Supplemental Material S3. By-question thematic analyses.

Question 10: Impact on Academic Progress

Participants were asked to describe how the COVID-19 pandemic had impacted their academic progress. One hundred fifty-eight unique codes were assigned during the first phase of analysis, then sorted into 20 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to 10 final themes.

Sub-Theme 1: Delayed Academic Progress

One hundred three participants contributed to this theme. Participants reported delays in anticipated data collection, program milestones (e.g. comprehensive exams, dissertation prospectus), and delayed graduation dates. Delayed progress was reported by students at all program levels (e.g. first-year students through ABD).

> "This pandemic has definitely impacted the pace of my program, it took an entire year to plan my first committee meeting. The expectations for a normal program length seem impossible with so little stability and support across all areas of my life."

Sub-Theme 2: Sudden Changes to Study Design

Eighty-five participants contributed to this theme. Participants reported that the pandemic required sudden changes and modifications to study design. In some cases, previously planned projects were rendered unfeasible by the pandemic or planned sample sizes were reduced. Participants reported that existing projects were transitioned and adapted to online implementations, while others reported developing entirely new studies to be implemented in an online environment.

> "My initial dissertation project was terminated due to school closures. Attempts to move my dissertation online were not fruitful due to limited engagement/lack of recruitment. I have begun a third dissertation project and have yet to gain access to data."

Sub-Theme 3: Less Rich Academic Environment

Thirty-two participants contributed to this theme. Participants reported that reduced contact with peers in their program, remote coursework, and reduced informal encounters with faculty contribute to an academic environment that is less intellectually-rich compared to pre-pandemic conditions, contributing to changes in productivity and progress through the program.

> "It has been difficult to start a program with the majority of interactions on scheduled Zoom meetings. There are no organic ways to be introduced to new people and I don't know many faculty."

Sub-Theme 4: Change in Work Quality and Hours

Twenty-nine participants contributed to this theme. Participants reported an increase in work tasks (e.g. more teaching responsibilities, re-writing previously approved IRBs), increases in number of work hours, a dislike for the work-from-home environment, and changes in the relative proportions of time devoted to particular tasks.

"I think I work more than I did when I was working in the building because I no longer set strict hours on when I am working."

Sub-Theme 5: Reduced Mentorship

Twenty-five participants contributed to this theme. Participants reported reduced contact with their primary research advisors, reduced professional mentorship, and reduced feelings of support.

"The remote situation has had a small but noticeable negative impact on the quality of the meetings with my mentor, as it feels harder to keep their attention and get the level of feedback and support I was used to when we were meeting in person."

Sub-Theme 6: Mental or Physical Health Challenges

Twenty-two participants contributed to this theme. Six participants reported COVID-19 infections that negatively impacted their progress. Participants also reported reduced motivation, feelings of isolation, stress, and depression and anxiety.

"It has been really difficult emotionally and with getting stuff done…I have some support, but need more and it has been hard for me to reach out. How do you tell someone I have depression and I haven't made any progress since March because I'm depressed? I don't think my advisor would get it. It's been hard to say the least. I'm getting better, but it still feels like I'm barely surviving."

Sub-Theme 7: No Change in Progress or Improved Progress

Twenty participants contributed to this theme. Some participants reported that they had not experienced any impact on academic progress, and a small number of participants reported positive impacts on progress.

"For some experiments, online data collection is faster and more convenient (less time demanding) for me as the experimenter, but I have worries about the quality of the data for unsupervised remote study."

Sub-Theme 8: Intersections between Identity and Impact of the Pandemic

Nineteen participants contributed to this theme. Participants reported disproportionate impacts of the pandemic based on their roles and responsibilities as members of various identity groups. Participants reported that their roles as caregivers impeded academic progress. International students reported additional stressors related to the impacts of the pandemic on current or future visa status.

"[The] main impact has been the effects of changes due to Covid 19 on the family which has had a knock on effect on my studies. I have had to manage the household all by myself (husband had to leave USA to earn income and couldn't return because of Covid). I have had a daughter at home needing educational support. I have managed to continue with my studies but delayed my comprehensive exams until January 2021 to give me more time to complete everything."

Sub-Theme 9: Financial Challenges

Thirteen participants contributed to this theme. Some participants reported sudden changes to funding which negatively impacted progress through the program, and sometimes

resulted in pursuit of outside work. Other participants reported anticipated or upcoming funding changes they believed were a result of the pandemic.

> "A TAship became unavailable once the pandemic hit. Hiring freezes kept my husband from getting a job after his residency ended. It took him ten months to get a part-time position, and I had to reduce my coursework to pick up more clinical hours."

Sub-Theme 10: Fewer Research Infrastructure Resources

Eleven participants contributed to this theme. Participants reported impacts to academic progress caused by limited access to research facilities, lab equipment, and support personnel.

Question 12: Anticipated Impacts of the COVID-19 Pandemic

Participants were asked to describe how they anticipated the pandemic would impact their academic career. One hundred ten unique codes were assigned during the first phase of analysis, and sorted into 17 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to eight final themes.

Sub-Theme 1: Job Market Contraction

Forty-eight participants contributed to this theme. Participants expressed concern that existing pandemic-related budget cuts would persist, and that more budget cuts would arise in the near future, causing reductions in the number of open positions and a larger pool of candidates to compete with.

> "I think that once I graduate, I will have limited opportunities and more competition compared to entering the workforce prior to the pandemic. Other students and postdocs are extending their stays in their current institutions and waiting for the job market to improve before they enter academia. That will create more competition as positions become available while universities recover."

Sub-Theme 2: Graduating with Fewer Skills and "End Products"

Forty participants contributed to this theme. Participants reported concerns that reduced productivity during the pandemic would have cascading impacts on their future career. Participants noted that their publishing histories had been impacted by pandemic-related delays, abandoned projects, and reduced collaborations. Participants expressed concerns that their truncated or hastily modified dissertation projects would allow them to graduate but preclude future publication. Ultimately, participants worried that their CVs would be "less impressive", making them less attractive candidates in an already saturated job market. In addition to these tangible concerns, participants reported that a lack of opportunities for hands-on learning and missed in-person training opportunities would contribute to an overall reduction in the quantity and quality of academic skills at the end of their programs that would negatively impact their academic careers.

> "I am worried about how my CV will look, as I have less opportunities to collect data for research projects, cannot present at conferences, and will now find it difficult to apply for awards and funding. Moreover, I imagine job openings will have been reduced across the world!"

Sub-Theme 3: Less Rich Intellectual Environments

Forty participants contributed to this theme. Participants reported concerns about future impacts caused by changes to their PhD programs brought on by the pandemic. They worried that reductions in course offerings, mentorship, and informal interactions with faculty and peers were reducing the quality of their education. Lack of informal contact was cited as reducing the richness of intellectual, academic relationships, reducing camaraderie and collaborations between faculty and peers, ultimately leading to reduced research quality.

> "I think everyone's doing the best they can, and my school could serve as a model for how schools can support students during the pandemic. That said, I think we need to acknowledge that this is NOT the same education. A PhD is more than the sum of course lectures + reading + papers + experiments. So much learning happens informally outside of the classroom - both learning of academic skills and softer skills, and I really miss that."

Sub-Theme 4: Reduced Opportunities to Network and Present Work

Thirty-three participants contributed to this theme. Participants reported potential future career impacts caused by reduced opportunities to network and reduced opportunities to present their work at in-person conferences. They reported that virtual conferences were an insufficient replacement for in-person experiences.

> "Additionally, because we cannot attend conferences in person now, it is much harder to present my work and meet peers and academics, which could again reduce my social network and potentially my attractiveness as a job candidate."

Sub-Theme 5: Cascading Impacts of Delayed Timelines

Twenty-nine participants contributed to this theme. Participants reported concerns about cascading future impacts of pandemic-related delays in human subjects data collection. They reported delayed attainment of program milestones, leading to (unpredictable) delays in graduation that would impact their ability to enter the job market.

> "It has already impacted how I need to network when looking for jobs. I can't commit to a deadline for graduation because of the challenges associated with data collection. There is the possibility of another lockdown impacting or halting my data collection."

Sub-Theme 6: Pandemic-Related Conditions may Require Taking a Less-than-Ideal Position

Twenty-five participants contributed to this theme. Participants reported concerns that, following graduation, they would need to accept job positions that they otherwise wouldn't have in a pre-pandemic job market. Specifically, participants expressed concerns that budgetary changes induced by the pandemic would lead to an increase in non-tenure track positions. Participants expressed concerns over geographic locations of available jobs, and difficulty assessing the potential of a particular work setting without the benefit of a typical campus interview. Some participants expressed that they anticipated taking a clinical position rather than remaining in research-oriented environments.

> "I am supposed to graduate in May or August so I have begun looking for a job. I have noticed that many places are offering non-tenure track positions. In fact, I applied for a tenure track position and then was notified that the univeristy's

administration decided to make it NTT [non-tenure track]. I am afraid that because there have been financial cutbacks I will have to accept a position at a school that may not be the best fit or I will have to move to far away from my family in order to secure a job."

Sub-Theme 7: No Concerns about Longer-term Impacts

Twenty-four participants contributed to this theme. Some participants reported that they were not concerned that the pandemic would have longer-term impacts on their academic careers. In particular, participants noted that they expected that pandemic-related impacts would affect students at similar stages to an equivalent degree, resulting in overall productivity slowdowns, but that would not disproportionately impact them. A number of respondents acknowledged that the pandemic may impact the careers of students at later stages of their programs, but that, being earlier in their PhD programs, they did not expect to sustain lasting difficulties. Some participants also reported potential positive impacts resulting from pandemic-related changes, and reported feelings of support from their advisors and departments.

"In a way, I hope it will help programs/departments realize new ways in which they can be flexible (e.g., postdoctoral research and other positions that are partially or fully remote)."

Sub-Theme 8: Financial Concerns

Fourteen participants contributed to this theme. Participants reported concerns that pandemic-related delays would delay graduation, resulting in unfunded program years that would jeopardize their likelihood of completing their PhD program.

"I'm terrified of not finishing before funding runs out. I'm also petrified of job opportunities and what will be available. I can't move due to my spouse so I'm stuck in one place. It feels debilitating on all ends and has reduced my productivity."

Question 25: Changes in teaching responsibilities

Participants were asked to describe how the pandemic had impacted their teaching responsibilities. Twenty-six unique codes were assigned during the first phase of analysis, and sorted into seven candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to two final themes.

Sub-Theme 1: Increased Teaching Workloads and Time Spent on Teaching

Twenty-one participants contributed to this theme. Participants reported that the transition to online learning brought about by the pandemic resulted in increases in their teaching workload, including more time devoted to preparing course materials, asynchronous online modules, and new teaching materials suitable for a virtual environment.

Sub-Theme 2: Increased Student Support Needs

Fifteen participants contributed to this theme. Participants reported a change in the frequency with which they were attending to student needs (including providing more academic support and attending to mental health needs), compared to their previous teaching or TAing responsibilities.

"I spend a lot more time emailing & having Zoom meetings with students answering questions & responding to concerns that normally could have been addressed in the

classroom. It feels as if there are no boundaries & I am 'on-call' all the time to respond to the needs of my students because the university has placed such an emphasis on making remote learning a positive experience."

Question 26: Changes in Caregiving Responsibilities

Participants were asked to describe how the pandemic had impacted their caregiving responsibilities. Twenty-nine unique codes were assigned during the first phase of analysis, and sorted into eight candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to four final themes.

Sub-Theme 1: Reduced Childcare Support

Eleven participants contributed to this theme. Participants reported changes to their daily caregiving responsibilities brought on by closures of childcare facilities.

"I have two kids under two at home who can't attend childcare; I can't get family help because I'm far away due to PhD and pandemic"

Sub-Theme 2: Balancing Family and Work

Ten participants contributed to this theme. Participants reported difficulties balancing childcare and at-home work, with several participants reporting that they exclusively worked on PhD-related work at night.

"I have one small child at home that does not go to daycare. Working from home has significantly increased my caregiving responsibilities. So I am forced to work during the night and care for my child during the day."

Sub-Theme 3: Managing At-Home School

Nine participants contributed to this theme. Participants reported managing virtual schooling. In addition to the time spent setting up and monitoring online learning, participants reported an increased need to provide academic support outside of school hours.

"I am a single parent of a 5 year old. His daycare closed in March and he has not been back. That means he has been with me every day from morning to night. Although he started kindergarten this fall, it is being done remotely, increasing my responsibilities for ensuring he gets his school work done as well as my own. During normal times, his teachers would be helping him with all of this in person."

Sub-Theme 4: Increased Caregiving for Adult Family Members

Eight participants contributed to this theme. Participants reported increases in caregiving responsibilities for adult family members to avoid COVID-19 exposure for at-risk family members.

"I take care of my 90-year old grandpa, and I also am in charge of all groceries and errands for my parents since they are at risk."

Question 27: Changes in Day-to-Day Research Activities

Participants were asked to describe how the pandemic had impacted their day-to-day research activities. Ninety unique codes were assigned during the first phase of analysis, and

sorted into 15 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to eight final themes.

Sub-Theme 1: Changes in Work Quality and Hours

Thirty-seven participants contributed to this theme. Participants reported that the shift to remote work in the face of COVID-19 lockdowns and regulations had changed qualitative aspects of their day-today work, including work setting and hours. Participants reported increases in the time spent in front of a computer, increased work at night and on weekends, and a blurring of home and work boundaries.

Sub-Theme 2: Pauses to In-Person Data Collection

Thirty-three participants contributed to this theme. Participants reported that institution-driven pauses to in-person research had halted data collection and reduced the amount of time they spent recruiting research participants. Some participants reported that by the time of the survey, in-person data collection had resumed, albeit at a reduced pace, while others reported continued restrictions on human-subjects research.

Sub-Theme 3: Changes in Research Methods

Thirty-two participants contributed to this theme. Participants reported shifts in their research methodology as a result of the pandemic, including transitioning to online research methods, focusing on secondary analysis of existing data sets, and an increase in survey methodology.

Sub-Theme 4: Changes in Work "Proportions"

Twenty-four participants contributed to this theme. Participants reported changes in the overall proportion of time they are spending on various research tasks, compared to their relative proportions prior to the pandemic. In particular, participants reported increases in time spent writing, reading, and conducting data analysis.

> "This has sped up the ramping down of the experimental portion of my research activities. I have changed from being primarily focused on experiments to being exclusively focused on writing."

Sub-Theme 5: Slower Progress and Reduced Output

Twenty-three participants contributed to this theme. Participants reported that research progress was significantly slowed following the onset of the pandemic, reducing research productivity and sometimes leading to abandoned projects.

> "I terminated a project I was working on regarding caregivers of persons with communication disorders. This was a side project & not related to my dissertation but it was frustrating to have to stop the project after I had dedicated so much time getting it off the ground."

Sub-Theme 6: Reduced Communication and Collaboration

Twenty-two participants contributed to this theme. Participants reported reduced research discussions, less social interaction during research activities, fewer group meetings, and feeling as though they were now working "as a team of one", with less help from advisors, peers, and research assistants.

Sub-Theme 7: Changes in Mental and Physical Health

Eighteen participants contributed to this theme. Participants reported reduced motivation for research, feelings of isolation, increased distraction and difficulty focusing, and physical impacts including reduced energy and COVID-19 infection.

> "Motivating myself can be difficult. Not having other PhD students to bounce ideas off of in person has been isolating. Being home and away from people in general (as well as my family who live across the country) has also been incredibly isolating-- this has all impacted my motivation and ability to work solidly for given amounts of time."

Sub-Theme 8: Caregiving Impeding Research Progress

Eight participants contributed to this theme. Participants reported that a lack of uninterrupted time related to caregiving responsibilities was impeding research progress

Question 28: Changes in Plans for Coursework

Participants were asked to describe how the pandemic had impacted their course-related plans. Sixteen unique codes were assigned during the first phase of analysis, and sorted into six candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to two final themes.

Sub-Theme 1: Reduced Course and Clinic Offerings

Thirteen participants contributed to this theme. Participants reported course cancellations in the summer and fall that impacted their academic progress, and participants in combined (clinical/research) programs reported reductions in clinical hours that have delayed their progress.

Sub-Theme 2: Barriers to In-Class Progress

Ten participants contributed to this theme. Participants reported a range of barriers to course-related progress caused by the pandemic. These included changes in course format and quality, mental and physical health concerns, and financial constraints.

> "I took a very challenging course in another department this semester, where I was counting on in-person collaboration to help with my learning. Instead, the course got moved from in person to synchronous online a week before the semester started, and then three weeks in it shifted to asynchronous. This combined with not knowing anyone in the class made it hard to collaborate, which made my assignments take much longer."

Question 29: What do PhD Students want Decision-Making Stakeholders in CSD to Know?

When asked directly what they wanted decision-making stakeholders to know about the experience of being a PhD student during the COVID-19 pandemic, respondents indicated a desire for stakeholders to acknowledge the changes in the quality of the academic training environment, to recognize and make accommodations for mental health challenges brought about by the pandemic, to recognize that the pandemic may result in students leaving the training "pipeline", and that existing inequalities in PhD training would likely be exacerbated by the pandemic. Ninety unique codes were assigned during the first phase of analysis, and sorted into

16 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to seven final themes.

Sub-Theme 1: Mental Health Negatively Impacted

Thirty-six participants contributed to this theme. Participants reported increases in stress, isolation, and anxiety, and reductions in social connections, motivation, and energy as a result of the COVID-19 pandemic.

> "The impact of the pandemic on mental health and motivation should not be ignored. I know that everyone (not just doctoral students) feel this. But I truly believe that the stress and uncertainty of this time contribute to mental exhaustion that takes a substantial toll on productivity and perhaps even motivation to finish a program at all (especially when we look ahead to a job market with few appealing possibilities)."

Sub-Theme 2: Reduced Quality of the Intellectual Environment

Twenty-one participants contributed to this theme. Participants reported that they wanted stakeholders to recognize and make accommodations for the fact that the richness of the academic environment has been significant impacted by the COVID-19 pandemic. Participants report missing out on expected networking opportunities, informal interactions and discussions about research with faculty and peers in their program, and concerns that changes to the academic environment initiated by the pandemic would persist because of financial factors or convenience, leading to an overall reduction in program quality over the long term. Participants also reported concerns that these reductions in education quality would cascade into underdeveloped skills at the end of their programs.

> "Don't move everything online after this is over just because you see that it works. Learning is not the same, but virtual options do have their advantages for attendance at cross-disciplinary events."

Sub-Theme 3: Provide Regular Support

Eighteen participants contributed to this theme. Participants reported on their experiences with (or lack of) advisor and/or departmental support and emphasized that support from their programs was critical for their academic progress. Participants offered ideas for the types of support they would like to be offered, including regular check-ins, time off, acknowledgement of hard work, increased encouragement, and increased data sharing.

> "It's hard to stay resilient and productive. I luckily have a very supportive mentor who is okay if I cry in every one of our meetings, but I know not all mentors and mentees have that kind of relationship. Not feeling supported would make the current status quo much more difficult to cope with."

Sub-Theme 4: May Leave the Academic Training "Pipeline"

Sixteen participants contributed to this theme. Participants reported concerns about cuts to their funding or a lack of program funding extensions, given that pandemic-related delays would impact their expected graduation date. Job market concerns were also cited as reasons that the COVID-19 pandemic might remove students from a faculty career path.

> "A career in research in communication science and disorders is my ideal career path. However, I find my dedication to that path wavers every time my children

need help with school and I can't give it to them because I'm in a lab meeting. It wavers when I see my children in front of screens all day and I want to rescue them but I can't because I'm desperately trying to keep up as a "productive" student. It wavers when my life is endless tedium of sameness with no authentic interaction with other scientists to recharge my scientific enthusiasm (and no, Zoom meetings are not authentic interaction). Taking my kids around in the car while I work as an Uber Eats driver is starting to seem like it's not such a bad idea."

Sub-Theme 5: Maintain Institutional Memory about the Pandemic

Thirteen participants contributed to this theme. Participants asked decision-making stakeholders to acknowledge, and maintain institutional memory of, the ways in which the pandemic would have lasting impacts on this cohort of doctoral students. Participants noted that there would be lasting cohort-wide differences in productivity and experience, but that there would also be unique individual-level challenges which are likely to be distributed unequally. Participants expressed hopes that future search committees would find ways to see beyond productivity gaps and see instead the positive skills gained during the pandemic (e.g. resilience, flexibility).

"Adjust your expectations for upcoming graduates of PhD programs accordingly. We haven't been able to do everything we wanted to do, especially not in the timelines we expected. We are still working hard to develop new ways of growing knowledge in this new virtual reality."

Sub-Theme 6: Existing Inequalities Exacerbated by Pandemic

Twelve participants contributed to this theme. Participants pointed to existing inequities in how individuals from various identity groups are supported (or not) by the existing structures in PhD training in CSD. Participants expressed that these existing inequities in PhD training have been further exacerbated by the pandemic.

"I don't think non-parents understand how difficult it is to raise children at home while trying to do any kind of academic work. The playing fields are really unequal between parents and non-parents, and there should not be the expectation that parents could produce anywhere near as much work as non-parents especially when the childcare burden is not shared equally between two parents."

"As a Black student, the nexus of quarantine and continued systemic racism/police brutality has been extremely difficult and detrimental to my productivity. I used to be able to gather with other members of the Black community to process and heal following incidents of racial violence, but I can no longer do that. So the outlet I had to be able to cope with these types of issues pre-COVID is gone, and it absolutely affects my productivity."

"I am an International Student and it has had a huge impact on International Students. Unable to travel home. Visa issues by present US Government. Increased financial burdens."

Sub-Theme 7: PhD Student as Uniquely Precarious Position

Nine participants contributed to this theme. Participants reported that while they understood that all levels of academics had been negatively impacted by the pandemic, a number

of inherent characteristics of the PhD student role make in a precarious position (even during normal circumstances). Participants pointed to negative aspects of the culture surrounding doctoral study that have been augmented by the pandemic and enhance the feeling of precarity, including glorification of over-work, high expectations for productivity in the context of low pay, and lack of structure and boundaries.

> "Being a PhD student right now has been much more difficult than working as an SLP, because I don't have the money to throw at my problems, and I'm feeling that the field should at least recognize the sacrifice I'm making on behalf of our under-PhD-ed field. If I had been working as an SLP, I could have hired a full-time live-in nanny and still had more money to spend on take-out food during this ridiculously difficult time. Instead, I am worried about money while watching kids and trying to cook while sick; maybe ASHA could provide some funding supplements for childcare for PhD students in recognition of the financial sacrifices we're making for the profession."

> "I wouldn't be directing this to my advisors or department because they are wonderful, but in general I wish more people would not glorify over-working for a PhD student--especially during the times of COVID-19. It is a common theme that people believe PhD students need to be working 10+ hour days, when first: we are not paid or compensated to do so and second: that is very unhealthy. Yet, there are pressures to publish, to network, to have all the experiences possible--but is that fair to ask during a pandemic? My answer is no."

Question 30: Post-Graduation Concerns

When asked to describe post-graduation concerns related to the pandemic, participants expressed concerns that the pandemic would significantly reduce the number of available job opportunities. Participants reported concerns that budget cuts at the level of the university and federal granting agencies might reduce the resources available to them to launch research programs. Participants reported concerns that job characteristics would be permanently altered by pandemic-related changes, and that they would be navigating new expectations and structures that they were unsure how to assess. Fifty-nine unique codes were assigned during the first phase of analysis, and sorted into 13 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to three final themes.

Sub-Theme 1: Fewer Job Opportunities

Sixty-five participants contributed to this theme. Participants expressed concerns that the job market would shrink as a result of the pandemic, including reductions in both faculty and postdoctoral training positions.

> "I do worry about hiring freezes and reduced enrollment at colleges and universities. I am hoping these issues are only temporary and will not be impacting my ability to get a job in 2 years."

Sub-Theme 2: Persisting Changes to Job Characteristics

Twenty-seven participants contributed to this theme. Participants expressed concerns that tenure-track lines would be replaced with non-tenure track positions, that online teaching would

become the norm, and that faculty course loads would be increased as a result of budgetary concerns at the university.

> "I wonder about my ability to get a job that isn't being an adjunct. I was already looking at the job market and worrying about finding a tenure track position as it is, but with the rapid shifts we're seeing now I wonder if even regular instructor jobs are going to be increasingly on a short-term contract basis."

Sub-Theme 3: Reduced Resources to Launch an Independent Research Program

Twenty-five participants contributed to this theme. Participants reported concerns that grant opportunities would be reduced due to financial fallout from the pandemic, and that startup packages for new hires might be significantly reduced. They expressed concerns that the pandemic would continue to limit in-person data collection and networking opportunities, making launching an independent research program more difficult.

Question 31: Unexpected Positive Impacts of the COVID-19 Pandemic

Participants were explicitly asked whether they had experienced any unexpected positive changes during the pandemic. Ninety-three unique codes were assigned during the first phase of analysis, and sorted into 13 candidate themes during the second phase of analysis. In the third phase, redundant candidate themes were combined and reduced to six final themes. Notably, the largest single code during initial coding of this question was "no positive impacts"; twenty-two participants indicated that they perceived no positive impacts of the COVID-19 pandemic. For those who did experience positive impacts, these included flexibility in work environment and schedule, development of unexpected skills, time freed up by work-from-home norms, and improvements in mental and physical health.

Sub-Theme 1: Flexibility in Work Environment and Schedule

Thirty-two participants contributed to this theme. Participants reported liking aspects of a work-from-home and virtual learning environment, including the flexibility in work hours, living arrangements, and scheduling/timing of meetings.

Sub-Theme 2: Time Freed up by Work-from-Home Norms

Thirty-one participants contributed to this theme. A majority of participants who contributed to this theme cited that not needing to commute in to work had freed up more time in their daily schedules. Others pointed to reductions in time needed to travel between buildings and rooms to meet with faculty.

Sub-Theme 3: There have been No Positives

Twenty-two participants contributed to this theme. A majority of participant responses aggregated under this theme were simply "No", in response to the question "Have there been any unexpected positive effects of the COVID-19 pandemic on your experience as a PhD student?".

Sub-Theme 4: Development of Unexpected Skills

Twenty-two participants contributed to this theme. Participants reported that the shift to remote methods of conducting research and virtual learning resulted in the development of skills they would not have obtained otherwise.

"It forced me to learn how to design experiments on online platforms, which is a skill I will likely need and use in the future. It is also forcing me to see how my population performs with a computer-based intervention."

"Teaching a hybrid was a challenging and amazing experience that I had only due to COVID-19. I had to be more creative to engage students."

Sub-Theme 5: Better Mental and Physical Health

Twenty participants contributed to this theme. Participants reported better work-life balance, engaging in more self-care, getting better sleep, and improved mental health as a result of the shift in work environments due to the pandemic.

"I feel like my mental health is better since I can take breaks if necessary to rest or eat during tedious tasks without anyone judging me."

Sub-Theme 6: Improved Academic Relationships

Twenty participants contributed to this theme. Participants reported improved communication (both in quantity and speed) with their academic advisors and closer relationships within their PhD student cohorts.

"Surprisingly, there is a group of other students I have grown closer with during this pandemic. We all had classes together and so we would text or chat pretty regularly. So that has been a huge positive is feeling supported by my peers. Another positive I would say is that my advisor is more available so we have had more face time together which has been great."