



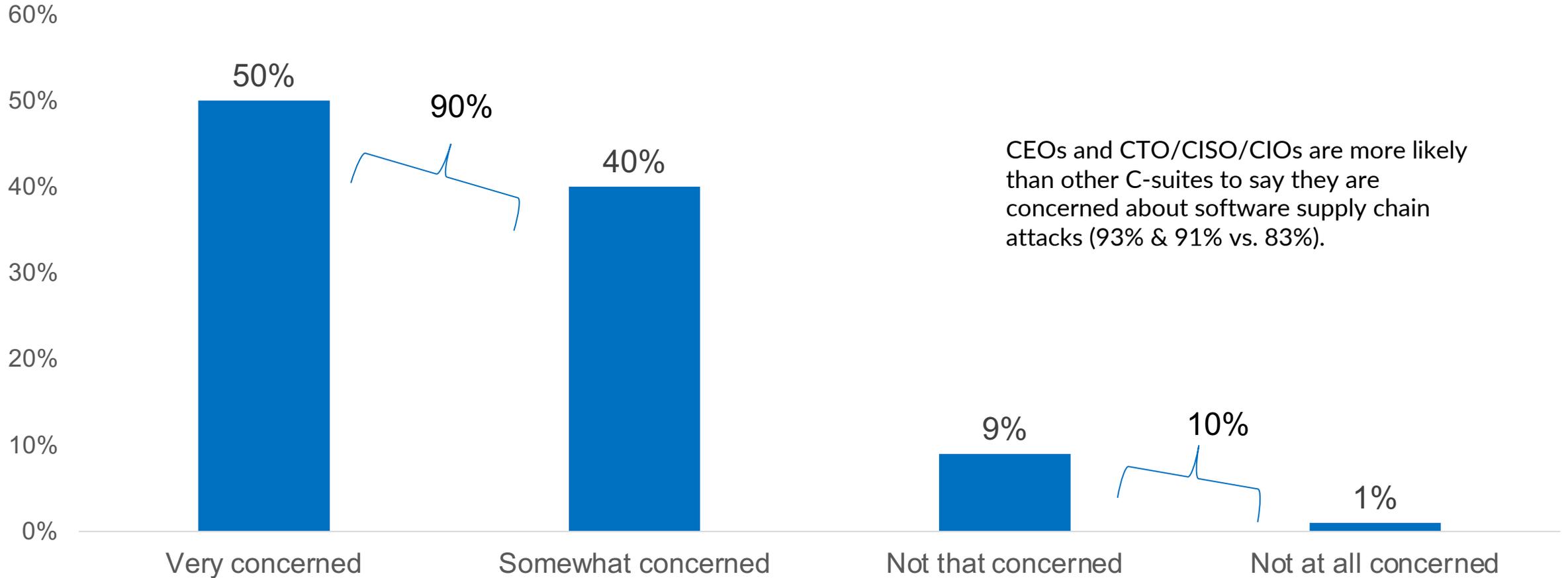
CLouDBEES GLOBAL C-SUITE SECURITY SURVEY REPORT

2022



DETAILED FINDINGS

Nine in ten C-suite executives say they are concerned about software supply chain attacks with half saying they are very concerned.



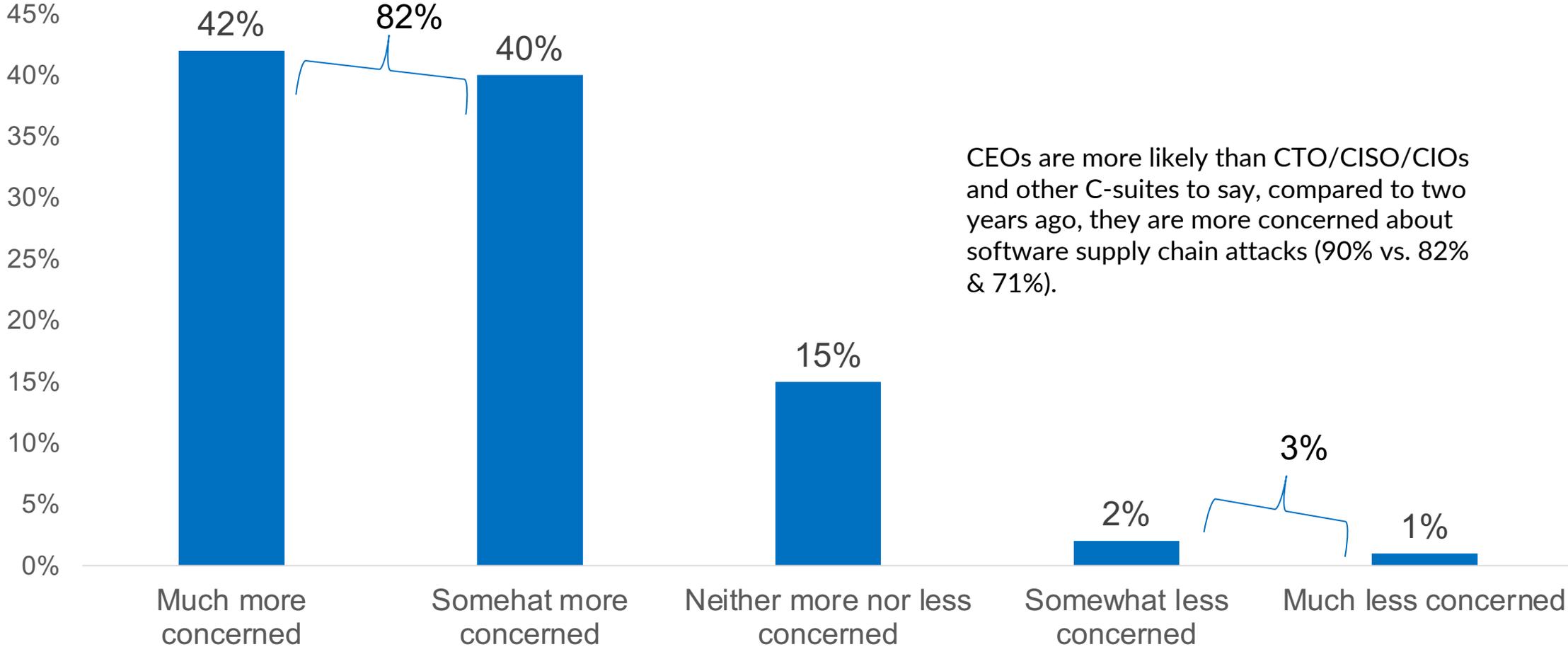
CEOs and CTO/CISO/CIOs are more likely than other C-suites to say they are concerned about software supply chain attacks (93% & 91% vs. 83%).

C-suite executives from Australia, France, Spain, the U.K., and the U.S. are more likely than those from Germany to say they are concerned about software supply chain attacks.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Concerned (NET)	90	91	89	77	97	92	93
Very Concerned	50	52	39	31	67	38	70
Somewhat Concerned	40	39	50	46	30	54	23
Not Concerned (NET)	10	9	11	23	3	8	7
Not That Concerned	9	7	9	21	3	7	6
Not At All Concerned	1	2	2	2	0	1	1

American and Spanish C-suite executives are much more likely than C-suite executives from the other four countries to say they are very concerned about software supply chain attacks.

Over four in five C-suite executives say, compared to two years ago, they are more concerned about software supply chain attacks.



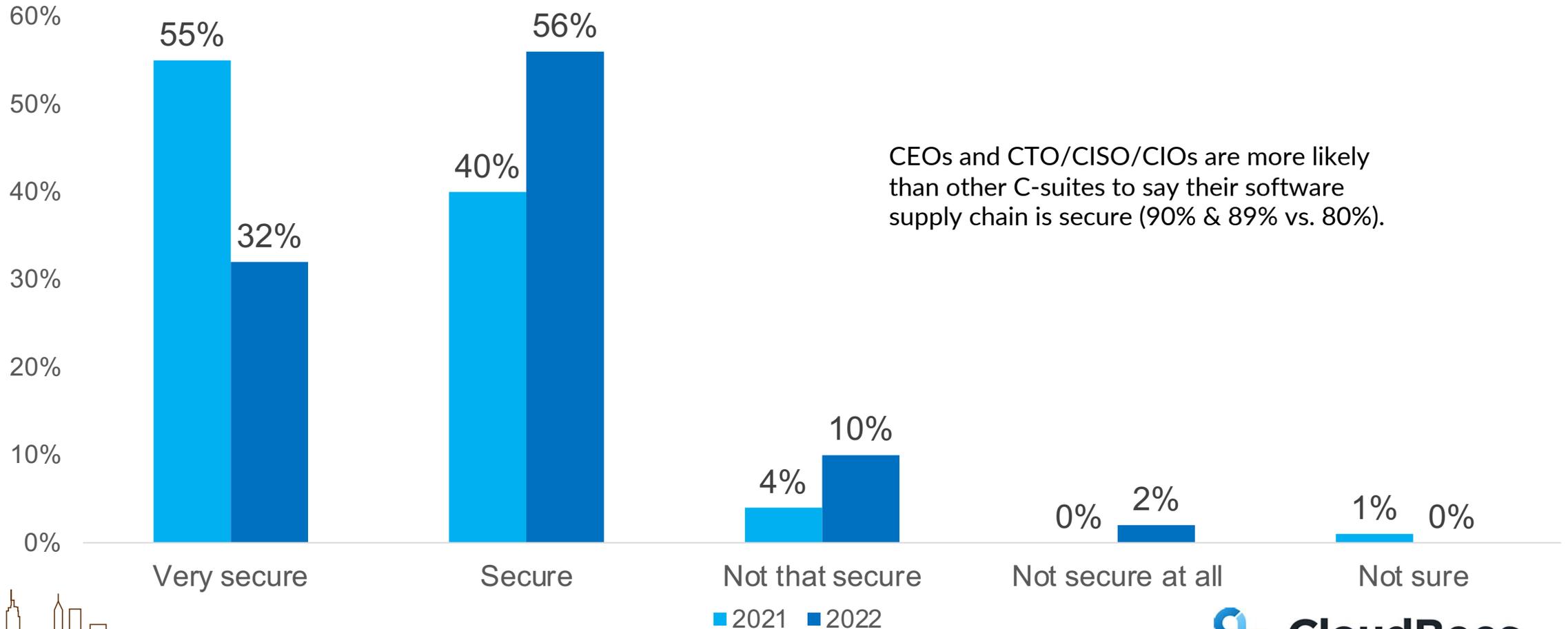
Q2 Compared to two years ago, would you say you are more or less concerned about software supply chain attacks?

At least three-quarters of C-Suite executives in all six countries say, compared to two years ago, they are more concerned about software supply chain attacks.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Concerned (NET)	82	88	81	74	81	84	86
Very Concerned	42	48	25	24	46	45	65
Somewhat Concerned	40	40	56	50	35	39	21
Neither more not less concerned	15	8	16	25	17	15	8
Not Concerned (NET)	3	4	3	1	2	1	6
Not That Concerned	2	4	2	1	1	1	5
Not At All Concerned	1	0	1	0	1	0	1

C-suite executives in Australia, Spain, the U.S., and the U.K. are more likely than those in France and Germany to say, compared to two years ago, they are very concerned about software supply chain attacks.

Last year over nine in ten C-suite executives (95%) said their software supply chain was secure with over half saying very secure. In 2022 that dropped to 88% saying it is secure and only one-third (32%) who say it is very secure.

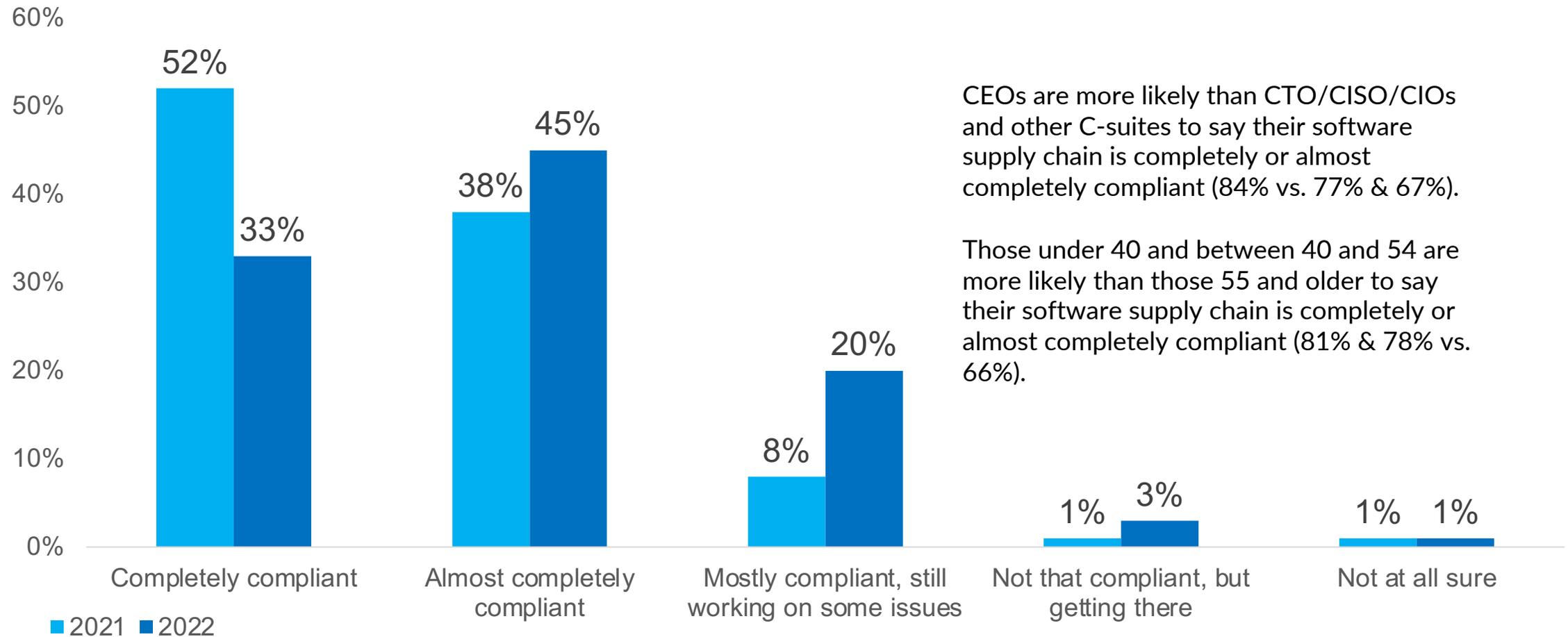


German C-suite executives are more likely than those from the other countries to say their software supply chain is not secure.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Secure (NET)	88	89	91	76	90	89	90
Very Secure	32	53	23	19	20	29	48
Secure	56	36	68	57	70	60	42
Not Secure (NET)	12	11	9	23	10	11	9
Not That Secure	10	8	7	17	10	10	9
Not Secure At All	2	3	2	6	0	1	0
Not sure	*	0	0	1	0	0	1

Australian and American C-suite executives are more likely than those from France, Germany, Spain, and the U.K. to say their software supply chain is very secure.

Over three-quarters of C-Suite executives (78%) say their software supply chain is completely or almost completely compliant, down from nine in ten (90%) who said so last year.



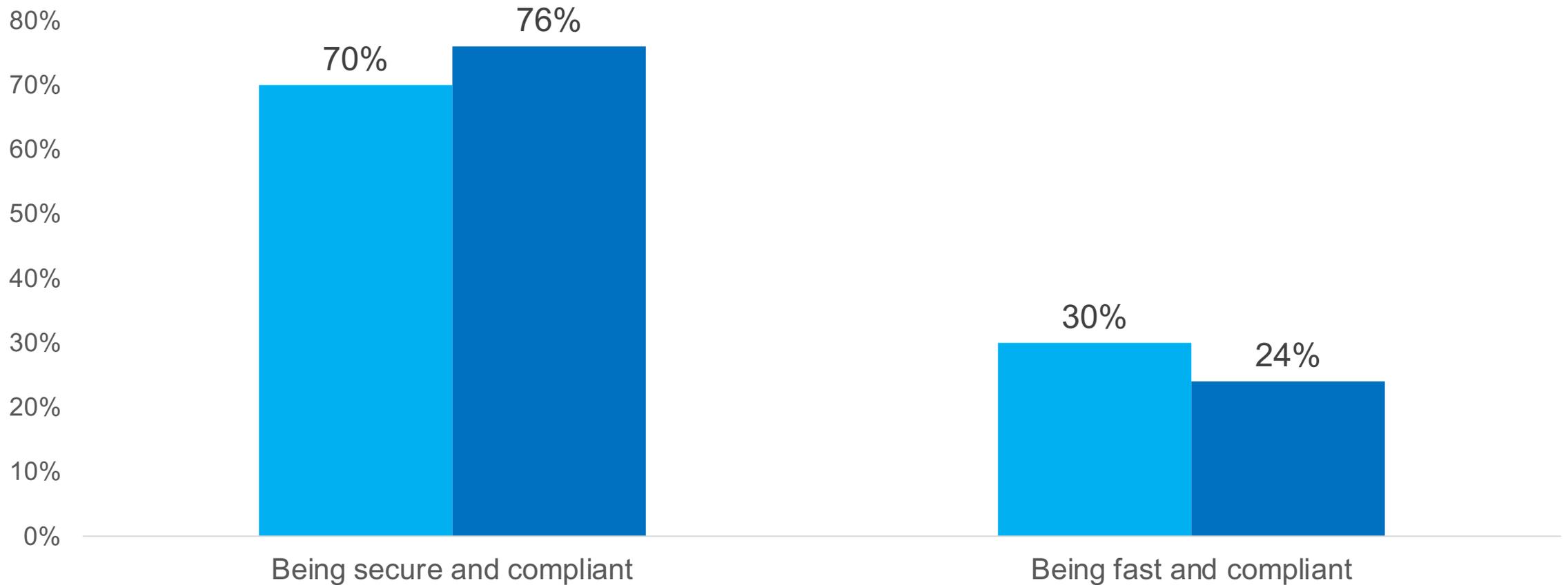
CEOs are more likely than CTO/CISO/CIOs and other C-suites to say their software supply chain is completely or almost completely compliant (84% vs. 77% & 67%).

Those under 40 and between 40 and 54 are more likely than those 55 and older to say their software supply chain is completely or almost completely compliant (81% & 78% vs. 66%).

C-suite executives in Australia, France, the U.K., and the U.S. are more likely than those in Germany and Spain to say their software supply chain is completely or almost completely compliant.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Completely/Almost Completely Compliant (NET)	78	84	83	63	68	85	82
Completely compliant	33	44	37	22	16	34	43
Almost completely compliant	45	40	46	41	52	51	39
Mostly compliant; still working on some issues	20	14	16	34	28	12	14
Not that compliant, but getting there	3	2	1	2	3	3	4
Not at all sure	*	0	0	1	1	0	0

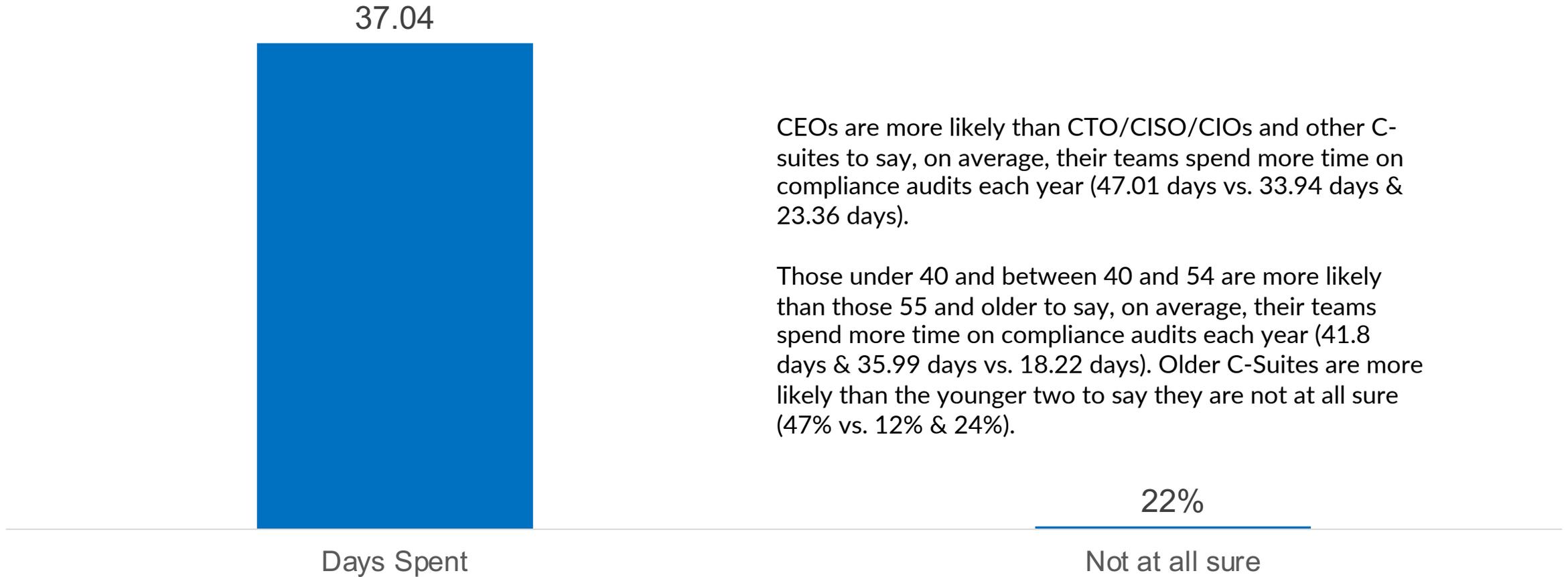
Three-quarters of C-suite executives say it is most important to be secure and compliant while one-quarter say being fast and compliant is most important.



At least two-thirds of C-Suite executives from each country say it is more important to be secure and compliant over being fast and compliant.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Being secure and compliant	76	69	84	65	84	78	75
Being fast and compliant	24	31	16	35	16	22	25

While over one in five C-suite executives say they are not at all sure, on average, C-suite executives say their teams spend over 37 days each year on compliance audits.



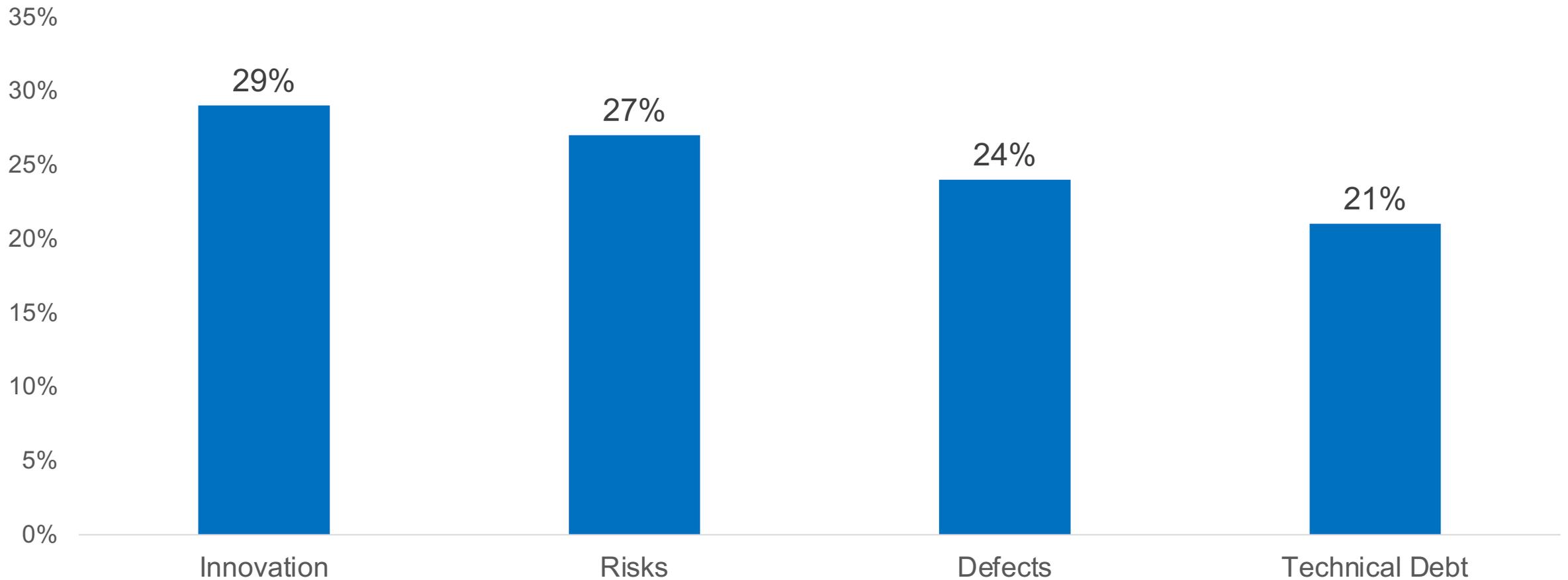
CEOs are more likely than CTO/CISO/CIOs and other C-suites to say, on average, their teams spend more time on compliance audits each year (47.01 days vs. 33.94 days & 23.36 days).

Those under 40 and between 40 and 54 are more likely than those 55 and older to say, on average, their teams spend more time on compliance audits each year (41.8 days & 35.99 days vs. 18.22 days). Older C-Suites are more likely than the younger two to say they are not at all sure (47% vs. 12% & 24%).

C-Suites from Spain, the U.K., and the U.S. are more likely than those from the other three countries to say their teams spend more time, on average, on compliance audits each year while German C-Suites are more likely to say they are not at all sure.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
Days spent each year	37.04	29.58	29.90	26.64	49.32	46.40	38.72
Not at all sure	22%	7%	29%	41%	29%	15%	13%

While C-suite executives say their teams are spending more time on innovation, the time they spend on risks and defects is not far behind.

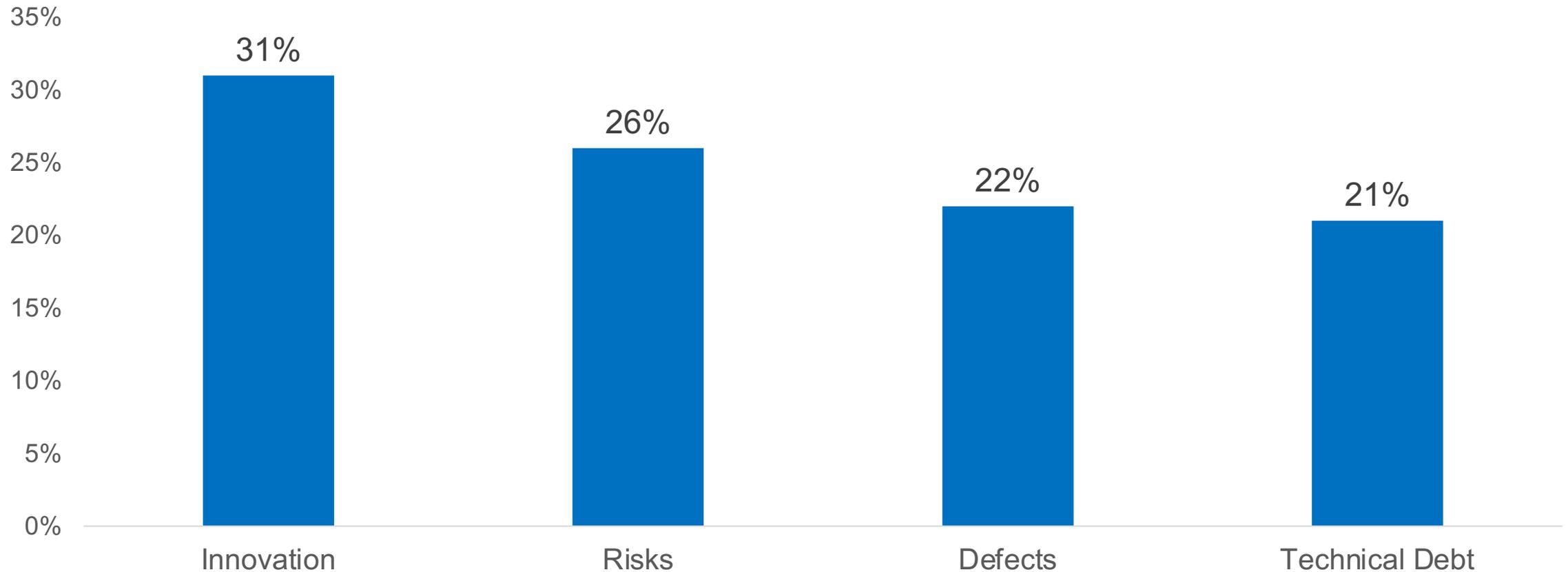


While all countries have similar proportions, in Australia and Spain time spent on risks edges out time spend on innovation.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Innovation	28.6	26.1	29.1	28.2	28.6	30.1	29.6
Risks	26.6	27.1	28.1	25.7	29.3	23.7	25.9
Defects	24	25.3	23.5	23.8	23.6	23.6	24.2
Technical Debt	20.8	21.6	19.2	22.3	18.5	22.7	20.4

CEOs are more likely than CTO/CISO/CIOs and other C-suites to say, on average, their teams spend more time on technical debt (22.6% vs. 20.1% & 19.4%).

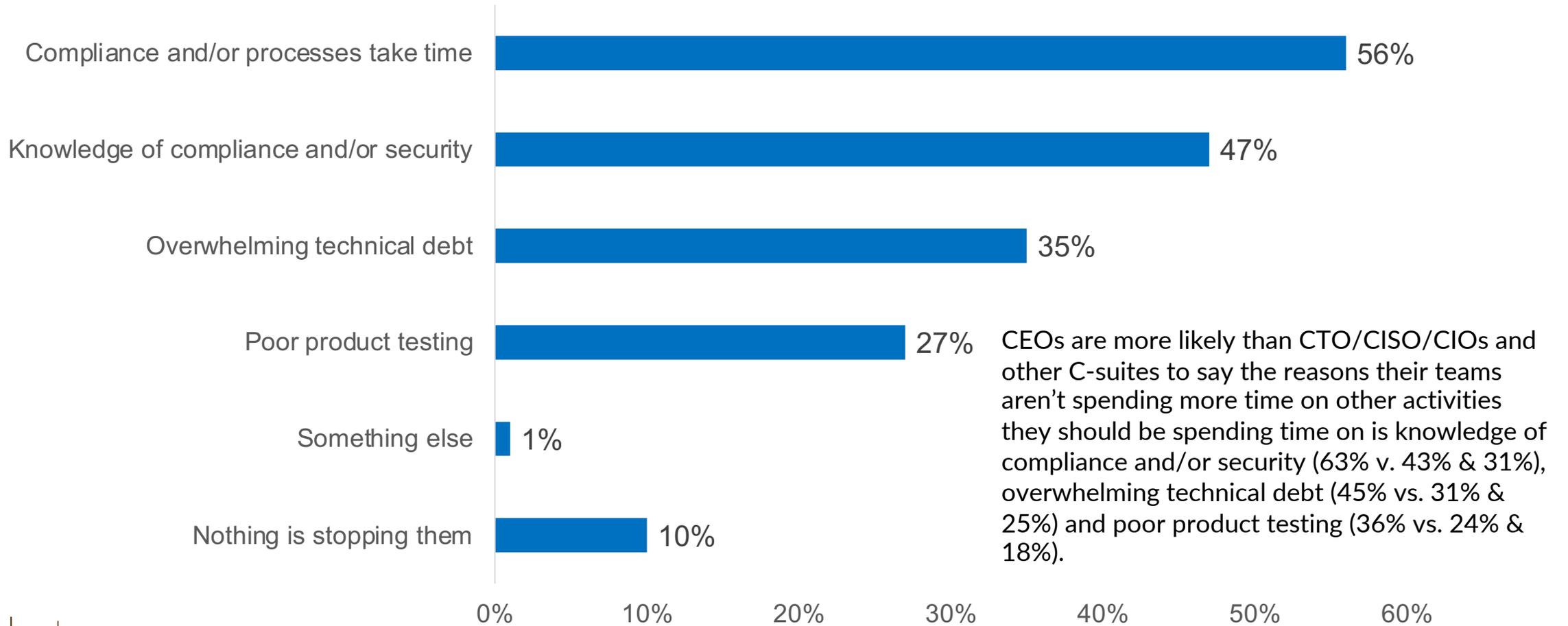
Not surprisingly, C-suites say their teams should spend the largest part of their time on innovation.



C-suites executives in Germany and the U.K. are more likely than those from the other countries to say more time should be spent on innovation while American and Spanish C-suites are more likely to say more time should be spent on risks.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Innovation	31.4	26.8	32.8	34.5	28.6	35.6	30.2
Risks	25.7	24.9	24	24.4	29.7	23.8	27.7
Defects	22.2	25.1	23.8	21.1	21.9	19.7	21.8
Technical Debt	20.6	23.2	19.5	20	19.8	20.1	20.3

Over half of C-suite executives say compliance and/or processes taking time is what is stopping their development team from spending more time on the activities they believe they should be spending time on.



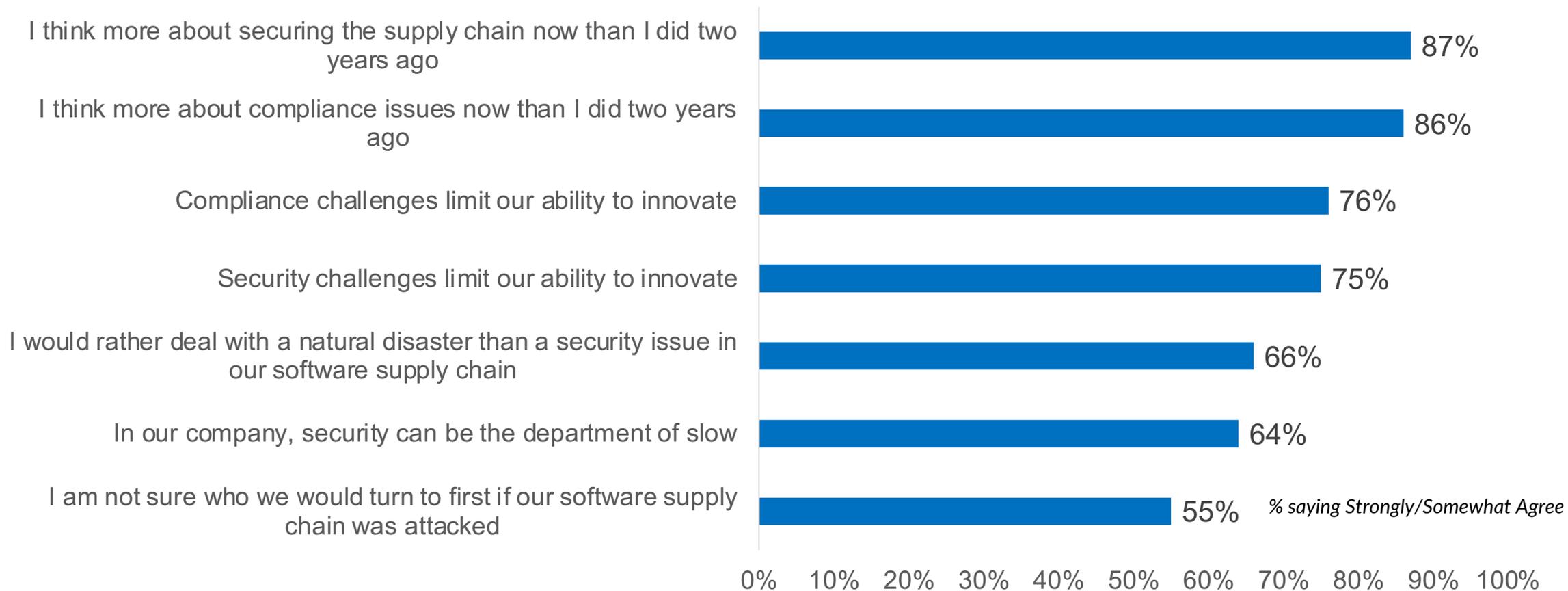
CEOs are more likely than CTO/CISO/CIOs and other C-suites to say the reasons their teams aren't spending more time on other activities they should be spending time on is knowledge of compliance and/or security (63% v. 43% & 31%), overwhelming technical debt (45% vs. 31% & 25%) and poor product testing (36% vs. 24% & 18%).

C-suite executives in Australia and the U.S. are more likely than those from other countries to say knowledge of compliance and/or security is what is stopping their development team from spending more time on activities they want them to spend time on.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Compliance and processes taking time	56	58	50	52	52	65	57
Knowledge of compliance and/or security	47	61	45	34	46	42	55
Overwhelming technical debt	35	41	26	30	22	44	45
Poor product testing	27	39	14	22	42	21	24
Something else	1	1	2	0	2	1	0
Nothing is stopping them	10	4	13	12	7	11	13

C-suites executives in Australia, the U.K., and the U.S. are more likely than those in France, Germany, and Spain to say overwhelming technical debt is what is stopping their development teams while those in Australia and Spain are more likely to say poor product testing is what is stopping them.

Almost nine in ten C-suite executives say they think more about securing the software supply chain and compliance issues now than they did 2 years ago.



Almost two thirds of C-suite executives say, in their company, security can be the department of slow.

	Agree (NET)	Strongly Agree	Somewhat Agree	Disagree (NET)	Somewhat Disagree	Strongly Disagree
	%	%	%	%	%	%
I think more about securing the supply chain now than I did two years ago.	87	42	44	14	11	2
I think more about compliance issues now than I did two years ago.	86	46	41	14	12	2
Compliance challenges limit our ability to innovate.	76	33	43	24	19	5
Security challenges limit our ability to innovate	75	32	43	26	21	5
I would rather deal with a natural disaster than a security issue in our software supply chain.	66	26	40	34	22	12
In our company, security can be the department of slow.	64	26	38	36	25	11
I am not sure who we would turn to first if our supply chain was attacked.	55	20	35	45	29	17

Demographics Differences: By type of C-suite executive

- CEOs are more likely than CTOs/CIOs/CISOs and other C-suites to say:
 - They think more about compliance issues now than they did two years ago (93% vs. 85% & 79%)
 - Compliance challenges limit their ability to innovate (82% vs. 73% & 73%)
 - Security challenges limit their ability to innovate (84% vs. 72% & 64%)
 - They would rather deal with a natural disaster than a security issue in their software supply chain (80% vs. 62% & 52%)
 - In their company, security can be the department of slow (79% vs. 58% & 50%)
 - They are not sure who they would turn to first if their software supply chain was attacked (70% vs. 45% & 51%).

Demographics Differences: By age

- Those under 40 and between 40 and 54 are more likely than those 55 and older to say:
 - Security challenges limit their ability to innovate (82% & 74% vs. 55%)
 - They would rather deal with a natural disaster than a security issue in their software supply chain (69% & 69% vs. 48%)
 - In their company, security can be the department of slow (71% & 65% vs. 39%)
 - They are not sure who they would turn to first if their software supply chain was attacked (62% & 55% vs. 34%).

Demographics Differences: By company size

- Those in companies with less than 1,000 employees are more likely than those in companies with 1,000 or more to say:
 - They would rather deal with a natural disaster than a security issue in their software supply chain (70% vs. 62%).

Demographics Differences: By time in C-suite

- Those in the C-Suite for 10 years or less are more likely than those in it over 10 years to say:
 - In their company, security can be the department of slow (67% vs. 52%).

C-Suite executives in Australia are more likely than those from the other countries to say they are not sure who they would turn to first if their software supply chain was attacked.

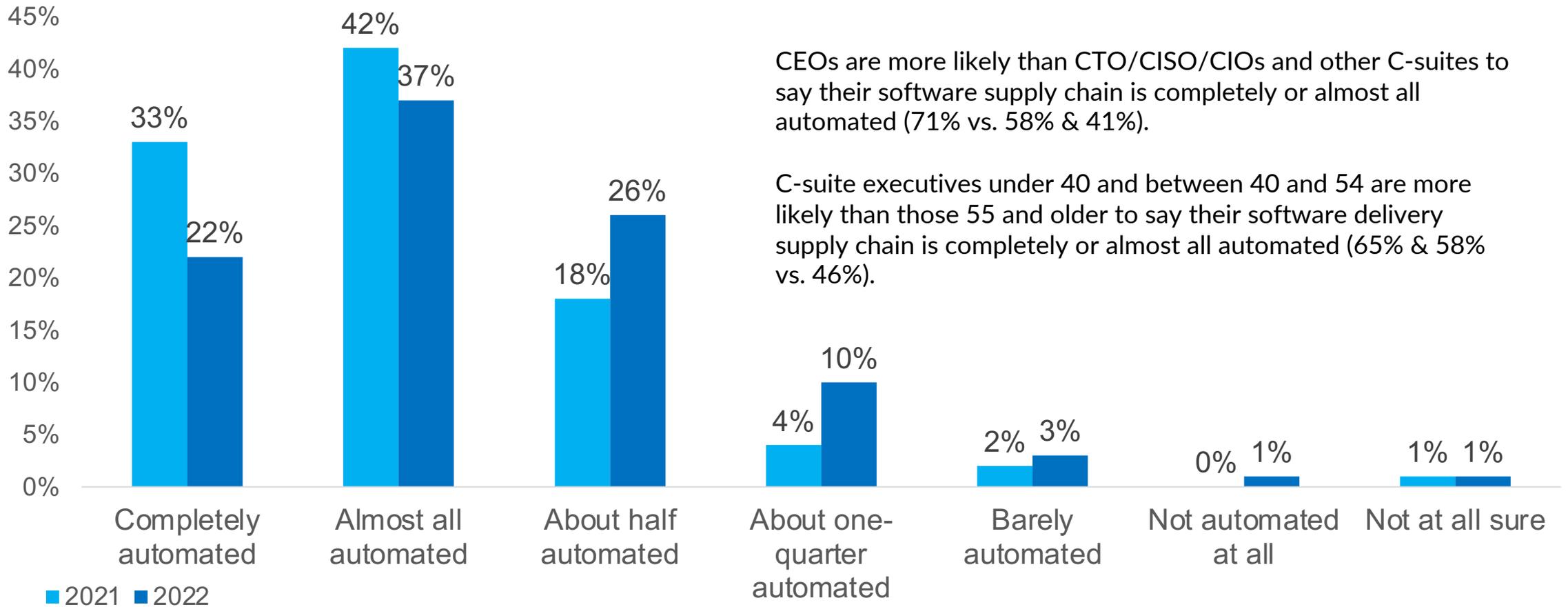
Those Saying “Strongly/Somewhat Agree”	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
I think more about securing the supply chain now than I did two years ago.	87	90	86	78	85	88	92
I think more about compliance issues now than I did two years ago.	86	85	83	83	88	87	92
Compliance challenges limit our ability to innovate.	76	83	76	67	69	80	82
Security challenges limit our ability to innovate	75	85	67	64	71	78	82
I would rather deal with a natural disaster than a security issue in our software supply chain.	66	73	64	53	60	71	74
In our company, security can be the department of slow.	64	82	54	49	56	72	69
I am not sure who we would turn to first if our supply chain was attacked.	55	71	51	54	48	50	54

C-suites executives in Australia, the U.K., and the U.S. are more likely than those in France, Germany, and Spain to say in their company, security can be the department of slow, security challenges limit their ability to innovate, and compliance challenges limit their ability to innovate.

All of these are down compared to last year, but that may have more to do with the additions of Spain and Australia than conditional changes.

Those Saying Strongly/Somewhat Agree	2021	2022
	%	%
I think more about securing the supply chain now than I did two years ago.	95	87
I would rather deal with a natural disaster than a security issue in our software supply chain.	73	66
In our company, security can be the department of slow.	75	64
I am not sure who we would turn to first if our supply chain was attacked.	64	55

Three in five C-suites (59%) say their software supply chain is almost or completely automated; down from three-quarters (75%) who said this last year.



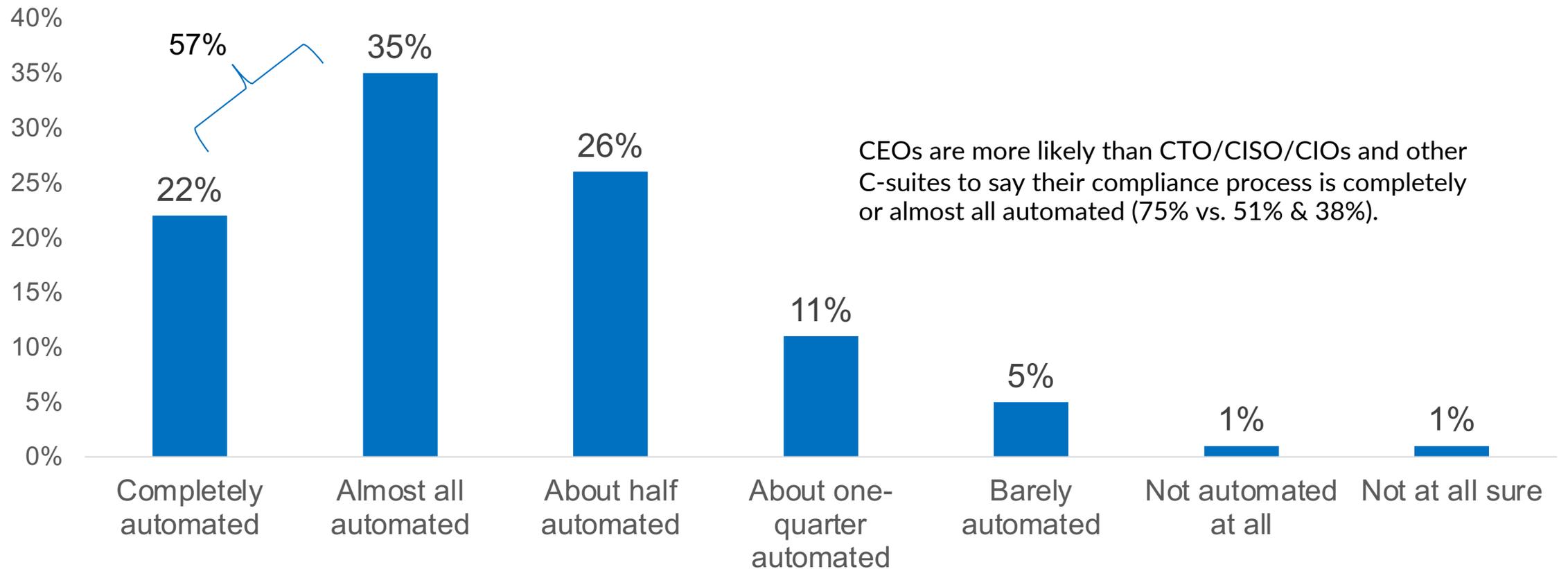
CEOs are more likely than CTO/CISO/CIOs and other C-suites to say their software supply chain is completely or almost all automated (71% vs. 58% & 41%).

C-suite executives under 40 and between 40 and 54 are more likely than those 55 and older to say their software delivery supply chain is completely or almost all automated (65% & 58% vs. 46%).

C-suite executives in Australia, the U.K., and the U.S. are more likely than those in France, Germany, and Spain to say their software supply chain is automated.

Your Software Delivery Supply Chain	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Automated (NET)	59	69	55	42	53	65	71
Completely automated	22	31	17	15	16	23	32
Almost all automated	37	38	38	27	37	42	39
About half automated	26	18	32	37	31	21	19
About one-quarter automated	10	9	8	17	12	6	7
Not Automated (NET)	4	4	3	3	4	6	2
Barely automated	3	4	3	3	2	5	2
Not automated at all	1	0	0	0	2	1	0
Not at all sure	1	0	2	1	0	2	1

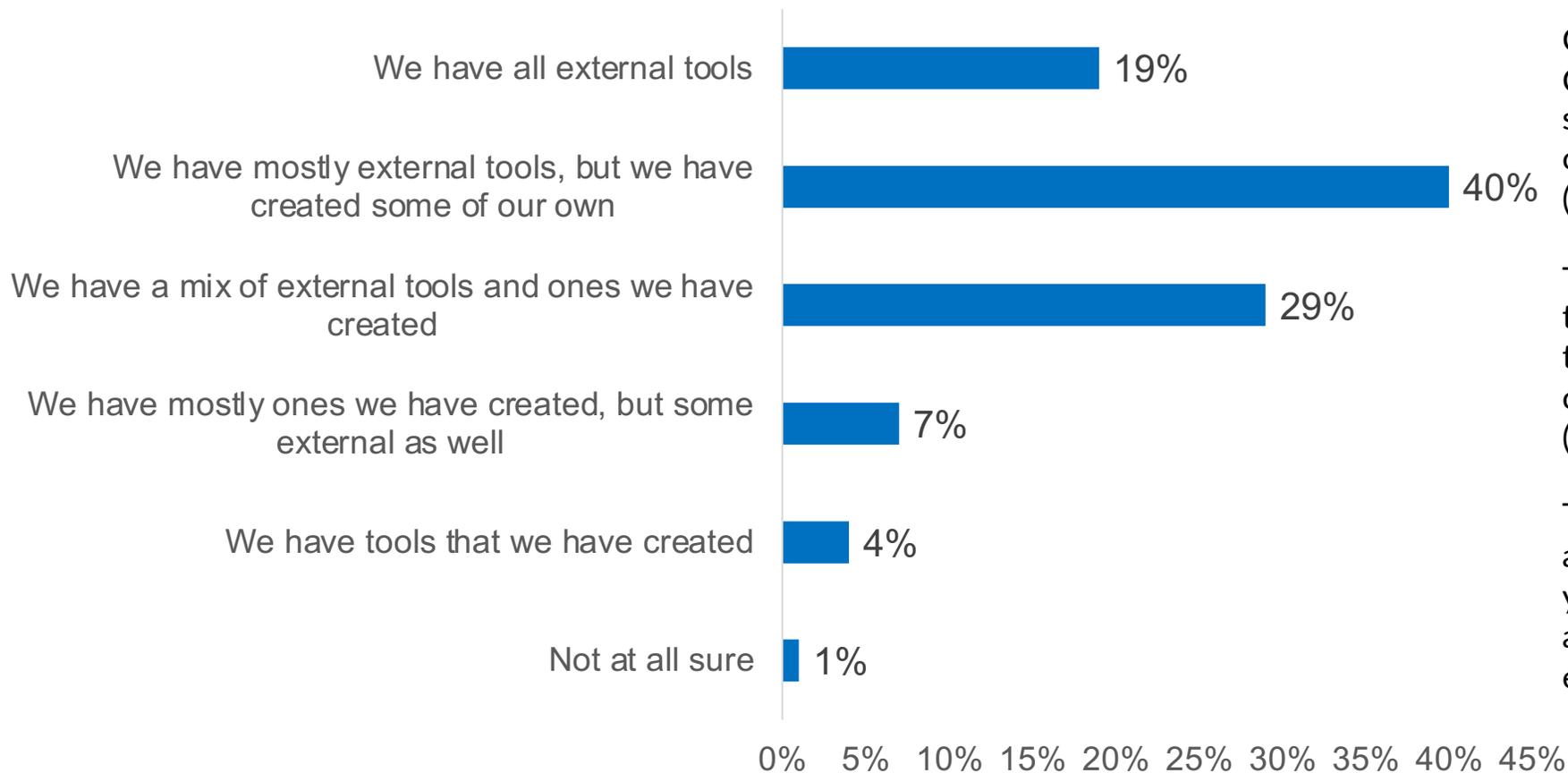
Almost three in five C-suite executives say their compliance processes are completely or almost all automated while one quarter say they are about half automated.



C-suites in Australia and the U.S. are more likely than those from the other countries to say their compliance processes are automated.

Your Compliance Processes	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Automated (NET)	57	66	56	44	49	55	70
Completely automated	22	31	19	9	16	22	32
Almost all automated	35	35	37	35	33	33	38
About half automated	26	21	23	36	29	31	17
About one-quarter automated	11	7	13	16	17	6	8
Not Automated (NET)	5	6	6	4	5	6	4
Barely automated	5	6	6	4	4	4	3
Not automated at all	1	0	0	0	1	2	1
Not at all sure	1	0	2	0	0	2	1

Three in five C-suite executives (59%) say the tools they have for security and/or compliance are all or mostly all external while three in ten have a mix and one in ten (11%) have mostly or all tools they created.



CEOs are more likely than CTO/CISO/CIOs and other C-suites to say their tools for security and/or compliance are all or mostly all external (71% vs. 55% & 49%).

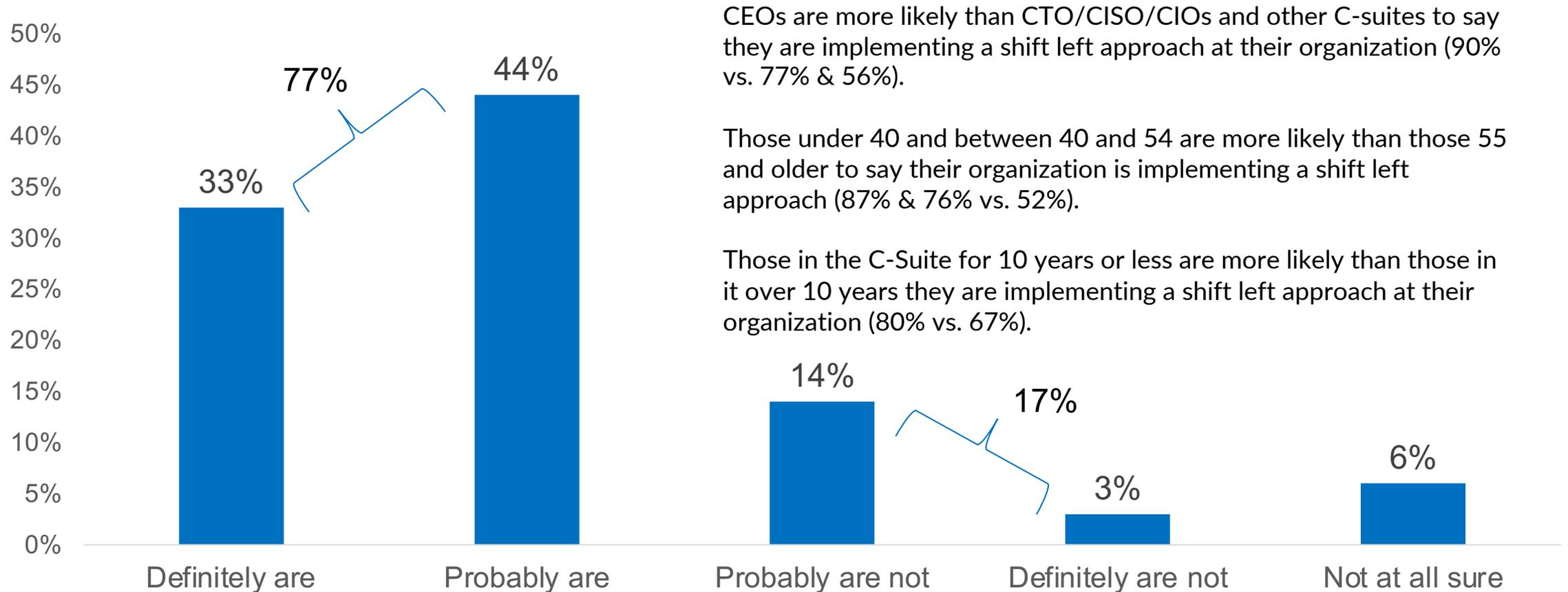
Those under 40 are more likely than those 40-54 and 55 and older to say their tools for security and/or compliance are all or mostly all external (66% vs. 55% & 52%).

Those in the C-Suite for 10 years or less are more likely than those in it over 10 years to say their tools for security and/or compliance are all or mostly all external (61% vs. 53%).

C-suite executives in Australia, the U.K., and the U.S. than in France, Germany, and Spain to say they use all or mostly all external tools for security and/or compliance issues.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
External Tools (NET)	59	67	53	47	53	66	69
We have all external tools	19	26	10	18	13	16	32
We have mostly external tools, but we have created some of our own	40	41	43	29	40	50	37
We have a mix of external tools and ones we have created	29	20	37	36	31	25	24
Created Tools (NET)	11	13	9	16	14	9	6
We have mostly ones we have created, but some external as well	7	6	5	12	11	4	5
We have all tools that we have created	4	7	4	4	3	5	1
Not at all sure	1	0	1	1	2	0	1

Over three-quarters of C-suite executives say they are implementing a “shift left” security and compliance approach at their organization, with one-third saying they definitely are.



CEOs are more likely than CTO/CISO/CIOs and other C-suites to say they are implementing a shift left approach at their organization (90% vs. 77% & 56%).

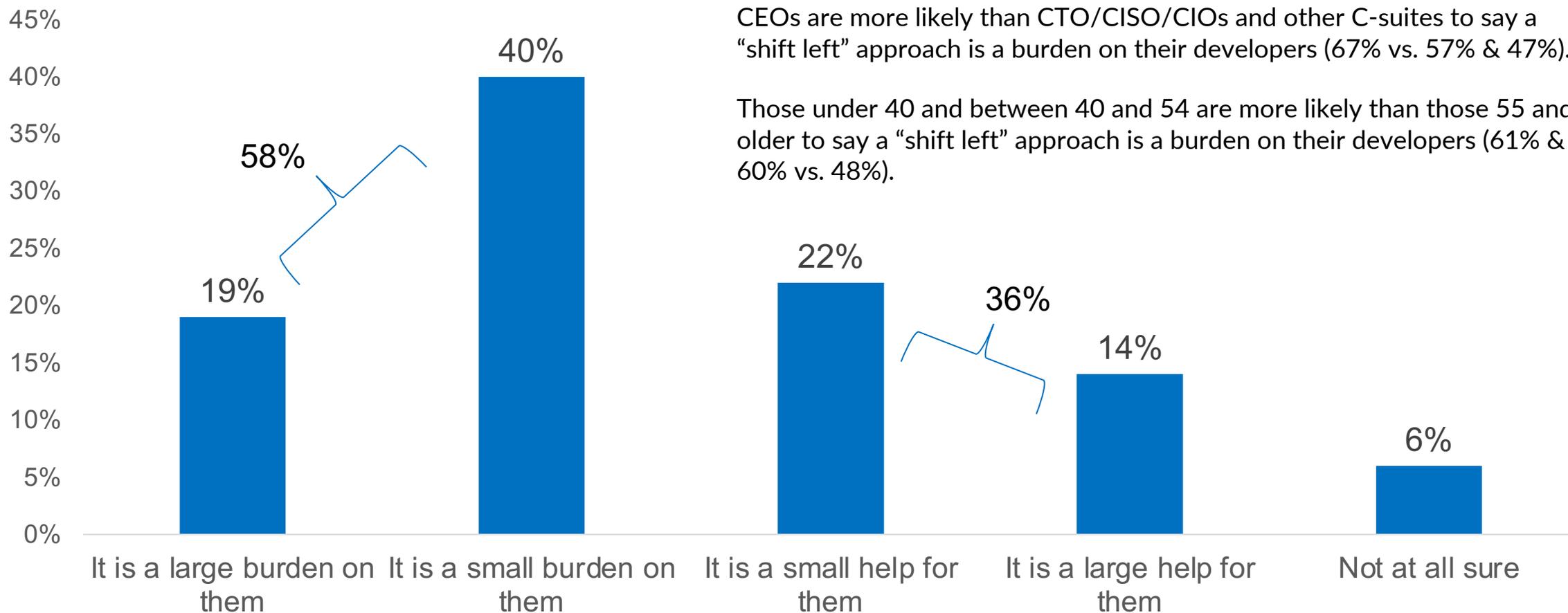
Those under 40 and between 40 and 54 are more likely than those 55 and older to say their organization is implementing a shift left approach (87% & 76% vs. 52%).

Those in the C-Suite for 10 years or less are more likely than those in it over 10 years they are implementing a shift left approach at their organization (80% vs. 67%).

C-suite executives in Australia, Spain, the U.K., and the U.S. are more likely than those in France and Germany to say they are implementing a “shift left” security and compliance approach at their organization while Germans are more likely to say they are not implementing one.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Are Implementing (NET)	77	87	71	61	80	80	83
Definitely are	33	41	19	19	30	40	48
Probably are	44	46	52	42	50	40	35
Not Implementing (NET)	17	11	17	33	13	15	12
Probably are not	14	8	13	30	11	13	11
Definitely are not	3	3	4	3	2	2	1
Not at all sure	6	2	12	6	7	5	5

Almost three in five C-suite executives say a “shift left” approach is a burden on their developers while over one-third say it is a help.



CEOs are more likely than CTO/CISO/CIOs and other C-suites to say a “shift left” approach is a burden on their developers (67% vs. 57% & 47%).

Those under 40 and between 40 and 54 are more likely than those 55 and older to say a “shift left” approach is a burden on their developers (61% & 60% vs. 48%).

Australian C-suites are more likely than those from the other countries to say a “shift left” approach is a burden on their developers while those from Germany and Spain are more likely to say it is a help for them.

	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
It Is a burden (NET)	58	78	52	48	47	63	62
It is a large burden on them	19	31	14	10	12	17	28
It is a small burden on them	40	47	38	38	35	46	34
It Is a help (NET)	36	19	39	45	47	31	33
It is a small help for them	22	11	27	32	26	17	16
It is a large help for them	14	8	12	13	21	14	17
Not at all sure	6	3	9	7	6	6	5

Nine in ten C-suite executives say their risk management team has the knowledge and expertise to build and/or ensure a secure software supply chain while almost nine in ten say their architects and/or developers do.



Over four in five C-suite executives say “shift left” is important for their organization.

	Agree (NET)	Strongly Agree	Somewhat Agree	Disagree (NET)	Somewhat Disagree	Strongly Disagree
	%	%	%	%	%	%
Our risk management team has the knowledge and expertise to build and/or ensure a secure software supply chain.	90	42	48	10	9	1
I am very confident that our software is secure in production.	89	39	50	11	10	2
Our architects and/or developers have the knowledge and expertise to build and/or ensure a secure software supply chain.	87	42	45	13	12	1
Our risk management team has all the tools they need.	86	37	49	14	13	2
Our developers have all the tools they need.	86	37	48	14	13	2
Shift left is important for us as an organization.	83	37	47	17	14	3

CEOs are more likely than CTO/CISO/CIOs and other C-suites to say they are very confident that their software is secure in production (95% vs. 89% & 80%) and “shift left” is important for them as an organization (91% vs. 83% & 71%).

CEOs and CTO/CISO/CIOs are more likely than other C-suites to say their architects and/or developers have the knowledge and expertise to build and/or ensure a secure software supply chain (89% & 89% vs. 78%).

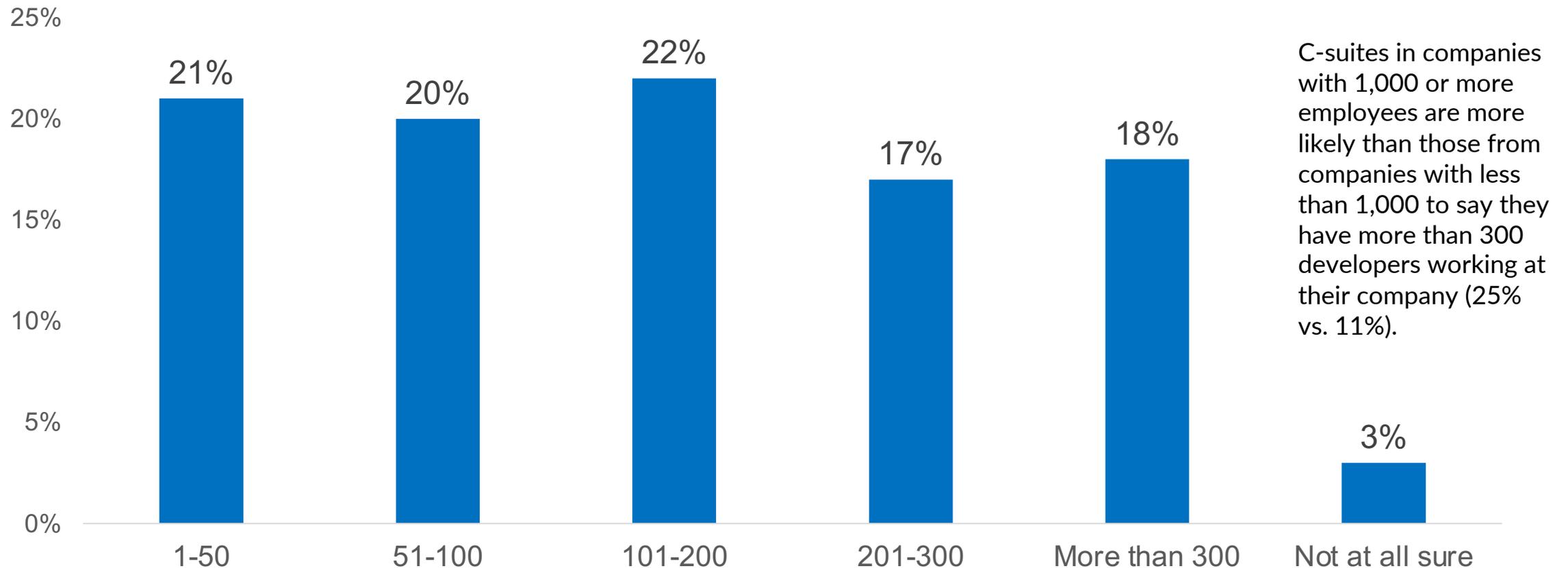
Those under 40 and between 40 and 54 are more likely than those 55 and older to say “shift left” is important for them as an organization (87% & 85% vs. 67%).

Those in the C-Suite for 10 years or less are more likely than those in it over 10 years to “shift left” is important for them as an organization (86% vs. 75%).

C-suite executives in Spain, the U.K., and the U.S. are more likely than those in Australia, France, and Germany to say they are very confident that their software is secure in production.

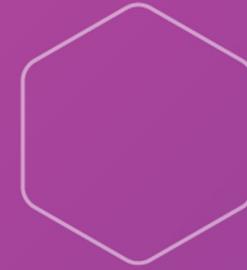
	Total	Australia	France	Germany	Spain	U.K.	U.S.
	%	%	%	%	%	%	%
Our risk management team has the knowledge and expertise to build and/or ensure a secure software supply chain.	90	92	90	87	86	94	92
I am very confident that our software is secure in production.	89	87	86	77	95	92	97
Our architects and/or developers have the knowledge and expertise to build and/or ensure a secure software supply chain.	87	89	87	83	84	87	90
Our risk management team has all the tools they need.	86	86	87	83	82	87	89
Our developers have all the tools they need.	86	87	90	77	86	85	89
Shift left is important for us as an organization.	83	84	80	74	83	89	89

Two in five C-suite executives (41%) say they have 100 or fewer developers currently working in their company while over one-third (35%) have over 200.



C-suite executives in France, Germany, Spain, and the U.K. are more likely than those in Australia and the U.S. say they have between 1-50 developers currently working for their company, while Australian executives are more likely to say they have between 201-300.

	Total	Australia	France	Germany	Spain	U.K	U.S.
	%	%	%	%	%	%	%
1-50 developers	21	11	32	26	24	22	10
51-100 developers	20	23	16	15	24	21	23
101-200 developers	22	19	22	22	18	20	28
201-300 developers	17	31	13	13	15	12	18
More than 300 developers	18	16	16	18	16	23	17
Not at all sure	3	0	1	6	3	2	4



METHODOLOGY & DEMOGRAPHICS

Methodology

- CloudBees partnered with Regina Corso Consulting to conduct a survey of C-suite executives in Australia, France, Germany, Spain, the United Kingdom, and the United States. to gather insights on the software supply chain and security issues surrounding it.
- This survey is among 600 C-suite executives from companies with at least 250 employees with 100 respondents each from Australia, France, Germany, Spain, the United Kingdom, and the United States.
- This survey was conducted online between June 27 and July 8, 2022.
- *Note for reading charts and tables:* Percentages may not add up to 100% due to rounding, or because the question allowed multiple responses. In addition, an “*” indicates the response was less than 0.5%. Unless otherwise indicated, bases for all slides represent the total of 600 C-suite executives. Where questions are repeated from the previous year’s survey, trend data is shown.
- *Note regarding year over year data:* In 2021 there were only four countries (France, Germany, the United States, and the United Kingdom) while 2022 two countries were added.

Demographics

- **Age:** 18-39=45%, 40-54=40%; and 55+=16%
- **Gender Identity:** Men=70%; Women=29%; Non-binary=*
- **Size of company:** 250-999 employees=53% and 1,000 or more employees=48%
- **Type of C-suite executive:** CEO=34%; CIO=21%; CTO=19%; Chief Audit Officer=6%; CISO=6%; Chief Risk Officer=2%; and, other C-suite title=12%
- **Time as C-suite executive:** 5 years or less=29%; 6-10 years=48%; 11-20 years=16% and over 20 years=7%

