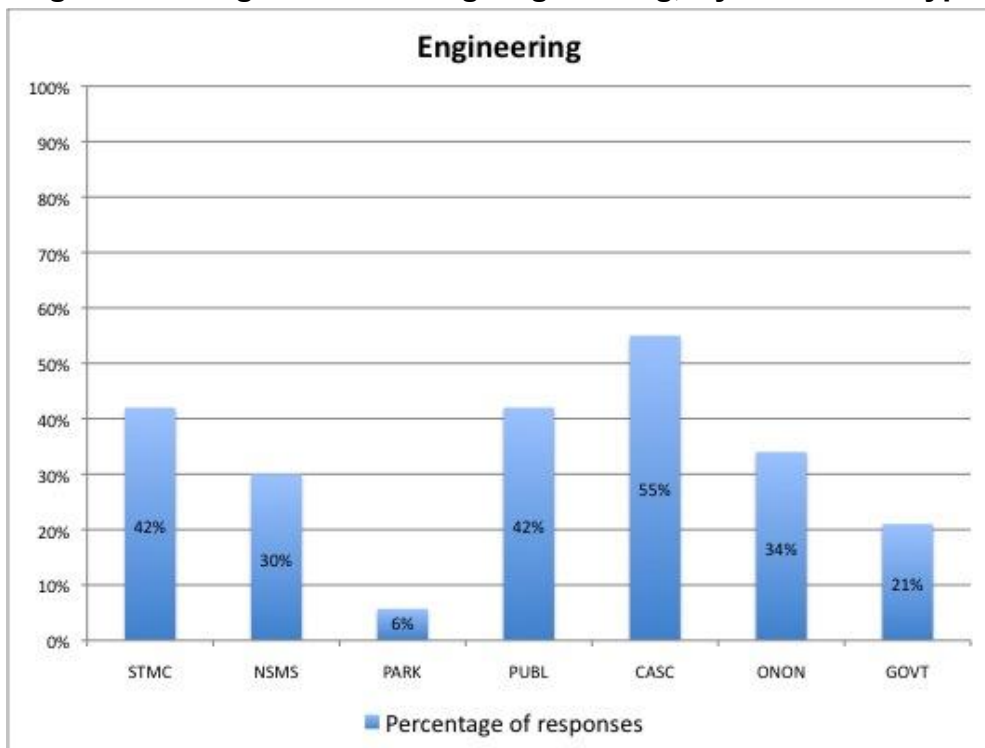
**Figure 17: Programs Involving Space Sciences, By Institution Type**



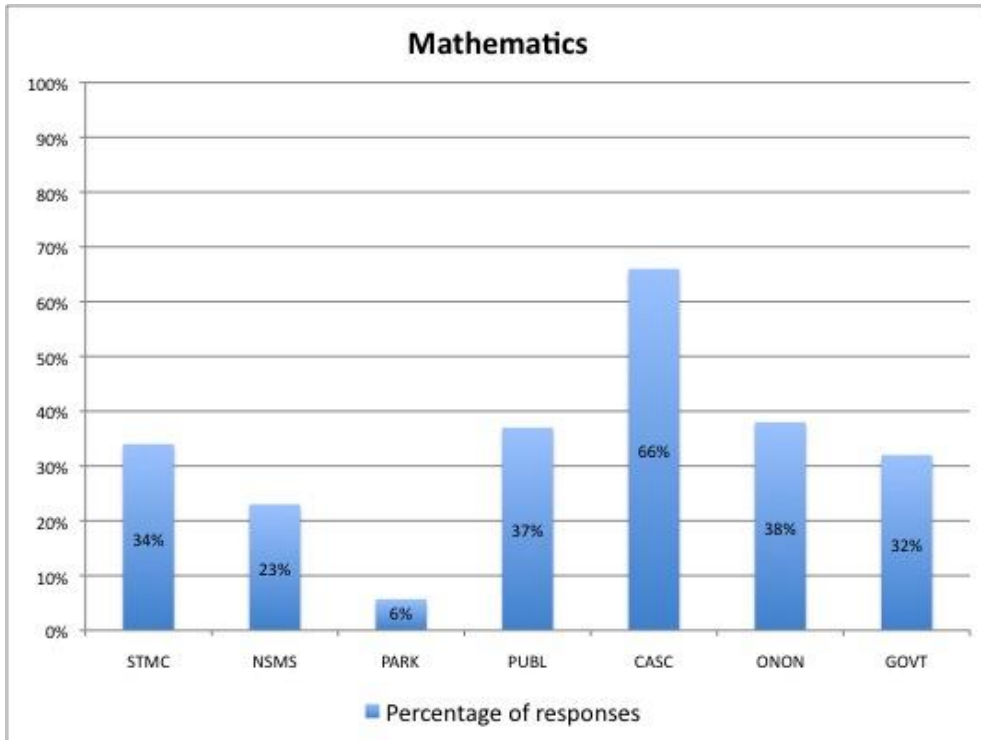
**Figure 18: Programs Involving Life Sciences, By Institution Type**



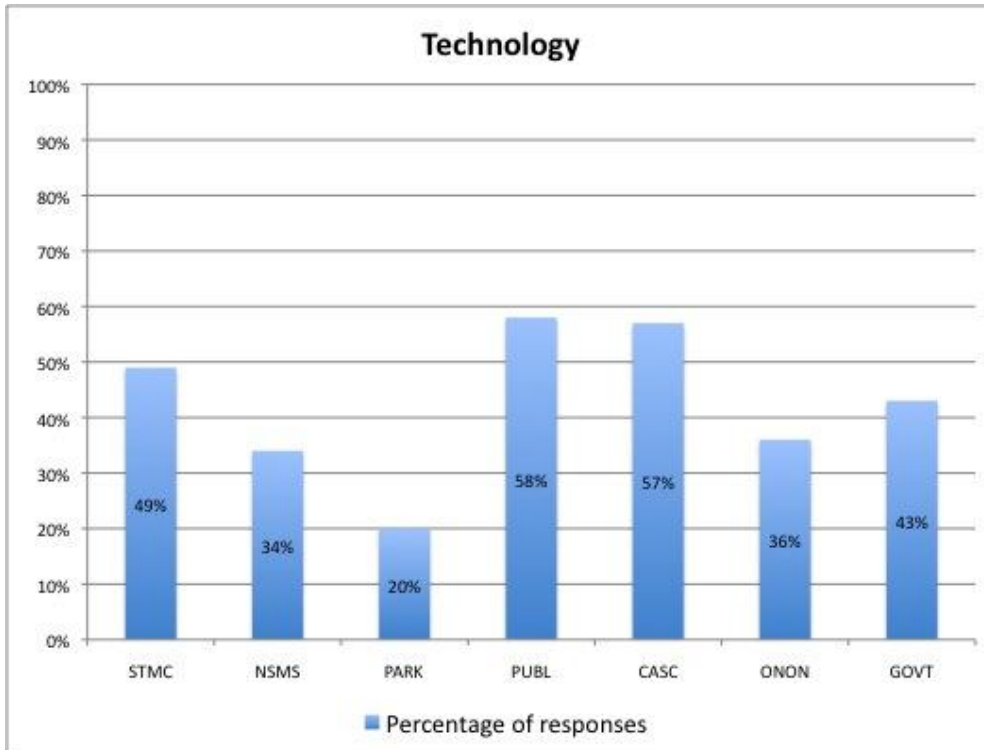
**Figure 19: Programs Involving Engineering, By Institution Type**



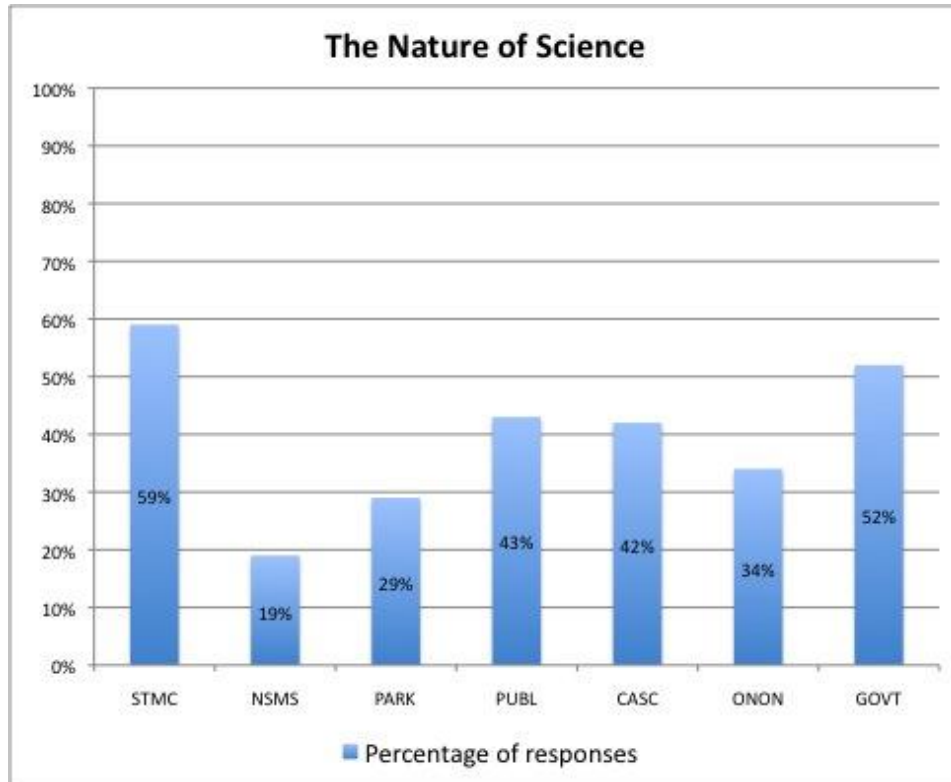
**Figure 20: Programs Involving Mathematics, By Institution Type**



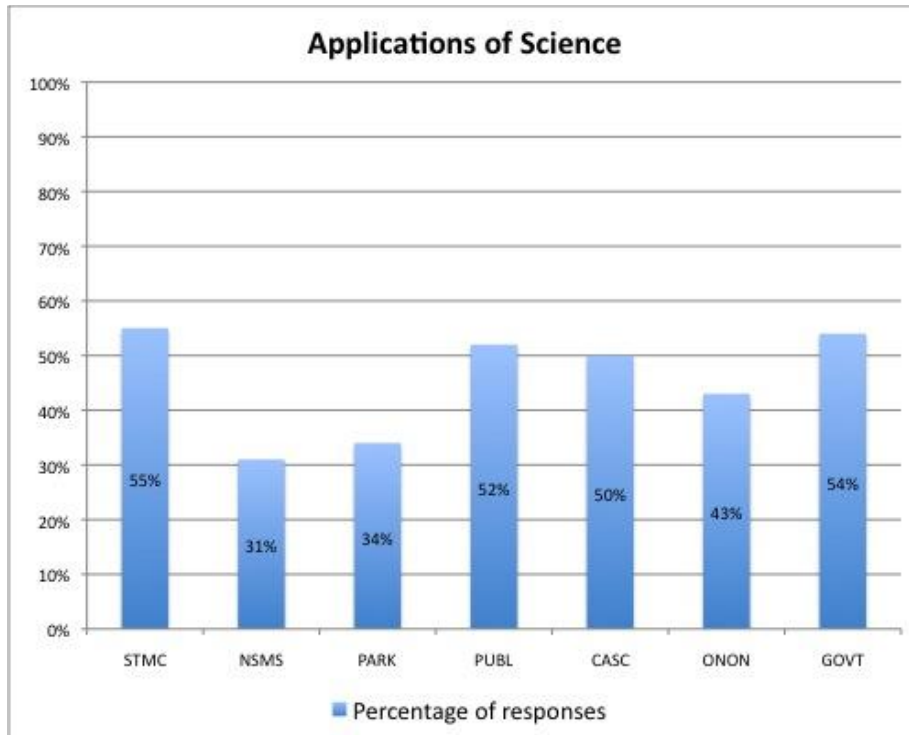
**Figure 21: Programs Involving Technology, By Institution Type**



**Figure 22: Programs Involving Life Sciences, By Institution Type**



**Figure 23: Programs Involving Applications of Science, By Institution Type**



In the following table, the highest and lowest percentages of STEM-related programming in eight topic areas provided by each audience segment are marked; to provide an additional visual reference, the highest three percentages for each audience segment are marked in purple and the lowest three percentages are marked in orange.

Results varied widely among all institution segments. The STEM topic covered most widely is Earth Science; the STEM topics covered the least widely are Engineering and Mathematics.

Please note that the percentages do not necessarily convey future interest level in providing programming on STEM topics, only the percentages of types of STEM-related programs respondents indicated that their institutions currently provide for their constituents.

**Table 4: Percentages of Programs Offered, All STEM Content Areas**

|            | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|------------|------|------|------|------|------|------|------|
| Earth      | 66%  | 31%  | 57%  | 60%  | 52%  | 43%  | 71%  |
| Space      | 60%  | 25%  | 43%  | 52%  | 47%  | 43%  | 43%  |
| Life       | 65%  | 30%  | 43%  | 47%  | 44%  | 30%  | 57%  |
| Engineer   | 42%  | 30%  | 6%   | 42%  | 55%  | 34%  | 21%  |
| Math       | 34%  | 23%  | 6%   | 37%  | 66%  | 38%  | 32%  |
| Tech       | 49%  | 34%  | 20%  | 58%  | 57%  | 36%  | 43%  |
| Nat of Sci | 59%  | 19%  | 29%  | 43%  | 42%  | 34%  | 52%  |
| App of Sci | 55%  | 31%  | 34%  | 52%  | 50%  | 43%  | 54%  |

**Question #15:** Please tell us how you would rank the usefulness to you/your work of each of the following informal education resource types.

The following chart indicates categories in order of preference for each institution segment (see footnote number 52 on the following page for abbreviations):

**Table 5: Rankings of Usefulness of Resources**

|    | <b>STMC</b>      | <b>NSMS</b>      | <b>PARK</b>      | <b>PUBL</b>      | <b>CASC</b>      | <b>ONON</b>      | <b>GOVT</b>      |
|----|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 1  | Lessons          | Lessons          | Lessons          | Kits             | Lessons          | Lessons          | Lessons          |
| 2  | Sci data, images | Text & images    | Text & images    | Lessons          | Kits             | Kits             | Sci data, images |
| 3  | Cut edge         | Downld           | Kits             | Text & images    | Downld           | Sci data, images | Text & images    |
| 4  | Kiosk            | Sci data, images | Sci data, images | Downld           | Text & images    | Cutting edge     | Cut edge         |
| 5  | Text & images    | Kiosk            | Downld           | Kiosk            | Web              | Text & images    | Kiosk            |
| 6  | Trav Exh         | Quantity         | Kiosk            | Speaker          | Kiosk            | Downld           | Downld           |
| 7  | Show             | Kits             | Speaker          | Quantity         | Sci data, images | Kiosk            | Quantity         |
| 8  | Kits             | Trav Exh         | Cut edge         | Trav Exh         | Careers          | Quantity         | Kits             |
| 9  | Downld           | Speaker          | Quantity         | Sci data, images | Speaker          | Careers          | Web              |
| 10 | Careers          | Cut edge         | Trav Exh         | Web              | Cut edge         | Trav Exh         | Careers          |
| 11 | Quantity         | Careers          | Careers          | Cut edge         | Quantity         | Web              | Trav Exh         |
| 12 | Web              | Web              | Show             | Careers          | Trav Exh         | Speaker          | Speaker          |
| 13 | Speaker          | Show             | Web              | Show             | Show             | Show             | Podcasts         |
| 14 | Podcasts         | Podcasts         | Podcasts         | Podcasts         | Podcasts         | Podcasts         | Show             |

Please note that the strength of preference for each informal education resource type cannot be inferred from these results.

The following is a summary of the top three informal education resource needs for each institution segment:<sup>51, 52</sup>

**Science/technology museum/centers:**

1. Lesson plans for informal education activities with embedded assessment tools
2. Resources that utilize real scientific data/images
3. Resources that utilize new or cutting-edge science

**Non-science museum/site:**

1. Lesson plans for informal education activities with embedded assessment tools
2. Pre-produced text/images that an institution can print and display
3. Downloadable posters/colorful handouts

**State park/park district/city park:**

1. Lesson plans for informal education activities with embedded assessment tools
2. Pre-produced text/images that an institution can print and display
3. Pre-assembled kits of lesson plans with all materials included

**Public library:**

1. Pre-assembled kits of lesson plans with all materials included
2. Lesson plans for informal education activities with embedded assessment tools
3. Pre-produced text/images that an institution can print and display

**Community/afterschool center:**

1. Lesson plans for informal education activities with embedded assessment tools
2. Pre-assembled kits of lesson plans with all materials included
3. Downloadable posters/colorful handouts

**Other/non-profit:**

---

<sup>51</sup> The audience segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

<sup>52</sup> The abbreviations used in this chart are as follows: Lesson plans for informal education activities with embedded assessment tools (Lessons), Resources that utilize real scientific data/images (Sci data, images), Resources that utilize new or cutting-edge science (Cut edge), Small exhibit kiosks (i.e., institution provides hardware, developer provides software) (kiosk), Pre-produced text/images that my institution can print and display (Text & images), Traveling exhibits for rent (Trav Exh), Planetarium show(s) (Show), Pre-assembled kits (i.e., "traveling trunk") of lesson plans with all materials included (Kits), Posters/colorful handouts that I can download myself (Downld), Resources that showcase careers in STEM (Careers), Posters/colorful handouts provided in larger pre-printed quantities (Quantity), Web-based experiences/games/activities (Web), Speakers bureau (list of subject matter experts who may be able to present at your site) (Speaker), Podcasts (Podcasts)

1. Lesson plans for informal education activities with embedded assessment tools
2. Pre-assembled kits of lesson plans with all materials included
3. Resources that utilize real scientific data/images

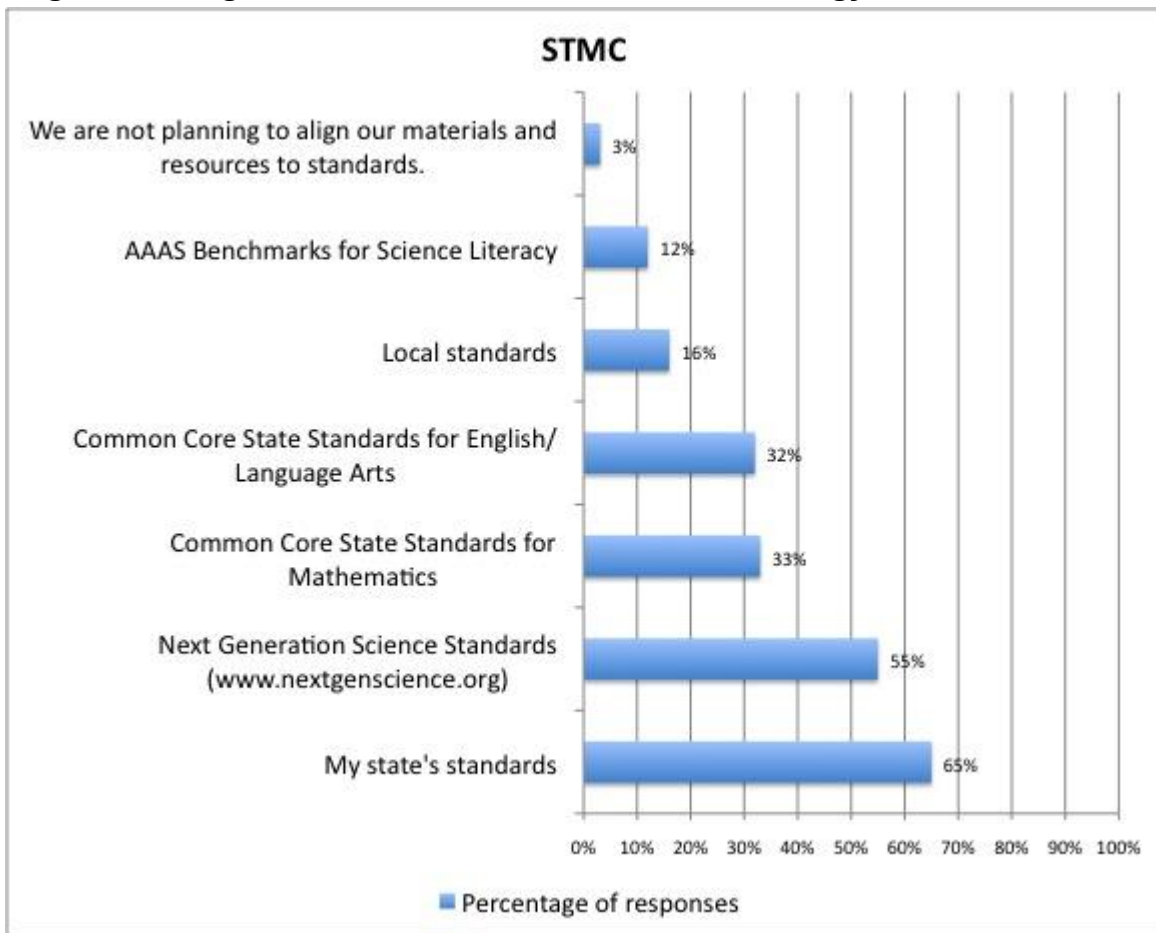
**Government agency:**

1. Lesson plans for informal education activities with embedded assessment tools
2. Resources that utilize real scientific data/images
3. Pre-produced text/images that an institution can print and display

**Question #16:** To which of the following standards are you planning to align/have you aligned your site’s materials and resources? Please select all that apply.

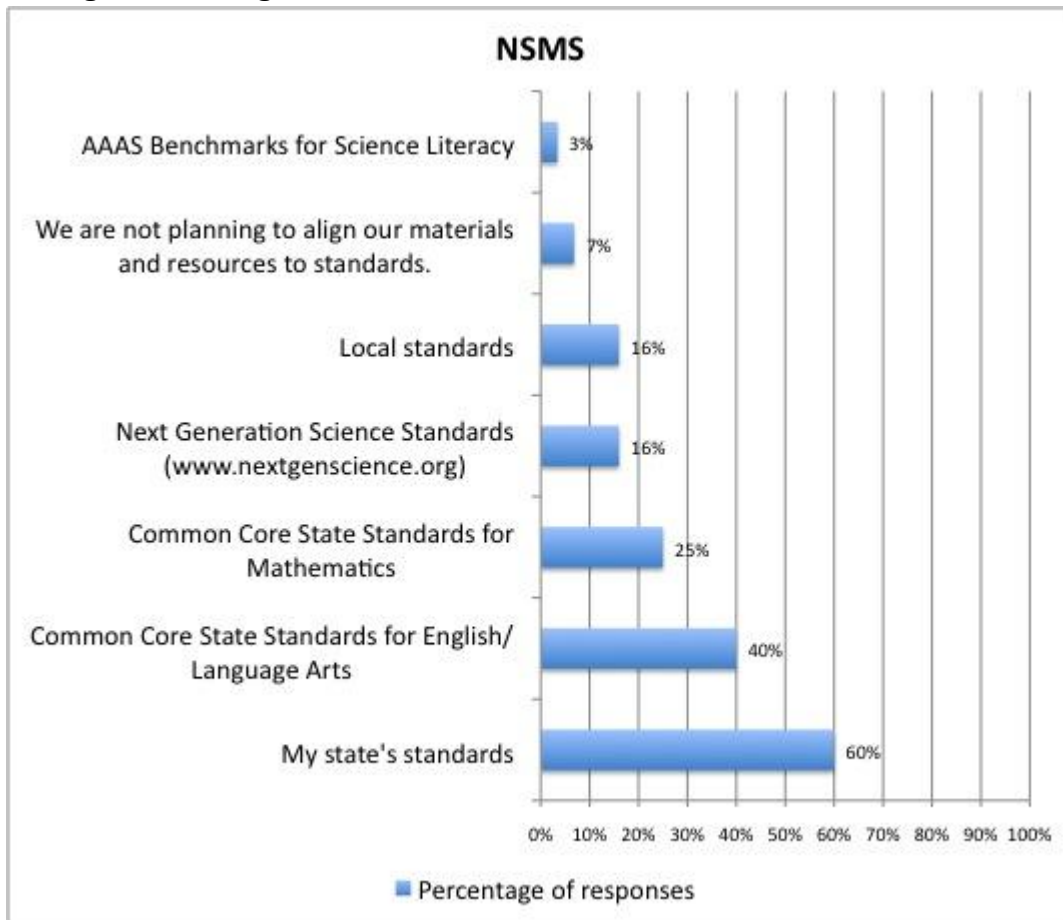
The responses below have been separated by institution type. Because respondents could choose more than one answer, percentages can total more than 100% across all responses.

**Figure 24: Alignment to Standards, Science/Technology Centers/Museums**



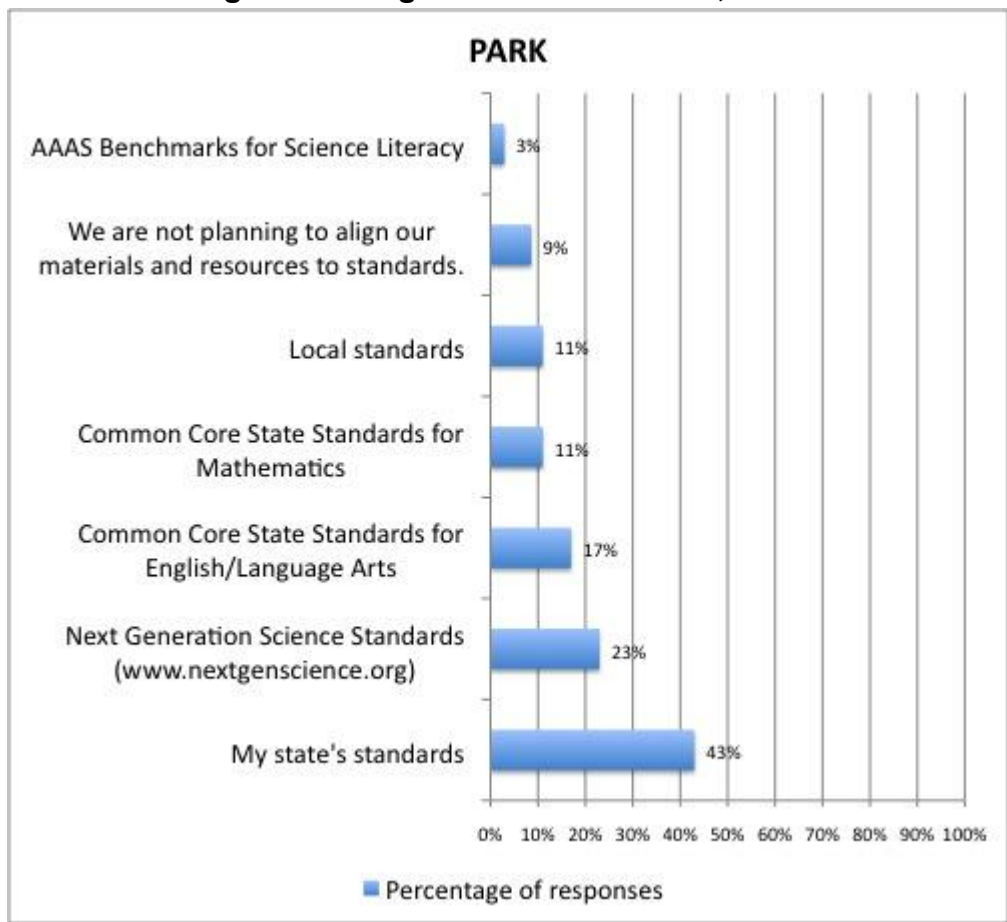
Respondents from Science/Technology Museums/Centers said they align, or plan to align, their informal education resources to their individual state standards (65%), followed by alignment to the Next Generation Science standards (55%), and the Common Core State Standards for Mathematics (33%) and English/Language Arts (32%).

**Figure 25: Alignment to Standards, Non-Science Museums/Sites**



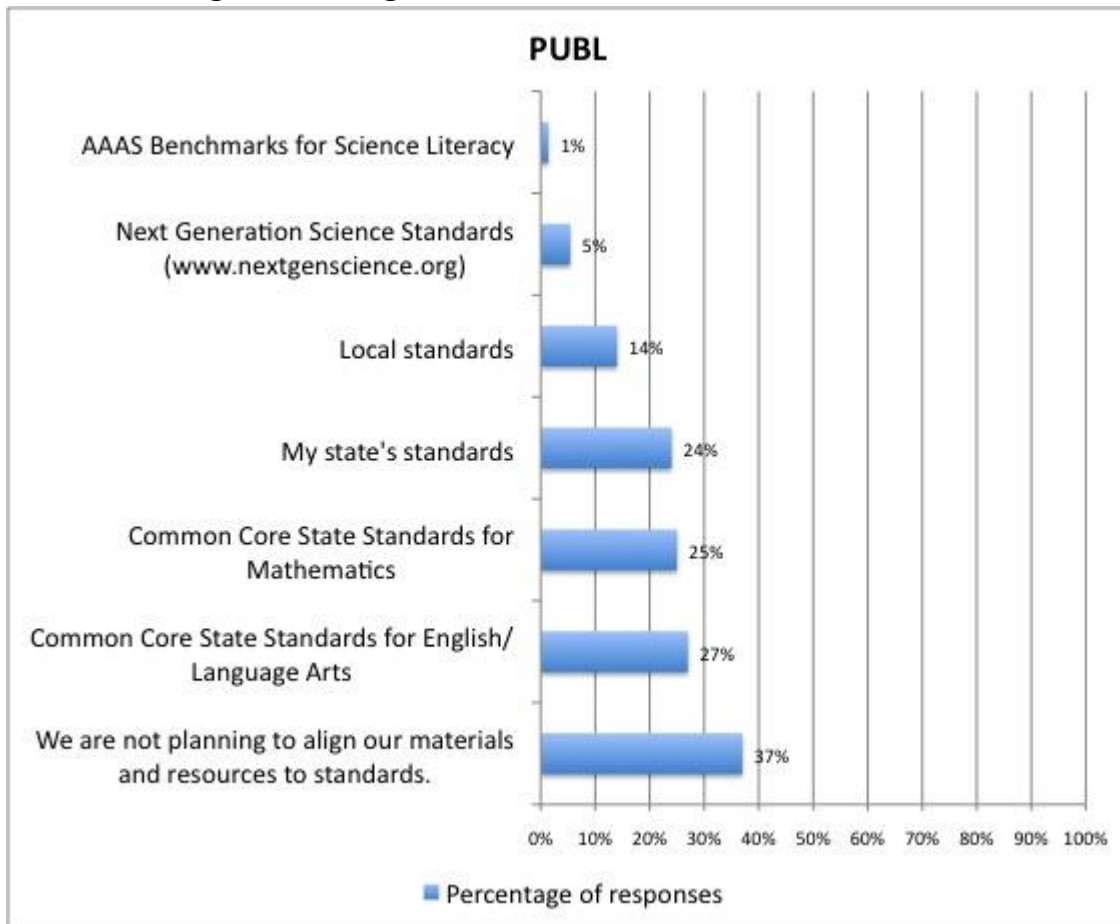
Respondents from Non-Science Museums/Sites said they align, or plan to align, their informal education resources to their individual state standards (60%), followed by the Common Core State Standards for Mathematics (40%), and Common Core State Standards for English/Language Arts (25%).

**Figure 26: Alignment to Standards, Parks**



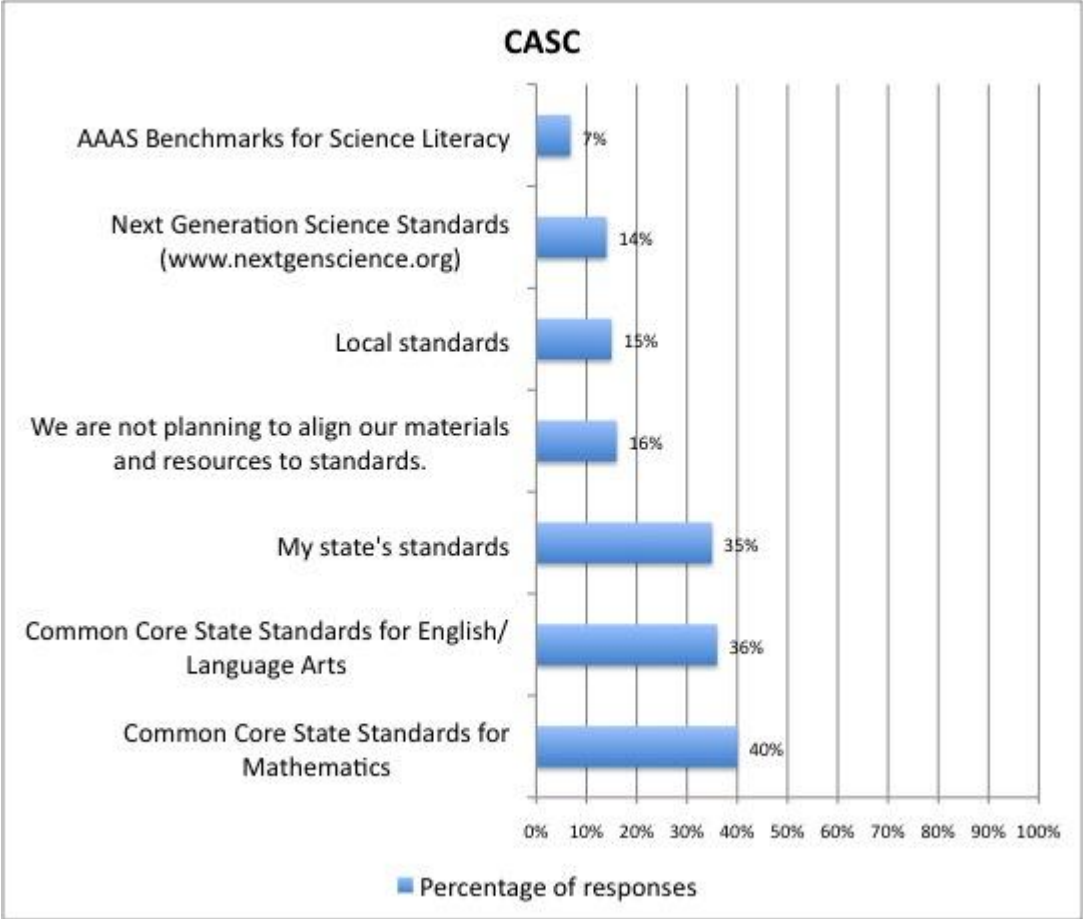
Respondents from Parks said they align, or plan to align, their informal education resources to their individual state standards (43%), followed by the Next Generation Science Standards (23%), and the Common Core State Standards for English/Language Arts (17%).

**Figure 27: Alignment to Standards, Public Libraries**



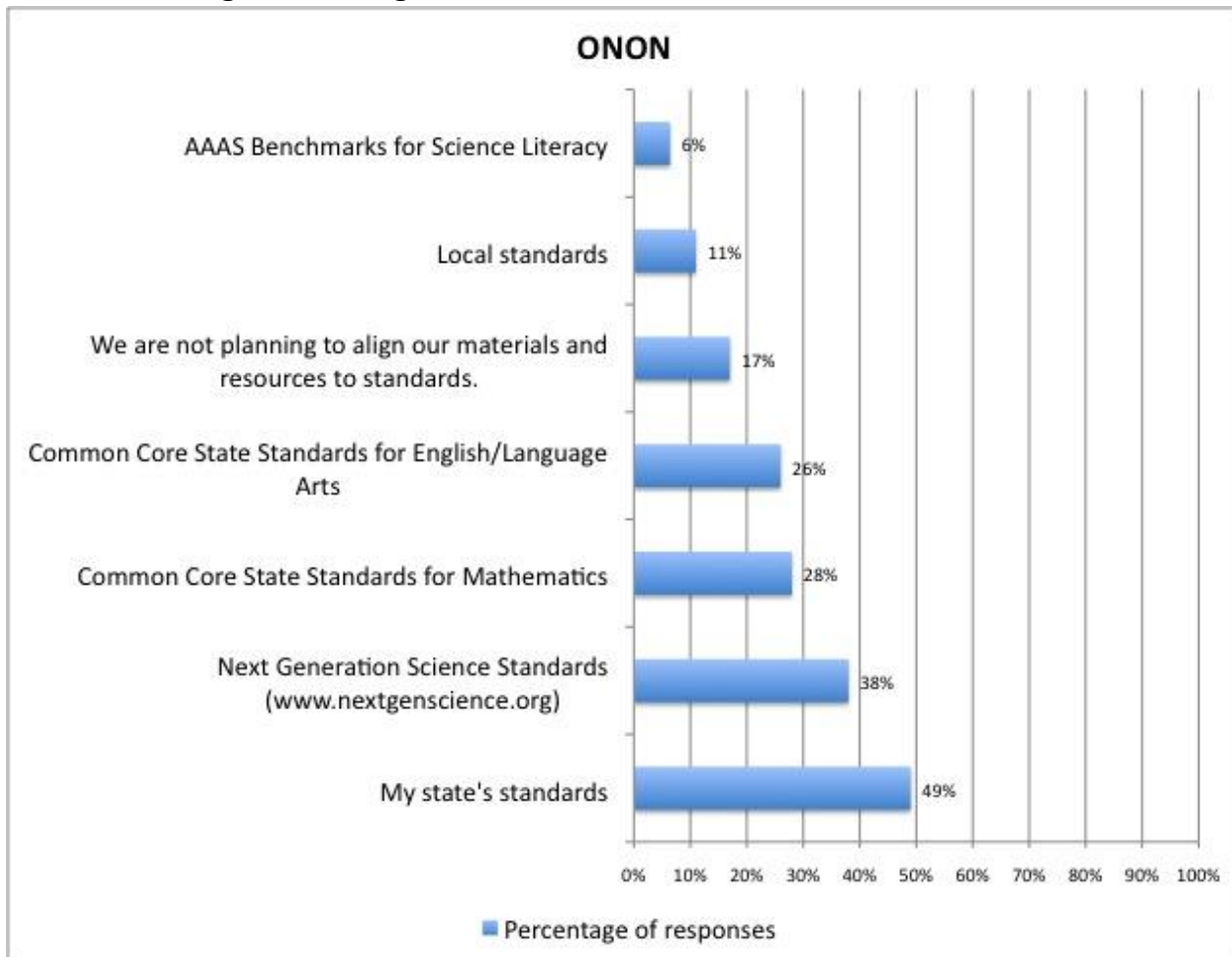
The largest group of respondents (37%) from Public Libraries said they do not plan to align their informal education resources to standards. Of those that do, they align or plan to align their informal education resources to the Common Core State Standards for English/Language Arts (27%), Common Core State Standards for Mathematics (25%), and their individual state standards (24%).

**Figure 28: Alignment to Standards, Community/Afterschool Centers**



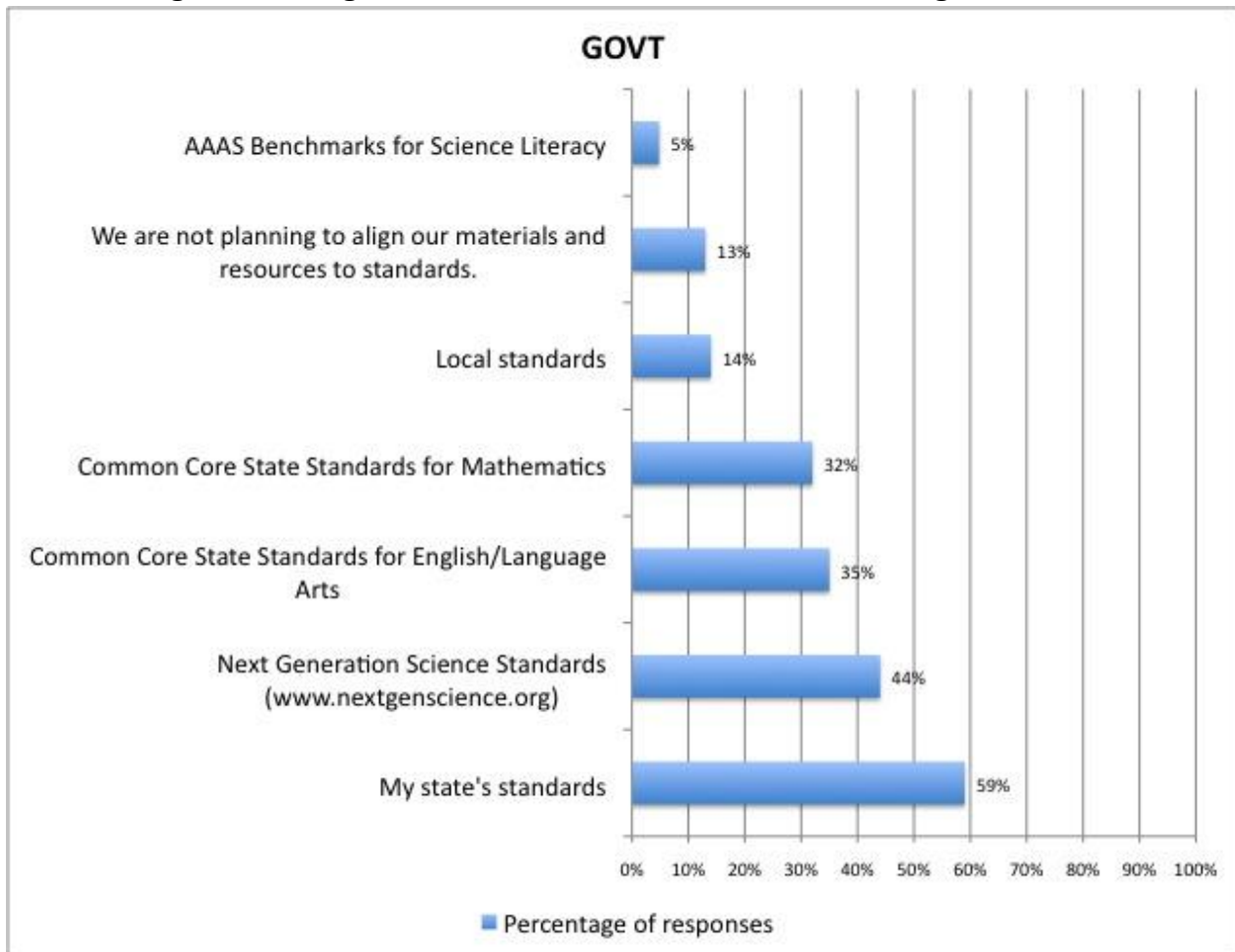
Respondents from Community/Afterschool Centers said they align, or plan to align, their informal education resources to the Common Core State Standards for Mathematics (40%), Common Core State Standards for English/Language Arts (36%), and their individual state standards (35%).

**Figure 29: Alignment to Standards, Other/Non-Profit Sites**



Respondents from Non-Profit Organizations said they align, or plan to align, their informal education resources to their individual state standards (49%), the Next Generation Science Standards (38%), the Common Core State Standards for Mathematics (28%) and the Common Core State Standards for English/Language Arts (26%).

**Figure 30: Alignment to Standards, Governmental Organizations**



Respondents from Governmental Organizations said they align, or plan to align, their informal education resources to their individual state standards (59%), the Next Generation Science Standards (44%), Common Core State Standards for English/Language Arts (35%), and the Common Core State Standards for Mathematics (32%).

**Question #17:** What are your needs with respect to the Next Generation Science Standards, specifically? Please tell us how you would rank your degree of agreement to each of the following statements.<sup>53</sup>

The following table displays the percentage of respondents who selected “Strongly Agree” or “Agree.” Each statement in the far left column begins with, “I need....”

**Table 6: Needs With Respect To Next Generation Science Standards**

| Statement                                                                      | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|--------------------------------------------------------------------------------|------|------|------|------|------|------|------|
| Professional development about the NGSS themselves                             | 64%  | 52%  | 40%  | 62%  | 80%  | 60%  | 63%  |
| Professional development about how to align materials to the NGSS              | 63%  | 56%  | 31%  | 56%  | 76%  | 63%  | 69%  |
| Tools I can use to help me align my resources to the NGSS                      | 69%  | 45%  | 46%  | 59%  | 80%  | 66%  | 73%  |
| STEM resources, materials, and activities that are already aligned to the NGSS | 77%  | 53%  | 40%  | 68%  | 91%  | 80%  | 65%  |

Needs of respondents with regards to the Next Generation Science Standards vary across institutions. Please note that these percentages do not necessarily mirror the responses to the previous question, which indicate whether respondents have aligned or plan to align their programs to various standards, including the Next Generation Science Standards.

<sup>53</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #18:** Who evaluates your programs, resources, and materials, currently?  
Please select all that apply.<sup>54</sup>

The greatest percentage is highlighted in purple.

**Table 7: Identification of Program Evaluators**

|                                                                               | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|-------------------------------------------------------------------------------|------|------|------|------|------|------|------|
| We do not formally evaluate our programs, resources, and/or materials.        | 15%  | 9.1% | 8.6% | 26%  | 14%  | 26%  | 14%  |
| We use an in-house evaluator.                                                 | 31%  | 23%  | 23%  | 14%  | 31%  | 13%  | 35%  |
| We use an external evaluator.                                                 | 25%  | 15%  | 5.7% | 2.2% | 15%  | 19%  | 24%  |
| I am responsible for evaluating my own programs, resources, and/or materials. | 53%  | 60%  | 40%  | 56%  | 52%  | 53%  | 59%  |

Because respondents could choose all, some, or none of the responses, percentage totals can be above, equal to, or below 100%. Across all institution segments, the greatest percentage of respondents are responsible for evaluating their own programs, resources, and/or materials. Except for other non-profit organizations, the second-largest percentage of respondents use in-house evaluation services. 26% of the respondents from public libraries and other non-profit organizations indicated that they do not formally evaluate their programs.

<sup>54</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #19:** Do you attend professional development (PD) sessions to improve your work? Select the option that best fits your situation.<sup>55</sup>

**Table 8: Professional Development as Part of Job Duties**

|                                                                                            | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|--------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|
| Yes, attending professional development (PD) sessions is a required part of my job duties. | 51%  | 51%  | 63%  | 62%  | 79%  | 38%  | 53%  |
| Yes, I do attend professional development (PD) sessions, but I attend on my own time.      | 35%  | 36%  | 38%  | 13%  | 23%  | 40%  | 28%  |
| No, I do not attend PD sessions now, but I would like to in the future.                    | 11%  | 13%  | 0%   | 5.4% | 8.6% | 15%  | 19%  |
| No, I do not attend PD sessions.                                                           | 3.0% | 0%   | 0%   | 3.6  | 1.4% | 7.5% | 0%   |

For almost all of the institution segments, the greatest percentage of respondents indicated that attending professional development sessions is a required part of informal educator job duties (greatest percentage highlighted in purple). The exception was the other non-profit audience segment, where the greatest percentage of respondents indicate that they attend professional development sessions on their own time. This was also the same audience segment that had the largest percentage of volunteers as respondents to this survey (see question #3 on page 17).

<sup>55</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #20:** What is the professional development (PD) program/workshop program duration in which you prefer to participate? Rank from 1 to 4 (1 = most preferred; 4 = least preferred).<sup>56</sup>

- Up to one day
- 2 consecutive days
- 3 to 5 consecutive days
- Non-consecutive days spread out over the course of several weeks or months

Please note that strength of preference among these answers cannot be inferred from responses. The highest-ranked selection is highlighted in purple.

**Table 9: Preferred Professional Development Program Duration**

|                                                                            | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|----------------------------------------------------------------------------|------|------|------|------|------|------|------|
| Up to one day                                                              | 1    | 1    | 1    | 1    | 1    | 2    | 1    |
| 2 consecutive days                                                         | 2    | 2    | 4    | 2    | 2    | 1    | 2    |
| 3 to 5 consecutive days                                                    | 4    | 4    | 2    | 3    | 4    | 3    | 4    |
| Non-consecutive days spread out over the course of several weeks or months | 3    | 3    | 3    | 4    | 3    | 4    | 3    |

For almost all of the institution segments, the greatest percentage of respondents indicated that they prefer to attend professional development sessions that are up to one day in length (highest ranked answer highlighted in purple). The exception was the Other Non-Profit institution segment, where a larger number preferred to attend professional development sessions that are two days in length.

<sup>56</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #21:** Assuming costs to attend PD sessions were equal, which of the following would you prefer? Rank from 1 to 3 (1 = most preferred; 3 = least preferred). If you have no preference, indicate by selecting "No preference."<sup>57</sup>

Please note that strength of preference among these answers cannot be inferred from responses. The highest-ranked selection is highlighted in purple.

**Table 10: Preference of Professional Development Program Attendance**

|                                                              | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|--------------------------------------------------------------|------|------|------|------|------|------|------|
| I would prefer to attend a PD session remotely               | 3    | 3    | 3    | 3    | 3    | 3    | 2    |
| I would prefer to attend a PD session in-person              | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| I would prefer a balance of remote and in-person PD sessions | 2    | 2    | 2    | 2    | 2    | 2    | 3    |

Respondents in all institution segments indicated that they prefer to attend professional development sessions in person, as opposed to blended (in person and remotely accessed) sessions and sessions that are only accessed remotely.

<sup>57</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #22:** If given appropriate professional development, how likely would it be that you would train others on topics, techniques, or content you learn about in workshops or other PD sessions? <sup>58</sup>

**Table 11: Respondents Likely or Very Likely To Train Others on Professional Development Content**

| Statement                      | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|--------------------------------|------|------|------|------|------|------|------|
| Percent Likely and Very Likely | 90%  | 78%  | 88%  | 60%  | 89%  | 94%  | 77%  |

Well over half of all respondents in all institution segments, ranging from 60% to 90%, indicated that they would be likely or very likely to train others on topics, techniques, or content learned in workshops and professional development sessions.

---

<sup>58</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #23:** When are you generally available during the year to attend PD sessions? Please choose all that apply.<sup>59</sup>

**Table 12: Preference for Availability for Attending Professional Development Sessions**

|           | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|-----------|------|------|------|------|------|------|------|
| January   | 43%  | 46%  | 60%  | 54%  | 45%  | 57%  | 49%  |
| February  | 39%  | 39%  | 57%  | 55%  | 45%  | 29%  | 51%  |
| March     | 25%  | 25%  | 34%  | 53%  | 44%  | 26%  | 38%  |
| April     | 17%  | 20%  | 14%  | 47%  | 40%  | 20%  | 18%  |
| May       | 18%  | 24%  | 9%   | 32%  | 29%  | 23%  | 18%  |
| June      | 25%  | 28%  | 9%   | 13%  | 26%  | 29%  | 28%  |
| July      | 28%  | 29%  | 14%  | 15%  | 39%  | 34%  | 35%  |
| August    | 36%  | 38%  | 14%  | 34%  | 36%  | 34%  | 38%  |
| September | 44%  | 36%  | 26%  | 46%  | 36%  | 23%  | 23%  |
| October   | 34%  | 28%  | 23%  | 48%  | 41%  | 20%  | 25%  |
| November  | 34%  | 28%  | 49%  | 48%  | 46%  | 20%  | 43%  |
| December  | 27%  | 24%  | 43%  | 37%  | 29%  | 14%  | 40%  |

Responses given below are in order of preference. The top 3 selections for each audience segment are highlighted in purple in the chart above.

**Science/technology museum/center:**

Top 3 selections: September, January, February

Lowest selections: March, May, April

<sup>59</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Non-science museum/site:**

Top 3 selections: January, February, August

Lowest selections: March, (tie) May/December, April

**State park/park district/city park:**

Top 3 selections: January, February, November

Lowest selections: (tie) April/July/August, (tie) May/June

**Public Libraries:**

Top 3 selections: February, January, March

Lowest selections: July, June

**Community/Afterschool Center:**

Top 3 selections: November, January, February

Lowest selections: (tie) May/December, June

**Other/Non-Profit:**

Top 3 selections: January, (tie) July/August

Lowest selections: (tie) April/October/November, December

**Government agency:**

Top 3 selections: February, January, November

Lowest selections: September, (tie) April/May

**Question #24:** What is your day-of-week preference for attending PD sessions? Rank from 1 to 3 (1 = most preferred; 3 = least preferred).<sup>60</sup>

- Weekday
- Weekend
- Weekday holiday

Please note that strength of preference among these answers cannot be inferred from responses. The highest-ranked selection is highlighted in purple.

**Table 13: Day-of-Week Preference for Attending Professional Development Sessions**

|                 | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|-----------------|------|------|------|------|------|------|------|
| Weekday         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| Weekend         | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Weekday holiday | 3    | 3    | 3    | 3    | 3    | 2    | 3    |

Respondents across all institution segments indicated that they primarily prefer to attend professional development sessions during weekdays that do not coincide with holidays.

<sup>60</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #25:** For short-duration PD sessions (i.e., PD sessions that are less than one day in length), during what time of day do you prefer to participate? Rank from 1 to 3 (1 = most preferred; 3 = least preferred).<sup>61</sup>

- Morning
- Afternoon
- Evening

Please note that strength of preference among these answers cannot be inferred from responses.

**Table 14: Preference for Time-of-Day for Attending Professional Development Sessions**

|           | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT    |
|-----------|------|------|------|------|------|------|---------|
| Morning   | 1    | 1    | 1    | 1    | 1    | 1    | 1 (tie) |
| Afternoon | 2    | 2    | 2    | 2    | 2    | 2    | 1 (tie) |
| Evening   | 3    | 3    | 3    | 3    | 3    | 3    | 3       |

Respondents across all institution segments indicated that their top two selections for the time of day of short-duration professional development sessions were professional development sessions that occur during the morning or afternoon (also highlighted in purple).

---

<sup>61</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #26:** In general, how do you secure funding to be able to participate in PD sessions? Please select all that apply.<sup>62</sup>

**Table 15: Availability of Funding for Attending Professional Development Sessions**

|                                                                                                                                                                               | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|
| My organization generally has money available for me to attend PD sessions.                                                                                                   | 31%  | 27%  | 37%  | 39%  | 40%  | 15%  | 41%  |
| My organization generally has money available for me to attend PD sessions, but only if the sessions occur as part of an organized conference.                                | 17%  | 17%  | 11%  | 19%  | 17%  | 4.3  | 18%  |
| I need an outside source of funding (e.g., grants, scholarships, stipends, etc.) to be able to attend a PD session because my organization does not have any money available. | 40%  | 28%  | 14%  | 26%  | 33%  | 38%  | 35%  |
| I pay for PD sessions myself.                                                                                                                                                 | 27%  | 25%  | 26%  | 17%  | 22%  | 38%  | 25%  |

The highest response level in each institution segment is highlighted in purple. There was no clear consensus among the answers across all segments regarding the availability of funding for informal educators to attend professional development sessions. The need for an outside source of funding varied from 14% to 40% of

<sup>62</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

respondents, and 15% to 41% of respondents indicated that their organizations have sources of professional development funding available.

**Question #27:** In general, how far do you travel to PD sessions? Please choose one answer.

**Table 16: Distance of Travel to Professional Development Sessions**

|                                                                           | STMC <sup>63</sup> | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|---------------------------------------------------------------------------|--------------------|------|------|------|------|------|------|
| I cannot travel to PD sessions at all.                                    | 31%                | 19%  | 13%  | 8.1% | 11%  | 22%  | 26%  |
| I generally travel only within my home state.                             | 33%                | 38%  | 29%  | 25%  | 38%  | 28%  | 30%  |
| I generally travel within my home state or regionally (to nearby states). | 31%                | 31%  | 58%  | 62%  | 47%  | 44%  | 38%  |
| I generally travel anywhere nationwide for PD sessions.                   | 4.9%               | 13%  | 0%   | 4.8% | 4.2% | 5.6% | 5.7% |

The highest response level in each institution segment is highlighted in purple and the second-highest response level is highlighted in dark red. Among science/technology museums/centers and non-science museums/sites, the highest percentage of respondents indicated they generally travel within their home states to attend professional development sessions, but the second-largest set of responses in both segments was from respondents who indicate that they travel regionally to attend professional development sessions. Among the rest of the respondents, the largest percentage indicate they travel regionally to attend professional development sessions, and the second-highest set of responses was from respondents who indicate that they travel only within their home states.

<sup>63</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

**Question #28:** Which STEM and/or informal education conferences or meetings have you attended in the past 3 years? Please select all that apply.<sup>64</sup>

Top selections for each institution segment.<sup>65</sup>

**Science/Technology Museums/Centers:**

1. Association of Science-Technology Centers (ASTC) annual conference (19%)
2. National Science Teachers Association (NSTA) national meeting (13%)
3. American Alliance of Museums (AAM) annual conference (8%)
4. Association of Zoos and Aquaria (AZA) annual conference (6%)
5. Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach (6%)
6. National Association for Interpretation (NAI) national workshop (5%)

I do not attend conferences/meetings: 13% of respondents

**Non-science Museums/Sites:**

1. American Alliance of Museums (AAM) annual conference (15%)
2. National Afterschool Association (NAA) annual conference (11%)
3. Association of Science-Technology Centers (ASTC) annual conference (8%)
4. Association of Children’s Museums (ACM) annual conference (7%)
5. National Science Teachers Association (NSTA) national meeting (6%)
6. National Association for Interpretation (NAI) national workshop (5%)

I do not attend conferences/meetings: 21% of respondents

**State park/Park District/City Park:**

1. National Association for Interpretation (NAI) national workshop (17%)
2. National Science Teachers Association (NSTA) national meeting (6%)
3. Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach (6%)

I do not attend conferences/meetings: 11% of respondents

**Public Libraries:**

1. American Library Association (ALA) annual conference (26%)

I do not attend conferences/meetings: 32% of respondents

---

<sup>64</sup> A complete list of all of the conferences listed by survey respondents is included in Appendix B on page 84.

<sup>65</sup> Selections reflecting percentages that were less than 4% of respondents were not included in the lists below.

**Community/Afterschool Centers:**

1. National Afterschool Association (NAA) annual conference (14%)
2. 21st Century Community Learning Centers Summer Institute (9%)
3. Tie: a) National Science Teachers Association (NSTA) national meeting (7%) and b) Beyond School Hours (7%)
4. American Camp Association (ACA) (6%)
5. Summer Changes Everything (5%)

I do not attend conferences/meetings: 30% of respondents

**Other non-profit:**

1. National Science Teachers Association (NSTA) national meeting (21%)
2. Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach (9%)
3. American Alliance of Museums (AAM) annual conference (6%)
4. (tie) a) Association of Science-Technology Centers (ASTC) annual conference (4%), b) American Association for the Advancement of Science (AAAS) annual conference (4%), c) National Association of Interpretation (NAI) national workshop (4%), and d) Association of Zoos and Aquaria (AZA) annual conference (4%)

I do not attend conferences/meetings: 21% of respondents

**Government:**

1. National Science Teachers Association (NSTA) national meeting (21%)
2. National Association for Interpretation (NAI) national workshop (16%)
3. Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach (6%)
4. (tie) a) Association of Science-Technology Centers (ASTC) annual conference (5%) and b) American Alliance of Museums (AAM) annual conference (5%)

I do not attend conferences/meetings: 27% of respondents

**Question #29:** Please tell us about the areas of support that you want to obtain from professional development sessions. How would you categorize the importance of each of the following?<sup>66</sup>

The following table indicates the percentage of respondents who indicated “Very important” or “Important”:

**Table 17: Preference for Areas of Support Obtained through Professional Development Sessions**

|                                                                            | STMC | NSMS | PARK | PUBL | CASC | ONON | GOVT |
|----------------------------------------------------------------------------|------|------|------|------|------|------|------|
| Instruction about how to facilitate activities                             | 86%  | 86%  | 89%  | 93%  | 94%  | 68%  | 66%  |
| Background information about session content                               | 73%  | 67%  | 83%  | 74%  | 79%  | 76%  | 65%  |
| Instruction about how to develop evaluation tools                          | 62%  | 65%  | 50%  | 37%  | 72%  | 40%  | 63%  |
| Instruction about how to implement evaluation                              | 56%  | 68%  | 43%  | 33%  | 59%  | 46%  | 64%  |
| Improving informal ed communication skills                                 | 69%  | 65%  | 59%  | 48%  | 61%  | 53%  | 61%  |
| Graduate-level credit and/or continuing education credits                  | 25%  | 8.6% | 44%  | 21%  | 41%  | 30%  | 24%  |
| Access to a content-matter expert after the session                        | 61%  | 31%  | 65%  | 56%  | 72%  | 68%  | 56%  |
| Access to community of practice including attendees, facilitators, experts | 75%  | 79%  | 61%  | 67%  | 78%  | 74%  | 69%  |

The top three percentages in each institution segment are highlighted in purple. The resource that respondents preferred (rated as “Important” or “Very important”) to receive at professional development sessions that is in the top three across all

<sup>66</sup> The institution segmentation abbreviations used in this chart are as follows: Science/technology museum/center (STMC), Non-science museum/site (NSMS), State park/park district/city park (PARK), Public library (PUBL), Community/afterschool center (CASC), Other/non-profit (ONON), and Government agency (GOVT).

institution segments is lesson plan/activity facilitation instruction. The other two resources that were identified with a large percentage of “Important” or “Very important” responses across almost all of the institution segments are background information about session content and access to community of practice including attendees, facilitators, experts.

## Appendix A: Recruitment Text and Survey for Informal Education Professionals

The following is the text from the recruitment email that was used to find participants.

*NASA's Informal Education Working Group has developed a survey to assess the science, technology, engineering, and mathematics resource and professional development needs of informal educators. The results of the survey will help NASA's Science Mission Directorate Education and Public Outreach community better meet those needs and plan future opportunities for the informal education community.*

*The survey was designed with the following definitions of informal educators and informal education in mind: Informal educators offer children and adults learning opportunities outside of formal schooling. Informal education is learning that is voluntary, self-directed, motivated by personal needs and interests, and provided by a variety of organizations, such as museums, after school settings, parks, libraries, and other settings. For the purposes of this survey, interpretation is considered a particular methodology of informal education and therefore, interpreters are welcome to respond to the survey.*

*The survey will take 10 to 15 minutes to complete:*

*<https://www.surveymonkey.com/s/InformalEd><sup>67</sup>*

*Thank you, in advance, for your time! The survey will be open until October 31, 2013.<sup>68</sup> Please share this information with informal education colleagues and contacts. Apologies for cross-postings.*

*For more information about NASA's Science Mission Directorate, go to <http://science.nasa.gov>.*

*For more information about the NASA Science Education and Public Outreach Forums, go to <http://www.smdepo.org>.*

---

<sup>67</sup> The survey link is no longer active.

<sup>68</sup> Due to various impacts related to the October 2013 partial federal government shutdown, the survey deadline date was extended to November 15, 2013.

**The following is the text from the *Survey for Informal Education Professionals*:**

As an informal educator or interpreter, what are your resource and professional development needs?

NASA's Informal Education Working Group has developed a survey to assess the science, technology, engineering, and mathematics resource and professional development needs of informal educators. The results of the survey will help NASA's Science Mission Directorate Education and Public Outreach community better meet those needs and plan future opportunities for the informal education community.

The survey was designed with the following definitions of informal educators and informal education in mind: Informal educators offer children and adults learning opportunities outside of formal schooling. Informal education is learning that is voluntary, self-directed, motivated by personal needs and interests, and provided by a variety of organizations, such as museums, afterschool settings, parks, libraries, and other settings. For the purposes of this survey, interpretation is considered a particular methodology of informal education and therefore, interpreters are welcome to respond to the survey.

The survey will take 10 to 15 minutes to complete, and you will need to complete it in one sitting.

Thank you, in advance, for your time!

\*required response

\*1. Any reports, articles, or papers generated from the information collected from this survey effort will contain only aggregate results. Quotes from respondents may be included in reporting but no personally identifiable information will be used. Computer IP addresses will not be saved and will not be linked to survey responses. If you provide comments within the survey, please do not identify yourself, your location, the name of the organization you work for, or any other information that would allow anyone to identify you specifically. If you agree to these conditions, select "I agree to these conditions. Take me to the survey!" If you do not agree to these conditions, please select "I do not agree to these conditions. I wish to exit the survey."

- I agree to these conditions. Take me to the survey!
- I do not agree to these conditions. I wish to exit the survey.

**First, we want to learn about you.**

\*2. In which state do you work or volunteer as an informal educator/interpreter?

- State codes plus DC, Puerto Rico, and other US territories
- My institution/organization is not located in or affiliated with the U.S. (if they choose this response, the survey ends with a friendly “thank you” message)

3. Are you paid for your work as an informal educator or are you a volunteer? Select one answer.

- I am paid for my work as an informal educator.
- I volunteer as an informal educator.
- I prefer not to answer.

4. How long have you worked and/or volunteered in the field of informal education?

Select one answer.

- Less than 1 year
- 1 to 2 years
- 3 to 5 years
- 6 to 10 years
- 11 to 20 years
- More than 20 years

5. How many years of experience do you have facilitating or providing STEM (Science, Technology, Engineering, and/or Mathematics) activities or programs? Select one answer.

- I have never facilitated STEM (Science, Technology, Engineering, Mathematics) activities or programs.
- Less than 1 year
- 1 to 2 years
- 3 to 5 years
- 6 to 10 years
- 11 to 20 years
- More than 20 years

6. What is your primary role within your institution or organization? Please select one option that you most closely associate with your current informal education position.

- Front-line staff/implementer/interpreter
- Trainer
- Program/curriculum developer
- Staff manager/decision-maker
- Other (please identify)

**Next, we'd like to learn about your organization.**

7. Please select one type of institution or organization from this list that you most closely associate with your current informal education position.

- Art museum
- Youth/children's museum
- Science/technology center or museum
- Planetarium/observatory
- History museum, house, or site
- Zoo or aquarium/marine biology institute
- Federal agency (NPS, NWS, etc.)
- State park, park district, or city park
- Public library
- Tribal library, archive, or tribal museum
- Community center or afterschool education center
- 4-H, Girl Scouts, Boy Scouts
- University
- Nature center, botanic garden, or arboretum
- Other (please identify)

8. What was your site's total attendance last year (or in the last year for which you have information)?

- (type in number)

9. What is the size and scale of your organization or institution? Select the option that best fits your institution's situation.

For example, a museum with its own governing body would be a "stand-alone institution." A city park district site would be part of a "local network." A state park site would be part of a "statewide network." A youth-serving club that is part of a larger nationwide organization would select "national network."

- My institution/organization is a stand-alone institution.
- My institution/organization is part of a local network.
- My institution/organization is part of a statewide network.
- My institution/organization is part of a national network.
- (optional) Please briefly describe (for privacy, you do NOT need to identify your organization by name):

10. How often does your your site offer STEM (Science, Technology, Engineering, and/or Mathematics) programs? Select the one answer that best represents your situation.

- Every day (if selected, skip logic to question #12)
- A few times per week (if selected, skip to question #12)
- A few times per month (if selected, skip to question #12)
- A few times per year (if selected, skip to question #12)
- Never (if selected, skip to question #11)

11. If your site does not offer STEM programming currently, why not? Please select all that apply.

- Our visitors/patrons would not be interested in STEM programming.
- STEM does not fall within my institution's mission.
- We do not have the time in our schedule to offer STEM programs.
- We do not have the staffing available to offer STEM programs.
- We do not have funding available to offer STEM programs.
- We do not have resources/materials on hand to offer STEM programs.
- Other (please specify):
- *(Note: selecting any of the above answers will then cause skip logic to go to question #15)*

12. Which types of STEM programming does your site offer now? Please select all that apply.

For clarity, please only indicate the STEM programming types you offer. If you offer other topic-specific programs that are not STEM-related, please do not indicate those.

- Programs in schools
- Programs at community organizations and/or at community events
- Field trip programs at my institution for school audiences
- Outreach utilizing a portable planetarium dome
- Scheduled classes/enrichment programs for children
- Scheduled classes/enrichment programs for adults
- Scheduled classes/enrichment programs for families
- Public lectures by a subject or content matter expert
- Guided activities in our public space(s) (examples: walks, talks, tours, demos, activity carts, etc.)
- Summer/holiday day camp programs
- After-school programs/clubs
- Camp-in/overnight programs
- Check-out program for kits of materials/lessons for local educators

- Youth employment programs
- Other (please describe)

13. Which are your site's largest audience(s) for STEM informal education programming? Please rank from among the choices below. 1 = your largest audience, 2 = your next largest audience, and so on. You can also drag and drop your choices.

If there are audience groupings in the list for whom you do not provide STEM programs, please choose "N/A."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- Pre-K school groups
- Grades K-2 school groups
- Grades 3-5 school groups
- Grades 6-8 school groups
- Grades 9-12 school groups
- Homeschool groups (any age)
- Higher education-age groups (undergraduate/graduate)
- Families with children (children of any age)
- Adults
- Programs for minorities
- Programs for Spanish-speaking audiences
- Programs for individuals with physical impairments
- Older adults/seniors

14. Which of the following STEM content areas do you use in your programming?  
Please select all that apply.

- Earth sciences (i.e., any sciences that deal with the Earth, its composition, or any of its changing aspects)
- Space sciences (i.e., any sciences dealing with the study of everything outside of Earth)
- Life sciences
- Engineering
- Mathematics
- Technology (e.g., knowledge of, making, or use of tools, machines, etc.)
- The nature of science (i.e., how science works)
- Applications of science (i.e., using science in everyday life)
- Other (please specify)

15. Please tell us how you would rank the usefulness to you/your work of each of the following informal education resource types.

Please rank from among the choices below. 1 = the resource that you/your institution could use the most or would be the most useful to you, 2 = your next highest choice, and so on. You can also drag and drop your choices. If there are any selections that you do not feel would be useful, please choose "Not Important."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- Small exhibit kiosks (i.e., institution provides hardware, developer provides software)
- Traveling exhibits for rent
- Pre-produced text/images that my institution can print and display
- Posters/colorful handouts that I can download myself
- Resources that utilize real scientific data/images
- Resources that utilize new or cutting-edge science
- Resources that showcase careers in STEM
- Posters/colorful handouts provided in larger printed quantities
- Lesson plans for individual informal education activities with embedded assessment tools
- Planetarium show(s)
- Web-based experiences/games/activities
- Pre-assembled kits (i.e., "traveling trunk") of lesson plans with all materials included
- Podcasts
- Speakers bureau (list of subject matter experts who may be able to present at your site)

16. To which of the following standards are you planning to align/have you aligned your site's materials and resources? Please select all that apply.

- Next Generation Science Standards ([www.nextgenscience.org](http://www.nextgenscience.org))
- Common Core State Standards for English/Language Arts
- Common Core State Standards for Mathematics
- My state's standards
- Local standards
- AAAS Benchmarks for Science Literacy
- We are not planning to align our materials and resources to standards.
- Other: (please identify)

17. What are your needs with respect to the Next Generation Science Standards, specifically? Please tell us how you would rank your degree of agreement to each of the following statements. (Strongly Disagree, Disagree, No Opinion, Agree, Strongly Agree)

- I need professional development about the NGSS themselves
- I need professional development about how to align materials to the NGSS
- I need tools I can use to help me align my resources to the NGSS
- I need STEM resources, materials, and activities that are already aligned to the NGSS
- Other: (please specify)

18. Who evaluates your programs, resources, and materials, currently? Please select all that apply.

- We do not formally evaluate our programs.
- We use an in-house evaluator.
- We use an external evaluator.
- I am responsible for evaluating my own programs, resources, and/or materials.
- Other comments?

19. Do you attend professional development (PD) sessions to improve your work?

Select the option that best fits your situation.

- Yes, attending professional development (PD) sessions is a required part of my job duties. *(if selected, skip to question #20)*
- Yes, I do attend professional development (PD) sessions, but I attend on my own time. *(if selected, skip to question #20)*
- No, I do not attend professional development (PD) sessions now, but I would like to in the future. *(if selected, skip to question #20)*
- No, I do not attend PD sessions. *(if selected, the survey ends)*

**Please tell us about the professional development (PD) workshops and sessions you prefer to participate in.**

20. What is the professional development (PD) program/workshop program duration in which you prefer to participate? Rank from 1 to 4 (1= most preferred; 4 = least preferred). If you do not prefer one or more of the options, please select "I would not choose this option."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- Up to one day

- 2 consecutive days
- 3 to 5 consecutive days
- Non-consecutive days spread out over the course of several weeks or months

21. Assuming costs to attend PD sessions were equal, which of the following would you prefer? Rank from 1 to 3 (1 = most preferred; 3 = least preferred). If you have no preference, indicate by selecting "No preference."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- I would prefer to attend a PD session remotely. (e.g. online, by phone or teleconference)
- I would prefer to attend a PD session in-person.
- I would prefer a blended PD session (both remote sessions and in-person sessions).

22. If given appropriate professional development, how likely would it be that you would train others on topics, techniques, or content you learn about in workshops or other PD sessions?

(Likert scale: *Very Likely, Likely, Unsure, Not Likely, Not At All Likely*)

23. When are you generally available during the year to attend PD sessions? Please choose all that apply.

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

24. What is your day-of-week preference for attending PD sessions? Rank from 1 to 3 (1 = most preferred; 3 = least preferred). If you more than likely would not attend on one or more of these days, please check the box labeled "I probably would not attend."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- Weekday
- Weekend
- Weekday holiday

25. For short-duration PD sessions (i.e., PD sessions that are less than one day in length), during what time of day do you prefer to participate? Rank from 1 to 3 (1 = most preferred; 3 = least preferred). If you more than likely would not attend at one or more of these times, please check the box labeled "I probably would not attend."

(Note: Once you make an initial selection or choose a number, Survey Monkey will number all of your remaining choices, but after the survey software does this, you can still number or drag-and-drop any of them however you wish.)

- Morning
- Afternoon
- Evening

26. In general, how do you secure funding to be able to participate in PD sessions? Please select all that apply.

- My organization generally has money available for me to attend PD sessions.
- My organization generally has money available for me to attend a PD session, but only if the sessions occur as part of an organized conference.
- I need an outside source of funding (e.g., grants, scholarships, stipends, etc.) to be able to attend a PD session because my organization does not have any money available.
- I pay for PD sessions myself.

27. In general, how far do you travel to PD sessions? Please choose one answer.

- I cannot travel to a PD session at all.
- I generally travel only within my home state.
- I generally travel within my home state or regionally (to nearby states).
- I generally travel anywhere nationwide for a PD session.

28. Which STEM and/or informal education conferences or meetings have you attended in the past 3 years? Please select all that apply.

- Association of Science-Technology Centers (ASTC) annual conference
- National Science Teachers Association (NSTA) national meeting
- American Alliance of Museums (AAM) annual conference
- American Association for the Advancement of Science (AAAS) annual conference
- National Association of Interpretation (NAI) national workshop
- Association of Zoos and Aquariums (AZA) annual conference
- Association of Children's Museums (ACM) annual conference
- National Afterschool Association (NAA) annual conference
- American Library Association (ALA) annual conference
- Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach
- Beyond School Hours
- Summer Changes Everything
- 21st Century Community Learning Centers Summer Institute
- Best Of Out-of-School Time (BOOST)
- American Public Gardens Association (APGA)
- American Camp Association (ACA)
- I do not attend STEM or informal education conferences or meetings.
- Other: (please specify)

29. Please tell us about the areas of support that you want to obtain from professional development sessions. How would you categorize the importance of each of the following? (*Very important, Important, Somewhat Important, Somewhat Unimportant, Unimportant, Very unimportant*)

- Instruction about how to facilitate activities that I can use at my institution/organization
- Background information about the subject matter content presented
- Instruction about how to develop program evaluation tools
- Instruction about how to create and implement an assessment/evaluation program
- Continuing education related to improving communication skills in informal education settings
- Graduate-level credit and/or continuing education credits for PD session participation
- Access to a content-matter expert after the workshop to be able to ask questions
- Access to a community of practice including other attendees, facilitators, and content experts
- Other (please describe)

***Almost finished!***

***At this point, you can still go back and change your answers, if needed. Hit the "Previous" button to go back. When you click "Done" below, you will submit your survey responses and no further changes can be made.***

***Thank you for taking the time to fill out this survey!***

## **Appendix B: Complete Listing of Conferences Attended by Respondents**

The following is a complete list of the conferences listed by survey respondents in the “Other” text box in Question #28, in alphabetical order:

- 21st Century Community Learning Centers Summer Institute
- Afterschool Excellence Conference
- American Alliance of Museums (AAM) annual conference
- American Association for State and Local History
- American Association for the Advancement of Science (AAAS) annual conference
- American Camp Association national conference
- American Camp Association regional conference
- American Educational Research Association
- American Fisheries Society
- American Library Association (ALA) annual conference
- American Public Gardens Association (APGA)
- American School Health Association (ASHA) annual conference
- American Society of Engineering Education
- APACS Conference
- Aquatic Resource Education Association
- Arizona SciTech Conference
- Association for Library Service to Children National Institute
- Association for Rural and Small Libraries (ARSL) annual conference
- Association of Academic Museums and Galleries
- Association of Children’s Museums (ACM) annual conference
- Association of Nature Center Administrators
- Association of Science Teaching (Northeast)
- Association of Science-Technology Centers (ASTC) annual conference
- Association of Zoos and Aquaria (AZA) annual conference
- Association of Zoo and Aquarium Docents
- Astronomical League
- Astronomical Society of the Pacific (ASP) Annual Meeting for Education & Public Outreach
- Best Of Out-of-School Time (BOOST)
- Beyond School Hours
- Boys & Girls Clubs of America
- Challenger Center Conference
- COCOSTEM
- Colorado Open Space Alliance
- Comparative Cognition Conference

- Conference for the Advancement of Science Teaching
- CS4HS
- Digital Media and Learning Conference
- ESRI GIS Educational User Conference
- Experimental Biology Conference
- FAME annual conference
- IAAPA
- International Arts Movement
- International Museum and Theater Alliance (IMTAL)
- International Planetarium Society (IPS)
- International Public Science Events Conference
- International Teacher-Scientist Partnership Conference
- League for Innovation in the Community College
- Leopold Education Project National conference
- Live Interactive Planetarium Symposium
- Minnesota Naturalist Association
- Museums and the Web
- National Afterschool Association (NAA) annual conference
- National Art Education Conference
- National Association of Biology Teachers
- National Association of Environmental Education conference
- National Association of Interpretation (NAI) national workshop
- National Charter School Conferences
- National Science Teachers Association (NSTA) national meeting
- National Society of Black School Educators
- National Summer Learning Association
- North American Association for Environmental Education (NAAEE) annual conference
- North East YMCA Camping Conference (NEYCC)
- NSTA regional/local conference
- Ocean Literacy Conference
- Outdoor Learning Symposium
- SciGirls
- SECME
- Statewide Collegiate Science and Technology Entry Program Student Conference (CSTEP Conference)
- Statewide Science and Technology Entry Program Student Conference (STEP)
- Summer Changes Everything
- Texas Computer Education Association conference
- US News STEM Solutions Conference

- Visitor Studies Association (VSA) annual conference
- World Maker Faire

## **Appendix C: Listing of All Included Tables and Figures**

### **Figures**

- Page 17 - Figure 1: Informal Educators, Paid vs. Volunteer
- Page 19 - Figure 2: Informal Educators, Experience Level
- Page 20 - Figure 3: Informal Educators, STEM Program Facilitation Experience Level
- Page 21 - Figure 4: Informal Educators, Primary Role
- Page 24 - Figure 5: Institutional Attendance
- Page 26 - Figure 6: Institutional Size and Scale
- Page 28 - Figure 7: STEM Program Frequency
- Page 29 - Figure 8: Reasons Institutions Do Not Offer STEM Programs
- Page 31 - Figure 9: Types of STEM Programs Offered by Science, Technology Centers/Museums
- Page 32 - Figure 10: Types of STEM Programs Offered by Non-Science Museums/Sites
- Page 33 - Figure 11: Types of STEM Programs Offered by Parks
- Page 34 - Figure 12: Types of STEM Programs Offered by Public Libraries
- Page 35 - Figure 13: Types of STEM Programs Offered by Community/Afterschool Sites
- Page 36 - Figure 14: Types of STEM Programs Offered by Other/Non-Profit Sites
- Page 37 - Figure 15: Types of STEM Programs Offered by Governmental Organizations
- Page 41 - Figure 16: Programs Involving Earth Sciences, By Institution Type
- Page 41 - Figure 17: Programs Involving Space Sciences, By Institution Type
- Page 42 - Figure 18: Programs Involving Life Sciences, By Institution Type
- Page 42 - Figure 19: Programs Involving Engineering, By Institution Type
- Page 43 - Figure 20: Programs Involving Mathematics, By Institution Type
- Page 43 - Figure 21: Programs Involving Technology, By Institution Type
- Page 44 - Figure 22: Programs Involving Life Sciences, By Institution Type
- Page 44 - Figure 23: Programs Involving Applications of Science, By Institution Type
- Page 49 - Figure 24: Alignment to Standards, Science/Technology Centers/Museums
- Page 50 - Figure 25: Alignment to Standards, Non-Science Museums/Sites
- Page 51 - Figure 26: Alignment to Standards, Parks
- Page 52 - Figure 27: Alignment to Standards, Public Libraries
- Page 53 - Figure 28: Alignment to Standards, Community/Afterschool Centers
- Page 54 - Figure 29: Alignment to Standards, Other/Non-Profit Sites
- Page 55 - Figure 30: Alignment to Standards, Governmental Organizations

### **Tables**

- Page 15 - Table 1: Abbreviations Used in This Report
- Page 25 - Table 2: Institutional Attendance, Unknown
- Page 38 - Table 3: Largest Audiences for STEM Informal Education Programming
- Page 45 - Table 4: Percentages of Programs Offered, All STEM Content Areas
- Page 46 - Table 5: Rankings of Usefulness of Resources

Page 56 - Table 6: Needs With Respect To Next Generation Science Standards  
Page 57 - Table 7: Identification of Program Evaluators  
Page 58 - Table 8: Professional Development as Part of Job Duties  
Page 59 - Table 9: Preferred Professional Development Program Duration  
Page 60 - Table 10: Preference of Professional Development Program Attendance  
Page 61 - Table 11: Respondents Likely or Very Likely To Train Others on Professional Development Content  
Page 62 - Table 12: Preference for Availability for Attending Professional Development Sessions  
Page 64 - Table 13: Day-of-Week Preference for Attending Professional Development Sessions  
Page 65 - Table 14: Preference for Time-of-Day for Attending Professional Development Sessions  
Page 66 - Table 15: Availability of Funding for Attending Professional Development Sessions  
Page 68 - Table 16: Distance of Travel to Professional Development Sessions  
Page 71 - Table 17: Preference for Areas of Support Obtained through Professional Development Sessions