Title: Supplemental results appendix for "Chinese state media Facebook ads are linked to changes in news coverage of China worldwide"
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Note: The material contained herein is supplementary to the article named in the title and published in the Harvard Kennedy School (HKS) Misinformation Review.

Appendix D: Supplemental results

In this section, we provide supplemental results to provide further validation of our findings and confirm they are robust to changes in the study design.

Lags and leads

First, we provide results when the lag and lead lengths are changed. We shortened the lag time and extended the lead time. Results from shorter lead times can be inferred from the existing graphs. However, lengthening the lag greatly reduced the number of available matches, and prevented some of our treated observations from being matched entirely. Figure 1 shows results with two different new choices of lag length and one new choice of lead length.

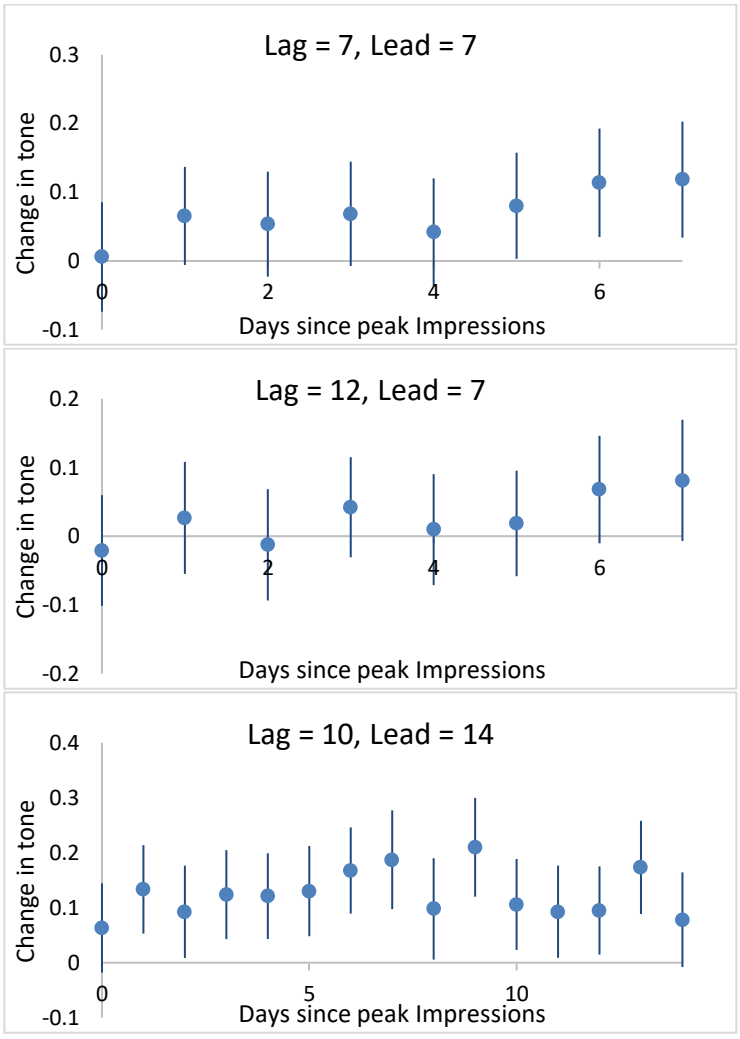

Figure 1. Main finding, with lag and lead lengths changed.

Extending the lead time did not affect the results. Shortening the lag time affected some of the central results, with some results dropping out of significance. Lengthening the lag time greatly affected the results, with most results dropping out of significance, though all but two of the point estimates remained positive, and it appears possible that longer lead times would become significant.

Matching method

Here, we provide results using different standards for matching. First, we re-ran the experiment, but if the standardized mean difference between a covariate and its matched set was above 0.1 for any covariate for any of the 11 periods, the treated observation was not used to calculate the average treatment effect. This is a common procedure used to ensure that each treated observation has an adequately similar control unit (King & Zeng, 2017; Lunt, 2014), but we did not report this in the main paper body because it risks introducing selection bias. Of 1,321 treated observations, 599 were excluded and 722 remain. Figure 2 shows the outcome of the experiment and has the same structure as the graphs above. The results are virtually unchanged, confirming that enforcing stricter balance standards did not affect the results.

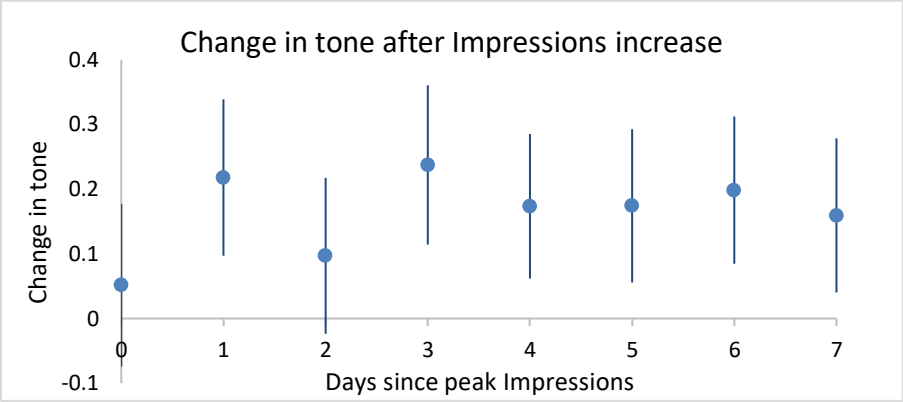

Figure 2. Main finding, with treated observations with poor-quality matches not considered in the treatment effect.

Second, we want to give an intuitive demonstration that our findings were not confounded by real-world events like aid delivery. The events covariate is designed to correct for this; however, one concern may be that there are too few events of the correct type among untreated units for an adequately similar matched set to be found. Therefore, we ran the experiment again, but this time, we ignored any treated observation that had any positive event on or up to ten days before the day of treatment. Thus, the average treatment effect was estimated for exactly those units that lacked any positive events preceding the treatment.

We excluded 306 treated observations from the data set and 1,015 remained. Figure 3 shows the results and has the same structure as the graphs above. The results were virtually unchanged. This confirms that our findings were not affected by a failure to find enough similar events in the matched set.

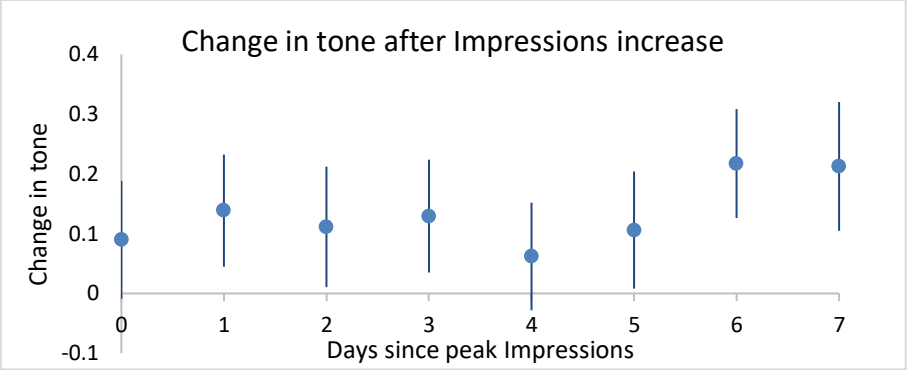

Figure 3. Main finding, excluding any treated observation that had a positive-valued event on the same or preceding ten days.

Third, we want to show that our results are robust to changes in the method of computing the matched set. We used Mahalanobis distance weighting, wherein each matching unit receives a weight inversely proportional to the Mahalanobis distance from the treated observation. Weights are normalized so that the sum of the weights is equal to 1. This procedure is designed to ensure that match quality does not suffer when fewer than five units are sufficiently similar to the treated observation. However, we opted not to use it in the manuscript because the presence of extreme weights greatly worsens the variance of estimates, and procedures to correct this are not well-established (Stuart, 2010). Figure 4 reports the results; they are virtually unchanged, which confirms the robustness of our central results.

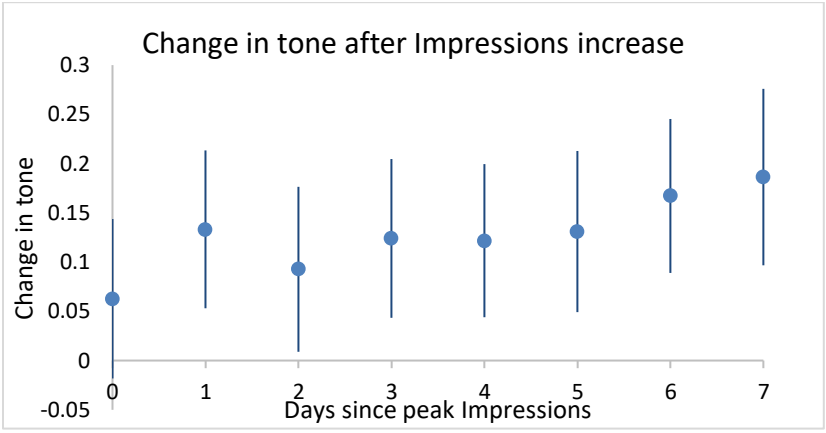

Figure 4. Main finding, with matched sets constructed using weighting instead of matching.