Facebook Falsehoods:

Evaluating Disinformation Resiliency in Eastern Europe

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FACEBOOK FALSEHOODS

EVALUATING DISINFORMATION RESILIENCY IN EASTERN EUROPE

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EXECUTIVE SUMMARY

During the North American Treaty Organization (NATO) Summit in June 2022, policymakers endorsed a Strategic Concept explicitly acknowledging the threat of disinformation campaigns and the urgency of preparing for such attacks in the future. To successfully fortify populations targeted by disinformation, NATO must first understand local contexts and then prescribe solutions. For example, which populations are most vulnerable to disinformation, and which are most resilient? How can NATO combat false information in countries where leaders are polluting the information space with their own doctored narratives? In this report, we respond to these questions with policy-relevant data and offer solutions that NATO can use to "prepare for, deter, and defend" against future information attacks.

This study evaluates the disinformation resiliency of three populations in Eastern Europe. We conduct this study using Facebook data, analyzing comments responding to disinformation flagged by fact-checking organizations in Hungary, Poland, and Estonia.

Given the specificity and prevalence of the Hungarian and Polish languages to Hungary and Poland, respectively, we use these languages as proxies for nationality. Estonia, by contrast, is a multilingual country with an Estonian-speaking majority and Russian-speaking minority. Our dataset included an overwhelming majority of Russian comments compared to Estonian comments. Given that the majority of Russian speakers extend beyond Estonia's borders into surrounding countries, these Russian comments can not serve as a reliable proxy for nationality. They do, however, offer valuable insight into the susceptibility of Russian-speakers in Eastern Europe to disinformation.

Each of these populations faces a unique risk from Russian disinformation. Although Hungary and Poland are experiencing democratic backsliding and increasing government control over the media, Poland is staunchly anti-Kremlin while Hungary has friendly relations with Russia. And while Estonia has long been considered a leader of media literacy and education, its large ethnic Russian population is a target for Kremlin narratives seeking to divide the country.

DisinfoLab pulled from fact-checking websites in Hungary, Poland, and Estonia to create a dataset of Facebook posts containing disinformation. These fact-checking sites flagged articles containing disinformation, and DisinfoLab analysts indexed Facebook posts that shared these articles. We analyzed the

comments on these Facebook posts to gauge support or skepticism for the misleading articles.

This report offers a language-based evaluation of disinformation resiliency in Eastern Europe that exposes the nuanced reality of the information environment – including levels of democratic backsliding, attitudes towards Russia, and pre-existing domestic social divisions. We arrive at five key takeaways for how different populations in Eastern Europe respond to deceptive online posts.

1) Poles combatted disinformation more often than Hungarians, despite both countries experiencing comparable democratic backsliding. Poles exposed false narratives at a rate of ~30%, while Hungarians exposed false narratives at a rate of ~18%.

2) Hungarians were substantially more likely to agree with Russia-Ukraine disinformation than COVID-19 disinformation, while Poles were substantially more likely to agree with COVID-19 disinformation than Russia-Ukraine disinformation. This disparity suggests a country's political relationship with Russia may meaningfully impact its citizens' susceptibility to Russian disinformation.

3) Russian speakers exhibited the highest rate of disinformation vulnerability compared to Hungarian and Polish speakers. Roughly 65% of Russian-language comments agreed with false posts, while only ~19% disagreed. Comments in this dataset pertained solely to conflict with Russia. These high rates of agreement suggest that Russian speakers may be uniquely vulnerable to pro-Russian narratives about war.

4) Russian comments constituted ~76% of responses to disinformation posts flagged by Estonian fact-checking organizations. While Polish and Hungarian fact-checking organizations primarily flagged Polish and Hungarian media, Estonian fact-checking organizations primarily flagged Russian media.

5) For all groups studied, comments agreed with disinformation posts far more often than they challenged them. Across our dataset, ~54% of comments in target languages (Hungarian, Polish, Russian) agreed with disinformation posts, while only ~22% of comments disagreed.

Given these findings, DisinfoLab recommends that NATO take the following steps to combat disinformation in Eastern Europe within the limitations of democratic backsliding, attitudes towards Russia, and ethnic divisions.

1) In countries experiencing democratic backsliding, NATO should help build and support local media literacy and fact-checking organizations to hedge against state-led narratives. NATO can look toward the exemplary collaboration between the Agence France-Presse and the European Union as a model.

2) NATO should support multilingual media literacy projects in countries with diverse linguistic populations. Disinformation campaigns often seek to divide populations by targeting domestic divisions, including language and ethnicity.

3) NATO should encourage local media literacy and fact-checking organizations to focus their efforts on pre-bunking and debunking the most salient topics for disinformation. To this end, NATO will be able to devote more time to understand how the Kremlin may tailor its narratives for a specific country.

4) NATO countries should put pressure on social media platforms to counteract the spread of disinformation. First, social media platforms should partner with local fact-checking organizations to identify misleading content to flag for users. Second, these companies should increase the availability of geographic information for public posts and comments, which would allow for disinformation researchers and government officials to better evaluate the strengths and shortcomings of a country's information environment.

INTRODUCTION

In February 2022, Russia invaded Ukraine in a bid to gain political and territorial control of the country. As Russian troops mobilized on the ground, Russian media mobilized on the airways. To garner support for the invasion, Kremlin-tied news channels broadcasted blatant lies – that Russian soldiers were liberating civilians of Ukraine from a government of neo-Nazis, that Ukraine is housing U.S.-backed "biolabs" to create biological weapons to use against Russia, and that the Ukrainian political system operates under "foreign management" with no independent judiciary, among other falsehoods. Months later, both Russia's invasion of Ukraine and its disinformation campaign at home continue.

Russia's media campaign during its invasion of Ukraine exemplifies the dangers of disinformation as the Kremlin seeks to garner support, obfuscate its military actions, and send a message to NATO: tread lightly in the former Eastern Bloc. In Hungary, Poland, and Estonia, various national actors have worked to counteract disinformation. However, little research has sought to quantitatively determine the resilience or vulnerability of these countries to disinformation.

Three Eastern European countries are the focus of the following report: Hungary, Poland, and Estonia. We seek to evaluate the disinformation resiliency of linguistic populations in these countries to recommend urgent policy solutions for combating disinformation vulnerabilities among their respective populations. Studying the local contexts of these countries offers a comparison between two similar states – Hungary and Poland – against a leader in media literacy, Estonia.

Hungary and Poland have similar information environments. First, democratic backsliding spurred by leaders in both countries led to the consolidation of media under state control or influence. Second, both states have similar internet usage rates amongst their populations, at 83% in Poland and 85% in Hungary. However, there are notable differences between the two countries. Compared to Hungary, Poland has a more robust and established network of fact-checking institutions. Moreover, the Polish population – from the government to civil society – takes a fervent anti-Russia stance while Hungary tolerates and even promotes pro-Kremlin narratives.

Meanwhile, Estonia's information environment differs from Hungary and Poland. Following a history of influence and mis- and disinformation from Russia, the Estonian government took on a series of projects seeking the development of a robust and free

media ecosystem in the country. These projects constitute part of e-Estonia, the government's digital integration initiative. As a result, Estonia boasts a high internet usage rate for its population at 89%. But despite these promising developments, Estonia has a critical weakness that impacts its disinformation vulnerability: its ethnic Russian population. These citizens are often the target of Russian disinformation and many are linguistically and geographically isolated from the ethnic Estonian populations.

In this report, we use a multidisciplinary approach to evaluate the disinformation resilience of three linguistic populations in Eastern Europe. The following three sections of the report are detailed country profiles of Hungary, Poland, and Estonia. We begin each profile with a qualitative analysis of the factors at play in each country's information environment, such as media literacy programs and press freedom. Then, in each profile we analyze interactions on Facebook posts containing disinformation to gauge the domestic spread of such content. After the three country profiles, we include a set of generalizable recommendations to improve disinformation resilience. Finally, we include our full methodology at the end of the report.

HUNGARY
DEMOCRATIC BACKSLIDING AND SILENCED VOICES

Prime Minister Viktor Orbán's rise to power in Hungary ushered in an era of increasingly illiberal actions, particularly as it relates to the information environment. Since 2010, the conservative Fidesz party has restricted Hungarian media with new regulatory laws and party-member appointments to (previously independent) news organization regulatory boards. News outlets backed by pro-Orbán oligarchs have tolerated the growing presence of Russian disinformation in the country and they have started silencing dissenting opinions. In this highly centralized information environment, few impartial sources and fact-checking websites exist, making Hungarians vulnerable to disinformation.

Government Media Control: State-Led Narratives and Fidesz-stacked News Outlets

Disinformation is pervasive in Hungary's information environment. Orbán's control of the Hungarian media has established an information monopoly for his political party, Fidesz, to fashion targeted narratives that support its image and attack political opponents.

In the 1990s and early 2000s, Hungary's media environment was structured around foreign ownership, facilitating diverse information outlets and perspectives. The global recession in 2008 interrupted this environment and media outlet ownership shifted to local oligarchs and Hungarian elites – setting the stage for Orbán's media takeover.

When Orbán came to power in 2010, he enacted a series of amendments that modified Hungarian media laws that granted the government more control. Most notably, Orbán established the National Media and Infocommunications Authority and the Media Council (NMHH), which became responsible for regulating the country's media environment. The Fidesz Party stacked the Media Council with Orbán loyalists, who have gained political influence over Hungarian media outlets Next, Orbán loyalist Gábor Liszkay founded the Central European Press and Media Foundation (KESMA) in 2018. Given the political influence of the NMHH, the owners of over 470 media outlets transferred their companies' ownership rights to KESMA. Therefore, while Hun-

gary's media sector remains nominally independent, it falls under the highly orchestrated control of the government.

To this end, Orbán's government has created a "Russian-like" media model with public and private media outlets centralized under state rule. One of the most prominent sources of disinformation in the country is Duna Media, Hungary's public service media. Duna has avoided punishment from either the NMHH or the Media Council for spreading false, pro-Kremlin narratives since the Russian invasion of Ukraine. This trend continued in the months following the initial invasion despite the EU's ban on content from Russian-state sponsored outlets RT and Sputnik.

Hungary's attacks on media pluralism expanded in March 2020 when a law punishing the publication of fake news with up to five years in prison was passed. This law must be understood in the context of Fidesz-friendly outlets empirically spreading disinformation without consequence. The Hungarian government's legislation is not an earnest effort to combat COVID-19 disinformation as claimed, but rather a pretext for expanding state control of the press.

A barrage of attacks on the free press has contributed to democratic backsliding in Hungary: press buyouts by pro-Orbán oligarchs, repressive legislative actions by Orbán's Fidesz-controlled parliament, and the promotion of state-sponsored narratives. Considering these actions, international media watchdogs have reported declining scores for press freedom in the country. Since Orbán's rise to power over a decade ago, Hungary's rank on the World Press Freedom Index has fallen from 23rd in 2010 to 85th in 2022, out of 180.

Hungarian Non-Governmental Organizations

Recently, non-governmental organizations have undertaken efforts to combat foreign and domestic disinformation and misleading state narratives. Notable NGOs include Political Capital, Index, 444, Átlátszó, and Direkt36. Moreover, in advance of the 2022 Hungarian election, the French media organization Agence France-Presse (AFP) worked in collaboration with the EU to establish the fact-checking site Lakmusz.

Given these promising sites online, the Freedom on the Net Index ranks Hungarian internet access as "free" with a score of 70 out of 100, but it makes important caveats with regard to content limits and violations of user rights. Despite the promise of these digital debunking sites in Hungary, the state impedes their impact and reach.

Vulnerable Populations in Hungary

Four demographic groups in Hungary are most vulnerable to Russian disinformation: rural populations, anti-establishment voters who distrust the media, Fidesz supporters, and Hungarians living outside Hungary.

- **Rural Populations.** Rural populations in Hungary have limited access to a diverse array of news sources. As a result, this demographic tends to consume news from traditional and government-supported sources, which are rife with misleading pro-Kremlin narratives.

- **Anti-establishment Voters.** This demographic's distrust of traditional news sources leads users to alternative news sources online. These sources tend to spread fringe conspiracies without evidence which anti-establishment voters are primed to believe.

- **Fidesz supporters.** Populations in favor of the ruling Fidesz party are more likely to trust the government-sanctioned news sources that doctor narratives and take a pro-Kremlin stance on various issues.

- **Hungarians outside Hungary.** For over 2 million Hungarian speakers living outside of Hungary's borders, the most common sources of Hungarian-language news reach them from pro-government sources.

Despite the presence of opposition media and media literacy programs in Hungary, these vulnerable populations either lack the motivation to participate in these programs, or they face limited access to it. For example, although EU media literacy programs are accessible online in Hungary, neither the Hungarian government nor the EU has extensive programs available for older generations.

Russian Disinformation Campaigns Against Hungarians

After Russia's invasion of Ukraine in late February 2022, Kremlin sources spread anti-Ukraine and anti-U.S. rumors to garner support for Putin. Among these narratives, Russian disinformation claimed that the Ukrainian government was installed by the United States CIA and that the United States encouraged Russia to invade Ukraine. Both of these statements are demonstrably false.

Russia's narratives are tolerated – and even welcomed – by the Orbán government despite the existence of the Counter Terrorism Center, implemented in 2010 to address disinformation and cyberattacks. The two leaders have developed a friendly relationship because of Hungary's reliance on Russian oil. This dependence is a prominent aspect of Hungary's Eastern Open Policy, under which the country has moved its posture towards deepening economic and political ties with Russia. And the feeling is mutual. In late 2021, the Kremlin presented Hungarian Foreign Minister Péter Szijjártó with the Russian Order of Friendship award – the highest award a foreign citizen can receive in Russia for promoting mutual cooperation.

Role and Analysis of Social Media Platforms in Hungary

As of January 2022, there are 7.27 million social media users in Hungary, which accounts for 75.6% of their population. The two most popular platforms are YouTube (7.27 million users, 75.6% of population) and Facebook (5.65 million users, 58.7% of population).

Due to state pressure, the ability of Meta (formerly Facebook) to maintain political neutrality while regulating state-led political mis- and disinformation has faltered. For example, in 2018 the company took down an inflammatory video about immigrants posted by Orbán's chief of staff, but went on to restore that video after accusations of censorship from the Hungarian government.

Facebook Findings

Hungary Data Set Summary

HUNGARY	All Hungary Data	Hungarian Language
Num Facebook Posts	41	33
Num COVID-19 Facebook Posts	15	7
Num Russia-Ukraine Facebook Posts	26	26
Total Top-Level Comments Collected	319	212
Avg Num Top-Level Comments/Post	8	6
Avg Num Total Comments/Post	413	
Avg Num Reactions/Post	1937	

We collected data from 41 Facebook posts that contained disinformation content identified by Hungarian fact-checking organizations. Of these posts, 15 contained disinformation pertaining to COVID-19, and 26 posts contained disinformation pertaining to Ukraine. These posts had, on average, 8 top-level comments (comments replying to the original Facebook post), 413 total comments (top-level comments and comments replying to other comments), and 1937 reactions (including "like," "love," and "angry," among others). We collected a total of 319 top-level comments for this data set. The most frequent comment languages were: Hungarian (212 comments), English (48), Dutch/Flemish (19), Czech (12), and German (7).

From the full Hungarian data set, we identified a subset of 33 Facebook posts which had top-level comments in Hungarian. Of these posts, 7 contained disinformation pertaining to COVID-19, and 26 posts contained disinformation pertaining to Ukraine. These posts had, on average, 6 top-level comments. We collected a total of 212 Hungarian comments for analysis.

Hungarian Language Comment Analysis

HUNGARIAN ALL		
Total # Comments	212	
	Num Comments	% Comments
Agree	107	50.471
Disagree	38	17.92
Neither	67	31.60
Agree/Disagree Ratio		**2.82**
Ukraine Content	145	68.40
COVID-19 Content	67	31.60

We collected 212 top-level Hungarian comments replying to 33 Facebook posts that contained disinformation content. 107 (50.47%) of these comments clearly supported the disinformation content referenced by the post, while 38 (17.92%) of these comments clearly refuted the disinformation content. 67 (31.60%) of these comments did not take a clear stance on the disinformation content referenced by the post.

Of these comments, 145 (68.40%) responded to posts containing disinformation about Ukraine while 67 (31.60%) of these comments responded to posts containing disinformation about COVID-19.

HUNGARIAN ALL	Num Comments Ukraine	% Comments Ukraine	Num Comments COVID-19	% Comments COVID-19
Agree	86	59.31	21	31.34
Disagree	15	10.34	23	34.33
Neither	44	30.34	23	34.33
Agree/Disagree Ratio	5.73		0.91	

By topic, Hungarian commenters exhibited agreement with posts containing Russia-Ukraine disinformation at a substantially greater rate (59.31%) than they did with posts containing COVID-19 disinformation (31.34%). Moreover, Hungarian commenters exhibited disagreement with posts containing Russia-Ukraine disinformation at a substantially lower rate (10.34%) than posts containing COVID-19 disinformation (34.33%).

This disparity may be attributable to the friendly relationship between Hungary and Russia, making Hungarians more susceptible to disinformation that paints the Kremlin in a positive light.

These findings suggest that Hungary's information environment is highly vulnerable to disinformation. Not only did less than a fifth of comments analyzed reject disinformation, but more than half of comments clearly agreed with them. Current efforts by NGOs to provide media literacy education and fact-checking services are a step in the right direction, but they are insufficient to overcome the harms of an increasingly Fidesz-run press and the vulnerabilities of large demographics.

POLAND
ANTI-RUSSIA, PRO-POLAND

Poland's Law and Justice Party has attacked free press and media since its rise to power in 2015. The party not only increased state control of the media, but has also been implicated in using fake accounts on social media to sway elections. Despite strong state intervention in the media environment, Poland has taken a harsh stance against Russian disinformation due to its long-standing tensions with the Kremlin. As such, the government warns its citizens of the threat of Russian disinformation while also conducting manipulative information operations themselves.

Government Media Control: PiS Media Regulation and Undermining the Political Opposition

Poland's history of disinformation vulnerability faced a key turning point in 2015, when Poland's Law and Justice Party (PiS) won an overall majority in the Polish parliament. Prior to 2015, Poland ranked among the top 20 countries in press freedom. Its media institutions were privatized and often foreign-owned – so as not to be under significant direct or indirect control from the government. But since the PiS election in 2015, the party has routinely undermined the country's free and diverse information environment. To maintain its power, the party has moved to dominate state media by restricting news sources and disseminating propaganda.

PiS aims to create a "new national media organization" with curatorial powers over the information sphere – preventing expression of government dissent. Following PiS's rise to power in 2015, the party moved to filter the information available to the public by appointing supportive elites to national television and radio broadcast boards.

During elections, the PiS has exercised its power over the television channel TVP – a previously trusted news source in Poland – to spread false attacks against political opponents. The party has also been implicated in the use of fake accounts on social media to spread defamatory and unconfirmed messages against political opponents. Moreover, in 2021, the government passed a law limiting foreign investment in Polish media in an effort to try to shut down TVN24 – a U.S.-owned news channel critical of the party. In addition to digital media, journalist oppression is com-

mon, with PiS either dismissing opposition journalists from their positions or coercing them to resign.

Government-led attacks on independent media have eroded media freedom in Poland. Since the PiS rose to power, Poland's rank on the World Press Freedom Index has fallen from 18th in 2015 to 66th in 2022, out of 180 – its lowest position ever on the index.

Polish Non-Governmental Organizations

Compared to other countries in the region, there are a relatively high number of Polish non-governmental organizations focused on media literacy. Poland has 19 civil society media literacy stakeholders, more than Hungary and Estonia combined. However, limited media freedom in the country has limited the impact of these organizations.

Three major NGOs are working in Poland to improve media literacy in the country. First, Media 3.0 Foundation is an NGO based in Poland which creates "tools that improve civic participation and increase transparency of public institutions." Second, the Polaska Lab works with NGOs to increase new media and technology awareness in Poland. Third, the Ethical Journalism Network is a UK-based NGO that works in Poland to build trust in journalism and improve media literacy. However, as media freedom continues to decline under the

PiS, the impact of these NGOs will further reduce, exacerbating the vulnerability of Poles to disinformation.

Vulnerable Populations in Poland

Three demographic groups in Poland are most vulnerable to disinformation: older Poles, politically radical Poles, and Poles who lack trust in political institutions. These groups are not mutually exclusive.

- **Older Generations.** Two characteristics make older generations more vulnerable to disinformation. First, some older Poles have expressed nostalgia for Poland's pre-1989 ties to the Soviet Union. These users are vulnerable to Russian disinformation campaigns and actively and regularly spread pro-Russian narratives online – true or false. To this end, social media users in this population are pro-Russia, pro-Putin, anti-West, and anti-Ukraine. Second, this generation also lags behind others in media literacy. Without the tools to critically evaluate sources, older Poles are ill-equipped to evaluate the credibility of various media content.

- **Politically Radical Populations.** Far-right and far-left political groups are both vulnerable to Russian disinformation campaigns. Although the far-right's insistence of the threat of Russia insulates them from Russian propaganda, they remain vulnerable to other elements of the Kremlin's agenda, which push anti-West narratives.

- **Poles Lacking Trust in Political Institutions.** Government distrust drives some Poles to fall for false narratives that implicate government actors or institutions in conspiracies. Many of these narratives seek to frame legitimate political actions as orchestrated attempts to infiltrate Polish politics and deceive the populace.

Unlike some other Eastern European countries, Poland does not have a Russian-speaking minority population. The lack of a Russian-speaking population makes Russian-language TV and radio a marginal threat to Poland relative to other countries.

Russian Disinformation Campaigns Against Poles

The tense political relationship between Poland and Russia extends from the mid-20th century to the present. The USSR's 1939 invasion of Poland and its subsequent massacre of over 20,000 Polish

military officers and prisoners of war remains a powerful part of Polish historical memory. More recently, a Polish government commission implicated Russia for the role it played in the 2010 Smolensk air disaster – in which a plane carrying the Polish president and other officials crashed in the Russian city of Smolensk, killing everyone aboard. While the cause of the crash remains uncertain, these allegations have reinvigorated political animosity between the two countries.

Moreover, Russia has waged multiple disinformation campaigns against Poland since the 2014 Russo-Ukrainian war through two broad disinformation campaigns.

- **Anti-Ukrainian Disinformation Campaigns.** Following Russia's annexation of Crimea in 2014, the Kremlin created bots and hired inauthentic users on Facebook to push pro-Russia and anti-Ukraine narratives in the country. In response to Russian cyber interference, the Polish government requested assistance from NATO and asked for a greater presence in countering the threat, including a larger military budget.

- **Anti-NATO Disinformation Campaign.** To increase tension between Ukraine and Poland before NATO's 2016 summit in Warsaw, the Kremlin hired journalists to spread fabricated Polish political information. One such tactic these "journalists" employed was publishing fake interviews with high-ranking Polish military leaders.

Although Polish officials have not classified Russian disinformation as a security threat in any strategic documents, the Polish Ministry of Foreign Affairs has recognized the Kremlin's actions as aggressive. In 2016, the Ministry of Foreign Affairs stated, "Our policy towards the Russian Federation is unfortunately determined by Russia's aggressive actions in Eastern Europe." These actions include the use of propaganda and the weaponization of social media platforms to manipulate public opinion.

Role and Analysis of Social Media Platforms in Poland

The two most widely used social media platforms in Poland are YouTube (27.2 million users, 72% of population) and Facebook (17.65 million users, 46.7% of population).

According to Polish officials, these platforms are currently not doing enough to combat disinformation. In February 2022, the Prime Ministers of Poland and the Baltic states wrote a letter demand-

ing that the executives of Meta, Google, YouTube, and Twitter take action to effectively combat the spread of disinformation on their platforms.

Facebook Findings

Poland Data Set Summary

POLAND	All Poland Data	Polish Language
Num Facebook Posts	43	43
Num COVID-19 Facebook Posts	10	10
Num Russia-Ukraine Facebook Posts	32	32
Num Other Facebook Posts	2	2
Total Top-Level Comments Collected	314	303
Avg Num Top-Level Comments/Post	7	7
Avg Num Total Comments/Post	278	
Avg Num Reactions/Post	1931	

*One Facebook post pertained to both COVID-19 and Russia-Ukraine and was counted for both categories.

We collected data from 43 Facebook posts that contained disinformation content identified by Polish fact-checking organizations. Of these posts, 10 contained disinformation pertaining to COVID-19, 32 posts contained disinformation pertaining to Ukraine, and 2 posts contained disinformation pertaining to other topics. One of these posts contained disinformation pertaining to both COVID-19 and the Russia-Ukraine war (counted in both metrics above). These posts had, on average, 7 top-level comments (comments replying to the original Facebook post), 278 total comments (top-level comments and comments replying to other comments), and 1,931 reactions (including "like," "love," and "angry," among others). We collected a total of 314 top-level comments for this data set. The most frequent comment languages were: Polish (303), German (3), English (2), Russian (2), and Croatian (1).

All 43 Facebook posts in the Poland data set contained top-level comments in Polish. We collected a total of 303 Polish comments for analysis.

Polish Language Comment Analysis

POLISH ALL		
Total # Comments	303	
	Num Comments	% Comments
Agree	138	45.54
Disagree	91	30.03
Neither	74	24.42
Agree/Disagree Ratio		1.52
Ukraine Content	235	77.56%
COVID-19 Content	59	19.47%
Other Content	15	4.95%

* Six Facebook comments pertained to both COVID-19 and Russia-Ukraine and were counted for both categories.

We collected 303 top-level Polish comments replying to 43 Facebook posts that contained disinformation content. 138 (45.54%) of these comments clearly supported the disinformation content referenced by the post, while 91 (30.03%) of these comments clearly refuted the disinformation content. 74 (24.42%) of these comments did not take a clear stance on the disinformation content referenced by the post.

Of these comments, 235 (77.56%) responded to posts containing disinformation about Ukraine while 59 (19.47%) of these comments responded to posts containing disinformation about COVID-19. 15 (4.95%) of comments appeared on posts containing disinformation unrelated to Ukraine or COVID-19.

POLISH ALL	Num Comments Ukraine	% Comments Ukraine	Num Comments COVID-19	% Comments COVID-19
Agree	88	37.45	47	79.66
Disagree	82	34.89	7	11.86
Neither	65	27.66	5	8.47
Agree/Disagree Ratio		1.07		6.71

By topic, Polish commenters exhibited agreement with posts containing COVID-19 disinformation at a substantially greater rate (79.66%) than they did with posts containing Russia-Ukraine disinformation (37.45%). Moreover, Polish commenters exhibited disagreement with posts containing COVID-19 disinformation at a substantially lower rate (11.86%) than posts containing Russia-Ukraine disinformation (34.89%). This disparity may be attributable to the strong anti-Russia sentiment in Poland, making Poles less susceptible to disinformation that paints the Kremlin in a positive light.

These findings suggest that Poland's information environment is vulnerable to disinformation. Surprisingly, although Poland and Hungary are both facing democratic backsliding and restrictions on the press, 30.03% of Polish comments rejected disinformation – almost twice the rate of Hungarian comments. This disparity may be due to the strong presence of fact-checking organizations in Poland or to the anti-Kremlin sentiment discussed above. Despite a comparatively high disagreement rate, still 45.54% of comments analyzed clearly agreed with disinformation. With this level of agreement, current Polish efforts to combat disinformation are insufficient to overcome the harms of an increasingly PiS-run press and the vulnerabilities of large demographics.

ESTONIA
STRONG ETHNIC DIVISIONS IMPACT RESILIENCY

Estonia has earned a reputation as the leader of media literacy and resilience to disinformation. It approaches disinformation through a national security approach which mandates strong media literacy curricula and press freedom. However, these actions are strained by the Russian-Estonian ethnic and linguistic divide in the country. The minority Russian population is often the target of Russian disinformation in Estonia.

Government-led Media Initiatives in Estonia

Following past disinformation campaigns from Russia, Estonia has pushed to become a world leader in cybersecurity and e-governance. In addition to digitizing voting and healthcare, Estonia invested heavily in government-led initiatives to monitor disinformation in Estonian media, notify the public of active disinformation campaigns, and provide media literacy training to its population.

The Ministry of Culture is responsible for creating and regulating television, radio and private broadcasting companies within Estonia. The Media Services Act and the Estonian Public Broadcasting Act both outline the requirements for independent media services. Companies must submit yearly reports of compliance to these laws to the Consumer Protection and Technical Surveillance Authority.

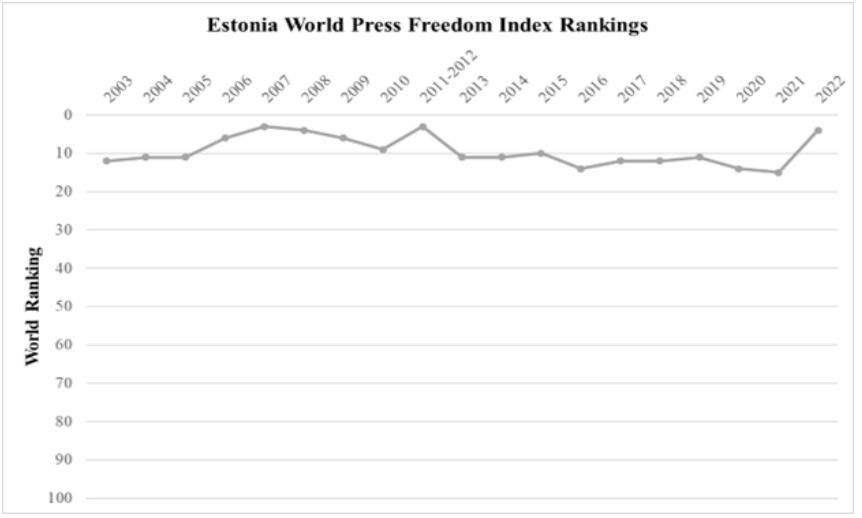
Additionally, security services continuously look for coordinated attacks through the National Security and Defense Coordination Unit and inform the public of sophisticated and imminent threats to information security. These regulations seek to stop the spread of all disinformation, but especially disinformation that aggravates relations between ethnic Russians and ethnic Estonians.

The Estonian government has also invested heavily in media literacy education for all grade levels starting in 2010. Today, the country consistently ranks at the top of media literacy indices, for citizens' capacity to evaluate the trustworthiness and relevance of information.

In elementary and middle school, teachers weave media literacy into math, art, and social studies classes. In high school, students must take a 35-hour media and influence class. Estonia's 2011 National Curriculum for Upper Secondary Schools identifies digital competence as one of eight general competencies that students are expected to acquire.

There are opportunities for adults to learn as well. The Estonian National Defense Council sponsors courses twice a year targeted at "Estonian politicians, senior state officials and members of the Estonian Defense Forces (EDF), local government officials, top economic and opinion leaders, cultural and educational practitioners, journalists and NGOs." Estonia has continued to establish a wider range of media literacy programs in recent years.

Finally, Estonia has a strong free press, currently ranking 4th on the World Press Freedom Index (out of 180).



Estonian Non-Governmental Organizations

Given the government-led promotion of free and informed media consumption, Estonia also possesses a small but robust network of fact-checking NGOs that seek to keep Estonians aware of false media spread online. The most notable NGO is Propastop, a volunteer-led blog published in Estonian, Russian, and English whose mission specifically seeks to expose propaganda in the country.

As a result of the Estonian government fostering a free media environment, many of the country's traditional news outlets engage in fact-checking, including Radio 4 and the newspaper Postimees, which not only feature information from Propastop, but also offer their own fact-checking and media literacy resources.

Vulnerable Populations in Estonia

Despite the prevalence of media literacy education in Estonia, the country has a critical vulnerability: the division between its ethnic-Estonian population and ethnic-Russian minority. Around 28% of Estonia's population speaks Russian: a legacy of the USSR's post-WWII occupation. This population is also highly concentrated. For instance, in the city of Narva, Russian speakers constitute 95% of its population.

The Russian diaspora in Estonia tends to consume Russian state media, which is known for its anti-West propaganda and pro-Russian rhetoric. Data from the Estonian media monitoring group demonstrated in 2017 that the most popular TV channels for Russian speakers were PBK (15.9%), RTR Planeta (14.1%), and NTV Mir (11.4%). However, the powerful pro-Russia outlet Sputnik has shown little success, likely due to the closure of its Estonian branch in 2019 and its subsequent rebranding and relaunch in 2020.

Although the Estonian government has created a Russian language media outlet (ETV+) to counter the influence of foreign media, viewership of the Estonian alternative remains modest: in late 2020, ETV+ constituted just 1% of viewership in the country, far below the 12% of viewership for the three most popular Russian channels.

Russian Disinformation Campaigns Against Estonians

In April 2007, the Estonian government voted to remove The Bronze Soldier, a statue of a WWII-era Soviet soldier located in the center of the capital city of Tallinn. For ethnic Russians liv-

ing in Estonia, the statue symbolized the Soviet heroes of World War II and the USSR's triumph over the Nazis. For many ethnic Estonians, however, it represented 48 years of Soviet occupation and oppression.

In the early morning of April 26th, 2007, the Estonian parliament held an emergency meeting and removed the statue. For the next two nights, riots, looting, and vandalism overtook the streets. These "Bronze Night" riots were driven in part by Russian disinformation claiming that Estonians had destroyed the statue and other pro-Soviet monuments and Soviet war graves. In reality, the statue was moved to a military cemetery near the edge of the city.

The following day, Estonia was hit by major cyber-attacks that inhibited the operations of several banks, media outlets, and governmental bodies. These attacks were linked to Russia, although never attributed to the Russian government. For the first time, wide-ranging cyber attacks had been leveraged against a sovereign state.

The Bronze Soldier incident was the catalyst that propelled Estonia to invest heavily in cybersecurity and e-governance as a matter of national security.

Role and Analysis of Social Media Platforms in Estonia

The two most widely used social media platforms in Estonia are YouTube (1.05 million users, 79.3% of population) and Facebook (685.6 thousand users, 51.8% of population).

Estonia's approach to combating disinformation on social media platforms has included building "partnerships and direct lines of communication" with companies like Meta and Google. This proved useful in ensuring that online platforms heard the warnings and requests passed on by the Estonian government. In one example, the Estonian government forwarded Meta a report by a local fact-checking organization exposing hundreds of Facebook accounts masquerading as Estonians to be fake. The process was not transparent, one government advisor explained, but Meta ultimately took down the accounts on Facebook.

Facebook Findings

Estonia Data Set Summary

ESTONIA	All Estonia Data	Russian Language	Estonian Language
Num Facebook Posts	47	34	6
Num COVID-19 Facebook Posts	1	0	1
Num Russia-Ukraine Facebook Posts	9	2	2
Num Conflict w/ Russia Facebook Posts	36	32	3
Num Other Facebook Posts (NATO)	1	0	0
Total Top-Level Comments Collected	400	305	28
Avg Num Top-Level Comments/Post	9	9	5
Avg Num Total Comments/Post	37		
Avg Num Reactions/Post	231		

We collected data from 47 Facebook posts that contained disinformation content identified by Estonian fact-checking organizations. Of these posts, 1 contained disinformation pertaining to COVID-19, 9 posts contained disinformation pertaining to Ukraine, 36 posts contained disinformation pertaining to conflict with Russia more broadly, and 1 post contained disinformation pertaining to a different topic (Finland's admission into NATO). These posts had, on average, 9 top-level comments (comments replying to the original Facebook post), 37 total comments (top-level comments and comments replying to other comments), and 231 reactions (including "like," "love," and "angry," among others). We collected a total of 400 top-level comments for this data set. The most frequent comment languages were: Russian (305 comments), Estonian (28), Spanish (21), English (16), and Ukrainian (10).

From the full Estonia data set, we identified two subsets. First, a subset of 34 Facebook posts which had top-level comments in Russian. Of this subset, 2 posts contained disinformation pertaining to Ukraine, and 32 posts contained disinformation pertaining to conflict with Russia. Notably, the one post flagged for COVID-19 disinformation by Estonian fact-checkers received 0 Russian comments. These posts had, on average, 9 top-level comments. We collected a total of 305 Russian comments for analysis.

Second, a subset of 5 Facebook posts which had top-level comments in Estonian. Of this subset, 1 post contained disinforma-

tion pertaining to COVID-19, 2 posts contained disinformation pertaining to Ukraine, and 3 posts contained disinformation pertaining to conflict with Russia. These posts had, on average, 5 top-level comments. We collected a total of 28 Estonian comments for analysis.

NOTE: Estonia has a large population of both Estonian speakers and Russian speakers. We have refrained from drawing conclusions on the nationalities of commenters who commented in Russian, as this language is commonly spoken in Estonia, Russia, and surrounding countries. Our findings for Estonia are based on the analysis of comments made in Russian and Estonian in this dataset, but the findings below should not be interpreted as equivalent in nature to our findings for Hungary and Poland.

Russian Language Comment Analysis

RUSSIAN		
Total # Comments	305	
	Num Comments	% Comments
Agree	197	64.59
Disagree	57	18.69
Neither	51	16.72
Agree/Disagree Ratio		**3.46**
Conflict with Russia Content	291	95.41
Ukraine Content	14	4.59

We collected 305 top-level Russian comments replying to 34 Facebook posts that contained disinformation content. 197 (64.59%) of these comments clearly supported the disinformation content referenced by the post, while 57 (18.69%) of these comments clearly refuted the disinformation content. 51 (16.72%) of these comments did not take a clear stance on the disinformation content referenced by the post.

Of these comments, 291 (95.40%) responded to posts containing disinformation about a potential conflict with Russia while 14 (4.60%) of these comments responded to posts containing disinformation about Ukraine.

RUSSIAN ALL	Num Comments Conflict w/ Russia	% Comments Conflict w/ Russia	Num Comments Ukraine	% Comments Ukraine
Agree	192	65.98	5	35.71
Disagree	50	17.18	7	50.00
Neither	49	16.84	2	14.29
Agree/Disagree Ratio	3.84		0.71	

Russian commenters not only expressed high rates of agreement with posts containing disinformation pertaining to conflict with Russia (65.98%), but they also expressed low rates of disagreement with such posts (17.18%). Interestingly, Russian commenters exhibited higher disagreement with disinformation pertaining to the Russia-Ukraine war than agreement, but the small sample size of these comments (n=14) precludes us from drawing meaningful conclusions from this observation.

These findings suggest that Russian speakers are highly vulnerable to disinformation. Of each dataset we analyzed, Russian comments exhibited the highest agreement rate with disinformation and a disagreement rate with disinformation roughly a fifth of the time. Although it is unclear whether these comments are coming from Russian-speaking Estonians, Russians, or Russian speakers elsewhere, these findings point to the importance for multilingual media literacy projects in countries like Estonia which have diverse linguistic populations.

Estonian Language Comment Analysis

Due to a limited sample of Estonian language comments (n = 28), we have refrained from analysis of this data set.

FACEBOOK FINDINGS SUMMARIZED

	Hungary			Poland			Russian (Country Unknown)		
	Overall %	Russia-Ukraine %	COVID-19 %	Overall %	Russia-Ukraine %	COVID-19 %	Overall %	Russia-Ukraine %	Conflict with Russia %
Agree	50.47	59.31	31.34	45.54	37.45	79.66	64.59	35.71	65.98
Disagree	17.92	10.34	34.33	30.03	34.89	11.86	18.69	50.0	17.18
Neither	31.60	30.34	34.33	24.42	27.66	8.47	16.72	14.29	16.84
Agree/Disagree	2.82	5.73	0.91	1.52	1.07	6.71	3.46	0.71	3.84

- Russian speakers exhibited the highest rate of agreement with disinformation posts.
- Polish speakers exhibited the highest rate of disagreement with disinformation posts.
- Poles and Hungarians – despite both experiencing democratic backsliding – exhibited disparate rates of disagreement with disinformation posts.
- Hungarians were substantially more likely to agree with Russia-Ukraine disinformation than COVID-19 disinformation; Poles were substantially more likely to agree with COVID-19 disinformation than Russia-Ukraine disinformation.
- In all datasets, commenters exhibited agreement with disinformation posts far more often than they exhibited disagreement with them.

Best Practices in Disinformation Resiliency and Policy Recommendations

NATO can more effectively counter disinformation operations by operating within local contexts and building on pre-existing media literacy programs and institutions. We propose four recommendations for NATO to pursue to strengthen disinformation resilience in Hungary, Poland, Estonia, and other countries which may be subject to disinformation campaigns.

Recommendation 1:
Fund and Support Local NGOs To Avoid State-Led Narratives

In countries experiencing democratic backsliding, NATO countries should help build and support local media, media literacy, and fact-checking organizations to hedge back against state-led narratives. Democratic backsliding and the deterioration of press freedom in Poland and Hungary are clearly linked, and the two in combination make these countries uniquely susceptible to disinformation. Although Polish comments rejected disinformation more often than Hungarian comments (30.03% vs. 17.92%), both Polish and Hungarian comments expressed agreement with disinformation far more often (45.54% and 50.47%, respectively).

In practice, NATO countries can pursue two courses of action. First, the organization can fund pre-existing organizations to expand their current operations to produce more media literacy content and increase its reach in the country. Second, NATO can offer accelerator programs to local actors seeking to establish a new media literacy or fact-checking organization. In either case, NATO can look towards the exemplary collaboration between the Agence France-Presse (AFP) and the European Union in Hungary as a model.

Recommendation 2:
Support Multilingual Media Literacy Programs in Diverse Countries

NATO countries should support multilingual media literacy projects in countries with diverse linguistic populations. Disinformation campaigns often seek to divide populations by targeting domestic divisions, including language and ethnicity.

NATO countries can identify prominent linguistic-minority populations in Eastern European countries – such as Russian speakers in Estonia – and develop media literacy and fact-checking organizations in those languages. Our research suggests that linguistic minorities may be more vulnerable to disinformation content in their primary language, making it critical to provide these groups with access to media education and fact-checking resources.

Recommendation 3:
Counter Narratives That Are Likely to Exploit Domestic Vulnerabilities

NATO countries should encourage local media literacy and fact-checking organizations to focus their efforts on pre-bunking and debunking the most salient topics for disinformation. The vast majority of disinformation content we collected pertained to COVID-19, Russia's invasion of Ukraine, or conflict with Russia more broadly – large-scale phenomena with predictably large-scale information (and disinformation) coverage. Disinformation content pertaining to niche topics outside of these two were rare, suggesting NGOs are best suited to focus on combating fake news about large-scale issues. Moreover, NGOs should look to prioritize the most impactful narratives in their country. For example, NGOs in Poland – whose population was resilient to Russia-Ukraine disinformation but highly vulnerable to COVID-19 disinformation – should place higher priority on debunking COVID-19 myths.

Experts and national politicians argue that "the Kremlin takes advantage of situations that emerge rather than creates or triggers it." With a select number of large-scale disinformation narratives, NATO will be able to devote more time to understand how the Kremlin may tailor its narratives about a certain issue to target a country's unique vulnerabilities, including its population's stance towards Russia, ethnic homogeneity, and domestic politics.

Recommendation 4:
Pressure Social Media Platforms to Release Descriptive Data

NATO countries should put pressure on social media platforms to enact specific changes to counteract the spread of disinformation online.

First, social media platforms should follow Meta's lead in partnering with local fact-checking organizations to evaluate the accuracy of online content and preemptively warn users of content that may be false or misleading. This strategy of pre-bunking, "preemptively warning and exposing people to weakened doses of misinformation," can have broad effects on a country's information environment by helping "cultivate 'mental antibodies' against fake news." Meta's program should be expanded to include more countries and more fact-checking organizations – especially for countries vulnerable to disinformation (e.g., democratic backsliding and linguistic divides).

Second, social media platforms should increase the availability of geographic information for user posts and comments. Compared to using comment language as a proxy for nationality, this data will allow disinformation researchers to more accurately identify who is posting disinformation and who is agreeing with or disagreeing with it. To alleviate privacy concerns, platforms can implement a setting that allows users to opt-in or out of sharing their location data, similar to an existing feature on Twitter. More accurate information will allow disinformation researchers and government officials alike to better evaluate the strengths and shortcomings of their information environments, and shape policy accordingly.

Methodology and Categorization Criteria

Descriptive Country Analysis

To inform our analysis, we investigated the information environments of Poland, Hungary, and Estonia by analyzing the relevant players and factors affecting each country's media. First, we evaluated each country's demographics, including population age, ethnicity, media literacy rate, and the number of internet users. Second, we identified national social media usage, including commonly used social media platforms and the number of social media users. Third, we identified the presence

and strength of each country's civil society institutions, including NGO-led initiatives, EU-led initiatives, and press freedom scores. Fourth, we analyzed the role of each state's governments, including the type of government and media control.

Collecting Disinformation Content

We sought to investigate the resiliency of Hungarians, Poles, and Estonians to disinformation. Thus, we collected online disinformation content (e.g., articles, videos) explicitly targeted at each of these groups using the following process.

Step 1: Pick a Local Fact-Checking Site

To source disinformation content explicitly targeted at civilians of each country, we relied on local fact-checking organizations. Using recommendations from the Disinformation Resilience Index, Meta's Third-Party Fact Checkers, and Duke Reporters' Lab, we identified two fact-checking organizations based in Hungary (Lakmusz, AFP Fact Check: Hungary), seven organizations based in Poland (OKO.press, Demagog, StopFake: Poland, DisinfoDigest.pl, Fakenews.pl, Pravda, AFP Fact Check: Poland), and two organizations based in Estonia (Propastop, Eesti Päevaleht). We browsed each site for reports of disinformation content, and used Google Chrome's built-in Google Translate feature to translate web pages into English as needed.

Step 2: Select and Read a Report

Each fact-checking organization's website contains a feed of disinformation reports. Generally, each report includes a piece of content containing disinformation, like a news article, and an explanation of why the content is incorrect. We read each report for essential context.

Step 3: Evaluate the Flagged Original Content

Finally, we assessed the original content that was flagged in each fact-checking report. We first confirmed that the original content was making the same claims as reported by the fact-checking organization. Next, we independently investigated whether those claims were indeed incorrect using online research. Most flagged content was related to COVID-19, the ongoing Russia-Ukraine war, or conflict with Russia more broadly. These are well-documented phenomena with ample evidence to inform our independent investigations.

If the flagged original content successfully met both conditions outlined above, we finally evaluated if the false claim equated to disinformation. Only flagged content that a) contained verifiably incorrect information and b) used that false information to further a political agenda was included in our data set.

Collecting Facebook Data

After compiling a data set of online disinformation content, we identified social media posts sharing the flagged content. According to GlobalStats statcounter, Facebook is the most-used social media platform in Hungary, Poland, and Estonia. Thus, we collected the URL's of public Facebook posts containing links to disinformation content using the CrowdTangle Chrome extension.

Next, we used the facebook-scraper Python package to collect information about each Facebook post sharing disinformation content. This included the post's text, datetime, poster/commenter ID, top-level comments (comments replying to the original Facebook post), and total number of reactions.

Identifying Comment Language

We used the googletrans Python package, which implements the Google Translate API, to identify the language of each Facebook comment we collected.

In addition to written comments, we were also able to attribute a language to non-verbal content, including emojis, photos, videos, and links. If comments of images contained text written in a foreign language (e.g., memes), the comment would be categorized in that language. If comments contained links to a website, the comment would be categorized as the language of the linked website. If neither of these methods were applicable, we viewed the public Facebook profile of the commenter to determine what language they use on other Facebook posts and comments. The comment in our collection would then be categorized in that language. If none of these methods worked, we flagged the comment's language as "N/A."

Comment Language as a Proxy for Nationality

Public Facebook posts are generally viewable by users anywhere in the world, and Meta's Graph API does not offer insight into the geographic location of a Facebook poster/commenter. Thus, when analyzing Facebook comments for agreement/disagreement, we used comment language as a proxy for nationality. Based on the most commonly spoken languages in each

country, comments in Hungarian were attributed to Hungarians and comments in Polish were attributed to Poles. Critically, both of these languages have a high concentration of speakers in these specific countries. Our findings for Poland and Hungary are based only on the analysis of comments made in these target languages for each country.

Estonia has a large population of both Estonian speakers and Russian speakers. We attributed comments in Estonian to Estonians, as this language also has a high concentration of speakers in this specific country. However, we refrained from drawing conclusions on the nationalities of commenters who commented in Russian, as this language is commonly spoken in Estonia, Russia, and surrounding countries. Russia banned Facebook in March 2022, but only 12 of the 305 Russian comments in the Estonia dataset we collected were from after the ban went into effect. Our findings for Estonia are based on the analysis of comments made in Russian and Estonian for this data set, but should not be interpreted as equivalent in nature to our findings for Hungary and Poland.

Analyzing Facebook Comments

Comments on a Facebook post may contain either an endorsement of the post's content or an objection. Thus, the number of comments that a Facebook post containing disinformation receives offers little insight into a group's disinformation resiliency. Instead, we analyzed the number of comments agreeing with the post's content compared to the number of comments disagreeing with the post's content. The ratio of agreement comments to disagreement comments is inversely related to disinformation resiliency.

To analyze comments for agreement/disagreement, we used the following process.

Step 1: Post and Comment Translation

We wrote a Python script that implemented the Google Translate API to translate each collected Facebook post and comment to English.

Step 2: Agreement Categorization

We manually categorized each comment as either agreeing with, disagreeing with, or taking no clear stance on the identified posts containing disinformation. Analysts first read the aforementioned fact-checking reports explaining why collected articles were misleading, then read an English translation of each Facebook post,

and finally read an English translation of each comment. They then categorized each comment based on the following criteria.

- **Agree:** The comment clearly supports the disinformation contained in, or linked to in the Facebook post.
- **Disagree:** The comment clearly refutes the disinformation contained in, or linked to in the Facebook post.
- **Neither:** The comment does not take a clear stance on the disinformation contained in, or linked to in the Facebook post.

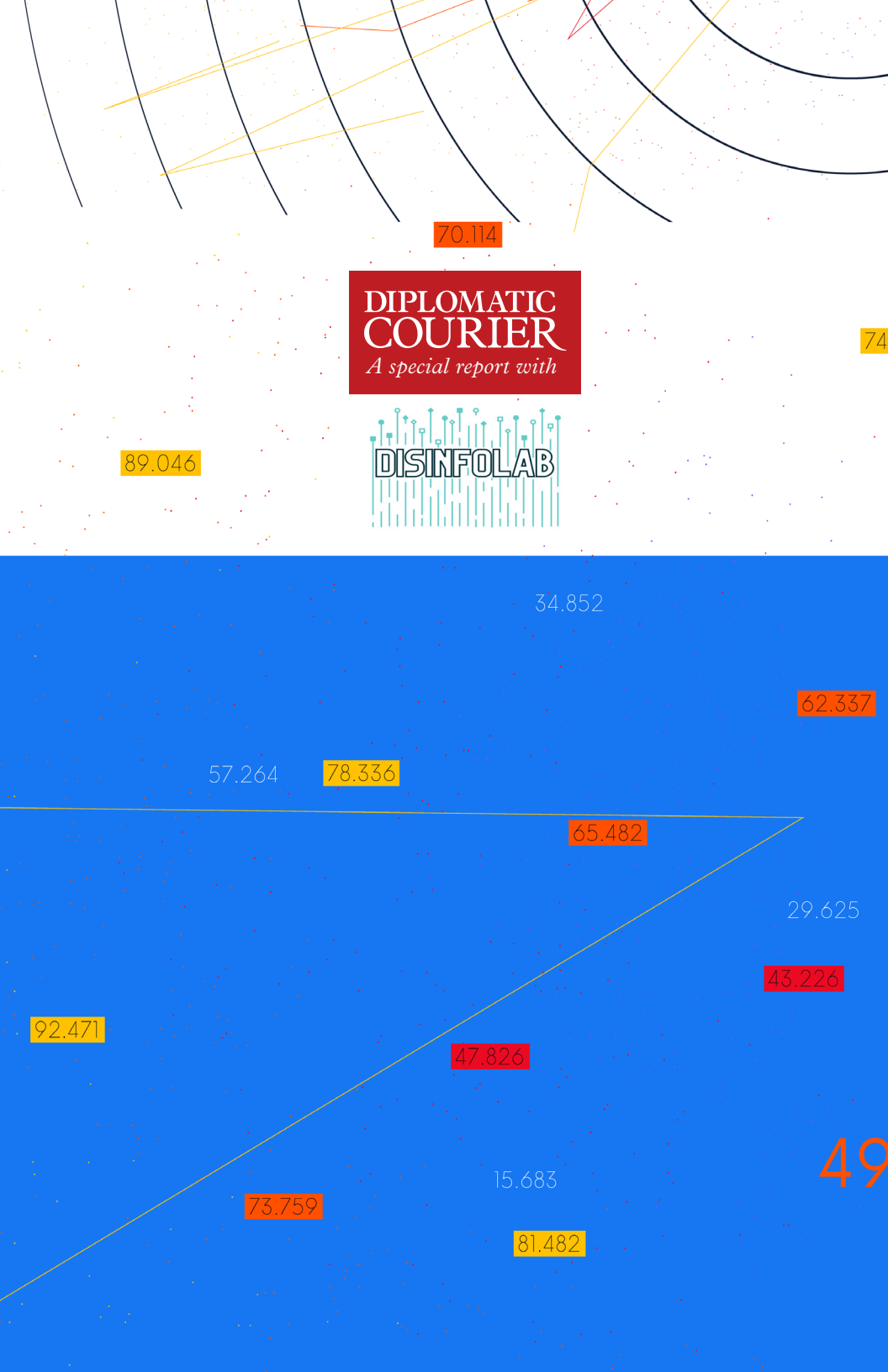
Analysts used a strict standard in categorizing comments. Comments categorized as "Agree" or "Disagree" were only done so if they overwhelmingly met the criteria above. Otherwise, comments were categorized as "Neither."

To ensure the reliability of each categorization, each comment was coded independently by two analysts. For comments that received different categorizations by both analysts, each analyst met to discuss their rationale and reach consensus on a final categorization for the data.

Limitations

Our study faces some limitations in evaluating the disinformation resiliency of Hungary, Poland, and Estonia. Our qualitative analysis is predicated off country-wide information and may exclude regional variations. For example, individuals living in rural versus urban areas may have varied rates of internet usage and access to media-literacy education.

Our social media analysis also faces a few limitations. First, our analysis is limited to Facebook posts referencing disinformation content and does not account for alternative platforms. Second, our comment analysis is restricted to top-level comments. Top-level comments that agreed with disinformation content may have received replies challenging them. Unfortunately, we found multi-layer reply chains untenable to categorize and thus excluded them from our study. Third, we relied on comment language as a proxy for commenter nationality as Facebook does not offer geographic information. Finally, due to a lack of Estonian, Hungarian, Polish, and Russian speakers on our team, we relied on Google Translate (which has demonstrated relatively high language translation accuracy for European languages) to translate foreign-language posts and comments into English for analysis.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COURIER
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