"Virtual Programs with NASA Scientists" Evaluation Summary

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Background and Methodology

NASA@ My Library worked with 75 partner libraries across the U.S. to support Earth and space science learning activities at their libraries. Partner libraries were asked to involve NASA scientists (subject-matter experts) in their programs. While many libraries successfully reached out to NASA-affiliated scientists, it was a challenging program component for many librarians. Aspects of the challenge included identifying scientists, difficulties reaching or hearing back from scientists, planning the role of the scientist, ensuring the program would be engaging to their audience, and ensuring a large enough audience. In addition, the time and funding required for travel were barriers for libraries and scientists, and especially for libraries in rural locations.

To help librarians provide quality opportunities for their patrons to be exposed to a NASA-affiliated scientist, *NASA@ My Library* worked with the Portal to the Public Network (PoPNet) from 2018-20 to offer virtual programming at select partner libraries. Virtual programming allowed scientists to reach populations in rural areas with no travel time or expense. PoPNet sites prepared scientists and helped each scientist create an engaging virtual presentation and activity suitable for a library audience. The PoPNet sites then partnered with libraries and offered 40 programs to patrons who were physically at a library with a virtual connection to the scientist (facilitated with help from the librarians).

With the start of the COVID-19 pandemic and resulting library closures, the project sought input from a task force[1] to determine library capabilities and interests regarding programs with scientists. Based on what was learned from the PoPNet programs, the Lunar and Planetary Institute (LPI) was originally planning to train scientists to offer virtual programs that would be offered again to patrons who were physically in their library. With the pandemic, the programs were modified to accommodate all-virtual attendance, with the typical plan for library staff and patrons to join a video call from their own connections. In addition to providing an opportunity for patrons to meet a scientist virtually and learn about their career and research, library staff also gained experience working with a scientist and leading an activity virtually.

LPI's role in coordinating "*Virtual Programs with NASA Scientists*" for libraries included:

- Preparing scientists to conduct programs for library patrons, and identifying appropriate activities that could be conducted virtually.
- Coordinating librarian requests for scientists and programs with scientists' availability and library schedules.
- Preparing library staff to host events and conduct the activities, and testing all video and sound equipment in advance.
- Helping to facilitate each program, and defining the roles and expectations for each person clearly in advance.

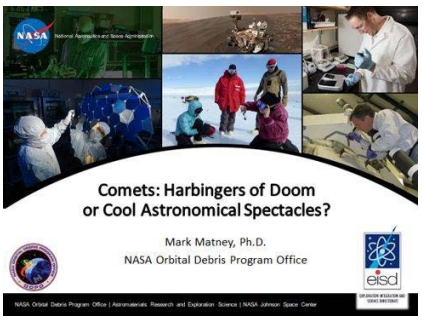
[1] The task force was comprised of partner library staff, State Library Agency representatives, and a representative from the American Library Association. Representatives from LPI and the Space Science Institute (SSI) facilitated.

The goals of the "Virtual Programs with NASA Scientists" for libraries were to:

1. Create memorable experiences
2. Increase patrons' interest in space science and awareness of NASA science missions
3. Increase library staff interest, knowledge, and confidence
4. Provide scientists with opportunities to connect with underserved audiences

LPI recruited and trained NASA-funded scientists and designed six programs, each featuring a NASA scientist speaking about their work as well as a related activity or demonstration for a librarian to lead. After a short application period open to all partner libraries, librarians participated in a training to help them prepare for their role in the programs. The 16 "Virtual Programs with NASA Scientists" were held between August and October 2020 at 15 different partner libraries.[2] (See Appendix A for the list of programs.) For most programs, patrons joined a scientist from their own connections at home. However, there were alternative formats, including a library that livestreamed programs on Facebook, a program where students joined from their schools, and one session where a small group of children were at the library and others joined from their homes.

Images from virtual programs



[2] The library hosting two programs were hosted by two different branches.

Evaluation Overview

The evaluation team drafted guiding questions to inform data collection to explore if and how librarians were able to engage scientists (known as Subject Matter Experts, or SMEs) in their programs, including the challenges and any additional support needed from *NASA@ My Library*. (See Appendix B.)

To understand the implementation and impact of the Virtual Programs with NASA Scientists, evaluators administered post-surveys to librarians, scientists, and patrons; interviewed a sample of librarians and patrons; asked patrons poll items during a sample of programs; observed a sample of programs; and gathered other data such as program attendance. Appendix B has more detail on the administration of the data collection instruments.

Evaluation Activities and Response Rates

Audience	Instrument	Responses Received
Librarians	Librarian Post-Survey (*Appendix C)*	13 out of 15 responded (87%)
	Librarian Interviews/Focus Group (*Appendix D)*	Individual interview with 1 librarian Focus group with 2 librarians
Scientists	Scientist Post-Survey *(Appendix E)*	6 out of 8 responded[3] (75%)
Patrons	Patron Pre- and Post- Program Poll Questions *(Appendix F)*	42 responses from 6 different programs[4]
	Patron Focus Groups *(Appendix G)*	After 6 different programs with 14 individuals
	Patron Post-Survey *(Appendix H)*	13 responses from 6 different programs
Other	Program observation (6 different programs)	
	Program attendance records	
	Video views of recorded programs	

[3] Two of the scientists invited to the survey were prepared but were asked to conduct the livestreamed programs (which used a much less interactive format)

[4] Six responses were to the pre-question only; 26 responses were to the post-question only. The polls were not used in the other programs (they were designed after some programs had already occurred and there were time limitations or tech issues in other programs). There could be only one response per computer, even if there were multiple patrons sharing a connection.

Summary of Virtual Programs

The table below provides a description of the programs and a high-level overview of the evaluation findings.

A Snapshot of *NASA@ My Library* "Virtual Programs with NASA Scientists" Programs

Program Details 	• Programs were planned to be 30 minutes, to keep patrons actively engaged. - Librarians' welcome/show poll question(s)/Introduction of scientist (3 mins) - Scientist presentation (10 mins) - Librarian-led activity or demonstration (10 mins) - Librarian-led Question & Answer/Discussion (5 mins) - Wrap-up, polls, survey link (2 mins) • The programs were typically not advertised with an ending time, and many went a little longer than 30 minutes. • A few scientists, librarians, and patrons felt the programs were a little rushed, especially the demonstration and Q&A, which were later in the program. • Each program was recorded by LPI and shared with the library after the event.
Librarian Role 	• Participated in a short (1 hour) training with LPI to prepare for the program. • Attended a technology test-run (15 minutes). • Advertised the program with their patrons (LPI provided librarians with flyers to edit as well as certificates of participation to print or email to their patrons.) • Prepared the materials (if any) for the activity or demonstration. • Facilitated the presentation. • Led the activity or demonstration. • Gathered video releases from patrons to share the program. • Many libraries disseminated the video on the library website and/or social media.
Scientist Role 	• Attended a short online session focused on how to present to a library audience (of mixed-ages) and present virtually. • During a program, scientists shared personal stories of how they came to work in space science, what they do in their work, and shared interesting space science facts and concepts. • Scientists used visual aids to engage the audience (photos and/or slides). • Scientists were familiar with the interactive portion (led by the librarian) and could make connections to their work. • Scientists participated in Question & Answer with attendees toward the end of the program.

Attendees

- Many attendees had prior interest in space science, which was what led them to join the program (selected by 7 of 13 poll respondents).
- In its intended virtual format, program attendance ranged from one family joining the "live" virtual program to 22 logons (each potentially representing multiple attendees). At the school-based program, there were a total of approximately 240 attendees from multiple schools. One of the two Facebook live-streamed videos had up to 570 following live, and a total of over 1,100 views after the livestream[5].
- Attendees typically joined with others in their family. Out of 13 post-survey respondents, 5 shared their connection with one other person; 3 respondents shared their connection with 2 or 3 other people; and 5 respondents shared their connection with 5 or more other people.
- Most post-survey respondents were White/Caucasian (70%). Two out of 13 post-survey respondents were Hispanic/Latino. Seven post-survey respondents were female; 3 were male; 3 preferred to not say.
- Less than half of post-survey respondents had heard a scientist speak about their work or career before this program.

Virtual Experience

- Most patrons appreciated the convenience of joining from home, including the efficiency of not traveling, not having to manage their kids as they may have at an in-person program, and with the COVID-19 pandemic, not worrying about exposure.
- Librarians appreciated being able to offer their patrons an opportunity to interact with a NASA scientist.
- Most attendees seemed comfortable with the chat box and used it to answer prompts or ask questions.
- There were some drawbacks to the virtual programs, such as technical issues (poor video or audio) and not feeling as connected to the patrons or the scientist.

Challenges

- Short program time/Rushed activities
- Low attendance at some programs
- The scientist not feeling connected to the audience, and vice-versa
- Technology issues
- Difficult to tell if participants are engaged

[5] Total views included 306 at the library Facebook page and 812 from 27 other posts.

Highlights

- Poll questions offered interactive opportunities, with questions such as “How long does it take to travel to Mars?”
- Library patrons and library staff agreed the scientists’ presentations were suitable and engaging to a younger audience.
- All patron post-survey respondents agreed that they would be interested in attending more virtual programs related to NASA science.
- All librarians agreed that, after their experience, they were more comfortable in hosting a program with a scientist and more comfortable hosting an effective virtual program.

Librarians' Experiences

Library staff participated in a short preparation session with facilitators from LPI. All librarians were satisfied with the level of communication from LPI. Further, they all agreed that the presentations and activities engaged the audience.

Two librarians disagreed that they were comfortable leading the hands-on demonstration or activity, with one calling it a learning experience and another specifying that they should have set it up differently, "I'm only saying disagree for the hands-on activity because I realized right when we started that I did the set up really awkwardly, but that is my fault and not your fault."

In the focus group, librarians spoke to their earlier challenges involving a scientist in their programs:

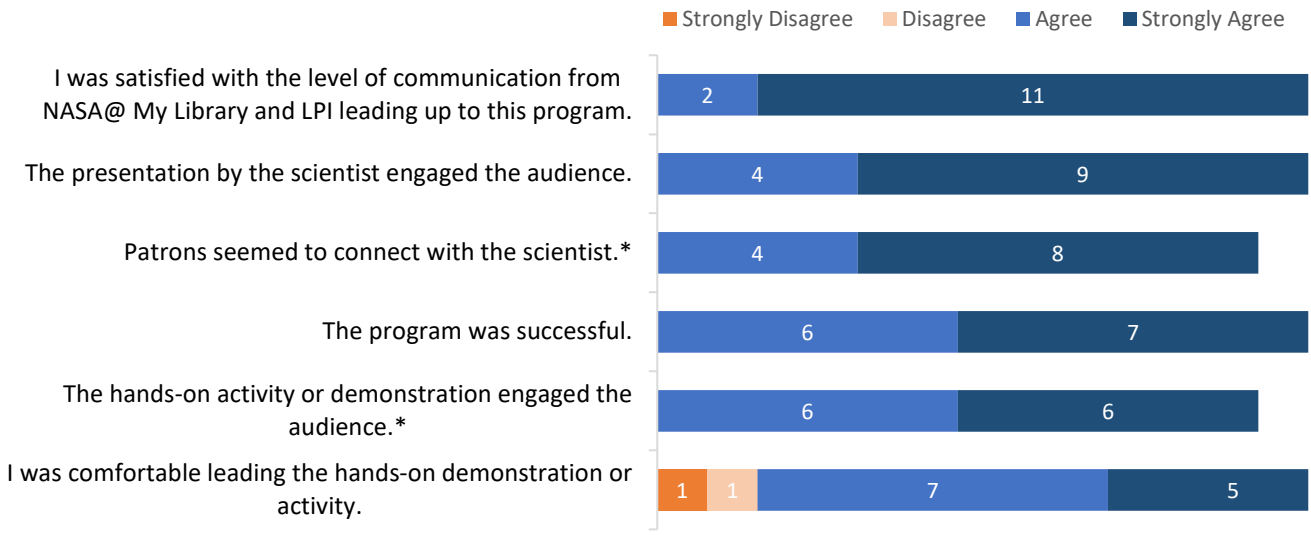
> "Reaching out to NASA, I got nowhere. Trying to fly someone in was so far out of my budget."
>
> -Librarian

> "When we started, there was a degree of frustration trying to get SMEs for NASA. Speaker's Bureau was not getting back to me. I know I wasn't alone."
>
> -Librarian

One librarian noted that the most valuable aspect of the program was someone else connecting them to a scientist.

Librarians overall felt very positive about the virtual programs.

Chart shows number of librarians selecting each response choice.



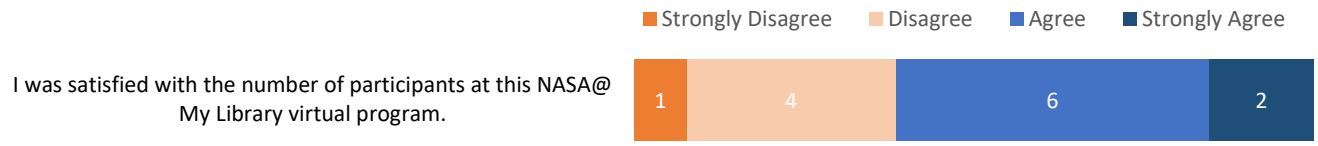
** One respondent noted that they were "Not sure"*

Technology issues, including audio and visual issues, connectivity, and logging on to the meeting, were the primary reason that librarians cited for not "Strongly Agreeing" the program was successful.

Librarians were satisfied with their role in the programs. As one librarian described, she felt comfortable serving as the facilitator:

> "I think I prompted some questions to keep the conversation going with the scientist. We had some good questions from the audience. Facilitating and being the intermediary and facilitating the activity was right."

Not all librarians were satisfied with the number of participants at their virtual program, with one librarian indicating "Strongly Disagree" and four librarians selecting "Disagree."



Attendance at the programs varied, with some programs having lower than desired attendance. One librarian mentioned they struggled with attendance at all virtual programs, especially with many schools moving online.

> "We did primarily social media advertising and locally, regional Educational Service Center and newsletter to schools. We had attendees, but not as many as we would have liked… We're not having as much success at all virtual programs."

Librarians offered possible explanations, including schools that were coping with the COVID-19 pandemic, scheduling across time zones (mentioned by 2 librarians), limited time to promote the program, and using a new online meeting platform. Responses included:

- "I was disappointed that only two teachers from our county schools took advantage of this very unique opportunity. Nothing to do with *NASA@ My Library*, everything to do with new school year and coping with COVID-19 procedures."
- "Most of the participants were the presenters or SSI staff. We had just finished our *NASA@ My Library* program which included Zoom meetings that were well-attended, and I expected the same participants to attend this meeting. I think it worked against us that we didn't have a lot of time to promote the program, and that it was done through RingCentral instead of Zoom. I received a message from a patron who was unable to log in to the meeting, likely because they had never used RingCentral before."
- "An in-person program would have had more for sure, but it was tough to advertise and the times available with the time difference were earlier in the day when evening programs have the best attendance."
- "Normally, we have more participants, but because of the school schedule we weren't able to get the middle school and high school students to join. In a recent survey, teens and preteens said they prefer programs to be at 6 p.m. or after."

One librarian made the point that the number of attendees is not necessarily the measure of success.

> "We had one little girl who said she wanted to be a space scientist… The scientist really answered her questions. For her to see a woman who was a scientist, she was so excited. We didn't have many people, but if you get one who goes on to do more amazing things in their life…Sometimes I think we focus too much on quantity instead of quality. For that one person, we made a big impact."
>
> -Librarian

There were also librarians who were satisfied with the number of attendees:

> "I was very pleased with the number of participants. We had 29 devices join[6], and I know there were several families who participated, so I estimated there were around 35-40, but it could easily be more."

One librarian described their library's marketing strategy, with a post to a targeted audience on social media (to those who liked previous science-related posts). This post reached a large audience, including many outside of her state.

Six librarians (50%) had never led the specific *NASA@ My Library* demonstration or activity with an audience before this virtual program. Five of those six indicated they were more likely to conduct the demonstration or activity in the future based on their experience (the other was unsure). The other six

[6] This total number of attendees likely included presenters and staff who joined the session.

librarians who had led the demonstration or activity before all indicated they were more likely to conduct it again in the future. One librarian said that the preparation and support from LPI to practice the activity to facilitate it online was very important, “It made all the difference to practice activities online with [LPI], doing Mars matching. If I hadn’t practiced, it would’ve bombed.”

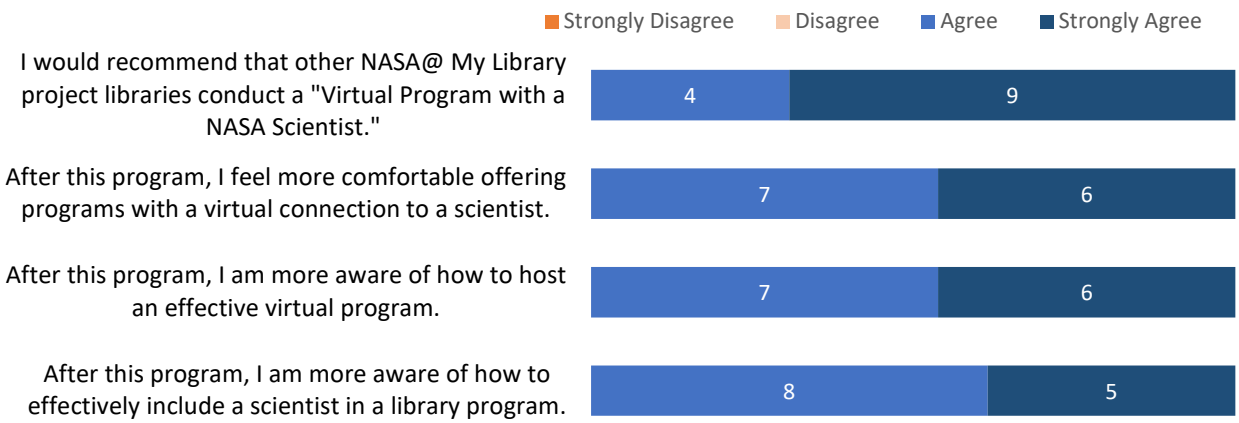
In the focus group, one librarian said that they could have had so many virtual programs if they would have had the opportunity to practice their presentation or demonstration and receive feedback and tips (such as from LPI). The librarian said their science confidence would have been higher with practice opportunities such as offered by LPI.

All librarians agreed they felt more comfortable offering programs with a virtual connection to a scientist and were more knowledgeable about how to host an effective virtual program. Additionally, all participating librarians recommended participating in the “Virtual Programs with NASA Scientists” to other libraries.

> “I was really prepared for the program today. The audience was engaged and I’m already getting requests for similar programs from participants.”
>
> -Librarian

Librarians had positive outcomes from hosting a Virtual Program with a NASA Scientist.

Chart shows number of librarians selecting each response choice.



According to librarians, the most successful aspects of the programs were the engaging scientist and the activity/demonstration.

Successful Aspects of the Programs (According to Librarians)

Category	Example Quotes
The scientist was engaging and understandable	• "The information presented by the NASA scientist was on level with the patrons." • "People were engaged." • "SME talk ... very interesting and concepts were explained in such a way that kids could understand them and adults didn't feel it was too simple." • "I loved [the scientist's] presentation and her responses to questions. She did a great job of showing how scientists research Mars, and how young people can prepare themselves to become explorers in the future."
Hands-on demonstration/ Activity	• "I liked that the presentation was fun and included a game." • "I think the most successful part was the trivia at the end, especially where the scientist explained things more."
Meeting a scientist	• "Connection with patrons"
Interaction	• "Interaction was excellent."
Reach	• "Engaging eighty students from our furthest county school and witnessing both the students' and their teachers' enthusiasm for the program, the medium, the library was our big success story!"

Prior to hosting this program, one librarian had not hosted any programs with a scientist during *NASA@ My Library*, and two others had only had programs with a non-NASA scientist. Of the 13 libraries responding to the survey, six had offered a program featuring a NASA-affiliated scientist in-person and seven had offered a virtual program prior to this one.

At the time of the post-survey, eight librarians were planning to disseminate the recorded video of the program and two others were unsure. Librarians were planning to disseminate via YouTube, Facebook, or their website. One librarian planned to disseminate the video to science teachers in their county. Another librarian planned to disseminate the program in conjunction with the Perseverance rover landing.

Most librarians indicated they had their usual patrons attending the programs, but two disagreed. One librarian specified that they had broader geographical attendance (including out of their state), and another said they had "more attendees than usual and new faces."

Librarian suggestions to improve the programs included longer programs (3 librarians), using a different meeting platform (2 librarians), using a different activity designed for virtual programs, providing take-home kits to attendees, resolving technology issues, having higher attendance, and having more time to promote the program.

Librarian suggestions to improve the programs

Category	Example Quotes
Increasing attendance	• "I would have liked more attendance, but that is what it is." • "In hindsight, it would have been good to have more time to promote the program." • "I just wish more kids would have attended in person, but I know that many will watch the video on Facebook."
Activity-related	• "The activity was designed for in person and did not translate well to virtual." • "Handing out kits to have kids make the best experiment at home."
Timing	• "More time, especially for the trivia part." • "Allow slightly more time for the program overall - we got going a little late with people having trouble logging in and then had to rush through the game."
Technology	• "Just use Zoom so people don't have to create a new account to attend one program." • "Tech issues resolved prior to program."
Reach	• "Engaging eighty students from our furthest county school and witnessing both the students' and their teachers' enthusiasm for the program, the medium, the library was our big success story!"

One librarian, in an interview, shared her opinion that the activity (the programmable mouse) did not fit well in a virtual program. Part of the issue was that it was rushed due to the short time.

Librarians, in general, offered their praise for the virtual programs:

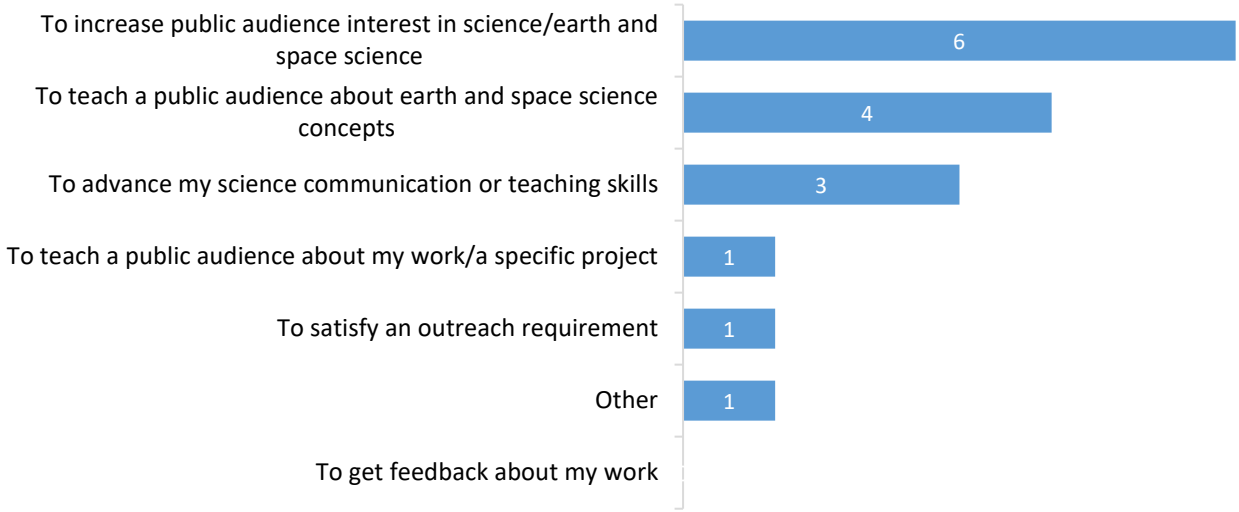
- "I only wish these had been offered several times per year throughout the entire *NASA@ My Library* partnership period."
- "It was easy to run. All the prep work had been done in advance and sent to me. The presenter knew her presentation well and everything ran smoothly."
- "This was a fantastic experience both for us and our patrons. [The scientist] was super!"
- "Well done!!"
- "Thank you again for this amazing opportunity!"
- "My LPI contact was very helpful and able to engage with the audience better than I can."
- "It was a lot of fun. It's nice to have a program at the library again!"
- "Thank you for doing this. It was a great program to offer our patrons. "

Scientists' Experiences

Scientists chose to participate in the *Virtual Programs with NASA Scientists* most commonly to increase public audience interest in science/earth and space science (selected by all 6 scientists) and to teach a public audience about earth and space science concepts (selected by 4 out of 6).

Scientists were all interested in increasing public interest in science.

Chart shows number of scientists selecting each option



All six scientists had done virtual outreach programs before this experience and three out of six scientists had presented to a library audience.

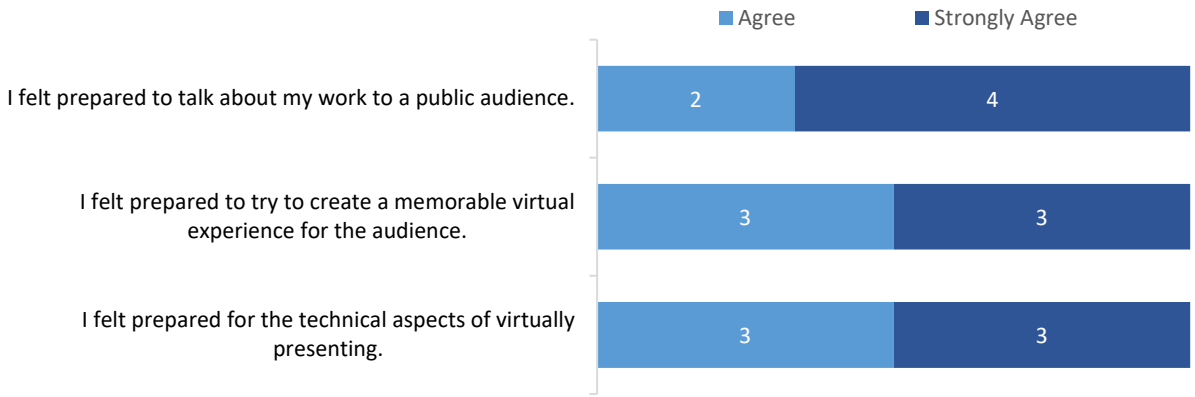
All scientists felt well-prepared for the program, including how to talk about their work, create a memorable experience, and manage the technical aspects.

One scientist noted that the most valuable aspect of the training were the tips to make sure it was appropriate and engaging for a younger audience:

> "The assistance I received from [the facilitators] on making my talk more children and young family friendly. It taught me a lot and their comments were very valuable."
>
> -Scientist

Scientists felt prepared for the programs.

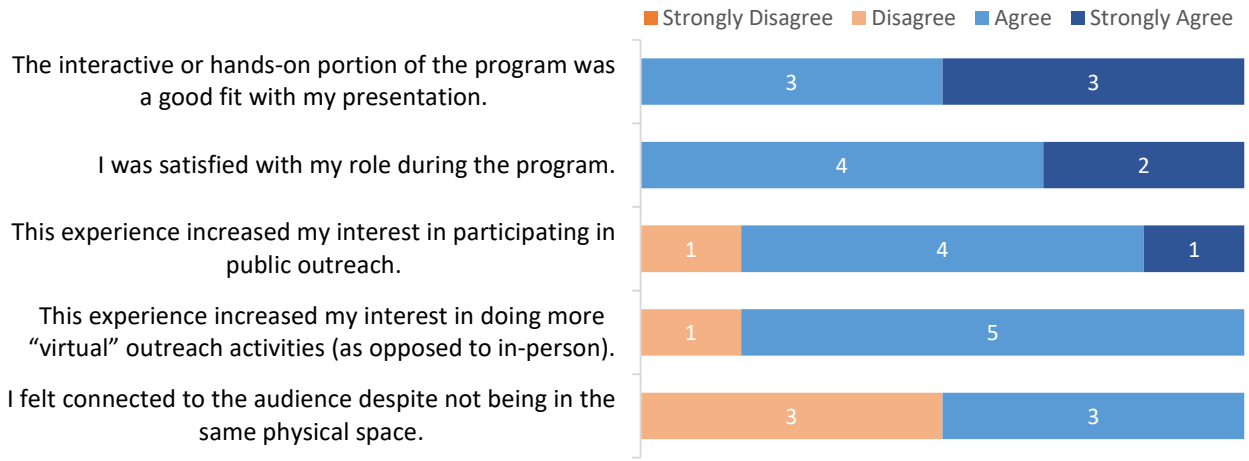
Chart shows number of scientists selecting each option; No respondents indicated "Disagree" or "Strongly Disagree"



Part of the scientists' training was focused on making their presentation accessible to all different age groups, from younger children to older adults. There was wide agreement that scientists effectively engaged their audiences, with five librarians noting it as a successful aspect (in an open-ended question) and patrons indicating that their children were engaged.

Five out of six scientists agreed that they were more interested in public outreach and doing "virtual" outreach after their experience. However, half of scientists disagreed that they felt connected to the (virtual) audience.

Chart shows number of scientists selecting each option



One of the scientists who disagreed that they felt connected to the audience noted that technical issues interfered with them forming a good connection with the participants: "Unfortunately in the last presentation, technical issues relating to connectivity made it difficult to fully connect with and engage the audience. Otherwise, I fully enjoyed participating in the program and meeting lots of people from all over the USA."

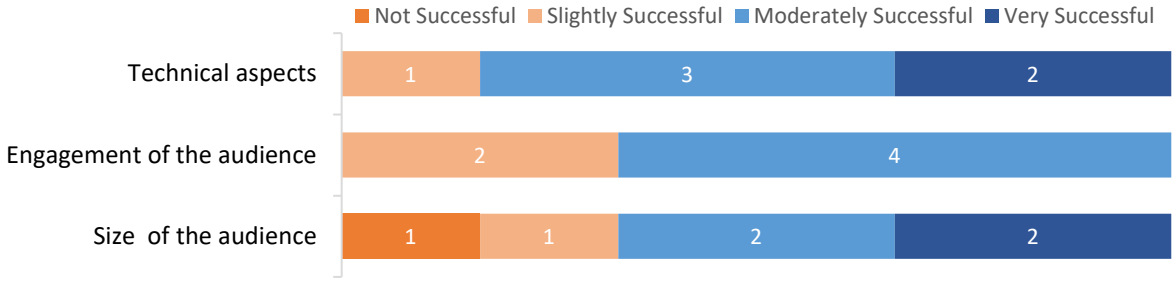
One scientist noted the distinction between the convenient virtual programs versus in-person programming:

> "Although virtual programs are a good option when it is the only way to reach people, either because of a pandemic or because of distance, in-person programming still provides a level of personal connection that cannot be replaced or mimicked in a virtual setting."
>
> -Scientist

Scientists did not always feel the size of the audience was successful, with one rating it as "Not Successful" and another rating it as "Slightly Successful." Not all scientists felt they had engaged the audience, with 2 out of 6 scientists rating audience engagement as "Slightly Successful."

Scientists had mixed ratings on the success of different aspects of the program.

Chart shows number of scientists selecting each option



The two suggestions from scientists on how to improve their experience were related to increasing the size of the audience, such as asking librarians to try to better predict what days/times would get more people to attend and sending regular reminders to patrons.

- "I received numerous requests to change date or time of the event, several advertised the wrong time or day. It was a little frustrating that these events did not seem to be high priority for many libraries. One library was pretty great though, but unfortunately, they still did not get a large audience. Might help to know what day/time the librarians thought would get a large audience, rather than picking semi-randomly."
- "Making sure the libraries send around regular reminders for the event prior to the fact may help boost the numbers. Some of the events had very few attending which made it a little more awkward when it came to the games/polls (though I then did get more time to talk to the audience individually which was nice)."

Patrons' Experiences

Patrons were attending mostly due to their interest in space science. From 15 poll responses, 9 had previously attended a program about space and 7 had previously attended a virtual program at their library.

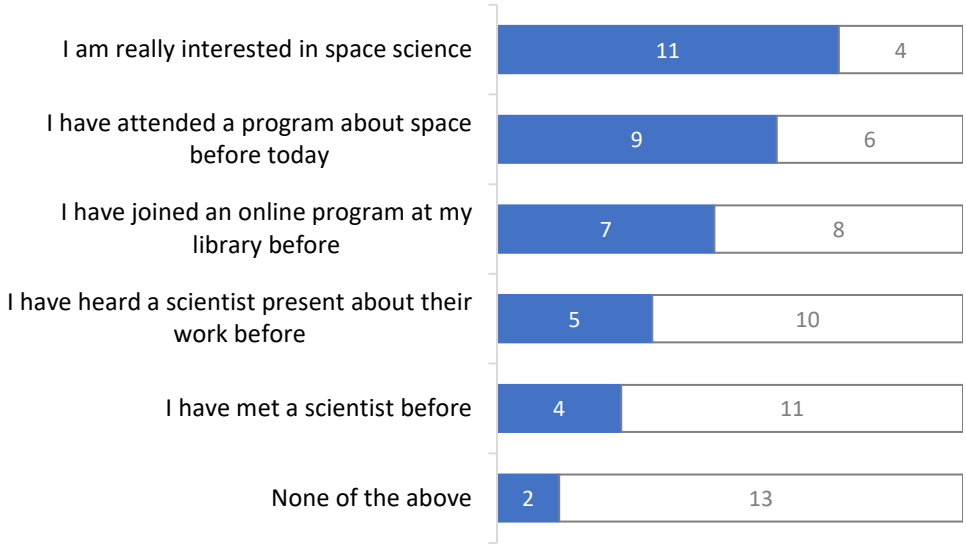
> "I think there were aspects that people of almost any age could enjoy."
>
> - Patron

Patrons noted they attended since they enjoyed programming on space and learning new things.

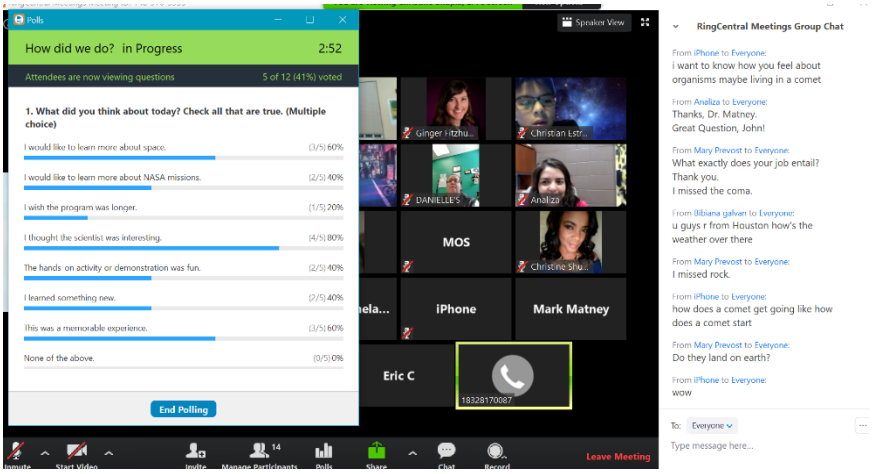
- "I love watching space stuff on Science Channel, and I love the rovers."
- "I love to learn new things, so I monitor the seminars from my library."

Many patrons already had an interest in space science, but not many had met a scientist before.

Patron poll responses at the start of the session, n = 15 from 6 different programs
(Respondents selected all that applied)



Screenshot of Laredo Public Library Virtual Meet a Scientist Program



Positive feedback from patrons:

"Pretty cool. About the meteors and the comets."
-Library patron

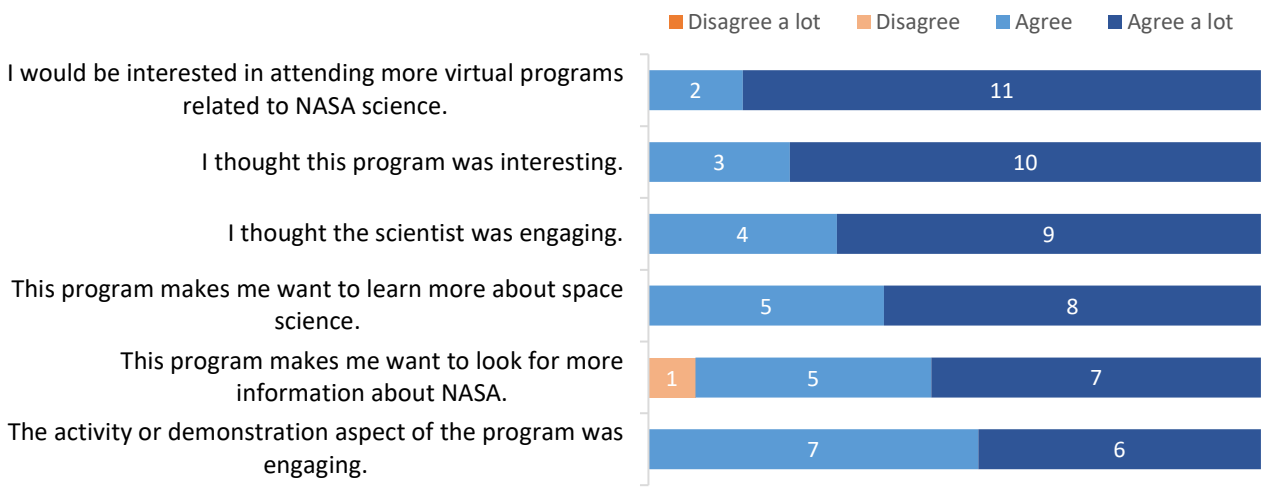
"I really liked it because… we learned a lot about comets."
-Library patron

"I liked the photos of Mars."
-Library patron

Patrons generally had very positive feedback about the programs. All attendees agreed that the program was interesting, the scientist was engaging, and that they would be interested in attending more virtual programs related to NASA science.

Patrons thought the program was interesting and that the scientist was engaging.

Chart shows number of patrons selecting each option



Although the presentations were not very content-driven, patrons were asked to specify (in the chat box) what they learned from the virtual program. Responses included:

- "That there are many things we don't know about Mars yet, but we still are able to figure out all the cool things about it."
- "[There are] sedimentary deposits on Mars."

They also generally enjoyed the librarian-led activity or demonstration:

- "I liked the dry ice, the comet's tail."
- "Thumbs up."
- "[I] really liked it."

Parents shared positive feedback on the programs and the scientists' presentations, which they felt were engaging and understandable for their kids.

- "As a parent, I think she did a good explaining who she was first. He just turned 7 so I thought it was above his level, and I think she described it at an age-appropriate level."
- "It held the attention of my kids. They don't have long. [It was] bite size enough so they were able to take something away from it."

The parents thought it was especially valuable for their children to be exposed to scientists and learn their personal stories and to hear about their work.

Positive feedback from parents

"My kids absolutely loved it! It was very engaging and they learned a lot!"
-Parent

"My son was so excited and dressed up in his astronaut costume. His current interest is in being a space scientist, although since he is 7, he hasn't focused in on what he specifically is interested in."
-Parent

- "I think it was good. It was nice able to present from her perspective and it gave a human perspective of NASA, which can be an unwieldy government agency. It gave a face to someone who works for the agency."
- "She (the scientist) talked about how she got into that… They (my kids) are interested in knowing 'Can you walk on Mars and breathe' and [it is very valuable] to see someone who is trying to figure out."

Librarians heard from patrons that they were engaged in the program:

> "It's hard to tell when people are on the phone for a virtual program what the level of engagement is; however, I heard from all that attended that they enjoyed the program."

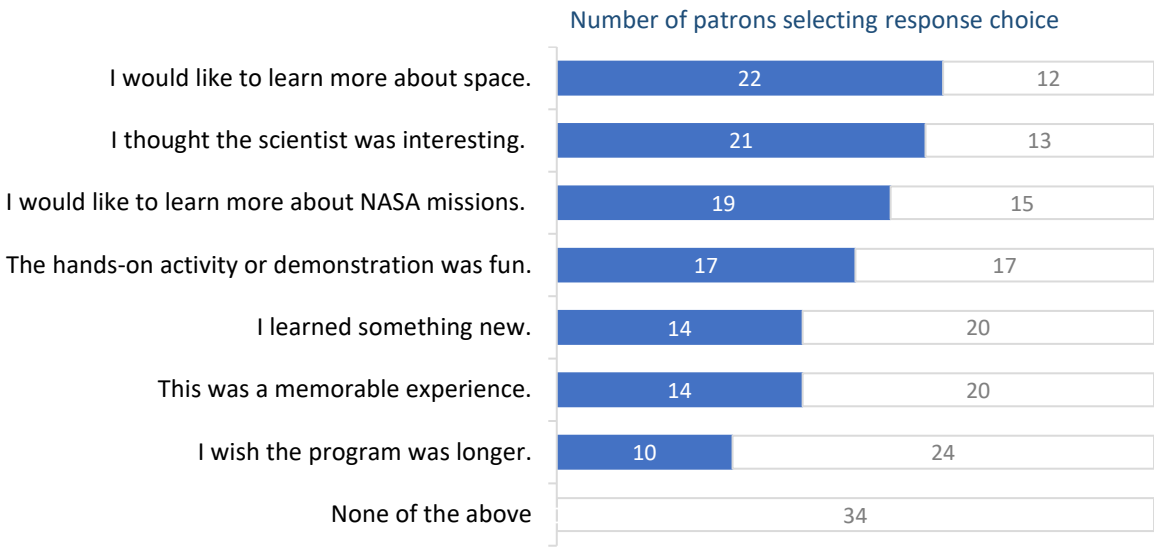
Librarians were asked to provide their perspective on what patrons got out of the programs. Similarly to the ideas raised by parents, according to librarians, just meeting a scientist and hearing their personal stories was very valuable to patrons.

> "One thing that is valuable is seeing that this is a person, this is a career. This is someone actually doing this… It just made it more personal. That was the value of having even the virtual connection to an actual working scientist."

Most patrons indicated they would like to learn more about space and NASA missions, and that the scientist was interesting.

Patron poll responses, after the session (n=34 from 4 different programs)

(Respondents selected all that applied)



Librarians shared the impact the programs had on their patrons.

"In our town, when you think of scientist, there are certain things… people don't think they are smart enough. When you meet a NASA scientist and they say, 'I grew up here' and 'This is where I went to school' and 'I love rugby'… people can connect and see 'We have this in common.'" - Librarian

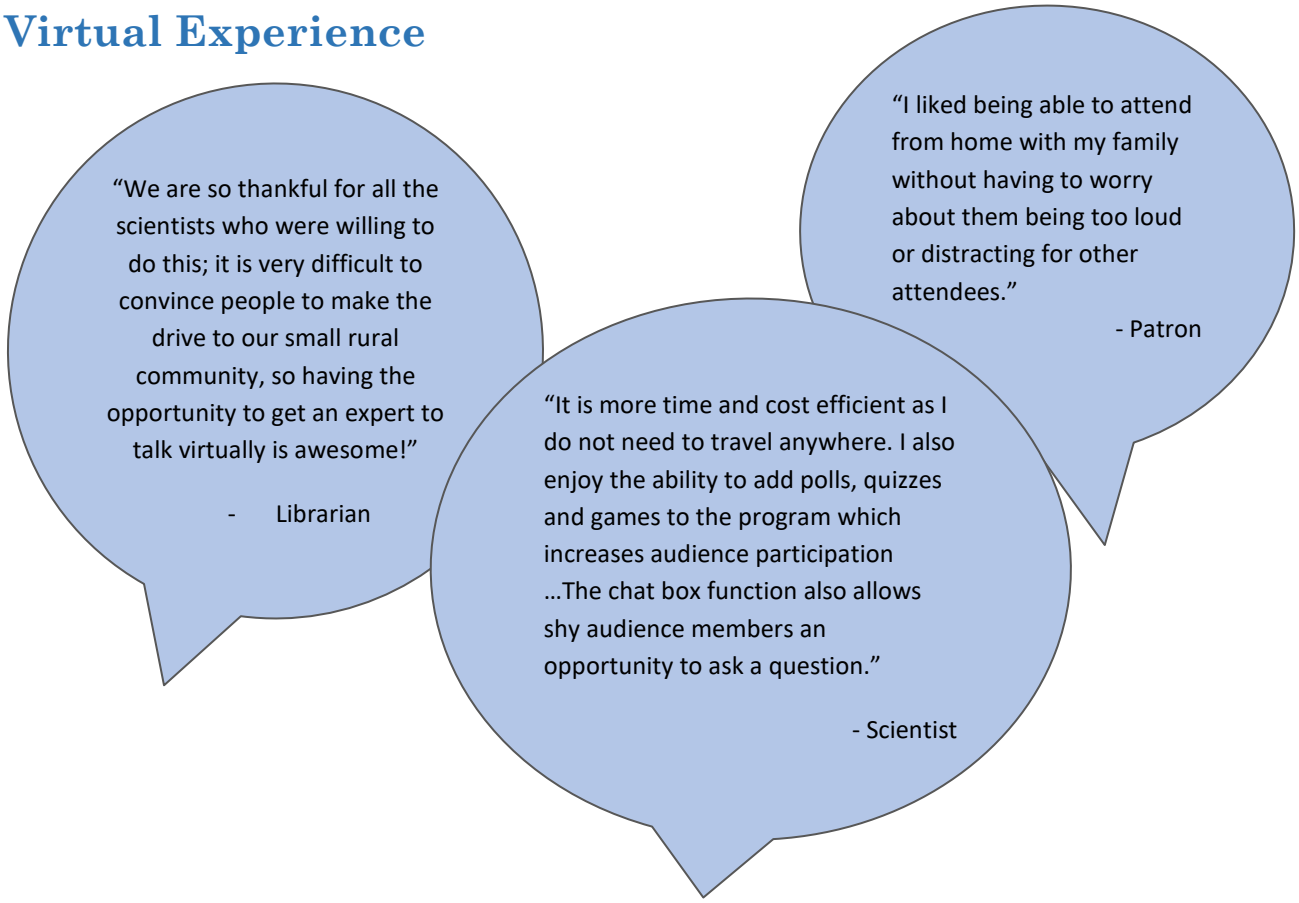
"I also think a major benefit was especially the girl who wanted to be an astronaut. Introducing her and connecting her to a NASA scientist was extremely beneficial. Humanizing science and making it a real career you can aspire to." - Librarian

Asked for suggestions to improve the programs, four patrons in the focus groups mentioned the program could have been longer:

- "Sorry to say, but a bit of an abrupt ending."
- "[I] wish she could teach more."
- "I think it'd be beneficial to be more in depth. Get more people engaged. People view things as very surface-level even if you don't grasp it all, it'd be good to hear."

This may not have been a widely held sentiment, though, as poll data show that 10/34 respondents wish it had been longer.

Virtual Experience



Stakeholders helped identify the benefits and drawbacks to the virtual aspect of the program.

Benefits to Virtual Programming

Category	Number of Respondents	Example Quotes
Reaching a geographically broad and more diverse audience	4 out of 6 scientists	• "Virtual workshops do allow for a broader geographic reach." • "Virtual program allows me to reach a greater number of and a more diverse audience than an in-person event." • "It is nice to reach a different audience." • "There is a capacity for reaching a larger and more diverse audience."
Cost-effective and time effective	2 out of 6 scientists	• "Limit on travel expenses and hassle." • "It is more time and cost efficient as I do not need to travel anywhere."
Interactive options	1 out of 6 scientists	• "I also enjoy the ability to add polls, quizzes and games to the program which increases audience participation more

Category	Number of Respondents	Example Quotes
Interactive options (continued)	2 out of 9 patrons	so than just a talk on its own. The chat box function also allows shy audience members an opportunity to ask a question." • "I thought it worked well - we could see the scientist clearly and submitting questions and responses via chat worked well in that it meant everyone got to engage effectively." • "Liked format. Has possibility of interacting. Someone real on other side of screen. Can answer questions in real time."
More scientists would be available to do more programs with scientists	1 librarian (interview)	• "I think more scientists would be willing to do virtual program, which is good for our library."
Accessible and convenient (especially with kids)	6 out of 9 patrons	• "Maybe made it a little more accessible but we have attended in person programs in the past." • "It was very convenient." • "It let me attend while also eating lunch...and mute my 3-year-old when he talked at random." • "It was nice to be able to enjoy this activity without having to worry about our health. Would love to do it again." • "It was tricky keeping my young kids from touching the computer. But with watching from home, I didn't have to worry about keeping them silent either." • "Great! I liked being able to attend from home with my family without having to worry about them being too loud or distracting for other attendees." • "[We] never would have gotten to it if it was in [the state where the library is located]. [Being virtual] allowed the ability to join. I'm a big fan of virtual activities. Nice added benefit and adds to [my kids'] schooling right now. I would be interested even if it was not a pandemic."
Easy technology	1 out of patrons	• "The virtual experience was very smooth and easy."

Drawbacks of Virtual Programs

Category	Number of Respondents	Example Quotes
Interpersonal connection not as strong	4 out of 6 scientists and 1 out of 9 patrons	• "The personal connection (e.g., body language, audience feedback, comfort level, etc.) cannot be truly replicated in a virtual setting." (- Scientist) • "I would think that parents and individuals are less likely to be open about who they are or where they are from in a public online event, due to privacy concerns, particularly for children (or at least I would be). This can make it difficult to connect with the audience." (- Scientist) • "Virtual programs are also less personal as I have less time/opportunity to chat with the audience and librarians one-on-one around the event." (- Scientist) • "I did not connect as well with audience since there were many children in many classrooms, each of which tuned in to my presentation. I felt like in this setting, where the children only get one screen for each class, and they get to share me with many other classrooms simultaneously, created a distancing environment. I felt that most kids were too shy to speak up and ask questions (but maybe that would be true in person, too)." (- Scientist) • "It made it harder to feel connected with the presenter, and I felt less comfortable asking questions." (- Patron)
Technical difficulties	2 out of 6 scientists	• "Technical issues are a big problem and can severely impact the audience engagement and learning experience." • "In one of my talks, we had an unforeseen technical problem which disrupted the presentation. Data cutoffs and technical difficulties are an ever-present problem."
Gauging audience engagement	1 out of 6 scientists	• "Audience participation is harder to gauge, especially with younger audiences that might rely on parents to help with computer controls."
Not as easy to see	1 out of 13 patron survey respondents	• "It was hard to see the experiment sometimes, but otherwise it didn't affect my experience."

Areas of Consideration

Areas of consideration for reflection and discussion among the project team include:

- Use a different meeting software that is more common in other online programs (such as Zoom).
- Set a longer program time to allow more time for the activity/demonstration and Question and Answer.
- Avoid connecting the scientist to different venues during one program to prioritize opportunities for connections between the audience and the scientist.
- Select activities or demonstrations that work well online.
- Provide more support (with details and suggested text) to help librarians promote the programs on various media channels, including a schedule of reminders to increase attendance.
- Help librarians disseminate the recorded video of the program with scientists so that more patrons can view the program.
- Encourage librarians to partner with organizations that reach underrepresented youth, as librarians felt that barriers existed to participation in their online programming, such as lack of high-speed internet. Youth who were attending school or other child-care could join from those sites, and would help guarantee attendance numbers.
- Brainstorm how to create more opportunities for scientists and attendees to connect, such as allowing patrons to introduce themselves and/or more informal discussion or Q&A during or after the scientist's presentation.
- To help prepare librarians for these programs in the future, consider sharing the recorded versions of the past programs, especially to see the librarian leading the demonstration or activity.
- To help attendance, be more flexible with the timing or recruit scientists from different time zones (so librarians further west can hold evening programs).

Learnings from LPI on successful programs:

Apply inclusive ways of facilitating learning—reaching broader audiences with a wide range of ages of patrons, from different communities.

Break the ice early, to encourage patrons to participate—using microphones or the chat function or polls to share their thoughts and experiences.

Work with the scientists to make their presentation and interactions personal, for instance sharing their favorite foods, hobbies, and experiences that might resonate with the patrons.

Work with the library staff and the scientists on asking good, open-ended questions that would enable to patrons to share their observations and ideas.

Use librarian-led demonstrations or activities, such as virtual games, or models of impact cratering or comets, to provide opportunities for these interactions.

Summary

There is evidence that the goals of the virtual programs with scientists were met, to varying degrees, through the fall and winter virtual programs with scientists.

1. Create memorable experiences
    - Librarians were very grateful for the opportunity to connect their patrons to a NASA scientist. Patrons were very positive about their experiences in the programs, including agreeing that the program was interesting and engaging and made them want to learn more about space science. In a "select all" poll question, fourteen out of 20 patrons indicated "This was a memorable experience."

2. Increase interest in space science and awareness of NASA science missions
    - All patron post-survey respondents agreed that they would be interested in attending more virtual programs related to NASA science.

3. Increase library staff interest, knowledge, and confidence
    - All librarians agreed that, after their experience, they were more comfortable in hosting a program with a scientist and more comfortable hosting an effective virtual program.

4. Provide scientists with opportunities to connect with underserved audiences
    - Less than half of post-survey respondents had heard a scientist speak about their work or career before this program. However, it was challenging for the scientists to feel connected to the audience in this virtual format.

Appendix A: Virtual Programs with NASA Scientists

Virtual Programs, with activities/demonstrations to be led by librarians

Comets: Harbingers of Doom, or Cool Astronomical Spectacles? Dr. Mark Matney

Dr. Matney is a planetary scientist and modeling lead for the Orbital Debris Program Office. Matney's work involves all aspects of orbital debris research including measurements, modeling, and mitigation.

Demonstration: create a model of a comet with dry ice, using directions for Recipe for a Comet (directions are in Kit B). Requires about $20 of materials, including dry ice, sand or soil, water, thick gloves, and small amounts of ammonia and syrup.

From the Moon and Back Again Dr. Julie Stopar

Dr. Stopar is a lunar geologist studying impact craters, volcanoes, and polar water-ice. She is a co-investigator on the Lunar Reconnaissance Orbiter Camera team and an avid future mission planner

Demonstration: model impact craters, using directions from Crater Creations. Requires sand, flour, cocoa, a large box, and small rocks or marbles.

How To Be an Interplanetary Explorer Dr. Candice Bedford

Dr. Bedford studies sedimentary and volcanic processes that provide insight into the ancient and modern geology of Mars. She is a collaborator on the Mars Curiosity Rover's CheMin and ChemCam instruments, and a member of the SAND-E Mars analog mission science team.

Activity: lead a virtual version of the Mars Match Game with a powerpoint we provide.

Planetary Defenders Dr. Edgard G. Rivera-Valentín

Dr. Rivera-Valentín uses the world's most powerful radio/radar telescope, the Arecibo Observatory in Puerto Rico, to study near-Earth asteroids and other Solar System bodies. Ed is also a team member of NASA's Near-Earth Object Surveillance Mission.

Activity: lead a virtual game of Space Rocks, with the powerpoint we provide.

Roving on Mars Dr. Elizabeth Rampe

Dr. Rampe studies Mars geology and mineralogy and is the deputy principal investigator of the CheMin instrument on the Mars Science Laboratory Curiosity rover. Dr. Rampe also supports human analog missions and scientists' incorporation in extravehicular activities (EVA).

Activity: use a robotic mouse and a map of Mars to program around hazards (Kit D) OR have patrons plan a route using a map you print and distribute OR plan the route using a map you share on your screen.

Searching for Alien Life on Mars, Dr. Svetlana Shkolyar

Dr. Shkolyar works at NASA Goddard Space Flight Center with laser-based tools for Mars rovers to study our ability to detect life.

Activity: Searching for Life, which can be conducted as a demonstration, during which you and Dr. Lynch will invite your patrons to make observations and share conclusions. All of the materials are within Kit D.

Table 1. Virtual Programs Conducted in Fall 2020

DATE	Library	Program Name/SME Presenter	Number families attending
8/12/20	Grand Forks Public Library	How to Be an Interplanetary Explorer, Dr. Candice Bedford	1
8/18/20	Ely Public Library	Planetary Defenders, Space Rocks virtual game with Dr. Edgard Rivera-Valentin	3
9/1/20	Orem Public Library	How to Be an Interplanetary Explorer, Dr. Candice Bedford	22
9/3/20	Juneau Public Libraries	Searching for Alien Life, Sub (Dr. Julie Stopar)	6
9/15/20	Indian River County Main Library	Comets: Harbingers of Doom or Cool Astronomical Spectacles with Dr. Mark Matney	3
9/22/20	Wilson Public Library	How to Be an Interplanetary Explorer, Dr. Candice Bedford	9
9/22/20	Crosby Edith Fae Cook Cole Library	Space Rocks, Dr. Jen Gorce FB LIVESTREAM	570 originally; 1.1 to date
9/23/20	Laredo Public Library	Comets: Harbingers of Doom or Cool Astronomical Spectacles? Dr. Mark Matney (Space Debris scientist) / Recipe for a Comet	7
9/24/20	Tom Green County Library	Roving on Mars, Dr. Elizabeth Rampe	6
9/29/20	Harris County Public Library	Sean O'Hara FB LIVESTREAM	785 views to date
9/29/20	Daviess County Library	Searching for Life on Mars / Svetlana Shkolyar	240
10/5/20	Carson City Library	Roving on Mars, Dr. Elizabeth Rampe	6
10/9/20	Middle Country Public Library	From the Moon and Back Again, with Dr. Julie Stopar	6
10/22/20	Anacortes Public Library	From the Moon and Back Again, Dr. Julie Stopar	13
10/23/20	Show Low Public Library	How to Be an Interplanetary Explorer, Dr. Candice Bedford	8
10/26/20	Cumberland County Public Library	Roving on Mars, with Dr. Elizabeth Rampe	14

Appendix B: Evaluation Guiding Questions and Meet a NASA Scientist Data Collection Methods

NASA@ My Library

Guiding Evaluation Questions Regarding Subject Matter Expert Involvement in

Implementation Questions

1. **What NASA@ My Library librarians participate** in the different types of LPI-led SME resources and why? **Why do librarians choose not to participate?**
   a. What is known about the **number and characteristics of the patrons reached** by the LPI-led SME resources?

2. How do librarians **disseminate and utilize the recorded SME videos**? To what extent and how are hands-on or interactive opportunities integrated with the recorded SME videos? (What NASA@ My Library resources are used--including kits, STEM guides, etc.)

3. To what extent are the **SMEs prepared** to deliver effective virtual programming to library audiences?

4. Overall, **what worked well** in virtual programs and where is their room for **improvement** or **opportunity** for deeper or broader impact?

Outcome Questions

5. To what extent does the access to LPI-trained SMEs **help partner librarians offer effective virtual programming featuring a SME?**
   b. To what extent do partner librarians/staff become **more interested in, knowledgeable about, and confident** about how to: develop and deliver NASA-related library virtual programming? Programs featuring a SME? Leading a virtual STEM activity?

6. To what extent do the LPI-led SME opportunities **increase library patrons' awareness and exposure to SMEs and Earth and space science concepts**? Are they interested in further engagement opportunities?

7. What are the **comparative values** of the different LPI-led SME engagement activities for *NASA@ My Library* librarians and patrons? (live versus recorded, integration of hands-on, opportunities for interaction, SME topic).
   a. To what extent did LPI-led SME activities **help fill existing needs** of librarians? (in terms of virtual programming options and/or SME connections)

8. What are other **[unanticipated] outcomes** of the LPI-led SME activities for librarians, libraries, patrons, and/or SMEs?

Instrument	Administration Details	Responses Received
Librarian Post-Survey	NaML project staff emailed an online survey link to librarians immediately following their program and evaluators sent a reminder to non-responders.	13 out of 15 responded (87%)
Librarian Interviews/Focus	Evaluators asked three librarians to participate in a focus group on the Virtual Programs with a NASA Scientist and their experiences engaging a SME in their NaML programming. Two librarians attended in late October. A librarian who was interviewed in October had hosted a Virtual Program with a NASA Scientist and commented on their experience.	Individual interview with 1 librarian Focus group with 2 librarians
Scientist Post-Survey	At the end of all programming, in November, evaluators sent an online link to all participating scientists to ask them to complete a short, reflective survey on their experience.	6 out of 8 responded (75%)
Patron Pre- and Post- Program Poll Questions	Poll questions popped up on the online meeting software (RingCentral) at the beginning and at the end of the programs. Only one response per computer was possible (even if multiple attendees were sharing the connection).	42 responses from 6 different programs[7]
Patron Focus Groups	At a sample of programs, evaluators asked any willing volunteers (aged 18 and over or a child attending with an adult) to stay after the program to answer a few questions. The LPI host, library staff, and SME departed the meeting link prior to the start of the focus group.	After 6 different programs with 14 individuals
Patron Post-Survey	LPI/NaML team members pasted a link in the chat box to direct attendees to a short, online, program post-survey near the end of programs.	13 responses from 6 different programs
Program observation	Evaluators attended a sample of programs (with the goal of observing each program once).	6 different programs

[7] 6 responses were to the pre-question only; 26 responses were to the post-question only

Instrument	Administration Details	Responses Received
Program attendance records	LPI/NaML team members provided a count of how many families joined each program.	
Video views of recorded programs	Evaluators checked the number of views of archived recordings of two programs that were livestreamed on Facebook.	

Appendix C: Librarian Post-Survey

This *NASA@ My Library* Virtual Program

We're interested to hear about your experience working with the Lunar and Planetary Institute (LPI) and about how the virtual program with a scientist went.

Virtual Program:

O Comets: Harbingers of Doom, or Cool Astronomical Spectacles? With Dr. Mark Matney, Space Debris Scientist

O From the Moon and Back Again, with Dr. Julie Stopar, Lunar Scientist

O How to Be an Interplanetary Explorer, with Dr. Candice Bedford, Mars Scientist

O Planetary Defenders, with Dr. Edgard G. Rivera-Valentín, Planetary Scientist

O Roving on Mars, with Dr. Elizabeth Rampe, Exploration Mission Scientist

O Searching for Alien Life, with Dr. Kennda Lynch, Astrobiologist, with Dr. Lynch

O Other, please specify: _____

Please indicate your level of agreement with the following statements about this *NASA@ My Library* virtual program.

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Not sure (5)
The program was successful.	O	O	O	O	O
The presentation by the scientist engaged the audience.	O	O	O	O	O
Patrons seemed to connect with the scientist.	O	O	O	O	O
I was comfortable leading the hands-on demonstration or activity.	O	O	O	O	O
The hands-on activity or demonstration engaged the audience.	O	O	O	O	O
I was satisfied with the level of communication from *NASA@ My Library* and LPI leading up to this program.	O	O	O	O	O

Please add any explanation regarding your responses in the table above, especially if you responded "Disagree" or "Strongly Disagree" with any of the statements.

_____

_____

_____

Had you done this *NASA@ My Library* activity or demonstration before this program?

O Yes

O No

Display This Question:

If Had you done this NASA@ My Library activity or demonstration before this program? = No

Are you now more likely to conduct this activity or demonstration in future programs?

- O Yes (1)
- O No (2)
- O Not sure (3)

Prior to this program, had your library had a program with a NASA scientist/subject matter expert, NASA-affiliated organization, or another non-NASA affiliated scientist as part of the NASA@ My Library project? *(Check all that apply).*

- ☐ Yes, at least one in-person program with a NASA-affiliated scientist
- ☐ Yes, at least one virtual program with a NASA-affiliated scientist
- ☐ Yes, at least one in-person program with a scientist who was not affiliated with NASA
- ☐ Yes, at least one virtual program with a scientist who was not affiliated with NASA

Have you or do you plan to disseminate the video of the program through live stream or a recording?

- O Yes
- O No
- O Not sure

Display This Question:

If Have you or do you plan to disseminate the video of the program through live stream or a recording? = Yes

If yes, please briefly describe how you will disseminate the recording:

_____

_____

Program Participants

Approximately how many participants were at this *NASA@ My Library* Virtual program?

_____

I was satisfied with the number of participants at this *NASA@ My Library* virtual program.

- O Strongly Disagree (1)
- O Disagree (2)
- O Agree (3)
- O Strongly Agree (4)

Display This Question:

If I was satisfied with the number of participants at this NASA@ My Library virtual program. = Disagree

Or I was satisfied with the number of participants at this NASA@ My Library virtual program. = Strongly Disagree

Please briefly explain why you were not satisfied with the number of participants at this program.

_____

_____

The attendees to the *NASA@ My Library* virtual program were representative of the patrons who normally come to my library and/or attend programs.

- O Strongly Disagree
- O Disagree
- O Agree
- O Strongly Agree
- O Not sure

Display This Question:

If The attendees to the NASA@ My Library virtual program were representative of the patrons who norm... = Strongly Disagree

Or The attendees to the NASA@ My Library virtual program were representative of the patrons who norm... = Disagree

Please explain how the attendees differed from the usual patrons of your library.

_____

_____

Final Reflection

Please indicate your level of agreement with the following statements.

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
After this program, I am more aware of how to effectively include a scientist in a library program.	O	O	O	O
After this program, I am more aware of how to host an effective virtual program.	O	O	O	O
After this program, I feel more comfortable offering programs with a virtual connection to a scientist.	O	O	O	O
I would recommend that other *NASA@ My Library* project libraries conduct a "Virtual Program with a NASA Scientist."	O	O	O	O

What was the most successful aspect of this program?

_____

_____

How do you think this program could have been improved?

_____

_____

Q33 **About Your Library**

Library Name:

▼ Anacortes Public Library (4) ... Other (27)

Library size *(select the best option)*:

- O Small (1)
- O Medium (2)
- O Large (3)

Library locale *(select the best option)*:

- O Rural (1)
- O Suburban (2)
- O Urban (3)

Please add any additional comments:

_____

_____

_____

Appendix D: Librarian Interviews/Focus Group Protocol

NASA@ My Library Focus Group Protocol: Engagement of NASA Scientists or "Subject Matter Experts" (SMEs)

Introduction

Thank you for agreeing to participate in this focus group. As part of EDC's evaluation of the NASA@ My Library *project, we are talking with representatives from select partner libraries about their experience in the project. For this focus group, we will be focusing on engaging NASA scientists or "Subject Matter Experts" (SMEs). I want to emphasize that the purpose of this interview is not to evaluate you or your work, but to capture what we have learned about the implementation and outcomes of NASA@ My Library project. Responses from these focus groups will be summarized and shared with the NASA@ My Library project team. We won't use your name or your organization's name in any reports. To facilitate our note-taking, we ask your permission to audio record our conversation.*

1. What *NASA@ My Library* resources or support have helped you reach out to NASA/STEM SMEs? What, if any, additional resources or support on finding or contacting a NASA/STEM SME would be helpful?

2. Has your opinion on the value of connecting to NASA SMEs to your patrons changed at all during this project? Explain your answer.

- **Prompt:** How do you think libraries can get the most impact from a connection to a NASA-affiliated SME? Consider the format, content, resources and/or the roles of the library staff, SME, and any others.

3. What is your current level of comfort and knowledge related to engaging SMEs in a library program? How equipped do you feel to engage NASA SMEs or other SMEs in the future?

Now I'd like to talk specifically about your experience with "Meet a Scientist" virtual programs.

4. How well prepared did you feel for your role in the "Meet a Scientist" program? What suggestions do you have to improve the preparation of librarians to host these programs?

5. Did you think you, as the librarian, had an appropriate role for this program? What changes, if any, would you suggest to the librarian role (versus the role of LPI and *NASA@ My Library*)?

6. Do you have any suggestions regarding the format, including technical suggestions or timing?

7. Tell me about the demonstration or interactive portion—how did it go? Do you think it was a good fit for this program?

8. How did the scientist's presentation go? What worked well? What would you suggest for improvement?

9. What were you hoping, or what did you see, your patrons get out of this program?

10. Did your experience in this program bring about any other ideas or plans for future programs at your library? Explain your response.

11. Do you feel more confident hosting virtual programs? Do you feel more prepared to work with a NASA scientist?

12. From your perspective, what was the biggest benefit of working with LPI to host a virtual "Meet a Scientist" program?

As we wrap up, we'd like to turn to a few broader questions to help inform NASA@ My Library in the future.

13. What tips or suggestions would you give to library staff that join *NASA@ My Library* in the future?

14. Do you have any final suggestions for how the *NASA@ My Library* team could better partner with libraries in the future to increase and enhance STEM learning opportunities for their communities?

Appendix E: Scientist Post-Survey

NaML Scientist Survey

Thanks for accessing this survey! This survey is being administered by Education Development Center (EDC), evaluators of the NASA@ My Library project to help us understand more about the virtual programs at libraries.

The survey should take about 10 minutes. Your responses will be summarized and shared with the NASA@ My Library project team. We won't use your name or any identifying information in anything that we share with the project team.

Introductory Questions

Why did you choose to participate in the Virtual Programs with NASA Scientists, hosted by libraries that are part of NASA@ My Library? Please check all that apply.

- ☐ To teach a public audience about my work/a specific project
- ☐ To teach a public audience about earth and space science concepts
- ☐ To increase public audience interest in science/earth and space science
- ☐ To advance my science communication or teaching skills
- ☐ To get feedback about my work
- ☐ To satisfy an outreach requirement
- ☐ Other, please explain: _____

Please rate the following items regarding the training and support you received for this project.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I felt prepared to talk about my work to a public audience.	O	O	O	O
I felt prepared to try to create a memorable virtual experience for the audience.	O	O	O	O
I felt prepared for the technical aspects of virtually presenting.	O	O	O	O

What was the most helpful aspect of the training or support you received from LPI or NASA@ My Library?

_____

_____

_____

Before your involvement with this project, had you ever presented or conducted public outreach at a public library?

O Yes

O No

Before your involvement in this project, had you previously done any public outreach programs virtually?

O Yes

O No

The Program

If you presented at multiple libraries, please consider your most recent presentation when answering the following items.

What was your experience with the timing of the program?

	Too short	About right	Too long
Your presentation	O	O	O
Demonstration or activity	O	O	O
Question and Answer	O	O	O

Please indicate your level of agreement to the following statements regarding the project.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I felt connected to the audience despite not being in the same physical space.	O	O	O	O
This experience increased my interest in participating in public outreach.	O	O	O	O
This experience increased my interest in doing more “virtual” outreach activities (as opposed to in-person).	O	O	O	O
I was satisfied with my role during the program.	O	O	O	O
The interactive or hands-on portion of the program was a good fit with my presentation.	O	O	O	O

Please add any explanation regarding your responses in the table above, especially if you responded “Disagree” or “Strongly Disagree” to any of the statements.

_____

_____

_____

Please rate the following aspects of your NASA@ My Library presentation.

	Not Successful	Slightly Successful	Moderately Successful	Very Successful
Size of the audience	O	O	O	O
Technical aspects	O	O	O	O
Engagement of the audience	O	O	O	O

NASA@ My Library planned to have virtual connections between libraries and scientists before the COVID-19 pandemic. In your experience, what are the benefits of presenting or facilitating activities virtually versus in-person (aside from there currently being a pandemic with limited in-person programming)?

_____

_____

What do you think are the drawbacks of these programs being virtual rather than in-person?

_____

_____

_____

Please add any suggestions that you have for ways to improve your experience.

_____

_____

_____

Appendix F: Patron Poll Questions

NASA@ My Library

"Meet a Scientist" Virtual Programs

In-Program Polls and Patron Interview Protocol 2020

Poll items

Entry Question

At the beginning

Tell us about yourself! Check all that are true.

- I have joined an online program by my library before today.
- I have attended a program about space before today.
- I am really interested in space science.
- I have heard a scientist speak about their work before.
- I have met a scientist before.
- None of the above

Closing Poll

What did you think about today? Check all that are true.

- I would like to learn more about space.
- I would like to learn more about NASA missions.
- I wish the program was longer.
- I thought the scientist was interesting.
- The hands-on activity or demonstration was fun.
- I learned something new.
- This was a memorable experience.
- None of the above

What is one thing you learned or one thing you enjoyed about today's program?

Appendix G: Patron Focus Group Protocol

Patron Interview Protocol

Title of Program:

Library:

Date:

Introduction:

I am talking to people who attend virtual programs with scientists such as this about what they liked and didn't like. Your responses are used by the organizers how they to improve the programs. I do not use your name or any other information that could identify you when I share the findings from these interviews.

This should last about 15 minutes. You can skip any question you do not feel like answering.

Introductory Questions

1. Why did you choose to attend this program?

The Program

2. What did you think of the scientist's presentation?
    a. What did you like about the scientist's presentation?
    b. How could it be better?

3. What did you think of the activity or demonstration?
    a. What did you like about the activity or demonstration?
    b. How could it be better?

a. How did the virtual connection affect your experience at the program?
    a. What, if any, were the benefits to the program being held virtually?
    b. What, if any, were the challenges to the program being held virtually?

Closing Questions

4. What will you remember from this program?

5. Is there anything else you would like to share?

Appendix H: Patron Post-Survey

Thank you for attending this virtual *NASA@ My Library* program!

We are interested in knowing what you thought about this library program. Please help us by taking this short survey. Evaluators are summarizing responses (with no identifying information) and sharing with the project team to help them improve the project. Thank you!

1. Name of today's program:
   - Comets: Harbingers of Doom, or Cool Astronomical Spectacles? With Dr. Mark Matney, Space Debris Scientist
   - From the Moon and Back Again, with Dr. Julie Stopar, Lunar Scientist
   - How to Be an Interplanetary Explorer, with Dr. Candice Bedford, Mars Scientist
   - Planetary Defenders, with Dr. Edgard G. Rivera-Valentín, Planetary Scientist
   - Roving on Mars, with Dr. Elizabeth Rampe, Exploration Mission Scientist
   - Searching for Alien LifeDr. Kennda Lynch, Astrobiologist, with Dr. Lynch

2. Library hosting the program: _____

Please tell how much you agree or disagree with each of the following statements:	**How much do you agree or disagree?** (please check one response for each statement)			
	Disagree a lot ☹	Disagree	Agree	Agree a lot ☺
I thought this program was interesting.	○	○	○	○
The activity or demonstration aspect of the program was engaging.	○	○	○	○
I thought the scientist was engaging.	○	○	○	○
This program makes me want to learn more about space science.	○	○	○	○
This program makes me want to look for more information about NASA.	○	○	○	○

Have you ever heard a scientist speak about their work or career before this program?	○ Yes	○ No
I would be interested in attending more virtual programs related to NASA science.	○ Yes	○ No

How did the virtual aspect of this program affect your experience?

Please tell us more about you.

I am:

- An adult (over age 18)
- Youth (under age 18)
    - Your grade:
        - Grade K-5
        - Grade 6-8
        - Grade 9-12
        - Other, please specify: _____
- Other; please describe

Gender

I identify as:

- Male
- Female
- Prefer not to say
- Prefer to self-describe: _____

Race/Ethnicity *(Check all that apply)*

I identify as:

- American Indian or Alaska Native
- Asian
- Black, African or African American
- Hispanic/Latinx
- Native Hawaiian or Other Pacific Islander
- White
- Prefer not to say
- Prefer to self-describe_____

Was anyone else participating in this program with you? Check all that apply.

- Noone else was connected with me (exclusive option)
- Adult(s) (over age 18)
- Youth(s) (under age 18)
    - Grade(s):
        - Younger than K
        - Grade K-5
        - Grade 6-8
        - Grade 9-12
        - Other, please specify: _____

Any other comments: