

Impact of the SARS-CoV-2 Pandemic on ASA Members

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When the worldwide pandemic began in early 2020, normal routines were disrupted and life changed dramatically for most of us: schooling moved online, the fortunate started working from home, childcare options became more restricted, and online video conferencing replaced in-person meetings. In December 2020, the Women in Acoustics (WIA) Committee decided to conduct a survey of how the pandemic has impacted members of the Acoustical Society of America (ASA) in five areas: (1) work productivity, (2) communication, (3) work enjoyment, (4) career advancement opportunities, and (5) dependent care. The survey, consisting of five rating questions and three open-ended questions, was distributed to members through the ASA e-mail listserv. The 893 responses are summarized in **Figure 1**. Survey responses regarding dependent care are shown in **Figure 2**. A breakdown of groups responding to the survey is shown in **Table 1**.

This essay presents the general trends from the survey and highlights the groups that have been most negatively affected. Across the five focus areas, the restrictions of the pandemic have resulted in improved conditions for some participants, while many have been negatively impacted and others have not experienced big changes as a result of the pandemic. The distribution of responses across questions differs based on career stage, gender, and employment setting. Finally, from the open-ended questions, we summarize several themes from the comments: (1) what ASA members have collectively missed, (2) what has been difficult, and (3) who ASA members have supported. The comments also spotlight some silver linings and lessons that need to be remembered as we emerge from this pandemic.

Work Productivity

Work productivity declined during the pandemic for over 50% of the survey participants. Challenges with

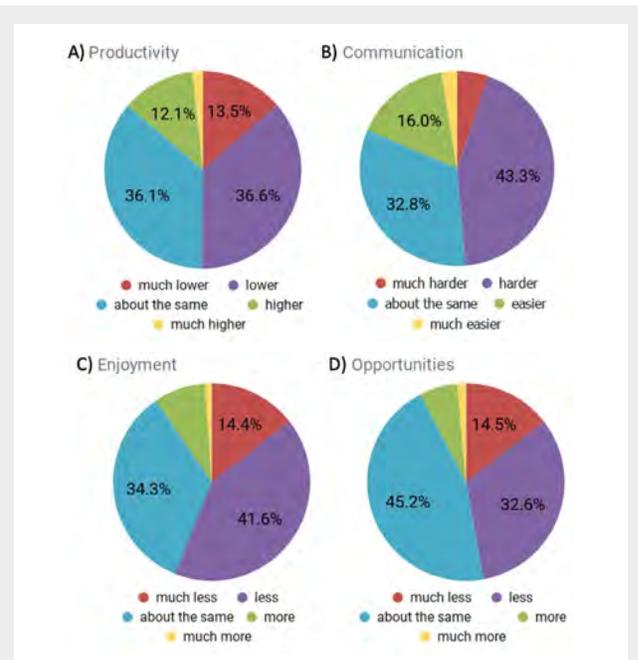


Figure 1. Survey responses regarding work productivity (A) communication (B) work enjoyment (C), and career advancement opportunities (D; $n = 893$). Color coding is consistent across questions, with **red** indicating a large negative impact and **yellow** a large positive impact.

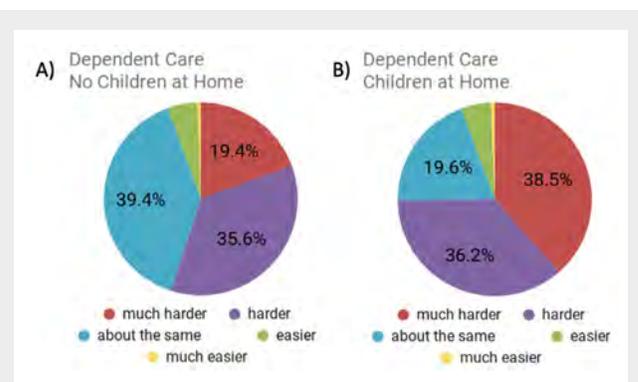


Figure 2. Survey responses regarding dependent care for those who indicated children at home (A) and no children at home (B).

Table 1. Survey participants based on career stage, gender, and employment

Career Stage			Gender			Employment		
	%	Count		%	Count		%	Count
Student	8	65	Male	60	453	Student	8	70
Early career	13	96	Female	37	288	Academia	33.5	277
Midcareer	28	211	Nonbinary	1	5	Industry	34.5	286
Mature career	40	307	Undeclared	2	15	Other field	14	114
Retired	11	83				Unemployed	1	10
						Retired	9	76
Total	100	762	Total	100	761	Total	100	833

Although a total of 893 survey responses were received, not all respondents completed questions regarding career stage, gender, and employment.

motivation, Zoom fatigue, and mental health issues due to isolation and pandemic concerns were reported as factors impacting productivity. Productivity was particularly affected during the initial months of the pandemic; some found strategies to be productive working from home, but many were stymied by factors beyond their control, such as restricted access to laboratories and human subject testing. The career-stage subgroups that expressed the largest reduction in productivity were students, where 66% reported lower productivity. In terms of gender differences, 57% of nonstudent women and 44% of nonstudent men reported lower productivity. In terms of employment, 60% of full-time academics reported decreased productivity compared with 42% of those employed full-time in industry.

Communication

Ease of communication at work has also been reduced for many during the pandemic, with 49% of respondents indicating that communications are more or much more difficult than before the pandemic. Again, student members were the most affected by remote interactions, with 63% reporting greater difficulty communicating. For nonstudents, the gender difference was 44% of men and 51% of women reporting more communication challenges.

“Previously, I relied on short in-person meetings in office. Now everything must be scheduled. This is much less efficient and impacts brainstorming and concept generation.”

At the same time, some participants feel more connected and have had an easier time with communication since the pandemic.

“It is much easier to contact colleagues who are working from home and not traveling. It is easy to answer e-mails quickly when you’re sitting at your computer all day. Video calling has made it easier to network and collaborate over large distances, so I have talked to more people this year than in the rest of my career combined.”

Work Enjoyment

Approximately half of the survey participants (56%) reported a small or large decrease in work enjoyment, with 53% of nonstudent men and 57% of nonstudent women reporting less work enjoyment. A larger percentage of students (67%) reported decreased enjoyment at work; however, the largest negative response came from early-career participants (79%). With regard to type of employment, full-time academics reported the largest decrease in work enjoyment: 79% of women and 70% of men.

Career Advancement Opportunities

When asked about how the pandemic has impacted opportunities for career advancement, 47% of respondents indicated a decrease, including 45% of nonstudent men and 43% of nonstudent women. Students again are the group with the largest concern over decreased opportunities (67%), followed closely by the early-career participants (62%).

Dependent Care

The final area of focus was on the difficulty of dependent care: caring for children or the sick, elderly, or disabled. The results for this question are shown in **Figure 2**. Of the 301 participants who have children at home, about 75% responded that dependent care was harder or much harder than before the pandemic. Of the 179 people who answered the dependent care question and also indicated that they did not have children at home, 56% indicated that dependent care was harder. In contrast, 5% of participants in both groups reported that dependent care was easier than before the pandemic. For both groups who have dependents to care for, 61% of nonstudent men ($n = 241$) responded that dependent care is harder than before the pandemic and 79% of nonstudent women ($n = 135$).

For survey participants with children, whether dependent care was more difficult during the pandemic was also affected by the age of children at home. Of those with at least one child between 2 and 10 years of age ($n = 164$), 88% reported increased difficulty compared with 76% of those with a child 0-1 year of age ($n = 37$), 79% with a child 11-15 years of age ($n = 67$), and 49% with a child 16-18 years of age ($n = 37$). In the comments, parents reported changes in the parent-child relationship, including feelings of guilt for neglecting their children while they work and needing to constantly manage screen time and plan for outdoor exercise.

Open-Ended Responses

What Have We Collectively Missed?

The most commonly missed events mentioned include travel, conferences, trade shows, visiting appointments at other institutions, and postdoctoral positions. Many survey participants working in academia reported missing experiments, field work, site inspections, and subject testing. Participants working in industry missed in-person meetings with clients, with one stating that “Zoom and Teams cannot replace face-to-face customer contact.” Additionally, most of us truly missed in-person interactions. Simple interactions such as dropping in to chat with coworkers, brainstorming sessions, and other informal interactions have been missed the most. In their personal lives, many respondents reported missing visits with family and friends.

What Has Been Difficult?

Many difficulties have arisen because of the pandemic in our professional and personal lives. Concerns expressed

regarding work include delayed or modified data-collection plans, transitioning to online teaching, limited or no access to laboratories, reduced visibility from limited conferences and interactions with colleagues, budget problems, layoffs, salary freezes, and technical issues with video conferencing as well as Zoom fatigue. Many survey participants reported that mental health challenges have been exacerbated by the pandemic. Separation and, in many cases, isolation have increased feelings of loneliness, anxiety, and depression, with the latter two being further strengthened by concerns over the pandemic and the sociopolitical events of the past year. Specific challenges regarding working from home were also identified, including the presence of a large number of distractions at home, sharing space with multiple people in the household, being in continual flux about childcare and schooling situations, and difficulty establishing work-life separation.

How Have We Helped Others?

Survey participants have gone shopping for others and cared for the medical needs of elderly or disabled relatives. Parents have spent time supporting children with remote schooling, which has been especially challenging for students with learning difficulties and special needs. Parents have also helped children grieve the loss of school and social activities. Survey participants commented on the difficulty of caring for elderly family members living in care facilities that did not allow visitors and watching those with early-stage dementia who could not understand why people stopped coming to visit.

Have There Been Silver Linings?

Amid the hardships, we asked survey participants to consider whether there have been silver linings to the pandemic. A few common answers included the reduction in commuting time, flexible work hours, and more time with family. Some have cherished being present more as babies and toddlers have reached new milestones, and many double-career families mentioned the increased need to share parenting responsibilities, which requires extra coordination.

Although virtual conferences are reportedly not as enjoyable or beneficial for most, for persons in countries farther removed from conference locations or those otherwise constrained by budget restrictions, the ability to attend virtual conferences has been astoundingly positive. One of the greatest positives identified by respondents is that the pandemic has made working remotely more acceptable.

Scheduling meetings online is more common and often easier to arrange, especially for international collaborations.

What Have We Learned?

Survey participants reported that the pandemic has made them look at life from a different perspective, work more independently, adapt to uncertainties, be more understanding about technical difficulties, make the most of whatever situation arises, and reflect on things that they took for granted such as in-person interactions. One survey respondent who is hard of hearing raised a particularly important point about accessibility:

“The pandemic has radically changed the experience of living with hearing loss. We no longer need to navigate noisy crowds, but we have to deal with face masks muffling sound. Normal-hearing people who are now struggling to hear people with masks have a greater appreciation for good communication practices. I hope that those lessons translate into better accessibility even after the pandemic.”

Conclusions

ASA members have shared their experiences with work productivity and enjoyment, communication, opportunities for career advancement, and dependent care as the pandemic has impacted their lives. After considering the dataset from different angles, several subgroups stand out as having been most significantly impacted by the pandemic. Students reported the highest negative changes in work productivity and communication. Students and those in the first five years of their career expressed the most negative impact in terms of opportunities for advancing their careers. Respondents who are currently unemployed ($n = 10$) are struggling the most in all areas at this time. With regard to gender, more women than men reported increased difficulties with work productivity, work enjoyment, opportunities to advance, and, in particular, dependent care. The closure of laboratories, restrictions on human subject testing, lack of in-person meetings for collaborations, networking, and sales, and transitioning to online classes have had a significant impact on many. Finally, those with children at home have in many cases felt overwhelmed by the continual flux and overall lack of childcare and/or the demands of remote schooling.

This survey highlights our collective need to share our individual pandemic experience. Although the majority

have experienced increased hardships, some report more positive outcomes. Every experience is valid and should be respected. Further details on the survey results can be found at (bit.ly/2PRNwhY). We thank all who participated in the survey and encourage each of us to consider how we can support those most impacted by the pandemic and what lessons we can take with us to improve life beyond the pandemic.

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