Gender Divides in Engagement with COVID-19 Information on the Internet among U.S. Older Adults

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Author Contributions

CC designed the analysis, interpreted findings, and drafted and revised the manuscript.

Conflict of Interest

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**Objective**

Gender and age disparities in older adults’ exposure to pandemic stressors may create different needs for engaging with COVID-19 information, yet mitigation strategies to curb spreading COVID-19 inhibit their access to preferred in-person information networks. To inform the design of Internet-based interventions for older adults, the current study of U.S. older adults examines gender and age divides in searching for and sharing COVID-19 information on the Internet.

**Methods**

A secondary analysis of survey data from the Pew Research Center fielded March 19-24, 2020. Bivariate probit regressions jointly estimated how searching for and sharing information on the Internet about COVID-19 were associated with the age and gender of U.S. older adults (50 or older), adjusting for sociodemographic characteristics.

**Results**

Consistent with previous research, younger older adults (50-64) were more likely than their older counterparts (65 or older) to search for and share information about COVID-19 and men, regardless of age, were less likely than women to share information. While men are usually more likely than women to search for information, women who are younger older adults were most likely to search for COVID-19 information.
Discussion

Internet-based interventions for older adults should consider how gender shapes their exposure to pandemic stressors. Men, who were already at risk of social isolation before the pandemic, may be candidates for interventions encouraging social uses of the Internet. Women between 50 and 64 were most likely among adults to provide care for another adult before the pandemic, which may be shaping their online information needs.

Keywords: gender, loneliness, caregivers, information-seeking, social media
The novel coronavirus (COVID-19) pandemic prompted many in the U.S. to engage with information on the Internet about the virus (Anderson & Vogels, 2020). Older adults were identified early in the pandemic as facing the greatest risk of complications from COVID-19 (Zhou et al., 2020), yet details of their Internet use for information about the virus is limited. Previous research shows they are less likely to access the Internet than their younger counterparts (Anderson & Perrin, 2017) and prefer engaging with information through offline sources, such as relying on a medical provider or friends and family for health advice (Chaudhuri, Le, White, Thompson, & Demiris, 2013). Because social distancing and other restrictions during the pandemic inhibited older adults from accessing preferred information sources (Armitage & Nellums, 2020; Steinman, Perry, & Perissinotto, 2020), it is important to understand whether and how they use the Internet. Such information can help identify unmet needs and inform best practices for leveraging the Internet to meet these needs.

I conducted a secondary analysis of data from the Pew Research Center to examine engagement with information about COVID-19 on the Internet, specifically searching for and sharing information, among U.S. older adults. Searching for information on the Internet requires more cognitive resources than passive reading (Litt, 2013), perhaps explaining why the likelihood of searching decreases with age (Hong & Cho, 2016; Schehl, Leukel, & Sugumaran, 2019). Yet, the rapidly changing evidence about COVID-19 makes searching for information critical. Sharing is also important, particularly through social media, because it can create a sense of being together, raise perceptions of social capital, and reduce loneliness (Campos-Castillo & Hitlin, 2013; Chopik, 2016; Cotten, Anderson, & McCullough, 2013; Ellison, Steinfield, & Lampe, 2011), and thus potentially mitigate the risk of the pandemic unraveling older adults’ social networks.

I also examined gender divides in engagement because they appear in studies conducted before the pandemic and their reproduction during the pandemic potentially exacerbates the effects of stressors. Before the pandemic, studies found a gender divide among older adults whereby women were more likely than men to use the Internet for sharing, but less likely to use it for
searching (Schehl et al., 2019; van Boekel, Peek, & Luijkx, 2017; van Deursen & Helsper, 2015; Yu, Ellison, McCammon, & Langa, 2016). During the pandemic, these gender divides may exacerbate gender disparities in older adults’ exposure to stressors. For example, a reduced tendency to share information on social media may be especially harmful for men who had not yet retired at the start of the pandemic, since they likely relied on their workplace for confidants to discuss important matters (Campos-Castillo, shuster, Groh, & Anthony, 2020; Cornwell, 2011, 2015; Schwartz & Litwin, 2018). Thus, working remotely, losing their job, or a reduction in work hours during the pandemic potentially diminished their access to discussion partners. For women, younger older adults (between 50 and 64 years old) are the most likely among all U.S. adults to operate as caregivers for another adult (AARP and National Alliance for Caregiving, 2020). During the pandemic, they may need information about COVID-19 to care for at-risk adults. Gender differences by age like these require tailoring proposed Internet-based interventions for older adults (Armitage & Nellums, 2020; Steinman et al., 2020), like targeting older men in programs assisting with using social media, thus making them critical to explore.

Methods

The survey from the Pew Research Center was conducted March 19-24, 2020 with their American Trends Panel, which is a probability-based online panel of U.S. adults (18 or older). Panelists without Internet-enabled devices received an Internet-enabled tablet at no cost. Out of the 15,433 invited panelists, 11,537 completed the survey (74.8% response rate) in either English or Spanish. Of these, 6,416 were older adults, defined as respondents 50 or older. Results shown are from analyzing 5,780 Internet users with complete responses on measures used.
**Searching for and Sharing COVID-19 Related Content**

The dependent measures are responses to two dichotomous items (1 = yes, 0 = no). Searching is measured with an item asking whether they “searched online for information about the coronavirus” and sharing with an item asking whether they “used social media to share or post information about the coronavirus.”

**Age and Gender**

The survey provides two age categories for older adults, 50 to 64 (referred to as the younger cohort) and 65 or older (referred to as the older cohort), and measures gender with binary sex, female or male.

**Covariates**

Covariates were respondent’s race/ethnicity (White, Black, Latino, other race/ethnicity), marital status (never married; currently married/cohabitating; divorced, widowed, or separated), annual family income (less than $30,000, $30,000-$74,999, greater than $75,000), educational attainment (high school or less, some college, college graduate), political leaning (very liberal, liberal, moderate, conservative, and very conservative), and mental health, which is an average of five items modified from the Center for Epidemiologic Studies Depression Scale (Radloff, 1977) and General Anxiety Disorder Scale (Spitzer, Kroenke, Williams, & Löwe, 2006) asking how frequently (less than 1 day, 1-2 days, 3-4 days, 5-7 days) they experienced the following during the seven days preceding the survey (alpha = .73): nervous, anxious, or on edge; depressed; lonely; hopeful about the future; trouble sleeping. Higher values indicate poorer mental health. Household characteristics were Census division, metropolitan area (yes, no), and presence of a child younger than 12 (yes, no).
Analysis

After describing the unweighted univariate characteristics of the sample, I present a weighted bivariate probit analysis of the two dependent measures using Stata 16 and survey weights from the Pew Research Center. A bivariate probit estimates the likelihood of searching for and sharing information jointly, thereby accounting for dependencies between the two estimation equations and thus their correlated errors (Greene, 2018). This accounts for observable (e.g., educational attainment) and unobservable (e.g., computer literacy) similarities between factors shaping the use of the Internet for searching and sharing. I estimated the bivariate probit first without and then with an interaction between gender and age groups to examine how gender divides vary by age cohort.

Results

Table 1 shows the unweighted univariate characteristics of the entire analytic sample and by age group. Much of the sample is white, a college graduate, currently married/cohabitating, and lives in a metropolitan area. The pattern holds for both age groups.

Results of the two weighted bivariate probit regressions, adjusting for all covariates, are shown in Table 2. Model 1 show estimates without the interaction between gender and age. The older cohort is significantly less likely than the younger cohort to report sharing ($b = -.139, p < .01$) and searching for ($b = -.325, p < .001$) information about COVID-19. Women are significantly more likely than men to share ($b = .289, p < .001$), but only marginally more likely to search ($b = .102, p = .066$).

Model 2 in Table 2 shows results from adding the interaction between gender and age. The interaction is only significant for the likelihood of searching for information about COVID-19 ($b = -.282, p < .01$). The coefficients for the older cohort ($b = -.178, p < .05$) and women ($b = .233, p < .01$) are also significant for predicting searching. Figure 1 plots the predicted probabilities of searching by age and gender.
gender and age with 95% confidence intervals to summarize these findings. The figure shows that among the younger cohort, women are significantly more likely than men to search for information (contrast: .071; 95% confidence interval: .025, .117). There are no gender differences among the older cohort.

To explore whether this finding was specific to the younger cohort of older adults or indicative of a pattern among younger adults overall, I re-estimated Model 2 from Table 2 using the full sample of adults in the survey dataset and plotted predicted probabilities. The auxiliary analysis is shown in the appendix and finds that the heightened tendency of women to search for information about COVID-19 occurs only among the younger cohort of older adults. Further, this was the only gender difference in the likelihood of searching for COVID-19 information on the Internet within any of the four age categories available (18-29, 30-49, 50-64, 65 or older).

**Discussion**

With the COVID-19 pandemic prompting many to access the Internet, I sought to examine how age and gender are associated with the likelihood of older adults using the Internet to engage (search and share) with information related to COVID-19. Like other studies of older adults (Hunsaker & Hargittai, 2018), the current study shows the younger cohort (50 to 64 year-olds) was more likely than the older cohort (65 and older) to engage overall and women were more likely than men to share. Further, women in the younger cohort were the most likely among older adults to search for information. These findings carry important implications for researchers tracking digital divides and for practitioners and caretakers working with older adults during the COVID-19 pandemic.

The findings show a reversal of some gender divides documented previously within older adults. In previous work, men were usually more likely to search for information while women shared (Schehl et al., 2019; van Boekel et al., 2017; van Deursen & Helsper, 2015; Yu et al., 2016),
but women tended to do both in the current study. Researchers will need to evaluate whether these findings represent a temporary or more enduring shift in gender divides. For example, the patterns may demonstrate another instance in which women have outpaced men online (Campos-Castillo, 2015; Ono & Zavodny, 2003) and therefore signal broader changes in Internet use among older adults. It is also possible that the heightened tendency of women between 50 and 64 to search may be unique to the COVID-19 pandemic context. Specifically, since they are most likely among all U.S. adults to provide informal care for another adult (AARP and National Alliance for Caregiving, 2020), they may be turning to the Internet for information related to their caregiver role. Gender disparities in exposure to pandemic stressors among older adults should therefore also be studied alongside their Internet use to fully understand the causes and consequences of gender divides.

There are at least two important implications, one for women and another for men, relevant for practitioners and caregivers working with older adults during the pandemic. Regarding women, there is a need to understand why women between 50 and 64 depart from previous trends and whether this may be due to their status as caregivers for other adults. Moreover, there is another need to monitor their exposure to misinformation. While only a small proportion of social media users are exposed to and share misinformation, they tend to be older adults, particularly older men with conservative ideological leanings (Grinberg, Joseph, Friedland, Swire-Thompson, & Lazer, 2019). If older women are more likely to search, this may elevate their risk of exposure to misinformation.

For men, it is essential to encourage social use of the Internet during the pandemic, particularly because social distancing and stay-at-home restrictions increase risks of social isolation (Armitage & Nellums, 2020; Steinman et al., 2020). Prior to the pandemic, men were already more likely than women to be socially isolated (Campos-Castillo et al., 2020; Cornwell, 2011, 2015; Schwartz & Litwin, 2018). Social media offers older adults a way to stay socially connected and reduce loneliness (Chopik, 2016; Cotten et al., 2013). Helping disseminate (credible) information
about COVID-19 on social media may encourage older men to engage in social interaction and combat isolation.

The study is not without limitations. The survey is cross-sectional and thus cannot be used to track changes over time. The sample comprises community-dwelling older adults, which limits understanding Internet use among those in residential facilities, who faced elevated risks (Barnett & Grabowski, 2020). While they usually use the Internet less than community-dwellers (Hunsaker & Hargittai, 2018), their elevated risk may spur their use or promote different uses. The age categories available in the dataset inhibit a more fine-grained assessment of age differences. Because Internet use decreases with age (Anderson and Perrin 2017), the reported estimates for the 65 and older group are likely overestimating use among the group’s older members, like the oldest-old (80 or older). A dataset that could further disaggregate the sample by age may thus also reveal that women between 50 and 64 are even more distinctive in their tendency to search because the estimation model can account for lowered use among older respondents like the oldest-old.

Older adults are among the groups most vulnerable during the COVID-19 pandemic and gender likely introduces another dimension shaping their experiences and risks. The current study shows a reversal during the COVID-19 pandemic of some well-documented gender divides in the ways older adults use the Internet. The data analyzed were collected during early stages of the pandemic in the U.S. Many experiences during this time – uncertainty about COVID-19 itself and social distancing – persisted after data collection and will likely do so for an extended period. Continued understanding of how older adults access the Internet to search for and share information about COVID-19 will likely therefore be critical, along with further exploration of how this alleviates or exacerbates gender disparities in their exposure to stressors. In turn, such data can inform interventions to meet the needs of older adults.
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Table 1. Unweighted Characteristics of Sample Respondents by Age Group

| Measure                        | Total (N = 5,780) | 50-64 (N = 3,148) | 65+ (N = 2,632) |
|-------------------------------|-------------------|-------------------|-----------------|
| Search - no. (%)              | 4,173 (72.2)      | 2,417 (76.8)      | 1,756 (66.7)    |
| Share - no. (%)               | 2,204 (38.1)      | 1,302 (41.4)      | 902 (34.3)      |
| Female - no. (%)              | 2,989 (51.7)      | 1,734 (55.1)      | 1,255 (47.9)    |
| Race/ethnicity - no. (%)      |                   |                   |                 |
| White                         | 4,355 (75.4)      | 2,200 (69.9)      | 2,155 (81.9)    |
| Black                         | 346 (6.0)         | 232 (7.4)         | 114 (4.3)       |
| Latino                        | 858 (14.9)        | 573 (18.2)        | 285 (10.8)      |
| Other                         | 221 (3.8)         | 143 (4.5)         | 78 (3.0)        |
| Education - no. (%)           |                   |                   |                 |
| High school or less           | 789 (13.7)        | 467 (14.8)        | 322 (12.2)      |
| Some college                  | 1,773 (30.7)      | 995 (31.6)        | 778 (29.6)      |
| College graduate              | 3,218 (55.7)      | 1,686 (53.6)      | 1,532 (58.2)    |
| Annual family income - no. (%)|                   |                   |                 |
| <$30,000                      | 960 (16.6)        | 508 (16.1)        | 452 (17.2)      |
| $30-74,999                    | 1,946 (33.7)      | 956 (30.4)        | 990 (37.6)      |
| $75,000+                      | 2,874 (49.7)      | 1,684 (53.5)      | 1,190 (45.2)    |
| Marital status - no. (%)      |                   |                   |                 |
| Never married                 | 476 (8.2)         | 352 (11.2)        | 124 (4.7)       |
| Current married or cohabitating| 3,783 (65.5)      | 2,063 (65.5)      | 1,720 (65.4)    |
| Divorced, widowed, or separated| 1,521 (26.3)      | 733 (23.3)        | 788 (29.9)      |
| Young child (< 12yrs) in household - no. (%) | 314 (5.4) | 243 (7.7) | 71 (2.70) |
| Mental health - mean (s.d.)   | 1.90 (0.66)       | 1.97 (0.68)       | 1.83 (0.63)     |
| Political leaning - no. (%)   |                   |                   |                 |
| Political Ideology          | No. (%) | No. (%) | No. (%) |
|-----------------------------|---------|---------|---------|
| Very liberal                | 435 (7.5) | 241 (7.7) | 194 (7.4) |
| Liberal                     | 1,131 (19.6) | 578 (18.4) | 553 (21.0) |
| Moderate                    | 2,161 (37.4) | 1,271 (40.4) | 890 (33.8) |
| Conservative                | 1,515 (26.2) | 788 (25.0) | 727 (27.6) |
| Very conservative           | 538 (9.3) | 270 (8.6) | 268 (10.2) |
| In metropolitan area - no. (%) | 5,076 (87.8) | 2,782 (88.4) | 2,294 (87.2) |

| Census division - no. (%)  |         |         |         |
|-----------------------------|---------|---------|---------|
| Pacific                     | 817 (14.1) | 437 (13.9) | 380 (14.4) |
| Middle Atlantic             | 615 (10.6) | 347 (11.0) | 268 (10.2) |
| East North Central          | 822 (14.2) | 462 (14.7) | 360 (13.7) |
| West North Central          | 389 (6.7) | 199 (6.3) | 190 (7.2) |
| South Atlantic              | 1,634 (28.3) | 881 (28.0) | 753 (28.6) |
| East South Central          | 243 (4.2) | 140 (4.5) | 103 (3.9) |
| West South Central          | 536 (9.3) | 299 (9.5) | 237 (9.0) |
| Mountain                    | 457 (7.9) | 226 (7.2) | 231 (8.8) |
| New England                 | 267 (4.6) | 157 (5.0) | 110 (4.2) |

Notes: no. = frequencies, s.d. = standard deviation. For mental health, higher values indicate poorer mental health.
Table 2. Bivariate Probit Regressions of Searching for and Sharing Information about COVID-19 on the Internet

| Characteristic                              | Share     |          |       |          |          |          |          |          |          |
|---------------------------------------------|-----------|----------|-------|----------|----------|----------|----------|----------|----------|
|                                             | b         | s.e.     | b     | s.e.     | b        | s.e.     | b        | s.e.     | b        |
| Age 65+                                     | -0.139 ** | (0.051)  | -0.325 *** | (0.056)  | -0.094   | (0.077)  | -0.178 * | (0.082)  |          |
| Female                                      | 0.289 *** | (0.052)  | 0.102 † | (0.056)  | 0.325 *** | (0.070)  | 0.233 ** | (0.077)  |          |
| Female x Age 65+                            | -0.084    | (0.101)  | -0.282 ** | (0.106)  |          |          |          |          |          |
| Race/ethnicity (vs. White)                  |           |          |       |          |          |          |          |          |          |
| Black                                       | 0.193 †   | (0.101)  | 0.026 (0.100) | 0.190 † | (0.101) | 0.012 (0.100) |          |          |          |
| Latino                                      | 0.502 *** | (0.093)  | 0.294 ** | (0.105)  | 0.501 *** | (0.093)  | 0.292 ** | (0.104)  |          |
| Other                                       | 0.055 (0.126) | 0.185 (0.150) | 0.056 (0.126) | 0.188 (0.149) |          |          |          |          |          |
| Education (vs. High school or less)         |           |          |       |          |          |          |          |          |          |
| Some college                                | -0.027    | (0.068)  | 0.359 *** | (0.069)  | -0.028   | (0.068)  | 0.357 *** | (0.069)  |          |
| College graduate                            | 0.029     | (0.068)  | 0.597 *** | (0.070)  | 0.027    | (0.068)  | 0.592 *** | (0.070)  |          |
| Annual family income (vs. <$30,000)         |           |          |       |          |          |          |          |          |          |
| $30-74,999                                  | -0.079    | (0.077)  | 0.041 *  | (0.081)  | -0.077   | (0.077)  | 0.047 (0.081) |          |          |
| $75,000+                                    | -0.167 *  | (0.082)  | 0.161 † | (0.088)  | -0.164 * | (0.082)  | 0.172 † | (0.088)  |          |
| Marital status (vs. Never married)          |           |          |       |          |          |          |          |          |          |
| Current married or cohabitating             | 0.222 *   | (0.095)  | 0.179 † | (0.098)  | 0.219 *  | (0.095)  | 0.167 † | (0.099)  |          |
| Divorced, widowed, or separated             | 0.189 †   | (0.099)  | 0.015 (0.102) | 0.190 † | (0.099)  | 0.018 (0.102) |          |          |          |
| Young child in household                    | 0.153     | (0.116)  | 0.207 † | (0.122)  | 0.155 (0.116) | 0.210 † | (0.122) |          |          |
| Mental health                               | 0.095 *   | (0.041)  | 0.226 *** | (0.046)  | 0.095 *  | (0.041)  | 0.226 *** | (0.046)  |          |
| Political leaning (vs. Very liberal)        |           |          |       |          |          |          |          |          |          |
| Liberal                                     | -0.118    | (0.100)  | -0.301 * | (0.119)  | -0.120   | (0.101)  | -0.306 * | (0.118)  |          |
| Moderate                                    | -0.267 ** | (0.096)  | -0.364 *  | (0.112)  | -0.269 ** | (0.096)  | -0.372 ** | (0.112)  |          |
| Conservative                                | -0.175 †  | (0.101)  | -0.454 *** | (0.117)  | -0.177 ** | (0.101)  | -0.460 *** | (0.116)  |          |
| Very conservative                           | -0.281 *  | (0.121)  | -0.452 ** | (0.135)  | -0.283 † | (0.121)  | -0.457 ** | (0.134)  |          |
Table 2. (continued)

| Characteristic                        | Model 1 |        |        | Model 2 |        |        |
|---------------------------------------|---------|--------|--------|---------|--------|--------|
|                                       | b       | s.e.   | b      | s.e.    | b      | s.e.   |
| In metropolitan area                  | -0.017  | (0.076)| -0.079 | (0.081) | -0.017*| (0.076)| -0.082 | (0.080) |
| Census division (vs. Pacific)         |         |        |        |         |        |        |
| Middle Atlantic                       | 0.001   | (0.096)| -0.008 | (0.109) | -0.002 | (0.096)| -0.016 | (0.109) |
| East North Central                    | -0.083  | (0.095)| -0.208*| (0.103) | -0.081 | (0.095)| -0.201†| (0.102) |
| West North Central                    | -0.156  | (0.111)| 0.010  | (0.131) | -0.157 | (0.111)| 0.005  | (0.129) |
| South Atlantic                        | 0.022   | (0.083)| -0.102 | (0.091) | 0.020  | (0.082)| -0.109 | (0.091) |
| East South Central                    | 0.030   | (0.136)| -0.269†| (0.141) | 0.027  | (0.136)| -0.277†| (0.141) |
| West South Central                    | 0.008   | (0.102)| -0.140 | (0.107) | 0.007  | (0.102)| -0.143 | (0.107) |
| Mountain                              | -0.106  | (0.110)| -0.212†| (0.121) | -0.108 | (0.110)| -0.220†| (0.120) |
| New England                           | -0.036  | (0.126)| -0.257†| (0.135) | -0.035 | (0.126)| -0.253†| (0.135) |

Notes: s.e. = standard error.
† p < .10. * p < .05. ** p < .01. *** p < .001
Sample is drawn from the Pew Research Center's American Trends Panel, with responses fielded March 19-24, 2020.
Figure 1. Predicted Probability of Searching for Information about COVID-19 on the Internet with 95% Confidence Intervals