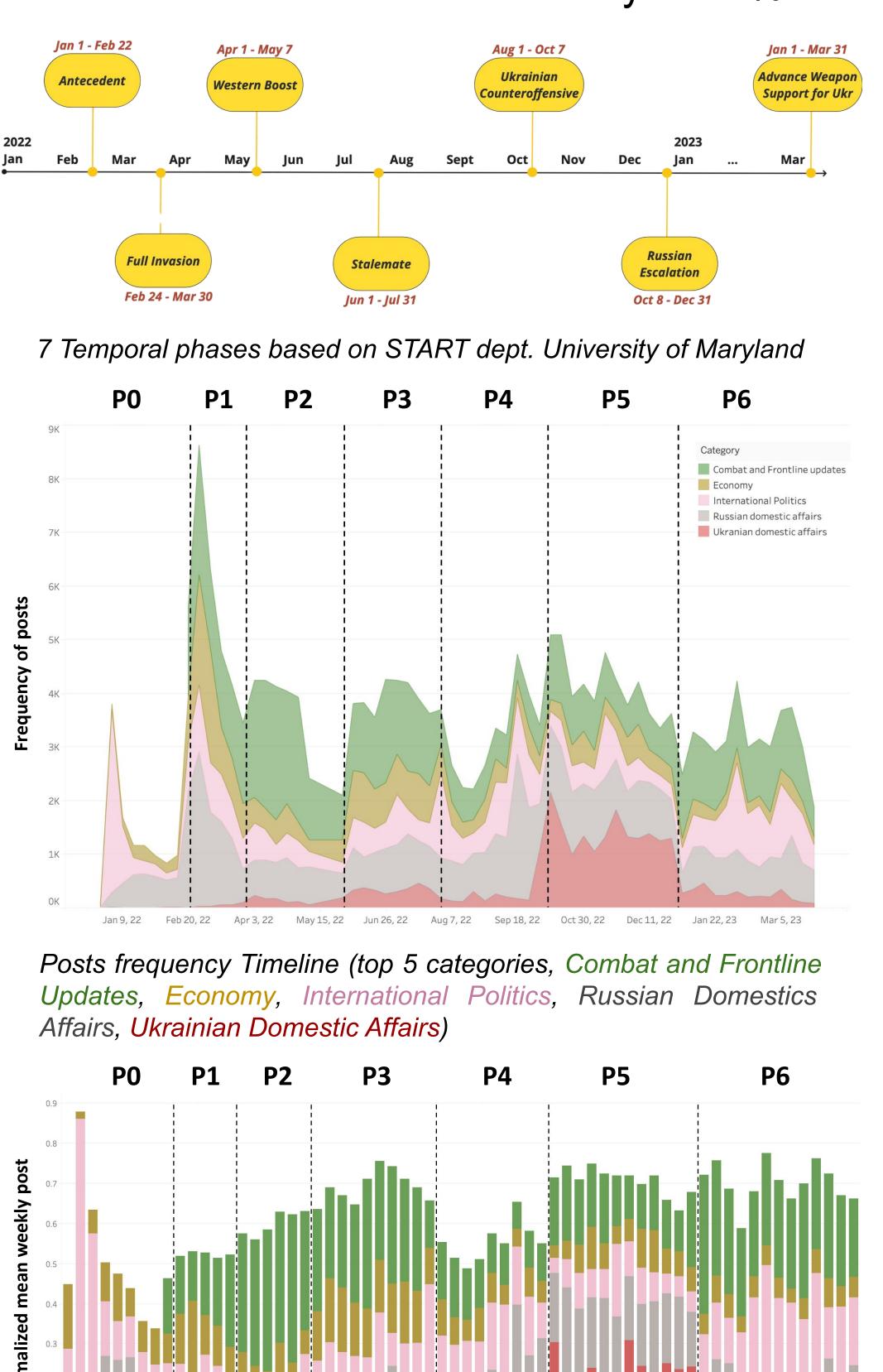# The Co-Evolving Signs of the Anti-Kremlin Rhetoric: A Longitudinal Analysis of Offline and Online Indicators from Russian Opposition

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MOTIVATION

➔ Russia's invasion of Ukraine highlighted the critical role of social media platforms like **Telegram** in information warfare during interstate conflicts.

➔ There is a lack of comprehensive research examining the **anti-Kremlin narrative**, the evolution of these communications with user engagement, and their impact on public discourse.

Research Questions

➔ **RQ1:** How the thematic patterns in the creation and dissemination of propaganda content within anti-Kremlin channels change throughout the conflict?

➔ **RQ2:** How do users engage with propaganda content on Telegram in relation to offline events, and how does the opposition adapt their strategy throughout different stages of the conflict?

OUR APPROACH

We employed the multilingual MPNet model to embed Russian language posts, followed by BERTopic approach to detect thematic shifts across seven temporal phases. Quantitative and qualitative analyses, including ANOVA tests, validated trends in post volume and user engagement across phases.

EXPLORATORY ANALYSIS

➔ 114 anti-kremlin channels, 1,354,084 posts spanning a two-year time frame with one year before and one year after the invasion (March 11, 2021, to March 31, 2023) across 7 temporal phases.

➔ Post volume saw a 158% rise, average views spiked by 325%, posts forwarding increased by 278%, and the average number of reactions soared by 1222%.
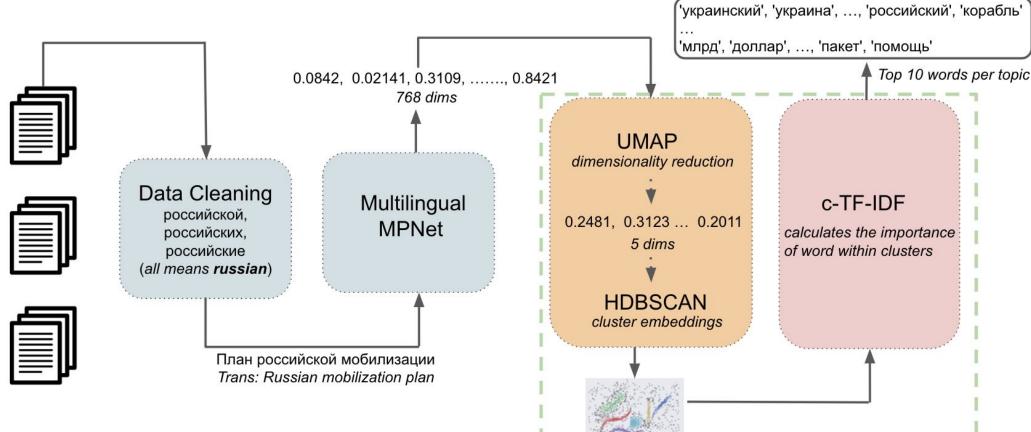

7 Temporal phases based on START dept. University of Maryland

Posts frequency Timeline (top 5 categories, Combat and Frontline Updates, Economy, International Politics, Russian Domestics Affairs, Ukrainian Domestic Affairs)

Normalized weekly posts frequency timeline (top 5 categories)

METHODOLOGY

➔ We employed MPNet to embed posts. UMAP and HDBSCAN were used for dimensionality reduction and clustering, with C-TF-IDF extracting key topical keywords.

➔ Apriori contrasts with ANOVA and post-hoc tests were performed to understand the evolution of prominent categories across temporal phases and corresponding user engagement throughout the conflict.
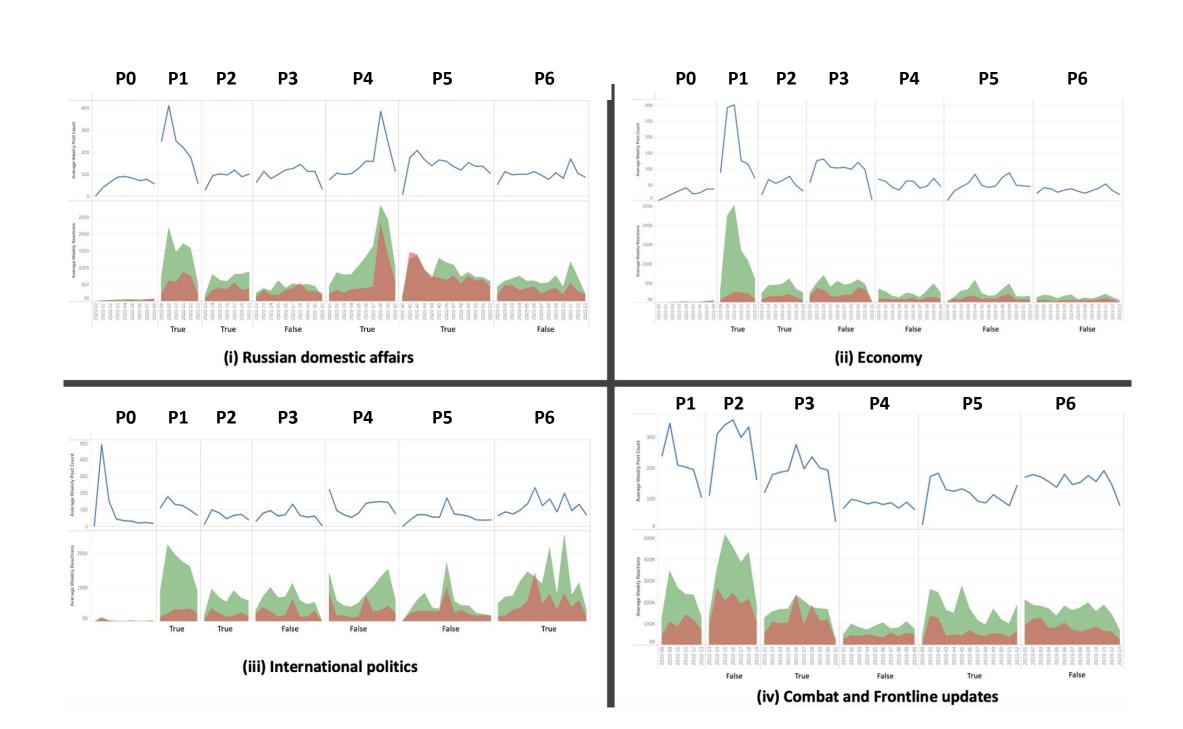

RESULTS

➔ Anti-Kremlin channels extensively covered "Russian Domestic Affairs," highlighting "opposition crackdowns"," "mobilization," and "referendum".

➔ Statistical tests ($k=7$, $p<0.05$) indicate significant differences in mean posts and net user reaction across phases.

Categories	Factor Variable	Sum of Squares	Degree of Freedom (dof)	Mean Square	F-ratio	P-value
Russian Domestic affairs	avg weekly posts	121761.84	6.0	20293.64	6.214	0.000041
	avg weekly net reactions	4.212e+10	6.0	7.020e+8	13.789	8.918e-10
Economy	avg weekly posts	98404.56	6.0	16400.76	12.664	3.562e-09
	avg weekly net reactions	6.151e+10	6.0	1.025e+10	16.300	4.991e-11
Combat and Frontline updates	avg weekly posts	194849.64	5.0	38969.93	12.751	4.210e-08
	avg weekly net reactions	9.836e+10	5.0	1.967e+10	8.112	0.00001
Ukrainian Domestic affairs	avg weekly posts	315145.76	6.0	52524.29	92.415	1.987e-28
	avg weekly net reactions	5.174e+10	6.0	8.623e+8	14.644	3.242e-10
International politics	avg weekly posts	48925.60	6.0	8154.27	1.746	0.125
	avg weekly net reactions	6.863e+10	6.0	1.143e+10	11.199	2.379e-08

*P < 0.05 = significant difference

Evolving categories across the phases. This figure includes 4 categories. For each one of them, we captured the (i) evolution of average weekly posts (blue) (ii) evolution of positive (green) and negative (red) user engagement (iii) statistical significance of net user engagement contiguously across the phases (True/False)

FINDINGS

➔ Kremlin's strategy is not succeeding in controlling Information Warfare, likely motivating crackdowns on the opposition and suppressing free speech.

➔ Despite western countries' anticipations of economic collapse, resilience in the Russian economy was apparent in online discourse, with diminishing volume and user engagement in anti-Kremlin channels.

➔ Opposition put efforts in meticulously tailoring the anti-Kremlin propaganda content.

References

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Ethical Considerations

For this work, we utilize public data, and our study does not involve any direct interaction with any individuals or their personally identifiable private data.