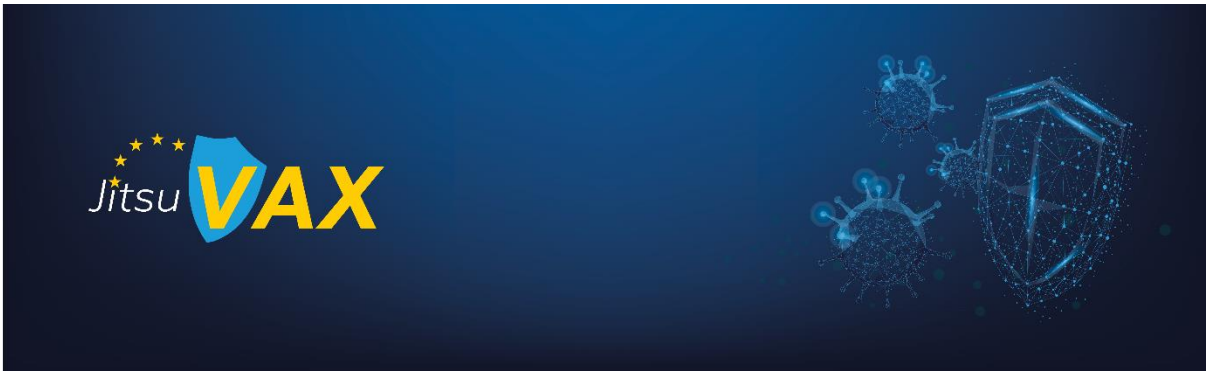

JITSUVAX:
Jiu-Jitsu with Misinformation in the Age of Covid

The COVID-19 pandemic and vaccine hesitancy: A cross-national comparative overview

(with special regard to Slovenia and Croatia)

March 2024

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Summary

This report deals with the COVID-19 pandemic and vaccination uptake from internationally comparative and sociological points of view. Already a glimpse at the basic data regarding the pandemic and the relative numbers of infections and deaths shows that the pandemic did not affect all countries in the same way. A clear division appears between Eastern and Central European countries, such as Bulgaria, Hungary, Croatia, Czechia and Slovenia, and Western and Northern European countries, such as the Netherlands, Denmark, Finland and Germany. The former show a much higher relative number of deaths than the latter. We can observe a very similar geographical division in the data on the COVID-19 vaccination uptake, notably in the uptake of additional, booster shots. The presented analysis attempted to observe those differences and identify possible sociological explanations.

While some countries showed significantly higher vaccine hesitancy than others already before the pandemic (e.g., Malta, Latvia, Slovenia, France), those countries do not correspond to the most COVID-19 vaccine-hesitant countries. The reasons for this are multifaceted and complex. In the literature, several explanations can be found for the lower vaccine uptake in Eastern Europe, such as vaccine availability, exposure to misinformation, trust in institutions and scientists or even a post-communist legacy. However, none of these can fully explain the differences in the international comparison. Therefore, this analysis included a variety of publicly available empirical data in order to find additional explanations.

Data on levels of trust in legal systems, political institutions and scientists in individual countries clearly correlate to the percentage of the population vaccinated against COVID-19, especially when taking the uptake of a booster vaccination into account. Countries with lower levels of trust in political institutions and the healthcare system have a smaller share of people vaccinated against COVID-19. Further, data on scientific literacy and attitudes to science, scientists and conspiracy thinking were visible. While some countries with higher levels of COVID-19 vaccine hesitancy do appear to have lower levels of scientific literacy and more challenging attitudes towards science and scientists, we were unable to identify the same clear geographical division as for the COVID-19 vaccine uptake. Similar conclusions can be made about the impact of people's satisfaction with the measures their governments took to measure the pandemic. These data only offer limited explanations and show some indirect connections that could influence the vaccination rates, meaning that clear explanations were impossible. In other words, factors such as trust in institutions, attitudes towards science and scientists, scientific literacy and satisfaction with national measures do play a role vaccine uptake, but it is hard to determine how strong is this role and in which way they are impacting one another.

The research analysed two case studies – Slovenia and Croatia – and explore the processes of vaccination, media and political responses to the pandemic and the specific political context. The analysed cases show that it is difficult to generalise all of the reasons for COVID-19 vaccine hesitancy. The findings must be discussed in a specific interdisciplinary interpretative framework.

Scope and purpose of this document

The first part of this report discusses the COVID-19 pandemic and vaccine hesitancy in Europe, specifically in the EU member states. Furthermore, two case studies are presented – Slovenia and Croatia. These case studies offer more detailed insights into the processes and circumstances that have influenced the uptake of COVID-19 vaccination and attitudes regarding it. Alongside existing research, media reports and public opinion data are additionally analysed.

In the last part, question of COVID-19 vaccine uptake and hesitancy among healthcare professionals, chiefly focusing on the cases of Slovenia and Croatia, according to available data.

Project overview

Vaccine hesitancy—the delay or refusal of vaccination without medical counter-indication—has been cited as a serious threat to global health by the World Health Organization (WHO), attributing it to misinformation on the internet. The WHO has also identified Health Care Professionals (HCPs) as the most trusted influencers of vaccination decisions.

JITSUVAX will leverage those insights to turn toxic misinformation into a potential asset based on two premises:

1. The best way to acquire knowledge and to combat misperceptions is by employing misinformation itself, either in weakened doses as a cognitive "vaccine", or through thorough analysis of misinformation during "refutational learning".
2. HCPs form the critical link between vaccination policies and vaccine uptake.

The principal objective of JITSUVAX is to leverage misinformation about vaccinations into an opportunity by training HCPs through inoculation and refutational learning, thereby neutralizing misinformation among HCPs and enabling them to communicate more effectively with patients. We will disseminate and leverage our new knowledge for global impact through the team's contacts and previous collaborations with WHO and United Nation International Children's Emergency Fund (UNICEF).

Background

This report is aimed at offering a wider, sociological perspective on the questions of vaccine hesitancy and vaccine refusal in order to complement the existing research within the Jitsuvax project. The main focus is on the COVID-19 vaccination and the differences between Eastern and Western Europe in terms of vaccine hesitancy from the sociological perspective.

Significant differences in the course of the pandemic between Eastern (and some Central) European countries and the rest of Europe can be observed. In general, Eastern European countries are some of the most affected by the pandemic in terms of relative number of deaths. This divide between Eastern and Western Europe is also reflected in the shares of people who got vaccinated against COVID-19. While reasons for this are multifaceted, the existence of such clear divide demands more attention from sociological aspects through internationally comparative approach.

We approach this through cross-national comparative analysis based on the publicly available data and a further case-study analysis of Slovenia and Croatia.

Materials & Methods

Study is based on the review of existing literature and secondary data analysis from publicly available databases. Data used: Worldometers, Johns Hopkins University: Our World in Data, European Center for Disease Prevention and Control, European Social Survey, Eurobarometer, Slovenian National Institute for Public Health (NIJZ), Croatian National Institute for Public Health, Valicon Public Opinion.

Ethical consideration

Data used in this research was anonymised and obtained from publicly available databases and as such did not require specific ethical approvals or treatment.

Results

The following chapters present the results of our analysis. The first chapter focuses on the variations in COVID-19 vaccination rates between different European countries. To place this in perspective, indicators of the severity of the COVID-19 pandemic in different European countries and attitudes to vaccination prior to the pandemic are also considered.

Chapter 2 shows an overview of the sociological explanations of the variations described in the first chapter. The theoretical part offers a review of existing literature on this topic. The empirical part analyses indicators such as trust in institutions and scientists, scientific literacy and attitudes to science and scientists, conspiracy beliefs and public attitudes towards vaccination.

In chapters 3 and 4, case studies of Slovenia and Croatia are presented. In the last chapter, the findings are discussed within an interpretative framework of anomic and post-factual syndrome. We further connect these findings with the existing Jitsuvax findings.

1. Consequences of the COVID-19 pandemic and vaccine hesitancy in Europe

1.1. Indicators of the severity of the COVID-19 pandemic in different European countries

Although the pandemic affected virtually every country in the world, not all were impacted to the same extent. The table below shows numbers of COVID-19 deaths, cases and tests in EU countries as on 23 June 2023.

Country	Deaths/ 1M	Cases/1M	Tests/1M
Bulgaria	5,613	191,214	1,645,916
Hungary	5,088	229,343	1,186,160
Croatia	4,501	313,838	1,381,652
Czechia	3,987	432,405	5,330,127
Slovakia	3,877	341,903	1,361,261
Lithuania	3,641	496,378	3,930,334
Greece	3,591	590,827	9,909,078
Romania	3,585	179,015	1,451,500
Latvia	3,451	529,057	4,260,855
Slovenia	3,417	646,867	1,370,382
Poland	3,170	172,701	1,027,563
Italy	3,165	429,576	4,534,503
Belgium	2,945	411,437	3,172,590
Portugal	2,651	551,489	4,549,993
Spain	2,603	297,631	10,082,298
France	2,555	611,862	4,139,547
Austria	2,485	670,647	23,302,116
Sweden	2,399	265,399	1,908,301
Estonia	2,270	468,421	2,815,855
Germany	2,078	458,119	1,458,359
Luxembourg	1,918	498,091	7,140,959
Malta	1,894	267,813	4,822,669
Ireland	1,798	341,289	2,606,161
Finland	1,786	266,788	2,178,453
Denmark	1,499	545,370	22,159,207
Netherlands	1,336	500,270	1,509,718
Cyprus	1,115	540,184	7,879,860

Table 1: Main indicators of pandemic consequences in the European Union as on 23 June 2023. Data from the Worldometers Coronavirus database[1].

The number of deaths per 1 million population reveals significant differences between countries. Bulgaria, for example, recorded almost five times as many deaths per capita than Cyprus or the Netherlands. We can observe that all Eastern European countries, except for Estonia, had registered over 3,000 COVID-19-related deaths per million people. This is also high in the global context given that just 25 countries in the world had recorded a death toll of 3,000 COVID-19 related deaths per million.

Still, it is important to note that international comparisons are somewhat difficult as statistics are not equally reliable in every country. Even within the European Union, definitions of COVID-related deaths might vary, despite efforts to coordinate them. The case of Slovenia, as will be elaborated on

[1] The table only includes EU member states, although some other countries might be worth including. The United Kingdom, for example, recorded 3,303 deaths per million population on 23 June 2023, with 359,404 cases per million and 7,628,357 tests per million. A case study of the United Kingdom is further presented in an article by Adam and Gorišek (2022).

later, shows some considerable discrepancies in data available in international databases. The data included in the Worldometer database, which are presented here, only count deaths that occurred in hospitals and elderly care facilities[2]. If we consider the official figure from the National Health Institute (NIJZ) which includes all deaths occurring within 28 days of a positive COVID-19 test, Slovenia counts around 4,400 deaths per million inhabitants. This significantly alters the rankings in the above table, with Slovenia becoming one of the top 4 most affected countries.

It is interesting to observe that those countries with the highest relative numbers of deceased did not also register the highest numbers of COVID-19 cases. However, the number of cases depends strongly on the number of tests and it is apparent that most countries with lower numbers of cases also performed fewer tests. We therefore identify the relative number of deaths as the most reliable indicator among the three presented.

In this regard, a clear trend is visible, which calls for further analysis – the Eastern and Central European countries (newer democracies) were affected significantly more by the pandemic than countries in the west and north of Europe. While the reasons for this are multifaceted and complex, similar patterns are visible in their COVID-19 vaccination uptake (Table 2, next chapter). This suggests that certain social, cultural and political factors may exist that influence people's decisions and behaviours regarding the pandemic and vaccination in individual countries.

1.2. International comparison of COVID-19 vaccination

The table below shows an overview of the COVID-19 vaccine uptake in the European Union as recorded by the European Centre for Disease Prevention and Control (ECDC) on 23 June 2023. The data show the percentage of the general population fully vaccinated, the percentage of adults aged over 60 who were fully vaccinated, and the percentages of adults who had got the first or second booster shot.

[2] At the beginning of the pandemic, authorities disseminated COVID-19-related data through press conferences, without a single portal or channel dedicated to data access. As a result, a group of professionals and volunteers formed to develop the COVID-19 Tracker, which collected official data on COVID-19 and presented it on a single portal. The data were intended for live tracking and modelling of the pandemic and prioritised the latest data available. The total number of deaths they portrayed (and as presented by some international databases such as Worldometers and Johns Hopkins University) is the sum of deaths of COVID-19-positive patients in hospitals and elderly care facilities. The data that include the deaths of all persons within 28 days of a positive COVID-19 test, based on the official death certificates, are issued by NIJZ with a delay of 1 or 2 weeks.

Country	Percentage of population fully vaccinated	Percentage of adults over 60 fully vaccinated	Percentage of population vaccinated with 1st booster	Percentage of population vaccinated with 2nd booster
Portugal	87.0	99.0	68.9	30.8
Malta	86.1	97.3	68.3	12.5
Italy	83.7	94.0	76.0	11.5
Ireland	81.1	100.0	61.1	25.2
Denmark	81.0	100.0	62.3	32.5
Iceland	80.5	100.0	68.8	17.4
Spain	79.3	96.7	56.2	20.0
Belgium	79.2	98.2	62.7	33.6
Finland	79.0	95.4	55.9	22.8
France	78.7	91.1	60.7	15.1
Germany	76.3	91.4	62.6	15.2
Norway	75.4	97.5	56.1	17.0
Austria	74.8	92.0	60.5	19.7
Cyprus	73.1	92.8	54.3	7.9
Greece	73.1	89.8	55.7	9.6
Luxembourg	72.7	91.2	57.9	12.4
Sweden	70.6	92.5	53.3	27.7
Average	69.7	86.2	48.8	13.2
Latvia	69.1	77.4	29.1	3.6
Netherlands	68.5	90.3	53.9	15.5
Lithuania	68.3	78.2	32.3	1.3
Czechia	64.5	86.0	40.9	7.5
Estonia	63.3	81.6	36.6	8.2
Hungary	63.2	81.9	39.8	4.3
Poland	60.0	76.1	33.1	7.7
Slovenia	56.5	77.3	30.8	3.7
Croatia	56.0	77.3	24.8	1.8
Slovakia	51.1	69.8	30.9	1.4
Romania	42.2	46.8	9.2	0.2
Bulgaria	30.1	38.5	12.0	1.6

Table 2: Overview of COVID-19 vaccine uptake in the European Union (with Iceland and Norway) by percentage of the population vaccinated (in the general population, in adults over 60) and by percentage of the population vaccinated with booster shots. Data from ECDC, accessed on 23 June 2023[3].

The table shows clear differences between countries in vaccination uptake. In general, three groups of countries can be distinguished – countries with the largest shares of fully vaccinated populations (between 75% and 87% of the population), countries with shares around the EU average, and countries with below-average shares of fully vaccinated populations (less than 69.7%). Observing other indicators, such as the share of vaccination among the older population and the uptake of booster shots, allows further distinctions to be made within these groups. We see that some countries like Ireland, Denmark, Iceland, Portugal and Belgium recorded a 100% (or close to that) share rate of vaccination of people older than 60. Those countries are also among the countries with a bigger share of the population having received the second booster shot. In this context, Sweden is an interesting example since while the share of vaccinated population is average, other indicators, especially the vaccination rate of the elderly and uptake of the second booster, place it in the group of the most vaccinated countries. Namely, it should actually be placed in the first group. The Netherlands should also be mentioned due to its relatively low vaccination rate among the general

[3] ECDC dataset does not include the United Kingdom. Data from Our World in Data (Johns Hopkins University) shows, that on 23 June 2023, 75,2% of UK population was fully vaccinated. While the database does not include data for other three indicators included in Table 2, data from UK Health Security Agency suggests that approximately 60% of population received the 1st booster shot. They further state that as of March 2023, 77.7% of the population eligible for it, received the fourth dose (2nd booster shot); however, it is unclear what that means in terms of the percentage of the population. The NHS report from 2021 notes that more than 90% of people over 60 are fully vaccinated (NHS 2023).

population, while showing relatively higher rates among older individuals, as well as high rates of booster vaccination. Taking all the indicators into account, this country belongs to the second group.

In contrast, there are significant differences in the group of countries with a below-average COVID-19 vaccination uptake. That is, we can identify two outliers – Romania and Bulgaria – where less than half the population had been fully vaccinated. The numbers are particularly low in Bulgaria where only 38.5% of the older population had been fully vaccinated. The cases of Slovenia and Croatia are interesting as well given that they record an almost identical share of the general (and older) population being fully vaccinated, whereas there is a significant difference in the uptake of booster shots.

The differences observed between the countries are enormous. For illustration, the share of the population of Portugal that received a second booster shot exceeds the share of the population in Bulgaria that is fully vaccinated. Further research focuses on exploring this division by analysing existing research and publicly available data using an internationally comparative sociological (and in some cases interdisciplinary) approach.

2. Sociological explanations for vaccine hesitancy during the COVID-19 pandemic

2.1. Attitudes to vaccination before the COVID-19 pandemic in Europe

Vaccination hesitancy did not start with the COVID-19 pandemic. Data show that differences in attitudes to vaccinations in various countries already existed before the pandemic. Research conducted in 2020 by the European Commission, Directorate General for Health and Food Safety, points to significant differences between countries in how people perceive vaccinations. In certain countries (Finland, Denmark, Hungary, Cyprus), over 80% of the population strongly agrees with the statement that vaccines are important. In comparison, in Latvia, Malta, Slovenia and France less than 60% of the population fully agrees with that statement. Similar differences can be found when asking individuals about their beliefs regarding the effectiveness and safety of vaccines.

Although differences are visible, no clear geographical distinctions are possible since representatives in various parts of Europe express varying attitudes. For example, Hungary and Croatia are among the countries where people hold the most favourable attitudes to vaccination, while Belgium and France rank among the countries with the smallest shares of the population believing that vaccines are important, effective and safe (European Commission. Directorate General for Health and Food Safety, 2020).

The same research, State of Vaccine Confidence in the EU, conducted in 2022 (European Commission, Directorate General for Health and Food Safety, 2022) measured the change in attitudes to vaccinations in general after the pandemic (data were collected between March and April 2022). General confidence in vaccines had dropped in most countries. However, this trend is more present in some countries (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Slovakia, Slovenia, Netherlands) compared to others (Austria, Belgium, Germany, Italy, Ireland, Luxembourg, Portugal, Romania, Spain, Sweden).

This shows that the COVID-19 pandemic has played an important role in the shaping of attitudes to vaccination in Europe. Further, the data suggest that there is a significant difference between most Eastern European countries (including Central European newer democracies) and most Western European countries. Nevertheless, some outliers are visible, namely the Netherlands, where confidence in vaccines dropped similarly as in Eastern European countries, and Romania, where the

trend is similar to that of Western European countries. We aim to further explore these geographical divisions.

2.2. Evidence from the literature

Many attempts have been made to explore the differences between vaccination rates in Eastern (and Central) European and Western European countries and to establish the sociological determinants of COVID-19 vaccination attitudes. Toshkov (2022) analysed the determinants of vaccine refusal in the European Union (the share of individuals declaring they will never receive a COVID-19 vaccination) based on a Eurobarometer survey conducted in May 2021 when vaccination campaigns were just beginning. The mentioned author is especially interested in the difference between Eastern and other parts of Europe[4]. The data clearly show that Eastern European countries show higher levels of vaccine refusal compared to countries in Southern and Western Europe. The author finds that the reasons for vaccine hesitancy do not vary much across the regions. Instead, there is a much higher prevalence of certain variables in Eastern Europe compared to Western and Southern Europe. A key variable is trust in the EU, the national and local governments, medical professionals and health authorities, which the author establishes to be positively correlated to vaccination intention. In contrast, people who trust the internet, online social networks and 'the people around them' tend to be more vaccine-hesitant. In addition, age and education play a more important role in Eastern Europe than elsewhere in Europe in vaccine hesitancy (the younger and less educated are more likely to be vaccine-hesitant). Franić (2022) analysed the same set of data and found similar results: the more educated, those who trust in institutions and science more and are more satisfied with the democratic principles are more likely to accept COVID-19 vaccination[5].

Fan et al. (2022) note that organisational factors like the availability and accessibility of vaccines along with the efficiency of vaccine distribution and administration play a role in people's willingness to become vaccinated but cannot be the main reason for the vaccination uptake observed in Eastern Europe. They point out people's worries with respect to the effectiveness and safety of the vaccine, as further fuelled by the rapid spread of misinformation through social media. They support this claim by noting the low levels of trust in government and the medical authorities based on Eurostat data.

Many other authors have connected lower levels of trust in institutions with lower levels of vaccination. A qualitative review conducted by Adhikari, Cheah and von Seidlein (2022) shows that the willingness to vaccinate against COVID-19 has been connected to different kinds of trust – trust in the safety and efficiency of the vaccine itself, institutional trust and trust in medical professionals. Syropoulos and Theofilos (2023) observed the European Social Survey data and saw that individuals who had received a COVID-19 vaccine or wanted to receive it reported significantly higher levels of trust in people, politicians, international organisations and science compared to those who did not receive the vaccine. Those vaccinated also show lower levels of belief in conspiracy theories.

[4] The countries are grouped into three regions: Eastern Europe, Western Europe and Southern Europe. Eastern Europe includes countries with a communist past and post-communist political culture. Southern Europe is characterised by lower levels of trust, economic development, and administrative capacities compared to the West. Western Europe comprises Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands and Sweden.

[5] Similar geographical divides can be observed also in attitudes towards democracy as people living in newer democratic countries in Europe (post-communist countries) are relatively more likely to have challenging attitudes towards democracy (are more inclined to authoritarian and populistic views) but also more likely to support conspiracy theories. Golob, Gorišek and Makarovič (2023) connect this to lower levels of social, cultural and economic capital.

Interestingly, they did not find a connection between ideology and religiosity as it occurred in some other studies (e.g., Popa et al. 2022). Paredes et al. (2023) researched the influence of institutional trust on individuals' COVID-19 vaccination intentions through an online survey in Spain. They found significant positive relationships between institutional trust and perceived vaccine safety and, along with that, the attitude toward the vaccine. Similarly, using a survey and focus groups in the UK Jennings and others (2021) established that individuals with lower levels of trust in the government and in the vaccination and those who hold conspiracy beliefs and believe in COVID-19 misinformation are less willing to be vaccinated.

Delia Popa et al. (2022) researched COVID-19 vaccine hesitancy in Eastern European countries and its relationship with health and vaccine literacy. They showed that individual perceptions play a significant role in the decision to vaccinate. The exposure to misinformation, amplified by the media, the community, and the healthcare and political system, shaped these perceptions.

Regazzi et al. (2023) analysed the European Social Survey data and found that people in Eastern European countries exhibit higher levels of conspiracy beliefs. These beliefs were associated with lower levels of trust in people, scientists and institutions, and with lower levels of satisfaction with life, the economy, government, democracy, education and the healthcare system.

Several authors researched the association between COVID-19 vaccine hesitancy in Eastern and Central Europe and the political history of those countries. Pronkina et al. (2023) explored the impact of institutional inheritance, specifically exposure to past Communist regimes, on COVID-19 vaccination decisions in European countries using data from the Survey of Health, Ageing and Retirement in Europe (SHARE). The study shows a positive correlation between individuals' life experience of communism and their decision to not be vaccinated. Social capital is identified as a possible factor influencing vaccination decisions. Further, the study does not make any distinction between the communist history of different countries even if the regimes were substantially different, for example between the Czech Republic and Slovenia. In another article, Martens (2023) hypothesises that historical communism is negatively associated with COVID-19 vaccination rates and that trust in the government is the main driver of it. The author observed this among European, Asian and African countries and found some evidence for the association between a communist history and lower vaccination rates. Nonetheless, the article fails to prove the role of trust in the government in this or establish other relevant explanations for this association.

Similar divisions between Eastern and Western Europe can be found in the general attitudes towards the pandemic. Eurobarometer studies show that the inhabitants of Eastern European countries were less satisfied with the measures taken by the national governments compared to those in Western European countries. Lacko et al. (2023) found similar patterns in their survey conducted in West Germany, East Germany, the Czech Republic and Slovakia. People in Germany reported higher legitimacy of government measures than people in other countries. However, people from East Germany were more likely to see governmental measures as less legitimate than people in West Germany. Authors connect this with the trust in government and the influence of the historical experience of communism[6]. This suggests that the recommendation to get the vaccination was not only perceived as a health-related, expert advice, but as political advice or a measure to tackle the pandemic. Therefore, specific country circumstances connected to people's attitudes towards democracy, government and overall satisfaction with political situation at the time of the pandemic influenced people's attitudes to vaccination and vaccination rates.

[6] The authors note that previous research regarding the differences in values between East and West Europe does not apply in the case of pandemic.

As revealed by this overview, several explanations can be found for the lower vaccine uptake in Eastern Europe. While some authors focus on the organisational aspects, such as the availability and accessibility of the vaccines and the efficiency of the vaccine distribution, they conclude that this cannot be the primary reason for the large geographical differences. On the level of individuals, authors find that the reasons for people's hesitancy regarding the vaccines are similar – the less educated and those with more trust in social media are more likely to be vaccine hesitant, whereas people with higher levels of trust in institutions are more likely to be vaccinated. In general, trust (in institutions and science) is most often mentioned as one of the determinants in decisions on vaccination and frequently offered as an explanation for the geographical division between Eastern and Western Europe.

2.3. Empirical data/findings

Based on the existing literature and research, the following indicators are most often connected to the lower vaccination rates in some countries: lower levels of institutional trust, trust in scientists and medical experts, scientific literacy, more commonly held beliefs in conspiracy theories, and individual specific features of the countries. In this chapter, we consider some empirical data connected to those findings (mostly public opinion data). It is important to note that this data can only be used as an illustrative insight into the complex issue and cannot sufficiently explain the differences and processes observed. The observed data is often inconsistent, meaning that the measured values of public opinion differ between different datasets and between different variables within one dataset[7]. Furthermore, the questions

European Social Survey: trust in institutions and interpersonal trust

While analysing European Social Survey data from 2020 (data collected between 2020 and 2022), we are first interested in patterns between trust in different institutions and general interpersonal trust and COVID-19 vaccination rates.

[7] While a considerable number of countries that are ranked at the bottom in scientific literacy (Romania, Bulgaria, Cyprus, Poland and Croatia) are also ranked among the highest in conspiracy thinking, these connections are less present in other dimensions, such as attitudes to science and scientists and interest in science. For example, Cyprus is among countries with the highest share of people interested in scientific discoveries and with an above-average share of people believing that overall influence of science and technology is positive or very positive (Eurobarometer 516). Cyprus also records above average COVID-19 vaccination rates.

Country	Trust in legal system (average)	Trust in political institutions (parliament, parties, politicians - average)	Trust in scientists (average)	Interpersonal trust (averag	Percentage of population fully vaccinated	Percentage of population vaccinated with 1st booster
Italy	5.2	3.5	7.1	5.0	83.7	76.0
Portugal	4.0	3.5	7.5	3.9	87.0	68.9
Iceland	6.1	5.3	8.0	6.6	80.5	68.8
Belgium	5.4	4.3	7.2	5.5	79.2	62.7
Germany	6.1	4.2	7.0	4.7	76.3	62.6
Ireland	5.7	4.4	7.2	5.6	81.1	61.1
France	5.2	3.9	/	4.7	78.7	60.7
Austria	6.4	3.7	6.9	4.7	74.8	60.5
Spain	4.4	2.6	8.2	4.5	79.3	56.2
Norway	7.7	6.2	7.5	6.8	75.4	56.1
Finland	7.5	5.8	7.8	6.9	79.0	55.9
Greece	6.3	3.7	7.3	4.3	73.1	55.7
Netherlands	6.8	5.5	7.5	6.5	68.5	53.9
Sweden	5.8	4.7	7.1	5.5	70.6	53.3
Czechia	5.6	4.2	/	5.3	64.5	40.9
Hungary	5.5	4.4	6.6	4.8	63.2	39.8
Estonia	6.3	4.3	/	5.8	63.3	36.6
Poland	3.2	2.3	6.6	2.9	60.0	33.1
Lithuania	5.2	3.5	7.2	5.0	68.3	32.3
Slovakia	4.0	3.1	6.3	3.9	51.1	30.9
Slovenia	4.3	3.1	7.1	4.7	56.5	30.8
Latvia	4.6	2.5	7.1	3.5	69.1	29.1
Croatia	2.9	2.5	6.5	4.7	56.0	24.8
Bulgaria	3.0	2.2	6.3	3.5	30.1	12.0
Average	5.3	3.9	7.1	5.0	69.6	48.4

Table 3: Average rates of trust in the legal system, political institutions, scientists and interpersonal trust (on a 0–10 scale) for different European countries (European Social Survey 2020) compared to the vaccination rates (ECDC 2023)[8]

Variables used in the table:

- Using this card, please tell me on a score of 0–10 how much you personally trust each of the institutions (0 means you do not trust an institution at all and 10 means you have complete trust):
  - **Trust in the legal system**
  - **Trust in political institutions**: combined average of trust in the country's parliament, trust in politicians and trust in political parties.
  - **Trust in scientists**[9]
- **Interpersonal trust**: Using this card, generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? (Score of 0 – 10, where 0 means you can't be too careful and 10 means that most people can be trusted).

[8] Only countries for which data in European Social Survey Round 10 are available are presented in the table. Data for UK became available only recently.
[9] Data not available for all countries.

All scores show the average level of trust.

Fully Vaccinated	**Trust in the legal system**	**Trust in political institutions**	**Trust in scientists**	**Interpersonal trust**
Pearson correlation coefficient	0.52895	0.47307	0.72203	0.41370
P value*	0.00393	0.00978	0.00003	0.02224

Table 4: Correlations between vaccination rate (percentage of population fully vaccinated) and trust in the legal system, political institutions, scientists and interpersonal trust (own calculations).

Vaccinated with 1st booster	**Trust in the legal system**	**Trust in political institutions**	**Trust in scientists**	**Interpersonal trust**
Pearson Correlation:	0.54954	0.47307	0.63547	0.45208
P value*	0.00270	0.00978	0.00042	0.01328

*One-tailed

Table 5: Correlations between 1st booster vaccination rate (percentage of population vaccinated with the 1st booster shot) and trust in the legal system, political institutions, scientists and interpersonal trust (own calculations).

The correlation analysis supports the patterns visible in Table 3. In countries where levels of general trust, trust in institutions, and especially scientists, are higher, a bigger share of the population is fully vaccinated against COVID-19. A statistically significant correlation between trust and vaccine uptake is established for all types of trust, especially regarding trust in scientists[10]. However, this cannot be the sole explanation of vaccine hesitancy and the differences among European countries. Several outliers can be found which would require further explanations. For example, Spain shows the highest rate of trust in scientists, despite lower trust in other indicators, and Slovenia records trust in scientists around the EU average (similar to Sweden).

Further, the question remains why trust in political institutions plays such an important role in making a rational decision important for an individual's health as well as public health in general, even in countries where large numbers of the adult population are highly educated[11].

Eurobarometer: scientific literacy and attitudes to science and scientists

In 2021, Eurobarometer conducted a special issue survey on European citizens' knowledge and attitudes regarding science and technology (Special Eurobarometer 516 2021). Since we have established a correlation between trust in scientists and vaccination uptake in European countries, it is important to investigate this topic further from an international, comparative point of view. We hence focus on the countries which are consistently under- or over-performing with respect to

[10] As we see in the Table 3 the trust in scientists is considerably higher than trust in political institutions, legal system and interpersonal trust in all countries. This makes it hard to claim that low trust in scientists is the main factor influencing the levels of vaccination.

[11] In many cases, the topic of the COVID-19 pandemic became a political topic rather than a public health one. The media played an important role in this process (see Schmidt 2023).

different attitudes to science based on the EU average. The tables below show the ranking of countries in a cross-country comparison.

Interest in science and scientific literacy

	Countries at the bottom of the ranking	**Countries around the EU average**	**Countries at the top of the ranking**
Interested in new scientific discoveries (very + moderately interested) (EU average = 82%)	PL, BG, IT, RO, SK, AT, EL (62%–77%)	**SI (80%)**, HU, **HR (84%)**, LT, MT, FR, ES, DE, DK (80%–89%)	FI, CY, LV, NL, NO, CZ, SE, UK, CH, LU, BE, EE, PT, IE (91%–98%)
Overall scientific literacy (more than 8 correct answers) (EU average = 24%)	RO, BG, CY, EL, PL, **HR (11%),** IT, SK (2%–13%)	LV, MT, LT, HU, ES, **SI (24%),** FR, EE, PT, UK, AT, UK, CZ (14%–36%)	DK, NO, DE, NL, FI, SE, CH, BE, LU (39%–46%)

Table 6: Rankings of European countries based on interest in science and scientific literacy (Special Eurobarometer number 516, 2021)

It is apparent that in all countries the vast majority of people are interested in new scientific discoveries. Still, the share of people ranges significantly from 98% in Ireland to 62% in Poland. These differences are even bigger when observing overall scientific literacy, which is highest in Luxembourg, Belgium, Sweden and Ireland, and lowest in Romania, Bulgaria, Cyprus and Greece. We can observe a similar set of countries at the top and bottom for both indicators.

Attitudes to science

	Countries with the smallest share of people agreeing with the statement	**Countries close to the EU average**	**Countries with the largest share of people agreeing with the statement**
Science and technology do not really benefit people like you (EU average = 25%)	SE, NO, UK, IE, FI, DK, BE, CZ, EE, NL, CH, LU, LV, DE, MT, LT (5%–16%)	PT, SK, EL, **SI (24%)**, CY, **HR (29%)**, FR, AT (17%–29%)	ES, BG, HU, IT, PL, RO (31%–39%)
Believe that the overall impact of science and technology on society is very or fairly positive (EU average = 86%)	RO, FR, AT, IT, (72%–82%)	SK, BG, **SI (85%), HR (85%),** DE (82%–98%)	MT, ES, HU, CZ, PL, CH, LV, EL, LU, BE, LT, NL, FI, CZ, DK, IE, EE, NO, UK, SE, PT, (90%–99%)
Science and technology could improve everyone's lives, but mostly improve the lives of	NL, BE, EE, NO, FI, DK, UK, FR, CZ, LU (41%–47%)	CH, SE, MT, LV, PT, IE, LT, DE, AT, SK, RO, IT (50%–63%)	PL, ES, EL, **HR (68%), SI (69%),** BG, HU, CY (64%–75%)

people who are already better off (EU average = 57%)			
We depend too much on science and not enough on faith (EU average = 32%)	NO, BE, FI, IE, UK, SE, DK, NL, EE, CH, LU, DE (11%–22%)	**SI (26%),** LV, FR, PT, LT, CZ, PL, **HR (39%),** IT, AT (26%–39%)	ES, SK, RO, HU, MT, EL, BG, CY (45%–68%)

Table 7: Ranking of the European based on their attitudes towards science (Special Eurobarometer number 516, 2021)

This table shows the countries where the largest shares of population agree or disagree with the statements that point to negative attitudes towards science. Here, the most notable differences are seen in attitudes regarding dependency on science and faith. While in Belgium, Finland, Ireland, Sweden and some other countries less than 20% of people believe that we rely on science too much and not enough on faith, more than half believe the opposite in countries like Cyprus, Bulgaria, Greece and Malta.

Attitudes to scientists

	Countries with the smallest share of people agreeing with the statement	**Countries close to the EU average**	**Countries with largest share of people agreeing with the statement**
Scientists are arrogant* (EU average = 28%)	HU, EE, BG, MT, CZ, PT, SK, SE (10%–20%)	DK, UK, ES, **HR (23%),** DE, NL, BE, CH, FI, IE, RO, FR, LT, IT (21%–30%)	LU, AT, NO, LV, **SI (39%),** CY, PL, EL (31%–50%)
Scientists are narrow-minded* (EU average = 23%)	MT, NL, BG, ES, PT, FI, EE, HU (10%–17%)	RO, SE, CZ, BE EL, **HR (21%),** IT, UK, IE, CY, NO, LT, LV, FR, SK (18–26%)	CH, DE, DK, LU, PL, AT, **SI (48%)** (28%–48%)
Scientists are immoral* (EU average = 16%)	HU, BG, EE, UK, SE, PT, NL, IE, DK (9%–13%)	DE, EL, ES, CY, CZ, FR, NO, SK, FI, BE, **HR (18%),** IT, AT, CH (14%–19%)	LU, LT, LV, RO, PL, MT, **SI (37%)** (20%–37%)
We can no longer trust scientists to tell the truth about controversial scientific and technological issues because they depend more and more on money from	UK, IE, MT, CZ, DK, EE, NL, NO, RO (27%–45%)	NL, RO, SK, PL, BE, EL, IT, CH, FI, SE, LU, DE, FR, AT, PT, HU (44%–54%)	BG, LT, **HR (56%),** ES, LV, **SI (62%),** CY (55%–71%)

industry (EU average = 50%)			
Because of their knowledge, scientists have a power that makes them dangerous (EU average = 46%)	EE, DK, FI, IE, UK, NO, CZ, NL (20%–29%)	BE, LV, SE, CH, LU, PT, LT, DE, FR, AT, RO, SK, **SI (51%),** ES, PL, EL (32%–53%)	IT, **(HR 54%),** BG, MT, HU, CY (54%–62%)

*Table 8: European countries ranked based on the shares of people agreeing with statements showing attitudes towards scientists *or saying that the characteristic describes them well* (Special Eurobarometer number 516, 2021).*

The table shows that attitudes to scientists are in general much more negative in some countries (Cyprus, Slovenia, Poland, Latvia) than in others (Netherlands, Portugal, Estonia). Nonetheless, there is no clear geographical division among them and the attitudes are not consistent. For example, Hungary ranks among the countries where the largest share of the population agrees that scientists are dangerous because of their knowledge, while at the same time it belongs to the countries where the smallest share of people believe that scientists are narrow-minded and immoral. It is impossible to determine what kind of attitudes, for instance, Hungarians hold about scientists[12]. This shows that the data presented here can only serve as an illustration and more specific data, for example on trust and attitudes to medical science, is needed.

Conspiracy beliefs:

	Countries with the smallest share of people believing the statement is true	**Countries close to the EU average**	**Countries with the largest share of people believing the statement is true**
Viruses have been produced in government laboratories to control freedom (EU average = 28%)	DK, NL, SE, NO, CH, IE, FI, BE, UK, LU, DE, CZ (6%–14%)	PT, EE, AT, LV, FR, LT, IT, MT, ES, SK, PL (19%–40%)	HU, EL, **SI (47%), HR (50%)**, BG, CY, RO (44%–53%)
The cure for cancer exists but is hidden from the public by commercial interests (EU average = 26%)	SE, NO, DK, FI, NL, BE, UK, CH, LU, EE, IE (4%–14%)	FR, CZ, DE, AT, PT, ES, LV, IT, SK, MT (19%–38%)	LT, **HR (38%),** PL, **SI (40%)**, BG, RO, HU, EL, CY (38%–58%)

Table 9: European countries ranked based on the share of people believing that given statements are true (Special Eurobarometer number 516, 2021)

The above table shows the percentage of people who believe in some conspiracy statements regarding viruses and medical discoveries. We see that in some countries, like Cyprus, Romania, Bulgaria, Slovenia, Croatia and Hungary, conspiracy thinking is much more common than in the

[12] Questions arise as to whether those inconsistencies indicate that people's opinions are inconsistent as well, or whether they are a result of the overgeneralised questions used in the survey, which are open to different interpretations.

Nordic and Benelux countries. The differences are quite sizeable: in Romania 53% of people believe viruses have been produced in government laboratories to control our freedom whereas in Denmark just 5% of people believe that.

It is difficult to find explanations for these differences. Considering the Eurostat data on education attainment, we see that Slovenia, for example, records an above-average rate of tertiary education attainment in the age class 25–34 years. Moreover, it ranks among the highest in the world in the number of PhD holders, which is a scientific title. Nevertheless, it ranks among the countries where the highest number of people demonstrate conspiracy thinking. Compared to the other dimensions observed, we see that a considerable number of countries ranking at the bottom in scientific literacy, namely Romania, Bulgaria, Cyprus, Poland and Croatia, also rank among the highest in conspiracy thinking. These connections are less present in other dimensions, such as attitudes to science and scientists and interest in science. However, some countries (Bulgaria, Romania, Poland, Cyprus, even Slovenia and Croatia) more consistently rank among the countries with more negative attitudes to science and scientists. This means that we are unable to provide a clear explanation for the differences between Eastern European and Western European countries when it comes to demonstrating conspiracy thinking as the reasons are multidimensional and complex.

Overall, we cannot find a clear geographical division similar to the one observed in vaccination uptake between Eastern and Western Europe while looking at the public opinion data. Attitudes towards science and scientists do play a role, but cannot explain vaccine hesitancy in Eastern Europe. For example, even though Cyprus consistently shows a negative attitude to science and scientists and a high level of belief in conspiracy statements, its vaccination rates are above the EU average. It has also recorded a relatively small number of COVID-related deaths. This shows that the data presented above can only be used for illustration purposes and the further observation of individual country cases is called for in order to find additional determinants of vaccine hesitancy.

Public opinion data on attitudes to COVID-19 vaccination

The Eurobarometer (2022) report on attitudes toward vaccination against COVID-19 from February 2022 distinguishes between three groups of individuals in each country – those who were vaccinated and received a booster dose or desire one (“pro-vaccination”), those who are vaccinated but do not desire booster shots or are not yet vaccinated but desire to be vaccinated in the future (“vaccine-hesitant”), and those who are not vaccinated against COVID and will not be vaccinated in the future (“against-vaccination”).

An overview of the data shows a much bigger share of people against vaccination in newer EU members compared to the old members. For example, in Bulgaria, Slovakia, Slovenia, Latvia, Croatia, Estonia, Romania, Lithuania, Hungary, Poland and Czechia at least 13% of the population is against COVID-19 vaccination. Combined with the vaccine-hesitant, this share rises to 33% in some countries. On the contrary, in Portugal, Spain, Italy, Belgium and Denmark the combined percentage of people hesitant to and against vaccination is less than 9%.

The most common reasons for not becoming vaccinated are the belief that vaccines have not been sufficiently tested yet, worries about the side effects of the vaccines and their efficiency, and doubt with regard to the seriousness of the illness and the pandemic.

Public opinion data on attitudes to national responses to the pandemic

The table below shows the percentage of people that said they were generally satisfied with the measures taken by the national government to fight the coronavirus pandemic as measured by Eurobarometer in different periods.

Percentage of 'satisfied'	Winter 2020/2021	Spring 2021	Winter 2021/2022	Average
Denmark	79	85	84	82.7
Luxemburg	73	84	76	77.7
Netherlands	71	74	59	68.0
Finalnd	69	73	62	68.0
Sweden	60	64	74	66.0
Ireland	53	67	78	66.0
Portugal	49	68	77	64.7
Malta	53	69	66	62.7
Hungary	52	61	61	58.0
Cyprus	53	59	60	57.3
Belgium	50	62	55	55.7
Germany	52	55	53	53.3
Austria	47	61	49	52.3
Estonia	45	61	49	51.7
Lithuania	52	56	40	49.3
Bulgaria	47	50	50	49.0
Average	43	53	50	48.7
Italy	39	54	53	48.7
Croatia	45	48	42	45.0
Poland	36	53	43	44.0
Romania	42	46	39	42.3
France	36	49	42	42.3
Greece	39	43	36	39.3
Spain	30	39	45	38.0
Czech Republic	24	41	44	36.3
Slovenia	31	38	32	33.7
Lithuania	21	35	40	32.0
Slovakia	25	36	32	31.0

Table 9: Percentage of people reporting they are satisfied with the measures taken by their national government to tackle the pandemic. (Source: Standard Eurobarometer 94, 2021; Standard Eurobarometer 95, 2021 and Standard Eurobarometer 96, 2022).

The countries with the highest levels of overall satisfaction with the pandemic measures of their governments are generally also countries with higher shares of vaccinated people. However, no hard conclusions can be made based on this data, as there are many outliers. For example, over 80% of Italians are fully vaccinated despite below-average level of general satisfaction with national measures. A similar situation can be seen in Spain and France. On the other hand, Bulgaria, the country with by far the lowest vaccination rates, shows an average level of satisfaction with measures adopted by their government. A similar discrepancy is found in Hungary.

Main findings

The empirical data is not straightforward enough to reach definite conclusions. While lower trust in scientists is correlated with lower vaccination rates among European countries, the trust in scientists remains higher than trust in other institutions, especially political institutions, in all European countries. Public opinion data on the attitudes to science and scientists is even more inconclusive. For example, even though Cyprus consistently shows a negative attitude to science and scientists and a high level of belief in conspiracy statements, its vaccination rates are above the EU average. It has also recorded relatively small numbers of COVID-related deaths.

There are several issues with analysing public opinion data. The biggest one is that the fact that the data is inconsistent. While a considerable number of countries ranking at the bottom in scientific

literacy, namely Romania, Bulgaria, Cyprus, Poland and Croatia, also rank among the highest in conspiracy thinking, these connections are less present in other dimensions, such as attitudes towards science and scientists and interest in science. This means that we are unable to provide a clear explanation of the differences between Eastern and Western countries when it comes to demonstrating conspiracy thinking as the reasons are multidimensional and complex. The questions posed in the surveys measuring public attitudes are often formulated too broadly or vaguely and do not enable one-sided interpretations.

Furthermore, it is hard to find explanations for the differences in public attitudes towards science and scientists. Considering the Eurostat data on education attainment, we see that Slovenia, for example, records an above-average rate of tertiary education attainment in the age class 25–34 years. Moreover, it ranks among the highest in the world in the number of PhD holders, which is a scientific title. Nevertheless, it ranks amongst the countries where the highest number of people demonstrate conspiracy thinking.

3. Case study of Slovenia

3.1. Management of the COVID-19 pandemic in Slovenia

This chapter presents a short summary of the findings of a 2-year project entitled Analysis of the Effectiveness of Management of the Epidemic in Slovenia – Internationally Comparative and Interdisciplinary Approach. The project was financed by the Ministry of Health of the Republic of Slovenia and the Slovenian Research Agency.

It should first be stressed that the pandemic has a highly non-linear and erratic logic and dynamics, where the situation was constantly changing with new waves, virus mutations, the creation of new knowledge and scientific discoveries, and the response of the public and politicians. Such changes and processes were not happening in the same way in all countries. Further, the international comparability of the pandemic response is often hampered by the available data, which is often unreliable, even among countries considered to have credible and reliable data collection and reporting methods in place. There are differences in testing protocols, methodologies or in the definition of COVID-related deaths. We found one such inconsistency here, in Slovenia. There are two methodologies for counting deaths and, accordingly, two different figures for the total number of deaths. By March 2023, these two figures had already varied by over 2,000 deaths. These differences may even be greater on the global level, noting that estimates of the pandemic's impact vary by several million deaths. Still, it is clear that some countries coped better with the pandemic than others, with this having been analysed in more detail several times during the course of the pandemic. Slovenia has consistently been one of the least successful countries in dealing with the pandemic (see Table 1).

Analysis shows that no single measure can stop a pandemic. Even mass vaccination failed to do this. A combination of measures and their clear and consistent implementation is required. Most of the most stringent measures focused on radically reducing people-to-people contact to reduce transmission of the virus. Although such closure measures on the level of society proved to be highly effective, they also held major consequences for society. The timeliness of adopting the measure and the consistency of implementing it are extremely important. Among measures, it is important to highlight the proper identification of cases, contact tracing and strict quarantine, which are particularly relevant in the early stages of an epidemic, before the virus has spread widely through the population. In any event, there is no single recipe for a combination of measures that would be applied everywhere and in all cases. The measures taken by different countries were, at least in

theory, relatively similar, which makes it important to observe how they were implemented in practice. In the case of Slovenia, while several measures were adopted in theory, they were insufficiently implemented in practice. They were adopted quickly with many subsequent changes and exceptions and also abolished quickly. Regarding the role of experts and their relationship with politics, communication was often inconsistent with an unclear division of roles and responsibilities, pointing to several systematic problems that need to be addressed.

An international comparison shows that, despite the existing risk assessments and measures prescribed by the international organisations, most of the world was simply unprepared for the pandemic and did not respond effectively. It is apparent that the countries which first experienced the SARS-CoV pandemic were better prepared. However, even more than 2 years since the beginning of the pandemic, experts often still disagree about which measures are most effective.

In fact, even the discovery of a vaccine, which was one topic that most experts and politicians agreed on, did not prove to be a universally effective measure able to end the pandemic. This outcome was partly due to an anti-vaccine rebellion that rose up against the preventive practice already in place for almost 80 years. This was particularly pronounced in Slovenia where a relatively strong group of anti-vaccination COVID-19 deniers has emerged, denying the dangers of COVID-19 and its consequences.

It is important to stress the problematic role of experts in the pandemic. They were often understood as a group of unanimous individuals, acting in the name of science, which knows one and only one truth. This understanding of science and experts creates difficulties. Already the different perspectives and theoretical frameworks lead to divergent views among various disciplines. In Slovenia, for example, we have seen a conflict between epidemiologists and infectiologists, which sparked a debate on 'right' and 'wrong' expertise and criticism that the government had been listening to the 'wrong' ones. It should be noted that this conflict was not only due to professional, but political profiling as well, since some experts were seen as closer to one political option or another. There is an impression that experts were included in the general polarising discourse unfolding in the Slovenian public.

When observing the resistance to vaccination, the lack of medication for home treatment, the lack of medical equipment in hospitals, the large numbers of hospitalisations in ICU units and the high mortality rates, we can talk about a breach of trust in science and the medical profession. These raise broader social issues and call for new approaches to encourage dialogue between science and broader society. Crisis theories teach that the long-term, unrepaired crisis of one social segment, in this case health, adds to crises (economic, financial, cultural) in other segments of society that in turn develop into a social crisis.

The presented analysis was conducted through various periods of the pandemic, noting that at this point in time we are quite distant from the period when rigorous measures were being imposed. Although we are still registering COVID-19 infections and deaths, today the public (general, political as well as some experts) believes that COVID is no longer a problem. On one hand, this overlooks the public health problems caused by the pandemic ('long COVID') and, on the other, raises doubts that we have learned from the pandemic and that we will be able to cope better with the next one.

Even though many problems with management of the pandemic can be found, this period also brought a great deal of knowledge and experience that may be valuable in the future. It is important to understand that there are not only two extreme scenarios in terms of total lockdown or the complete elimination/absence of all measures. We need to look for sustainable and effective solutions. We emphasise the calibration, combination and continuity of measures. This means

adopting targeted, proportionate and time-sensitive measures that are cleverly combined and applied continuously, even if not to the entire population. Greater focus needs to be given to measures that are effective without interfering with society (ventilation, disinfection and hygiene measures, wearing effective protective masks for vulnerable groups...). Finally, it is crucial to establish a more interdisciplinary dialogue, along with the greater harmonisation and convergence of views.

Understanding of constitutional values during the pandemic in Slovenia

While restriction measures have been similar (with some exceptions) in many countries, they have been accepted differently by the society at large. A comparison between Spain and Slovenia[13] can demonstrate how the understanding of pandemic measures and constitutional values can differ in different countries.

Spain suffered greatly during the first pandemic wave, with a higher death toll compared to Slovenia. The Spanish government adopted various measures that were adjusted based on hospital occupancy and new infection rates. The first wave witnessed the adoption of strict measures confining most of the population to their homes. The most rigid restriction imposed was limitation of freedom of movement within municipalities with high incidence rates. After the first wave, Slovenia recorded higher numbers of death. Spain records 2,600 deaths per million of inhabitants (until March 2024, data from Worldometers), while the Slovenian number is over 4,800 (according to NIJZ).

While the principal reasons for the discrepancies in the death toll remain a matter for speculation, they are likely to include the scope, nature, and timing of governmental restrictions, the compliance rate with the measures by individuals, and the capacity of the health system. However, what can be noted for now is that the vast majority of the population in Spain accepted restrictive measures as necessary and adequate to address the pandemic, while in Slovenia, a significant portion considered them unnecessary. Critics have linked these attitudes to widespread opposition to the Slovenian government during the pandemic. However, historical traditions, culture, and legacies of former authoritarian regimes may also contribute to the differences in observance and compliance. The stringency of measures in both countries has been comparable throughout the pandemic, the main difference is in the general population's reaction to those restrictive measures[14].

There were not many public protest or dissent towards preventive measures in Spain, with the majority accepting mask wear as a necessary public health measure. The biggest difference can be observed once the restrictions eased up. In Spain, the majority complied with standards long after restrictions were lifted, while in Slovenia, most people relaxed their compliance before restrictions were lifted in April 2022.

What could be some of the reasons for such different reactions? First, the constitutional frameworks of each state derive from different historical, cultural, and societal traditions, customs, and heritage. While both countries have suffered under authoritarian regimes for a large part of the twentieth

[13] See: Jernej Letnar Černič (2022): Between two worlds: Personal reflections from Slovenia and Spain on the Covid-19 pandemic. *International Journal of Constitutional Law.* 20 (3): 1378-1385.

[14] There has never been much popular protest or dissent expressed towards the preventive measures in Spain. For instance, the vast majority tacitly accepted the obligation to wear masks as a justified and necessary public health measure. Once travel restrictions eased up, I observed significant discrepancies in following the preventive measures in Spain versus Slovenia. A vast majority of the Spanish population complied with standards long after restrictive measures were lifted. By contrast, most of the population in Slovenia had relaxed their compliance with the preventive measures long before restrictions were lifted in April 2022. In Slovenia, people had been generally questioning the rules since the pandemic started.

century, these regimes have differed in their ideology, as well as the scope and nature of their governance. Second, much opposition to restrictive pandemic measures in Slovenia and some Spanish regions such as Madrid seems to have been connected to more general opposition to the respective governments and their policies. Third, one can perhaps draw parallels between different degrees of compliance with restrictive measures and different perceptions of human dignity and freedom.

A possible hypothesis, posed by the author of this chapter and research, is that perhaps individuals in Spain have taken responsibility for protecting human dignity in private relationships. By contrast, my observation suggests that in Slovenia and the rest of Central and Eastern Europe state authorities have often been seen by the general public as sole duty holders of human rights obligations.

3.2. COVID-19 vaccination in Slovenia

The first vaccination against COVID-19 in Slovenia was given on 27 December 2020. The national strategy identified priority groups for vaccination; namely, the elderly and staff in care homes, the most exposed health workers, people aged over 75 years and particularly vulnerable chronic patients. After the second half of May 2021, vaccination for the rest of the population was also available. The first vaccines available in Slovenia were Comirnaty (Pfizer), Moderna and AstraZeneca. Later, other vaccines were available as well, more adapted to the prevalent mutations, such as Comirnaty 10, 30, Spikevax bivalent Original/Omicron BA.1 (Moderna), Spikevax bivalent Original/Omicron BA.4-5 (Moderna) and others. The Comirnaty 30 vaccine (Pfizer/Biontech) was the most widely used vaccine, with 2,306,708 vaccinations distributed.

Individuals interested in vaccination had to personally schedule an appointment at the vaccination centre, which was often criticised for lacking a more proactive approach from the healthcare system. There were several other issues with the organisation of vaccination, on several occasions where no appointment slots had been opened, people queued for hours to receive a vaccination. On other occasions, insufficient vaccine doses were available for everyone waiting (Hacler and Boršič 2021; M. Z. and G. C. 2021).

The analysis by the National Public Health Institute shows that while the (printed) media narratives were largely positive towards vaccination (Polajžer and Vrdelja 2022), a more sceptical narrative was being developed on social media (often powered by ‘influencers’). These sceptical narratives proved to play an important role in forming attitudes to vaccination in Slovenia.

Arguments related to vaccine hesitancy in Slovenia

This chapter delves into the landscape of types of vaccine hesitancy in Slovenia, drawing from two studies: one examining social media discourse on anti-vaccination sentiments (Hafner et al. 2021), and the other conducting a survey to gauge public opinion on vaccination (Petravić et al. 2021). While these insights provide only fragments of the same picture, it helps us understand at least partly the conglomerate of various attitudes regarding vaccination against COVID-19.

It has been shown that social media provides a fertile ground for dissemination of incorrect health-related information (Allington et al. 2020). Hafner et al. (2021) analysed arguments circulating on social media in Slovenia between February and May 2021, focusing on the most popular anti-

vaccination content originating in Slovenia[15]. The analysis showed the prevalence of two general themes or positions: the first position denies the existence of COVID-19, with proponents of this argument claiming that the pandemic is a global conspiracy. The second position acknowledges the existence of COVID-19 but states that it is not dangerous, therefore vaccination is unnecessary.

Petravić et al. (2021) approached the topic of attitudes towards vaccination through a cross-sectional survey[16]. As part of the survey, respondents were presented with an optional open-ended question on their opinion on the topic. These answers provide a glimpse into the thinking of at least some vaccine-hesitant individuals in Slovenia[17]. Individuals opposing vaccination and with lower levels of trust in the WHO and the National Institute of Public Health were more likely to write their opinion.

Through hierarchical clustering the authors identified most common opinions showing vaccine hesitancy. The following arguments were most popular: the idea that COVID-19 does not exist and is in fact a Big Pharma scam; worries about the side-effects of the vaccines; equating the virus with influenza; assertions that the vaccine is an attempt to control the population; and assertions that the immune system is sufficient to deal with the virus; and some mentioned their personal negative experiences with vaccines, which contributed to their opposition to COVID-19 vaccines[18] (Petravić et al. 2021). These arguments are in line with the research done in other countries (see for example Fasce et al. 2023).

COVID-19 vaccination as a pandemic management measure

As already discussed in previous chapters, the COVID-19 vaccination is embedded in the broader context of government actions to contain the pandemic, which means it is connected to the attitudes of the general public towards the pandemic measures. In the following, we will look more closely at the data pertaining to the relationship between the government's measures to mitigating the effects of the pandemic and the opinions of the Slovenian population regarding them.

Data from Eurobarometer, presented in chapter 2.2. and Flash Eurobarometer studies conducted in 2021 and 2022 show that a significantly larger proportion of the Slovenian population was dissatisfied with the government's handling of the vaccination strategy compared to the EU average. For comparison, countries with the highest vaccine uptake in the EU, Portugal and Malta, reported dissatisfaction rates of 13% and 27%, respectively, in February 2022.

According to the same dataset from February 2022, a notable majority of Slovenian respondents who do not want to receive the vaccine reported dissatisfaction with the government's handling of the situation – 88%. Conversely, among those who have received at least one dose of the vaccine,

[15] Out of more than 50 most popular (by number of likes and shares) materials, they analysed those originating from Slovenian anti-vaccination advocates – 16 materials in total, comprised of 11 videos, four websites and one Facebook post.

[16] The survey was conducted among 12,042 respondents in December 2020, which coincides with the initial rollout of vaccines in Slovenia.

[17] The presented findings have some limitations, including a low response rate to the open-ended question (only 12% of all respondents), and the use of a non-probability sampling method.

[18] Both studies also find out that language used by those advocating against vaccination differs compared to those advocating for vaccination. The latter are relying more on statistical data, while the language of those opposing vaccination is often focused on individual examples, uses a more personal and emotional approach and uses language that speaks to individuals as if on an equal footing (as opposed to the top-down communication style of experts talking to the general public) (Hafner et al. 2021; Petravić et al. 2021).

the dissatisfaction rate was 60%[19]. Hafner Fink and Uhan (2021) reached similar conclusions on the representative survey after the first wave of the pandemic, that Slovenians with higher levels of trust in government are expected to adhere more to the pandemic measures. However, they warn that Slovenia had traditionally very low trust in political institutions and that this trust is then often shifted to other targets, such as physicians.

The subpar management of the pandemic in Slovenia has been linked to political causes, particularly the government's stringent approach on one side and the predominantly liberal nature of the Slovenian society on the other (Žerdin 2021). As discussed in chapter 3.1., the Slovenian government's approach to limiting the effects of the pandemic was marked by inconsistency, with stringent measures hastily adopted, with COVID-19-related decrees sometimes implemented without following the proper legal procedure, with frequent subsequent changes to the measures and their eventual abolishment (Kovačič 2021). Furthermore, many authors have been critical of the governments' communication during the pandemic. Verčič (2021) notes that in the first wave, the authoritarian and decisive communication strategy worked well, but failed when the government wanted to implement it in future waves, where a more cooperative strategy would be more appropriate. While the government was often criticized for not following expert advice enough, conflicts arose even between different experts. These were not sufficiently addressed and instead triggered the discussions about *right* vs. *wrong* experts (Gorišek 2023). This inconsistent approach and problems with communication have likely undermined trust in vaccines in the Slovenian population, as clear and precise communication from the government is important for instilling confidence (Thaker & Ganchoudhuri 2021).

The emergence and power of groups against vaccination

As already seen in the above-mentioned data from Eurobarometer, Slovenia is among the countries where the largest share of the population shows support for conspiracy theories and has the third-largest share of people in the EU who are against COVID-19 vaccination (using the definition of Eurobarometer, which identifies people who say they are not vaccinated against COVID-19 and will not become vaccinated in the future (Eurobarometer 2022).

A vocal group of medical professionals (none of whom were epidemiologists or infectiologists) and other sceptical individuals argued that COVID-19 did not represent a real threat even at the beginning of the pandemic and later campaigned against vaccination. They called themselves *'Slovenian Physicians'* in the hope of giving the impression that they represented the view of the majority of Slovenian doctors. Most medical professionals are organised within medical chambers, which have often publicly distanced itself from the aforementioned group and opposed the views advocated by its members.

The opponent groups were not adequately addressed at the time the pandemic was emerging and have since grown and consolidated to the point where today they represent a significant part of the Slovenian population and have an impact not only on the ability to cope with the pandemic, but also on public health in general, because they also oppose other types of vaccination, further lowering their trust in healthcare institutions. This group has been strengthened by various media and book releases, some published even by otherwise credible institutions yet without proper critical evaluation. In addition, a section of society, while not opposed to the risk of the virus, was strongly

[19] It is also noteworthy to mention that older individuals exhibit higher levels of trust in government sources regarding COVID-19 (Žagar et al. 2023), and at the same time a larger proportion of older individuals received the vaccine compared to younger individuals.

opposed to measures to contain the epidemic, initially seeing them as a pretext for introducing undemocratic, even dictatorial processes. We can also talk about the politicisation of measures[20]. All of this means that a fairly large share of society has a strong aversion to any public policy measures that encroach on the level of individual freedom, which certainly reduces the chances of effective action in the future. This was seen in the future political development – the elections were won by a party which had counted on the votes from the COVID-sceptical part of the population. The elected prime minister continued the discourse of amnesia and the desire to forget about the pandemic as quickly as possible. The consequences are still seen in 2023 in the collapse of the country's healthcare system[21].

Dealing with the vaccination side effects

During the pandemic, various doubts arose in Slovenia and elsewhere about the effectiveness and safety of the vaccine against COVID-19. While doubts in science are desirable, since science is not infallible and its development is facilitated by doubts, irrational opposition to science can become problematic given that it can develop into conspiracy theories, as we were able to observe during the pandemic. However, not everyone who doubted, for example, the effectiveness of the vaccines are conspiracy theorists and by default reject vaccination. Many have tried to clarify their doubts as the vaccines have caused certain side effects, which are a proper cause for concern.

A report on the monitoring of adverse reactions after COVID-19 vaccination (NIJZ 2023) reveals that the highest number of reports of one or more adverse reactions, in the period between 27.12.2020 and 31.12.2022, came after receiving a dose of AstraZeneca. The record shows 3,099 reports out of 327,058 doses administered, which means that 0.95% of the vaccinations resulted in an adverse reaction. Of these, the NIJZ registry received 67 reports that were classified as serious (2.1% of all reports submitted). Seven people, mostly with chronic illnesses, passed away days after receiving a vaccination. However, the link between their deaths and the vaccination was not considered probable, largely due to the severity of their other comorbidities. Hence, in Slovenia there is not a single scientifically confirmed case of death due to vaccination against COVID-19 after the AstraZeneca vaccine, even though these reports were the most numerous.

The Comirnaty 30 (Pfizer/Biontech) vaccine ranks second in terms of the share of reports of one or more side effects after being vaccinated against COVID-19 in Slovenia during the same period. Out of 2,306,708 vaccinations administered, 5,642 reports were recorded, which means that the proportion of adverse reaction reports from vaccination with the Comirnaty 30 (Pfizer/Biontech) vaccine is 0.24%. Further, 211 reports of adverse effects were classified as serious and 35 people passed away after being vaccinated. The Ministry of Health examined 22 of them and concluded that in 20 of the 22 cases a connection with vaccination is unlikely. In the other two cases, while death related to

[20] Another influential group, *Network for legal democracy,* was formed, opposing pandemic measures by arguing that they violate human rights and liberties. They claimed that the measures to contain the virus were not constitutional and represented excessive interference by the government with individual freedoms. The Constitutional Court agreed with this and annulled several fines written pursuant to those laws. The discourse of weighing the rights to free movement and gathering and rights to health emerged and the court rulings suggest that the former were deemed to be more important. We can identify elements of ageism in that older individuals were more affected by this decision.

[21] Several media reported in October 2023 that there were no more available beds in hospitals anywhere in Slovenia and patients needed to be hospitalised in hospital hallways and were waiting more than 10 hours to be examined (24ur.com, 26.10.2023).

vaccination was possible, the death was probably the result of another, pre-existing condition of the patient.

In the same period, the Moderna vaccine is ranked third in terms of the share of reports of one or more adverse effects after being vaccinated against COVID-19 in Slovenia. Out of 240,704 doses administered, 561 reports of adverse reactions were recorded, representing 0.23% of vaccinations. The register received 24 reports defined as serious (4.2% of all submitted reports). Three people passed away within days of being vaccinated; in the first case, the connection is unlikely, while the other two cases are still being investigated.

There are no scientifically proven deaths due to the COVID-19 vaccinations in Slovenia among the most commonly distributed vaccines. Nevertheless, the National Health Institute confirmed that the Janssen vaccination was the cause of death of a 20-year-old woman in Slovenia in 2021.

Based on the scientific evidence in the case of Slovenia, the highest proportion of unwanted effects is associated with vaccination with the AstraZeneca vaccine, followed by the Comirnaty (Pfizer/Biontech) vaccine, and then the Moderna vaccine. However, the most doses were distributed with the Comirnaty vaccine (Pfizer/Biontech) and we cannot ignore the fact that vaccines affect every individual differently. Many other factors in an individual's life (such as hereditary diseases) may influence both the course of the illness of the COVID disease, as well as how the human organism responds to vaccines against COVID-19[22].

3.3. COVID-19 vaccination among health care professionals in Slovenia

In the case of Slovenia, the most reliable data comes from the National Health Institute (NIJZ) which gathered data from an online registry of vaccinated people (eRCO) and the official records of healthcare professionals within the healthcare network of Slovenia on 1 May 2022. The data show that 77.7% of healthcare professionals were fully vaccinated and 50.9% had been vaccinated with a booster shot. The percentage rises with age of an HCW, namely, a bigger share of older individuals is vaccinated than younger ones. There are significant differences between different occupations. The share of fully vaccinated doctors was 93.2% (78.4% with a booster shot), for nurses the share was 77.7% (46.6% with a booster) and for technicians 71% (39.3%). The lowest share of vaccinated was amongst midwives and physiotherapists, 68.2% and 67.8% (only 8% of physiotherapists had received a booster shot) (Grašek and Učakar 2022).

Globevnik Velikonja and others (2022) conducted a cross-sectional study specifically for the case of Slovenia. The mentioned survey was performed among healthcare professionals in Slovenia at the beginning of the pandemic, 1 month later and again 1 year later[23]. The authors established that the

[22] The safety of the vaccines was discussed by Dr Matjaž Zwitter, a Slovenian expert in medical ethics, in the March Saturday appendix of the newspaper Delo (Zwitter 2023). Zwitter identified two issues or obstacles when objectively assessing the frequency of vaccination-related complications. The first is the non-specificity of complications – complications that could also occur without vaccines against COVID-19, such as heart attacks, thrombosis and strokes. The other obstacle is the incomparability of the populations of vaccinated and unvaccinated people. The author suggested that NIJZ conduct research (since only it has this kind of data) analysing only those who died after being vaccinated. Since basic analysis cannot exclude other factors that influence mortality, cases should be investigated individually, which in Slovenia is possible due to the small sample.

[23] It should be noted that the samples of those three studies vary considerably. The first survey includes answers from 851 healthcare professionals, the second from 86 and the third from 145.

share of respondents declaring vaccine hesitancy had decreased in the observed period. Further, the factors influencing their decisions seem to have changed as well. At the start of the pandemic, those with higher levels of anxiety and higher levels of education were more likely to intend to become vaccinated. In the last survey, the higher level of threat due to possible infection played a bigger role in the intent to be vaccinated. Study by Kregar Velikonja and others (2022) adds that younger HCWs and those with a higher education were more likely to accept vaccination, while gender did not play a significant role in vaccination acceptance.

4. Case study of Croatia

4.1. COVID-19 pandemic and its consequences in Croatia

Nationwide lockdown was announced on March 16 and the first COVID-19 fatality occurred on March 19, 2020 (Lauri Korajlija and Jokic-Begic, 2020). Until June 12, 2023 (the most recent data available), 1,273,907 individuals have contracted the new coronavirus, of which 18,267 have passed away. Compared to the multi-year average, there has been a 19,000 rise in death from the start of the pandemic to March 2022 (Koronavirus.hr, 2023)[24]. The Government of the Republic of Croatia declared on May 11, 2023, the end of the COVID-19 epidemic caused by the SARS-CoV-2 virus. The decision was made based on Article 2, Paragraph 5 of the Law on Protection of the Population against Infectious Diseases. With this Decision on the cessation of the COVID-19 epidemic in Croatia, the previous Decision declaring the epidemic, made on March 11, 2020, ceased to be valid (ibid).

Public response to COVID-19 pandemic and high mortality

The Croatian media (data for 2022) predominantly focused on the elevated COVID-19 mortality rates in the country. There was a prevailing inquiry into whether the cause of this issue lay in the relaxation of measures or the higher infection rates typical during the winter months. Moreover, a substantial segment of the Croatian media concurred that the tourism season, a pivotal economic sector in Croatia, contributed to a notably lenient approach towards addressing the COVID-19 virus and the relaxation of associated restrictions. The Croatian news portal Index highlighted the unfortunate death of journalist Vladimir Matijanić, attributing it to medical errors. This incident exposed serious shortcomings in the way the Croatian healthcare system handled the COVID-19 pandemic, causing a major scandal in the country.

Following some Croatian scientist researching this topic (Grbeša 2020; Holy 2021), the majority of Croatia's mainstream media included COVID-19 coverage on their agenda, claiming that this demonstrates how significantly they influenced what the country's inhabitants should think about it. Furthermore, as Holy (2021) highlights, during the first wave, when the strictest measures were in place (from March 19, 2020, to April 27, 2020), the media in Croatia heavily focused on the topic of the COVID-19 crisis. This coverage was closely tied to the upcoming parliamentary elections, indicating the media's ambition to shape public opinion about the crisis.

As Holy further states, the Croatian government, aware of the influence of public perception on electoral outcomes, enlisted the services of a PR agency, Media Val, without a public bidding process. This agency, under the domain Koronavirus.hr, assisted the government by establishing official websites and social media platforms for COVID-19 information dissemination. The nature of this cooperation remained somewhat opaque, raising questions about whether it involved shaping

[24] This was the official Croatian government website providing updates and information regarding the COVID-19 pandemic in Croatia. The website has not been active since December 2023.

media narratives and potentially appropriating state resources for political objectives. Notably, the media's coverage during the lockdown frequently portrayed the public as resilient heroes, highlighting the human aspect of the crisis, including disrupted plans, livelihoods, and lives due to the virus. The narrative also emphasized the omnipresence of death. (ibid).

Hence, the media discourse perpetuated victory narratives, drawing parallels to stories like David and Goliath, where sacrifice leads to a transformative and promising future. Additionally, the media also focused on punishment narratives for irresponsible individuals during this period (ibid, 2822-2825). Similarly, military metaphors and references to the Homeland War were common in Croatian pandemic communication, fostering unity and discipline. The initial media portrayal of key communicators bolstered public trust and compliance. However, doubts about political influence eroded trust, posing challenges for the government in ensuring adherence to measures (Grbeša 2020).

4.2. COVID-19 vaccination in Croatia

As of June 11, 2023, a total of 5,362,024 vaccine doses have been administered, with 59.96% of the total population vaccinated, or 71.34% of the adult population (Koronavirus.hr, 2023). Hence, in order to explore this issue in more detail, Pavić et al. (2022) conducted four online focus groups that were asynchronous and involved 40 Croatian residents in total. Three main causes of vaccine reluctance were identified through iterative thematic analysis: institutional distrust, confidence in natural immunity, and risk perception (cost-benefit ratio). As they further state, although vaccine hesitancy has not received much attention in Croatian research, it should be noted that prior to the COVID-19 pandemic, vaccine hesitancy was relatively low. This could be due to the legacy of public health interventions from the socialist era, when vaccination was both widely accepted and strictly regulated by law (ibid, 524–525)[25].

An exclusive survey conducted by IPSOS for Croatian television Nova TV explored vaccination hesitancy among Croatian citizens, revealing distinct attitudes between younger and older demographics. Despite governmental efforts, nearly half of the population remained unconvinced about receiving the COVID-19 vaccine. The findings indicated that over 60% of individuals aged 60 and above have been vaccinated, contrasting with over 70% of unvaccinated individuals aged 29 and below. Respondents cited personal health as the primary motivation for vaccination, followed by protecting others, freedom of movement, social interaction, and job requirements. Concerns about unexplored vaccine side effects deterred 28% of respondents, while 23% opposed being dictated to, and 21% feared known side effects. Disbelief in the pharmaceutical industry was noted by 18% of respondents.

Younger individuals expressed less fear of infection and doubted the vaccine's efficacy, harbouring concerns regarding potential impacts on reproductive health. Nearly 40% of the unvaccinated respondents felt unmotivated by any factor to get vaccinated, though further vaccine safety research could persuade some. Employer directives or persuasion from family and friends could potentially influence 17% and 11% of respondents, respectively. Monetary rewards appeared enticing to 8%, predominantly among younger respondents, while 7% were inclined towards vaccination for employment or travel objectives (Dnevnik.hr 2021).

[25] We were unable to find official data related to the vaccination of health care professionals in Croatia. McGlacken and Codd (2023) note that by June 2021, 57.4% of health care professionals got vaccinated, which is one of the lowest numbers compared to other countries included in the study.

In terms of socioeconomic indicators, belief in COVID-19 conspiracy theories is more prevalent among younger individuals, especially those aged 25 – 29, lower-educated individuals, those from larger households with lower incomes, and residents of smaller towns. In addition to their higher inclination to believe in other conspiracy theories on average, these individuals also exhibit lower trust in science, a tendency toward right-wing populist views and religiosity, lower scientific and political literacy, and a reduced inclination for critical thinking. These findings stem from a research study conducted between April 29 and May 17, 2022, with a national representative sample of 1,401 adults aged 18 to 64 as part of the multidisciplinary project "Pro-fact: Uncovering COVID-19 Misinformation Narratives in Croatia through Research, Fact-Checking, and Education." Almost 50% of the respondents agreed with the conspiracy theory that statistics are manipulated to exaggerate COVID-19 mortality by including people who died from other diseases ('GONG Pro Fact' 2023).

The 2021 study on anti-mask sentiment in Croatia found that it's mainly associated with right-wing radical affiliations, as well as centrist voters who support newer Croatian political parties without a clear ideological stance. Notably, the analysis underscores the presence of non-anti-mask adherents among supporters of the ruling party, the Croatian Democratic Union (HDZ). The explanation for this phenomenon may be attributed to the HDZ's responsibility for implementing pandemic control measures, potentially fostering higher trust levels among its followers regarding these measures. Consequently, the relationship between political preferences and anti-mask attitudes is intertwined with the issue of trust. Supporters of political parties known for mobilizing their base through conspiracy theories and alternative narratives also appear to influence anti-mask sentiment (Ančić and Cepić 2021).

A certain percentage of the population may espouse belief in conspiracy theories, but, as shown from researches above, a significant majority of those opting against COVID-19 vaccination do so primarily out of fear or the conviction that their youth and overall health render vaccination unnecessary, or because of distrust in state institutions.

This enduring scepticism towards the state remains pronounced, particularly in nations grappling with elevated poverty rates. Croatia, situated within this societal backdrop, grapples with the persistent issue of low trust in governmental institutions. This trust deficit is exacerbated by high levels of corruption (see Grubiša 2005; Budak 2006; Vuković 2019; Kurecic, Kokotovic, and Haluga 2023), frequently intertwined with state structures. Thus, while the government may earnestly aspire to enhance vaccination rates for the commendable purpose of preserving lives, the efficacy of such endeavours is hindered by the pervasive lack of trust in the message bearers.

Unfortunately, the prevalent mistrust among citizens is not confined to governmental institutions but also extends to the healthcare system. Issues such as bribery and favouritism in accessing healthcare (Radin 2013), alongside a perceived lack of patience for patients' concerns, have deepened the perception that individuals must fend for themselves in Croatian society if they lack financial resources or connections.

4.3. Attitudes to vaccination and trust in institutions and science

The Croatian society displayed a diverse range of attitudes concerning their trust in institutions throughout the COVID-19 pandemic. Confidence in several key establishments, such as the government and healthcare system, experienced fluctuations driven by a multitude of factors. The response of the Croatian government to the COVID-19 pandemic elicited a nuanced spectrum of responses within society. Initially, there was a discernible degree of trust in the authorities, driven by their prompt implementation of evidence-based preventive measures and restrictive protocols.

Nonetheless, trust in governmental institutions exhibited variations as the pandemic evolved. Certain groups of people seemed to be more sceptical, which might be due to their worrying about the economic and social impacts of the restrictions.

Drawing from findings of the Special Eurobarometer 516 (2021) on European citizens' knowledge and attitudes towards science and technology, Croatia exhibits a concerning stance in terms of scientific literacy and trust in scientific institutions. The data places Croatia in the lower quartile (bottom 25%) for overall scientific literacy. Furthermore, a significant portion of the Croatian populace resonates with scepticism towards the integrity of scientific discourse on controversial scientific and technological issues. This scepticism is articulated through substantial agreement with statements such as “We can no longer trust scientists to tell the truth about controversial scientific and technological issues because they depend more and more on money from industry” and “The cure for cancer exists but is hidden from the public by commercial interests.“

Therefore, the effectiveness of the healthcare system and its connection with the public became crucial factors during the public health crisis. The arrival of the COVID-19 pandemic highlighted the vital role of trust in healthcare institutions, significantly affecting how people followed public health guidelines. This, in turn, had a lasting impact on how the pandemic was managed as a whole. Still, observing the local government's strong efforts and subsequent effectiveness in reducing the pandemic's primary negative consequences during its early stages is notable (Glaurdić and Lesschaeve, 2024).

According to Igor Rudan, a well-respected expert in epidemics and genetics, Croatia went through a tough second wave of COVID-19. The healthcare system experienced a state of heightened strain, and the daily death toll was noticeable. In the initial stages, the success fostered a sense of complacency among the population, leading to the assumption that the virus was contained. This led to several different issues, with the testing system becoming overwhelmed, making the data less reliable. To deal with this, Croatia took serious preventive measures, learning from successful countries in Asia and Europe. The economic and societal repercussions were disparate, particularly affecting sectors vulnerable to virus dissemination. This prevailing scenario underscored the significance of proactively averting the pandemic, emphasizing prevention over reactionary responses. The efficacy of these measures became discernible in subsequent weeks, underscoring the ongoing imperative for an active defence against the pandemic until the advent of vaccines (Rudan 2020).

Furthermore, Nikodem, Ćurković and Borovečki (2022)[26] conducted a cross-sectional survey on a random three-stage sample of the general Croatian population (N = 1230), aimed to assess trust in the healthcare system and physicians. The sample was constructed to be nationally representative and weighted for gender, age, education, and regional representation. The survey addressed various sociodemographic characteristics, religious beliefs, political orientation, and experiences related to death and caregiving. Factors such as lower education and low income were associated with lower trust in physicians and the healthcare system. Results indicated that high or very high trust was observed in the educational system and healthcare system, with trust varying across different institutions. The highest trust in healthcare was found in Northern Croatia (76.7%), while the lowest was in Eastern Croatia (50.3%). Hence, it found that respondents from regional centres and the capital, Zagreb, those with secondary education, and those with higher monthly incomes were more likely to trust the healthcare system in Croatia.

[26] The research was done prior to the COVID-19 pandemic.

Glaurdić and Lesschaeve (2024) in their research on COVID-19 vaccination hesitancy in southeastern Europe also came to the conclusion that higher income and education levels, as well as higher proportions of an ethnically predominant population, are all correlated with greater vaccination rates[27]. Similarly, higher vaccination rates in Croatia are associated with an older population, smaller community sizes, and less religious conservatism. Factors such as scepticism towards vaccination are linked to religious beliefs, with higher religiosity predicting lower vaccination rates. Additionally, areas impacted by the War of Independence show reduced vaccination rates, attributed to diminished trust in authorities and the long-lasting effects of war trauma on public health (ibid). There has been little research on the topic of vaccination hesitancy among healthcare workers in Croatia,. In their research on vaccination attitudes, beliefs, and behaviours among primary health care workers in northern Croatia, Tomljenovic et al. (2021) discovered that 17% of primary healthcare professionals were reluctant to receive vaccinations, with a notable difference between doctors and nurses (7% vs. 24.9%). Nonetheless, as they further highlight, given that one in four practicing nurses may be vaccine apprehensive, the degree of vaccine hesitation among nurses is concerning. (ibid) Similar study conducted by Miskulin et al. (2022), researching vaccination attitudes and experiences of medical doctors in Croatia amid the COVID-19 pandemic, revealed that physicians were largely in favour of the nation's immunization program, although some were concerned about the fast approval rates of new vaccines, especially COVID-19 vaccines. The study also identified communication barriers with vaccine-hesitant patients, which are frequently brought on by schedule conflicts and larger societal variables that undermine trust. The results imply that, in order to increase vaccination rates, public health initiatives should take into account the social context of vaccination as well as the challenges faced by medical professionals.

Main findings

In Croatia, as of June 11, 2023, the status of COVID-19 vaccination shows an intricate situation. Around 60% of the entire population and over 70% of adults have received the vaccine. However, there's a noticeable reluctance among a significant portion of the population, especially among younger age groups, towards getting vaccinated.

A survey by IPSOS in partnership with Croatian television Nova TV revealed contrasting views across different age groups. The reluctance towards vaccination stems from various reasons. Worries about possible side effects, uncertainties about vaccine effectiveness, and a lack of trust in pharmaceutical companies play key roles in this hesitancy. This is particularly evident among younger people, prompting discussions about the communication of information and trust in these institutions.

However, it is not just about hesitancy towards vaccines. Socioeconomic elements significantly influence these attitudes. Individuals with lower education levels tend to lean more towards COVID-19 conspiracy theories and have less trust in scientific knowledge. This intricate relationship between education, location, and belief systems emphasizes the necessity for more focused and thorough educational and awareness initiatives.

Distrust in governmental institutions and the healthcare system exacerbates vaccination hesitancy in Croatia. The public's scepticism towards these systems, influenced by concerns like corruption and unequal healthcare access, seriously undermines confidence in medical interventions.

Additionally, the link between political loyalties and opinions on pandemic control measures, particularly anti-mask sentiments, highlights a tangled relationship between trust and belief systems.

[27] Albeit they also state that the latter finding disappears in the full model.

The core of these problems involves deep-seated societal scepticism, covering various challenges from trust issues to doubts about institutional honesty. Resolving the ongoing vaccination hesitancy in Croatia demands efforts that go beyond simply sharing information. It requires comprehensive strategies addressing societal trust gaps, educational inequalities, and concerns about institutional integrity. Dealing with these multifaceted challenges is crucial for building more confidence in vaccination campaigns and public health initiatives in the country.

5. Discussion

This report deals with the COVID-19 pandemic and vaccination uptake from internationally comparative and sociological points of view. Already a glimpse at the basic data regarding the pandemic and the relative numbers of infections and deaths shows that the pandemic did not affect all countries in the same way. A clear division appears between Eastern and Central European countries, such as Bulgaria, Hungary, Croatia, Czechia and Slovenia, and Western and Northern European countries, such as the Netherlands, Denmark, Finland and Germany. The former show a much higher relative number of deaths compared to the latter. We can observe a very similar geographical division in the data on COVID-19 vaccination uptake, notably in the uptake of additional, booster shots. The presented analysis attempted to observe those differences and identify possible sociological explanations.

While some countries showed significantly higher vaccine hesitancy compared to others even before the pandemic (e.g., Malta, Latvia, Slovenia, France), those countries do not correspond to the most COVID-19 vaccine-hesitant countries. The reasons for this are multifaceted and complex. In the literature, several explanations can be found for the lower vaccine uptake in Eastern Europe, such as vaccine availability, exposure to misinformation, trust in institutions and scientists, and even a post-communist legacy. However, none of these can fully explain the differences in the international comparison. Therefore, this analysis included a variety of publicly available empirical data in order to find additional explanations.

Data on levels of trust in legal systems, political institutions and scientists in individual countries clearly correlate to the percentage of the population vaccinated against COVID-19, especially when taking into account the uptake of a booster vaccination. Countries with lower levels of trust in political institutions and the healthcare system have a smaller percentage of their population vaccinated against COVID-19. Further, data on scientific literacy and attitudes to science, scientists and conspiracy thinking were visible. While some countries with higher levels of COVID-19 vaccine hesitancy do appear to have lower levels of scientific literacy and more challenging attitudes towards science and scientists, we were unable to identify the same clear geographical division as for the COVID-19 vaccine uptake. Similar conclusions can be drawn regarding the impact of people's satisfaction with the measures their governments took to manage the pandemic. These data provide only limited explanations and demonstrate some indirect connections that could influence vaccination rates, making clear explanations impossible. In other words, factors such as trust in institutions, attitudes towards science and scientists, scientific literacy and satisfaction with national measures do play a role vaccine uptake, but it is difficult to determine is the extent of this role and the manner in which they impact each other.

The research included two case studies – Slovenia and Croatia – and explored the processes of vaccination, media and political responses to the pandemic and the specific political context for each of the two countries. The analysed cases show that it is difficult to generalise all of the reasons for COVID-19 vaccine hesitancy. The findings must be discussed in a specific interdisciplinary interpretative framework.

5.1. Types of vaccine hesitancy and emergence of different social groups during the pandemic

Based on the data presented in this report, mainly in chapters discussing the factors influencing vaccination rates and arguments related to vaccine hesitancy, and previous research[28] we hypothesize that six different groups emerged in relation to the COVID-19 vaccination. These proposed groups remain to be further explored in future research, most likely in the form of focus groups, complemented by discourse analysis, content analysis of media, and semi-structured interviews.

The hypothesized six ("ideally-typical") groups are as follows:

1. The refusal group. Individuals in this group a priori refuse or even condemn (in the sense of conspiracy theories) the call to get vaccinated. They believe that COVID-19 does not exist and that the 'connected' deaths are fabricated or are a consequence of the vaccines.
2. The vitalist group. They are mostly adherents to the "herd immunity" concept or argue that vaccination is not safe, and that there is no need to get vaccinated. This group might have been more prevalent at the beginning of the pandemic.
3. The sceptical group. The members of this group have no defined attitude to vaccination. If they come to the conclusion that the campaign in favour of vaccination is fair and persuasive, they are prone to become vaccinated.
4. The alternative group. Some members of this group are from medical professions and do not deny the severity of pandemic but are exploring alternative medicines (like ivermectin) or methods to improve immunity (which overlaps with the Vitalist group), aiming to complement or even substitute the need for vaccination.
5. The cooperative group. In this group, we mostly find older individuals who trust the authorities, especially healthcare institutions and persons, and who decide without much forethought that vaccinations and other preventative measures are necessary.
6. The persuaded group. The adherents are generally individuals who obtained a higher level of education and professionals who actively follow relevant information and arguments. They are persuaded that vaccination is an important and inevitable measure to contain the coronavirus and to reduce the consequences of the pandemic.

While this classification is referring to social groups, parallels can be found with the previous work within the Jitsuvax project – namely the taxonomy of anti-vaccination arguments which focuses on vaccine-hesitant beliefs and ideologies on the level of an individual (Fasce et al. 2023). The taxonomy could be connected to our hypothesized groups in the following way:

1. Individuals in the refusal group are most likely to support anti-vaccination arguments of the following attitude roots:
    - *conspiracy ideation* (tendency to believe in conspiracy theories),
    - *unwarranted beliefs* (beliefs not backed up by science or misinterpreted scientific facts),
    - *distorted risk perception* (lack of fear or awareness of the threat),
    - *epistemic relativism* (the concept of truth and standards of reasoning are relative)
    - possibly also: *world view and politics* (stems from view of society or attitudes towards political option), *distrust* and *reactance* (an individual's tendency to defend

[28] A 2-year project entitled Analysis of the Effectiveness of Management of the Epidemic in Slovenia – Internationally Comparative and Interdisciplinary Approach (Adam 2023), data and interpretations listed in this report.

their autonomy when they perceive that others are attempting to impose their will on them).

2. Individuals in the vitalist group are most likely to support anti-vaccination arguments of the following attitude roots:
    - *distorted risk perception,*
    - *epistemic relativism,*
    - *unwarranted beliefs*,
    - *fear and phobias*,
    - *perceived self-interest* (prioritizing one's own needs relative to that of others)
    - possibly also: *world view and politics; religious concerns, moral concerns, distrust*
3. Individuals in the sceptical group are most likely to support anti-vaccination arguments of the following attitude roots (however, their attitudes might be less strong compared to some of the other vaccine-hesitant groups listed above):
    - *world-view and politics,*
    - *distrust*,
    - *fear and phobias*,
    - *perceived self-interest,*
    - possibly also *religious concerns* (religious or other manifestations motivate hesitant attitudes towards vaccination) or *moral concerns* (similar but not tied to religion)
4. Individuals in the alternative group are most likely to support anti-vaccination arguments of the following attitude roots:
    - *epistemic relativism,*
    - *unwarranted beliefs,*
    - *perceived self-interest,*
    - possibly also: *distrust*, *religious concerns, moral concerns, reactance*

If we try to illustrate this in the case of Slovenia and the empirical data presented in chapter 3.2., *conspiracist ideation* – referring to the tendency to believe in a chain of secret events even when there are more probable explanations (ibid) – may be connected to the argument that the vaccines are a global conspiracy or a Big Pharma scam, or that they are intended to control the population (Petravić et al. 2021). These individuals would most likely belong to the refusal group.

Some arguments presented also show the attitude root *unwarranted beliefs* where e.g. scientific evidence is misrepresented (Fasce et al. 2023), as in the case of the argument that the virus should have been isolated according to the Koch postulates[29] (Petravić et al. 2021). These individuals could belong to the alternative, vitalist or even refusal group, depending on other attitudes they hold.

The argument that the virus is not dangerous (Hafner et al. 2021) and that the human immune system is sufficient to combat it (Petravić et al. 2021) can be linked to the attitude roots *distorted risk perception* and *unwarranted beliefs*. Individuals with these attitudes could belong to the vitalist or even refusal group.

[29] four criteria developed in 1890 to establish the causal relationship between a microbe and a disease which are known to be outdated in light of modern medicine advancements (Berman 2019).

5.2. Interpretative framework: anomic and post-factual syndrome – some theses for discussion/understanding of recent societal crises (especially the COVID-19 pandemic) and mindset behind them

1.

Studying and evaluating epidemiological measures, vaccination against COVID-19, the role of politics and experts, as well as public opinion polls has led us to new insights and certain corrections of our understanding of social and political turbulence and morphogenesis. In fact, the pandemic turned into a new field of social struggles and doctrinal clashes on a scale that we are not used to. The impression is that social and political polarisation further expanded during the pandemic. Reaching consensus has almost become mission impossible.

Indeed, sociological and broader integral and heterodox social scientific and humanistic insights are needed to understand the latent and manifest phenomena we face. The structural shifts and rapid social changes that are outpacing regulatory and ethical frameworks should be highlighted. In this sense, we may speak of anomie (following E. Durkheim). This concept implies an erosion of the normative order, manifested in reduced social integration and solidarity. In essence, it is a crisis of legitimacy, a lack of trust in institutions, a kind of disorganisation of the system, and disorientation. This is then reflected in both the functioning of the subsystems and on the micro level, in interpersonal relations and in the profile of the personality that adapts to these structural changes.

2.

Anomie refers primarily to the moral and evaluative/expressive dimension, and less to the cognitive, i.e., gnoseological/epistemological side (the distinction between doxa and episteme from old Greek philosophy is useful here) of disorientation and relativisation. We combine the two – moral and cognitive - aspects. In other words, we believe that the current crisis of society and civilisation is linked to both anomy on the moral level and a known syntagm of a post-factual (post-truth) society, which involves cognitive map disorientation/simplification and an a priori distrust of science and experts.

3.

The contemporary social framework and decision-making system are increasingly perceived as unstable and unable to cope with the phenomena and crises created by the pandemic, the war in Ukraine, globalisation, climate change, rapid digitalisation transition, social media and online communication. One outcome of these "objective" social facts (as E. Durkheim, one of the founders of sociology, would call them) is that a pattern of forma mentis (mindset) and a (sub)cultural matrix is being formed and reinforced, which has the characteristics of an anomic phenomenon. There are many parallels with the nihilistic call for a revaluation of all values and with concepts such as cynical reasoning (or cynical distance), relativism and solipsism.

4.

Anomie means that old norms/values are no longer valid and new ones do not yet exist. It also means the coexistence of values that are contradictory or even mutually exclusive (binomie). However, although it can be argued that this is a legitimate state in a pluralistic/democratic society, we mean the state where the reaching of minimal basic consensus is not possible (J. Habermas expressed in terms of communication vs. systemic rationality). The intermediate period provides an opportunity for extremism, fundamentalism and the emergence of saviours and gurus of all kinds. On the other hand, there are strong tendencies towards the negation ('nihilation') of all hierarchies

(including scientific hierarchies) and the emergence of an anti-systemic subculture and anti-politics. Our interpretation is that the anomic and post-factual (post-truth) form of forma mentis and the cultural matrix reflected in the personality structure is a syndrome made up of several typical and either loosely or tightly connected components/symptoms. Different combinations of these are possible.

5.

The first symptom is manifested in amnesia and a short historical memory whereby unpleasant situations or problems are not explained but made to seem non-existent. A good example of suppression is the pandemic where, at least implicitly, there is a view that it is over and that there is no need to deal with it anymore or to prepare for similar possible phenomena (in order to recognise and manage them from the outset). Simply because it is not talked being about, it is really believed to be gone. Indeed, most people are behaving in line with this interpretation. Another feature of the anomic personality structure that reinforces amnesia is hypocrisy or chameleonism, which also helps to keep one's image as one would like others to see it, yet on the other hand allows one to be flexible and adaptable without having a guilty conscience.

The third component is cognitive dissonance, namely, a conflict or mismatch between the information and beliefs that form the basis of our (concrete) attitudes or behaviour (or a mismatch between values and behaviour). This mismatch is something that the individual tries to resolve, but is often not aware of, and so it persists. On the level of opinion polls, on one hand in Slovenia the advocacy of an egalitarian society, whereby the state should ensure that income disparities are kept to a minimum, has been found while, on the other hand, public opinion favours those who are more productive and creative.

Another element of the personality structure is (pathological) narcissism, based on extreme individualism/subjectivism which is the basis for solipsism and relativism. Such a person claims the right to see things in their own way, regardless of whether they are able (or prepared) to argue in support of their hastily taken-in information from social media, digital portals, or blogs. Conspiracy theories and ‘influencers’ guide the decisions of millions of people, even in complex situations like a pandemic. With some exaggeration, it can be said that this is also the punishment for experts and scientists who are too overbearing. Still, it is clear that these are global processes whose background is sometimes difficult to unravel.

Certainly, narcissism has a negative impact on social responsibility, as rights and particular interests are at the forefront. Here we can refer to the acquisitive individualism or non-selective consumerism taking place in modern ‘sanctuaries’: shopping centres, which are springing up like mushrooms after the rain (in Slovenia, for example), notwithstanding the fact that a recession is looming or that purchasing power is declining.

Constituting an important component of the anomic/post-factual mentality, as a fifth component or symptom we refer not only to amnesia, but also to short-term-oriented thinking, acting and decision-making that prevails not merely on the level of the individual, but also (as an adverb) in politics, along with the business world and other sub-systems. If this approach is combined with ‘group-think’ monolithicism where it is ‘unseemly’ to challenge the majority opinion and such groups or so-called ego-centric networks also have influence on decision-making, the consequences can only be negative.

6.

Although the symptoms that make up the syndrome of anomic and post-factual forma mentis cannot be said to be predominant, they are present in many settings and certainly shape and determine the way we respond to structural shifts and social crises. It is at once a consequence and a concomitant of these shifts and crises. We can speak of defence mechanisms that help to survive (and, for some, to thrive) in a globalised "world bursting at the seams" (as the UN Secretary-General recently described it). There are major upheavals and transformations taking place, but there are no real cognitive and political tools to deal with them. We see the inability to reach consensus not only in Eastern Europe but also in countries like France with the pension reform or in the UK (Brexit) or recently on the level of the EU regarding the (i)migration policy.

Last but not least, it can be seen from our (and others') research and papers that during the pandemic – and especially at the end of it (from 2022 till today), in many EU member states (and beyond) there was no consensus on dealing with the epidemiological measures – or later on in evaluating them – nor in the relationship between experts and politics/civil society groups or among experts from different disciplines.

7.

Summarising these theses, it may be said that the common denominator of the anomic and post-factual syndromes is moral and cognitive anarchic relativism/solipsism. It is driven by digital technology, especially social media. This mental attitude is both a consequence of structural change and an adaptation to it. We do not only live in a reflexive risk society (U. Beck), nor in a knowledge society or meritocratic society. Many social groups (even educated ones, or in societies where a large part of the population holds a tertiary education – like in Slovenia) are moving towards 'conspiracy theories', following the views of populist influencers and holding a negative attitude to science. Moreover, social (self) thematisation (N. Luhmann), critical reflection and systemic dialogue seem to be increasingly taking a back seat.

8.

It cannot be overlooked that the last sentence above points to a very unpleasant question: are science and expertise also responsible for this situation? Are they part of the solution or the problem? To provide a generalised answer would clearly be a mistake. However, there is solid evidence or at least indications that some groups of scientists and experts active during the pandemic as advisers, researchers or public intellectuals revealed the deficiency of their engagement and style of communication (lack of interdisciplinarity, lack of dialogue in order to reach basic consensus or explanation of divergent opinions, non-autonomous habitus, submission to political or ideological influence). Yet, it is true that scientists and experts are not the only actors given that they are dependent on research policy. If this policy is intertwined with narrow and short-term commercial or ideological interests, then some (or many) of them are prone to adapt with all the problematic consequences this may bring.

On the other side, it cannot be ignored that the respect for and implementation of scientific advice and proposals is dependent on the will, interest and understanding of decision-makers. Here we can encounter a vitious or a virtuous circle.

Next steps

This analysis offers a great starting point for further research. It is clear that sociological factors play the role in vaccine acceptance, especially during the pandemic. For example, we can see that trust in institutions and scientists is connected to the vaccination uptake. However, new questions arise, for example, what are the factors influencing the levels of trust in different societies and how to address them. Further research is also needed to deepen the understanding of the role of science and scientists in society and how to bridge the gap between science and wider public.

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