9^{th} International Conference on Computational Social Science IC^2S^2
July 17-20, 2023, Copenhagen, Denmark

Cable and Broadcast News Intermedia Agenda Setting Across the COVID-19 Issue Attention Cycle

Keywords: intermedia agenda setting, issue attention cycle, COVID-19, news

Extended Abstract

Intermedia agenda-setting refers to the influence that different news sources have on each other, leading to alignment in their agendas/coverage. This theory found much support in scholarship. Yet, in today's fragmented media environment, it is unclear whether intermedia agenda setting persists. There are reasons to still expect such alignment. The commonalities in journalist training and routines and the broader social context can lead to convergence. Yet, factors such as competition for audiences can also lead outlets to differentiate their coverage.

Our analysis contributes to this line of scholarship. Through a combination of manual and computerized content analysis of cable and broadcast news transcripts, we analyze agenda setting in COVID-19 coverage and provide evidence for the persistence of intermedia agenda setting. We measure both second-level agenda setting (investigation of attributes used to describe issues) and third-level agenda setting (investigation of the linkages, or co-occurrences, among various issues and attributes). These analyses produce similar findings. For brevity, here we focus on second-level agenda setting only.

Intermedia agenda setting is particularly interesting to inspect, and yet rarely inspected, for new issues where newsrooms haven't carved out unique niches. COVID-19 coverage provides us with a means to do so. Issue-attention cycle (Downs, 1972) provides a useful framework for such emerging issues. Using this framework, we identify small yet consistent changes in relationships among media agendas over time.

Data: We used a dataset of COVID-19 coverage by all prime-time cable shows and broadcast news programs between January 21-June 12, 2020 (Budak et al., 2021). The dataset includes 486,068 paragraphs across 4,589 cable and broadcast news transcripts. The authors label each paragraph as related or unrelated to COVID-19 (see their paper for reliability and accuracy results). We restrict our analysis to the 202,449 paragraphs classified as related to COVID-19.

Methods: We analyzed the content of the COVID-19 paragraphs through a dictionary-based approach. We started with the pre-existing Lexicoder Topic Dictionaries (Albugh, 2013), which capture topics in news content, legislative debates, and policy documents. We expanded the Lexicoder dictionaries through an iterative computer-aided labeling approach. At each iteration, we identity new candidate phrases–unigrams and bigrams that occurred at least 100 times in our COVID-19 dataset that had high semantic similarity to phrases already in our dictionary (computed using a word embedding model). The resulting expanded dictionary was evaluated by trained experts. A hundred phrases were randomly sampled from the set of phrases classified as belonging to at least one policy. The phrases were then presented to the experts (masking the machine-assigned policy label), who coded whether the phrase was associated with a given policy for all policies. The coders were highly reliable at this task (Krippendorff alpha = 0.84).

This process was repeated 3 times until a preset accuracy level was reached. The accuracy numbers in each step were 0.71, 0.78, and 0.93. The final dictionary was inspected to remove the inaccurate pairs to reach perfect precision (Krippendorff alpha for this task was 0.82).

Measuring Agendas and their alignment: We measured attribute agendas in two ways: (i.) central themes and (ii.) aspects. Aspects corresponded to the phrases in our policy dictionaries.

Central themes correspond to groups of phrases related to a particular policy topic. We constructed vectors for each For central themes, we constructed a 17-dimensional vector for each s and i as: $C_{i,s} = [c_{i,s,healthcare}, c_{i,s,governmentops}, ...]$, where $c_{i,s,healthcare}$ denotes the total frequency of healthcare-related phrases in coverage for network i during issue-attention cycle stage s [1]. For aspects, we constructed a similar vector, now at the phrase level. This 834-dimensional vector corresponds to the dictionary phrases identified.

We define similarities between networks i and j as the cosine similarity between their corresponding vectors. Tracking this measure over time allows us to determine whether network agendas converge or diverge. We rely on bootstrap sampling to determine whether this measure varies significantly across outlet pairs and over time.

Results: The similarity in central themes is high across all pairs, consistently exceeding .94. The alignment scores are lower at the aspect attribute level (see Fig) but still comparable to/higher than past studies that conclude strong alignment. As such, we conclude that a high level of intermedia agenda setting is observed for COVID-19 coverage across broadcast and cable news programs. We observe this high similarity even though various events changed the attribute focus over time (measured through topic and phrase distributions, skipped for brevity). As can be seen from Fig 1, there are changes over the issue attention cycle stages. All but two pairs see a significant increase followed by a significant reduction in alignment when comparing the stages.

Our findings suggest that significant real-world events can overwrite or at least temper partisan differences in news coverage. Although there are consistent differences across the three time periods, the overall magnitude of the similarity measures is striking.

References

Albugh, Quinn, Julie Sevenans and Stuart Soroka. 2013. Lexicoder Topic Dictionaries, June 2013 versions, McGill University, Montreal, Canada.

Budak, C., Muddiman, A., Kim, Y., Murray, C. C., & Stroud, N. J. (2021). COVID-19 Coverage By Cable and Broadcast Networks. ICWSM, 15(1), 952-960.

Downs, A. (1972). Up and down with ecology– The "issue-attention cycle." The Public Interest, 38-50.

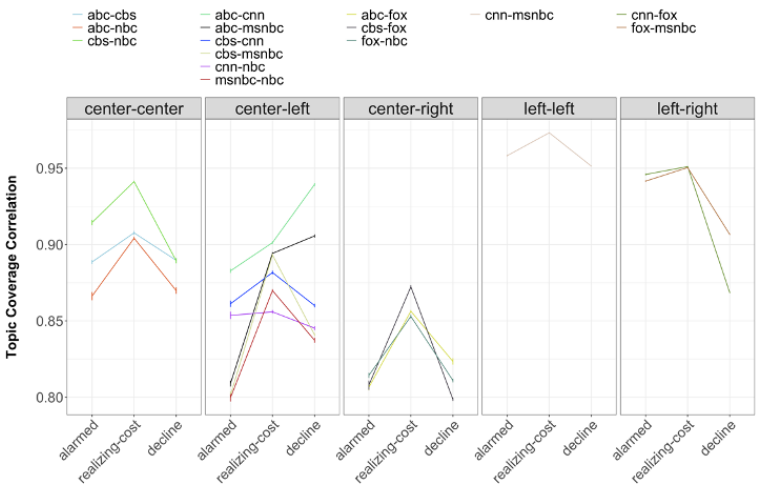

Figure 1: Cosine similarity for attribute agendas at the aspect level across issue-attention cycle stages. Attributes are words and phrases/aspects (e.g., covid, test, job). The x-axis denotes the issue attention cycle stages. Error bars denote two standard errors computed across bootstrap samples.

[1] Issue attention cycle covers five stages: the pre-problem, alarmed discovery, realizing the cost, gradual decline of public interest, and the post-problem stages. Our analysis period covers 2-4, eliminating (1) due to minimal coverage and (5) because it's debatable whether we had entered this phase at the time of our analysis.