World Risk Poll 2021: A Digital World

Perceptions of risk from AI and misuse of personal data

LR Foundation

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Preface

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We live in an age of rapid advancements in digital technology and interconnectivity. This rapid change was accelerated by the Covid-19 pandemic, which pushed more people and activities online. These advances have demonstrated great value and offer opportunities to drive economic growth and higher living standards globally. However, such advances often run ahead of policy, regulation and people's personal understanding, leaving space where existing inequities can be worsened and where new personal and system-level risks may be generated.

The mission of Lloyd's Register Foundation — to engineer a safer world — is fundamentally underpinned by research and evidence, and our World Risk Poll is a powerful tool to understand the nature and scale of different safety challenges across the globe. The Poll gives a voice to people around the world, including in places where there is little existing data on risk.

It provides a resource to understand how people around the world use and view emerging technologies and empowers policymakers to ensure that technological adoption promotes equity across all groups in society.

This report focuses on two main areas: the emergence of artificial intelligence technologies and their increasing role in decision-making processes; and the risks associated with personal information shared online. Our results show there is widespread concern about both issues and that experience of discrimination galvanizes opinion and acts as a significant driver of concern, especially in relation to the misuse of data by governments.

There is a clear and urgent need for policymakers to close regulatory gaps and ensure equitable access to this technology for all.

To support this aim, we make our data freely available so that stakeholders across the world, including governments, regulators, businesses, researchers, NGOs and international bodies, can use them to inform and target policies and interventions that make people safer, working with the communities at risk. Please get in touch if we can help you use these data to create a safer, more connected world.

Executive summary

With digital technologies spreading throughout much of the world, an increasing number of people are poised to enjoy the benefits of technological innovation and inclusion — but also to contend with its risks. The 2021 World Risk Poll asked people about two areas in which technology use may — intentionally or unintentionally — have negative consequences:

1) **artificial intelligence (AI)**, which benefits humanity in many ways but can also lead to biased decision-making if algorithms are based on flawed designs or data, AI development teams lack diversity or AI outputs are interpreted in ways that lead to unfair discrimination

2) **use of personal information online**, which can lead to a host of negative consequences despite efforts in many countries to protect data privacy

The 2021 study includes 125,911 people across 121 countries and territories across all global regions[1]. Key findings include:

Artificial intelligence

- Worldwide, 39% of people said AI would 'mostly help' people in their country, 28% said it would 'mostly harm' people, and 30% said they 'do not have an opinion' (22%) or did not know (8%).

    - Women were less likely than men to say AI would mostly help — 35% versus 42%, respectively.

- In Eastern Asia, Southeastern Asia, Central Asia, Northern/Western Europe, Southern Europe, Australia/New Zealand and Eastern Europe, more people said AI would mostly help rather than mostly harm people in their country in the next 20 years.

    - Optimism about AI was strongest in Eastern Asia, where 57% said AI would mostly help people, while just 13% said it would mostly harm them. Several countries in the region — including China, Japan and South Korea — are considered leaders in developing AI applications.

    - By contrast, people in several of the world's lowest-income regions — including Central/Western Africa, Southern Africa, Northern Africa, Eastern Africa and Southern Asia — were more likely to say AI would mostly harm than help people in their country in the next 20 years.

- People who said religion was important in their daily lives expressed less optimism about AI, regardless of their level of educational attainment. Overall, 32% of those who said religion was important in their daily lives felt AI would mostly help people in their country, versus 48% of those who did not.

- At the global level, people who had faced discrimination based on their race/nationality, skin colour or sex were evenly split as to whether AI would mostly help (35%) or mostly harm people in their country in the next 20 years (35%). Those who had not experienced such discrimination were also closely aligned but were more likely to say they had no opinion or did not know than those who had experienced discrimination (32% vs. 27%, respectively).

- In 16 countries worldwide — including three Scandinavian countries where the issue of potential bias in AI algorithms has been particularly salient — the percentage who said AI would mostly harm people was at least 10 points higher among people who had experienced discrimination based on skin colour, race/nationality or religion than among those who had not.

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1   Many of the findings in this report are based on all people in the 121 countries and territories studied or on the total populations of individual regions, countries or territories. However, the analysis attempts to identify and address areas where there were notable differences by demographic categories such as sex, education or age.

- One application of AI technology — the development of self-driving cars — was met with scepticism among most people. At the global level, 27% said they would feel safe being driven in a car without a human driver, while 65% said they would not. In no country or territory did more than 45% of people say they would feel safe.

Global internet use

- The percentage of people who reported using the internet in the past 30 days rose from 54% in 2019 to 63% in 2021 among the 119 countries and territories surveyed both years. The greatest increases occurred in lower-middle-income (from 31% to 41%) and upper-middle-income (65% to 76%) economies.

  - By contrast, there was a comparatively small rise in internet use among low-income economies; in 2021, 22% of people in these countries said they had used the internet in the past 30 days, versus 20% in 2019. Less than a third of people in three of the world's lowest-income regions — Southern Asia (31%), Eastern Africa (29%) and Central/Western Africa (27%) — said they had used the internet in the past 30 days, compared with more than half in all other regions.

- Worldwide, 38% of people with primary education or less said they had gone online in the past 30 days, compared with 78% of those with secondary and 94% with post-secondary education.

- Globally, women were less likely than men to say they had used the internet in the past 30 days — 59% versus 66%, respectively. The gender gap was widest in Southern Asia at 23 percentage points.

  - Just 10% of women in Southern Asia with primary education or less had used the internet in the past 30 days.

- Though internet use remains more common among younger people worldwide, those aged 65 and older saw the greatest gain in internet use since 2019, from 28% to 46% in 2021. Covid-19 may have influenced the rise in internet use among older adults, many of whom have engaged with technology in new ways to stay connected to family and friends or to access essential services during the pandemic.

Use of personal information online

- At least two-thirds of internet users worldwide were 'very' or 'somewhat' worried that their personal information online would be stolen (77%), used by companies for marketing purposes without their permission (74%) or used by the government without their permission (68%). Close to two in five said they were very worried in each case.

- Majorities said they were very worried about the theft of their personal information online in five regions: Central/Western Africa (62%), Southeastern Asia (61%), Southern Africa (60%), Latin America/Caribbean (56%) and Eastern Africa (54%).

- The percentage of internet users very worried their personal information would be stolen was higher, on average, in countries that scored lower on the World Justice Project's Rule of Law Index.

- Worldwide, less financially secure internet users and those who had experienced discrimination were most likely to worry about the theft or unauthorised use of their private information online.

Insight to action

The 2021 World Risk Poll reveals high levels of concern about the potentially negative effects of digital technologies, particularly among socially or financially vulnerable groups, even as those technologies become accessible to more of the global population. The findings highlight the need for policymakers around the world to work with ethics experts, local stakeholders and industry representatives to establish regulatory environments that protect vulnerable groups while allowing them to derive the full benefits of such technologies.

Such initiatives are needed as part of a broader effort to ensure technology use narrows rather than widens existing inequality around the world. A critical part of that effort is extending internet access to groups who currently do not have it but stand to be most empowered by it, such as less-educated people — particularly less-educated women — in low-income countries.

But as the findings in this report demonstrate, it is equally important to ensure new technologies will lead to positive outcomes for all groups in society. With AI, that means minimising the potential for discrimination so marginalised groups feel safe using the technology as they grow more familiar with it. More generally, it means extending legal protections for misuse of personal information and educating people about the safe use of digital tools, particularly among those who may be using them for the first time.

Acknowledgements

Introduction

Technological advances drive economic growth and higher living standards for people worldwide[2]. However, technology use also often carries risks[3] — particularly in the early phases of adoption, among populations less equipped to benefit from it or among those more vulnerable to its possible negative consequences.

The Covid-19 pandemic further spurred the already-rapid spread of digital technology in many regions, as more people needed to use online services. However, countries where such technologies are relatively new are less likely to have adopted policies to protect people from the risks they pose[4,5]. Further, in countries and territories where the internet has only recently become widely available, many people may lack the digital literacy needed to feel confident they can avoid the pitfalls associated with its use[6].

Notably, such concerns are not relegated to countries or territories where web-based digital technologies are relatively new. The World Risk Poll finds that even among high-income countries with widespread internet access, underprivileged groups such as people with low incomes and those who had experienced discrimination were warier of threats like the misuse of their personal information or potential bias in AI-driven assessments. However, limiting one's online presence has its own costs, including possibly restricting education and job opportunities among groups who may need them most[7].
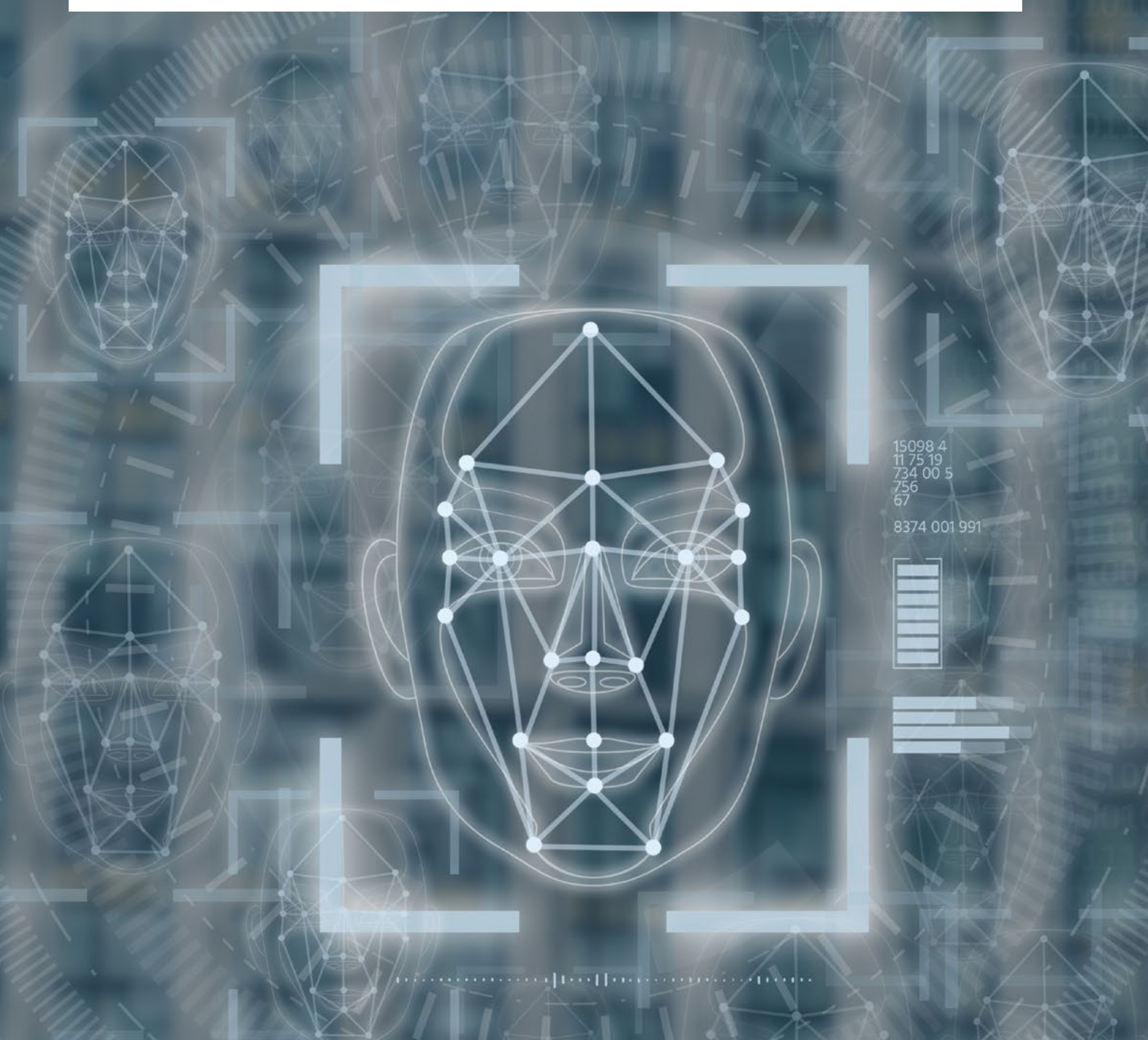
The 2021 World Risk Poll asked people in 121 countries and territories about two areas in which technology use may — intentionally or unintentionally — have negative consequences.

- **Artificial intelligence:** AI has become a primary driver of technological development, but it poses significant challenges. Among the greatest concerns is the possibility that AI-driven algorithms used to make decisions that affect people's lives, such as assessments about job qualifications or creditworthiness, will produce or amplify discriminatory results[8]. Even as companies expand AI systems, developers are still working to identify and limit the impact of human bias in their design[9].

- **Protection of personal information:** Abuse of personal information online can result in a wide range of negative consequences. A 2021 literature review on the topic listed 11 potential paths of harm, including acquiring personal data and passwords to take over people's online accounts (commonly known as identity theft), monitoring political dissidents and journalists in authoritarian countries, and using highly targeted information to manipulate consumers[10].

2 Broughel, J., & Thierer, A. (2019, March 4). *Technological innovation and economic growth: A brief report on the evidence.* Mercatus Center at George Mason University. https://www.mercatus.org/publications/entrepreneurship/technological-innovation-and-economic-growth

3 Gray, A. (2017, January 11). *What new technologies carry the biggest risks?* World Economic Forum. https://www.weforum.org/agenda/2017/01/what-emerging-technologies-have-the-biggest-negative-consequences/

4 Fick, M., & Akwagyiram, A. (2018, April 4). In Africa, scant data protection leaves internet users exposed. *Reuters.* https://www.reuters.com/article/us-facebook-africa-in-africa-scant-data-protection-leaves-internet-users-exposed-idUSKCN1HB1SZ

5 Kavanagh, C. (2019, August 28). *New tech, new threats, and new governance challenges: An opportunity to craft smarter responses?* Carnegie Endowment for International Peace. https://carnegieendowment.org/2019/08/28/new-tech-new-threats-and-new-governance-challenges-opportunity-to-craft-smarter-responses-pub-79736

6 Lopez, M., & Aminu, Z. R. (2021, March 26). *The World Bank in partnership with EQUALS launches new program to support digital skills development.* World Bank Blogs. https://blogs.worldbank.org/digital-development/world-bank-partnership-equals-launches-new-program-support-digital-skills

7 Madden, M. (2019, April 25). Opinion | The devastating consequences of being poor in the digital age. *The New York Times.* https://www.nytimes.com/2019/04/25/opinion/privacy-poverty.html

8 Manyika, J., Silberg, J., & Presten, B. (2019, October 25). What do we do about the biases in AI? *Harvard Business Review.* https://hbr.org/2019/10/what-do-we-do-about-the-biases-in-ai

9 Turner Lee, N., Resnick, P., & Barton, G. (2019, May 22). *Algorithmic bias detection and mitigation: Best practices and policies to reduce consumer harms.* The Brookings Institution. https://www.brookings.edu/research/algorithmic-bias-detection-and-mitigation-best-practices-and-policies-to-reduce-consumer-harms/

10 Kröger, J. L., Miceli, M., & Müller, F. (2021). How data can be used against people: A classification of personal data misuses. *SSRN Electronic Journal.* https://www.researchgate.net/publication/357431331_How_Data_Can_Be_Used_Against_People_A_Classification_of_Personal_Data_Misuses

Results from the 2021 study point to widespread apprehension about these issues, especially among populations that stand to benefit enormously from the safe use of digital platforms that provide greater access to services like healthcare[11], education[12] and banking[13]. Policymakers and industry leaders have a responsibility to work together on regulatory schemes that meet the needs of populations around the world to help ensure the spread of digital technologies maximises new opportunities while minimising potential risks.

11   Labrique, A. B., Wadhwani, C., Williams, K. A., Lamptey, P., Hesp, C., Luk, R., & Aerts, A. (2018). Best practices in scaling digital health in low and middle income countries. *Globalization and Health, 14(1)*, 103. https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-018-0424-z

12   Trucano, M. (2014, July 22). *Promising uses of technology in education in poor, rural and isolated communities around the world.* World Bank Blogs. https://blogs.worldbank.org/edutech/education-technology-poor-rural

13   Tay, L.-Y., Tai, H.-T., & Tan, G.-S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon, 8(6)*, e09766. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9240988/

Chapter 1
Artificial intelligence: People in low-income regions most wary of potential harms

Artificial intelligence generally refers to software that simulates human cognition and perception. The United Kingdom Information Commissioner's Office further notes that 'AI is an umbrella term for a range of technologies and approaches that often attempt to mimic human thought to solve complex tasks. Things that humans have traditionally done by thinking and reasoning are increasingly being done by, or with the help of, AI[14]'. Like computers and the internet, AI is a general-purpose technology that can be applied in countless ways across many different domains, including:

- The virtual assistants on mobile devices use AI to interact with users via natural language processing[15] and make recommendations for online or media content based on user inputs[16].
- Healthcare applications utilise machine learning processing of large datasets to increase the accuracy of patient diagnoses[17].
- Teachers are using AI-powered games and tools to help customise instruction to the needs of individual learners[18].
- AI algorithms drive climate models used by the Intergovernmental Panel on Climate Change and other researchers tasked with helping officials make informed climate policy[19].

14 *Definitions | artificial intelligence.* (n.d.). United Kingdom Information Commissioner's Office. Retrieved 11 October 2022 from https://ico.org.uk/for-organisations/guide-to-data-protection/key-dp-themes/explaining-decisions-made-with-artificial-intelligence/part-1-the-basics-of-explaining-ai/definitions/

15 *The role of natural language processing in AI.* (2021, October 12). University of York. https://online.york.ac.uk/the-role-of-natural-language-processing-in-ai/#:~:text=What%20is%20natural%20language%20processing,a%20lot%20of%20unstructured%20data

16 Kaličanin, K., Čolović, M., Njeguš, A., & Mitić, V. (2019). Benefits of artificial intelligence and machine learning in marketing. *Proceedings of the International Scientific Conference - Sinteza 2019*, 472-477. https://www.researchgate.net/publication/333292012_Benefits_of_Artificial_Intelligence_and_Machine_Learning_in_Marketing

17 Biswal, A. (2022, August 11). AI applications: *Top 14 artificial intelligence applications in 2022.* Simplilearn. https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/artificial-intelligence-applications

18 Sahu, A. (2021, April 13). *8 applications of artificial intelligence in education.* West Agile Labs Blog. https://www.westagilelabs.com/blog/8-applications-of-artificial-intelligence-in-education/#:~:text=Personalized%20learning,learners%20from%20preschool%20to%20college

19 Snow, J. (2019, July 18). How artificial intelligence can tackle climate change. *National Geographic.* https://www.nationalgeographic.com/environment/article/artificial-intelligence-climate-change

Though AI-driven applications have seemingly limitless potential to improve decision-making and perform complex analytical tasks, some researchers have raised ethical concerns regarding potential bias that can be built into its algorithms. If left unchecked, such flaws could 'scale up' discriminatory decision-making in critical areas like employment, healthcare, education, finance and criminal justice. In 2021, the UN High Commissioner for Human Rights called for a moratorium on AI systems that pose such risks until adequate safeguards are in place[20]. In 2022, European Union leaders proposed legislation, known as the Artificial Intelligence Act, to regulate AI models that have the potential to result in machine-based discrimination[21].

Worldwide, 39% believed AI will 'mostly help' people in the next 20 years, but 28% disagreed.

The 2021 World Risk Poll asked people in each country and territory studied whether they thought AI would 'mostly help' or 'mostly harm' people in their country in the next 20 years. When interpreting the results, it is important to consider that people's understanding of AI may vary widely. The survey provided a broad definition of the technology as 'machines or robots that can think or make decisions on their own', leaving room for a range of interpretations reflecting people's experience with AI applications — or lack thereof.

Worldwide, 39% of people said AI would mostly help people in their country, 28% said it would mostly harm people, and 30% said they 'don't have an opinion' (22%) or did not know (8%). Women were less likely than men to say AI would mostly help people in their country — 35% versus 42%, respectively. Conversely, they were somewhat more likely than men to say AI would mostly harm people (29% vs. 27%) or that they did not have an opinion.

Chart 1.1

Views on whether AI will 'mostly help' or 'mostly harm' people in the next 20 years, global results overall and by sex
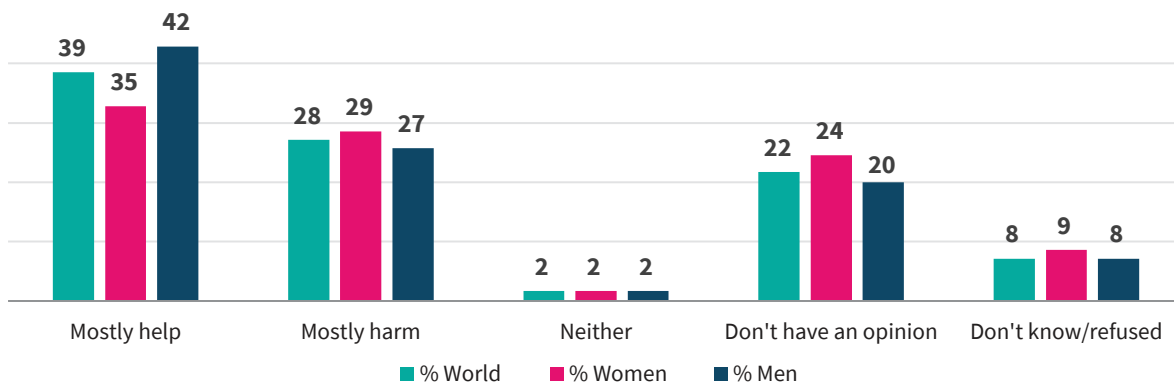
Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?
Due to rounding, percentages may sum to 100% ±1%.

The 2021 results were similar to those seen in the 2019 World Risk Poll[22]. Among countries included in both waves of the survey, the percentage who said AI would mostly help people was 40% in 2019, compared with 39% in 2021. The percentage who said AI would mostly harm people was also relatively stable, at 30% in 2019 and 28% in 2021.

20 *Artificial intelligence risks to privacy demand urgent action – Bachelet.* (2021, September 15). United Nations Human Rights Office of the High Commissioner. https://www.ohchr.org/en/2021/09/artificial-intelligence-risks-privacy-demand-urgent-action-bachelet

21 Makortoff, K. (2022, August 7). 'Risks posed by AI are real': EU moves to beat the algorithms that ruin lives. *The Guardian.* https://www.theguardian.com/technology/2022/aug/07/ai-eu-moves-to-beat-the-algorithms-that-ruin-lives

22 Lloyd's Register Foundation & Gallup, Inc. (2020). *The Lloyd's Register Foundation world risk poll: Full report and analysis of the 2019 poll.* https://wrp.lrfoundation.org.uk/LRF_WorldRiskReport_Book.pdf

Regionally, optimism about AI was most prevalent in Eastern Asia.

In Eastern Asia, Northern/Western Europe, Southern Europe, Australia/New Zealand and Eastern Europe, more people said AI would mostly help rather than mostly harm people in their country in the next 20 years. In Eastern Asia, a majority (57%) said AI would mostly help people, while just 13% said it would mostly cause harm. The resulting ratio of 4.4:1 was higher than in any other global region.

In six regions — including Northern America, Latin America/Caribbean, the Middle East and Central, Southeastern and Southern Asia — people were about as likely to say AI will mostly harm people in their country in the next 20 years as they were to say it will mostly help, with about a third or more in each region saying they 'don't know' or had no opinion.

People in each of the four African regions — Central/Western Africa, Southern Africa, Northern Africa and Eastern Africa — were more likely to say AI would mostly harm than mostly help people in their country over the next 20 years. Eastern Africa stands out as the only region in which more than half (51%) said AI would mostly harm people, more than twice the 22% who said the technology would mostly help. Among Eastern African countries, clear majorities in Tanzania (62%), Kenya (57%) and Uganda (57%) said AI would mostly harm people, while no more than 25% in any of these three countries said it would mostly help.

Chart 1.2

Views on whether AI will 'mostly help' or 'mostly harm' people in the next 20 years, by region
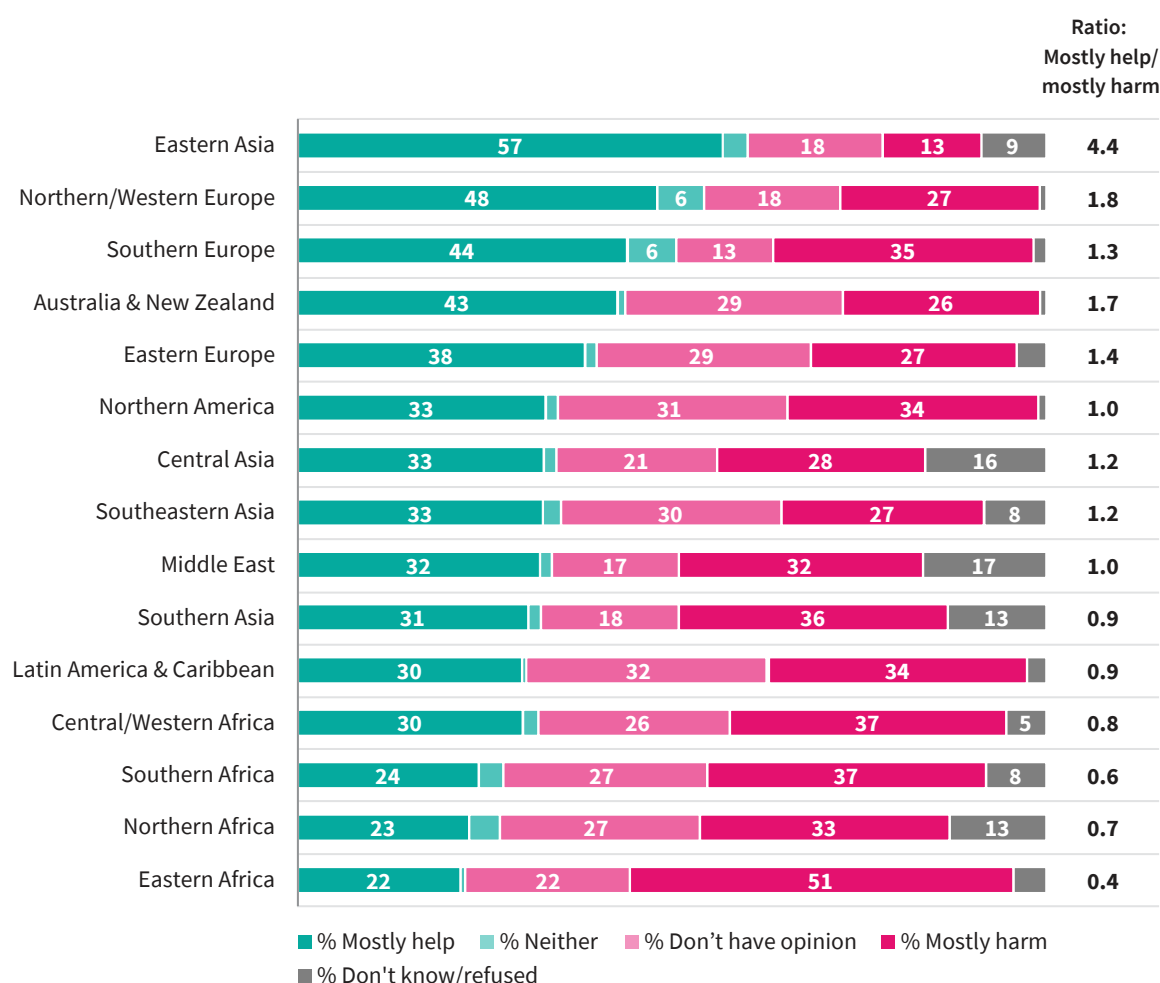
Ratio: Mostly help/ mostly harm

Region	% Mostly help	% Neither	% Don't have opinion	% Mostly harm	% Don't know/refused	Ratio
Eastern Asia	57		18	13	9	4.4
Northern/Western Europe	48	6	18	27		1.8
Southern Europe	44	6	13	35		1.3
Australia & New Zealand	43		29	26		1.7
Eastern Europe	38		29	27		1.4
Northern America	33		31	34		1.0
Central Asia	33		21	28	16	1.2
Southeastern Asia	33		30	27	8	1.2
Middle East	32		17	32	17	1.0
Southern Asia	31		18	36	13	0.9
Latin America & Caribbean	30		32	34		0.9
Central/Western Africa	30		26	37	5	0.8
Southern Africa	24		27	37	8	0.6
Northern Africa	23		27	33	13	0.7
Eastern Africa	22		22	51		0.4

Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?
Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Map 1.1 shows how the ratio between the percentage who said AI will mostly help versus mostly harm people in their country varied by global region.

Map 1.1

Ratio of those who said AI will 'mostly help' versus 'mostly harm' people in the next 20 years, by region

Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?

Optimism about AI was high in countries leading in the development of its applications.

Table 1.1 shows the countries where those who said AI will mostly help people in their county outnumbered those who said it will mostly harm by the widest margins. Several are considered global leaders in the development of AI-powered technology[23] — including China, where 56% said AI will mostly help people in their country, and just 13% said it will mostly cause harm. Stanford University's 2022 AI Index report notes that only China exceeded the United States in the total number of journal articles published on AI in 2021[24]. The United States and China led the world in private investment in AI between 2013 and 2021, with Germany, Japan and South Korea also among the top 10 countries in that regard[25].

23 Davies, N. (2021, November 10). *Index shows US is winning the AI race – but for how long?* Investment Monitor.
     https://www.investmentmonitor.ai/ai/ai-index-us-china-artificial-intelligence

24 *Artificial intelligence index report 2022.* (2022). Stanford University. https://aiindex.stanford.edu/report/

25 *Research and development expenditure | Data.* (2022, June). The World Bank.
     https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?most_recent_value_desc=true

Table 1.1

Countries with the greatest difference between the percentages who said AI will 'mostly help' and 'mostly harm' people in their country in the next 20 years

	% Mostly help	% Mostly harm	Net 'mostly help'*	% No opinion/ don't know
South Korea	70	15	55 pts.	14
Japan	62	13	49 pts.	20
Finland	67	19	48 pts.	14
Sweden	58	14	44 pts.	28
China	56	13	43 pts.	28
Germany	59	20	39 pts.	11
Norway	56	18	38 pts.	26
Estonia	57	20	37 pts.	20
Denmark	54	18	36 pts.	27
Iceland	48	14	34 pts.	36

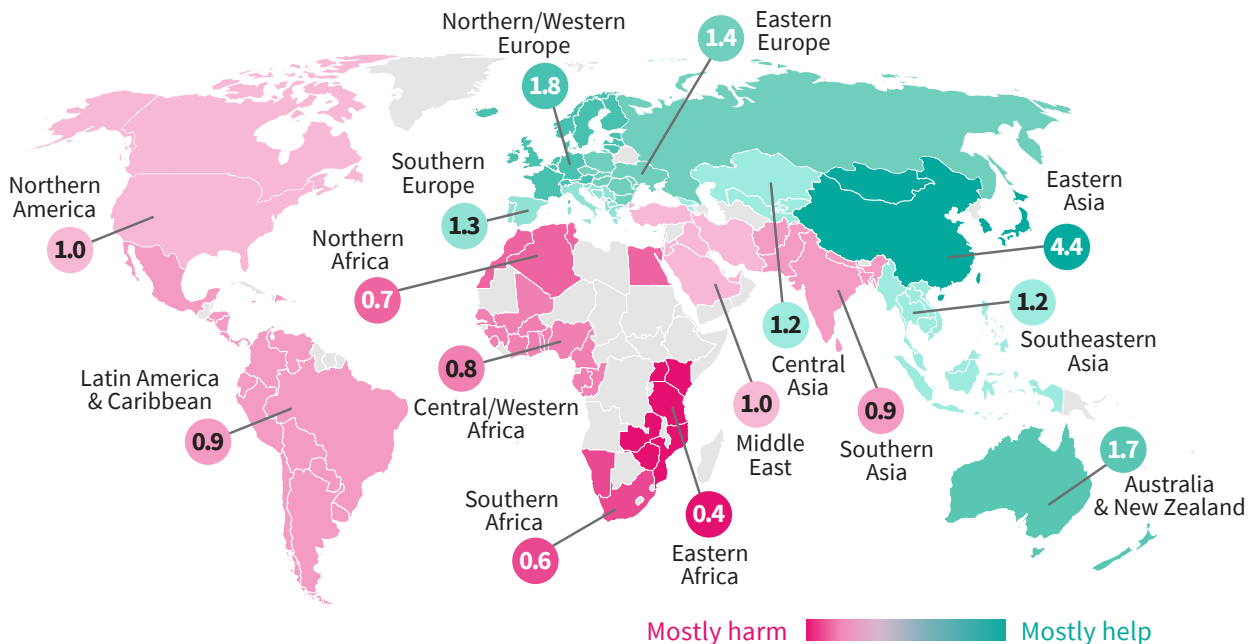*'Mostly help' percentage minus 'mostly harm' percentage*

Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?

Prior research has shown that public sentiment about new technologies in countries leading in their development tends to be positive because these populations stand to benefit most from the economic growth and additional wealth they generate. By contrast, late-adopting countries benefit less because they are simply 'customers' of the new technologies; thus, people may be more likely to feel the disruption they create outweighs their benefits. This perception may be particularly common for AI-driven technologies in populations where post-secondary education is less prevalent, since many may fear their jobs will be automated[26].

Two additional considerations stand out among a range of other variables that may be associated with people's perceptions of AI: internet access and the importance of religion in their lives.

26   Wike, R., & Stokes, B. (2018, September 13). In advanced and emerging economies alike, worries about job automation. *Pew Research Center*. https://www.pewresearch.org/global/2018/09/13/in-advanced-and-emerging-economies-alike-worries-about-job-automation/
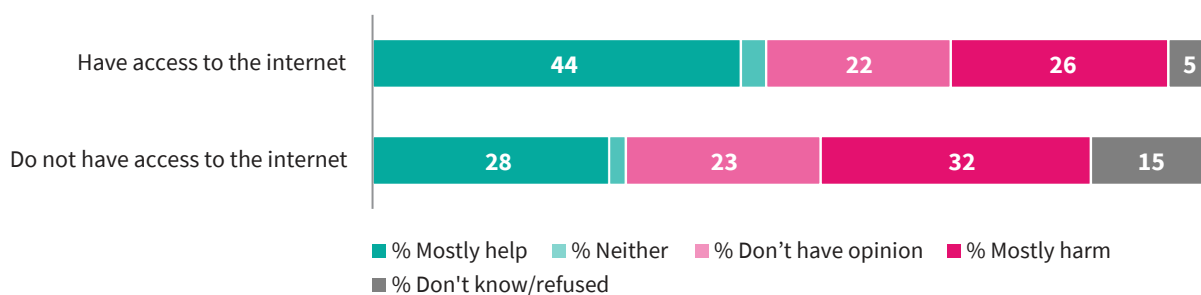
Internet access

Many people's primary exposure to AI comes in the form of digital personal assistants on smartphones and other internet-enabled mobile devices — e.g., Siri on Apple iPhones, Bixby on Samsung Galaxy phones or Alexa on Amazon smart speakers. Routine use of such technology may increase people's comfort with AI in general.

Globally, 44% of people who said they have access to the internet felt AI will mostly help people in their country in the next 20 years, compared with 28% of those without internet access. These differences were present regardless of people's educational attainment level; for example, while 34% of people with primary education or less said AI will mostly help people in their country, that figure rose to 43% among those with internet access.

Chart 1.3

Views on whether AI will 'mostly help' or 'mostly harm' people in the next 20 years, by access to the internet

	% Mostly help	% Neither	% Don't have opinion	% Mostly harm	% Don't know/refused
Have access to the internet	44		22	26	5
Do not have access to the internet	28		23	32	15

■ % Mostly help ■ % Neither ■ % Don't have opinion ■ % Mostly harm
■ % Don't know/refused

Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?
Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Religiosity

Though the United States is a global leader in AI, Americans expressed less optimism about the technology than people in European and East Asian countries that have invested in its development and use (Table 1.1). Just 32% of people in the United States believed AI will mostly help people in the next 20 years, while 34% said it will mostly cause harm.

The importance of religion to many Americans may factor into this difference, as it is associated with scepticism about the impact of AI. Fifty-eight percent of Americans said religion was an important part of their daily lives, versus 31% in Northern/Western Europe and 17% in Eastern Asia. Among more religious Americans, 25% said AI will mostly help people, compared with 43% of those who said religion was not an important part of their daily lives.

This difference reflects a broader global relationship between religiosity and perceptions of AI. Worldwide, those who said religion was important in their daily lives were about as likely to say AI would mostly harm people in their country (34%) as they were to say AI would mostly help them (32%). Among those who said religion was not important in their daily lives, those who felt AI would mostly help people outnumbered those who said the technology would mostly harm people by more than two to one (48% vs. 21%, respectively).

Chart 1.4

Views on whether AI will 'mostly help' or 'mostly harm' people in the next 20 years, by religiosity

Religion important in daily life	32	24	34	9
Religion not important in daily life	48	20	21	7

■ % Mostly help   ■ % Neither   ■ % Don't have opinion   ■ % Mostly harm
■ % Don't know/refused

Survey question: These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?
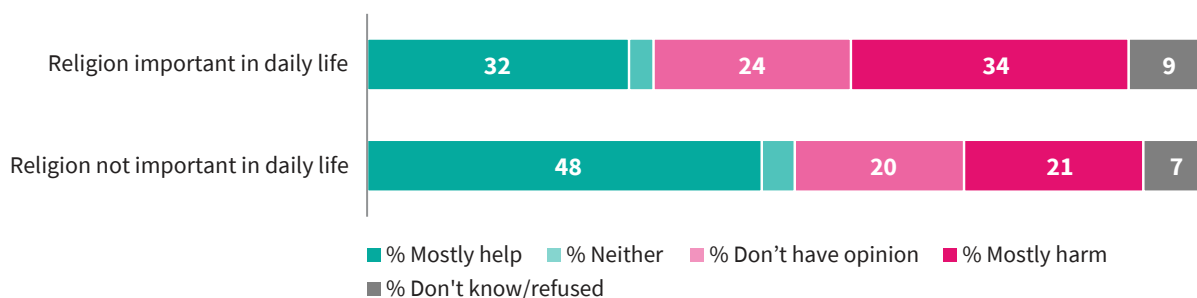Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Importantly, differences associated with religiosity are independent of people's educational attainment or whether they have internet access. For example, even when the analysis includes only people with internet access and post-secondary education, those who said religion was important in their daily lives were less likely than those who said it was not to feel AI will mostly help people in the next 20 years — 47% versus 64%, respectively.

These results suggest that, as with other advances like genetically modified foods[27] and stem cell research[28], the concept of artificial intelligence makes many people uneasy from a theological perspective. In societies where strong religious convictions are more prevalent, collaboration with local stakeholders to consider prevailing social values when designing and implementing AI applications may help ease public concerns about their use.

Those who had experienced discrimination were more likely to have an opinion on AI's social impact.

At the global level, people who said they had experienced discrimination based on their race/nationality, skin colour or sex were evenly split as to whether AI would mostly help (35%) or mostly harm people in their country in the next 20 years (35%). Those who had not experienced such discrimination were also closely aligned (33% mostly help vs. 32% mostly harm); however, they were more likely to say they had no opinion or did not know than those who had experienced discrimination (32% vs. 27%, respectively)[29].

27   Omobowale, E. B., Singer, P. A., & Daar, A. S. (2009). The three main monotheistic religions and GM food technology: An overview of perspectives. *BMC International Health and Human Rights, 9*(1), 18. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2741429/

28   Allum, N., Allansdottir, A., Gaskell, G., Hampel, J., Jackson, J., Moldovan, A., Priest, S., Stares, S., & Stoneman, P. (2017). Religion and the public ethics of stem-cell research: Attitudes in Europe, Canada and the United States. *PLOS ONE, 12*(4), e0176274. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5398703/

29   Three countries where Gallup was unable to ask questions about discrimination — China, Saudi Arabia and the United Arab Emirates — are excluded from this analysis. China's absence is particularly notable, since its large population has a major effect on global-level results.

Views on whether AI will 'mostly help' or 'mostly harm' people in the next 20 years, by experience of discrimination

Have experienced discrimination based on race/nationality, skin colour or gender

| 35 | 21 | 35 | 6 |

Have not experienced discrimination based on race/nationality, skin colour or gender

| 33 | 24 | 32 | 9 |

■ % Mostly help   ■ % Neither   ■ % Don't have opinion   ■ % Mostly harm
■ % Don't know/refused
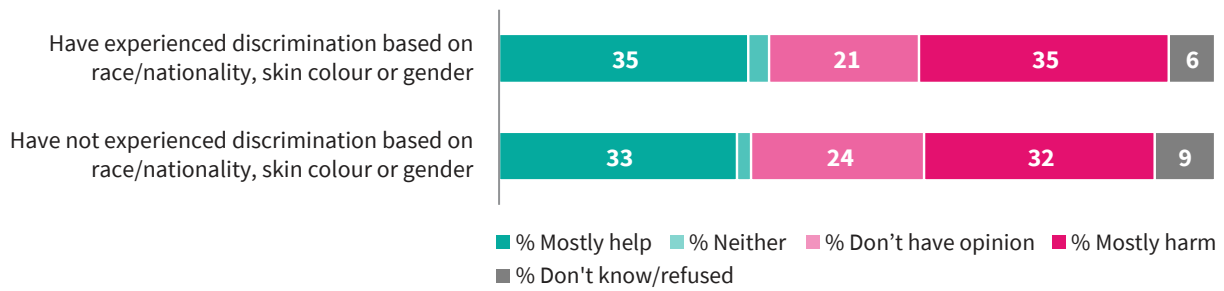
Survey questions: Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years?
Have you, personally, ever experienced any discrimination because of any of the following? The colour of your skin; your ethnic group; your gender.
Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

In some countries, however, experiences with discrimination were associated with more pessimistic views of AI. In 16 countries, the percentage saying AI will mostly harm people in their country was at least 10 points higher among those who had experienced discrimination based on their race/nationality, skin colour or sex than among those who had not. Notably, these include three Northern European countries where overall perceptions of AI were among the most positive in the world: Norway, Denmark and Sweden[30].

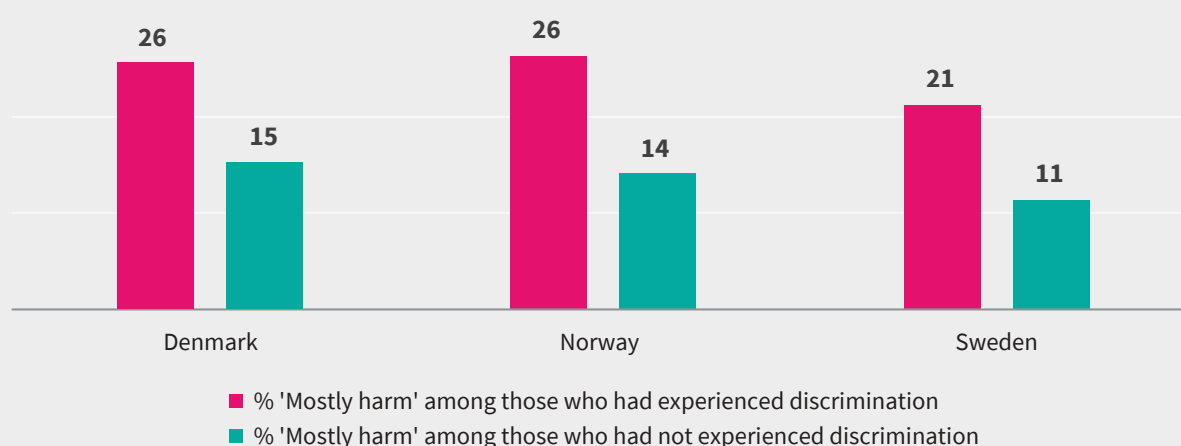30   The remaining countries with differences of at least 10 percentage points were Afghanistan, Mauritius, Slovakia, Ecuador, Vietnam, Peru, Israel, Turkey, Mexico, Nicaragua, Morocco, South Africa and Switzerland.

Groups facing discrimination in Norway, Denmark and Sweden were particularly concerned about AI-related harm.

In Norway, Denmark and Sweden, people who had experienced discrimination due to their race/nationality, skin colour or sex were significantly more likely than those who had not to say AI would mostly harm people in their country in the next 20 years. In all three countries, these differences were driven more by results among people who had faced discrimination based on their race/nationality or skin colour than among those who had faced gender-based discrimination.

Chart 1.6

Percentage who said AI will 'mostly harm' people in the next 20 years, by experience of discrimination

Denmark: 26, 15
Norway: 26, 14
Sweden: 21, 11

- ■ % 'Mostly harm' among those who had experienced discrimination
- ■ % 'Mostly harm' among those who had not experienced discrimination

Survey questions: Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years? Have you, personally, ever experienced any discrimination because of any of the following? The colour of your skin; your ethnic group; your gender.

Each of these countries aspires to be a leader in the development and adoption of AI technology[31,32,33], and their governments have sought to address the ethical issues involved in its use. For example, Norway's National Strategy for Artificial Intelligence highlights the development of 'trustworthy' AI, stating:

'The government wants public debate on the ethical use of AI and on what applications of AI we want to adopt in Norway. Norway has a number of bodies whose mandate is to invite public debate on technology and ethics, such as the Norwegian Data Protection Authority, the Norwegian Board of Technology, and the Norwegian National Committees for Research Ethics[34]'.

31   *The national strategy for artificial intelligence.* (n.d.) Government.no. Retrieved 14 September 2022 from https://www.regjeringen.no/en/dokumenter/nasjonal-strategi-for-kunstig-intelligens/id2685594/?ch=6

32   Data Centers by Sweden. (2018, September 4). Sweden set to become global leader in artificial intelligence. *The Local SE.* https://www.thelocal.se/20180904/swede-set-to-become-global-leader-in-artificial-intelligence-dcbs-tlccu/

33   *National strategy for artificial intelligence.* (2019, March). The Danish Government Ministry of Finance and Ministry of Industry, Business and Financial Affairs. https://en.digst.dk/media/19337/305755_gb_version_final-a.pdf

34   *The national strategy for artificial intelligence.* (n.d.) Government.no. Retrieved 14 September 2022 from https://www.regjeringen.no/en/dokumenter/nasjonal-strategi-for-kunstig-intelligens/id2685594/?ch=6

Awareness of potential bias in AI algorithms may also have been heightened in the region when David Hansson, a high-profile Danish entrepreneur and software developer, tweeted in 2019 that his Apple card granted him 20 times the credit limit his wife received, though they filed tax returns jointly and she had a higher credit score than he did[35]. The tweet went viral, attracting media attention and leading to a regulatory investigation that ultimately cleared Apple and underwriter Goldman Sachs of wrongdoing. However, the incident led others to share similar experiences and sparked a wider debate on the use of AI algorithms to make decisions about access to financial services[36,37].

The World Risk Poll results suggest that as awareness of the potential for discrimination in AI models becomes more prevalent, many people who have experienced discrimination may feel threatened by it — particularly in countries where its use is expanding rapidly in domains that directly affect their lives. Policymakers in these countries face the challenge of addressing such concerns without stifling the innovation needed to realise the full potential of AI-driven applications.

In many countries and regions, regulations that attempt to strike that balance have been adopted or are in development[38]. Perhaps the most prominent is the Artificial Intelligence Act proposed by European Union leaders in 2022, which would regulate AI models that have the potential to result in machine-based discrimination. The EU website created to explain the proposed law cites the possibility that it could become a global standard for AI regulation[39].

Worldwide, 27% would feel safe in self-driving cars; 65% would not.

One potentially transformative application of AI is its use in self-driving cars. Technology companies and auto manufacturers have predicted the widespread adoption of automated driving systems for years[40], and advocates say they could save thousands of lives every year by avoiding many of the crashes caused by human error[41]. However, adoption of autonomous vehicles continues to face formidable barriers, including technological limitations and public concerns about safety[42]. As new techniques — such as reinforcement learning that allows self-driving vehicles to continually improve their performance — lower technological barriers[43], convincing people that self-driving cars are safe may be the more difficult task.

In response to the 2021 World Risk Poll, 27% of people worldwide said they would feel safe being driven in a car without a human driver, while 65% said they would not.

35   Vigdor, N. (2019, November 10). Apple card investigated after gender discrimination complaints. *The New York Times.* https://www.nytimes.com/2019/11/10/business/Apple-credit-card-investigation.html

36   Makortoff, K. (2022, August 7). 'Risks posed by AI are real': EU moves to beat the algorithms that ruin lives. *The Guardian.* https://www.theguardian.com/technology/2022/aug/07/ai-eu-moves-to-beat-the-algorithms-that-ruin-lives

37   Telford, T. (2019, November 11). Apple card algorithm sparks gender bias allegations against Goldman Sachs. *The Washington Post.* https://www.washingtonpost.com/business/2019/11/11/apple-card-algorithm-sparks-gender-bias-allegations-against-goldman-sachs/

38   Engler, A. (2022, February 1). *The EU and U.S. are starting to align on AI regulation.* The Brookings Institution. https://www.brookings.edu/blog/techtank/2022/02/01/the-eu-and-u-s-are-starting-to-align-on-ai-regulation/

39   *The Artificial Intelligence Act.* (n.d.) Future of Life Institute. Retrieved 14 September 2022 from https://artificialintelligenceact.eu/#:~:text=What%20is%20the%20EU%20AI,AI%20to%20three%20risk%20categories

40   Shladover, S. E. (2021, September 25). 'Self-driving' cars begin to emerge from a cloud of hype. *Scientific American.* https://www.scientificamerican.com/article/self-driving-cars-begin-to-emerge-from-a-cloud-of-hype/?amp=true&gclid= CjwKCAjw1ICZBhAzEiwAFfvFhFk86Qmh3MpMEQrBTrlUoz_4_dXqboF7koEqhohch2Yf4gVnYhhynRoC1uUQAvD_BwE

41   Bauman, M. (2017, November 7). *Why waiting for perfect autonomous vehicles may cost lives.* Rand Corporation. https://www.rand.org/blog/articles/2017/11/why-waiting-for-perfect-autonomous-vehicles-may-cost-lives.html

42   *Barriers to autonomous vehicle adoption.* (2021, August 31). Autocrypt. https://autocrypt.io/barriers-to-autonomous-vehicle-adoption/

43   Heaven, W. D. (2022, May 27). The big new idea for making self-driving cars that can go anywhere. *MIT Technology Review.* https://www.technologyreview.com/2022/05/27/1052826/ai-reinforcement-learning-self-driving-cars-autonomous-vehicles-wayve-waabi-cruise/

Chart 1.7

Perceptions of the safety of self-driving cars, global results
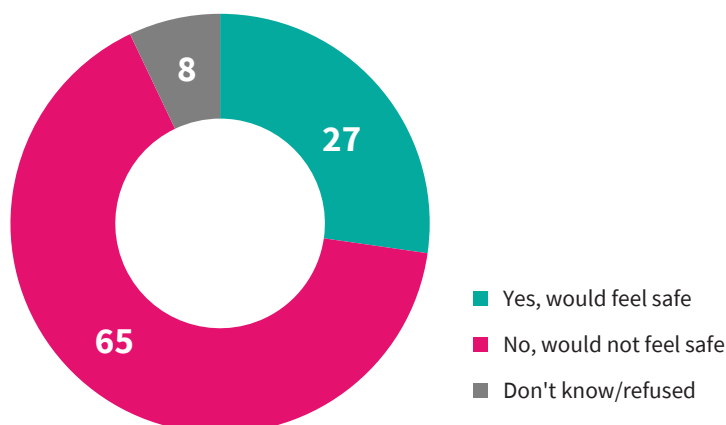
Legend:
- Yes, would feel safe
- No, would not feel safe
- Don't know/refused

Survey question: Suppose that in the next few years we have cars that can drive themselves using a computer system in the car, without a human driving them. Would you feel safe being driven in a car without a human driver, or not?

Though these results varied substantially around the world, more people in each country surveyed said they would not feel safe in a self-driving car than said they would feel safe. Denmark had the highest percentage of people who would feel safe, at 45%. Four of the 10 countries where people were most likely to say they would feel safe (Denmark, Italy, Spain and Sweden) are in Europe; an additional three (the United Arab Emirates, Saudi Arabia and Iran) are in the Middle East.

Notably, Afghanistan was also among the countries where people were most likely to feel safe; however, it also showed one of the largest gender gaps in the world on this question, with 54% of Afghan men saying they would feel safe, versus 34% of women. The difference likely reflects restrictive social norms that deter many Afghan women from driving alone[44].

Table 1.2

Countries where people were most likely to say they would feel safe in a self-driving car

	% Yes, would feel safe
Denmark	45
United Arab Emirates	44
Afghanistan	44
Italy	43
Spain	41
Kyrgyzstan	41
Sweden	40
Saudi Arabia	39
Iran	38
Nepal	38

Survey question: Suppose that in the next few years we have cars that can drive themselves using a computer system in the car, without a human driving them. Would you feel safe being driven in a car without a human driver, or not?

44   Bellingreri, M., & Mamo, A. (2019, August 22). Kabul: 'I want to break the tradition that women can't drive.' *Aljazeera.*
     https://www.aljazeera.com/gallery/2019/8/22/kabul-i-want-to-break-the-tradition-that-women-cant-drive

As with optimism about AI, people with higher levels of educational attainment were most likely to say they would feel safe in a self-driving car — overall, 35% of those with post-secondary education responded this way, versus 28% of those with secondary education and 25% with primary education or less. However, internet access was also independently associated with feeling safe; among people at each educational attainment level, the percentage who said they would feel safe was at least nine percentage points higher among those with internet access than among those without it.

Chart 1.8

Percentage who said they would feel safe in a self-driving car, by education level and access to the internet

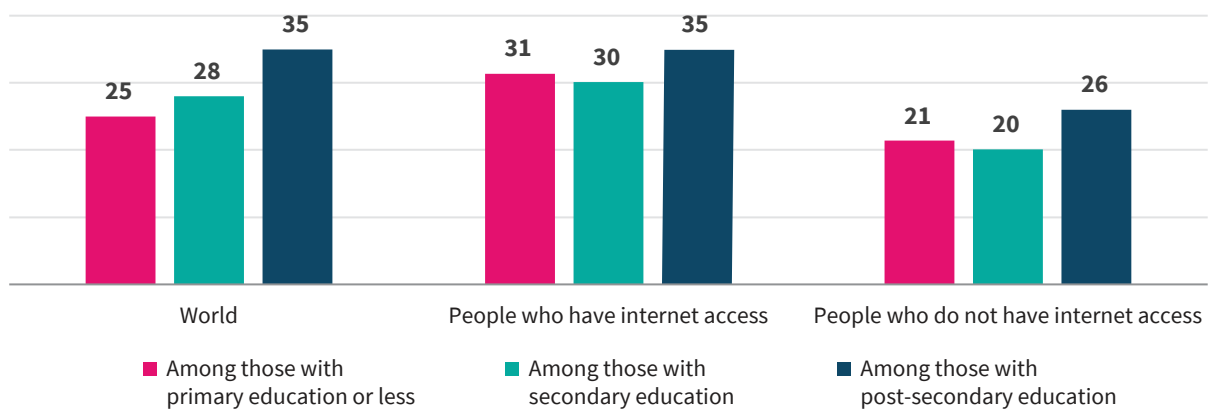|	World	People who have internet access	People who do not have internet access
Among those with primary education or less	25	31	21
Among those with secondary education	28	30	20
Among those with post-secondary education	35	35	26

Survey question: Suppose that in the next few years we have cars that can drive themselves using a computer system in the car, without a human driving them. Would you feel safe being driven in a car without a human driver, or not? Percentage who would feel safe

This finding suggests internet access may play a key role in increasing people's level of comfort with emerging technologies like self-driving cars. Internet use provides exposure to digital technologies and requires people to achieve some level of digital literacy, regardless of their formal education level. That may have important implications for policymakers seeking to promote public acceptance of AI and AI-driven advances as internet access and use continue to spread to more of the world's population.

Chapter 2

Global internet use:
Despite a rise since 2019, the poorest populations remain unconnected

Among the 119 countries and territories surveyed in both the 2019 and 2021 World Risk Polls, the percentage of people who said they had used the internet, including social media, in the past 30 days rose from 54% in 2019 to 63% in 2021. The greatest increases occurred among countries classified by the World Bank as lower-middle-income (from 31% to 41%) and upper-middle-income (65% to 76%) economies. Among low-income countries, however, there was comparatively little increase (20% to 22%).

Chart 2.1

Percentage who had used the internet in the past 30 days, global results by World Bank country income group in 2019 vs. 2021
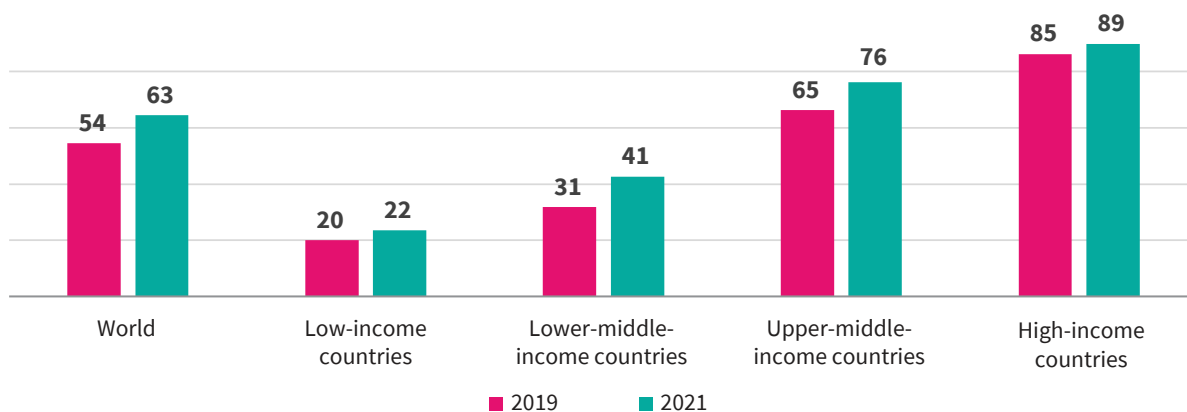
Income group	2019	2021
World	54	63
Low-income countries	20	22
Lower-middle-income countries	31	41
Upper-middle-income countries	65	76
High-income countries	85	89

■ 2019 ■ 2021

Survey question: Have you used the internet, including social media, in the past 30 days on any device, such as a mobile phone, a computer or any other device? Percentage 'yes'

The increase in self-reported internet access is consistent with a late 2021 report from the International Telecommunications Union (ITU) showing strong global growth brought an estimated 782 million additional people online between 2019 and 2021. The report attributes some of the increase to a 'Covid connectivity boost' driven by an increased need for online services and information during the pandemic[45].

However, the ITU report also emphasises that more than a third of the global population remains offline, with most of those people living in less economically developed countries. The 2021 World Risk Poll highlights the extent to which people in the lowest-income regions — including Southern Asia, Eastern Africa and Central/Western Africa — differ from the rest of the world in internet use.

Chart 2.2

Percentage who had used the internet in the past 30 days, by region

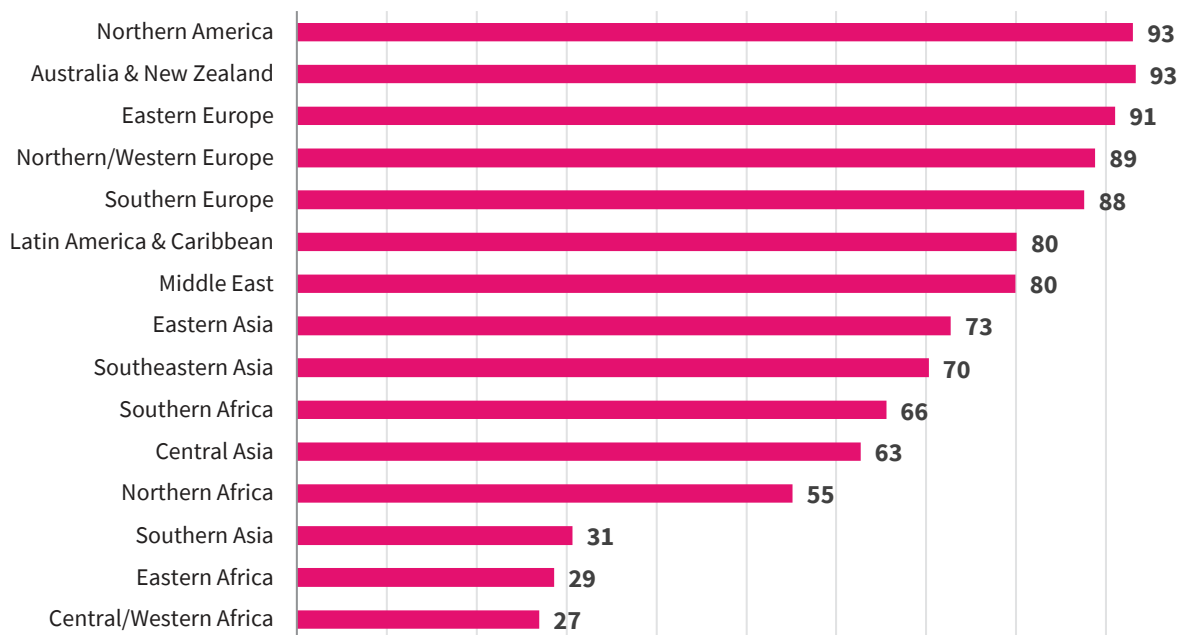| Region	Percentage
Northern America	93
Australia & New Zealand	93
Eastern Europe	91
Northern/Western Europe	89
Southern Europe	88
Latin America & Caribbean	80
Middle East	80
Eastern Asia	73
Southeastern Asia	70
Southern Africa	66
Central Asia	63
Northern Africa	55
Southern Asia	31
Eastern Africa	29
Central/Western Africa	27

Survey question: Have you used the internet, including social media, in the past 30 days on any device, such as a mobile phone, a computer or any other device? Percentage 'yes'

At the global level, internet use remained uneven across several demographic categories, including educational attainment, income, sex and age.
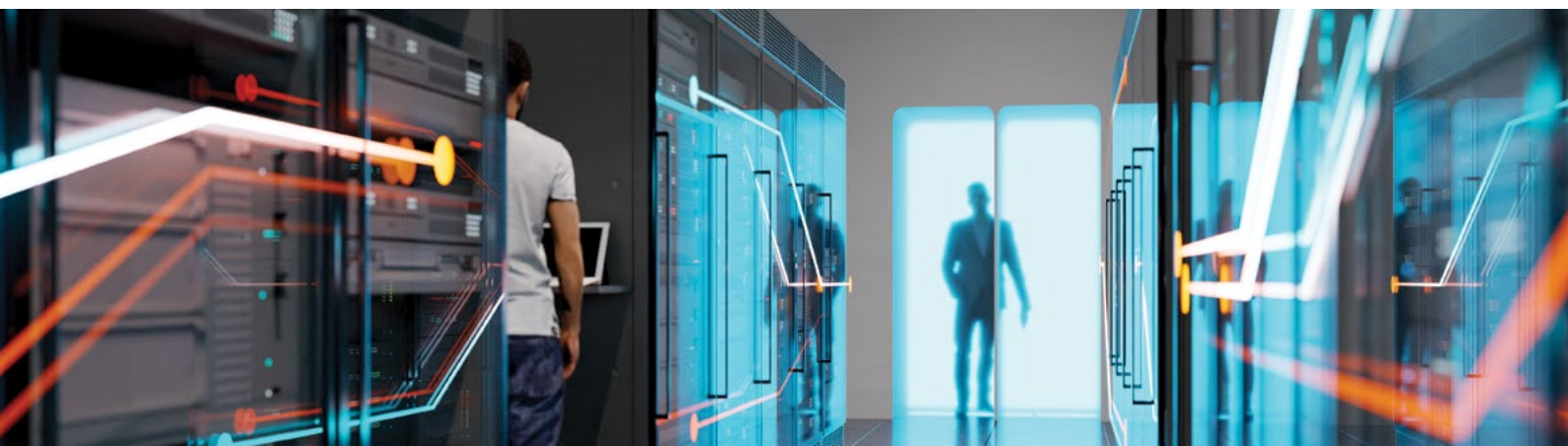
45 *Measuring digital development: Facts and figures 2021.* (2021). International Telecommunications Union.
   https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf

Education and income

Worldwide, people with primary education or less (0-8 years) were much less likely, at 38%, to say they had gone online in the past 30 days than those with secondary (78%) or post-secondary (94%) education. Though access to secondary education has spread rapidly in some regions, the World Risk Poll finds that people with primary education or less still represent a majority in five regions: Southern Asia (65%), Central/Western Africa (57%), Eastern Africa (55%), Eastern Asia (55%) and Northern Africa (53%).

Seventeen percent of people in Southern Asia with primary education or less said they used the internet in the past 30 days, as well as just 12% of those in Eastern Africa and Central/Western Africa.

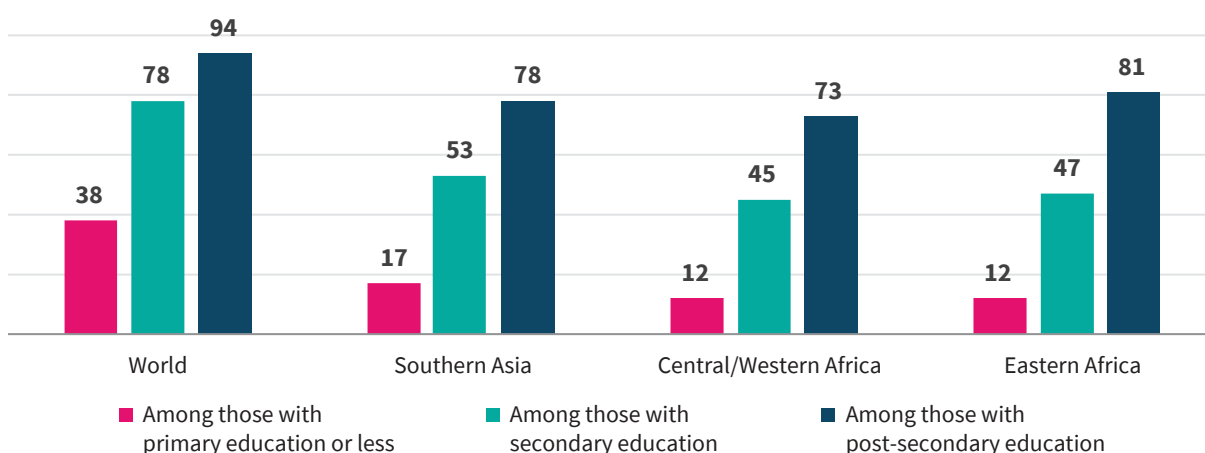### Chart 2.3

Percentage who had used the internet in the past 30 days, by education level

	World	Southern Asia	Central/Western Africa	Eastern Africa
Among those with primary education or less	38	17	12	12
Among those with secondary education	78	53	45	47
Among those with post-secondary education	94	78	73	81

Survey question: Have you used the internet, including social media, in the past 30 days on any device, such as a mobile phone, a computer or any other device? Percentage 'yes'

People with lower education levels typically have less earning power and may be less able to afford the hardware and data plans needed to go online. Globally, about half of those in the lowest income quintile in their country (51%) said they had used the internet in the past month, versus about three-quarters (77%) of those in the top income quintile.

Sex

Across all countries surveyed, 66% of males said they had used the internet in the past 30 days, compared with 59% of females. Regionally, the difference was greatest in Southern Asia, where 42% of males but just 19% of females said they had gone online in the past 30 days. Southern Asia, with its huge populations in India and Pakistan, has a substantial influence on the global results; when the region is excluded, the global gap in internet use narrows to just two points: 74% of males versus 72% of females.

The large gap in Southern Asia is driven in part by differences in educational attainment, as 72% of females in the region have primary education or less, compared with 57% of males. However, sex-based differences also persisted within education groups, highlighting the intersectional disadvantage of less-educated females in the region. Among people in Southern Asia with secondary education, 61% of males had used the internet in the past 30 days versus 43% of females, while among those with primary education or less, the corresponding figures were 25% of males versus 10% of females.

Age

Younger people worldwide remained considerably more likely than their older counterparts to use the internet; at the global level, 71% of those aged 15-29 had gone online in the past 30 days, compared with 46% of people aged 65 and older.

Notably, much of the increase in internet use between 2019 and 2021 occurred among older people. The percentage of those 65 and older who had gone online in the past 30 days rose by 18 points in 2021, compared with a six-point rise among those aged 15-29 or 30-49. Covid-19 may have influenced the rise in internet use among older adults. Recent studies in the United States and Canada found technology usage and adoption of new technologies increased among older adults after the pandemic began[46,47]. Notably, the largest regional increases among seniors were in Eastern Europe, Southeastern Asia, Eastern Asia and Latin America/Caribbean — four regions where less than 20% of seniors reported using the internet prior to the pandemic (in 2019), but where most of the population lived in areas where internet service was accessible.

Chart 2.4

Percentage who had used the internet in the past 30 days, 2019 vs. 2021 by age group
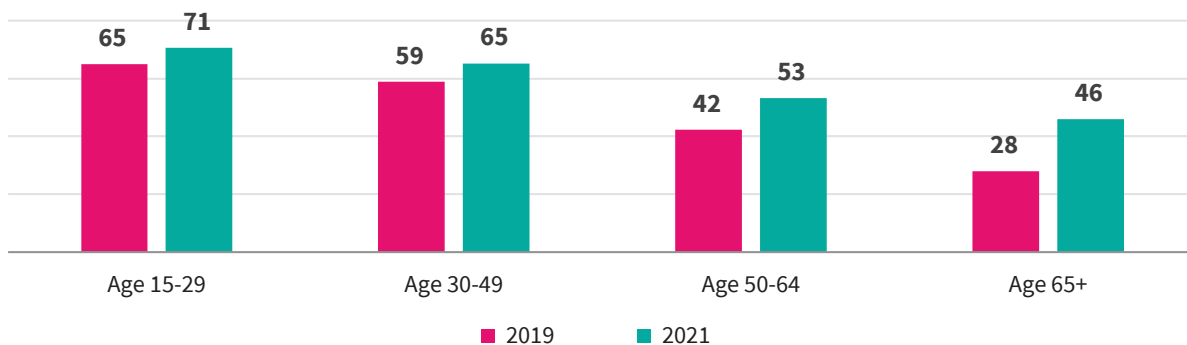
Survey question: Have you used the internet, including social media, in the past 30 days on any device, such as a mobile phone, a computer or any other device? Percentage 'yes'

While the global rise in internet access between the 2019 and 2021 World Risk Polls is welcome news, the results show that access remains rare and stagnant among low-income countries and territories. Concerns about the ethical use of new technologies notwithstanding, one of the greatest risks associated with technology use in the coming years is that the ongoing digital divide will continue to restrict growth opportunities for the world's most poverty-stricken populations, especially women.

Further, as discussed in the 2021 World Risk Poll report *A Resilient World? Understanding Vulnerability in a Changing Climate*, connectivity is an important component of resilient systems that allows vulnerable populations to cope with and adapt to large-scale forms of adversity, such as severe weather events associated with climate change. Among people in low-income countries, those with internet access were significantly more likely than those without to believe they could protect themselves and their families in the event of a disaster — 52% versus 36%, respectively.

46   *Tech usage among older adults skyrockets during pandemic.* (2021, April 21). Cision PR Newswire.
     https://www.prnewswire.com/news-releases/tech-usage-among-older-adults-skyrockets-during-pandemic-301273924.html

47   Haase, K. R., Cosco, T., Kervin, L., Riadi, I., & O'Connell, M. E. (2021). Older adults' experiences with using technology for socialization during the Covid-19 pandemic: Cross-sectional survey study. *JMIR Aging, 4*(2), e28010. https://aging.jmir.org/2021/2/e28010/

Chapter 3

Online data:
Internet users worldwide worry about misuse of personal information

As internet use becomes more widespread in many countries, so do the problems associated with it. Among the most common of these are issues related to data privacy and the protection of personal information online. The 2021 World Risk Poll asked internet users[48] how worried they were about the use of their personal information online — including the possibility that their personal information could be 1) stolen, 2) used by the government without their permission, or 3) used by companies for marketing purposes without their permission.

At least two-thirds of internet users worldwide said they were 'very' or 'somewhat' worried about each possibility, including about two in five people who said they were very worried (Chart 3.1). Internet users were somewhat more likely to worry that their personal information would be stolen (77% very or somewhat worried) or used by companies for marketing purposes (75%) than that it would be used by the government (68%).

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48   In this report, 'internet users' refers to people who said they had used the internet, including social media, in the past 30 days.

Chart 3.1

Concerns among internet users about personal information being online, global results
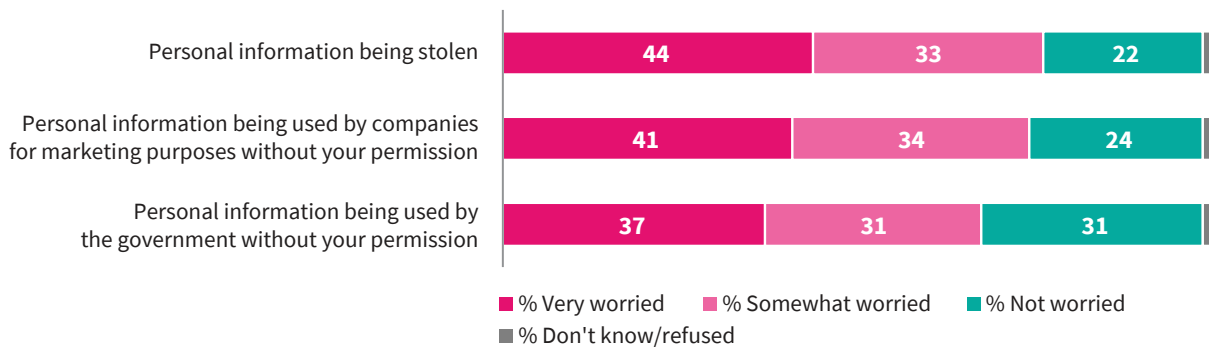
	% Very worried	% Somewhat worried	% Not worried
Personal information being stolen	44	33	22
Personal information being used by companies for marketing purposes without your permission	41	34	24
Personal information being used by the government without your permission	37	31	31

■ % Very worried   ■ % Somewhat worried   ■ % Not worried
■ % Don't know/refused

Survey question: When you use the internet or social media, how worried are you that the following things could happen to your personal information?
Values under 5% not displayed.

Majorities of internet users across five global regions said they were very worried that their personal information would be stolen online: Central/Western, Southern and Eastern Africa, the Latin America/Caribbean region and Southeastern Asia.

Chart 3.2

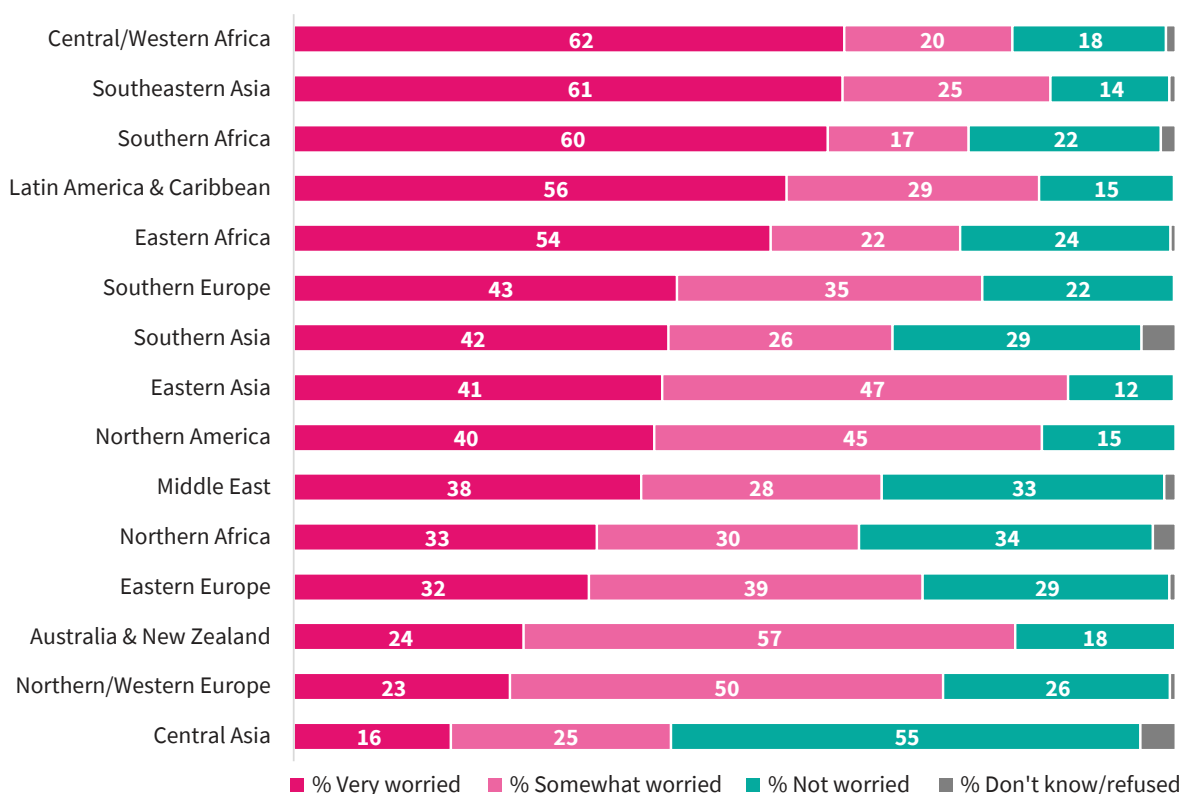## Concerns among internet users about online personal information being stolen, by region

Region	% Very worried	% Somewhat worried	% Not worried	% Don't know/refused
Central/Western Africa	62	20	18	
Southeastern Asia	61	25	14	
Southern Africa	60	17	22	
Latin America & Caribbean	56	29	15	
Eastern Africa	54	22	24	
Southern Europe	43	35	22	
Southern Asia	42	26	29	
Eastern Asia	41	47	12	
Northern America	40	45	15	
Middle East	38	28	33	
Northern Africa	33	30	34	
Eastern Europe	32	39	29	
Australia & New Zealand	24	57	18	
Northern/Western Europe	23	50	26	
Central Asia	16	25	55	

■ % Very worried　■ % Somewhat worried　■ % Not worried　■ % Don't know/refused

Survey question: When you use the internet or social media, how worried are you about [your personal information being stolen]? Due to rounding, percentages may sum to 100% ±1%. Values under 5% not displayed.

Internet users' perceptions of the institutional safeguards and technological capacity to protect people from identity theft and other privacy violations in their country may help explain differences by region and country in concern about the use of personal information online. The percentage very worried that their personal information will be stolen online tended to be higher in countries with weaker rule of law, as measured by the World Justice Project's Rule of Law Index[49].

Countries with stronger adherence to the rule of law are better positioned to protect individuals' online information in a variety of respects. They place more emphasis on the fundamental rights of individuals and have the capacity to enforce legal regulations protecting those rights[50]. Further, stronger rule of law places greater constraints on government power and promotes greater transparency in government[51], making it less likely ruling administrations will seek to use constituents' information in illicit ways. All these attributes are accounted for in the World Justice Project's index.

49　*Rule of law index | Data.* (2021). World Justice Project. https://worldjusticeproject.org/rule-of-law-index/

50　*Rule of law and human rights.* (n.d.). United Nations and the Rule of Law. Retrieved 12 October 2022 from https://www.un.org/ruleoflaw/rule-of-law-and-human-rights/

51　Kouilas, C. (n.d.). *Promote the rule of law to protect citizens and businesses.* United Nations Global Compact. Retrieved 12 October 2022 from https://www.unglobalcompact.org/what-is-gc/our-work/governance/rule-law

Chart 3.3

Relationship between internet users being 'very worried' about their online personal information being stolen and Rule of Law Index scores
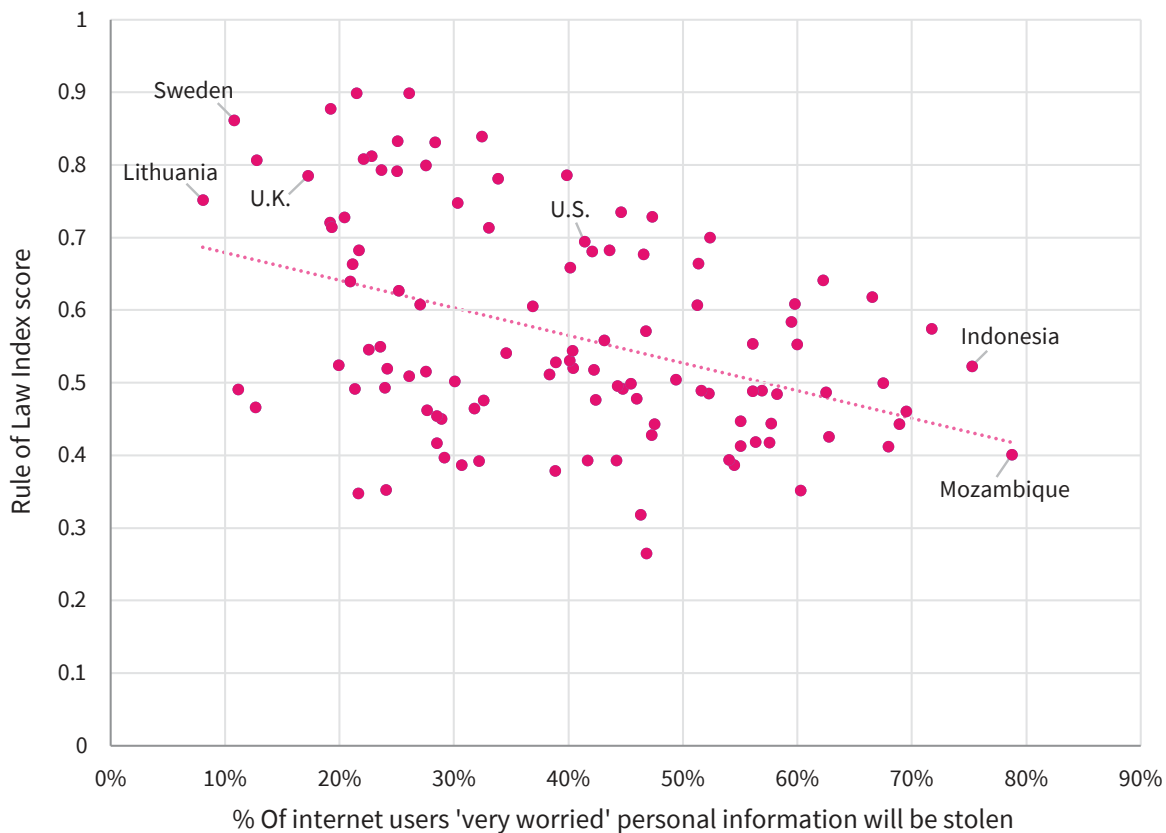
Survey question: When you use the internet or social media, how worried are you about [your personal information being stolen]?

As more social and economic activities move online, governments around the world have taken steps to counter the misuse of personal information. The United Nations Conference on Trade and Development reports that 71% of countries worldwide have passed legislation protecting data and privacy, and an additional 9% have drafted but not yet passed such legislation[52]. However, data protection laws are less common among the 'least developed countries' — those designated by the UN as 'highly disadvantaged in their development process[53]' — at 48%.

Younger and less financially secure people were the most likely to worry about theft of personal information.

At the global level, the percentage of internet users very worried that their personal information would be stolen varied modestly by sex and educational attainment. Women were somewhat more likely than men to be very worried (46% vs. 42%), and people with primary education or less were more likely, at 47%, than those with secondary (44%) or post-secondary (40%) education to respond this way.

There was greater variation by age group. Almost half of internet users under age 50 (46%) said they were very worried about their personal information being stolen versus about one-third (32%) of those 65 and older. Such

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52 *Data protection and privacy legislation worldwide.* (2021, December 14). UNCTAD.
    https://unctad.org/page/data-protection-and-privacy-legislation-worldwide

53 *UN recognition of the least developed countries.* (n.d.). UNCTAD. Retrieved 16 September 2022 from
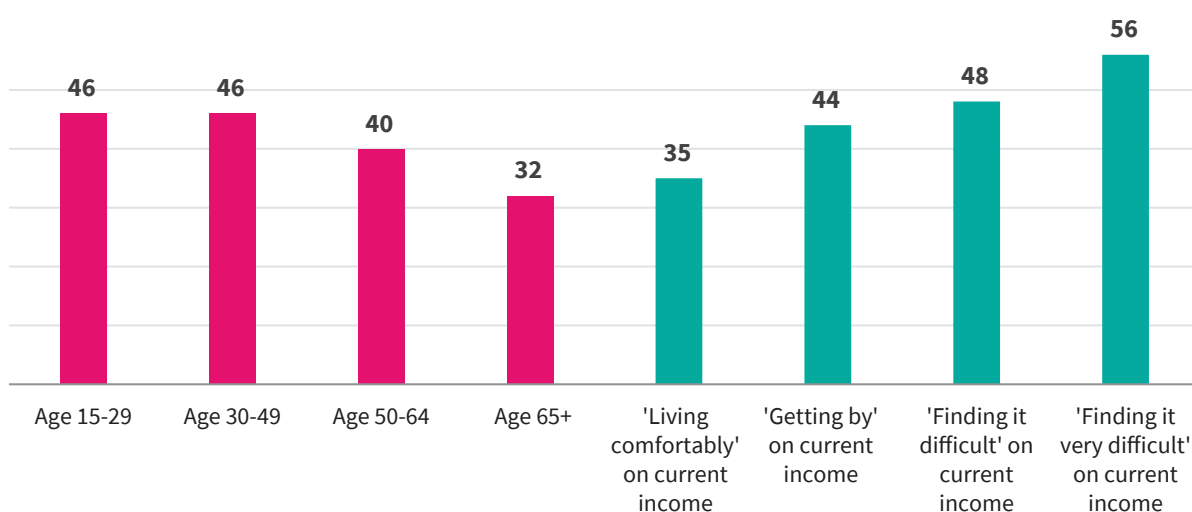   https://unctad.org/topic/least-developed-countries/recognition

concerns being less common among older internet users is notable given that many online scams specifically target seniors[54].

There were also substantial differences by people's sense of financial security. Among internet users worldwide who said they were 'living comfortably' on their current income, 35% were very worried their personal information would be stolen, compared with 56% of those who were 'finding it very difficult' on their current income.

Percentage of internet users 'very worried' about their online personal information being stolen, by age group and feelings about current income

Age 15-29	Age 30-49	Age 50-64	Age 65+	'Living comfortably' on current income	'Getting by' on current income	'Finding it difficult' on current income	'Finding it very difficult' on current income
46	46	40	32	35	44	48	56

Survey question: When you use the internet or social media, how worried are you about [your personal information being stolen]? Percentage 'very worried'

Even in countries with strong data protection laws, people with less financial security may have greater reason to worry about their data being stolen. Identity theft is more likely to have devastating consequences for those struggling to make ends meet if victims lose access to resources like credit, government benefits or utility services[55].

54   *2020 Elder fraud report. (2020).* Federal Bureau of Investigation Internet Crime Complaint Center.
     https://www.ic3.gov/Media/PDF/AnnualReport/2020_IC3ElderFraudReport.pdf
55   Dranoff, S. (2014, December 15). *Identity theft: A low-income issue.* American Bar Association.
     https://www.americanbar.org/groups/legal_services/publications/dialogue/volume/17/winter-2014/identity-theft--a-lowincome-issue/

Worry about the use of personal information by the government or private companies was most common in Central/Western Africa, Southeastern Asia and Southern Africa.

In general, internet users' likelihood of worrying that their personal information will be used by the government or by companies for marketing followed a similar regional pattern as their likelihood of worrying about the theft of their personal information (Chart 3.2). More than half in Central/Western Africa, Southeastern Asia and Southern Africa said they were very worried about use of their personal information by both types of organisations, followed closely by people in Eastern Africa and the Latin America/Caribbean region.

In several regions — most notably Northern America, the Middle East, Australia/New Zealand and Northern/Western Europe — people were more likely to worry about use of their personal information by private companies for marketing purposes than by the government. These results coincide with recent surveys of individual countries in these regions — including Australia[56,57] and the United States — showing that concern about how companies use people's personal data is more widespread than concern about how the government uses them.

Chart 3.5

Percentage of internet users 'very worried' about the government or companies using their online personal information, by region
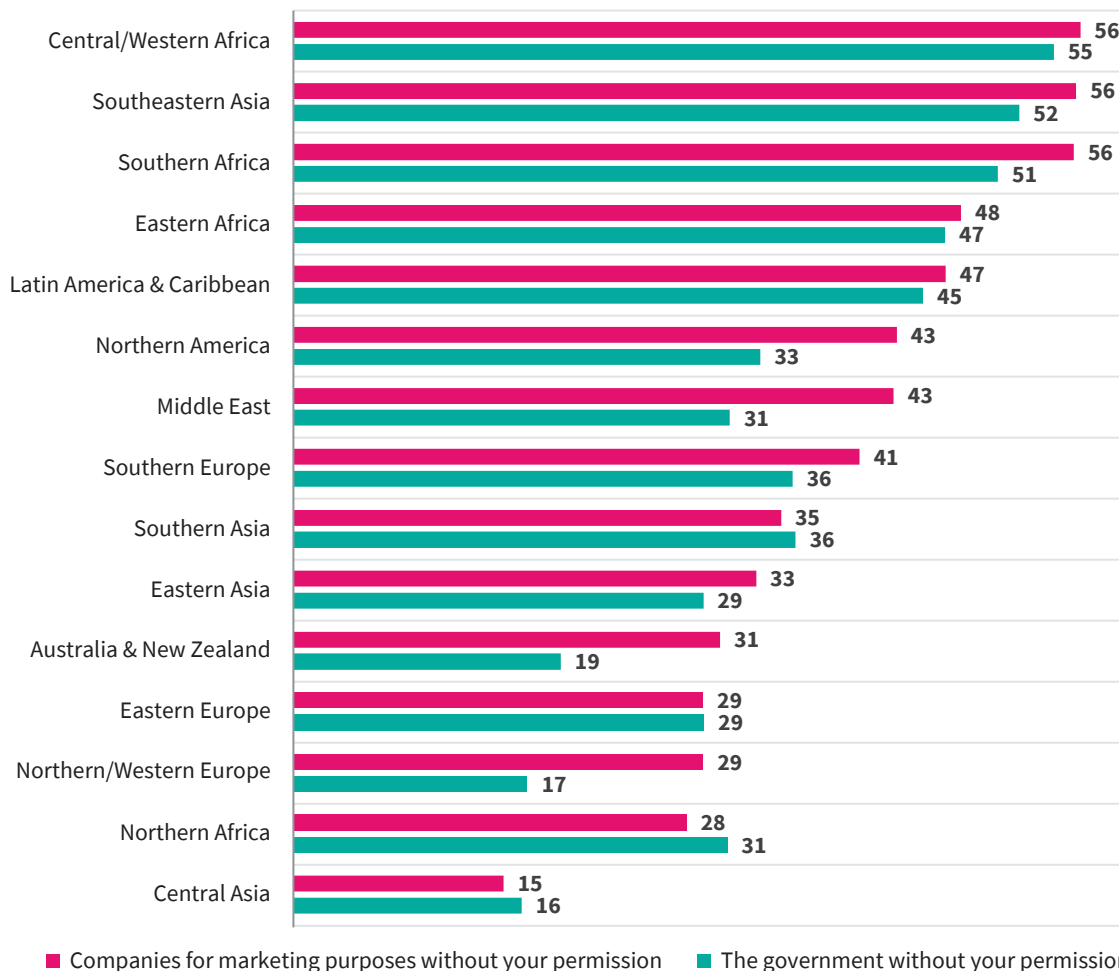
■ Companies for marketing purposes without your permission ■ The government without your permission

Survey question: When you use the internet or social media, how worried are you about [your personal information being used by _____]? Percentage 'very worried'

56 *Companies are misusing our data and there's little we can do.* (2019, November 27). The University of Sydney. https://www.sydney.edu.au/news-opinion/news/2019/11/27/companies-are-misusing-our-data-and-there-s-little-we-can-do.html
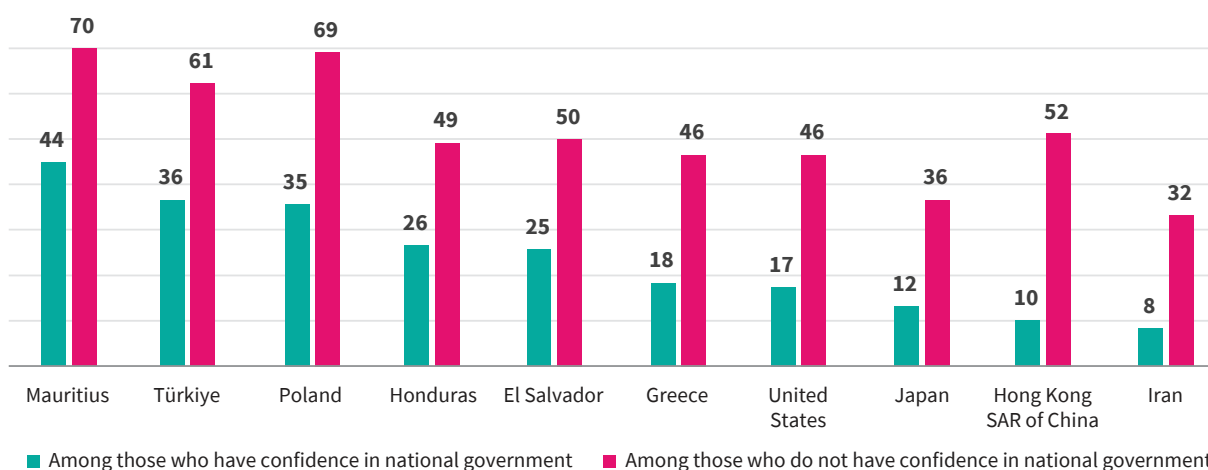
57 Auxier, B., Lee, R., Anderson, M., Perrin, A., Kumar, M., & Turner, E. (2019, November 15). Americans concerned, feel lack of control over personal data collected by both companies and the government. *Pew Research Center.* https://www.pewresearch.org/internet/2019/11/15/americans-concerned-feel-lack-of-control-over-personal-data-collected-by-both-companies-and-the-government/

As might be expected, internet users who lack faith in their government were more likely to worry that it will use their personal information. Globally, 43% of those who said they did not have confidence in their country's national government were very worried that it would use their personal information online, versus 31% of those who did have such confidence. However, the gap was considerably wider in some countries and territories. For example, in Hong Kong SAR of China, many residents harbour mistrust of the Chinese government[58], and in the United States, extreme partisan polarisation fuels low trust in government among members of opposing political parties[59].

Chart 3.6

Percentage of internet users 'very worried' about government use of their online personal information, by confidence levels in their national government

	Mauritius	Türkiye	Poland	Honduras	El Salvador	Greece	United States	Japan	Hong Kong SAR of China	Iran
Among those who have confidence in national government	44	36	35	26	25	18	17	12	10	8
Among those who do not have confidence in national government	70	61	69	49	50	46	46	36	52	32

■ Among those who have confidence in national government   ■ Among those who do not have confidence in national government

Survey question: When you use the internet or social media, how worried are you about [your personal information being used by the government without your permission]? Percentage 'very worried'
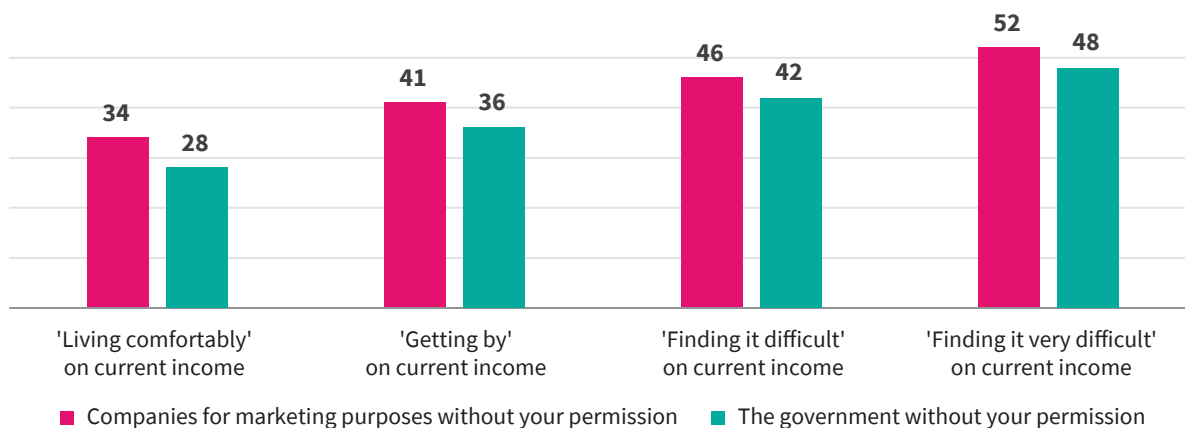
58   Polls show Hong Kong residents' distrust of Chinese vaccines. (2021, January 28). *Reuters.*
     https://www.reuters.com/article/us-health-coronavirus-hongkong/polls-shows-hong-kong-residents-distrust-of-chinese-vaccines-idUSKBN29X10P
59   Babington, C. (2021). Partisan views affect trust in government. *Pew Research Center.*
     https://www.pewtrusts.org/en/trust/archive/summer-2021/partisan-views-affect-trust-in-government

Like concerns about theft of personal information online, worries about its unauthorised use were also more prevalent among people with higher levels of financial insecurity. Among those worldwide who said they were 'finding it very difficult' on their current income, about half were very worried that their information will be used by the government (48%) or by private companies (52%).

Chart 3.7

Percentage of internet users 'very worried' about the government or companies using their online personal information, by feelings about current income

	'Living comfortably' on current income	'Getting by' on current income	'Finding it difficult' on current income	'Finding it very difficult' on current income
Companies for marketing purposes without your permission	34	41	46	52
The government without your permission	28	36	42	48

- Companies for marketing purposes without your permission
- The government without your permission

Survey question: When you use the internet or social media, how worried are you about [your personal information being used by _____]? Percentage 'very worried'

Higher levels of concern about how private companies will use their personal information among those who are struggling financially may in part reflect personal experiences; in some countries, people with low incomes are targets for marketing scams or predatory services such as payday loans[60].
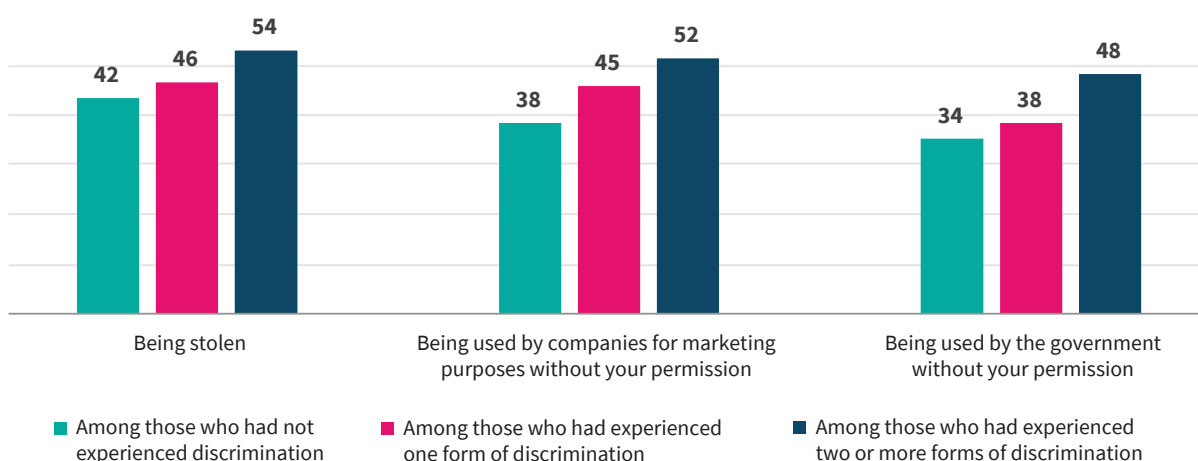
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60 Byrne, C. (2019, March 18). *Trading privacy for survival is another tax on the poor.* Fast Company.
https://www.fastcompany.com/90317495/another-tax-on-the-poor-surrendering-privacy-for-survival

Experiences with discrimination were linked to greater concern about theft and misuse of personal information.

Internet users who said they had experienced discrimination based on their skin colour, race/ethnicity, sex, religion or disability status were more likely to be very worried about all three possible misuses of their private information, than those who had not experienced such discrimination. Further, those who had experienced discrimination based on more than one of these characteristics were more likely to be very worried than those who experienced just one form of discrimination.

Chart 3.8

Percentage of internet users 'very worried' about potential hazards of personal information being online, by experience of discrimination

- Among those who had not experienced discrimination
- Among those who had experienced one form of discrimination
- Among those who had experienced two or more forms of discrimination

Survey question: When you use the internet or social media, how worried are you that the following things could happen to your personal information? Percentage 'very worried'

In many countries and territories, marginalised populations face both discrimination and financial insecurity, the combination of which may make them particularly vulnerable to misuse of their personal information online[61]. Among internet users worldwide who had experienced discrimination and were finding it very difficult on their current income, 64% were very worried their personal information would be stolen online, and 56% were very worried it would be used by the government without their permission.

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61 Madden, M. (2019, April 25). Opinion | The devastating consequences of being poor in the digital age. *The New York Times.* https://www.nytimes.com/2019/04/25/opinion/privacy-poverty.html

Conclusion

The 2021 World Risk Poll highlights a number of factors that may make some social and economic groups in countries and territories around the world more hesitant than others to use internet- or AI-based technologies. Some factors — including fear that they will be discriminated against or that their personal information will be used against them — are particularly relevant to low-income or marginalised groups in many countries.

Policymakers must address such concerns if they are to close the digital divides that threaten to increase and perpetuate income inequality. People and groups who are hesitant to engage with digital technologies — either because they fear negative consequences or because using such technologies seems inconsistent with their beliefs — risk falling further behind people and groups who feel secure in using them to pursue educational and economic opportunities and improve their quality of life.

Appendix 1: Lloyd's Register Foundation World Risk Poll questionnaire

1. **Have you used the internet, including social media, in the past 30 days on any device, such as a mobile phone, a computer or any other device?**

Yes	No	(DK)	(Refused)
1	2	98	99

(If code 1 in Q1, Continue; Otherwise, Skip to Q3)

2. **When you use the internet or social media, how worried are you that the following things could happen to your personal information - very worried, somewhat worried, or not worried? How about your personal information…?**
(Read Items)
(Programmer: Randomize Items)

		Very worried	Somewhat worried	Not worried	(DK)	(Refused)
2A	Being stolen	1	2	3	98	99
2B	Being used by the government without your permission	1	2	3	98	99
2C	Being used by companies for marketing purposes without your permission	1	2	3	98	99

3. **Suppose that in the next few years we have cars that can drive themselves using a computer system in the car, without a human driving them. Would you feel safe being driven in a car without a human driver, or not?**

	CIRCLE ONE RESPONSE:
Yes, would feel safe	1
No, would not feel safe	2
(DK)	98
(Refused)	99

4. **These days, there are machines or robots that can think and make decisions on their own, often known as artificial intelligence. Do you think artificial intelligence will mostly HELP or mostly HARM people in this country in the next 20 years? If you don't have an opinion about this, please just say so.**

Mostly help	Mostly harm	Don't have opinion	(Neither)	(DK)	(Refused)
1	2	3	4	98	99

Appendix 2: Regions

2021 World Risk Poll regions and countries

Australia & New Zealand	Australia; New Zealand
Central Asia	Armenia; Georgia; Kazakhstan; Kyrgyzstan; Tajikistan; Uzbekistan
Central/Western Africa	Benin; Burkina Faso; Cameroon; Congo Brazzaville; Gabon; Ghana; Guinea; Ivory Coast; Mali; Nigeria; Senegal; Sierra Leone; Togo
Eastern Asia	China; Hong Kong SAR of China; Japan; Mongolia; South Korea; Taiwan
Eastern Africa	Kenya; Mauritius; Mozambique; Tanzania; Uganda; Zambia; Zimbabwe
Eastern Europe	Bulgaria; Czech Republic; Hungary; Kosovo; Moldova; Poland; Romania; Russia; Slovakia; Ukraine
Latin America & Caribbean	Argentina; Bolivia; Brazil; Chile; Colombia; Costa Rica; Dominican Republic; Ecuador; El Salvador; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Uruguay; Venezuela
Middle East	Iran; Iraq; Israel; Jordan; Lebanon; Saudi Arabia; Türkiye; United Arab Emirates
Northern/Western Europe	Austria; Belgium; Denmark; Estonia; Finland; France; Germany; Iceland; Ireland; Latvia; Lithuania; Netherlands; Norway; Sweden; Switzerland; United Kingdom
Northern Africa	Algeria; Egypt; Morocco; Tunisia
Northern America	Canada; United States
Southern Asia	Afghanistan; Bangladesh; India; Nepal; Pakistan; Sri Lanka
Southeastern Asia	Cambodia; Indonesia; Laos; Malaysia; Myanmar; Philippines; Singapore; Thailand; Vietnam
Southern Africa	Namibia; South Africa
Southern Europe	Albania; Bosnia Herzegovina; Croatia; Cyprus; Greece; Italy; Malta; North Macedonia; Portugal; Serbia; Slovenia; Spain

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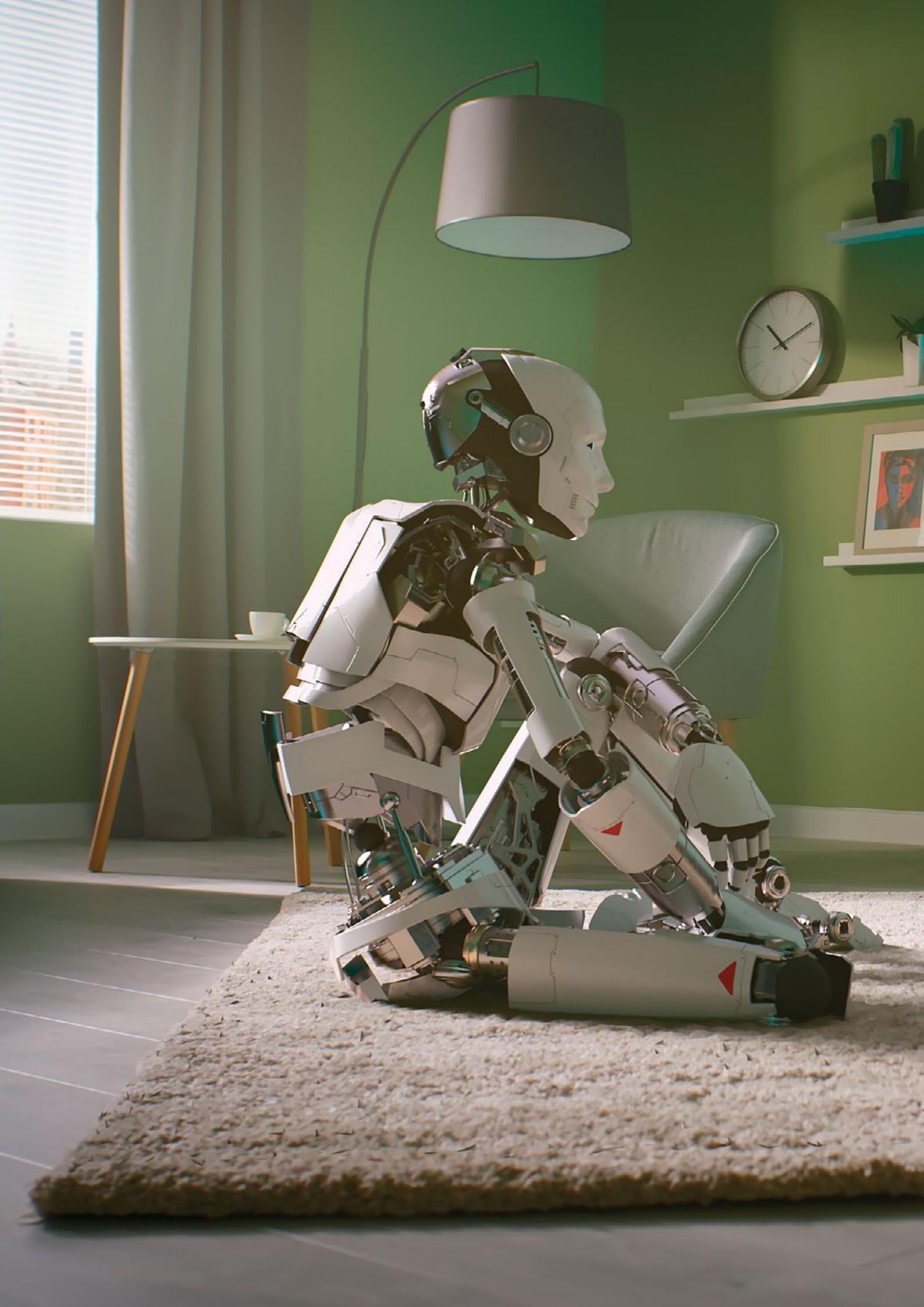Kouilas, C. (n.d.). *Promote the rule of law to protect citizens and businesses.* United Nations Global Compact. Retrieved 12 October 2022 from https://www.unglobalcompact.org/what-is-gc/our-work/governance/rule-law

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