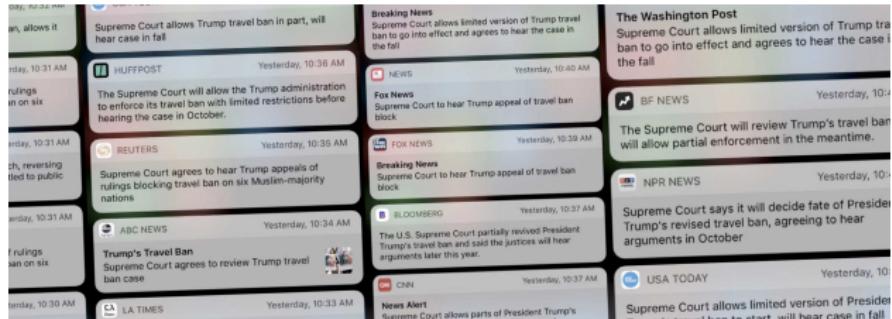


TIME COMPETITION FOR THE NEWS

Guzel Ishmaeva

INTRODUCTION

- The Internet has transformed journalism, emphasizing **real-time reporting**.



- Main dimensions of differentiation:

- Vertical**: speed and editorial quality.
- Horizontal**: slant.

RESEARCH QUESTION

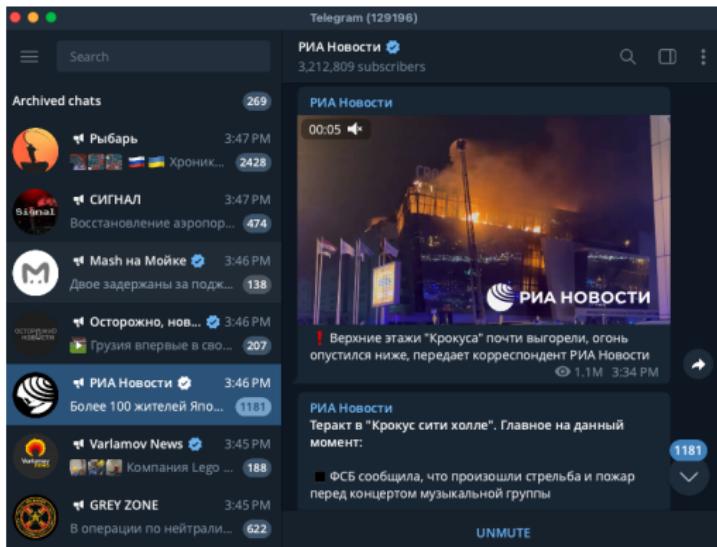
How does slant influence time competition?

- Higher slant intensity creates a **narrower** audience, where competition is **less intense**:
 - Ideological alignment/disalignment plays a larger role.
- Delay impacts neutral outlets more significantly.
- Neutral outlets tend to rush their reporting.

How is media specialization affected by platform features?

TELEGRAM

- The most popular social media in Russia since July 2023
- The share of Russians using the Telegram messenger **daily** reached 47% of the total population in 2024 (Mediascope)



Russian Audience Research

(TGStat, 2023):

- 50 000+ respondents
- 85% learn news from Telegram
- the main source of news for 68%

DATA: PUBLICATIONS

- Publications of the top 77 outlets in category "News and Media" for 2021-2024.
- For each post, we collect the text, timestamp, and the number of views.
- An event detection algorithm: 39476 events (Cagé et al., 2020)
- Delay: time elapsed after the news-breaker's post
- Rank: 1 - news-breaker, 2 - second fastest, etc.

Outlet	Date	Delay	Rank	Views	Text
НьюсачДвач	2023-07-28 15:14:45	0.000000	1.0	157163	⚡ < b>Режим ЧС ввели в Таганроге после паде...
Ateo Breaking	2023-07-28 15:14:46	0.016667	2.0	193377	❗ Режим ЧС ввели в Таганроге после падения обл...
Mash	2023-07-28 15:15:23	0.633333	3.0	732915	Режим ЧС ввели в Таганроге после падения облом...
Topor Live	2023-07-28 15:15:37	0.866667	4.0	805828	⚡ < b>Режим ЧС ввели в Таганроге после паде...
Прямой Эфир Новости	2023-07-28 15:22:25	7.666667	5.0	657025	< b>Режим ЧС ввели в Таганроге после падени...
Что произошло	2023-07-28 15:29:51	15.100000	6.0	103855	< b>⚡ Режим ЧС ввели в Таганроге после паде...
NECAXAP	2023-07-28 16:05:20	50.583333	7.0	316776	< b>В Таганроге ввели режим ЧС после падения об...
ОФИЦЕР	2023-07-28 16:11:59	57.233333	8.0	42284	< b>Режим ЧС ввели в Таганроге после падени...

DATA: ANALYTICS TGSTAT

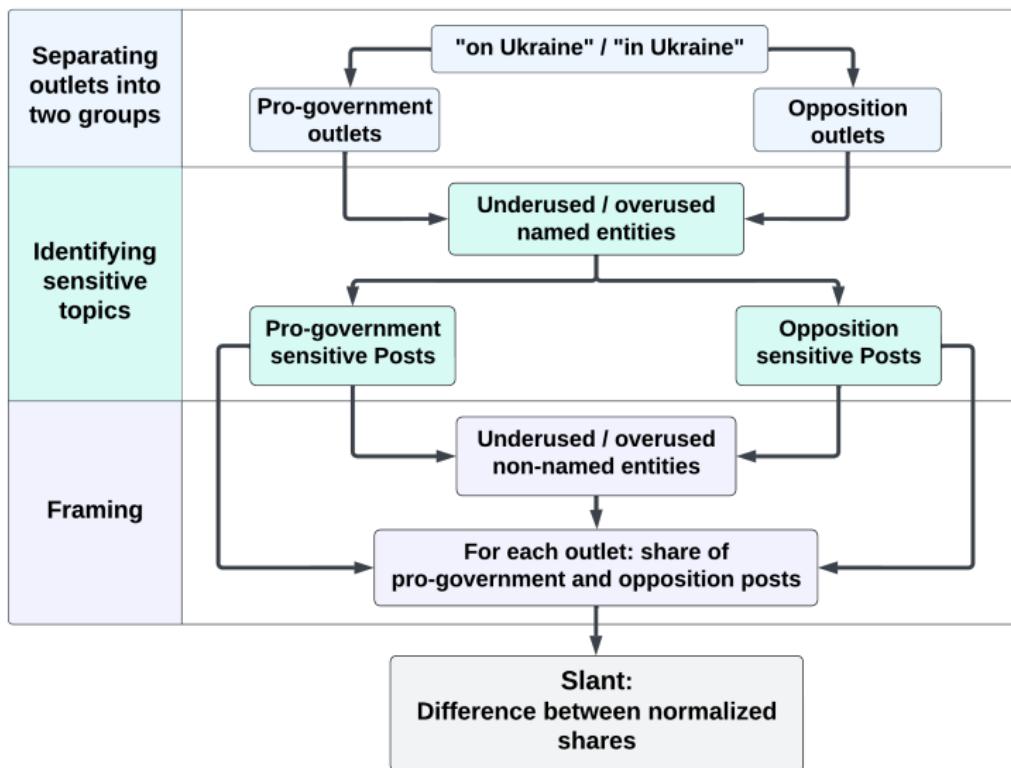
- Subscribers number growth (daily and hourly): subscribed/unsubscribed
- Views analysis (hourly)

Post	Views	Graph	1 hour	2 hour	3 hour	4 hour	5 hour	6 hour
Post #98527 26 Mar, 02:37	⌚ 1.2m 3		10.1% 118142	6% 70525	6.8% 80075	10.4% 122006	15.6% 183787	13.3% 156068

- Deleted publications
- Subscribers engagement (daily):
 - Engagement by views: percentage of subscribers who read channel posts
 - Engagement by interactions: the ratio of the number of all interactions to the number of views of the publication
 - Average number of interactions (shares, comments, reactions)
- Information about forwards

DATA: SLANT

► Details



SLANT

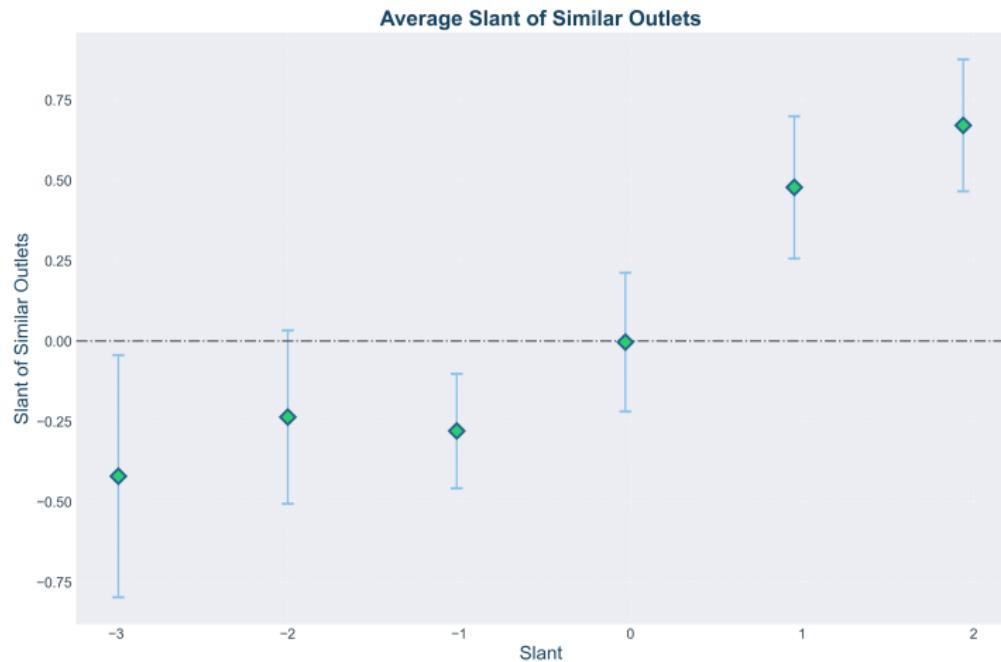
Sensitive Topics	Named Entities	Framing in Sensitive News
POC	Alexey Navalny, Ilya Yashin	extremist community, political repression, political prisoner
Ukraine Crisis	Volodymyr Zelenskyy, Denis Pushilin	Kyiv regime, anti-war, Ukrainian propaganda
Sanctions and Mobilization	Yevgeny Balitsky, Gennady Timchenko, Ramzan Kadyrov	anti-Russian sanctions, discrediting the army, Russophobic

One of the main dimensions of differentiation: ➔ Details

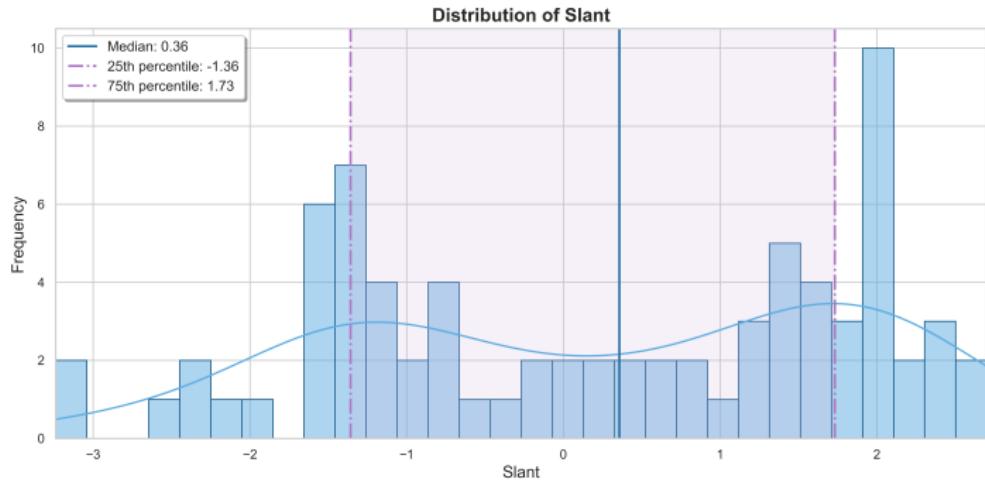
	Slant	Sport	Enter	Econ
PC1	-0.37 ***	0.15	-0.00	0.11
PC2	0.68 ***	0.17	0.06	0.19

SLANT OF SIMILAR OUTLETS

Channels are selected automatically based on similarities in their **subscriber bases**.



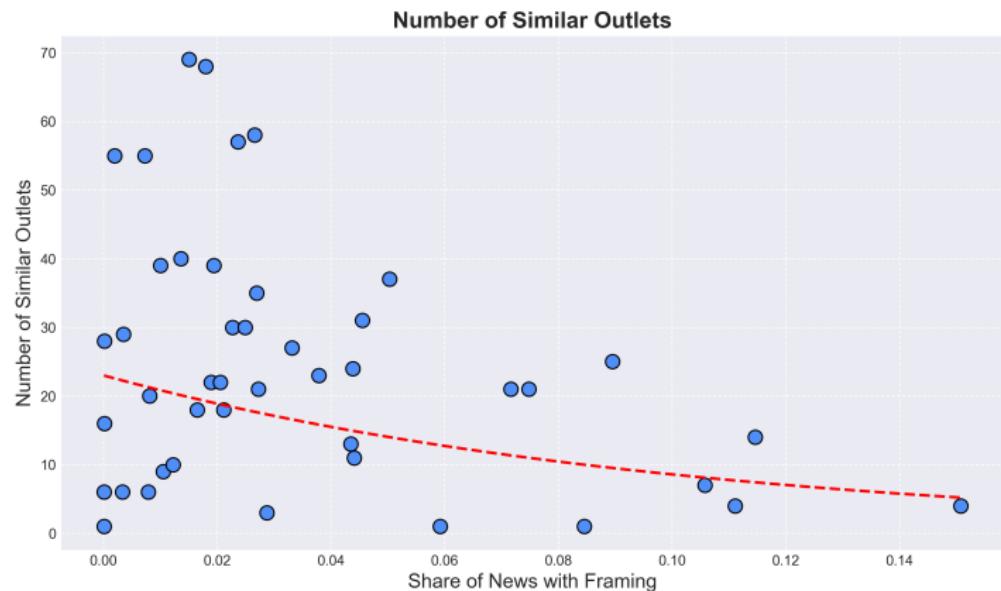
INTENSITY OF SLANT



Intensity = Share of News with Framing

	Absolute Value of Slant
Framing Share	0.31^{***}

SIMILAR OUTLETS



FACTS: OVERVIEW

1. The effect of speed on viewership.
2. Differences in reporting speed based on the intensity of framing.
3. The influence of faster outlets' popularity on viewership.
4. Timing of posts and intensity.
5. Introduction of Similar Outlets feature.

RANK AND VIEWS

$$\log \left(\frac{s_{ij}}{1-s_{ij}} \right) \sim 1st_{ij} + 2nd_{ij} + 3rd_{ij} + (1st_{ij} + 2nd_{ij} + 3rd_{ij}) \times \log(\text{Int}_{iq}) + \log(\text{Len}_{ij}) + \gamma_{iq} + \sigma_j$$

	Share
First	0.096 *** (0.010)
Second	0.063 *** (0.006)
Third	0.034 *** (0.005)
First × Intensity	-0.023 *** (0.007)
Second × Intensity	-0.027 *** (0.004)
Third × Intensity	-0.015 *** (0.004)

DELAY AND VIEWS

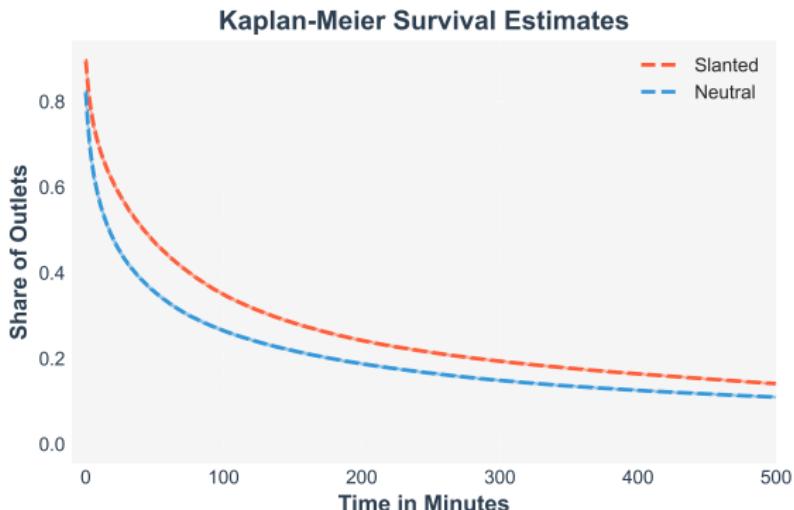
$$\log\left(\frac{s_{ij}}{1-s_{ij}}\right) \sim \log(\text{Delay}_{ij}) + \log(\text{Delay}_{ij}) \times \log(\text{Int}_{iq}) + \log(\text{Len}_{ij}) + \gamma_{iq} + \sigma_j$$

	Share
Delay	-0.012 *** (0.001)
Delay × Intensity	0.003 *** (0.001)
Post length	0.014 *** (0.002)
Observations	339,950
Adjusted R ²	0.936

► Details

NEUTRAL OUTLETS POST FASTER

	Mean	SD	First Quartile	Median
Reaction time (in minutes)	211.1	447.3	3.3	29.5
If news outlet is:				
Neutral	188	430.2	2	19.8
Slanted	246.2	470.1	7	49.5



POPULARITY OF FASTER OUTLETS AND VIEWS

$$\log\left(\frac{s_{ij}}{1-s_{ij}}\right) \sim \log(\text{Delay}_{ij}) + \log(P_{ij}) + \log(P_{ij}) \times \log(\text{Int}_{iq}) + \log(\text{Len}_{ij}) + \gamma_{iq} + \sigma_j,$$

where P_{ij} is the sum of lagged views of faster outlets.

	Share
Delay	-0.005*** (0.0004)
Popularity	-0.004*** (0.0003)
Popularity × Intensity	0.002*** (0.0002)
Post length	0.015*** (0.002)
Observations	339,950
Adjusted R ²	0.936

► Details

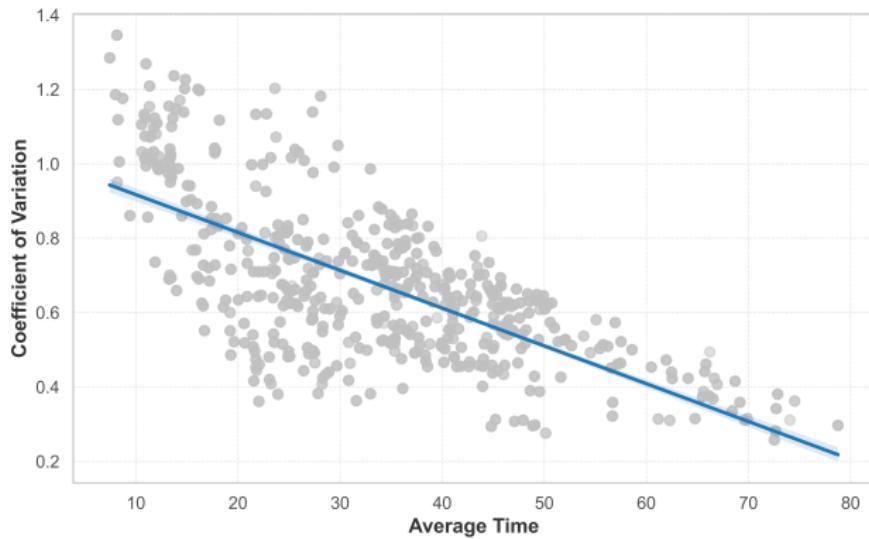
POPULARITY OF FASTER OUTLETS AND VIEWS

	P_{Neutral}	P_{Slanted}
Neutral	-0.0007*** (0.0001)	-0.0031 (0.0032)
Slanted	0.0001 (0.0008)	-0.0005*** (0.0001)

► Details

Is it important whether the faster outlets are slanted? **Yes!**

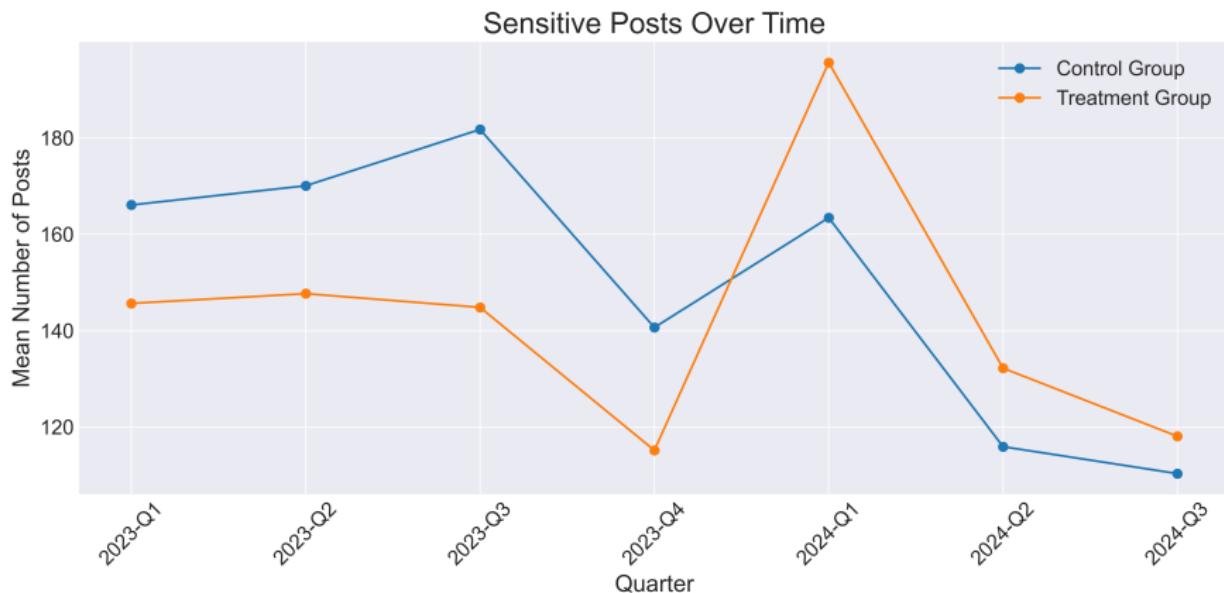
TIME BETWEEN POSTS



	CV	Avg time
Intensity	-0.9856 *** (0.1869)	36.54 *** (10.62)

SIMILAR OUTLETS

	Framing Share	Sensitive Share
Post × Treatment	0.0038*** (0.0011)	0.0055*** (0.0015)



DEMAND MODEL: OVERVIEW

Outlets choose the intensity of slant and the investment into timeliness.

Impact of timeliness:

- **Switching Between Followed Outlets**
 - Consumer's choice depends on the position of the outlet, quality of news, and framing.
- **Discovery of New Outlets**
 - Consumers discover new outlets when posts are forwarded by channels or friends, potentially subscribing to the outlet.

DEMAND MODEL

- **Consumers:**

- Continuum of consumers: $i \in (0, 1)$
- Two types of consumers: $\theta_i \in \{A, B\}$
- Relative preference for sensitive news: $\beta_i^S \in [0, 1]$
- Loyalty to a preferred slant: $\beta_i^F \in [0, 1]$

- **Outlets:**

- There are J_d media outlets on date d , with each outlet j having type $\alpha_j \in \{A, B\}$ and slant intensity $\gamma_j \in [0, 1]$

The utility for consumer i from sensitive news published by outlet j is:

$$U_{ij}^S(\theta_i, \beta_i^S, \beta_i^F) = \bar{x}_j^S \beta_i^S + \beta_i^F \gamma_j (\mathbf{1}_{\alpha_j=\theta_i} - \mathbf{1}_{\alpha_j \neq \theta_i})$$

where \bar{x}_j^S represents the share of reporting of outlet j on sensitive topics.

DEMAND MODEL

Consumption behavior:

- Consumer has a small probability ρ of checking the app at any minute.

The utility for consumer i from opening outlet j at time t is :

$$U_{ijt} (\theta_i, \beta_i^S, \beta_i^F) = V_d^S \times U_{ij}^S (\theta_i, \beta_i^S, \beta_i^F) + \beta_i \bar{x}_j + \ln(\xi_{ijt}) + \epsilon_{ijt}$$

where:

- V_d^S is the relative importance of sensitive news on day d : the share of sensitive news articles across all outlets
- \bar{x}_j is the reputation of timeliness: average share of common interest events covered (depends on **delays**)
- ξ_{ijt} is the visibility of outlet j at time t for consumer i (depends on **the frequency of posts**)

- Consumers follow outlets J_{id} on day d and click on outlet $j \in J_{id}$ when they open the app if:

$$U_{ijt} > U_{ikt} \quad \forall k \neq j$$

DEMAND MODEL

Checking Multiple Outlets:

- Check another outlet with exogenous probability p_d (depends on the events on day d).
- Satiation:
 - If their preferred outlet j does not cover all events $x_{jt} < 1$, consumers may check other outlets $j' \in J_{id}$ with a probability proportional to $(1 - x_{jt})$.
 - Diminishing marginal utility: Consumers gain utility only from new information.
 - A fixed amount of time that consumers are willing to spend on reading news.

DEMAND MODEL

Forwards:

If outlet k forwards a post from outlet j:

- Let Q_{jk} be the set of consumers who read both outlets j and k , Q_j the set of consumers who read only outlet j , and Q_k the set of consumers who read only outlet k .
- Views of the forwarded post: $Q_{jk} + Q_k$
- Views of the original post: $Q_{jk} + Q_j + Q_k$
- Views of the post before/after original post: $Q_{jk} + Q_j$

PLAN

1. Model
2. Conduct survey

Thank you!

DATA: SLANT

Based on Simonov and Rao, 2021

1. Two groups of outlets based on frequency of usage: "on Ukraine"/"in Ukraine"
2. Identify significantly underused/overused named entities
3. Identify "sensitive" news topics as posts containing at least one named entity from the list (Ukraine-Crisis, mobilization, sanctions, POC)
4. Identify significantly underused/overused non-named entities for "sensitive" news topics
5. For each outlet, compute the share of "sensitive" posts containing overused/underused words
6. Normalize the shares (zero mean and unit standard deviation) and compute slant as the difference in these normalized measures

› Back to Slant

EXTRA: TOPIC MODELING DETAILS

Topics: 60

1. Topic Modeling with Latent Dirichlet Allocation.
2. Determine the optimal number of topics by evaluating both Perplexity and Coherence scores.
3. Apply PCA or UMAP to reduce the dimensionality of the topic distribution.

» Back to Slant

DETAILS FACT 1

	Share
First	0.096*** (0.010)
Second	0.063*** (0.006)
Third	0.034*** (0.005)
First × Intensity	-0.023*** (0.007)
Second × Intensity	-0.027*** (0.004)
Third × Intensity	-0.015*** (0.004)
Post length	0.014*** (0.002)
Observations	339,950
Adjusted R ²	0.936

› Back to Fact 1

DETAILS FACT 1

	Share
Delay	-0.012*** (0.001)
Delay×Intensity _{Opp}	0.006*** (0.001)
Delay×Intensity _{Gov}	0.003*** (0.001)
Post length	0.014*** (0.002)
Observations	339,950
R ²	0.944
Adjusted R ²	0.936

Table 1: Delay and Views

	Share
Rank	-0.008*** (0.001)
Rank×Intensity _{Opp}	0.004*** (0.0004)
Rank×Intensity _{Gov}	0.004*** (0.0004)
Post length	0.014*** (0.002)
Observations	339,950
R ²	0.944
Adjusted R ²	0.936

Table 2: Rank and Views

▶ Back to Fact 1

DETAILS FACT 3

	Share
Delay	-0.005*** (0.0004)
Popularity	-0.004*** (0.0003)
Popularity \times Intensity _{Opp}	0.002*** (0.0003)
Popularity \times Intensity _{Gov}	0.002*** (0.0002)
Post length	0.015*** (0.002)
Observations	339,950
R ²	0.944
Adjusted R ²	0.936

Table 3: Popularity

DETAILS FACT 3

	Share
Delay	-0.0052*** (0.0004)
Neutral × Popularity _{Neutral}	-0.0007*** (0.0001)
Neutral × Popularity _{Slanted}	-0.0031 (0.0032)
Slanted × Popularity _{Neutral}	0.0001 (0.0008)
Slanted × Popularity _{Slanted}	-0.0005*** (0.0001)
Post length	0.0150*** (0.0017)
Observations	339,950
R ²	0.9437
Adjusted R ²	0.9361

Table 4: Popularity by groups.

SURVEY QUESTIONS

1. How often do you check more than one news outlet per day?

2. What motivates you to check another outlet after reading from the first outlet you opened?
 - (a) To find more in-depth coverage of the same event
 - (b) To get a different perspective on the same event
 - (c) To check if other outlets cover events that were missed
 - (d) Out of habit or routine

3. When you check additional outlets after the first one, how often do you find new information that you hadn't already seen?