Thriving in an AI World

Just one year ago, *Living in an AI World* signaled on all accounts that AI was starting to have real impact across industries, yet industry leaders told us that they felt it was not being implemented fast enough.

Fast forward to today, industry leaders are telling us they are experiencing what we at KPMG are calling **COVID-19 whiplash**, with AI adoption literally skyrocketing as a result of the pandemic.
Now, industry leaders are saying it's moving too fast.

In this year's *Thriving in an AI World*, it's been incredibly fascinating to see that business leaders are confident in AI's ability to help solve major industry problems, including the challenges brought on by COVID-19, including helping with **vaccine development** and **distribution** (life sciences and healthcare respondents), **detecting fraud** (financial services), and **improving bureaucratic efficiency** (government).

We're also seeing optimism with the new administration and industry leaders are conscious that controls are needed and overwhelmingly believe the government has a role to play in regulating AI technology.

Please take a moment to review findings with my team across all categories, including two new categories we explored, as well as two new industries we've added. I hope you find this study as informative and insightful as we do. We look forward to speaking with you and advancing this conversation in the market.

- Traci Gusher, Principal of Artificial Intelligence at KPMG

Contents

Key findings

1

The COVID-19 pandemic accelerated the pace **of AI adoption**, but many business leaders and government decision-makers indicate it's **moving too fast** for comfort.

2

Organizations are betting on AI to solve **major industry problems**, but much work remains to realize the technology's **full potential**.

3

Despite **skyrocketing adoption**, growing concerns around **security**, **privacy** and **ethics** present the biggest risks for AI.

4

Business leaders and government decision-makers say they are optimistic the **new administration** will help **advance AI** and **support regulation** for the technology.

Momentum amid the pandemic

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More than half of business leaders and government decision-makers surveyed say AI is functional at their organization

Chart 1: AI is at least moderately to fully functional in each of the seven industries KPMG surveyed.

93%
Industrial Manufacturing

Does your current organization make use of AI (artificial intelligence) in any of its operations or functions?

↑ +37 ppt
84%
Financial Services

↑ +20 ppt
83%
Tech

↑ +29 ppt
81%
Retail

77%
Life Sciences

67%
Healthcare

61%
Government

Industry respondents from **small companies (88%)** are more likely than industry respondents from **large companies (75%)** to say AI is at least moderately to **fully functional** in their organization.
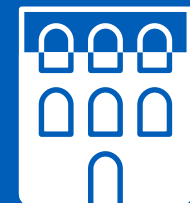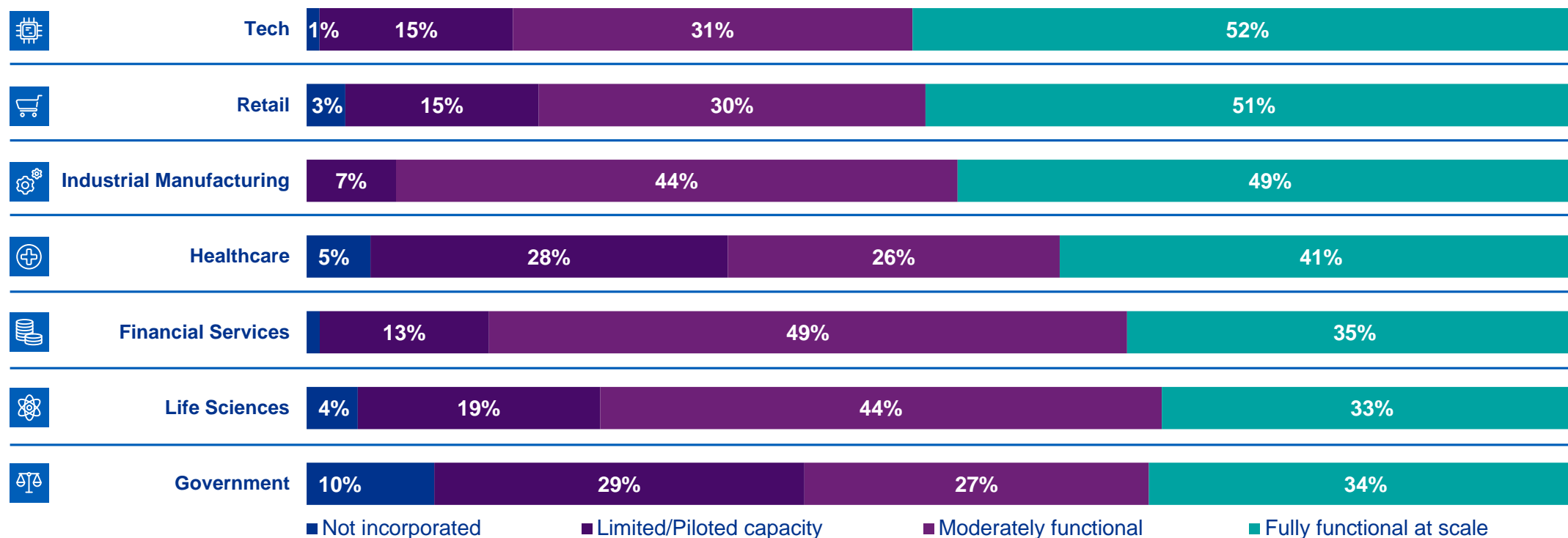
Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

The level of AI functionality varies across industries with technology, retail and industrial manufacturing leading the pack

Chart 2: Current use of AI in operations or functions.

Industry	Not incorporated	Limited/Piloted capacity	Moderately functional	Fully functional at scale
Tech	1%	15%	31%	52%
Retail	3%	15%	30%	51%
Industrial Manufacturing	7%		44%	49%
Healthcare	5%	28%	26%	41%
Financial Services		13%	49%	35%
Life Sciences	4%	19%	44%	33%
Government	10%	29%	27%	34%

■ Not incorporated ■ Limited/Piloted capacity ■ Moderately functional ■ Fully functional at scale
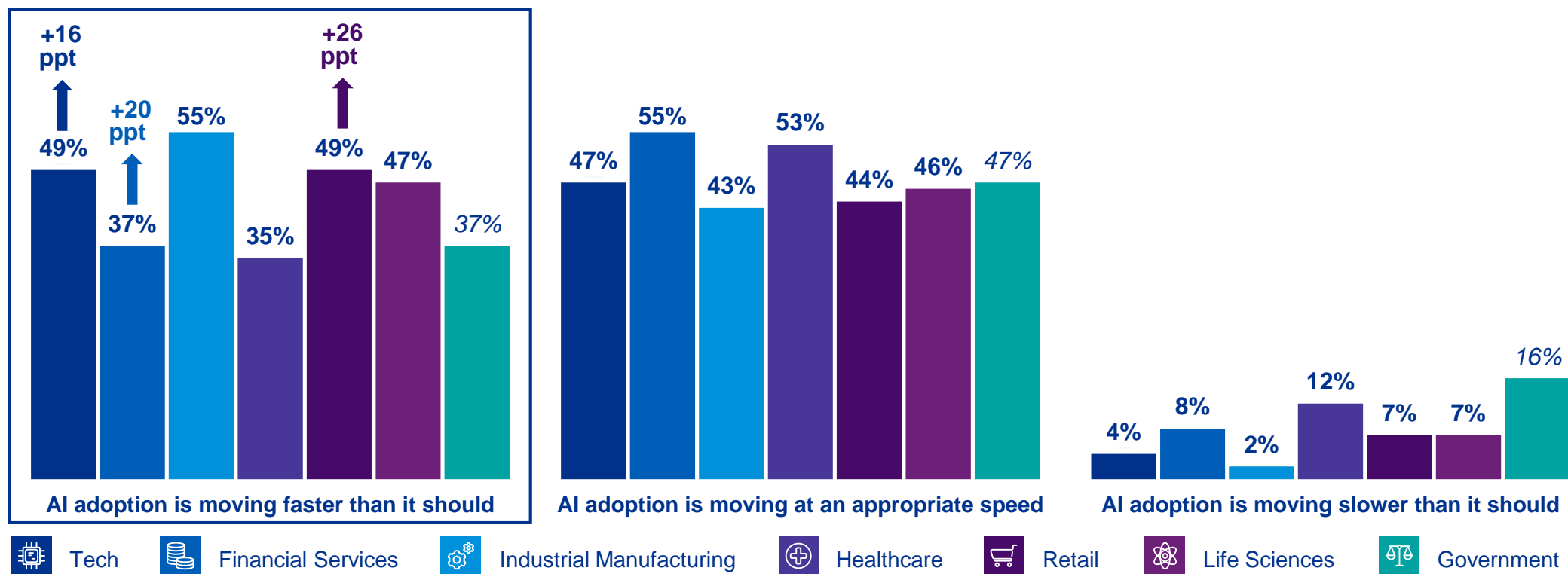
Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

As AI adoption increases, large percentages of business leaders indicate the technology is moving too fast for comfort

Chart 3: Perception of pace of AI adoption across industries.

AI adoption is moving faster than it should

- +16 ppt / 49% — Tech
- +20 ppt / 37% — Financial Services
- 55% — Industrial Manufacturing
- 35% — Healthcare
- +26 ppt / 49% — Retail
- 47% — Life Sciences
- 37% — Government

AI adoption is moving at an appropriate speed

- 47% — Tech
- 55% — Financial Services
- 43% — Industrial Manufacturing
- 53% — Healthcare
- 44% — Retail
- 46% — Life Sciences
- 47% — Government

AI adoption is moving slower than it should

- 4% — Tech
- 8% — Financial Services
- 2% — Industrial Manufacturing
- 12% — Healthcare
- 7% — Retail
- 7% — Life Sciences
- 16% — Government

Tech   Financial Services   Industrial Manufacturing   Healthcare   Retail   Life Sciences   Government

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Business leaders from small companies and with high AI knowledge, including younger industry respondents, believe AI is moving faster than it should

Small company

Industry respondents from **small companies** are more likely than total industry respondents to feel **AI adoption is moving faster** than it should (63% vs. 44%).
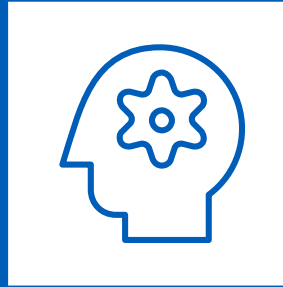
High AI Knowledge

Half (51%) of industry respondents with **high AI knowledge** feel **AI adoption is moving faster than it should** compared to 44% of total industry respondents.

Younger industry respondents

Younger (Gen Z and Millennial) industry respondents are more likely than total industry respondents to feel **AI adoption is moving faster than it should** (51% vs. 44%).

Many business leaders say their organization accelerated AI adoption during the pandemic and credit the technology in their response

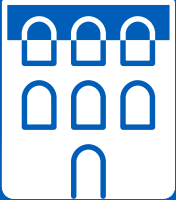## Chart 4: COVID-19 influenced AI implementation and sped the pace of adoption.

How has COVID-19 influenced your company's plans to implement AI? - Sped up my company's pace of adoption.

Base: Interested in Implementing AI Technology (Tech n=150, Retail n=149, Financial Services n=149, Industrial Manufacturing n=150, Healthcare and Life Sciences n=198, Government n=147)

*Due to reduced base sizes for this question, Healthcare and Life Sciences respondents were combined to bolster the sample.

72% Industrial Manufacturing

57% Tech

53% Retail

44% Government

42% Financial Services

37% Healthcare and Life Sciences
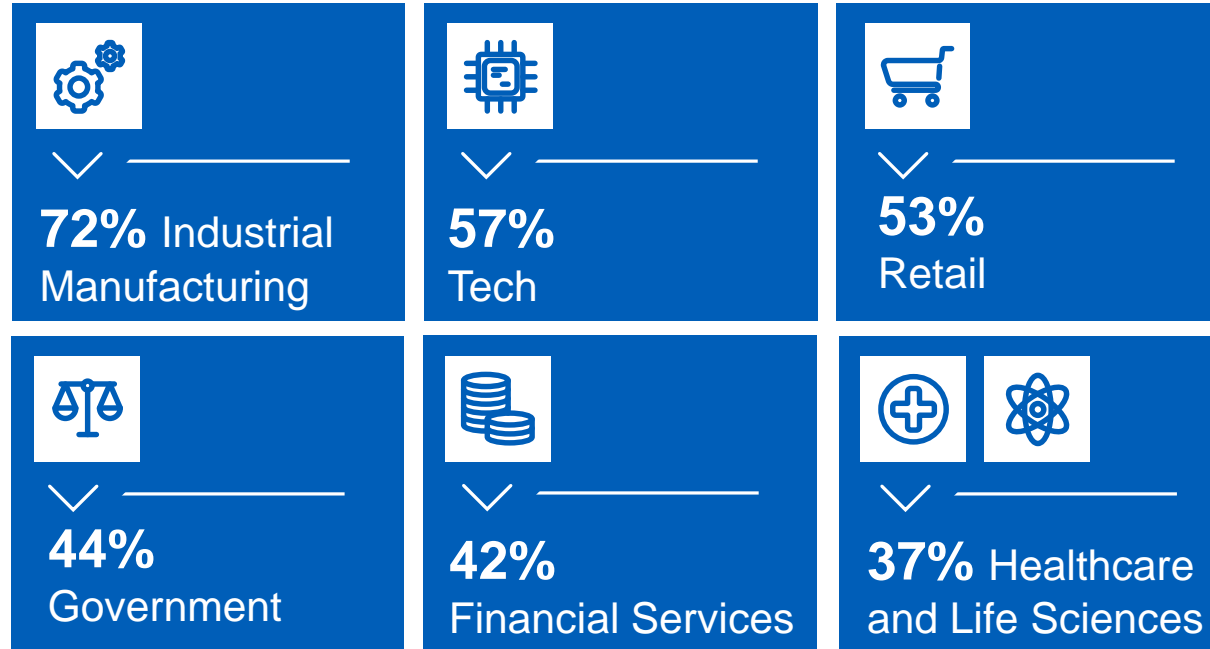
Industry respondents from **small companies (88%)** are more likely than industry respondents from **large companies (80%)** to say **AI technology** helped their company during the **COVID-19** outbreak.

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Portrayals & perceptions of AI

Confidence in AI to help solve major industry problems is high among business leaders and government decision-makers

Business leaders are confident in AI's ability to detect fraud in the financial services industry.

Government decision-makers are confident in AI's ability to improve bureaucratic efficiency.

7%
Not
confident

93%
Confident

+8 ppt

7%	51%	41%

21%
Not
confident

79%
Confident

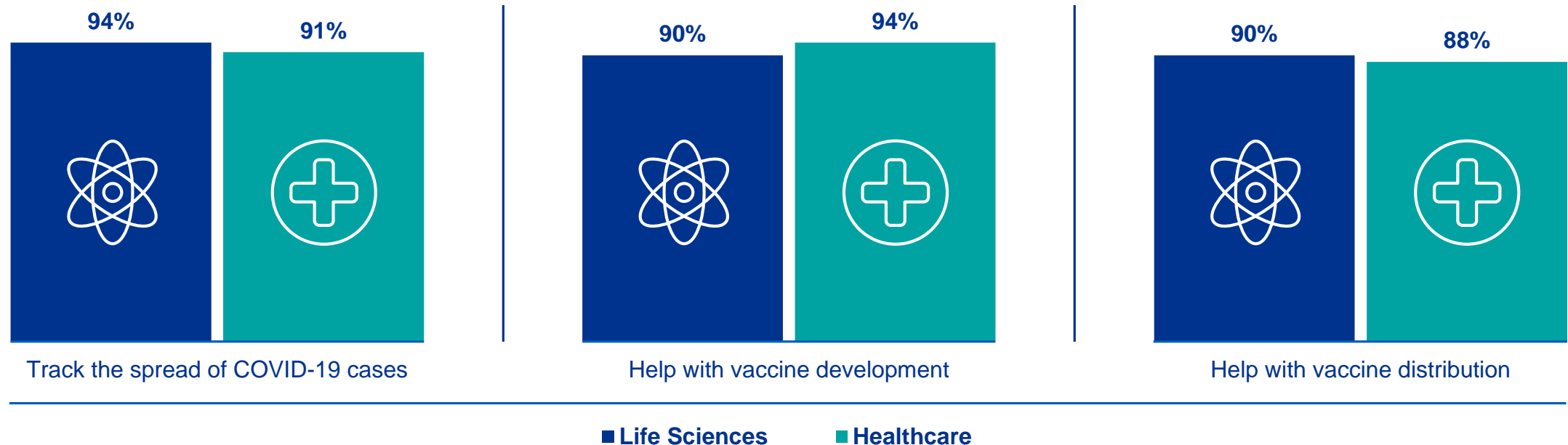| 7%	14%	41%	38%

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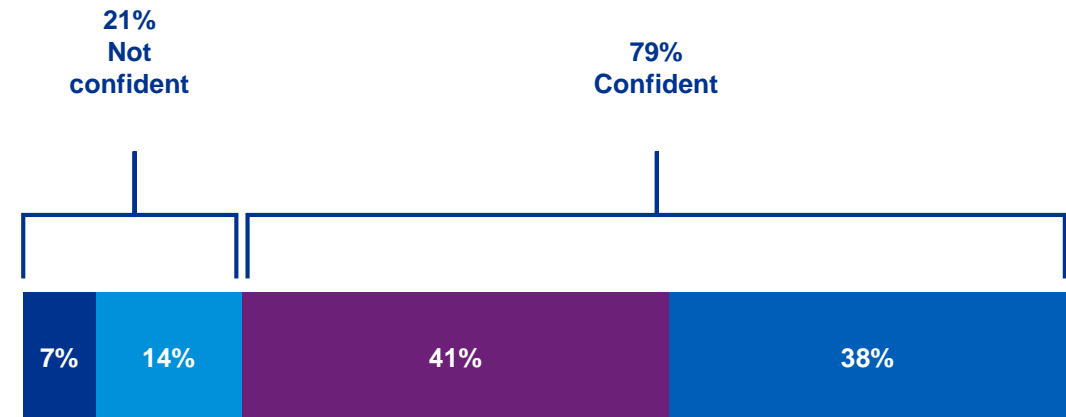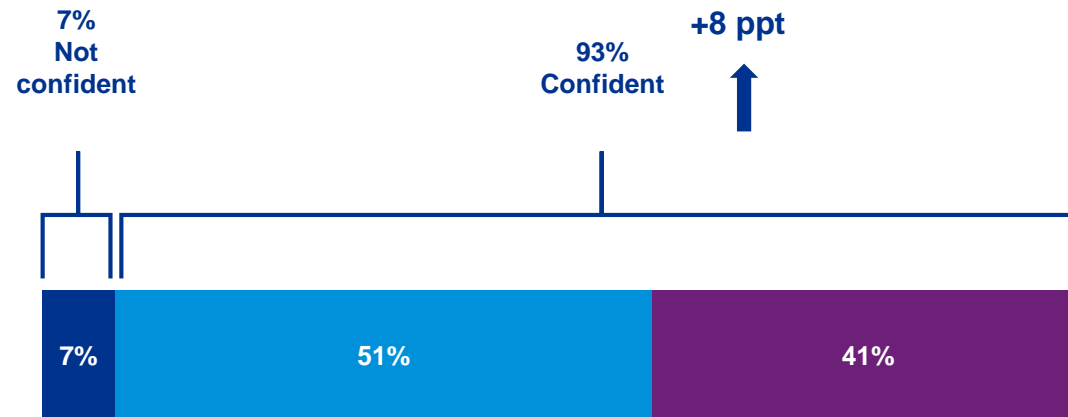
Respondents in the life sciences and healthcare industries are confident in AI's ability to both monitor the spread of Covid-19 and vaccine development and distribution
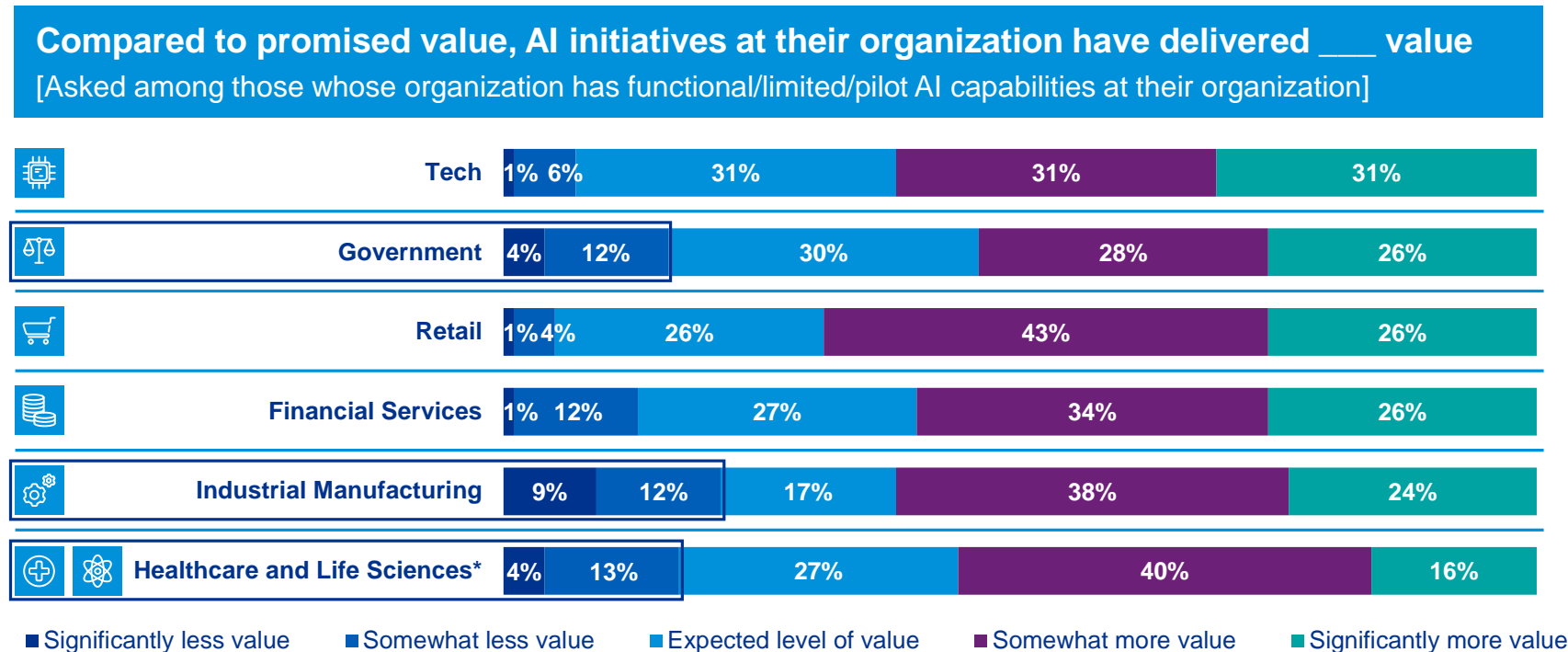
Chart 5: Level of confidence in AI's ability to combat coronavirus.

94% 91%

90% 94%

90% 88%

Track the spread of COVID-19 cases

Help with vaccine development

Help with vaccine distribution

■ Life Sciences ■ Healthcare

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Most business leaders whose organizations have AI initiatives say the technology added more value, but respondents in the Healthcare/Life Sciences, Industrial Manufacturing, and Government industries may be struggling to recognize its full potential

More value summary

Compared to promised value, AI initiatives at their organization have delivered ___ value
[Asked among those whose organization has functional/limited/pilot AI capabilities at their organization]

Industry	Significantly less value	Somewhat less value	Expected level of value	Somewhat more value	Significantly more value
Tech	1%	6%	31%	31%	31%
Government	4%	12%	30%	28%	26%
Retail	1%	4%	26%	43%	26%
Financial Services	1%	12%	27%	34%	26%
Industrial Manufacturing	9%	12%	17%	38%	24%
Healthcare and Life Sciences*	4%	13%	27%	40%	16%

■ Significantly less value ■ Somewhat less value ■ Expected level of value ■ Somewhat more value ■ Significantly more value

- **69%** Retail
- **62%** Tech
- **62%** Industrial Manufacturing
- **60%** Financial Services
- **56%** Healthcare and Life Sciences
- **54%** Government

*Due to reduced base sizes for this question, Healthcare and Life Sciences respondents were combined to bolster the sample
(Tech n=147, Retail n=144, Financial Services n=146, Industrial Manufacturing n=150, Healthcare and Life Sciences n=191, Government n=134).
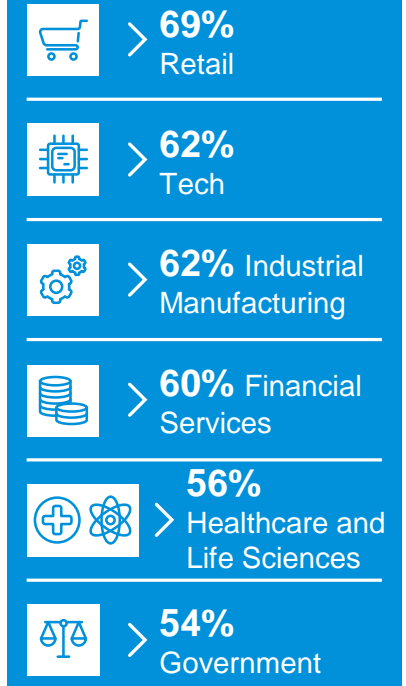
Lower levels of management and large companies with AI initiatives are less likely to say they see the value AI has delivered at their organization
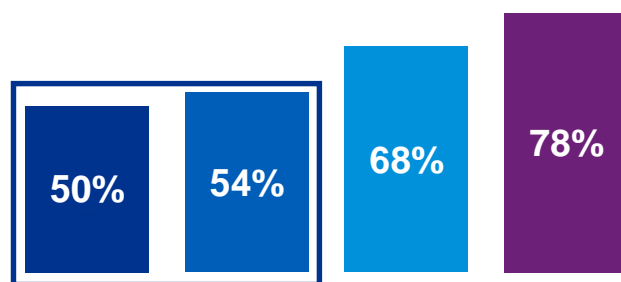
Managers and directors are struggling to see the value AI initiatives have delivered compared to higher levels….

…and respondents at large companies are struggling to see the value AI initiatives have delivered compared to those at small companies.
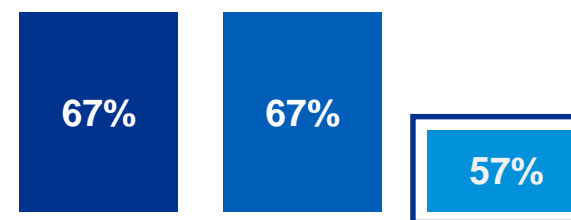
By job level

■ Managers ■ Directors ■ VP/SVP ■ C-Suite Executives

- 50%
- 54%
- 68%
- 78%

Say AI initiatives at their organization have delivered more value

By company size

■ Small ■ Medium ■ Large

- 67%
- 67%
- 57%

Say AI initiatives at their organization have delivered more value

Governance, privacy & ethics

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Cybersecurity breaches are the greatest potential risk of AI adoption for industry respondents, with healthcare respondents viewing privacy violations as the greatest potential risk

Chart 8: The top two potential risks for AI per industry.

Government

63%
Cybersecurity breaches

42%
Privacy violations

Tech

61%
Cybersecurity breaches

52%
Privacy violations

Industrial Manufacturing

58%
Cybersecurity breaches

43%
Surveillance issues

Healthcare

54%
Privacy violations

50%
Potential bias in AI technology

Life Science

51%
Cybersecurity breaches

44%
Potential bias in AI technology

Financial Services

50%
Cybersecurity breaches

44%
Privacy violations

Retail

47%
Cybersecurity breaches

45%
Potential bias in AI technology

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Moreover, threats to security and privacy are a particular ethical concern to industry respondents; however, this concern has fallen from 2019. Concerns about the concentration of wealth around companies using AI technology is growing
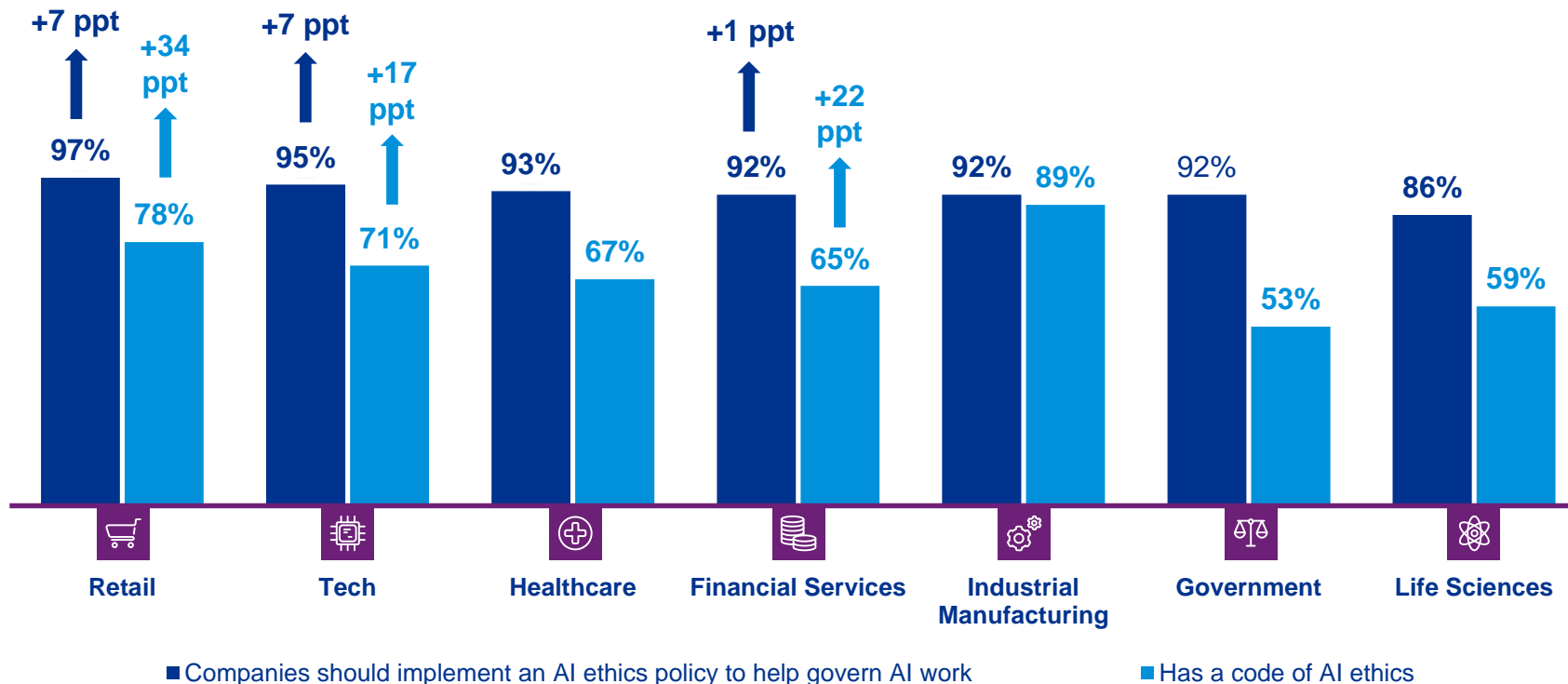
Ethical Concerns Regarding AI Technology							
	Industrial Manufacturing	Tech	Government	Healthcare	Life Sciences	Retail	Financial Services
Threats to security and privacy	59%	55% ▼ -4 ppt	54%	52%	51%	49% ▼ -12 ppt	49% ▼ -23 ppt
Safety issues	55%	40% ▲ +1 ppt	33%	45%	39%	35% No change	27% ▼ -6 ppt
Machine bias issues	43%	29% ▼ -22 ppt	32%	35%	32%	46% ▲ +14 ppt	32% ▼ -8 ppt
A loss of personal interaction or humanistic approach	31%	37% ▼ -6 ppt	33%	28%	32%	41% ▼ -18 ppt	42% ▼ -9 ppt
Potential for AI takeover by malicious entities	39%	37% ▼ -6 ppt	34%	35%	37%	25% ▼ -11 ppt	38% ▲ +1 ppt
Concentration of wealth around companies using AI technology	29%	33% ▲ +11 ppt	26%	27%	39%	29% ▲ +14 ppt	33% ▲ +8 ppt
Loss of jobs	22%	26% ▼ -14 ppt	27%	14%	32%	37% ▼ -25 ppt	28% ▼ -14 ppt

Indicates when an industry response is statistically significant compared to total industry respondents.

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Business leaders and government decision-makers agree companies should implement an AI ethics policy, yet not all organizations currently have one

Chart 9: Statements agreed with about AI ethics and code of ethics.

Retail
- +7 ppt → 97%
- +34 ppt → 78%

Tech
- +7 ppt → 95%
- +17 ppt → 71%

Healthcare
- 93%
- 67%

Financial Services
- +1 ppt → 92%
- +22 ppt → 65%

Industrial Manufacturing
- 92%
- 89%

Government
- 92%
- 53%

Life Sciences
- 86%
- 59%

■ Companies should implement an AI ethics policy to help govern AI work　　■ Has a code of AI ethics
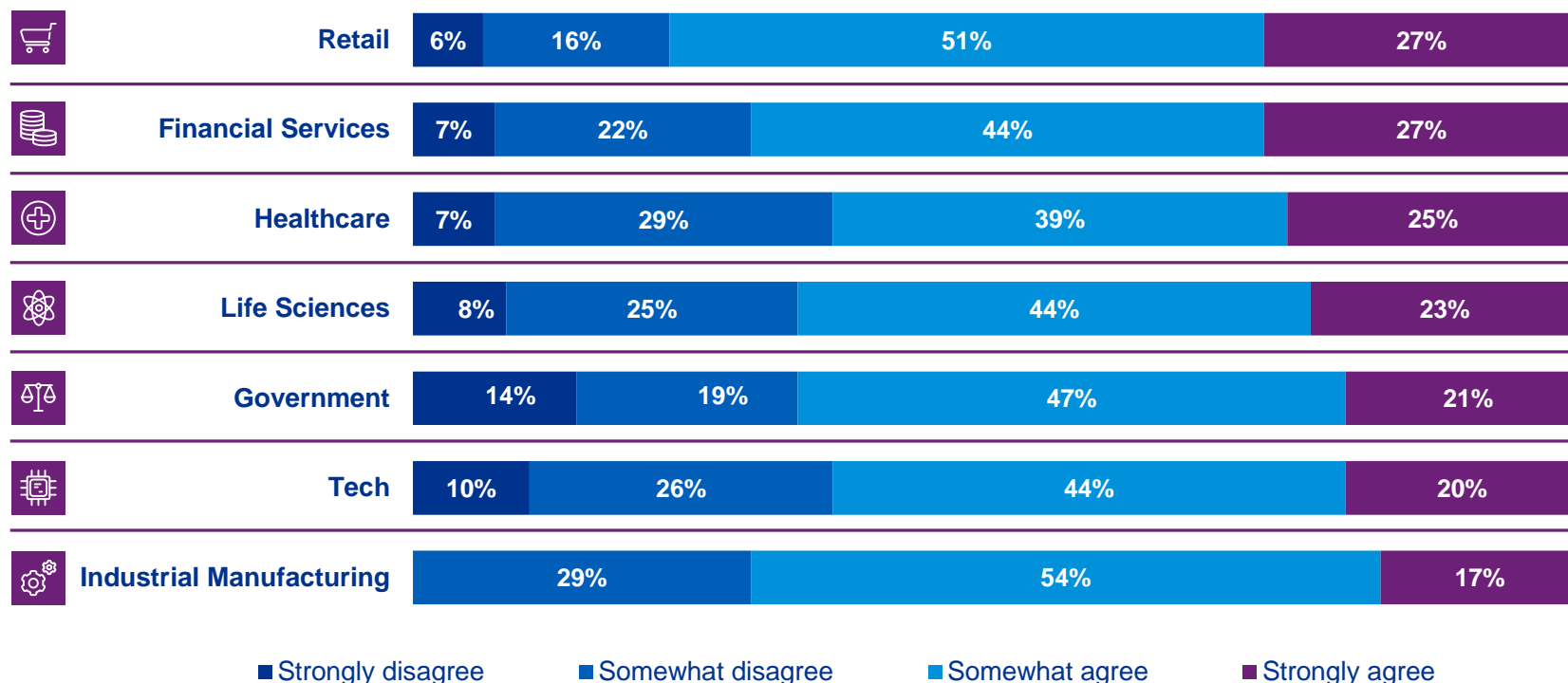
82%　　75%　　64%

Industry respondents from **small (82%)** and **medium (75%) companies** are more likely to say their company currently has a **code of AI ethics**, compared to **64% of large companies**.
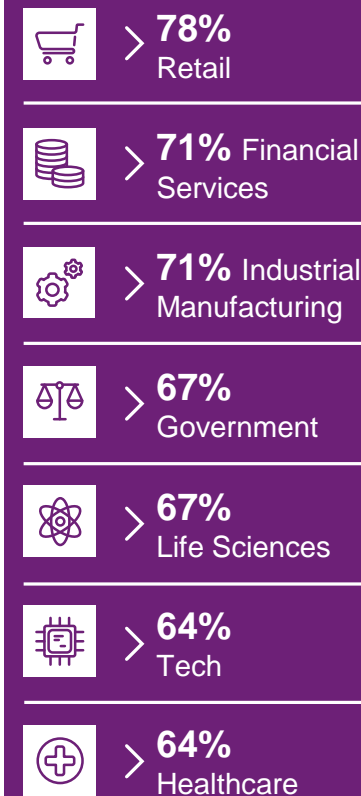
Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

In addition to ethical concerns and risks, industry respondents say it's difficult to stay on top of constantly evolving AI offerings

Chart 10: Level of agreement that it is hard to keep up with the evolving AI landscape.

Industry	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
Retail	6%	16%	51%	27%
Financial Services	7%	22%	44%	27%
Healthcare	7%	29%	39%	25%
Life Sciences	8%	25%	44%	23%
Government	14%	19%	47%	21%
Tech	10%	26%	44%	20%
Industrial Manufacturing	29%		54%	17%

- ■ Strongly disagree
- ■ Somewhat disagree
- ■ Somewhat agree
- ■ Strongly agree

Total agree summary

- **78%** Retail
- **71%** Financial Services
- **71%** Industrial Manufacturing
- **67%** Government
- **67%** Life Sciences
- **64%** Tech
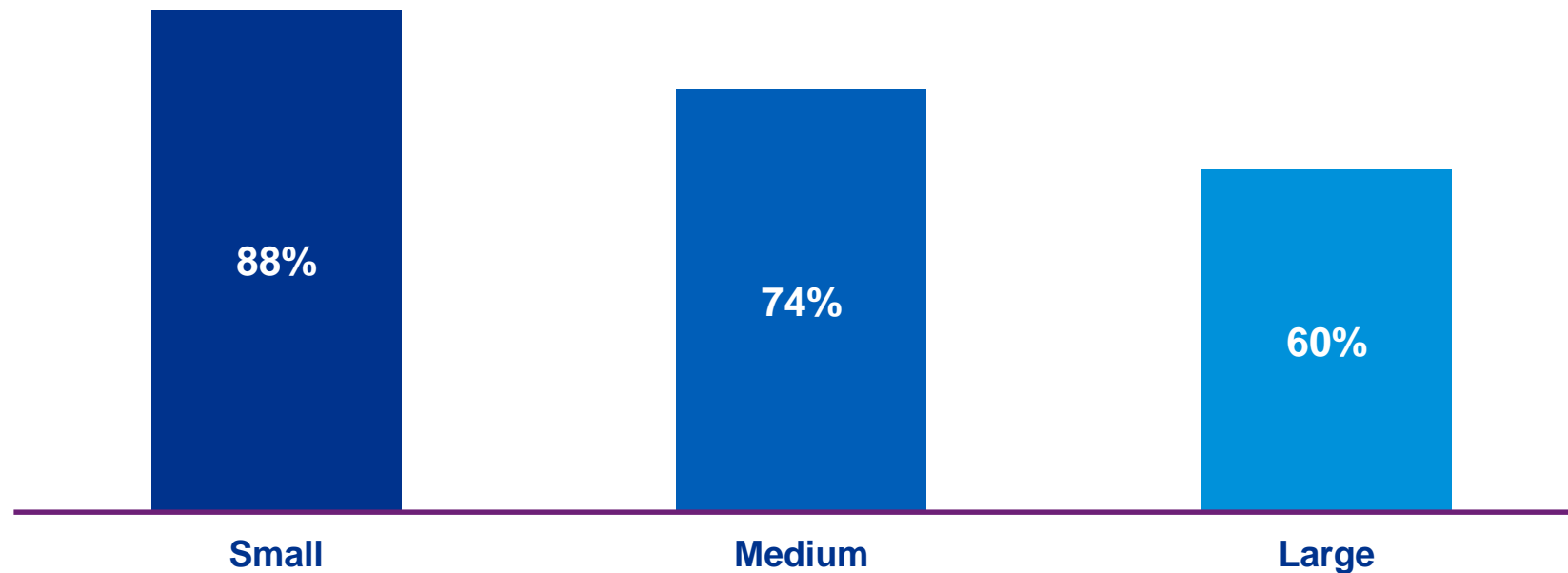- **64%** Healthcare

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Business leaders also say they struggle to select the best AI technologies; those from small companies are more likely to struggle

Total agree summary by industry

Agree their company struggles to select the best AI technologies.

Small	Medium	Large
88%	74%	60%

75% Government

73% Life Sciences

69% Retail

66% Financial Services

66% Healthcare

64% Industrial Manufacturing

60% Tech

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries
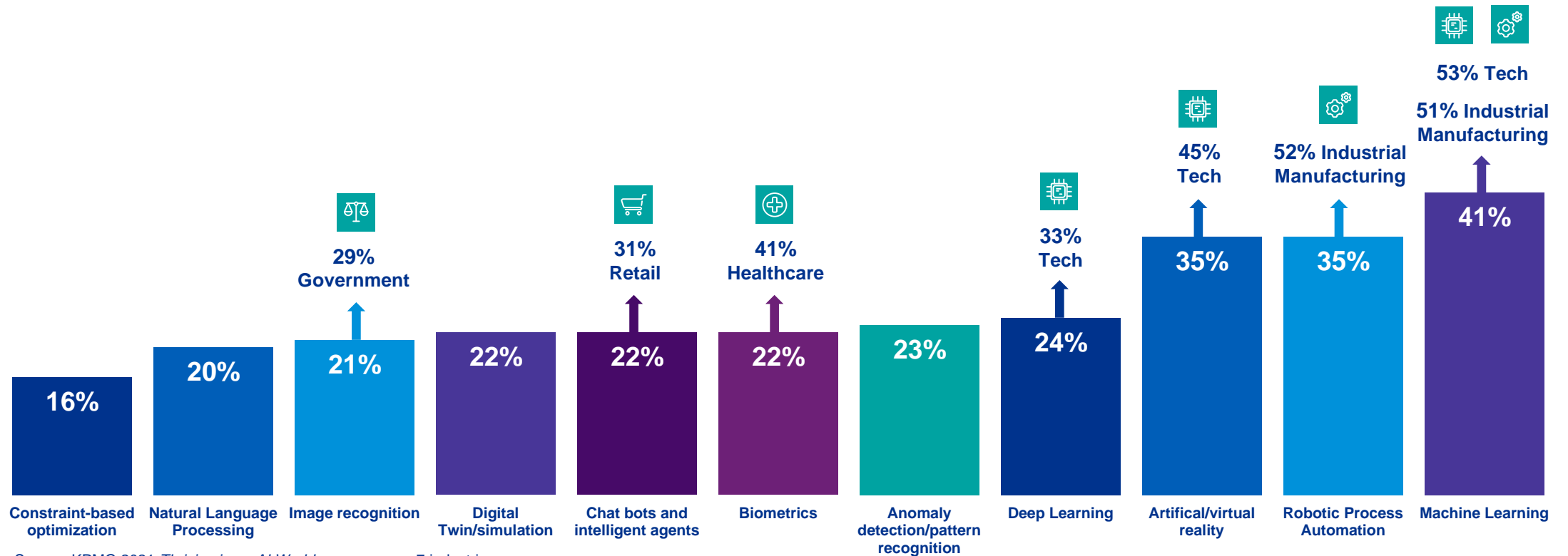(Base: Small company n=139; Medium company n=211; Large company n=600)

Reflections for the future

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Business leaders believe machine learning will have the greatest impact on their respective industries

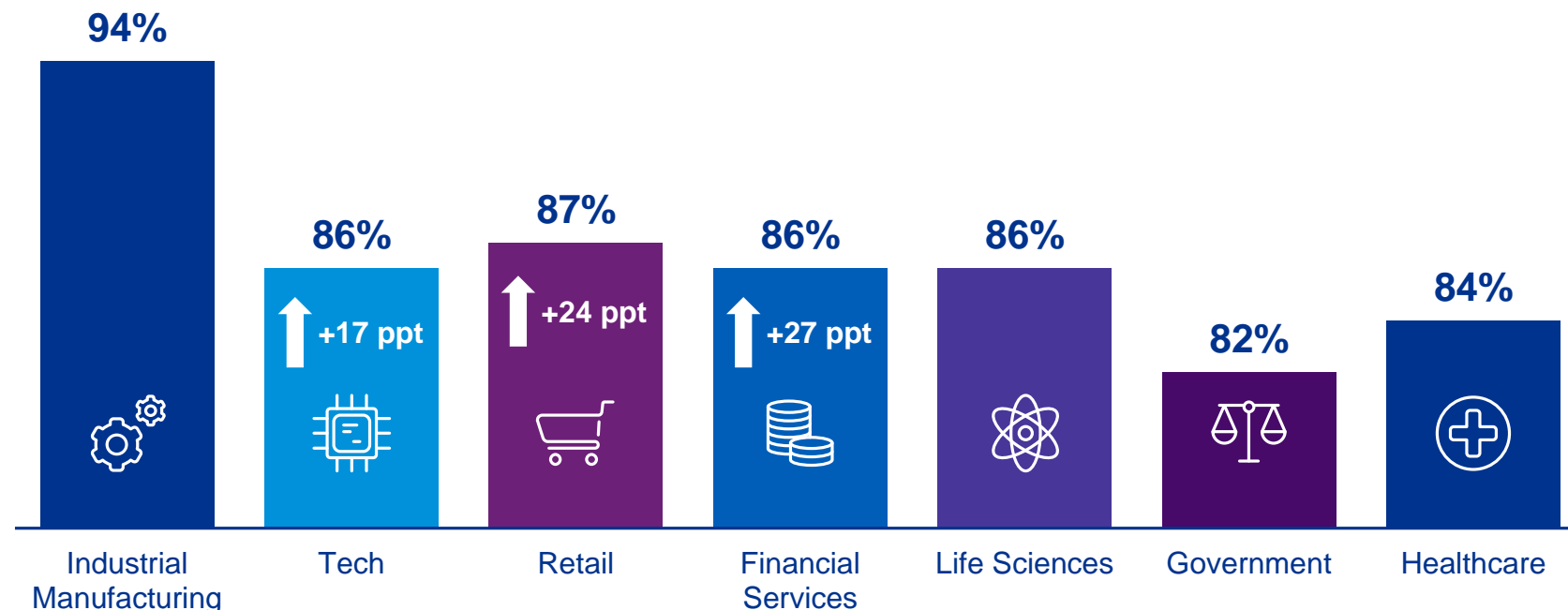## Chart 11: AI technologies that will have the greatest impact across industries (asked of total industry respondents).

53% Tech

51% Industrial Manufacturing

52% Industrial Manufacturing

45% Tech

33% Tech

41% Healthcare

31% Retail

29% Government

Category	Value
Constraint-based optimization	16%
Natural Language Processing	20%
Image recognition	21%
Digital Twin/simulation	22%
Chat bots and intelligent agents	22%
Biometrics	22%
Anomaly detection/pattern recognition	23%
Deep Learning	24%
Artifical/virtual reality	35%
Robotic Process Automation	35%
Machine Learning	41%

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Government has a role to play in regulating AI, with more retail, financial services, and technology respondents interested in government involvement now than in 2019
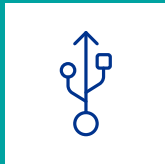
Chart 12: Believe government should be involved in regulating AI technology.

94% Industrial Manufacturing

86% Tech (+17 ppt)

87% Retail (+24 ppt)

86% Financial Services (+27 ppt)

86% Life Sciences

82% Government

84% Healthcare

Industry respondents **with high AI knowledge (92%) are more likely than total industry respondents (87%) to say the government should be involved in regulating AI technology.**

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Despite feeling like things are moving too fast, business leaders believe the US is behind in adoption AI

Chart 13: Level of agreement that compared to other countries, the US is behind in terms of AI adoption.
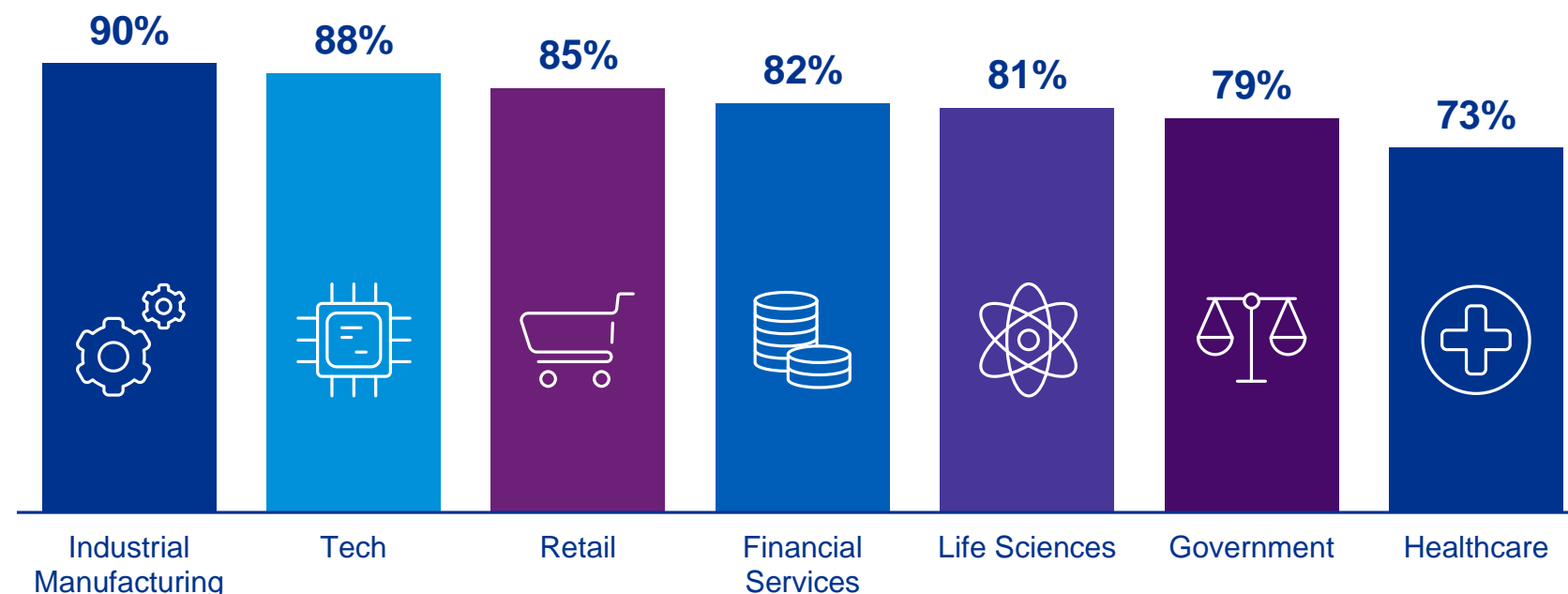
Industry	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
Retail	8%	19%	39%	35%
Financial Services	11%	17%	43%	28%
Tech	20%	19%	33%	28%
Government	9%	28%	39%	25%
Healthcare	11%	31%	33%	25%
Life Sciences	12%	26%	41%	21%
Industrial Manufacturing	25%	15%	50%	11%

■ Strongly disagree ■ Somewhat disagree ■ Somewhat agree ■ Strongly agree

Total agree summary

73% Retail	
71% Financial Services	
63% Government	
62% Life Sciences	
61% Tech	
61% Industrial Manufacturing	
58% Healthcare	
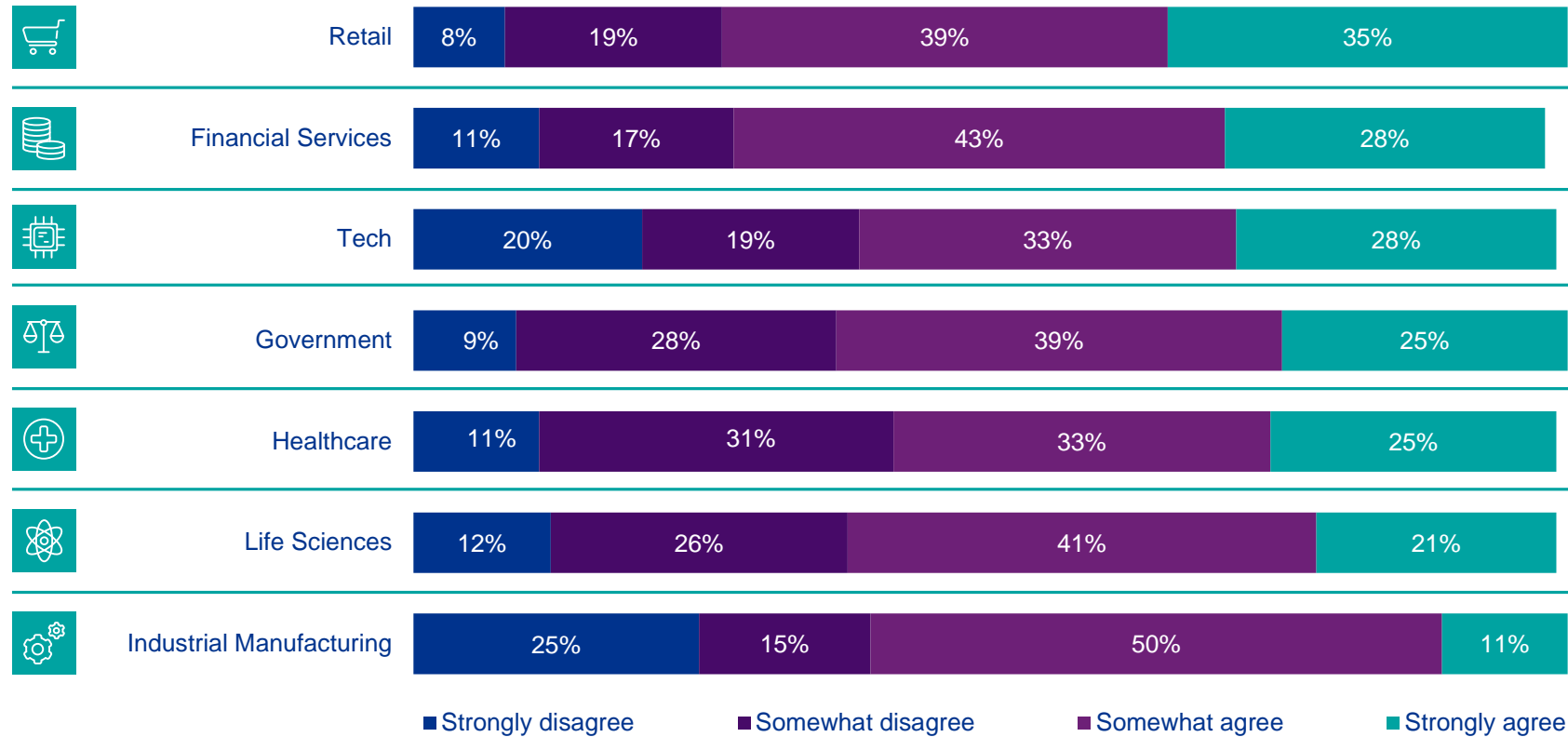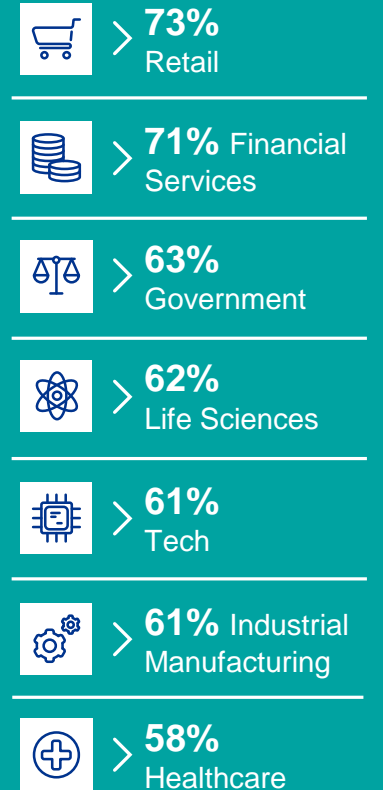
Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Respondents believe the Biden administration will do more to help advance the adoption of AI, with younger industry respondents feeling more optimistic of the new administration

Chart 14: Business leaders believe the new administration will help advance AI adoption.

Industry	Percentage
Industrial Manufacturing	90%
Tech	88%
Retail	85%
Financial Services	82%
Life Sciences	81%
Government	79%
Healthcare	73%

Younger (Gen Z and Millennial) industry respondents are more likely than older (Gen X and Baby Boomer) industry respondents to be more optimistic of the potential actions the Biden administration will do to help advance the adoption of AI in enterprise (90% vs. 79%).

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Government decision-makers want to see the Biden administration increase AI's role in healthcare over the next four years

Chart 15: Top five areas of interest for government to increase the role of AI over the next four years.
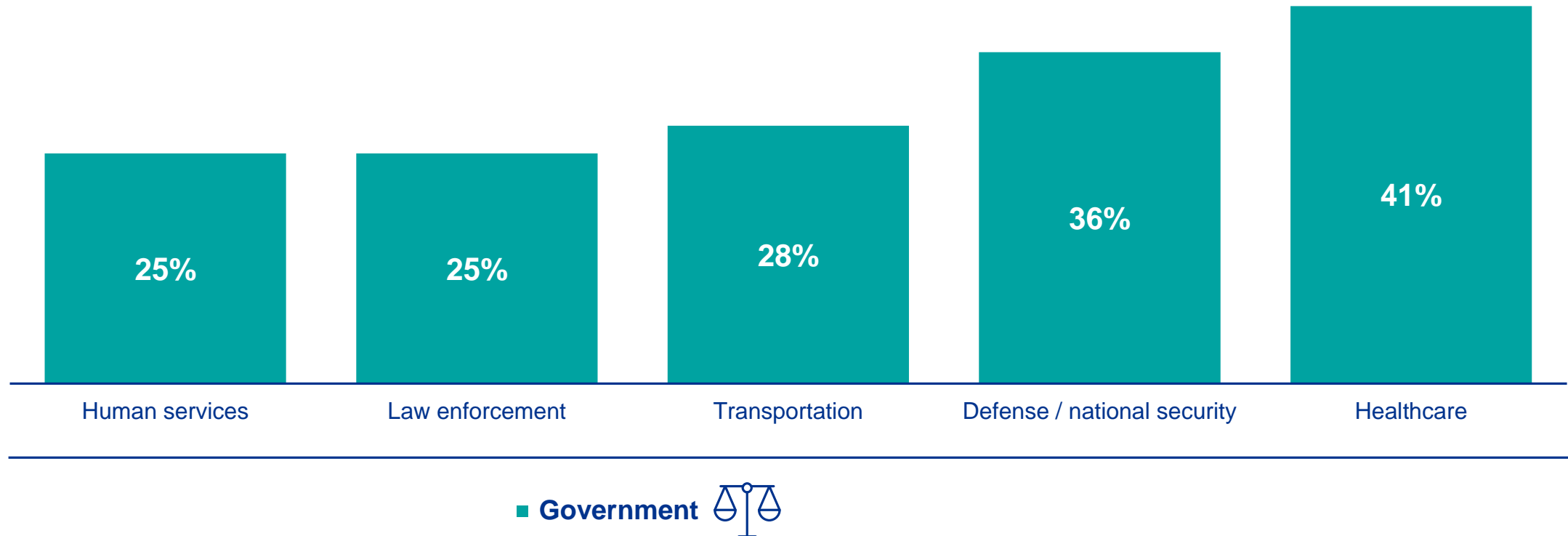
Human services	Law enforcement	Transportation	Defense / national security	Healthcare
25%	25%	28%	36%	41%

■ **Government**

Source: KPMG 2021 *Thriving in an AI World* survey across 7 industries

Overview & methodology

Overview & Methodology

To support media relations and content development efforts for KPMG around artificial intelligence (AI), Ketchum conducted a survey assessing the perceptions of AI technology as it relates to seven specific industries: healthcare, Financial Services, retail, technology, industrial manufacturing, life sciences and government/public sector. By targeting decision makers in these respective verticals, the survey uncovered pain points, perceived risks and challenges of large companies in the U.S. related to artificial intelligence.

2019 (n=751)			2021 (n=950)		
The online survey was fielded between September 3rd, 2019 and September 16th, 2019. The margin of error (MOE) for the total sample at the 95% confidence level is +/- 3.58 percentage points.			The online survey was fielded between January 3rd, 2021 and January 16th, 2021. The margin of error (MOE) for the total sample at the 95% confidence level is +/- 3.2 percentage points.		
Industry	**#**	**Audience Criteria**	**Industry**	**#**	**Audience Criteria**
^Tech	150	Business decision makers (manager level and above) Full time employees With at least a moderate amount of AI knowledge Companies with revenue of $1b plus At least 51 employees	**^Tech**	150	Business decision makers (manager level and above) Full time employees With at least a moderate amount of AI knowledge Companies with revenue of $1b plus At least 51 employees
Healthcare*	150		**^Retail**	150	
^Retail	151		**^Financial Services**	150	
^Financial Services	150		**Industrial Manufacturing**	150	
Transportation	150	Business decision makers (manager level and above) with the exception of 6 analysts/associates Full time employees With at least a moderate amount of AI knowledge Companies with revenue of $250M plus At least 51 employees	**Healthcare***	100	Business decision makers (manager level and above) Full time employees With at least a moderate amount of AI knowledge Companies with revenue of $100M plus At least 51 employees
			Life Sciences*	100	
			Government	150	IT decision makers (manager level and above) Full time employees With at least a moderate amount of AI knowledge At least 51 employees

^NOTE: *Only Tech, Retail and Financial Services are comparable from 2019 to 2021.*
*NOTE: *Healthcare and Life Sciences will not be comparable to 2019 survey since they are now split, and the audience criteria shifted to accommodate the change.*

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