



# State of Vaccine Confidence in the European Union

2022



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August 2022



Vaccine  
Confidence  
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Print	ISBN 978-92-76-58958-7	doi: 10.2875/188426	EW-08-22-321-EN-C
PDF	ISBN 978-92-76-58959-4	doi: 10.2875/149743	EW-08-22-321-EN-N

Luxembourg: Publications Office of the European Union, 2022.

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## Acknowledgements

The Vaccine Confidence Project™ would like to thank ORB International, the Standing Committee of European Doctors, the University of Antwerp, and the London School of Hygiene and Tropical Medicine for providing support and data collection.



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# 1 Executive summary

Vaccination is considered one of the most important scientific advances of the 21<sup>st</sup> century,<sup>1</sup> the impact of which is hard to exaggerate with vaccines estimated to prevent 4-5 million deaths worldwide annually before the pandemic.<sup>2</sup> The rapid development and rollout of the COVID-19 vaccines have saved further lives still and has proved to be a vital instrument in the fight against the pandemic, turning the tide of health and economic outcomes.

In this report – the third edition of the biennial State of Vaccine Confidence in the European Union – vaccine confidence across the EU is evaluated in 2022 and compared to levels of vaccine confidence in both 2018 and 2020.

Although good majorities of respondents hold positive beliefs towards vaccines in 2022, many of the gains in vaccine confidence witnessed in the previous edition<sup>3</sup> have faded. In the previous edition, large increases in vaccine confidence across many EU member states, particularly with regard to the seasonal influenza vaccine, were detected and were likely impacted by the timing of 2020 fieldwork, which took place in Spring 2020.

Despite a slight fall since 2020, public perceptions towards the safety of the MMR and seasonal influenza vaccines have increased across the EU since 2018, while perceptions towards the HPV vaccine have fallen. As in 2020 and 2018, there are large geographic variations in confidence and confidence trends over time, with many Eastern and Central European countries witnessing notable decreases in confidence. While vaccine confidence among older age groups has consistently been found to be higher than in younger age groups in previous editions, this ‘gap’ in vaccine confidence appears to be widening in 2022 across the majority of EU member states. This vaccine confidence gap between old and young is a worrying trend, with potential fallout for uptake of children’s routine immunisation programmes. This report points to countries where these vaccine confidence gaps are the widest. Follow-up investigations in low confidence countries or countries with low confidence among specific target populations for routine immunisations may be warranted to understand specific barriers to vaccination uptake. Perceptions towards vaccines is again extremely high across the EU among healthcare professionals who have a role in prescribing, administering, or advising on vaccines, though HCPs across most countries are less likely to recommend vaccines to pregnant women.

This study highlights vaccine hesitancy as a complex and context specific challenge, varying across time, place, sociodemographic characteristics, and vaccines.

## 1.1 Key findings

With three waves of data collected since 2018, this edition of the State of Vaccine Confidence in the European Union reports on a number of key findings, examining trends over time and highlighting the current context of the vaccine confidence landscape in 2022.

**Across the EU, overall vaccine confidence has declined among the general public since 2020 but roughly the same as 2018.**

- Agreement that vaccines are important, safe, effective, and compatible with beliefs has fallen compared to 2020 values. Agreement that vaccines are important and effective are also below 2018 levels, but agreement that vaccines are safe and compatible with beliefs are higher than 2018 levels.
- Agreement that the MMR vaccine is safe and important has fallen since 2020 across the EU but remain above 2018 levels
- Agreement in that the seasonal influenza vaccine is important and safe in 2022 is down slightly across the EU since 2020, but up since 2018
- Agreement that the HPV vaccine is important and safe has fallen since 2018

**Vaccine confidence among healthcare professionals remains high in 2022**

- Above 90% of HCPs surveyed in all EU member states agree that vaccines are important
- Above 90% of HCPs surveyed in all EU member states agree that vaccines are safe, except for France, Greece, and Austria
- Healthcare professionals across the EU are highly likely to recommend the MMR, seasonal influenza, and COVID-19 vaccines to patients, though likelihood to recommend the HPV vaccine shows high variability between countries
- HCPs likelihood to recommend seasonal influenza and COVID-19 vaccines to pregnant women are generally lower than their likelihood to recommend these vaccines to other patients

**Variability in vaccine confidence exists between countries, among vaccination types, and within sociodemographic characteristics**

- Overall confidence in the importance, safety, effectiveness, and compatibility with beliefs is highest in Portugal and Spain and lowest in Slovakia and Latvia
- Steep declines in vaccines confidence are a worrying trend most notable in Eastern and Central Europe, the Baltics, and Netherlands
- The MMR vaccine is considered to be the most important in 2022, followed by COVID-19, seasonal influenza, and HPV vaccines. In terms of safety, the MMR vaccine ranks the highest among the general public, and the COVID-19 vaccine, the lowest
- Younger age groups, lower levels of education, and Muslim respondents tend to have lower levels of agreement across all confidence items in many settings compared to lower age groups, those with higher education, and atheists or agnostics, respectively.
- The HPV vaccine is viewed less favourably by females compared to males in France

**The age “gap” in confidence is widening between younger and older age groups**

- Between 2018 and 2022, there is increasing polarisation between older and younger age groups in terms of perceptions of vaccines with over 65s becoming more confident and 18-34-year-olds growing less confident
- The seasonal influenza vaccine is the only vaccination where an inverse of this trend can be seen, where the gap between older and younger age groups is narrowing

## 2 Introduction

The importance of vaccines as a life-saving intervention has been underscored over the last two years. Developed, manufactured, and licensed within just ten months, COVID-19 vaccines are estimated to have already prevented over 14 million deaths.<sup>4</sup> While COVID-19 vaccines are readily available across the EU, spatial heterogeneities in COVID-19 vaccine uptake exist, reflecting populations' differing attitudes towards the vaccine. In this report, the third biennial State of Vaccine Confidence in the European Union study, vaccine confidence across the EU is measured among the general population and healthcare professionals in 2022 and compared to 2020 and 2018.

The outbreak of SARS-CoV-2 was declared a pandemic by the World Health Organization (WHO) on 11 March 2020.<sup>5</sup> The development and roll-out of COVID-19 vaccines has been a major undertaking in the fight against the burden of COVID-19 disease. To date, six COVID-19 vaccines have been approved by the European Medicines Agency,<sup>6</sup> which have been accepted by a large majority of the European public. COVID-19 vaccines were estimated to have prevented 14.4 million deaths worldwide before the end of 2021,<sup>4</sup> a remarkable global public health achievement.

Despite the importance of vaccines, uptake of COVID-19 vaccines has been slower in some EU settings than others: reflecting variations in confidence towards vaccines across the continent<sup>7,8</sup> as well as access to vaccines.

The success of COVID-19 vaccines and their rapid rollout across the EU is a pioneering moment in scientific history. However, the latest World Health Organization and UNICEF estimates of national immunization coverage (WUENIC) reveal that the COVID-19 pandemic has contributed to the largest fall in global routine immunization coverage in three decades.<sup>9</sup> Although the majority of the 25 million infants who have missed out on vaccines live in Africa and Asia, Europe has not escaped declining uptake rates. Coverage rates of first-dose measles-containing vaccines, for example, have fallen by two percentage points across the WHO's European Region since 2019, with falls above five points in Bulgaria, Malta, and Poland.<sup>10</sup> Although disruptions in vaccine supply, access, and delivery caused by the pandemic are playing a substantial role,<sup>11</sup> it is currently unclear whether vaccine confidence is also contributing to declining vaccination rates.

In this edition of the State of Vaccine Confidence in the European Union, 25,143 members of the public were interviewed across the 27 EU member states (EU-27), building on 53,825 interviews conducted in 2018 and in Spring 2020 across the EU-27. Additionally, 3,012 healthcare professionals (HCPs) were surveyed in 2022. In this edition, nurses and GPs from the 2022 and 2020 surveys with a role in vaccinating children are considered. Data presented throughout this study does not consider 2018 or 2020 data collected in the United Kingdom.

This regular monitoring of vaccine confidence across the EU allows for an evaluation and assessment of current confidence levels as well as tracking of the evolution of the confidence landscape. This edition of the report explores the changing vaccine confidence landscape in the EU in response to the COVID-19 pandemic.

## 3 Methodology

### 3.1 Measuring vaccine confidence

Vaccine confidence is measured across the European Union using the Vaccine Confidence Index™ tool (VCI) developed by the Vaccine Confidence Project™. The VCI is a set of survey items that measures confidence in vaccines generally as well as confidence towards specific vaccines and has been used to monitor and map vaccine confidence around the globe.<sup>12</sup>

The VCI measures confidence across four dimensions of vaccine confidence: confidence in the importance of vaccines, confidence in their safety, confidence in the effectiveness of vaccines, and compatibility of vaccines with religious or personal beliefs. In the previous edition of this report,<sup>3</sup> confidence was measured with respect to specific vaccines as well as perceptions to vaccines in general. The specific vaccines in the previous report were the measles, mumps, and rubella vaccine (MMR), the human papillomavirus vaccine (HPV), and the seasonal influenza vaccine (flu). In this edition, this list is extended to consider confidence in the COVID-19 vaccine.

A summary of all VCI items presented to both the general public and healthcare professionals is shown in **Table 1**. Respondents are able to respond to these items on a four-point scale ranging from “strongly agree” to “strongly disagree”. Respondents can also report that they “do not know” or choose not to provide a response. In addition to these items displayed in **Table 1**, which are asked to both the general public and healthcare providers, healthcare providers are asked about their likelihood of recommending vaccines to patients. These additional items are shown in **Table 2**. In this 2022 report, healthcare professionals are now also asked about whether they would recommend the COVID-19 vaccines to patients and whether they would recommend COVID-19 vaccines to pregnant women. These recommending items are answered on another four-point scale, this time ranging from “highly unlikely” to “highly likely.” Again, HCPs can also report that they “do not know” or can choose not to reply.

### 3.2 2022 Data Collection

A total of 25,143 members of the general public and 3,012 healthcare professionals were surveyed across the EU’s 27-member states (EU-27) between March and August 2022. **Table 3** details the fieldwork dates and the number of respondents surveyed for each country’s public and HCP sample. All surveys were distributed by ORB International ([www.orb-international.com](http://www.orb-international.com)) via online panels in local languages with additional HCP survey responses collected in Cyprus, Malta, and Luxembourg via survey distribution in partnership with the Standing Committee of European Doctors (CPME) ([www.cpme.eu](http://www.cpme.eu)).

For the general public participants, quotas were set for sex, age band, and sub-national region so that nationally representative samples were obtained. All respondents participating are aged 18 or over. For each individual in the general public sample, additional individual level socio-demographic data was collected on respondents’ sex, age, highest level of educational attainment, and religion. A target of 1,000 responses per country was set.

For healthcare professional survey samples, quotas were set by profession, with targets set for 80% of General Practitioners (GPs) and 20% of nurses. As in 2020, only healthcare workers with a role in prescribing, administering, or advising on vaccines were included. A target of 100 HCPs per country was set. This target was met in most settings, however, in Luxembourg, Malta, and Cyprus below ten responses were obtained. To provide a meaningful comparison of healthcare professionals' views over time, therefore, only 2020 and 2022 data is compared, as 2018 data did not provide a screen-out for whether HCPs were responsible for prescribing, administering, or advising on vaccines.

### 3.3 Analysis

Throughout this report, responses to all survey items are grouped from their original four categories into two. In the case of the vaccine confidence survey items (**Table 1**), “strongly agree” and “tend to agree” responses are recoded to “agree”, while all remaining choices, including the “do not know” response or no response, are recoded to “not agree”. In the case of HCPs and the likelihood of recommending vaccines (**Table 2**), the four-category response scale sees “highly likely” and “somewhat likely” recoded to “likely”, with all other responses (“somewhat unlikely”, “highly unlikely”, “do not know”, and no response) recoded to “not likely”. These recodings prevent the loss of missing data and facilitate comparisons in vaccine confidence over time. This categorisation (and modelling approach, described below) differs from the previous report, reducing and simplifying the comparisons over time for easier interpretation of trends.

For the public data, a Bayesian multilevel multivariable logistic regression model was fit for each survey item in **Table 1**. In each model, each survey item is a binary response variable (agree or not agree) and individuals' socio-demographic characteristics (age, sex, education level, employment status, and religion) are used as explanatory variables to explore the associations between socio-demographic status and vaccine confidence. In all models, individuals are nested within countries, which are further nested within year. Each model is fit using data from all individuals across all survey editions in which a given item was included. In cases where a survey item was asked in all three editions, therefore, the multilevel model comprises 78,968 individuals, which is the total number of respondents in EU-27 countries across all three surveys.<sup>3,13</sup> This model approach and formulation allows the probability of item agreement to be estimated for each individual in each year. These estimates are then post-stratified to give national level estimates by reweighting according to the relative number of individuals of a given sex and age band within a given year. These post-stratified weights are derived from Eurostat data.<sup>14</sup> EU-wide summaries are calculated via a weighted average of national-level statistics according to national population size.

For the HCP survey, responses in 2020 and 2022 are reweighted by the sample-wide distribution of profession, age (18-44, 45-55, and 55 and over), and sex (male and female). This reweighting therefore means that each country and time point has the same effective number of nurses and GPs, males and females, and HCPs in each age band, so that a meaningful comparison can be made. These raw re-weighted percentages are presented in this report.

Throughout the report, vaccine confidence estimates are presented as the percentage of respondents agreeing with a given item and, in the case of HCPs, the percentage likely to recommend a vaccine are also provided. Estimates in this report (notably EU-wide estimates) may vary from

previous reports due to the exclusion of data from United Kingdom in this report as well as the model-based approach described above used for the general population.

**Table 1** Vaccine confidence survey items for the general public and healthcare professionals. Each item is answered on a four-point scale that ranges from “strongly disagree” to “strongly agree”. Respondents may also indicate that they “do not know” or provide no response. The wording to the confidence item on compatibility with religious, personal, or philosophical beliefs has changed in 2022 from ‘vaccines are compatible with my religious beliefs’ in 2018 and 2020.

Vaccine confidence survey items		2018	2020	2022
General vaccine confidence	Vaccines are important for children to have	✓	✓	✓
	Vaccines are safe	✓	✓	✓
	Vaccines are effective	✓	✓	✓
	Vaccines are compatible with religious, personal, or philosophical beliefs	✓	✓	✓
MMR vaccine confidence	MMR vaccine is important for children	✓	✓	✓
	MMR vaccine is safe	✓	✓	✓
	MMR vaccine is effective			✓
	MMR vaccine is compatible with religious, personal, or philosophical beliefs			✓
Seasonal influenza vaccine confidence	Seasonal influenza vaccine is important	✓	✓	✓
	Seasonal influenza vaccine is safe	✓	✓	✓
	Seasonal influenza vaccine is effective			✓
	Seasonal influenza vaccine is compatible with religious, personal, or philosophical beliefs			✓
HPV vaccine confidence	HPV vaccine is important		✓	✓
	HPV vaccine is safe		✓	✓
	HPV vaccine is effective			✓
	HPV vaccine is compatible with religious, personal, or philosophical beliefs			✓
COVID-19 vaccine confidence	COVID-19 vaccines are important			✓
	COVID-19 vaccines are safe			✓
	COVID-19 vaccines are effective at preventing infection			✓
	COVID-19 vaccines are effective at preventing severe disease			✓
	COVID-19 vaccines are effective at preventing transmission to others			✓
	COVID-19 vaccines are compatible with religious, personal, or philosophical beliefs			✓

**Table 2** Measuring healthcare professionals' likelihood to recommend vaccines to patients. 2018 data is not further considered in this edition.

Likelihood of recommending ...		2018	2020	2022
How likely are you to recommend	... the MMR vaccination to patients?	✓	✓	✓
	... the seasonal influenza vaccination to patients?	✓	✓	✓
	... the seasonal influenza vaccine to a pregnant woman?	✓	✓	✓
	... the HPV vaccination to patients?		✓	✓
	... the COVID-19 vaccination to patients?			✓
	... the COVID-19 vaccination to a pregnant woman?			✓

**Table 3** Surveys conducted in State of Vaccine Confidence in the EU 2022. Note low sample sizes for HCP surveys in Cyprus, Luxembourg, and Malta.

Country	Sample size and fieldwork dates (public)	Sample size and fieldwork dates (HCPs)
<b>Austria</b>	998, 25 March to 7 April	99, 18 May to 29 July
<b>Belgium</b>	999, 25 March to 10 April	207, 18 May to 11 August
<b>Bulgaria</b>	999, 25 March to 16 April	100, 30 May to 28 July
<b>Croatia</b>	988, 25 March to 17 April	97, 29 May to 7 July
<b>Cyprus*</b>	250, 25 March to 31 March	5, 20 July to 22 July
<b>Czechia</b>	993, 25 March to 7 April	96, 30 May to 22 July
<b>Denmark</b>	997, 25 March to 8 April	98, 18 May to 17 July
<b>Estonia</b>	993, 25 March to 1 April	95, 13 June to 4 July
<b>Finland</b>	993, 25 March to 12 April	97, 18 May to 5 July
<b>France</b>	999, 25 March to 6 April	102, 18 May to 21 July
<b>Germany</b>	998, 25 March to 6 April	99, 18 May to 22 July
<b>Greece</b>	997, 25 March to 16 April	98, 29 May to 14 June
<b>Hungary</b>	999, 25 March to 12 April	100, 29 May to 5 June
<b>Ireland</b>	998, 25 March to 14 April	105, 26 April to 21 July
<b>Italy</b>	998, 25 March to 5 April	100, 18 May to 27 May
<b>Latvia</b>	992, 28 March to 28 April	102, 30 May to 13 July
<b>Lithuania</b>	987, 28 March to 16 April	94, 30 May to 21 June
<b>Luxembourg*</b>	500, 31 March to 14 April	1, 20 July to 20 July
<b>Malta*</b>	492, 25 March to 29 April	6, 15 July to 18 July
<b>Netherlands</b>	999, 25 March to 6 April	93, 29 May to 1 June
<b>Poland</b>	997, 28 March to 8 April	100, 23 May to 5 July
<b>Portugal</b>	1000, 28 March to 14 April	497, 18 May to 21 July
<b>Romania</b>	999, 28 March to 14 April	99, 29 May to 31 May
<b>Slovakia</b>	995, 25 March to 15 April	231, 29 May to 23 August
<b>Slovenia</b>	988, 25 March to 18 April	93, 29 May to 17 June
<b>Spain</b>	996, 25 March to 10 April	100, 18 May to 24 June
<b>Sweden</b>	999, 25 March to 8 April	98, 18 May to 21 July

## 4 General Population

### 4.1 EU-wide vaccine confidence

The estimated percentage of the EU adult population agreeing with the survey items in **Table 1** are shown in **Figure 1**. All figures below refer to the values provided in **Figure 1**.

Across the EU-27 member states, 81.5% of 25,143 respondents agree that vaccines are important, down from 91.8% in 2020 and 89.6% in 2018. A similar trend, but less pronounced, is observed for perceptions towards the effectiveness of vaccines, with 85.6% agreeing that vaccines are effective in 2022, down from 89.7% in 2020 and 87.2% in 2018.

The percentage of respondents agreeing that vaccines are safe stands at 82.3% in 2022, an increase from 81.9% in 2018, but down from 87% in 2020.

With regards to confidence in specific vaccines, the MMR vaccine was considered to be the most important in 2022, with 84.5% of respondents agreeing that the MMR vaccine was important. The COVID-19 vaccine was considered to be the next most important vaccine with 77% of the EU public agreeing with its importance, followed by the seasonal influenza vaccine (75.6%), and the HPV vaccine (75%). In 2022, fewer people agreed that these vaccines are important than in 2020: with MMR down from 88.2%; seasonal influenza down from 76.7%; and HPV down from 80.2%. However, perceptions towards the importance of MMR and seasonal influenza vaccines are higher than 2018 levels, with perceptions towards the importance of the seasonal influenza vaccine almost 13 percentage points (pp) higher than in 2018.

EU-wide agreement in the safety of the MMR vaccine in 2022 are down since 2020, from 86.6% to 85.1%, though 2022 agreement is still higher than in 2018 (85.1% compared to 81.9%). Perceptions towards the safety of the seasonal influenza vaccine have continued to grow into 2022, with 81.4% of the EU-27 agreeing that the seasonal influenza vaccine is safe in 2022, compared to 79.4% in 2020 and only 67.2% in 2018. The HPV vaccine is viewed overall as less safe in 2022, with 74.4% of respondents agreeing the vaccine was safe in 2022, compared to 78.3% in 2020. 73.5% of the EU public believe the COVID-19 vaccine to be safe, the lowest of all vaccines considered in this report.

Three measures of COVID-19 vaccine effectiveness were added in this edition to explore public perceptions around the effectiveness of COVID-19 vaccines in preventing severe disease, infection, and onward transmissibility (**Table 1**). 77.2% of the EU-27 public believe that COVID-19 vaccines are effective at preventing severe disease (a higher proportion than agreed that COVID-19 vaccines are safe), 66.8% agree that COVID-19 vaccines are effective against getting infected with SARS-CoV-2, and 65.9% agree that COVID-19 vaccines are effective at preventing transmission of the SARS-CoV-2 virus to others.

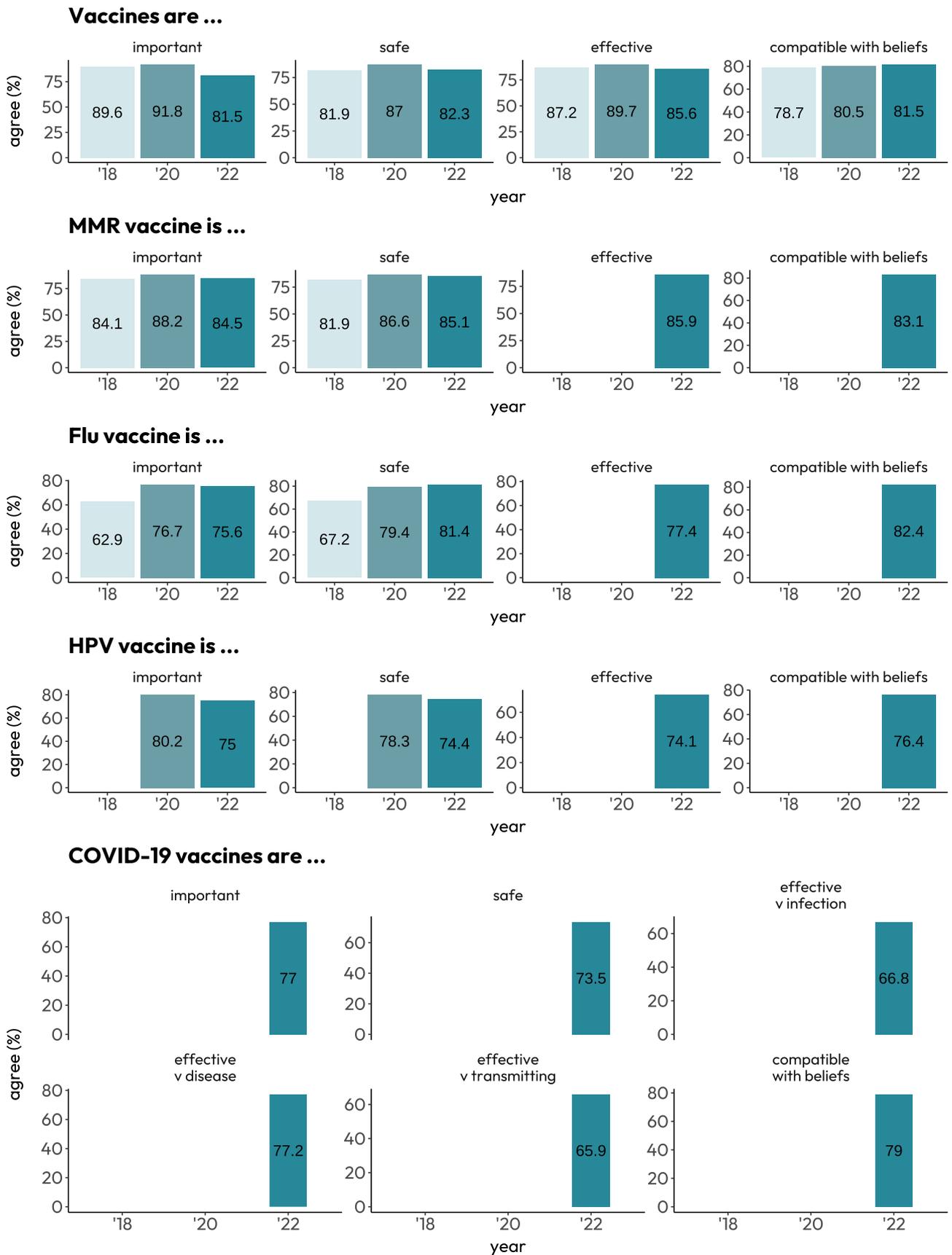


Figure 1 EU-wide vaccine confidence in the general public between 2018 and 2022

## 4.2 General vaccine confidence by country

Vaccine confidence levels between 2018 and 2022 for each EU member state regarding general vaccine perceptions are shown in **Figure 2**. These trends are mapped in **Figure 3**. In the text below (and the corresponding text in sections 4.3, 4.4, and 4.5), only changes over time that are statistically significant are flagged and commented on.

The percentage of respondents agreeing that vaccines are important in 2022 is highest in Portugal (92.4%), Finland (90.4%), and Spain (88.6%), and lowest in Slovakia (62.1%), Croatia (61.7%), and Latvia (60.3%). A total of 25 member states therefore have population-level agreement that vaccines are important above 80%.

The highest levels of agreement that vaccines are safe in 2022 are also in Portugal (93.7%), Spain (90%), and Finland (89.4%), but lowest in Latvia (62.2%), Bulgaria (60.8%), and Slovakia (60.4%). Despite 25 member states having in excess of 80% of their populations agreeing that vaccines are important, 16 member states have levels of agreement that vaccines are safe below 80%.

Portugal also has the highest population agreement that vaccines are effective (94.3%) followed by Luxembourg (91.8%), and Spain (91.5%); the lowest agreement levels in the effectiveness of vaccines are in Bulgaria (67.5%), Slovakia (66.3%), and Latvia (65.8%). Portugal, Spain, and Italy have the highest levels of agreement that vaccines are compatible with personal or religious beliefs in 2022, whereas Croatia, Latvia, and Malta have the lowest agreement.

Between 2018 and 2022, perceptions towards the importance of vaccines have only increased in Poland, which has seen an increase from 75.6% of their public agreeing that vaccines are important in 2018 to 80.5% in 2022 (**Figure 2** and **Figure 3**). In every other country across the EU, with the exception of Sweden, for which there is no change detected, agreement that vaccines in general are important has fallen. The biggest falls in agreement are in Croatia (-27.7pp between 2018 and 2022), Latvia (-25.8pp), and Slovakia (-24.3pp). Between 2018 and 2022, general perceptions towards the safety of vaccines have increased in Poland (71.4 to 79.9%), France (71.5 to 79.6%), and Ireland (85.8 to 89%), but has decreased in 14 countries, including Netherlands (-14.2pp), Slovakia (-14.2pp), and Slovenia (-14.6pp), which have experienced the largest falls. Confidence in the effectiveness of vaccines in general has again only increased between 2018 to 2022 in Poland, from 74.4% to 82.5%, but has fallen in 15 countries, with the largest decreases again in Netherlands (-12.8pp), Slovakia (-14.6pp), and Slovenia (-16.2pp).

Across the European Union there are broad declines in confidence between 2018 and 2022, notably in Netherlands, Denmark, the Baltic states, and Central and Eastern Europe. Unlike most EU countries which witnessed a spike in confidence between 2018 and 2020, the Netherlands recorded year-on-year declines between 2018 and 2022 (**Figure 2**[Error! Reference source not found.](#)).

## General vaccine confidence

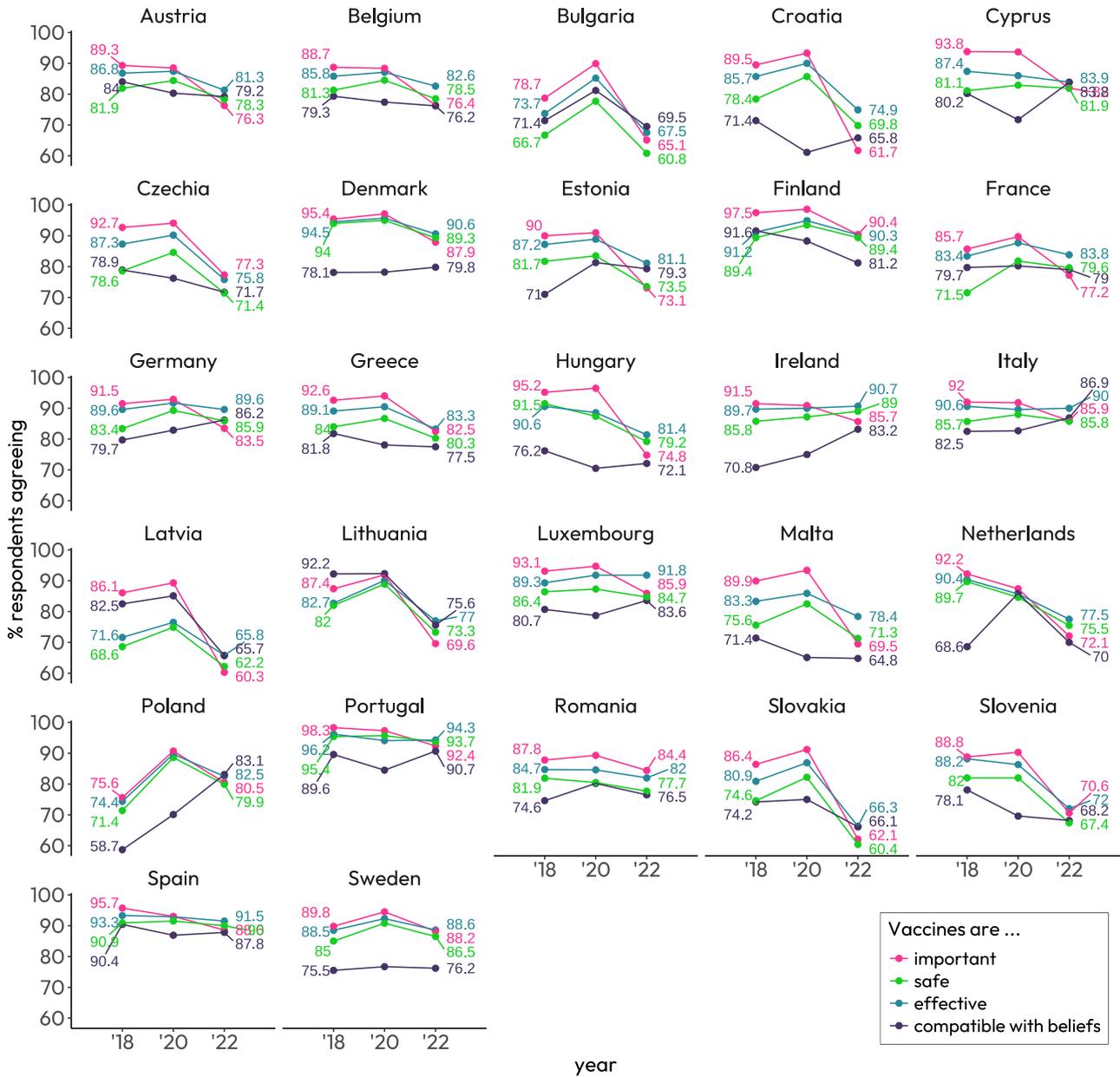
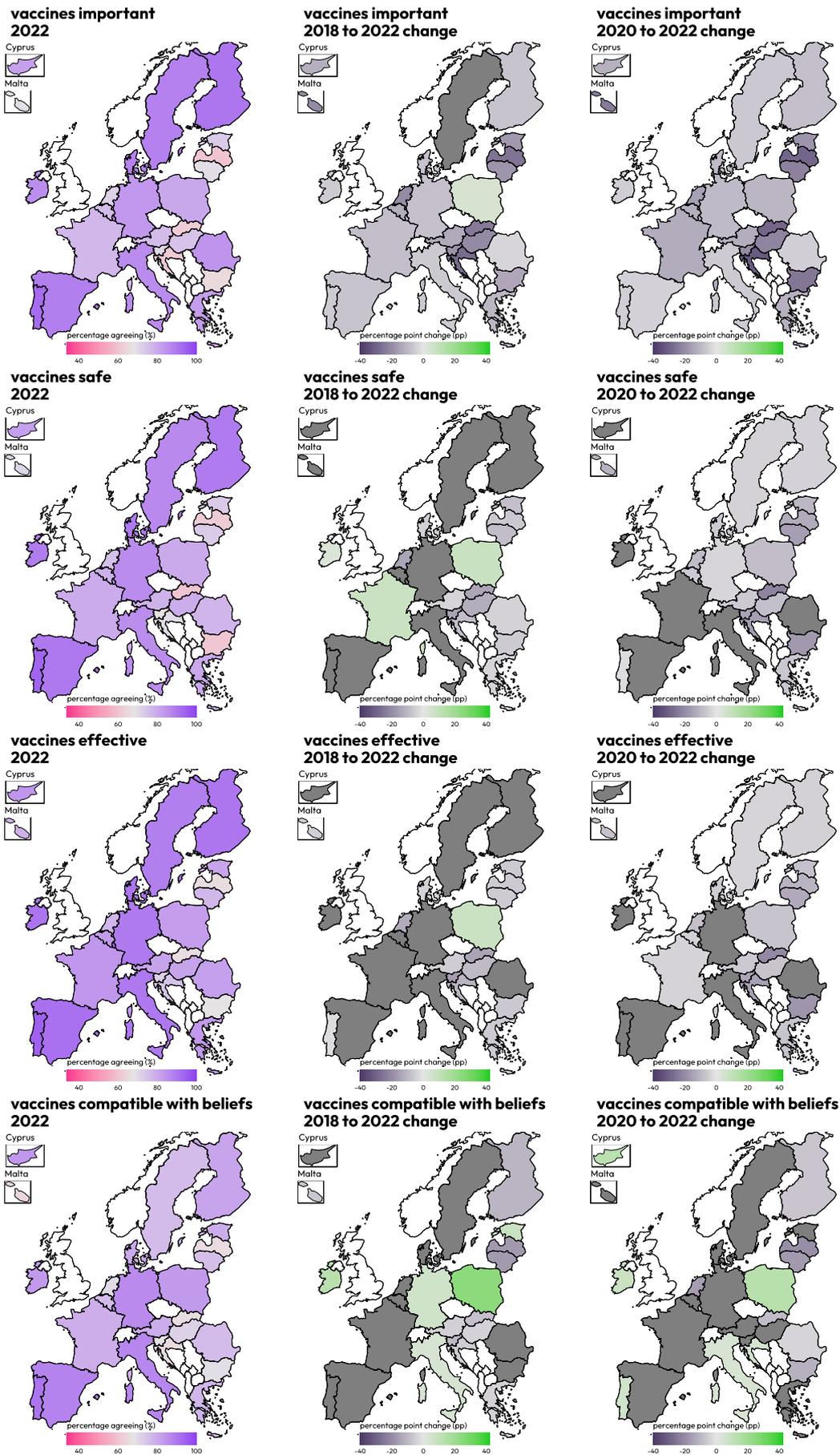


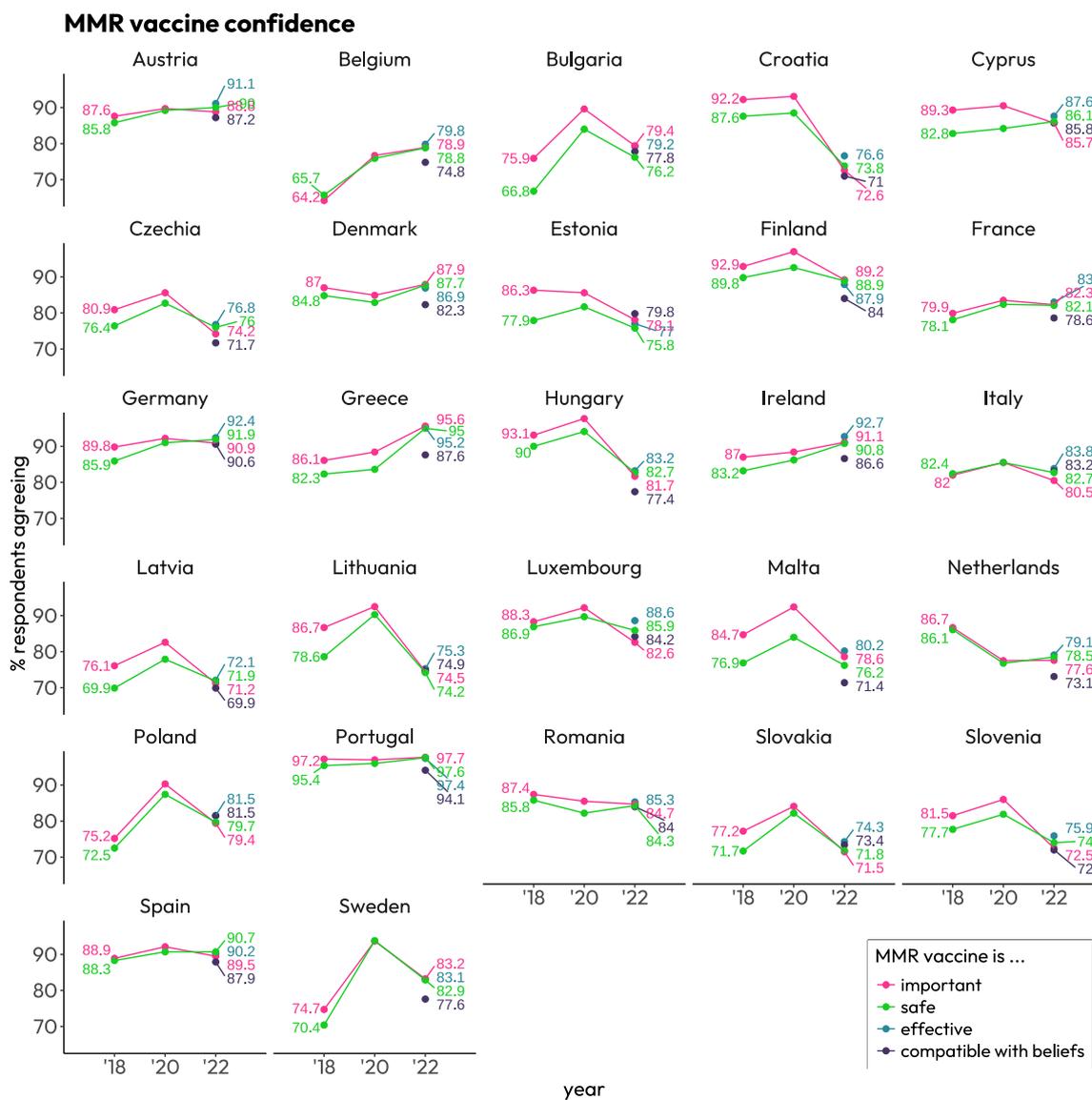
Figure 2 Trends in general vaccine confidence between 2018 and 2022 for each EU member state



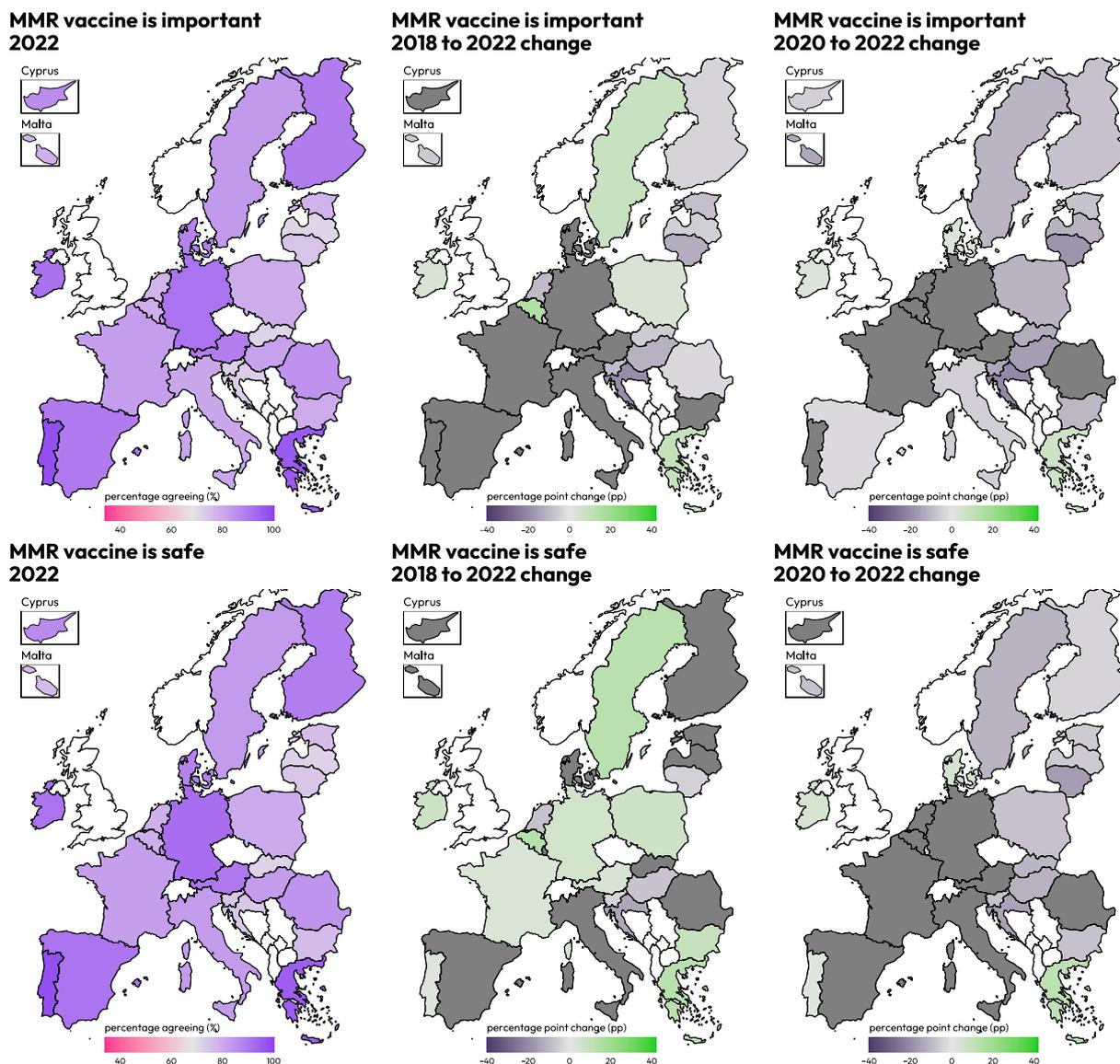
*Figure 3* Confidence in 2022 (left column) in the importance, safety, effectiveness, and compatibility of vaccines. Changes in confidence between 2018 and 2020 (centre column) and between 2018 and 2022 (right column) are also shown. Countries with no significant change detected are coloured dark grey.

### 4.3 MMR vaccine confidence by country

Levels of confidence in the MMR vaccine between 2018 and 2022 are shown for each member state in **Figure 4** and mapped in **Error! Reference source not found.**. The percentage of respondents agreeing that the MMR vaccine is important in 2022 is highest in Portugal (97.7%), Greece (95.6%), and Ireland (91.1%), and lowest in Slovenia (72.5%), Slovakia (71.5%), and Latvia (71.2%). The highest levels of agreement that the MMR vaccine is safe in 2022 are in Portugal (97.6%), Greece (95%), and Ireland (92.7%), followed by Germany (91.9%) and lowest in Croatia (73.8%), Latvia (71.9%), and Slovakia (71.8%). Portugal also has the highest population agreement that the MMR vaccine is effective (97.4%) followed by Greece (95.2%), and Ireland (92.7%); the lowest agreement levels in the effectiveness of the MMR vaccine are in Lithuania (74.3%), Slovakia (74.3%), and Latvia (72.1%). Portugal, Germany, and Spain have the highest levels of agreement that MMR vaccine is compatible with personal or religious beliefs in 2022, whereas Malta, Croatia, and Latvia have the lowest agreement.



**Figure 4** Trends in confidence in the MMR vaccine between 2018 and 2022 for each EU member state. The questions surrounding the effectiveness and belief-compatibility of the MMR vaccine were added in 2022.



*Figure 5 Confidence in 2022 (left column) in the importance and safety of the MMR vaccine. Changes in confidence between 2018 and 2020 (centre column) and between 2018 and 2022 (right column) are also shown. Countries with no significant change detected are coloured dark grey.*

Between 2018 and 2022, a higher proportion of respondents in Belgium, Greece, Sweden, Ireland, and Poland believe the MMR vaccine to be important, while lower proportions in 13 countries believe the MMR vaccine to be important, with the largest falls in Croatia (-19.6pp), Lithuania (-12.2pp), and Hungary (-11.4pp). Most of Western Europe reports no change.

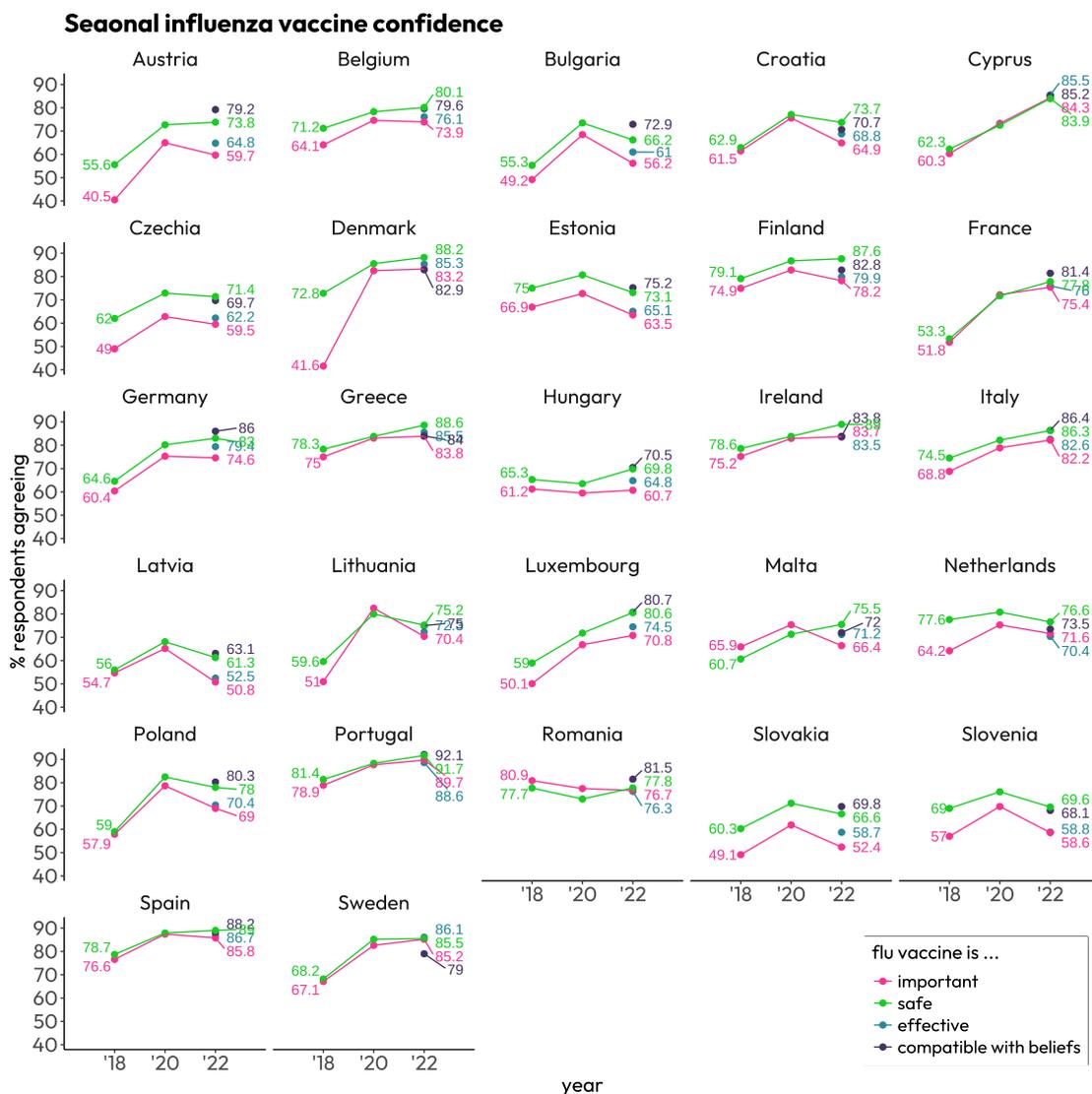
Changes in countries' agreement towards the safety of the MMR vaccine reveals that while five countries have lower proportions agreeing that the MMR vaccine is safe in 2022 compared to 2018 (Croatia, Hungary, Lithuania, Netherlands, and Slovenia), 10 have higher proportions: Austria, Belgium, Bulgaria, Germany, France, Greece, Ireland, Poland, Portugal, and Sweden. The country with the largest increase in population-wide agreement that the MMR vaccine is safe is Belgium (+13.1pp change since 2018), while the country with the largest decrease is Croatia (-13.7pp).

It is worth noting that while MMR confidence overall appears relatively stable across the EU, with the exceptions listed above, when socio-demographic determinants of confidence are explored in section 4.8, some countries with gains in population-level confidence since 2018 have falls in confidence in younger age groups (for example, in Belgium and Bulgaria).

## 4.4 Seasonal influenza vaccine confidence by country

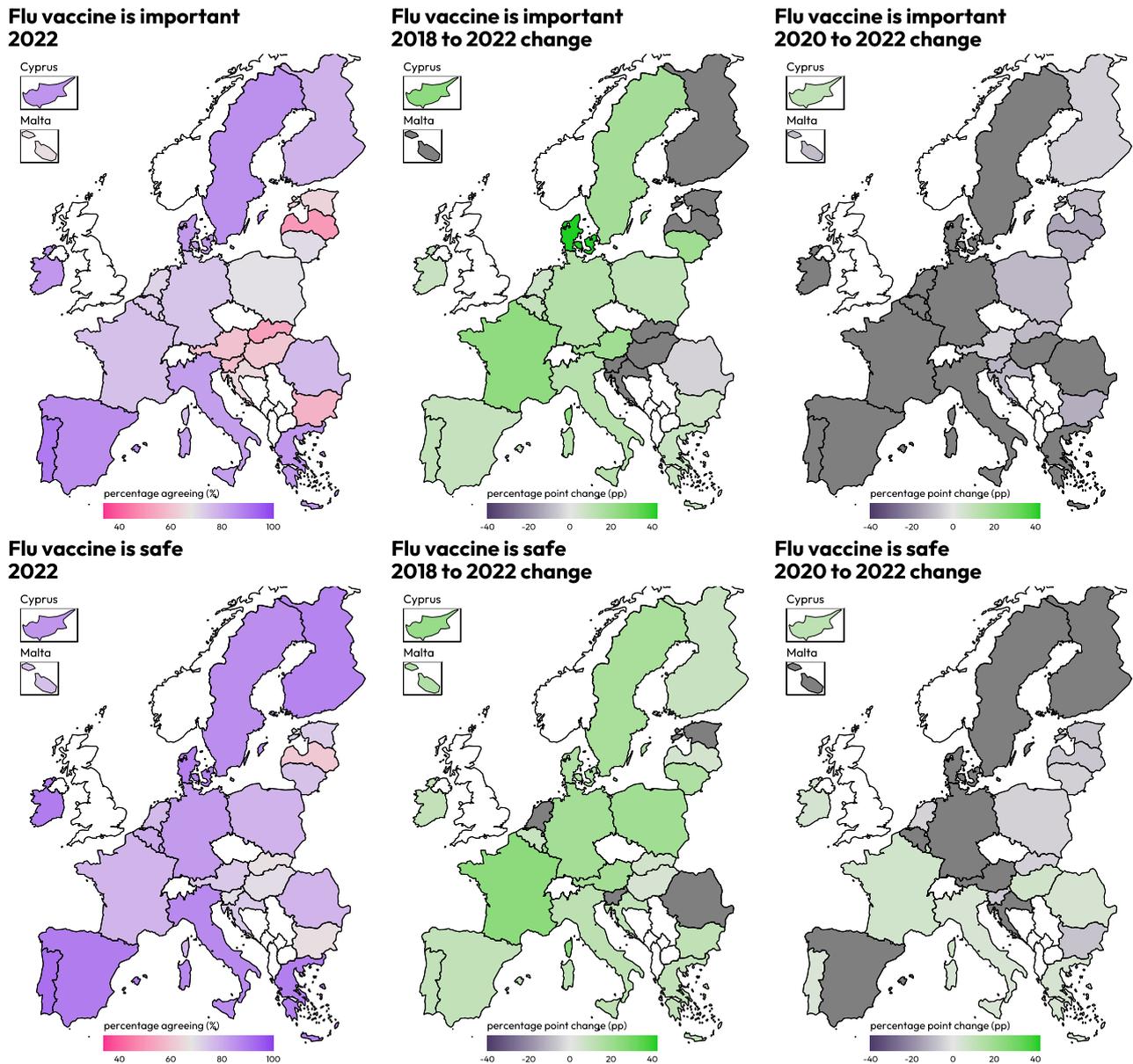
Levels of confidence in the seasonal influenza vaccine between 2018 and 2022 are shown for each member state in **Figure 6** and mapped in **Figure 7**.

The percentage of respondents agreeing that the seasonal influenza vaccine is important in 2022 is highest in Portugal (89.7%), Spain (85.8%), and Sweden (85.2%), and lowest in Bulgaria (56.2%), Slovakia (52.4%), and Latvia (50.8%). The highest levels of agreement that the seasonal influenza vaccine is safe in 2022 are in Portugal (92.1%), Ireland (83.8%), and Spain (88.2) and lowest in Slovakia (60.3%), Bulgaria (55.3%), and Latvia (56.2%). Portugal again has the highest population agreement that the seasonal influenza vaccine is effective (89.7) followed by Spain (86.7%), and Sweden (86.1%); the lowest agreement levels in the effectiveness of the flu vaccine are in Slovenia (58.8%), Slovakia (58.7%), and Latvia (52.5%). Portugal, Spain, and Italy have the highest levels of agreement that seasonal influenza vaccine is compatible with personal or religious beliefs in 2022, whereas Czechia, Slovenia, and Latvia have the lowest agreement.



**Figure 6** Trends in confidence in the seasonal influenza vaccine between 2018 and 2022 for each EU member state. The questions surrounding the effectiveness and belief-compatibility of the flu vaccine were added in 2022.

Despite the variability in national level confidence towards other vaccine confidence items across the EU, public confidence in the flu vaccination is increasing across the majority of the EU member states. Agreement that the flu vaccine is important has increased in 18 countries between 2018 and 2022, including a 41.6pp rise in Denmark, 24pp increase in Cyprus, and 23.6pp increase in France. Only Romania (-4.2pp) has experienced a fall. Similarly, agreement that the seasonal influenza vaccine is safe has increased in 23 member states, with no country reporting a fall. The largest increase in agreement that the flu vaccine is safe is in France (+24.5pp), with Cyprus (+21.6pp) and Luxembourg (+21.6pp) also reporting large gains.

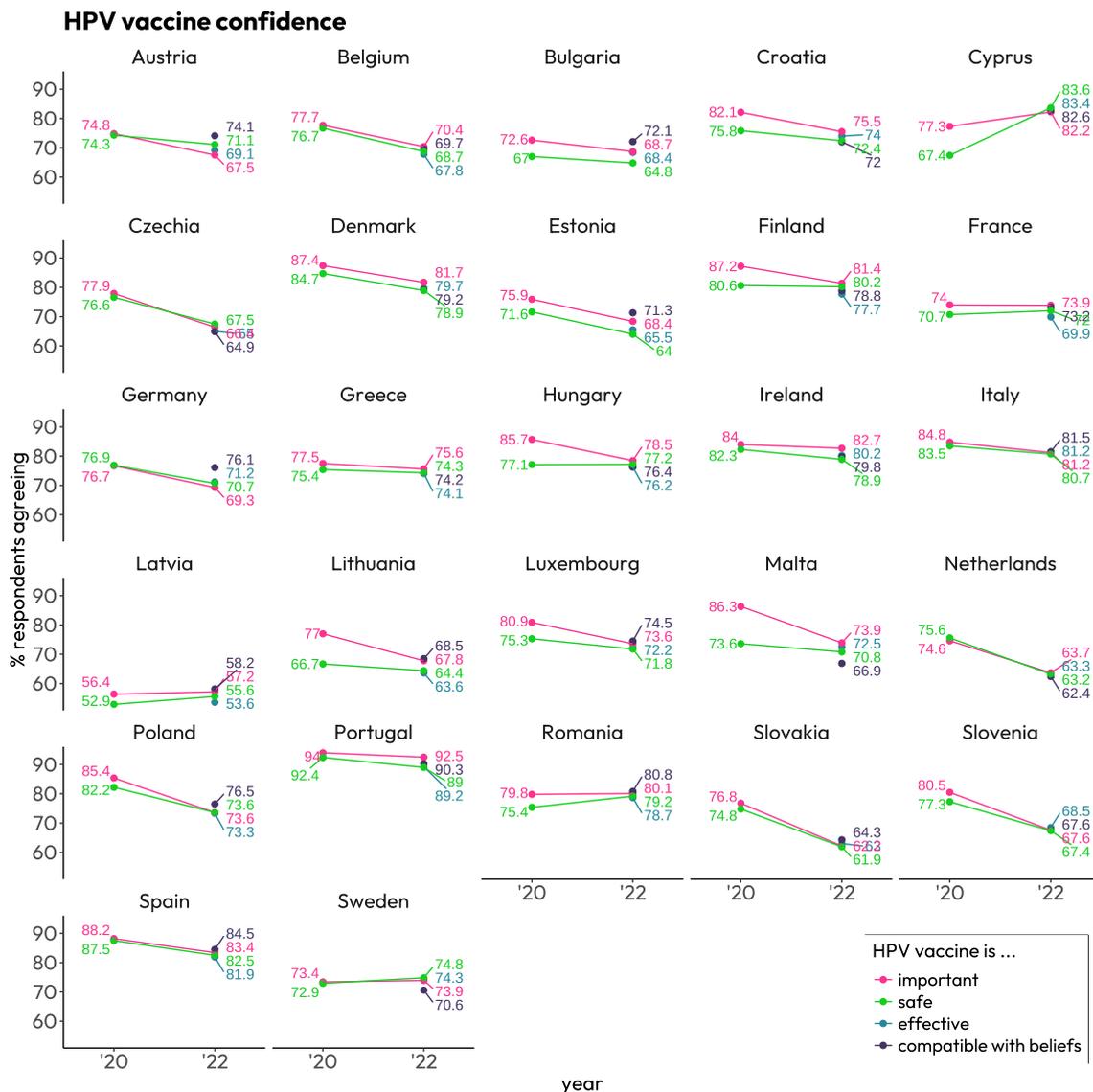


*Figure 7 Confidence in 2022 (left column) in the importance and safety of the seasonal influenza vaccine. Changes in confidence between 2018 and 2020 (centre column) and between 2018 and 2022 (right column) are also shown. Countries with no significant change detected are coloured dark grey.*

## 4.5 HPV vaccine confidence by country

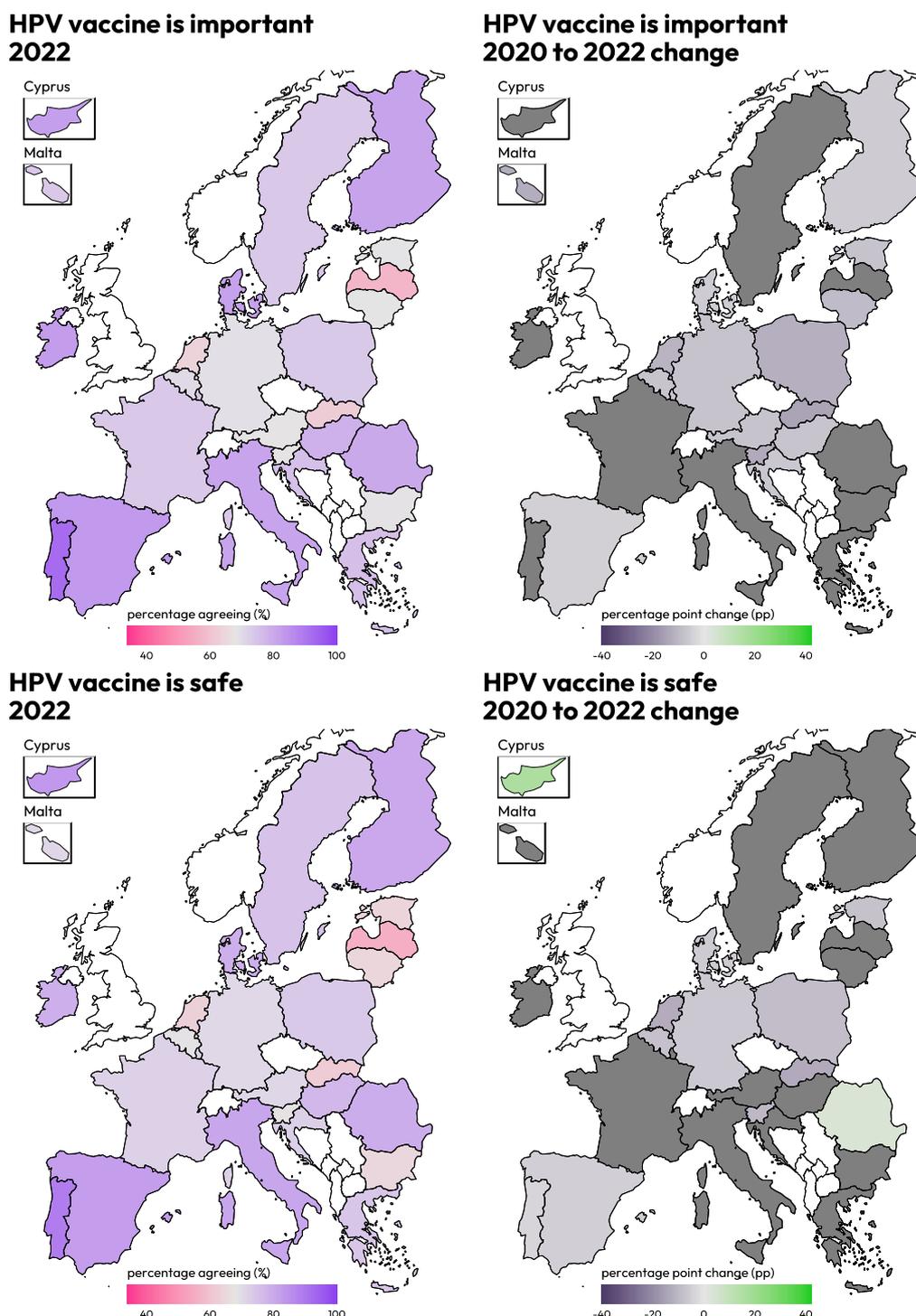
Levels of confidence in the HPV vaccine between 2018 and 2022 are shown for each member state in **Figure 8** and mapped in **Figure 9**.

The percentage of respondents agreeing that the HPV vaccine is important in 2022 is highest in Portugal (92.5%), Spain (83.4%), and Ireland (82.7%), and lowest in Latvia (57.2%), Slovakia (62.2%), and Netherlands (63.7%). The highest levels of agreement that the HPV vaccine is safe in 2022 are in Portugal (89%), Cyprus (83.6%), and Spain (82.5%) and lowest in Latvia (55.6%), Slovakia (61.9%), and Netherlands (63.2%). Portugal again has the highest population agreement that the HPV vaccine is effective (89.2%) followed by Cyprus (83.4%), and Spain (81.9%); the lowest agreement levels in the effectiveness of the HPV vaccine are in Latvia (53.6%), Slovakia (63%), and Netherlands (62.4%). Portugal, Spain, and Cyprus have the highest levels of agreement that seasonal influenza vaccine is compatible with personal or religious beliefs in 2022, whereas Latvia, Slovakia, and Netherlands, again have the lowest agreement.



**Figure 8** Trends in confidence in the HPV vaccine between 2018 and 2022 for each EU member state

Public confidence in the HPV vaccination is decreasing across the majority of the EU member states. Agreement that the HPV vaccine is important has decreased in 17 countries between 2020 and 2022 and increased in none. The largest decreases are in Slovakia and Slovenia (-14.6pp and -13pp falls, respectively). Agreement that the HPV vaccine is safe has increased in Cyprus (+16.2pp) and Romania (+3.8pp) but decreased across 11 countries, with the largest falls in Netherlands (-12.4pp) and Slovakia (-12.9pp).



*Figure 9* Confidence in 2022 (left column) in the importance and safety of the HPV vaccine. Changes in confidence between 2020 and 2022 (right column) are also shown. Countries with no significant change detected are coloured dark grey.

## 4.6 COVID-19 vaccine confidence by country

Levels of population agreement towards the six survey items relating to COVID-19 vaccines (see Table 1) are presented in Figure 10. These six survey items are new to this 2022 report.

Respondents from Portugal (89.9% agreement), Spain (86.7%), and Denmark (85.5%) hold the highest level of agreements that COVID-19 vaccines are important, while respondents from Slovakia (56%), Latvia (55.9%), and Bulgaria (51.3%) hold the lowest. The same three countries (Portugal, Spain, and Denmark) also have the highest agreement that COVID-19 vaccines are safe, though at slightly lower levels of agreement (85.9, 84.1, and 84.1%, respectively). Slovenia (52.3%), Latvia (51.1%), and Bulgaria (45.1%) have the lowest agreement that COVID-19 vaccines are safe. In almost all member states, agreement that the COVID-19 vaccine is effective against severe disease is higher than agreement that the COVID-19 vaccines are effective against infection or onward transmission. Portugal, Spain, and Germany have the highest agreement that the COVID-19 vaccine is compatible with religious, personal, or philosophical beliefs, while Slovakia, Bulgaria, and Latvia have the lowest.

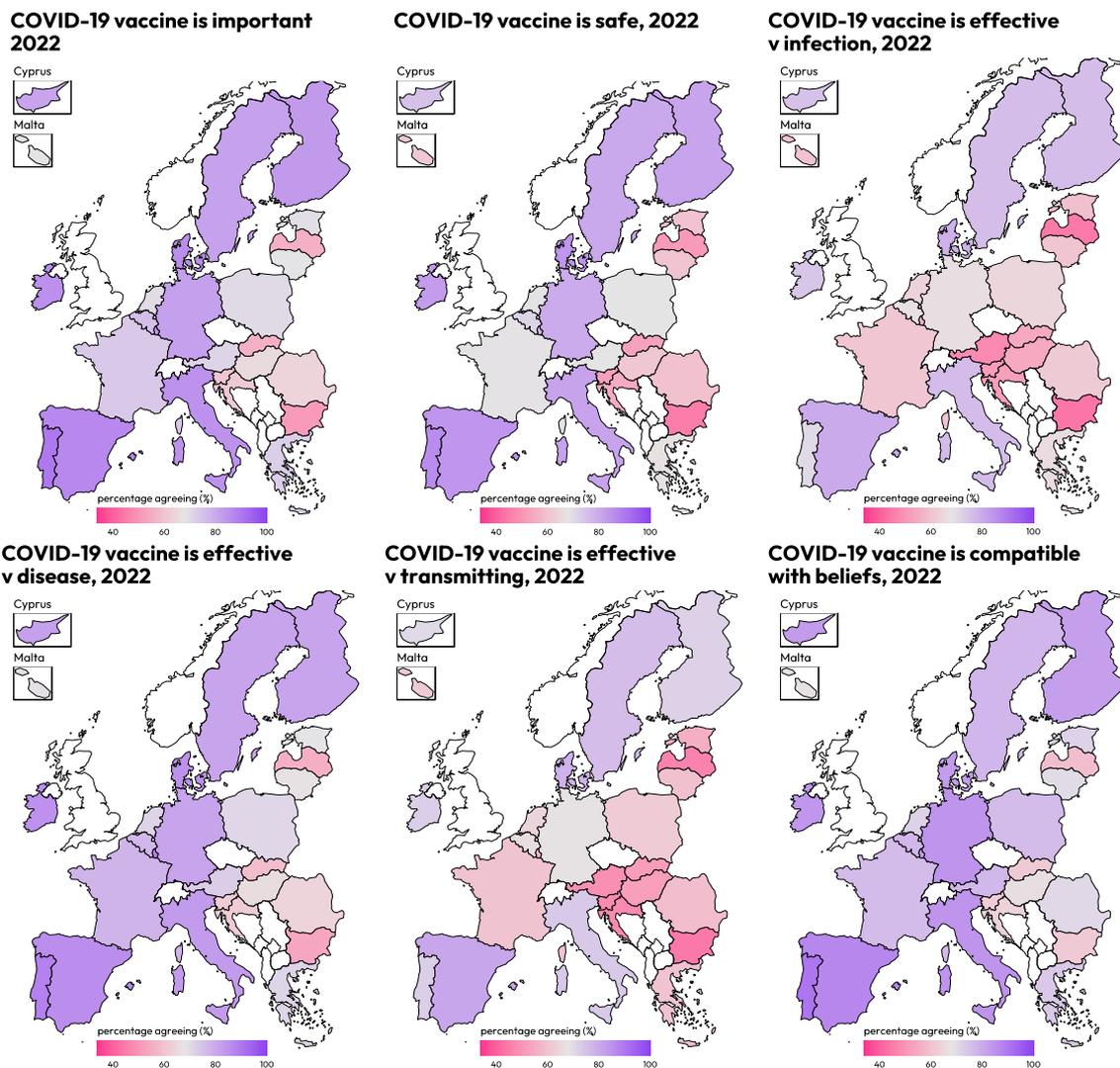


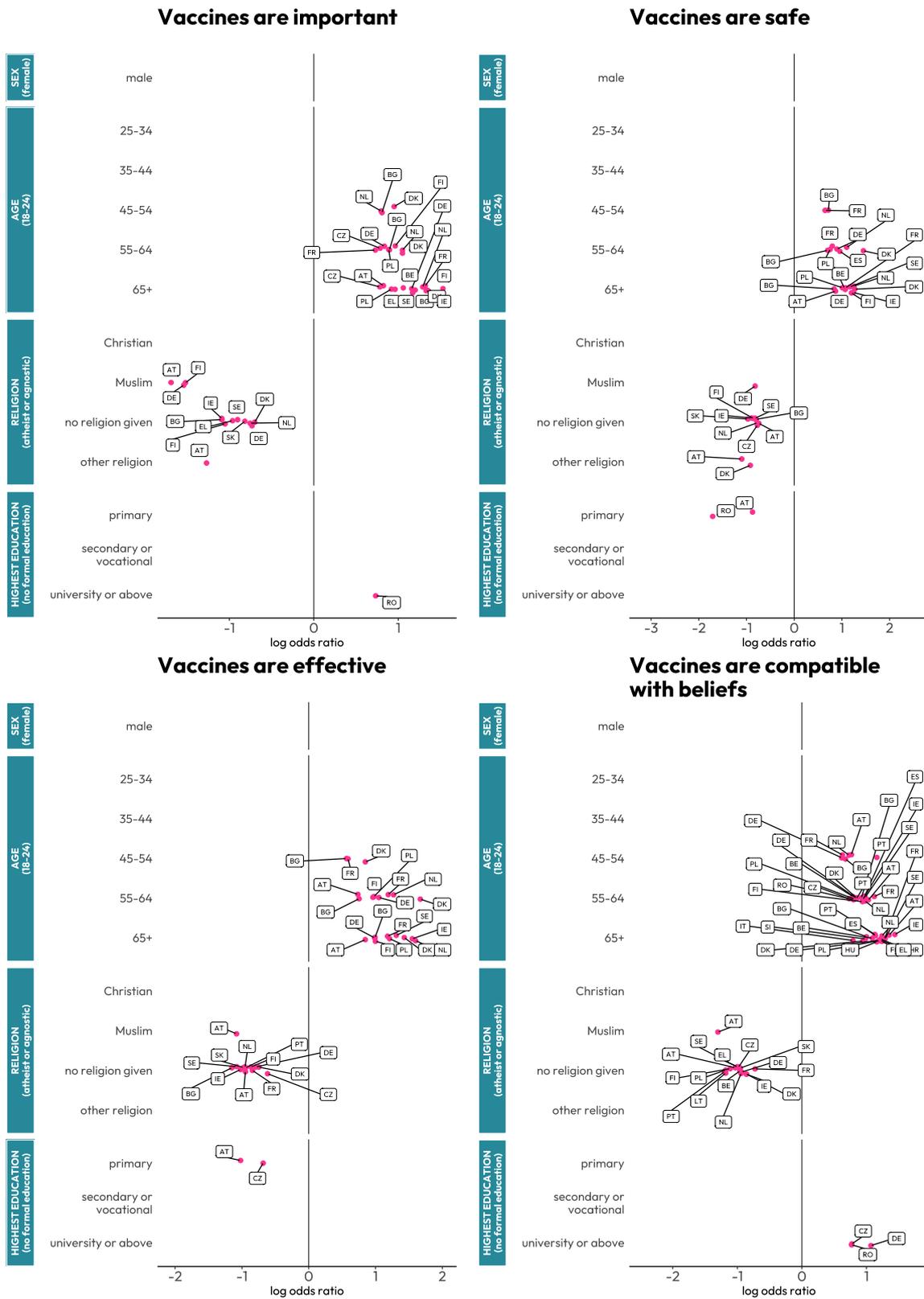
Figure 10 2022 Confidence in the importance, safety, effectiveness, and belief-compatibility of COVID-19 vaccines.

## 4.7 Socio-demographic determinants

The relationship of vaccine confidence against four socio-demographic variables was considered with respect to a baseline variable: sex (male versus female), age (65+, 55-64, 45-54, 35-44, and 25-34 versus 18-24-year-olds), religious identification (Christian, Muslim, other religious affiliation, or affiliation refused versus atheist or agnostic), and highest education level (primary education, secondary or vocational education, university education or above versus no formal education). The 2022 relationships between these socio-demographic groups and agreement that vaccines are safe, important, effective, and compatible with beliefs are shown in **Figure 11**. Similar figures for the relationships between socio-demographic status and vaccine confidence in the MMR, seasonal influenza, HPV, and COVID-19 vaccines are provided in the Appendix, as the findings largely mirror those described here.

Although there are no (significant) differences between the sexes detected for any country, age groups above 45 years-old are more likely to agree that vaccines are important, safe, effective, and compatible with beliefs than 18-24-year-olds in many countries. No differences in agreement to the four items are detected between Christians and atheists or agnostics. Muslims in Austria, Finland, and Germany are less likely than atheists or agnostics to agree that vaccines are important; Muslims in Germany are also less likely than atheists or agnostics to agree that vaccines are safe; and Muslims in Austria are less likely to agree that vaccines are effective or compatible with their beliefs. Refusing to provide a religion is associated with lower agreement across the four items than atheists or agnostics in many settings. Each additional level of education appears to increase agreement in the four general vaccine confidence items. University-educated respondents in Romania are more likely to agree that vaccines are important than those with no formal education, while university-educated respondents in Romania, Germany, and Czechia are more likely to agree that vaccines are compatible with their beliefs than those with no formal education.

Trends in confidence in the MMR vaccine are very similar, though the effect of age appears extremely strong: over 45-year-olds in almost every country are more likely than 18-24-year-olds to agree the MMR vaccine is important, safe, effective, and compatible with beliefs (**Error! Reference source not found.**). Surprisingly, the 'gap' in confidence between older and younger groups is smaller for the seasonal influenza vaccine, and over 65s in only a handful of countries are more likely than 18-24-year-olds to agree that the seasonal influenza vaccine is important and safe (**Error! Reference source not found.**). Males in five countries are also more likely to agree that the flu vaccine is important than females, and males in Austria, Bulgaria, and Czechia are more likely to agree that it is safe. Across all four items in 2022, there are no differences found in perceptions towards the HPV vaccine between older age groups and 18-24-year-olds. Males in France, however, are more likely to perceive the HPV vaccine to be safe than females (**Error! Reference source not found.**). Regarding COVID-19 vaccines, over 65s are more likely than 18-24-year-olds to agree that the COVID-19 vaccine is important and safe, as too are males in Czechia and Bulgaria. Males in Poland and Austria are also more likely to agree that COVID-19 vaccines are safe compared to females (**Error! Reference source not found.**).



**Figure 11** The socio-demographic determinants of confidence in vaccines in general. Dots denote the log odds ratio of association between socio-demographic status and agreement to survey items. Pink dots, with corresponding country labels, signify that the parameter 95% credible interval excludes zero. The baseline group is shown in parentheses on the blue vertical banners. Two-letter country abbreviations are used: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czechia (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Italy (IT), Finland (FI), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), and Sweden (SE).

## 4.8 The vaccine confidence age gap is widening

An additional assessment was made into the how the strength of association between socio-demographic determinants and survey item agreement changed over time. A notable finding is the increasingly diverging perceptions towards vaccines between 18-34-year-olds and over 65s in many settings.

The overall level of agreement that vaccines are important, safe, effective, and compatible with beliefs in each year among 18-34-year-olds and over 65s is shown in **Figure 13**. The overall level of agreement that the MMR and seasonal influenza vaccines are important and safe is shown in **Error! Reference source not found.** These two figures highlight the consistent difference in vaccine confidence between the youngest and oldest groups across the majority of EU member states, as well as revealing that for many countries this confidence gap between old and young is increasing. Particularly large and increasing gaps exist in Belgium, Bulgaria, Croatia, France, Hungary, Latvia, Poland, and the Netherlands. This age gap is summarised across all countries in **Figure 12**, which shows an increasing gap in agreement across eight survey items between 18-34-year-olds and over 65-year-olds between 2022 and 2018.

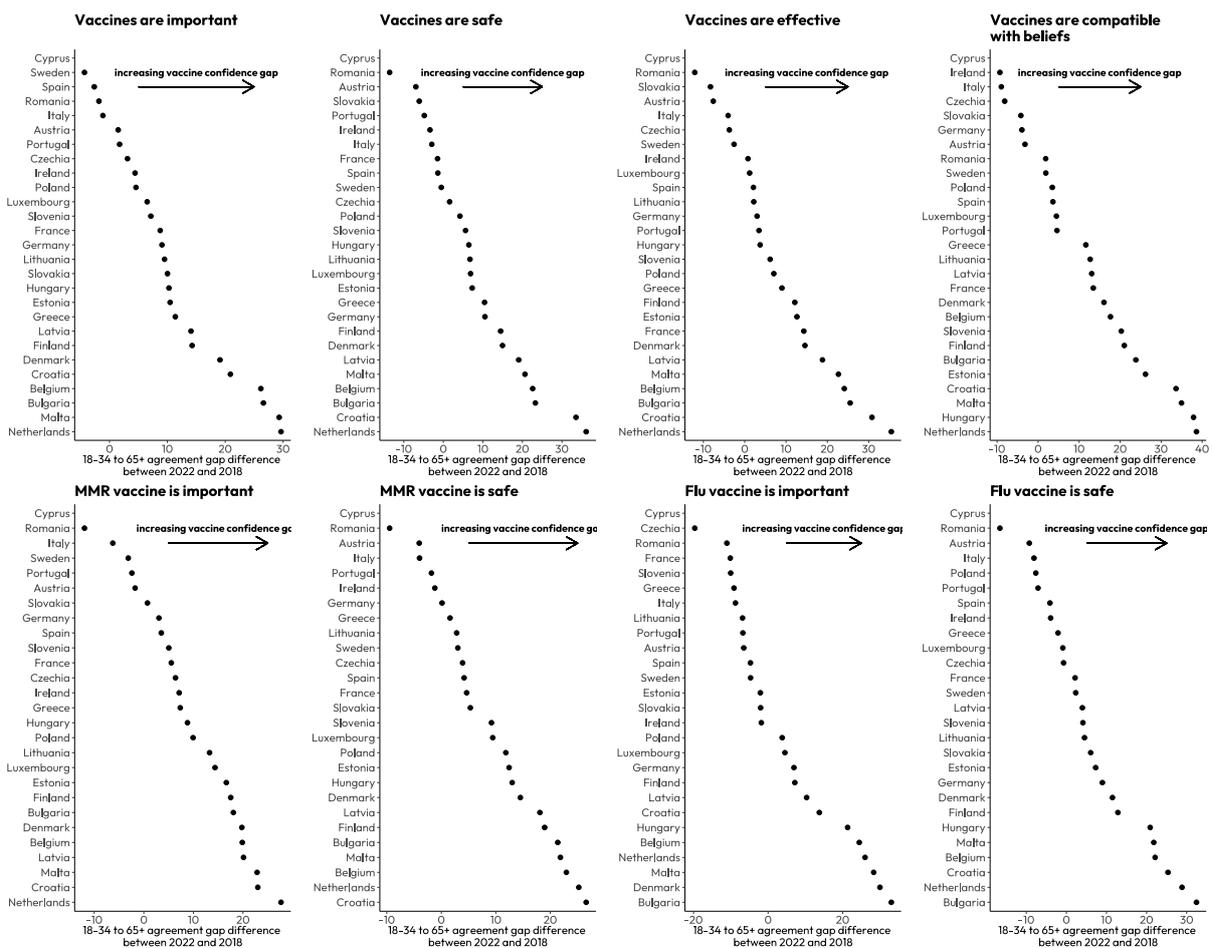
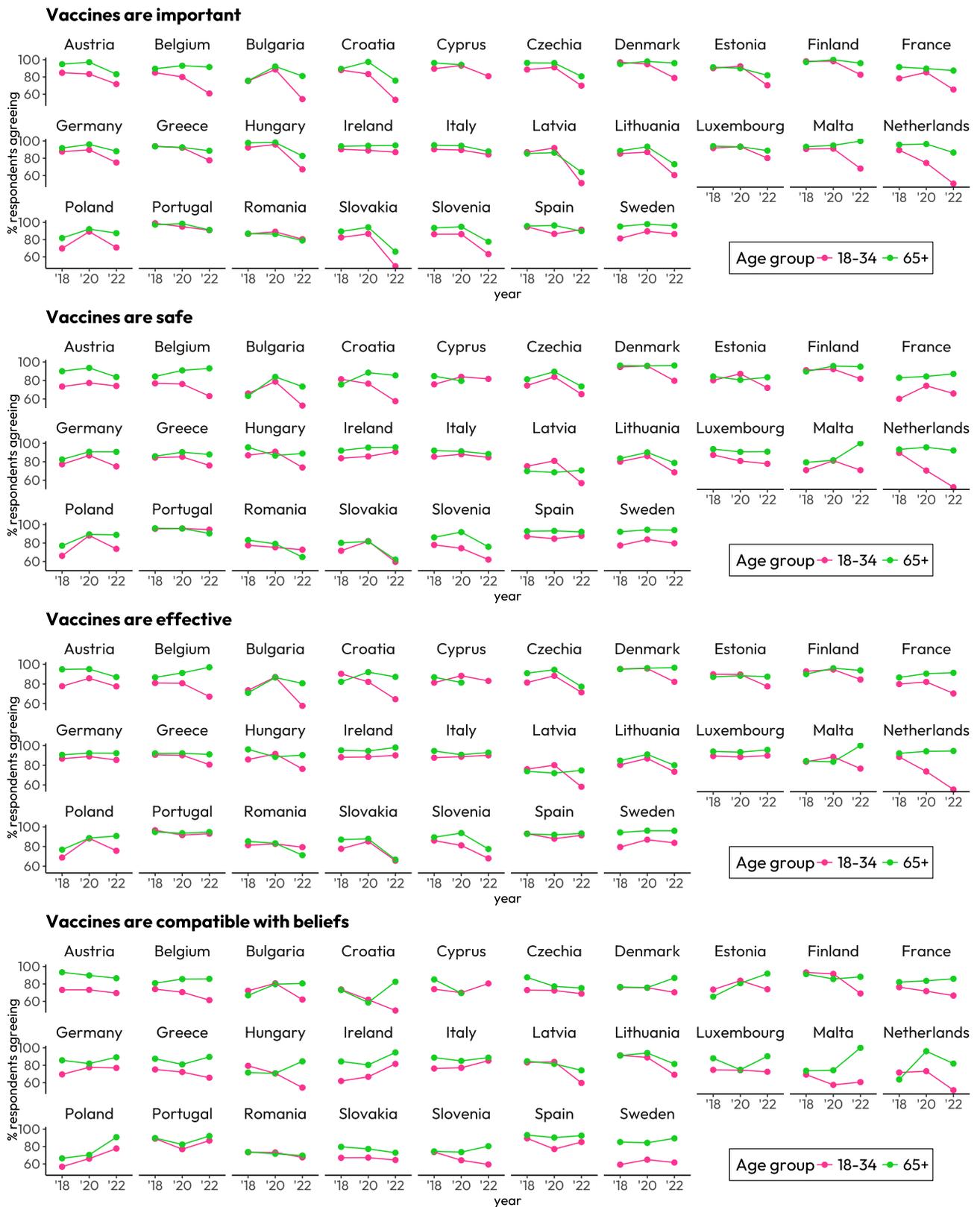
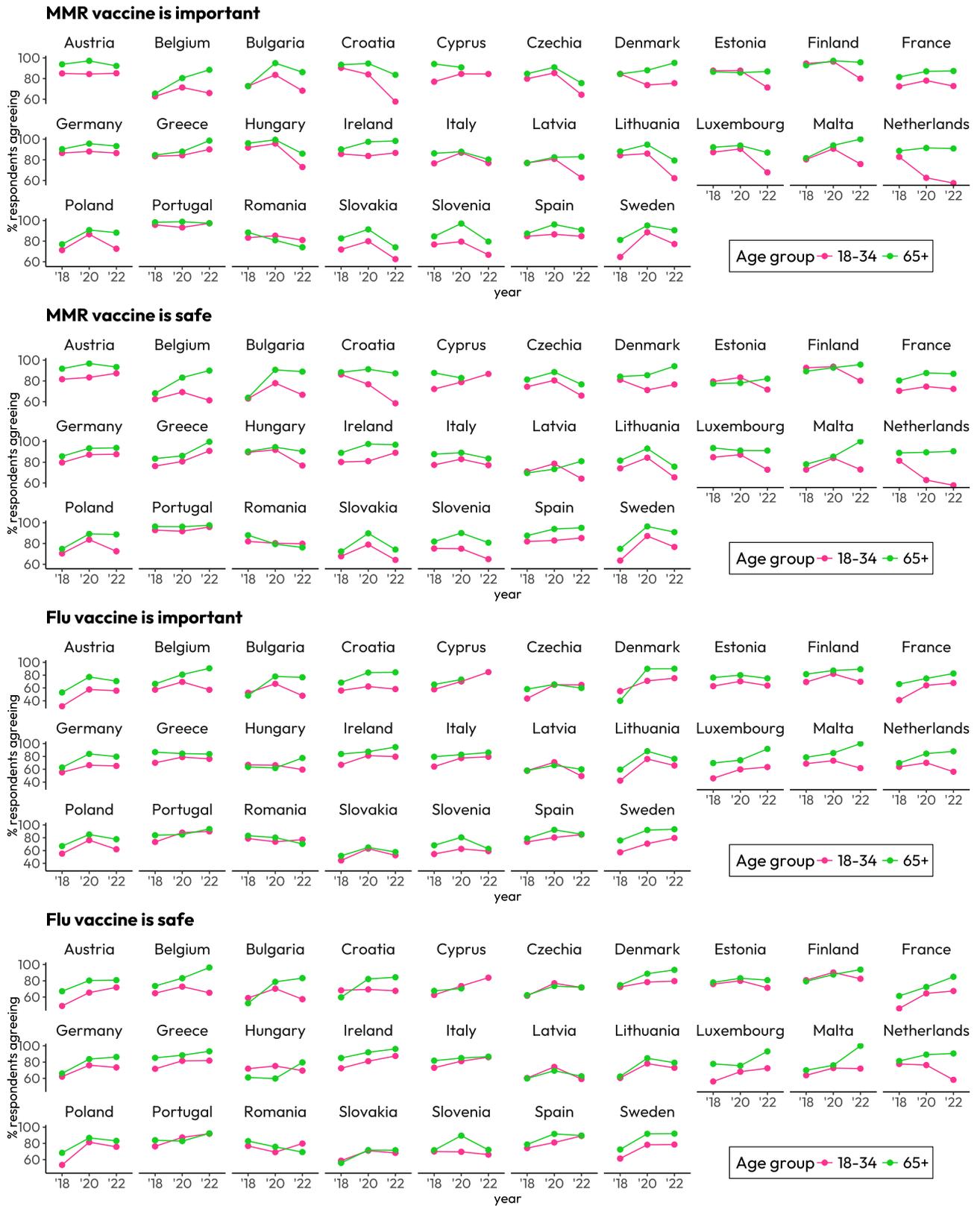


Figure 12 Increasing gap in agreement across survey items between over 65s and 18-34-year-olds over time



**Figure 13** The vaccine confidence age gap. Trends in agreement in the importance, safety, effectiveness, and belief-compatibility are shown for 18-34-year-olds and over 65s. Note: No over 65s were surveyed in Cyprus in 2022.



**Figure 14** The vaccine confidence age gap. Trends in agreement in the importance and safety of the MMR and seasonal influenza vaccines are shown for 18–34-year-olds and over 65s. Note: no over 65s were surveyed in Cyprus in 2022.

## 5 Healthcare Professionals

### 5.1 General HCP vaccine confidence by country

Confidence levels in vaccines generally among nurses and doctors who have a role in prescribing, administering, or advising on vaccines are shown in **Figure 15**. Due to the low number of responses from healthcare workers in Cyprus, Malta, and Luxembourg, these trends are not further commented on in this section or in the sections that follow.

The percentage of nurses and doctors (HCPs) with a role in prescribing, administering, or advising on vaccines agreeing that vaccines are important, safe, effective, and compatible with beliefs is universally high and stable between 2020 and 2022 across EU-27 member states. Above 90% of HCPs surveyed in all countries agree that vaccines are important. However, HCPs in Austria (84.9%, 97 healthcare professionals), Greece (87.2%, n=98), and France (74%, n=102) have fewer than 90% of HCPs agreeing that vaccines are safe in general. Fewer than 90% of HCPs agree that vaccines are effective and compatible with beliefs in Greece (87.9% and 85.9%, respectively).

While vaccine confidence among HCPs appears to be extremely stable over time in the majority of member states, there are signs of decreasing vaccine confidence among HCPs in France, Greece, and Slovakia. In France agreement that vaccines are important for children has fallen among HCPs from 100% (n=94) in 2020 to 95.3% (n=102) in 2022, while agreement that vaccines are safe has fallen from 98.8% in 2020 to 74% in 2022. In Greece, agreement that vaccines are safe has fallen among HCP survey respondents from 98.6% (n=188) in 2020 to 87.2% (n=98) in 2022, with a similar drop for agreement in vaccine effectiveness (98.7% to 87.9%). In Slovakia, agreement has fallen among HCPs sampled towards the statements that vaccines are important, from 99.3% (n=257) to 95.4% (n=231); that vaccines are safe, from 97.5% to 95.4%; and that vaccines are effective, from 98.9% to 96.1%.

### 5.2 HCP confidence in the MMR vaccine

Confidence levels in the MMR vaccine among nurses and doctors who have a role in prescribing, administering, or advising on vaccines are shown in **Figure 16**. The percentage of nurses and doctors with a role in prescribing, administering, or advising on vaccines agreeing that the MMR vaccine is important, safe, effective, and compatible with beliefs is again universally high and stable between 2020 and 2022 across EU-27 member states. Above 90% of HCPs surveyed agree to all four statements (that the MMR vaccine is important, safe, effective, and belief-compatible) in every member state except Greece. In Greece fewer than 90% of HCPs agree that the MMR vaccine is important (82.3%, n=188), safe (84.6%), effective (84.3%), and compatible with beliefs (85.1%). The largest falls in the level of agreement that the MMR vaccine is both important for children and safe are in Austria, Greece, and Ireland.

### General vaccine confidence

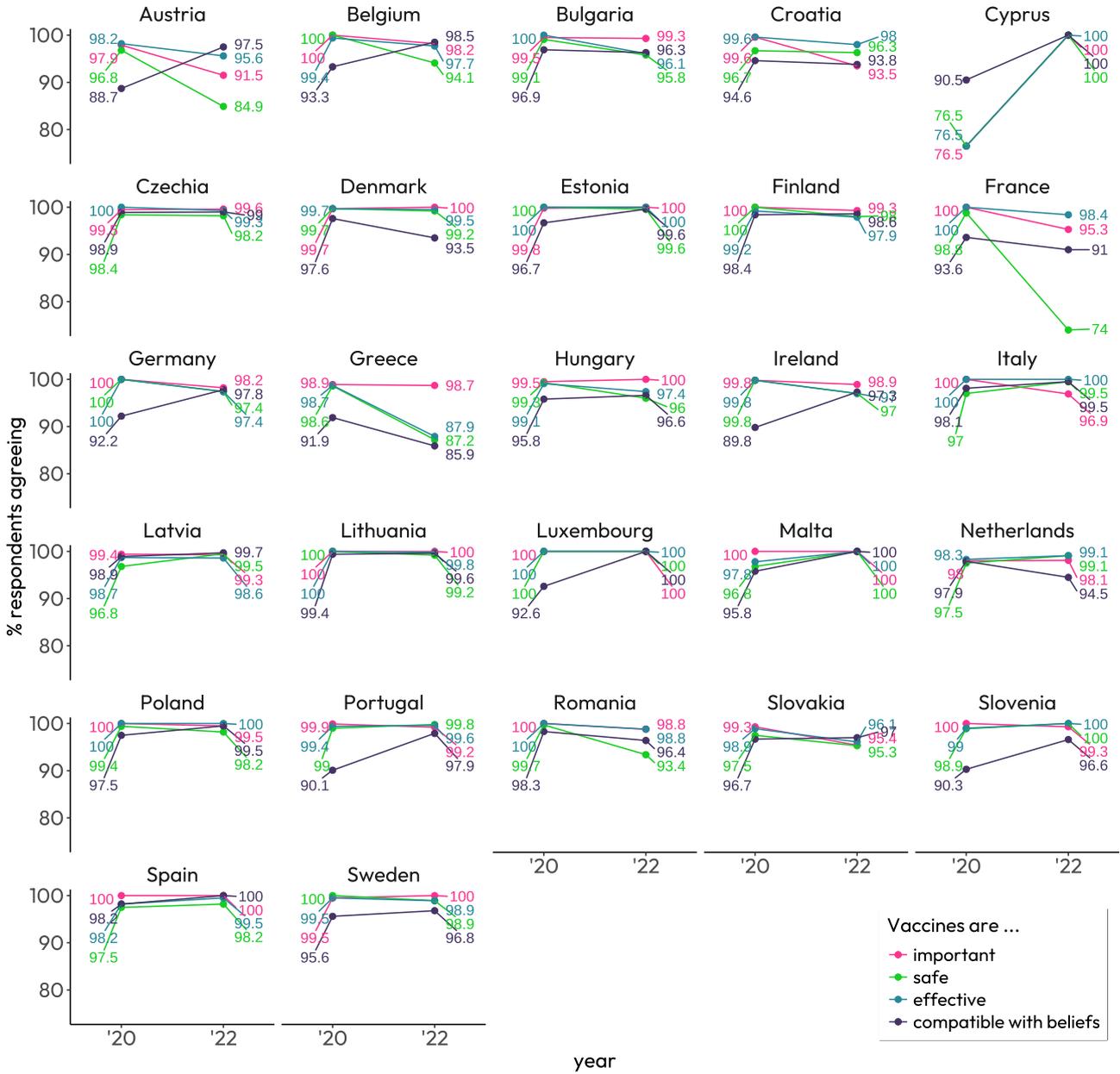


Figure 15 General vaccine confidence in 2020 and 2022 among nurses and doctors in each EU member state. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).

### MMR vaccine confidence

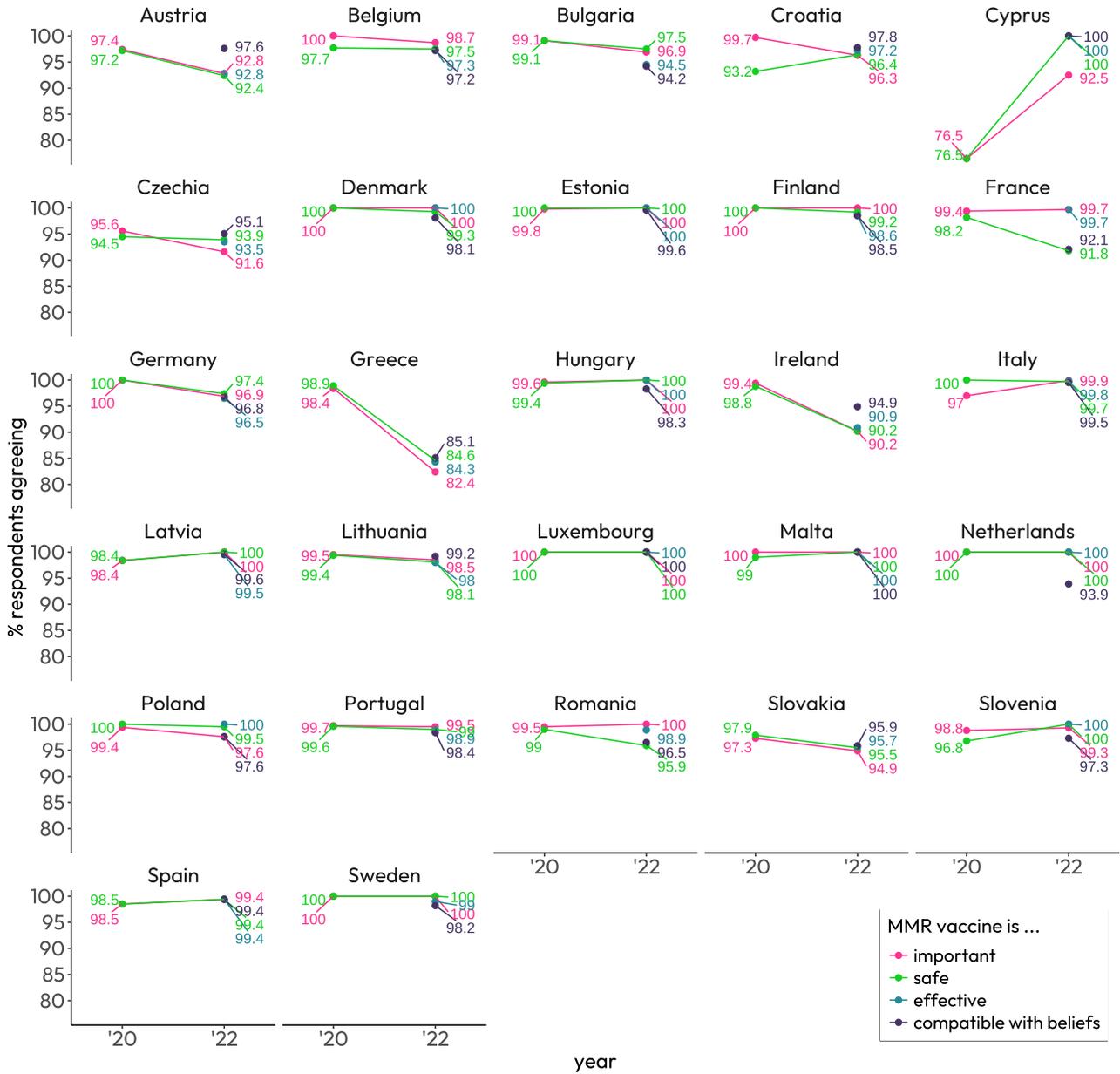


Figure 16 MMR vaccine confidence in 2020 and 2022 among nurses and doctors in each EU member state. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).

### 5.3 HCP confidence in the seasonal influenza vaccine

Confidence levels in the seasonal influenza vaccine for nurses and doctors who have a role in prescribing, administering, or advising on vaccines are shown in **Figure 17**. Overall confidence in the influenza vaccine is again high and stable across the European Union.

The percentage of nurses and doctors with a role in prescribing, administering, or advising on vaccines agreeing that the influenza vaccine is important, safe, effective, and compatible with beliefs is again universally high and stable between 2020 and 2022 across EU-27 member states. However, there are more countries reporting below 90% agreement to each of the four seasonal influenza confidence survey items.

Fewer than 90% of HCPs agree that the seasonal influenza vaccine is important in Slovakia (87.7%, n=231), Hungary (86.2%, n=100), and Austria (78.5%, n=99). There are no countries with fewer than 90% of HCPs agreeing that the seasonal influenza vaccine is safe. France (89.4%, n= 102), Slovakia (88.2%, n=231), Denmark (87.1%, n=98), Hungary (86.2%, n=100), and Austria (78.5%, n=99) all have fewer than 90% of HCP respondents agreeing that the seasonal influenza vaccine is effective, while France (89.7%, n=100) is the only country with sub 90% agreement that the flu vaccine is compatible with beliefs.

### 5.4 HCP confidence in the HPV vaccine

Confidence levels in the HPV vaccine among nurses and doctors who have a role in prescribing, administering, or advising on vaccines are shown in **Figure 17**. Overall confidence in the HPV vaccine is again high across the European Union.

HCP survey participants in Bulgaria, Croatia, and Greece have the lowest overall level of confidence in the HPV vaccine, with below 90% agreement across the four HPV items. In Bulgaria, 87.4% (n=100) respondents agree that the HPV vaccine is important, 83.2% agree that it is safe, 79.1% agree that it is effective, and 87.8% agree that it is compatible with their beliefs. In Croatia, 88.5% (n=97) respondents agree that the HPV vaccine is important, 88.8% agree that it is safe, 85.2% agree that it is effective, and 88% agree that it is compatible with their beliefs. In Greece, 88.9% (n=98) respondents agree that the HPV vaccine is important, 88.9% agree that it is safe, 89.6% agree that it is effective, and 87.1% agree that it is compatible with their beliefs. Confidence is also relatively low in France in comparison to other EU member states, where 91.7% (n=102) agree that it is important, 88.9% agree that it is safe, 89.4% agree that it is effective, and 91.6% agree that it is compatible with beliefs.

### Seasonal influenza vaccine confidence

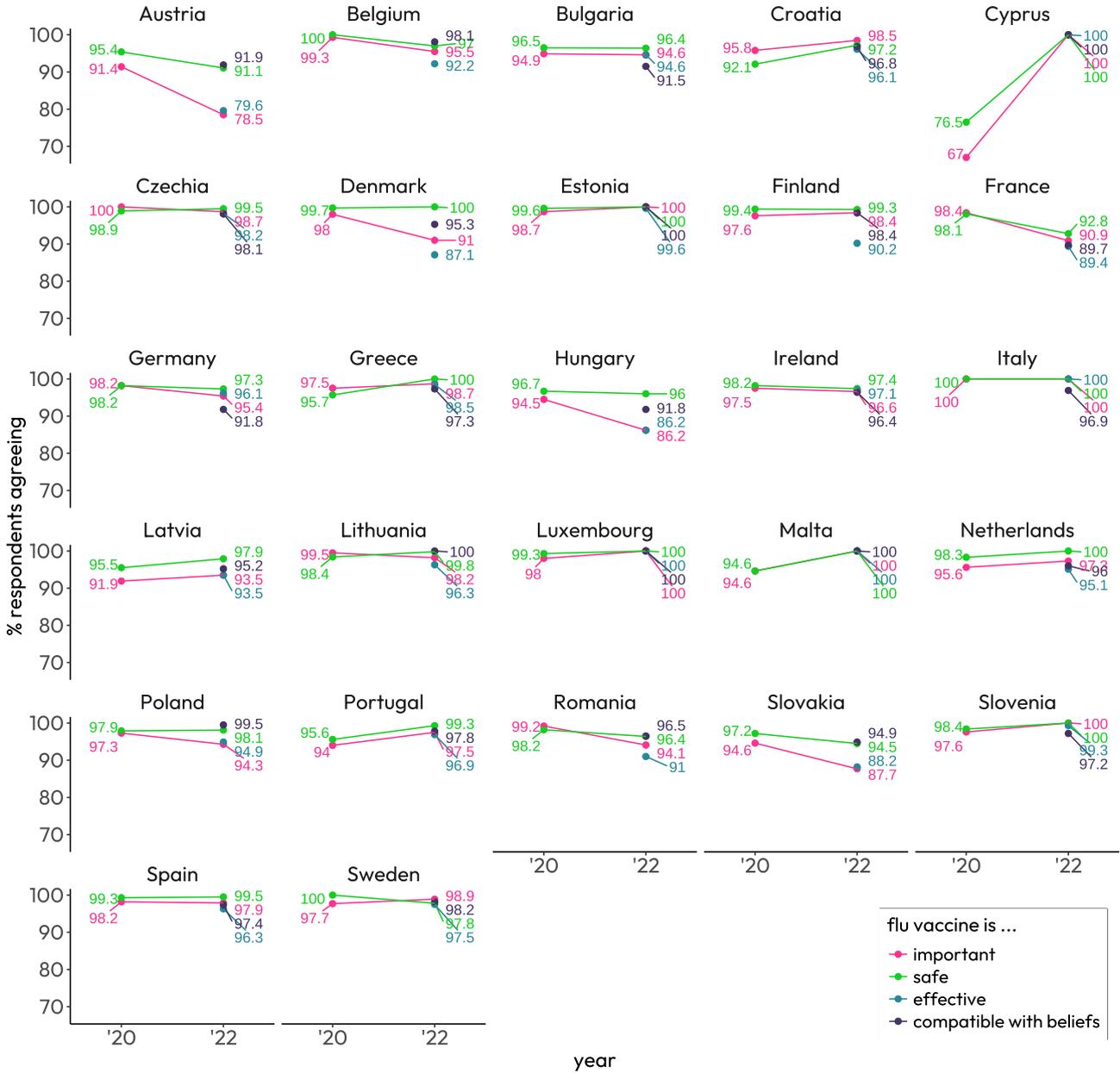


Figure 17 Seasonal influenza vaccine confidence in 2020 and 2022 among nurses and doctors in each EU member state. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).

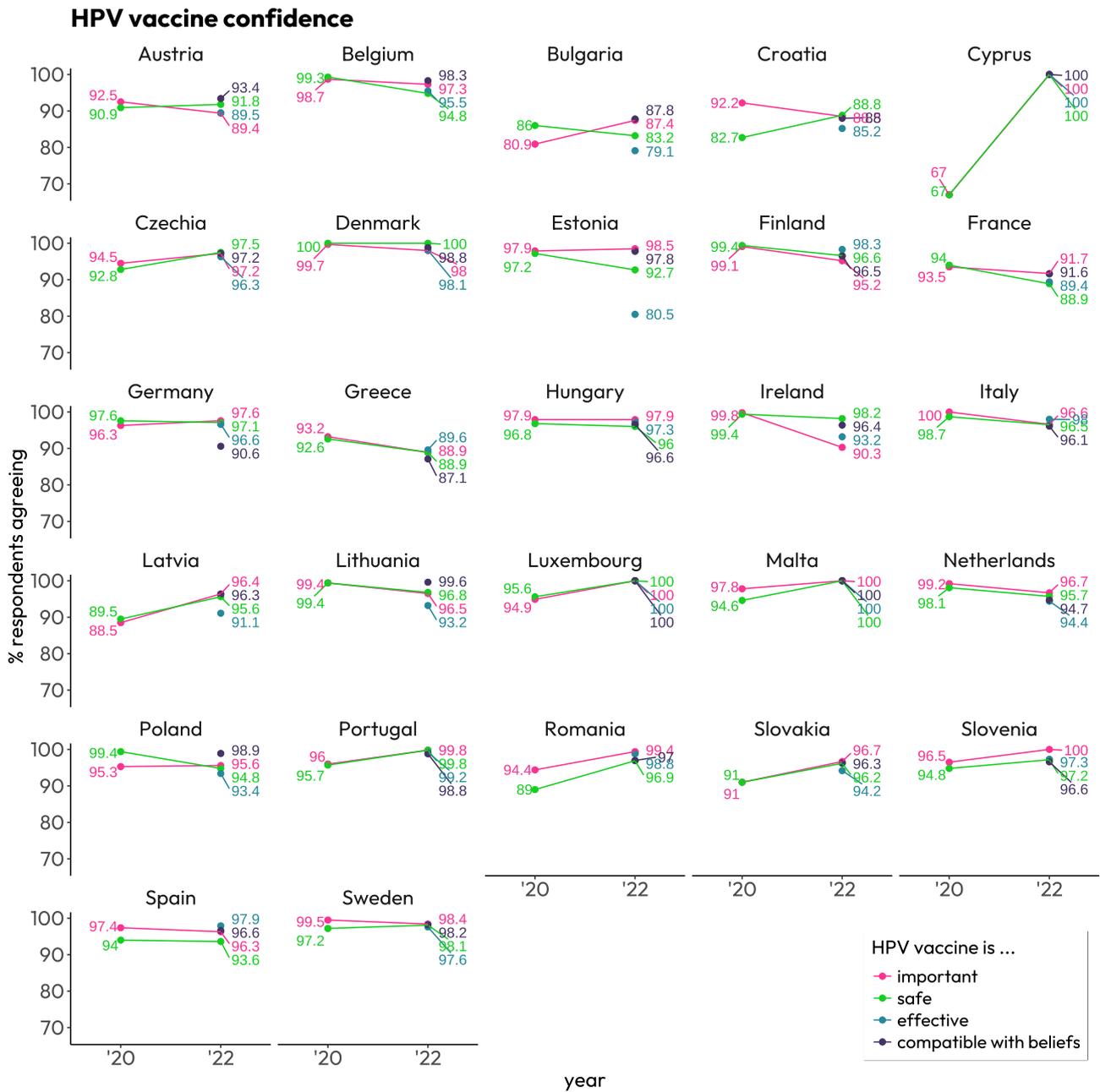


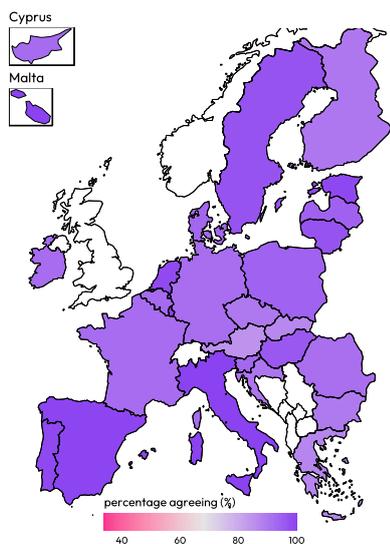
Figure 18 HPV vaccine confidence in 2020 and 2022 among nurses and doctors in each EU member state. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).

## 5.5 HCP confidence in the COVID-19 vaccine

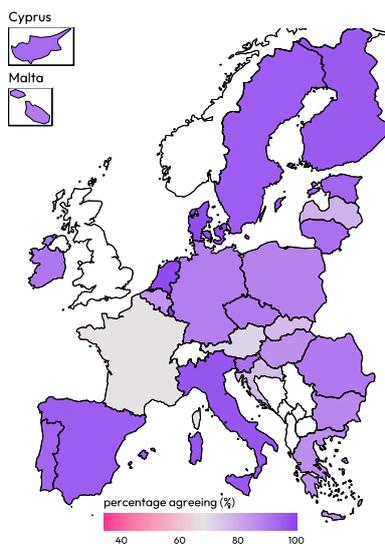
Confidence levels in the COVID-19 vaccines among nurses and doctors who have a role in prescribing, administering, or advising on vaccines are shown in Figure 19. Overall HCP confidence in the COVID-19 vaccines is high, but with some exceptions.

Agreement that COVID-19 vaccines are important, safe, and effective are high across the EU, though perceptions towards the importance of COVID-19 vaccines are below 90% agreement in Austria (85.3%, n=99), Slovakia (87.2%, n=231), Greece (87.5%), Bulgaria (89.6%, n=100), and Finland (89.9%, n=97).

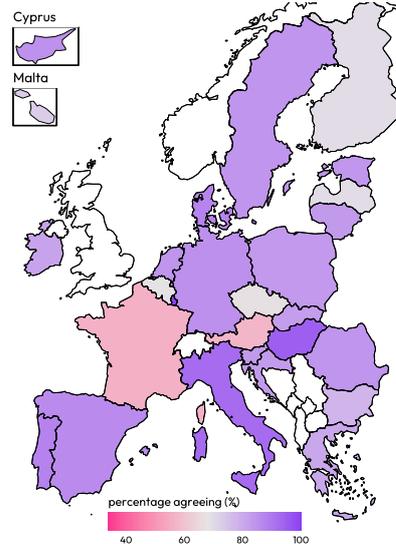
**COVID-19 vaccine is important  
2022**



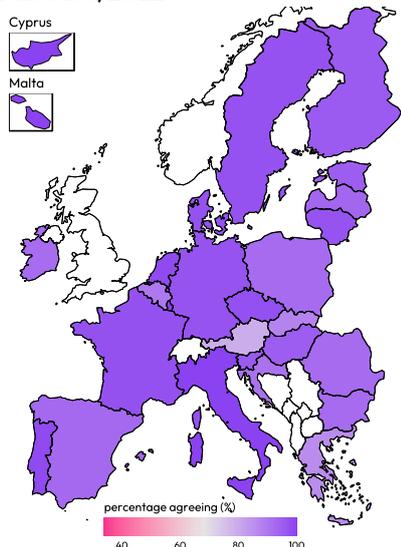
**COVID-19 vaccine is safe, 2022**



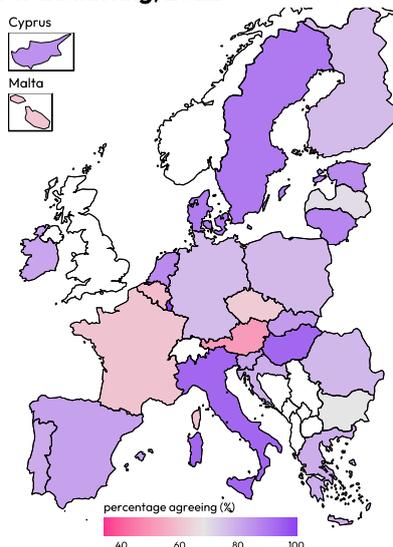
**COVID-19 vaccine is effective  
v infection, 2022**



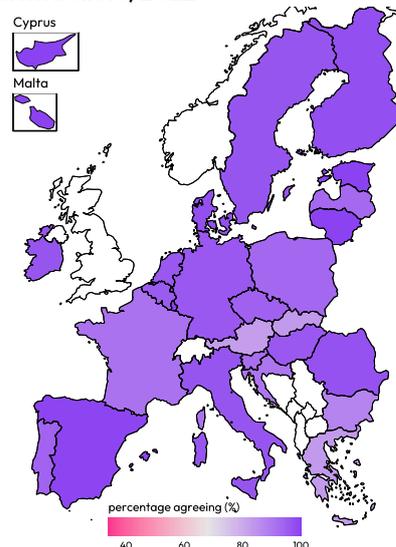
**COVID-19 vaccine is effective  
v disease, 2022**



**COVID-19 vaccine is effective  
v transmitting, 2022**



**COVID-19 vaccine is compatible  
with beliefs, 2022**



*Figure 19 Trends in healthcare professionals' level of agreement to six items on confidence in COVID-19 vaccines across the EU-27. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).*

Below 90% of HCP respondents surveyed in 14 countries agree that the COVID-19 vaccine is safe. Of all the safety survey items posed to healthcare professionals, the COVID-19 vaccine has the highest number of countries with below 90% of respondents agreeing that the COVID-19 vaccine is safe. Agreement that the COVID-19 vaccine is safe is lowest among HCPs in France (68.3%, n=102), followed by Austria (72.3%, n=99) and Croatia (76.2%, n=97).

Below 90% of HCPs in 24 of the 27 EU member states that the COVID-19 vaccine is effective against SARS-CoV-2 infection or transmission. The lowest level of agreement that the COVID-19 vaccines are effective against infection is in France, where 56.8% (n=102) of HCPs agree, while the lowest level of agreement that the COVID-19 vaccines are effective against transmission is in Austria, where only 51.5% (n=99) of HCPs agree. However, agreement that COVID-19 vaccines are effective against severe disease is higher, with only three countries (Slovakia, Greece, and Austria) reporting fewer

than 90% of respondents agreeing with this survey item. The overwhelming evidence at this stage of the pandemic is that COVID-19 vaccines cannot prevent infection or transmission in the long-term with significant waning in conferred immunity over time.<sup>15-17</sup>

## 5.6 HCP likelihood of recommending vaccines

Healthcare professionals' likelihood of recommending vaccines is shown in **Figure 20**.

Above 90% of HCPs would be likely to recommend the MMR vaccine in all member states except for Bulgaria (89.7%, n=100), Greece (82.8%, n=98), and Austria (79.8%, n=99). Above 90% of HCPs would be likely to recommend the seasonal influenza vaccine to patients in all member states except Hungary (84.0%, n=100) and Austria (80.2%, n=99). Slightly more countries have below 90% of HCP respondents who would recommend the HPV vaccine to patients: Croatia (86.8%, n=97), Austria (86.1%, n=99), Greece (85.9%, n=98), Bulgaria (81.6%, n=100) and Estonia (81.2%, n=95). There are only three countries that have fewer than 90% of HCPs surveyed that would recommend the COVID-19 vaccine to patients: Poland (89.4%, n=100), Austria (87.5%, n=99), and Slovakia (84%, n=231).

There is a far higher number of countries, however, where less than 90% of HCP respondents who would recommend the seasonal influenza or COVID-19 vaccines to pregnant women. A total of 20 countries have fewer than 90% of respondents who would likely recommend the seasonal influenza vaccine to pregnant women, with Czechia (60.5%, n=96), Bulgaria (50.7%, n=100), and Slovakia (48.9%, n=231) having the lowest percentages. A total of 19 countries have fewer than 90% of respondents who would likely recommend the COVID-19 vaccine to pregnant women, with Croatia (66%, n=97), Slovakia (59.8%, n=231), and Bulgaria (55.7%, n=100) having the lowest levels.

## 5.7 Comparison of country-level confidence in HCPs and the public

A correlative analysis between the overall level of agreement to each vaccine confidence survey item between HCPs and the general public was performed. This analysis is complicated by the very high levels of vaccine confidence among HCPs which does not often provide enough variation to regress against. However, significant positive correlations between HCP and public agreement was found for the safety of the COVID-19 vaccine (Spearman's rho = 0.58), the effectiveness of the COVID-19 vaccine against severe disease (Spearman's rho = 0.43), and whether the COVID-19 vaccine was compatible with personal beliefs (Spearman's rho = 0.39).

## Likelihood of recommending vaccines

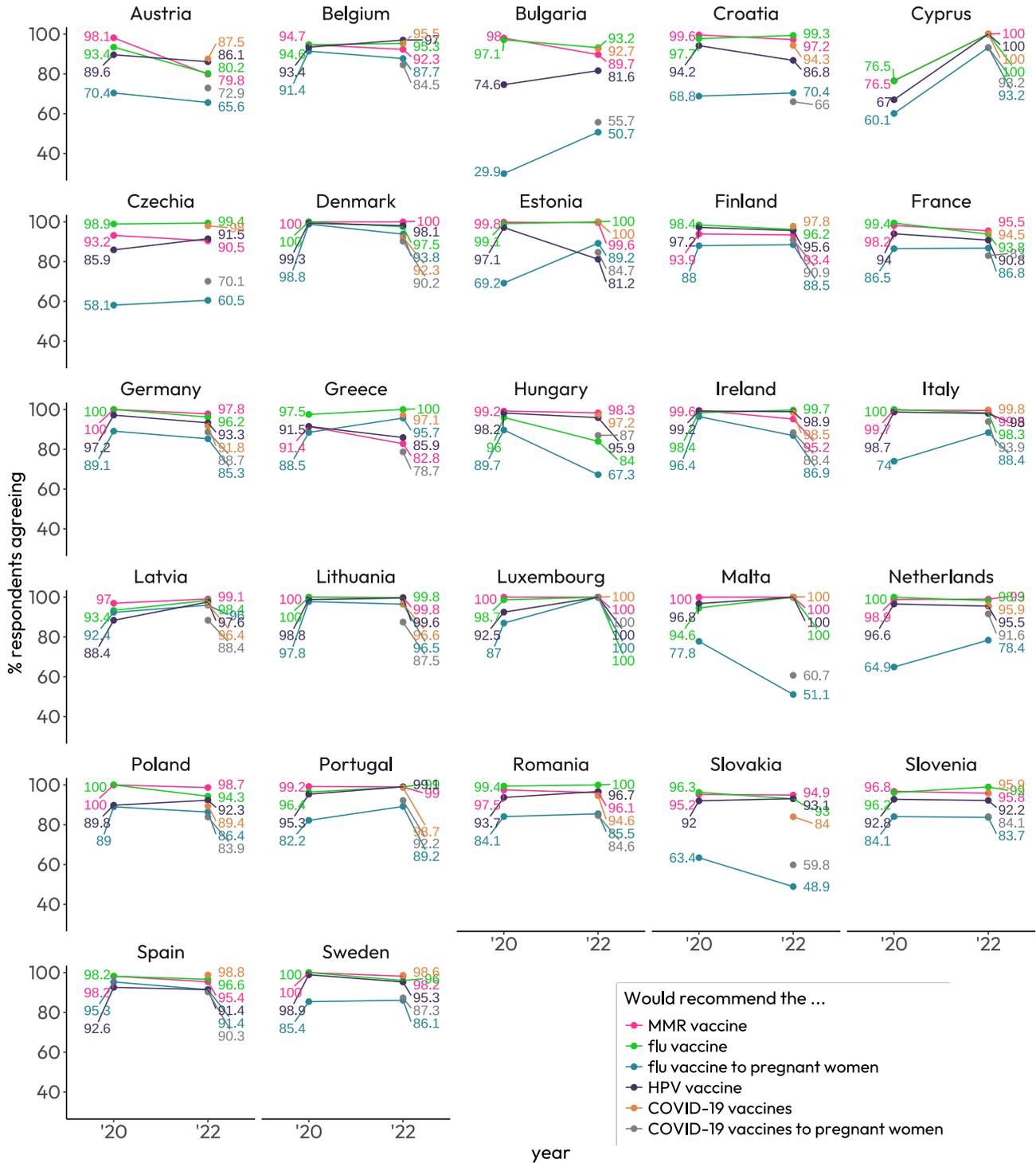


Figure 20 Trends in healthcare professionals' likelihood of recommending vaccines to patients. There are very low sample sizes in 2022 in Cyprus (5), Luxembourg (1), and Malta (6).

## 6 Discussion

### 6.1 EU-wide summary

This current edition of the State of Vaccine Confidence in the EU reveals that vaccine confidence among the public and healthcare professionals is high across most populations, with some exceptions and caveats.

Between 2018 and 2020, there was a large increase in public perception towards vaccines across the EU, particularly towards the seasonal influenza vaccine. As these data were collected as the COVID-19 pandemic was arriving in Europe, these large increases in perceptions towards the seasonal influenza vaccine were likely largely driven by increases in perceptions of disease risk combined with symptoms COVID-19 often being described as “flu-like”.<sup>18</sup> Many of these 2020 gains have been reversed and perceptions towards the importance, safety, and effectiveness of vaccines have declined across the EU between 2020 and 2022. However, overall agreement across the EU that vaccines are safe remains higher than 2018 levels.

These EU-wide changes in public perceptions towards the importance and safety of vaccines shows strong vaccine-dependence. EU-wide agreement that the seasonal influenza vaccine is safe and important is currently substantially higher now than they were in 2018, reflecting significant gains in how the flu vaccine is perceived across the EU. The MMR vaccine is also currently perceived to be more important and safer than it was in 2018, again reflecting positive progress. However, perceptions towards the HPV vaccine have undergone marked falls since 2020 (with no 2018 data for comparison).

Despite these broad EU trends, there is substantial variability between countries.

### 6.2 Country-specific summary

There is a very mixed picture with regard to levels and trends in public vaccine confidence within specific countries. As in the 2020 edition, public confidence in Portugal and Spain remains high across all survey items. However, perceptions towards vaccines in general remain low in many parts of Eastern and Central Europe as well as in Netherlands, Latvia, and Lithuania, which have all undergone appreciable declines in perceptions towards vaccines generally since 2018.

With regard to the MMR vaccine, Croatia, Hungary, Lithuania, and Netherlands have all undergone declines in the percentage of their public surveyed agreeing that the MMR vaccine is important and safe since 2018. Conversely, Belgium, Greece, Ireland, Poland, and Sweden have all improved between 2018 and 2022 on these dimensions. Almost every member state has significantly increased its level of agreement that the influenza vaccine is important and safe since 2018, while the majority of member states have undergone declines in the level of agreement that the HPV vaccine is important and safe between 2022 and 2020.

An evaluation into the differences in public confidence between over 65-year-olds and 18-34-year-olds reveals key insights into an increasing ‘vaccine confidence gap’: that is, the difference in vaccine confidence between 65-year-olds and 18-34-year-olds appears to be widening over time across many EU member states, with 18-34-year-olds becoming less confident between 2018 and 2022. This could be a particular cause for concern as high vaccine confidence in this age cohort is paramount for high vaccine acceptance of routine childhood immunisation programmes.

Considered one of the most trusted sources of information around vaccination, healthcare workers play a critical role in motivating, reassuring, and convincing individuals to get vaccinated. While this study found vaccine confidence among healthcare workers across all 27 EU member states to be universally high and stable, it is worth noting evidence of decline in some countries including France, Greece, and Slovakia. A 2022 study exploring factors influencing healthcare professional’s vaccine confidence in Europe similarly found that while the majority of HCPs have confidence in vaccination, an increasing number are becoming more hesitant, refusing some vaccines for themselves or avoiding recommending certain vaccines to their patients.<sup>19</sup> A recent global study also found that more than a third of HCPs report that they do not trust information that they receive from health authorities.<sup>20</sup>

## 6.3 Conclusion

Because vaccine confidence is influenced by external factors and can change in light of developments over time,<sup>21</sup> it is difficult to determine if findings from this study represent short-term fluctuating and reversible trends or more permanent shifts. Continued monitoring of public and HCP trends is vital to identify early-warning signals of confidence losses. One such signal identified here is the growing vaccine confidence gap between old and young. Understanding the specific barriers to vaccine acceptance among younger age groups is of prime importance if we are to increase routine immunisation uptake rates to levels sufficient for herd immunity. Moving towards sub-national monitoring and evaluation of trends will allow for insights into spatial heterogeneities in confidence which may provide more local insights into potential vaccination policies and interventions.

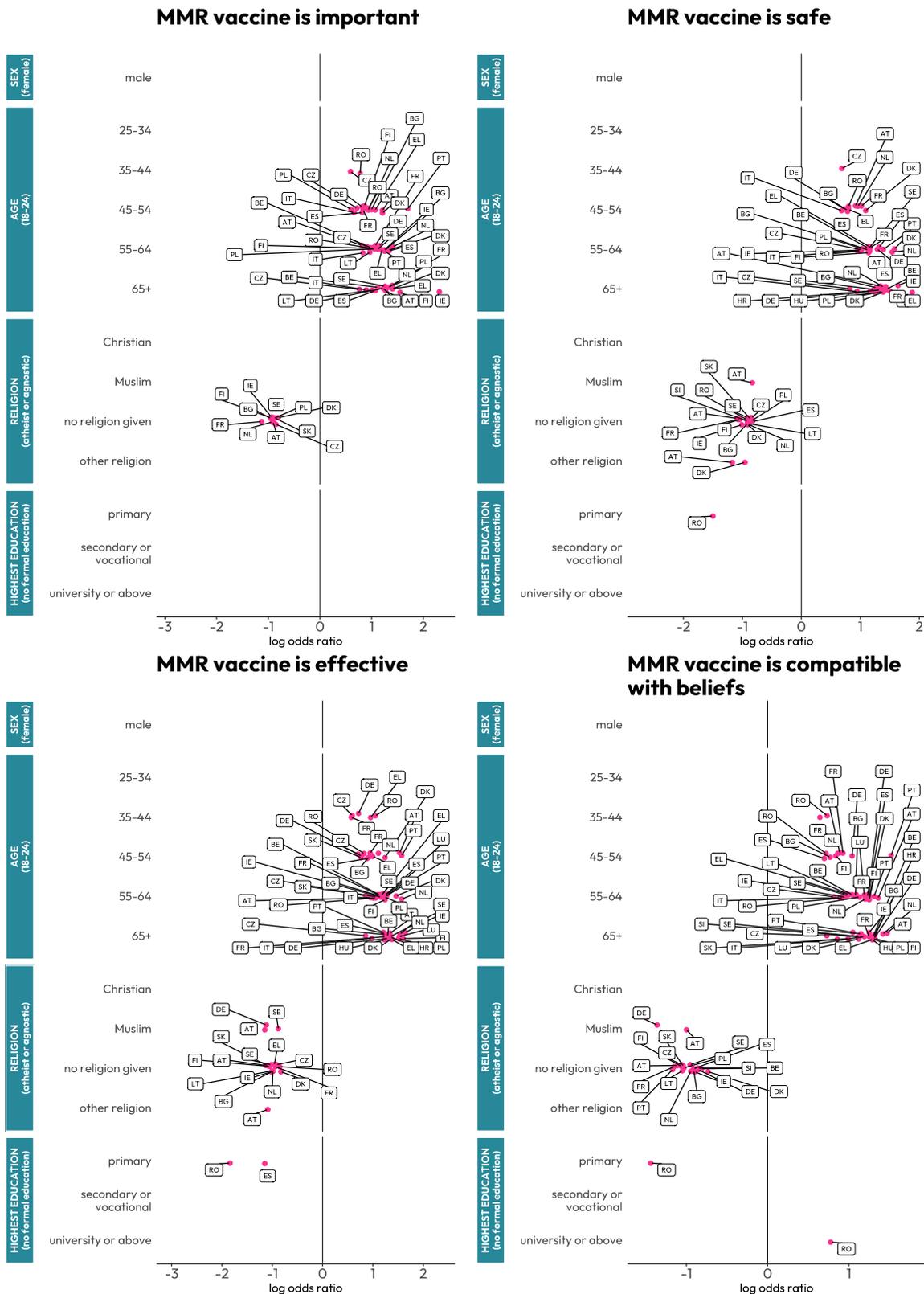
Consistent monitoring of confidence levels, their causes and consequences, can help shape our understanding of and ability to predict future trends as well as inform interventions to mitigate the negative outcomes of vaccine hesitancy and resulting decreases in vaccine uptake.

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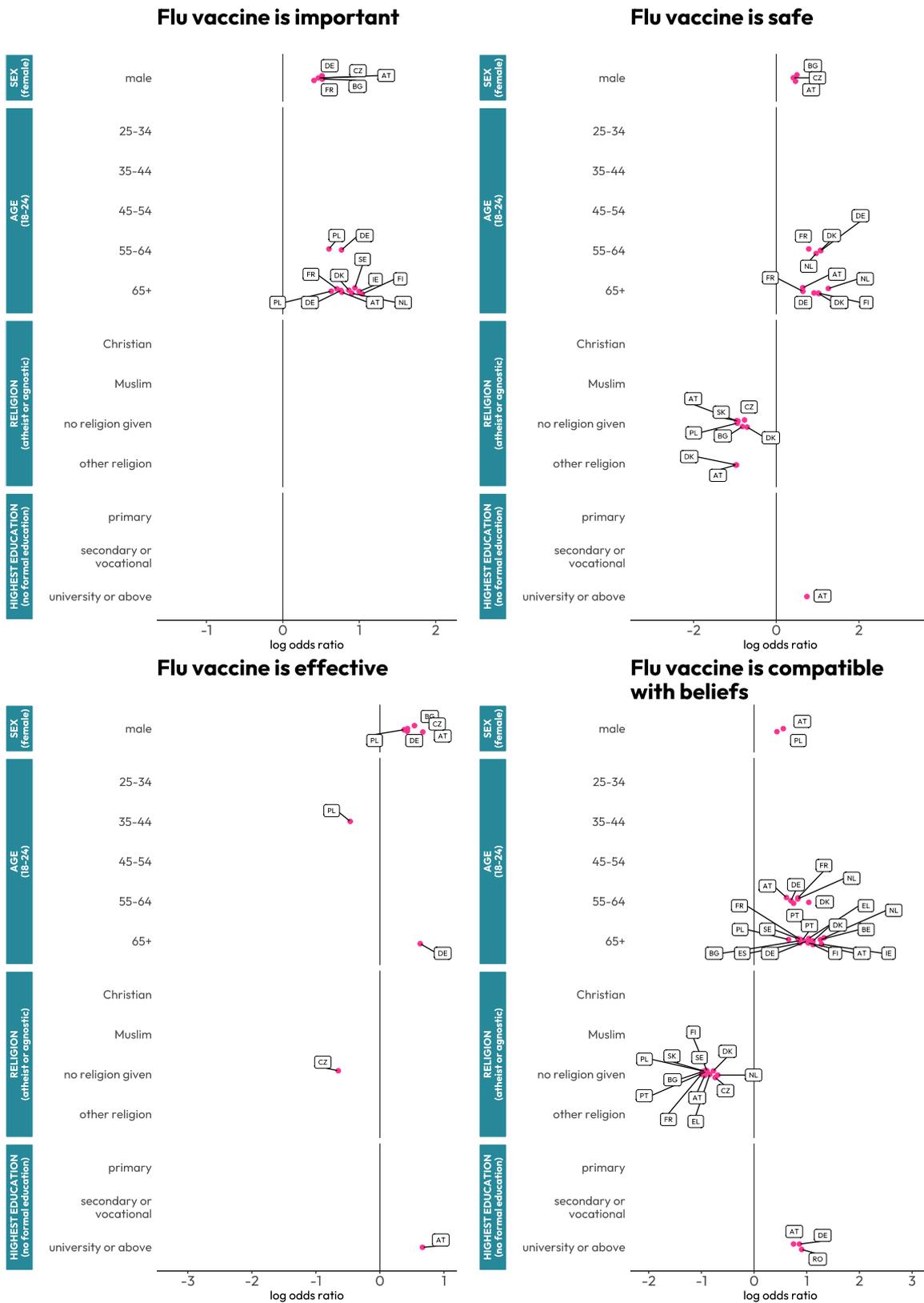
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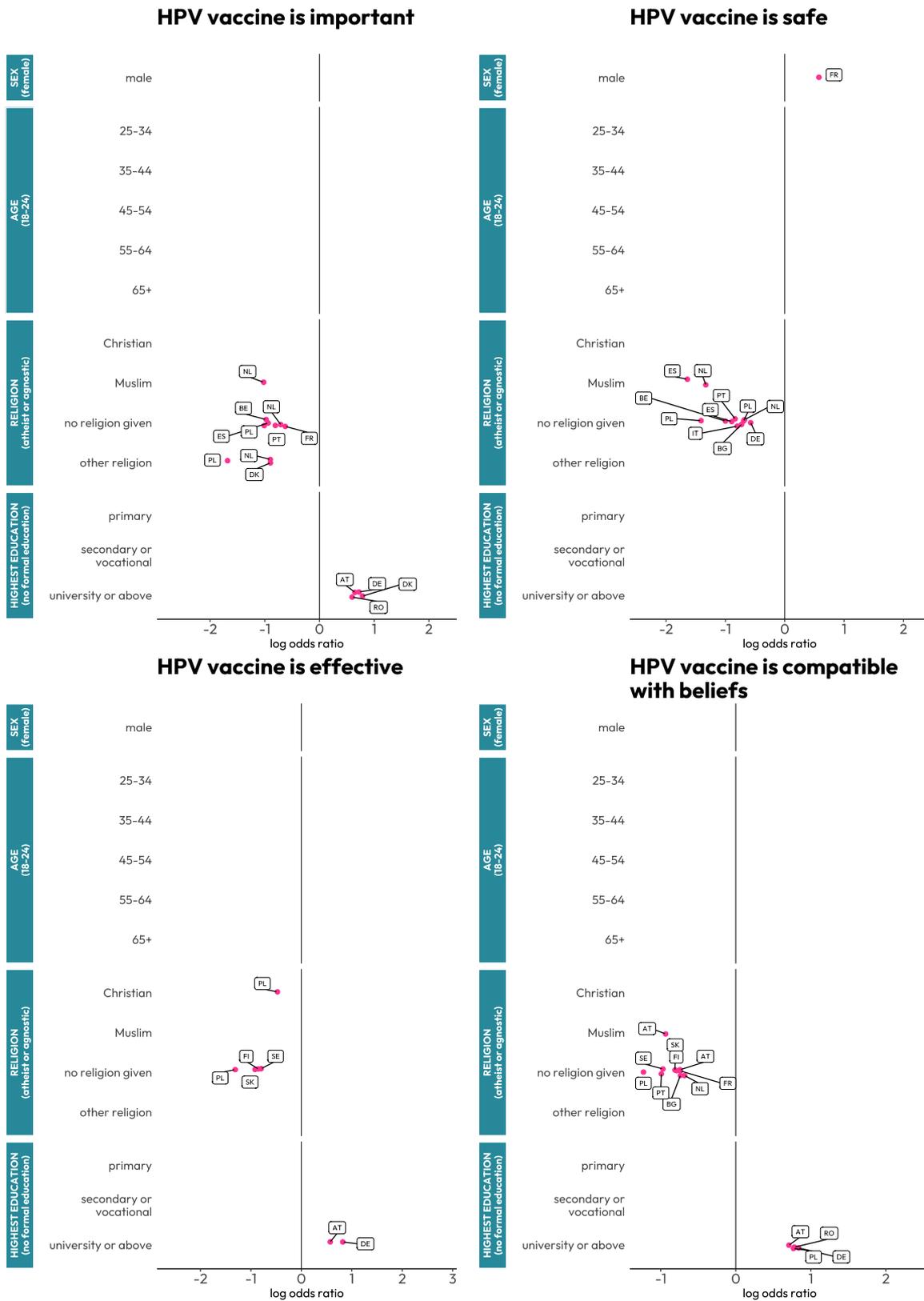
# Appendix



**Figure 21** The socio-demographic determinants of confidence in the MMR vaccine. Dots denote the log odds ratio of association between socio-demographic status and agreement to survey items. Pink dots, with corresponding country labels, signify that the parameter 95% credible interval excludes zero. The baseline group is shown in parentheses on the blue vertical banners. Two-letter country abbreviations are used: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czechia (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Italy (IT), Finland (FI), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), and Sweden (SE).



**Figure 22** The socio-demographic determinants of confidence in the seasonal influenza vaccine. Dots denote the log odds ratio of association between socio-demographic status and agreement to survey items. Pink dots, with corresponding country labels, signify that the parameter 95% credible interval excludes zero. The baseline group is shown in parentheses on the blue vertical banners. Two-letter country abbreviations are used: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czechia (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Italy (IT), Finland (FI), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), and Sweden (SE).



**Figure 23** The socio-demographic determinants of confidence in the HPV vaccine. Dots denote the log odds ratio of association between socio-demographic status and agreement to survey items. Pink dots, with corresponding country labels, signify that the parameter 95% credible interval excludes zero. The baseline group is shown in parentheses on the blue vertical banners. Two-letter country abbreviations are used: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czechia (CZ), Germany (DE), Denmark (DK), Estonia (EE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Hungary (HU), Ireland (IE), Italy (IT), Finland (FI), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), and Sweden (SE).



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