

European Digital Media Observatory

# Research focus and gaps on digital disinformation within the EU: Findings from a survey with researchers

Supplement to IV.D.B

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## 1 Introduction and Data collection

In this report findings from a survey with researchers within the field of disinformation research within the EU are presented. The results provide a basis for fostering EDMO activities and collaborations.

The survey was mainly developed in order to identify appropriate academic institutions and relevant independent organisations in the EU member states related to research on digital disinformation. We approached researchers identified in the course of the establishment of the repository of scientific articles developed for EDMO (IV.D.A). We extracted email addresses provided in the respective publications from the authors of the identified publications listed in the repository. The researchers were mainly approached to extend the list of relevant institutions, however, the survey they were invited to also covered more topics such as research focus and link to fact-checking organizations. It was conducted with EUSurvey, a public service. The survey was sent out in December 2021, and we sent two reminders in January 2022. In addition to researchers identified based on the repository (forming the largest groups of invited persons), we also invited researchers from the EDMO hubs - Ireland hub, BENEDMO, CEDMO, IBERIFIER, EDMO BELUX, NORDIS, DeFacto, IDMO - to participate in the survey with a slightly adjusted introduction text. The survey was sent out to the coordinators of the different hubs. The coordinators were encouraged to share the contact information of the research partners of their hubs. From the total of 212 researchers invited to the survey, 44 participated. The following sections will address the results of the survey that supplement the part used to identify the institutions and organisations (for the task IV.D.B). A more detailed description of the questionnaire and the procedure was also published on the EDMO website (as part of IV.D.B). In general, answers to the survey are only presented on an aggregated level and if answers to open questions are presented, the answers have been processed to remove personal information or information that could help to identify participants.

## 2 Researchers background

Figure 1 to 5 show the background of the participants of the survey. They show that most researchers were affiliated with an university, located within Europe, with a background in Computer Science and Informatics or Media studies/ Communication and Journalism studies, in a later stage of their academic career (beyond or Postdoc) and male. There are several potential explanations for why some researchers outside Europe participated as well. The most likely is, that they have been invited based on the repository of scientific articles as this repository also includes studies published in collaboration and studies focusing on the EU but conducted from researchers outside the EU.



Figure 1: Type of institution affiliated to (N=44)

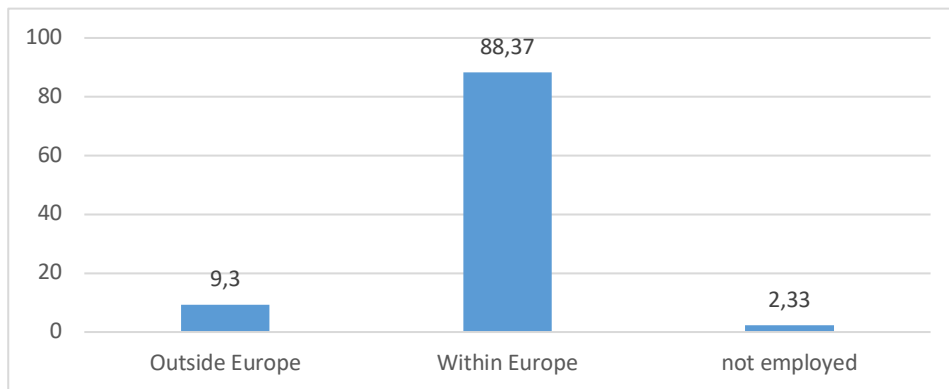


Figure 2: Location of affiliation (N=43)

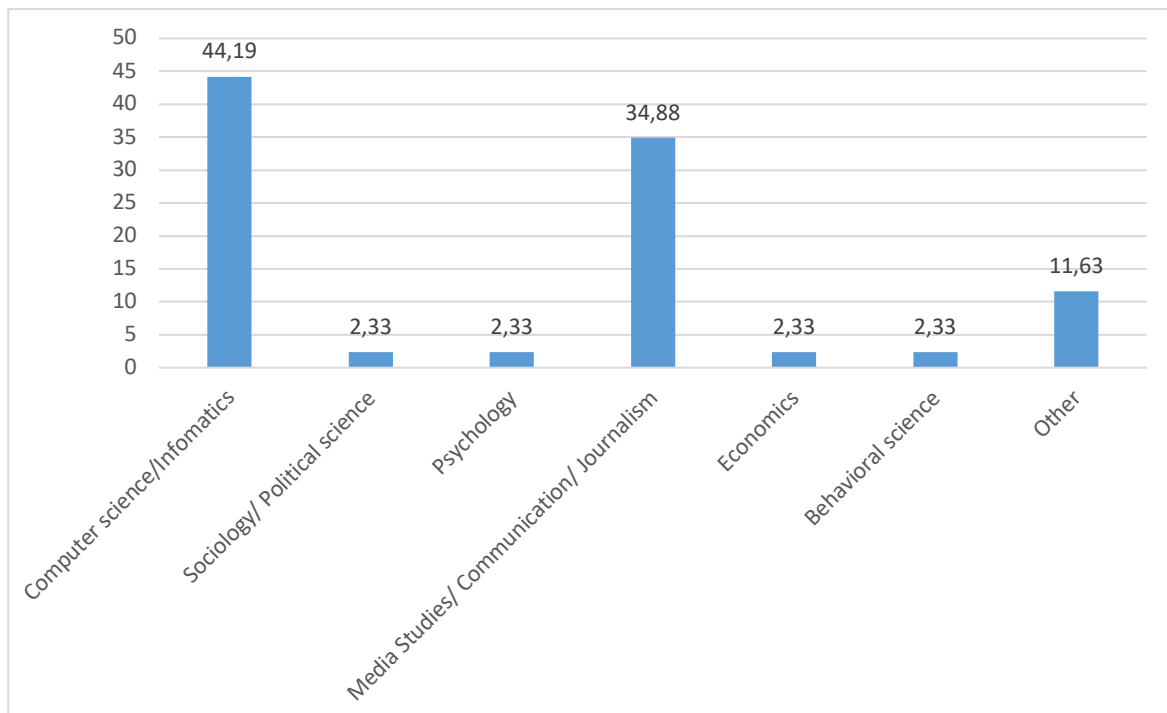


Figure 3: Field of study (N=43)

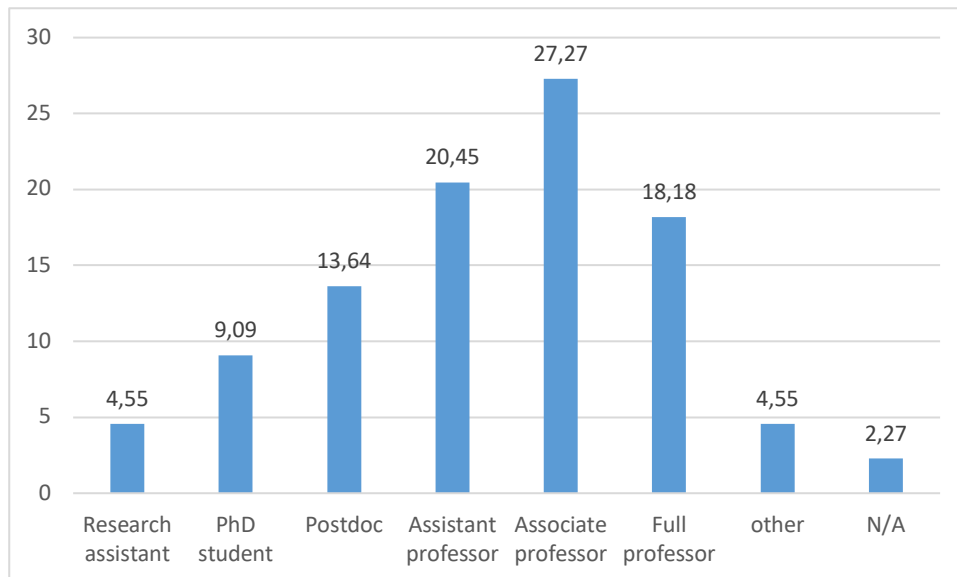


Figure 4: Current position (N=44)

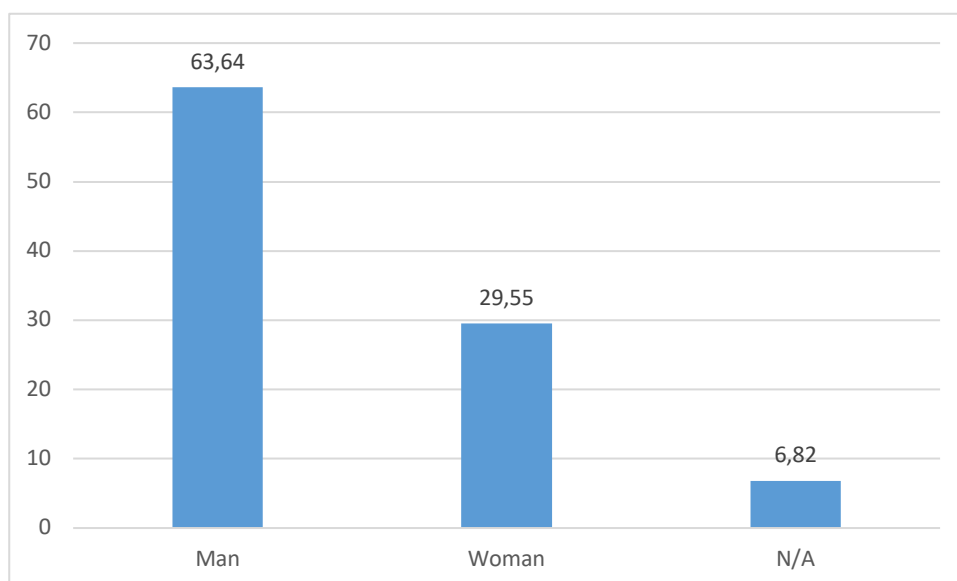


Figure 5: Gender (N=44)

### 3 Relation to EDMO

A part of the survey addressed to what extent EDMO is known to the researchers and how they would profit from a collaboration with EDMO or which services they considered relevant for their research. Figure 6 shows that EDMO is not known to all researchers, which indicates a potential for intensifying the visibility of the work EDMO

is doing. Figure 7 namely shows that there is a high interest in being part of the EDMO research community.

Table 1 presents the comments and suggestions provided by the participants to the question: “Can you shortly describe how a successful collaboration could look like for you? Which services would be interesting for you? How could you profit from EDMO?” The ideas that come up are manifold addressing platforms for collaborations such as workshops or seminars, as well as data provision and funding. In general, there seems to be a high need in facilitating collaborations across fields and topic specific and in getting access to relevant data.

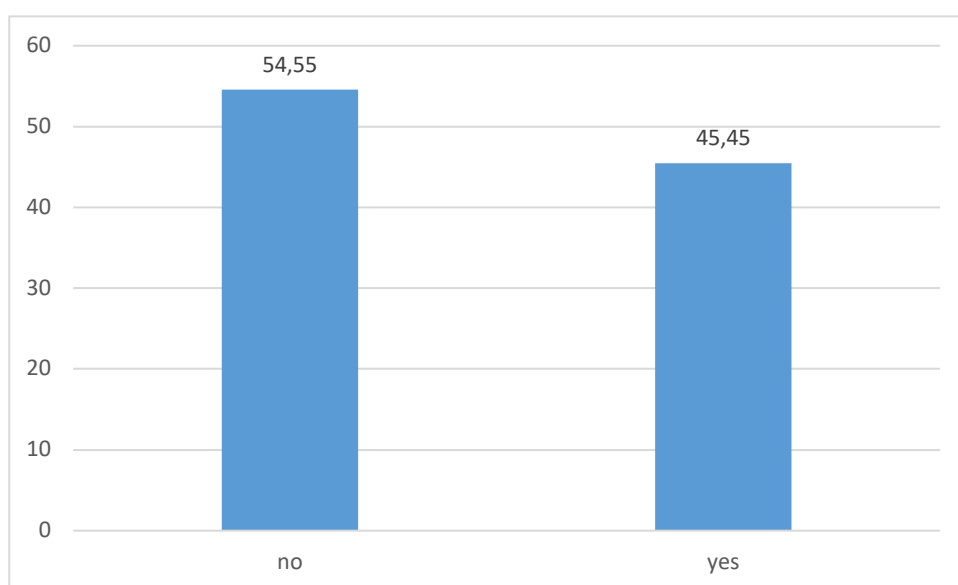


Figure 6: Heard about EDMO? (N=44)

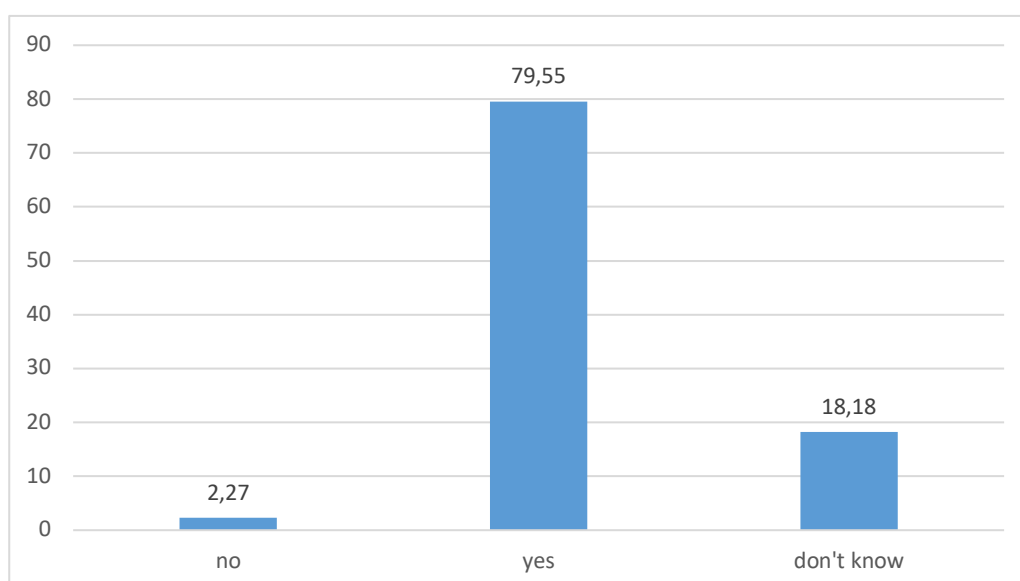




Figure 7: Interest in being part of EDMO research community? (N=44)

Table 1 Ideas, suggestions and comments about how participants would profit from collaborations and EDMO

Knowledge about related activities, expertise from EDMO researchers, data access
Active sharing of knowledge and insights to avoid overlapping work
Access to anonymized data from social networks; Online webinars supporting knowledge sharing between EDMO/EDMO hubs/researchers/regulators (e.g., ERGA)
Network organized per areas, topics and interests / bottom-up initiatives of workshops / webinars - responding to specific interests / structured newsletter/ news on research and events - structured per areas / database for networking, source for organizing events and inviting peers, co-authoring
Connecting academic research with partners in practice and policy
With interest in didatisation of false information (how to teach about disinformation, how to work with the topic in schools) → profit from having a source of examples of false information and to offer a didactic view about the issue
Provision of research data
It would be great if EDMO could contribute as a platform to find international experts on disinformation research, in order to set up international comparative studies on disinformation. EDMO is the most suitable environment to launch a project aimed at mapping the European digital media ecosystem.
Conduct joint cross-border activities with other researchers in Europe, Collaborate in mapping, supporting and coordinating research activities on disinformation at European level, share scientific and real-life information on disinformation in Europe, Support public authorities on disinformation issues.
Conferences money
Datasets, Models
already collaborating with EDMO

Maybe online seminars about the topic; or exchanging students.
Access to datasets, access to funds, joint publications, events
analysis of disinformation cases and their impact on public opinion
interested in having access to more datasets. Unfortunately they are not all in the same format and this involves a lot of preprocessing. If we could all agree on a format for evaluating fake news that would be great.
Finding collaborators to study the health infosphere in EU countries
Linking researchers, facilitating networking, pump priming pilot research
A successful collaboration could enhance my network and research work on this topic.
researches, guidelines anti-disinformation, workshop
Current focus on medical disinformation and interest in collaborating with researchers from social sciences and IT. That kind of mutual project would really make a difference
access to data and relevant stakeholders, knowledge dissemination
networking, dissemination activities of my own results, cooperation in future disinformation projects, collaboration in joint research activities, etc.
international collaboration, extending the boundaries of studies to encompass several countries
Create a network of researchers to advance the state of the art; obtain fundings to continue research.
Access to computational resources. Discussion and collaboration with different groups from the EU to identify key factors on the detection of disinformation in a multi-language scenario.
research in ways of combating misinformation, research and analyse the policy that should be proposed to combat misinformation.
Joint research
I would like to collaborate with EDMO as a networking opportunity to meet researchers, practitioners and stakeholders with which to start scientific collaborations and project proposals. Furthermore, I would like to know more about the research carried out in Europe in relation to mis- and disinformation, and of the tools and services being developed.

Machine Learning and NLP

Don't know. As far as I can see is difficult to shape a clean research line

## 4 Collaborative aspect of research conducted about disinformation in the EU

A part of the survey also addressed collaborations already taking place. First, we asked about in how many projects related to disinformation, the participants were involved in. Figure 8 shows, that most researchers have been involved in more than one project. Figure 9 shows that also most researchers collaborate with other disciplines. Figure 10 shows that the disciplines, the researchers collaborate mostly with, are Computer science/Informatics, Sociology/ Political science and Media studies/ Communication/ Journalism studies. However, none of the disciplines was never mentioned. Figure 11 shows how many different disciplines have been mentioned per participant. Most researchers collaborate with more than one discipline. These figures show, that collaboration within disinformation research is already taking place to a large extent and across many disciplines. This provides a good context for interpreting the findings presented in the third section. Even though collaborations are already established, the participants call for even more opportunities and facilitation of these collaborations.

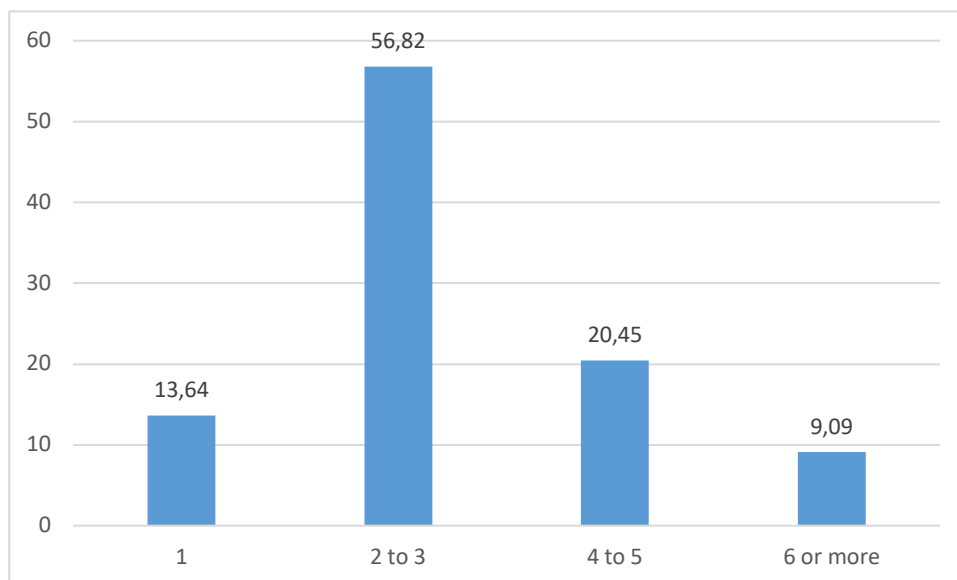


Figure 8: Number of research projects related to disinformation participants have been involved in (N=44)

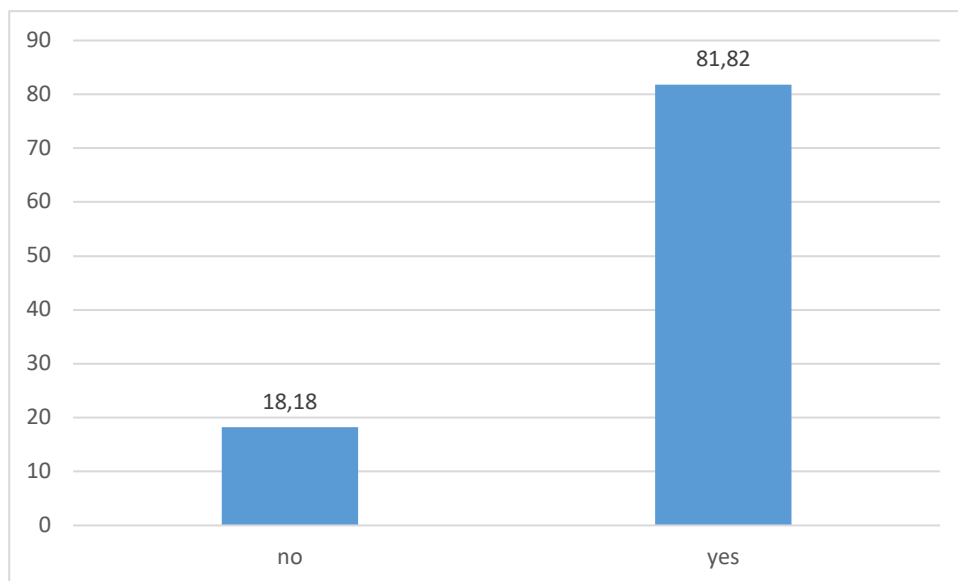


Figure 9: Collaboration with other disciplines? (N=44)

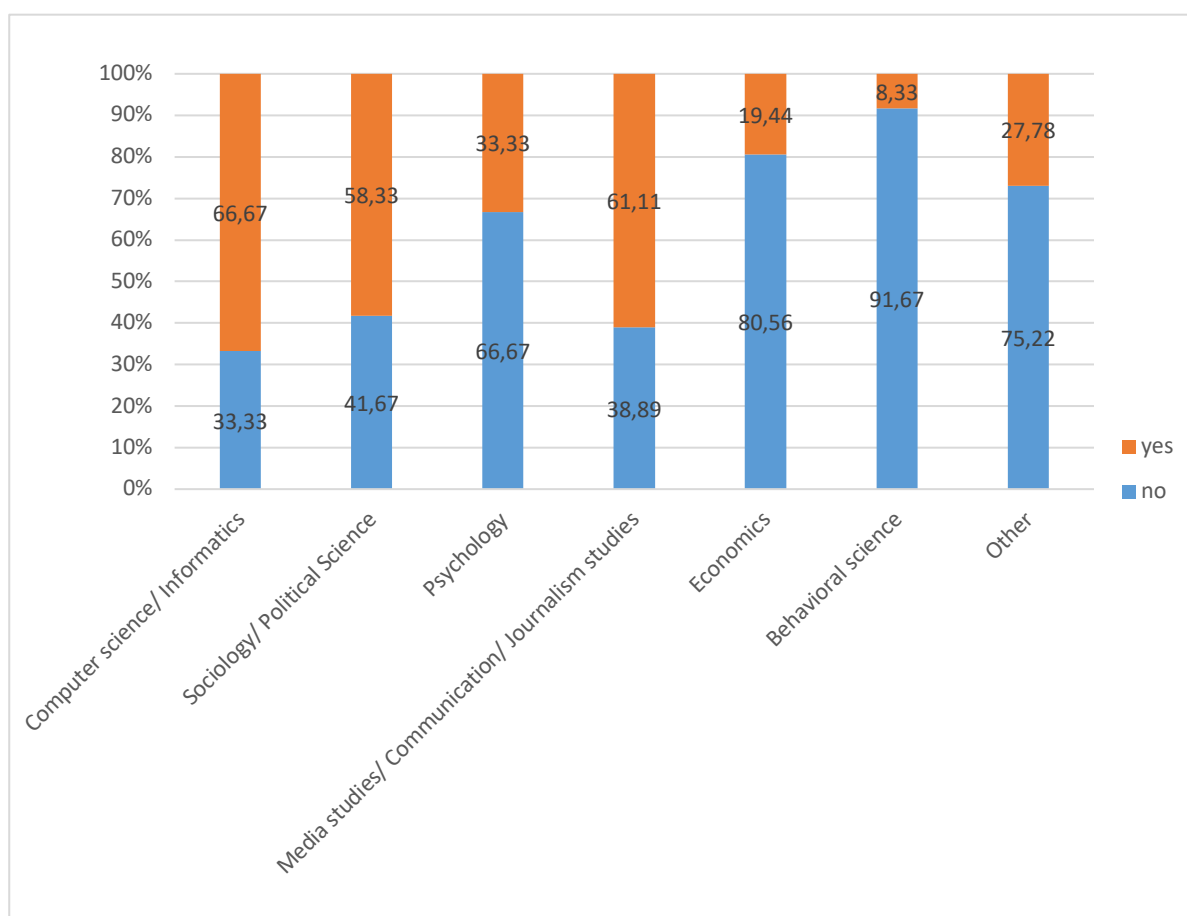


Figure 10: Disciplines participants collaborate/ collaborated with (N=36, multiple answers)

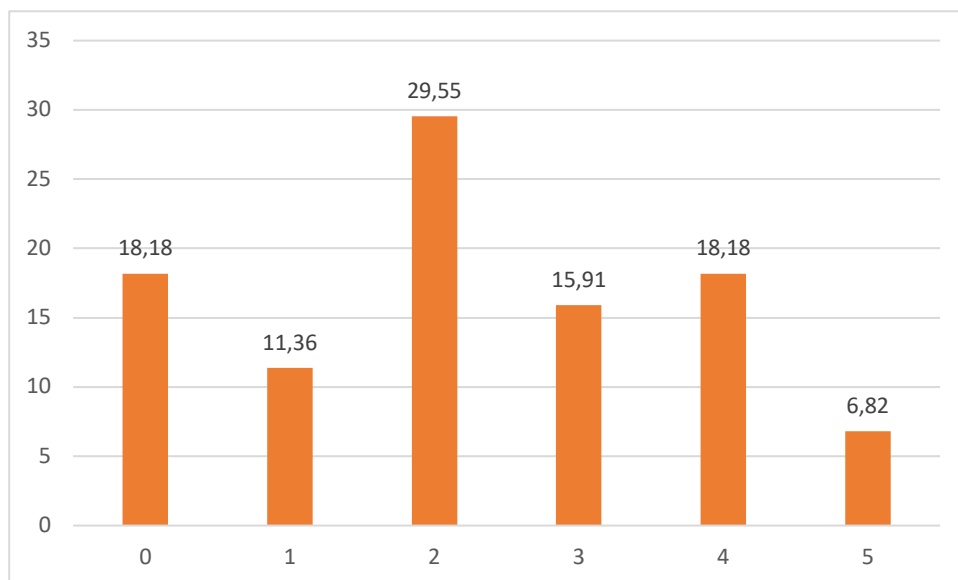


Figure 11: Number of disciplines participant collaborates/ collaborated with (per participant, N=44)

## 5 Institutions addressed by the participants

This section supplements information about the list of organisations and institutions included in IV.D.B. Figure 12 shows the number of institutions mentioned by the researchers (21 of the 44 participants answered the open question). Most researchers mentioned more than one institution and up to 14. These mentions in addition to the own research institution of the respondents built in addition to the institutions identified in the repository of scientific articles (IV.D.A) the basis for the list.

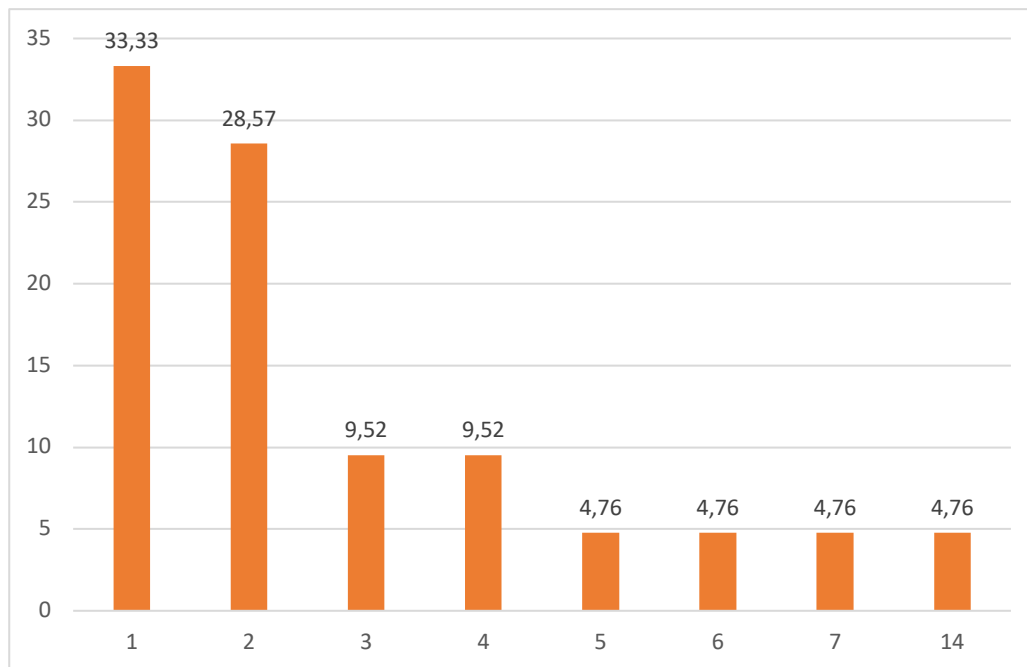


Figure 12: Number of institutions relevant for disinformation research mentioned (N=21)

## 6 Research addressed by the participants

Part of the survey also addressed the research focus and methods used by the researchers as a source of information to provide the option to identify common interests and research gaps. Table 2 lists the main focus of research of the participants in their own words as they answered the following question: “In some sentences, what is the main focus of your research on disinformation and/or misinformation?” The comments show that there is a wide range of topics addressed and methods used, highlighting the complexity of the field and also the difficulty to identify main areas of interest.

Table 2. Main focus of research on disinformation – open answers

to develop data-driven models of complex systems, develop innovative mathematical models and computational tools to better understand, anticipate and control complex phenomena (information diffusion, opinion dynamics, epidemic modeling, network medicine)
analyzing the health infosphere
Artificial Intelligence, Machine Learning, Multimodal and Fusion technologies, Natural Language Processing applied to disinformation and malinformation domains

Automatically identifying fake news through computational and AI-based methods
cognitive factors / trust in reliable information / spread on social media
countering disinformation
Create systems to automatically identify disinformation on social media
Credibility detection in social media, Multimodal fake news detection, Detection of fake news and conspiracy spreaders, Emotion-based false information detection
Currently I am mostly interested in disinformation around climate change
currently the economic cost of disinformation or fake news
Detect fake news
Detection and monitoring
Detection of fake news
Digital/Media literacy; Didatisation of false information (how to identify and deal with false information); Children and youth
Effects on common people; what drives people to fall for disinformation in the online media environment
Fact-checking technology and journalistic practices
Fake news in branding
Formal models of source trustworthiness assessment
Generally on the links between semantics (e.g., named entities, relations, etc) and fake news. Fact checking is also interesting to me.
Health and medicine
focus mainly on deepfake phenomenon, its position in online and TV environment and the possible and real impact on audience, structural and linguistic aspects of disinformation.
issues related to mis- and disinformation; quantitative and computational approaches to the investigation, characterization and detection of social bots, and of their role in spreading mis- and disinformation. investigate and develop solutions for detecting coordinated inauthentic behaviors (CIB), for tracking the spread of mis- and disinformation, and for evaluating the effectiveness of platform interventions (e.g, bans, warning labels, etc.) against mis- and disinformation.

Identifying fake news on social media
Improve Text Mining, Machine Learning methods and NLP.
Information production-consumption, media, education of journalists, interaction media-technology-law, disinfo during COVID, multidisciplinary focus on disinfo, quantitative surveys and qualitative research
Mathematical structures for the automatic detection of disinformation items/practices
Media effects of disinformation
Media Verification, social network analysis, AI, computer vision
Medical fake news
problem of disinformation in social networks from a more pragmatic point of view. With respect to the users that spread disinformation, look at the problem in a scenario where information on these users can vary (users with a lot of posts, bots, users with a small number of posts) and try to automatically detect these users with these constraints. In the task of identifying if a post contains misinformation, focus on evaluating the longevity of the detection systems and how they can be updated if they start to lose performance.
explore the typology of disinformation. examine the dynamics of spread of disinformation on social media, through network analysis. interested in researching the effects of media literacy.
Polarization, Echo Chamber, public influence, platforms' feed algorithm
policy
political disinformation; online media and the sharing of disinformation (fake news); structural aspects of conspiracy theories and disinformation narratives
Science communication and implications of science for politics and society
social consequences of disinformation, algorithmic bias in disinformation spreading
study how social media can have an effect on spreading disinformation and what are the characteristics of this phenomenon
Studying effects and corrective efforts (i.e, deepfakes)
Text analytics (stance detection) and network analytics (spread of information)



understanding the social impact of misinformation and strategies for overcoming it

focusing on research and development AI-based solutions to support disinformation monitoring, detection and characterization. research on algorithmic auditing, i.e., external auditing of algorithms used by social networks, like recommender systems and their tendencies to support disinformation spreading. particularly focus on providing support to local fact-checking organization with utilization of multi-lingual/cross-lingual techniques.

We also asked on which aspect of disinformation the researchers focuses on: “Which of the following categories describes your research on disinformation best? If your research focuses on more than one aspect, click all answers that apply” – the potential answers were: “disinformation detection”; “spread or propagation of disinformation (distribution)”; “analyzing exposed audiences (target)”; “analyzing actors who spread (creator/ spreader)”; “analyzing platforms on which disinformation spreads (medium)”; “analyzing characteristics of disinformation (content)” and “Other, namely: \_\_\_”. Findings are presented in Figure 13. The figure shows that from all the different aspects, the target aspect is the one least focused on. Most interest is in “content” and “distribution” of disinformation. Figure 14 shows how many of these aspects were covered by each participant. Most researchers address more than one aspect in their research.

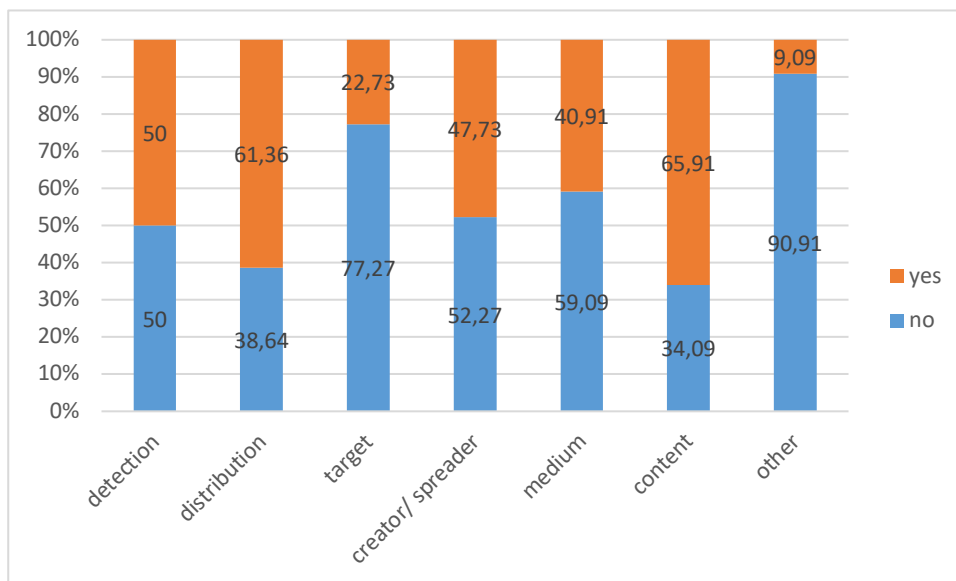


Figure 13: Research focus by aspects of disinformation (multiple answer, N=44)

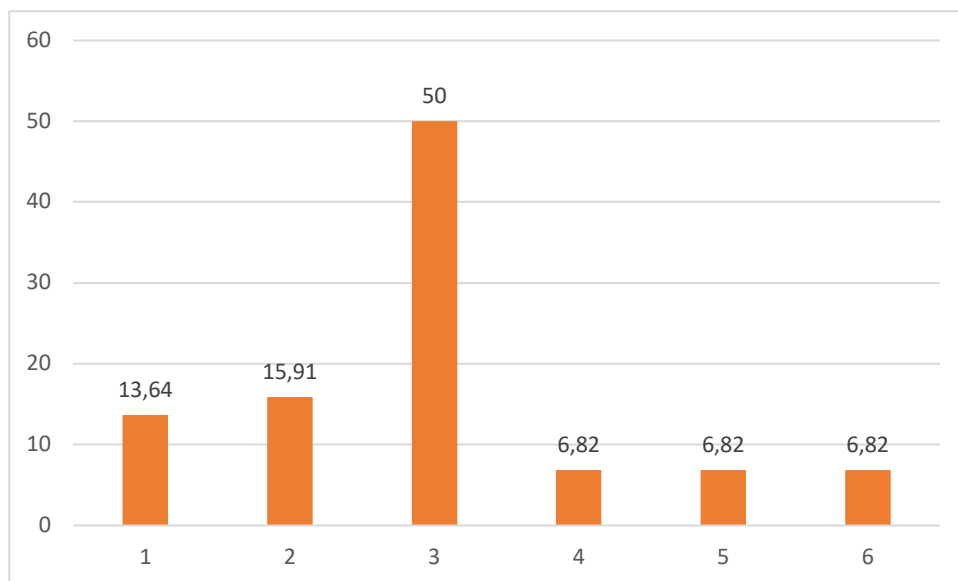


Figure 14: Number of aspects covered in the research per participant (N=44)

In addition to the aspect of disinformation the research focuses on, the survey also addressed the issue of which topic is addressed by the researchers. Figure 15 shows the findings. All listed topics were addressed by the researchers, with “physiological effects” being least addressed and “politics” the most. Figure 16 shows how many topics were addressed by each participant, presenting that most researchers address more than one topic.

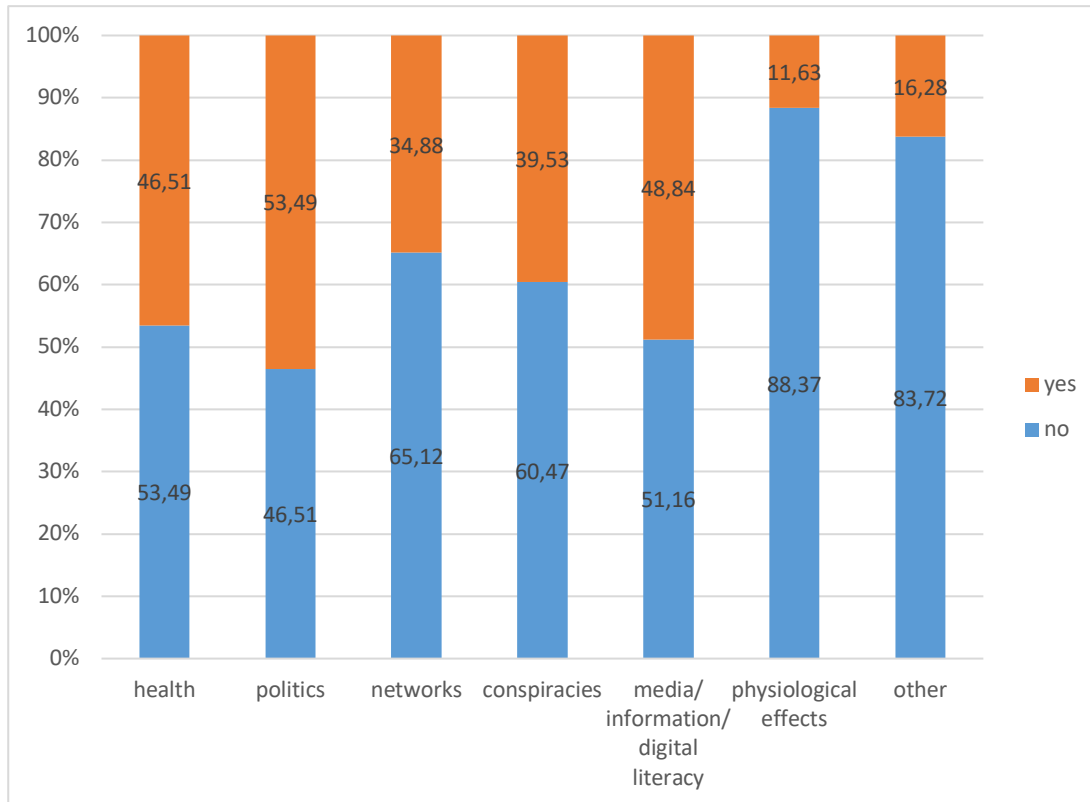


Figure 15: Topics addressed by the researchers (multiple answers, N=43)

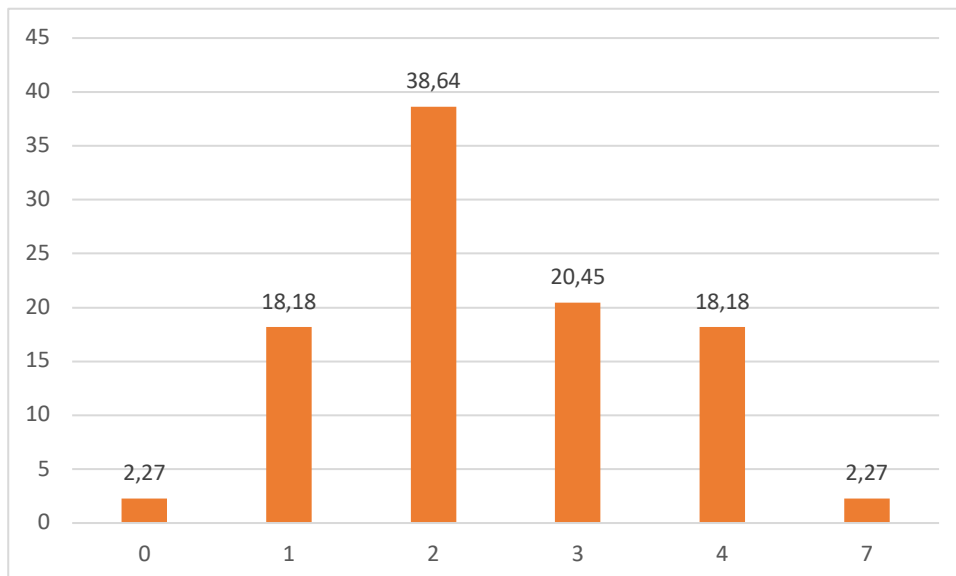


Figure 16: Number of topics addressed by the researchers (per participant, N=44)

The survey also asked more specifically which methods were used in studying disinformation: “Please describe in detail which analytical methods you have used in

your research on disinformation”. Table 3 presents the open answers. The comments also highlight the diversity of applied analytical methods and data collection methods applied in the field –with quantitative and qualitative approaches from experimental to survey data and machine learning methods.

Table 3. Applied methods

analyze social media, especially Facebook, Twitter. emphasis to Google News and Wikipedia. Various Internet tools are helpful
AI, Social Network Analysis, Computer Vision, Information Retrieval
analysis of the messages, their impact, the method of propagation and how this has influenced the economic cost for companies and institutions.
Artificial Intelligence & natural language processing algorithms
Iquantitative and computational methods. frequently leverage graph theory and network analysis, natural language processing, machine learning and artificial intelligence, data science, causal inference.
Classical ML methods (e.g., SVM, Random Forest, XGBoost) and neural networks (CNN, Bi-LSTM, Transformers). Additional methods include sentiment analysis, named entities and slot filling.
Content analysis / Network analysis / Online survey to internet users / Focus groups to internet users
Content analysis, qualitative and quantitative interviews
deep learning, machine learning, graph methods, social media analysis, emotion detection, opinion mining, natural language processing
multiple analysis techniques For example, structural equation models were developed with online users' responses to surveys. While using online reviews posted in different social media networks, the tone, valence, and content were qualitative and quantitative analyzed.
Ethnographic studies: interviews, observation
Experiments, Surveys, in-depth interviews, focus groups
experiment, content analysis
Experiments, content analysis, interviews
Experiments; public opinion surveys; content analysis
Formal models, simulation, algorithmic modelling

Graph theoretical topological structures and dynamics
individual based models, content analysis, experiments, social media data analysis
Machine learning
Machine learning classifiers. Word2vec embeddings, sentiment analysis, emotion recognition.
Machine Learning, Deep Learning, Feature Selection, Feature Extraction
Machine learning, mainly based on text classification (BERT type models), and computational network analytics.
Machine learning, network analysis
Natural language processing, transformers, deep learning techniques, artificial intelligence
Network analysis, information source classification,
Network Models, data-driven modeling of complex systems, percolation
Quantitative analysis on twitter data .Extraction of common text mining features such as sentiment, entities and parts of speech from disinformation in Twitter and exploratory analysis of the data. Machine learning and deep learning to the identification of unreliable users and unreliable tweets
Quantitative and qualitative surveys, text and media output analysis, AI tools, and more...
quantitative content analysis, structural analysis, linguistic analysis, survey
SISM (Social impact in social media)
social media data analyses (including Natural Language Processing and Social Network Analysis), Computational/Agent-based modeling
stakeholder and user surveys and interviews, desktop analysis
survey, digital methods
Survey; Workshops (group activities); Outcomes: Handbook for teachers; false information repository
surveys, content analysis, data analysis (through software)
textual information and network structures
Traditional Text Mining Methods and Deep Learning (RNN and Auto-encoders)

mostly AI-related techniques - data analysis together with machine learning to identify and analyze disinformative content.

collect webpages from search engines and code them for intrinsic information quality and then content analysis to look for alignment with scientific consensus

Finally, with regard to the research focus of the participants, the survey asked to comment on research gaps: “In your opinion, which areas or aspects of disinformation research are neglected within Europe?” The answers are presented in Table 4. The answers show, that researchers perceive a gap in various areas – for example with relation to audiences (e.g. children), topics (e.g. sexuality; science), methods (e.g. multi modality) and data collection/ analysis (e.g. aspect of languages).

Table 4 Research gaps within Europe identified by the participants

contextual factors of media systems, political, economic, societal contexts, policy context
Don't know
deepfake technologies and videos, strict and publicly known differentiation between trustworthy media and disinformation media
AI-based detection/characterization/mitigation of disinformation in the whole spectrum of European minor languages. The most of research focus on English language or other non-European languages (Chinese, Arabic). Also the existing tools (also those used in very large online platforms) support primarily English. (Semi)-automatic approaches to address disinformation in local European low-resource languages therefore represent a significant research challenge.
The wider context of disinfo success: erosion of trust, social cohesion, social rewiring, increasing tech/digital complexity not reflected in the education process (of kids, journalists, lifelong upskilling, insufficient explanatory function of mediators (state, media, experts, scientists...), dilemmas of politicians spreading disinfo via public media - impact and mitigation - legal context. Psycho-social research: from researching individual psycho mindset, individual and societal needs and vulnerabilities, typology to communities and socio-historical influence Lack of longitudinal multidisciplinary studies
Talking about mis- and disinformation (Fake News labels) and implications
Its impact on children and youth
gender and sexuality

I don't believe there are serious research gaps
Knowing the alternatives that can reduce misinformation.
Science
source trustworthiness
Health-related
the cost to democracy and the economy
No idea
a lot of the research is still focused on English and local languages are ignored
There is some prominent research on prebunking and psychological inoculation in the UK, not sure how much attention it gets in Europe
Consumer manipulation by disinformation
military use of disinformation, content analysis of disinformation, narrative patterns
AI-generated disinformation, motivations / goals of misinformation
the role of platforms and the regulation of content online
I think areas related to behavioural sciences could be reinforced
structural analysis of disinformation narratives
Creation of reputation of authors / editors.
Media and Digital Literacy to educate users online and what information to believe.
policy that went into the balance "user privacy" and combating misinformation.
Actually, my impression is that all aspects should be tackled in a more unitary way all over Europe and beyond
Quantification of the exposure and effects of both mis- and disinformation (e.g., do social bots have any effect?) and of the interventions deployed to contrast them. Being able to quantify exposure and effects would allow prioritizing interventions on those issues that are more dangerous (i.e., largest exposure and potential effects).
All, the current focus is totally badly flawed. Looking at fake news and not at the main changes in the information ecosystem,
trust on reliable information

## 7 Relation to fact-checking

The survey also addressed how the research of the participants is related to fact-checking. The findings show, that only about half of the participants' research is related to fact-checking (Figure 17), if so, that fact-checks are often used to identify disinformation (Figure 18) and that fact-checks from more than one organization is used (Figure 19). That is, fact-checking is used by a substantial amount of researchers in their work and provides a basis for conducting research and that it is more common to combine sources than to rely on single fact-checking organisations.

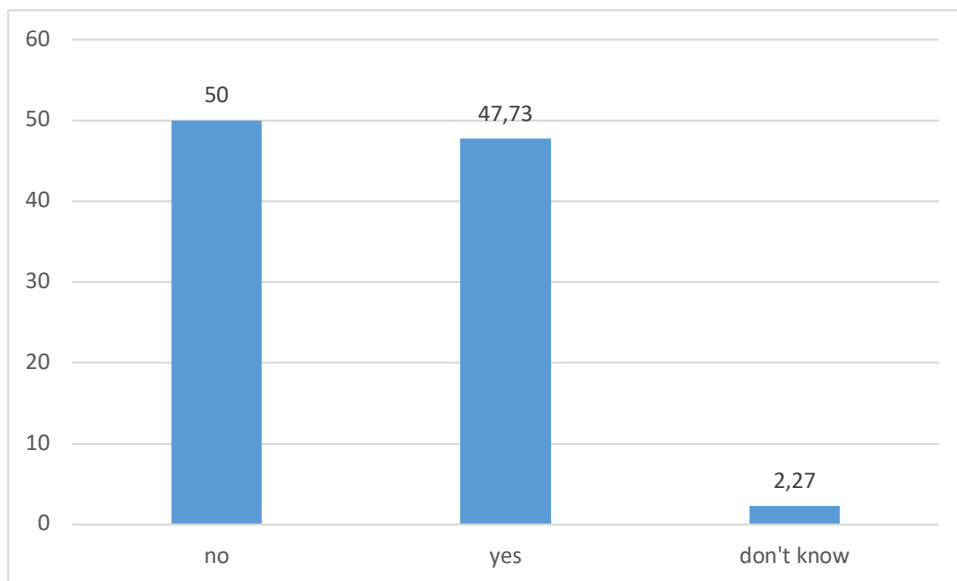
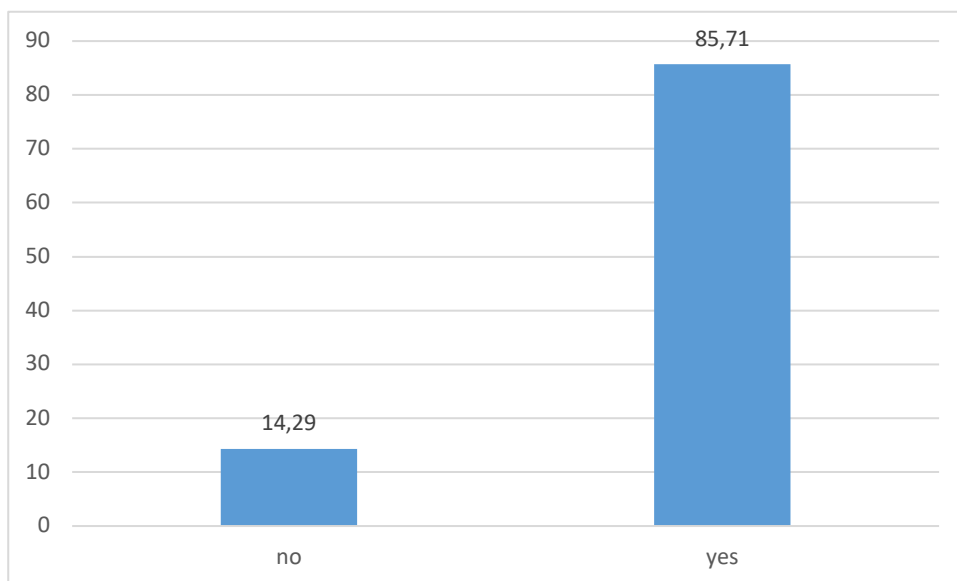
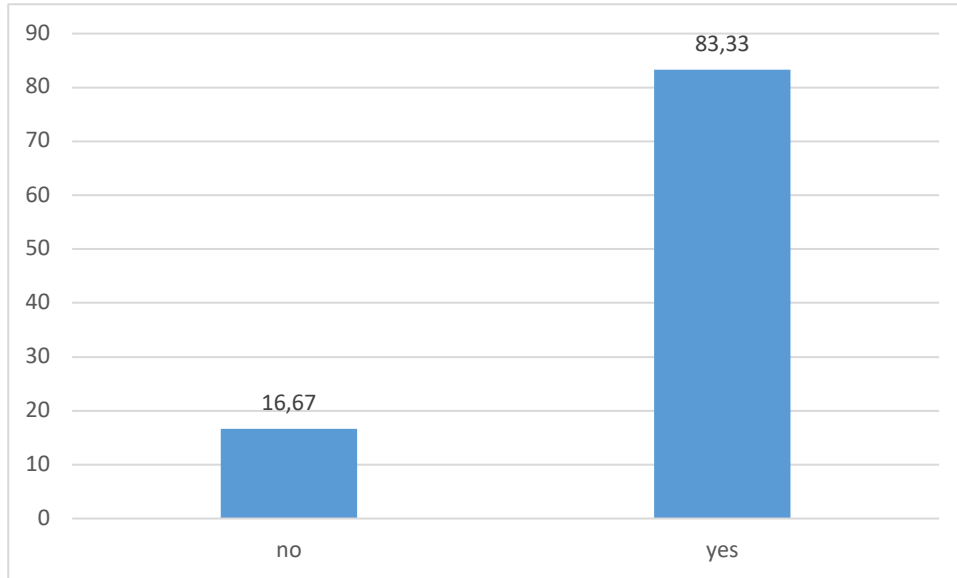


Figure 17: Research related to fact-checking? (N=44)





**Figure 18: Fact-checking used to identify disinformation? (N=21)****Figure 19: Fact-checks from more than one institution used? (N=18)**

## 8 Research within the EU

The survey also aimed at giving an insight in researchers' perception of different regions within Europe with regard to research on disinformation. We therefore asked whether they perceive some regions respectively countries to be underrepresented and if that is the case, which ones these are. Figure 20 shows that most researchers are not aware of underrepresentations or have difficulties to name them indicating an in general good coverage. Table 5 lists for which regions and countries an underrepresentation was perceived. As one underrepresented region East Europe is mentioned several times.

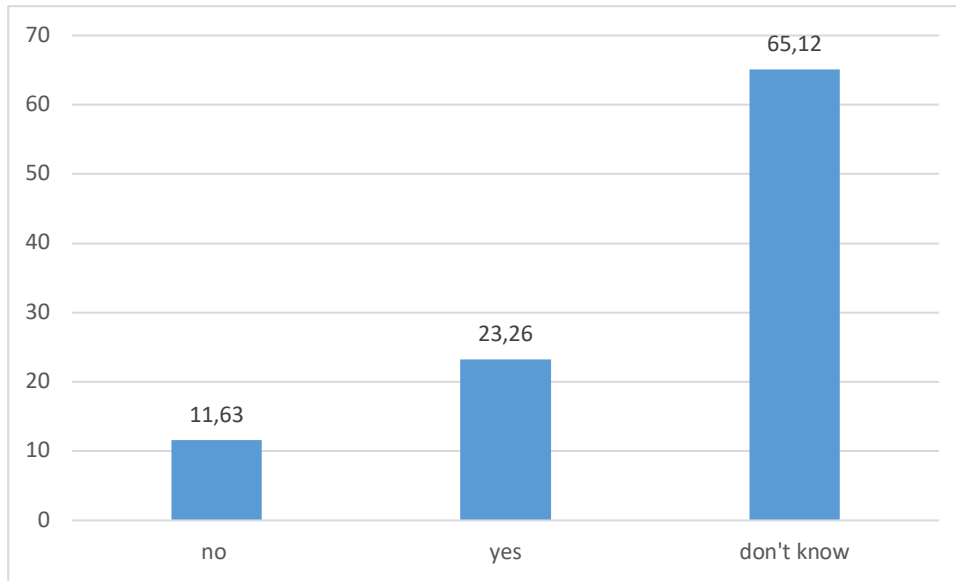


Figure 20: Are there underrepresented countries within the EU? (N=43)

Table 5 Underrepresented countries mentioned if underrepresentation was perceived in general

Central Europe (including Slovakia) is facing an extensive amount of disinformation. At the same time, the citizens in these countries are especially susceptible to believe disinformation and influence their decisions (political, health-related). The governmental plans to address hybrid threats are only emerging or have been proposed only very recently. Overall falling behind is present in disinformation research as well.
Baltic Countries: Estonia, Latvia, Lithuania, Balkans: Croatia, Slovenia, Serbia, BiH, Montenegro, Bulgaria
Eastern European countries/Southern European countries
eastern European countries; Nordic countries
Germany, Greece
Croatia, Switzerland, Poland, Hungary, Malta
Romania, Bulgaria, Austria, Germany, Switzerland, France, Ukraine, Serbia, Albania, Macedonia, etc
most of the non-english speaking countries
east Europe countries are usually not as well represented as France, Spain or Italy. Smaller countries such as Denmark, Netherlands, Belgium and so on are usually not enough represented as well.

Most of EU countries

## 9 Funding sources for research

The survey also addressed funding sources of the participating researchers. Figure 21 shows that researchers use public and private funding sources, but mainly national and not international ones. Figure 22 shows that most researchers only have one funding source.

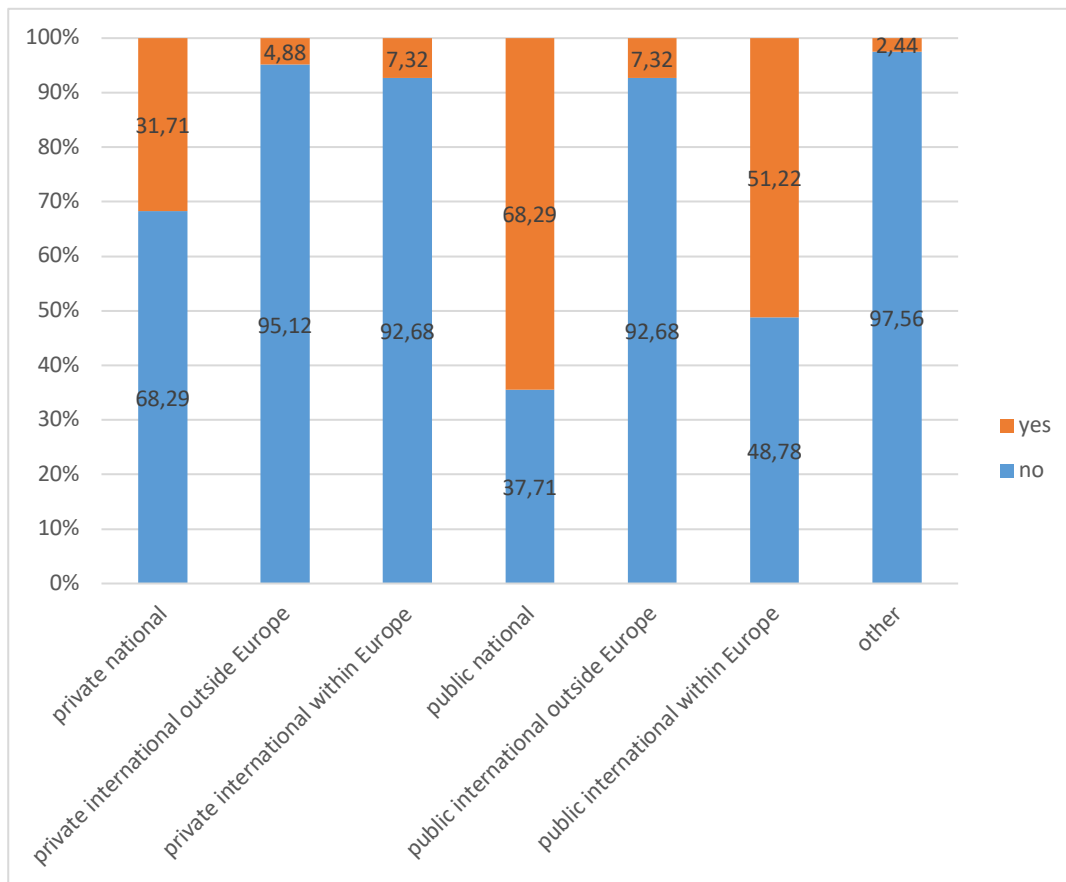


Figure 21: Funding sources for researchers (multiple answers; N=41)

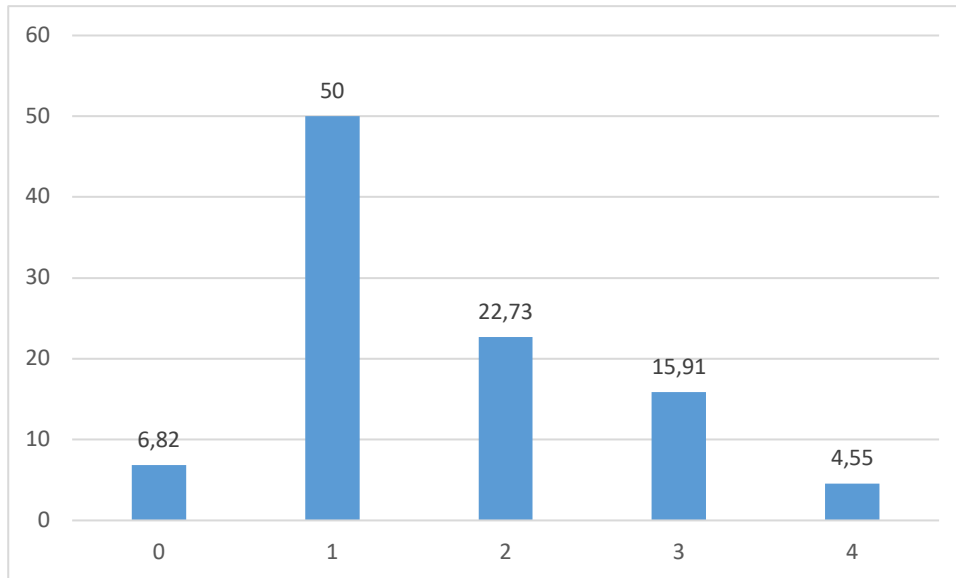


Figure 22: Number of funding sources mentioned (per participant, N=44)

## 10 Concluding remarks

The survey covered different aspects of research on disinformation within Europe, showing that research focus and topics as well as methods widely vary. The results can be used as a starting point to address researchers' needs within EDMO, to identify common interests and methods and to foster collaboration.

For the interpretation of the results, it is important to notice, that even though the survey participants were invited systematically, the approach and design of the survey might have an influence on the answers. This is also the case with regard to non response. Only about 21% of all invited persons participated in the end. So the picture shown mainly results from active researchers that might be more involved in collaborations or focus on specific areas or research.