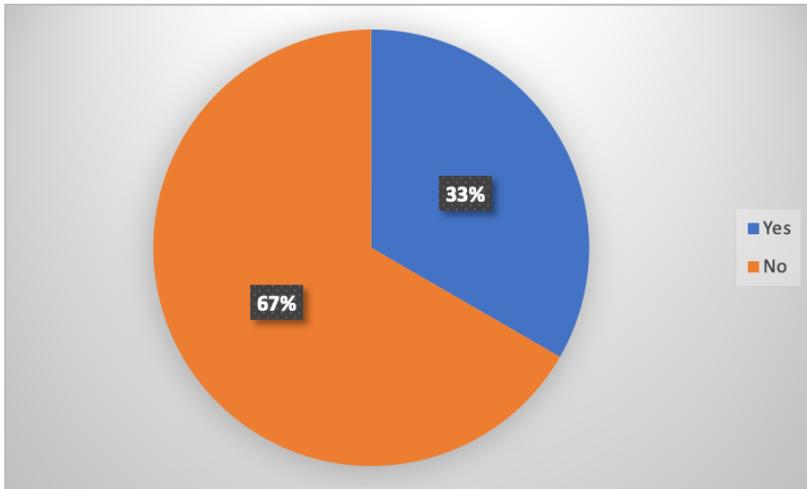


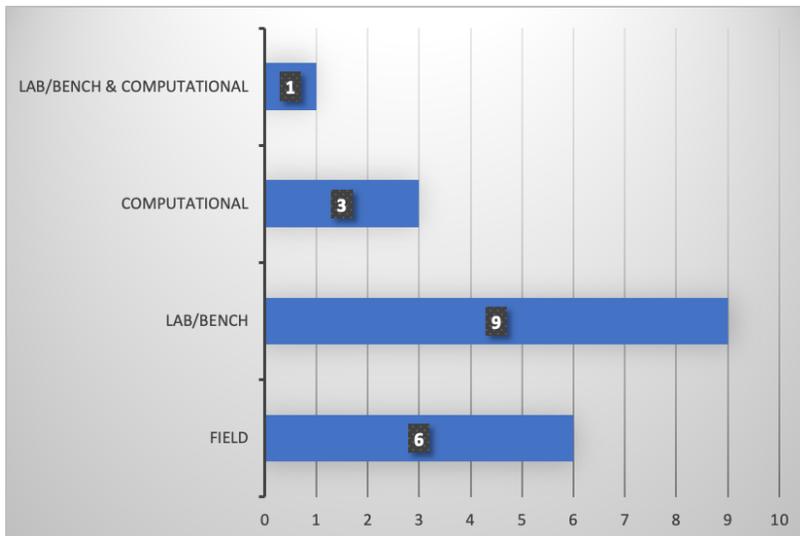
BIO-REU PULSE CHECK

Did you run a program in 2020?



* 38 (67%) did not run a 2020 program; 19 (33%) did run a 2020 program.

Of those who ran a program: What type of program do you run?



* Respondents indicated they flipped their lab/bench program to be computational/remote

What modifications, if any, did you make to your 2020 program that allowed it to run?

Created new activities

- “We held research seminars with former participants and faculty.”
- “We had three formal student presentations during the ten week-long program.”
- “We had seven interns, each matched with a remote project. They participated in weekly professional development meetings, weekly meetings with our peer mentor team, a three-day R workshop, and two end of program symposia (one for our program and the Leadership Alliance conference).”

Admitted fewer students for a more focused virtual experience

- “Accepted fewer students (5 instead of 10), all relatively local to [town] or our field stations (but only 1 of 5 was a [student]) so students already had their own off-campus housing, or were able to arrange it. All students had their own personal vehicle to use for the program. Minimal in-person team building activities. Workshops and presentations all virtual. Research all in field but with proper safety protocols. Mentor meetings virtual and in-person as part of field work. Provided allowance for off campus housing and Wi-Fi/cellular.”

Comprehensive shift to online format

- “...we ultimately arranged for an entirely remote/online program, and we:
 - 1) adapted most existing projects to permit this;
 - 2) shifted some interns to other projects if their originally planned projects could not proceed in an online-only format;
 - 3) offered deferrals to Summer 2021 for 2 students who preferred to wait for a potential “normal” onsite program/project;
 - 4) ensured that all interns had the necessary technology and data access to participate effectively; and
 - 5) moved all professional development activities online and developed online/remote enrichment and engagement activities for the interns.”
- “Research projects were centered around genomics, bioinformatics, novel representations of biological data and land use dynamics in tropical ecosystems using satellite images. All research topics remained aligned with the intellectual scope of the project. Students participated in virtual meetings 2–5 times a week (more early in the program and less later) for technical training, professional development and social engagement for cohort cohesion. Program directors, participant faculty and mentors maintained open communication streams with participants through Slack and WhatsApp. Remote meetings were held through Google Meet and Zoom.”

Focused on local students

- “...in one case, materials were dropped off with interns and they carried out an experiment in their yard.”
- “We added a couple mentors who live locally, as well as students who lived locally so they could commute for field work.”

What barriers did you experience to running in the way you original planned? What barriers did students have in participating in the program?

Making connections online

- “The biggest barrier that students seemed to have was with making connections to each other. Overall, we seemed to be pretty successful making students feel integrated into their labs and part of the larger Smithsonian community, but they did not bond as a cohort the way that our past in-person programs where interns all live in one dorm with shared common spaces.”
- “Keeping cohort cohesion is challenging for virtual REU. Social gaming required extra cost that we have no budget for.”

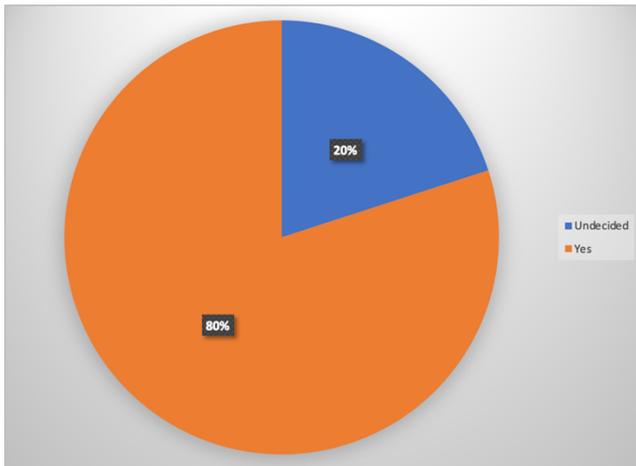
Student WFH challenges

- “Some barriers with regards to student participation were with regards to managing home life and the demands of the program.”
- “A major barrier was poor living conditions- no dedicated work space/sleeping space and spotty internet.”
- “As a computational program, we didn't have that many barriers to running virtually. Students did have some difficulty in managing their research and program activities, while trying to deal with everything else going on. Having regular conversations with them helped to navigate what a good middle ground was and how they can help take good care of themselves.”

Limited faculty capacity to take on students

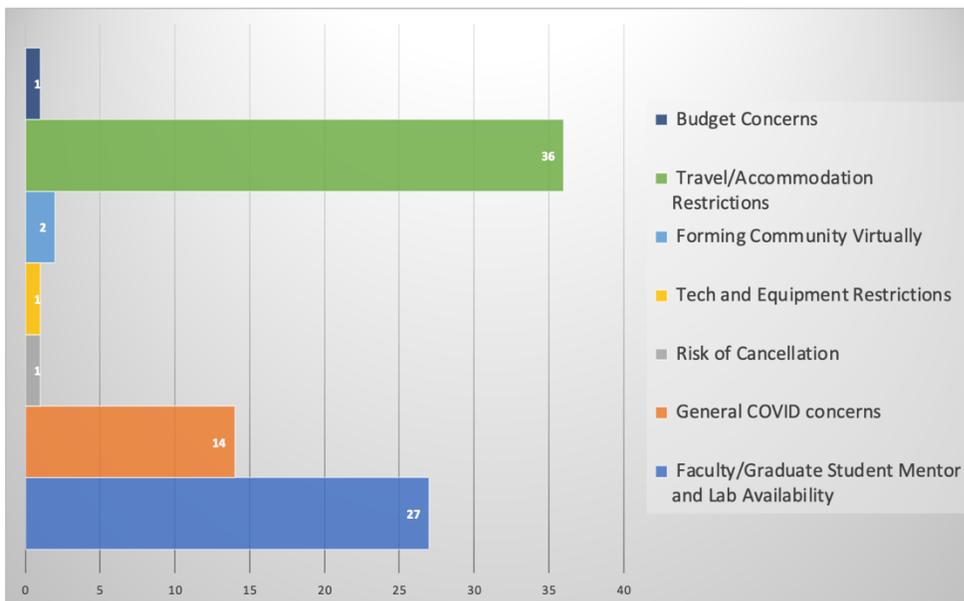
- “Fewer faculty were willing to participate because the program objectives had to change over a two-week period and because at that time many laboratories were closed. We could only offer three internships instead of 8 or 9 due to the limited number of projects.”
- “The greatest barrier was that we had already paired students with mentors when the decision was made by the university to move online. Not all of our mentors were able to provide a remote research experience and so we came up with a tiered approach to participating in our program. Some students who participated part-time then went on to find a job or take other classes all of which changed the level they were able to engage with the program.”

Do you plan to run a program in 2021?



* 40 respondents plan to run a 2021 program; 10 are undecided.

When considering a 2021 program what barriers do you foresee?



The most prevalent concerns related to travel and accommodation. Concerns include: university/state government restrictions on non-student visitors or any visitors to their campuses; unavailability of housing for students; inability to apply physical distancing and quarantining measures.

The second most prevalent concern was faculty availability and/or interest in mentoring

students, as well as the availability of lab space on campus. Programs cited faculty burnout and limitations in capacity due to COVID concerns. Lab/bench-based programs indicated physical space was a limitation owing to physical distancing requirements, space capacity limits, and uncertainty around lab closures in Summer 2021.

The third most prevalent concern is categorized as general COVID concerns. Concerns include questions about quarantining and testing protocols and the health risks posed to students and mentors. Questions include how a 14-day on-site quarantine would impact their 10-week long program and how to navigate isolation of a student who contracts COVID.

What additional support do you need from NSF or from leadership council?

Annual Report

- “Guidance on how to fill out an annual report for this year when we did not hold a summer program.”

Flexibility around the cohort size

- “We offered 7 students from our 2020 cohort the option to defer until 2021. We are looking for NSF to provide guidance on the size of a cohort we should admit in 2021 (assuming we can run a our REU). We don't want to reduce opportunity for new students - Will NSF support 10 new students AND 7 deferrals from 2020 (assuming we have the capacity to host that many in mentor labs)?”

Flexibility around funding

- “It would be reassuring to know that we could apply for another NCE to carryover funding for another summer if we're not allowed to host students on campus in 2021.”
- “We could use some salary support for the PI and co-PI if we are just continuing our current program. We are waiting to see whether we are renewed or if we just work off of remaining funds with a no-cost extension. If the latter, we do not have salary funds for the PI and co-PI, nor the modest professional allowances we give to faculty.”
- “We will need to be able to use funds for COVID screening if required by our university/state for on-site participants. It would also be helpful to know if there is any supplemental health insurance we should make available (and whether funds could be used for that). Lodging and meals may cost more this year, since the university is operating on a reduced staffing level due to fewer students on campus.”
- “If we decide to run virtually, will costs like postage, student computing needs, etc. be allowed as expenses from the budget, if we are not using the travel funds for students to meet in person?”
- “It would be helpful for NSF to be very clear about what can and cannot be funded for virtual programs as soon as possible. I feel the prudent way forward is to simultaneously plan for a virtual and in-person program for 2021 and so knowing about any restrictions early on would be helpful.”

Project Guidelines

- “Provide support for developing virtual projects including support for laboratory personnel (grad students, postdocs, research assistants) to develop material for virtual training.”

Community Building

- “Guidance on changes to our approach (from an immersive/self-contained experience recruiting participants from all over to a local program with students living at home only) to accommodate COVID restrictions, with an expectation that scores on the URSSA may be affected adversely through loss of community.”
- “Permission to run an in-house program this summer, involving only College of Charleston students and faculty. That way we can allow students to live in their own housing, avoid long-distance travel, and commute on their own to work in our own laboratories.”
- “Of particular interest would be information/suggestions on how to foster “group cohort-building” activities for interns, as well as opportunities for informal “intern-to-intern interactions” and “intern-

scientist interactions” beyond formal program activities, mentor-intern interactions, lab-group meetings, etc.”

Communications Support

- “Facilitate ways for better communication between program directors and also better ways to share resources (workshops etc).”

Program Ideas and Networking

- “Continuing to hear the creative solutions coming from other organizations would be appreciated.”
- “If NSF can connect those sites that are also wet lab based, maybe we can brainstorm and collectively come up with something that will work. Or if we can combine our programs to offer a virtual but much more enriching summer experience to the REU students than each individual program can offer, that would be great.”
- “Last year we did not run a poster session and it would be good to get more ideas about whether its worth trying to do this. We did have a successful symposium. We hope to be able to once again take advantage of other programs (bootcamps and social activities).”
- “It would be great to have a centralized source of best practices from the other remote programs.”

What additional questions do you have for NSF or the leadership council?

Funding	Student Participation	Programmatic Changes
<ul style="list-style-type: none"> • What is the process and/or likelihood of obtaining a second no-cost extension if we have to cancel our program again? • If the program runs online only in 2021, could some "in-person" costs (such as housing and transportation, be used for a future extension? • Will there be negative impacts on future funding if we accept a smaller cohort for 2021? 	<ul style="list-style-type: none"> • Is NSF willing to relax the requirement that participants do not yet have a bachelor's degree? • How do we protect students that lose opportunities by committing to a program that later cancels? • Is NSF trying to take measures/start new efforts in order to increase student participation for 2021 only? We are wondering if any of the changes/initiatives might be long term changes? 	<ul style="list-style-type: none"> • What options have other institutions provided for virtual options when it comes to a field based REU program? • I am thinking of keeping the number of participants to a low level in order to have in-person meetings (if possible) or to keep the Zoom meetings more personal. What other resources do you suggest to help build a sense of community? • Is there a possibility to shift some focus to local students to avoid travel issues related to covid-19, e.g., those already at the home institution or nearby? Populating the REU with local students would avoid the possible need for quarantine upon arrival, residence hall accommodations, etc.