GDI

**Global
Disinformation
Index**

Media Market
Risk Ratings:
Estonia

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GDI Global Disinformation Index

Preface

Since the invention of the web, how we live our lives online—and off—has changed in countless ways. This includes how news is funded, produced, consumed and shared.

These shifts have also created risks in the news industry. Disinformation is one of them. Disinformation has been used as a tool to weaponise mass influence and disseminate propaganda. During the COVID-19 pandemic, disinformation has created an infodemic undermining public health, safety and the government's responses. No country or media market is immune from these threats.

To combat disinformation, we need to find ways to disrupt the system and its funding. This is where the Global Disinformation Index (GDI) has set its focus.

At the GDI, we believe that an independent, trusted and neutral risk rating of news sites' disinformation risks is needed. These risk ratings can be used by advertisers

and ad tech companies to ensure that where they direct their online ad spends is aligned with their own brand safety and risk mitigation strategies for disinformation.

The GDI's research offers a trusted and neutral assessment about a news domain's risk of disinforming. By looking at structural, content, operational and context indicators, the GDI provides a domain-level rating about a news site's risk of disinforming an online user.

The following report presents the results of applying the GDI risk rating methodology to some of the most frequently visited news sites in Estonia. In total we assessed 33 sites that produce content in Estonian and Russian, and which are based both in Estonia and Russia (see Figure 1: all sites based in Russia have a .ru domain).

We consider the findings to be the start of a discussion among news sites, advertisers and ad tech companies on how the GDI risk ratings should be used to strengthen the funding of independent, diverse and trusted media in Estonia. Please join us in this journey.

Figure 1. Media sites assessed in Estonia (in alphabetical order)

1. aripaev.ee	12. meiemaa.ee	23. rus.delfi.ee
2. delfi.ee	13. mke.ee	24. rus.err.ee
3. ekspress.delfi.ee	14. objektiiv.ee	25. rus.postimees.ee
4. epl.delfi.ee	15. ohtuleht.ee	26. saartehaal.postimees.ee
5. err.ee	16. online.le.ee	27. sakala.postimees.ee
6. geenius.ee	17. parnu.postimees.ee	28. seti.ee
7. harjuelu.ee	18. pohjarannik.postimees.ee	29. severnojepoberezhje.postimees.ee
8. jarvateataja.postimees.ee	19. postimees.ee	30. stolitsa.ee
9. lenta.ru	20. prospekt.ee	31. uueduudised.ee
10. lounapostimees.postimees.ee	21. regnum.ru	32. virumaateataja.postimees.ee
11. maaleht.delfi.ee	22. ria.ru	33. vorumaateataja.ee

Introduction

The harms of disinformation[1] are proliferating around the globe—threatening our elections, our health, and our shared sense of accepted facts.
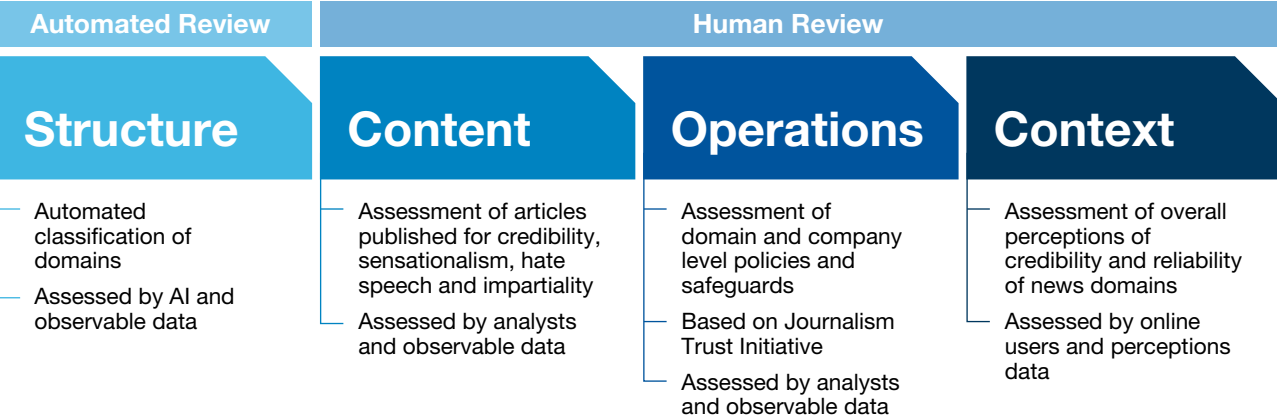
The infodemic laid bare by COVID-19 conspiracies clearly shows that disinformation costs peoples' lives. Websites masquerading as news outlets are driving and profiting financially from the situation.

The goal of the Global Disinformation Index (GDI) is to cut off the revenue streams that incentivise and sustain the spread of disinformation. Using both artificial and human intelligence, the GDI has created an assessment framework to rate the disinformation risk of news domains.[2]

The GDI risk rating provides advertisers, ad tech companies and platforms with greater information about a range of disinformation flags related to a site's Structure (i.e. metadata and lexical features),[3] Content (i.e. reliability of content), Operations (i.e. operational and editorial integrity) and Context (i.e. perceptions of brand trust; see Figure 2). The findings in this report are based on the three pillars that were manually reviewed: Content, Operations and Context.[4]

A site's disinformation risk level is based on that site's aggregated score across all of the reviewed pillars and indicators (see figure 2).[5] A site's overall score ranges from zero (maximum risk level) to 100 (minimum risk level). Each indicator that is included in the framework is scored from zero to 100. The output of the index is therefore the site's overall disinformation risk level, rather than the truthfulness or journalistic quality of the site.

Figure 2. Overview of the GDI disinformation risk assessment

Automated Review	Human Review		
Structure	**Content**	**Operations**	**Context**
— Automated classification of domains — Assessed by AI and observable data	— Assessment of articles published for credibility, sensationalism, hate speech and impartiality — Assessed by analysts and observable data	— Assessment of domain and company level policies and safeguards — Based on Journalism Trust Initiative — Assessed by analysts and observable data	— Assessment of overall perceptions of credibility and reliability of news domains — Assessed by online users and perceptions data

The following report presents findings pertaining to disinformation risks for the media market in Estonia, based on a study of 33 news domains.[6] The data provide an initial snapshot of the overall strengths and challenges that these sites face to mitigate disinformation risks.[7]

All of these findings come from the research conducted between April and July 2020. The market analysis is based on 15 disinformation flags from the human review of Estonian websites performed by two researchers.[8] This report presents the average scores for the market sample. Sites that are rated as having a minimum or low-risk site and/or score above a 95 on any of the three pillars are named and profiled in the report.[9]

The GDI risk rating methodology is not an attempt to identify truth and falsehoods. It does not label any site as a disinformation site—or, inversely, as a trusted news site. Rather, our approach is based on the idea that a range of signals, taken together, can indicate a site's risk of carrying disinformation.

The scores should be seen as offering initial insights into the Estonian media market and its overall levels of disinformation risk.

The results are open to debate and refinement with stakeholders from news sites, advertisers and the ad tech industry. (The annex to this report outlines the assessment framework).[10] We look forward to this engagement.

How to address disinformation risks from international sites

The internet is largely seamless and so is the information that people can access. Whether you are in Cape Town, Melbourne or Toronto, you may be relying on some of the same English-language media sites that are based outside your own country. The same applies to many other languages including Arabic, French, Portuguese and Spanish.

But how do you assess and address the disinformation risks that these sites pose to the local market? This issue is particularly challenging when international sites target language minorities within a country with a different official language. This case is extremely relevant for understanding the assessment of the Estonian media market.

The sizeable community of Russian speakers in Estonia means that many online readers naturally use and rely on Russian-language media, including Estonian sites and those outside the country. Many of the country's most popular Russian-language sites are based in Russia.[11] For this market study, we assessed seven Estonian sites (www.rus.err.ee; www. rus.postimees.ee, www.rus.delfi.ee, www.seti.ee, www.mke.ee, www.severnojepoberezhje.postimees. ee and www.stolitsa.ee) and three Russian sites

(www.lenta.ru, www.ria.ru, and www.regnum.ru), all of which publish content in Russian.

While the Estonian sites score relatively well in the report, the Russian sites do not in comparison with the rest of the market sample. These Russian sites lack many of the operational safeguards and journalistic practices that are associated with low- and medium-risk sites. They all score below the market average for each of the pillars.

While it is critical to understand their risk profile, this situation creates a policy challenge as well. As international sites, they are not regulated by Estonia's media authorities, signatories to the press corps' code of conduct, nor are they accountable to the Estonian government in cases where domestic media regulations are violated. There is no clear way to remedy any of the identified risks for these international sites unless they opt to address them. We hope these findings provide these international sites with a clear road map of how to mitigate the disinformation risks found, and look forward to working with them.

Key Findings: Estonia

In looking at the media landscape for Estonia, GDI's assessment found that:

Some of the country's most used news sources are also those with minimum disinformation risks: www.err.ee, www.rus.err.ee and www.aripaev.ee.

- The main news sites operated by ERR (the public service broadcaster), which are in Estonian and Russian provide reliable content, have strong operational checks and balances, and are viewed by online users with strong perceptions of brand trust.

- For example, 75 percent of survey respondents gave ERR high marks for its accuracy in covering news events.

- The financial site www.aripaev.ee was perceived by 82 percent of surveyed online users as providing accurate news coverage and has nearly all of the operational checks and balances in place. In addition, our researchers found that it provides neutral content.

One in four sites were rated as having a high or maximum level of disinformation risk.

- These sites are mostly outside the mainstream sites that are used and many of their online users have low levels of trust in any other news sources.

- This finding suggests that their online users are operating in an information bubble and relying on news from the sites which present the highest risk of disinforming them.

Most of the sites in our sample fall into the medium risk category. Two-thirds of the sites that were assessed in Estonia received this risk rating.

- This group includes a wide range of regional and national news sites. The absence of key operational and editorial policies, which provide important checks and balances in newsrooms, were one of the main contributors to increased risks.

Overall, we found a latent risk for the market due to the frequent use of clickbait titles by some leading, high-traffic Estonian sites, which could lower trust.

- These sites' reliance on advertising revenues and high traffic further complicates the challenge of moving away from sensational headlines.

- Yet our research shows the clear benefits of forgoing clickbait titles. In our study, the news sites which are perceived to be more accurate are also the ones that are assessed as carrying less sensational content, having more neutral headlines and forgoing the negative targeting of groups and/or individuals in their stories.[12]

Figure 3. Disinformation risk ratings by site
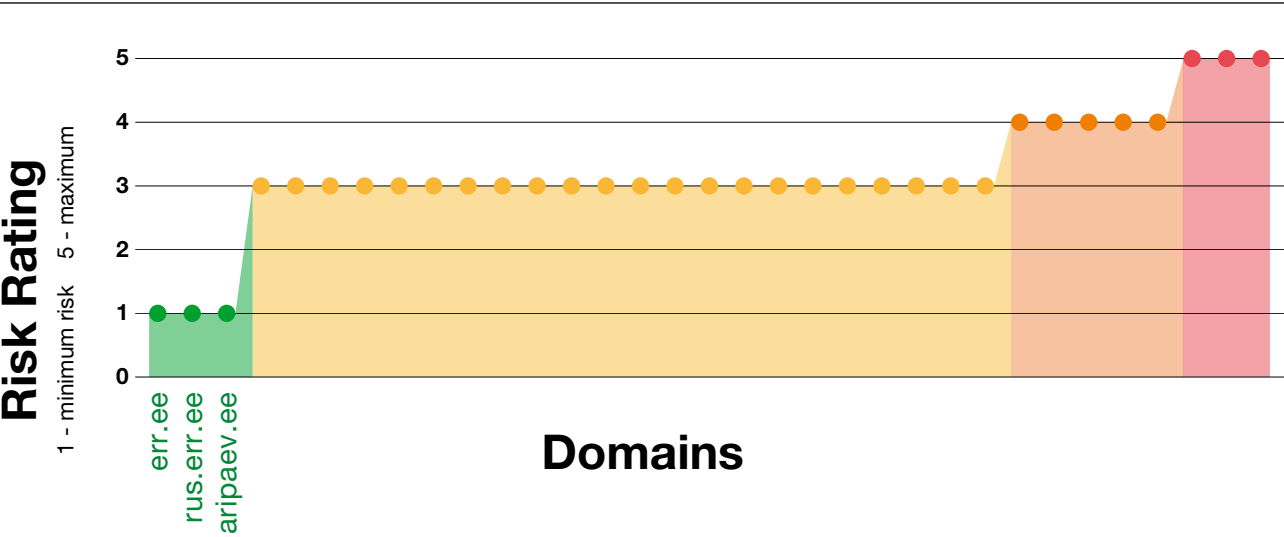
The Estonian media market:
Key features and scope

Estonia has a unique profile in terms of its media market and experiences with disinformation campaigns. The country has media in two main languages: Estonian and Russian. **About one in three people speak Russian as their main language in Estonia.** Based on this study's findings, the Russian-language audience is much more familiar with Estonian-language media than Estonians' are with Russian-language outlets.[13] Previous studies show that the local Russian-language audience overall tends to consume a wider range of media sources, including Russian and international outlets.

The strong presence of a Russian-speaking community reflects the fact that the country was part of the Soviet Union for 50 years and adhered to the model of state-controlled news and information until 1991. Following the dissolution of the Soviet Union, Estonia moved to establish independent and vibrant media to serve its population of 1.3 million. By the early 2000s, it was clear that Russia was trying to influence information in the country through alleged disinformation campaigns. One example is the so-called 'monument crisis' in 2007, which led to rioting and violence—and which was reportedly incited by Russia.[14]

Given this context, **recent research suggests that nearly one in three Estonians distrust the media**, and that 47 percent do not trust the news they see on social media.[15] Findings show that 73 percent of those surveyed are concerned by what news in Estonia is real and 'fake'.[16] At the same time, 61 percent of Estonians said that they are confident that they can detect 'fake' news.[17]

Traditional media (TV, radio and print) are consumed by the Estonian and Russian communities very differently. While the most frequently visited domains offer content in both languages (i.e www.delfi.ee, www.postimees.ee and www.err.ee), the Estonian and Russian language versions of their sites can vary widely. Overall, people in Estonia tend to trust traditional news sources like radio (80 percent), television (79 percent) and printed newspapers and magazines (71 percent). As for online news content, 60 percent of those surveyed trust their content.[18] In Estonia, it is estimated that 71 percent of the population gets their news online and mostly via their mobile phones (64 percent).[19]

Among the highest traffic sites in Estonia, two of the top five sites are news sites: www.delfi.ee and www.postimees.ee.[20] Overall, the Estonian online news market is dominated by two private media companies (Ekspress Grupp and Postimees Grupp) and Estonian Public Broadcasting (ERR). The media market is generally characterised by a growing horizontal and vertical integration.

As everywhere else, **Estonian media companies are trying to adapt their business models to the challenges of the information society and face a general situation of uncertainty**. The erosion of the advertising market caused by global internet giants (€107 million in 2019)[21] has put extra pressure on Estonian private media companies. The amount of ad revenue spent locally on Google and Facebook (€15.3 million) has been increasing rapidly and is catching up to the sums spent on advertising on Estonian websites (€22.4 million).[22] Still, the main Estonian media sites have managed to increase their subscriber base and sales, a positive trend that was recently hailed by the Estonian Media Alliance.[23]

For this study, we defined the Estonian media market based on an initial list of nearly 40 news sites, which included well-known national outlets, tabloids and regional newspapers, as well as four frequently visited Russian news portals. We then worked with local media experts to refine the list based on each site's reach and relevance. We defined reach and relevance based on a site's Alexa rankings and its Facebook and Twitter followers. We also consulted with local experts to identify domains with lower reach but high relevance among decision makers and included those sites.

Disinformation risk ratings

**No site in Estonia was assessed with a low level of disinformation risk.**

Market overview

Overall, the disinformation scores for Estonian news sites tend to be uniform for a large group of sites, with almost two-thirds of all domains presenting a medium level of disinformation risk. Only two sites run by the public service broadcaster (www.err.ee and its sister site in Russian, www.rus.err.ee) and a financial news sites (www.aripaev.ee) present minimum disinformation risks.

This distribution of risk ratings reveals that all of the domains in our sample have room for improvement. One in four Estonian sites falls into a high risk or maximum risk category. Most of the sites that are currently found in the middle range for risks could move into a lower-risk group with improvements to their operational policies (as explained in the Operations pillar section below).

Other drivers of disinformation risk across the 33 sites are related to online users' perceptions of brand trust in these sites (see Figure 4). This is due to online users' perceptions that sites often use clickbait titles and fail to issue corrections.

Figure 4. Overall market scores, by pillar
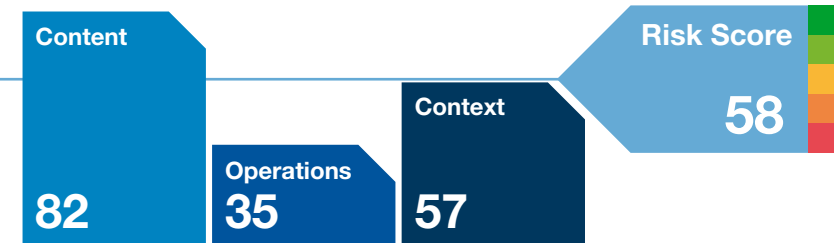
We can also see how different disinformation risk groups performed on each pillar of the assessment and the general characteristics shared among each group (Figure 5).

In Estonia, minimum risk sites score well across all three pillars of the index, performing best in Operations followed by Content. The minimum risk sites in Estonia are www.err.ee, www.rus.err.ee, and www.aripaev.ee. The strong journalistic practices and the clear and accurate content produced by these sites mitigates their risk of disinforming readers. However, even Estonia's minimum risk sites show room for improvement in the Context pillar.

As noted, none of the Estonian sites included in the market sample fell into the low risk category, indicating a significant gap between the best performing sites and the rest of the market.

The medium risk sites tend to consist largely of sites that score relatively well on their content, but entirely fail to meet standards for editorial and operational policies and have lower perceptions of brand trust (based on survey responses by their online users). In the case of operational risks, this is particularly true for some of the 13 local news sites in our sample.[24] Across the sample, the current scores capture the risks posed by potential integrity breakdowns, which could eventually trigger higher content-related risks for the stories covered on these sites.

The high risk sites have less reliable content than the other sites assessed in Estonia. They are also largely missing many of the operational policies that are needed to ensure editorial and journalistic checks-and-balances. Levels of brand trust are also less strong when compared to other media sites assessed in Estonia.

Estonia's maximum risk sites lag in terms of Content and Operations indicators when compared to the other risk groups. These sites are lacking nearly all of the policies associated with strong operational and editorial policies and practices. The content on these sites is also more biased, sensational and likely to negatively target groups than the other sites. The level of online user trust in accurate and impartial news on these sites is also lower.

Figure 5. Average pillar score by risk rating level
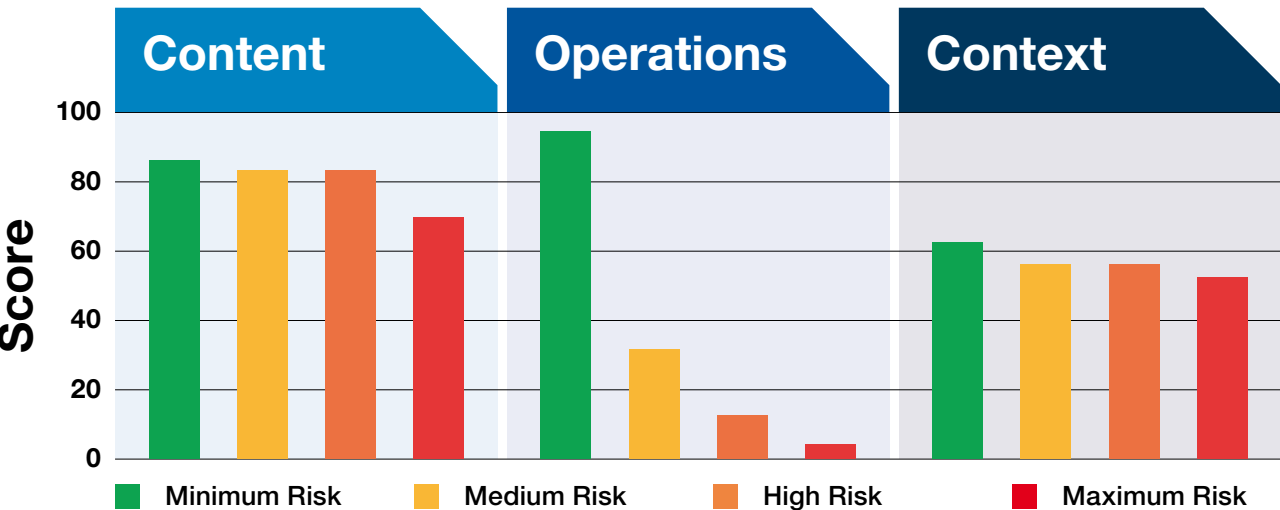
The tone of a site's articles is a good predictor for how well a site performs across many of the other pillars' indicators.

Pillar Overview

CONTENT PILLAR

This pillar focuses on the reliability of the content provided on the site. Our analysis for the Content pillar is based on an assessment of ten anonymised articles for each domain. These articles are drawn from among the most frequently shared pieces of content during the data collection period (see Figure 6). All article scores are based on a scale of zero (worst) to 100 (best), as assessed by the country reviewers.

For the Estonian media market, the articles sampled for each of the Estonian media sites generally show low disinformation risks for indicators related to their titles, bylines, targeting of groups or individuals, and coverage of recent events (see Figure 6). One site, www.postimees.ee, has a near perfect score across all of the content indicators, receiving 96 out of a possible 100 points for the Content pillar.

The tone of a site's articles is a good predictor for how well a site performs across many of the other two pillars' indicators in the Estonian study.[25] This finding suggests that the overall tone of a site's article is strongly and significantly correlated with the site's disinformation risk rating.

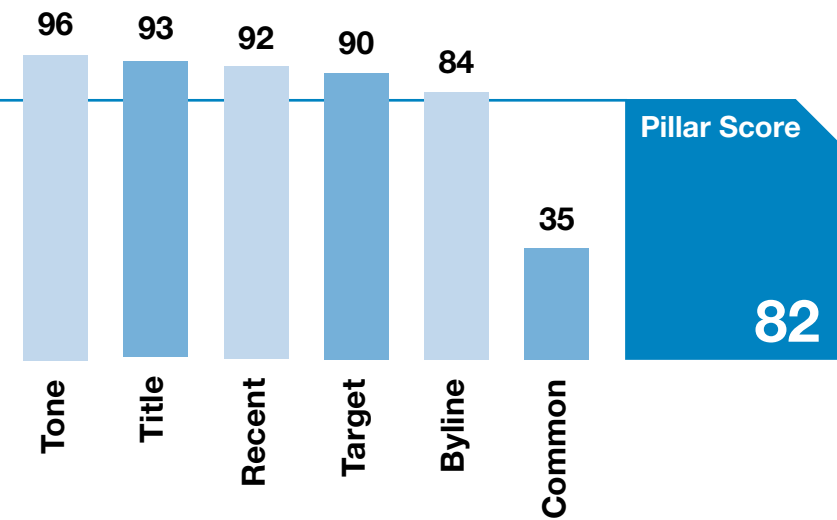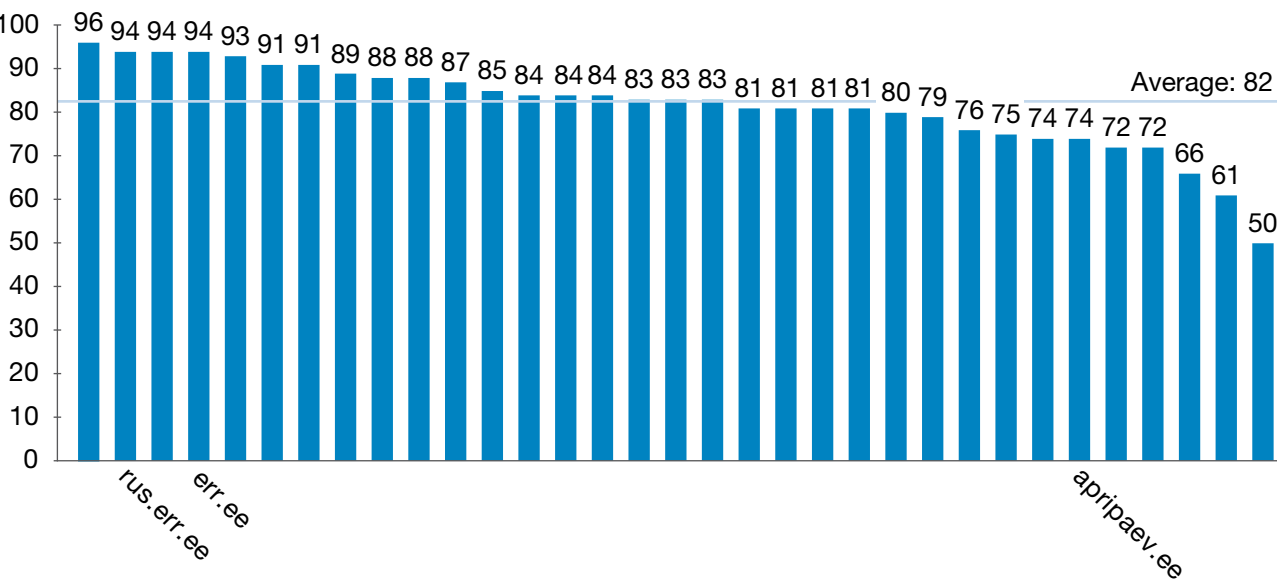**Figure 6. Average Content pillar scores by indicator**

Figure 7. Content pillar scores by site

OPERATIONS PILLAR

This pillar assesses the operational and editorial integrity of a news site. All scores are based on a scale of zero (worst) to 100 (best), as scored by the country reviewers according to the information available on the site. The operations indicators are the quickest wins to reduce disinformation risk, as they represent policies that domains can immediately establish and make public.[26] However, most sites in our market sample are found to be missing many of these policies. For example, only three sites (www.aripaev.ee, www.err.ee and www.rus.err.ee) offer a public statement of their editorial independence. However, the majority of sites are committed to adhering to the Estonian Journalism Code of Ethics,[27] which includes a commitment to editorial independence.[28]

All Estonian sites in our sample have the potential to score perfectly on all the indicators of the Operations pillar if they adopt and disclose such operational policies and information. The indicators for the Operations pillar are taken from the standards which were set by journalists as part of the Journalism Trust Initiative (JTI).[29] As the JTI points out,[30] adopting these standards raises credibility in the eyes of the public, compels traditional media to reassess their practices in the digital age, and encourages new media outlets to be more transparent about their business models.

Estonia's media body—the Estonian Media Alliance[31]—could do more to embed such policies for its members. For example, it has the Press Council, which deals with citizen complaints about violations of the Code of Ethics and could be used to flag general problem areas across media sites. The Council's "Estonian Journalism Code of Ethics" provides recommendations on truthful and ethical news reporting, conflicts of interest, user-generated content, privacy, and the appropriateness of how people are portrayed in stories, among other areas. Its decisions are accepted by the members of the Estonian Media Alliance.[32] If these recommendations seem to have

been breached, third parties may issue complaints to the Press Council. Complaints also can be addressed to the Estonian Press Council, which is a different oversight entity.[33] This self-regulatory body is independent of the media industry, but is less visible.

Estonian sites performing poorly on this pillar include right-wing conservative news portals, some local independent newspapers, news aggregators and Russian-based outlets. This finding suggests that in order to minimise operational risks for the Estonian media market, all publishers should rethink their standards for the public disclosure of the JTI's key policies. Notably, this finding is supported by online users' perceptions of how sites put these operational safeguards into practice. Our findings show a strong correlation between sites that have all of the operational checks and balances in place and those that are perceived to be more accurate and provide more unbiased, neutral coverage.[34]

Figure 8. Average Operations pillar scores by indicator
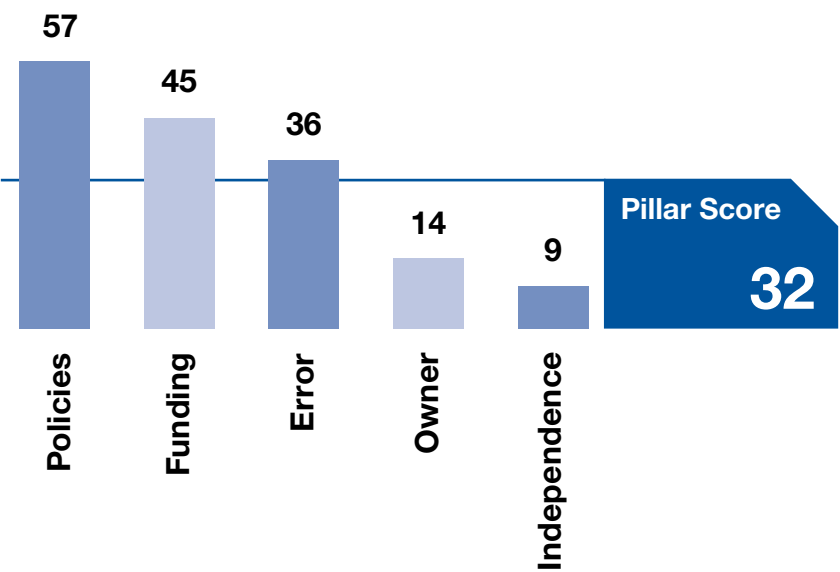
One of the indicators that many sites fail to report on was information about their ownership. The three top performers in our sample had this information directly on their sites: www.aripaev.ee, www.err.ee and www.rus.err.ee. Information about the ownership of major media houses and local news sites may be easily accessible to the public—but through other sources and not on the specific news sites. It would significantly raise the score of some sites belonging to the country's main media groups—and lower the risks— if this information was published directly on their websites (see Figure 8).

A similar issue was noted for sites' scores for editorial independence. While only three sites bore this clear statement, many others have committed to comply with the Estonian Journalism Code of Ethics.[35] They could outline these commitments clearly on their sites.

Sites could also improve their performance and lower their disinformation risk by publishing their sources of funding directly on the sites. Only three sites

publish full information on their sites about their sources of funding: www.aripaev.ee, www.err.ee, and www.rus.err.ee. Major media players in Estonia do publish this information in their annual reports, where the main revenue streams are explained. But this information is not available on the relevant sites, which would greatly help with transparency. Moreover, our findings show that sites that publish their sources of funding are significantly and highly correlated with sites that have more neutral and unbiased content, and are also perceived by online users to be more accurate, issuing corrections and differentiating clearly between news and opinion stories.[36]

## Figure 9. Operations pillar scores by site
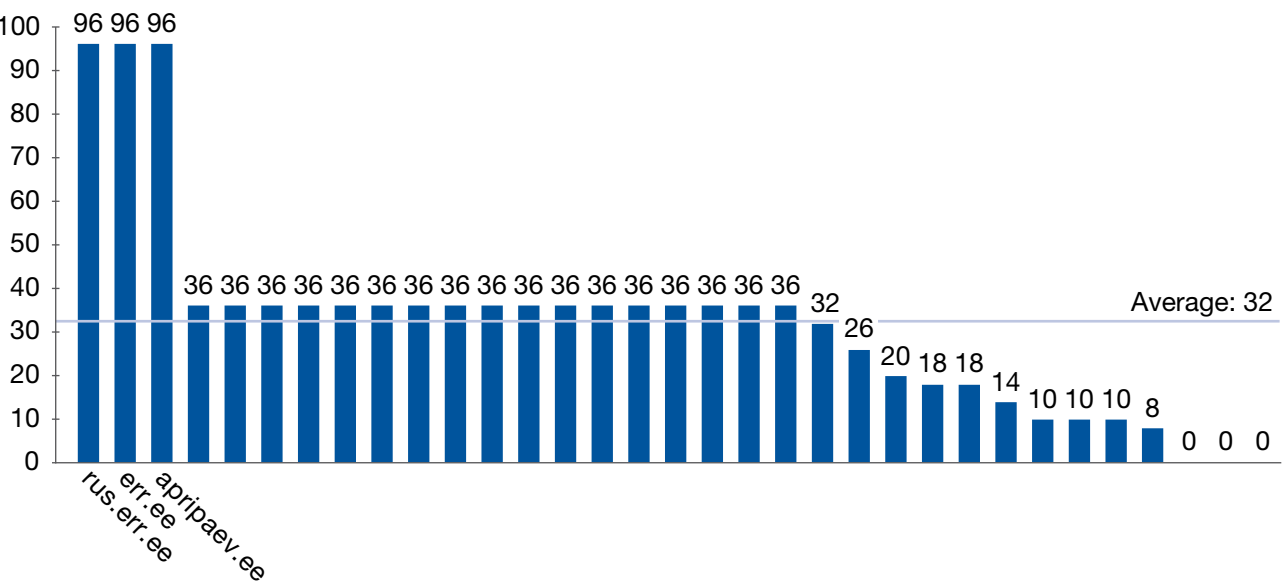
CONTEXT PILLAR

A site's performance on this pillar is a good measure of perceptions of brand trust in a given media site. All scores are based on a scale of zero (worst) to 100 (best), as rated by online users. Context pillar scores have significant room for improvement for many domains, although shifting expert perceptions can only occur over the medium to long-term (see Figure 10). This is partly due to the fact that perceptions can be "sticky" and take time to realign with a sites' current realities. That said, our statistical analysis indicates that respondents' perceptions do reflect several of the Content and Operations indicators, so adopting the content and operations standards measured in those pillars may have the additional effect of improving user perceptions.

The context pillar findings are based on an independent survey[37] conducted of online user perceptions of brand trust in the Estonian media sites included in our sample.[38] They show that over half of the sites get a passing grade when it comes to perceptions of the accuracy of their content (scores 70 or above out of 100 points). This group includes many special interest sites.

The site that is perceived by survey respondents to be the most accurate and trusted is the public broadcaster (www.err.ee), which has content available in both Estonian and Russian languages.

Figure 10. Average Context pillar scores by indicator
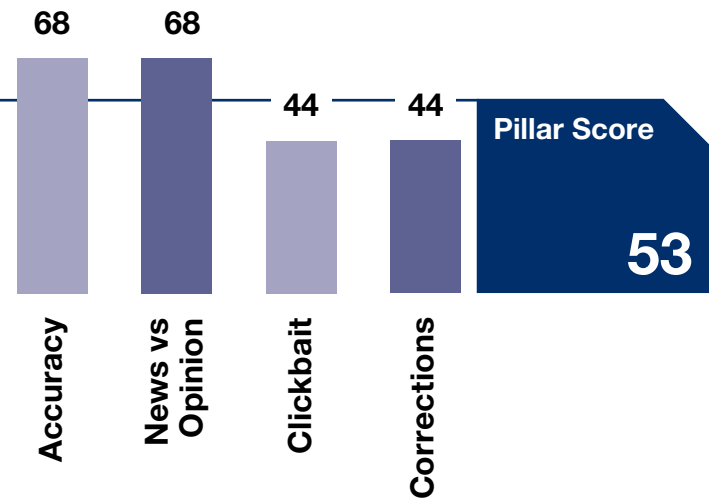
Respondents also consider www.err.ee to be the most reliable in its coverage of politics, health (including COVID-19) and environmental-related news.

Sites were perceived to have higher disinformation risks when it came to the use of clickbait titles and not correcting errors in their stories. Our findings show that sites which were perceived to do a better job at publishing corrections were the same sites that were perceived to be more accurate, to clearly distinguish news stories from opinion, and to not use clickbait titles. These were also the sites that showed strong and positive correlations with having better operational policies across the board.

Figure 11. Context pillar scores by site

Conclusion

Annex: Methodology
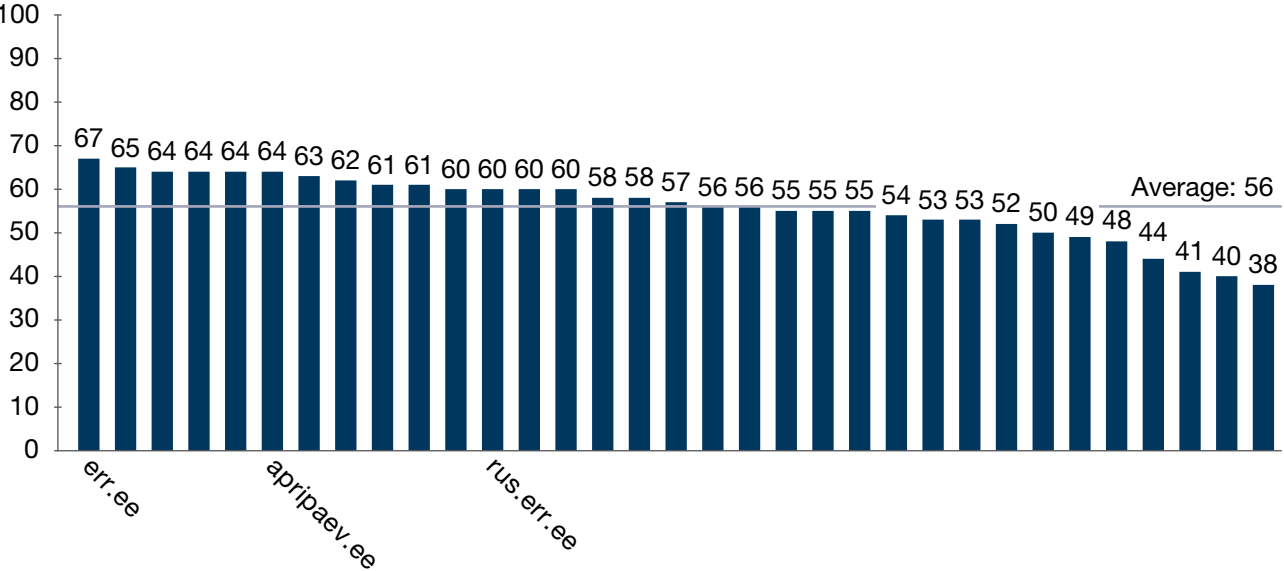
Our assessment of the disinformation risk of popular news sites in Estonia finds that the country's vibrant and relatively trusted media market still presents various disinformation risks that should be addressed.

The analysis shows that two-thirds of the sites share a common level of disinformation risk, which places many of them within a medium risk level for disinformation.

Domains typically demonstrate better performance in our framework when it comes to indicators that assess the reliability of content. Still, these domains' overall ratings are brought down by either operational shortcomings or low levels of brand trust in them.

News sites could address these shortcomings by taking actions that:

- Focus on adopting journalistic and operational standards like those set by the Journalism Trust Initiative.

- Ensure that sites publish a statement of editorial independence, guidelines for issuing corrections, and policies for user- and algorithmically-generated content.

- Encourage the Estonian Media Alliance to specify and outline some journalistic practices that would be easy to adopt for the media outlets, such as the use of bylines and statements of editorial independence.

- Improve and make more visible a site's correction practices. It is important that such site corrections be clearly seen and understood, rather than being hidden on a web page below the fold.

- Attempt to address the challenge of the 'clickbait' culture and its race-to-the-bottom by presenting headlines that are clear and which accurately reflect the text of a story. This includes working with advertisers and ad tech companies over the long-term to shift the incentives of the overall online advertising business model.

- Promote the implementation of public policies that tackle new media challenges. This includes an EU-wide digital tax (which was taken off the table in 2020) and finding sustainable funding streams for media to address the longer-term challenges of an ad-driven model of content that gets the most clicks.

- Find mechanisms to promote the journalistic integrity and ethics of Russian-language outlets that are not subject to Estonian regulations. Although the country's public broadcaster is a highly trusted source of information in Russian and Estonian, there is much to be done in fighting disinformation from the perspective of the public authorities.

The need for a trustworthy, independent rating of disinformation risk is pressing. The launch of this risk-rating framework will provide crucial information to policy-makers, news websites, and the ad tech industry, enabling key decision-makers to stem the tide of money that incentivises and sustains disinformation.

Pillar scoring

The Structure, Content and Operations pillars of the GDI risk ratings are all designed to capture discrete, observable features of a domain by analysing a snapshot of a particular moment in time. This approach is effective at mitigating bias and standardising our analysis across domains and countries, but it is limited in scope. Historical information about a domain's content and practices is not captured by these pillars—nor are less observable disinformation flags (such as regularly disinforming readers by saying nothing about a story or topic). Both of these limitations are addressed by the fourth pillar, context, which assesses long-term trends and indicators that are harder to measure. In this report, two-thirds of a domain's score is based on a snapshot of observable features (through the content and operations pillars), while the final third comes via a public perceptions survey that contextualises our findings.

The Content pillar produces a score based on six indicators reviewed by two dedicated country analysts across ten articles published by a domain. These ten articles were randomly selected from among that domain's most shared articles within a two-week period and then stripped of any information that could identify the publisher. The indicators included in the final risk rating are: title representativeness, author attribution, article tone, recency of topic and common coverage of the story among other domains.

The Operations pillar is scored at the domain level by the same country analysts. We selected five indicators from the Journalism Trust Initiative's list of trustworthiness signals in order to capture the risk associated with a domain's potential financial conflicts of interest, vulnerability to disinformation in its comments sections, and editorial standards. This is not meant to capture actual quality of journalism, as this pillar rates a domain based on its public disclosure of operations, which may differ from actual operations. The indicators included are: disclosure of true beneficial owners, transparency in funding sources, published policies for comments sections and the publication of algorithmically-generated content, a clear process for error reporting, and a public statement affirming editorial independence.

The Context pillar score is based on results from a survey of online users' perceptions of a domain's content and operations. Incorporating survey data in calculating the risk rating is essential because it captures a wider range of opinions, and because online users' perceptions are based on a site's long-term behaviour and performance. This pillar offers a good complement to our content pillar, which goes more in-depth but analyses only ten articles. The survey captures four indicators: accuracy, clear differentiation of news and opinion articles, use of clickbait headlines and error reporting.

Domains are placed into one of five risk categories based on their final risk score. The cutoffs for the categories are determined by combining the risk ratings for domains in all countries in the current version of the index and calculating this global sample's mean and standard deviation. Domains are placed into a category based on the number of standard deviations that separate their rating from the global mean score. The following table shows each category and its cut-offs.
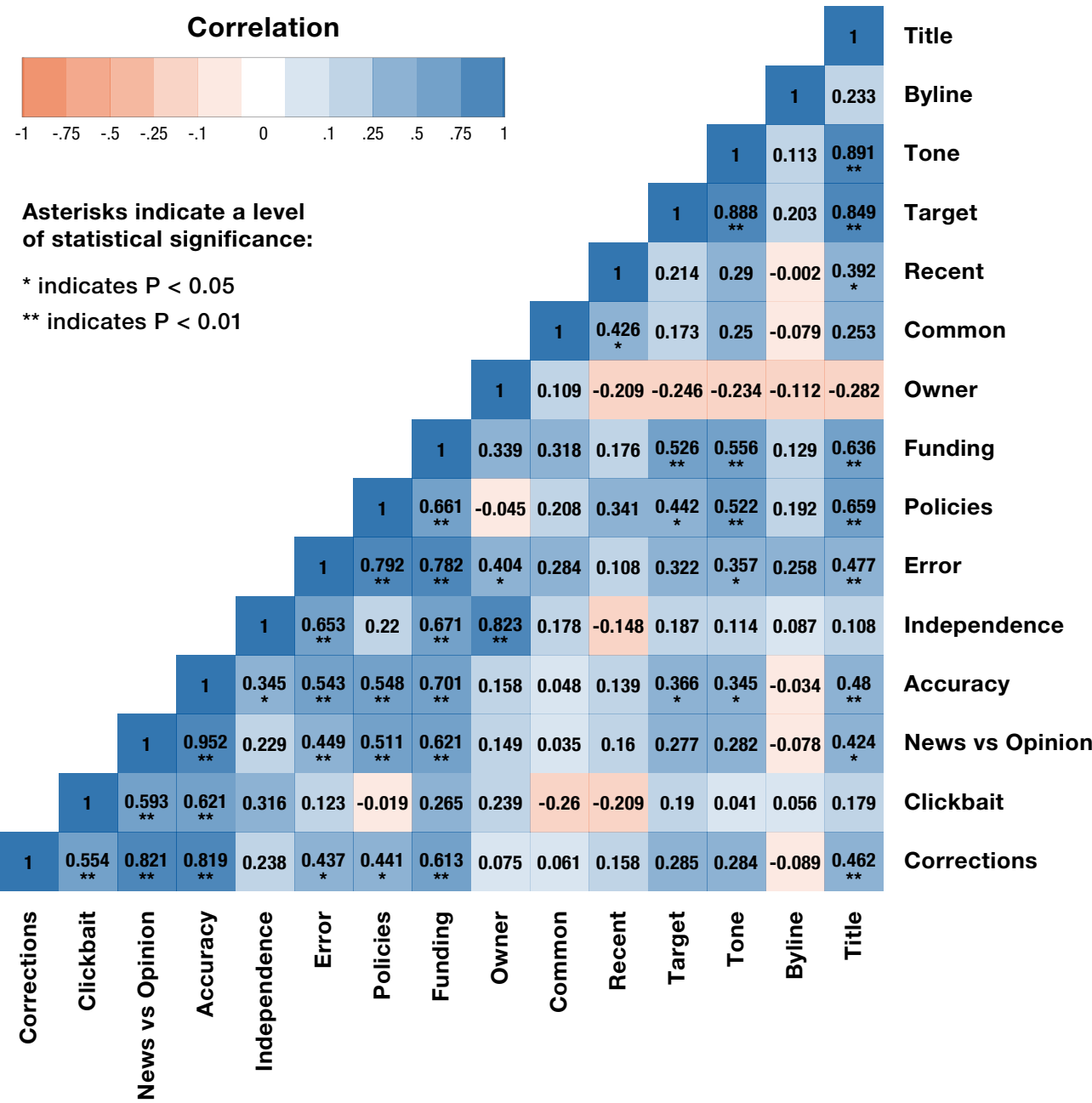
Table 1: Overview of risk bands

TOTAL DOMAIN SCORE	DISINFORMATION RISK LEVEL	DISINFORMATION RISK CATEGORY
< -1.5 SD from mean	5	Maximum risk
≥ -1.5 and ≤ -0.5 SD from mean	4	High risk
> -0.5 and ≤ 0.5 SD from mean	3	Medium risk
> 0.5 and ≤ 1.5 SD from mean	2	Low risk
> 1.5 SD from mean	1	Minimum risk

Data collection

The Estonian domains were each assessed by two analysts who were trained by GDI staff on our framework according to a codebook that provides detailed instructions for assessing each indicator.

The survey was conducted by Norstaat and includes 1076 respondents drawn from sophisticated online users. Each respondent was asked a series of questions about domains that they indicated they were familiar with. Each respondent assessed up to 10 sites from the sample based on their familiarity with the site. The maximum of respondents for a site was 125 and the minimum 46. These numbers suggest a survey size that allows for a robust analysis.

Table 2. Correlations matrix

Correlation

-1   -.75   -.5   -.25   -.1   0   .1   .25   .5   .75   1

Asterisks indicate a level of statistical significance:

* indicates P < 0.05

** indicates P < 0.01

	Corrections	Clickbait	News vs Opinion	Accuracy	Independence	Error	Policies	Funding	Owner	Common	Recent	Target	Tone	Byline	Title	
															1	**Title**
														1	0.233	**Byline**
													1	0.113	0.891 **	**Tone**
												1	0.888 **	0.203	0.849 **	**Target**
											1	0.214	0.29	-0.002	0.392 *	**Recent**
										1	0.426 *	0.173	0.25	-0.079	0.253	**Common**
									1	0.109	-0.209	-0.246	-0.234	-0.112	-0.282	**Owner**
								1	0.339	0.318	0.176	0.526 **	0.556 **	0.129	0.636 **	**Funding**
							1	0.661 **	-0.045	0.208	0.341	0.442 *	0.522 **	0.192	0.659 **	**Policies**
						1	0.792 **	0.782 **	0.404 *	0.284	0.108	0.322	0.357 *	0.258	0.477 **	**Error**
					1	0.653 **	0.22	0.671 **	0.823 **	0.178	-0.148	0.187	0.114	0.087	0.108	**Independence**
				1	0.345 *	0.543 **	0.548 **	0.701 **	0.158	0.048	0.139	0.366 *	0.345 *	-0.034	0.48 **	**Accuracy**
			1	0.952 **	0.229	0.449 **	0.511 **	0.621 **	0.149	0.035	0.16	0.277	0.282	-0.078	0.424 *	**News vs Opinion**
		1	0.593 **	0.621 **	0.316	0.123	-0.019	0.265	0.239	-0.26	-0.209	0.19	0.041	0.056	0.179	**Clickbait**
	1	0.554 **	0.821 **	0.819 **	0.238	0.437 *	0.441 *	0.613 **	0.075	0.061	0.158	0.285	0.284	-0.089	0.462 **	**Corrections**

Endnotes

1   We define disinformation in terms of the verb 'to disinform': 'to deliberately mislead; opposite of inform.'

2   The human review elements of the framework were developed in collaboration with Alexandra Mousavizadeh (head of insights for Tortoise Media and co-founder of the GDI). The framework was advised by, vetted by, and finalised with the support of a technical advisory group (TAG), including Ben Nimmo (Graphika), Camille François (Graphika), Miguel Martinez (co-founder & chief data scientist, Signal AI), Nic Newman (Reuters Institute of Journalism), Olaf Steenfadt, (Reporters without Borders), Cristina Tardáguila (the Poynter Institute's International Fact-Checking Network), Amy Mitchell (Pew Research), Scott Hale (Meedan and Credibility Coalition), Finn Heinrich (OSF) and Laura Zommer (Chequeado).

3   The Structure pillar is assessed by a machine-learning algorithm prototype that is trained on metadata from thousands of websites known for regularly disinforming readers. It identifies these domains according to technical features. For example, use of ads.txt, security protocols, and site-specific email aliases. For more on our methodology, see the appendix.

4   For more on our methodology, see the appendix and methodology at: https://disinformationindex.org/research/.

5   The Structure pillar is assessed by a machine-learning algorithm prototype that is trained on metadata from thousands of websites known for regularly disinforming readers. It identifies these domains according to technical features of the website itself, and currently produces a binary assessment: it either is or is not a high risk disinformation site. For this study, the structural indicators were used only as a filter to cross-checking the domains which were selected for the human review. Their scores on this pillar were not used to calculate the final risk rating. As the sample is composed of some of the most popular sites in the Estonian media market, they would not be expected to share structural features with high risk sites.

6   In this round of reports for 2020, media market assessments will be produced for the following countries: Argentina, Estonia, France, Georgia, Germany, Latvia, India, South Africa, UK and the US. Additional countries may also be added.

7   All sites included in the report were informed of their individual scores and risk ratings, as well as the overall market averages.

8   Two researchers assessed each site and indicator. The survey was commissioned and conducted by a local independent survey company, Norstat (https://

norstatgroup.com/). A quantitative web survey using a nationally representative sample of 1076 respondents was conducted. The sample was composed using the Norstat online panel https://norstatgroup.com/methods/online-data-collection. All respondents answered a standard set of questions used by the Global Disinformation Index (GDI) in all countries where it conducts risk ratings. Each respondent provided their perceptions of brand trust and credibility for up to ten sites that they said they were 'familiar' with.

9   Minimal risk is the best risk rating, followed by a low-risk rating. Both ratings suggest a news site that has scored well across all of the indicators. For all countries, individual site scores were shared confidentially with the sites operators to allow for engagement, feedback and any necessary changes. All sites were contacted in advance to provide them with information on the methodology and rating process. In all countries covered by the risk ratings, the composite scores are shared only for the sites assessed to have a low or minimal disinformation risk have their composite scores shared. As a result, the number of sites disclosed in the report will vary by country.

10   The GDI looks forward to working with the entire industry this effort. There is a strong demand for such a risk assessment of sites, and a notable concern that less trusted, less independent actors may seek to fill this gap.

11   Based on the Alexa rankings for the country for the top 500 sites in Estonia: https://www.alexa.com/topsites/countries/EE.

12   See the statistical correlations in the Annex.

13   Based on data collected through a public perceptions survey that was commissioned in Estonia. For more information, see the context pillar section of this report.

14   The crisis began when the government decided to relocate a Soviet-built WWII memorial from Tallinn's city centre to the army cemetery. Disinformation campaigns – allegedly as part of a broader cyber-attack by Russia–- spread wild conspiracy theories via online and social media that led to violence and rioting in the city centre. See: https://www.forbes.com/sites/francistapon/2018/07/07/the-bronze-soldier-statue-in-tallinn-estonia-give-baltic-headaches/#70b0cc9a98c7 and https://www.bbc.com/news/39655415.

15   See: https://www.ebu.ch/news/2020/04/new-report-shows-broadcast-media-is-most-trusted
Also see: https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/uabvpb2cf7/Globalism2019_Social_Media_General.pdf.

16   See: https://data.europa.eu/euodp/en/data/dataset/S2183_464_ENG. This includes those that responded 'yes' and 'definitely yes'.

17   Based on respondents saying they were 'confident' or 'somewhat confident'. Survey data collected by Eurobarometer. https://data.europa.eu/euodp/data/dataset/S2183_464_ENG

18   All findings are based on data collected in 2018 by Eurobarometer. Flash Eurobarometer 2018: fake news and disinformation online: https://data.europa.eu/euodp/en/data/dataset/S2183_464_ENG for additional information check also Eurobarometer, March 2020: Attitudes towards the impact of digitalisation on daily lives: https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/SPECIAL/surveyKy/2228 Eurobarometer, January 2020: Europeans' attitudes towards cyber security: https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/special/surveyky/2249 Eurobarometer, March 2019: Europeans' attitudes towards Internet security: https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/special/surveyky/2207 Eurobarometer, September 2018: Illegal content online: https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/flash/surveyky/2201.

19   Jõesaar, A. (2019). Estonian and Russian speaking audience sections' opinion on media credibility and on the value of public service broadcasting in 2010-2019. Paper presented at the IAMCR 2019 conference.

20   Based on Alexa rankings: https://www.alexa.com/topsites/countries;0/EE. Of the top 20 sites in Estonia, six are news-related sites.

21   https://www.bestmarketing.ee/uudised/2020/07/14/reklaamituru-ulevaade-suurim-osakaal-televisioonil-enim-kasvas-internetireklaam.

22   https://www.kantaremor.ee/blogi/kui-palju-internetireklaamiturul-raha-liigub-ja-kelle-kukkur-kiiremini-taitub/.

23   ERR 07.08 2020 "Digital subscriptions compensate for large drop in July print run" https://news.err.ee/1121707/digital-subscriptions-compensate-for-large-drop-in-july-print-run. It is important to note that the COVID-19 crisis will have a negative impact on advertising on media which is only just starting to be felt.

24   ERR 03.07 2020 "Erik Gamzejev: No justification for municipal media" https://news.err.ee/1109179/erik-gamzejev-no-justification-for-municipal-media. This is especially a challenge for municipal-level media, but not only them. There is no easy solution to this problem, in part because there is no tradition of appointing a media ombudsman (or any other type of media regulator) that could be compared to various analogous institutions in other European countries.

25   See statistical correlations in the annex.

26   The operations pillar looks at whether relevant policies are in place. It does not assess the level of robustness of the policy based on good practice, and does not look at how the policies are being implemented. However, other indicators in the framework do capture some of the relevant practices, such as by measuring expert perceptions on how often sites correct errors or are viewed as carrying accurate content.

27   For the list of the members of Estonian Media Alliance, see https://meedialiit.ee/liikmed/.

28   This argument is supported by the fact that for many years Estonia has ranked very high on the World Press Freedom Index: https://rsf.org/en/ranking.

29   For more information on the JTI, which has adopted an ISO standard for the industry, please see: https://jti-rsf.org/en/.

30   https://www.cen.eu/news/workshops/Pages/WS-2019-013.aspx.

31   https://meedialiit.ee/.

32   The Estonian Media Alliance is an organization that stands for the interests of the media owners, and it also functions as a kind of watchdog, that processes complaints on the violations of the Estonian Journalism Code of Ethics.

33   http://www.asn.org.ee/english/index.html.

34   See statistical correlations in the annex.

35   The website of the Estonian Media Alliance: https://meedialiit.ee/eetikakoodeks/.

36   See statistical correlations in the annex.

37   The survey was conducted by Norstat Estonia in July 2020. The method was a quantitative web survey with a nationally representative sample of 1076 respondents. The sample was composed using Norstat's online panel https://norstatgroup.com/methods/online-data-collection/.

38   Based on survey responses, the sites that were best known by the respondents and which had the highest number of responses are the biggest and oldest nationwide outlets Delfi.ee, Õhtuleht, postimees.ee, Eesti Ekspress, Eesti Päevaleht, Maaleht, Äripäev and Err.ee . Regionally oriented outlets (i.e. Pärnu Postimees, Sakala, Saarte Hääl, Virumaa Teataja, Põhjarannik + Severnoje Poberežje, Järva Teataja, Stolitsa, Võrumaa Teataja, Lõuna Eesti Postimees and Lääne Elu) are better known in their respective regions.

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