

The Narrative of Timing in News Stories

Blanca Calvo Figueras, Tommaso Caselli & Marcel Broersma



Introduction

The stories narrated by mass media shape the public perception of reality. Agenda-setting theory suggests that readers not only get informed through media but also get to **grasp the salience of a certain issue based on the amount of information published** on a news story.¹

The volume of journalistic works published by written media has been in steady increase since the emergence of the WWW. Not having space limitations, has allowed digital media to virtually publish unlimited documents. In the age of digital news, the **consecutive broadcast of articles dedicated to a story** has become an added **source of power for digital newspapers**.²

In this project, we suggest that the **dynamics of news publishing** have become empirical clues for the study of the **narrative of news stories**.

Do different types of news stories give rise to different narrative plots?

Types of news issues (Soroka, 2001)

Story: The aggregate of news articles that narrates a sequence of events.

Plot: The narrative structure used for the telling of the story.³

	Sensational	Governmental	Prominent
obtrusiveness	X	X	✓
dramatism	✓	X	X
abstractness	X	✓	X
duration	🐇	🐢	🐢

Methodology

An exhaustive corpus of **50,385 political articles** of the entire 2018 was collected from the Spanish newspapers *El País*, *El Periódico*, *El Mundo* and *ABC*. For each week, news stories were extracted by aggregating articles with k-means clustering using tf-idf representations. The general clusters (comprised of news articles that do not belong to any story) were removed using silhouette analysis. Then, the similarity of each cluster to the articles in the colliding weeks (before and after) was measured using cosine similarity. As long as there were more than 10 similar articles found, the system kept looking for articles in the colliding weeks.

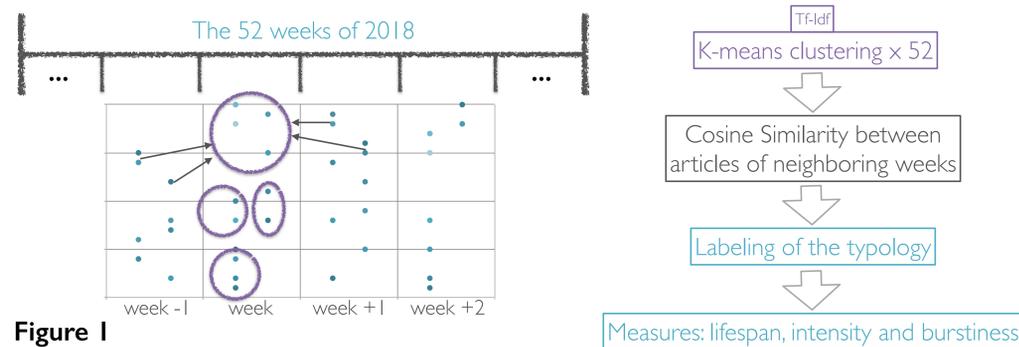


Figure 1

The automated system outputted a total of **82 news stories**. The evaluation of the results showed a **0.83 value of purity** against gold annotated data. The stories were labelled according to their typology, resulting in 40 sensational stories, 37 governmental stories and 7 prominent stories. Two of the stories were discarded as outliers. Finally, lifespan, intensity and bustiness of each of the stories was calculated.

Results

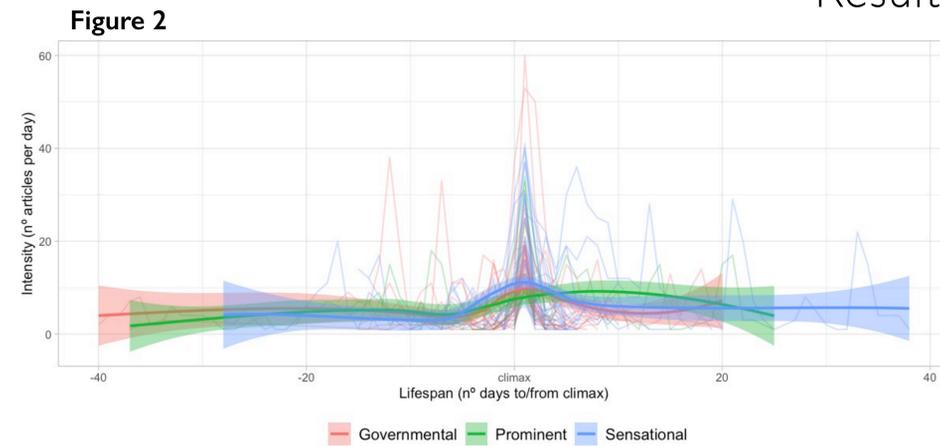
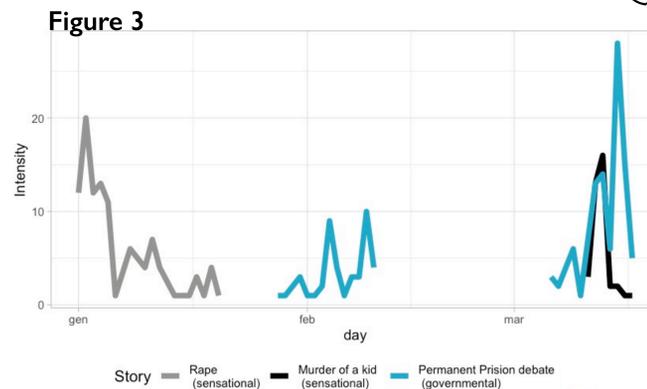


Figure 2 shows all stories of the corpus (thin lines) plotted with their climax at $x = 0$. The climax is the day in which the highest amount of articles was published. The smoothed conditional mean of each type is plotted in bold.

	Sensational	Governmental	Prominent
lifespan	11.35	18.23	14.00
intensity	8.04	6.79	5.93
burstiness	6.14	6.01	4.52

- (1) Lifespan is defined as the **amount of days** in which articles of the news story keep being published.
 - (2) Intensity is the **amount of articles** published about the same news story in one day. The intensity of one single story is defined by the mean of the intensity of all the days within the lifespan of the story.
 - (3) Burstiness is **the speed** with which a story goes from incipient to its climax. It is measured with the Fano Factor, a ratio of the variance to the mean of counts.
- The difference between sensational stories and governmental and prominent stories in **intensity was found to be significant** ($0.01253 \leq 0.05$ and $0.006821 \leq 0.05$, respectively).

Qualitative observations



In Figure 3, an **interaction between sensational and governmental stories** can be observed. A first discussion on permanent prison started after a highly mediated rape case. It then behaved like a common governmental issue (mean intensity=3.2 in 14 days). Another very dramatic event (the murder of a child) reopened the debate some weeks later, but this time it was covered by the media as a sensational story (mean intensity=9.3, with a peak of 28 articles in one day).

In 2018, there were two debates about the national budget, each with a different party in the government. As can be observed in Figure 4, **the media coverage of each of the debates was very different**. What makes national budget a story for the media? The most common bigrams of the titles of the articles show that, while the debate in 2018 focused on the parties, in 2019 the coverage was way more personalistic and included prominent topics like "salario mínimo" or "sanidad pública".

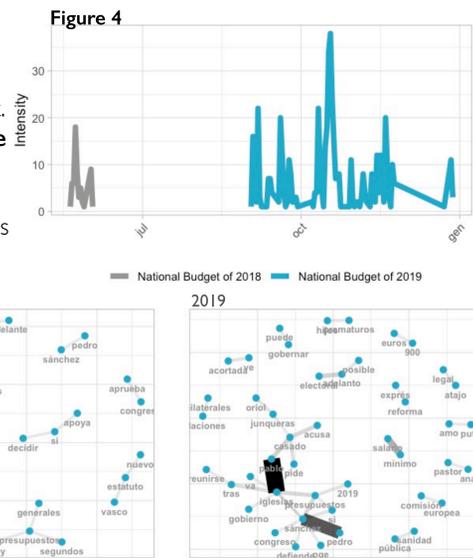


Figure 5

Discussion

The types of stories showed a significant difference in intensity. The methodology presented here is reliable enough to be used in different ways for media research.

- Future research can include:
- Changes in language use when topics become mainstream.
 - The relation between media timings and social media interactions.
 - How timing has an impact on public opinion.

References

1. Wanta, Wayne, and Salma Ghanem. 2006. "Effects of Agenda Setting." In *Mass Media Effects Research: Advances Through Meta-Analysis*. Routledge.
2. Lee, Sun Kyong, Nathan J. Lindsey, and Kyun Soo Kim. 2017. "The Effects of News Consumption via Social Media and News Information Overload on Perceptions of Journalistic Norms and Practices." *Computers in Human Behavior* 75 (October): 254–63.
3. Bal, M. 1997. *Narratology: Introduction to the Theory of Narrative*. University of Toronto Press.