

1 **When the Labs Closed: Graduate Students’ and Postdoctoral**  
2 **Fellows’ Experiences of Disrupted Research During the COVID-19**  
3 **Pandemic**

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8 **Supporting Material**

9 **Supporting Table 1.** Qualitative codebook and representative quotations.

10 **Supporting Table 2.** Further Survey Respondent Characteristics.

11 **Supporting Table 3.** Interview Respondent Characteristics.

12 **Supporting Table 4.** Participation in shutting down other’s experiments, stratified by academic  
13 position.

14 **Supporting Table 5.** Symptoms of distress, stratified by respondent gender.

15 **Supporting Table 1.** Qualitative codebook and representative quotations.

16 **Initial Closure Period**

<b>Chaos and Confusion</b>	
<ul style="list-style-type: none"> <li>• “One day, we were told that we could continue recruiting human subjects; the next, everything was to be shut down” (Survey ID 770)</li> <li>• “After a week of emails saying like, ‘We’re open. We’re open. We’re open.’ [...] And then that night around 6:30 PM, after getting an email at 3 p.m. saying ‘We’re open’, we got an email saying ‘Gotcha. Campus is closed’.” (Interviewee 6)</li> <li>• “Some people in charge were behaving like this was a minor inconvenience and others were behaving like this was an apocalypse, you know? So I think having those kinds of contradictory messages from people in charge was difficult.” (Interviewee 4)</li> <li>• “There was discussion and there was lots and lots of uncertainty and anxiety, I would say, from myself and my peers. Looking towards our supervisor was not very helpful, as I felt that we were more informed about what other institutions were doing than they were.” (Interviewee 11)</li> <li>• “It was chaotic” (Survey ID 86)</li> <li>• “There wasn’t a lot of communication from [my university] about what was happening and our supervisors did not have/provide working plans or accommodations for working from home.” (Survey ID 345)</li> <li>• “It went from, ‘This is going to be okay and this will be so smooth’ to, ‘Oh God, we’re all shutting down right now’. And the abruptness of the change was unanticipated and more disruptive than I thought it was going to be.” (Interviewee 2)</li> </ul>	
<b>Uniform Laboratory Closures</b>	
Solidarity and Safety	<ul style="list-style-type: none"> <li>• “It created a sense of solidarity for me. Everyone was working together to try and keep people safe” (Survey ID 533)</li> <li>• “I think I felt a bit relieved when all the labs finally shut and I knew that everyone was at home. It just meant that all the uncertainty of when the labs were going to close was over and everyone was now on the same page” (Survey ID 767)</li> </ul>

	<ul style="list-style-type: none"> <li>• “A sense of togetherness since we were all in a similar situation” (Survey ID 639)</li> <li>• “I think it made it feel like it was happening to everyone and there was some security in that.” (Survey ID 758)</li> <li>• “I guess we're all in this messy situation together. It's not like just my project is going to get messed up or something. I think there was kind of at a certain point, there was a realization that this is a very global thing.” (Interviewee 4)</li> </ul>
Anxiety related to seriousness of shutdown	<ul style="list-style-type: none"> <li>• “A little bit anxious because it was really starting to show the reality and seriousness of the situation.” (Survey ID 284)</li> <li>• “Anxious for the future” (Survey ID 155)</li> <li>• “Anxious, it was a lot of thinking and planning and wondering” (Survey ID 493)</li> </ul>
Loneliness and Isolation	<ul style="list-style-type: none"> <li>• “Lonely and sad. I really miss being around my peers” (Survey ID 425)</li> <li>• “Weird, isolated, and lonely. I lost both major parts of my social life in an instant, one of those being my colleagues. Day-to-day interaction is a completely different animal to staying in touch online.” (Survey ID 634)</li> <li>• I felt isolated. I live alone, so not being able to see and talk to others at work deprives me of a large portion of my social interactions. (Survey ID 468)</li> </ul>
<b>Staggered Laboratory Closure</b>	
Understanding of difference in timelines (Animal model research, other reasons)	<ul style="list-style-type: none"> <li>• “Those who had to finish animal data collection went into lab while others started working at home. It made a lot of sense.” (Survey ID 158)</li> <li>• “My colleague was in the middle of an animal experiment and had she terminated the experiment early, she would have had to sacrifice animals without collecting any data, rendering those animals a waste. I am glad she continued the experiment until the</li> </ul>

	<p>planned end-point, thereby not having to use any additional animals.” (Survey ID 188)</p> <ul style="list-style-type: none"> <li>• “I felt it was ok. My supervisor gave permission for individuals who needed the data to finish their thesis seminar to continue working until everything was officially closed. It seemed like a reasonable thing” (Survey ID 126)</li> <li>• “We do have a large animal colony and that took much more time to figure out what to do with that. There's now one person that has been working continuously so as to not have to completely shut down all the procedures that we have and in order for us to make it a little bit easier when we have to go back, or when we can go back.” (Interviewee 9)</li> </ul>
<p>Concern for people continuing work</p>	<ul style="list-style-type: none"> <li>• “It was also worrying to see other still complete work and putting themselves in harm’s way during a pandemic to ensure they could actively finish their experiment.” (Survey ID 18)</li> <li>• “It made me nervous for my colleagues who were still going into the hospital.” (Survey ID 129)</li> <li>• “I was worried for the people who had to keep on working” (Survey ID 259)</li> </ul>
<p>Anxiety and Guilt (Remaining workers)</p>	<ul style="list-style-type: none"> <li>• “I was completing final experiments while others were already working from home. This made me feel guilty that I was putting others at risk” (Survey ID 22)</li> <li>• “I was still working while others were at home, and they were all very concerned for me, so it made me feel more anxious” (Survey ID 91)</li> <li>• “I was the one working. And felt like I was doing something wrong” (Survey ID 325)</li> </ul>
<p>Unfairness and Jealously (Workers who</p>	<ul style="list-style-type: none"> <li>• “Frustrated and angry that they would complete their research while I had to start over” (Survey ID 183)</li> <li>• “It felt unfair and I was a little jealous” (Survey ID 253)</li> </ul>

<p>transitioned to working from home)</p>	<ul style="list-style-type: none"> <li>• “I also would like to continue my project. If some have to stop, everyone also should” (Survey ID 276)</li> <li>• “I wished I was with them” (Survey ID 334)</li> <li>• “Lots of resentment” (Survey ID 356)</li> <li>• “Upset that my project had lower apparent priority.” (Survey ID 117)</li> </ul>
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**Pressure to Continue Working**

<p>External (Supervisor and Peers)</p>	<ul style="list-style-type: none"> <li>• “Supervisor put heavy pressure on us to continue working and being productive, even after an official shutdown...My concerns were not met with understanding from my supervisor” (Survey ID 188)</li> <li>• “My supervisor does not believe COVID is a very serious issue and that responses have been an over-reaction. Thus, was advised to continue working. My lab is in a hospital, and it was the hospital's decision to shut down all non-essential work. They reduced entrance/exits to 3 points, which were monitored by security and IDs checked. At this point, I did not have access to my lab.” (Survey ID 265)</li> <li>• “I felt it mostly from my supervisor. He kept saying things like ‘you can't just STOP research’.” (Survey ID 364)</li> <li>• “Peers outside our lab suggested that we were overreacting and that there would be no shutdown, which made some people question our reaction.” (Survey ID 255)</li> <li>• “There's only one grad student in my lab who was actively running a study that cannot be done online, it requires in-person, there's no possible way. He was kind of pressured to keep going. I actually think he's kind of being pressured now to start up again, which I disagree with, but there's a little bit of pressure to keep going because he is at a point where he should be graduating soon. If he doesn't collect this data he can't graduate, and our University</li> </ul>
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	<p>has a quite strict policy on how long master's and PhDs take. We are really pushed not to extend it, and so he is kind of getting pushed both administratively and from our PI, as well as his own desire to finish the program.” (Interviewee 16)</p>
<p>Internal (Need to get work done)</p>	<ul style="list-style-type: none"> <li>• “My thesis is due at the end of the summer. I was scared because even if research were to have started up again, I lost my window of time where I could have continued research. At this point, I just have to write a thesis with the data I have.” (Survey ID 73)</li> <li>• “I am losing a lot of valuable data collection time and am concerned I won't finish on time to graduate.” (Survey ID 417)</li> <li>• “The days prior to the shutdown were filled with some pressure because I was trying to finish experiments that would provide data for an upcoming manuscript. My hope was that I'd get the data I needed and then go home and start writing the paper.” (Survey ID 71)</li> <li>• “Externally, no. Internally, yes. It was a thing where I was just feeling, ‘I'm getting comfortable with these techniques, I want to start my experiments.’ And then it shut down.” (Interviewee 5)</li> <li>• “It was all self-imposed pressure. Because we didn't want to lose time.” (Interviewee 14)</li> </ul>
<p>Internal (My peers are working)</p>	<ul style="list-style-type: none"> <li>• “Some of my peers also felt like the pandemic wasn't super serious at the beginning, so I felt like I had to keep working from campus if they were.” (Survey ID 515)</li> <li>• “My peers from my lab seemed to be on board with it so I felt embarrassed or lazy for being concerned about continuing my work, or having trouble continuing” (Survey ID 188)</li> <li>• “[My Peers] are continuing somewhat so it made me feel like maybe I should [continue working]” Survey ID 333)</li> </ul>
<p><b>Hindsight from the closure process</b></p>	

<p>Stopping experiments sooner</p>	<ul style="list-style-type: none"> <li>• “Personally, I would have taken the issue more seriously, earlier on and stopped working from lab sooner.” (Survey ID 528)</li> <li>• “I would have left sooner and cancelled tests sooner.” (Survey ID 237)</li> <li>• “In retrospect, it seems that the university went very quickly from a "normal" situation, to campus-wide shutdown, which is understandable, but unfortunate. If more of a "ramp-down" protocol had been initiated, it would have been possible to salvage more experiments prior to shutdown.” (Survey ID 703)</li> </ul>
<p>Clearer Communication</p>	<ul style="list-style-type: none"> <li>• “Standardized procedures and more clear communications from everyone involved.” (Survey ID 704)</li> <li>• “Have the communication more clear. I know this is hard because everything happened so fast and was unknown. (Survey ID 483)</li> <li>• “I wish there was clearer communication” (Survey ID 635)</li> </ul>
<p>Bringing more things home from lab</p>	<ul style="list-style-type: none"> <li>• “Considering what I know now, I would have brought more things home from the lab (e.g., journals, stationery, printer/scanner).” (Survey ID 15)</li> <li>• “I did not think we would be locked out so long, so I would have brought home more personal effects that stayed at the lab/office.” (Survey ID 156)</li> <li>• “Initially did not know shut down would be for a long time (initial shut down was for 2 weeks), so would have brought more things home to me and prepare as if shut down would persist into December 2020.” (Survey ID 157)</li> <li>• “Back up more files and bring more office equipment home (e.g., books, folders, etc).” (Survey ID 139)</li> <li>• “I think in knowing what we know now, I think it would have been helpful to have moved to remote access in perhaps a different way.[...] We would have backed up more of the data to have it accessible via remote. We have it accessible on separate</li> </ul>

	computers, but not linked to a central server. So that will require us going in person to do that transfer.” (Interviewee 3)
<b>Migration Following Laboratory Closures</b>	
“I live here” (Remain in same city)	<ul style="list-style-type: none"> <li>• “Because I live there.” (Survey ID 31)</li> <li>• “I live in this city” (Survey ID 222)</li> <li>• “This is my home.” (Survey ID 86)</li> <li>• “I’ve lived here for the past almost four years, and was happy to stay here.” (Interviewee 7)</li> <li>• “I live [here] full time, as I assume most graduate students do at the university. Not literally at the university, but I do live just across the street” (Interviewee 15)</li> </ul>
Avoiding Air travel (Remain in same city)	<ul style="list-style-type: none"> <li>• “I was certainly not wanting to do unnecessary flying.” (Survey ID 99)</li> <li>• “My immediate family is in another province, so I looked into travelling home but decided not to risk air travel.” (Survey ID 39)</li> <li>• “International travel, even just to the US, seemed risky and might slow down our return to work.” (Survey ID 770)</li> </ul>
Moved to be with family	<ul style="list-style-type: none"> <li>• “To be with family and not be alone in a basement apartment. Also in an area with fewer cases and less dense population.” (Survey ID 739)</li> <li>• “I eventually moved to my parents place (2 hr drive) because I was feeling lonely and I saw this time as a good opportunity to spend time with my family.” (survey ID 284)</li> <li>• “I was living by myself in an apartment building. It felt safer/healthier to be living with my family and in a detached home. This required me to move to a different city where my family is located” (Survey ID 207)</li> </ul>
Other	<ul style="list-style-type: none"> <li>• “I had gone home to visit my parents for a weekend, and they live in another city, and I thought it was just going to be for a weekend, but then the conversation [concerning laboratory</li> </ul>

	<p>closures] shifted over the course of the weekend. So instead of coming back to the big city and the densely populated area, I stayed behind.” (Interviewee 2)</p> <ul style="list-style-type: none"> <li>• “I am a international student. I could not risk going back to my country without being sure that I could comeback and finish my PhD.” (Survey ID 719)</li> <li>• “I have to be close by in case there are issues with my animals. We still have mice breeding and in an ageing study so travelling far was not an option.” (Survey ID 521)</li> </ul>
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18 **While Working from Home**

<b>Distribution of Household Labour</b>	
<p>Intentional imbalance of household activities</p>	<ul style="list-style-type: none"> <li>• “My partner isn't employed right now so he does more than half the chores because he has more time than me.” (Survey ID 29)</li> <li>• “Some household members have chronic health issues and aren't able to do as much.” (Survey ID 462)</li> <li>• “I am still working (albeit, the work I do is a little different without lab work), while my partner is temporarily laid off due to COVID, so he's be doing a lot more of the cooking, and work around the house (gardening, washing windows, renovations, etc.).” Survey ID 652)</li> </ul>
<p>Unintentional imbalance of household activities</p>	<ul style="list-style-type: none"> <li>• “Some gender roles are hard to escape and I find myself, now that I am always home, picking up even more of the slack than before.” (Survey ID 248)</li> <li>• “Though my partner and I both work from home, I still feel like a lot of home duties fall on me. I do 80% of the cleaning and cooking--though this is not much different prior to COVID.” (Survey ID 741)</li> </ul>

	<ul style="list-style-type: none"> <li>• “I live with 6 people who refuse to clean up after themselves. Garbage left everywhere. Dirty dishes everywhere.” (Survey ID 626)</li> <li>• “My roommates are lazy as fuck and won't take out the trash or empty the god damned dish washer.” (Survey ID 631)</li> </ul>
Equal distribution of household activities	<ul style="list-style-type: none"> <li>• “Both me and my partner are dividing tasks so that everyone plays a role and contributes to household shores. We also try to plan and divide the workspace depending on our workload, tasks and meetings.” (Survey ID 87)</li> <li>• “We have always been pretty good about equally distributing household responsibilities and it hasn't changed during the work-from-home stage.” (Survey ID 230)</li> <li>• “We already had a schedule routine, so that everyone contributes equitably to cohabitation.” (Survey ID 719)</li> </ul>
<b>Barriers to working from home</b>	
Technical Issues	<ul style="list-style-type: none"> <li>• “The Internet in my apartment is not very stable and I often have difficulties that unpredictably prevent me from getting online” (Survey ID 133)</li> <li>• “No functional workspace, lack of strong internet connection, dysfunctional personal laptop” (Survey ID 191)</li> <li>• “The software thing, I don't know how big of a barrier that's going to be because I haven't even tried to download it yet, but we'll see. That's a potential one.” (Interviewee 10)</li> <li>• “My computer itself can't really do as much processing as I would like, so that is kind of a limitation as well. Storage of data, I had to buy two new externals. Technology, I think, was probably the biggest one, the biggest limitation with regards to the work specifically that I was doing.” (Interviewee 8)</li> </ul>
Distractions/Other responsibilities	<ul style="list-style-type: none"> <li>• “It is difficult to be productive when there are so many distractions around and I can't get a change of scenery.” (Survey ID 576)</li> </ul>

	<ul style="list-style-type: none"> <li>• “Distractions throughout the day. There are many other things I could be doing in the household during the day (laundry, cleaning, outdoor maintenance, etc.) that I would not normally worry about when I was in the lab.” (Survey ID 528)</li> <li>• “[My daughter] is only 15 months so she requires a lot of hands on attention, so my husband and I take turns watching her so we only work for 2-2.5 hours/day” (Survey ID 137)</li> <li>• “So if I just get up to go grab a glass of water, then I'll see something and I'll fix it. Or oh, there's a little bit of dishes. I'll start doing them and I'll start doing other things, and I'll never go back to work. So when I work in the lab and in my office at the desk, there's nothing else.” (Interviewee 14)</li> <li>• “My kids, 100%. Just distractions at home would be how I would call that for sure.” (Interviewee 18)</li> </ul>
<p>Decreased Motivation</p>	<ul style="list-style-type: none"> <li>• “Lack of motivation. I think this partially stems from my general struggle with quarantine, but I find it hard to motivate myself to do things that are work related (such as reading the literature). Nothing seems pressing and I sometimes genuinely do not feel like working.” (Survey ID 129)</li> <li>• “Lack of motivation, because I feel like my research is less relevant now, and that the biggest thing slowing me down is not getting new experiments done.” (Survey ID 52)</li> <li>• “Motivation - my brain seems to just shut down all the time, and I have a hard time controlling and coming out of it. I just feel so overwhelmed thinking I have so much to do that I don't do anything and then I get anxious because I'm afraid that I didn't do enough work.” (Survey ID 562)</li> <li>• “That was a major difficulty, just catching back and re-finding the motivation to get stuff done.” (Interviewee 13)</li> </ul>

<p>Poor Mental Health</p>	<ul style="list-style-type: none"> <li>• “My brain seems to just shut down all the time, and I have a hard time controlling and coming out of it. I just feel so overwhelmed thinking I have so much to do that I don't do anything and then I get anxious because I'm afraid that I didn't do enough work.” (Survey ID 562)</li> <li>• “Managing my anxiety and depression during this uncertainty has left very little energy to focus on work ” (Survey ID 311)</li> <li>• “I suffer from mental health issues (anxiety, depression) which have been worsened by the pandemic and the side-effects have been detrimental to completing work (insomnia, panic attacks, lack of motivation).” (Survey ID 51)</li> <li>• “I think, three weeks to four weeks in, I started to get very, very depressed, because I think I was coping up until that, but then at that point, I think your coping strategies need to change, and I think hope was something that was being lost at that point” (Interviewee 8)</li> </ul>
<p><b>Supports while working from home</b></p>	
<p>Financial</p>	<ul style="list-style-type: none"> <li>• “Financial security of my stipend” (Survey ID 311)</li> <li>• “Continued financial support from my department” (Survey ID 265)</li> <li>• “Monetary support from the government (CERB)” (survey ID 657)</li> <li>• “Government Financial Support CESB” (Survey ID 674)</li> <li>• “Uber eats: we picked up a delivery driver job because it is considered essential work, and our income was greatly impacted” (Surveu ID 48)</li> <li>• “My institution is still paying graduate students their same stipend that they would have been paid anyway. And as a scholarship holder, the funding agencies are also doing that as well. However,</li> </ul>

	<p>my scholarship also runs out the same time that I should be graduating.” (Interviewee 11)</p> <ul style="list-style-type: none"> <li>• “One of the things our department did, which was so good, is we normally get a grant or we get a little reimbursement for travel for conferences, so they've moved that to being anything you need now that you live at home to run your studies at home. You can actually apply for that money to go towards that.” (Interviewee 16)</li> </ul>
<p>Social Connections</p>	<ul style="list-style-type: none"> <li>• “I feel supported and validated in my feelings, and knowing that we're all struggling. Support from friends and peers makes me feel less alone and I know I'm not the only one having trouble with this” (Survey ID 493)</li> <li>• “My friends: help me feel less lonely/My family: provide support and optimism” (Survey ID 12)</li> <li>• “1. Spending time with my child - he makes me happy 2. Video call with family” Survey ID736)</li> <li>• “Support from family and friends and my partner. Give me hope that I can still connect with people and make it through this” (Survey ID 29)</li> <li>• “I have had my friends that I keep communicating with as because they are my friends and we play Euchre at lunchtime, and then we'll play games after hours and stuff too. They've become more available because they also are being stuck from doing things that they would like to do outside of the house. So I think that the communal network of friendship and stuff has grown stronger because of which.” (Interviewee 15)</li> </ul>
<p>Establishing and Maintaining Routine</p>	<ul style="list-style-type: none"> <li>• “Cleaning my apartment and establishing a routine, for feeling that there is a rhythm and purpose to my daily life again” (Survey ID 133)</li> </ul>

	<ul style="list-style-type: none"> <li>• “My partner, routine exercise and cooking have kept me feeling productive and in a routine throughout each week” (survey ID 567)</li> <li>• “A professor in the department offered a daily online statistics workshop that has helped keep me in a routine” Survey ID 196)</li> <li>• “Having a dog has helped me stay in a normal routine of getting up at a decent time to take her outside and getting out for a walk every day.” (Survey ID 515)  “My dog insists on thrice daily walks, which gets me up and moving. And I find that I get back from walks and I can focus a lot better.” (Interviewee 6)</li> </ul>
<p>Mental Health Support</p>	<ul style="list-style-type: none"> <li>• “The Telehealth therapy has been intermittently helpful.” (Survey ID 115)</li> <li>• “My therapist, who helped me work out a schedule and cope with my emotions in a healthy way” (Survey ID 417)</li> <li>• “Counselling: It is good to have someone who understands my mental health and is working to keep me going through this time.” (Survey ID 658)</li> <li>• “Exercise - I always feel like I need to be doing (which is why sitting down and writing is hard for me); running removes all the excess anxiety and improves my mood” (Survey ID 116)</li> </ul>
<p>Supervisors and Administrative Support</p>	<ul style="list-style-type: none"> <li>• “My supervisor is very supportive not only of my research but also my well-being. He listens and encourages me to take care of my mental health and understands that this social distancing thing is having a pretty big impact on me.” (Survey ID 562)</li> <li>• “[My] supervisor telling the group during lab meeting to focus on health and family and not expecting any productivity at this time.” (Survey ID 87)</li> <li>• “My department chair has been very transparent which has provided clarity and some ease of anxiety.” (Survey ID 195)</li> </ul>

	<ul style="list-style-type: none"> <li>• “I’d say my supervisor genuinely, she has been incredibly supportive during this time of understanding what it’s like to go through this, but also keeping us very aware of decisions that are being made and very realistic.” (Interviewee 3)</li> <li>• “My supervisor and labmates have kept our weekly lab meetings and one-on-one meetings going and have added a weekly virtual lunch so we can have social contact. This keeps me connected to my work and my co-workers.” (Survey ID 255)</li> </ul>
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20 **Returning to the Laboratory**

<b>No Concerned About COVID-19</b>	
<ul style="list-style-type: none"> <li>• “Not too worried about it career wise, everybody in the field is experiencing it in a similar way. Just need to make sure I’m moving forward and staying ahead of myself.” (Survey ID 313)</li> <li>• “I think everyone’s research has been disrupted heavily and most grant / hiring committees are aware of this, so I am not extremely worried. That said I feel like I should be using this time much better and it’s starting to stress me out.” (Survey ID 99)</li> </ul>	
<b>Concerns on Ramifications of COVID-19 (Personal)</b>	
Family or Friends Getting Sick	<ul style="list-style-type: none"> <li>• “Personally I have mostly been worrying about my family, since they live in a country that already struggles with its healthcare system. I worry they might get sick and I won’t be able to do anything from here” (Survey ID 93)</li> <li>• “My girlfriend or family member getting sick is probably my main concern in that regard. They might be fine, or they might be nearly incapacitated afterward, we don’t know” (Survey ID 324)</li> <li>• “I am worried for the health of my family members who have chronic illnesses and need to attend medical appointments that are unrelated to Covid.” (survey ID 481)</li> </ul>

	<p>“I fear my family and friends getting sick and dying, especially if by some chance I never get to see some people again in person” (Survey ID 462)</p>
Personal health	<ul style="list-style-type: none"> <li>• “I... might die? So that's an issue that I worry about” (Survey ID 234)</li> <li>• “I have been lucky enough to stay in virtual contact with my significant other, it is not the same as being with one-another and feelings of loneliness have been quite frequent and difficult to surpass at times. That, in combination with my anxiety about the impact of COVID-19 on my planned graduation date/future, make me worried about my mental health” (Survey ID 129)</li> <li>• “I am concerned about the impact COVID-19 will have on my long term physical/mental health” (Survey ID 516)</li> <li>• “Probably my mental health - there are definitely days I felt more depressed or anxious than others.” (Survey ID 120)</li> </ul>
Decreased social interaction	<ul style="list-style-type: none"> <li>• “I worry that it's going to affect my ability to engage in social interactions productively. I've always been shy and somewhat awkward, so I worry that spending so much time in social isolation will just exacerbate that.” (Survey ID 513)</li> <li>• “Feeling lonely and isolated, I've relocated but the situation is still not ideal” (Survey ID 394)</li> <li>• “Not being able to physically see people makes it harder to maintain connections. I had a ‘COVID’ birthday and it felt like I was forgotten by most people, even though a birthday is not a priority in times like these.” (Survey ID 37)</li> <li>• “My main concern is the fact that I have no idea when will be the next time I see my family.” (Survey ID 98)</li> </ul>
Delayed life milestones	<ul style="list-style-type: none"> <li>• “This situation has screwed up my whole life plan, I just want to scream, I feel like I have no control.” (Survey ID 377)</li> </ul>

	<ul style="list-style-type: none"> <li>• “We were planning on starting a family. In the first week of confinement my [birth control] was supposed to be removed, but that appointment got canceled. It is unclear when this can happen now and whether this is a good moment to become pregnant.” (Survey D 259)</li> <li>• “I won’t get married next June 2021” (Survey ID 183)</li> <li>• “I always had it in my brain that I would get finished with school and then get married and have a kid. Or have a kid during my first postdoc or something like that or during my first industry job or something. [...] But now that my schooling maybe pushed by a whole year, our timelines may not be kind of lined up anymore. So then that brings up the question. Do I kind of pressure my partner to change their timeline to more suit what I want? Or do I just decide that I just have a kid during my PhD and see how that looks? But then on top of that, if I do that, then that compounds the financial issue that I already talked about. Yeah. I feel like whenever I think too hard about it, I kind of spiral into this pit of despair. So I try not to think too hard about it.” (Interviewee 11)</li> </ul>
<p>Personal Finances</p>	<ul style="list-style-type: none"> <li>• “I am still paying full tuition to sit on my couch and not be allowed into my lab, when that tuition I'm paying is to be a part of a research program, a research program I currently cannot take part in.” (Interviewee 17)</li> <li>• “Financially, this is very stressful for my family and me personally. I worry this will affect many plans we had in the future” (Survey ID 15)</li> <li>• “My biggest worry is how I will provide for my family. Scientific research has really changed. The job market is shut down. How do I keep putting food on the table?” (Survey ID 526)</li> </ul>

	<ul style="list-style-type: none"> <li>• “Financial worry. I was expecting to have a lab job this summer and still needed to find a second job to meet my living needs.” (Survey ID 657)</li> <li>• “I worry that our graduate student clock is ticking while we don't get any research done, and we will be forced to going over time. I worry that the school won't extend the amount of time that they continue to pay graduate students their entire stipend, even if students only go overtime due to COVID” (Survey ID 34)</li> <li>• “And unfortunately that comes with the limitation because the time lost is, as far as today, no agency is willing to acknowledge this in their funding process for PhD and post doctoral students. Everyone will tell you life continues and we're going to find the solutions and when you have your main source of funding that ends in September and you see two or three months of your loss, that's more intense.” (Interviewee 12)</li> </ul>
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**Concerns on Ramifications of COVID-19 (Current Research Activities)**

<p>Research Funding Shortage</p>	<ul style="list-style-type: none"> <li>• “I worry that funding for basic research will become scarce”(Survey ID 80)</li> <li>• “I mostly worry about funding availability. Especially within the next few years and our economy recovers.” (Survey ID 513)</li> <li>• “I worry there will be a lack of jobs and funding in the future because of the economic impacts of this. I aim to continue in research in the healthcare field, but I am not interested in COVID research which is where I think a lot of funding (rightfully) will go.” (Survey ID 651)</li> <li>• “I am scheduled to defend my PhD this fall and was hoping to apply for post doctoral funding in the fall. I am hoping it still exists/ those funding competitions precede.” (Survey ID 481)</li> <li>• “Availability of funds next year and the coming years, that may actually be an issue. Considering the deficit that we are definitely</li> </ul>
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	<p>running ourselves into, I think it really opens up a bigger question about whether or not we decide to put money back into science” (Interviewee 8)</p>
<p>Project Delay or modification</p>	<ul style="list-style-type: none"> <li>• “[COVID-19] has already cancelled my current research topic and forced me to have to change it.” (Survey ID 664)</li> <li>• “I am very worried about this impacting my ability to graduate on time.” (Survey ID 676)</li> <li>• “Delaying my graduation date due to not having enough data to complete my project on time” (Survey ID 340)</li> <li>• “The biggest worry in this regard is that it will delay my graduation.” (Survey ID 528)</li> <li>• “My current research project is on hold until I can go in to lab to collect more data. There is nothing to be done about my current research project. However, I am exploring other research projects that can be done remotely.” (Survey ID 146)</li> </ul>
<p>Delayed Graduation</p>	<ul style="list-style-type: none"> <li>• “The biggest worry in this regard is that it will delay my graduation. Graduate student has been hard on me. I don't have enough time to do all of the things I want to in life. Basically, I don't want to be in this life situation longer than is required.” (Survey ID 528)</li> <li>• “My main concern right now is just being able to graduate from this current degree” (Survey ID 471)</li> <li>• “That I will be unable to graduate on time as I cannot complete any studies and nature of work does not allow for remote work.” (Survey ID 521)</li> </ul>

<p>Cancelled Travel and networking</p>	<ul style="list-style-type: none"> <li>• “It may delay my graduation and restrict my ability to travel abroad for a postdoc or to conferences which provide vital networking opportunities that can dictate my future steps after graduation.” Survey ID 284)</li> <li>• “I may not be able to travel abroad for a research opportunity I was very much so looking forward to. This could limit the impact of my research being applied to different subsets of the field” (Survey ID 631)</li> <li>• “My dream post-doc is in the United States (Texas!) and I am worried that it won't be safe/ there will not be the opportunity in a year from now.” (survey ID 481)</li> <li>• “I'm nearing the end of my PhD, and looking to postdocs. A lot of my postdocs that I was trying to at least explore were all international.” Participant 1)</li> <li>• “I'm in that crucial new investigator period of my career. COVID represents a year of no conferences, no networking, no data collection... it's setting everything back.” (Survey ID 203)</li> </ul>
<p>Decreased productivity</p>	<ul style="list-style-type: none"> <li>• “Getting a "penalty" on my CV for not being productive or showing some type of scientific work. In addition of lagging behind colleagues that were able to continue working either due to a different lab shutdown procedures or working in countries where policies were completely different” (Survey ID 228)</li> <li>• “I fear that I will have a gap in my CV where I am not productive. It feels like many others are maintaining productivity by writing reviews and meta-analyses, so I do not want to fall behind” (Survey ID 445)</li> <li>• “I worry I will be judged for how productive I was during the crisis. Many biologists are switching gears and starting new research projects on COVID-19 or developing test kits... I worry that my isolation a province away from my lab will make it seem</li> </ul>

	<p>like I've run away from potentially being able to help people” (Survey ID 80)</p> <ul style="list-style-type: none"> <li>• “I hope that future employers will not be asking questions and interviews like, "How productive were you during the quarantine or during the shutdown?" Because it's not necessarily a reflection on how productive I would be at work here.” (Interviewee 2)</li> </ul>
<p><b>Concerns on Ramifications of COVID-19 (Career)</b></p>	
<p>Decreased competitiveness as a candidate</p>	<ul style="list-style-type: none"> <li>• “But this will impact my career compared to other labs that are still functioning in the country, and around the world, so it will slow me down competitively compared to other students/researchers. I.e. publishing, amount of data, etc” (Survey ID 296)</li> <li>• “I am worried I will not get a job in academia because my productivity has decreased, and the job market is poised to become even more competitive.” (Survey ID 761)</li> <li>• “My goal is to become a tenure-track faculty member at a research-intensive university, which is a difficult enough task as is. But I worry that because of this situation, I will either not be productive enough to secure a position, or I will have to prolong my postdoc experience in order to gain enough productivity to be a viable candidate. I also worry that universities will have decreased hiring in the next few years, which coincides with my entry into the academic job market.” (Survey ID 255)</li> </ul>
<p>Availability of employment</p>	<ul style="list-style-type: none"> <li>• “I'm concerned [about] job opportunities in the near future. Many Universities in the states are talking about furloughs and they won't be the only ones that have to take this route. In Alberta there are cuts everywhere. I am extremely anxious about my chances moving on from this PDF and that I am not going to be successful on the job market this year. There will be fewer postings and</li> </ul>

	<p>positions available than ever before and it is terrifying” (Survey ID 248)</p> <ul style="list-style-type: none"> <li>• “I just hope there are still jobs in academia (or any kind of research) after all the economic fallout” (Survey ID 99)</li> <li>• “I’m mostly worried about how it will affect employment opportunities. I’m scheduled to be done in a year and I feel like there will be fewer postings.”( Survey ID 447)</li> <li>• “We don't really know what's going to happen. We know that it's super hard to get a job in academia. So, on top of that now, what are things going to do? It seems like a lot of universities are freezing hires for a good amount of time, so that will, for sure... All the people who can't apply right now are going to apply later, as the freezes are lifted, so for sure, competition is going to get even worse than it was.” (Interviewee 13)</li> </ul>
<p>Modifying career goals</p>	<ul style="list-style-type: none"> <li>• “I am convinced about leaving Academia.” (Survey ID 113)</li> <li>• “Before COVID, I was gaining momentum in my project. I was deciding between transferring from MSc to PhD, but after COVID I lost this motivation entirely. I now have decided to finish with an MSc and hopefully find a job afterwards.” (Survey ID 763)</li> <li>• “I worry that although I would like to stay in academia that the financial burden of delaying my project completion and graduation will require me to turn to the more lucrative industry options which make it difficult to return to academia over the long term.” (Survey ID 195)</li> <li>• “I worry that I can't cope with taking care of my child and getting any work done so that when I return to work I will have lost so much time on my contract and my career won't recover.” (survey ID 226)</li> <li>• “I feel like the time away from [the lab], whether this is good or bad has maybe made me cooled off a little bit and like feeling</li> </ul>

	<p>more, I don't know, further from science and thinking that maybe that's not bad.” (Interviewee 4)</p>
<p><b>Supports to facilitate return to the laboratory</b></p>	
<p>Personal Protective Equipment and Protocols</p>	<ul style="list-style-type: none"> <li>• “Proper PPE and protections in place to prevent spread if there happens to be a outbreak or cases in the department” (Survey ID 422)</li> <li>• “Provision of PPE, implementation of SOPs for working in our current research climate” (Survey ID 457)</li> <li>• “Clear guidelines on safe operation of the building” (Survey ID 654)</li> </ul>
<p>Understanding and Empathy</p>	<ul style="list-style-type: none"> <li>• “Understanding I won't be as productive as before COVID for a long time” (Survey ID 458)</li> <li>• “Reassurance that delays are acceptable” (Survey ID 739)</li> <li>• “Emotional support and encouragement” (Survey ID 769)</li> <li>• “Moral support getting back on track with experiments” (Survey ID 123)</li> <li>• “I would like them to provide resources for counseling, financial support, and immigration consulting for foreign students and postdocs” (Survey ID 84)</li> <li>• “Understanding if I wasn't as productive as some of my peers might have been--circumstances like these are especially difficult for me, having generalized anxiety that mostly revolves around the fear of me getting sick. It's somewhat harder to focus when you've got that spinning around in your head.” (Survey ID 92)</li> </ul>

<p>Guidance and Direction</p>	<ul style="list-style-type: none"> <li>• “I want my supervisor to have a meeting with me and set up clear goals for me to finish my program. I also want her to have in mind that this is going to be an ongoing situation for a while, so how many experiments I still have to do to finish manuscripts and how productive can I be during the current situation is gonna have to be taken into consideration.” (Survey ID 93)</li> <li>• “A detailed plan of how to be most efficient with research efforts, prioritize tasks, offer training support to help get me started on experiments” (Survey ID 347)</li> <li>• “Clear communication of expectations and [degree] protocols” (survey ID 248)</li> <li>• “we can graduate on time/ transitioning, how committee meetings are going to go” (Survey ID 32)</li> <li>• “a solid plan on the lab reopening, and potentially projects we can do if human-to-human interactions are not permitted for a while” (Survey ID 442)</li> <li>• “I think long term, it would be great if PIs could adjust their expectations, given our current circumstances and acknowledge that the PhD or the master's degree that students had originally set out to accomplish may not be feasible within our current time frames.” (Interviewee 11)</li> </ul>
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<p>Timeline Support</p>	<ul style="list-style-type: none"> <li>• “I would hope that there would be support in terms of flexibility for certain milestones (comprehensive exams, graduation timeline, funding timeline) that allows us to get back to our research without feeling like we need to compress everything into the time that we lost” (Survey ID 92)</li> <li>• “The main worry is that my committees will not be pleased with it and I have to extend my degree, which is something I really don’t want to do.” (Survey ID 651)</li> <li>• “Assurance that I will graduate on time” (Survey ID 583)</li> <li>• “An automatic program extension” (Survey ID 417)</li> </ul>
<p>Financial Support</p>	<ul style="list-style-type: none"> <li>• “Extension of the guaranteed period of funding would be amazing. While I’m not very worried about my supervisor and funding, technically our department only guarantees funding for 4 years and losing more than an entire semester really affects that” (Survey 139)</li> <li>• “I know that we are all just trying to cope with it, but tri-council agencies extended grant support to PIs and grad students in the last year of their degree. Post-docs, however, were left by the wayside as if we’re not affected by this at all! Why not extend funding for all researchers (at least by the time it took to deal with the shutdown)... Last couple of months and likely all summer is going down the drain anyways.” (Survey ID 624)</li> <li>• “Financial support (especially for international students)” (Survey ID 35)</li> <li>• “Deflate tuition fees! I am paying thousands of dollars every semester to use university space/infrastructure and was unable to use any of this for a considerable amount of time.” (Survey ID 78)</li> <li>• “Would be great to have funding that covers the bills for necessary software needed to basic research and covered by university or</li> </ul>

	<p>department or else without touching to our fellowship” (Survey ID 330)</p> <ul style="list-style-type: none"> <li>• “ideally extension of my fellowship in funding and extension of the 5-year status of a post-doc/work permit” (Survey ID 259)</li> <li>• “I think also with a lot of the communications coming down from funding bodies, while excellent that they're thinking about short term needs of students who are trying to complete this term and are delayed, that's wonderful, I'm also concerned about long term. That in light of the delay in my research, I'm thinking about decisions like should I take a leave of absence to then allow for funding to extend my degree further? Because these funding bodies have not been, they say that they're very well maybe changes that come down for students in a year or two years from now, or who are struggling to finish on time. But those decisions right now are for the immediate, which I understand why that is.” (Interviewee 3)</li> <li>• “I had really hoped that the tri council agencies were going to extend everyone's scholarships by a year, especially considering how they extended everyone's discovery grants by a year. [...] I was happy to see for some of my colleagues that they were extending some scholarships by four months, which is great. However, being someone who doesn't qualify for that, it's a little frustrating. Yeah. Long term support, money for sure.” (Interviewee 11)</li> </ul>
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22 **Supporting Table 2.** Further Survey Respondent Characteristics.

Category	N (%)
Previous publication of journal articles	
No	93 (40.4)
Yes	137 (59.6)
For Master’s Students – In the process of looking for a PhD position in the past six months?	
No	48 (71.6)
Yes, casually looking for positions	10 (14.9)
Yes, actively looking for positions	2 (3.0)
Yes, I have found a PhD position	7 (10.4)
For PhD Students – In the process of looking for a Postdoctoral position in the past six months?	
No	90 (76.9)
Yes, casually looking for positions	22 (18.8)
Yes, actively looking for positions	2 (1.7)
Yes, I have had interview(s)	1 (0.9)
Yes, I have found a postdoctoral position	2 (1.7)
For Postdoctoral Fellows – In the process of looking for a new position in the past six months?	
No	20 (42.6)
Yes, casually looking for a new postdoctoral position	5 (10.6)
Yes, actively looking for postdoctoral position	5 (10.6)
Yes, I have had interview(s) for a postdoctoral position	1 (2.1)
Yes, I have found a new postdoctoral position	2 (4.3)

Yes, casually looking for a new faculty position	7 (14.9)
Yes, actively looking for a faculty position	3 (6.4)
Yes, I have had interview(s) for a faculty position	3 (6.4)
Yes, I have found a new faculty position	1 (2.1)

24 **Supporting Table 3.** Interview Respondent Characteristics.

Category	N (%)
Gender	
Female	12 (66.6)
Male	6 (33.3)
Academic Position	
Master's Student	1 (5.6)
PhD Student	13 (72.2)
Postdoctoral Fellow	4 (22.2)
Location of Research Institution	
Alberta	1 (5.6)
New Brunswick	1 (5.6)
Ontario	9 (50.0)
Quebec	7 (38.9)
Area of Research	
Biology	7 (38.9)
Engineering	1 (5.6)
Health and Medical Science	6 (33.3)
Kinesiology	1 (5.6)
Physics	2 (11.1)
Psychology	1 (5.6)
Progress in Graduate Degree	
First-Year of Study	1 (7.1)
Mid-way through degree	6 (42.8)
Entering last year of study	5 (35.7)

All but defence completed	1 (7.1)
Recently Defended	1 (7.1)
Months in Current Postdoctoral Fellowship	
Less than 12 months	1 (25.0)
Between 13 and 24 months	2 (50.0)
More than 48 months	1 (25.0)
For Graduate Students - In the process of looking for a PhD or postdoctoral position in the past six months?	
No	9 (64.2)
Yes, casually looking for positions	3 (21.4)
Yes, actively looking for positions	2 (14.3)
For Postdoctoral Fellows – In the process of looking for a new position in the past six months?	
No	2 (50.0)
Yes	2 (50.0)

26 **Supporting Table 4.** Participation in shutting down other's experiments, stratified by academic  
27 position. N values and percentage values are given for each row. This sample does not include  
28 respondents who did not disclose their academic position. Significance was determined by Fisher's  
29 exact test using GraphPad Prism 8 (P=0.2896).

<b>Category</b>	<b>No - Shut down own project</b>	<b>Yes - Shut down own and other's projects</b>	<b>Total Respondents</b>
Graduate Students	130 (70.7%)	54 (29.3%)	184
Postdoctoral Fellows	29 (61.7%)	18 (38.3%)	47

30

31 **Supporting Table 5.** Symptoms of distress, stratified by respondent gender. Percentage value  
 32 represented those who did not respond “None of the time” to the indicated distress item.  
 33 Significance was determined by Fisher's exact test using GraphPad Prism 8. Total population  
 34 includes respondents who are non-binary or genderfluid, as well a those who did not disclose their  
 35 gender.

Item	Distress Item	Female (%)	Male (%)	Total (%)	Significant Difference?
1	Feeling Overwhelmed	97.6	86.2	94.5	No
2	Feelings of Hopelessness	87.3	81.0	85.5	No
3	Exhaustion (Not from Physical Activity)	92.9	89.5	92.2	No
4	Feeling Very Lonely	83.0	79.3	83.2	No
5	Feeling Very Sad	89.7	79.3	87.9	No
6	Feeling Depressed	64.6	53.4	62.4	No
7	Overwhelming Anxiety	84.8	67.2	79.2	Yes (P=0.0067)
8	Overwhelming anger	53.7	43.1	50.8	No
9	Easily Annoyed or Irritable	90.9	74.1	86.7	Yes (P=0.0029)
10	Restlessness	76.2	72.4	74.5	No
11	Difficulty Focusing on Tasks	98.2	93.0	96.9	No
12	Trouble Sleeping	85.3	79.3	83.3	No
13	Difficulty Connecting with People	73.2	72.4	73.7	No
14	Difficulty Relaxing	86.6	75.9	83.5	No
15	Lowered Productivity	98.2	93.1	97.3	No
16	Difficulty Getting Out of Bed	81.7	79.3	82.4	No

36