Appendix B:

Figures 6 and 7 display our second example, while Figures 8 and 9 display our third example for the Hourly Emerging Topic Modeling Analysis.

Figure 6 depicts the topics created and monitored from French tweets in our three-hour window on June 6th, 2023. The lime-green line shows the emergence of another "Iran" topic, this time around the debut of its hypersonic missile¹. The Reuters article was published around 18:00 GMT, and we can see the "Iran" topic emerging before this article was published.

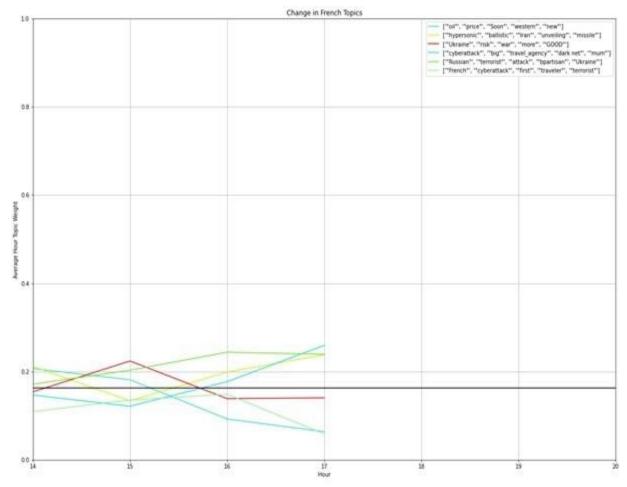


Fig 6 French Topics generated and tracked for June 6th, 2023, from 14:00 to 17:00 GMT

¹ Hafezi, Parisa, "Iran Presents Its First Hypersonic Ballistic Missile, State Media Reports."

Below, Figure 7 shows the Google Trends for Iran on June 6th, 2023. As the orange trend line shows, interest in Iran as a search term starts increasing at 17:00 GMT and spikes after 18:25 GMT, which is after the topic had emerged in the French tweets.

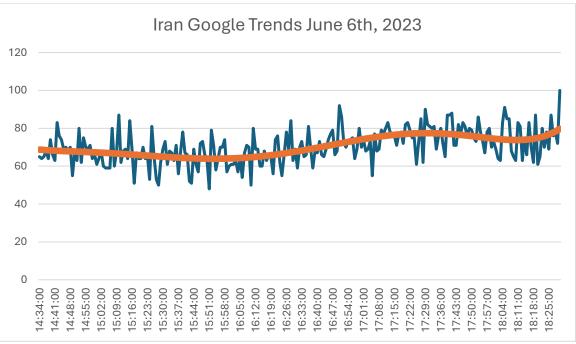


Fig 7 Google Trends tracking of "Iran" from 14:34 - 18:25 on June 1st, 2023

Figure 8 exhibits the topics created from Japanese tweets for June 6th, 2023, from 14:00 to 17:00 GMT. There are no major spikes in the any of the topics, which are generally clustered around the median value for average weights of the topics, which indicates that these topics were generally discussed equally throughout the time period. That said, the green line topic representing "Macron" stood out from the rest around 15:00 GMT. This small spike is in reference to the French protests that were occurring in this period, and an increased police presence for protest scheduled on June 6th, 2023².

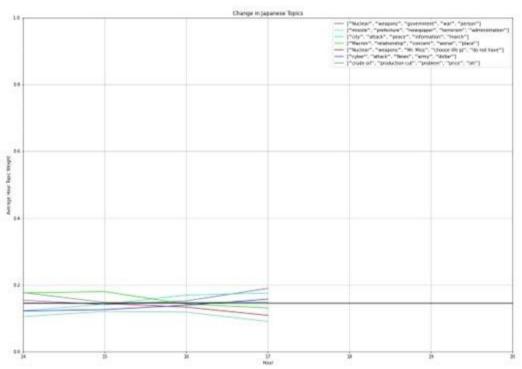


Fig 8 Japanese Topics generated and tracked for June 6th, 2023, from 14:00 to 17:00 GMT

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² Reuters. "France Plans Major Police Presence for June 6 Day of Protest."

Figure 9 presents the change in Google Trends for "Macron" from 14:36 to 18:31 GMT. As the figure shows, the increase in search activity about Marcon did not peak until around 17:00 GMT, which is nearly two hours after it had peaked on X / Twitter.

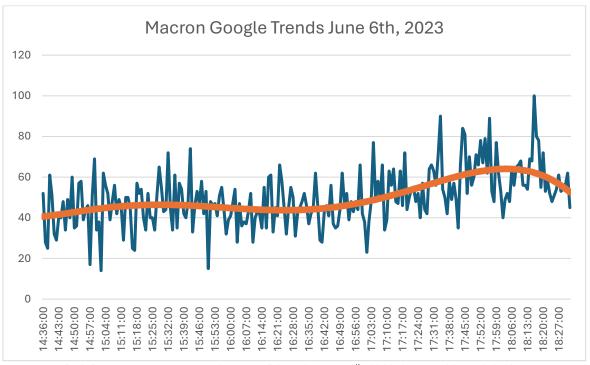


Fig 9 Google Trends tracking of "Macron" from for June 6th, 2023, from 14:36 to 18:27 GMT