



National Cyber
Security Centre
a part of GCHQ



Decrypting Diversity

Diversity and Inclusion in Cyber Security

2021

The right mix of minds
makes anything possible



Diversity: the second year's results

Last year's survey established a baseline for diversity and inclusion in the cyber security industry – one of the most comprehensive diversity studies ever undertaken in the sector. Now in 2021, we have a second year's data, based on the responses of 945 professionals working in cyber security, against which to measure and assess the sector and begin to analyse the progress that is being made.

How to use this summary

In this section, we set out our key findings in relation to the diversity of the cyber security industry and where this has changed from 2020. We then move on to consider issues of inclusion, followed by discrimination and barriers to career progression. Following these analyses, we outline our key recommendations to improve diversity and inclusion across the sector.

More detailed benchmark data across all the above areas is then presented in the second half of this report as a reference resource for readers.

The findings in the report are based on analysis of the survey data. We recognise that intersectional analysis is key to better understanding diversity and inclusion. Identities are made up of a complex combination of characteristics, which overlap in ways that can have important consequences – often leading to multiple disadvantages for some groups.

A note on intersectionality

Whilst some limited intersectional analysis has been completed, the current sample size of 945 somewhat limits what meaningful conclusions can be drawn.

During the course of this analysis, we have been alive to what this means in reality. For example, the number of ethnic minority females (identifying as Mixed, Asian or Black ethnicity) in our sample is 6% of the total, which equates to 52 individuals. This is in line with the male:female split we see across our whole survey population.

In the future, it is important to expand this analysis to better understand the experiences of those who live in these intersections. An increased sample size would support this.

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What's new this year

In this year's survey, we have added several important new characteristics against which to analyse diversity and inclusion.

Last year's survey measured responses against gender, ethnicity, sexual orientation and socio-economic background, as well as some analysis by job title or seniority.

In the 2021 survey, we have added additional characteristics – age, disability, location and neurodiversity – to provide a balanced perspective on diversity within the cyber security industry. We have also gathered more detailed information on the type and size of organisations for which individuals work, as well as insights into how individuals joined the cyber security industry. This enables us to consider issues of social mobility and career path choices that inevitably influence the diversity profile of the sector.

Taken together, the new characteristics that we have captured this year give a richer, more detailed and more complete view of diversity and inclusion in cyber security.



Lindy Cameron
CEO, NCSC

Forewords

As the world's dependence on technology continues to grow, cyber security has never been more important. We've shown as a profession that we can step up to meet challenges like the coronavirus pandemic: now we need to step up to the challenge of creating a diverse and inclusive sector.

At the National Cyber Security Centre, we say that cyber security is a "team sport". We all have a part to play in making the profession a thriving eco-system of a diverse minds, that fully reflects our country and society, and a workforce in which everyone feels valued, included and equal. That's why the research that the NCSC has conducted with KPMG is so important, giving us an insight into who makes up the cyber security profession and their experiences being part of it.

The survey shows a mixed picture. There are some areas to be proud of: in terms of who we are, more than a quarter of respondents identify as having a disability. But we are still evidently a very male profession, with disproportionately male senior leadership. At the NCSC we are committed to bringing more women into the profession, for example with our CyberFirst Girls Competition.

But there's clearly more to do. We are a growing profession – so this isn't a structural problem we have to live with – if we face this head on, we can ensure we are a profession that fully reflects our nation's rich diversity and full range of talent. We will need to, both to get the skills we need today and make the most of them, and to avoid a skills gap tomorrow.

More worryingly though, one in five cyber security professionals still feel like they cannot be themselves at work, with the figure rising for disabled and neurodivergent colleagues. None of us should be comfortable with that, and each of us has a leadership role to play.

The creation of the UK Cyber Security Council is a really positive step to achieving this goal. It will take a leading role in pushing diversity and inclusion to the top of the industry's agenda.

Driving change within the profession is a collective effort. As cyber security leaders, we must also play our role in delivering positive change. We must work together continue to challenge the status quo and reflect on our behaviours, practices and assumptions in the workplace.

We have had our wake-up call – it is now time to act on the recommendations outlined in this report.

The UK continues to rely on a thriving cyber security sector to remain safe and prosperous. Diversity and inclusion is fundamental to this because we need to attract and retain the best talent and foster diversity of thought. It's so important that all those within the cyber industry workforce can thrive and reach their full potential, regardless of their gender identity, ethnicity, disability, sexual orientation or socio-economic background. Therefore, alongside the NCSC, I'm proud to introduce this year's report, the second in our annual series.

Building on last year's findings, this year's report has surveyed new areas – including disability, neurodiversity and organisation characteristics – to provide us with important and additional diversity characteristic insights. It is clear that there is still much more work required to improve diversity and inclusion in the cyber industry. However, I am hopeful that we have provided a sound baseline from which to work from.

Gathering and analysing data is the important first step to improving diversity and inclusion. The findings in this year's report continue to help us identify how individuals feel about working in cyber and the key areas for improvement. The updated recommendations we have made in the report provide the direction that organisations and individuals working in the cyber industry need to take.

KPMG and the NCSC remain committed to ensuring that diversity and inclusion is at the heart of the future of the cyber industry. We are grateful to those who participated in this year's survey and we hope that readers of this year's report find the insights and recommendations impactful and helpful as they continue to address diversity and inclusion within their own organisations.



Jonathon Gill

Partner, KPMG in the UK
Head of Aerospace
and Defence

Executive summary

A more diverse and inclusive team is a more innovative team. The cyber security industry is a significant employer in its own right and the diversity and inclusion of its workplaces affect many thousands of people. What's more, with ever-growing demand for cyber security experts and well-publicised skills shortages, attracting a wider range of talent into the industry has become critically important.

We hope the findings from this, our second comprehensive study of diversity and inclusion in the industry, will help employers consider what progress they are making, challenge themselves where necessary to do more, and motivate them to continue in their efforts.

A clear case for diversity and inclusion

The moral case for equality of opportunity in the workplace is clear, while numerous studies have shown that high levels of diversity and inclusivity create better business outcomes too. In recent times, the case for equality has been powerfully propelled forwards by societal events.

Increasingly, there is a simple expectation and a demand that all avenues of modern life, whether in the public or private spheres, will create fair and equal environments where individuals of all backgrounds and characteristics can be themselves and thrive.

The second year

Against this backdrop, we have conducted a second year of research amongst UK cyber security professionals, with 945 people from across the industry choosing to take part and fill in our online survey. Our inaugural research last year set the baseline. This year, we had the opportunity to benchmark against the 2020 findings to gauge what progress is being made.

We did so recognising that, in diversity and inclusion terms, one year is not a long time – hence our commitment to continuing this study over the long term to see greater change. We did not, therefore, have expectations of radical shifts in findings. Nevertheless, we were keen to see whether there is evidence of specific areas of progress, or specific areas of concern. We have not provided comparisons between the years for every single finding – but have focused on those areas where there have been the most interesting or significant movements.

It is important to recognise also that the entirety of this year's research was conducted during the pandemic. Cyber organisations – and indeed all organisations – have had a tumultuous year simply dealing with the unprecedented challenges of operating through a time of great uncertainty, anxiety and changed ways of working.

This in no way alters the need for strong and fair diversity and inclusion approaches. But we should remember, when looking at the results, that the operational agenda has been exceptionally full.

Another significant development since the 2020 report is that the Department for Digital, Culture, Media and Sport has now formally established the UK Cyber Security Council. The Council acts as the independent voice of the UK cyber security profession. It develops, promotes and stewards nationally recognised standards for cyber security in support of the UK government's National Cyber Security Strategy. It has already published its principles in support of diversity and inclusion¹ as well as a careers route map, setting out a number of pathways into different roles within the profession.

A broader set of characteristics

This year, we have asked participants in the survey for feedback against a wider range of characteristics, protected and not. In 2020, we benchmarked against gender, ethnicity, sexual orientation and socio-economic background, as well as some analysis by job title or seniority. In 2021, we have added some additional characteristics to provide a balanced perspective on diversity within the cyber security industry. We have also gathered more detailed information on the type and size of organisations for which individuals work, as well as insights into how individuals joined the cyber security industry.

It is not possible to capture the views of every single individual working in cyber security, and we should bear in mind that those who respond to the survey may not necessarily have the same views as others they work with. Nevertheless, by expanding the characteristics analysed, this year's research gives us a fuller picture of the experience of those working within the cyber security industry.

LGB

In this report, we use the acronym 'LGB' to refer to individuals with minority sexual orientations (i.e. lesbian, gay, bisexual).

In line with the 2021 census, we asked respondents about their gender identity through the question 'Is the gender you identify with the same as your sex registered at birth?' The question about sexual orientation (LGB) was therefore separate to the question about gender identity (trans, or non-binary). For this reason, when we use the term LGBT, or other similar acronyms, it is in parts of the report that reference other sources.

Executive summary



“It’s disturbing that 25% of respondents say they’ve experienced a career barrier related to diversity and inclusion. That is surprising to see in 2021 with all the recent education and knowledge we have as leaders. It’s also a big jump from 14% in 2020 and shows we can’t take our eye off the ball on diversity and inclusion.”

**Javid Hamid, Partner,
KPMG in the UK
Head of Corporates Consulting**



Our key findings – Diversity

In many ways, diversity in the cyber security industry is relatively good even if there remains further to go. Over a third (36%) of our respondents are female, significantly higher than some other studies that have been conducted, such as by the ISC2 Foundation in 2019.² One in ten respondents are from the LGB community – much higher than the estimated 2.2% of the UK population that is LGB according to 2018 ONS data.³

A quarter (25%) of respondents identify as having a disability. This is higher than the figure for the working population as a whole which stands at 20%, and significantly outperforms the IT labour market specifically where it has been calculated that 14% of the workforce is constituted by people with disabilities.⁴

Other characteristics are broadly in line with national population proportions, including those from ethnic minorities (15%), and those who are trans and non-binary (1%).

One area for further attention is age. One in twenty of the respondents is aged 18–24. Increasing this should be a priority for the future, not least in recognition of the cyber industry’s perennial skills shortage. We also find that just 3% of the cyber workforce entered via a school leaver or apprenticeship scheme and 12% via a graduate scheme. Raising these levels – in particular of school leavers and apprentices – could have a positive impact on the diversity of the sector.

Of our respondents this year:

36%

are female

15%

are from ethnic minorities

6%

are ethnic minority females

25%

have a disability

Our key findings – Inclusion

Diversity is fundamentally important – but the degree to which individuals feel included, accepted and treated equally is critical too. Without that, efforts to raise diversity are virtually meaningless.

We find some grounds for encouragement this year – but plenty of evidence that there is more to be done. Overall, 70% of people feel able to be themselves at work, in line with last year (72%). This leaves one in five cyber professionals (22%) who, like last year, feel they cannot be themselves.

On the positive side, we find a marked increase in confidence amongst Black respondents. Whereas last year only 41% of Black, African, Caribbean or Black British professionals felt able to be themselves, this has jumped to 60% this year. This is perhaps evidence of the impact of wider awareness of race in society. Nevertheless, confidence to be themselves remains lower amongst Black professionals than their White counterparts – an unacceptable situation.

We also find evidence of greater reporting of discriminatory incidents, with the proportion of individuals who said they did not report an incident falling, from 74% to 65%.

However, our research gives much food for thought. The experience of disabled and neurodivergent individuals, for example, is very mixed. They are one of the most likely groups to feel unable to be themselves – with around a third of respondents in both groups disagreeing that they could be themselves in the workplace. They also experienced one of the highest levels of discrimination – around a third in each group once again.

Concerning disclosure, we find that only just over half of disabled individuals are comfortable disclosing their disability. The confidence of LGB individuals to disclose their sexual orientation has also fallen quite significantly compared to last year.

70%



of our respondents feel able to be themselves in the workplace

22%



of respondents experienced some form of discrimination in the last year

Overall, over a fifth (22%) of the cyber industry say they have experienced discrimination in the last year, up from one in six (16%) in 2020. However, this rise may reflect the fact that the survey asked about a wider number of characteristics this year. We also find that women, those from ethnic minority backgrounds, and those who are lesbian or gay all suffered much higher levels of discrimination than the average.

Equally concerning is that the proportion of respondents experiencing career barriers as a result of one of their characteristics has risen significantly, from 14% last year to 25% now. Again, this may be partly due to the wider number of characteristics analysed against. But we also find, again, that the proportion of women and those from ethnic minority backgrounds that have experienced a barrier is significantly higher than many other groups.

As a result, the number of individuals who are considering or have considered changing employer or leaving the sector has also grown – from 9% last year to 16% now.

Executive summary

Our **Six** recommendations for the industry:

- 01** Take an active role in leading on diversity and inclusion
- 02** Create and benefit from hybrid working
- 03** Use data to understand, monitor and improve the talent lifecycle
- 04** Learn from D&I best practice
- 05** Publicise the success stories
- 06** Map out the roles and skills

Recommendations and the path ahead

We make six recommendations that we believe the cyber security industry should adopt in order to drive progressive change (see page 26), ranging from collaboration and senior leadership accountability to effective use of data and learning from best practice. These are modelled on the recommendations we put forward last year, but updated to reflect this year's findings and the significant developments – such as the founding of the UK Cyber Security Council – that have taken place over the last twelve months.

We welcome the creation of the UK Cyber Security Council and believe that it can take a leading role in pushing the diversity and inclusion agenda in the industry forward. As noted earlier, the Council has already made an impact such as in its work creating a cyber careers route map together with high level descriptions of the nature of key cyber roles – which will help to 'demystify' the industry and potentially attract a wider range of people towards a cyber career.

We hope that this year's results – and comparisons to the 2020 data – will help those working in the cyber security industry to reflect on the situation in their own organisations and think about ways of continuing to build workplaces that are diverse, inclusive, open and fair.

"The UK Cyber Security Council is proud to take a leading role in pushing the diversity and inclusion agenda forward and welcome the results of this survey and report. With just 3% of school leavers or apprenticeship scheme and 12% via a graduate scheme entering the profession, there is still much to be done in this and other areas and the Council looks forward to working with the NCSC and KPMG on driving diversity and inclusion forward."

**Simon Hepburn, CEO,
UK Cyber Security Council**

01

2021 Key findings

Diversity: broadly unchanged, but above average in many categories

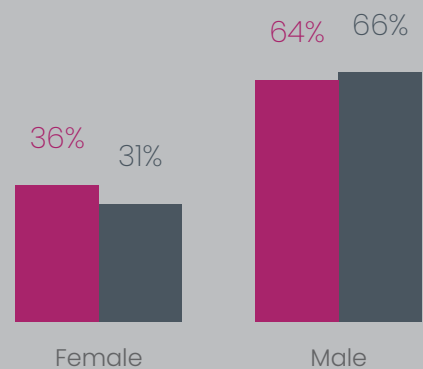
The diversity profile of the cyber security industry in 2021 is broadly similar to that of last year, although there are some interesting shifts in some areas.

“Female cyber security professionals are often overlooked because they are less likely to self-promote.”

Anonymous survey respondent, 2021

What is your sex?

■ 2021 ■ 2020*



* In 2020, we asked respondents “which of the following best describes your gender,” with the options of Male, Female, Non-binary, Prefer to self-describe and Prefer not to say.

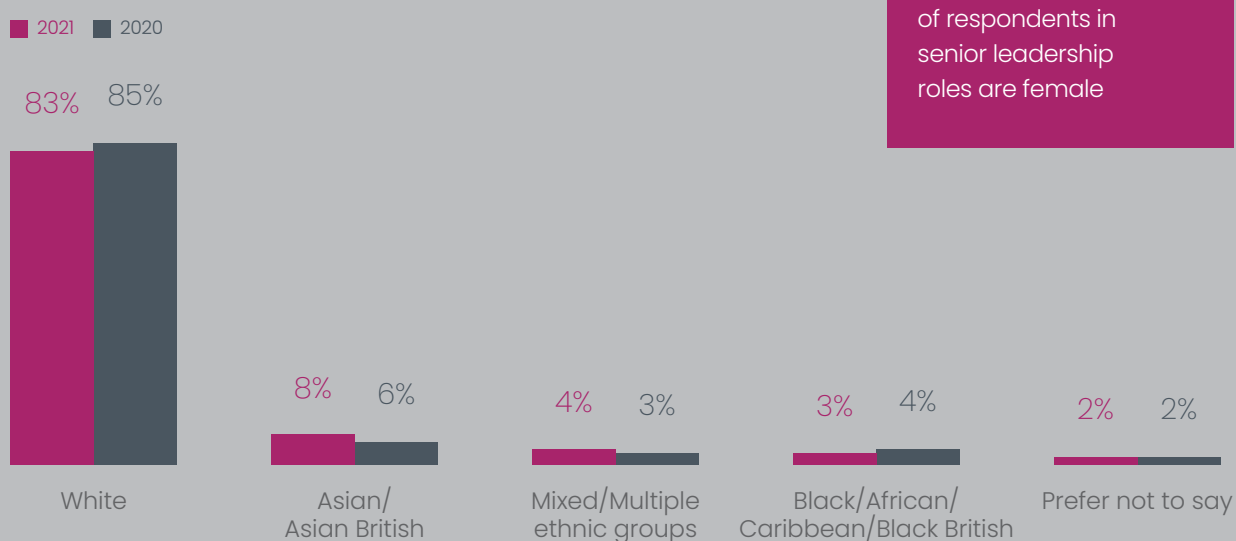
In 2021, in line with the Census, we asked “What is your sex,” with the options of Male or Female, with a further question asking “Is the gender you identify with the same as your sex registered at birth,” with options of Yes, or No – with the ability to specify their gender.

Industry diversity profile compared to 2020

Last year, we found that levels of diversity against key characteristics in the cyber security industry were average or high relative to UK-wide data and this continues to be the case. Across key characteristics, our high level findings are:

- 36% of respondents were women, up from 31% in 2020. However, this slight rise may be as a result of the question asked in this year's survey being worded differently to align it with the wording in Census 2021. At over a third, this female representation is significantly higher than other studies of the cyber security or related industries have recorded, which put female representation at 25.5% (Tech Nation).⁵ We also find a higher weighting of female staff amongst younger age groups (18-24 and 25-34) compared to men, suggesting that a greater proportion of women are at relatively early stages of their careers.
- Amongst senior leadership roles, 34% are filled by women compared to 66% by men, further illustrating the need for greater female representation across all areas of the industry.
- Respondents from ethnic minority backgrounds marginally increased from 2020 to 15% from 13% last year. This is broadly similar to the UK as a whole. The proportion of Black professionals is similar to last year, whilst respondents of Indian origin make up 6% of total respondents this year, compared to 1% of the total in 2020.
- The size of the LGB community in the survey has remained steady at 10% and still compares very favourably to the 2.2% of the UK population found in the ONS data released in 2018.⁶

What is your ethnicity?



10% 

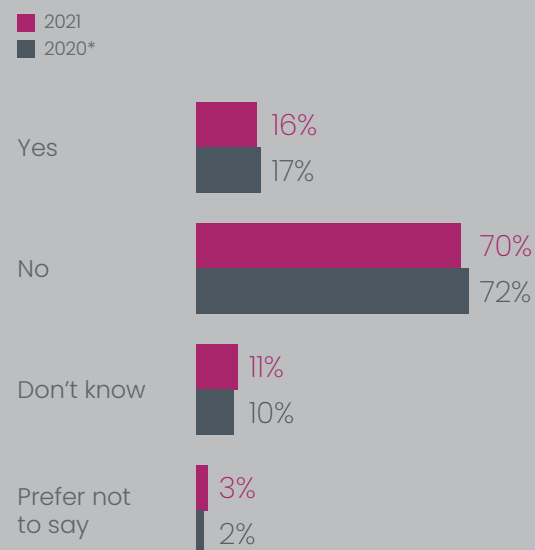
of respondents identified as LGB – much higher than the 2.2% of the UK population that declared themselves as such in 2018

1% 

The proportion of trans and non-binary respondents remains broadly unchanged

- The proportion of trans and non-binary people in our respondent base remains broadly unchanged at around 1%. This appears to be in line with the estimate made in The Women and Equalities Committee's report on Transgender Equality that suggested around 1% of the UK "are likely to be gender incongruent to some degree."⁷
- In terms of socio-economic diversity, 16% of the respondent base comes from a background where they were eligible for free school meals (FSM). This is fractionally down from the 2020 survey (17%) but broadly in line with the population as a whole where the proportion of students eligible for FSM generally fluctuates between around 15% and 19%. As at October 2020, the proportion was 19.7%.⁸ Our data indicates that Black respondents were significantly more likely to have received free school meals than the population as a whole, at 33% (10 respondents out of 30).

Were you eligible for free school meals?



* Due to rounding, the percentages given add up to more than 100%.

“

“Neurodivergent people are hardwired to think differently, increasing both business innovation and corporate resilience. That a third of respondents are experiencing discrimination & career barriers, shows we are stifling our own talent pool. We know better, now we must do better – with “Inclusion by Design” in culture, process and practice.”

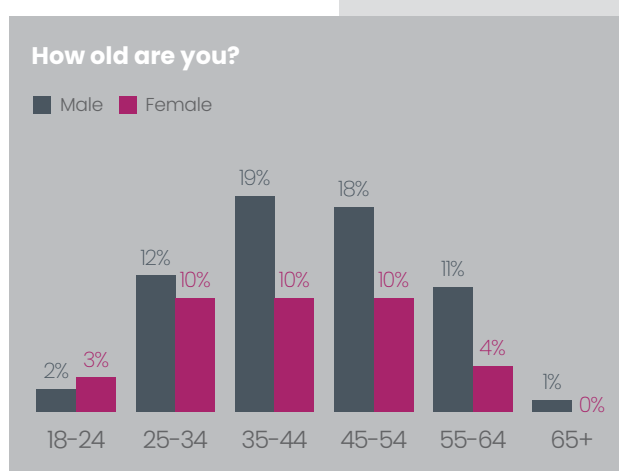
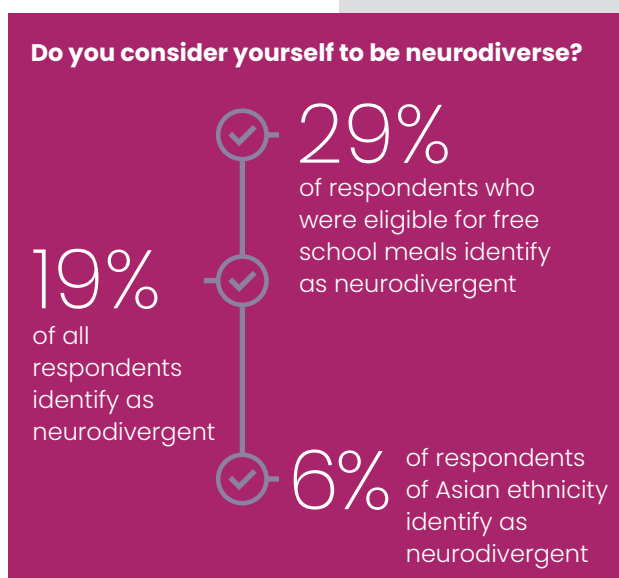
Nicola Whiting MBE, NeuroCyber CIC

”

New characteristics for 2021

The key findings for the new characteristics captured this year include:

- Disability** – a quarter (25%) of respondents identify as having a disability. This is higher than the figure for the working population as a whole which stands at 20%⁹, and significantly outperforms the IT labour market specifically where it has been calculated that 14% of the workforce is constituted by people with disabilities.¹⁰ In terms of types of disability, the most commonly cited area that respondents consider their condition to impact is mental and emotional health (53%). Only 27% cited their disability as affecting their physical capability – a reminder of how disability goes far beyond physical impairments and can often be ‘unseen’. There is a particularly high prevalence in the 18–24 age range, with 36% identifying as having a disability.
- Neurodivergence** – 19% of respondents identify as neurodivergent, which is significantly higher than the 10% that has been estimated for the UK population.¹¹ This can encompass a broad range of conditions such as autism, dyspraxia, Asperger’s syndrome, dyslexia and attention deficit hyperactivity disorder (ADHD). Nationally, the proportion of neurodivergent adults is estimated to be over 15%. Higher proportions of younger age groups are identifying as neurodivergent with 27% of 18–24 year olds and 23% of 25–34 considering themselves neurodivergent. This should not be taken to suggest that neurodivergence is increasing. Whilst late diagnosis is becoming more common, a larger proportion of older neurodivergent people are believed to remain undiagnosed. This is generally attributed to poorer historic recognition and support in schools.
- Age** – 71% of the respondent base is aged 35–64. While the age distribution curve is generally in line with other professions, it is noticeable that the proportion aged 18–24 is low at 5%. Increasing this proportion should be a priority for the future, not least in recognition of the cyber industry’s perennial skills shortage challenge.¹²



01

2021

Key findings

Organisational and role diversity

Who do cyber professionals work for?

It is useful to establish the type and size of organisation that individuals work for as this deepens our understanding of diversity trends and could also have a significant bearing on individuals' lived experience in terms of inclusion and discrimination.

Our research shows that there is a fairly even split between privately-owned (50%) and public sector (41%) organisations. The great majority (84%) are large organisations (as defined by the Companies Act 2006) employing 250+ staff. In terms of location, the dominant regions are the South West (32%) and London (27%).

These findings may in part reflect the large body of cyber security individuals working for NCSC and GCHQ – large, public sector organisations which have a majority of their workforce based in the South West (Cheltenham). Outside the South West and London, no other region gets into double figures and several are as low as 1% or 2%. This suggests that there are significant opportunities for the government's levelling up agenda to have a real impact on the cyber security industry across the UK. Further work is needed to spread cyber opportunities and career pathways across the country and encourage a more diverse range of talent into the sector. There have already been some significant steps in this direction, for example in GCHQ's new Manchester office.

“Language in cyber security can be divisive, gendered and violent – our vocabulary needs to be updated.”

Anonymous survey respondent, 2021

Entry routes

An important driver of diversity is to have a diverse intake across entry routes. Nearly two thirds of respondents came into the sector as an experienced hire or career switcher. Just 3% entered via a school leaver or apprenticeship scheme and 12% via a graduate scheme. Raising these levels – in particular of school leavers/apprentices – could have a positive impact on the diversity of the sector. Outside these routes, the high cost of gaining cyber technical qualifications frequently acts as a barrier to socio-economic and ethnic diversity within the industry.

Roles and job titles

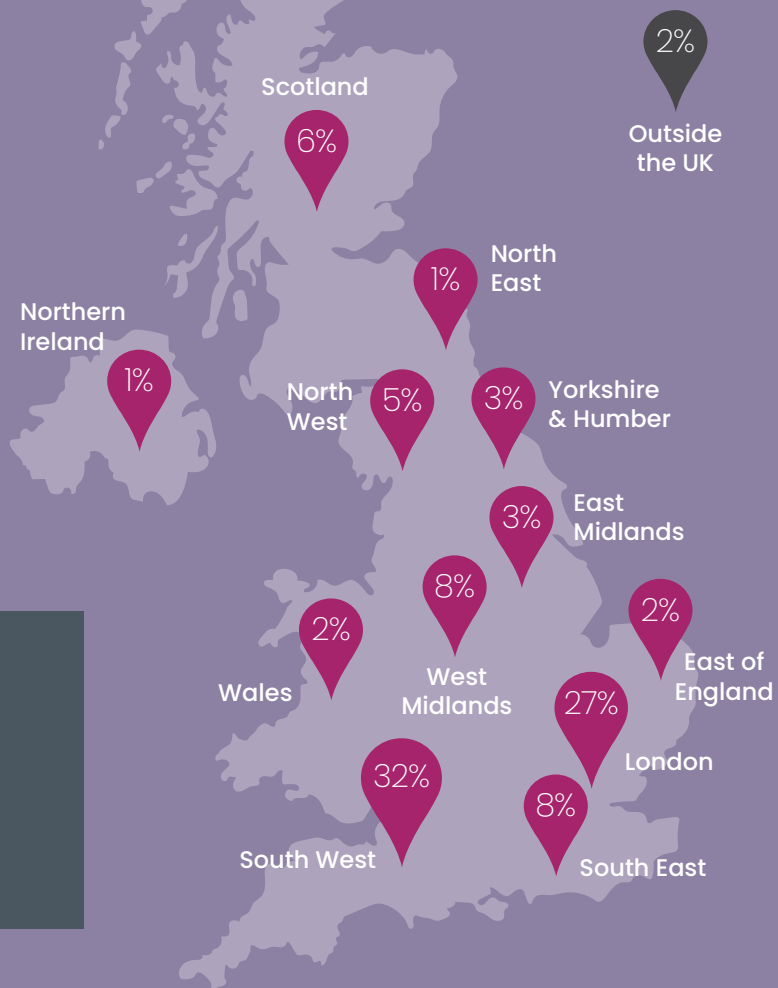
As last year, our research shows that the cyber security industry encompasses a wide range of job titles. In addition to the 30 job roles given within the survey, around a quarter of individuals self-described their role within the 'Other' category, yielding over 100 additional job titles.

Cyber Security Consultant along with Cyber Security Analyst were the most common job descriptions (nearly a quarter of the industry). But these are very generic descriptors, while many individuals identified with or gave very precise job titles. This underlines the wide array of specialisms and skills in the industry and a significant breadth of interdisciplinary and multi-skilled talent. It suggests a strong overlap between cyber roles and roles that may often be considered part of the wider technology or digital sectors.

These factors all contribute to the richness of the cyber sector and the range of opportunities it affords. However, as we noted last year, the lack of clarity that it indicates about what exactly cyber is, and what job role opportunities exist within it, could also be acting as a barrier to attracting a more diverse pipeline of talent.

Further work is needed to clarify, define, and communicate the skillsets and most common job roles within cyber. This may be an area that the newly formed UK Cyber Security Council is well-placed to lead on.

Work location by region



100+



job roles within the industry –
Cyber Security Consultant and
Cyber Security Analyst being the
most common.

Type of organisation you work for



Privately-
owned
organisation



Public sector
organisation



Not-for-profit
organisation



Academic
organisation
(incl. students)



Not currently
in employment



Other

How many people are employed by the organisation you work for?



250+
(Large)



100-249
(Medium)



50-99
(Medium)



10-49
(Small)



0-9
(Micro)



01

2021

Key findings

Inclusion: a mixed picture

We will only have flourishing places to work if there is a culture of inclusivity in which people feel able to be themselves. Key indicators of inclusivity are whether individuals have the confidence to be themselves and to disclose aspects of themselves – if they wish to – at work. There is a clear business case for this too: when people are able to be themselves they are more likely to work at their best level, increasing organisational productivity as numerous studies have found.

We find that 70% of people feel able to be themselves, in line with last year (72%). While this sounds positive as a headline figure, it nevertheless leaves one in five cyber professionals (22%) who, like last year, feel they cannot be themselves. This is a significant proportion and shows that the industry has further work to do to tackle the issue.

We also find marked variations amongst different groups. Neurodivergent individuals and people with disabilities are two of the groups most likely to feel unable to be themselves – with 34% and 33% of respondents respectively in these groups tending to or strongly disagreeing that they could be themselves in the workplace. There are signs that socio-economic background has an impact too, with 27% of those with an FSM-eligible background feeling inhibited.

Do you feel able to be yourself at work?

■ Disagree ■ Neither agree nor disagree ■ Agree



Being yourself: a marked increase in Black respondents' confidence

There are also significant differences by ethnicity – and some encouraging signs of improvement. Perhaps unsurprisingly in a largely white society, White respondents remain the most confident in being themselves (71%). But whereas last year only 41% of Black, African, Caribbean or Black British professionals felt able to be themselves, this has jumped to 60% this year. While this still means that nearly three in ten Black professionals do not feel confident to be themselves, and is lower than the response from White professionals, the improvement seems significant.

Other positives include the fact that those identifying as gay or lesbian are amongst the most confident groups, although a higher percentage of bisexual respondents (30%) disagree that they can be themselves.

Regional disparities exist

Regionally, we note some wide variations. Professionals in London feel most able to be themselves, with only 19% saying they are not confident. But the proportion of those lacking confidence rises to 29% in Yorkshire & Humber, 36% in the North West.

37% 

of individuals with a disability are uncomfortable disclosing their disability at work

Disclosure: sexual orientation confidence falls

However, in contrast to gay and lesbian respondents being one of the groups most confident in themselves, we see a deterioration in the picture this year among this group, only 76% being comfortable disclosing their sexual orientation in the workplace, down from 89% last year. Amongst bisexual respondents the picture is worse still, with just 47% being comfortable down from 77% in the prior year. These figures compare to 91% of heterosexuals being comfortable to disclose. The reasons for this year's falls are unclear.

Another group with low confidence in disclosing is individuals with a disability. Just 53% are comfortable disclosing, with over a third (37%) actively uncomfortable in disclosing.

We see a difference, too, regarding social background. While 84% of those who did not receive FSM when young are comfortable disclosing their social background, only 73% of those who did receive them are comfortable.

Regarding respondents' confidence in disclosing the ethnicity they identify with at work, the direction of travel in this year's survey is more positive. There have been rises in confidence amongst mixed race respondents (from 72% to 85%) and Asian respondents (from 73% to 81%) while amongst Black respondents the figure has remained constant at 90%. These figures compare to White at 94% (2020: 92%).

By sex, the difference in responses is encouragingly small, as it was last year. 71% of all male and 69% of all female respondents feel they can be themselves, suggesting that, in this context at least, parity of experience exists. However, amongst those who indicated that their gender is now different to the sex assigned to them at birth, it is a different picture – with only 44% comfortable in disclosing their gender identity.

01

2021

Key findings

£127 billion

The annual economic cost of discrimination in the workplace

Discrimination: a reality for more than 1 in 5

Discrimination in the workplace is something that no employer should tolerate. It has a corrosive mental and emotional toll on those who experience it. There is also a significant economic cost associated – estimated at £127bn per annum.¹³

Sadly, over one in five (22%) of the cyber industry say they have experienced discrimination in the last year. Whilst this is an increase from 2020, when the figure stood at one in six (16%), it may reflect the fact that the survey asked about a wider number of characteristics this year.

Nevertheless there is a clear challenge for the industry here, to prevent this increase from becoming a trend.



Have you experienced a negative incident in the past year?



Other standout findings include:

- **Gender** – Gender-based incidents against women continue to be one of the largest issues with 19% of women experiencing a gender-based incident, up from 15% last year. This compares to just 1% of men.
- **Ethnicity** – there has been significant improvement in ethnicity-based incidents since last year, with the proportion of Black respondents experiencing an incident dropping from 41% last year to 23% this year and incidents for Asian respondents dropping from 27% to 18% this year. However significant improvement is still needed as these remain some of the highest incident rates for any population.
- **Sexual orientation** – 14% of gay and lesbian respondents suffered an incident in relation to their sexuality. This compares to just 1% of heterosexual respondents.
- **Social background** – 11% of those who received FSM said they had experienced an incident in relation to their social background, compared to just 3% of others.
- **Age** – younger (18-24) and older (55+) respondents experienced approximately double the incidents (14% and 13% respectively) of those in the middle age range (25-54).
- **Disability** – 18% of those with a disability have experienced an incident in relation to their disability.

An intersectional lens on discrimination:

31% 

of female respondents consider themselves to be disabled vs. 22% of male respondents

6% 

of female respondents reported experiencing negative comments or conduct based on their ethnicity, against 4% of male respondents

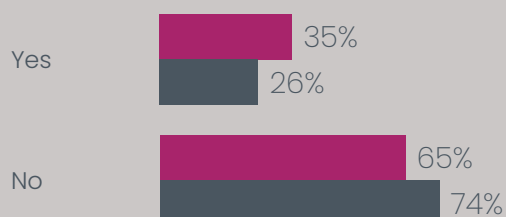
12% 

of female respondents reported experiencing negative comments or conduct based on their age, against 8% of male respondents

01 2021 Key findings

Did you report the negative comments or conduct to your employer?

■ 2021
■ 2020



76% ♂

of men chose not to report
an incident, compared to

55% ♀

of women

Reporting: room for improvement

To tackle discrimination, it is key that incidents are reported and that organisations then take full and proper steps to address it. But this year's research gives a mixed picture as to the direction of travel here.

On the positive side, the proportion of individuals who experienced an incident and said they did not report it has fallen, from 74% to 65% – although this is still disappointing given that the figure should be as close to zero as possible. It is interesting to observe a sex imbalance here – a higher proportion of men (76%) than women (55%) chose not to report an incident. Further investigation is needed to understand the reasons for this – with one possibility being that men tend to feel there is a 'stigma' in admitting they were subjected to an incident.

Individuals with confidence in their organisation's response to inappropriate behaviour or incidents has also fallen, from 88% to 81% (those rating their confidence between 6 and 10 out of 10). And the percentage of those saying that all incidents they reported were satisfactorily resolved has reduced too – with just 16% saying this was the case compared to 23% in 2020. Similar to last year, around four in ten incidents were not resolved.

More than

4 in 10 

reported incidents were not
satisfactorily resolved

Decoding Covid-19: more analysis needed

One factor that requires further study in relation to this is Covid-19. For the entire period covered by this year's survey, the UK was under varying levels of Covid-19 restrictions, which meant many people worked at home (while in the 2020 survey, remote working only began in the last few months of the period). It's not yet clear what the impact of colleagues no longer being physically co-located has been on diversity and inclusion. On the one hand, it could be argued that the reduced number of direct interactions would mean a reduction in opportunities for inappropriate remarks or behaviour to take place. On the other, placing a distance between people could lead to more of these remarks and behaviours as the increased physical distance could make some individuals feel less accountable. The rise of remote working also brings new factors to the fore that hadn't previously been considered – what impact does broadband speed or sharing a workspace with a flatmate have on an individual's inclusion?

So while we cannot be certain how much the new characteristics in this year's survey are behind the rise in incidents, we can say with reasonable confidence that the number of incidents has not moved on a downward curve.

With remote and hybrid working set to continue as the dominant model for the foreseeable future – and perhaps permanently – it will be important to understand the full dynamics of how these models affect discrimination, the reporting of incidents, and the way incidents are dealt with. It is hoped that studies on this may begin to emerge over time, giving organisations valuable insights and enabling them to shape their responses accordingly.

"Understandably, many people lack confidence having honest, open conversations about identity. Marginalised people can be impacted by internalised oppression and fear of speaking up. Others struggle with shame and guilt. Adopting Cultural Humility, a life-long process of self-reflection, can help us become more comfortable with uncomfortable conversations, empathise with the lived experiences of others and allow for a healthier exchange of ideas."

**Hillna Fontaine,
CEO and Founder,
Mabadiliko CIC**

Career barriers: more blocks in the road

Discrimination can not only be hurtful and damaging to individuals at the time it occurs – it can also erect barriers to their career progression. This must be regarded as one of the ultimate injustices of prejudice and intolerance. It also harms organisations as they experience greater talent loss with some individuals deciding to change employer or even leave the industry altogether.

It is of concern, therefore, that the proportion of respondents experiencing career barriers as a result of diversity and inclusion issues has risen significantly, from 14% last year to 25% now. It is sobering to think that a quarter of the industry has encountered blockages on the basis of their personal characteristics. It is worth noting, however, that the figures are lower amongst not-for-profit (18%) and academic organisations (21%).

Again, the overall rise may partly be explained by the wider set of characteristics and experiences relating to them covered in this year's survey. And once again, the groups newly featured in this year's survey had experienced more barriers, pushing the overall average up: 37% of neurodivergent respondents and 36% of disabled respondents said they had experienced a barrier.

As with discrimination, we find that some groups are significantly more likely to have experienced career barriers:

- **Sex** – 37% of women and 18% of men said they have experienced barriers as a result of a diversity and inclusion issue.
- **Ethnicity** – 40% of Black respondents have met with a barrier, significantly higher than the proportion for their White colleagues (24%). Asian respondents also experienced more barriers (30%).

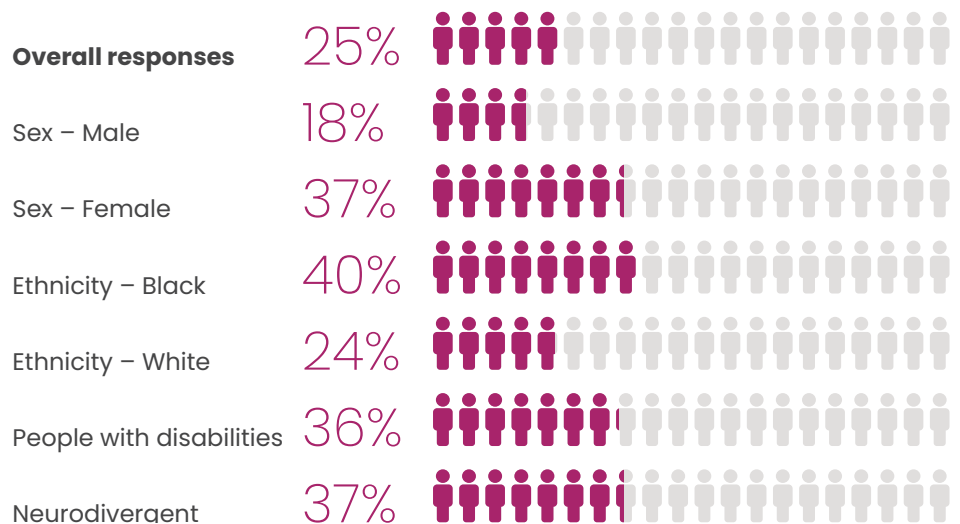


25%

of respondents experienced career barriers in the cyber industry, up from 14% in 2020

Have you ever experienced barriers to your career progress?

■ Yes



The number of individuals who are considering or have considered changing employer or leaving the sector because of perceived career barriers has also grown – from 9% to 16%. Of these, 12% are considering or have considered changing employer and 4% leaving the cyber industry.

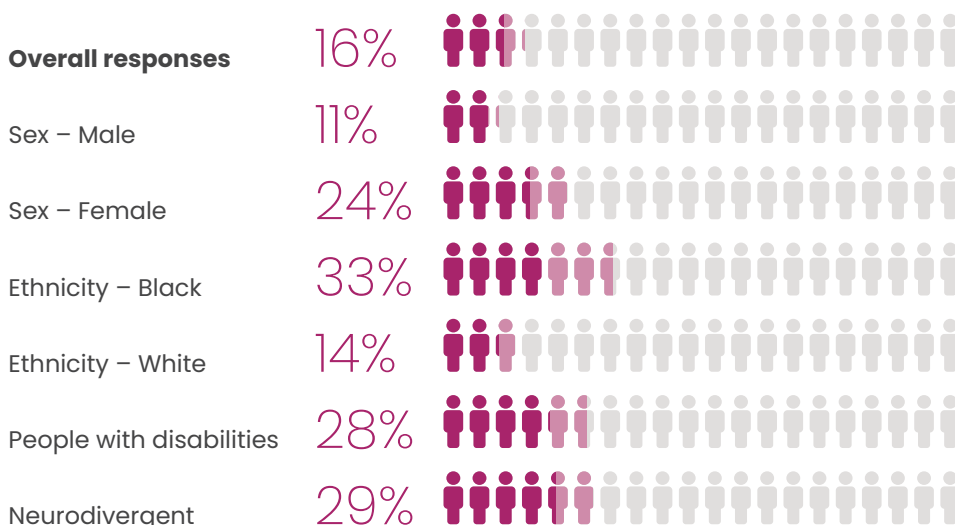
Once again, there are clear disparities amongst groups:

- **Disability** – disabled respondents are much more likely than those who do not identify as disabled to be considering moving employer (21% vs 9%). A higher proportion (7% vs 3%) are also considering leaving the sector entirely.
- **Neurodivergence** – the figures similarly high, with 22% considering moving employer and 7% thinking about leaving sector.
- **Ethnicity** – one in five Black respondents (20%) is considering moving employer compared to only one in ten (11%) White respondents, and 13% are contemplating leaving the sector (3% White).
- **Sex** – a significantly higher proportion of women than men are considering moving employer (17% vs 9%) and more are also thinking about leaving the sector (7% vs 2%).

The wider set of characteristics asked about this year may have had an impact on the numbers reported. Establishing a like-for-like long-term picture will help to monitor the progress being achieved.

Are you considering changing employer or leaving the sector because of the barriers you have encountered?

■ Yes – move employer ■ Yes – move sector



16%

The number of individuals who are considering changing employer or leaving the sector – up from 9% in 2020

Recommendations

We make six recommendations that we believe the cyber security industry should adopt in order to drive progressive change. These are modelled on the recommendations we put forward last year, but updated to reflect this year's findings and the significant developments – such as the founding of the UK Cyber Security Council – that have taken place over the last twelve months.

We welcome the creation of the UK Cyber Security Council and believe that it can take a leading role in pushing the diversity and inclusion agenda in the industry forward. The Council has already made an impact such as in its work creating a cyber careers route map together with high level descriptions of the nature of key cyber roles – which will help to 'demystify' the industry and potentially attract a wider range of people towards a cyber career.

This year's recommendations have been streamlined to six compared to last year's seven by merging two of them together, for ease of use and reference. They continue to cover just as wide a range of issues as before.

Our expectation is that the recommendations we produce will not change radically each year but rather will gradually evolve over time. They are designed to be a long-term, enduring set of recommended actions that reflect best practice and can steer the industry in the right direction.

But while they are for the long term, at the same time action is needed now. The NCSC and KPMG hope that the UK Cyber Security Council will spearhead work to move the dial on diversity and inclusion, and that readers of the report in the sector will find the recommendations a useful reference point for focusing and shaping their own efforts as they seek to create better workplaces for all.

01 Take an active role in leading on diversity and inclusion

The cyber security industry must take responsibility for improving diversity and inclusion. Organisations within the industry must work collaboratively to set a clear vision for the D&I practices that cyber professionals should expect from their employers. Everyone in the industry has an active role to play but, in particular, senior leaders must act as role models and lead by example.

02 Create and benefit from hybrid working

Identify a set of principles for organisations to ensure inclusivity is factored into the shift to hybrid working.

It is important to maintain inclusivity with a significant proportion of employees working remotely, flexibly or part-time working, and to build, maintain and enhance affinity groups in such an environment.

This should include: identifying opportunities to improve diversity and inclusion through new ways of working; retaining employees whose roles mean they cannot shift to hybrid working; and attracting more diverse talent through the benefits of hybrid working.

03 Use data to understand, monitor and improve the talent lifecycle

The industry should leverage its expertise in data to better understand how diversity and inclusion can be embedded across the talent lifecycle. This should include showing how the implementation of new D&I initiatives using a data-driven approach have made a difference to professionals' experience. The Tech Talent Charter provides best practice and facilitates knowledge sharing across organisations. Organisations in the cyber security industry should consider signing the Charter, adopting its best practice and contributing to success by sharing data.

04 Learn from D&I best practice

The industry must work collaboratively with all stakeholders to share diversity and inclusion best practice. This will support organisations in learning from others as they each take their own steps to improve the experiences of cyber professionals, regardless of who they are.

05 Publicise the success stories

The UK Cyber Security Council should produce a series of case studies and career journeys that show the breadth of routes into cyber and the diversity of professionals in the industry today. Individuals need to understand how they can join the cyber security industry and the variety of opportunities available, including at entry level. There should be no barrier to entering the cyber job market based on demographic characteristics.

06 Map out the roles and skills

The UK Cyber Security Council should produce cyber roles and the skills required in order to develop a framework to describe cyber roles and skills consistently. Job descriptions and adverts for cyber roles need to be clear and accessible, to ensure they are inclusive, and focused on aptitude and skills. The industry should support this by, providing information on the cyber roles and skills they require.

02

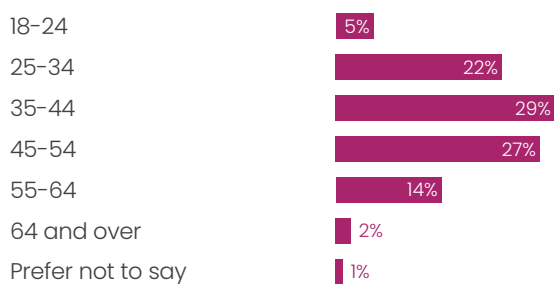
Detailed survey results: Diversity

This section of the report provides detailed information on our aggregated survey results. In particular, these pages focus on the diversity of respondents – what characteristics, both protected and not, they possess. Where the same question was asked in 2020, the results from that year’s survey are also shown for comparison.

Figures have been rounded to aid presentation, rounding differences may occur

Age

What is your age?

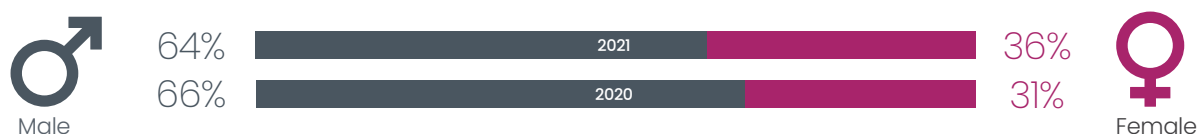


71% 

of the respondent base is aged between 35 and 64

Sex and gender identity

What is your sex?*

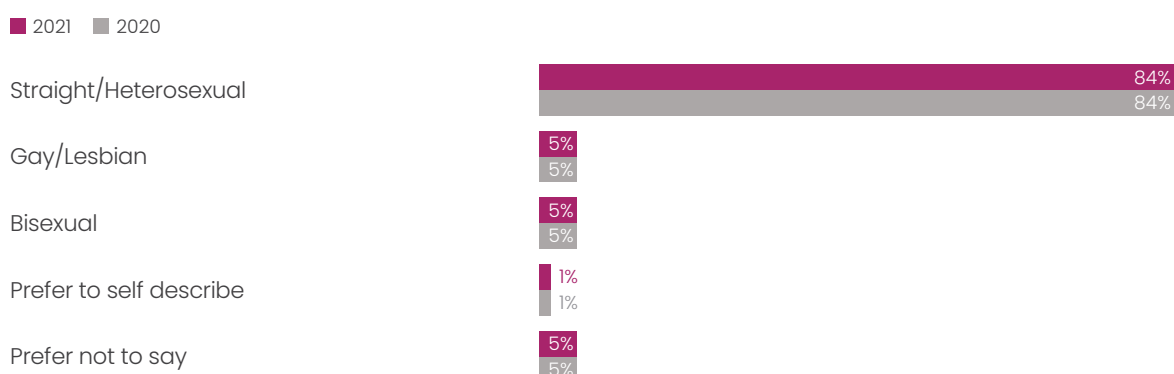


Is the gender you identify with the same as your sex registered at birth?*



Sexual orientation

Which of the following best describes your sexual orientation?

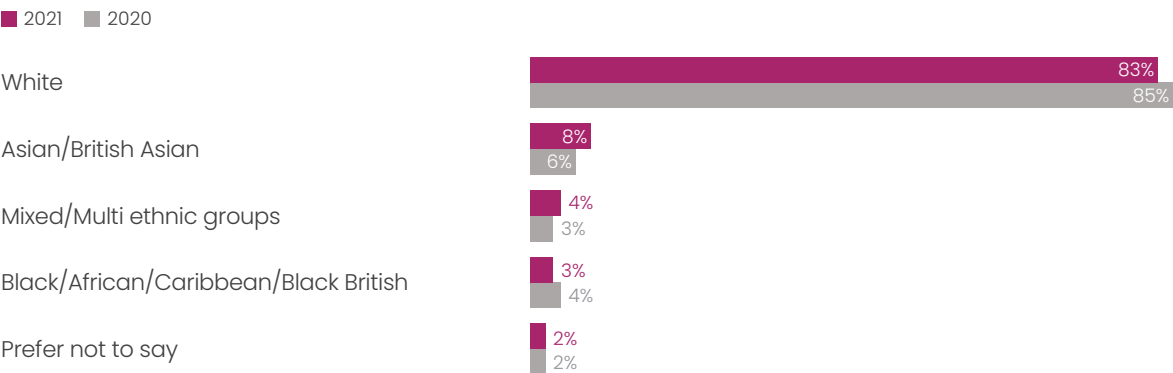


* In 2020, we asked respondents 'which of the following best describes your gender?', with the options of Male, Female, Non-binary, Prefer to self-describe (please specify) and Prefer not to say. In 2021, in order to align with the Census, we asked 'What is your sex?' with the options of Male or Female, with a follow-on question of 'Is the gender you identify with the same as your sex at birth?' with options for Yes and No, please specify.

02
Detailed
survey results:
Diversity

Ethnicity

What is your ethnicity?



Neurodivergent

Do you consider yourself to be neurodivergent?



21%



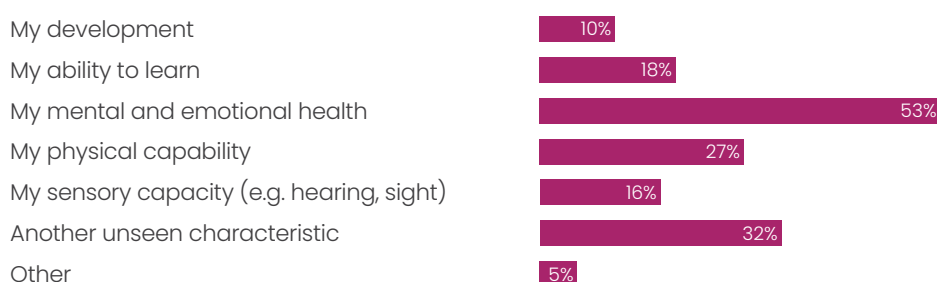
of male respondents consider themselves
to be neurodivergent compared to
17% of female respondents

Disability

Do you have any long-standing physical or mental health condition, illness, impairment or disability?



What areas do you consider your condition, illness, impairment or disability to affect?
(Please select all that apply)



How does your condition, illness, impairment or disability affect you in the workplace?
(Please select all that apply)



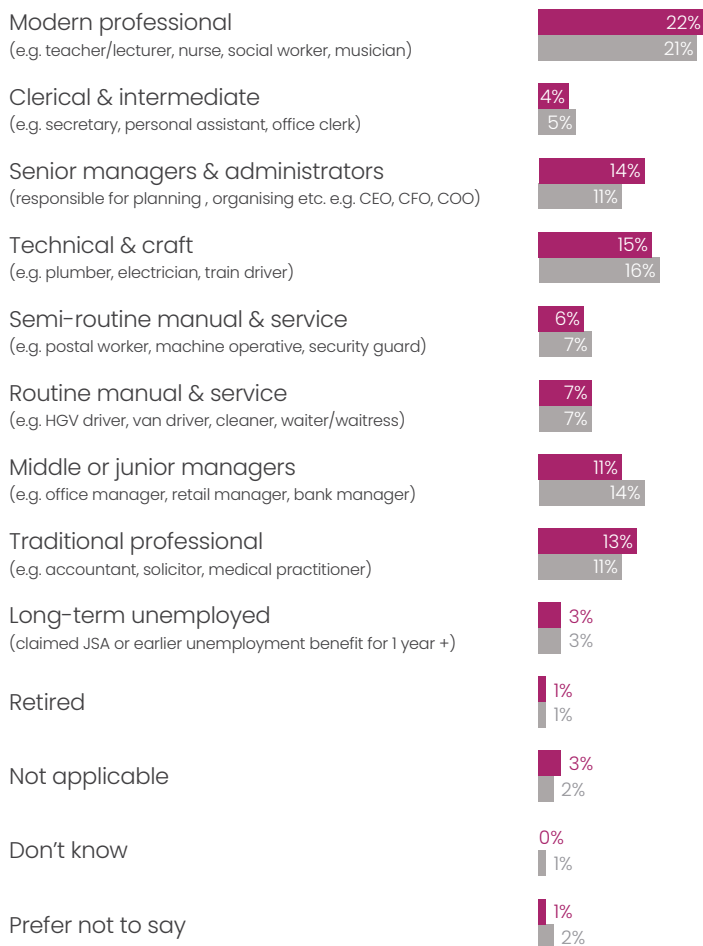
02

Detailed survey results: Diversity

Socio-economic

Thinking back to when you were aged 14, which best describes the sort of work the main/highest income earner in your household did in their main job?

■ 2021 ■ 2020



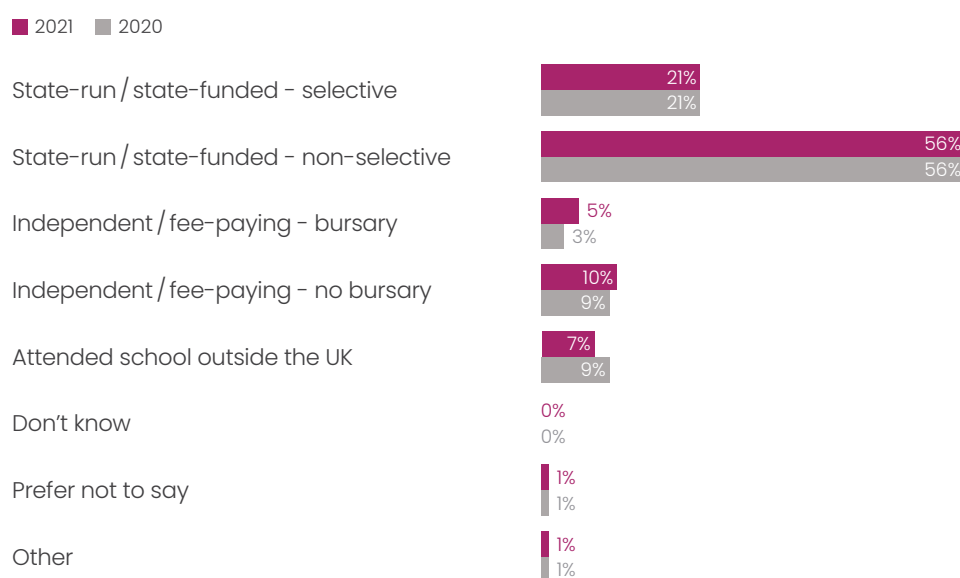
“

“The deck is stacked against those from less privileged backgrounds, who are less able to access the technical qualifications required for cyber jobs.”

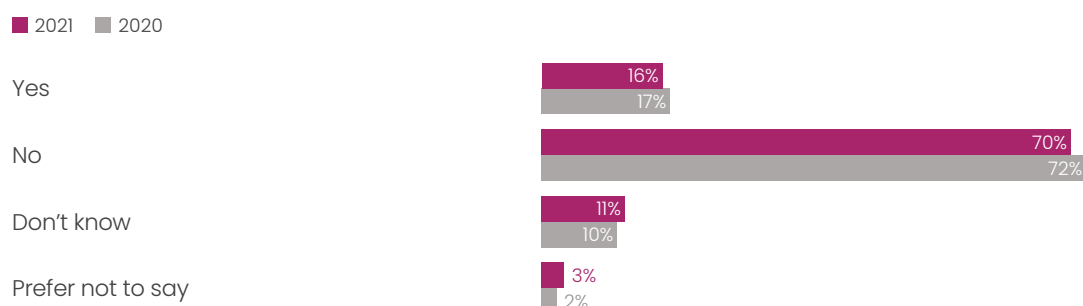
Anonymous survey respondent,
2021

”

What type of school(s) did you mainly attend between the ages of 11 and 16?



If you finished after 1980, were you eligible for Free School Meals* at any point during your school years?



* Free School Meals are a statutory benefit available to school-aged children from families who receive other qualifying benefits and who have been through the relevant registration process. It does not include those who receive meals at school through other means (e.g. boarding schools).

03

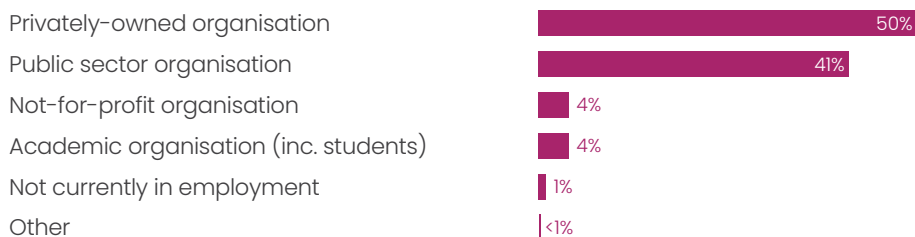
Detailed survey results: Industry

In this section, we focus on the questions that build a picture of the UK's cyber security industry as a whole – what size and type of organisations respondents work for, where in the UK they're based, how they entered the industry and what roles they perform.

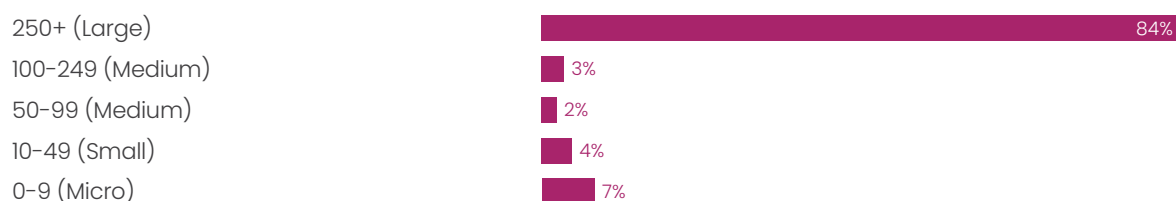
Figures have been rounded to aid presentation, rounding differences may occur

Organisations

What type of organisation do you work for?



How many people are employed by the organisation your work for?



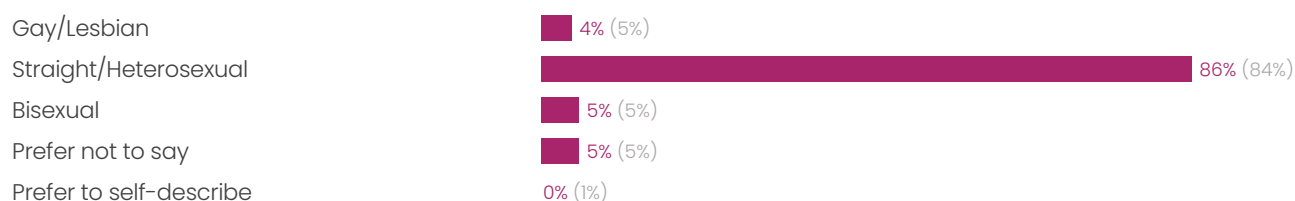
Are you part of your organisation's senior leadership?



Senior leadership by demographic

(population base rate)

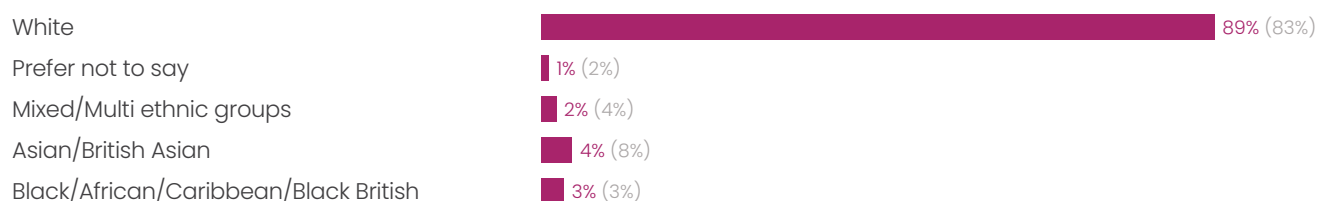
Sexual orientation



Sex



Ethnicity



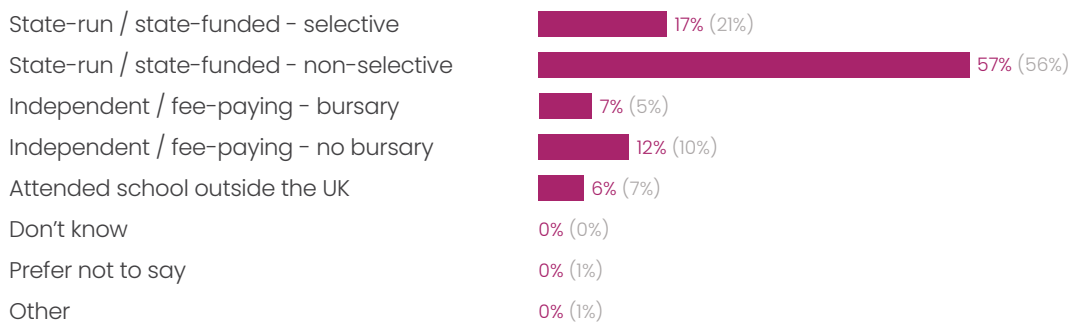
03

Detailed survey results: Industry

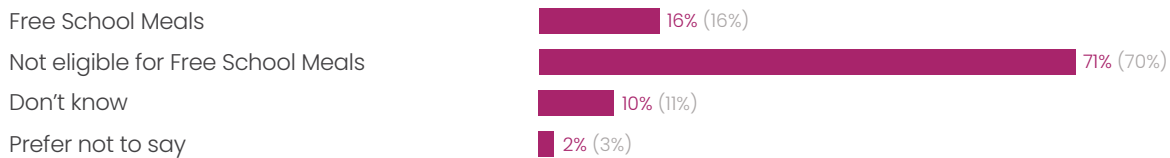
Senior leadership by demographic (continued)

(population base rate)

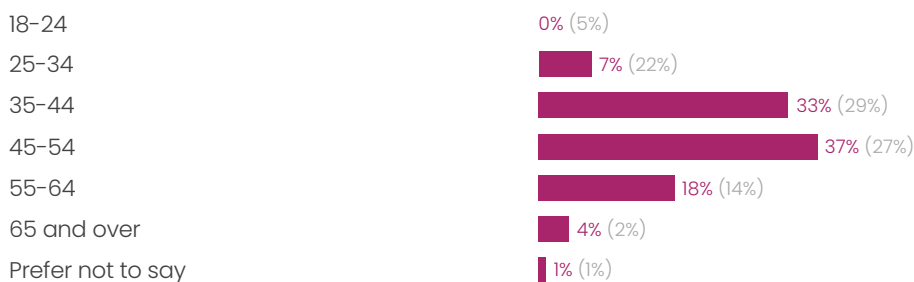
School type



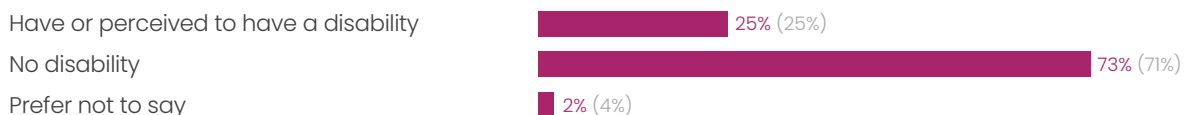
Social background



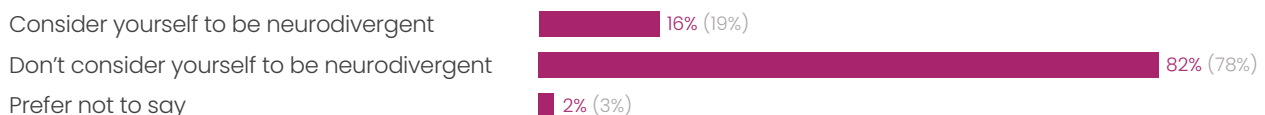
Age



Disability

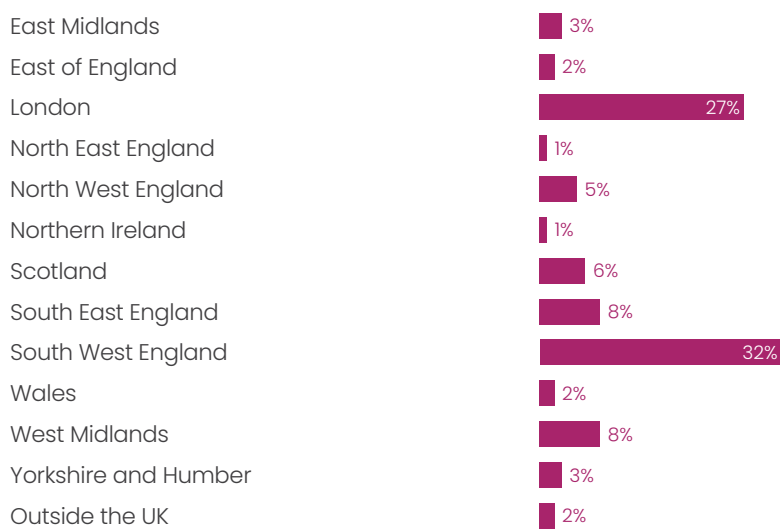


Neurodivergent

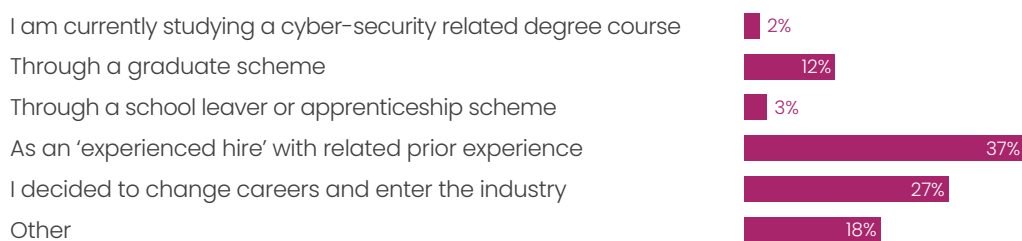


Industry

What is the location of your normal place of work?



How did you enter the cyber security industry?



03

Detailed survey results: Industry

“

“Cyber security is an important and exciting area. It is vital that we make our offer appealing to all; there is both a moral and an effectiveness case for diversity and inclusion. Bringing new people into our industry and keeping them up to date with innovative skills and techniques is essential. We are all responsible for making sure that we have a diverse and inclusive workforce. Diverse teams perform better.”

**Professor Nick Jennings,
Vice-Chancellor,
Loughborough University**

”

What is your current job role?

25%	Other
15%	Cyber security consultant
8%	Chief information officer/Chief information security officer Cyber security analyst
7%	Information security manager
4%	Cyber policy
3%	Security architect Cyber governance Security operations manager
2%	Incident response Software engineer Security engineer Chief executive officer Cryptographer Cyber security auditor and/or compliance Risk manager / analytics
1%	Penetration tester Systems analyst Operational technology specialist Vulnerability assessor Network engineer Threat hunter Forensic specialist Student – cyber security Chief risk officer Operational resilience specialist Security administrator
<1%	Cyber continuity / IT disaster recovery specialist Student (post-graduate) – cyber security-focused Applications developer Student – computer science Secure software development

04

Detailed survey results: **Inclusion**

This section deals with inclusion – what respondents' experiences working in the UK cyber security industry have been. The questions explore the extent to which respondents feel able to be themselves at work, their comfort disclosing various characteristics about themselves, any negative experiences they've had, and more. Again, comparators to our 2020 survey are provided where possible.

Figures have been rounded to aid presentation, rounding differences may occur

04

Detailed survey results:

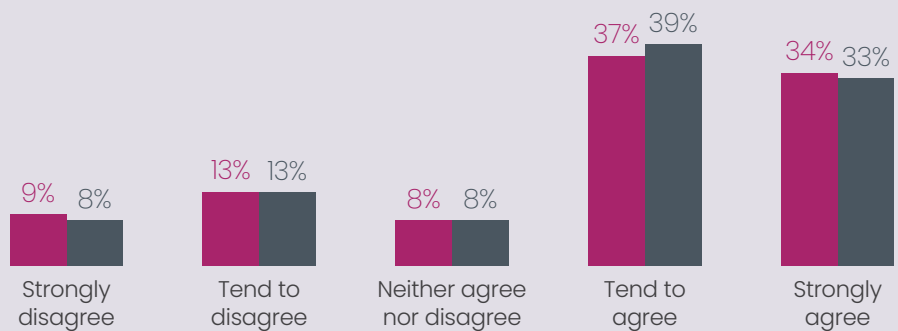
Inclusion

Able to be myself

To what extent do you agree or disagree with the following statement:
"I feel able to be myself in the workplace/educational institution"?

Overall responses

■ 2021 ■ 2020



Sex

Female

Male

■ Disagree ■ Neither agree nor disagree ■ Agree



Sexual orientation

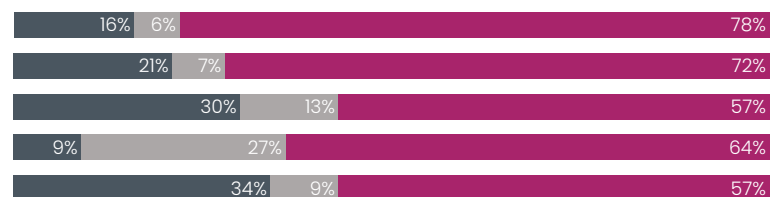
Gay/Lesbian

Straight/Heterosexual

Bisexual

Prefer to self-describe

Prefer not to say



Age

18-24

25-34

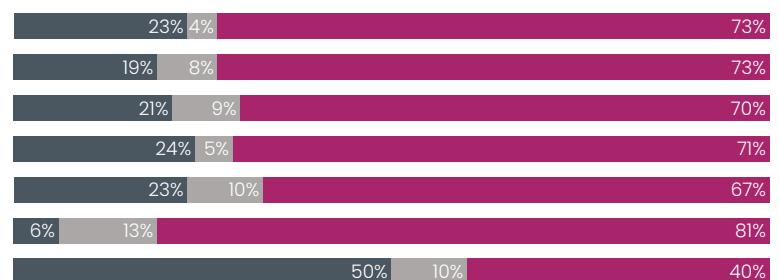
35-44

45-54

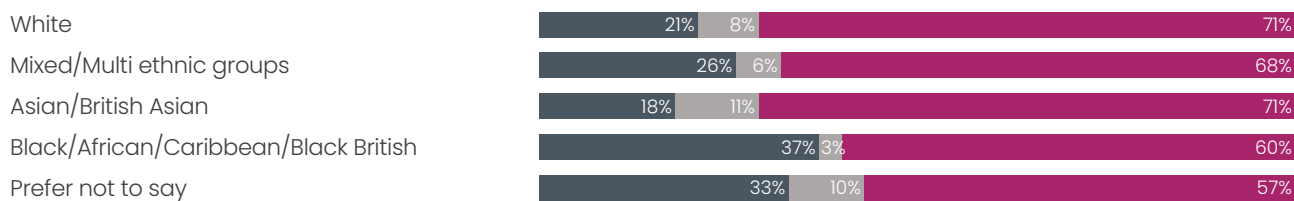
55-64

65+

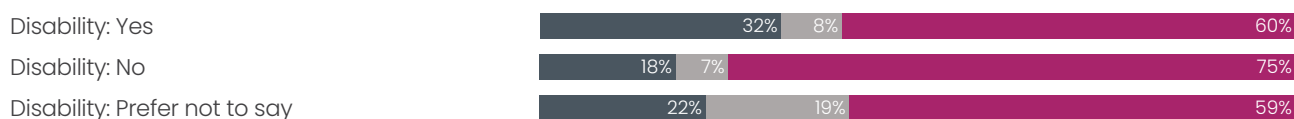
Prefer not to say



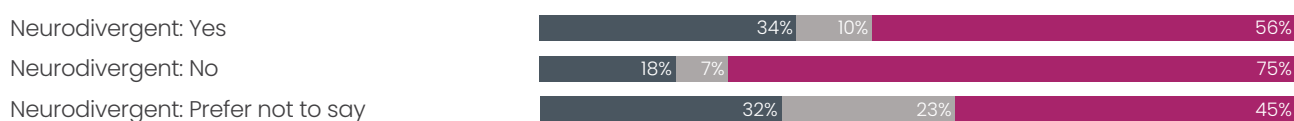
Ethnicity



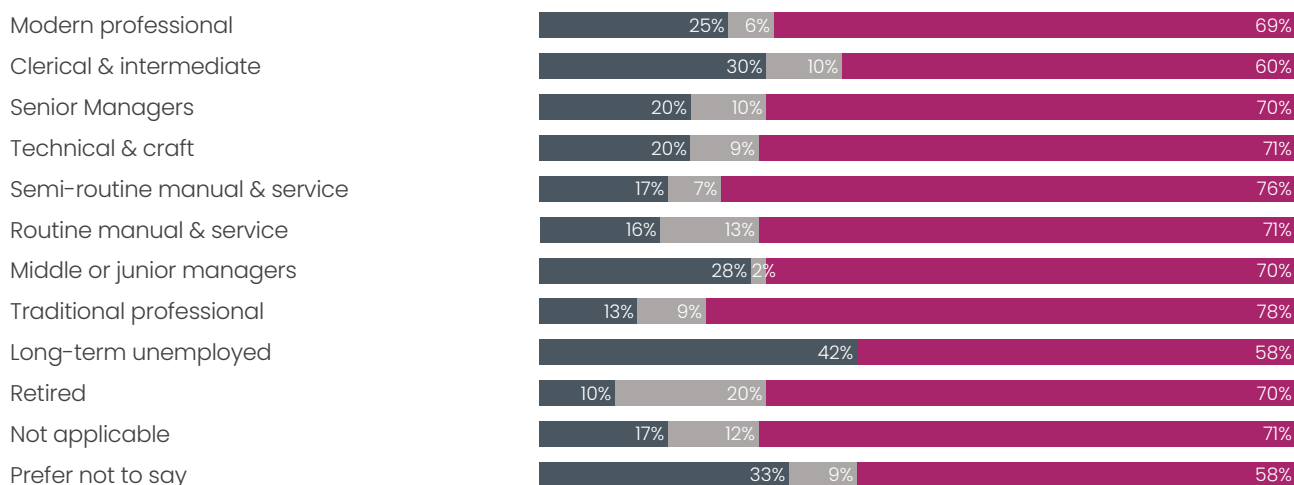
Disability



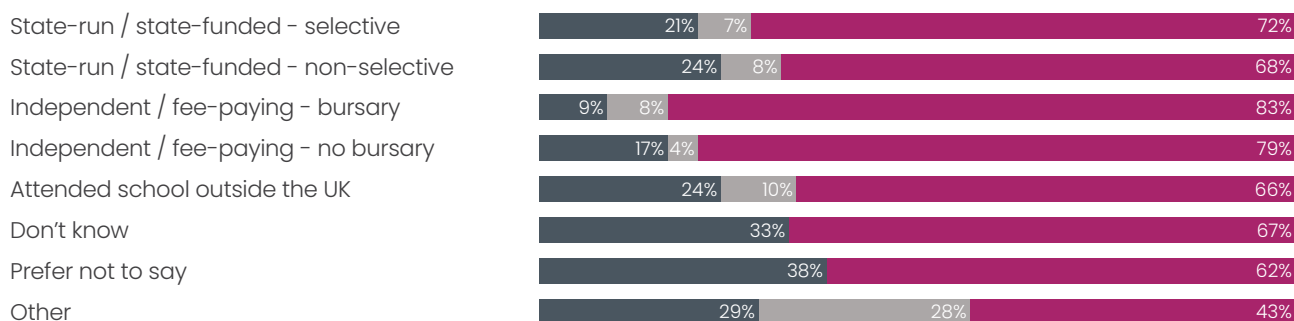
Neurodivergent



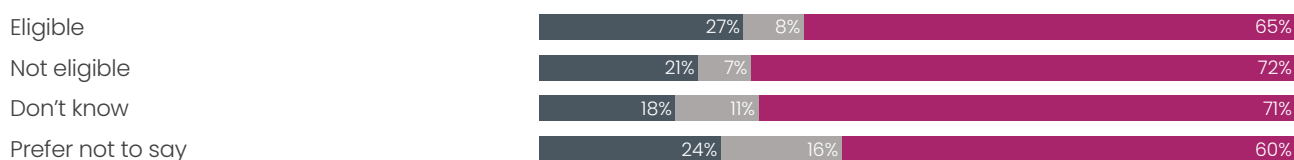
Parental occupation



School type



Free school meals



04
Detailed
survey results:
Inclusion

Disclosure comfort

How comfortable would you feel disclosing the following about yourself at work?

Overall

Disability
Social background
Sexual orientation
Age
Gender identity
Ethnicity

Not at all comfortable 0 1 2 3 4 5 6 7 8 9 10 Totally comfortable



Sexual orientation

Straight/heterosexual
Gay/lesbian
Bisexual
Prefer not to say
Prefer to self-describe



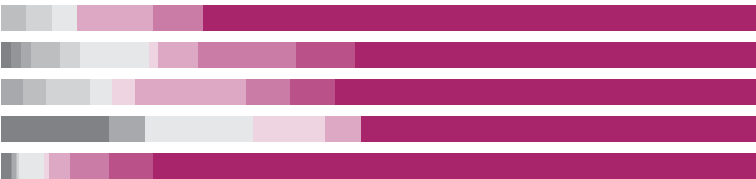
Gender identity

Male
Female
Gender different to sex at birth



Ethnicity

Black/African/Caribbean/Black British
Asian/British Asian
Mixed/Multi ethnic groups
Prefer not to say
White

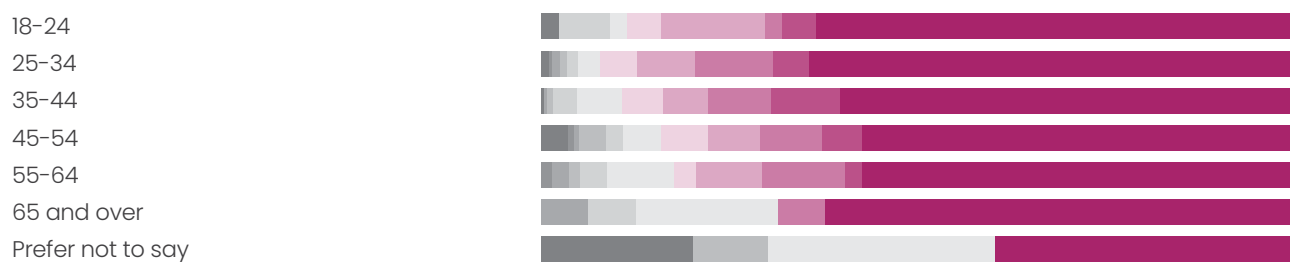


Not at all comfortable 0 1 2 3 4 5 6 7 8 9 10 Totally comfortable

Social background (free school meals)



Age



Disability



04
Detailed
survey results:
Inclusion

Confidence in the workplace

How confident do you feel your workplace would respond appropriately to inappropriate behaviour and discrimination towards individuals from historically underrepresented groups, such as females, people of black heritage, the LGBT+ community and disabled people?



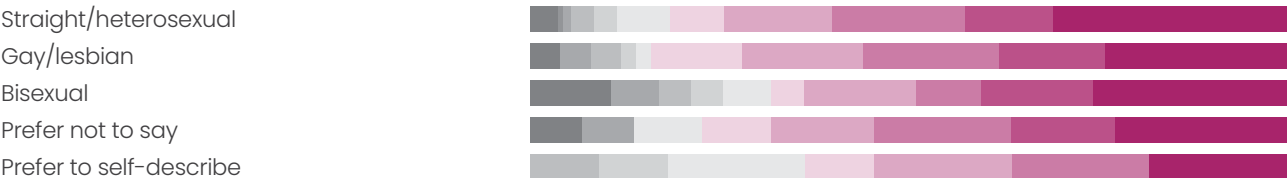
Age



Sex



Sexual orientation



Not at all confident 0 1 2 3 4 5 6 7 8 9 10 Completely confident

Ethnicity

Black/African/Caribbean/Black British
Asian/British Asian
Mixed/Multi ethnic groups
Prefer not to say
White



Disability

Yes
No
Prefer not to say



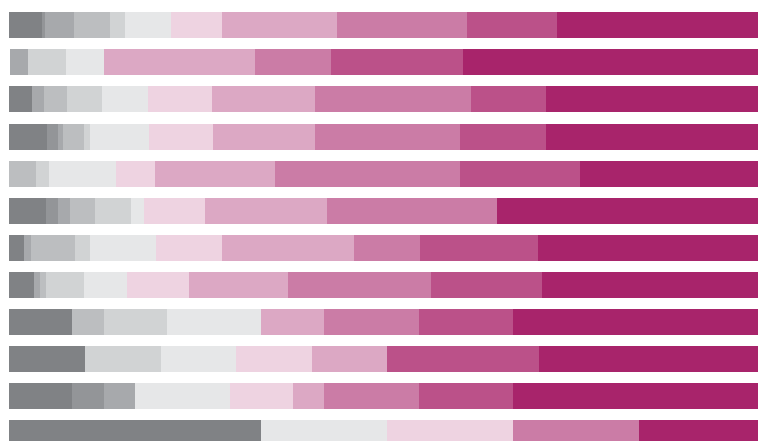
Neurodivergent

Yes
No
Prefer not to say



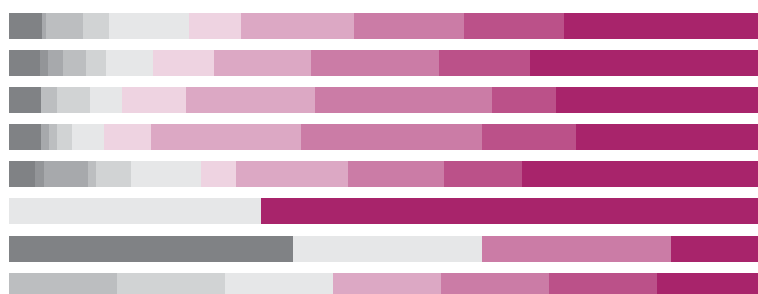
Parental occupation

Modern professional
Clerical & intermediate
Senior Managers
Technical & craft
Semi-routine manual & service
Routine manual & service
Middle or junior managers
Traditional professional
Long-term unemployed
Retired
Not applicable
Prefer not to say



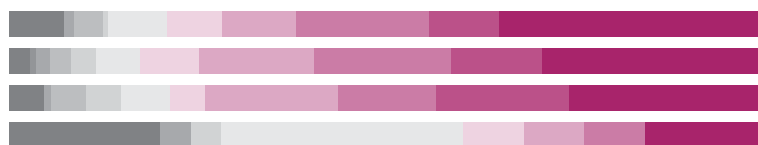
School type

State-run / state-funded - selective
State-run / state-funded - non-selective
Independent / fee-paying - bursary
Independent / fee-paying - no bursary
Attended school outside the UK
Don't know
Prefer not to say
Other



Free school meals

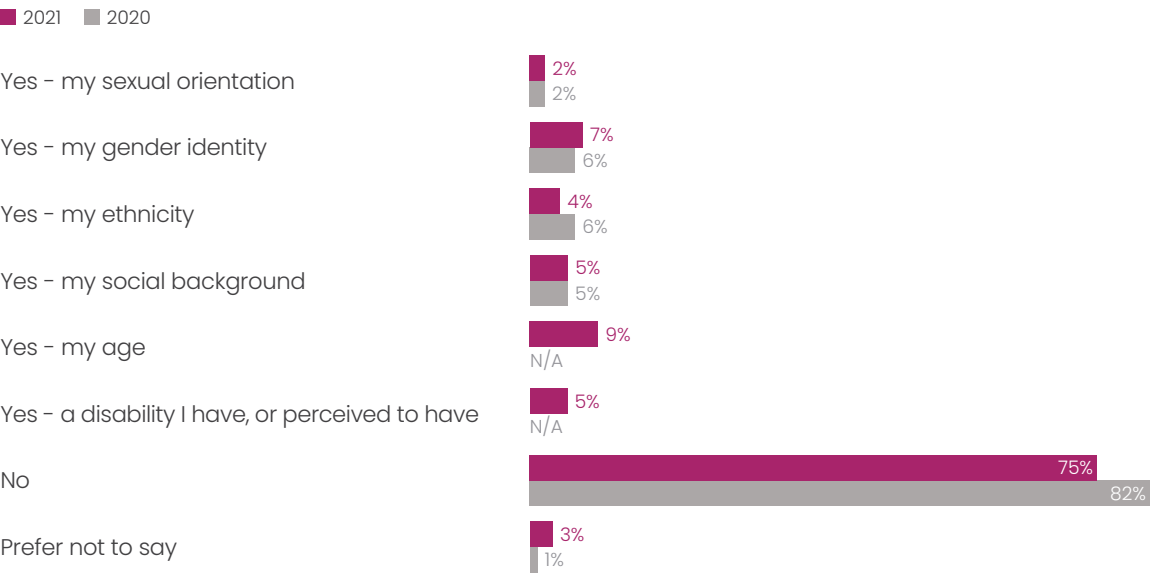
Eligible
Not eligible
Don't know
Prefer not to say



04
Detailed
survey results:
Inclusion

Negative incidents

Please think about your current workspace in the last year. Have you experienced negative comments or conduct from colleagues because of one of the following?

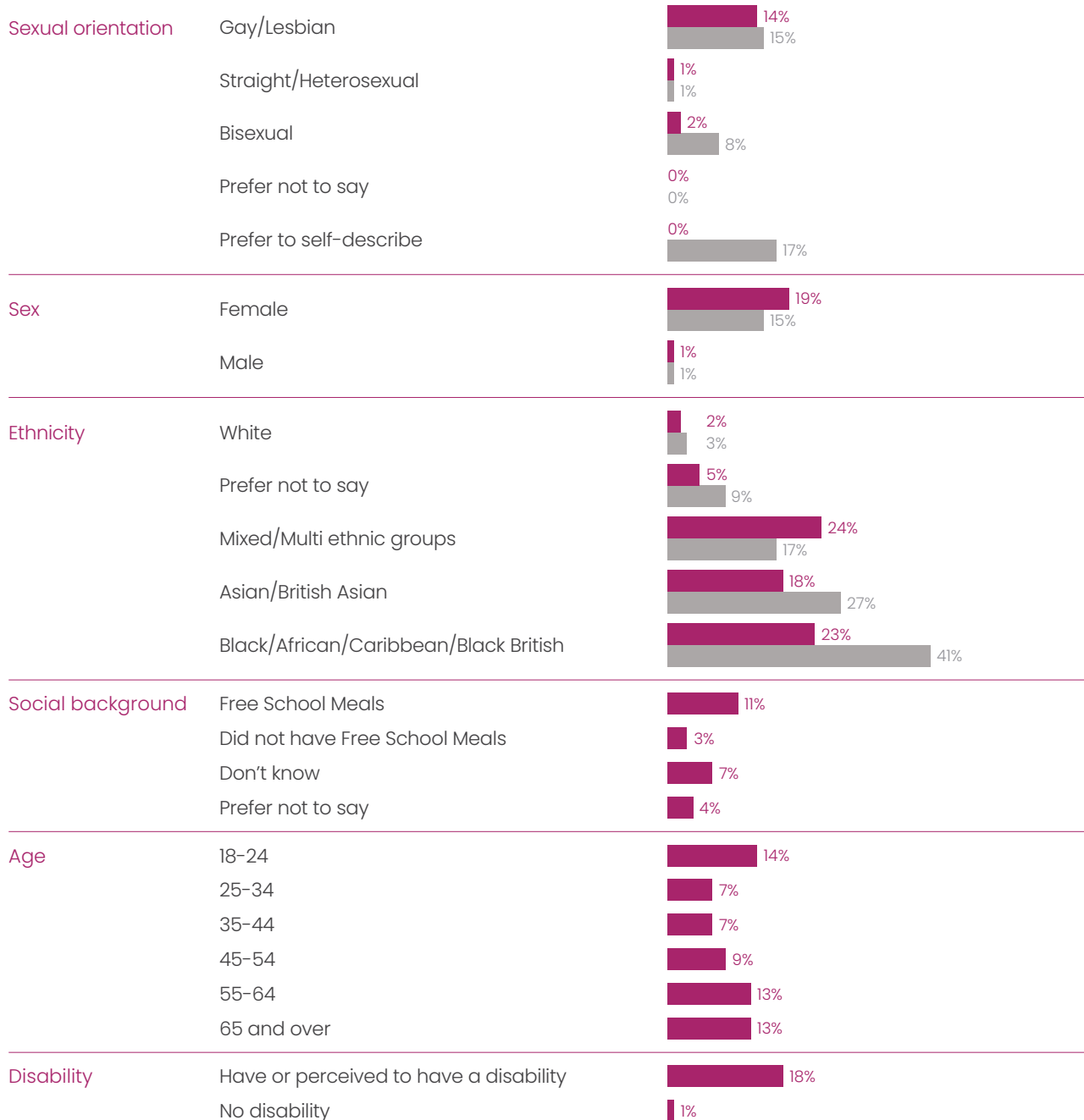


Negative incidents by demographic

■ 2021 ■ 2020 (where data is available)

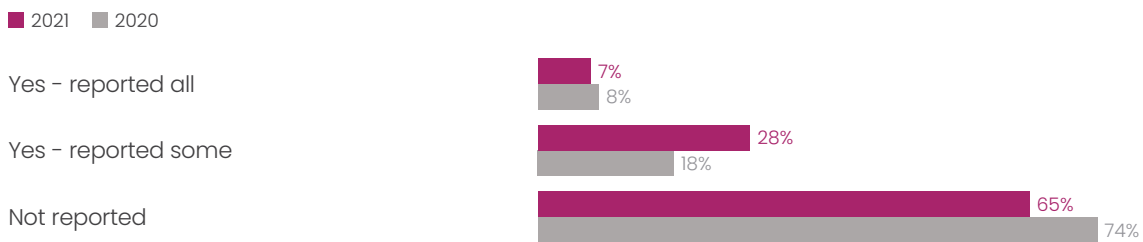
Negative incidents
related to:

Experienced by:

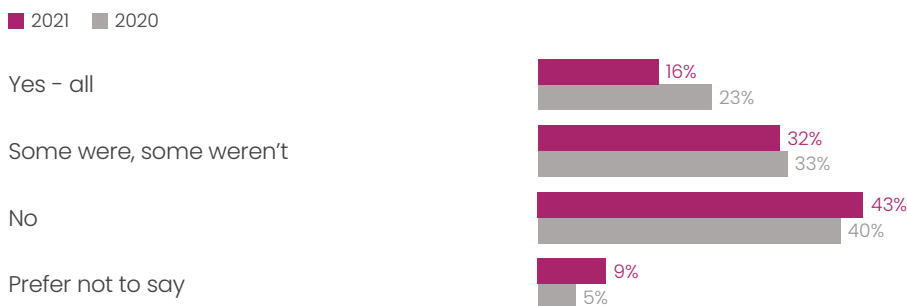



04 Detailed survey results: **Inclusion**

Did you report the negative comments or conduct to your employer?



You said that you reported the negative comments or conduct to your employer.
Was the incident(s) resolved effectively?





"Despite improved diversity, power dynamics often remain unchanged. The social neuroscience heuristics of loss, aversion and status threat can help explain. If we typically value loss higher than gain, what happens if we experience personal loss of power? Creating space for others often means taking up less space ourselves. This might require self-awareness, courage and help from others."

Dr. Nadine Fontaine-Palmer,
Director, Mabadiliko CIC

04

Detailed survey results: Inclusion

Career barriers

Have you experienced barriers to your career progression and/or resigned because of your employer's approach towards sexual orientation, gender identity, ethnicity, social background, age or disability?

Overall



Age



Sex



Sexual orientation



Ethnicity

White

Mixed/Multi ethnic groups

Asian/British Asian

Black/African/Caribbean/Black British

Prefer not to say



Disability

Disability: Yes

Disability: No

Disability: Prefer not to say

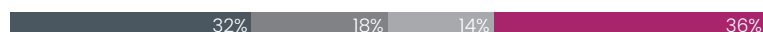


Neurodivergent

Neurodivergent: Yes

Neurodivergent: No

Neurodivergent: Prefer not to say



Parental occupation

Modern professional

Clerical & intermediate

Senior Managers

Technical & craft

Semi-routine manual & service

Routine manual & service

Middle or junior managers

Traditional professional

Long-term unemployed

Retired

Not applicable

Prefer not to say



School type

State-run / state-funded - selective

State-run / state-funded - non-selective

Independent / fee-paying - bursary

Independent / fee-paying - no bursary

Attended school outside the UK

Don't know

Prefer not to say

Other



Free school meals

Eligible

Not eligible

Don't know

Prefer not to say



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Detailed survey results:

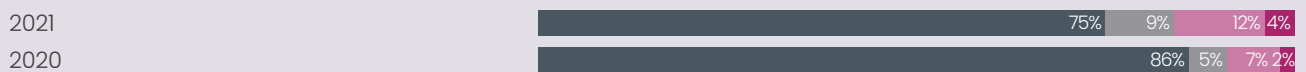
Inclusion

Have you ever considered moving?

You may have experienced barriers to your career progression because of your employer's approach towards sexual orientation, gender identity, ethnicity, social background, age or disability. Have you considered, or are you considering, moving employers/sectors because of this?

■ Not experienced barriers ■ No ■ Yes – move employers ■ Yes – move sectors

Overall



Age



Sex



Sexual orientation



Ethnicity



Disability



Neurodivergent



Parental occupation



School type



Free school meals



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Methodology, Acknowledgements & References

Methodology

This second annual report is based on the results of an online survey of self-identifying cyber professionals conducted in April to June 2021. The survey asked respondents to identify their personal characteristics and their experiences of diversity and inclusion in their place of work or study. The survey did not seek the responses of organisations or ask individuals to respond on behalf of their organisation.

The survey and data collection method was designed jointly by NCSC, KPMG (including KPMG Nunwood) and Imperial College London and used Stonewall, Office of National Statistics, and Cabinet Office best practice guidance on which questions to ask to capture the data, aligned to the 2021 UK Census. The survey included both open and closed questions. Respondents had to answer all questions but could choose the option of 'prefer not to say' to questions in line with leading practice survey techniques.

The survey was responded to by 945 individuals who work or study in the cyber security industry. In addition to the survey, the NCSC and KPMG have conducted interviews with individuals from NCSC, KPMG and other organisations to seek their views on the data and findings. These have been used to provide quotes within the report on their perspectives and experiences of Diversity and Inclusion and/or the cyber security industry. These have not formed part of the findings or conclusions.

The findings in the report are based on analysis of the data provided through the survey.

Whilst some limited intersectional analysis has been completed, the current sample size of 945 somewhat limits what meaningful conclusions can be drawn.

For further methodological detail please contact us at: cyberdandi@kpmg.co.uk

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Methodology, Acknowledgements & References

Acknowledgements

This report is the result of significant time and effort not only from those in KPMG and the NCSC involved in writing it, but also those who have helped review it, design it, input into it, and ensure it reaches the greatest possible audience.

Our particular thanks go out to:

Nick Jennings CB, Vice-Chancellor and President, Loughborough University

Nadine Fontaine-Palmer, Director, Mabadiliko CIC

Simon Hepburn, CEO, UK Cyber Security Council

Nicola Whiting MBE, NeuroCyber

Mark Hamilton

The teams at the NCSC and KPMG UK who managed the marketing, communications and PR for the report

The report design team at KPMG UK CREATE

The survey team at KPMG Nunwood

The employee networks and affinity groups at KPMG UK and the NCSC respectively

Finally, all the report reviewers from KPMG UK, the NCSC, DCMS and the UK Cyber Security Council

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