

Does a Societal Lockdown Treat Gender the Same? Submission and Reviewing Patterns at JAIS During Spring 2020

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Spring 2020² is unlikely to fade into memory anytime soon, if ever. The dramatic disruptions to everyday life resulting from the various degrees of societal lockdowns experienced across the globe will have long-term repercussions for many individuals, occupations, organizations, and societies. One observation repeated in both the popular and academic presses is that the burden of the lockdown was not equitably distributed. Specifically, working women with school-aged children seemed to face even greater hurdles in managing their households and careers than did men (Alon et al., 2020; Collins et al., 2020; Motoko, 2020; Madbavkar et al., 2020). The delicate family-work balance that these working women had managed to build during what we might now nostalgically refer to “normal” times had been shattered. To extend the balance metaphor, the scale was not just broken, it was no longer measuring anything meaningful.

Recognizing the struggle facing female faculty members in many academic disciplines (Andersen et al., 2020; Fazackerley, 2020; Fredrickson, 2020; Kitchner, 2020; Viglione, 2020; Vincent-Lamarre et al., 2020), we embarked on an analysis of authorship and reviewer data from the *Journal of the Association for Information Systems* (JAIS) in order to compare submission and review data in the pre-lockdown period March-June of 2019 with the early lockdown period of March-June 2020 to see if there were any noticeable patterns. We do recognize that there are

working men with sole custody of children, just as there are women with stay-at-home husbands, as well as men and women with no children. Nevertheless, with numerous sources noting, on average, a greater burden placed on working women during the lockdown than other groups, we decided to investigate how, if at all, this played out in terms of journal authorship and reviewership. This editorial presents the results.

We begin with Figure 1, which shows the distribution of the total number of authors and the total number of submissions to JAIS between March 2019 and June 2020.³ Overall, submissions have averaged about 32.6 per month, with a range of between 19 and 49 per month. The number of all authors (first authors and all other authors) on these submissions has averaged about 91.4 per month, with a range of between 51 and 135 per month. Based on these numbers, we notice:

- The number of submissions during the early lockdown period (between March and June 2020) is 22% lower than that between the same months (March to June) in 2019.
- The number of all authors on submissions during the lockdown period (between March and June 2020) is 23% lower than that between March and June 2019.

Indications are that the lockdown did slow submissions. However, as of the writing of this

¹ Authors listed in descending order of professional disruption provoked by the lockdown.

² Or Fall 2020, for our southern hemisphere colleagues

³ Report created on September 12, 2020, based on Scholar One data for the *Journal of the Association for Information Systems* (JAIS) collected on August 30, 2020.

editorial, submissions have picked back up and now well exceed the number for the same time last year.⁴

To analyze submission patterns between women and men, we first had to determine the gender of authors. Our first step was to use Namsor to analyze author names to predict gender.⁵ Each gender prediction is associated with a confidence level. Although 0.85 is the suggested cut-off confidence level, we used 0.95 as the cut-off to be more conservative. That is, any name classified with a confidence level lower than 0.95 was

also analyzed manually. For those names, we first relied on our personal knowledge of the individuals. Lacking that, we conducted web searches to find information that could help us determine gender, looking for bios and photos. In this way, we were able to assign genders to almost all of the names. Our analysis is thus simply based on our estimation of female-male biological sex, given the information we were able to acquire, and does not account for gender identity.

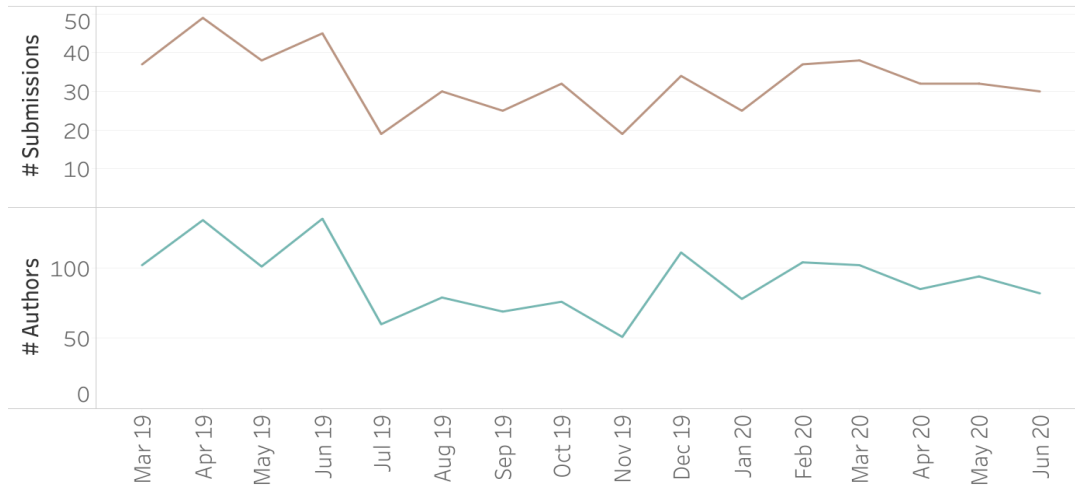


Figure 1. Number of Submissions and Authors by Month

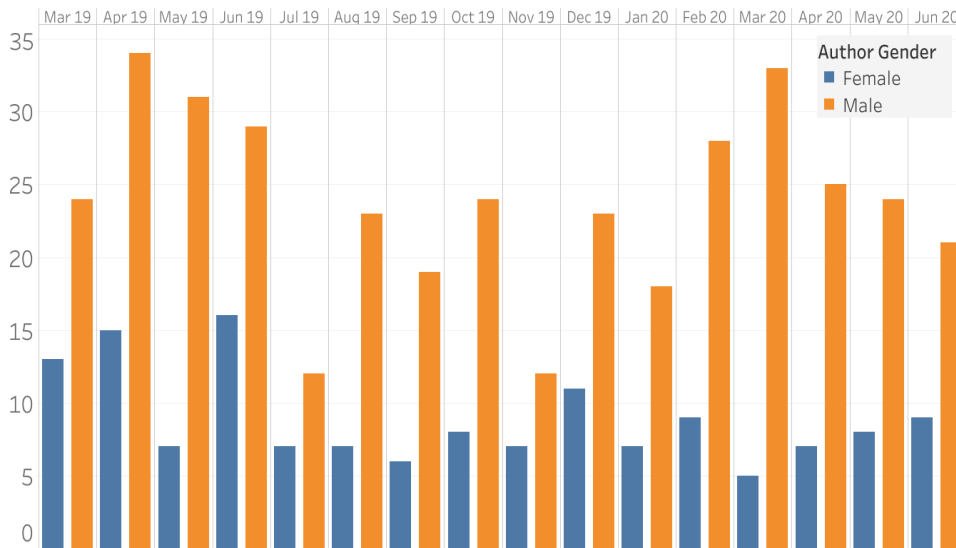


Figure 2. Number of First Authors by Gender

⁴ The January-February editorial will provide a 2020 JAIS year-in-review with additional details

⁵ Note: there are several automated “genderizers” available, but Elsevier uses this one for their authorship gender analyses, hence, we deemed it to be the optimal choice for our analysis.

Figure 2 displays the total number of female and male *first* authors on submissions from March 2019 to June 2020. We were unable to distinguish between first author in an otherwise alphabetical order and first author based on contribution. However, we would expect no differences in either female or male authors being listed first in alphabetical order across the two time periods; hence, any differences observed can be reasonably attributed to first authorship based on contribution.

This graph presents two observations:

- The number of female first authors during the early lockdown period (between March and June 2020) is 43% lower than that between the same months of the previous year (between March and June 2019).
- The number of male first authors during the same three months is 13% lower in 2020 than in 2019.

Overall, the rate of decrease in submissions from female first authors is greater than that from male first authors.

Our next series of analysis is based on female:male ratios. Using ratios helps determine whether submissions from female authors were down while, at the same time, submissions from male authors were up, which is the lockdown effect that has most concerned academics, especially those with children or other dependents (Kitchner, 2020). It is also easier to compare these values with other benchmarks. To fully understand any impact of the lockdown on submissions to JAIS, we compare the female to male ratio of submissions during the lockdown period (March-June 2020) to three benchmarks: (1) the female to male ratio of Academic members of the Association for Information Systems (AIS) (a proxy for the population of submitters), (2) the female to male ratio of submitters that was “normal” at JAIS prior to the lockdown, and (3) the female to male ratio of submitters during the equivalent pre-lockdown period (March-June) in 2019. We first establish these three benchmarks as follows:

1. Using AIS membership data, among AIS Academic members (i.e., not Student or Professional members) ($n = 3210$ in June 2020) the gender distribution was 33% female and 67% male. Thus, the ratio of female to male Academic members of AIS is 1:2, or 0.50. We use this AIS baseline female:male ratio as our first basis for comparison.
2. The average female:male ratio among first authors of submissions to JAIS before the lockdown, that is, between March 2019 and February 2020, is 1:2.4 or 0.42 (which is 16% lower than the AIS baseline ratio of 0.50). We thus consider 0.42 to be the “normal” female:male ratio of first authors at JAIS.
3. The female:male ratio of first authors varies greatly month to month; thus, as our third baseline, we use the female:male ratio of first authors during the March-June 2019 period, which we consider to be the most appropriate comparison period for the early lockdown period. The female:male ratio during the 2019 comparison period is 1:2.3 or 0.44.

Having explained the three comparison ratios, we now present a graph (Figure 3) that shows the ratio of female to male *first* authors on submissions between March 2019 and February 2020.

Based on the above numbers, we make three observations:

- During the lockdown period (March-June 2020), the average ratio of female:male first authors is 1:3.33 or 0.3, which is 40% lower than the AIS baseline ratio of 0.50 (1:2).
- During the lockdown, the average ratio of female:male first authors (1:3 or 0.33) is 33% lower than the “JAIS normal ratio” of 0.42 (1:2.4).
- Similarly, during the lockdown, the average ratio of female:male first authors (1:3 or 0.33) is 32% lower than the female:male ratio during the 2019 comparison period of 0.44 (1:2.3).

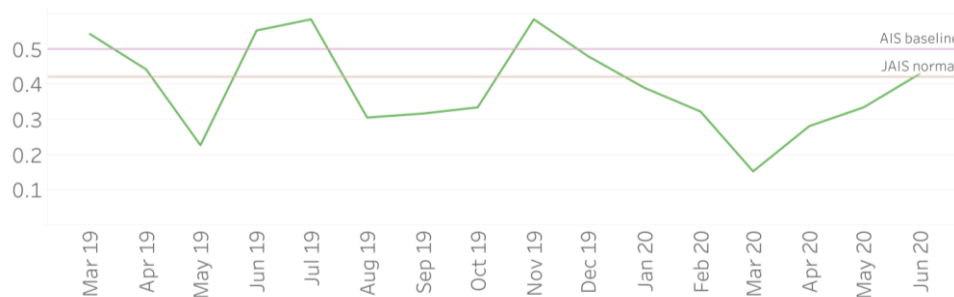


Figure 3. Ratio of Female to Male First Authors

Lastly, we consider the case of all authors, not just first authors. For our baseline ratios, we use the following:

- As above, the AIS baseline female:male ratio is 1:2 or 0.50.
- The average female:male ratio of submissions considering all authors between March 2019 and February 2020 (JAIS’s “normal” ratio) is 1:2.8 or 0.36, which is 28% lower than the AIS baseline ratio of 0.50. We consider 0.36 to be the normal female:male ratio of all authors submitting to JAIS.
- The female:male ratio of all authors varies quite a bit from month to month. We thus also calculate the ratio of female to male authors among all authors submitting during the March-June 2019 period, which we consider to be the most appropriate comparison period for the lockdown period. The female:male ratio during this comparison period is 1:2.7 or 0.37, well below the AIS baseline of 0.50 but very similar to JAIS’s normal ratio (0.36).

Figure 4 shows the ratio of female to male authors among all authors submitting since March 2019.

Based on the female:male submission data for all authors displayed above, we are able to draw three observations:

- During the lockdown period (March-June 2020), the average female:male ratio among all authors is 1:2.9, or 0.31, which is 38% lower than the AIS baseline ratio of 0.50 (1:2).
- During the lockdown period (March-June 2020), the average female:male ratio among all authors (1:2.9, or 0.31) is 13% lower than the “JAIS normal ratio” of 0.36 (1:2.8).
- During the lockdown period (March-June 2020), the average female:male ratio among all authors (1:2.9 or 0.31) is 16% lower than the female:male ratio during the 2019 comparison period of 0.37 (1:2.7).

What might one conclude from this data? Generally speaking, the data support the argument that the lockdown has had a substantial impact on submissions from women who are first authors and a noticeable, albeit smaller, impact on women who are not first authors.

One concern that we heard expressed by various stakeholders is that women were more likely to accept reviews during the lockdown than men, in essence, following a hunter-gatherer role division—i.e., men were more likely to focus their constrained time on their own research (authoring), while women were more likely to focus their constrained time on others’ research (reviewing). We heard from many young female academics who felt overwhelmed by review invitations. We thus decided to look into the data.

To understand the impact of the lockdown on female reviewers, we established three baselines.

1. As in the author analysis, the first baseline, the AIS baseline, is based on the gender distribution of Academic members of AIS ($n = 3210$ in June 2020), where the reported membership is 33% female to 67% male; therefore the baseline ratio among AIS Academic members is 0.50 (1 female member for every 2 male members, 1:2).
2. Our second baseline is based on the gender distribution of accepted review requests at JAIS between March 2019 and Feb 2020, prior to the lockdown. This “normal” female:male ratio among those accepting review assignments is 1:2.6 (0.38).
3. Our third baseline is based on the gender distribution of accepted review requests in the pre-lockdown period, between March and June 2019, which is 1:3 or 0.33. Recall that the female:male ratio of all authors submitting to JAIS during this same time period is 1:2.8 or 0.36. Thus, the ratio of female:male reviewers during the March to June 2019 period is 8% lower than the ratio of female:male submitting authors during the same time period.

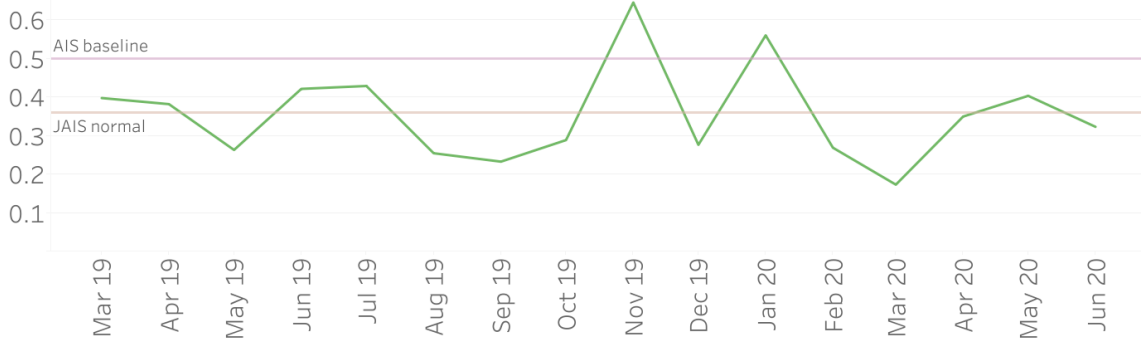


Figure 4. Ratio of Female to Male Submissions Among All Authors

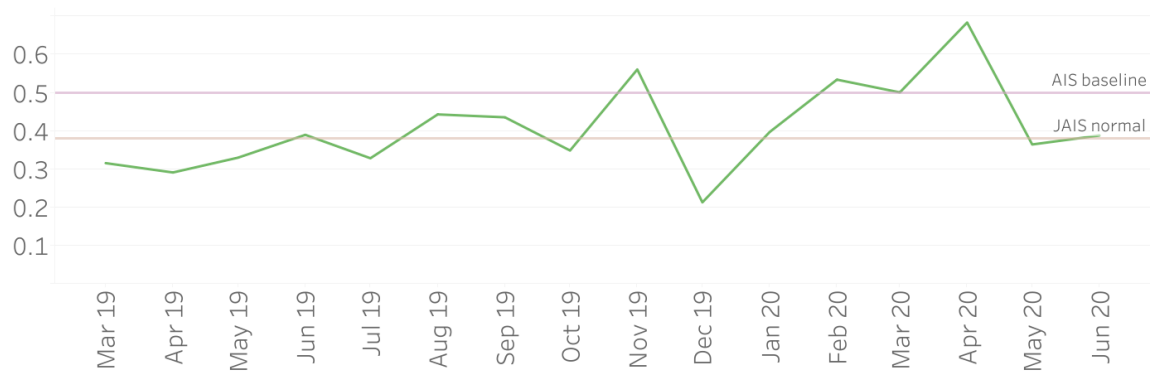


Figure 5. Female:Male Ratio of Accepted Review Requests

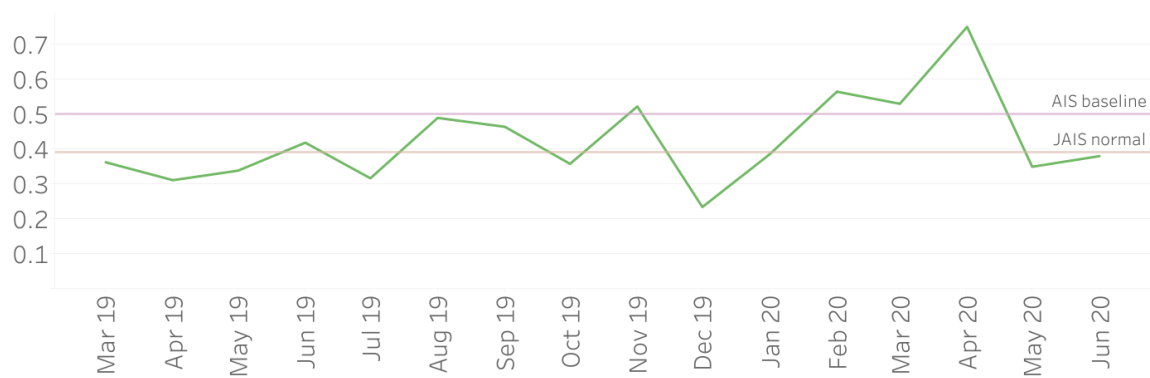


Figure 6. Female:Male Ratio of Completed Reviews

Figure 5 shows the female:male ratio in terms of accepted review requests since March 2019. Based on these data and the author data presented earlier, we draw three observations:

- The average female:male ratio of those accepting review assignments between March and June 2020 is 1:2.0 (0.48). Recall that the female:male all-author ratio during this same time period is 1:2.9 (0.31). Thus, the ratio of female:male reviewers during the lockdown is 55% higher than the ratio of female:male authors during the lockdown.
- The female:male ratio during the post-lockdown period is 26% higher than the normal JAIS female:male ratio of review acceptances (0.38).
- The female:male ratio during the post-lockdown period is 45% higher than the female:male ratio of review acceptances during the comparison period (i.e., March-June of 2019; 0.33).

Overall, we observe a pattern that during a relatively stable time period (March to June 2019) male reviewers carried a disproportionately high share of the

review load, relative to the baselines, whereas during a highly unstable time (March to June 2020) female reviewers carried a disproportionately high share of the review load.

The above analysis is based on accepted review assignments. Despite their best intentions, some reviewers are unable to complete their reviews. Thus, we next look at the data on completed reviews. Figure 6 shows the distribution of the female:male ratio in terms of the total number of completed reviews since March 2019. Our first baseline is the female:male “normal” ratio of completed reviews for JAIS prior to the lockdown (March 2019-February 2020), which is 1:2.6 (or 0.39) and is 22% lower than the AIS baseline of 0.50. Our second baseline is the female:male ratio of completed reviews at JAIS during the March-June 2019 comparison period, which is 1:2.8 (0.36).

In these data, we note the following:

- The average female:male ratio of completed reviews between March and June 2020 is 1:2 (0.50), which is the same as the AIS baseline (1:2, or 0.50).

- The March-June 2020 ratio is 28% higher than the normal JAIS ratio of completed reviews of 1:2.6 (0.39).
- The March-June 2020 ratio is also 38% higher than the female:male ratio of completed reviews in the March-June 2019 comparison period (0.36).

In summary, during the lockdown, women were completing a disproportionate amount of reviews.

Figure 7 displays the percentage of accepted review requests by gender since March 2019.

- For both genders, the rate at which review invitations were accepted increased slightly over time.

- For female reviewers, between March and June 2020, 76% of review invitations were accepted; this rate is 10% higher than that between March and June 2019.
- For male reviewers, between March and June 2020, 78% of review invitations were accepted; this rate is 4% higher than that between March and June 2019.

Another comment we heard commonly expressed was that reviews were taking longer because of the added burden faculty faced in moving courses online and taking on greater household responsibilities. In fact, the average number of days needed to complete a review decreased during the lockdown for both genders. Figure 8 shows the average number of days it took to complete a review by gender between March 2019 and June 2020.



Figure 7. Percentage of Accepted Review Requests

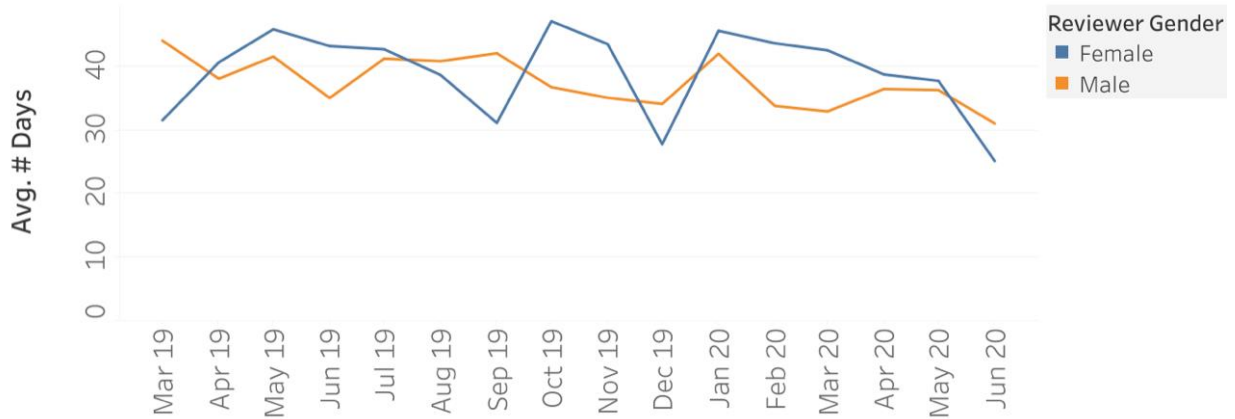


Figure 8. Average Number of Days Needed to Complete a Review

In Figure 8 we see that:

- For both genders, the average number of days needed to complete a review is decreasing.
- The JAIS normal (March 2019-February 2020) average number of days needed to complete a review for women and men is 40 and 38.6 days, respectively.
- During the comparison period (March-June 2019), the average number of days needed to complete a review for women and men is 40.2 and 39.6 days, respectively.
- For women, the average number of days needed to complete a review during the lockdown, between March and June 2020, is 36 days, which is 10% less than the 40.2 days it was taking women, on average, to complete a review between March and June 2019.
- For men, the number of days needed to complete a review during the lockdown is 34.1, which is 14% less than the 39.6 days it was taking, on average, between March and June 2019.

Both men and women completed reviews more quickly during the lockdown period, with men completing reviews even more quickly during the lockdown than women.

In short, the JAIS data on submissions and reviews provides a glimpse into the gender patterns observed during a period of relative stability (spring 2019) compared to a period of relative instability (spring 2020). We notice that during the unstable period, the rate of first authorship among women dropped considerably, the rate of co-authorship among women dropped a little, the rate of accepted and completed reviews by women increased substantially, and the days needed to complete a review for both men and women decreased.

Before drawing any conclusions or making any recommendations, we must keep in mind what we do not know: we do not know how many of the women in our sample were primary caregivers to children or other dependents during the lockdown; we do not know how many of the men in our sample were primary caregivers during the lockdown; we do not know why during “normal” times, the ratio of female:male submitting authors is lower than the AIS baseline membership. Thus, we must be careful in making recommendations or drawing broad conclusions. That said, we offer a few points that we feel are justified given the data.

First, any author who has had to postpone the submission of a paper on which he or she is the first author because of caregiving responsibilities imposed by the lockdown should make a strong case to his or her department chair for an extension—or an additional extension—to the tenure clock. Many authors stagger their projects, so delays in completing one first-authored paper for submission creates delays for other papers. It is therefore

reasonable to assume that the effects of the lockdown will be much longer than a 3-4 month span. At many universities, faculty members undergo annual reviews during which teaching loads for the following year are decided based on research productivity in the prior year. We urge department chairs to avoid raising the teaching load in 2021 for faculty members who have experienced lower productivity during the lockdown of 2020.

Second, authors are encouraged to take appropriate steps within their control to eliminate delays once a paper has been submitted. One of the best ways to eliminate delays in review time is to carefully note conflicts of interest with the senior and associate editors of the journal. Some of the longest review times are incurred when, several weeks into a review, an SE happens to notice a conflict with one of the authors on the paper. The paper must then be assigned to another SE and the screening process begins anew, creating a 1-3 week lag. To avoid such delays, submitting authors are encouraged to carefully note all conflicts of interest—not just theirs, but also those of their co-authors—with any of the journal’s senior editors.

Another thing authors can do is to politely inquire about the status of their paper once the paper is over the 3½ month mark. In general, senior editors work very hard to ensure that papers are reviewed in a reasonable amount of time, but they are not always aware that a paper has been held up. A gentle reminder can help push the review out.

Most importantly, though, the best way to ensure the quickest cycle time from initial submission to eventual publication is to put enormous effort into polishing the manuscript prior to submission. With this in mind, JAIS offers the JAIS Promise review option for manuscripts that authors feel truly represent their best work. This option results in either a commitment or a rejection after the first review. Authors receiving this commitment have the certainty of knowing that the efforts they put into a revision will be rewarded.

Finally, given the greater strain placed on most researchers during the lockdown, it is wise for the journal itself to limit reviews to two per paper in order to decrease the overall number of people needed for reviews and (hopefully) decrease the time to decision. This will work to the benefit of authors and reviewers alike, provided that reviewers who agree to review are able to complete the reviews.

In closing, JAIS would like to sincerely thank the many reviewers who have graciously given of their constrained time during the lockdown, reviewing papers even when they were in the midst of many unplanned distractions. It is only because of the dedication of the senior editors, associate editors, and reviewers that the journal has been able to operate with little disruption during what has otherwise been a most disruptive period.

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