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## Together, Apart: Communication Dynamics among Academic Librarians during the COVID-19 Pandemic

Maryellen Nash  
*University of South Florida*

Barbara Lewis  
*University of South Florida, bilewis@usf.edu*

Jessica Szempruch  
*University of South Florida, jszempru@usf.edu*

Stephanie Jacobs  
*University of South Florida, sajacobs@usf.edu*

Susan Silver  
*University of South Florida, ssilver@usf.edu*

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# Together, Apart: Communication Dynamics among Academic Librarians during the Covid-19 Pandemic

Maryellen Nash, Barbara Lewis, Jessica Szempruch, Stephanie Jacobs, and Susan Silver

The COVID-19 pandemic forced organizations into rapid transition to virtual workplace settings. Librarians at the University of South Florida conducted a study to discover trends in team communication dynamics among academic librarians working remotely during this period. This study was motivated by a desire to gauge the perceived degree of positive or negative impact on group communication dynamics and connectedness before and after the transition, with attention paid to factors that inform team communication. This study used a quantitative approach employing a cross-sectional survey administered to the population of professional academic librarians in the United States. Survey findings exhibited small shifts in dynamics, opening a path for more nuanced examination. Effects on librarianship due to the pandemic are still being felt; it is a topic with long reach and impact, which merits examination.

## Introduction

While remote work practices have increased in recent years, the unprecedented events of 2020 prompted revision of operations for libraries large and small. Prepandemic research documented a rise in job satisfaction among those working at home. This same study also investigated the emotional well-being of individual employees.<sup>1</sup> For purposes of employee well-being and institutional efficacy, virtual teams need to maintain communication, rapport, and trust through effective management and team building designed for a virtual environment.<sup>2</sup> The effect of virtual communication and technology on both job satisfaction and teamwork is investigated by researchers in a variety of fields, naturally, because a wide spectrum of businesses and institutions employ virtual work to varying degrees. Mesmer-Magnus et al. provide findings on team information-sharing practices that suggest that the outcomes of virtual team communication

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\*Maryellen Nash was Director for Research & Instruction in the USF Tampa campus library at University of South Florida; e-mail: mallen@usf.edu. Barbara Lewis is a Social Sciences Librarian in the USF Tampa campus library at University of South Florida; e-mail: bilewis@usf.edu. Jessica N. Szempruch is campus librarian in the Sarasota-Manatee campus Library at University of South Florida; e-mail: jszempru@usf.edu. Stephanie A. Jacobs is a Blended Instructional Design & Arts Librarian in the USF Tampa campus library at University of South Florida; e-mail: sajacobs@usf.edu. Susan Silver is a retired Social Sciences Librarian in the USF Tampa campus library at University of South Florida; e-mail: ssilver@usf.edu. ©2022 Maryellen Nash, Barbara Lewis, Jessica N. Szempruch, Stephanie A. Jacobs, and Susan Silver, Attribution-NonCommercial (<http://creativecommons.org/licenses/by-nc/4.0/>) CC BY-NC.

can result in varying outcomes, observing that “high-virtuality teams exchange more unique information”<sup>3</sup> while noting that the in-person teams exchanged information more freely, but that this information was not necessarily conducive to more efficient work.

The topic of virtual work is inextricably linked with the issues of team communication as an integral force behind getting things done. The study described here is intended to investigate the challenges faced by and changes to the communication dynamics of library teams after the shift to remote work during the COVID-19 pandemic. A research team of librarians from multiple campuses of the same organization came together to design and implement a survey, which was created to address specific research questions concerning librarians’ perceived impact of altered modes of communication on their connectedness, communication dynamics, and teamwork. This paper will share the findings from this survey and analysis of results to discuss the overall impact the abrupt shift to remote work had on team dynamics and communication for a sampling of academic librarians across the profession.

## Literature Review

Organizations have slowly been adopting remote work policies for their employees for decades. In some cases, it was economically advantageous. In other cases, it was because an employee had specific at-home responsibilities. Worldwide, organizations also realized the benefits of virtual communication for multinational project teams.<sup>4</sup> As virtual teams and work from home became more prevalent, scholars began studying the impact, benefits, and challenges of remote contact on group development, collaboration, and communication among team members.

A prevalent factor in the success of teams, whether face-to-face or virtual, is the knowledge about and trust in other team members that develop over time as a team becomes integrated. In their review of group development models, Mennecke et al. identify group development as “the degree of maturity and cohesion that a group achieves over time as members interact, learn about one another, and structure relationships and roles within the team.”<sup>5</sup> Sarker and Sahay studied four phases of virtual team development over time: initiation, exploration, collaboration, and culmination/dissolution. In their study, collaboration was exemplified by “identity becoming integrated at the team-level,” “developing shared meanings and norms,” and relying on and trusting in other team members.<sup>6</sup>

Negative aspects of new team functioning are relatively similar between face-to-face and virtual teams; however, the degree to which a team is virtual can compound some of the effects. A meta-analysis of virtual team research indicates various inconsistencies in the results depending on factors such as the type of teams studied (such as student vs. professional, laboratory vs. field, discipline), the amount of time the team exists, and the technology available.<sup>7</sup> However, some findings are significant. The “degree of virtualness,”<sup>8</sup> from *not at all* to *highly virtual*, can affect team functioning, although some negative effects experienced by highly virtual teams, such as less communication frequency and knowledge sharing, may lessen over time, especially for long-term teams. Regarding the use of virtual tools, Mesmer-Magnus et al. concluded that, where teams fall on the “continuum of virtuality,” between fully virtual to highly virtual or hybrid, impacts the quantity and quality of information sharing. Their meta-analysis found teams that are fully virtual with high use of synchronous tools, such as videoconferencing, can “closely mimic face-to-face interactions.”<sup>9</sup>

An overall review of literature pre- and mid-COVID pandemic indicates that there are many differences between the experiences of those who choose and/or plan to work from home

and those who are under enforced work-from-home situations.<sup>10</sup> The rapid shift to entirely remote working proved to be unprecedented even in the context of virtual team research. Virtual teams have changed as a result of these unprecedented work-from-home edicts, and therefore what is known about how virtual teams function must be reexamined.<sup>11</sup> Ongoing discourse highlights the need to investigate the differing outcomes between voluntary/planned and enforced/unplanned work-from-home situations.

As libraries have been slow to adopt remote work policies, the majority of the literature addressing the topic comes from other industries. As the COVID-19 pandemic is still evolving, library literature has emerged to provide insights and preliminary findings. A segment of that research involves teamwork and group communications during this unprecedented time. Several early reports provided tips for managing remote teams or working remotely, often shaped directly from the actions taken at a specific workplace or within an industry.<sup>12</sup> Early library-related literature from this period reiterated that remote work provides many challenges to workers, especially those who are accustomed to highly collaborative, in-person work environments. At the onset, administrators perceived that public-facing departments, such as reference and instruction or access services, were least suited to remote work assignment.<sup>13</sup>

The ability to work from home successfully during this time is shaped by multiple exterior factors. In most cases, existing face-to-face and co-located teams have tried to recreate their existing work processes in a virtual space through the use of new technologies.<sup>14</sup> This has brought its own set of challenges and opportunities. Hudson-Vitale and Waltz state the consideration of deficiencies in communication, specifically nonverbal cues, as particularly important to library teams navigating work-from-home assignments.<sup>15</sup> Research during this period has found that, for telepresence technology to be most successful in replicating the shared communal feelings of a face-to-face experience, it must be able to replicate nonverbal communication, including handwaving, facial expressions, and other body language.<sup>16</sup>

Issues related to at-home office space and struggles of “boundaryless working” have highlighted inequities among team members that organizations may not have previously had to consider.<sup>17</sup> There is much concern over a lack of work/life balance and separation of workspace/home in discussions regarding these new work-from-home orders. Many workers reported that new technologies designed to facilitate communications among team members contributed to feelings that they could never leave work.<sup>18</sup> This sentiment was particularly strong among nonmanagerial employees who may have seen some of these technologies as a means of surveillance from leadership, especially where the expectations of productivity were not clear.<sup>19</sup>

The effect of working virtually on the communication dynamics and the levels of connectedness of team members is relevant to the success of virtual teams. According to the Pew Research Report by Parker et al., online communication tools are crucial in virtual work, since about 80 percent of remote workers use online meeting software to stay in touch and 65 percent are satisfied with the technological substitute. Despite challenges, findings indicate that many workers found the transition to work from home due to the pandemic relatively simple and would like to continue remote work in the future.<sup>20</sup> Just less than two-thirds of those surveyed by Pew Research (65%) also noted that they found new online tools to be a good substitute for face-to-face interactions to maintain communication with colleagues, with 63 percent feeling comfortable with the amount of time they spend on video calls. Dubey and

Tripathi completed a sentiment analysis of 100,000 Twitter posts from early in the pandemic. They discovered that more than 70 percent of postings continued positive sentiments in regard to working from home.<sup>21</sup> Rysavy and Michalak found that transitioning to working from home was easier for their team because they were already accustomed to collaborating with virtual tools, and team meetings allowed humanizing glimpses into the real lives of their colleagues.<sup>22</sup>

While most remote workers were satisfied with their ability to communicate with fellow team members during the pandemic, the majority also felt they are now less connected to their coworkers, although “seasoned teleworkers” were less likely to feel disconnected (65% vs. 27%, respectively).<sup>23</sup> One factor that is identified with feelings of disconnection is the loss of “side-bar connections that happen in a regular office setting.”<sup>24</sup> The decrease in interpersonal interactions with colleagues may be challenging and leave knowledge workers feeling isolated and without social support or engagement.<sup>25</sup> This decreased feeling of connectedness with coworkers could also be exacerbated by the loss of social connectedness with the outside world during the pandemic. As one study showed, engagement with others outside work can have a beneficial effect on job-related positive affective well-being.<sup>26</sup>

Though the literature is still developing, there are glimpses into the long-lasting impact of newly formed virtual teams and remote work. Lessons learned in regard to maintaining work-life balance, creating productive and dedicated workspace in a home office, and communicating openly and often with teams have lasting impact.<sup>27</sup> Some scholars, who discovered previously unconsidered research topics or forged new collaborative relationships they may not have otherwise been able to create, wonder if this experience will continue to shape their practice once working from home is no longer mandated.<sup>28</sup> Libraries, such as those discussed by Ayre and Craner, that have come to rely on virtual collaboration tools to maintain communication with their patrons may wish to continue using those tools to enhance their reach.<sup>29</sup> New positions created by libraries to support distanced patrons may allow for increased availability and viability of work-from-home opportunities postpandemic.<sup>30</sup>

Charalampous et al. found that remote work can prove to be a benefit to knowledge workers because it allows for decreased interruptions and less commute-related stress.<sup>31</sup> When coupled with social support networks and good communication between remote and office-based workers, those working from home may find themselves more confident and have more job satisfaction. Findings by Ortiz de Guinea et al. suggest that, in the longer term, a virtual team’s communication should improve to levels more in line with typical face-to-face interactions.<sup>32</sup> Advances in technology are continually improving, which has the possibility of also improving and enhancing virtual team communication.<sup>33</sup> More than ever, it has become apparent how reliant teams are on virtual communication technologies as a means to collaboration. The pandemic has highlighted the previously asserted necessity of formalizing systems and use of specific technology tools across organizations, with input from users to help guide that selection.<sup>34</sup>

Despite current limitations in the literature regarding COVID-specific restrictions within library virtual teams, what exists is significant for understanding the placement of this current study within the scholarly conversation.

## Methods

This descriptive, cross-sectional study was conducted to determine to what extent, if any, the shift to remote work after the COVID-19 pandemic had on group communication dynamics for academic librarians. The period of data collection was November 4 through December 4, 2020.

The target population for this research was primarily team members from well-established academic libraries wherein the teams might be considered cohesive and in the collaboration phase prior to the work-from-home edict. Additionally, the impact of the pandemic forced most teams studied to become fully virtual rapidly, although where they started on the virtuality continuum related to the use of synchronous technology varied. Based on our own experiences, the investigators hypothesized that the ubiquity of collaborative software tools combined with the rapid transition to a work-from-home environment would result in an increase in communication and feelings of connectedness among team members. To this end, the investigators sought to answer three research questions:

1. Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?
2. Did the shift to remote work positively or negatively affect the communication dynamics of teams?
3. Do the members of work teams believe that this shift in communication dynamics will have a lasting impact?

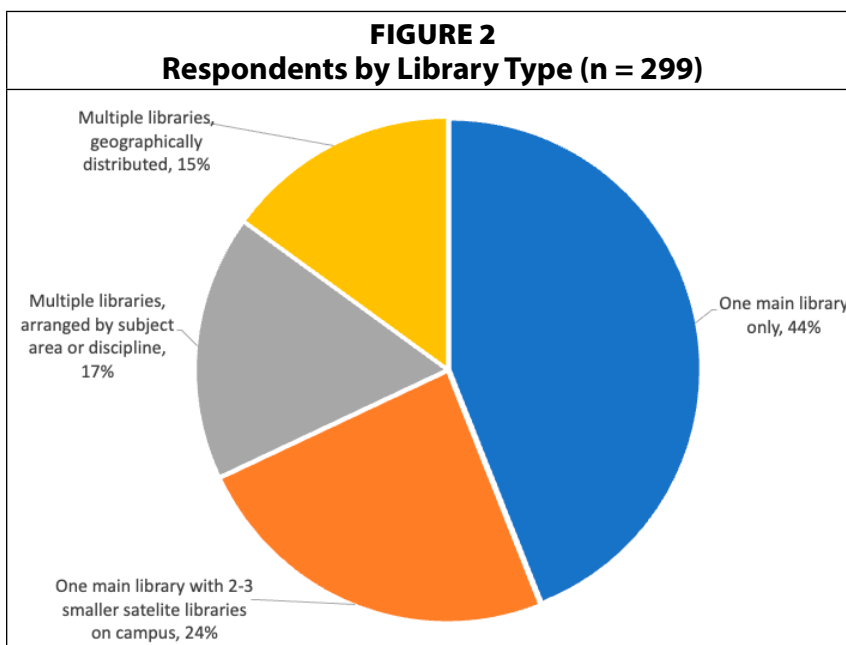
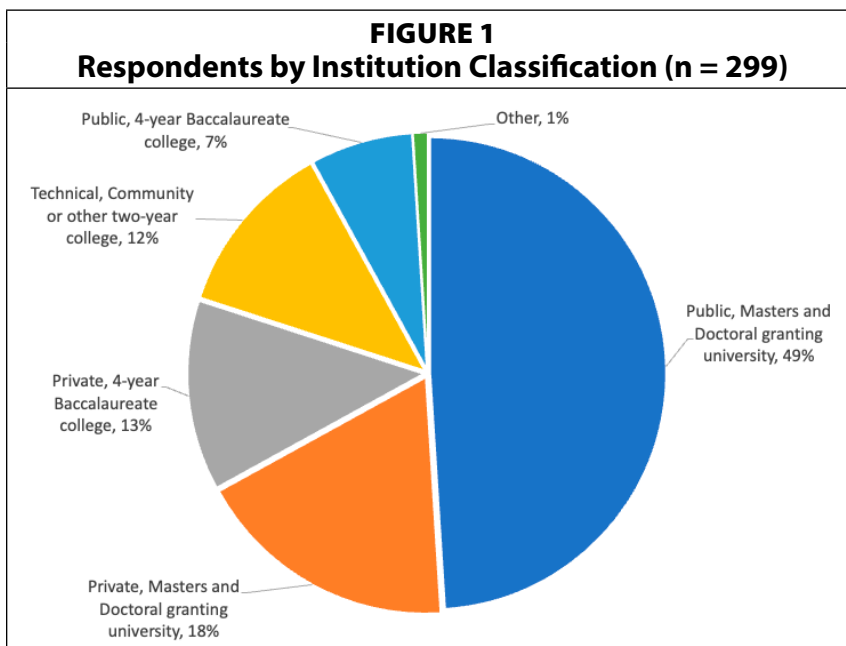
The population for this survey consists of professional academic librarians in the United States. The sample population was derived from academic librarians who responded to calls for participation on professional listservs administered by the Association of College and Research Libraries (ACRL). No attempts were made to determine respondents' specific institutions, nor were protocols put in place to determine if more than one respondent represented a single institution. The total population in 2019 of full-time academic librarians in all institution types, according to the latest available statistics from the National Center for Education Statistics, is approximately 34,000.<sup>35</sup> Using Cochran's formula, with a confidence level of 90 percent and a margin of error of 5 percent, the ideal sample size for this survey was determined to be 271. Since 373 librarians responded to the survey, this sample population was sufficient to accurately represent the experiences of academic librarians in the United States. Although 373 academic librarians responded to the survey, not all respondents completed each question or completed the entire survey. Seventy-four responses were not included in the regression analysis due to missing or incomplete responses, leaving a sample population of 299, which was still greater than the number required for a 90 percent confidence level.

This study was a descriptive, cross-sectional survey using a set of unmanipulated variables to determine patterns in participant perceptions and if a correlation exists between the transition from on-site to off-site work as a result of the COVID-19 pandemic and the communication dynamics of academic librarians. Data analysis was conducted using simple descriptive and cross-tabulation statistics in Power BI, and multiple regression in SPSS to determine if there was a correlation between independent input and dependent outcome variables.

Power BI was used first to understand the general distribution of survey responses and allow the investigators to identify areas that might warrant further analysis. In addition, the visualization of the survey data in Power BI, combined with the ability to cross-tabulate specific survey responses, such as institution and library type with indicators regarding transition to remote work and reported team qualities, helped the team better understand how the response data broke down among various categories. This analysis showed that survey responses concerning feelings of connectedness before and after, team meeting frequency before and after, perceptions of overall impact, and perceived persistence of impact were very evenly distributed throughout library types, different team sizes, and institutions. Therefore, institu-

tion classification, library type, and team size did not affect other data points in the survey. For the multiple regression analysis, the investigators were able to identify specific independent and dependent variables from the Power BI analysis that could be drawn out and analyzed separately to shed light on the specific research questions, “Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?”; “Did the shift to remote work positively or negatively affect the overall communication dynamics of teams?”; and “Do the members of work teams believe that this shift in communication dynamics will have lasting impact?” The following independent variables (referred to hereafter as “input variables”) were identified from the first phase of the data analysis:

- Reported feelings of connectedness with team
- Perception of communication team dynamic
- Reported team meeting frequency



In relation to the investigators’ research questions, the following dependent variables (referred to hereafter as “output variables”) were identified as: 1) perceived quality of the overall impact of the transition on team dynamics; and 2) the perception of the anticipated duration of the impact.

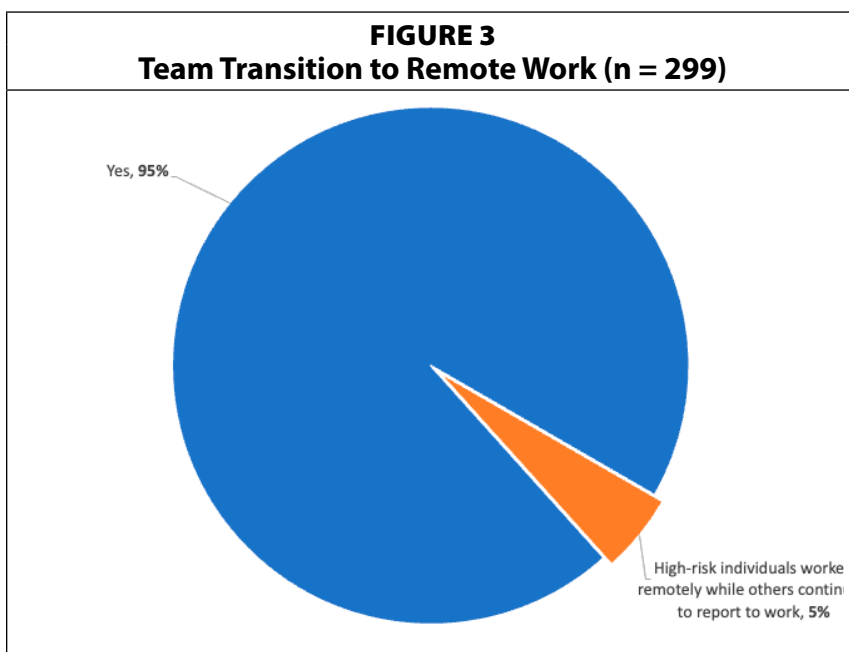
**Respondent Profiles**  
*Institution Classification*

Of the 373 academic librarians who responded to the survey, 74 respondents did not complete the survey and were discarded, leaving 299 respondents. Each respondent was asked to identify their institution’s classification according to the Basic Classification Descriptions derived from Carnegie Classification of Institutes of Higher Education<sup>36</sup> as well as their libraries by number and geographic distribution. The largest group of participants (48.7%) were associated with public, master’s, and

doctoral-granting institutions. This was followed by private master's and doctoral-granting institutions (18.2%) and private, four-year baccalaureate colleges (12.8%). The remainder of respondents represented technical, community, or other two-year colleges (11.8%); public, four-year baccalaureate colleges (7.4%); and "other" (1.1%). The "other" category allowed write-in responses and included public and private universities granting master's degrees.

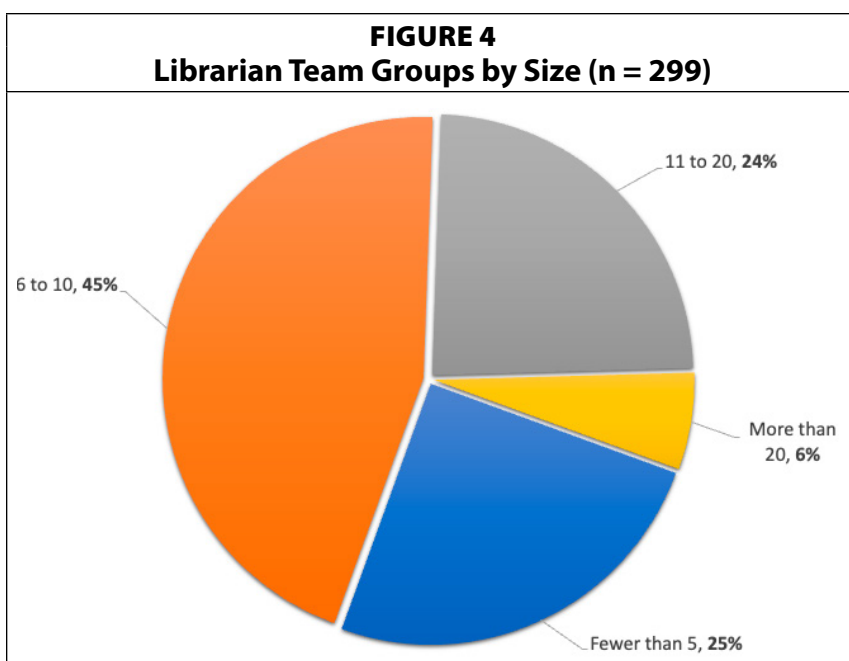
### Library Type

The libraries represented consisted mostly of institutions with "one main library only" (44.3%) followed by "one main library with 2–3 smaller satellite libraries on campus" (23.9%) and "multiple libraries, arranged by subject area" (16.6%), and "multiple libraries, geographically distributed" (15.2%).



### Transition

When queried whether or not they transitioned to a remote work environment as a result of the COVID-19 pandemic, the vast majority (94.9%) affirmed that they did, while 5.1 percent responded that high-risk individuals transitioned while others continued to travel to work. None of the respondents chose the third answer option indicating that their team continued to report to work as usual.



### Librarian Teams

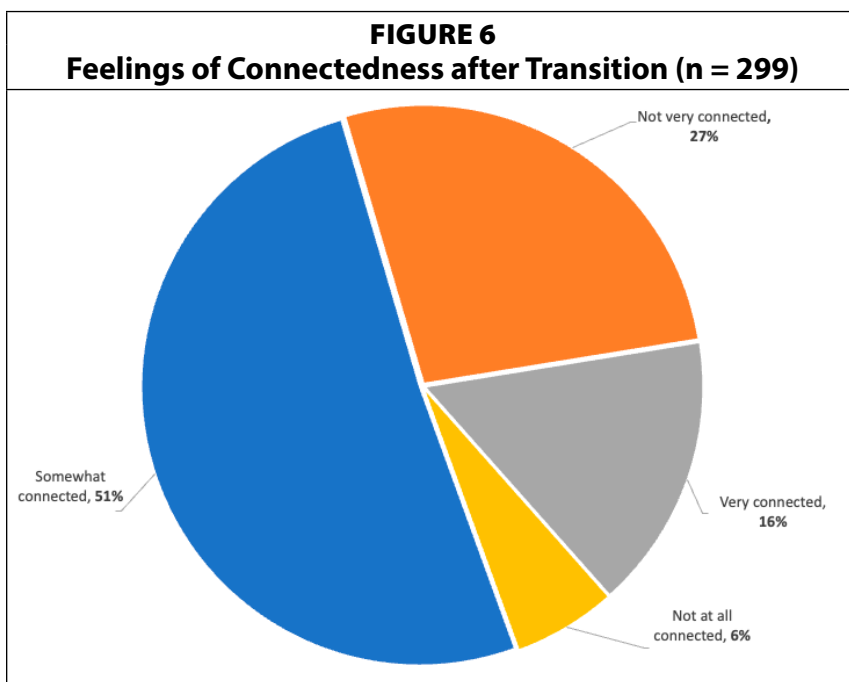
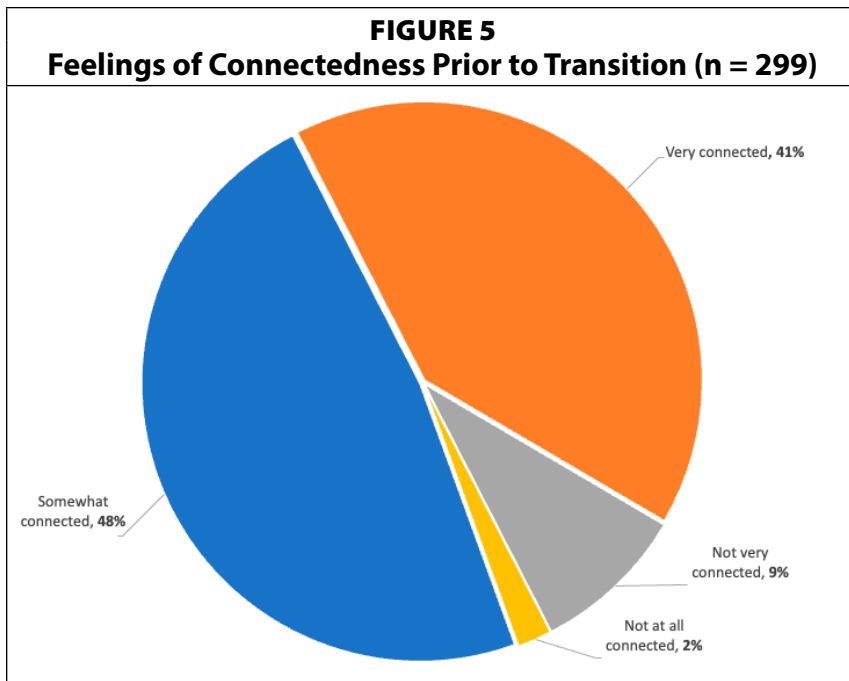
In terms of team characteristics, a significant number of respondents reported being members of teams with 6 to 10 members (44.6%). This was followed by respondents who were members of teams with 5 or fewer librarians (24.7%), teams with 10 to 20 members (24.3%), and teams with more than 20 members (6.4%). The survey contained three sets of paired "before and after" questions employing three variable themes (reported feelings of connectedness



with team, perception of communication team dynamic, and reported team meeting frequency) to understand whether the shift to a remote work environment affected overall perceptions of team communication dynamics and impact duration after the move to remote work. Multiple regression analysis in SPSS was used to examine the survey data to determine the extent to which identified input variables (feelings of connectedness, perception of team communication dynamic, and team meeting frequency) predicted output variables (the perception of the shift as overall positive or negative, and the belief that the transition would/would not have a lasting impact on team dynamics).

For the regression analysis, the investigators proposed the following hypotheses:

1. Survey participant responses regarding their post-transition feelings of team connectedness, team meeting frequency, and perception of team communication dynamic would accurately predict their perceptions of the level of impact (positive, negative, or no change) overall on their team’s communication dynamic.
2. Survey participant responses regarding their post-transition feelings of team connectedness, team meeting frequency, and perception of team communication dynamic would accurately predict their perceptions of the duration of impact.



**Findings**

1. Did the work teams feel more, less, or no change in a feeling of connectedness as a result of the shift to remote work?

**Connectedness**

For feelings of connectedness (How connected did you feel to your teammates and colleagues?), the respondents were asked to rate how connected they felt to the other members of their teams both

before and after the transition to remote work. Response options varied from “very connected” to “not at all connected.” Prior to the transition to remote work, 41 percent of respondents reported feeling “very connected,” while 48 percent reported feeling “somewhat connected.” In contrast, the number of respondents feeling “very connected” after the transition declined to 16 percent, while those who reported feeling “somewhat connected” stayed relatively consistent, experiencing a very modest increase to 51 percent. Those who reported feeling “not very” or “not at all” connected jumped from 11 percent prior to the transition to 33 percent after.

The responses for this pair of “before” and “after” variables were additionally analyzed in SPSS to determine the extent to which the variable “before and after” pair experienced a

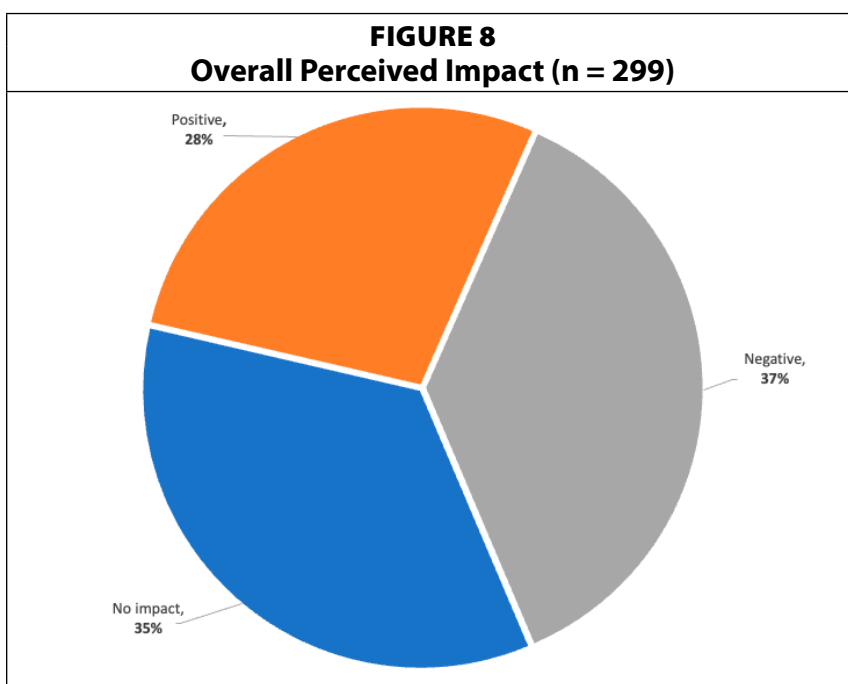
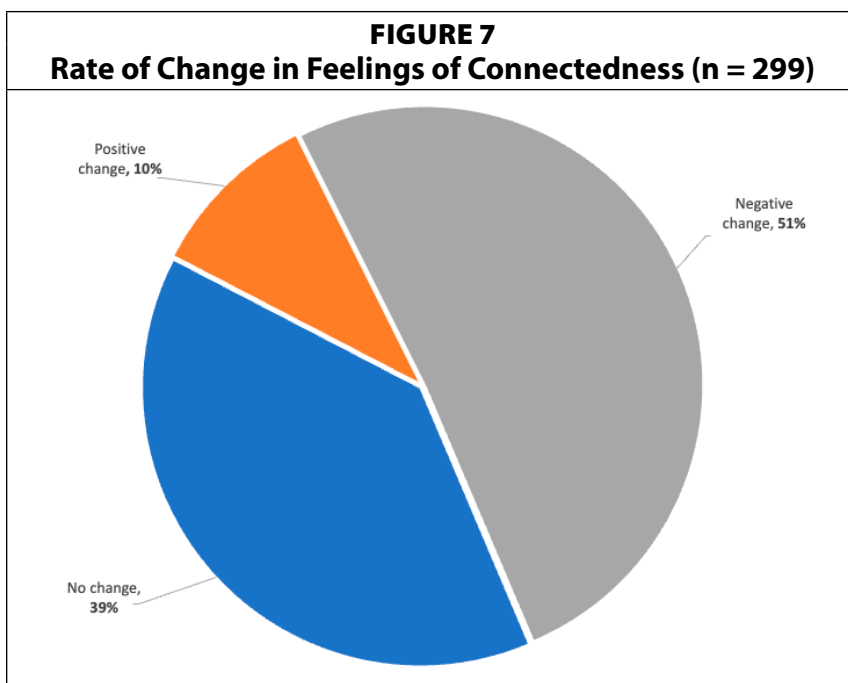
positive change, no change, or a negative change. More than 50 percent (118) of respondents ( $n = 299$ ) indicated a negative change (that is, that they felt less connected to their colleagues after the transition to remote work), while 39 percent reported there being no perceived change. Ten percent of respondents reported feeling more connected.

Overall, these data indicate that most respondents felt less connected to their team members as a result of the transition to remote work.

2. Did the shift to remote work have an overall positive or negative effect on the communication dynamics of teams?

### *Overall Impact*

Respondents who answered this question ( $n = 299$ ) were, overall, evenly split between “positive impact” (28.09%), “negative impact” (37.12%), and “no impact” (34.78%), although slightly more respondents indicated that the transition had a negative impact on their team’s communication dynamic.



## Regression Analysis

For the dependent variable, “overall impact,” the regression included the predictors “feelings of connectedness: after,” “team meeting frequency: after,” and “perceived team dynamic: after.” The analysis revealed that the Adjusted R Squared in the model summary was .191, meaning the input variables accounted for 19.1 percent of the variance in the output variable, showing a possible moderate relationship between the input and output variables.

**FIGURE 9**  
**Regression Analysis for Overall Impact**

		<b>ANOVA<sup>a</sup></b>				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.563	3	12.854	24.356	.000 <sup>b</sup>
	Residual	155.168	294	.528		
	Total	193.732	297			

a. Dependent Variable: Overall Impact

b. Predictors: (Constant), Connectedness After, After Meeting Frequency, Team Dynamic After

However, the regression coefficients revealed that, while feelings of connectedness and reported perception of team dynamic after the shift were significantly correlated with overall impact ( $p = .000$  and  $p = .005$  respectively), meeting frequency was *not* a significant predictor of the degree of overall impact ( $p = .356$ ). Therefore, the first hypothesis was only partially supported.

**FIGURE 10**  
**Regression Coefficients for Overall Impact**

		<b>Coefficients<sup>a</sup></b>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.347	.202		1.719	.087	-.050	.745
	After Meeting Frequency	.036	.039	.051	.924	.356	-.041	.113
	Team Dynamic After	.153	.054	.188	2.830	.005	.046	.259
	Connectedness After	.296	.066	.290	4.471	.000	.166	.427

a. Dependent Variable: Overall Impact

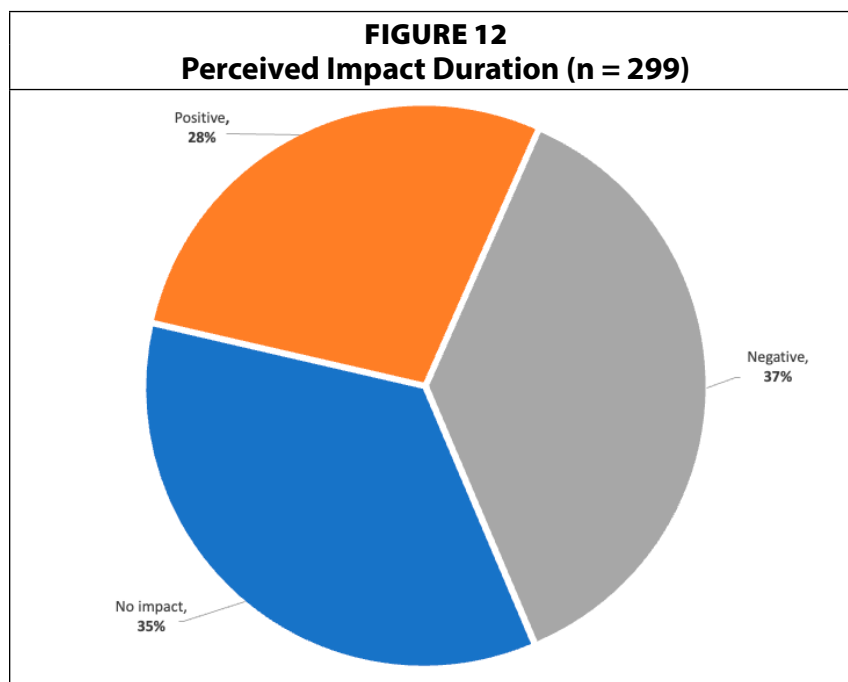
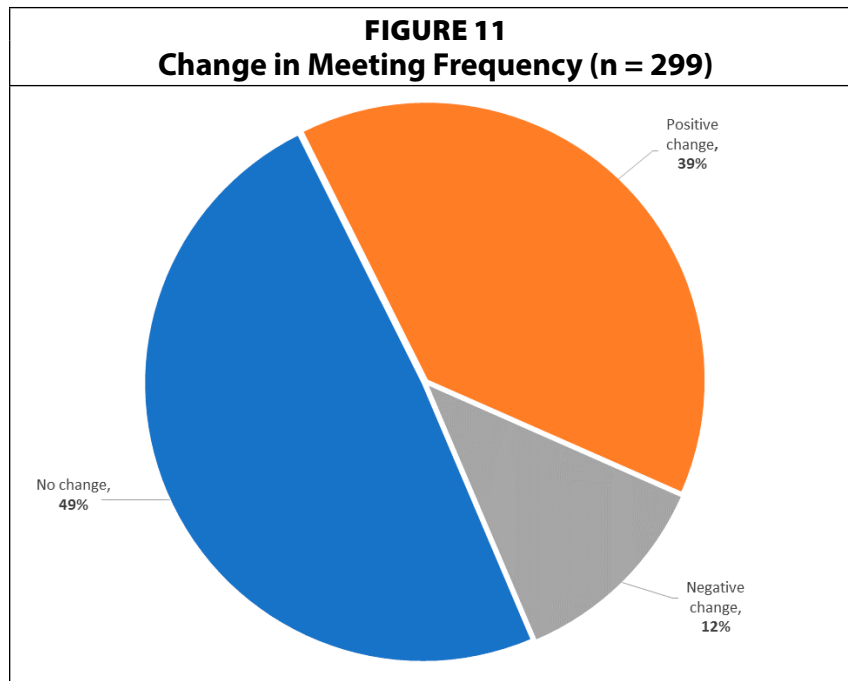
The unanticipated result of meeting frequency having no significance prompted an additional examination of this variable.

### *Impact of Meeting Frequency*

Respondents were asked to categorize the frequency of their team meetings before and after the transition to remote work. These categories varied from “we did not meet,” indicating that

the team had no team meetings at all, to “more than once a week.” Other options included “more than once a month, but less than weekly” to include teams that met on a biweekly basis, as well as “once a month” and “once a week.” It was assumed that respondents who chose the “other” category had team meetings that were less frequent than once a month, but the team still met.

After calculating the change between participant responses for “before” and “after,” about half of the respondents ( $n = 299$ ; 48.7%) reported no changes in their team’s meeting frequency, while close to 40 percent (38.8%) reported an increase in meeting frequency, and 12.2 percent reported a decline.



When comparing these data to team meeting frequency *prior* to the transition as a stand-alone variable, the majority of respondents (63.71%) indicated that their team met more than once a month, weekly, or more than weekly. Therefore, if approximately half of the respondents indicated there was no change in meeting frequency, and declines in meeting frequency accounted for around 13 percent of the teams’ experiences, this suggests that more teams were meeting at the same level or more frequently *after* the transition to remote work. This poses an interesting contrast with “feelings of connectedness,” which saw a significant decrease, suggesting that, even though teams were meeting more often on average, team members felt more disconnected from their teammates after the transition.

3. Do the members of work teams believe that this shift in communication dynamics will have long-lasting impact?

### *Impact Duration*

When looking at the respon-

dent breakdown for the question regarding the transition to remote work having a lasting impact in team dynamic, the results were not conclusive. This is not surprising, as respondents were quite evenly divided, with 27.3 percent reporting that they believe the transition will have a lasting impact, 30.7 percent reporting a temporary impact, and 28 percent indicating the belief that the return to a normal work environment will see a return to the previous dynamic. Only 14 percent reported that the team dynamic never changed.

**FIGURE 13**  
**Regression Analysis for Impact Duration**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.288 <sup>a</sup>	.083	.074	.987

a. Predictors: (Constant), Connectedness After, After Meeting Frequency, Team Dynamic After

b. Dependent Variable: Lasting Impact

The analysis would imply that there is no definitive answer to this question, pointing to a need for additional research on the impact of the transition to remote work after more time has passed and teams return to on-site work.

The regression analysis for impact duration employed the same predictor variables as that used in the analysis for overall impact. In terms of lasting impact, the regression analysis revealed a very low level of prediction between the input variables and the perception of the transition having a lasting impact (R = .288). Moreover, the Adjusted R Square shows that the input variables account for only 7.4 percent of the variability of the inputs on the output variable.

When looking at the variable coefficients, both perceived “after” team communication dynamic, and “after” reported feelings of connectedness were statistically significantly correlated with the outcome variable ( $p < .005$ ), while the “after” variable for team meeting frequency was not ( $p = .506$ ).

**FIGURE 14**  
**Regression Coefficients for Impact Duration**

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.568	.274		5.726	.000	1.029	2.107
	After Meeting Frequency	-.035	.053	-.039	-.666	.506	-.140	.069
	Team Dynamic After	.144	.073	.140	1.975	.049	.000	.288
	Connectedness After	.249	.090	.192	2.767	.006	.072	.425

a. Dependent Variable: Lasting Impact

The small percentage of the adjusted R Square and the lack of significant correlation for “after” team meeting frequency indicates that the second hypothesis was not supported.

## Discussion

This study offers a brief snapshot of academic librarians’ feelings and attitudes regarding their team’s communication dynamic following an unparalleled and rapid shift to a remote work environment as a result of the COVID-19 pandemic.

The findings suggest that there was an even distribution in respondents feeling more connected, less connected, and no change in their feeling of connectedness to their fellow team members. The small amount of shift may also be indicative of more complicated and nuanced communication dynamics already existing in the library workplaces prepandemic. The relatively unchanged perceptions of team communication levels and quality from before the transition to remote work versus after could potentially reveal underlying issues with pre-existing communication structures as a whole. Further, the results indicate that most workers who shifted to remote work did not perceive that any change in connectedness experiences during the COVID-19 shift to remote work would be long-lasting.

Institution classification, library type, and team size did not appear to be influencing factors in how librarians responded to the survey questions. While these data show that many teams reported increases in meeting frequency, this did not appear to translate into higher feelings of connectedness among team members, suggesting that, when working in a remote environment, the number of team meetings alone may not contribute to a more collegial or collaborative communication dynamic. This issue is likely more complex and nuanced than the current study was designed to clarify, indicating the need for further research.

We must also consider and discuss the limitations of the study, as well as the potential for personal difference in respondents’ assessment of their team’s dynamic. The general homogeneity of the sample population limits the generalizability of the study to wider populations of workers who shifted to remote work. Additionally, while there appeared to be a moderate relationship between reported feelings of team connectedness and individual perceptions of the collaborative nature of their teams with the overall perceived impact and duration of change, the investigators could not conclude whether these variables resulted in a positive or negative shift.

## Conclusion

The literature demonstrates that virtual team communication dynamics evolve over time. This study represents a preliminary step in understanding the long-term opportunities and challenges in creating and sustaining virtual library teams. The survey was distributed eight months into what turned out for many to be more than a year of remote work. This was after the initial rush to a remote work environment but was likely not far enough away to allow participants time to evaluate the long-term impact of the shift fully.

As can be expected, this research also generated additional questions for possible future research. For example, there was a positive impact on communication but a negative impact on connectedness, with most reporting that they met the same amount or more and had no loss in collegiality and other factors. Could loss of connectedness be due to the loss of informal personal interaction in the face-to-face environment (visiting offices, lunches, hallway conversations, and the like)? There is also potential for additional research around the data

relative to the demographics. Did younger librarians not feel a loss of connectedness because they were more comfortable with virtual communication? How does the number of virtual communication tools used and an individual's comfort level with those tools affect connectedness and communication dynamics? Were supervisors/managers less comfortable with virtual teams or feel less connected than their employees because they perceived a loss of control?

As the pandemic begins to wane and organizations prepare to return to a normal working environment, many organizations are considering allowing workers to choose a more flexible or hybrid environment of remote and in-person work. More research, such as mentioned above, is needed to gain an understanding of factors that may impact individual and organizational success, such as team communication and connectedness.

## APPENDIX. The Survey:

### Communication Dynamics Post Covid-19

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#### Start of Block: Block 5

Thank you for accessing our survey. We are conducting this survey to better understand academic librarians' perceptions of their team's communication dynamics in a remote work environment, particularly considering the 2020 COVID-19 pandemic. If you are an academic librarian who has participated in remote work during this timeframe, we would appreciate your responses. This survey will support a peer-reviewed article to be published in a library science journal.

This survey should take approximately 10–15 minutes to complete. The survey is anonymous, and no effort will be made to track respondents' names or email addresses. There are no known risks involved in participating in this study. This study has received IRB approval from the University of South Florida's IRB review board.

The next page provides more information and asks you to accept or reject participation (informed consent) in the survey.

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#### Start of Block: Demographic Information

How would you classify your institution?

- Public, master's and doctoral-granting university (1)
  - Private, master's and doctoral-granting university (2)
  - Public, 4-year baccalaureate college (3)
  - Private, 4-year baccalaureate college (4)
  - Technical, community, or other two-year college (5)
  - Other (please explain) (6) \_\_\_\_\_
- 

How would you classify your institution's library/libraries?

- Multiple libraries, arranged by subject area or discipline (12)
  - One main library with 2–3 smaller satellite libraries on campus (13)
  - Multiple libraries, geographically distributed (14)
  - One main library only (15)
- 

How many librarians are part of the team that you regularly communicate with?

- Fewer than 5 (1)
- 6–10 (2)
- 11–20 (3)
- More than 20 (4)

#### End of Block: Demographic Information

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### Start of Block: Work Environment

As a result of the Covid-19 outbreak, did your team transition to a remote work environment?

- Yes (1)
  - No, we continued to report to work as usual (2)
  - High-risk individuals worked remotely while others continued to report to work (3)
- 

How would you characterize your work environment prior to the Covid-19 outbreak?

- 100% on site (1)
  - More than 50% on site (2)
  - 50–50 schedule, evenly split between on-site and remote (3)
  - More than 50% remote work (4)
  - 100% remote work (5)
- 

Prior to the Covid-19 outbreak, did all of the members of your team work in the same physical location?

- Yes (1)
  - Some members worked at other sites on campus or on another campus (2)
  - No, most of the team was physically distributed (3)
- 

Prior to the Covid-19 outbreak, did the members of your team generally work a uniform weekly schedule (for example, everyone worked M–F, 8–5)?

- Yes, possibly with some variation to cover early or late hours (1)
- No, we had shifts to cover a wide range of hours (2)

### End of Block: Work Environment

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### Start of Block: Communications

What kinds of communication software does your library or institution employ? (Select all that apply)

- Adobe Connect (195)
  - Blackboard Collaborate (196)
  - Google Meet (197)
  - GoTo Meeting (198)
  - Microsoft Teams (199)
  - WebEx (200)
  - Zoom (201)
  - Other (202)
- 

How often did your team meet *prior* to the Covid-19 outbreak?

- Once a month (18)
- More than once a month, but less than weekly (19)
- Once a week (20)
- More than once a week (21)
- We did not meet (22)
- Other (23)

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How often did your team meet *after* you transitioned to a remote work environment?

- o Once a month (12)
- o More than once a month, but less than weekly (13)
- o Once a week (14)
- o More than once a week (15)
- o We did not meet (16)
- o Other (17)

End of Block: Communications

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Start of Block: Perceptions

How would you characterize your team's communication dynamic *prior* to transitioning to a remote work environment?

- o Collaborative, collegial, and frequent (1)
  - o Collaborative and collegial, but not frequent (2)
  - o Not particularly collaborative (everyone did their own thing), and infrequent (3)
  - o Frequent, but not collaborative or collegial (5)
  - o We did not communicate (4)
- 

How would you characterize your team's communication dynamic *after* transitioning to a remote work environment?

- o Collaborative, collegial, and frequent (1)
  - o Collaborative and collegial, but not frequent (2)
  - o Not particularly collaborative (everyone did their own thing), and infrequent (3)
  - o Frequent, but not collaborative or collegial (5)
  - o We did not communicate (4)
- 

**Prior** to transitioning to a remote work environment, how connected did you feel to your teammates and colleagues?

- o Very connected (1)
  - o Somewhat connected (2)
  - o Not very connected (3)
  - o Not at all connected (4)
- 

**After** transitioning to a remote work environment, how connected did you feel to your teammates and colleagues?

- o Very connected (1)
  - o Somewhat connected (2)
  - o Not very connected (3)
  - o Not at all connected (4)
-

Overall, do you feel that the transition to a remote work environment had a positive, negative, or null impact on your team's communication dynamics?

- o Positive (1)
- o Negative (2)
- o No Impact (3)

Overall, do you believe that the change to a remote work environment will have a significant, lasting impact on your team's communication dynamics?

- o Yes, a significant, lasting change (1)
- o Yes, for a while, but I don't see it lasting (2)
- o No, I think when we return to onsite work, we will return to our previous dynamic (3)
- o No, our dynamic never really changed (4)

Are there any additional comments you would like to make concerning your team's communication dynamics in a remote work environment?

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## Notes

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