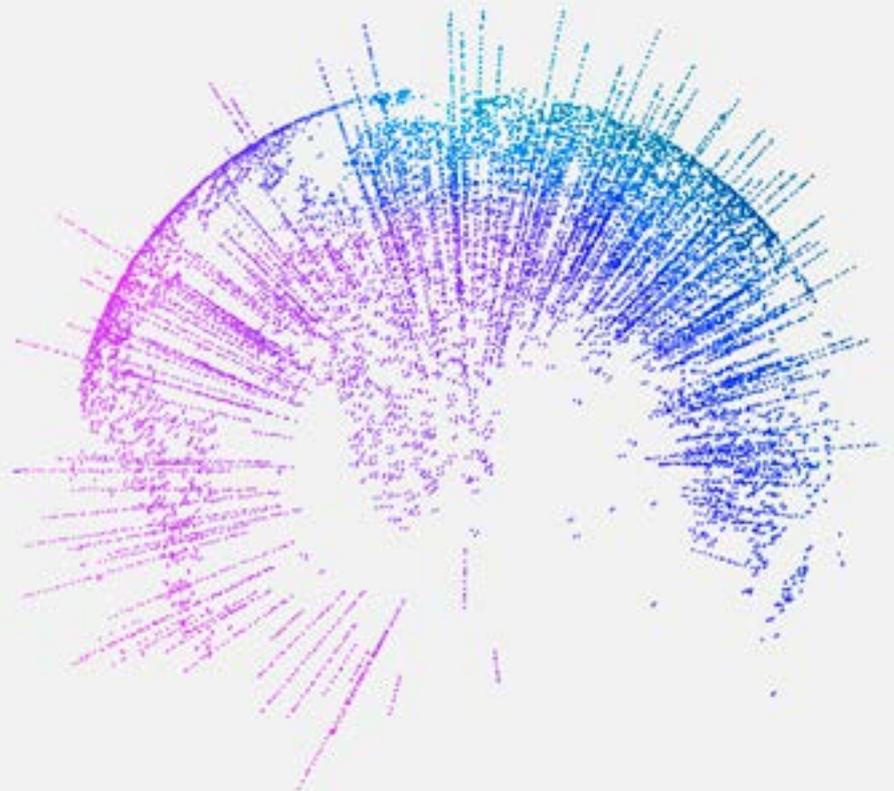




Trust in Artificial Intelligence

A five country study



March 2021

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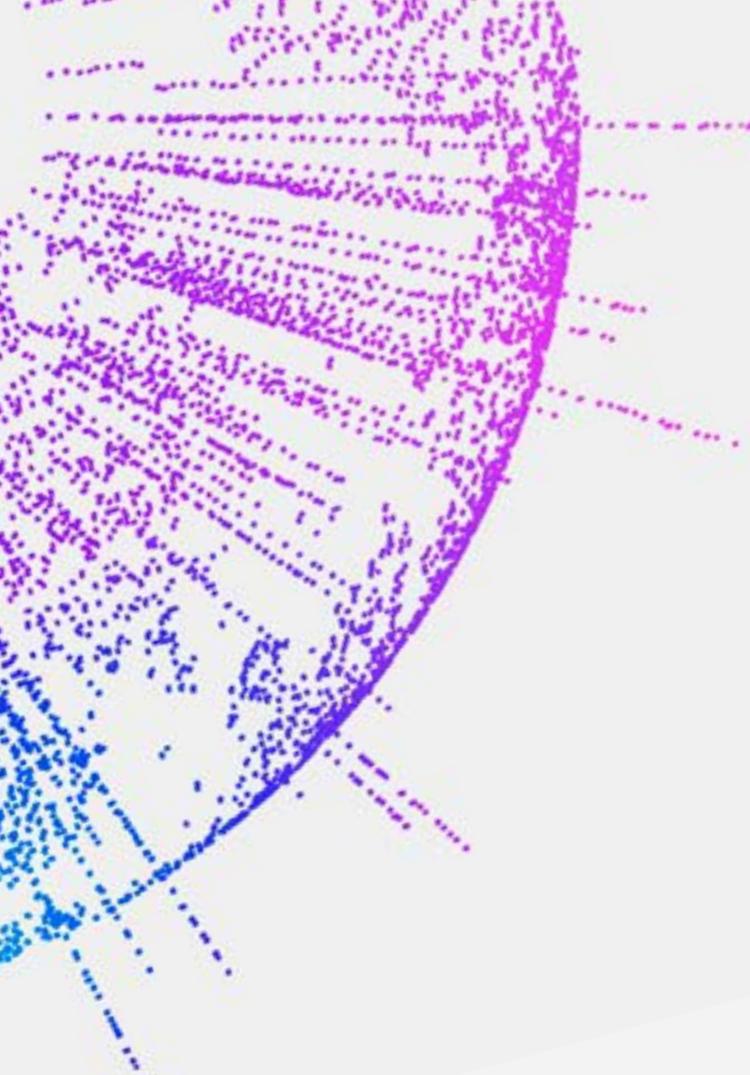
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Executive summary

Artificial Intelligence (AI) is enabling rapid innovation with many potential benefits for society and business. The COVID-19 pandemic has accelerated the uptake of advanced technology, and investment in AI continues to grow exponentially¹.

Realising the benefits AI offers requires building and maintaining the public's trust: citizens need to be confident AI is being developed and used in an ethical and trustworthy manner². AI poses considerable risks and challenges to society which have raised concerns about whether AI systems are worthy of trust. These concerns have been fuelled by high profile cases of AI use that were biased, discriminatory, manipulative, unlawful, or violated human rights.

This survey is the first to take a deep dive into understanding citizen trust and expectations of AI use across multiple countries. To do this, we surveyed a nationally representative sample of 1,200+ citizens from the United States, Canada, Germany, the United Kingdom and Australia, respectively (total sample 6,054). We asked about AI systems in general, as well as AI systems in two domains – healthcare and human resources – where AI is rapidly being deployed and is likely to impact large numbers of citizens.

Our findings provide important and timely research insights into citizens' trust and attitudes towards AI. We draw on these insights to lay out an evidence-based pathway for strengthening trust and acceptance of AI systems, and discuss the implications for government, business and non-government organisations (NGOs).

Below, we summarise the key findings. Most of these findings hold across all countries and therefore are reported in aggregate form. Significant country differences in the findings are highlighted.



Trust is central to the acceptance of AI, and is influenced by four key drivers

Our results confirm that trust strongly influences AI acceptance, and hence is important for the societal uptake of AI and realising its benefits. There are four key drivers that influence citizens' trust in AI systems: 1) beliefs about the adequacy of current regulations and laws to make AI use safe, 2) the perceived impact of AI on jobs, 3) familiarity and understanding of AI, and 4) the perceived uncertain impact of AI on society. These drivers are important across all five countries.

Of these drivers, the perceived adequacy of current regulations and laws is clearly the strongest. This highlights the importance of ensuring adequate regulatory and legal mechanisms are in place to protect people from the risks associated with AI use. Such regulation in turn supports citizen uptake and adoption.



Citizens have low trust in AI systems but generally 'accept' or 'tolerate' AI

Trust in AI is low across the five countries, with citizens generally wary or ambivalent about trusting AI systems. Only about a quarter (28%) of citizens are willing to trust AI systems in general. Two out of five citizens are unwilling to share their information or data with an AI system and a third are unwilling to trust the output of AI systems (e.g. a recommendation or decision). While many citizens are hesitant to trust AI systems, they generally accept (42%) or tolerate (28%) AI, but few approve (15%) or embrace (6%) it, and some outright reject AI (9%).

Citizens' trust and support of AI depends on the purpose of the AI system: the public is more trusting and supportive of AI use in healthcare (i.e. for aiding medical diagnosis and treatment), and less trusting and supportive of AI use in human resources (i.e. for aiding hiring and promotion decisions). Citizens also view the benefits of AI in healthcare as greater than the risks, whereas they view the risks of AI in human resources as greater than the benefits. However, regardless of the application, citizens are still wary with the majority unwilling or ambivalent about trusting AI in both healthcare (63%) and human resources (77%).

Younger generations, notably Gen Z and Millennials, are generally more trusting and accepting of AI systems than older generations. In Germany and Australia, those with a university education are also more accepting of AI than those without a degree.



Confidence in entities to develop, use and regulate AI varies across countries

Citizens have the most confidence in their national universities and research institutions, as well as their defence organisations, to develop and use (71-77%) and regulate and govern AI (67-73%) in the best interest of the public. In contrast, citizens have less confidence in governments and commercial organisations to do this. 58% – 62% have confidence in commercial organisations and government to develop and use AI, and 54 – 58% have confidence in these entities to regulate and govern AI. This may be because most citizens believe commercial organisations (62%) and government (52%) innovate with AI for financial gain, rather than for societal benefit.

Countries differ in their confidence of entities to use and govern AI. Americans are less confident in a broad range of entities to regulate and govern AI, compared to citizens in other countries. US and UK respondents are also less confident in their governments to develop and use AI in the public's best interest compared to other countries, a finding that mirrors the lower trust these countries have in their governments more generally. In contrast, Australians are more confident in their research institutions and defence forces to develop, use and regulate AI.



Citizens expect AI to be regulated with external, independent oversight

The large majority of citizens (81 %) expect AI to be regulated. While there are small country differences, there is general agreement (61-62 %) that there should be a new, dedicated independent AI regulator, and that government and existing regulators should play a role in the regulation of AI systems. Co-regulation and involvement of industry that develop or use AI is also seen as desirable by the majority (54-59%).

US respondents are less likely than respondents in other countries to report that government and existing regulators should regulate AI, and more likely to believe AI regulation is not required. In contrast, UK respondents are more likely to expect a new, dedicated, independent AI regulator than other countries.



Current safeguards are insufficient given the uncertainty around AI

Despite the strong expectations of AI regulation, most citizens (67%) across the five countries either disagree or are ambivalent that current regulations and laws are sufficient to make the use of AI safe. This powerfully highlights the importance of strengthening and communicating the regulatory and legal framework governing AI (including data privacy laws) across all surveyed countries.

Most citizens (66-79%) in each country believe the impact of AI on society is uncertain and unpredictable. It is therefore not surprising that the large majority (96%) expect AI governance challenges to be carefully managed. The public view data challenges such as surveillance (61%), fake online content (60%), cyber-attacks (60%), and data privacy (59%) to be the most likely to impact large numbers of citizens within their country in the next 10 years. Half also viewed disease misdiagnosis as likely to impact society.



Citizens expect organisations to uphold the principles of trustworthy AI

Citizens in each country have very clear expectations of the principles and related practices they expect organisations deploying AI systems to uphold in order to be trusted. These principles mirror those proposed by the European Commission's High Level Expert Group on AI. Almost all citizens (95%) expect AI systems to meet high standards of:

- performance and accuracy
- data privacy
- security and governance
- transparency and explainability
- accountability
- risk and impact mitigation
- fairness
- human oversight

Most citizens (more than 57%) would be more willing to use AI systems if assurance mechanisms were in place, such as independent AI ethics reviews, AI ethics certifications, national standards for transparency, and AI codes of conduct. Organisations can directly build trust and consumer willingness to use AI systems by supporting and implementing these mechanisms.



Citizens feel comfortable with some but not all uses of AI at work

Only about one in five citizens (22%) believe AI will create more jobs than it will eliminate. Despite this, 45% of employed citizens report using AI in their work, but most use AI rarely or occasionally. Most citizens (70-76%) are comfortable with the use of AI at work for the purposes of task automation and augmentation. However, they are less comfortable with the use of AI for employee-focused activities, such as monitoring and evaluating employees, or in recruitment and selection.



Citizens want to know more about AI but currently have low awareness and understanding of AI and its uses

Most citizens (62%) have heard about AI. However, three out of every five citizens report a low understanding of AI, including how and when it is used in everyday applications. For example, even though 76% of citizens use social media, only 41% are aware social media uses AI. Men and the university-educated are more likely to be aware of AI and understand when it is being used. The good news is that most citizens across all countries (83%) want to know more about AI. Considered together, the results suggest there is a strong need and appetite for a public AI literacy program.



A pathway to strengthen public trust in AI

Collectively these survey insights provide an evidence-based pathway for building and maintaining the trust and acceptance of AI systems by citizens of western nations. As we discuss in detail in the concluding section, this pathway requires government and business to take action by: 1) living up to citizens' expectations of trustworthy AI, 2) strengthening the regulatory framework for governing AI, and 3) enhancing AI literacy of the public and employees.

The survey insights are relevant for informing AI policy and practice within business, government, and NGOs at the national level, as well as multinational and pan-governmental AI policy and practice (e.g. the Global Partnership on AI). Resources are available to support organisations to embed the principles and practices of trustworthy AI into their everyday operations, and put in place mechanisms that support stakeholder trust in their use of AI³.

Given the rapid investment and deployment of AI, it will be important to regularly re-examine public trust and expectations of AI systems as they evolve over time, to ensure AI use is aligned with and meeting societal expectations.

Introduction

Artificial Intelligence (AI) is an increasingly ubiquitous part of our everyday lives and is transforming the way we live and work⁴.

AI is used in a range of applications, such as calculating the best travel route to take in real-time, predicting what customers will buy, identifying credit card fraud, helping diagnose disease, identifying people from photos, and enabling self-driving vehicles. All sectors of the global economy are embracing AI. In the words of Klaus Schwab, Chairman of the World Economic Forum, we are entering a fourth industrial revolution characterised 'by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres'⁵.



What is AI?

Artificial Intelligence (AI) refers to computer systems that can perform tasks or make predictions, recommendations or decisions that usually require human intelligence. AI systems can perform these tasks and make these decisions based on objectives set by humans but without explicit human instructions (OECD, 2019).

The benefits and promise of AI for society and business are undeniable. AI is helping people make better predictions and informed decisions, enabling innovation, productivity gains and improved efficiency, and lowering costs. It is helping protect physical and financial security and facilitating the global fight against COVID-19, to name just a few of its beneficial applications.

The risks and challenges that AI poses for society are equally undeniable. These include the risk of codifying and reinforcing unfair biases, infringing on human rights such as privacy, spreading fake online content, technological unemployment and the dangers stemming from mass surveillance technologies, critical AI failures and autonomous weapons. These issues are causing public concern and raising questions about the trustworthiness and regulation of AI systems⁶.

The public's trust in AI technologies is vital for continual acceptance. If AI systems do not prove to be worthy of trust, their widespread acceptance and adoption will be hindered, and the potentially vast societal and economic benefits will not be fully realised⁷.

Despite the central importance of trust, to date little is known about citizens' trust in AI or what influences it across countries. Prior public attitude surveys⁸ have instead examined general acceptance and support. In 2020, we conducted the first deep dive survey examining Australians' trust in AI systems (Lockey, Gillespie & Curtis, 2020). This report extends this deep dive on trust in AI by examining citizen perspectives across five nation states: the United States, Canada, Germany, the United Kingdom and Australia.

This multi-country survey is designed to understand and quantify citizens' trust in and support of AI, to benchmark these attitudes over time, as well as explore similarities and differences in trust and expectations across five western countries. Understanding similarities and differences across countries is important given AI systems are not bounded by physical borders and are rapidly being deployed and used across the globe. By taking this deep dive into the question of trust, this research provides a comprehensive and nuanced understanding of US, Canadian, German, UK and Australian citizens' trust in AI systems. The research provides insights into the key drivers of trust, community expectations and confidence in the regulation of AI and management of societal challenges associated with AI. It also sheds light on citizens' current understanding and awareness of AI, and the practices and principles citizens expect organisations to use to responsibly design, develop, deploy and govern AI in society and the workplace.

How we conducted the research

We collected data in each country using research panels. This approach is commonly used in survey research to recruit groups of people who are representative of a national population.

Our total sample included 6,054 respondents. The sample size across countries ranged from 1,200 to 1,229 respondents, with each sample nationally representative of the United States (USA), Canadian, German, United Kingdom (UK), and Australian populations on gender⁹, age and location matched against each country's census data.

All data was collected in 2020, with data from the USA, Canada, Germany and the UK collected from mid-November to mid-December, and Australian¹⁰ data from late June to late July 2020. Surveys in Germany were administered in German, and Canadian respondents could opt to complete in English or French. To ensure survey equivalence, surveys were translated and back translated into German and French.

We conducted statistical analyses to examine differences between countries. Where findings are common across countries, we report aggregated results. Where significant and meaningful differences were found between countries, we report country-level data. We also report country-level data on citizen trust. Further details of the methodology and statistical procedures are detailed in Appendix 1.

Who completed the survey?

Demographic details for the total sample are summarised here. The demographic profile for each country is reported in Appendix 2.

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Country Sample



1,223

USA



1,229

Canada



1,202

Germany



1,200

UK



1,200

Australia

Gender



51%

Female



49%

Male

Age Groups

6%

Generation Z
(18 – 23)

32%

Millennial
(24 – 39)

28%

Generation X
(40 – 55)

30%

Baby
Boomer
(56 – 74)

4%

Silent
Generation
(75 – 89)

Area of Residence



57%

Metropolitan



43%

Regional or Rural

Education



42%

University
education



58%

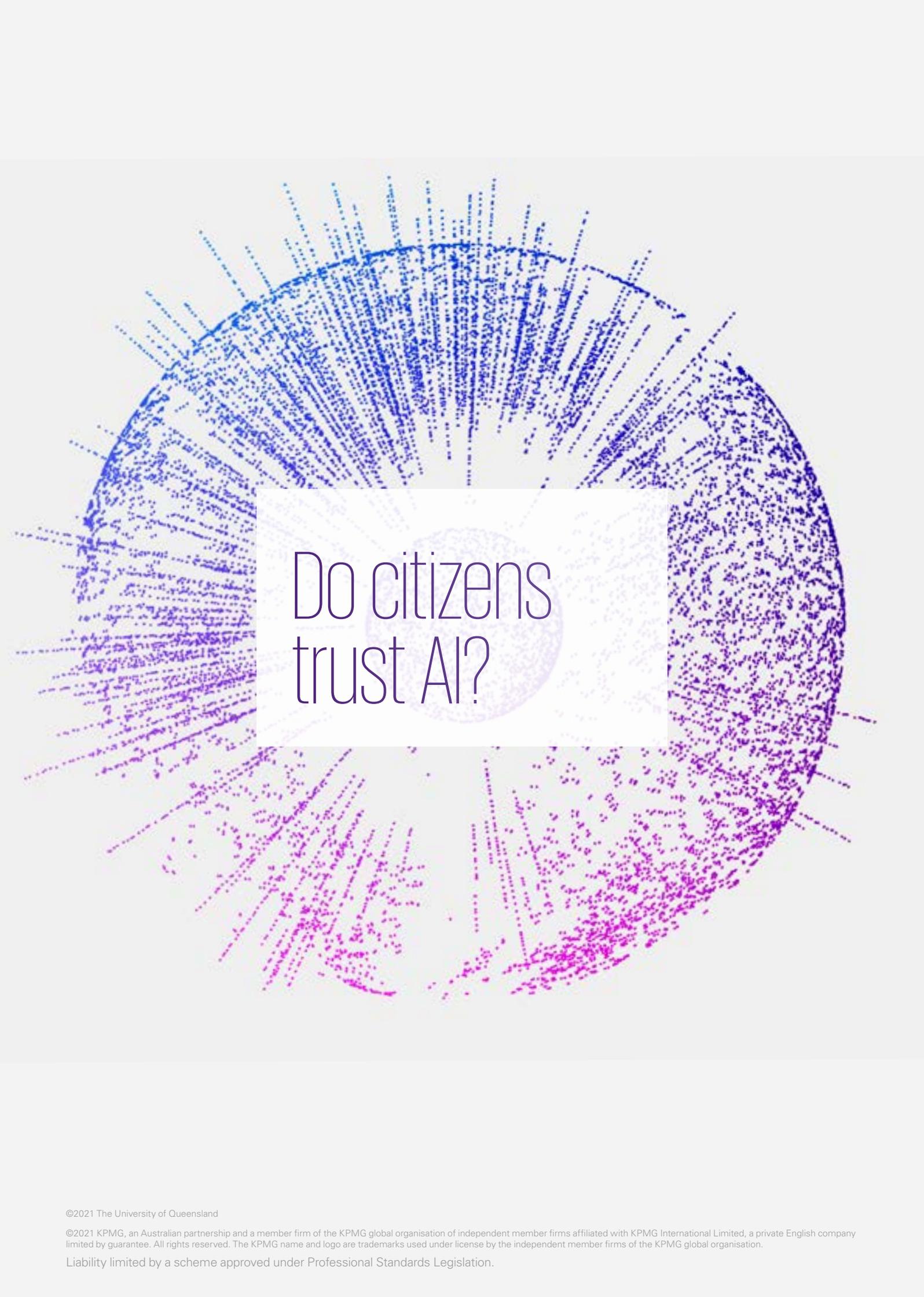
No university
education



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Do citizens trust AI?



To answer this question, we asked citizens how much they trust, accept and support AI in general, as well as two specific applications – Human Resource AI used to inform decisions about hiring and promotion, and Healthcare AI used to inform decisions about how to diagnose and treat patients (see Appendix 1).

Most people are unwilling or ambivalent about trusting AI systems

Most citizens across the five countries are wary about trusting in AI system. As shown in Figure 1 (top chart), over a third indicate they are unwilling to trust AI systems in general and about a third report ambivalence. Only about a quarter report they are willing to trust AI systems in general.

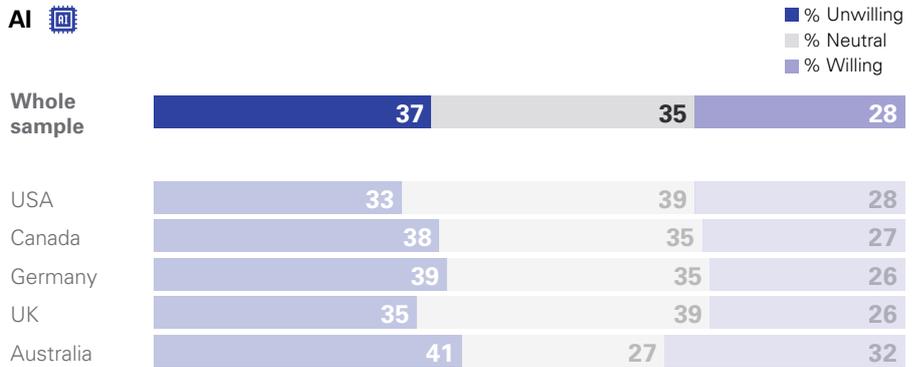
As shown in Figure 1, citizen trust is influenced by the specific AI application. Citizens are more trusting of the use of AI in healthcare and less trusting of AI use in human resources¹¹. Overall, most citizens report being unwilling or ambivalent about trusting AI in healthcare (63%) and HR (77%).

There are no significant differences between countries in willingness to trust AI systems in general. However, Australian citizens are less trusting of Human Resource AI than US citizens (mean 3.3/7 vs 3.7), and Healthcare AI than Canadian citizens (mean 3.8 vs 4.1).

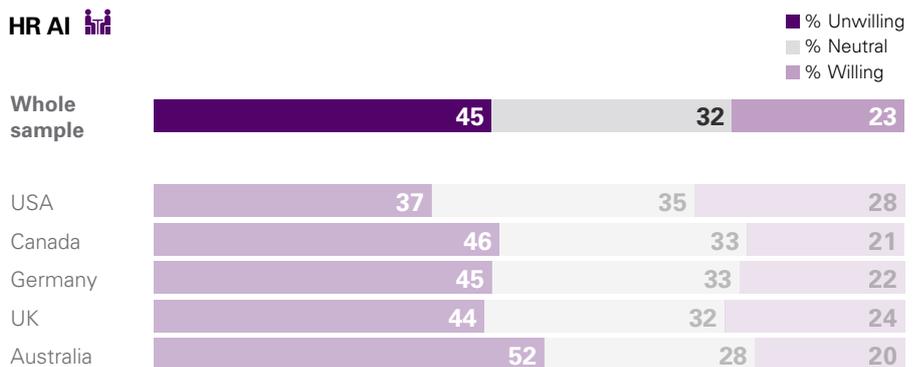
Figure 1. Willingness to trust AI systems

'How willing are you to: rely on information provided by an AI system / share information with an AI system' [8 questions]

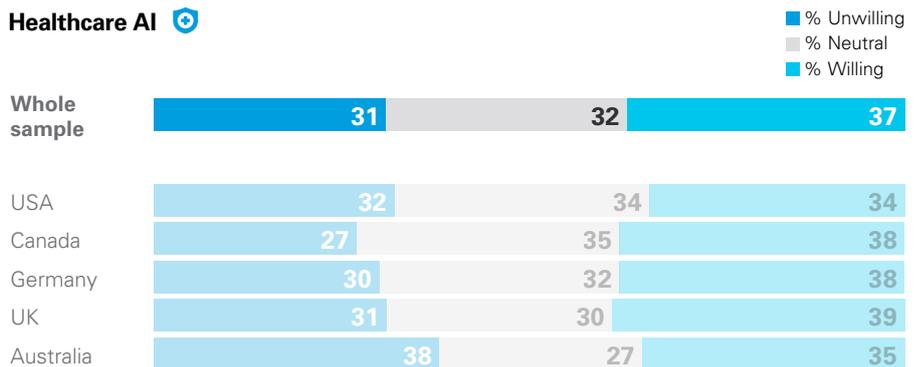
AI



HR AI



Healthcare AI



Unwilling = 'Completely unwilling', 'Unwilling', 'Somewhat unwilling'
 Neutral = 'Neither willing nor unwilling'
 Willing = 'Somewhat willing', 'Willing' or 'Completely willing'

We drilled down to examine two key ways that trust manifests: reliance and information sharing.



Reliance

Assesses people's willingness to rely on an AI system's output, such as a recommendation or decision (i.e. to trust that it is accurate). If people are not willing to rely on AI system output, the system will not be used.



Information sharing

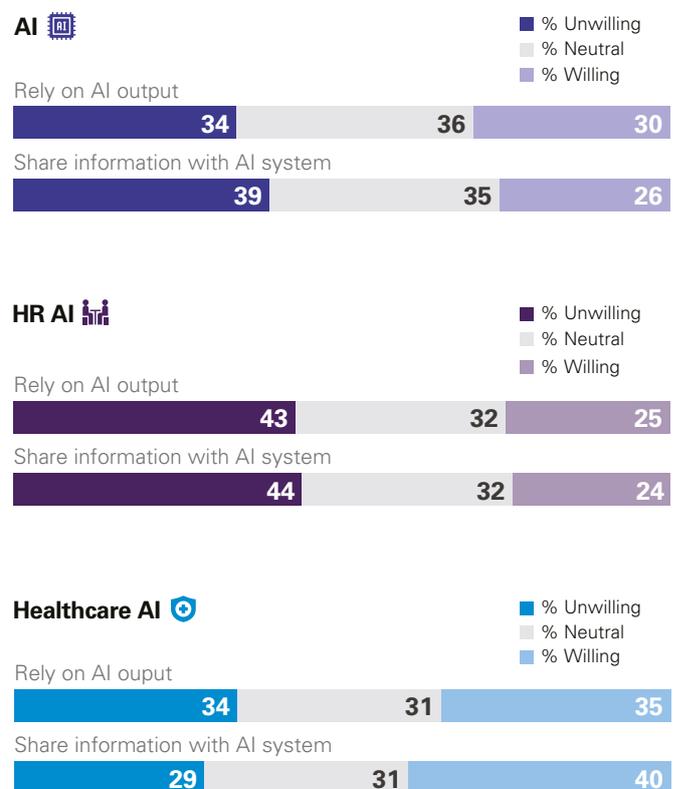
Relates to the willingness to share information or data with an AI system (i.e. to provide data to enable the system to work or perform a service for you). All AI systems are trained on large databases, but only some require the specific user to share information as input to function.

Citizens are more willing to rely on output and share information with AI systems used in healthcare, than AI systems used in human resources

This revealed a similar pattern of trust across the three AI applications (see Figure 2). People are more willing to rely on Healthcare AI (35%, mean 3.9/7) and AI systems in general (30%, mean 3.8/7) than Human Resource AI (25%, 3.5/7). Citizens are also more willing to share information with Healthcare AI (40%, mean 4.0) than either AI systems in general (26%, mean 3.6/7) or Human Resource AI (24%, mean 3.4/7).

There are no significant differences between countries in willingness to trust AI systems in general. However, Australian citizens are less willing to rely on (mean 3.4 vs 3.7) and share information (mean 3.4 vs 3.6) with Human Resource AI than US citizens, and less willing to rely on Healthcare AI than Canadian (mean 3.6 vs 4.0) and German (mean 3.6 vs 4.0) citizens.

Figure 2. Willingness to rely on and share information with AI systems



In order to trust an AI system, citizens need to believe it is trustworthy. We assessed two key components of trustworthiness.



Ability
Relates to the perceived reliance, performance and accuracy of AI output.



Integrity and humanity
Relates to perceptions that the AI is developed based on sound ethical principles (e.g. fairness), is transparent about the data it collects and how it is used, and upholds the rights of users and societal interests.

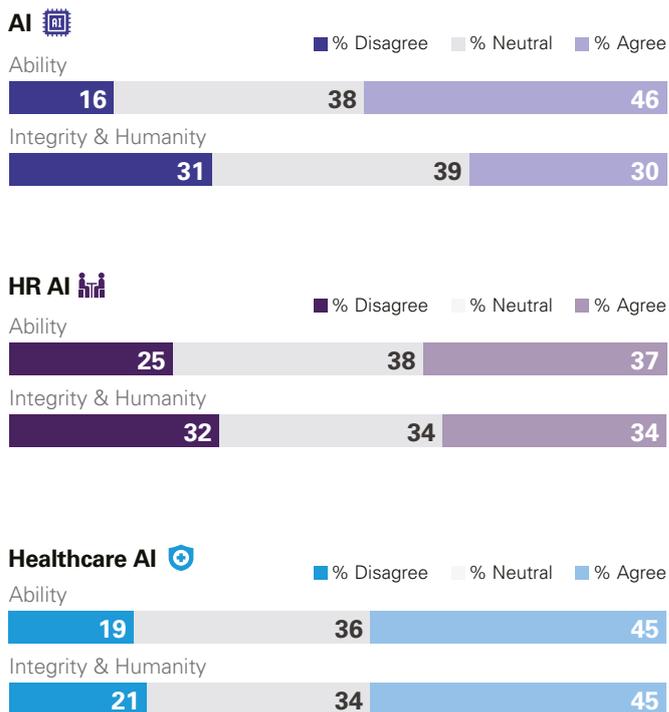
Most citizens do not view AI systems as trustworthy. However, they are more likely to perceive AI systems in general as capable than designed to operate with integrity and humanity.

As shown at the top of Figure 3, more citizens agree AI systems in general are capable (46%, mean 4.3/7) than designed to operate with integrity and humanity (30%, mean 3.9/7). This distinction between the two aspects of trustworthiness was less evident for Healthcare AI and HR AI.

More citizens believe Healthcare AI would operate with integrity and humanity (45% agree; mean 4.3/7) than AI systems in general (30% agree; mean 3.9/7) or HR AI systems (34% agree; mean 3.9/7). This finding likely reflects that citizens generally have higher trust in healthcare institutions (mean 4.7/7) than other institutions (mean business 3.7/7; mean government 3.6/7, mean media 3.4/7).

There is one notable country difference: Australians perceive AI systems in general to be more capable (56% agree, mean 4.5/7) than Germans (39% agree, mean 4.2/7).

Figure 3. Perceptions of the ability, integrity and humanity of AI systems



Ability sample item: I believe [AI application] produce output that is accurate.
Integrity & Humanity sample item: I believe [AI application] are developed based on sound ethical principles (e.g. fairness).

More people support than oppose the development and use of AI, but some applications are less supported than others

As shown in Figure 4, more citizens support AI development than oppose it. However, in line with the pattern of findings for trust, significantly more citizens support AI systems in general (47%, mean 3.3/5) and AI use in healthcare (46%, mean 3.3/5), than AI use in human resources (34%, mean 3.0/5).

It is notable that, regardless of the AI application, a significant proportion of citizens are ambivalent about AI development and use (34-36%), or oppose its development and use (18-30%). There are no meaningful differences in support of AI systems across countries.

Figure 4. Support for AI systems

'How much do you support or oppose the development and use of AI?'

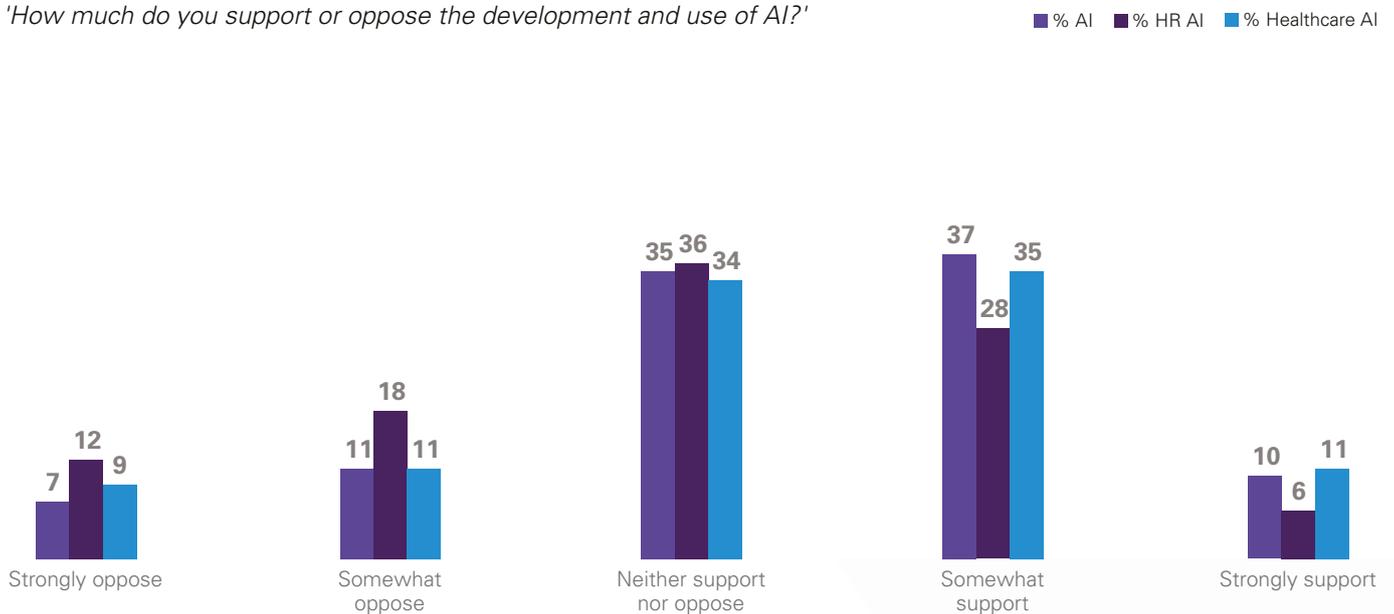
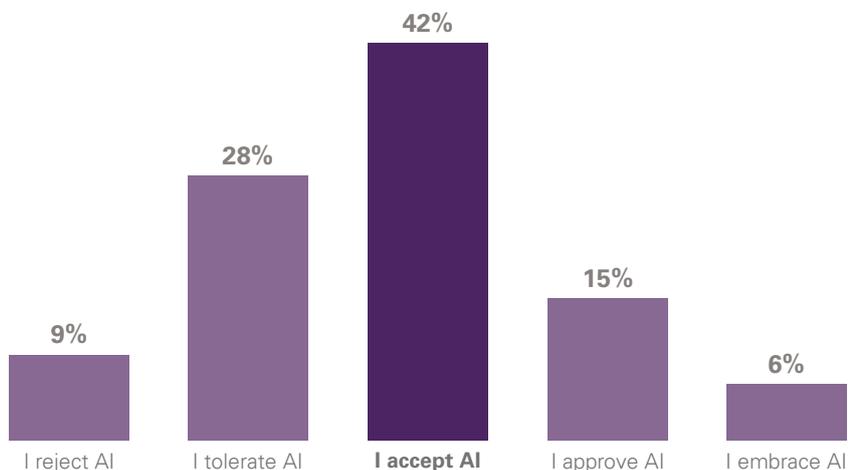


Figure 5. AI Acceptance

'In thinking about AI, which of the following best represents your view?'



Citizens generally accept or tolerate AI, but few approve or embrace it

As shown in Figure 5, about two out of every five citizens 'accept' AI. However, only about one in five 'approve' of AI or 'embrace' it, and over a third of citizens (37%) report they either 'tolerate' or 'reject' AI. Only a small proportion of citizens position themselves on the extreme poles of either outright 'rejecting' or 'embracing' AI.

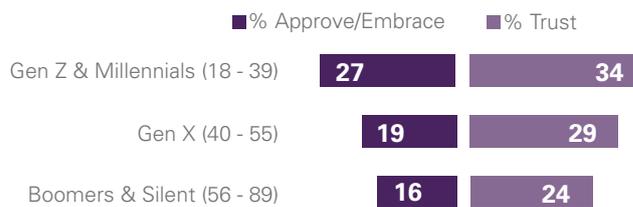
There are no significant differences in acceptance across countries. When people 'approve' or 'embrace' AI, they are more likely to engage with it and be supportive of its development and use. This is highlighted in the strong relationship between AI acceptance and support for the development and use of AI in general ($r = .73$). It is at these higher levels of acceptance that the benefits of AI and its widespread adoption are likely to be realised.

The young and the university-educated are more trusting and approving of AI systems

As shown in Figure 6, younger people, notably Generation Z and Millennials, are more likely to trust and perceive AI systems as trustworthy, and approve or embrace AI, than older generations [Trust mean 4.0 vs 3.5-3.6/7; Trustworthy mean 4.3 vs 4.0/7; Accept mean 3.0 vs 2.6-2.8/5]. This generational difference held across all countries, however only in relation to AI systems in general and AI use in human resources: there are no generational differences in relation to AI in healthcare.

In Germany and Australia, people with a university education are more likely to approve or embrace AI than those without a university degree (mean 3.0 vs 2.7/5): 30% of German citizens and 29% of Australian citizens with a university degree approve or embrace AI, compared to 19% of Germans and 17% of Australians without a degree.

Figure 6. AI acceptance and trust by generation





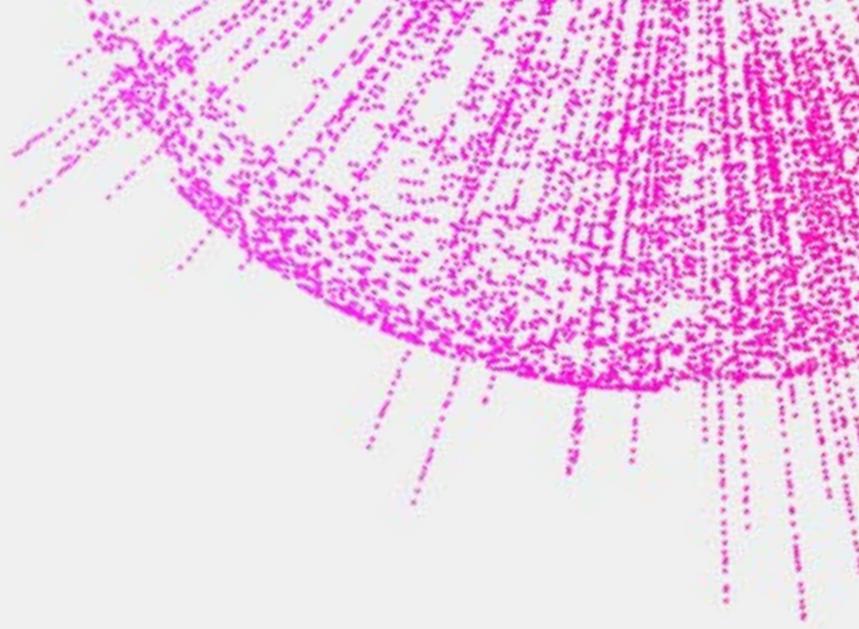
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Who do citizens trust to develop and regulate AI?



To answer this question, we asked respondents how much confidence they have in different entities to develop and use AI, as well as regulate and govern AI. We first explore the insights for the total sample, and then examine country differences.

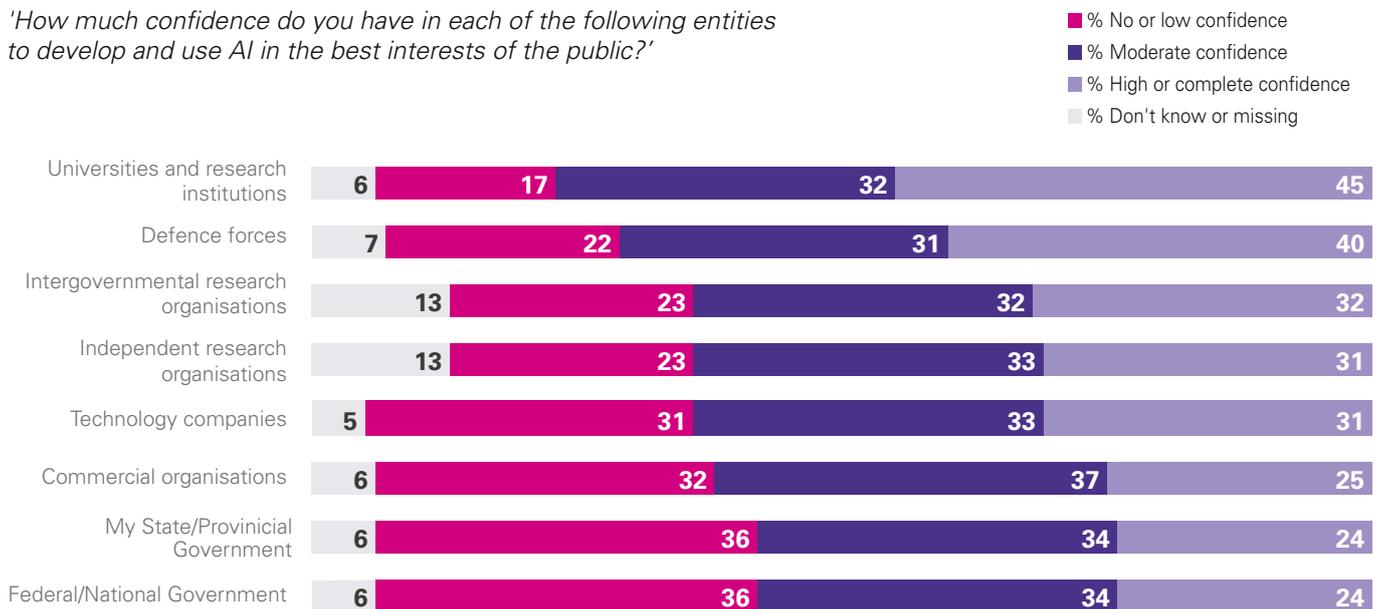
Citizens are most confident in university and research institutions, as well as defence organisations, to develop and use AI and regulate and govern AI.

As shown in Figure 7, the majority of citizens have moderate to complete confidence in their national universities and research institutions (77%, mean 3.4/5) and national defence forces (71%, mean 3.2/5) to develop and use AI in the best interests of the public. In comparison, about two thirds of citizens have moderate to complete confidence in technology and commercial organisations (62-64%, means 2.9/5). On average, citizens have the least confidence in federal and state government to develop and use AI (58%, mean 2.8/5).

It is noteworthy that around a third of citizens report no or low confidence in government, technology companies and commercial organisations to develop and use AI. The lack of confidence in technology companies and commercial organisations is striking given that most citizens' experience of AI is with applications developed and used by such organisations. A solution may be for commercial and technology companies and government to collaborate in AI development with more trusted entities, such as universities and research institutions.

Figure 7. Confidence in entities to develop and use AI (total sample)

'How much confidence do you have in each of the following entities to develop and use AI in the best interests of the public?'



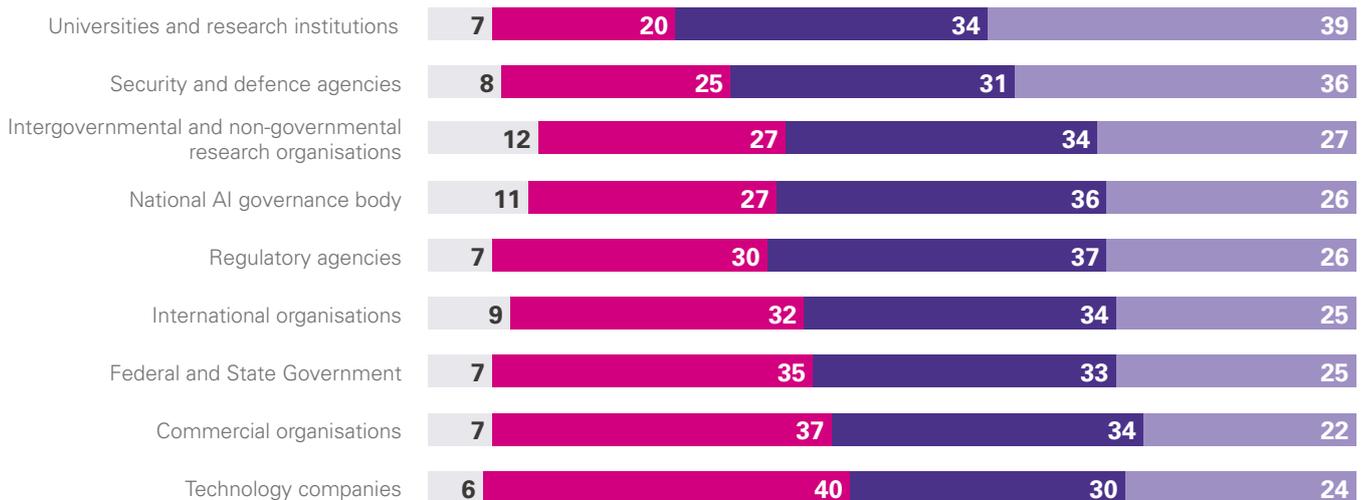
Citizens show a similar pattern regarding confidence in entities to regulate and govern AI in the best interest of the public (Figure 8)¹². Citizens report higher confidence in national university and research institutions (73% moderate to complete confidence, mean 3.2), as well as security and defence agencies (67%, mean 3.1) to regulate and govern AI than other entities. Citizens reported the least confidence in governments (federal and state, mean 2.8), commercial organisations (mean 2.8) and technology companies (mean 2.7). Over a third of citizens report no or low confidence in these entities to develop and regulate AI (see Figure 8).

Overall, citizens generally show less confidence in all institutions to regulate and govern AI than to develop and use it.

Figure 8. Confidence in entities to regulate and govern AI (total sample)

'How much confidence do you have in each of the following to regulate and govern AI in the best interests of the public?'

■ % No or low confidence
 ■ % Moderate confidence
 ■ % High or complete confidence
 ■ % Don't know or missing



'Existing regulatory agencies' includes independent, government-funded bodies.

'National AI governance body' refers to an AI partnership or an association of tech companies, academics, and civil society groups.

Countries vary in their confidence in entities to develop, use and regulate AI

Figures 9 and 10 highlight important differences between countries in their confidence to develop, use and regulate AI¹³. Americans are less confident in their state and federal governments, research institutions, and intergovernmental and non-governmental research organisations (e.g. AAAI¹⁴), to develop and use AI compared to all other countries (see Figure 9). Americans also have lower confidence in a broad range of entities to regulate and govern AI, compared to other countries, except for entities that involve industry (such as commercial and tech organisations, see Figure 10).

The British are also less confident in their government to develop, use and regulate AI compared to other countries (except the USA, see Figures 9 and 10). This lower confidence in governments in the US and UK likely reflects the significantly lower trust these two countries have in their governments (means 3.2 and 3.3/7 respectively), compared to the other countries surveyed (means range 3.7 to 4.0/7). This view is supported by the finding that general trust in government is strongly correlated with confidence in government to develop and use (r = .57), and regulate and govern AI (r = .62).

In contrast, Australians are more confident in their security and defence forces to develop, use and regulate AI than all other countries, and more confident in their universities and research organisations than most countries (see Figures 9 and 10). This likely reflects Australians' significantly higher general trust in their government (mean 4.0 vs 3.6/7) and in their universities and research institutions (mean 4.7 vs 4.4/7), than the other countries surveyed.

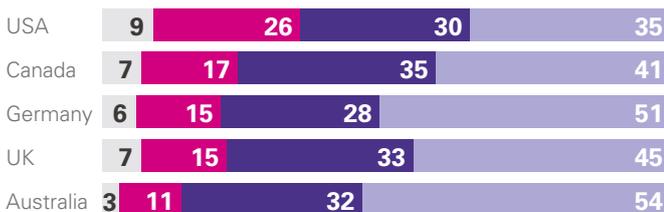
Finally, German respondents are less confident in their defence forces and in technology companies to develop and use AI compared to other countries.

Figure 9. Confidence in entities to develop and use AI (reported by country)

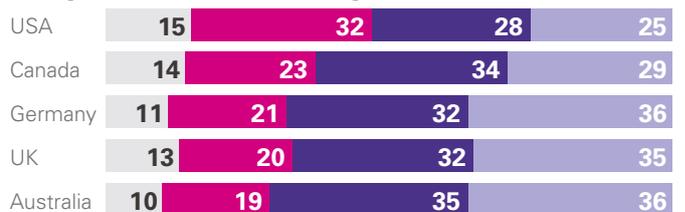
'How much confidence do you have in each of the following entities to develop and use AI in the best interests of the public?'

■ % No or low confidence ■ % High or complete confidence
 ■ % Moderate confidence ■ % Don't know or missing

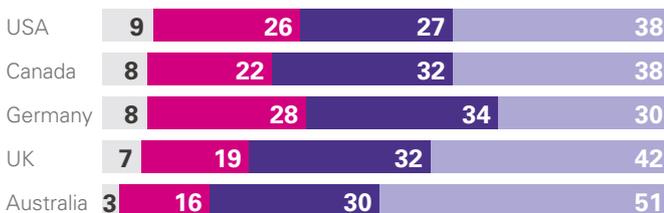
Universities and research institutions



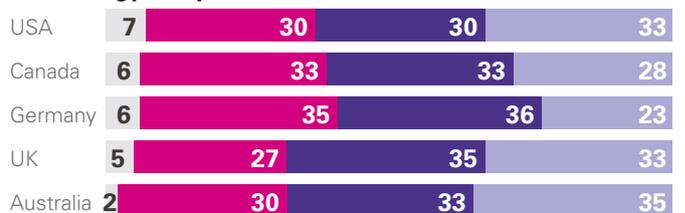
Intergovernmental research organisations



Defence Forces



Technology companies



Independent research organisations

USA	13	28	28	31
Canada	14	25	33	28
Germany	13	20	33	34
UK	14	18	38	30
Australia	9	23	34	34

State/Provincial Government *

USA	8	45	30	17
Canada	7	33	36	24
Germany	7	30	33	30
Australia	3	34	37	26

Federal/National Government

USA	8	45	30	17
Canada	7	30	38	25
Germany	6	30	32	32
UK	6	43	33	18
Australia	3	32	37	28

*UK has no comparative State Government

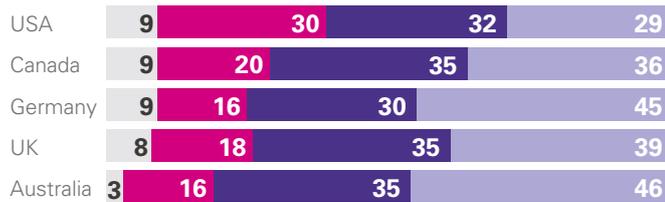


Figure 10. Confidence in entities to regulate and govern AI (reported by country)

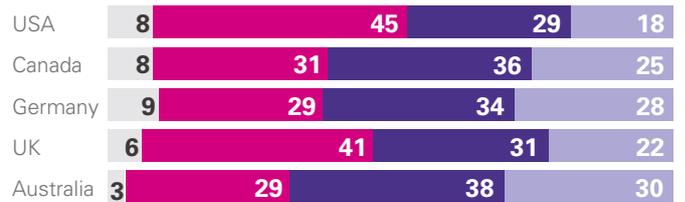
'How much confidence do you have in each of the following to regulate and govern AI in the best interests of the public?'

■ % No or low confidence ■ % High or complete confidence
 ■ % Moderate confidence ■ % Don't know or missing

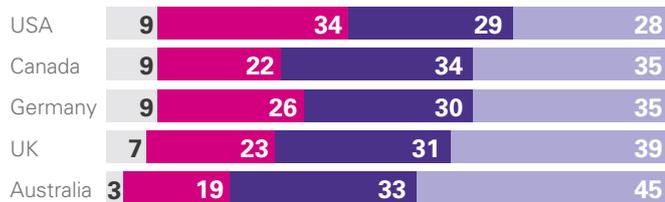
Universities and research institutes



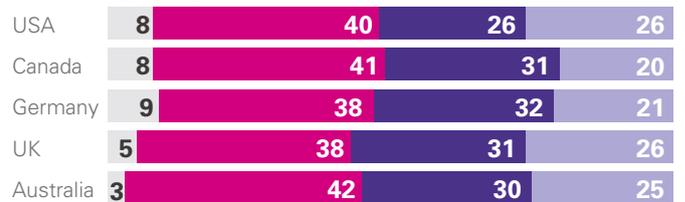
Federal / State / Provincial Government



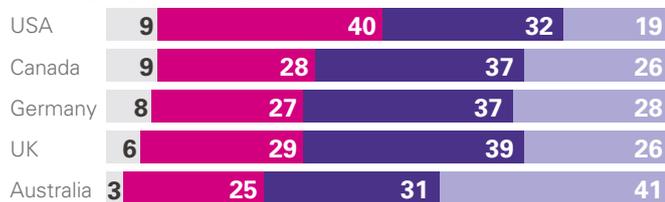
Security and defence agencies



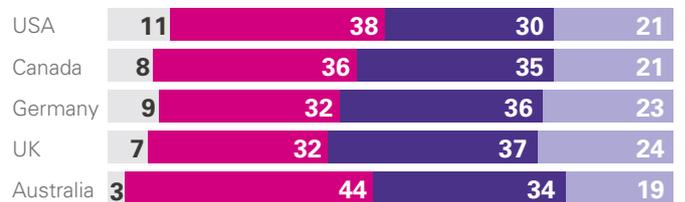
Technology companies



Existing regulatory agencies

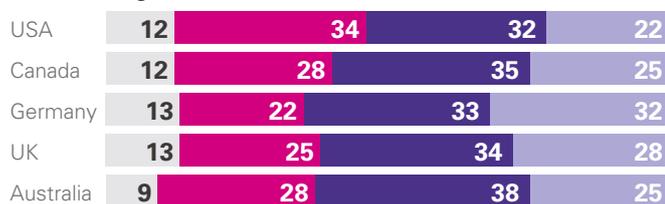


Commercial organisations



'Existing regulatory agencies' includes independent, government-funded bodies

Intergovernmental and non-governmental research organisations



People believe organisations innovate with AI mostly for financial reasons

One reason for the low confidence in commercial organisations to develop and govern AI may be that people think such organisations are motivated to innovate with AI primarily to cut labour costs and increase revenue (financial motivation) rather than to help solve societal problems and enhance societal wellbeing (societal motivation).

As shown in Figure 11, 62% (mean 5.1) of the public believe commercial organisations innovate with AI for financial gain, whereas only a third (32%, mean 4.0) agree they innovate for societal benefit.

This pattern was replicated for government and even non-profit organisations, although the difference between financial and societal

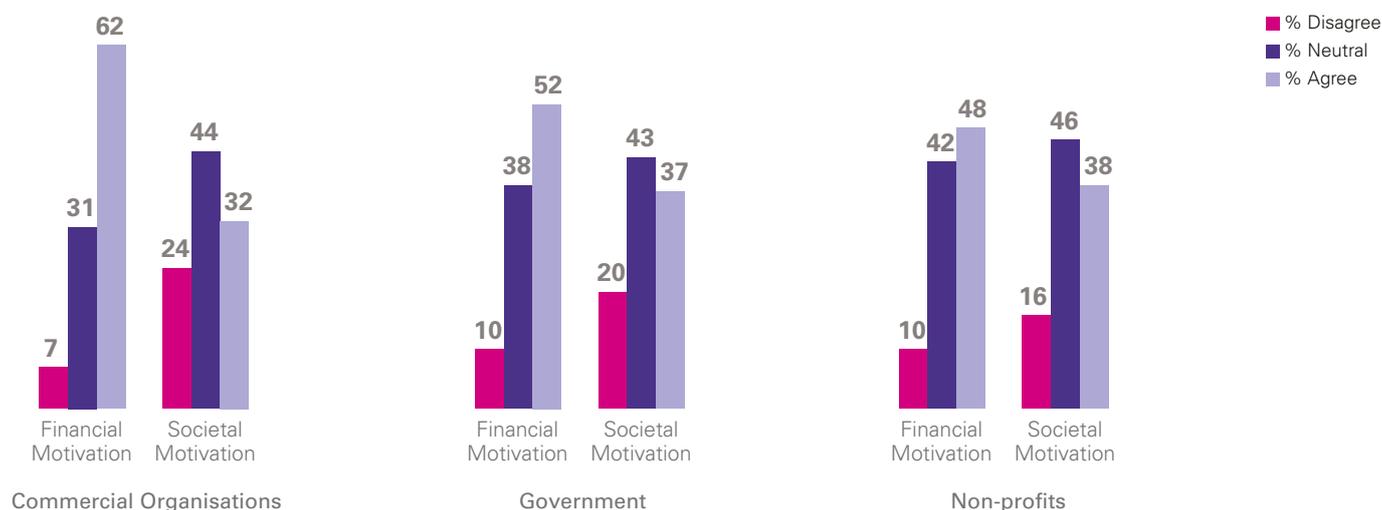
motivation to innovate was less pronounced. About half of citizens agree government (52%, mean 4.8) and non-profits (48%, mean 4.7) innovate with AI for financial reasons, whereas over a third (37-38%, mean 4.3-4.2) believe these organisations innovate with AI for societal benefit (see Figure 11).

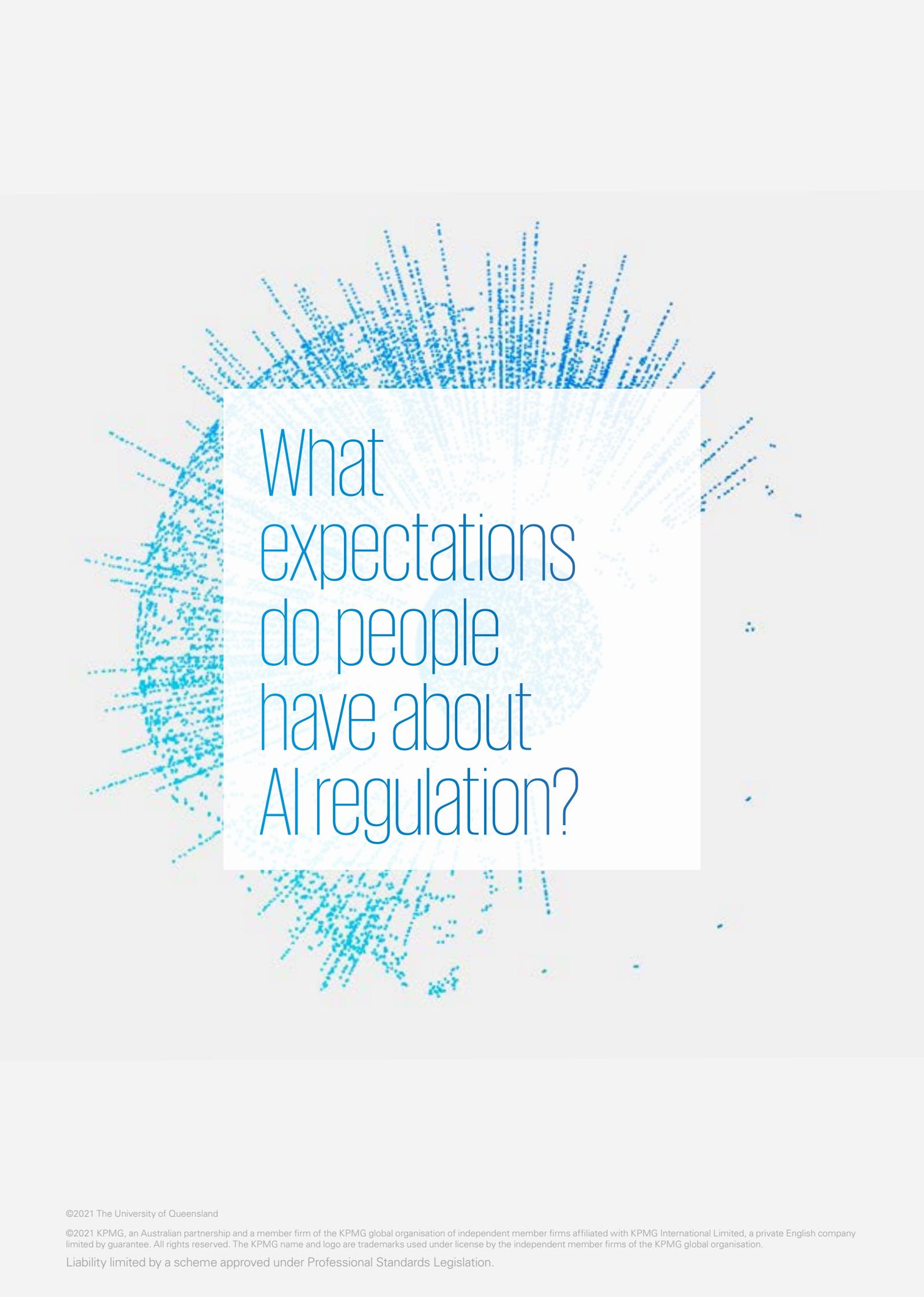
This pattern was shared across each of the five countries. It is noteworthy that compared to citizens in other countries, Australians were more likely to view commercial organisations and government organisations as deploying AI for financial reasons.

A significant proportion of the public (43-46%) are unsure whether commercial, government and non-profit organisations innovate

for societal good. This represents an opportunity for organisations to strengthen communication and public understanding of when AI is being deployed to deliver societal benefits or shared benefits. The societal motivation to innovate with AI was significantly correlated with both trust ($r=.57$) and acceptance ($r=.49$) of AI, suggesting using AI for societal benefit is one pathway to strengthen public trust and acceptance of AI.

Figure 11. Motivation to innovate with AI





What
expectations
do people
have about
AI regulation?



We asked several questions related to the expectations the public have around AI development and regulation, including the extent to which they think regulation is necessary, who should regulate, and whether current regulations and institutional safeguards are sufficient.

AI regulation is required, and citizens expect external, independent oversight.

Most citizens across countries (81%) view AI regulation as required [ranging from 79% (USA) to 83% (Canada)]. This finding corroborates those of previous surveys, indicating strong citizen desire for regulation¹⁵.

As shown in Figure 12, the majority of citizens expect a range of bodies to play a role in regulating AI, including a new, dedicated, independent AI regulator (62%), as well as government and/or existing regulators (61%). Co-regulation by industry, government and existing regulators is also desirable (59%), and over half of citizens (54%) expect industry that uses or develops AI to play a role in regulation.

The desire for a dedicated, independent AI regulator may reflect the fact that confidence in the government to regulate AI is not uniformly high. As discussed in the previous section, a little over a third of the public have no or low confidence in the government to regulate AI.

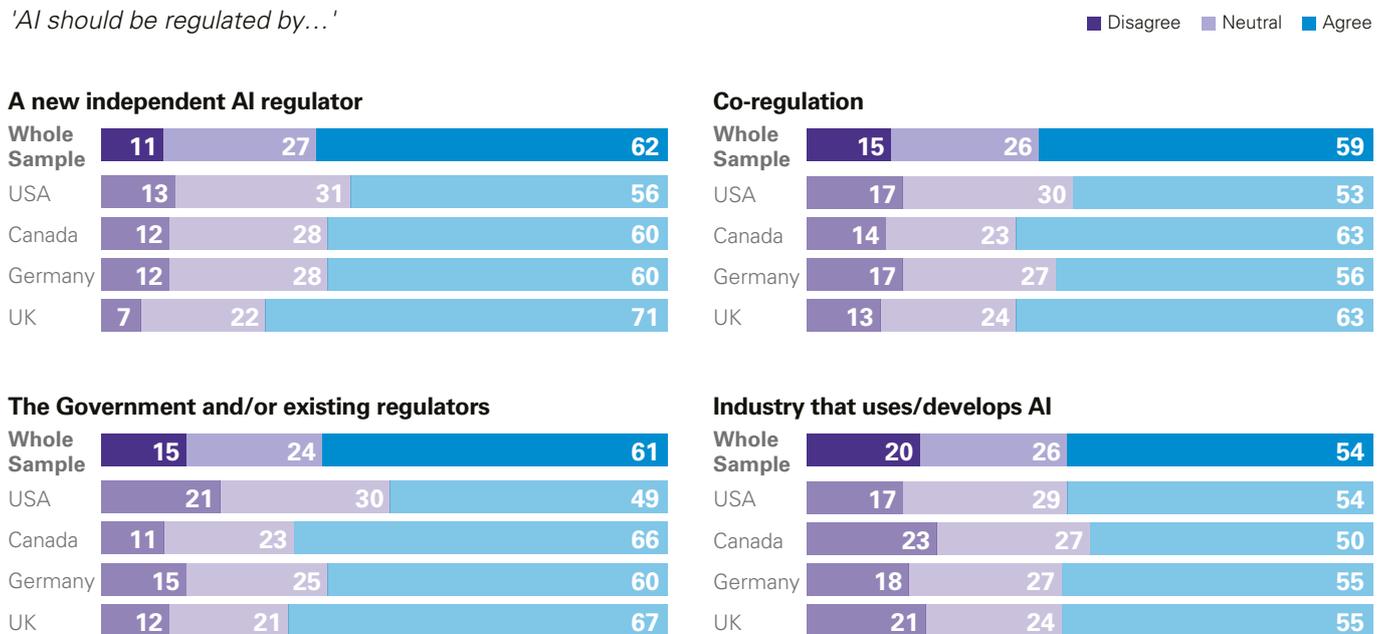
There are several significant differences between countries in their expectations of who should regulate AI (see Figure 12).

Fewer Americans expect external regulation by government and existing regulators (49% vs 60%+ in other countries). American citizens are also more likely to believe AI regulation is not required (21%) compared to Canadian and British citizens (17-19%).

This finding aligns with the pattern reported for the USA in the prior section: Americans are less likely to expect government regulation and less confident in their ability to regulate. In contrast, British citizens are more likely to expect a new dedicated, independent AI regulator (71%) than all other countries (56-60%).

The Australian sample was excluded from these analyses due to use of a different response format and wording of questions that does not allow direct comparisons to be made. The pattern of results for Australians was broadly similar: the vast majority believe AI regulation is needed (96%), and the majority expect government and existing regulators to play a role in regulation (63%), as well as co-regulation by government and industry (59%).

Figure 12. Citizen expectations of who should regulate AI

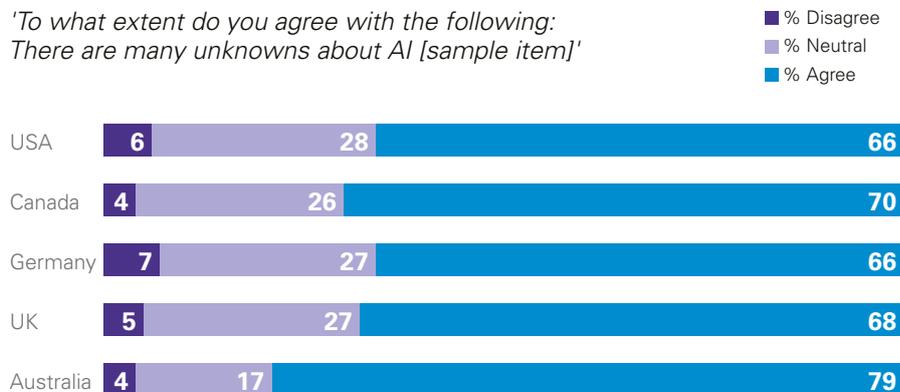


Current safeguards are insufficient given the uncertainty around AI

Most citizens (70%) believe the impact of AI on society is uncertain and unpredictable (see Figure 13). While citizens in all countries perceive a great deal of uncertainty around AI, Australians (79%, mean 5.5) perceive more uncertainty than all other countries (66-70%, means 5.1-5.3).

There is also a difference in perceived uncertainty across AI applications: AI use in Healthcare is perceived as less uncertain (64%, mean 5.1) than AI use in both human resources (73%, mean 5.4) and in general (71%, mean 5.3).

Figure 13. Perceptions of AI uncertainty



Citizens generally disagree (37-42%) or are ambivalent (24-27%) that current safeguards around AI (rules, regulations and laws) are sufficient to make the use of AI safe or protect them from problems (see Figure 14). Similarly, the majority either disagree (41%) or are ambivalent (24%) that the government adequately regulates AI. This corroborates previous European¹⁶ surveys reporting citizens do not think current rules are effective in regulating AI.

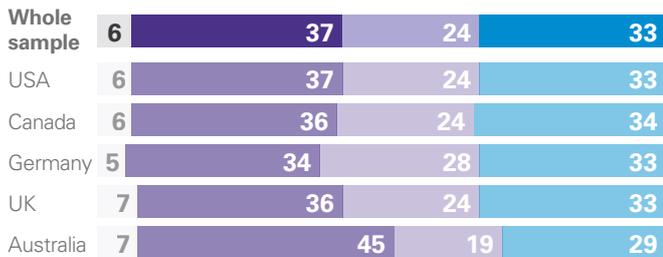
There was only one significant difference across countries: Germans are more confident that their government adequately regulates AI (35%, mean 3.9) compared to the USA, UK and Australia (26-30%, mean 3.5-3.6).

Figure 14. Perception of current regulations, laws and rules to make AI use safe

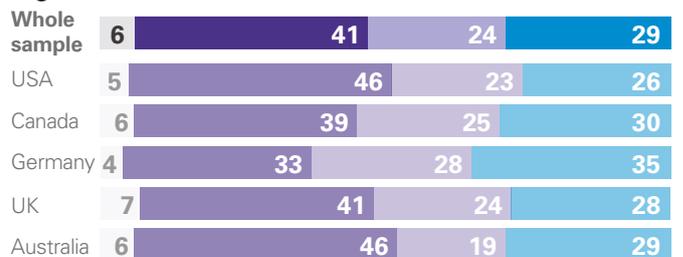
'To what extent do you agree with the following...'

■ % Don't know or missing ■ % Disagree ■ % Neutral ■ % Agree

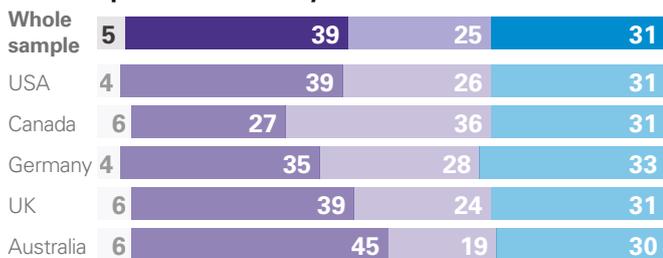
There are enough current safeguards to make me feel comfortable with the use of AI



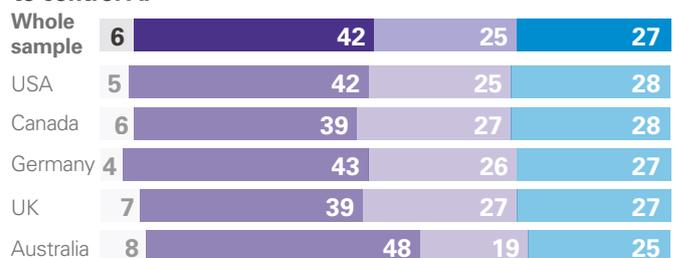
I feel confident that the government adequately regulates AI



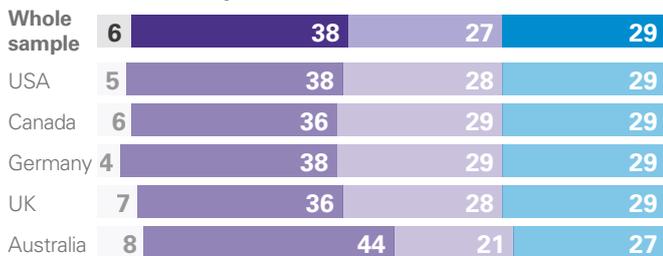
There are sufficient regulatory processes in place to protect me from problems that may arise from the use of AI



I feel the current rules and regulations are sufficient to control AI



The current law helps me feel that the use of AI is safe



The risks and benefits of AI depend on their application

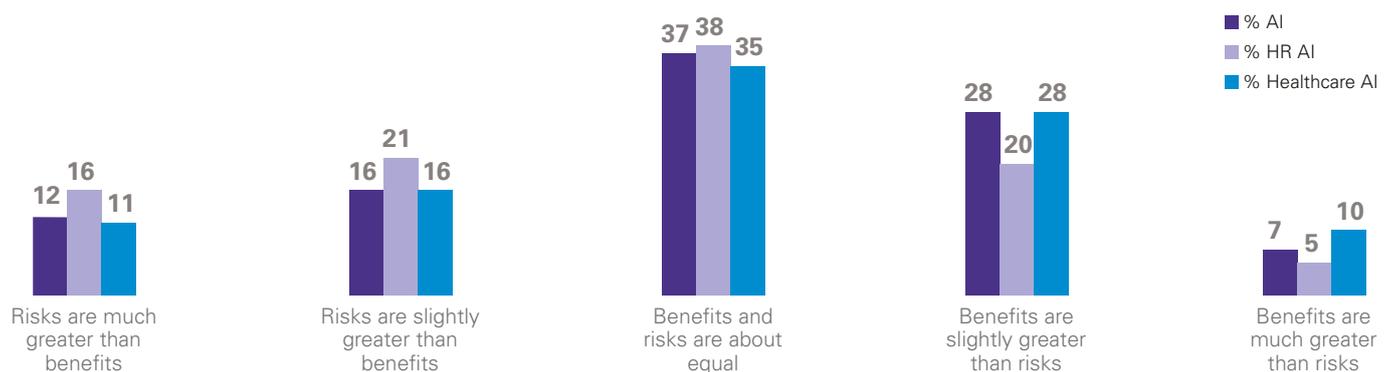
We asked citizens about the balance between the risks and benefits of AI. As shown in Figure 15, citizens' perceptions of the balance of risks and benefits differ significantly across AI applications.

For Healthcare AI and AI systems in general, more citizens perceive the benefits to outweigh the risks (Healthcare AI: 38% benefits>risks, 27% risks>benefits; AI in general: 35% benefits>risks, 28% risks>benefits). In contrast, more citizens perceive the risks of Human Resource AI to outweigh the benefits (37% risks>benefits; 25% benefits>risks).

It is notable that of those who believe the benefits outweigh the risks, more believe that the benefits are slightly greater (20-28%) than much greater (7-10%). It is also notable that over a third of citizens believe the benefits and risks of AI are about equal.

Figure 15. Perceived balance of risks and benefits of AI applications

'Overall, which best represents your view on the benefits and risk of AI systems?'



Assurance mechanisms enhance trust in AI systems

Most citizens (57% to 66%) indicate they would be more willing to use an AI system if there are assurance mechanisms in place to support ethical and trustworthy use. These mechanisms include independent AI ethics reviews, AI codes of conduct, national standards on AI explainability and transparency, and AI ethics certification (see Figure 16). These mechanisms increase perceptions of current safeguards and reduce uncertainty.

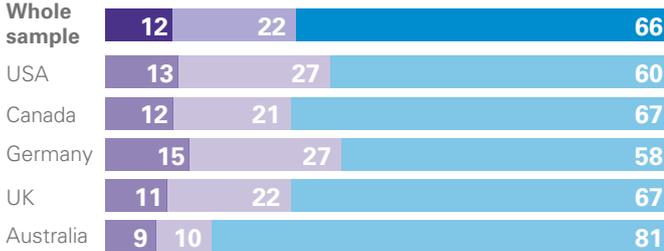
More Australian citizens, and fewer German and American citizens, report that these assurance mechanisms would increase their willingness to use AI systems, compared to citizens in other countries.

Figure 16. AI Assurance mechanisms

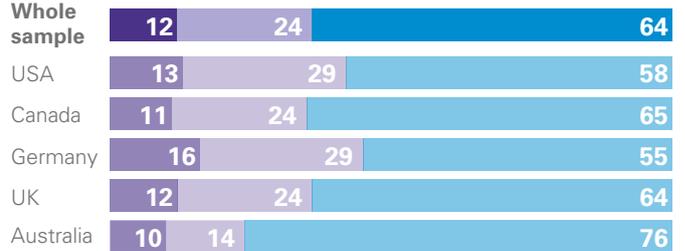
'I would be more willing to use an AI system if...'

■ % Disagree ■ % Neutral ■ % Agree

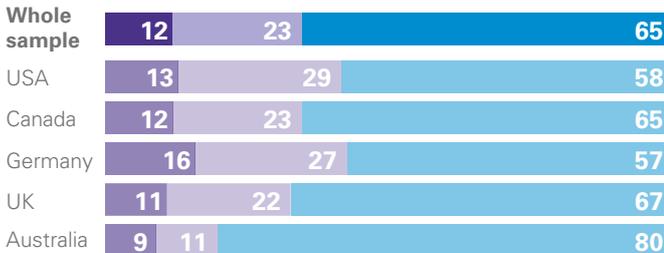
An independent body conducted regular reviews of the ethics of AI systems



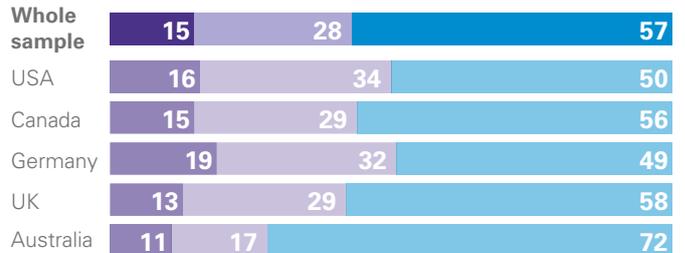
It adhered to national standards for AI explainability and transparency



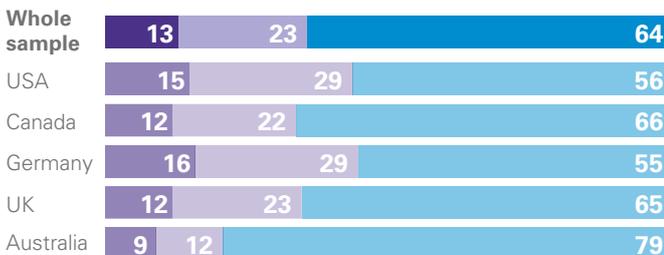
It had been reviewed by an AI ethics board



It has an AI ethics certification



The organisation using the AI system had an AI ethics code of conduct

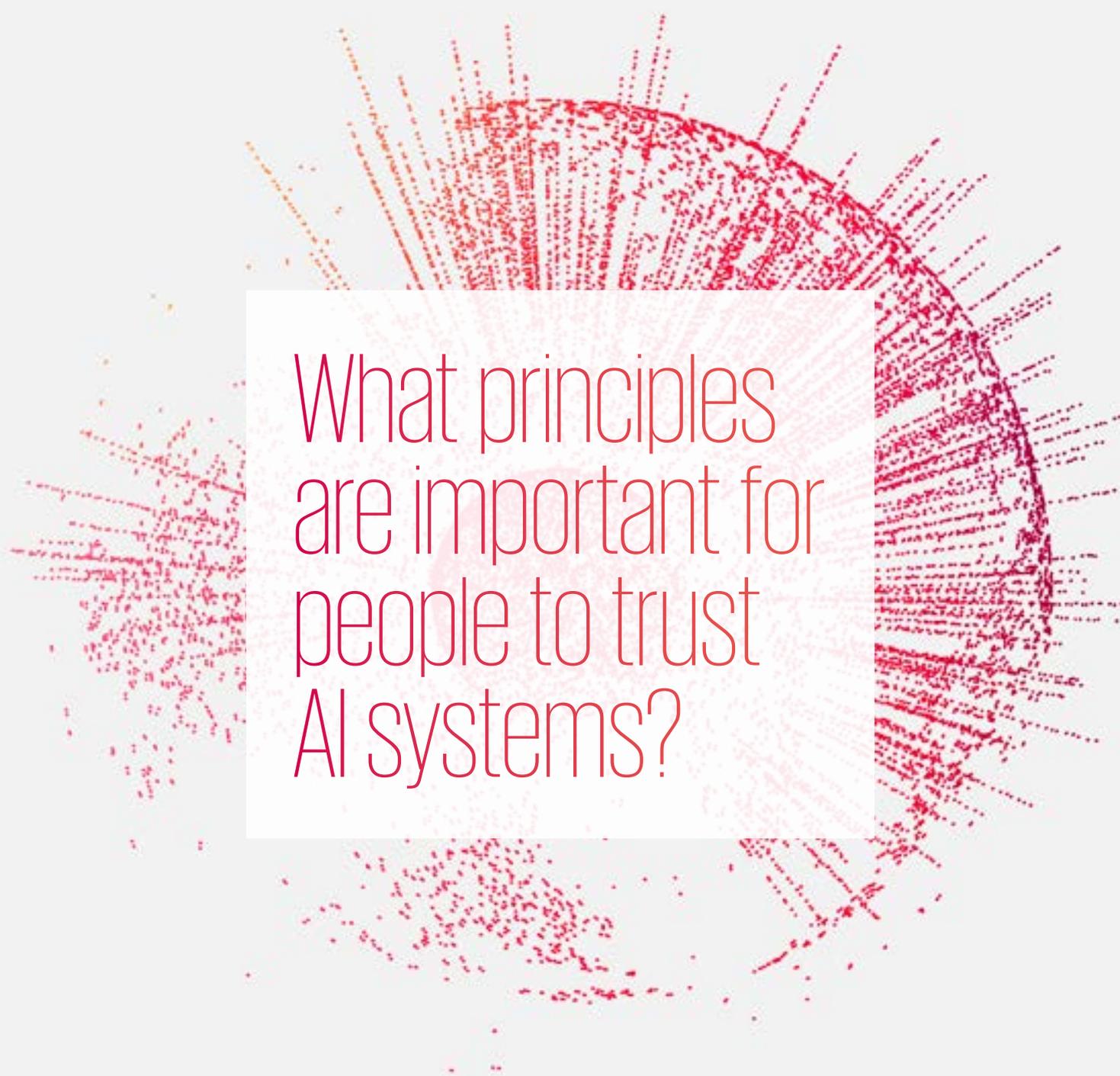




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What principles
are important for
people to trust
AI systems?



Eight AI design and governance principles and associated practices are highly important for trust.

A proliferation of reports and guidance documents on the development and deployment of trustworthy AI have been produced over the past few years¹⁷.

One goal of this survey was to determine what practices and principles are important for citizens within western nations to trust in AI. To answer this question, we asked about the importance of 33 practices associated with the eight principles for trustworthy AI. These principles were adapted primarily from the 2019 European Union Principles for Trustworthy AI¹⁸. Specifically, we asked how important each of these practices are for respondents' trust in AI systems.

Principles and Practices for Trustworthy AI



Technical robustness and safety

The performance and accuracy of AI system output is assessed before and regularly during deployment to ensure it operates as intended. The robustness of output is tested in a range of situations, and only data of appropriate quality is used to develop AI.



Data privacy, security and governance

Safety and privacy measures are designed into the AI system. Data used for AI is kept secure, used only for the specific purpose to which it is agreed, and is not shared with other apps or third parties without permission. Robust security measures are in place to identify and prevent adversarial attacks.



Human agency and oversight

There is appropriate human oversight and control of AI systems and their impact on stakeholders by people with required expertise and resources to do so. AI systems are regularly reviewed to ensure they are operating in a trustworthy and ethical manner.



Transparency and explainability

The purpose of the AI system, how it functions and arrives at its solutions, and how data is used and managed is transparently explained and reasonably understandable to a variety of stakeholders. Developers keep an audit trail of the method and datasets used to develop AI.



Fairness and non-discrimination

The outcomes of AI systems are assessed regularly to ensure they are fair, free of unfair bias, and designed to be inclusive to a diversity of users. AI is developed with the participation and input of a diverse range of people.



Accountability and contestability

There is clear accountability and responsibility if something goes wrong with an AI system. Any impacted user or stakeholder is able to challenge the outcomes of an AI system via a fair and accessible human review process.



AI literacy

People are supported in understanding AI systems, including when it is appropriate to use them, and the ethical considerations of their use.



Risk and impact mitigation

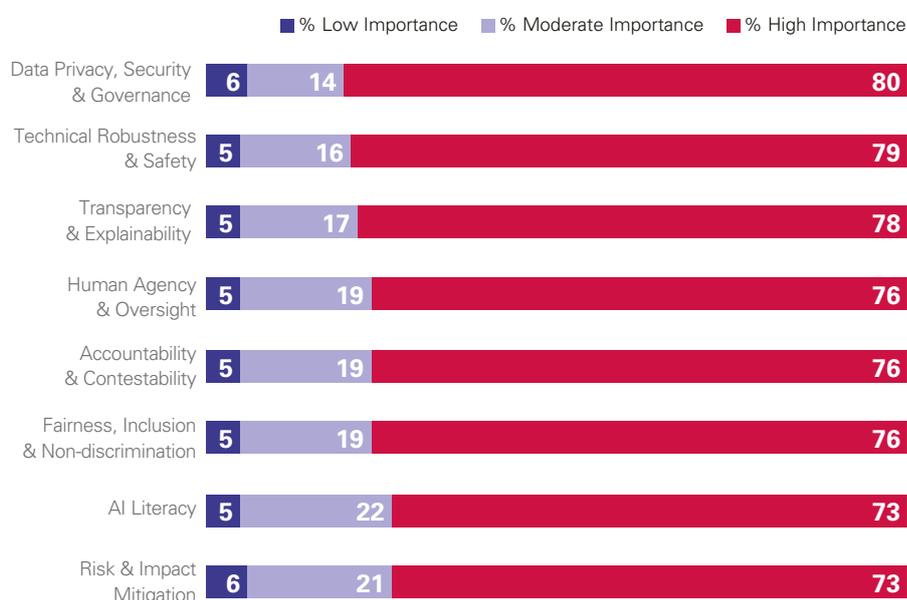
The risks, unintended consequences and potential for harm from an AI system are fully assessed and mitigated prior to and during its deployment.

Results indicate that the vast majority of citizens (95%) view every one of these eight principles, and the practices that underlie them, as moderately to extremely important for trust in AI systems (see Figure 17). This held across all three AI application uses (AI systems in general, in healthcare and human resources).

This provides clear public endorsement of these principles and practices and a blueprint for developing and using AI in a way that supports trust.

Figure 17. Importance of the Principles for Trustworthy AI

'How important are the following [...] for you to trust AI systems?'



Low importance = 'Not at all important', 'Very low importance', or 'Low importance'

Moderate importance = 'Moderately important'

High importance = 'High importance', 'Very high importance', or 'Extremely important'

Figure 18. Importance of the Principles for Trustworthy AI by Country

'How important are the following [...] for you to trust AI systems?'

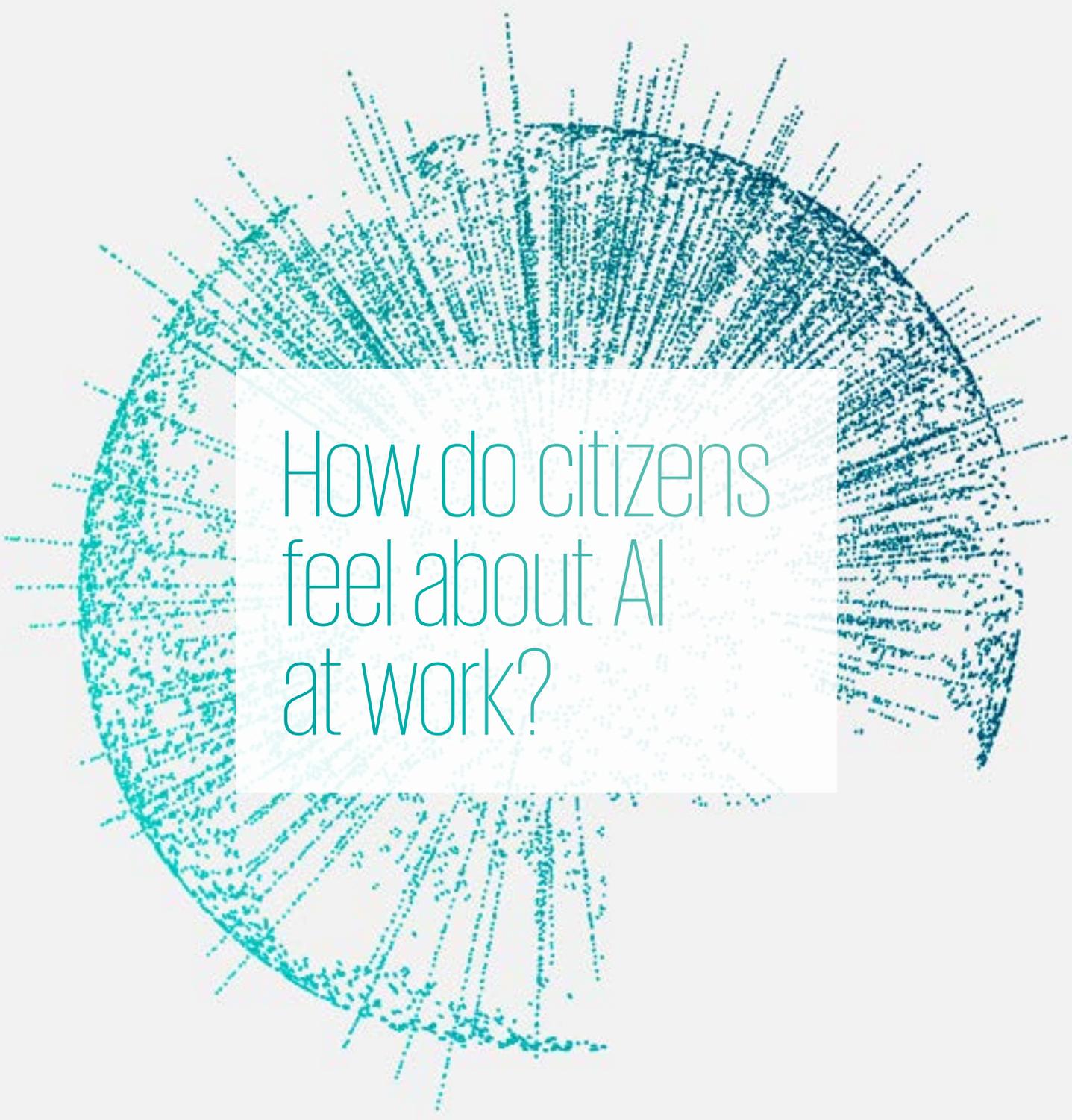


Low importance = 'Not at all important', 'Very low importance', or 'Low importance'

Moderate importance = 'Moderately important'

High importance = 'High importance', 'Very high importance', or 'Extremely important'

While the large majority of citizens across all five countries viewed these principles as important, there are two clear patterns of differences across countries (see Figure 18): Australians rated these principles as more important to trust in AI systems (94%), than all other countries (70-81%). In contrast, US citizens rated these principles as less important for trust in AI systems (70%) than citizens in other countries (78-94%).



How do citizens feel about AI at work?



To understand how people feel about the use of AI at work, we asked questions about the impact of AI on jobs, citizens' AI use at work, and their comfort with AI use to support different work functions.

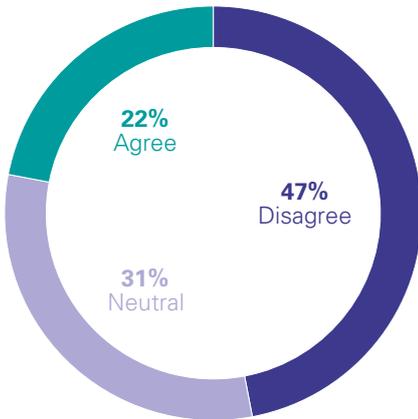
Only one in five citizens believe AI will create more jobs than it will eliminate

Most citizens (78%) either disagree or are unsure that AI will create more jobs than it will eliminate (see Figure 19). The concern that AI will eliminate jobs is also expressed in prior national and transnational surveys¹⁹.

Australians are more likely to believe AI will eliminate more jobs than it creates than citizens in the other countries (61% vs 41-48%, mean 3.1 vs 3.5/5).

Figure 19. Perceived impact of AI on jobs

'In general, to what extent do you agree that AI will create more jobs than it will eliminate?'



Most people 'never' or 'rarely' use AI in their work

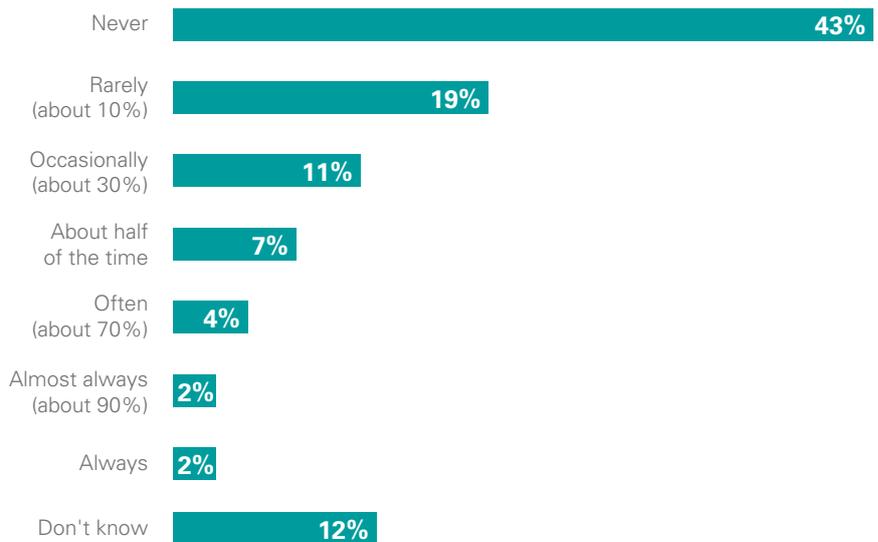
As shown in Figure 20, over 40% of employed citizens report that they never use AI in their work (ranging from 42% in the USA to 45% in the UK)²⁰. One in five citizens (19%) report using AI in their work rarely (i.e. about 10%). In contrast, about a quarter (26%) of citizens report using AI in their work about 30% of the time or more frequently.

Given many citizens report a low understanding and awareness of AI use, these figures may partially reflect that people are not aware of AI use in their work. 12% opted for the 'don't know' option suggesting they did not have sufficient understanding to gauge whether AI is being used in their work.

There are no significant differences in AI use at work across countries.

Figure 20. Use of AI at work

'How often do you use AI in your work?'



Most people are comfortable with AI at work when it is not focused on them

Most citizens are at least moderately comfortable with AI use in task automation and augmentation at work (see Figure 21). However, when AI is focused on them as employees, they are much less comfortable.

Most citizens (70-76%) are either highly or moderately comfortable with AI use in task automation and augmentation at work, such as monitoring the organization's digital and physical security, automating physical tasks (e.g. robot on an assembly line), tailoring marketing to customers, and assisting with customer queries (e.g. chatbots).

However, citizens are considerably less comfortable with AI use when it is focused on themselves as employees – such as to monitor employees, evaluate performance and support recruitment and selection decisions. Only 46-58% of citizens feel comfortable with AI use in these employee-focused activities.

Examination of country differences revealed that Germans are significantly less comfortable with AI use to support recruitment and selection and to monitor employees (compared to Americans), automate physical tasks (compared to the British), and to monitor security (compared to Australians).

On average, people who report using AI in their work, also report feeling more comfortable with the use of AI for the various uses in Figure 21, than those who do not use AI in their work. This most likely reflects their greater familiarity with AI at work.

Figure 21. Comfort with the use of AI at work

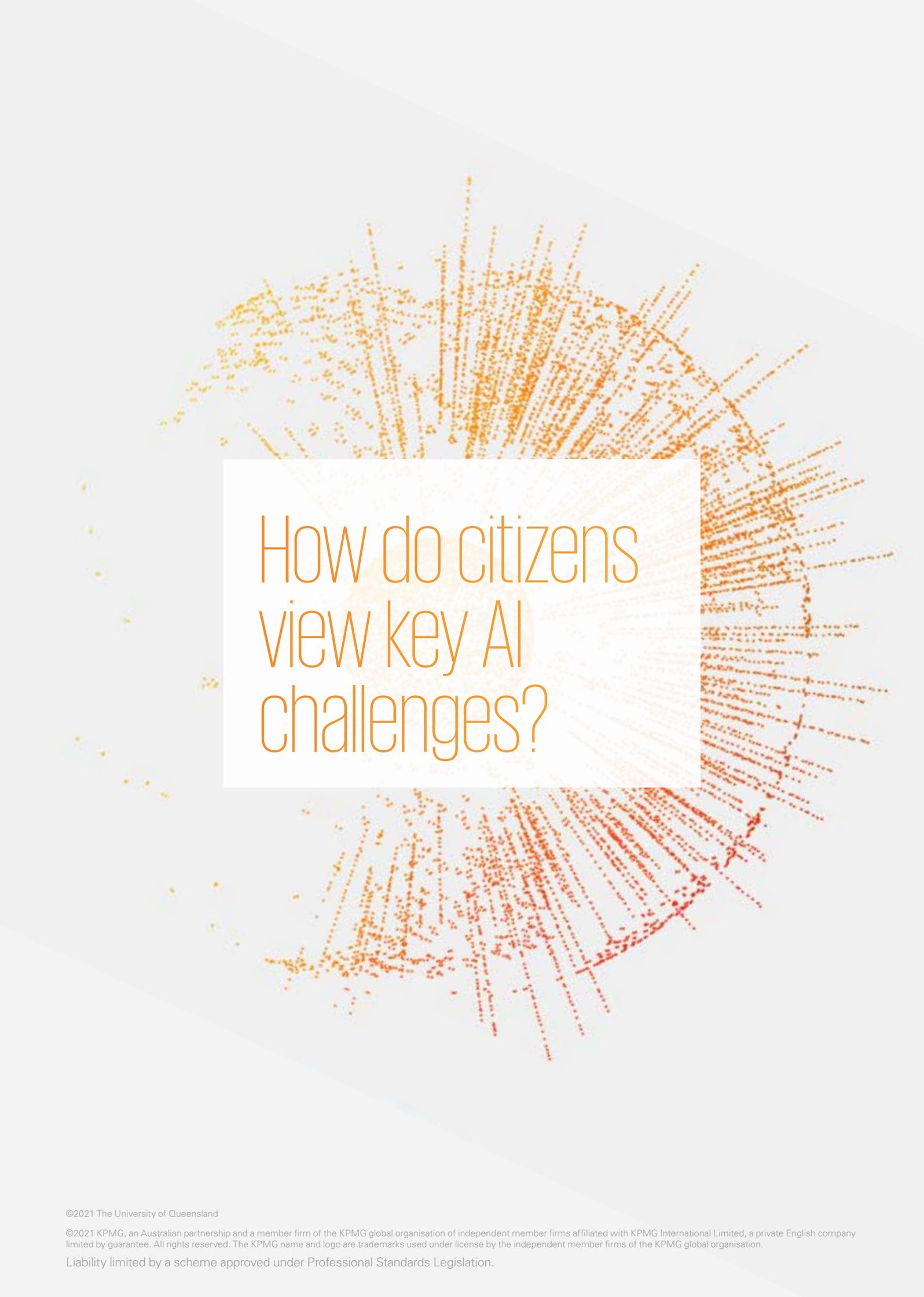
'How comfortable are you with AI being used in the following ways at work?'



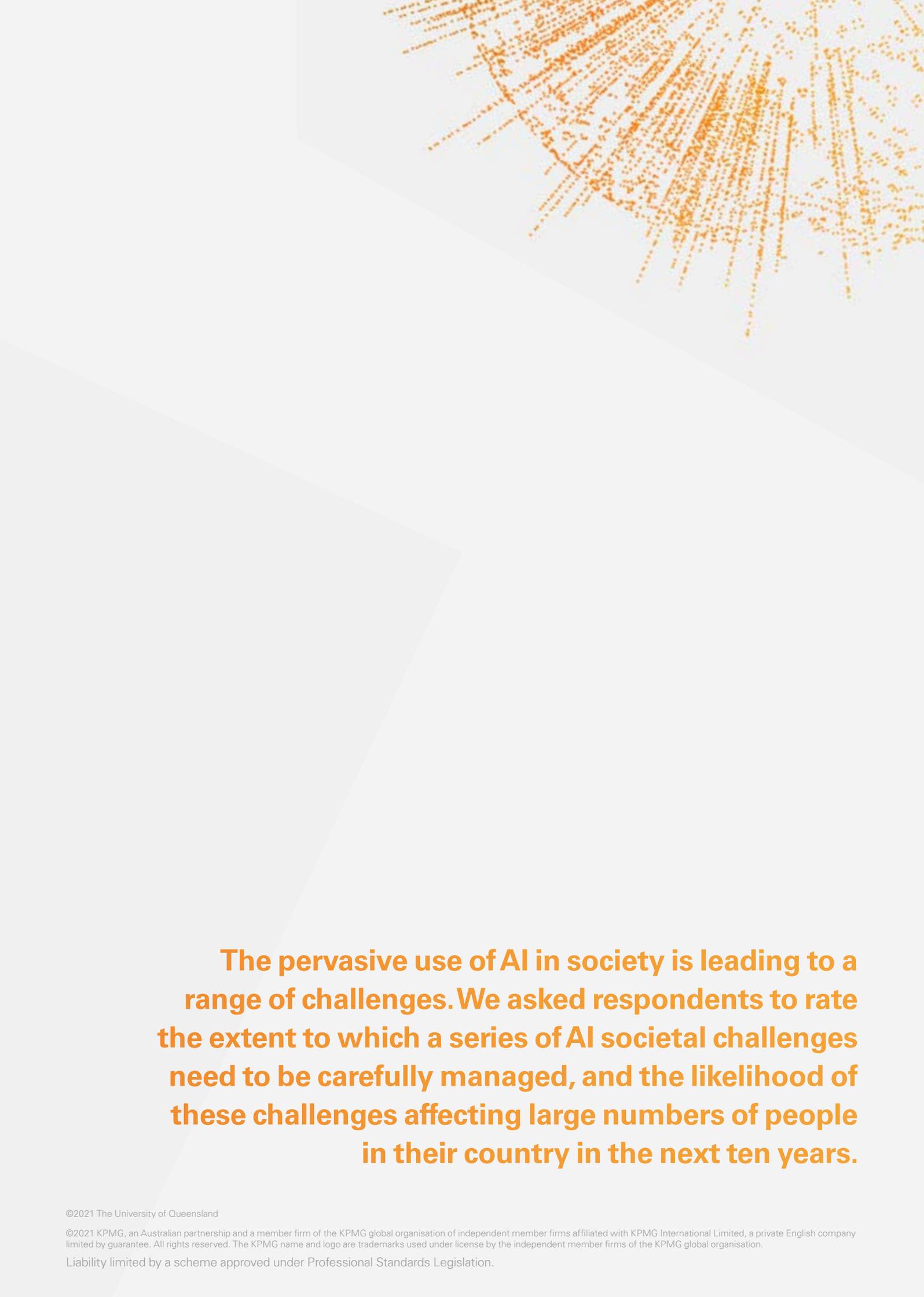
Younger people and the university-educated are more comfortable with AI at work

Younger people, specifically Gen Z and Millennials, are more comfortable with AI use at work than older respondents. 78% of Gen Z and Millennials are at least moderately comfortable with the use of AI at work for the activities shown in Figure 21, compared to 62% of older respondents.

Similarly, the university-educated are more comfortable with AI use at work than those without a university degree. 73% of the university-educated are at least moderately comfortable compared to 64% of those without a degree.



How do citizens view key AI challenges?



The pervasive use of AI in society is leading to a range of challenges. We asked respondents to rate the extent to which a series of AI societal challenges need to be carefully managed, and the likelihood of these challenges affecting large numbers of people in their country in the next ten years.

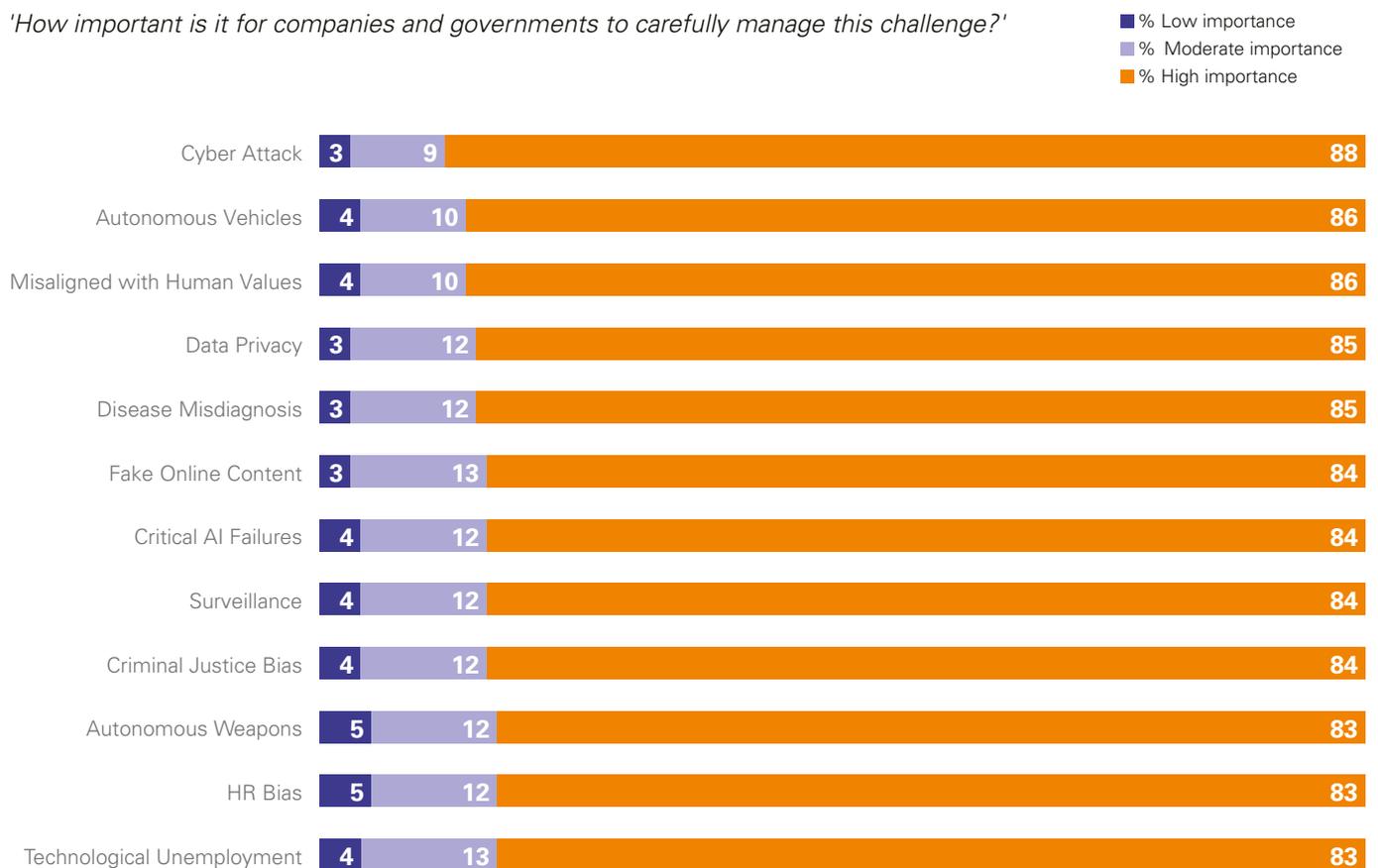
AI challenges need to be carefully managed

All twelve of the AI challenges we presented need to be carefully managed by governments and organisations. Figure 22 shows that most respondents (83% or more) rate the careful management of AI challenges as very or extremely important.

While older generations are more likely to rate the careful management of the AI challenges as highly important, the large majority of all generations rated these challenges as highly important (ranging from 79% for Gen Z and Millennials, 84% for Gen X, to 94% for Boomers and Silent Generation).

These findings align with and update those found in a 2019 US survey which reported Americans regard each of these AI challenges as needing careful management²¹. We further found that Australians rate the careful management of these challenges as more important (95% high, mean 4.7/5) than respondents from other countries (range from USA 79%, mean 4.2/5 to Canada 85%, mean 4.4/5)²².

Figure 22. Importance of careful management of AI challenges



Low importance = 'Not at all important' or 'Slightly important'
 Moderate importance = 'Moderately important'
 High importance = 'Very important' or 'Extremely important'

Data challenges considered most likely to impact people in the near future

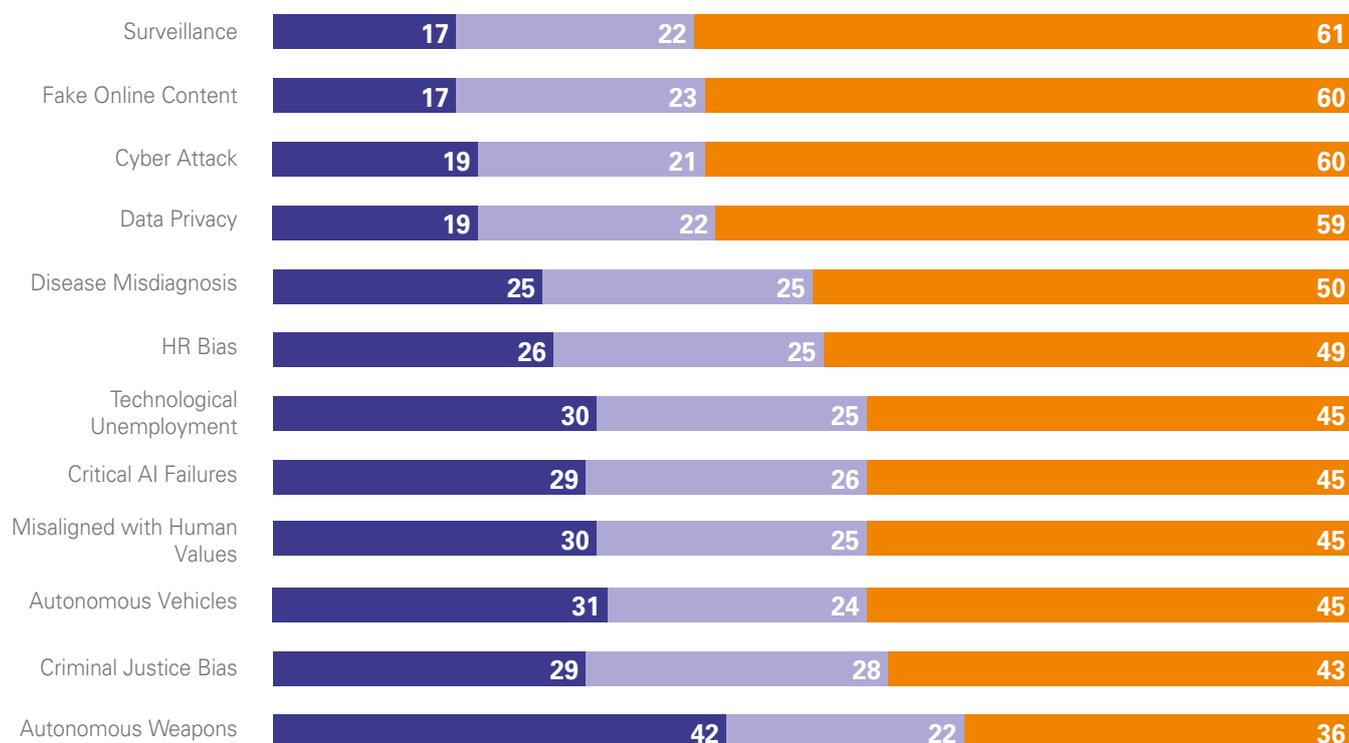
Figure 23 indicates that most respondents (59-61%) think data challenges such as surveillance, fake online content, cyber-attacks, and data privacy are most likely to impact large numbers of people in their country over the next ten years. The only challenge which people perceive to be more unlikely (42%) than likely (36%) to impact large numbers is the use of lethal autonomous weapons.

Germans tend to believe these challenges are less likely to impact large numbers of people (41% 'likely', mean 4.2/7), than respondents from other countries (ranging from Australia 45% 'likely', mean 4.5 to USA 53% 'likely', mean 4.6). In contrast, Americans are more likely to believe that autonomous weapons will impact large numbers of people (46% likely, mean 4.3/7), than respondents from other countries (34%, mean 3.7/7).

Figure 23. Likelihood of AI challenges impacting large numbers of citizens

'In the next 10 years, how likely do you think it is that this challenge will impact large numbers of the people in your country?'

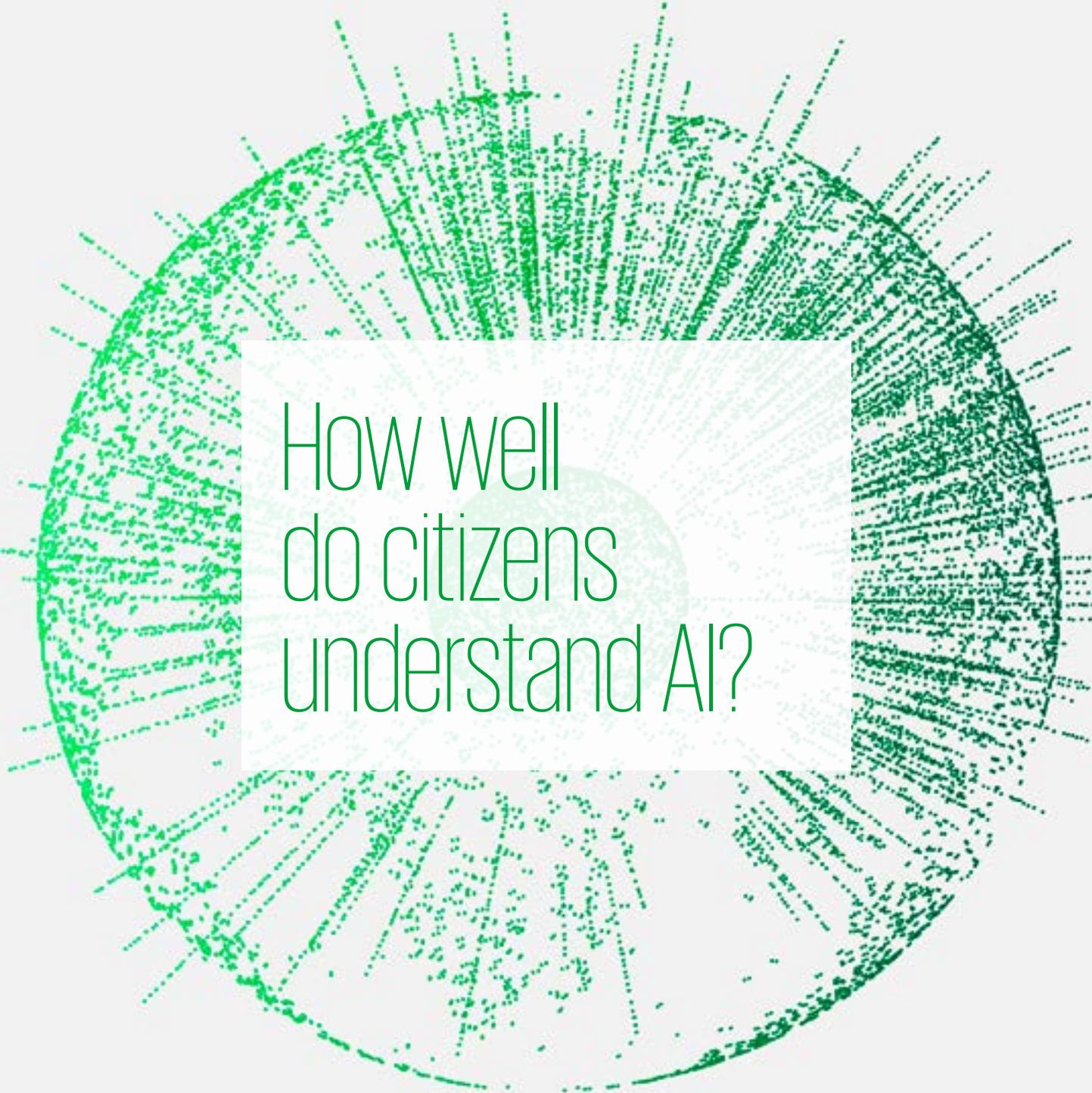
■ % Unlikely
■ % Equally likely as unlikely
■ % Likely



Unlikely = 'Very unlikely (<5% chance)', 'Unlikely (5-20% chance)' or 'Somewhat unlikely (20-40% chance)'

Equally likely as unlikely = 40-60% chance

Likely = 'Somewhat likely (60-80% chance)', 'Likely (80-95% chance)' or 'Very likely (>95% chance)'



How well do citizens understand AI?



To identify how well citizens understand AI, we asked about AI awareness, subjective and objective knowledge of AI and interest to learn more.

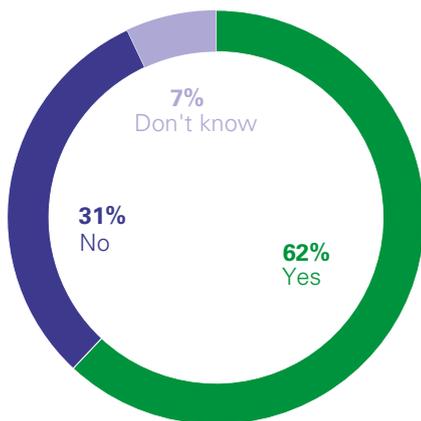
Three out of five citizens are aware of AI

Only 62% of citizens had heard, read or seen something about AI (see Figure 24). This is higher than a 2017 European survey²³ which found less than 50% of respondents had heard of AI, suggesting awareness is increasing.

More UK respondents (70%) had heard of AI than Canadian (62%) or US respondents (62%)²⁴.

Figure 24. Awareness of AI

'Have you heard, read, or seen anything about AI?'



Most citizens do not feel they understand AI

On average, three out of five citizens (60%, see Figure 25) report low subjective knowledge of AI, indicating that they feel they know little about AI, or when and how it is being used²⁵. Only a small proportion of citizens (14%) report high subjective knowledge of AI. This aligns with findings from a recent European survey reporting only 9% of European citizens feel well informed about AI²⁶.

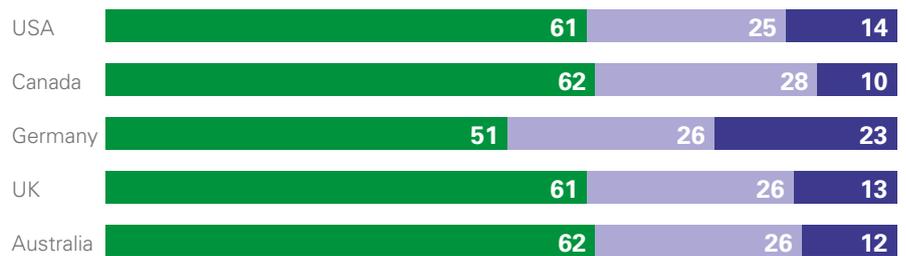
As shown in Figure 25, German citizens report higher subjective knowledge than citizens from all other countries.

Figure 25. Subjective knowledge of AI

'To what extent do you...'

- a) feel you know a lot about AI?
- b) feel informed about how AI is used?
- c) think you understand when AI is being used?'

■ % Low
 ■ % Moderate
 ■ % High



Low = 'Not at all' or 'Slightly'
 Moderate = 'Moderately'
 High = 'Considerably' or 'A great deal'

Citizens have a low understanding of when AI is used

Given the low understanding of AI, it is not surprising that citizens often don't know that AI is used in common everyday technologies. When asked if the common technologies shown in Figure 26 use AI, overall, less than 50% correctly answered yes. That is, people could not correctly identify if the technology used AI better than a chance guess.

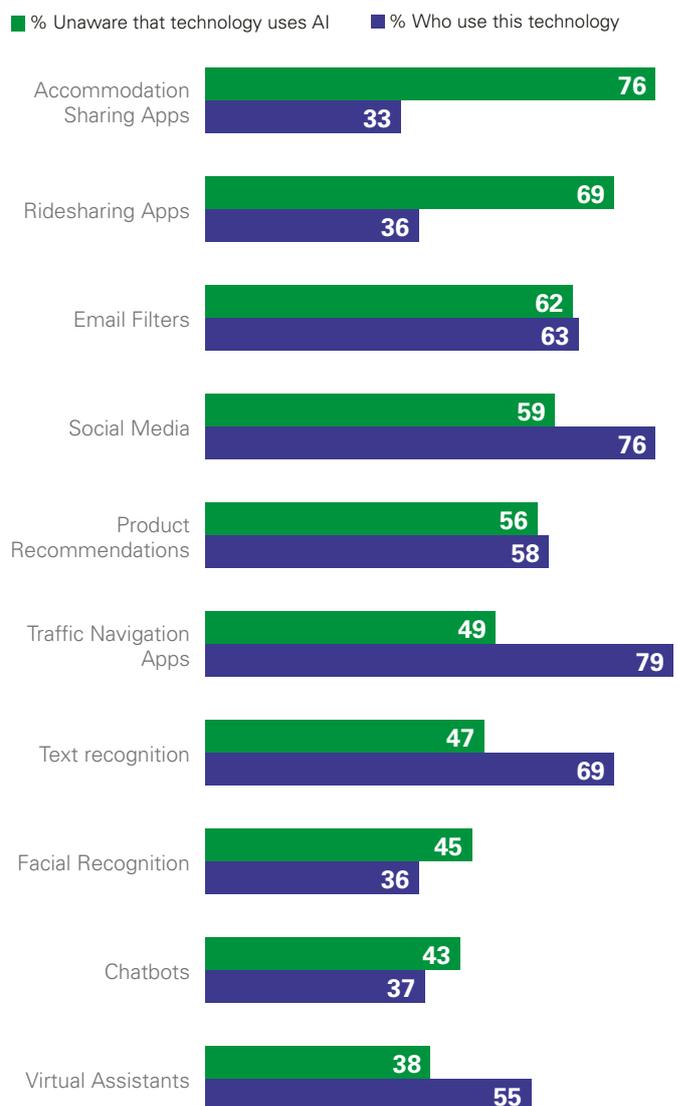
In particular, the majority of citizens are unaware that AI is used in applications such as accommodation sharing (76% unaware) and ridesharing (69%) apps, email filters (62%), social media (59%) and product recommenders (56%). In contrast, there is more awareness of AI use in embodied applications (e.g. with voice) such as chatbots (43% unaware) and virtual assistants (38%).

Surprisingly, use of a technology does not necessarily translate into an increased understanding of whether AI is part of the technology. As shown in Figure 26, this is particularly the case with social media, email filters and traffic navigation apps. For example, while 79% of citizens report using traffic navigation apps, 49% are unaware this technology uses AI.

There are several country differences. Australian citizens are more aware, and Germans less aware, that AI is used in virtual assistants (Germany 42% unaware vs Australia 29%) and facial recognition (Germany 50% unaware vs Australia 35%). German citizens are also less aware that AI is used in product recommendation systems (61% unaware) compared to Canadian (53%) and British respondents (54%). This lower awareness for Germans is surprising given they report higher subjective knowledge of AI than all other countries. Yet Germans use many of the AI systems shown in Figure 26 less than respondents in other countries (49% average use, compared to other countries ranging from 56% to 59%).

Figure 26. Use of AI technologies and understanding of these technologies use of AI

'For each technology below, please indicate if you have used it and if it uses AI?'



Most citizens want to know more about AI

While citizens generally lack knowledge and awareness of AI, the large majority (83%) are interested in learning more about AI. Only 17% report no interest in learning more about AI (ranging from 14% of Australians to 23% of Americans). Americans report less interest in learning more about AI than Australians and Germans.

Some population segments have more awareness and knowledge of AI

Men and those with a university education are more aware of AI. As shown in Figure 27, 20% more men than women had heard of AI, and 20% more respondents with a university degree than those without a degree.

Men and those with university degrees are also more likely to understand when AI is being used in common applications than women and people without degrees. Two in five (40%) citizens without a university degree were unable to correctly identify AI use in any of the common applications presented to them (see Figure 26), compared to just 23% of those with a degree. Similarly, 39% of women did not correctly identify AI use in any of the applications, compared to 27% of men.

Figure 27. AI awareness by population segment

'Have you heard, read, or seen anything about AI?'

■ % Yes



Men and the university-educated, as well as younger people, also report higher subjective knowledge of AI (see Figure 28). Over half of men (51%) report at least moderate subjective knowledge of AI, compared to less than a third (31%) of women, indicating a significant gender gap. Similarly, half of people with a university degree (49%) report at least moderate subjective knowledge compared to a third (34%) of those without a degree. Finally, we see a similar pattern over generations: about half (49%) of Gen Z and Millennials report at least moderate subjective knowledge compared to 38% of Gen X and a third (33%) of Baby Boomers and Silent Generation.

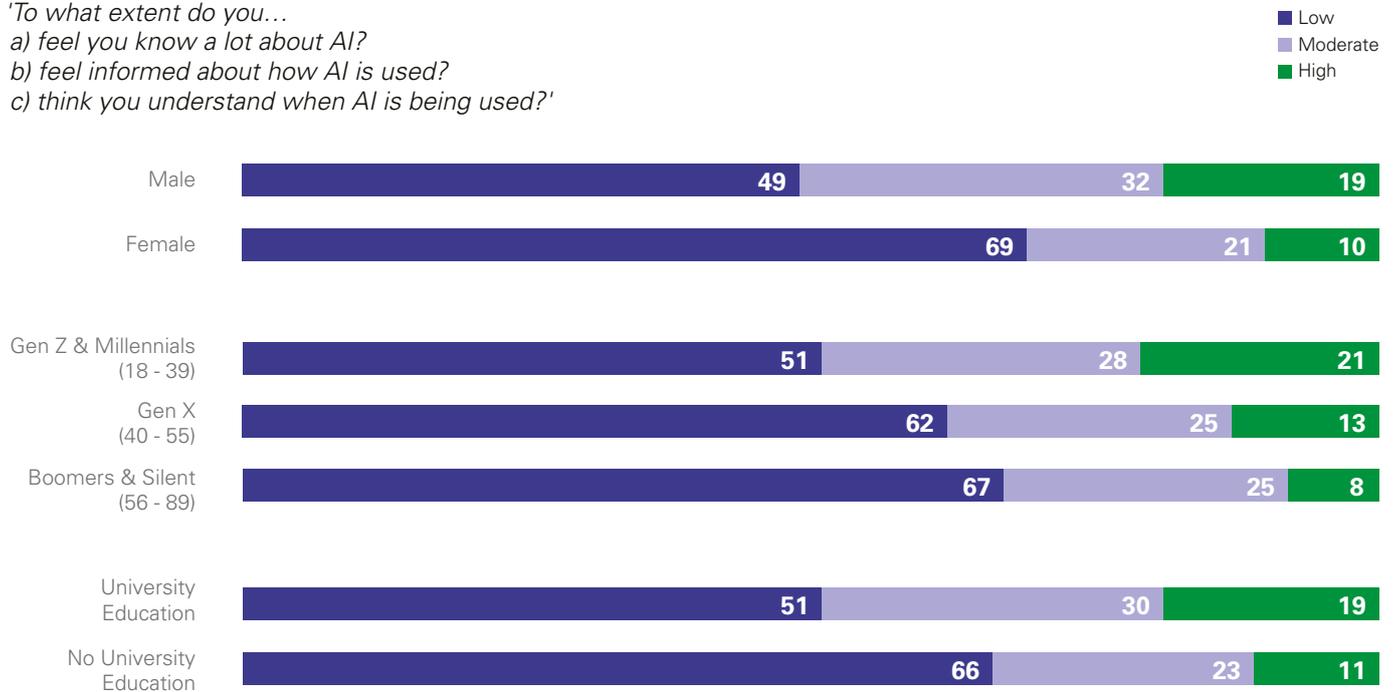
Figure 28. Subjective knowledge by population segment

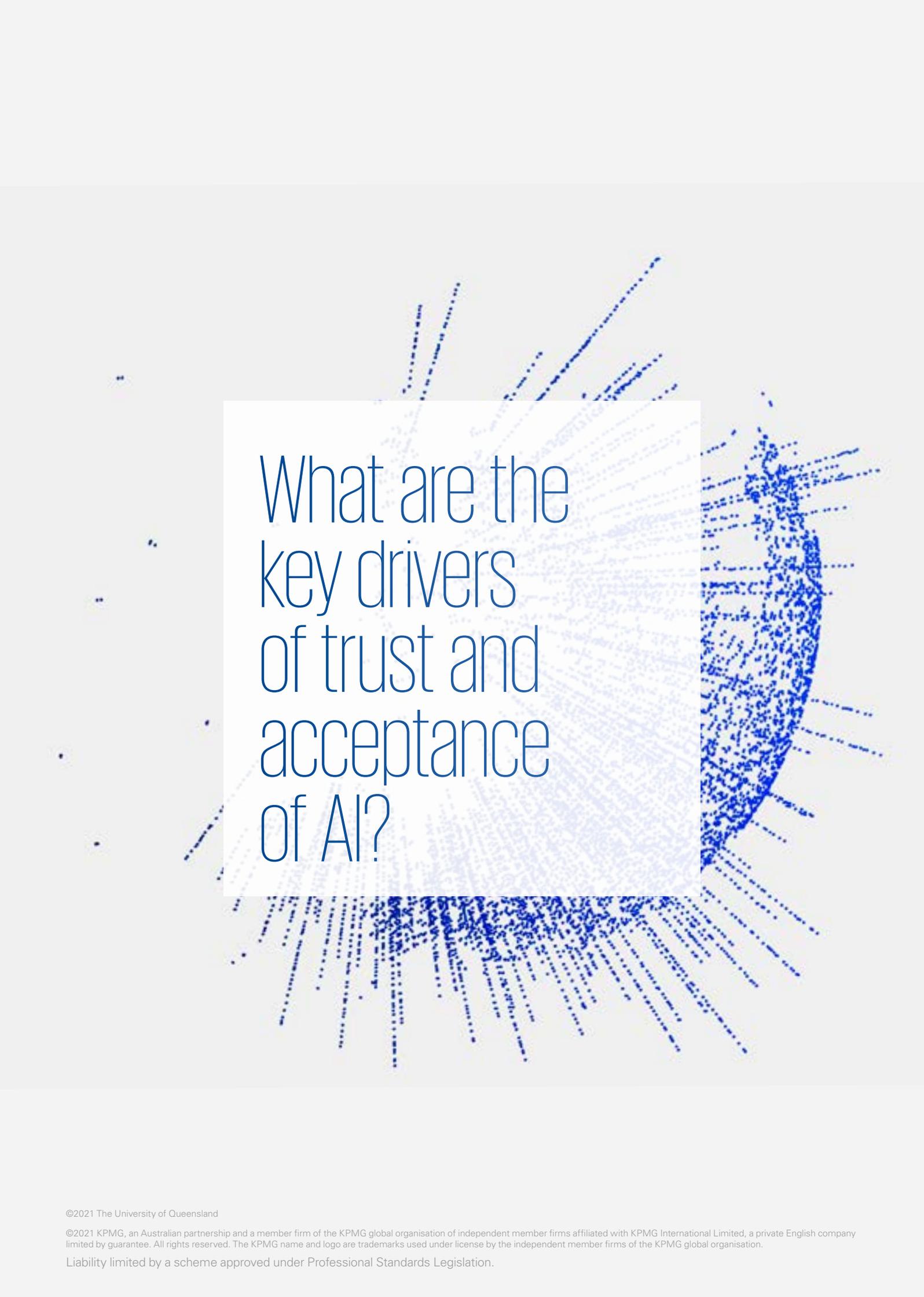
'To what extent do you...

a) feel you know a lot about AI?

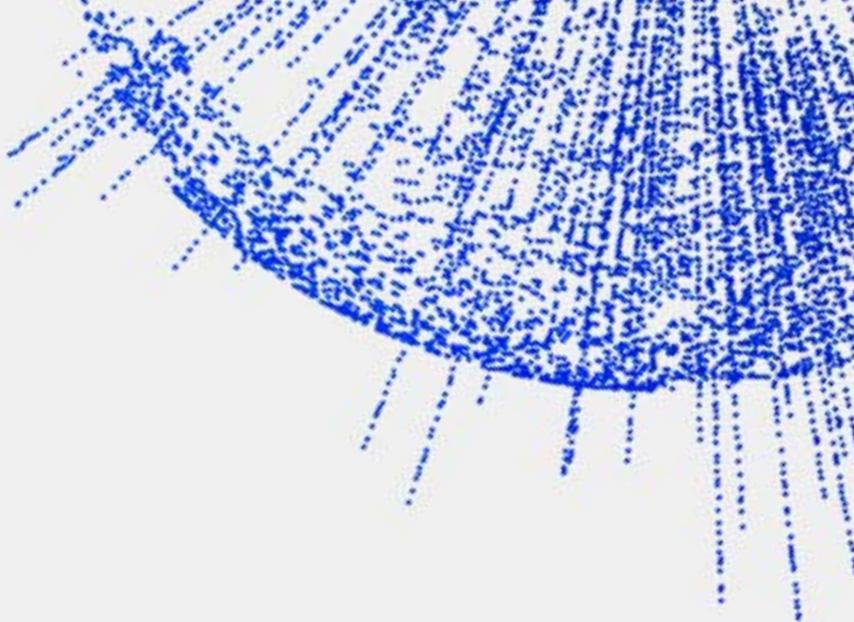
b) feel informed about how AI is used?

c) think you understand when AI is being used?'





What are the key drivers of trust and acceptance of AI?



To identify the most important drivers of trust and acceptance of AI systems examined in this report, we used a statistical technique called path analysis. We explain the path model in Figure 29, together with notes on interpreting the model.

Trust is central to AI acceptance

The path model shows that trust is a central driver of AI acceptance ($B = .47$). This finding empirically supports why trustworthy AI matters: if people perceive AI systems to be trustworthy and are willing to trust them, this leads to the acceptance necessary to realise the benefits of AI.

Trust acts as the central vehicle through which other drivers impact AI acceptance. Each of the four drivers on the left-hand side of the model influences trust, which in turn influences acceptance. Given the key role of trust in driving acceptance, it is important to understand what drives trust in AI systems.

The strongest driver of trust is believing current regulations and laws are sufficient to ensure AI use is safe

As shown in the path model, believing current safeguards are sufficient is the strongest driver of trust. The relative importance of current safeguards ($B = .55$) is more than twice that of the next strongest driver, the perceived impact of AI on jobs ($B = .20$).

This demonstrates the importance of developing adequate regulatory and legal systems that protect people from problems that may arise from AI use, and make them feel safe to use AI systems. Given most people either disagree or are ambivalent that current AI safeguards are adequate, ensuring AI is governed by an appropriate regulatory and legal framework is a critical first step towards enhancing trust and acceptance of AI.

The perceived impact of AI on jobs, and familiarity with AI, influence trust

People's beliefs about the impact of AI on jobs is the second strongest driver of trust ($B = .20$). People who believe AI will create more jobs than it will eliminate are more likely to trust in AI systems. Familiarity with AI was the third driver of trust ($B = .12$). This shows that people who feel that they understand how and when AI is used and have knowledge of AI use in common applications are more likely to trust AI systems and accept AI.

The more people believe the impact of AI is uncertain, the less they trust AI systems

The model indicates that if people believe the impact of AI on society is uncertain and unpredictable, they are less likely to trust in ($B = -.08$) and accept AI. This is the fourth driver of trust.

AI context and education influence trust and acceptance

We also found that two other factors had a smaller impact on trust and acceptance. People are generally more trusting of AI in a healthcare context than AI in general or AI in Human Resources ($B = .06$). People with a university degree also tend to be more accepting of AI than those without a degree ($B = .06$).

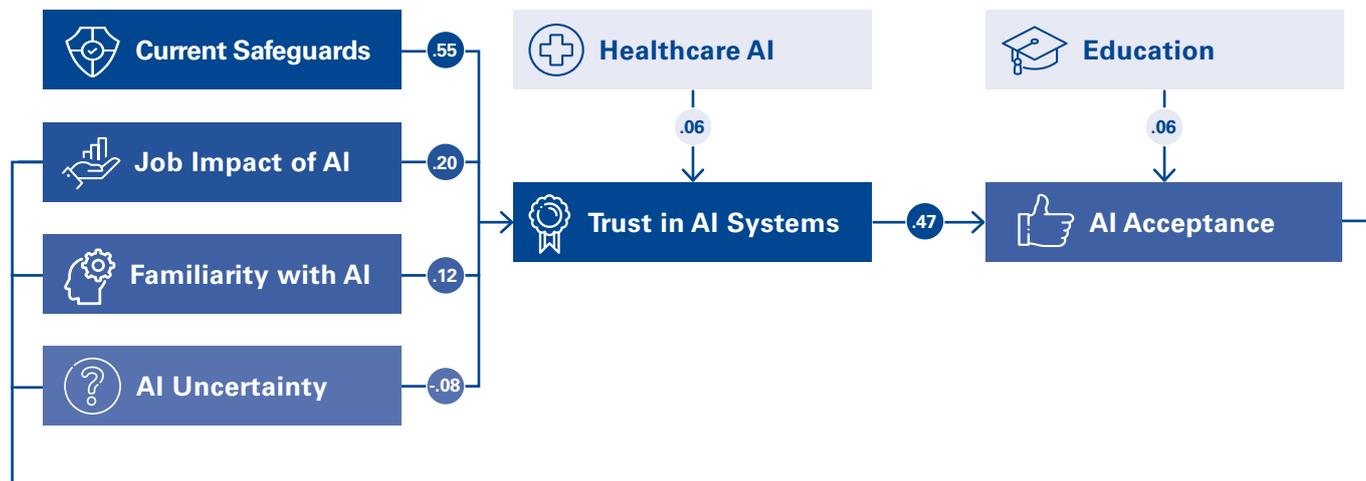
How to read the path model

When reading the path model, follow the arrows from left to right. The values on the arrows indicate their relative importance in driving trust and acceptance: the larger the number, the stronger the effect. The negative value of AI uncertainty indicates that when uncertainty increases, trust and acceptance decrease. All other relationships are positive, which means, for example the more people believe current safeguards are sufficient, the more they will trust AI systems, and the more they trust AI systems, the more they accept AI. Only significant relationships are shown²⁷.

The model is based on all data (across countries and AI applications).

Trust is central to the acceptance of AI systems and is influenced by four key drivers. This model lays out a pathway to building trust and acceptance of AI.

Figure 29. A model of the key drivers of trust and acceptance of AI systems



The belief that current regulations, laws and safeguards are sufficient to protect people and ensure AI use is safe. This is the strongest predictor of trust in AI systems.



The belief that AI will create more jobs than it will eliminate.



The extent to which people feel they understand AI, know when AI is used in common applications, and have used common AI applications.



The belief that the societal impact of AI is unpredictable and there are many unknowns about AI.



The extent to which people trust AI systems and perceive them to be trustworthy.

Other factors also had a small impact on trust and acceptance.



People are more trusting of Healthcare AI than other systems.



People with a university degree are more accepting of AI than those without a degree.



The extent to which people accept and approve of AI.



Conclusion and implications

Together, the findings of this multi-country nationally representative survey of US, Canadian, German, UK and Australian citizens highlight important insights on the public's trust and attitudes towards AI and lays out a pathway for building trust and acceptance of AI systems.

The findings provide a clear overview of the current and future challenges to building and preserving trust and acceptance of AI systems. They also reveal more commonalities in citizens' views across western nations than differences.

A key insight from the survey is that the public generally has low trust towards AI systems. Given trust is a central factor influencing the acceptance and adoption of AI, this low trust is likely to impair societal uptake and the ability of western nations to realise the societal and economic benefits of AI, if left unaddressed. The following insights lay out a roadmap for enhancing public trust in AI.



Live up to citizens' expectations of trustworthy AI

- Our findings reveal that citizens across the five western nations surveyed have very clear and consistent expectations of the principles and practices they expect AI systems to uphold in order to be trusted. They expect organisations to maintain high standards of AI systems in terms of:
 - performance and accuracy
 - data privacy
 - security and governance
 - transparency and explainability
 - accountability
 - risk and impact mitigation
 - fairness
 - human oversight
- These principles and practices reflect those identified in numerous recent government reports on trustworthy, ethical AI²⁸, and our findings provide clear public endorsement for them, as well as underscoring their importance for public trust.
- The public clearly expect AI systems will be monitored and evaluated on an ongoing basis. Organisations should undertake regular in-house and independent ethics reviews of their AI systems to ensure they operate according to these principles and practices.
- Our survey revealed that most people believe organisations innovate with AI for financial reasons (e.g. cost saving or profit maximisation) rather than to benefit society more broadly. This imbalance is most pronounced for commercial organisations, followed by government and then non-profit organisations. This highlights the opportunity for organisations to better engage AI systems for the benefit of citizens, customers and employees, as well as better demonstrate how their use of AI supports societal health and wellbeing.
- It is also important to recognise that people's trust in and support for AI depends on its application. Citizens are broadly more trusting and supportive of AI use in healthcare than in human resources, and view the risks and benefits differently across these applications. These findings suggest citizens are more likely to approve of, and engage with, AI systems for healthcare diagnosis and treatment, than for HR hiring and promotion purposes. This highlights the importance of taking a contextualised approach to the development and deployment of AI systems.
- Many citizens believe AI will eliminate more jobs than it creates, and this belief strongly influenced trust of AI systems.
- Our findings further reveal that most citizens are comfortable with AI use at work for the purposes of task automation and augmentation. This suggests most employees will be generally receptive to the use of AI for these purposes. However, citizens are less comfortable with AI use at work for employee-focused activities, such as evaluating and monitoring performance, and recruitment and selection.
- Taken together, these findings highlight that organisations looking to accelerate the use and uptake of AI need to build trust with customers, employees and the public more broadly – it is not enough to focus on only one stakeholder group. Experiences of AI both as an employee and more broadly as a citizen, will influence trust and acceptance of AI deployment. Governments and employers need to consider and plan for how AI will influence technological unemployment and how to accelerate investment in data and technology literacy for the public and the workplace to help ensure a responsible transition.
- The findings further serve as a warning to employers of the dangers of using AI for purposes that will alienate their people, and suggests employers who are active in upskilling and educating their employees will be better placed to engage them in the use of AI.
- Organisations also need to consider that different cohorts in the workplace and community have different views about AI, with younger people more trusting and accepting of AI, and the university-educated more likely to accept AI. A one-size-fits-all approach is therefore unlikely to work.



Strengthen the regulatory framework for governing AI

- Most citizens view the societal impacts of AI as uncertain and unpredictable. Furthermore, most citizens believe the challenges associated with AI such as fake online content, surveillance, data privacy, cyber-attacks, data privacy, and disease misdiagnosis, are likely to impact a large number of fellow citizens in their country. The public are near unanimous in their expectation that governments and the companies deploying AI carefully manage these challenges.
- It is understandable, therefore, that the large majority (81%) of the citizens surveyed expect AI to be regulated. However, many view the current regulatory and legal framework as insufficient to make AI use safe and protect people from the risks.
- Given this pattern and the finding from this survey that the perceived adequacy of current regulations and laws is the single most important driver of public trust in AI systems, a clear pathway to enhancing trust in AI is to strengthen the regulatory and legal framework governing AI, and citizens' understanding of these frameworks. A strong governance environment reassures the public that AI is being deployed in a trustworthy way and is safe, while also providing guidance and confidence to business to innovate and adopt AI²⁹.
- The public clearly want appropriate regulation that is fit-for-purpose to manage the risks and uncertainties associated with AI. Our results further show that most of the public expect an independent AI regulator, as well as the government and existing regulators, to be involved in regulating and governing AI systems, rather than leaving it to industry only. Most of the public have at least moderate confidence in the government to do so in the public's best interest. However, the US and UK are trailing behind the other countries in their confidence in government to regulate AI. Given these countries also have lower trust more generally towards their governments, strengthening general trust towards government is likely to be an important building block to enhancing confidence in AI regulation.
- Given the public has the most confidence in universities, research and defence organisations to develop and use, as well as regulate and govern AI systems, there is an opportunity for business and government to partner with these organisations around AI initiatives.
- Our findings further indicate that organisations can directly build trust and willingness to use AI systems by adopting assurance mechanisms that support the ethical deployment of AI systems. These include actions such as establishing independent AI ethics reviews, adopting codes of conduct and national standards, and obtaining AI ethics certification.



Enhance Public AI literacy

- A key finding is that the public generally has low awareness and understanding of AI and its use in everyday life. While younger people, men, and the university-educated tend to be more aware and understand AI better, even these groups report low to moderate AI understanding.
- At the same time, a large majority of the community are interested in learning more about AI (83%), and report that supporting people to understand AI, is important for them to trust AI systems (95%). This last insight is further supported by our path model, which identified familiarity and understanding of AI as a key driver of trust and acceptance of AI.
- Collectively, these insights paint a clear picture of the need to increase the AI literacy of the public. Educating the community about what AI is and when and how it is being used is important for a range of reasons. First, despite the current low awareness and understanding, the community have strong views on the regulation, use and design of AI. Increasing public literacy will assist in ensuring these views are well informed. Second, AI literacy empowers citizens, consumers and employees to better seize the benefits and opportunities from AI systems, while also identifying and managing the potential risks (e.g. of data sharing and privacy). Third, AI literacy is fundamental to the public's ability to effectively contribute to public policy and debate on the stewardship of AI into society, and facilitates meaningful public consultation on AI design and use.
- Some countries have already invested in providing free AI public literacy courses³⁰ and the European Commission recently developed a Digital Education Action Plan to facilitate AI and digital education³¹. We recommend that enhancing the public's AI literacy be a responsibility shared by government (e.g. formal programs within schools and for citizens), and organisations using or developing AI (e.g. by investing in employee and customer AI literacy programs and tools).

These three pathways are each important for the responsible stewardship of AI into society and provide complementary ways to build and maintain citizen trust in AI systems.

Appendix 1

Methodological and Statistical Notes

In this section, we explain our methodological and statistical approach.

Survey design

Where possible, we used or adapted existing validated measures from academic research or from previous attitude surveys³².

We asked a subset of questions to explore whether respondents' trust and attitudes towards AI differ depending on whether we asked about AI systems in general versus two specific use cases of AI systems: Healthcare AI and Human Resource AI. These two domains were chosen as they represent domains where AI is rapidly being deployed and is likely to impact a large numbers of citizens (healthcare as an essential service, and HR as relevant to a broad range of employment contexts).

Before answering questions, respondents were provided with a brief description of what the system does, how it works and how it is used (see shortened descriptions below). The research team developed these descriptions based on a range of in use systems and input from domain experts working in healthcare and human resources.



Healthcare AI

An AI system used to improve the diagnosis and treatment of disease. The system compares patient health data to existing databases to produce recommendations. Doctors use the system to inform decisions about how to diagnose and treat patients.



Human Resource AI

An AI system used to improve the prediction and evaluation of performance by collecting and comparing employee data and job performance over time. Managers use the system to inform decisions about hiring and promotion.

We extensively piloted and refined the survey before full launch. To ensure survey equivalence across countries, we conducted translation and back translation of the French and German versions of the survey using separate professional translators and piloted these surveys separately with French and German speakers prior to use.

Reporting differences between countries and applications, and within people

Our in-text reporting of between-country, between-application, between-citizen and within-person differences was informed by statistical analyses and adhered to well-established benchmarks for interpreting between- and within-subject effect sizes (see Cohen, 1988; Lakens, 2013). We used a stringent cut off of $p < .01$ to interpret statistical significance.

We used one-way analysis of variance (ANOVA) to examine differences between countries, between AI applications and between citizens (e.g. generational differences). Where there are statistically significant differences between groups ($p < .01$), we examined the omega-squared effect size to determine the magnitude of difference between the groups. Differences with an effect size less than .01 were deemed practically insignificant and are not reported. Meaningful patterns of between country findings that exceeded the .01 effect size are reported³³.

We performed paired-sample t-tests to examine within-person differences (for instance, the variability in one's willingness to rely on versus share information with an AI system). We used a measure of effect size to determine the magnitude of statistically significant effects. Specifically, we used Hedges' g with a cut-off of .30 to indicate a robust and practically meaningful difference.

Rounding

When percentages did not add up to 100% due to rounding, we distributed the remaining value based on decreasing order of the values' decimal part, as per the Largest Remainder Method.



Appendix 2

Country Samples

Country demographic profiles

The demographic profile of each sample was nationally represented on age, gender and location based on official national statistics within each country, specifically: USA – United States Census Bureau, Canada – Statistics Canada, Germany – Federal Statistical Office, UK – Office for National Statistics, Australia – Australian Bureau of Statistics. Income reflects household income for all countries except Australia, which reports personal income.

The gender balance was 51% female and 49% male for all countries. The mean age across countries ranged from 46 years (USA and Australia) to 49 years (Canada). The countries vary in the proportion of the sample that live in metropolitan regions, with Canada having the highest metropolitan sample (73%) followed by Australia, the USA, then Germany and the UK (46%). Country samples also vary on education, with USA having the highest percentage with a university education (48%) and Germany the lowest (34%). In forming income categories for each country, we consulted data from each country's census or national statistics body related to median household income to ensure this figure was within the relevant country's middle category. Descriptive analysis of our income categories confirmed the median response in each country was in the middle category, as expected.

USA: 1,223

Area	
Non-metropolitan	48%
Metropolitan	52%
Age	
Generation Z (18-23)	8%
Millennial (24-39)	34%
Generation X (40-55)	27%
Baby Boomer (56-74)	27%
Silent Generation (75-89)	4%
Education	
High school, GED or less	28%
Vocational/trade/ technical qualification	7%
Associate degree	17%
Undergraduate degree	29%
Postgraduate degree	19%
Income (Household)	
Less than \$25,000	20%
\$25,000 – \$49,999	22%
\$50,000 – \$74,999	21%
\$75,000 – \$99,999	13%
\$100,000 or more	24%

Canada: 1,229

Area	
Non-metropolitan	27%
Metropolitan	73%
Age	
Generation Z (18-23)	3%
Millennial (24-39)	29%
Generation X (40-55)	33%
Baby Boomer (56-74)	32%
Silent Generation (75-89)	3%
Education	
Secondary school or less	22%
Vocational/trade/technical qualification	12%
College/CEGEP or other non- university certificate or diploma	21%
Undergraduate degree	34%
Postgraduate degree	11%
Income (Household)	
Less than \$25,000	12%
\$25,000 – \$49,999	21%
\$50,000 – \$74,999	22%
\$75,000 – \$99,999	19%
\$100,000 or more	26%

Germany: 1,202

Area	
Non-metropolitan	58%
Metropolitan	42%
Age	
Generation Z (18-23)	5%
Millennial (24-39)	30%
Generation X (40-55)	29%
Baby Boomer (56-74)	33%
Silent Generation (75-89)	3%
Education	
Secondary school or less	7%
Vocational / apprenticeship/ professional	41%
Secondary school graduation/ university entrance qualification	18%
Undergraduate degree	17%
Postgraduate degree	8%
Income (Household)	
Less than €18,000	21%
€18,000 – €30,999	24%
€31,000 – €51,999	28%
€52,000 – €99,999	22%
€100,000 or more	5%

UK: 1,200

Area	
Non-metropolitan	54%
Metropolitan	46%
Age	
Generation Z (18-23)	3%
Millennial (24-39)	37%
Generation X (40-55)	27%
Baby Boomer (56-74)	29%
Silent Generation (75-89)	4%
Education	
School to O Level, GCSE, National 5 (or similar) or less	19%
Vocational/trade/technical qualification	22%
School to A Level (or similar)	15%
Undergraduate degree	32%
Postgraduate degree	12%
Income (Household)	
Less than £18,000	21%
£18,000 – £30,999	29%
£31,000 – £51,999	29%
£52,000 – £99,999	18%
£100,000 or more	3%

Australia: 1,200

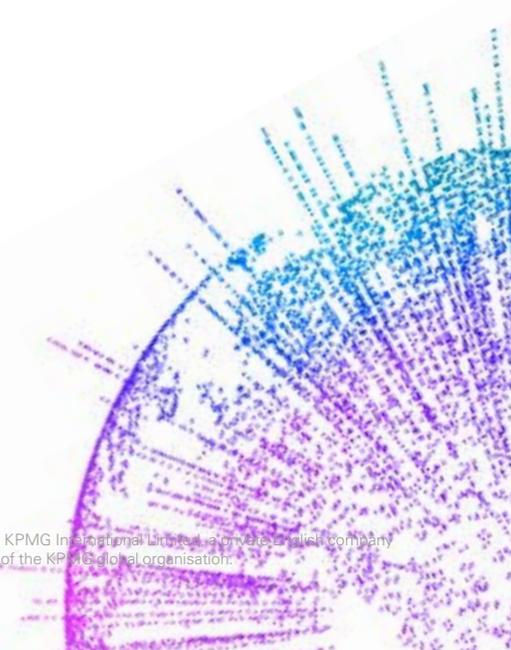
Area	
Non-metropolitan	31%
Metropolitan	69%
Age	
Generation Z (18-23)	13%
Millennial (24-39)	29%
Generation X (40-55)	24%
Baby Boomer (56-74)	28%
Silent Generation (75-89)	6%
Education	
Year 11 or lower	11%
Completed Year 12	21%
Vocational/trade/ technical qualifications	27%
Undergraduate degree	31%
Postgraduate degree	10%
Income (Personal)	
Less than \$25,000	27%
\$25,000 – \$49,999	26%
\$50,000 – \$74,999	20%
\$75,000 – \$99,999	11%
\$100,000 or more	16%

Endnotes

- 1 International Data Corporation. (2021, February 23). IDC Forecasts Improved Growth for Global AI Market in 2021. Retrieved from www.idc.com
- 2 AI HLEG. (2019). Ethics Guidelines for Trustworthy AI. European Commission. Retrieved from <https://ec.europa.eu/>;
- 3 For example, see Gillespie, N., Curtis, C., Bianchi, R., Akbari, A., and Fentener van Vlissingen, R. (2020). Achieving Trustworthy AI: A Model for Trustworthy Artificial Intelligence. KPMG and The University of Queensland Report. doi. org/10.14264/ca0819d
- 4 Loureiro, S. M. C., Guerreiro, J., & Tussyadiah, I. (In press). Artificial intelligence in business: State of the art and future research agenda. *Journal of Business Research*.
- 5 Schwab, K. (2016). The Fourth Industrial Revolution. World Economic Forum. <https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab>

Schwab, K. (2015, December 12). The Fourth Industrial Revolution: What it means and how to respond. Foreign Affairs. Retrieved from <https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution>. [Accessed October 6, 2020].
- 6 OECD (2019), Artificial Intelligence in Society, OECD Publishing, Paris. <https://doi.org/10.1787/eedfee77-en>
- 7 Multiple international and pan governmental organisations, including the OECD, The European Commission, and the G7 Innovation Ministers, note the importance of trust in AI and developing 'trustworthy' AI systems, to support continual AI adoption. This is also recognised in the AI roadmaps and strategic plans of the five countries examined in this report (see for example https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/949539/AI_Council_AI_Roadmap.pdf and <https://www.nitrd.gov/news/National-AI-RD-Strategy-2019.aspx>)
- 8 Eurobarometer. (2019). Europeans and Artificial Intelligence. European Commission. Retrieved from <https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/ResultDoc/download/DocumentKy/89670>; Eurobarometer. (2017). Attitudes towards the impact of digitisation and automation on daily life (Report no. 460). Retrieved from <https://ec.europa.eu/>; BEUC (2020). Artificial Intelligence: what consumers say. Findings and policy recommendations of a multi-country survey on AI. The European Consumer Organisation. Retrieved from https://www.beuc.eu/publications/beuc-x-2020-078_artificial_intelligence_what_consumers_say_report.pdf; Pew Research Centre. (2020). Science and Scientists Held in High Esteem Across Global Publics: Yet there is ambivalence in many publics over developments in AI, workplace automation, food science. Retrieved from <https://www.pewresearch.org/science/2020/09/29/science-and-scientists-held-in-high-esteem-across-global-publics/>; Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. Retrieved from SSRN 3312874.
- 9 Seven respondents identified as a gender 'other' than male or female. Due to the low proportion of respondents, we were unable to run statistical analyses for this group. In analyses reporting gender differences (see Figures 27 and 28, related to awareness of AI and subjective knowledge), we note that 43% of 'other' respondents had heard of AI (29% had not heard of AI, 28% don't know), and just 14% of these respondents reported high subjective knowledge.
- 10 The Australian sample used in this report was stratified from a larger sample of 2,575 Australians collected for an Australian-specific report (Lockey, Gillespie, & Curtis, 2020). We stratified the sample to achieve a similar size to the four other country samples and avoid disproportionate influence of aggregated country data. There are no substantive demographic differences between the full Australian sample and the sub-set used in this report.
- 11 Healthcare AI is most trusted (M = 3.9), followed by AI (M = 3.70), then Human Resource AI (M = 3.5). These differences are all statistically significant (all comparison $p < .001$, ANOVA effect size = .02).
- 12 We asked respondents to rate their confidence in twelve entities. Given similarities in the data across some of these entities, for simplicity we amalgamated responses to the following six entities into three entities: 'The federal government' and 'My state/province government' to form 'Federal/State/Provincial Government'; 'Independent regulatory bodies funded by the government' with 'Existing agencies that regulate and govern specific sectors' to form 'Existing regulatory agencies'; 'Intergovernmental research organizations (e.g. CERN)' with 'Non-government scientific organizations (e.g. AAAI)' to form 'Intergovernmental and non-governmental research organizations'.
- 13 For ease of interpretation and display, we report data for seven of the nine entities. Responses to 'National AI Governance Body' and 'International Organisations (e.g. United Nations, European Union)' followed the same pattern of country differences, with the US reporting less confidence in these entities to regulate and govern AI compared to other countries.
- 14 AAAI refers to the Association for the Advancement of Artificial Intelligence, an international scientific society promoting research in, and responsible use of, AI.
- 15 Eurobarometer. (2017). Attitudes towards the impact of digitisation and automation on daily life (Report no. 460). Retrieved from <https://ec.europa.eu/>; Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. Retrieved from SSRN 3312874.
- 16 Eurobarometer (2019). Europeans and Artificial Intelligence. European Commission. Retrieved from <https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/ResultDoc/download/DocumentKy/89670>; Eurobarometer. (2017). Attitudes towards the impact of digitisation and automation on daily life (Report no. 460). Retrieved from <https://ec.europa.eu/>; BEUC (2020). Artificial Intelligence: what consumers say. Findings and policy recommendations of a multi-country survey on AI. The European Consumer Organisation. Retrieved from https://www.beuc.eu/publications/beuc-x-2020-078_artificial_intelligence_what_consumers_say_report.pdf
- 17 Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), 389-399.
- 18 AI HLEG. (2019). Ethics Guidelines for Trustworthy AI. European Commission. Retrieved from <https://ec.europa.eu/>
- 19 Edelman AI. (2019). 2019 Edelman AI Survey. Retrieved from <https://www.edelman.com/>; Eurobarometer. (2017). Attitudes towards the impact of digitisation and automation on daily life (Report no. 460). Retrieved from <https://ec.europa.eu/>; Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. Retrieved from SSRN 3312874.
- 20 This question was asked differently in the Australian survey ("What percentage of your work involves some form of AI?" compared to "How often do you use AI in your work?"). As such, responses cannot be directly compared, and Australian data is excluded. Full reporting of the Australian sample is available in Lockey, Gillespie & Curtis (2020).
- 21 Zhang, B., & Dafoe, A. (2019). Artificial intelligence: American attitudes and trends. Retrieved from SSRN 3312874.
- 22 Exceptions were autonomous vehicles and criminal justice bias, where Australia was higher than only select countries, not all.

- 23 Eurobarometer. (2017). Attitudes towards the impact of digitisation and automation on daily life (Report no. 460). Retrieved from <https://ec.europa.eu/>
- 24 Australians were asked whether they had heard, read, or seen anything about AI “in the past 12 months”; whereas this qualifier was removed for other countries. Therefore, we exclude Australians from the examination of country differences.
- 25 Responses to the three items assessing subjective knowledge were aggregated to produce an overall score.
- 26 BEUC (2020). Artificial Intelligence: what consumers say. Findings and policy recommendations of a multi-country survey on AI. The European Consumer Organisation. Retrieved from https://www.beuc.eu/publications/beuc-x-2020-078_artificial_intelligence_what_consumers_say_report.pdf
- 27 For an accessible introductory text detailing the path analytic approach, see Hayes, A. F. (2017). Introduction to mediation, moderation, and conditional process analysis A regression-based approach (2nd ed.). Guilford Press: New York.
- 28 For example: AI HLEG. (2019). Ethics Guidelines for Trustworthy AI. European Commission. Retrieved from <https://ec.europa.eu/>
- 29 The importance of effective governance and legislation is noted in the AI roadmaps of several countries (for example, see <https://www.gov.uk/government/publications/ai-roadmap>, https://www.ki-strategie-deutschland.de/files/downloads/Fortschreibung_KI-Strategie_engl.pdf, and <https://cifar.ca/wp-content/uploads/2020/05/rebooting-regulation-exploring-the-future-of-ai-policy-in-canada.pdf>)
- 30 An example is Finland’s ‘Elements of AI’ course run by the University of Helsinki (see <https://www.elementsofai.com/>). The UK government has developed a free online ‘Skills Toolkit’ that includes introductory courses on AI (<https://nationalcareers.service.gov.uk/find-a-course/the-skills-toolkit>)
- 31 European Commission. (2020). Digital Education Action Plan (2021-2027): Resetting Education for the Digital Age. Retrieved from https://ec.europa.eu/education/sites/default/files/document-library-docs/deap-communication-sept2020_en.pdf
- 32 We draw from validated scaled published in academic journals (e.g. Porting & Pidgeon, 2005; Pavlou et al., 2007), and in places, used or adapted scales from prior attitude surveys by Zhang and Dafoe (2019) and Eurobarometer (2017)
- 33 See Field, A. (2013). Discovering statistics using IBM SPSS statistics (4th ed.). Sage: London. (see page 474 values for 2 of 0.01, 0.06, 0.14 indicate small, medium and large effects respectively).



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