

A satellite-style map of Europe and the surrounding regions, including parts of North Africa and the Middle East. The map shows green landmasses, blue oceans, and brownish desert areas. The text is overlaid on the map.

**BBVA Foundation European Values
Survey
Part III:
Values and attitudes in Europe towards
science, technology and nature**

Fundación
BBVA

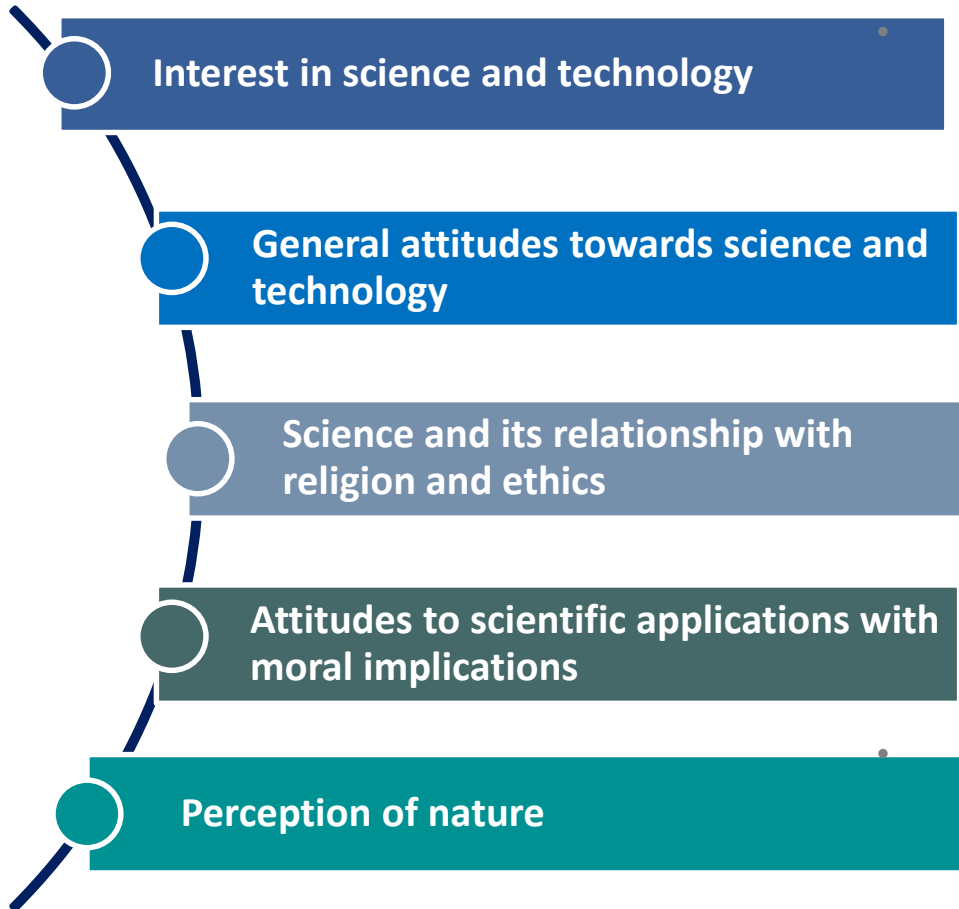
Department of Social Studies and Public Opinion

January 2020

- The BBVA Foundation's 2019 European Values Survey examines a broad set of values and attitudes held by the adult population of five European countries: Germany, the United Kingdom, France, Italy and Spain. The values and attitudes considered address both the public (politics, economics, the media, trust) and private domains (religion, ethics, science, the environment).
- This presentation confines itself to selected aspects of the private sphere, concerning attitudes and values in regard to science, technology and nature. A comparative analysis of these values and attitudes, measured by a survey conducted in the same time interval, identifies commonalities and differences across and within the five societies by reference to sociodemographic and cultural factors, primarily age, sex, educational level, declared political orientation and religiosity.
- Empirical information was gathered through a survey of a representative sample of 1,500 people aged 18 and over in each of the European Union's top five most populated countries.
- The fieldwork was carried out by Ipsos between April and July 2019. The design of the questionnaire and the analysis of the study data are the work of the BBVA Foundation Department of Social Studies and Public Opinion.

- **The aim of the study is to capture a broad set of preferences, values and beliefs that inform individual conduct in multiple facets of public and private life, and to examine how these conducts interrelate in the two domains.**
- **Values and intangibles in both spheres interact, operating together as a kind of “GPS for attitudes and beliefs” that helps individuals navigate their way around complex issues and situations on which they have limited information, aiding them in their decision-making: they help to quickly identify what is “good” (valuable) and “right” (which kind of behaviours are obligatory, which permitted, and which may earn a negative sanction).**
- **The map of cultural “intangibles” – values and predispositions – of the adult population is fairly stable in its main contours, but may be affected or modified as a result of exceptional events (crises) or the emergence of new information of singular importance, visibility and reach.**

- The study provides an essentially descriptive map of values and attitudes relative to the public sphere, identifying the characteristics of Spain that most stand out in comparison to the other four European countries in mid-2019 and, for selected indicators, considering how they have varied over the last ten years. Five main strands:





Interest in science and technology

- **Map of interests**
- **Importance of new technologies**
- **Use of Internet**

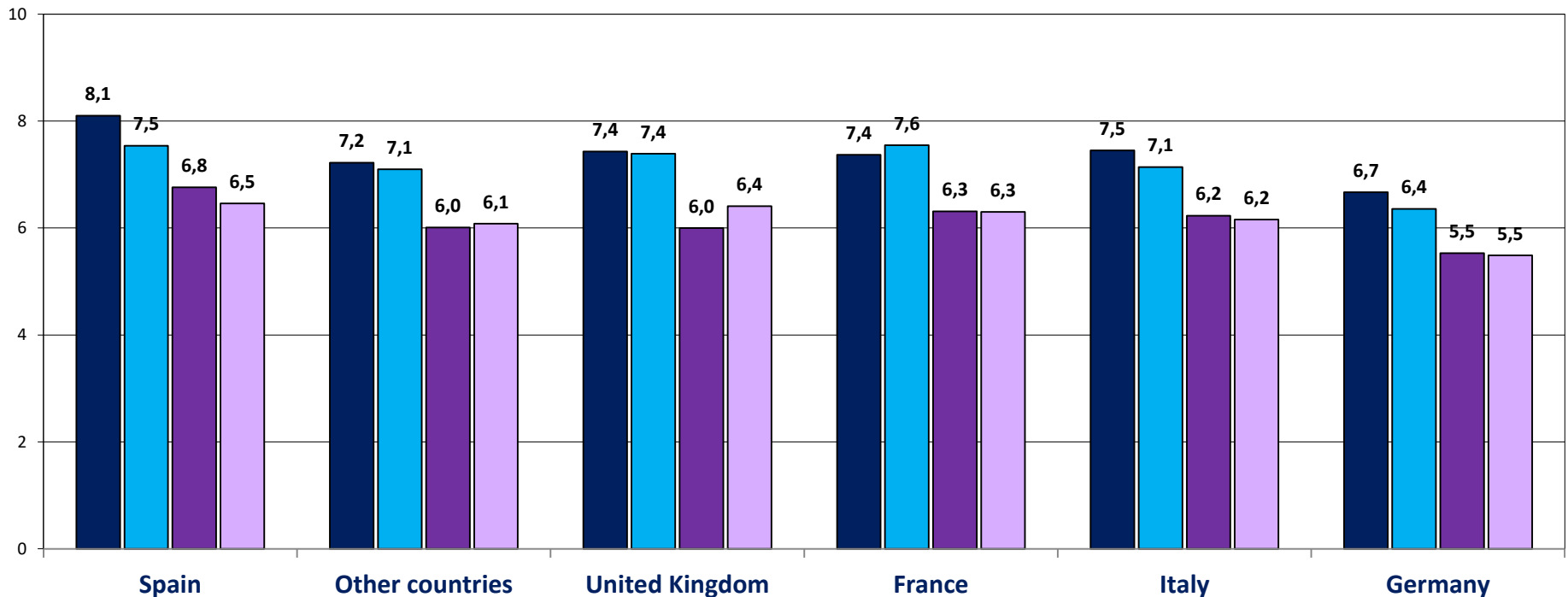
- Health and environmental issues head the list by degree of declared interest, following by technology and science.
- The Spanish report interest in these issues exceeding the average of the other four countries.

“Could you please tell me how interested you are in each of the issues I am going to read out?”

Average on a scale from 0 to 10, where 0 means that you have no interest at all and 10 that you have a great deal of interest

Base: all cases.

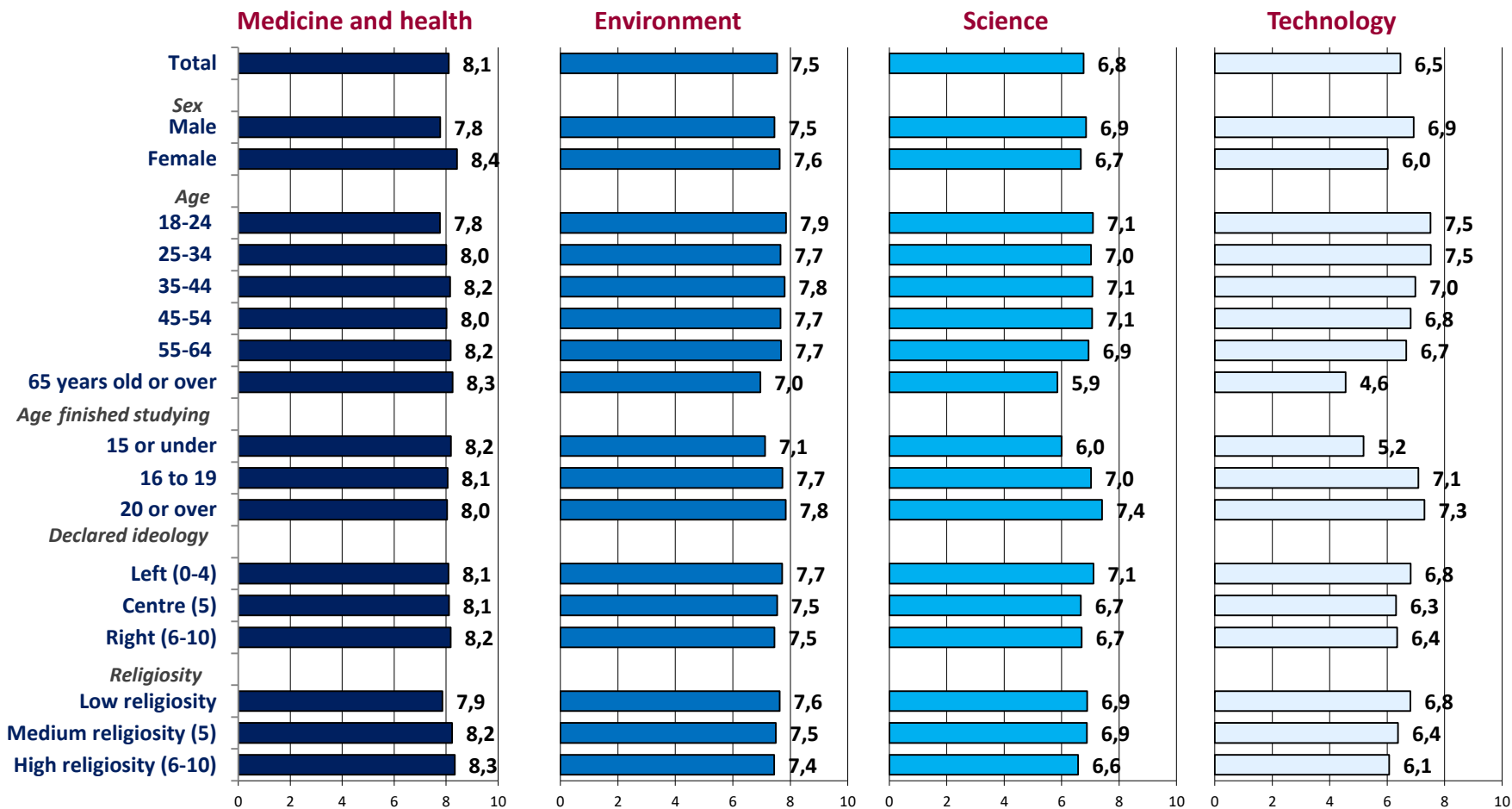
■ Medicine and health ■ Environment ■ Science ■ Technology



- While interest in medical and environmental issues cuts fairly evenly across segments, interest in science and technology is greater among younger adults, those with more years of study, those on the political left and those in the low religiosity bracket. Also men tend to express more interest than women in technological issues.

“Could you please tell me how interested you are in each of the issues I am going to read out?”

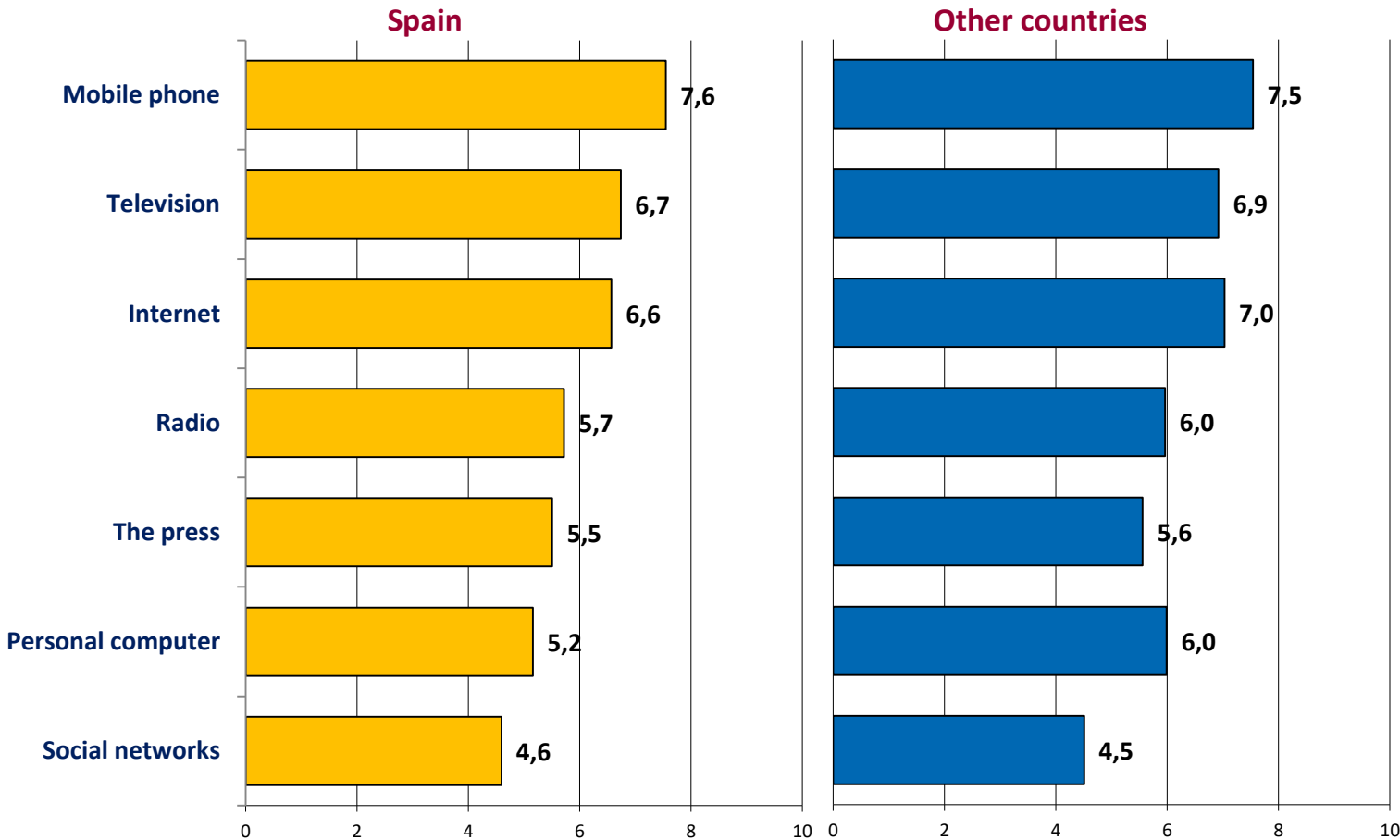
Average on a scale from 0 to 10, where 0 means that you have no interest at all and 10 that you have a great deal of interest. Base: all cases in Spain



- For the citizens of the five survey countries, the mobile phone is their single most important means of communication (average scores exceeding 7 points), followed by television and the Internet. The radio, the press and personal computers are seen as important, though less so, while the majority attach little importance to social networks.

“How important are each of the following media and technologies in your daily life?”

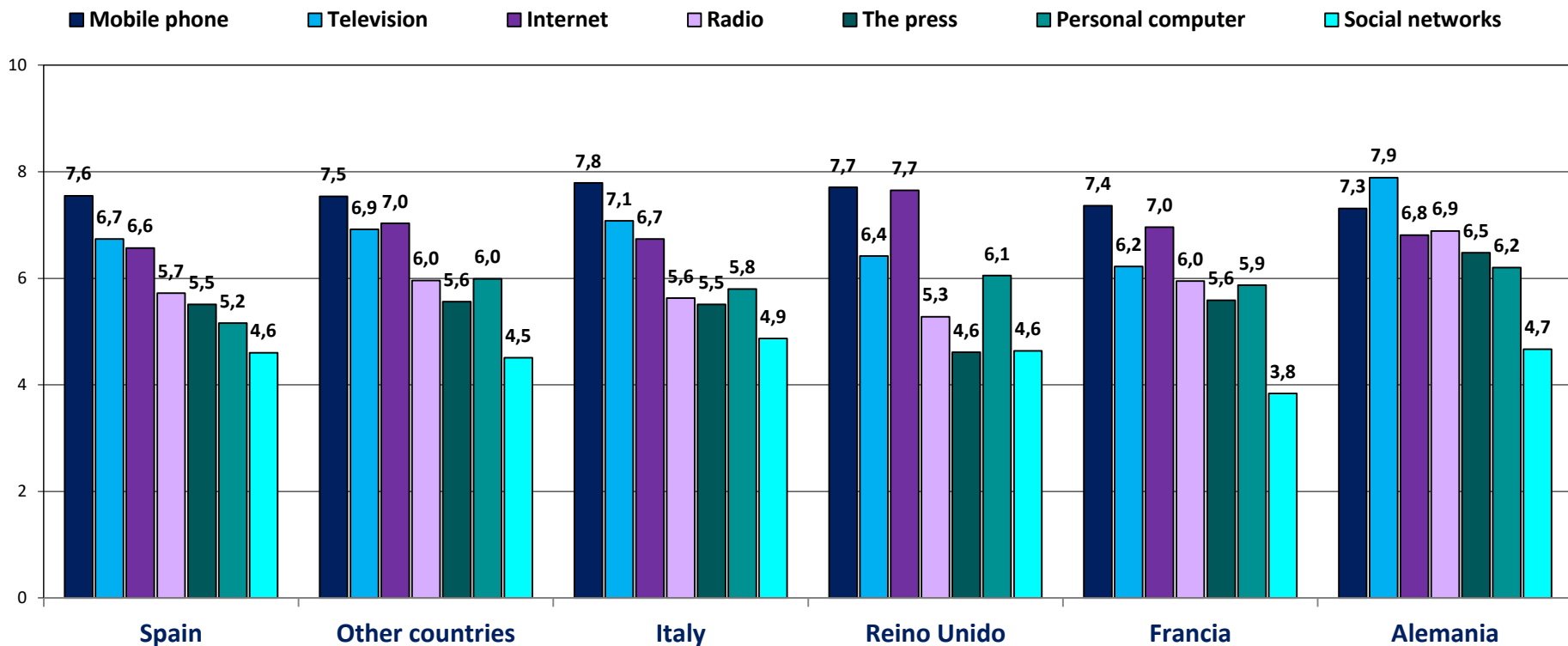
Average on a scale from 0 a 10, where 0 means that, for you, it is “not at all important” and 10 means it is “very important”. Base: all cases



- The Spanish score close to the European average, except for the lesser importance they attach to personal computers.
- Germans accord more importance to television and the press, and the British to Internet.
- The French are the least convinced of the importance of social networks.

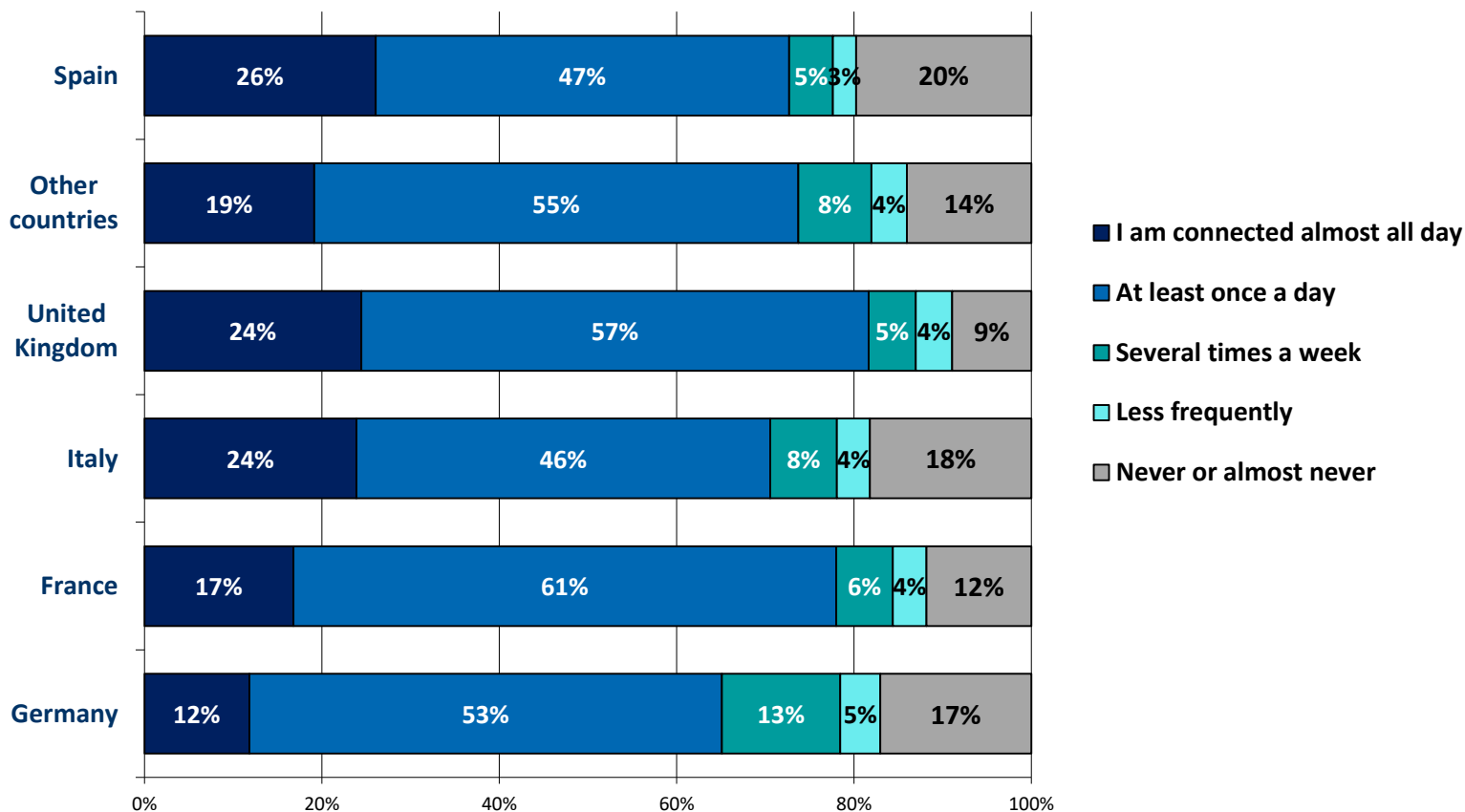
“How important are each of the following media and technologies in your daily life?”

Average on a scale from 0 a 10, where 0 means that, for you, it is “not at all important” and 10 means it is “very important”. Base: all cases



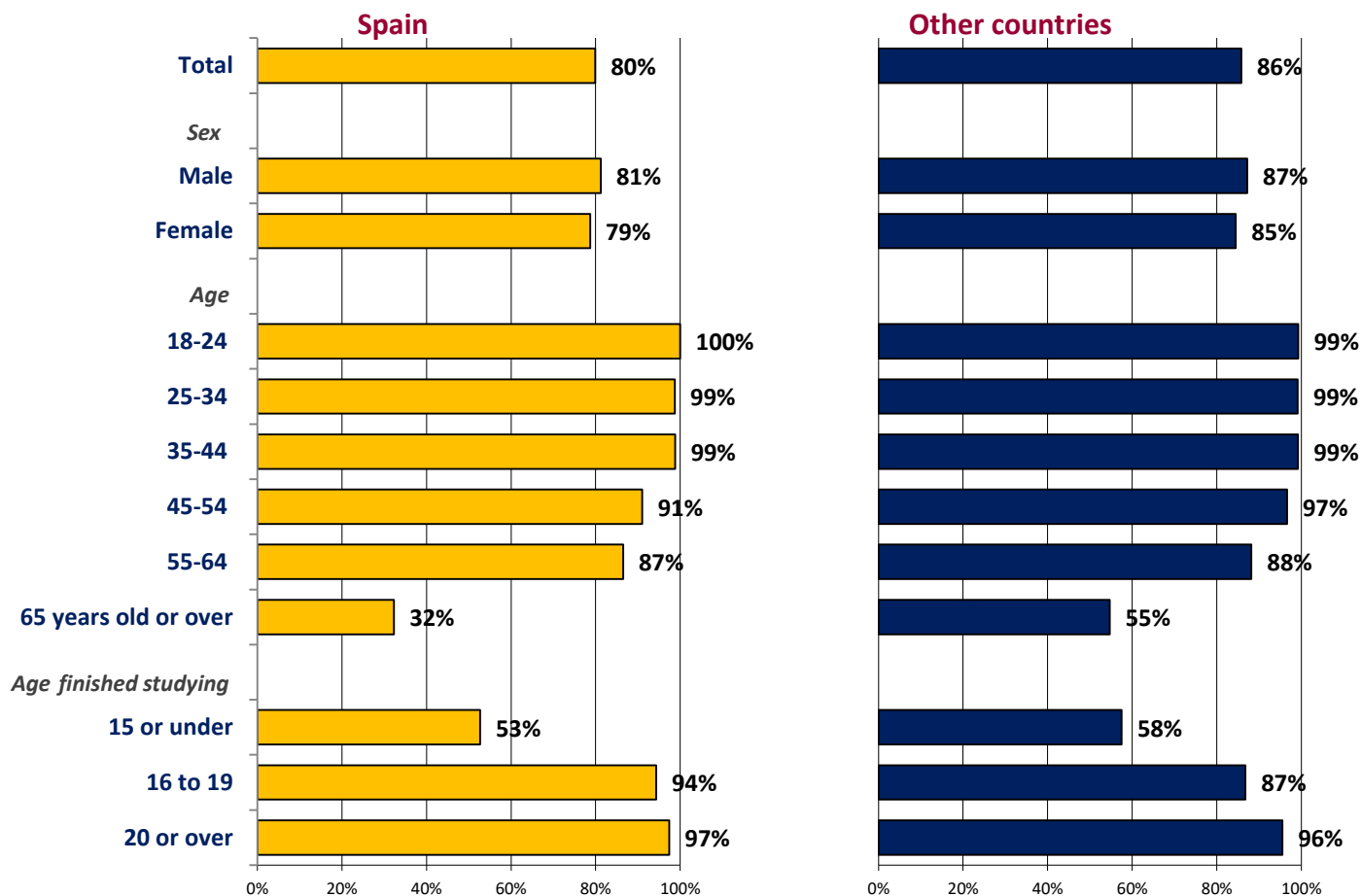
- Eighty percent or more of citizens in the five survey countries declare themselves Internet users. Penetration is highest in the United Kingdom and France. However frequency of use (“I am connected almost all day”) is greatest in Spain, followed by the United Kingdom and Italy.

“How often do you use the Internet?” Base: all cases



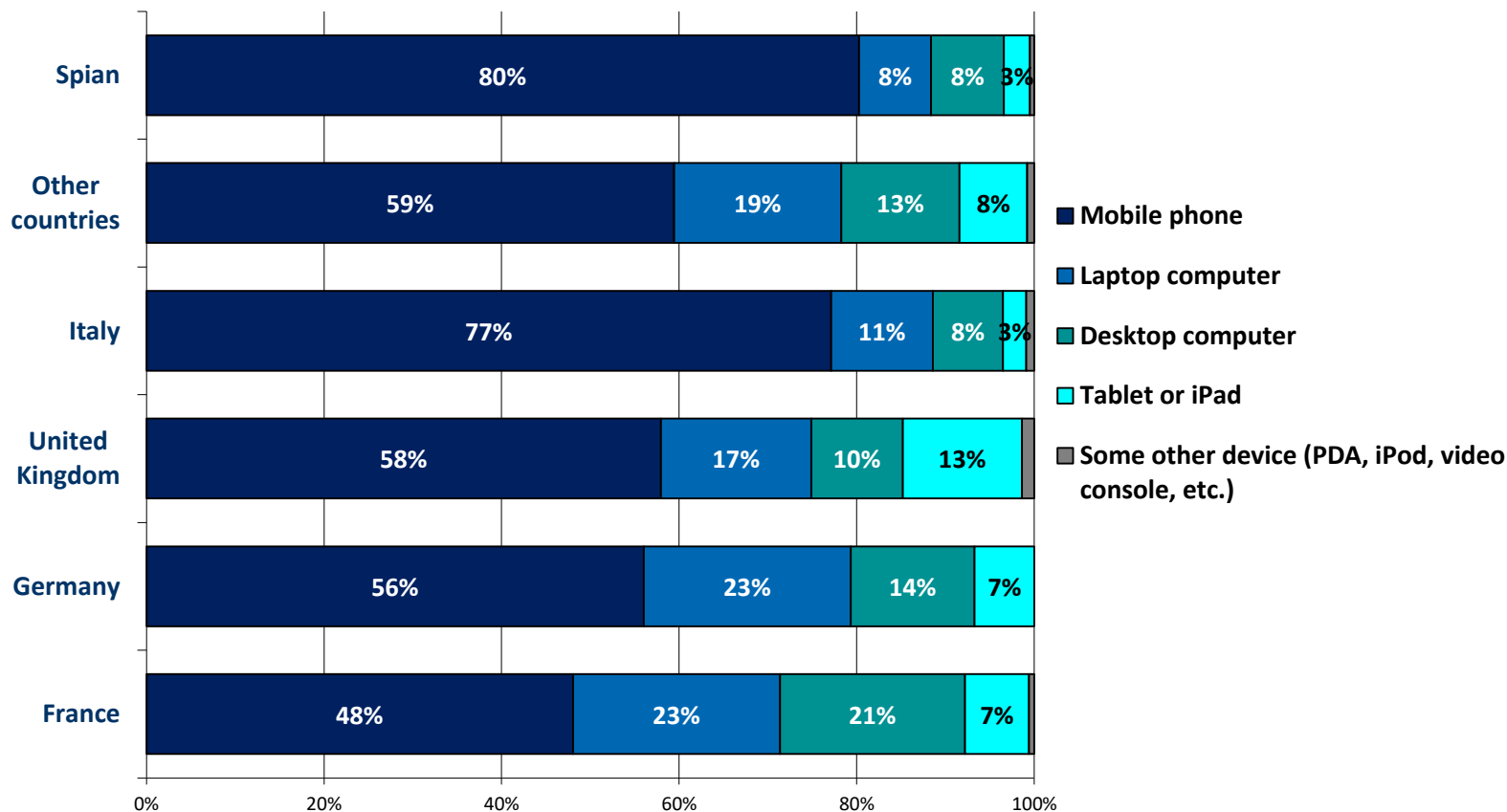
- Internet use barely varies by gender. While use extends to practically the entire population below the age of 45, it tails off slightly in the 45 to 64 range (though still almost 90% or more) then falls dramatically among those aged 65 and over. In Spain, just a third of this age group are Internet users, compared to half in other survey countries.
- Educational level is a predictor of use, which decreases sharply among those with the fewest years of study.

“How often do you use the Internet?” Percentage using Internet with a certain frequency. Base: all cases



- Mobile phones are the most common means to access the Internet, particularly in Spain and Italy. Next come laptop computers, a strong second choice in Germany and France, and desktop computers, also popular in France.
- In last place comes the tablet or iPad, which finds most support in the United Kingdom.

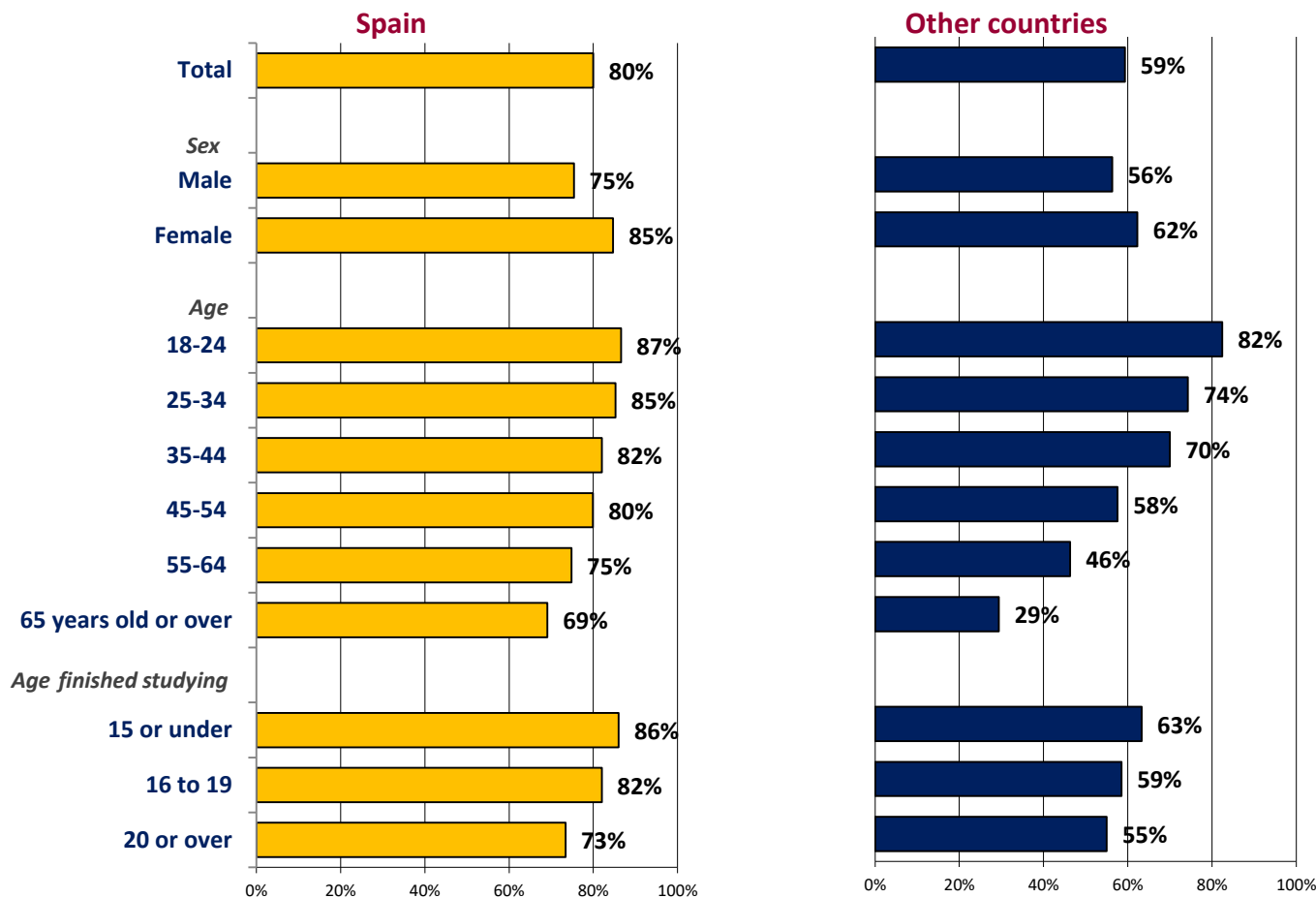
“What device do you most often use to connect to the Internet?” Base: Internet users



- The percentage using a mobile phone as their main access device is slightly higher among women, and also rises steadily as we descend through the age groups. Differences by age are on average far more marked in the other four countries than in Spain, where the mobile is a clear majority option among the adult and elderly population.
- Mentions of the mobile as the primary means of access also rise inversely with years in education.

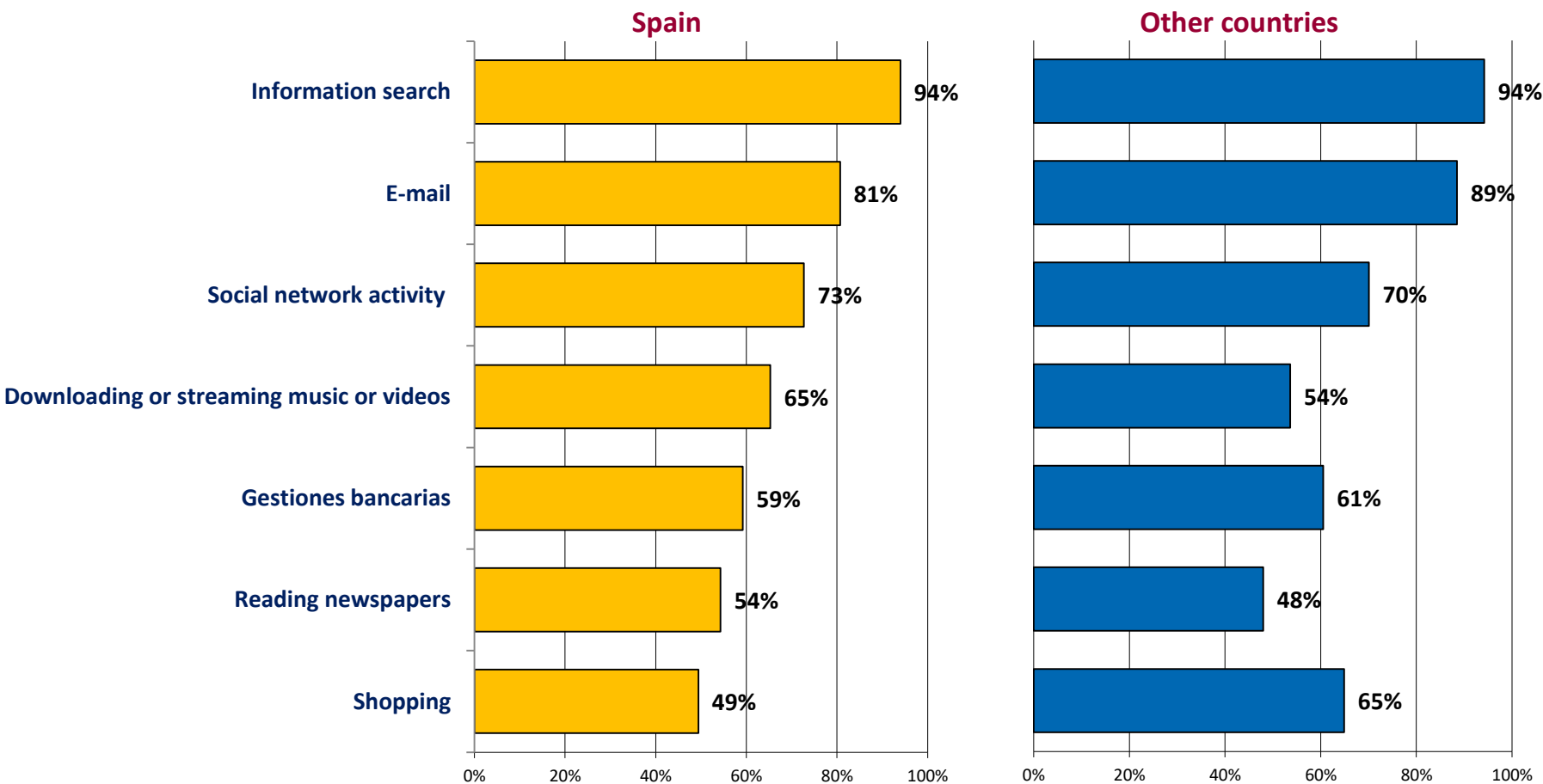
“What device do you most often use to connect to the Internet?”

Percentage answering “mobile phone” Base: Internet users



- Internet is overwhelmingly a space for information search and interpersonal communication via e-mail and social networks. A significant percentage also use it for entertainment purposes (downloading or streaming music and videos), to follow current events on newspaper sites or for instrumental activities like online shopping or banking.

“Have you performed any of the following activities via the Internet in the last month?” Base: internet users



- Information search and e-mail are used by a large majority of citizens in all countries. Social network activity is also widespread, notably in Italy, the United Kingdom and Spain.
- The downloading of music and/or videos is particularly popular among the Spanish and French, who are also, with the Italians, the most avid readers of online newspapers.
- The United Kingdom is a clear leader in the uptake of online banking services. It also scores highest in regard to online shopping, just ahead of Germany.

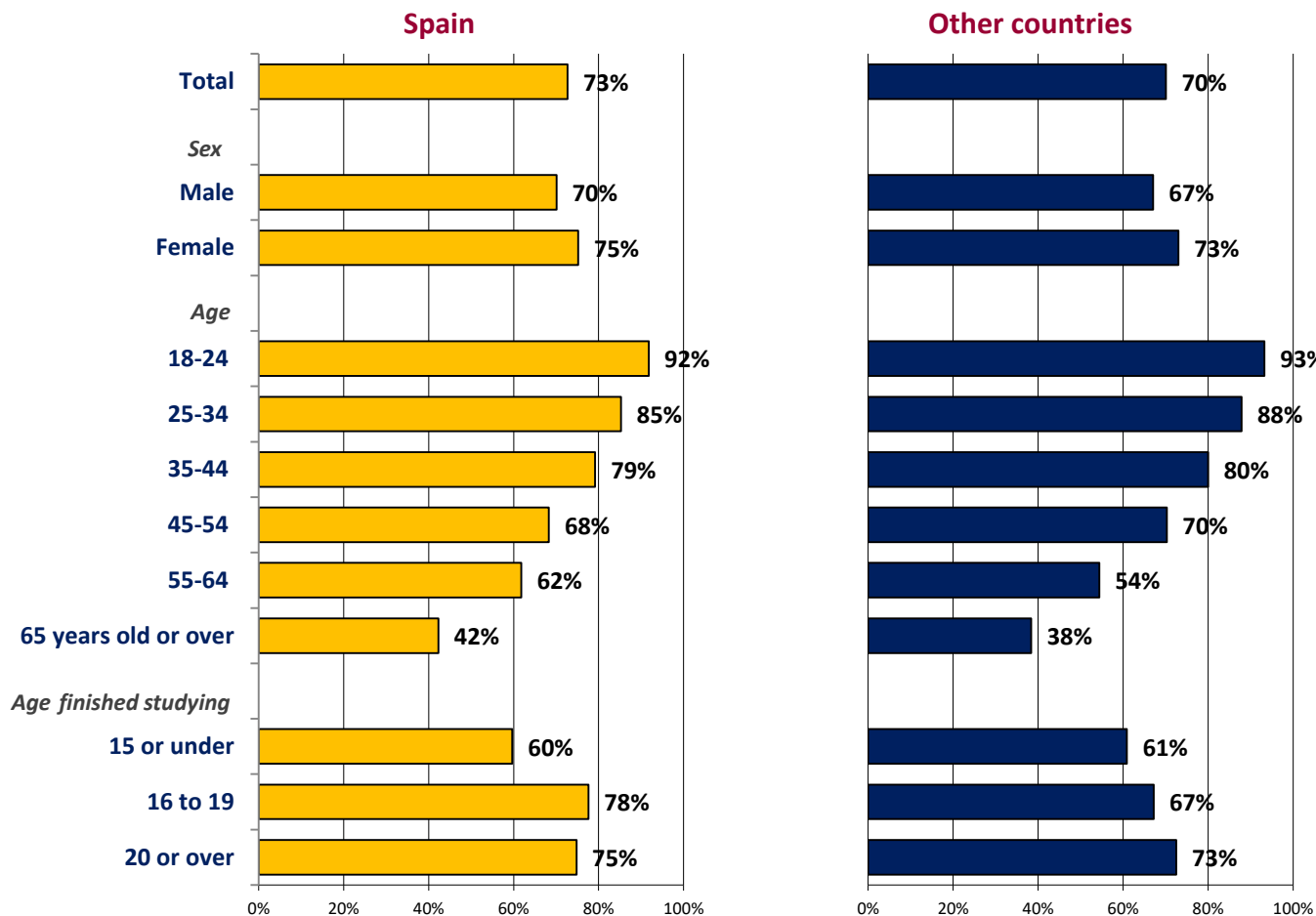
“Have you performed any of the following activities via the Internet in the last month?” Base: Internet users

	Spain	Other countries	France	United Kingdom	Germany	Italy
Information search	94%	94%	97%	95%	96%	90%
E-mail	81%	89%	92%	91%	93%	77%
Social network activity	73%	70%	65%	73%	68%	74%
Downloading or streaming music or videos	65%	54%	60%	55%	49%	51%
Banking transactions	59%	61%	65%	76%	58%	42%
Reading newspapers	54%	48%	55%	49%	38%	50%
Shopping	49%	65%	65%	76%	71%	47%

- Social network activity is rather more intense among women than men, and increases sharply as we move down the age groups, opening up a significant breach between the young and the elderly. Use is also greater among those of medium and high educational level.

“Have you performed any of the following activities via the Internet in the last month?” Base: Internet users

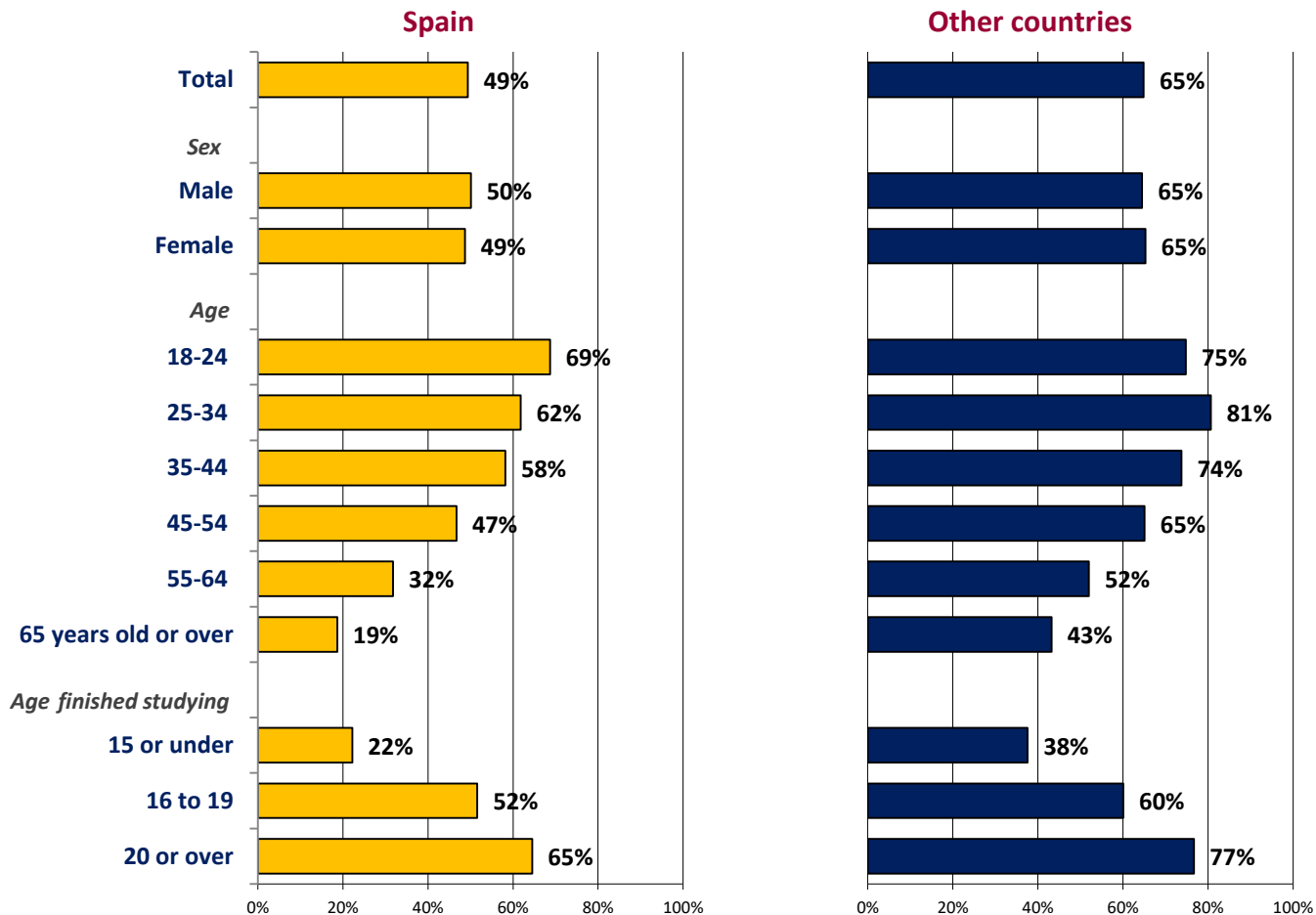
Percentage participating in social networks



- Recourse to online shopping varies inversely with age both in Spain and the other four countries on average, and is also increasing with years of study.

“Have you performed any of the following activities via the Internet in the last month?” Base: Internet users

Percentage doing shopping





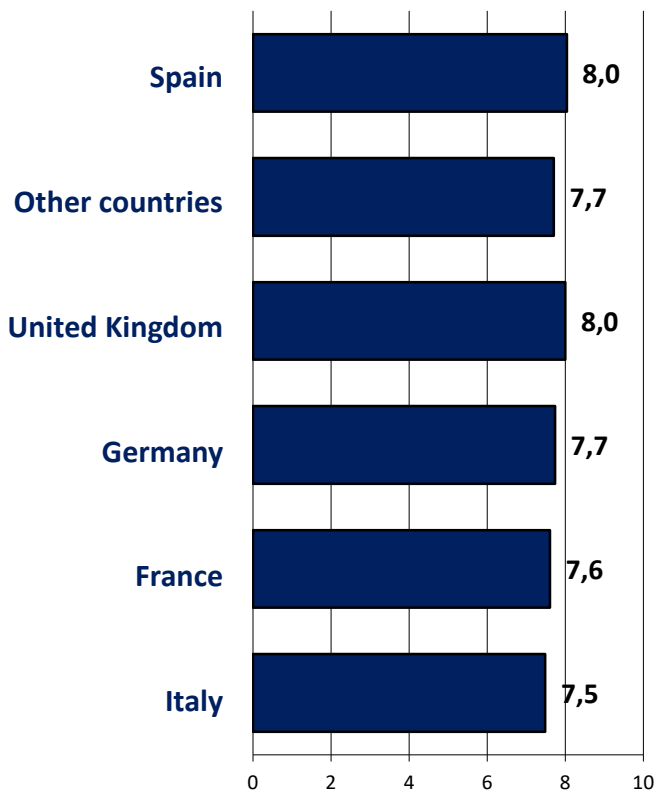
General attitudes to science and technology

- Positive and negative facets of science
- General expectations regarding science
- Trust in scientists

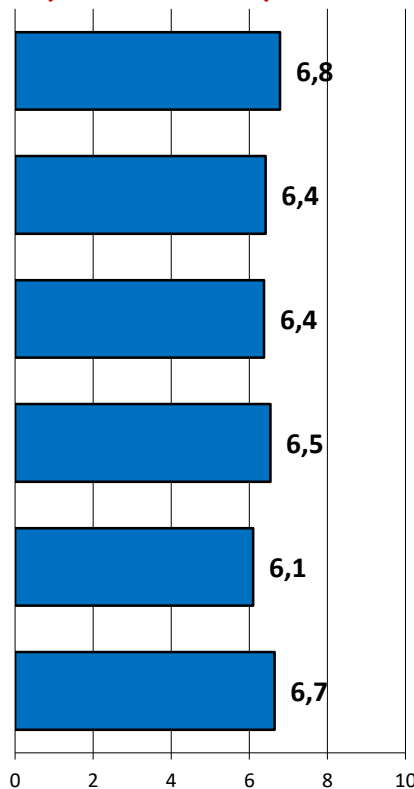
- Broad consensus around the role of science in improving human health and, rather less so, around the idea that it has reduced the fears and superstitions of the past and the belief that it is the most reliable way to understand the world.

“I am going to read out some statements about science and technology, and I would like you to tell me how much you agree or disagree with each”. Base: all cases. Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 means you “completely agree”.

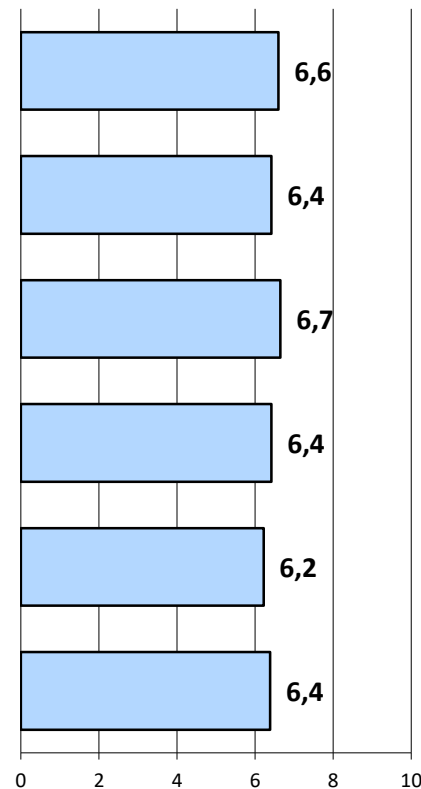
Thanks to science, people’s health is continuously improving



Science has reduced the fears and superstitions of the past



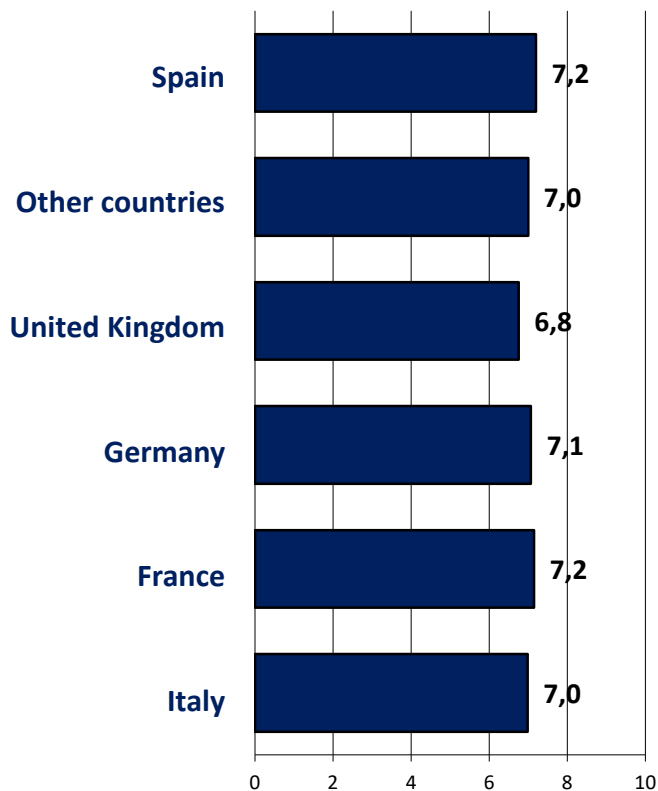
Science is the most reliable way to understand the world



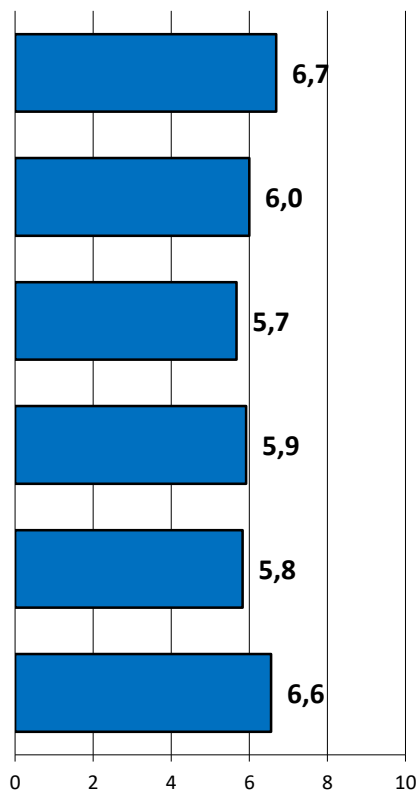
- There is widespread agreement to the effect that science is the motor of material progress, though citizens are less likely to see it as the motor of cultural progress.
- Division of opinions on whether “science has an answer for all the major problems”, with the Spanish, Italians and Germans supporting this view and the French and British lined up against.

“I am going to read out some statements about science and technology, and I would like you to tell me how much you agree or disagree with each”. Base: all cases. Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 means you “completely agree”.

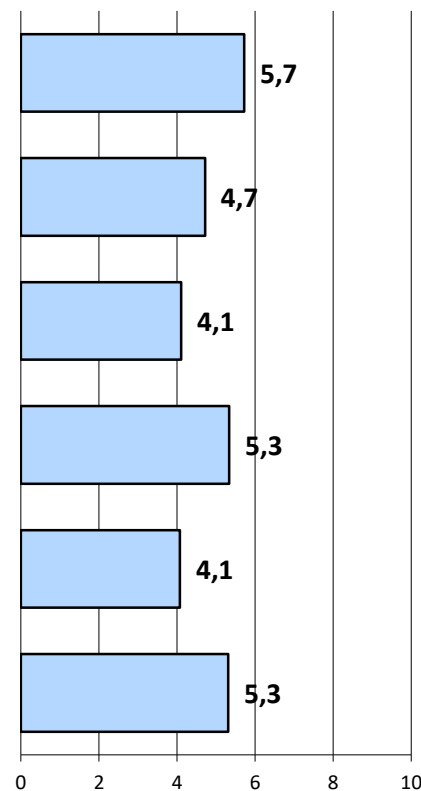
Science is the motor of material progress



Science is the motor of cultural progress



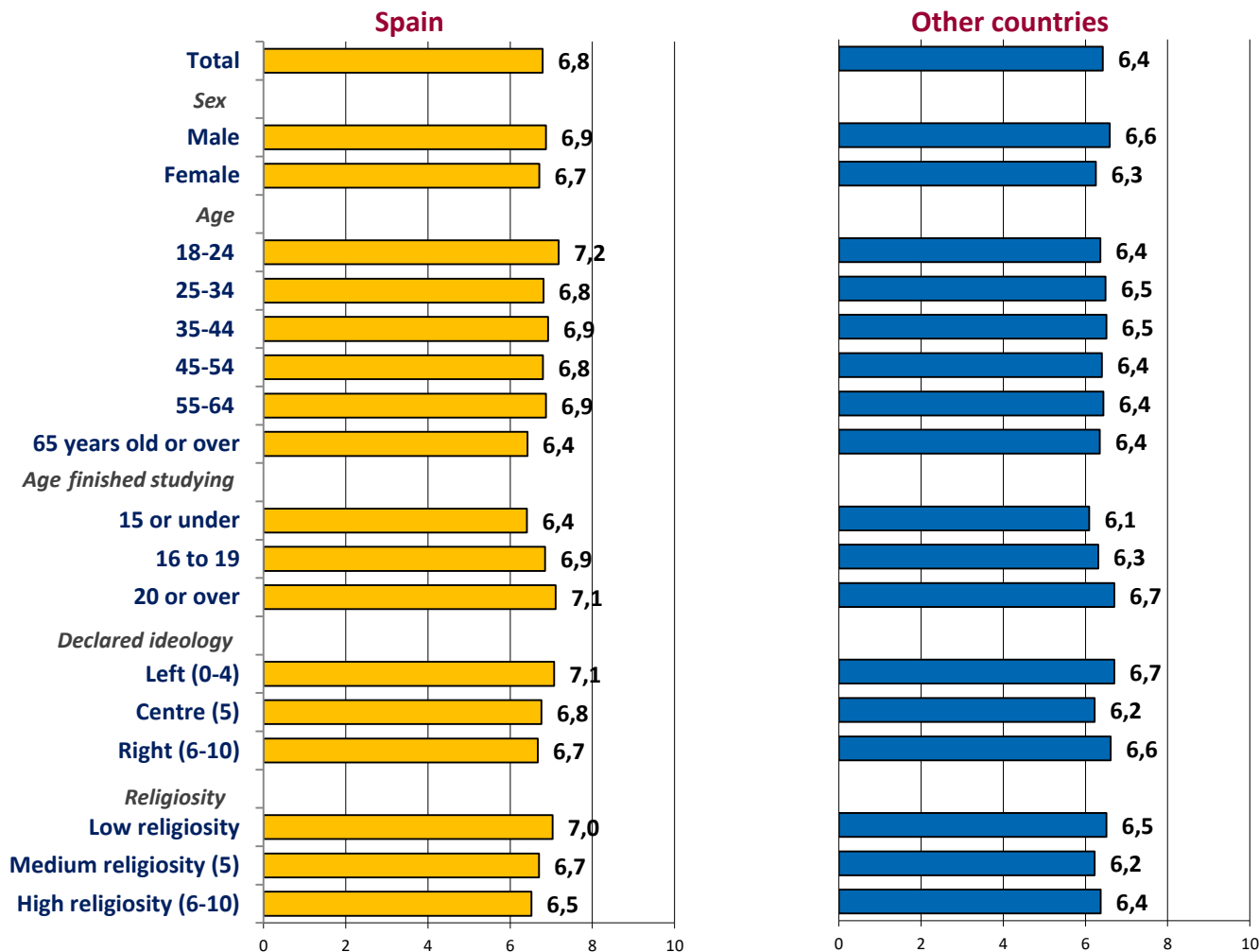
Science has an answer for all major problems



- The consensus that science has reduced the fears and superstitions of the past broadens further among those of a higher educational level. In Spain, support for this idea is strongest among the young, those declaredly on the left and those with a low level of religiosity.

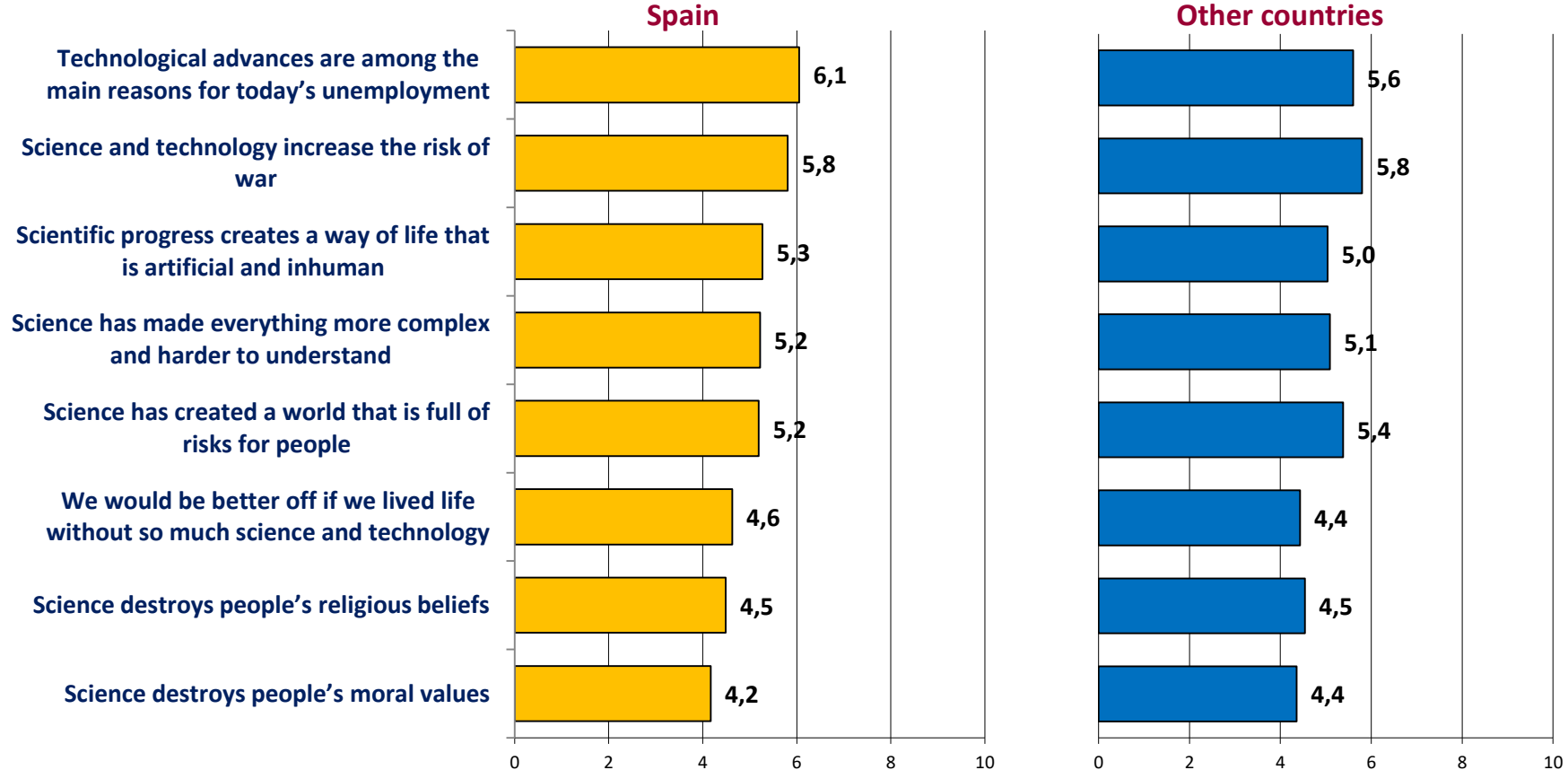
“I am going to read out some statements about science and technology, and I would like you to tell me how much you agree or disagree with each”. Base: all cases. Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 means you “completely agree”.

Science has reduced the fears and superstitions of the past



- Agreement prevails as to the negative impact of science and technology vis à vis employment and the threat of war. Citizens also express reservations, albeit with more disparity, about the impact of science on our way of life and in creating a world full of risks. These reservations do not imply a belief that “we would be better off if we lived life without so much science and technology”, while citizens reject the idea that science destroys people’s religious beliefs and moral values.

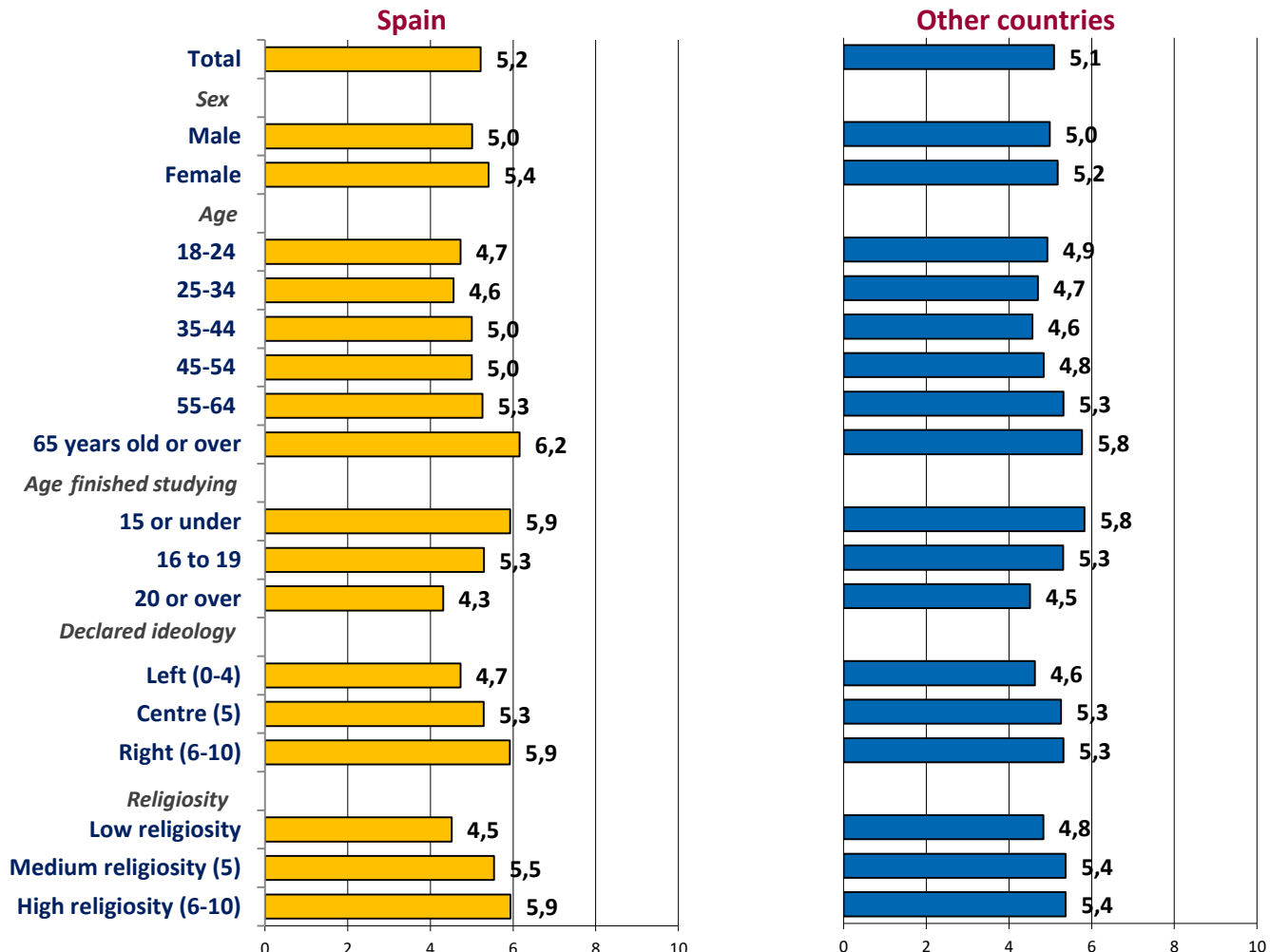
“I am going to read out some statements about science and technology, and I would like you to tell me how much you agree or disagree with each”. Base: all cases. Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 means you “completely agree”.



- Perceptions of some reservations vary significantly by segment. The idea that science has made everything more complex and harder to understand is more widespread among those aged 65 and over, those with fewer years of education, those on the political right, and those of medium to high religiosity.

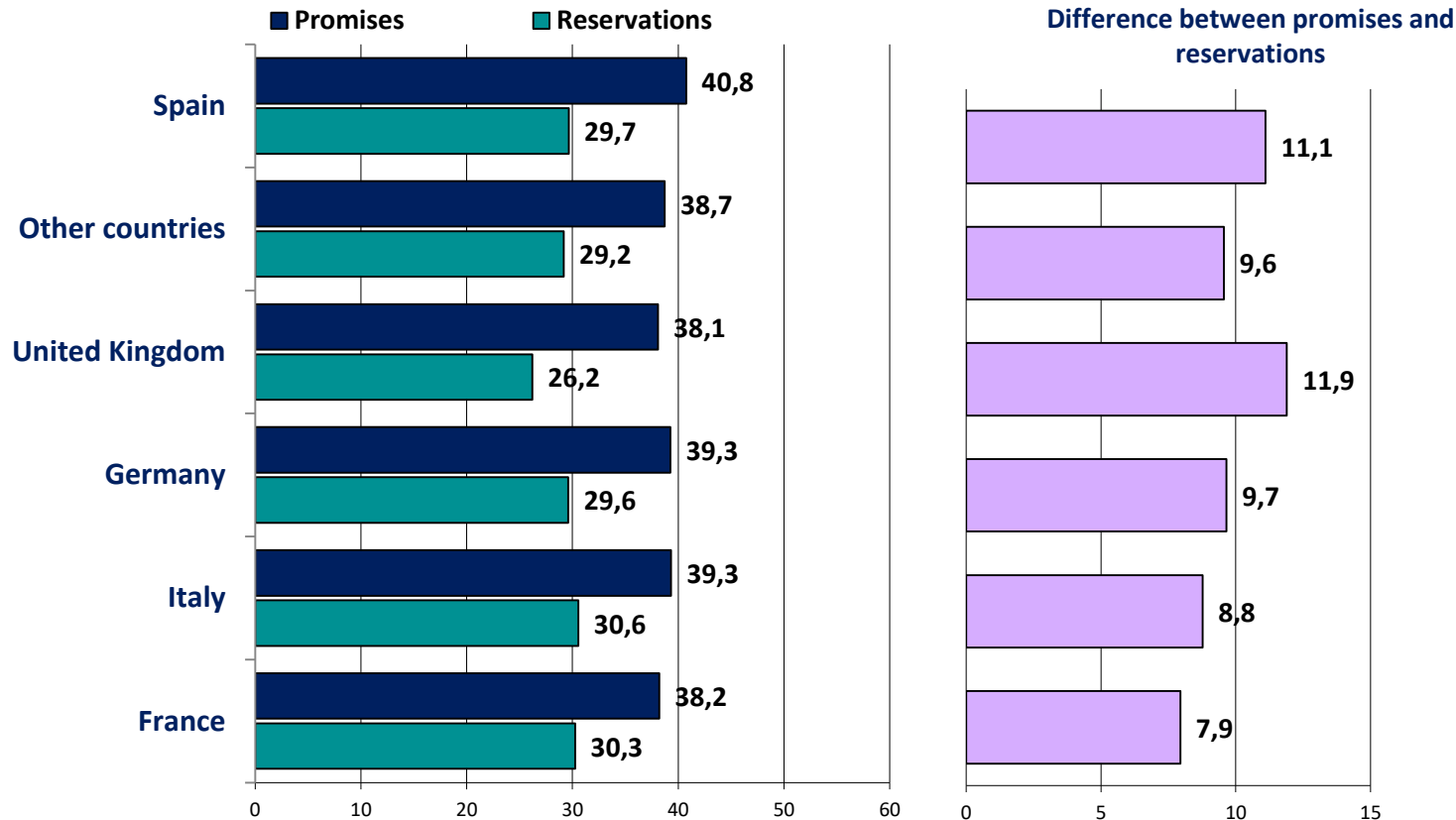
“I am going to read out some statements about science and technology, and I would like you to tell me how much you agree or disagree with each”. Base: all cases. Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 means you “completely agree”.

Science has made everything more complex and harder to understand



- If we pan out from specific facets of the science to an aggregated view based on a scale of positive assessments ("promises") and another of negative perceptions ("reservations"), we see that in all countries the perception of promises wins out clearly over reservations. The largest difference between promises and reservations is observed in the United Kingdom, followed by Spain.

Scale of promises and reservations towards science (0 to 60)



Starting from an analysis of principal components, we constructed two scales, each comprising six items measured on an agreement scale from 0 to 10:

Promises of science: Science is the motor of material progress, Science is the most reliable way to understand the world, Science has an answer for all the major problems, Science is the motor of cultural progress, Thanks to science, people's health is continuously improving, Science shows us fascinating things about nature.

Reservations towards science: Science destroys people's moral values, Science has made everything more complex and harder to understand, We would be better off if we lived life without so much science and technology, Scientific progress creates a way of life that is artificial and inhuman, Science has created a world that is full of risks for people, Technological advances are among the main reasons for today's unemployment.

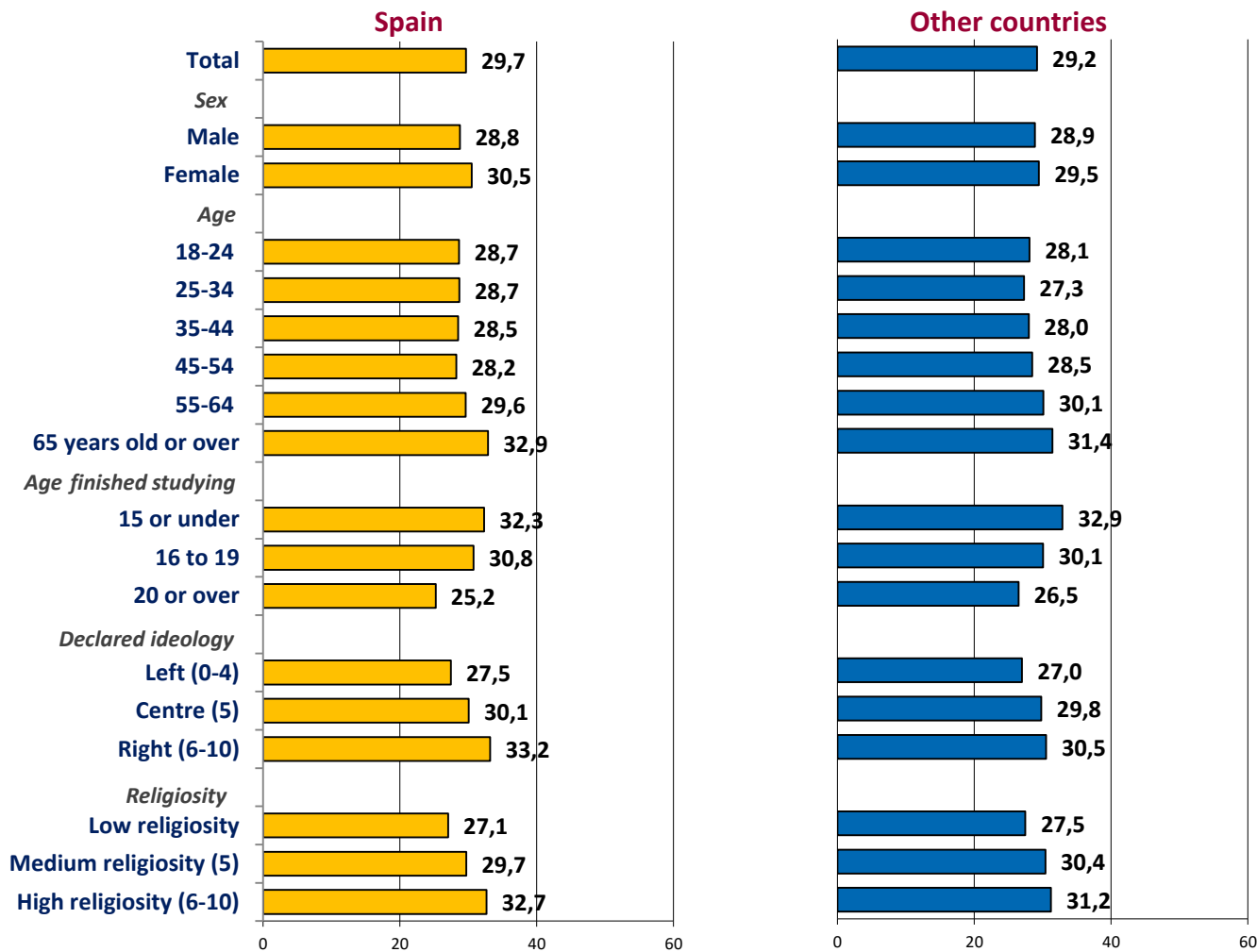
- Perception of promises barely differs from one segment to another, beyond rising slightly with educational level and standing a little lower among those aged 65 and older.

Scale of promises of science (0 to 60)



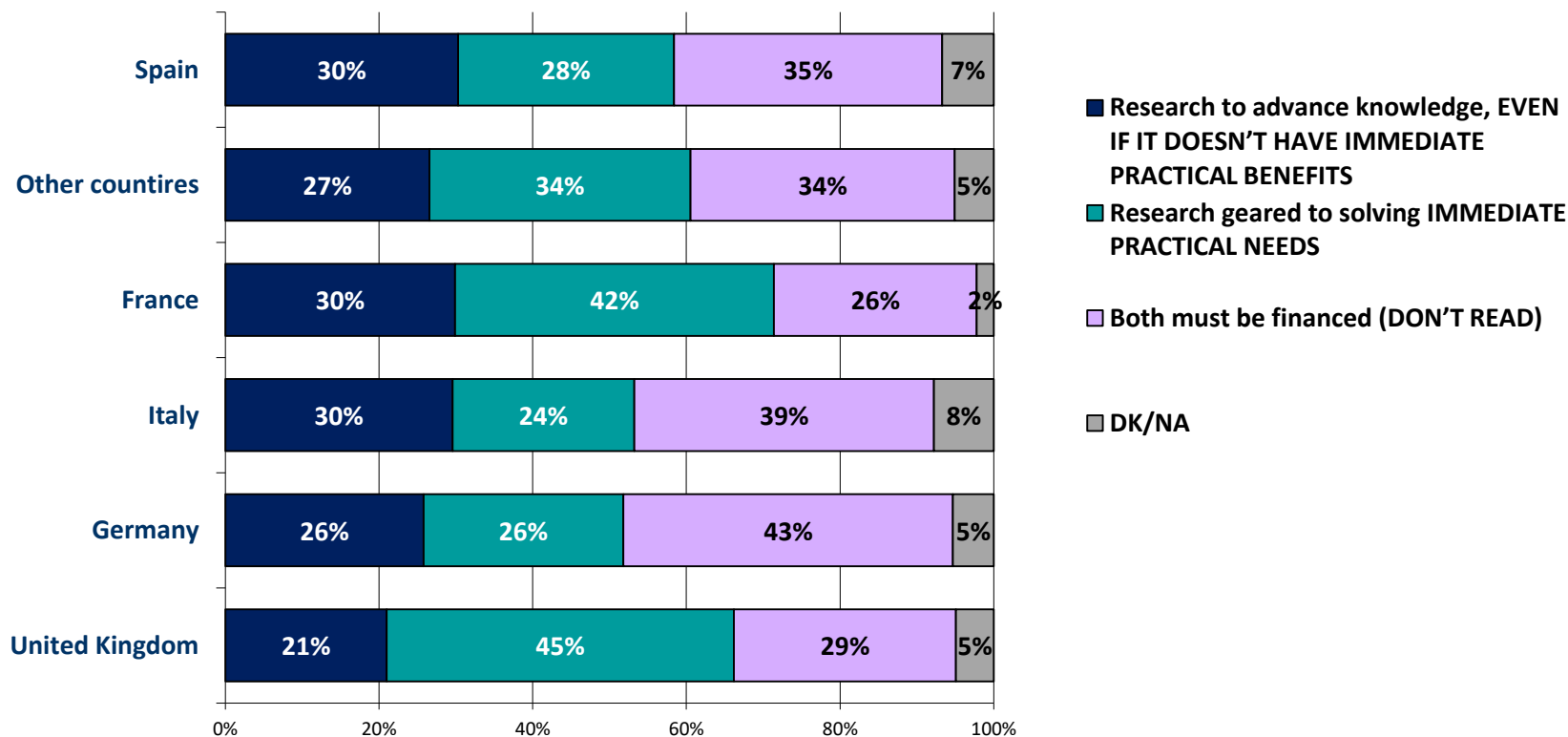
- In contrast to “promises”, “reservations” towards science are sensitive to different variables. The average on the reservations scale stands higher among adults aged 65 and over, those identifying as on the right and those who express a high degree of religiosity. Conversely, the reservations score decreases among those with most years of study.

Scale of reservations towards science (0 to 60)



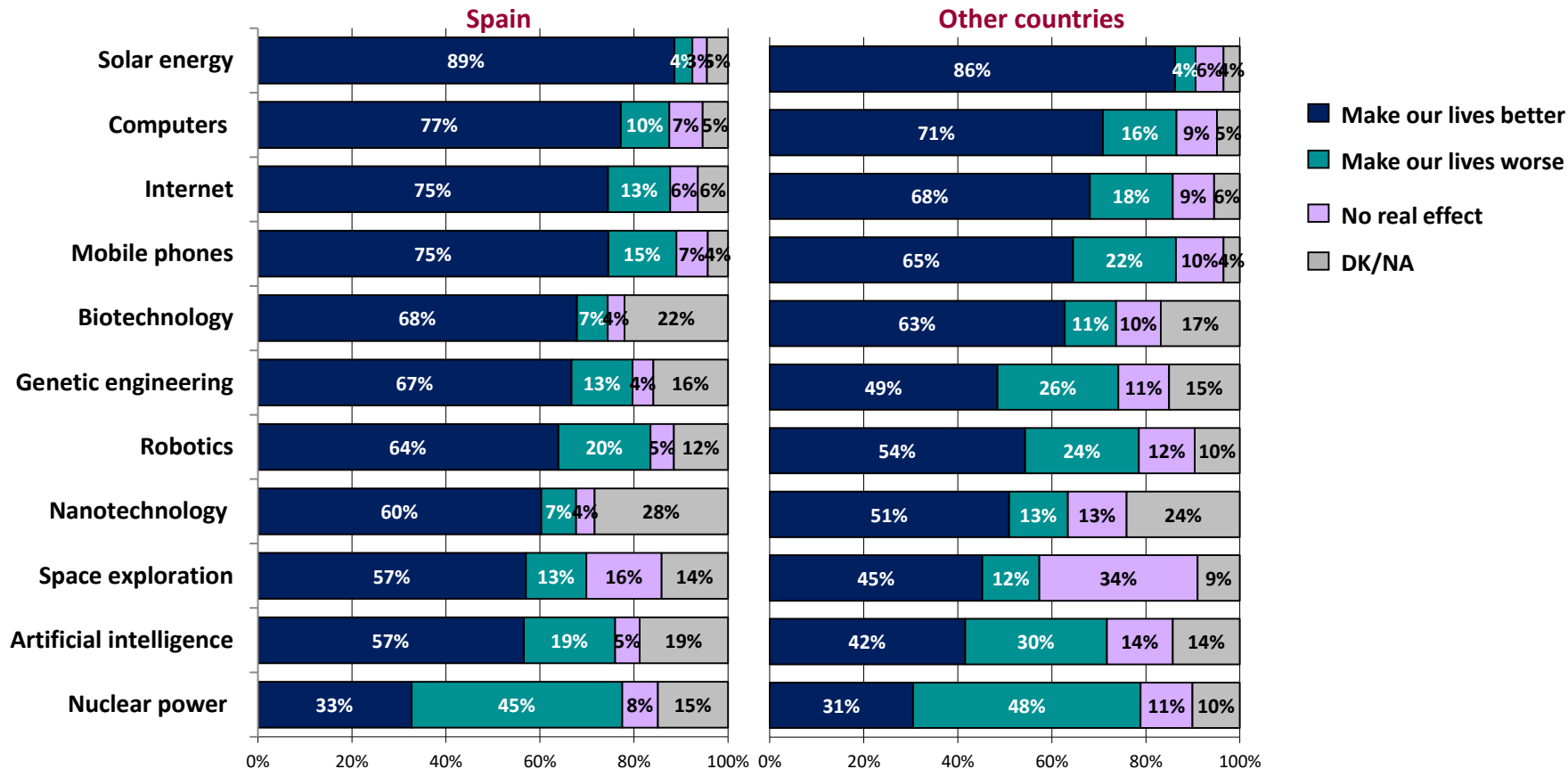
- Citizens are equally ready to support the funding of utilitarian or results-oriented research and the funding of basic research (leading to advances in knowledge, whether or not they produce immediate benefits).
- The funding of research pursuing practical benefits finds particularly strong support in the United Kingdom and France.

“Which of the following types of scientific research do you think should receive public funding?” Base: all cases



- Upbeat expectations for a range of technologies and applications with solar power and new technologies (computers, Internet, mobile phones) to the fore. The sole exception is nuclear power, which a relative majority believe will make our lives worse.
- The Spanish stand apart from the average of the other four countries in being more favourably disposed to all applications, especially genetic engineering, space exploration and artificial intelligence.

“I am going to read out a list of technologies and scientific applications. I would like you to tell me if you think this technology or scientific application will make our lives better or worse, or have no real effect on our lives.” Base: all cases



- Analysis by country of the segment reporting favourable expectations shows Spaniards to be among the upbeat on all applications. The exception is again nuclear power, with Britons most positive in their expectations.
- The French are the least favourable to new technologies, while Germans stand out for their lower expectations for genetic engineering.
- While in Spain and Italy expectations regarding biotechnology and genetic engineering are broadly similar, in other countries there is an important gap (bigger in Germany) in favour of biotechnology.

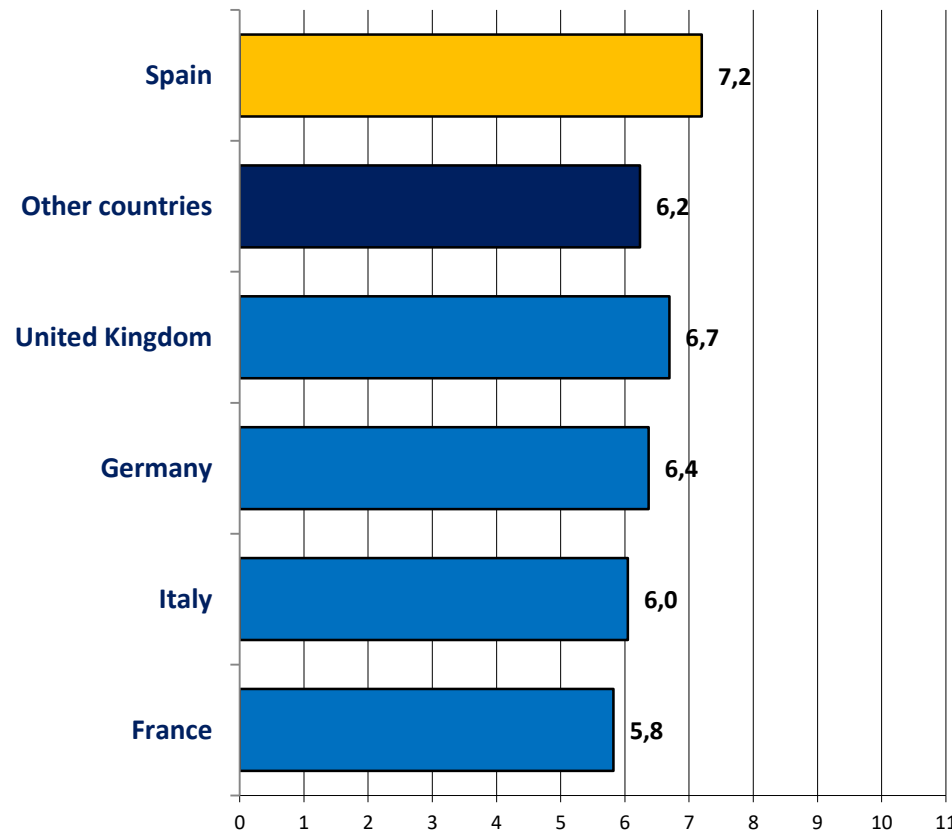
“I am going to read out a list of technologies and scientific applications. I would like you to tell me if you think this technology or scientific application will make our lives better or worse, or have no real effect on our lives.”

Percentage answering “will make our lives better” Base: all cases

	Spain	Other countries	Italy	United Kingdom	France	Germany
Solar energy	89%	86%	88%	87%	87%	84%
Computers	77%	71%	67%	78%	61%	76%
Mobile phones	75%	65%	63%	68%	48%	77%
Internet	75%	68%	67%	74%	55%	76%
Biotechnology	68%	63%	59%	63%	65%	64%
Genetic engineering	67%	49%	54%	53%	48%	40%
Robotics	64%	54%	49%	60%	55%	54%
Nanotechnology	60%	51%	49%	52%	51%	51%
Space exploration	57%	45%	45%	48%	43%	45%
Artificial intelligence	57%	42%	37%	46%	40%	43%
Nuclear power	33%	31%	27%	40%	27%	28%

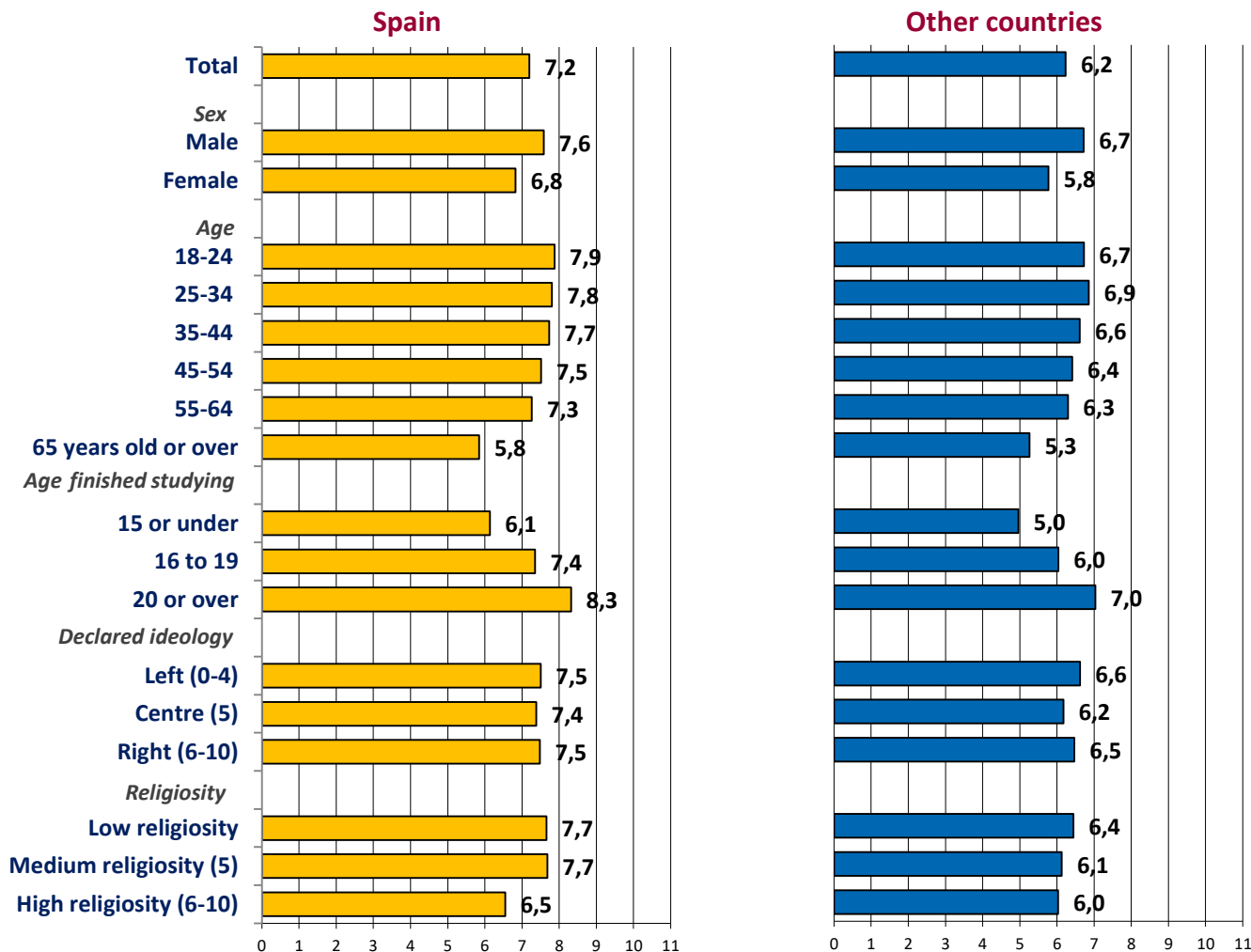
- If we construct a summated scale with the number of technologies or applications that citizens believe will make their lives better, we see significant differences emerge between countries. Spain scores highest of the five by the measure of positive expectations (average of 7.2 applications of the 11 mooted). In second place stands the United Kingdom, with France at the extreme of lowest expectations.

Summated scale of positive expectations (0 to 11): average of technologies and applications respondents believe will make their lives better. Base: all cases



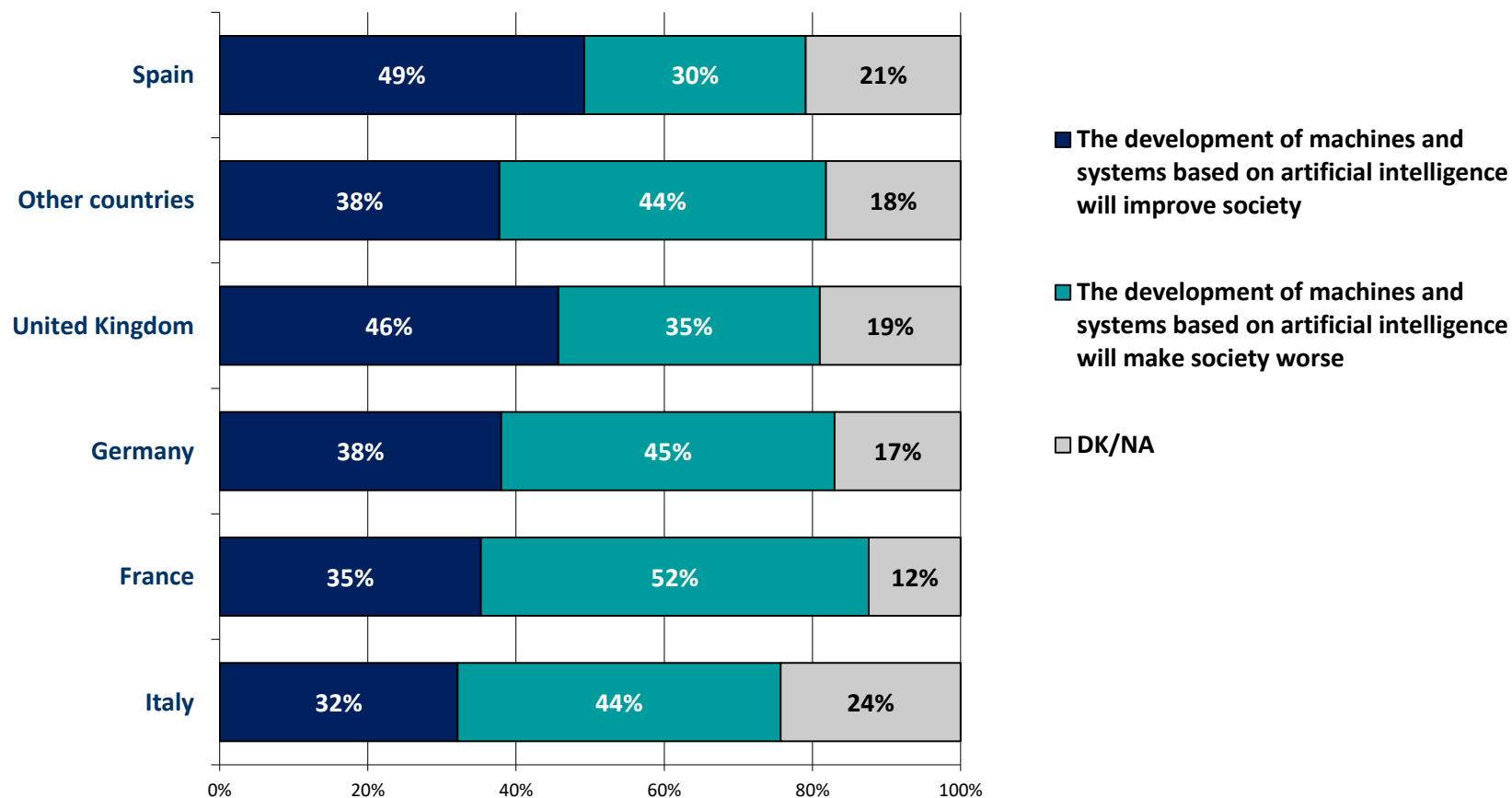
- Education is the variable that best discriminates for expectations regarding science and technology, which tail off sharply among the population with fewest years of study. They are also lower among women, those over 65 and those with a high level of religiosity.

Summated scale of positive expectations (0 to 11): average of technologies and applications respondents believe will make their lives better. Base: all cases



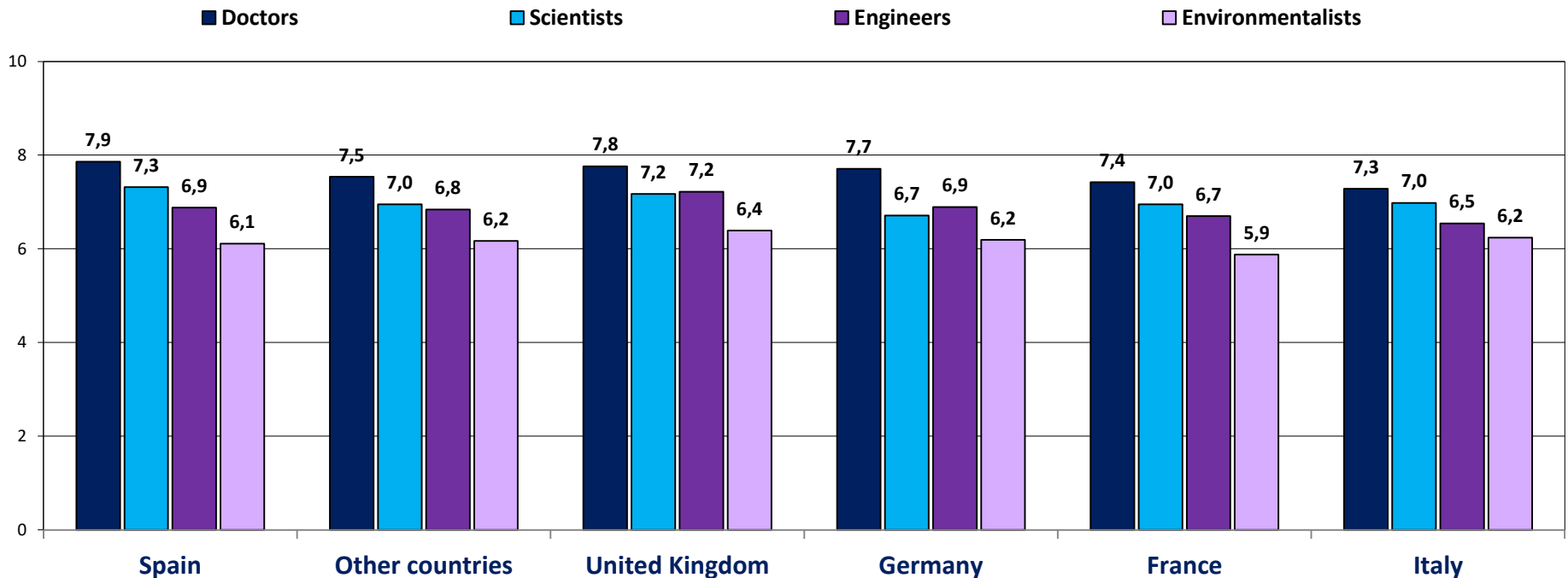
- Specific expectations towards the development of machines and systems based on artificial intelligence vary widely between and within countries. A relative majority of Spanish and British believe that such development will improve society, while a majority of French and a relative majority of Germans and Italians believe that it will make things worse. In all countries a large segment declines to issue an opinion.

“Which of the following statements comes closer to your point of view?” Base: all cases



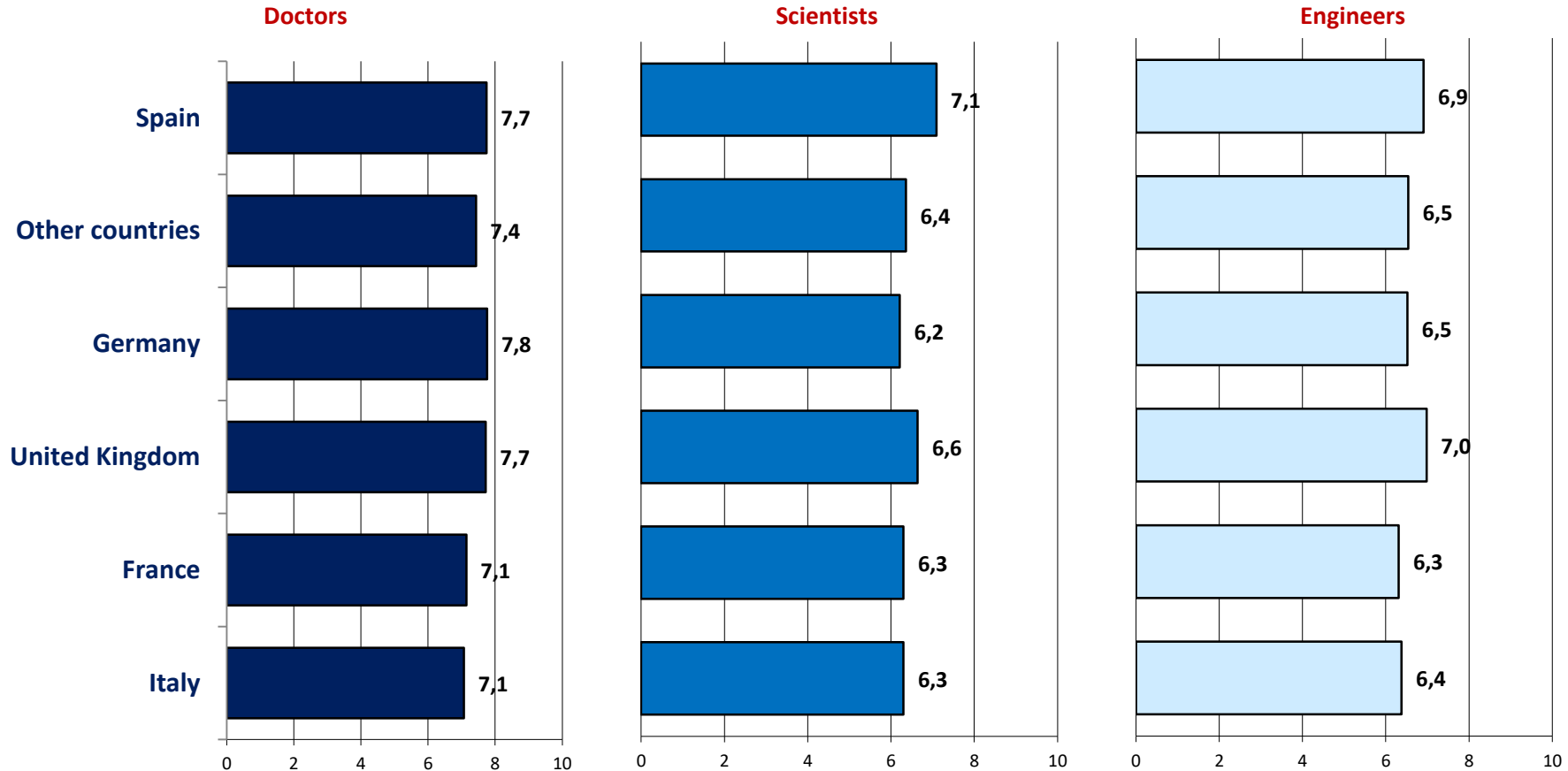
- Doctors and scientists are the professional groups accorded most trust, followed by engineers and environmentalists.
- The Spanish are those expressing most trust in doctors and scientists.
- In Germany, engineers come second ahead of scientists, while in the United Kingdom the same two professions tie in second place.

“How much do you trust the following groups and persons?” Average on a scale from 0 to 10 where 0 means “you do not trust them at all”, and 10 means “you trust them completely”. Base: all cases



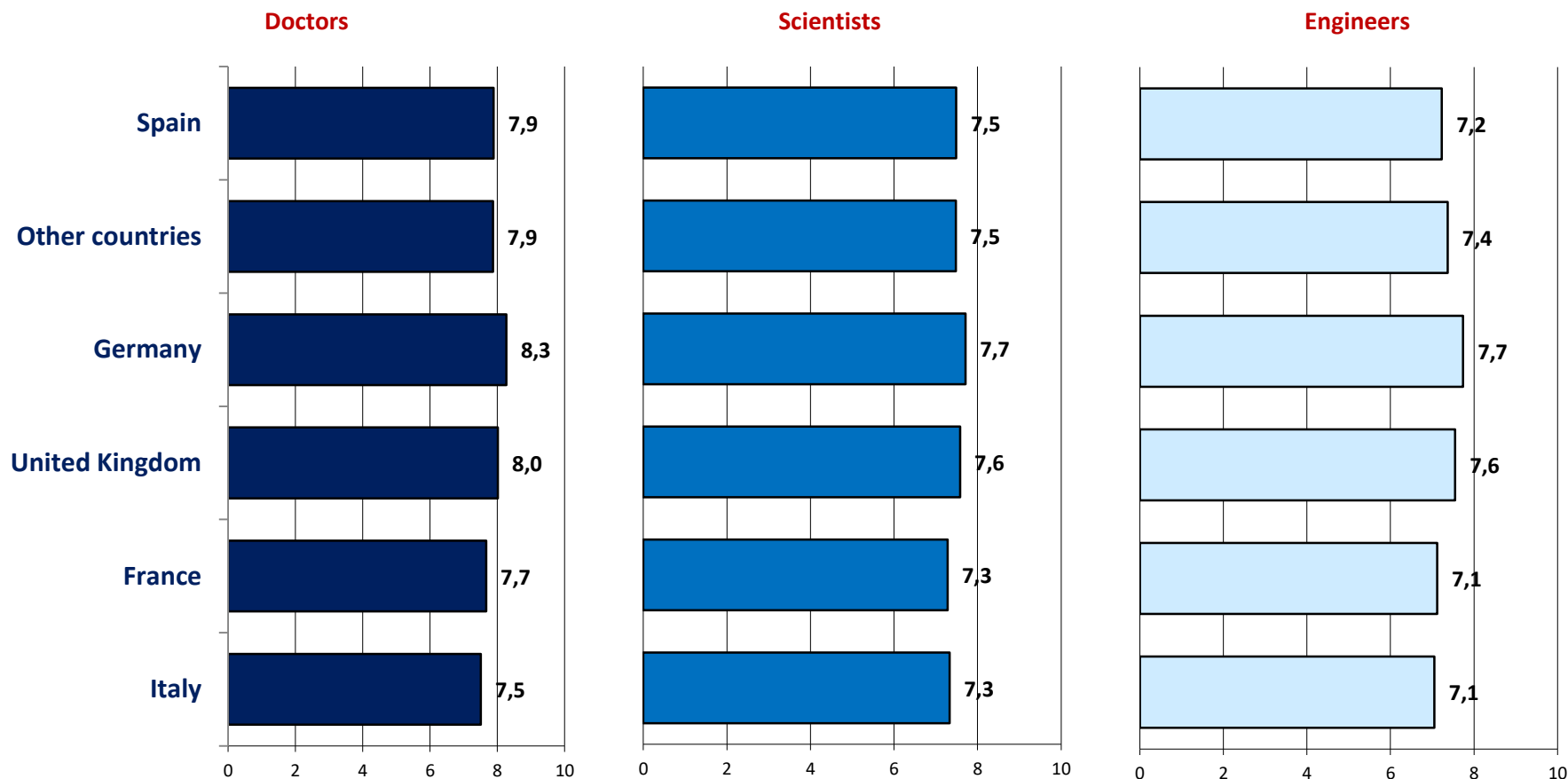
- A key determinant of trust in professional groups is a belief in their ethical behaviour. In this respect, we find a broad consensus in all countries in classing doctors, followed by scientists and engineers, as professional groups that act in an ethical manner.

“To what extent do you think that the following groups ACT IN AN ETHICAL WAY?” Average on a scale from 0 to 10 where 0 means “they do not act at all ethically” and 10 means “they act in a completely ethical way”. Base: all cases



- The other main factor of trust in professional groups is their perceived ability or competence to perform their function. A majority in all countries concur in seeing doctors, scientists and engineers as competent and capable professional groups.
- Germans trust most strongly in the competence of these three professions, with Spaniards close to the average.

“And to what extent do you think that the following groups are COMPETENT, meaning they have the skills and training to perform their jobs?” Average on a scale from 0 to 10 where 0 means they are “not at all competent” and 10 means they are “completely competent.” Base: all cases



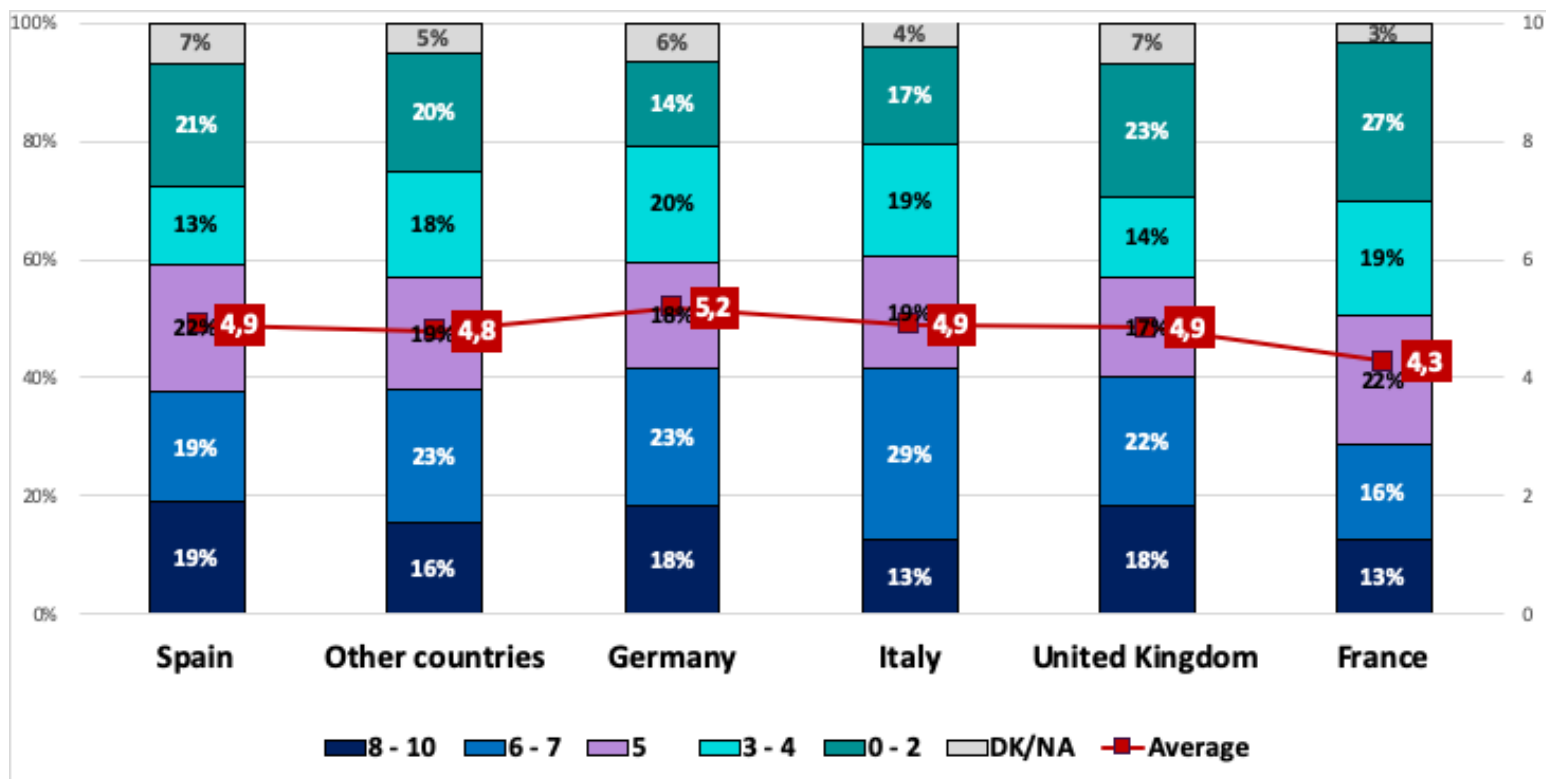
A satellite-style map of Europe and the Mediterranean region. A dark blue curved line originates from the top left, passes through a white circle, and then curves down and to the right, ending near the bottom of the slide. The white circle is positioned at the start of the callout box.

Science and its relationship with religion and ethics

- **Relationship between science and religion**
- **Religious limits to scientific advances**
- **Ethical limits to scientific advances**

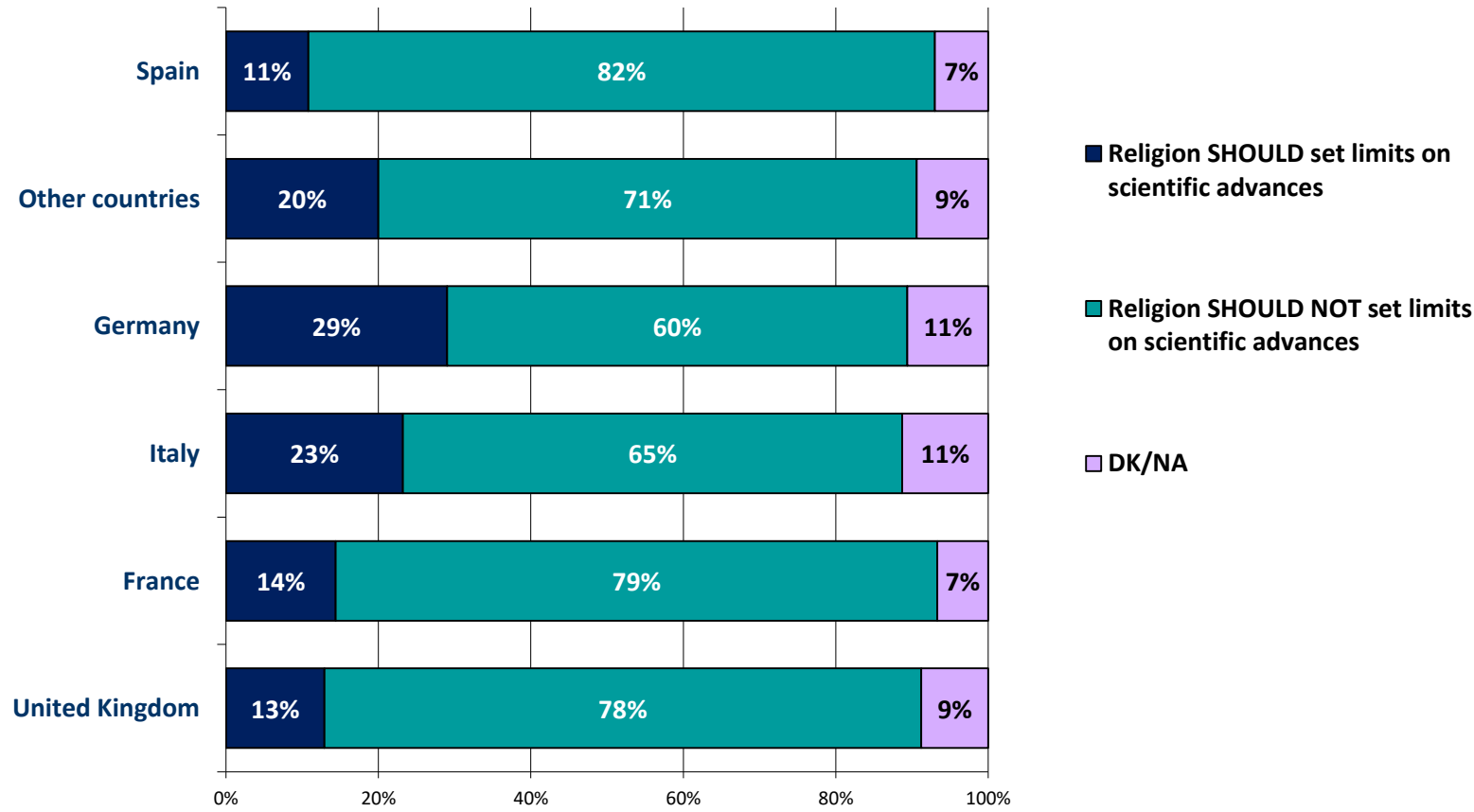
- Citizens are divided over the nature of the current coexistence of science and religion. The Germans are most convinced that the two domains coexist without problems, with the French most strongly in disagreement.

“To what extent do you agree or disagree with the idea that ‘Nowadays science and religion coexist without major problems?’” Distribution and average on a scale from 0 to 10, where 0 means that you completely disagree and 10 that you completely agree. Base: all cases



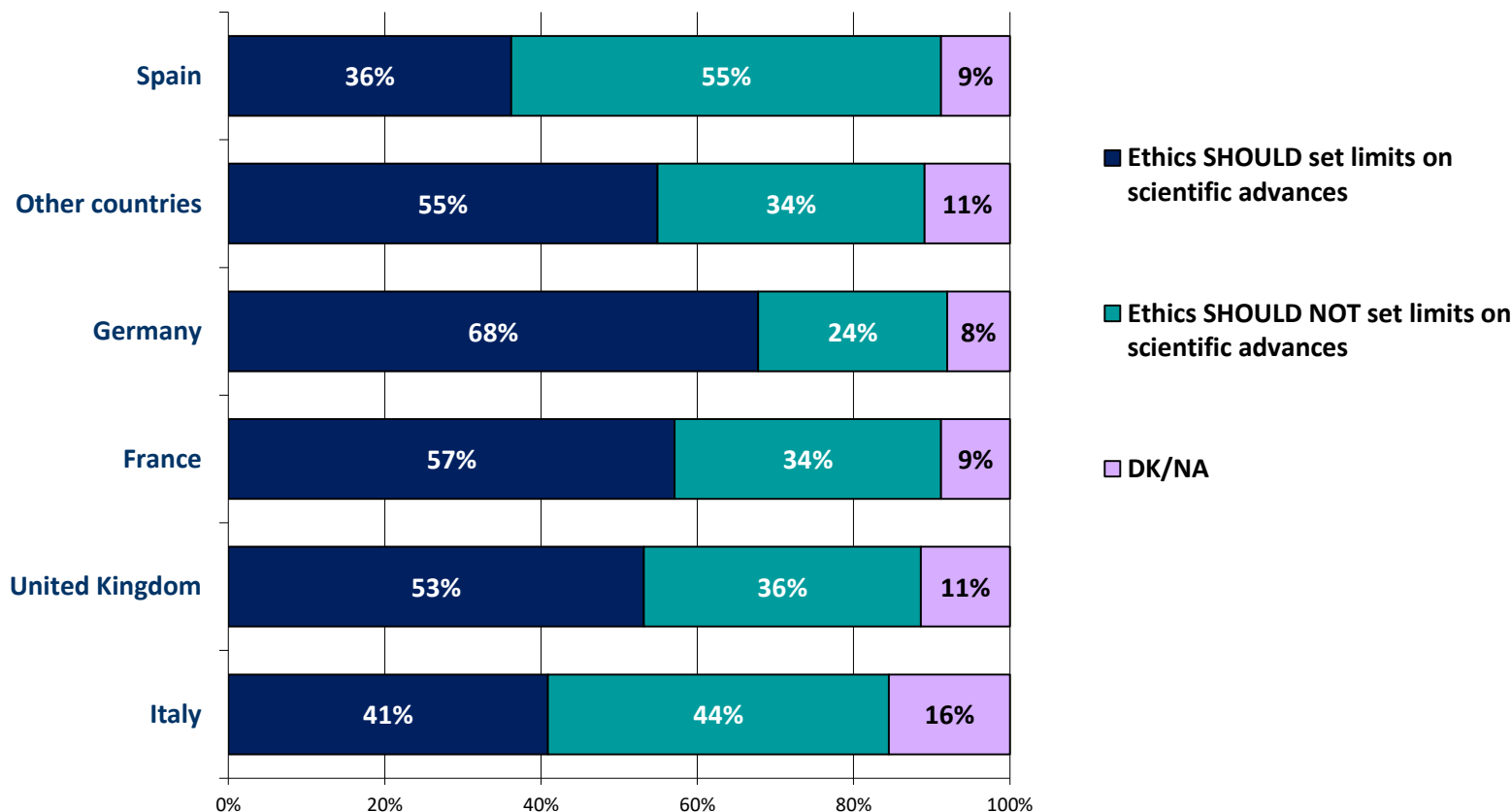
- Ample consensus in all countries to the effect that religion should not set limits on scientific advances. This view finds particularly strong support in Spain, France and the United Kingdom.

“Which of these two statements do you agree with more?” Base: all cases



- When citizens are asked not about religion and science but about ethics and science, a majority in all countries, with the exception of Spain, say that ethics should set limits on scientific advances, with the Germans then the French firmest in this conviction. In the case of Spain, only 36% believe that ethics should set limits on science.

“Which of these two statements do you agree with more?” Base: all cases





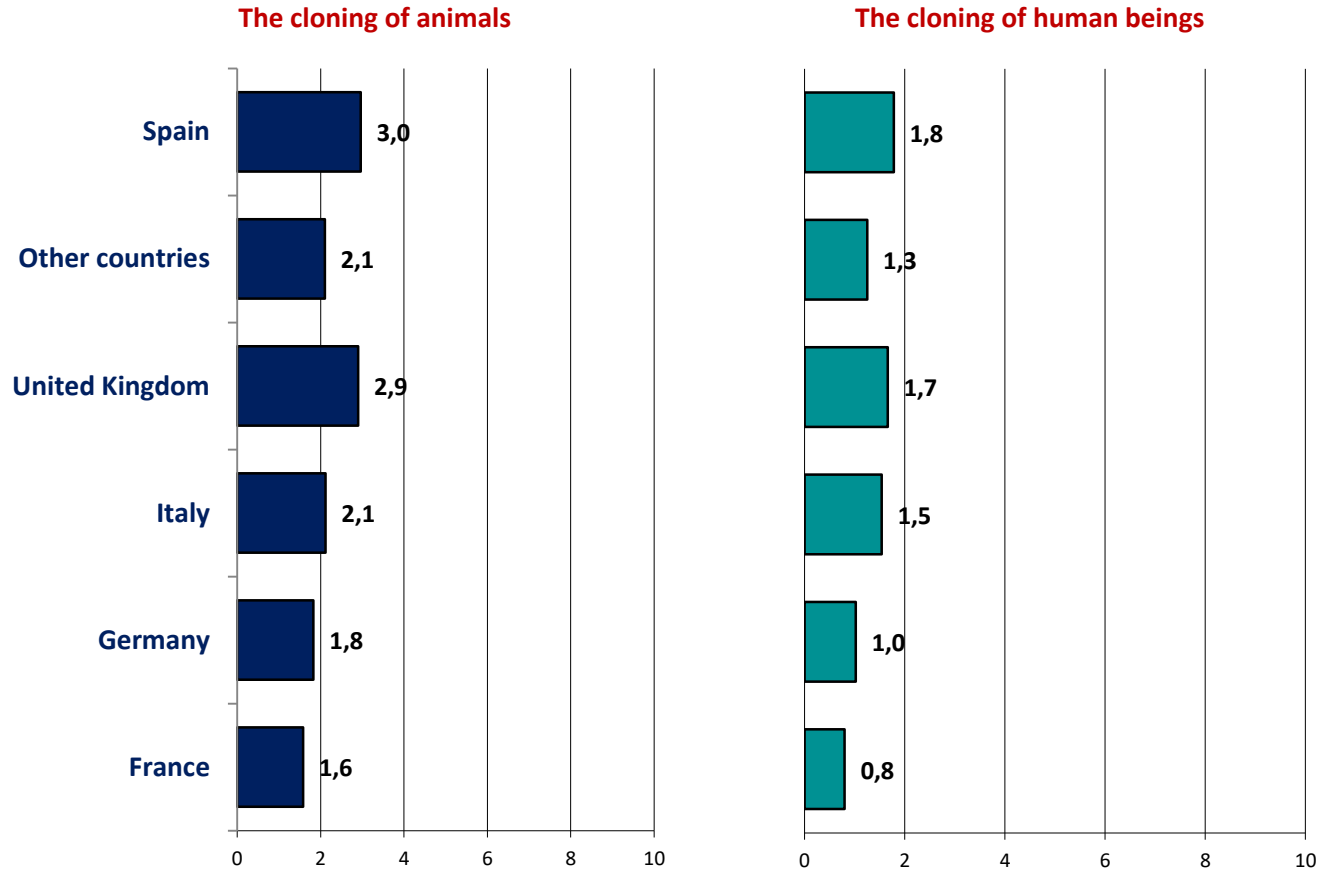
Attitudes towards scientific applications with moral implications

- Cloning
- Genetic modification of plants and animals
- Brain implants
- In vitro fertilisation
- Use of embryos in research
- Gene editing of embryos

- The cloning of animals meets with strong and widespread rejection in all countries (average scores of three points or lower on an acceptance scale from 0 a 10). The Spanish and British record the highest average scores and French and Germans the lowest.
- Cloning of humans is even more vehemently rejected, with average scores below two points.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

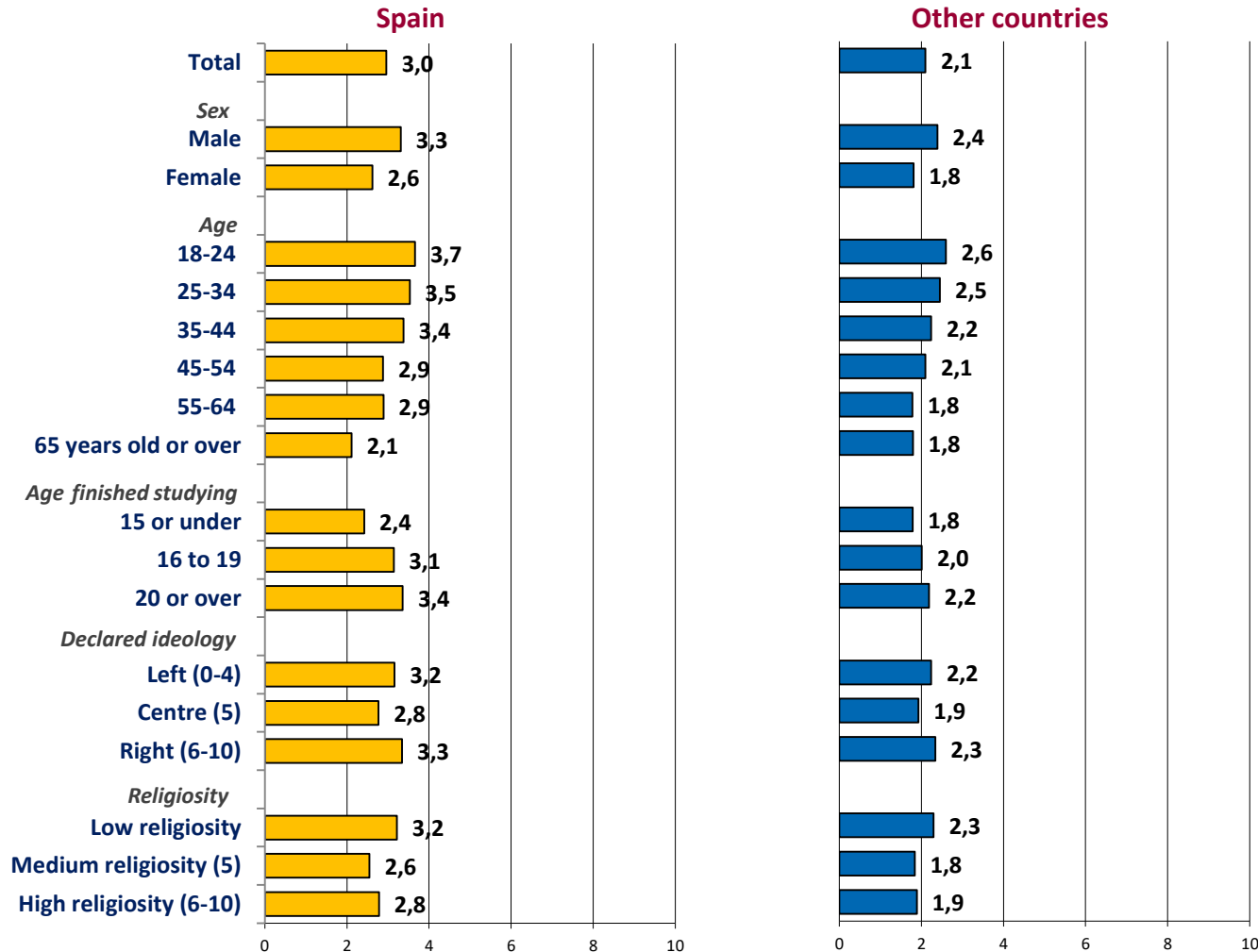


- Acceptance of animal cloning is minimal across all segments, most notably amongst women, older age groups, those with fewest years of education and those in the medium to high religiosity bracket. These differences, moreover, tend to be wider in Spain.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

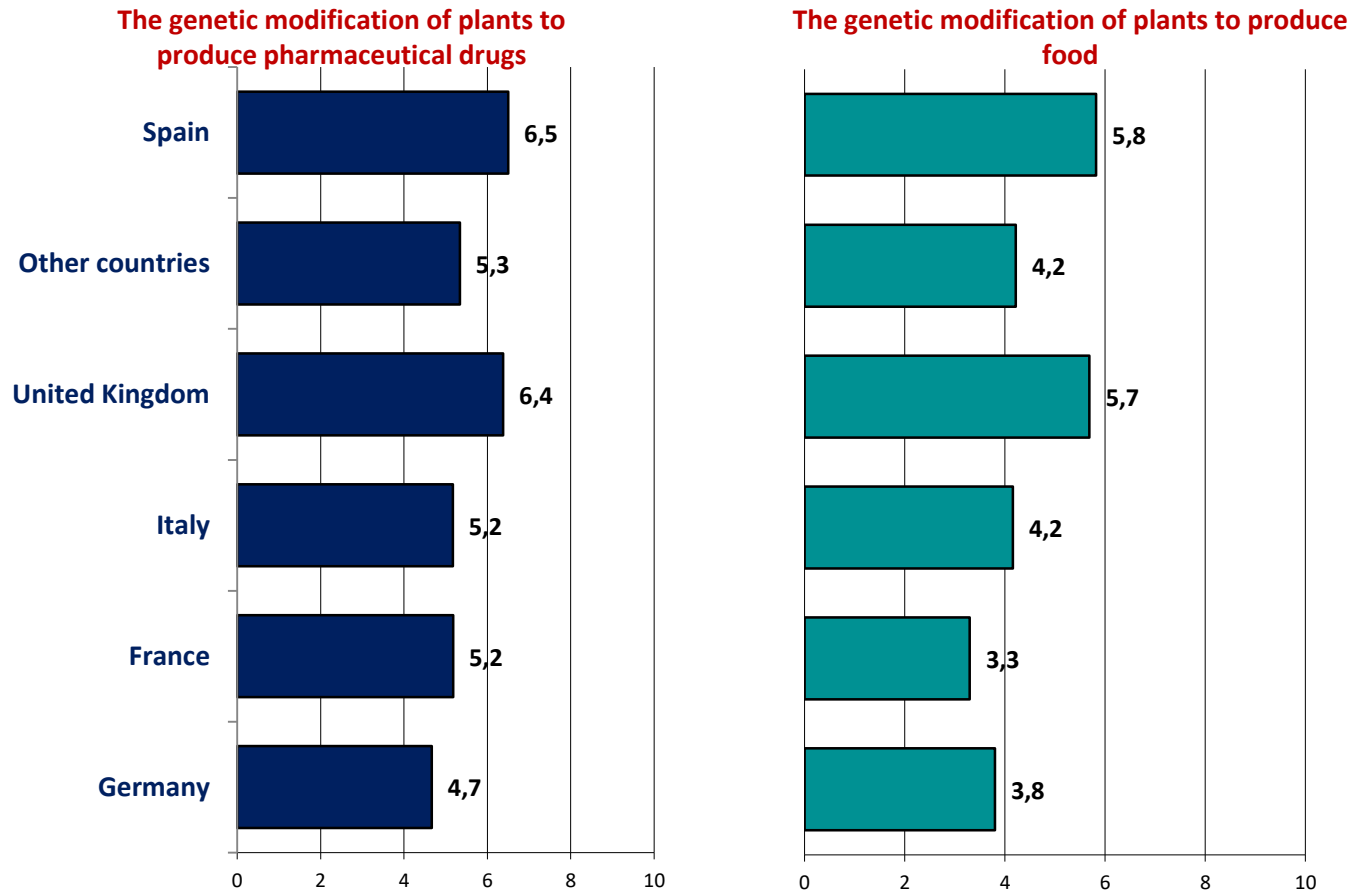
The cloning of animals



- Genetic modification of plants raises significant concerns in most countries. The purposes of such modification conditions level of acceptance, with pharmaceutical drug production activating acceptance to a greater extent than the production of food.
- In Spain and the United Kingdom acceptance wins out in both scenarios, while the Italians and French accept the former use but not the latter. In Germany, finally, opinions fall below the acceptance threshold in both cases.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

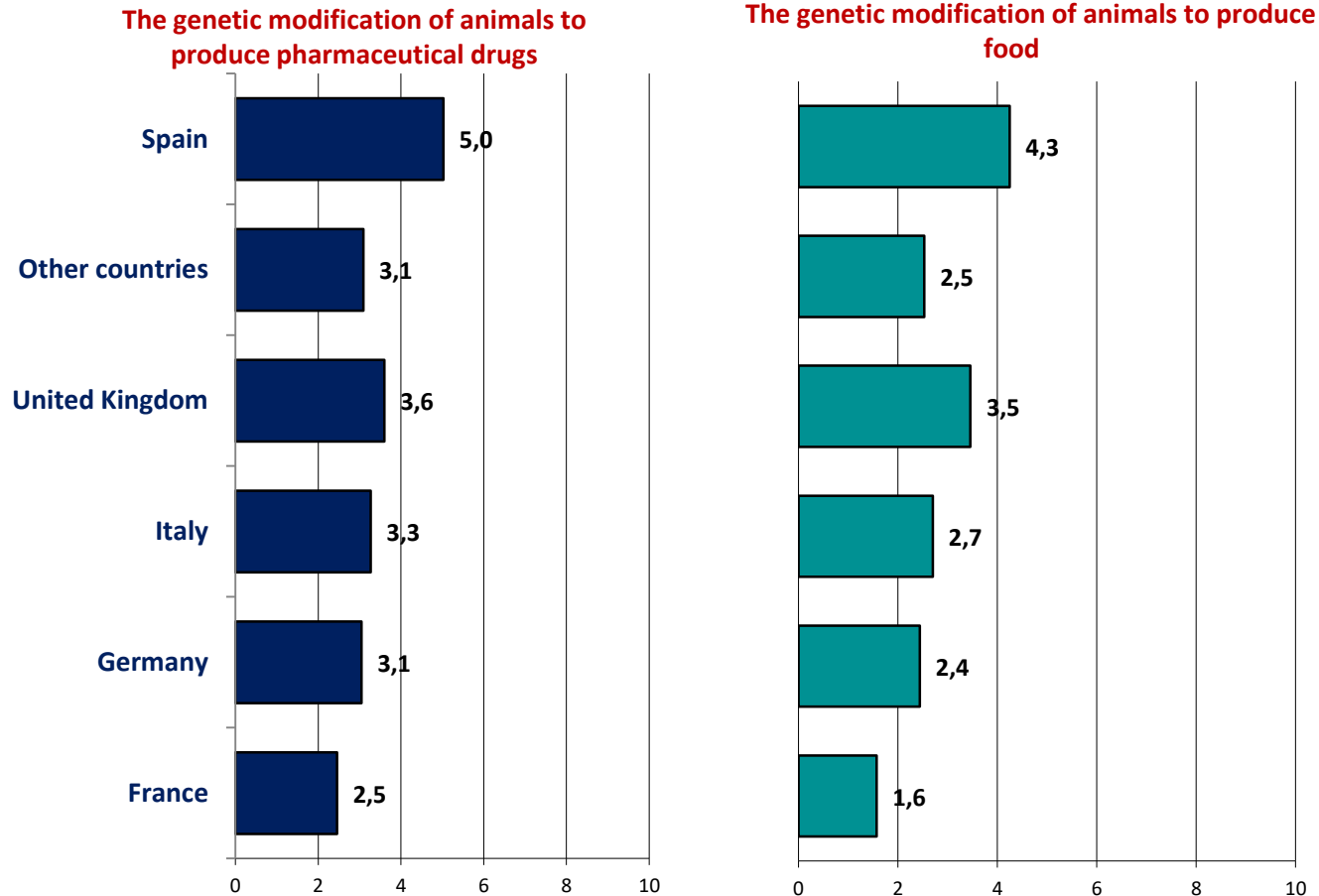


- The genetic modification of animals for diverse purposes generates far more rejection than the genetic modification of plants. Only in Spain do scores reach the acceptance threshold (average of 5) for the case of drug production, though not so for the production of food. Citizens in the other four countries reject the practice outright, with disapproval strongest in France and Germany.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

¿

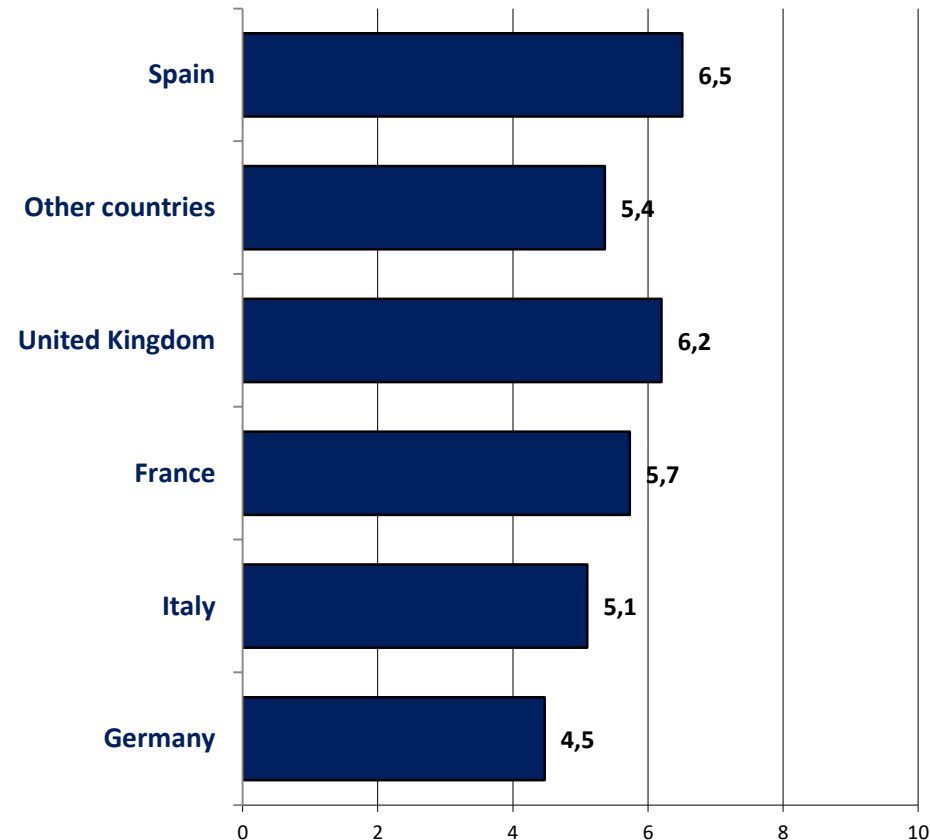


- Transplanting organs and tissues from an animal to a human to replace damaged organs is considered an acceptable technique in all countries except Germany. While acceptance is widespread in Spain and the United Kingdom, it barely exceeds the threshold of approval in Italy.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Transplant of organs and tissues from an animal to a human being to replace damaged organs

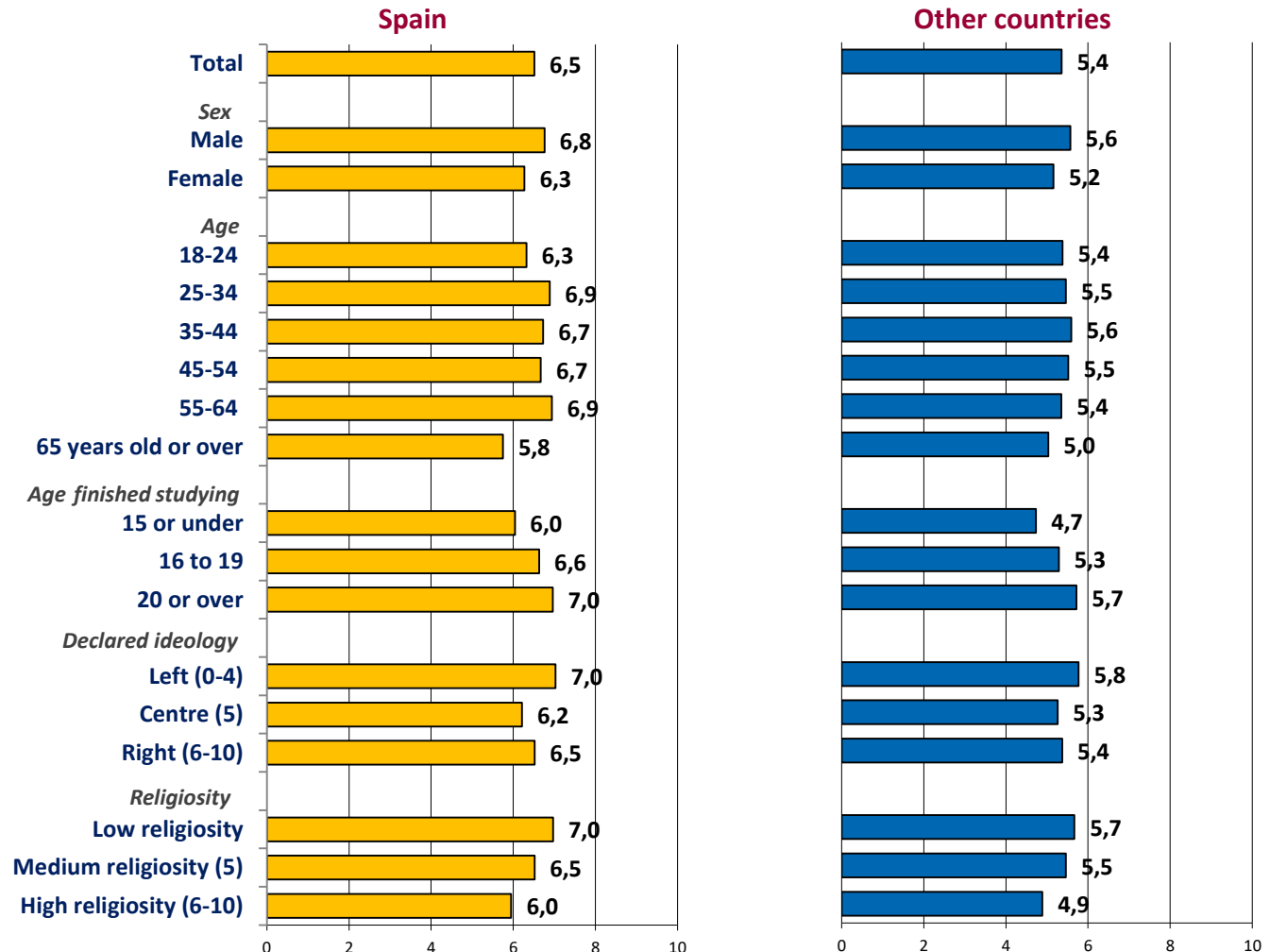


- In Spain “the transplant of organs and tissues from an animal to a human being to replace damaged organs” finds acceptance across all segments, especially those with most studies, those declaredly on the left and those expressing low religiosity. Acceptance tails off in other countries, falling short of the approval threshold among those of a lower educational level and those of high religiosity.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Transplant of organs and tissues from an animal to a human being to replace damaged organs



- Acceptance of brain implants varies according to the end sought.
- A majority view them as acceptable to correct memory loss due to degenerative diseases, but rejection wins out when the goal is to prevent impulsive or violent reactions or to increase a normal person’s mental abilities. Spain departs from the rest in extending acceptance to these last two purposes.

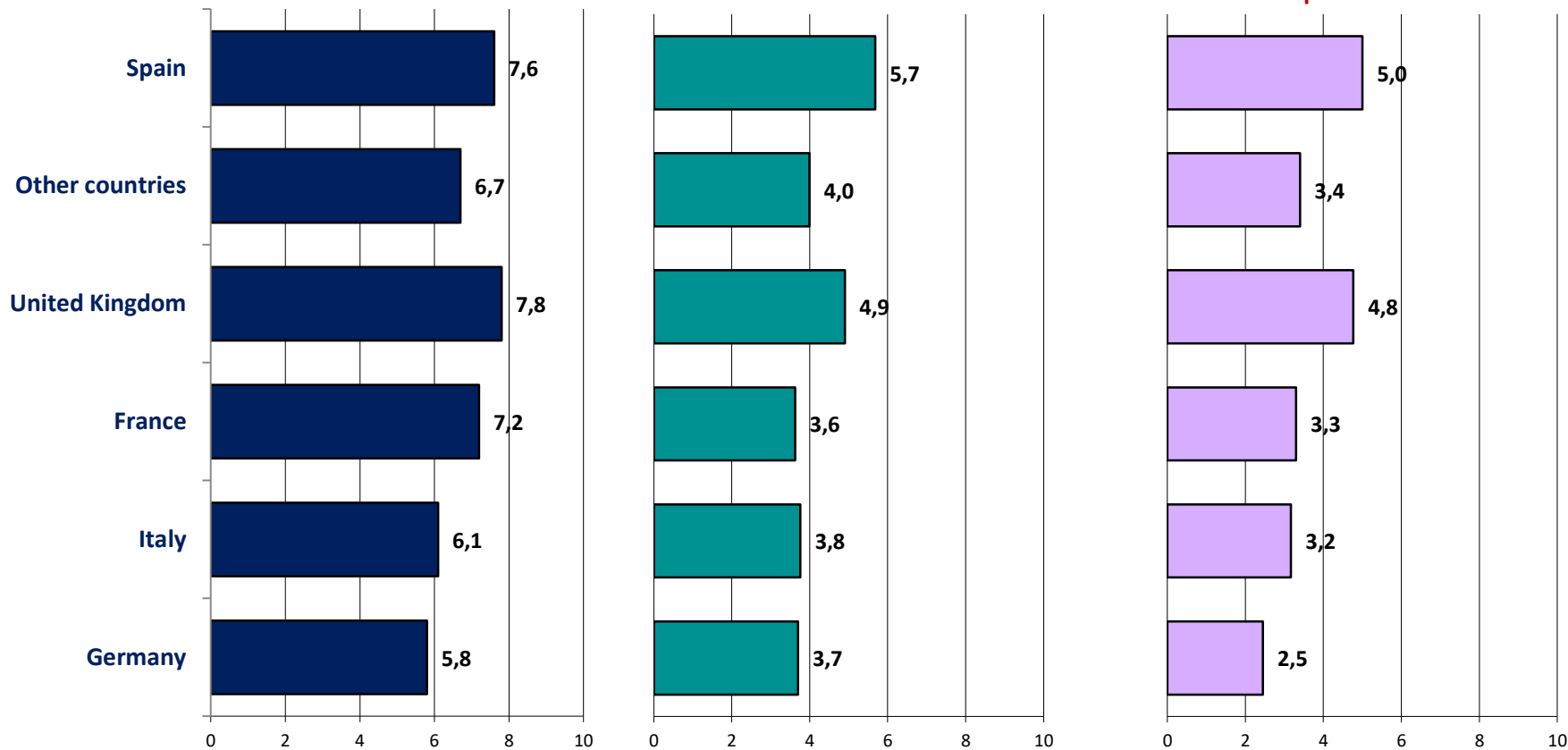
“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Brain implants to repair memory loss caused by degenerative diseases like Parkinson’s or Alzheimer’s

Brain implants in a normal person to prevent impulsive or violent reactions

Brain implants to increase a normal person’s mental abilities, like attention, memory and comprehension

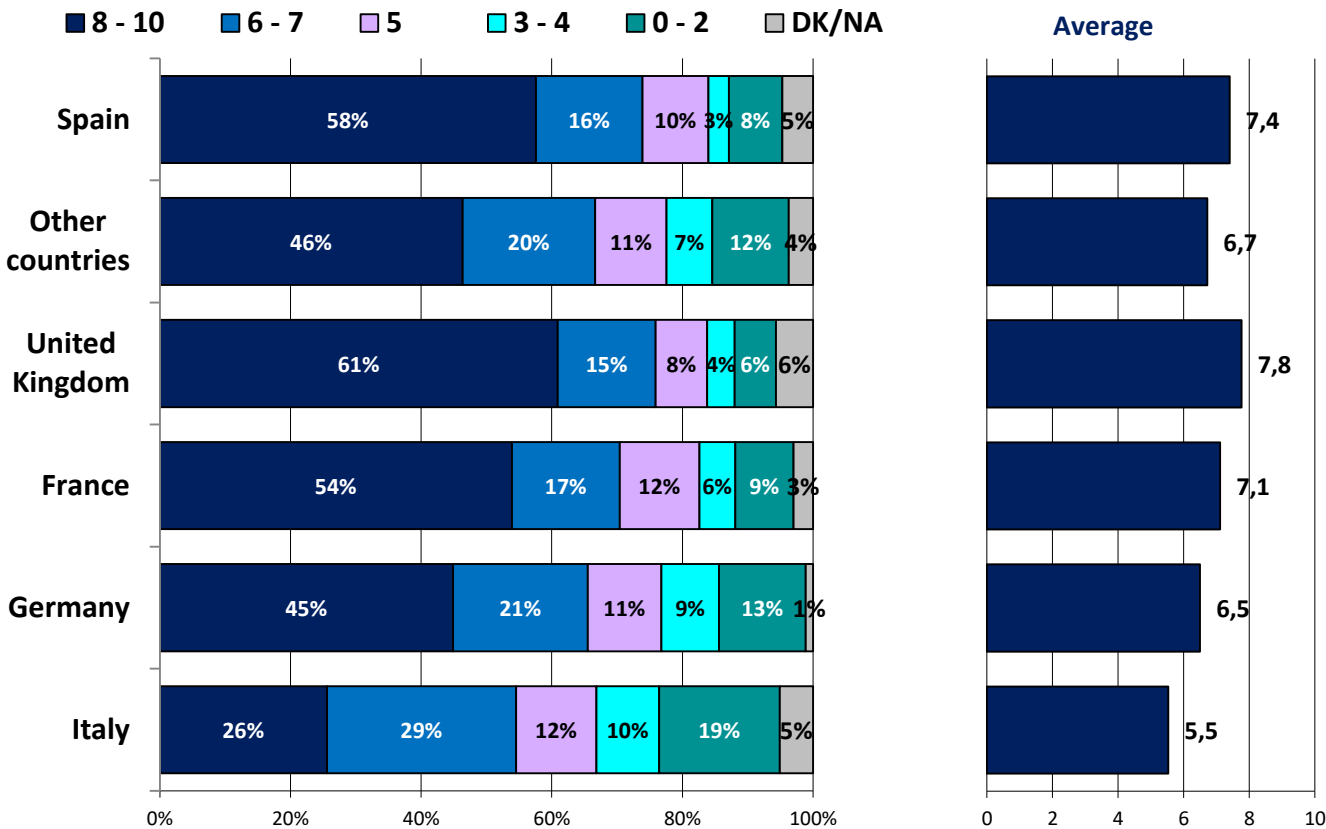


- A majority are comfortable with in vitro fertilisation, a stance accentuated in the United Kingdom and Spain, and less widely embraced in Italy. In all countries except the latter, a majority or relative majority stand in the extreme acceptance zone (scores between 8 and 10). This can accordingly be seen as a non-problematic option and technique.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

In vitro fertilisation

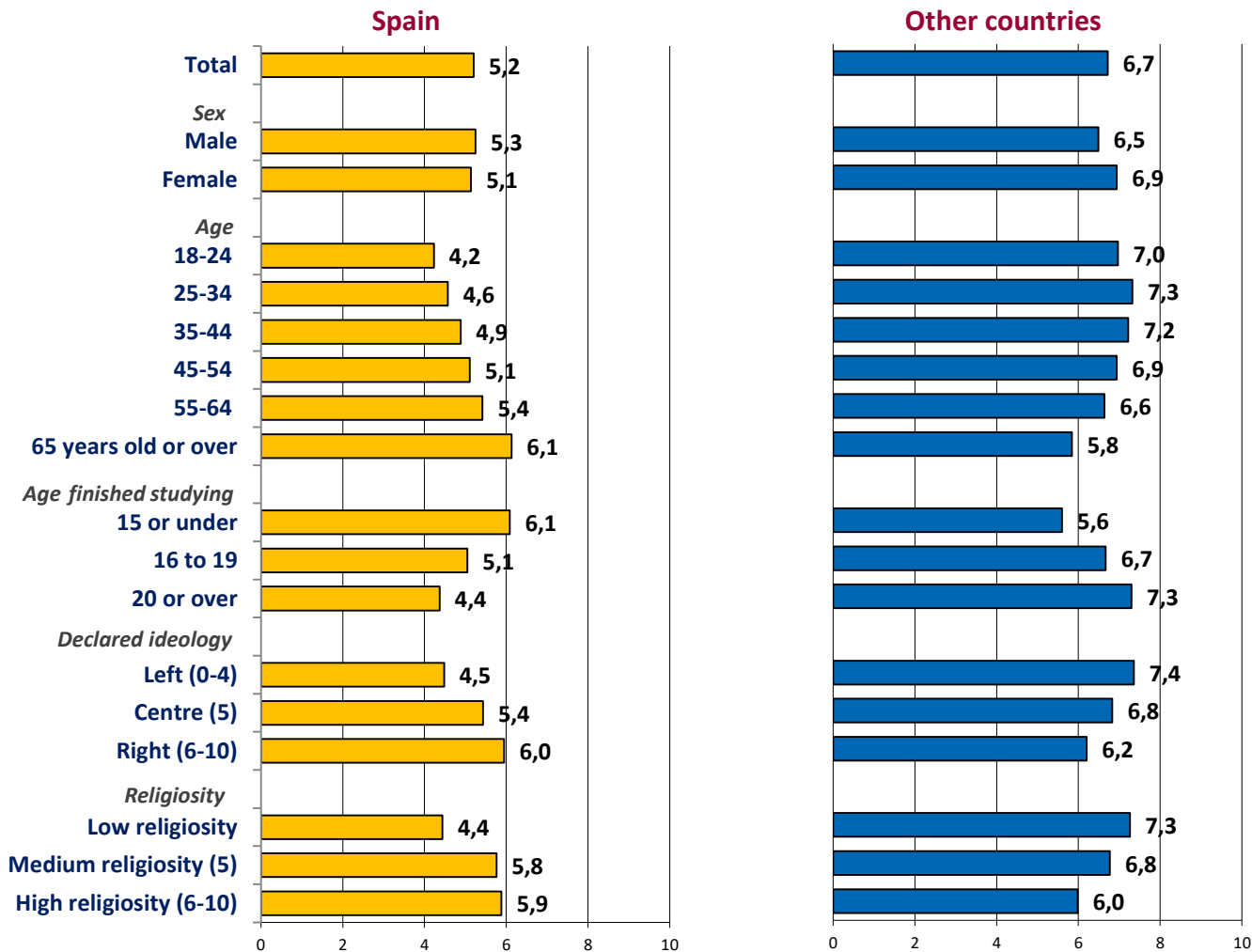


- Acceptance of in vitro fertilisation cuts across all segments, but age, education, ideology and religiosity modulate levels of agreement.

“Can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

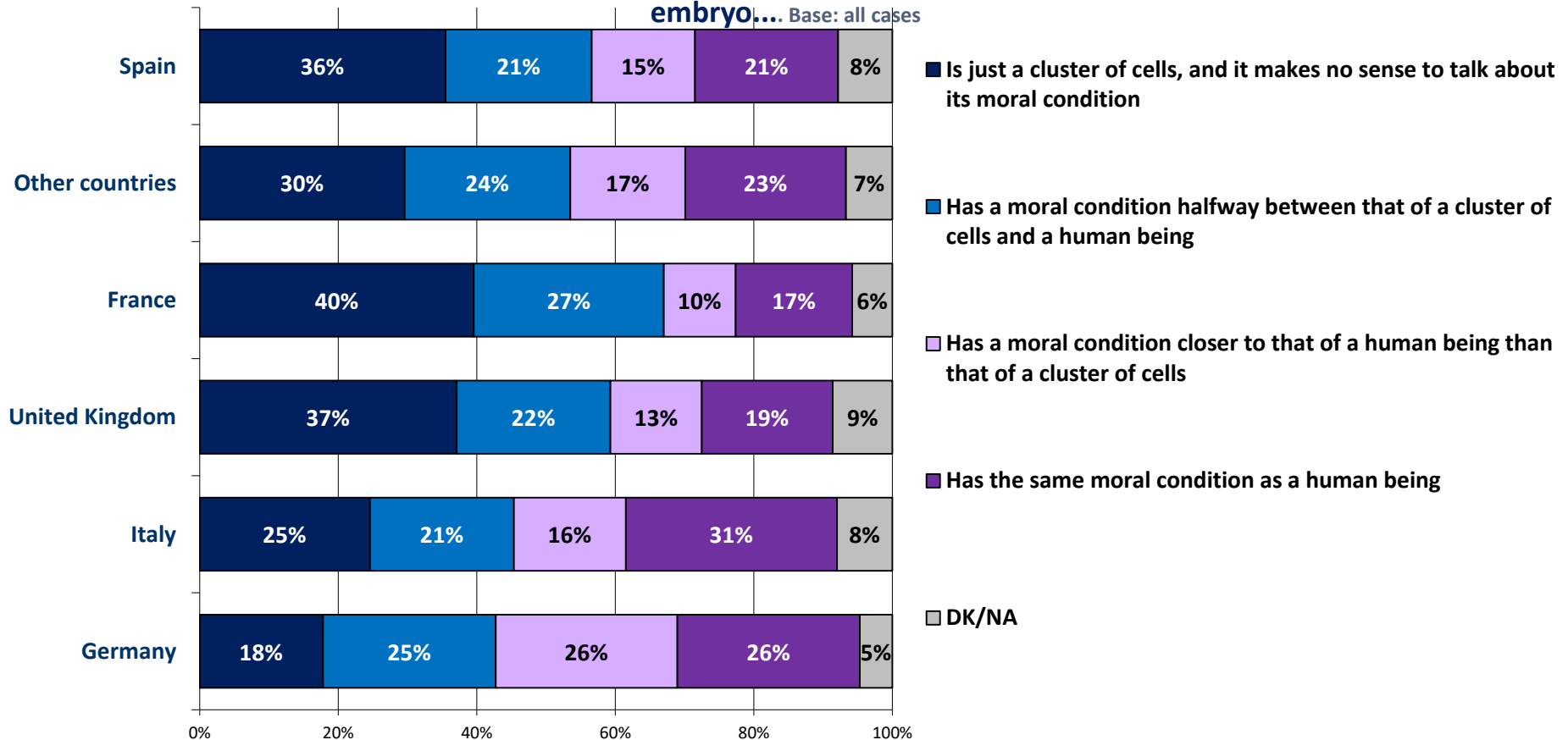
Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

In vitro fertilisation



- Opinions vary as to the moral status of the embryo. In France, the United Kingdom and Spain, over a third see the embryo as a cluster of cells with no moral condition, ahead of those who see it as having a moral status halfway between a cluster of cells and a human being.
- In Italy and Germany, the division is sharper with a majority or relative majority saying it has a moral condition closer or even identical to that of a human being.

“Can you please tell me which of the four statements I am going to read out you agree with most?” The human embryo... Base: all cases

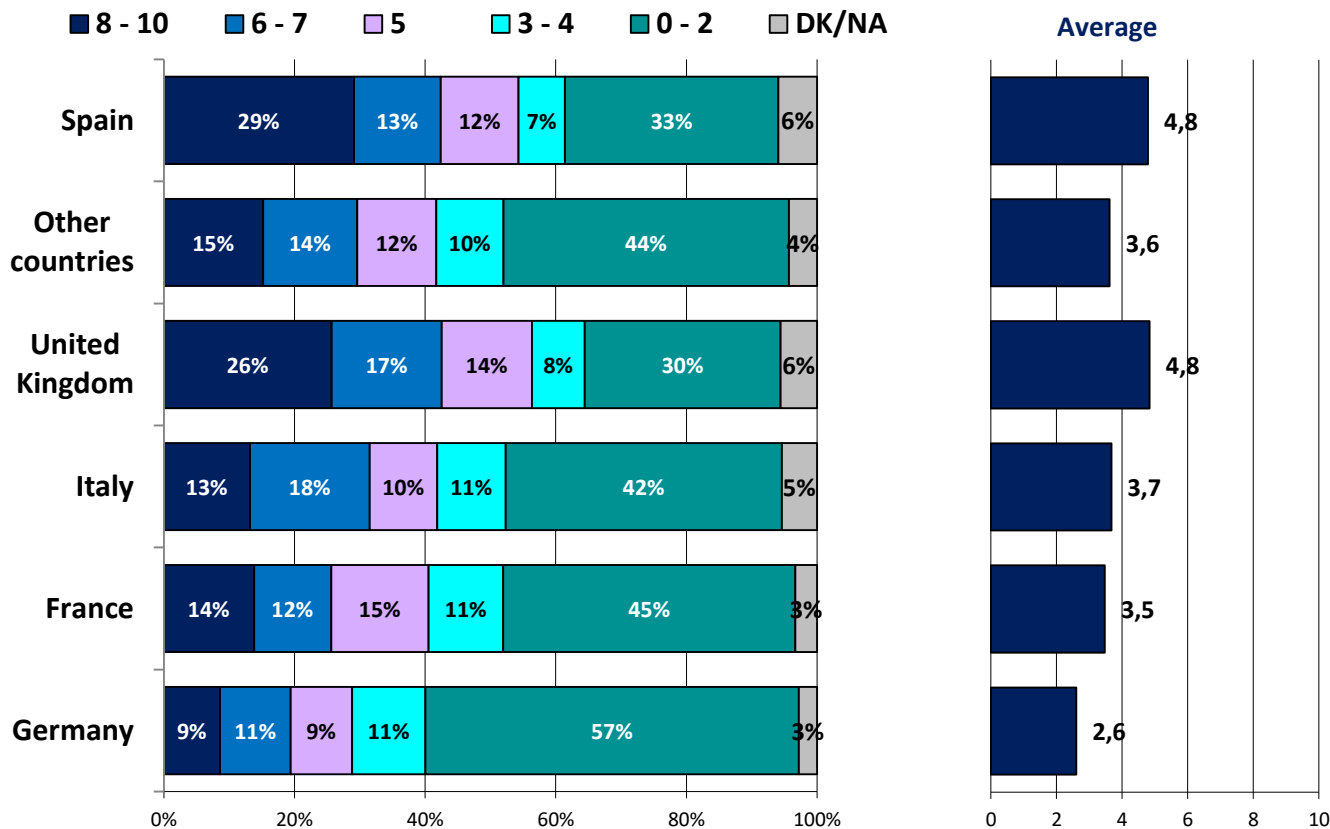


- Research with human embryos a few days old for medical purposes is considered morally unacceptable in Germany, France and Italy. The segment locating themselves at the extreme of outright rejection (0 to 2) is largest of all in Germany, as well as being opted for by a relative majority in the other two countries.
- In Spain and the United Kingdom, views are more divided, with not dissimilar percentages bunched at the extremes of most rejection (0 to 2) and acceptance (8 to 10).

“And can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Research using human embryos that are a few days old to obtain medical benefits

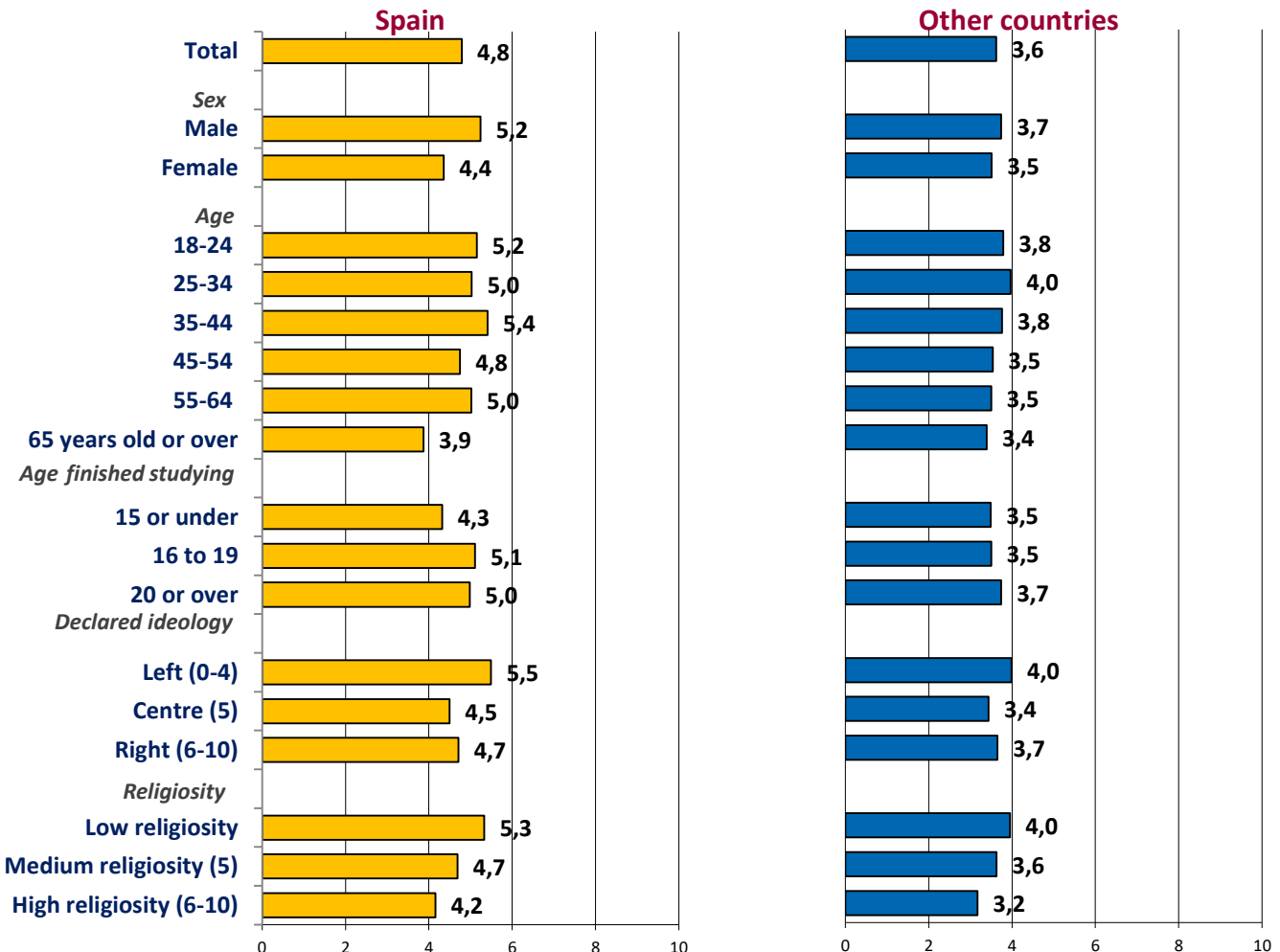


Acceptance of research for medical purposes on few-day-old human embryos exhibits more variability by segment among citizens in Spain than among those of the four other countries on average, exceeding the acceptance threshold among men, young people, those of a higher educational level, those declaredly on the left and those of low religiosity.

“And can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Research using human embryos that are a few days old to obtain medical benefits

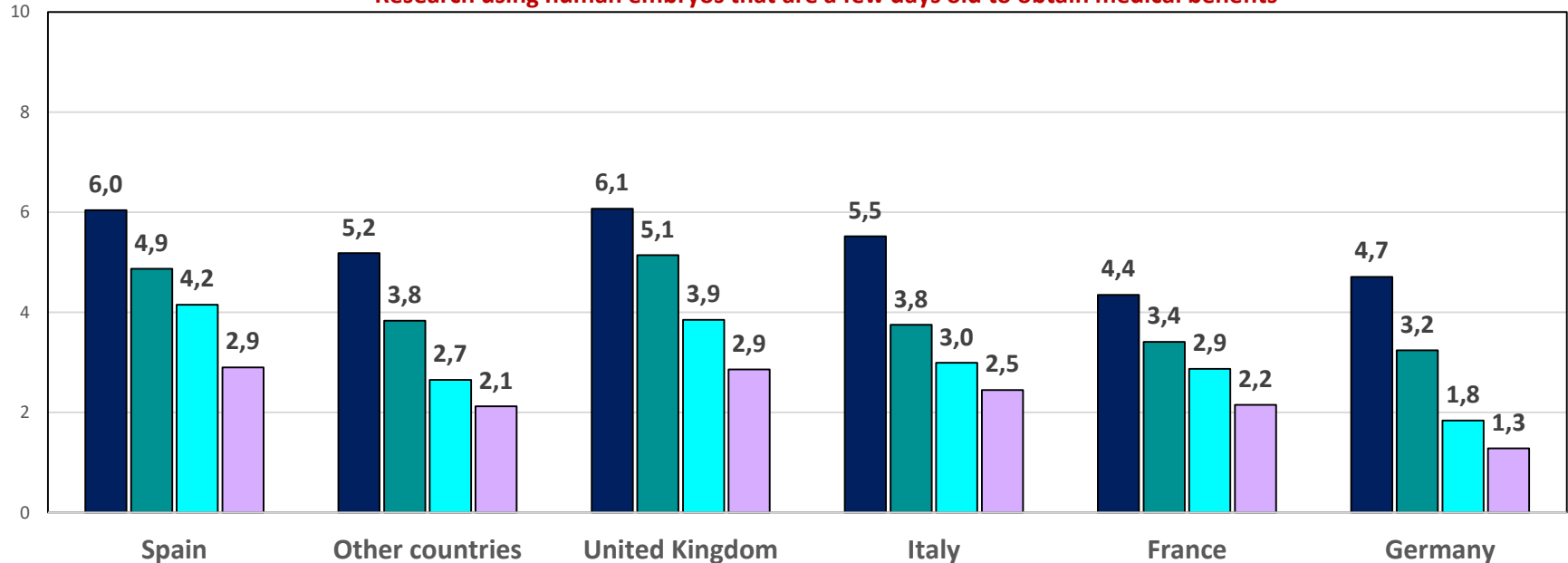


- Although rejection predominates in most segments, it is accentuated among those who view the embryo as having a moral condition closer to that of a human being and, even more so, among those who believe it has the same moral condition. Among perceiving it as a cluster of cells, its use is approved in Spain, the United Kingdom and Italy. And among those who consider that its moral condition is halfway between a human being and a cluster of cells, it only exceeds the threshold of acceptance in the United Kingdom.

“And can you tell me whether you think the things I am going to read out are morally acceptable or unacceptable?”

Average on a scale from 0 to 10, where 0 means you think it is “completely unacceptable” and 10 means you think it is “completely acceptable”. Base: all cases

Research using human embryos that are a few days old to obtain medical benefits

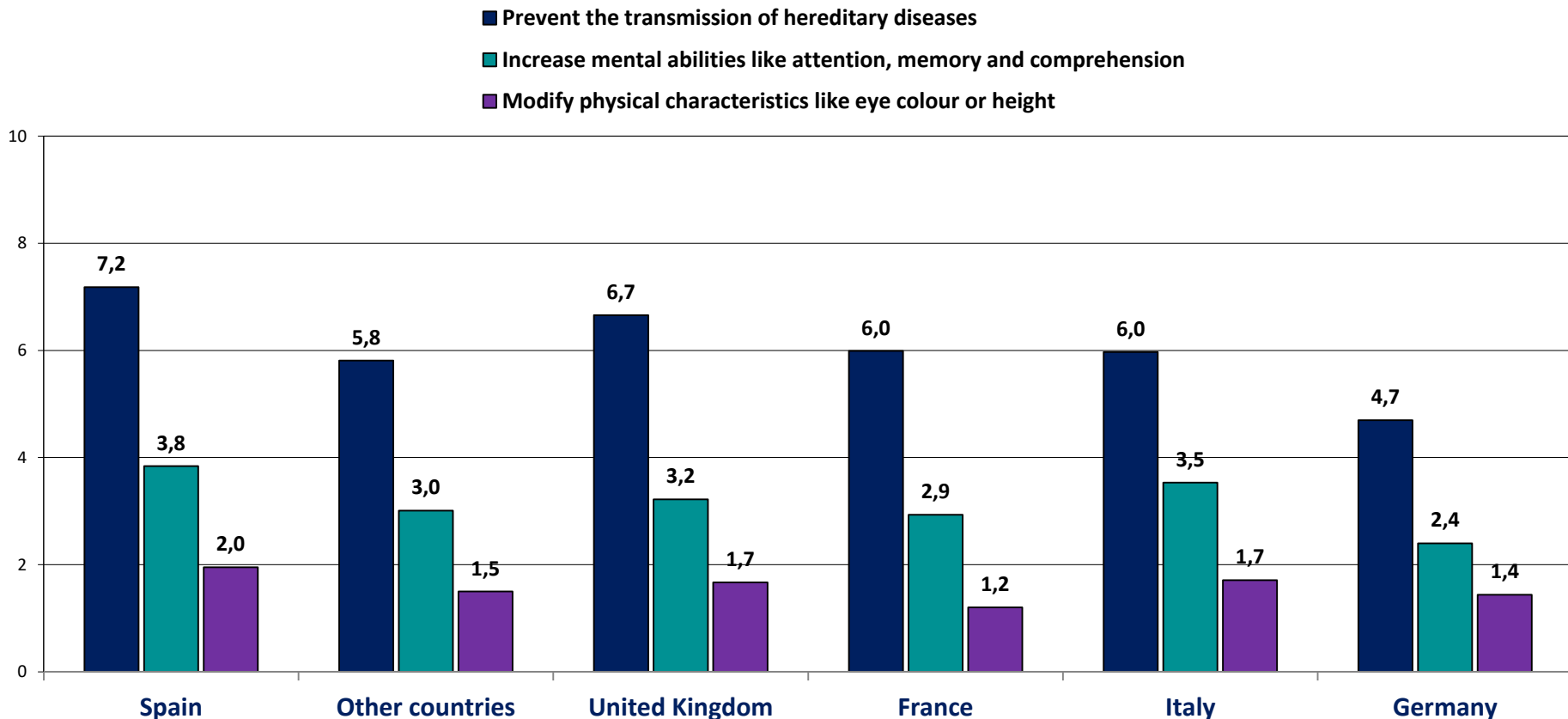


- Is just a cluster of cells, and it makes no sense to talk about its moral condition
- Has a moral condition halfway between that of a cluster of cells and a human being
- Has a moral condition closer to that of a human being than that of a cluster of cells
- Has the same moral condition as a human being

- Acceptance of the gene editing of embryos is also contingent on the ends pursued: while widely accepted, except in Germany, to prevent the transmission of hereditary diseases (with support especially strong in Spain and the United Kingdom), there is widespread opposition in all countries to its hypothetical use to increase people’s cognitive abilities and, more markedly still, to modify their physical characteristics.

“To what extent do you think the genetic alteration or editing of embryos is or is not acceptable in order to...”

Average on a scale from 0 to 10, where 0 means “completely unacceptable” and 10 means “completely acceptable”. Base: all cases



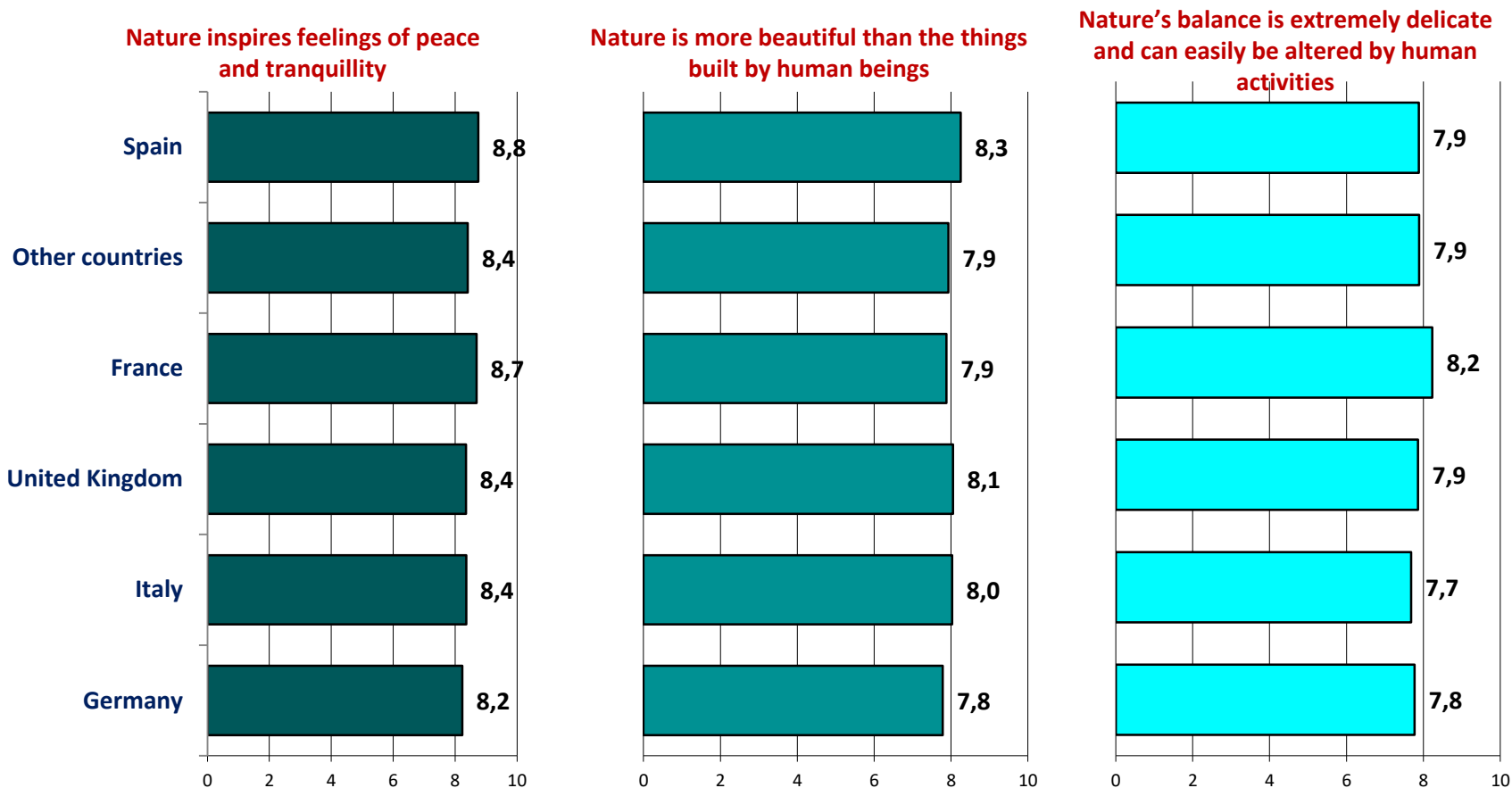
A satellite-style map of Europe and the Mediterranean region. A dark blue curved line originates from the top left and points to a teal callout box on the right. The callout box contains the title 'Perception of nature' and a bulleted list of five topics.

Perception of nature

- Values regarding nature
- Biodiversity
- Usage of animals
- Science and nature
- Climate change

- Ample consensus between and within countries around a view of nature as beautiful, inspiring feelings of peace and in a delicate state of balance vulnerable to human activity.

“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases



- Ideas that reflect a materialist or utilitarian vision of nature tend to cause division of opinions. The idea that “plants and animals exist to be used by humans” is particularly divisive, while rejection wins out (except in Spain) to the proposition that “exploitation of nature is unavoidable if humanity is to progress”. Finally, the view that “economic growth is more important than protecting the environment” garners least support of all. Rejection of the materialist perception is accentuated in Germany and more moderate in Spain and Italy.

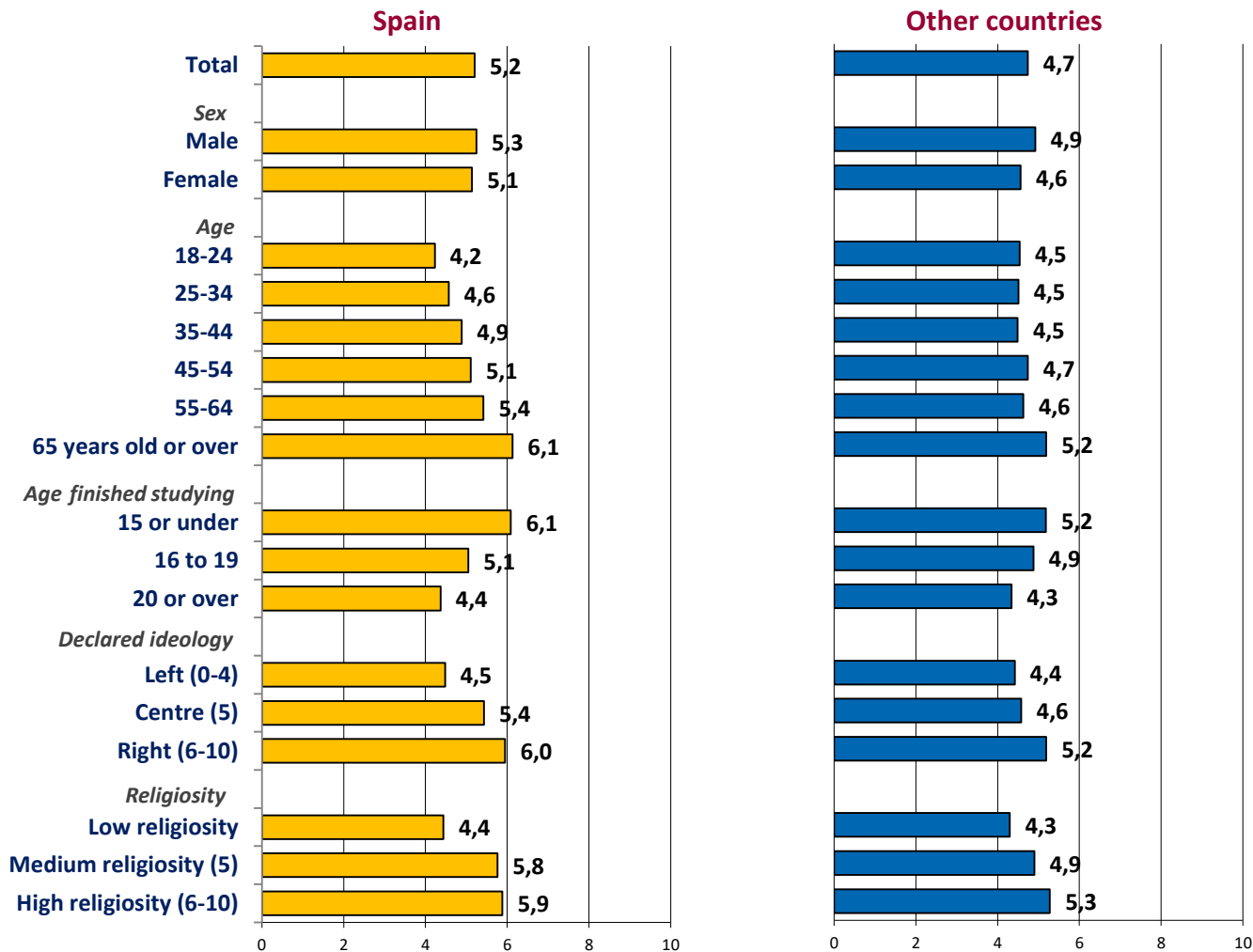
“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases



- Agreement with the view that “plants and animals exist to be used by humans” increases with age, and is also stronger among those of a lower educational level, those on the political right and those in the high religiosity segment.

“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases

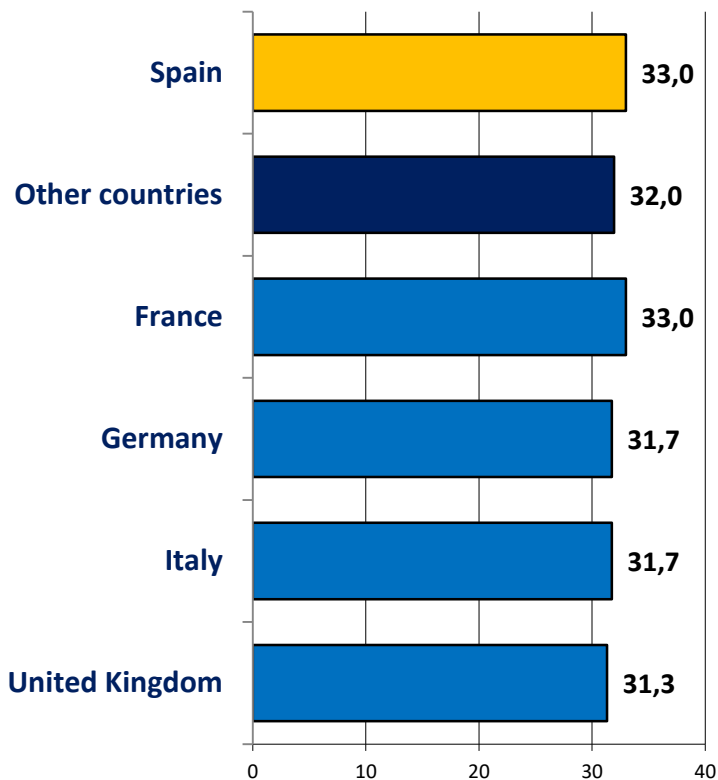
Plants and animals exist to be used by humans



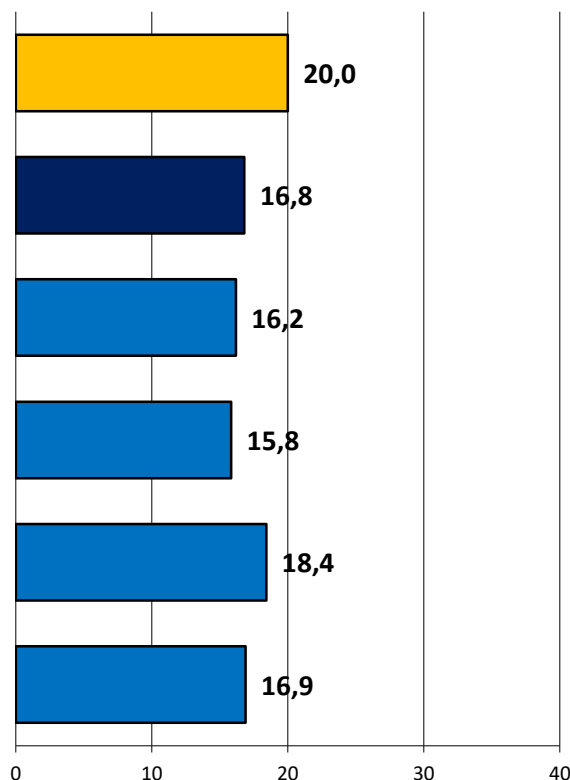
- To obtain a synthetic measure of vision of nature, we constructed two scales: one capturing a “pro-environmentalist” perception and another a “materialist” one. In all societies, the “environmentalist perception” prevails clearly over the “materialist”. The materialist view scores highest in Spain, followed by Italy, and lowest of all in Germany.

Perception of nature

Summated scale of environmentalist vision (0 to 40)



Summated scale of materialist vision (0 to 40)

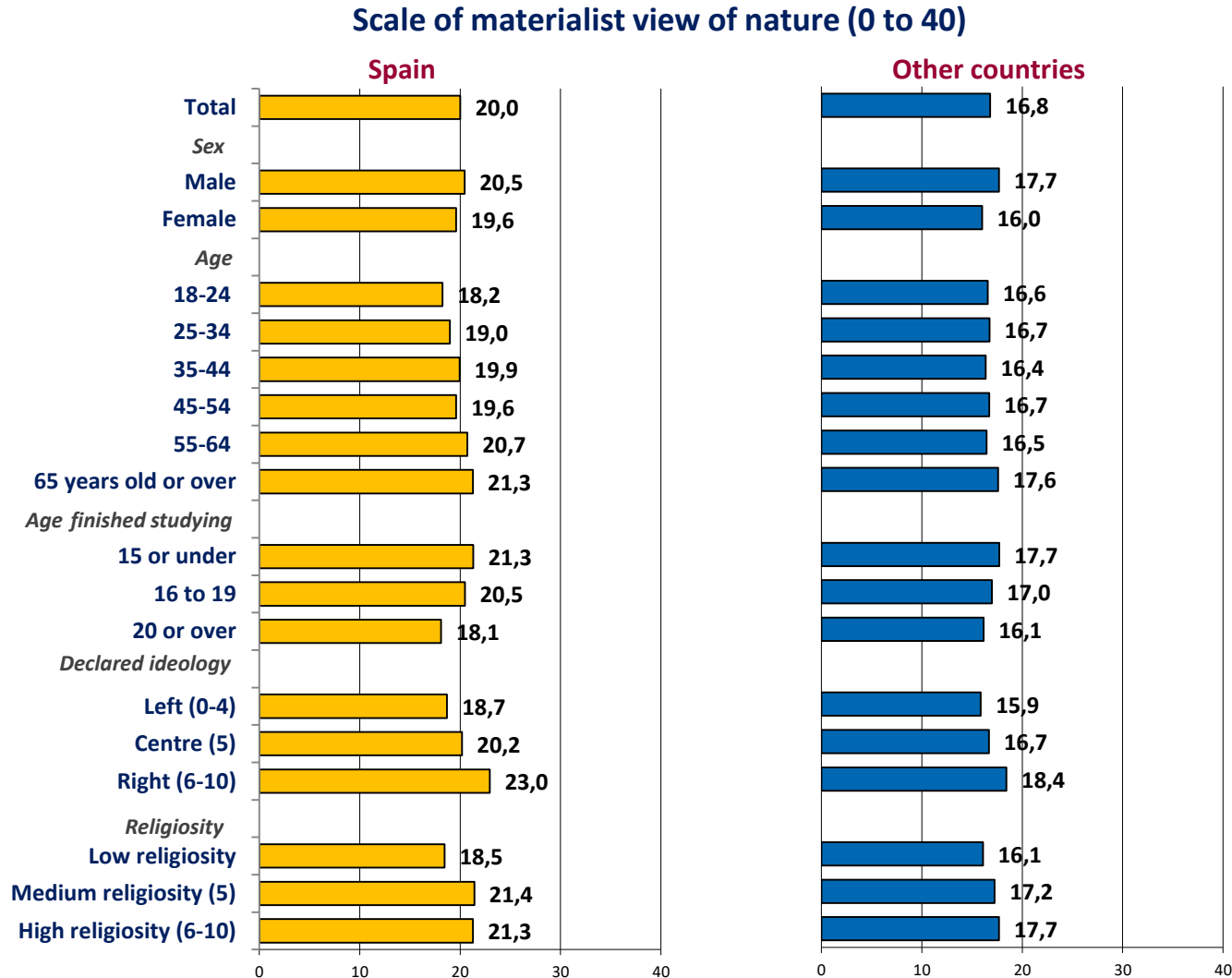


Starting from an analysis of principal components, we constructed two scales, each comprising four items measured on an agreement scale from 0 to 10:

Environmentalist vision: Nature’s balance is extremely delicate and can easily be altered by human activities, Nature inspires feelings of peace and tranquility, Nature is more beautiful than the things built by human beings, Plant and animal diversity is an essential part of a country’s wealth.

Materialist vision: Plants and animals exist to be used by humans, The exploitation of nature is unavoidable if humanity is to progress, Economic growth is more important than protecting the environment, We should accept the use of animals in scientific research in order to improve human health.

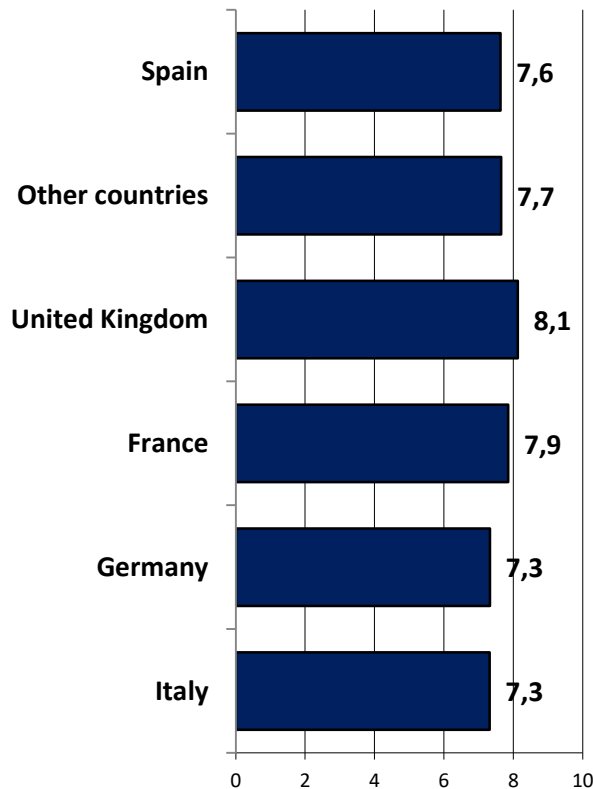
- In Spain the segment expressing a materialist view of nature is increasing with age, and lower among those with most years of education, those on the left and those with a low level of religiosity.
- Differences are more muted on average in the other four countries.



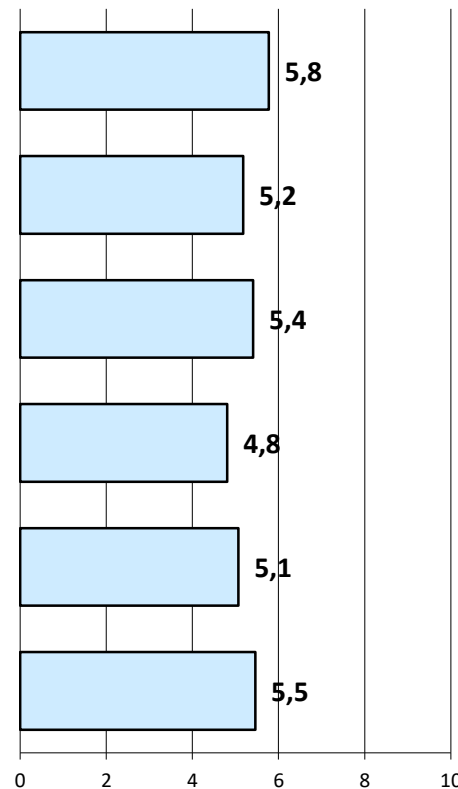
- Citizens concur with the idea that science shows us fascinating things about nature.
- Opinions are divided within each country as to whether science and technology have the power to solve today's environmental problems, with agreement winning out everywhere except France and strongest of all in Spain.

“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases

Science shows us fascinating things about nature

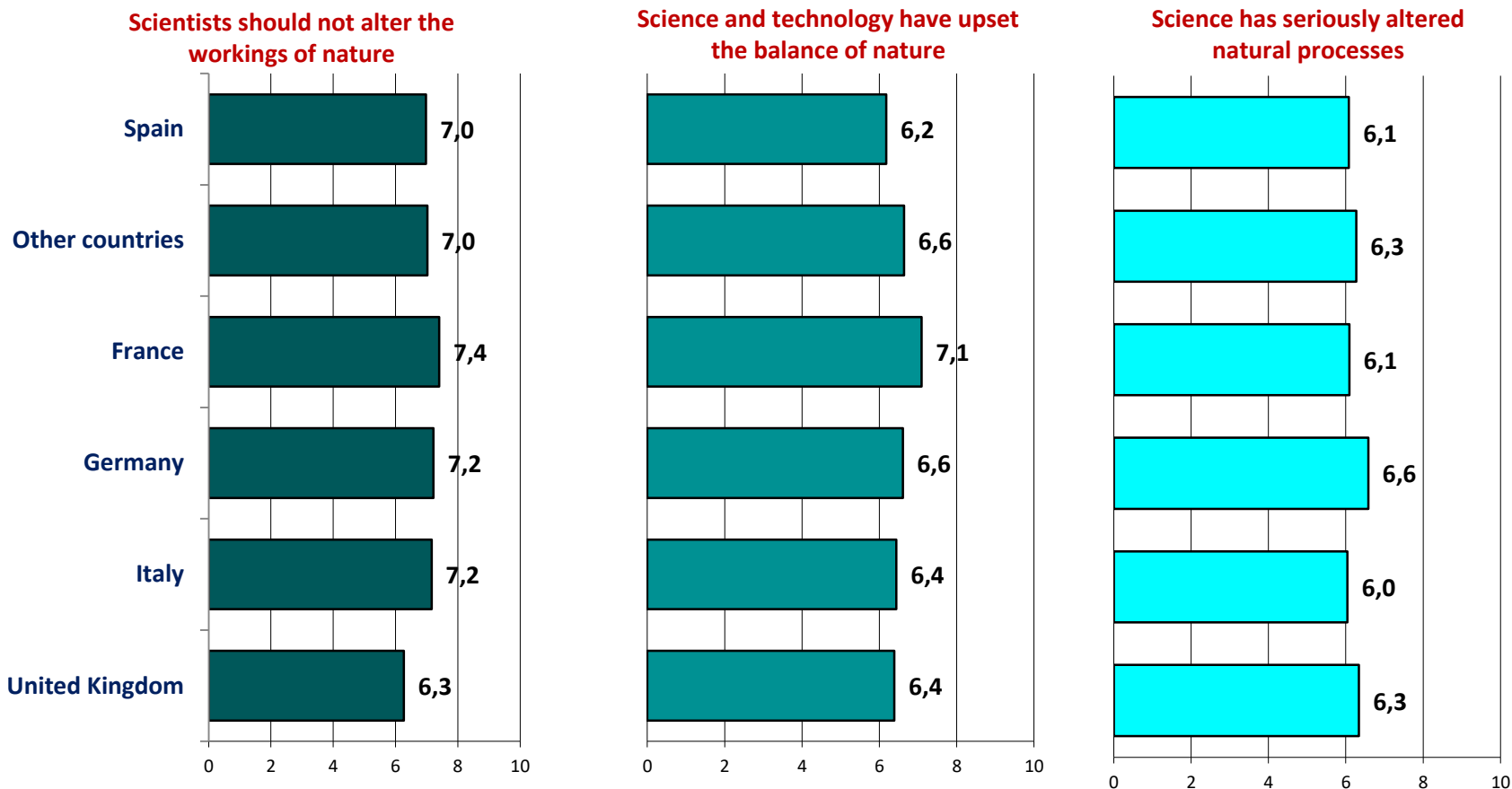


Science and technology will solve today's environmental problems



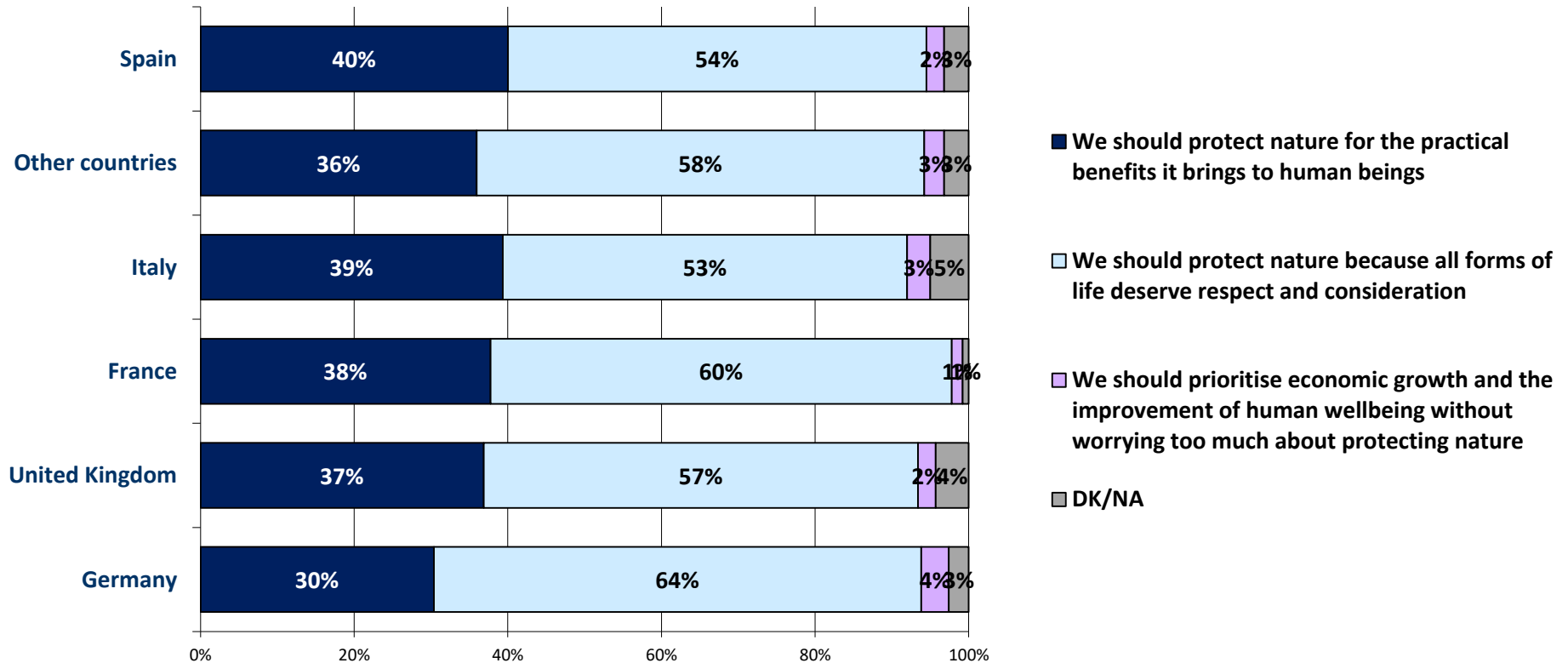
- Predominantly favourable views of science’s role in the environment coexist with a vision of science as having already disrupted the balance of nature. There is also broad agreement to the effect that scientists should not alter the workings of nature.

“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases



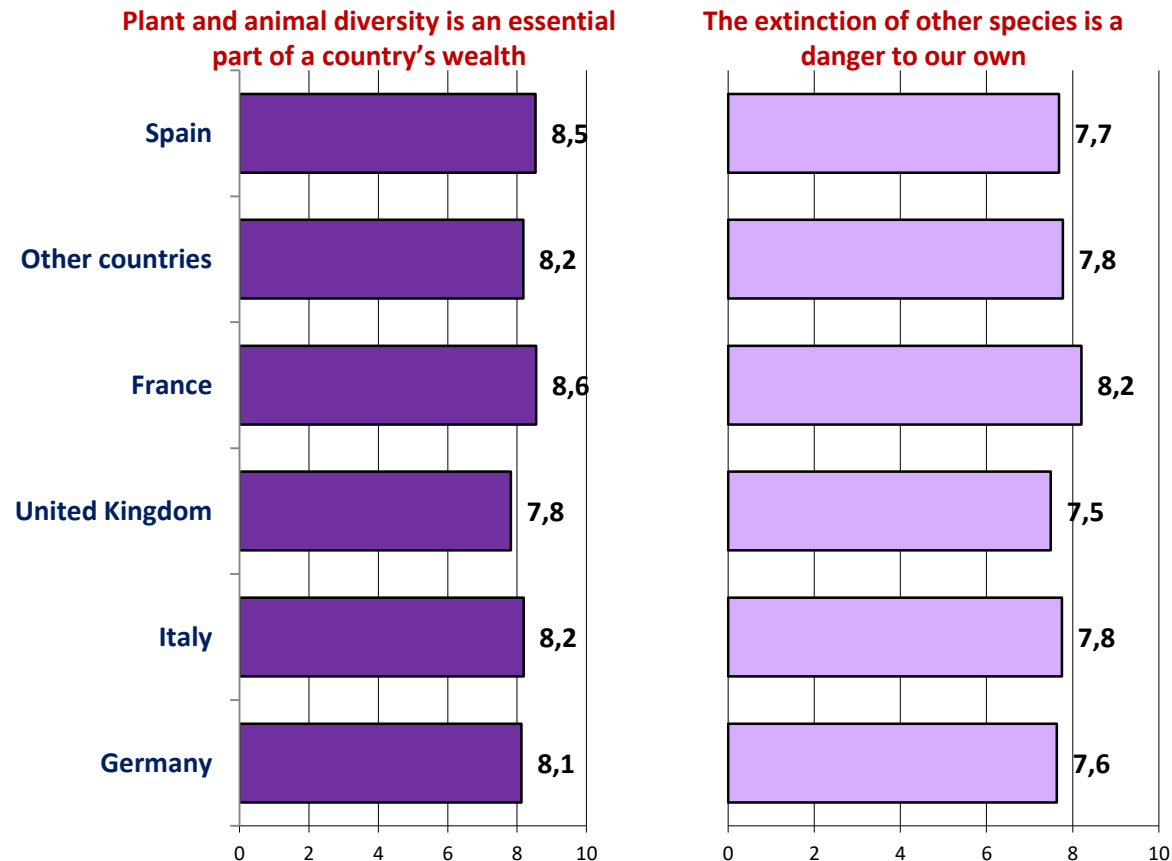
- The view prevails (most strongly in Germany and France) that nature should be protected because of the respect and consideration due to all forms of life. However, a considerable percentage in all countries believe that nature should be protected because of the practical benefits it brings to humans, a position that is more marked in Spain and less so in Germany.

“Which of these three opinions is closest to your own?”. Base: all cases



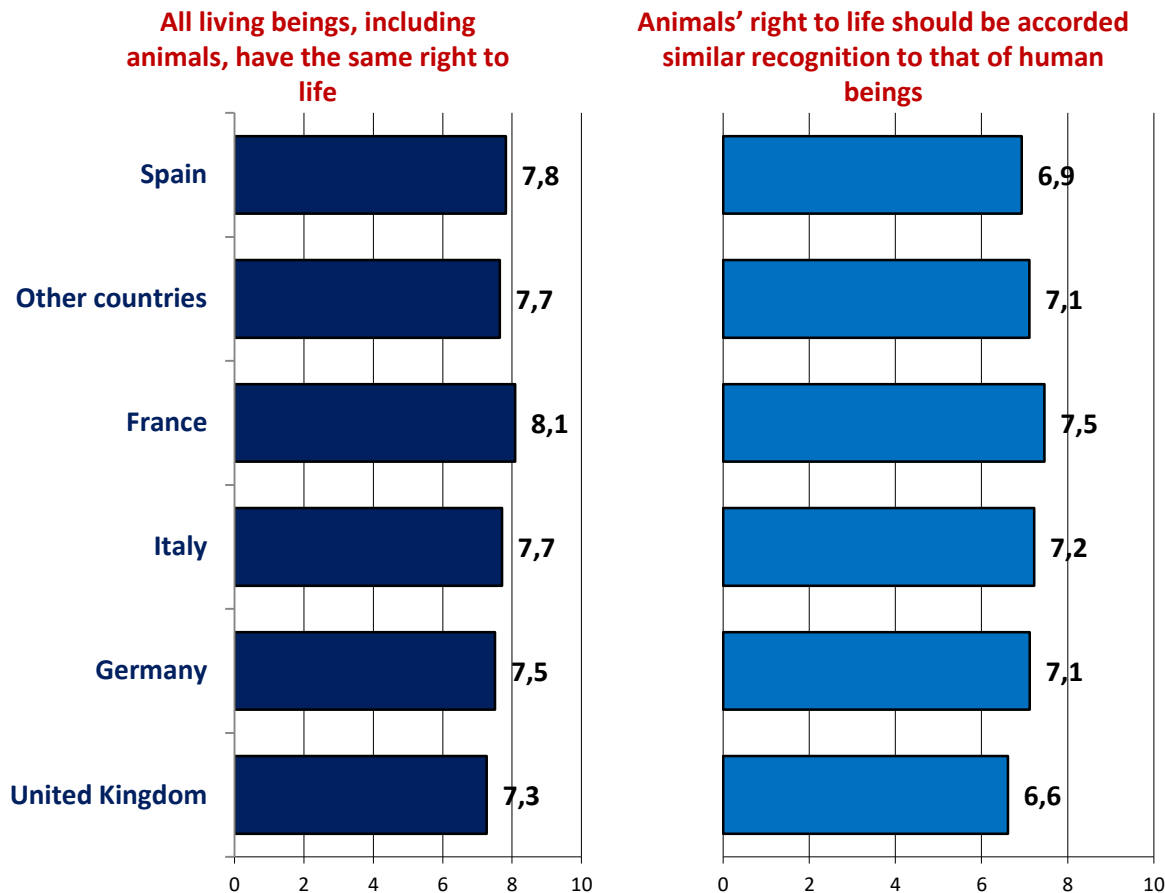
- Extremely broad consensus in regarding biodiversity as an essential part of a country's wealth, and also around the dependence we have on other species.

“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases



- A large majority in all countries agree that all living beings have the same right to life and that, in the case of animals, this right to life should be accorded similar recognition to that of human beings.

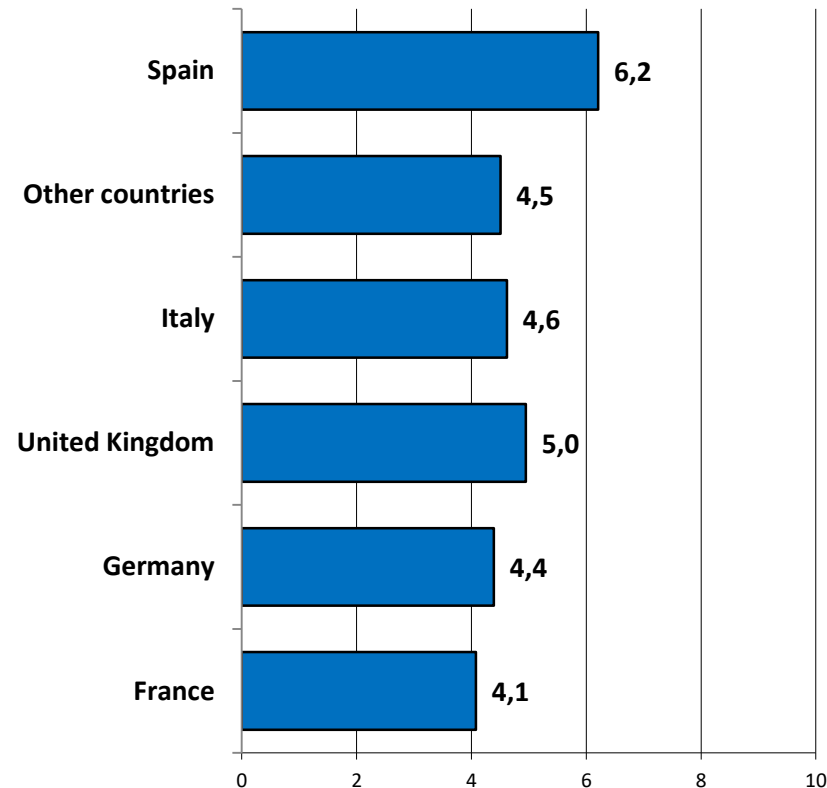
“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases



- The use of animals in research aimed at improving human health finds considerable support in Spain, contrasting with the rejection expressed in Italy, Germany and, more so, France, and the more divided views of Britons.

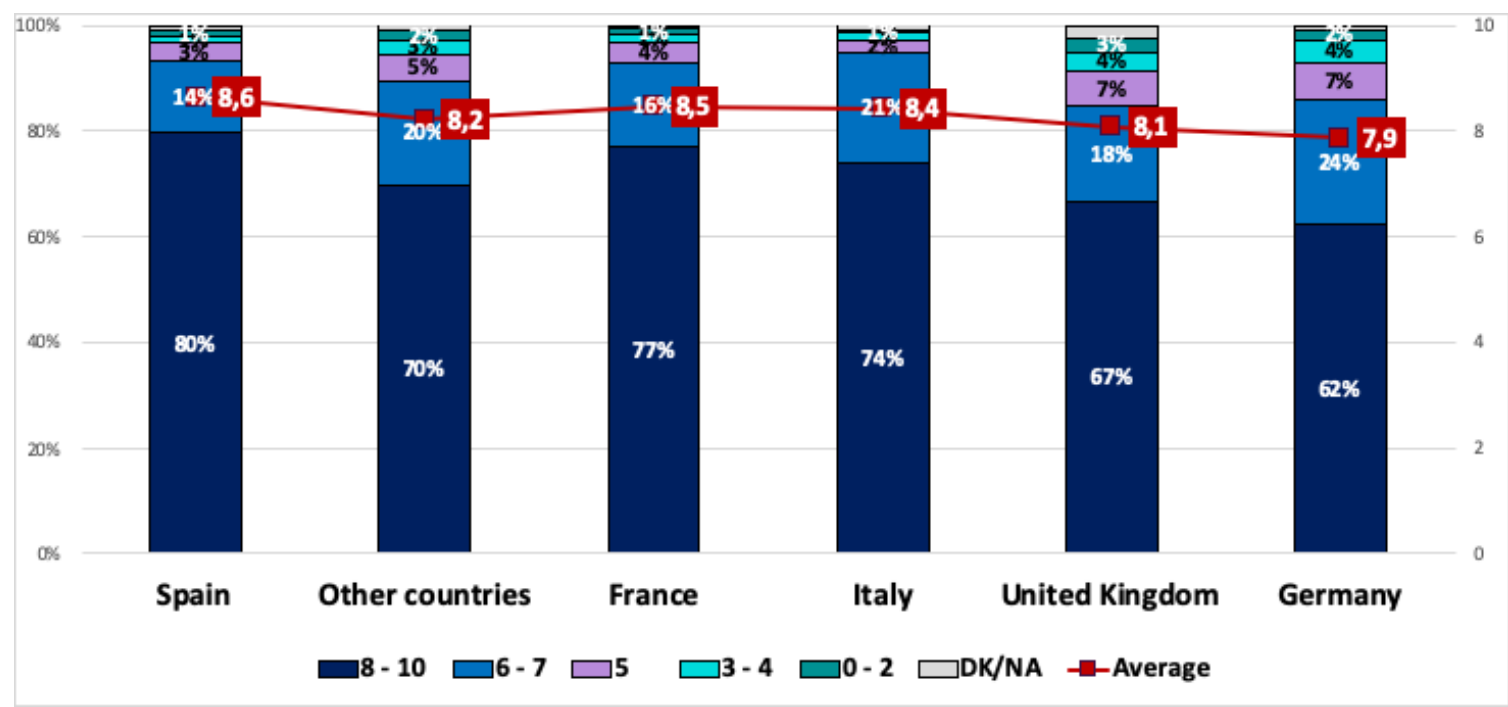
“How much do you agree or disagree with each of the following statements?” Average on a scale from 0 to 10, where 0 means you “completely disagree” and 10 that you “completely agree”. Base: all cases

We should accept the use of animals in scientific research in order to improve human health



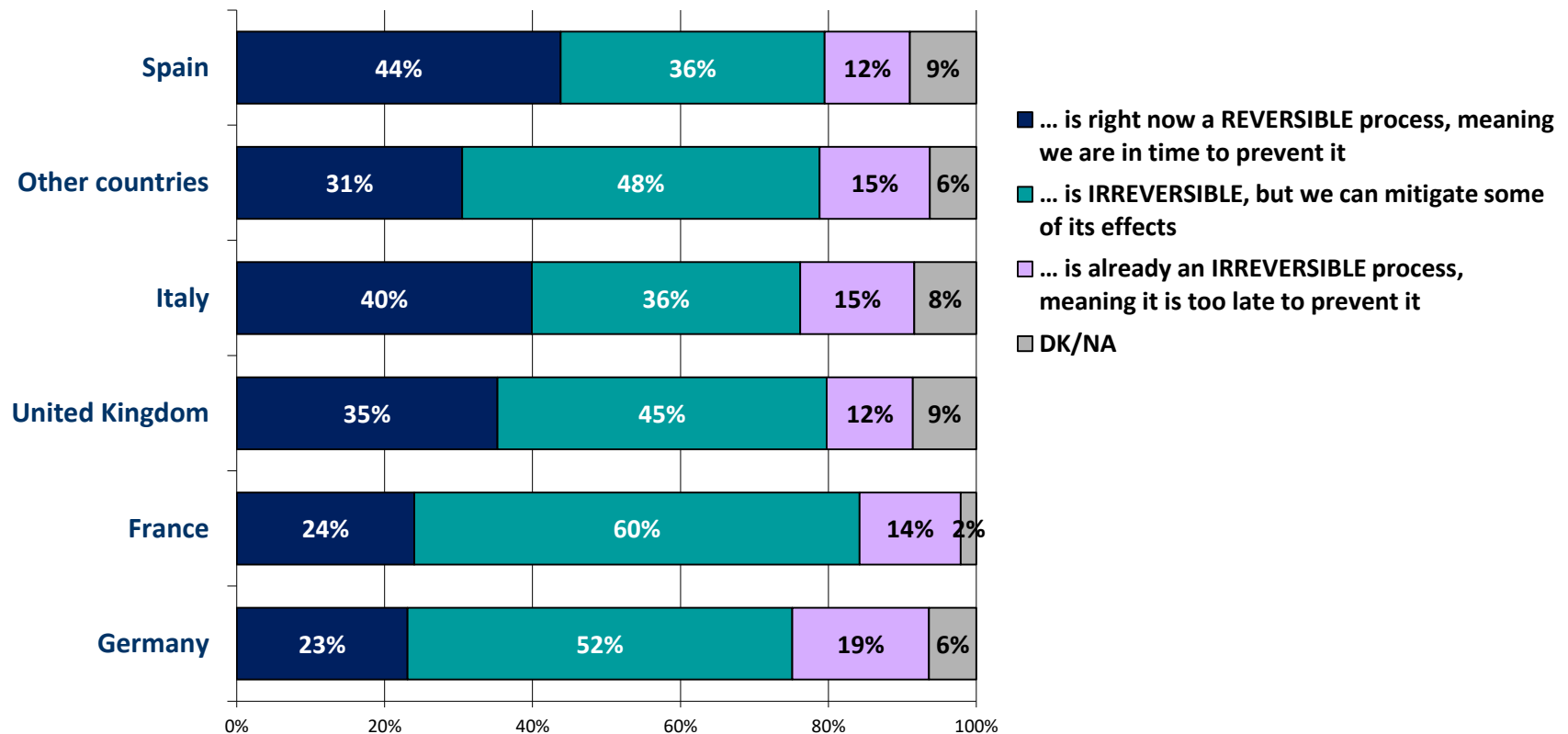
- On the issue of climate change, citizens are united in considering it a grave threat (averages of 8 and more in almost every country). Eighty percent of the population in Spain and more than 60% in the other survey countries rate the problem very serious, assigning it the highest scores (between 8 and 10).

“To what extent do you think climate change is or is not a serious problem?”. Average and distribution on a scale from 0 to 10, where 0 means it is “not a serious problem” and 10 means it is “a very serious problem”. Base: all cases



- Regarding the possible future course of climate change, the sentiment is clearly pessimistic. This is especially so in France and Germany, where the process is viewed as irreversible, with a majority convinced that we can only hope to mitigate some of its effects. In Spain a relative majority believe there is still time to rein in global warming.

“Which of these statements is closer to your opinion about global warming?” Base: all cases



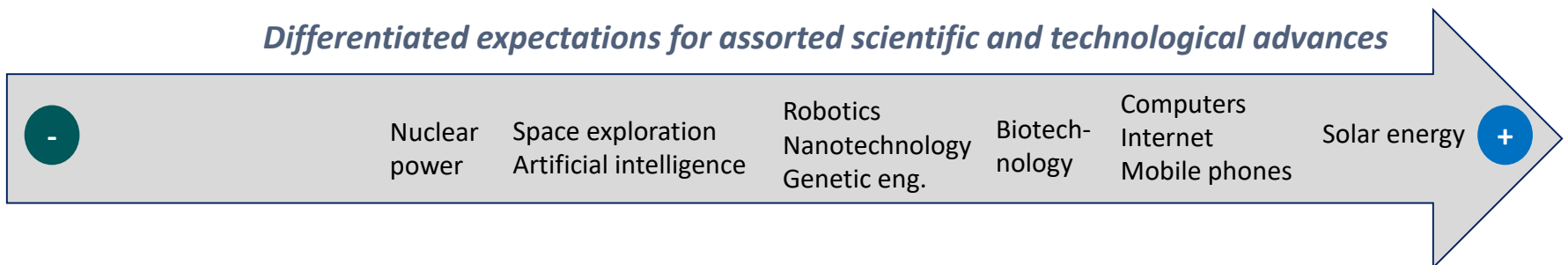


Conclusions

ATTITUDES PREDOMINANTLY FAVOURABLE TOWARDS SCIENCE AND TECHNOLOGY

- Citizens express a keen interest in scientific and technological issues
- They attach considerable importance to information and communication technologies (mobile phones, Internet, computers) in their daily lives
- Strong trust in scientists, who are seen as a competent and ethical professional group
- Extensive and intensive use of the Internet as a space for information, communication, entertainment, shopping and services, in that order, with mobile phones as a favoured access device
- Markedly positive expectations regarding most technologies and science applications, albeit on a distinct gradient, with nuclear power at one extreme (-) and solar energy at the other (+).

Differentiated expectations for assorted scientific and technological advances



A COMPLEX DIFFERENTIATED IMAGE OF SCIENCE WITH A POSITIVE BALANCE

Positive facets

- Improvements in health
- Motor of material and cultural progress
- Reduces fears and superstitions of the past
- Reliable way to understand the world

Though positive and negative views coexist, the positive wins out in both breadth and intensity

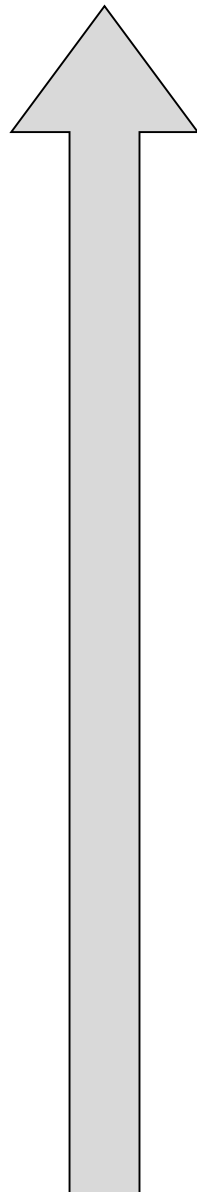
Reservations

- Adds to unemployment
- Increases the risk of war
- Has led to a world full of risks

But

- No sentiment that we would be better off living life without so much science and technology
- Widespread rejection of the idea that science destroys religious beliefs and moral values

DIFFERENTIATED VIEWS ACCORDING TO APPLICATIONS AND, ESPECIALLY, GOALS



Widespread acceptance

- In vitro fertilisation
- Brain implants to repair memory loss caused by degenerative diseases like Parkinson's or Alzheimer's

Acceptance with division of opinions

- The transplant of organs and tissues from an animal to a human being to replace damaged organs
- Genetic modification of plants to produce pharmaceutical drugs

Rejection

- Genetic modification of plants to produce food
- Brain implants in a normal person to prevent impulsive or violent reactions

Widespread rejection

- Research using human embryos that are a few days old to obtain medical benefits
- Brain implants to increase a normal person's cognitive abilities, like attention, memory and comprehension
- Genetic modification of animals to produce pharmaceutical drugs

Extreme rejection

- Genetic modification of animals to produce food
- Cloning of animals
- Cloning of human beings



PERCEPTION OF NATURE

- **Strong interest in environmental issues and strong trust in environmentalists**
- **The “pro-environmentalist” vision wins out after the more materialist or utilitarian perspective: the image of nature is associated with purity and beauty, while human activity is perceived as being easily able to upset its delicate balance**
- **Regarding the dimensions that express a utilitarian vision of nature, the idea that economic growth is more important than protecting the environment meets with majority rejection**
- **Ample consensus in viewing biodiversity as an essential part of a country’s wealth and the fact that we as humans are dependent on other species**
- **Recognition of animals’ rights though with some division over their use in scientific research**
- **On the issue of climate change, large majorities in every country acknowledge it as a serious problem, and declare themselves pessimistic about its future course.**

SCIENCE AND NATURE

In the five countries analyzed, keen interest in scientific issues and predominantly favourable attitudes to science and technology, coexist with an environmentalist (or non-materialist) perception of nature as a beautiful thing whose balance can be easily altered by human activity.

Though aware of the potential benefits science and technology could bring in the realm of the environment, in terms of advancing knowledge and solving problems, citizens oppose the use of its tools to alter the natural order.



- **The map of perceptions of science and its applications is a differentiated one.**
- **It exhibits a positive valence in the case of techniques that, while intervening in natural processes, do not alter them directly and are aimed clearly at obtaining medical benefits, but a negative valence for practices that modify or genetically alter living beings, with rejection more intense in the case of humans and animals than that of plants.**
- **The Spanish tend to be the most positively disposed to the applications mooted, followed by the British, while the French, Italians and Germans assign lower acceptance scores.**

DISTINGUISHING TRAITS OF THE SPANISH

- Spaniards tend to be strongly positive on the diverse aspects of science covered by the survey
- They express a higher level of positive expectations about the effect of most applications of science and technology, exceeding the European average in the case of genetic engineering, space exploration and artificial intelligence. In contrast to the other survey countries, which express differentiated expectations regarding biotechnology and genetic engineering, more favourable to the former, the Spanish express similar expectations for both.
- They concur with the citizens of the other four countries in saying that religion should not set limits on scientific advances, but differ in their belief that nor should ethical considerations. This overall view is qualified when considering specific applications (like the cloning or genetic modification of animals) that impinge clearly on the moral terrain, with citizens in every country, including Spain, displaying attitudes of wariness or rejection.
- They are also the most supportive of certain applications and practices subject to moral controversy, standing alone with the British in accepting the genetic modification of plants for both medicine and food production.
- Spaniards express greater acceptance of the use of human embryos in research and their gene editing to prevent the transmission of diseases. Finally, they stand apart from their European peers in their firm acceptance of the use of animals in scientific research.

TECHNICAL NOTES

- **Geographical scope of the study:** Germany, Spain, France, Italy, and the United Kingdom.
- **Universe:** in each country, the general population aged 18 and over.
- **Method:** administered face-to-face interview in the home.
- **Sample size and distribution:** 1,500 cases in each of the 5 countries. Multistage sample distribution stratified by region (NUTS classification or equivalent)/size of habitat, with primary units selected by lot at municipal level. Individuals randomly selected.
- **Sampling error:** The estimated sampling error is +/- 2.6% in each country for a confidence level of 95.5% and in the worst-case scenario ($p=q=0.5$).
- **Survey period:** April to July 2019
- **Weighting:** Total European results are arrived at by weighting each country's data according to its population weight in the universe of European countries surveyed.
- **Fieldwork:** coordinated and executed by the IPSOS network.
- **Study design and analysis:** BBVA Foundation Department of Social Studies and Public Opinion.