December 2021

Digital Privacy and Security Survey

Calyx Institute

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Calyx Institute

https://calyxinstitute.org/

About Calyx Institute

The Calyx Institute's mission is to educate the public about privacy in digital communications and to develop tools that anyone can use to build "privacy by design" into their internet access. By developing encryption and anonymity tools that can help users maintain their privacy, we hope to make online security easier and more accessible for everyone online.

We are a non-profit education and research organization devoted to studying, testing and developing and implementing privacy technology and tools to promote free speech, free expression, civic engagement and privacy rights on the internet and in the mobile communications industry.

Contents

The Digital Privacy and Security Survey was conducted between October and November 2021. A total of 1146 individuals aged 18 years and over from different parts of the world responded the online survey.

Goals

The main goals of the survey were to:

- ✔ **Provide insights about people's attitudes towards digital privacy and security.**
- ✔ **Identify awareness of protection and protective behavior.**
- ✔ **Explore knowledge and concerns related to digital privacy and security.**

Key findings

Eighty percent of survey respondents report being concerned about the topic of digital privacy in the last year and 59% say they feel more aware about how their data is treated than a year ago.

The biggest threat to their digital privacy is social media and big tech companies (70%) but also law enforcement and intelligence agencies (16%). The most common negative experiences for survey participants in the last year are spam emails, scams/fraud and non-consensual data use.

The majority of participants also take measures to protect themselves digitally and half of them feel confident about the measures they are taking. What participants value the most in a mobile OS is privacy, security and ease of use.

Fifty-five percent of them also say they have knowledge about how information is shared by their phones. At the same time, 40% report being unsure whether they have suffered security breaches on their phones.

Almost 60% rate their knowledge about digital protection and privacy tools and practices highly, while at the same time knowledge about data protection laws and digital privacy rights is rated as very good by only 27% of participants.

More than half of participants also believe they understand how they can protect themselves, while 40% say they care but they don't know how to do it.

The biggest challenges participants face when it comes to securing devices are: not knowing which solutions to choose, the solutions are too complex to understand, install, and maintain. In addition, many participants expect to find the solutions already installed on their mobile devices.

Seventy-two percent think government should play a significant role in raising awareness about digital privacy and protection, while 62% believe this role should be played by civil society organizations.

What participants think is necessary to be done in order for people to start caring more about their digital privacy is to provide more information about violations of citizen's privacy, but also better communications and outreach on why people should care about their digital privacy.

Forty-four percent of participants consider themselves to be ultimately responsible for securing their own data, while 33% believe both government and companies should take responsibility for that. Decisive factors when sharing data with an organization are: knowing how data is managed, but also controlling what kind of data is being shared.

The most important aspects for participants when deciding whether or not to trust a given digital source are: the reputation of the source, their familiarity with it, as well as what information about the service is available on the website.

Finally, 50% of participants say it is likely for them to engage in activism to push laws and policies to protect their data and prevent abuse.

The idea for this survey emerged while conducting literature review in preparation for interviews with people working in risk environments (e.g. independent journalists, human rights defenders, lawyers) and current CalyxOS users.

Gaps in knowledge and inconsistencies in language used across different research studies on digital privacy and security were identified during the literature review.

This means that data from different studies regarding privacy and security cannot be easily compared, contributing to the complexity of researching attitudes and behaviors towards digital privacy and security. This makes it difficult to track and spot trends over time.

The interviews conducted with individuals working in risk environments and the CalyxOS users earlier this year, have revealed interesting insights in relation to protective behavior and exposure and perception of risk and threat.

We thought that it is worth the effort exploring further to find out how the larger community feels about these topics.

Understanding the tendencies in relation to topics of interest provides a context for better product development and further and more detailed research. We are aware that a single survey will not answer all the questions but it is a good starting point.

Overview

This is the first survey about Digital Privacy and Security conducted by the Calyx Institute.

Questionnaire development

The questionnaire was first developed based on literature review and insights from previously conducted qualitative research with CalyxOS users and people working in risk environments.

The questionnaire was then improved with feedback from the Calyx Institute extended team and members of the Internews team. A comprehensive phase of cognitive interviews in both survey languages, Spanish and English, and pilot testing was undertaken to evaluate the questionnaire from a respondent perspective and ensure the questions were clear, unambiguous and interpreted in the manner intended.

The survey was approximately 15 minutes in length and contained 34 questions, available in Spanish and English.

Fieldwork

The survey was deployed online on 14 October 2021 and was closed on 15 November 2021. The survey was shared through mailing lists, newsletters, social media channels, Reddit communities and one-on-one reach.

Limitations

This online survey is based on non-random sampling and therefore we cannot draw conclusions for the entire population nor make predictions.

Whenever was possible, that is to say, considering similarity in sample size of subgroups (e.g. men and women), a comparison between subgroups was made and , if notable variations were present, these were included in the report.

1146 individuals participated in the online survey

60%

690 men took part in this survey,

28%

327 are the women who filled it in,

9.2%

106 participants have chosen not to answer the question about their gender,

1.3%

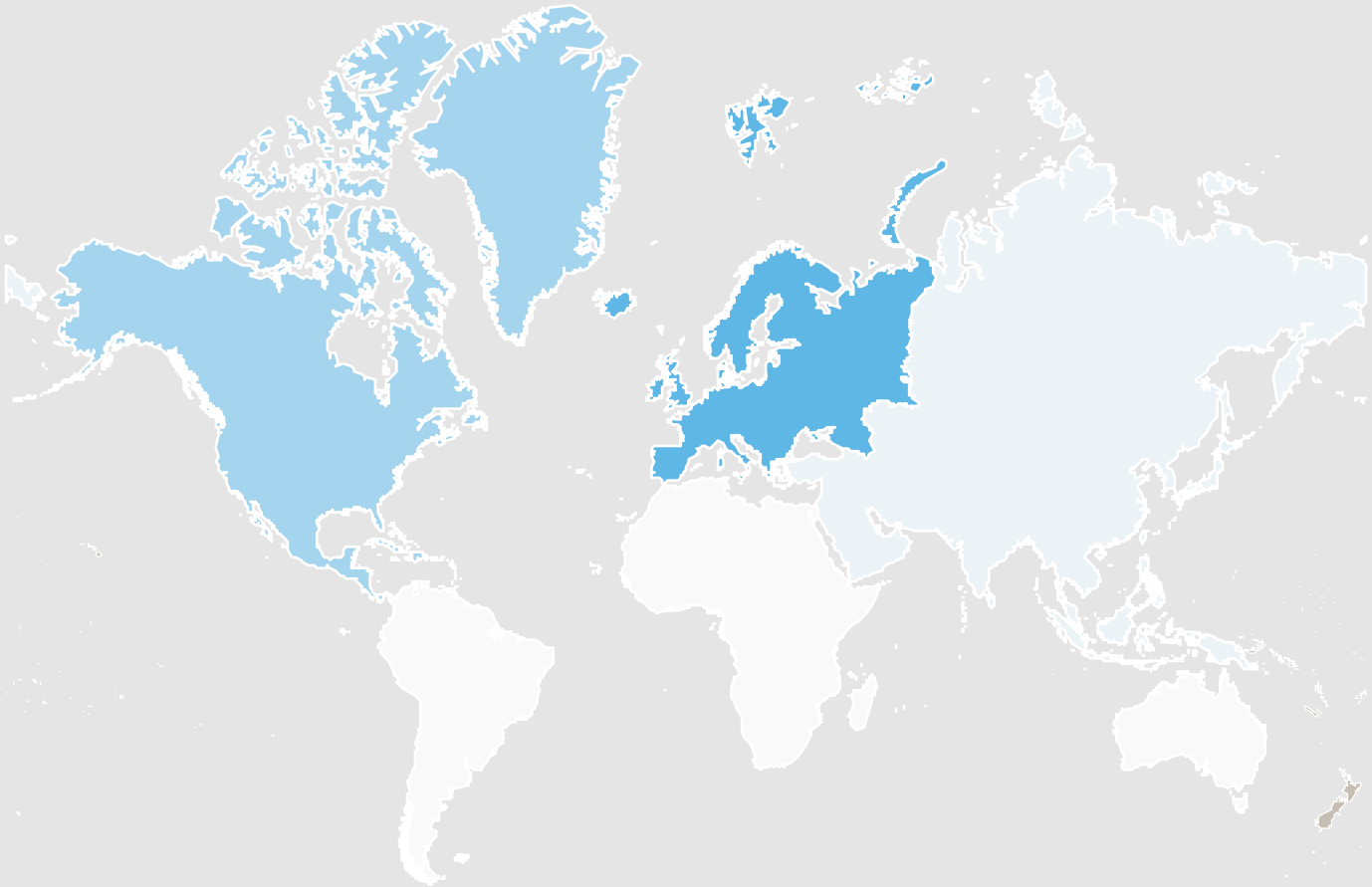
15 respondents identify as 'non-binary',

0.7%

and 8 respondents identify as "other".

Note: *Percentages in this report are rounded according to rounding rules for reporting summary statistics. Therefore, not all percentages in charts and comments add up to 100%.*

Fifty-four percent of respondents say they are located in Europe



North America is the next most represented continent in this survey with 28% of participants reporting from there.

Six percent are located in Asia, and Oceania and South America are represented by 3.2% and 2.7% of participants, respectively.

Finally, 4.8% of people who filled in the survey decided not to answer this question, and only 8 people reported Africa as their location.

Participants in this survey are rather young and highly educated

Fig. 1: Level of education

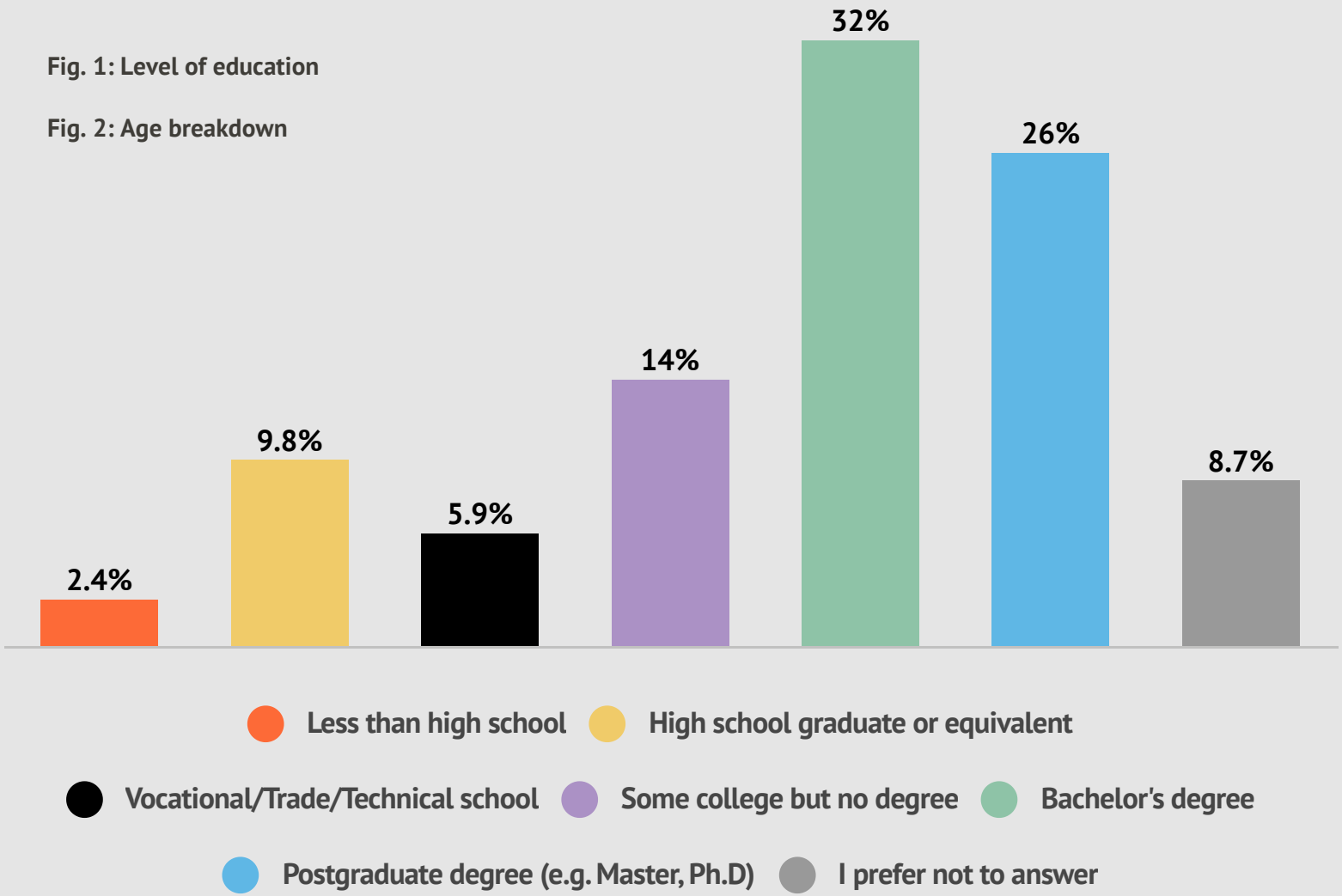
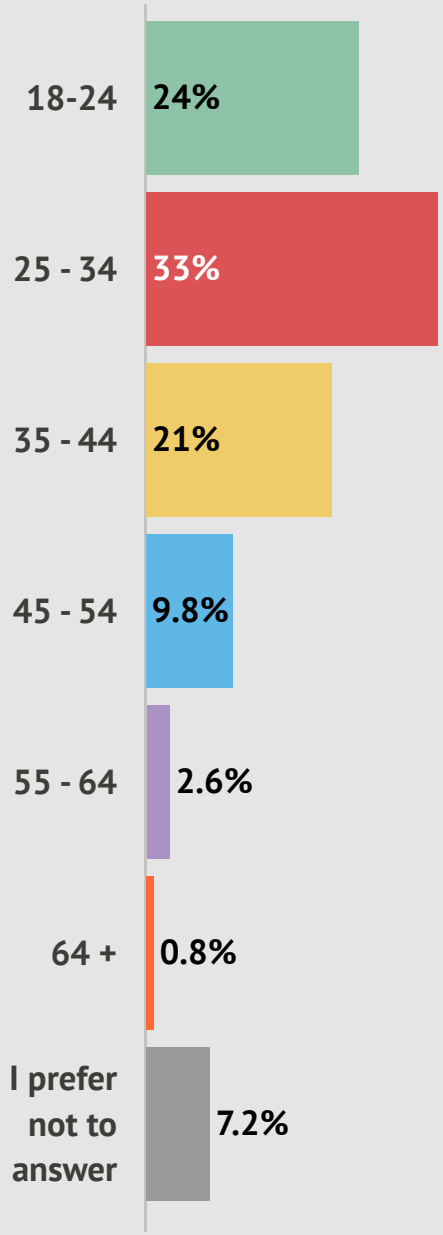


Fig. 2: Age breakdown



A diversity of professions

The IT sector is the biggest aggregated category, with 22% of respondents identifying as 'software/web developer', 'information or IT security professional' and 'IT sector worker'. The second biggest group in this survey are students with 17%, followed by people who choose to describe themselves as private sector workers with 15%.

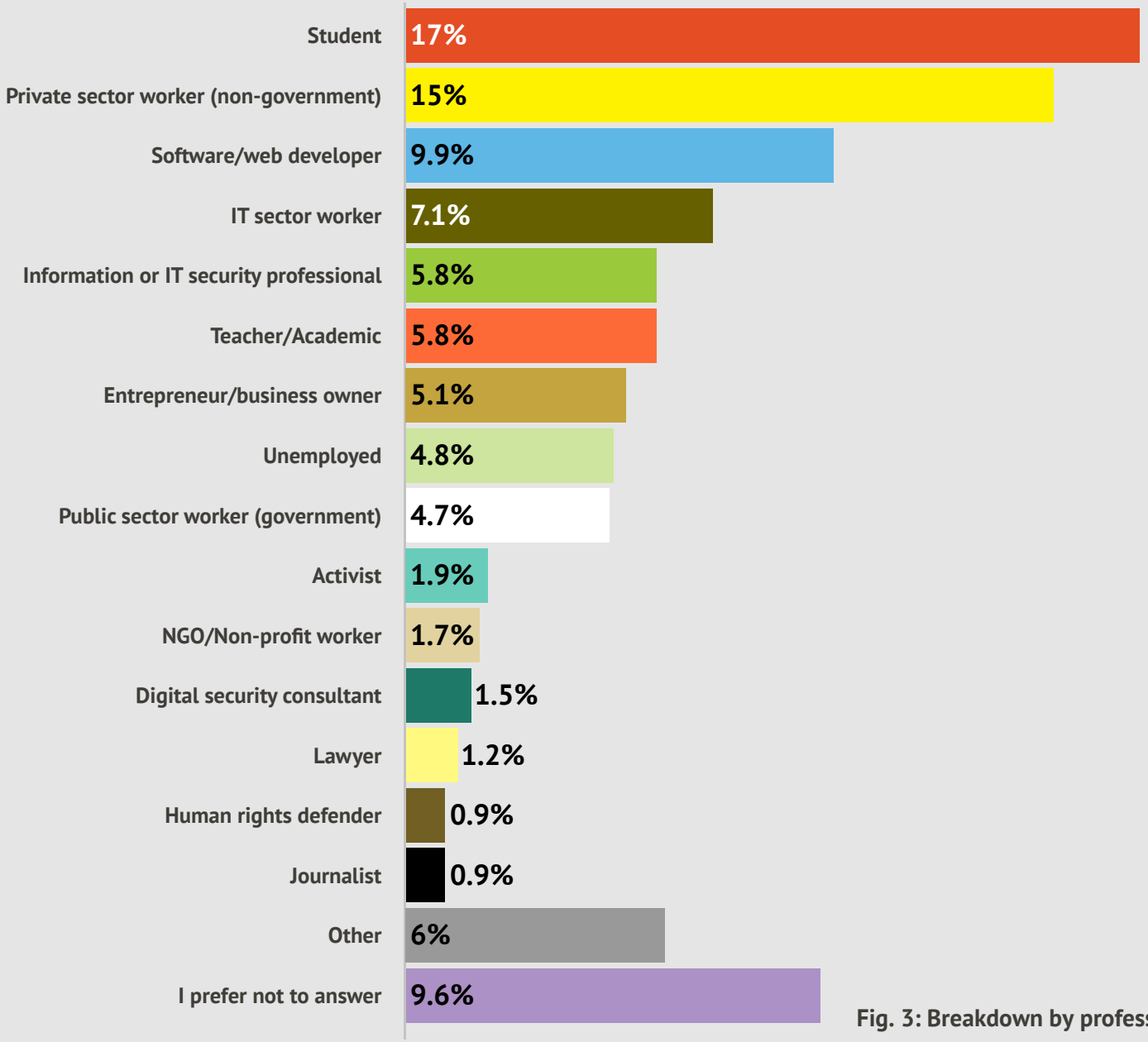
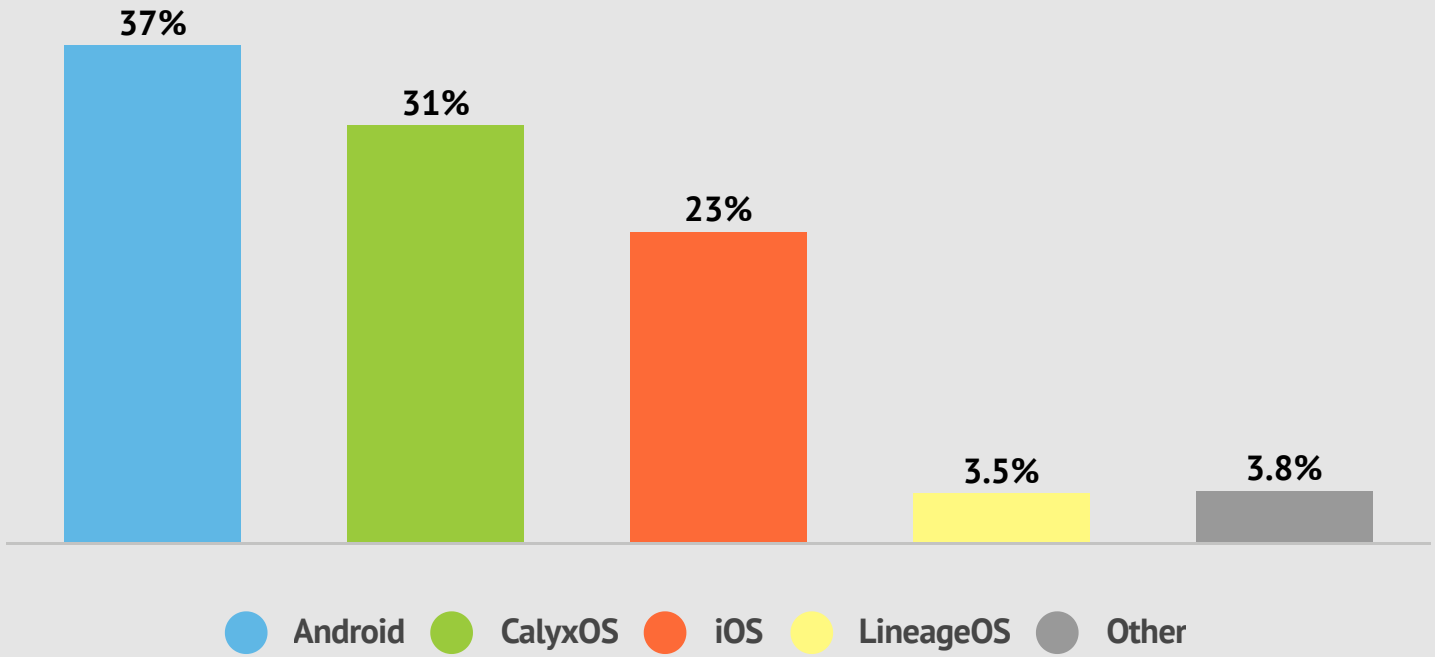


Fig. 3: Breakdown by profession

Thirty-seven percent of survey participants are Android users

Fig. 4: Types of mobile OS participants currently have



The second biggest group of participants are CalyxOS users (31%), followed by iOS users (23%).

Under the category of 'other' mentions are made to /e/, Mobian, MIUI, Blackberry and Graphene. There are a few instances of users with more than one mobile OS.

On the other hand, 41% of Android and iOS users have considered switching to an alternative mobile OS in the last year.

The majority of CalyxOS participants are male

84%

311 of these CalyxOS users identify as 'man',

1.7%

6 of them as 'woman',

11%

41 CalyxOS users have chosen not to answer the question about their gender,

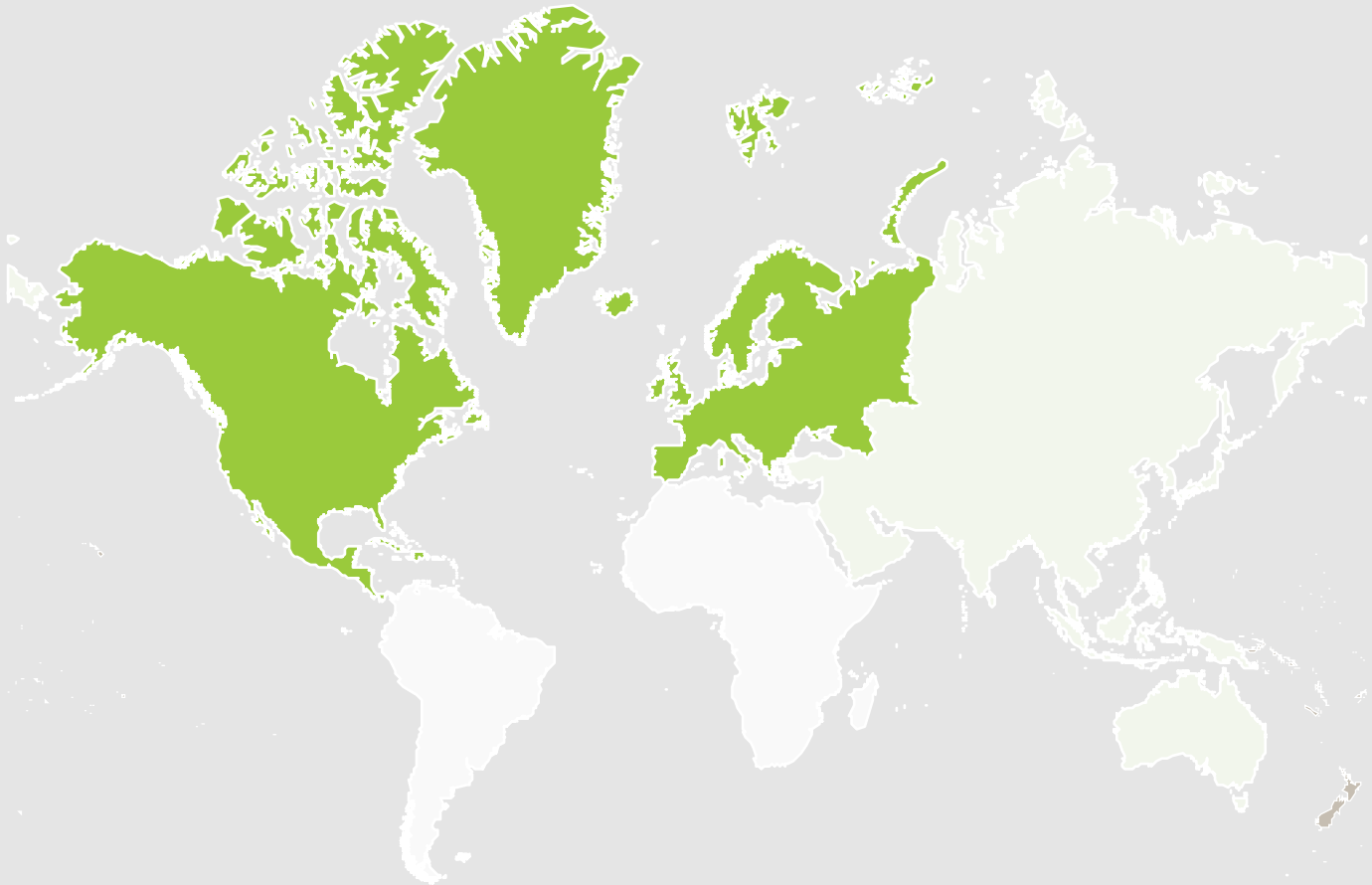
1.4%

5 respondents identify as 'non-binary',

1%

and 4 CalyxOS respondents identify as "other".

CalyxOS survey participants are located predominantly in Europe and North America



Almost an equal split between the two continents with 42% and 41% of CalyxOs users reporting their location as Europe and North America, respectively.

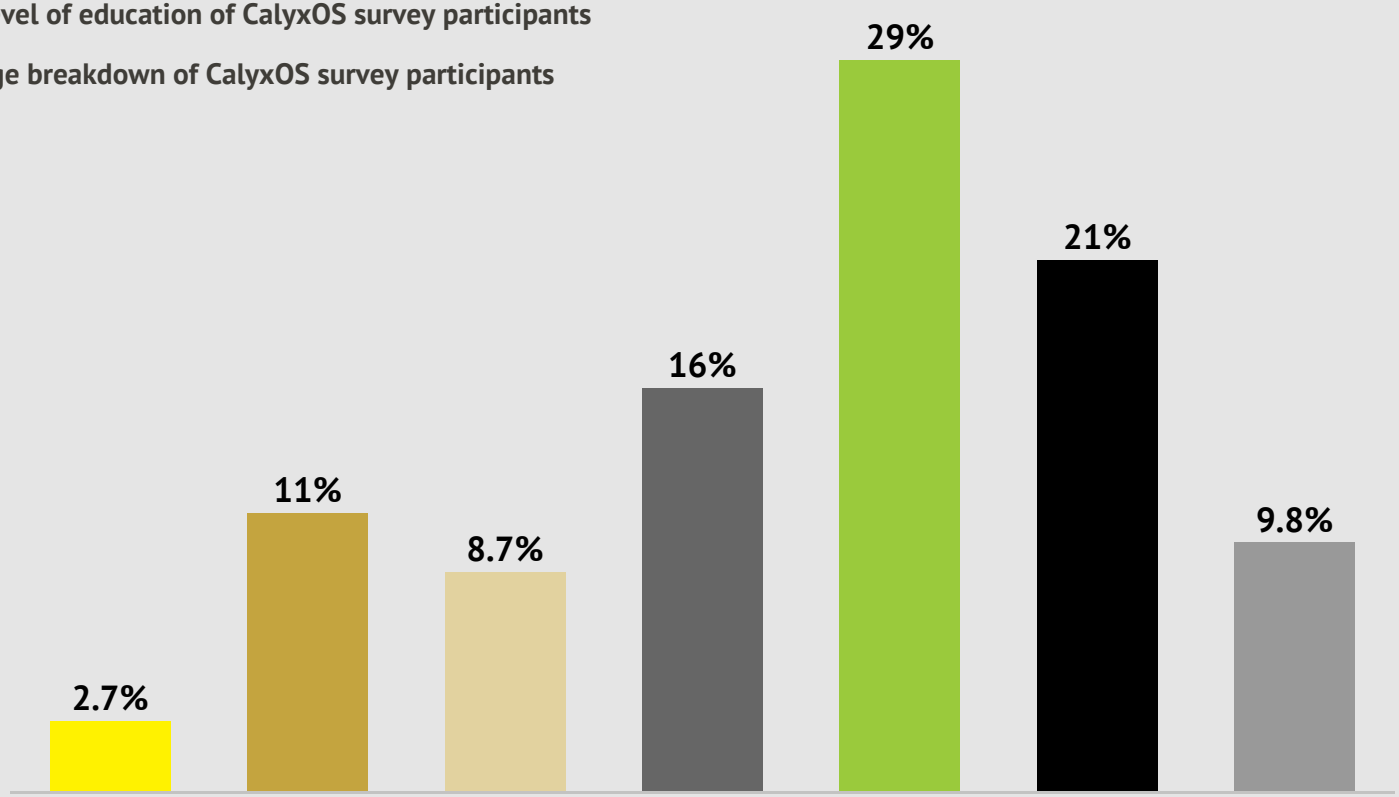
Five percent of CalyxOS users who have filled in the survey report from Asia, 4.9% from Oceania and 4.3% have chosen not to answer this question.

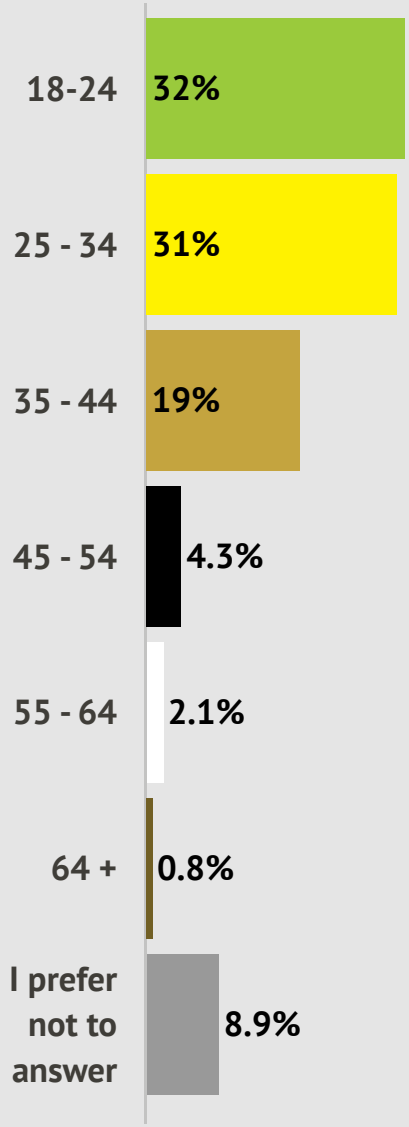
South America and Africa are represented by 2 and 1 individuals, respectively.

More than half of CalyxOS participants are aged 18-34 and half of them in a possession of at least a Bachelor's degree

Fig. 5: Level of education of CalyxOS survey participants

Fig. 6: Age breakdown of CalyxOS survey participants





Less than high school
High school graduate or equivalent
Vocational/Trade/Technical school
Some college but no degree
Bachelor's degree
Postgraduate degree
I prefer not to answer

Thirty-one percent of them belong to the IT sector

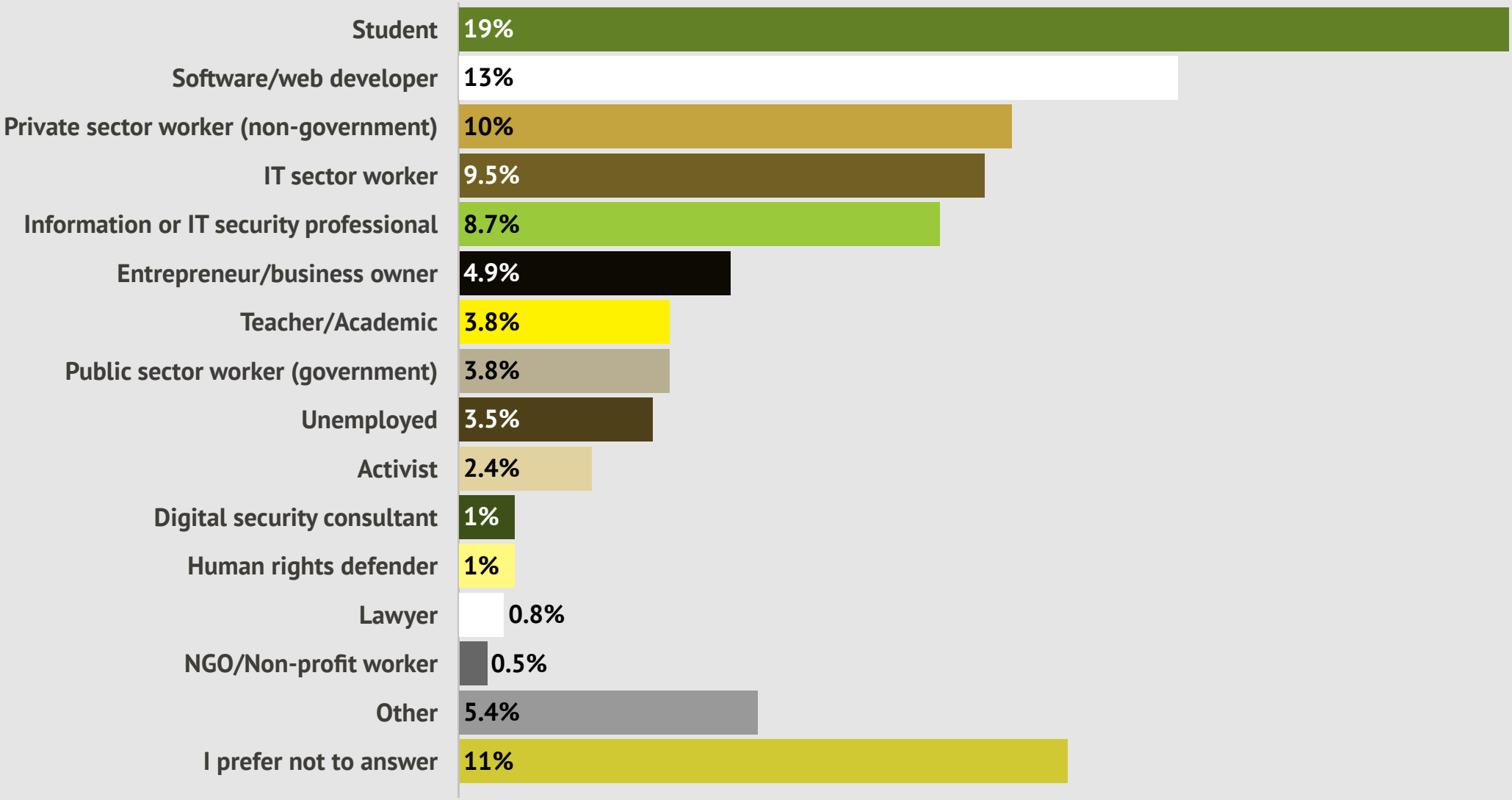
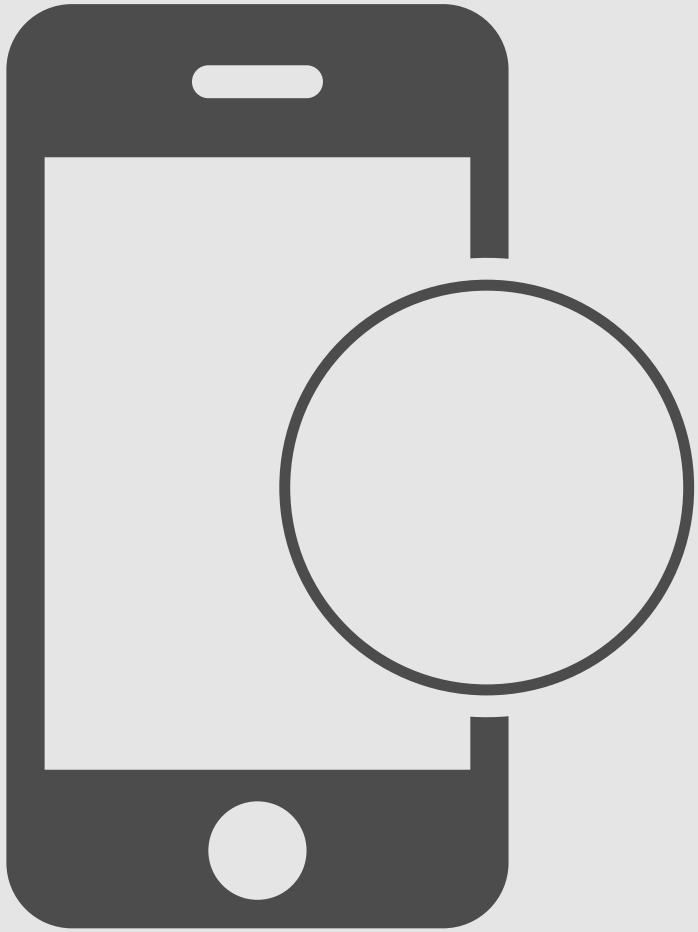


Fig. 7: Breakdown by profession of CalyxOS survey participants



69%

Percentage of survey participants who connect to the internet via private Wi-Fi (e.g. home, office)

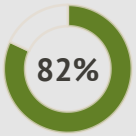
29%

Percentage of survey participants who use their mobile data for internet access

Frequently performed activities on mobile phones

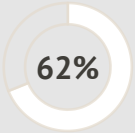
Texting

Percentage of participants texting/chatting frequently. Women (90.8%) are texting more often than men (83%).



Web browsing

Percentage of participants web browsing frequently.

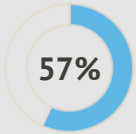


Listening music

Percentage of participants listening music/podcasts/books frequently.

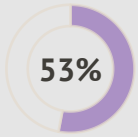
Watching content

Percentage of participants watching audiovisual content frequently. More women (66%) than men (55%), and more Android (62%) and iOS (63%) than CalyxOS (50%) users are watching content frequently.



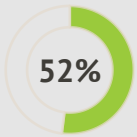
Taking pictures

Percentage of participants taking pictures/videos/audios frequently. Women (83%) are more active than men (47%), and iOS users (74%) are more actively engaged than Android (63%) and CalyxOS (43%) users .



Reading emails

Percentage of participants reading/answering emails frequently. Women (62%) do that more often than men (51%). iOS users (63%) perform this activity more often than Android (53%) and CalyxOS (49%) users.



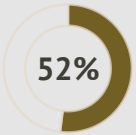
Using maps

Percentage of participants using maps or other location-based services. More women (74%) than men (45%) do that frequently. iOS users (68%) are also more active than Android (57%) and CalyxOS (39%) users.

Occasionally performed activities on mobile phones

Sharing files

Percentage of participants sharing files occasionally. Women (50%) are more frequent file sharers than men (17%). CalyxOS users (13%) are less frequent file sharers in comparison with Android (36%) and iOS (33%) users.

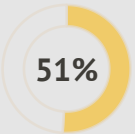


Reading documents

Percentage of participants reading documents/books occasionally.

Making phone calls

Percentage of participants making phone calls occasionally. More iOS users (45%) make phone calls frequently than Android (39%) and CalyxOS (29%) users.



Making videocalls

Percentage of participants making videocalls occasionally. Women (30%) are more active than men (15%) with making videocalls frequently. Also, iOS users (29%) are more frequent performers than Android (19%) and CalyxOS (12%) users.

Miscellanea

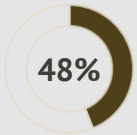
Social media access and online banking via mobile phones are more frequently performed activities by women but there are some differences by mobile OS too.

Eighty-two per cent of women use their phones to access social media in comparison with 36% of men who perform this activity frequently. Also, CalyxOS users with 23% stating this as a frequent activity are less active than Android (62%) and iOS (62%) users.

More women (30%) than men (15%) buy frequently using their mobile phones. Also, iOS users (31%) are more active than Android (21%) and CalyxOS (11%) users in buying online on a frequent basis.

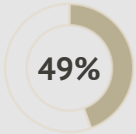
Playing games

Percentage of participants who have never played games on their mobile phones.



Accessing social media

Percentage of participants accessing social media frequently.



Online shopping

Percentage of participants buying online frequently.

Online banking

Percentage of participants accessing their online banking frequently.

What 'privacy' means to participants

Respondents were asked to choose from a list of options what privacy means to them. Although there are no notable variations between subgroups, users of alternative mobile OS more often have selected the open category of 'other' to define 'privacy'.

Although, actual qualitative feedback under the open category of 'other' was not provided in the majority of instances when selected, which makes it impossible to understand what are these 'other' definitions of privacy.

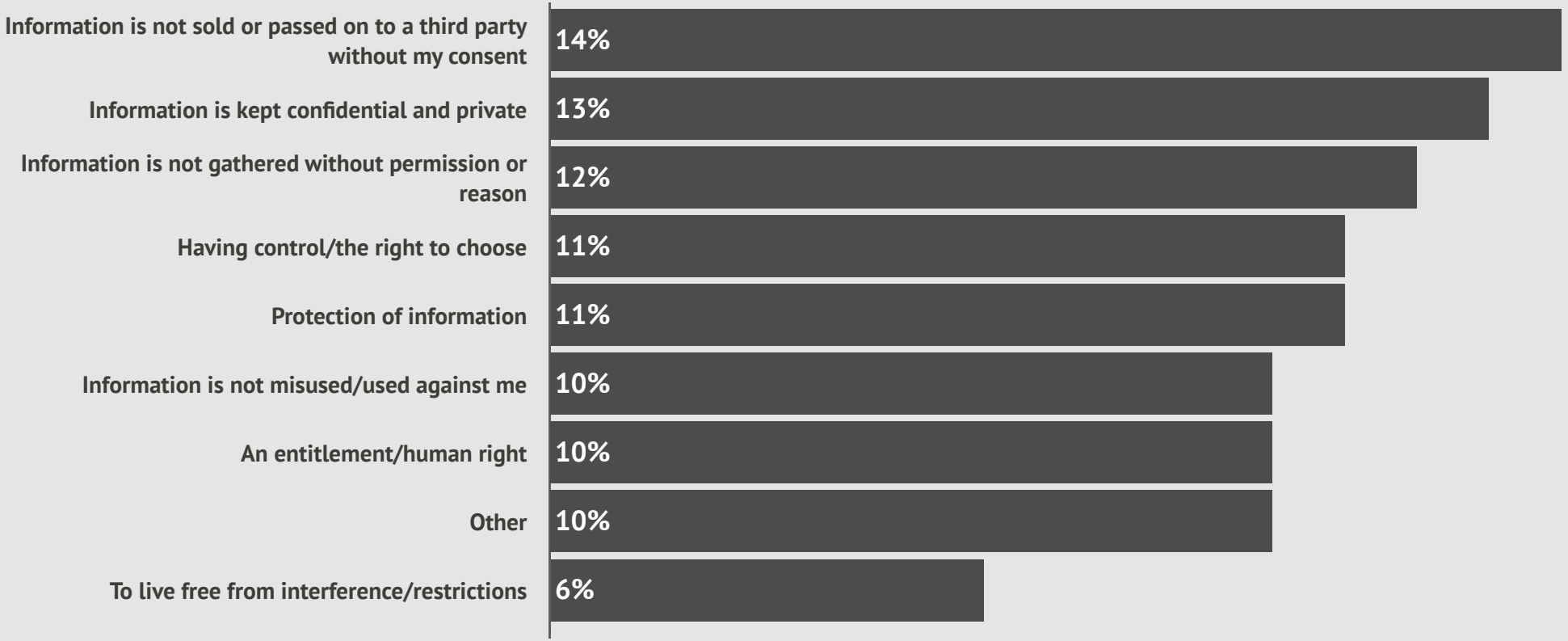


Fig. 8: Definitions of privacy

How concerned are participants about the topic of digital privacy ?

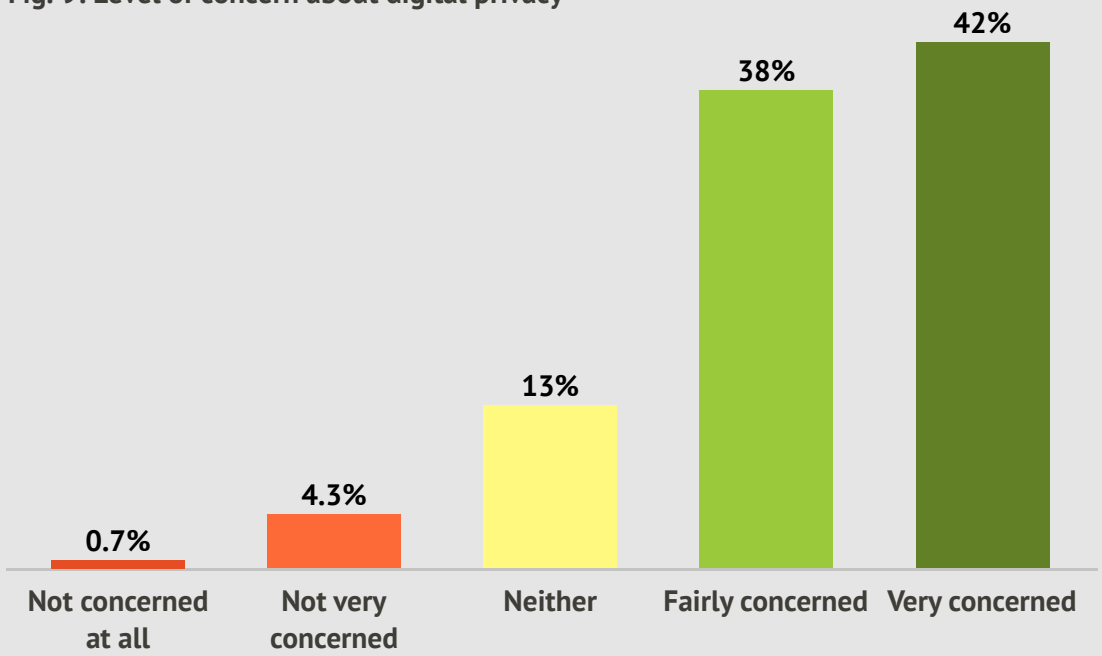
The majority of participants (80%) have been concerned about the topic of digital privacy in the last year.

Although digital privacy is everyone's concern, there are some variations by gender.

Fifty-two percent of men have stated being very concerned in comparison with only 14% of women claiming the same.

Users of alternative mobile OS also appear to be more concerned than Android and iOS users. For instance, 56% of CalyxOS users are very concerned while 33% of Android and iOS users report the same level of concern. It comes as no surprise that almost everyone (95.5%) who have considered switching to an alternative mobile OS in the last year have very strong concerns about digital privacy.

Fig. 9: Level of concern about digital privacy



52%

Percentage of men who are very concerned about the topic of digital privacy in the last year.

14%

Percentage women who are very concerned about the topic of digital privacy in the last year.

What is the biggest threat to participants digital privacy?

Clearly, the biggest threat for the majority of participants (70%) are social media and big tech companies, followed by law enforcement and intelligence agencies (16%). There are no notable variations by age, level of education, gender nor whether they are using a more private OS already or not. For instance, 71% of CalyxOS users who took part in this study report social media and tech companies as their major threat, similarly to 70% and 71% of Android and iOS, respectively.

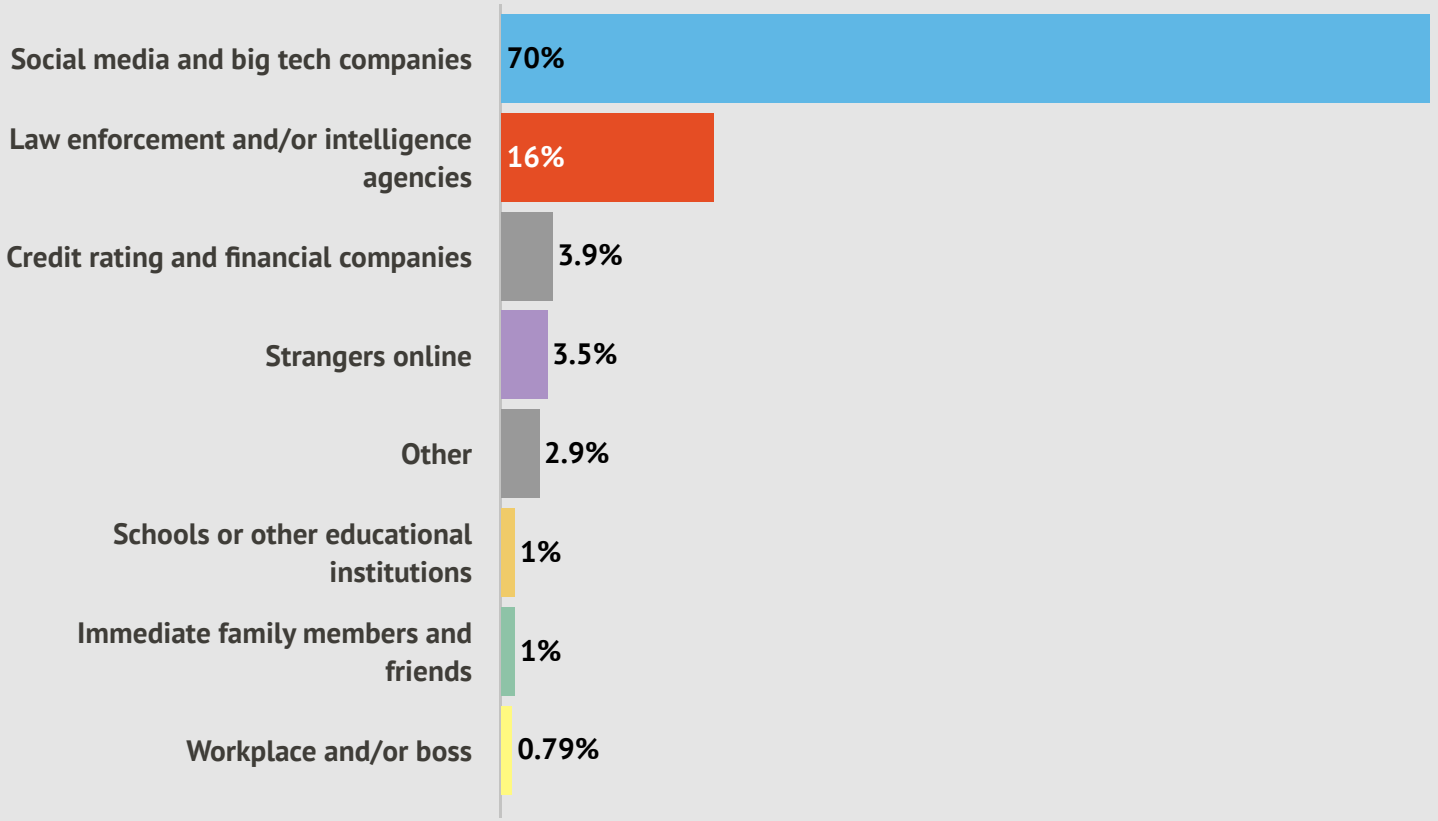
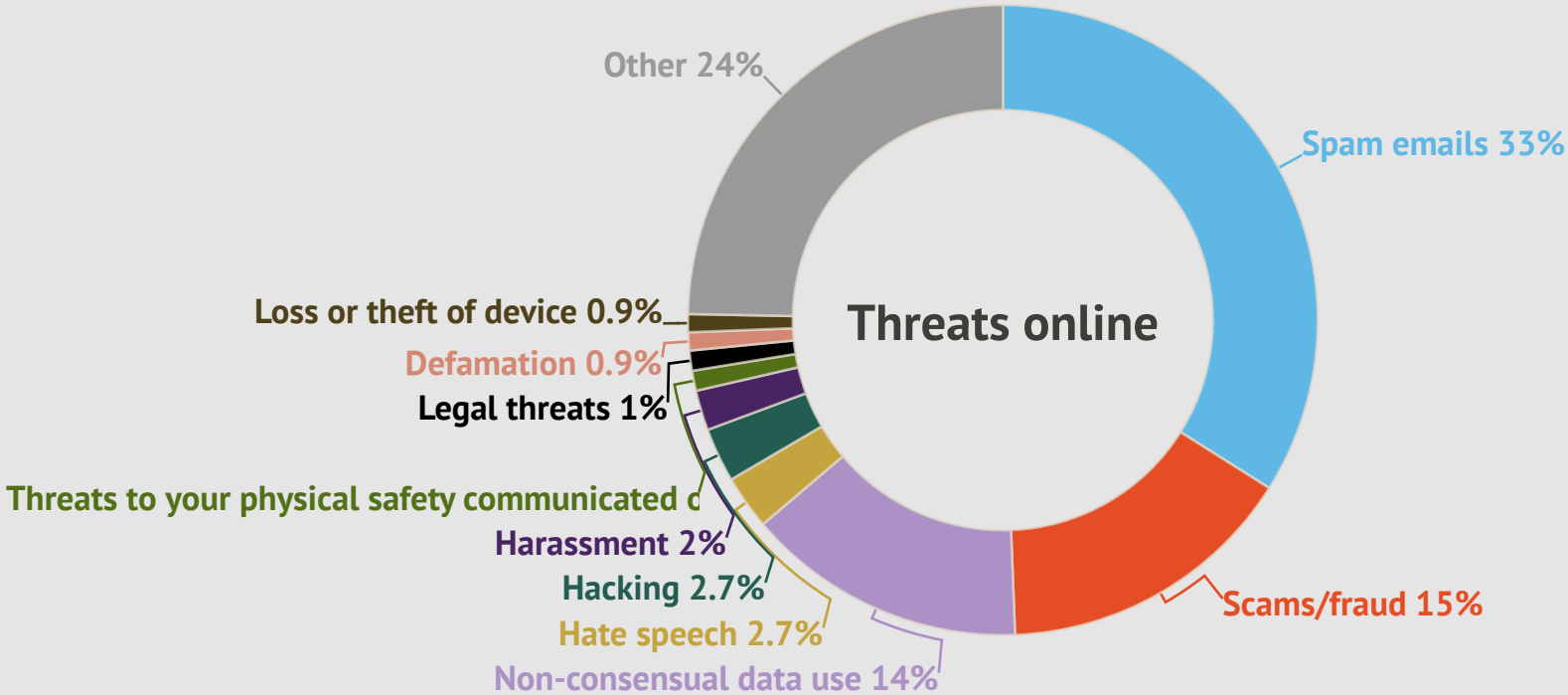


Fig. 10: Biggest digital privacy threats according to partcipants

Incidence of negative online experiences

The most common negative experiences for participants in this survey in the last year are spam emails (33%), scams/fraud (15%) and non-consensual data use (14%). Many also selected the open category of 'other' (24%) without leaving qualitative feedback and therefore it is impossible to understand what are these 'other' threats. In the instances where participants have specified the threats, these have been classified within the existing categories as there were detailed examples falling into already formulated type of threats.

Fig. 11: Digital threats experienced in the last 12 months



What participants do to protect their digital privacy

Less than 1% of participants in this survey have stated that they don't take any measures to protect themselves online.

The most common actions reported are managing browsing (16%), usage of encrypted instant messaging tools (15%), password hygiene (15%) and download of software updates (14%). Twelve percent provide false information as a protective strategy, while only 6.9% report to use email software to block spam and 7.1% usage of antivirus/spayware.

There are slight variations of reporting usage of firewall (10%) by mobile OS, with 12% of CalyxOS users adopting this measure against 10 % and 9.5% of iOS and Android users, respectively.

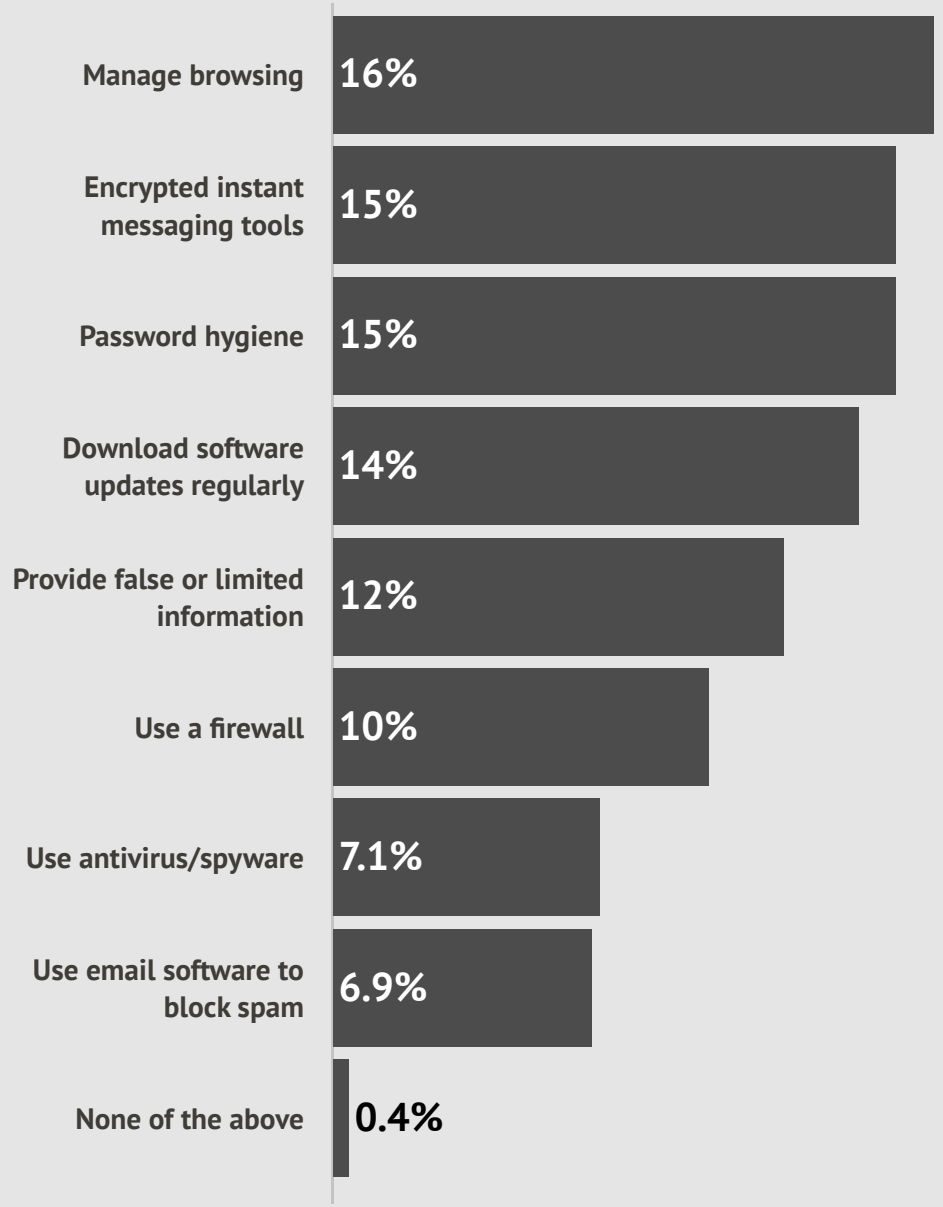


Fig. 12: Actions participants take to protect themselves digitally

Usage of and familiarity with VPNs and Tor

Forty percent of participants say they are regular VPN users. Thirty percent say they use one on an occasional basis, similar to the 32% of participants who say they use Tor occasionally.

There are some gender differences in relation to familiarity with VPN and Tor. Almost 43% of female participants state they are unfamiliar with VPNs, compared to 2.6% of male participants. Similarly, Tor is unknown to 73% of women, compared to 6% of men.

On the other hand, Android and iOS users are more unfamiliar with VPN and Tor than users of alternative mobile OS. For instance, 22% and 38% of iOS users report unfamiliarity with VPNs and Tor, respectively.

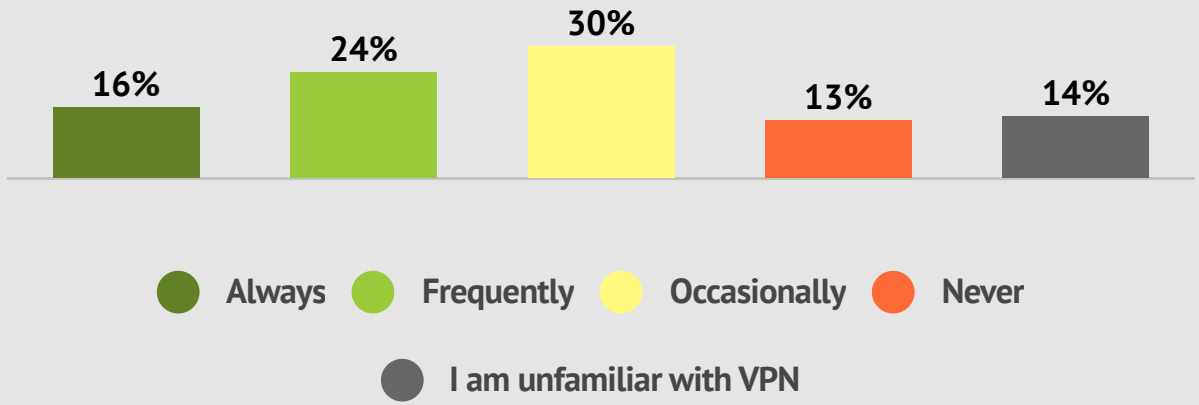
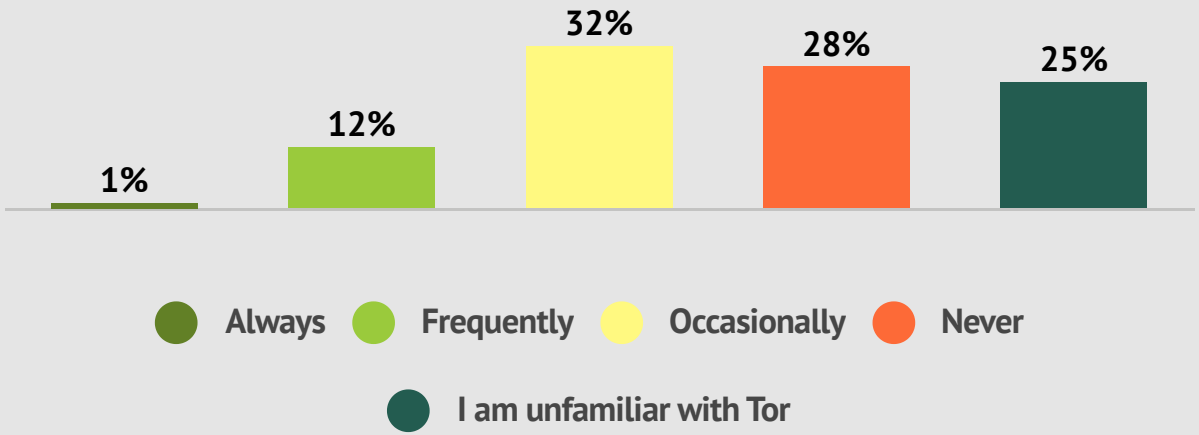


Fig. 13: How often participants use VPN

Similarly, 23% (VPN) and 39% (Tor) of Android users report unfamiliarity with these services, in comparison with 1% and 2% of CalyxOS users not knowing what VPNs and Tor are, respectively.

Fig. 14: How often participants use Tor



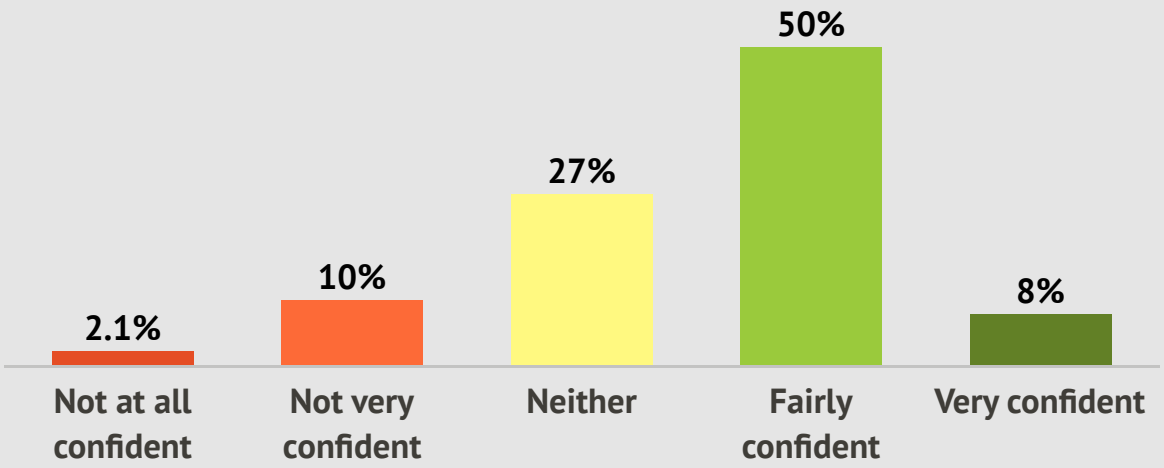
Level of confidence about the adopted protective actions

Fifty-eight percent of participants feel confident about the digital protective measures they are currently taking. Men are much more confident than women who took part in this study with 61% and 10% reporting confidence in adopted protective measures, respectively.

Not surprisingly, users of alternative OS show a higher confidence level than those who use Android or iOS. For instance, 28% of iOS users and 33% of Android users feel confident, in comparison with 71% of CalyxOS users who feel the same level of confidence.

Those who are thinking of switching to an alternative mobile OS (44%) feel more confident than those who did not consider (14%) a more private mobile OS in the last year.

Fig. 15: Level of confidence about the adopted protective actions



61%

Percentage of men who have stated being 'fairly confident' and 'very confident" about the measures they are taking to protect themselves online.

10%

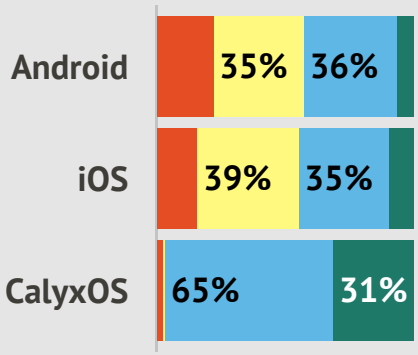
Percentage of women who report the same.

Forty- eight percent take precautions even though their job doesn't require it

When asked whether the nature of their job requires them to take security steps, almost half of participants (48%) said they are taking precautions no matter what. More men than women are adopting this behavior with 58% and 22%,, respectively.

Fig. 16: Does the nature of your work require to take security steps to protect yourself better digitally?

Fig. 17: Distribution of answers by type of mobile OS



Although precaution is important for almost half of participants, there are some variations by mobile OS. Sixty-five percent of CalyxOS users take security steps to protect themselves digitally even though the work doesn't require it. This compares with 36% of Android users and 35 % of iOS users who report the same behavior.

What participants value the most in a mobile OS

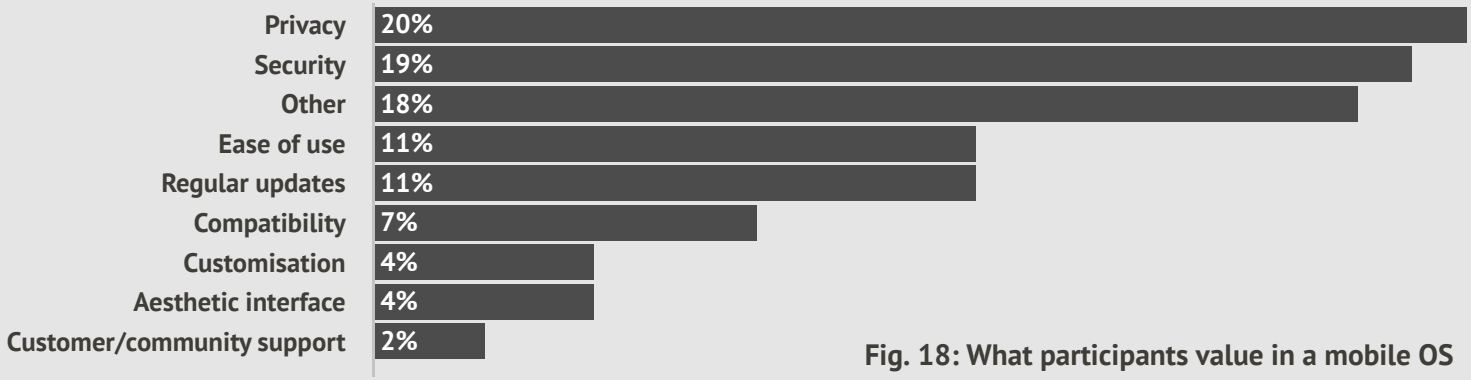
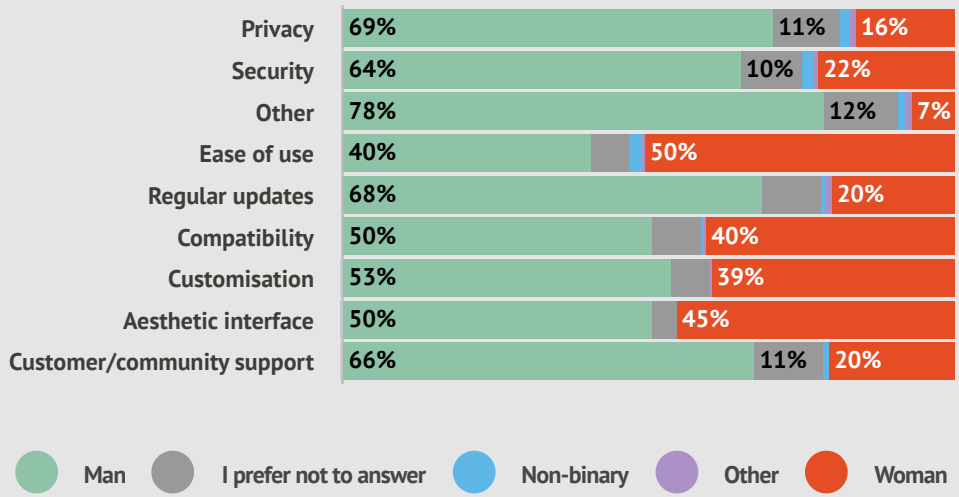


Fig. 18: What participants value in a mobile OS

Overall, privacy (20%), security (19%), ease of use (11%) and regular updates (11%) are the things that participants in this survey value the most in a mobile OS.

Thematically, under the category of 'other', selected by 18% of participants, there are four additional parameters commented – open-source technology, long-term support, accessibility and price.

Fig. 19: Percentage of gender per value



Privacy, security and regular updates are more important to men than women, while ease of use is more important to women who took part in this study (see fig. 19). Men value customer support more than women, with 66% compared to 20% choosing this factor as important.

Forty-five percent of CalyxOS users who took part in this survey select the customer/community support as one of the 3 most important things in a mobile OS.

Also, CalyxOS users (44%) are the portion of survey respondents to value other things more often than Android (26%) or iOS users (18%), that is to say, open-source technology, long-term support, accessibility and price.

On the other hand, for Android (35%) and iOS (39%) users, the aesthetic interface is more important than for CalyxOS (22%) users and while ease of use is not that important for CalyxOS users (16%), it is important for the other two user groups in this survey, Android (49%) and iOS (31%).

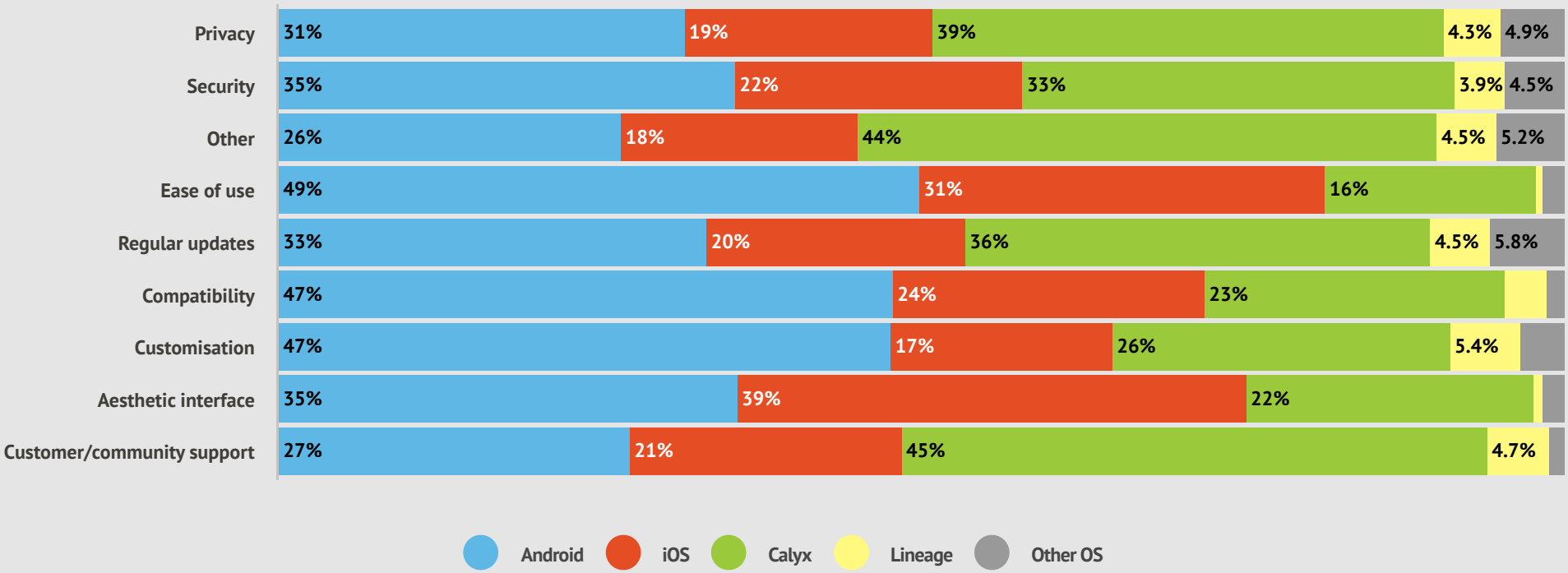


Fig. 20: Percentage of mobile OS per value

How participants secure their mobile phone screens

The most popular security measures among participants to lock their mobile phones are fingerprint (32%) and PIN/passcode (32%). Only 1.5% of participants do not use any measure to lock their mobile phones.

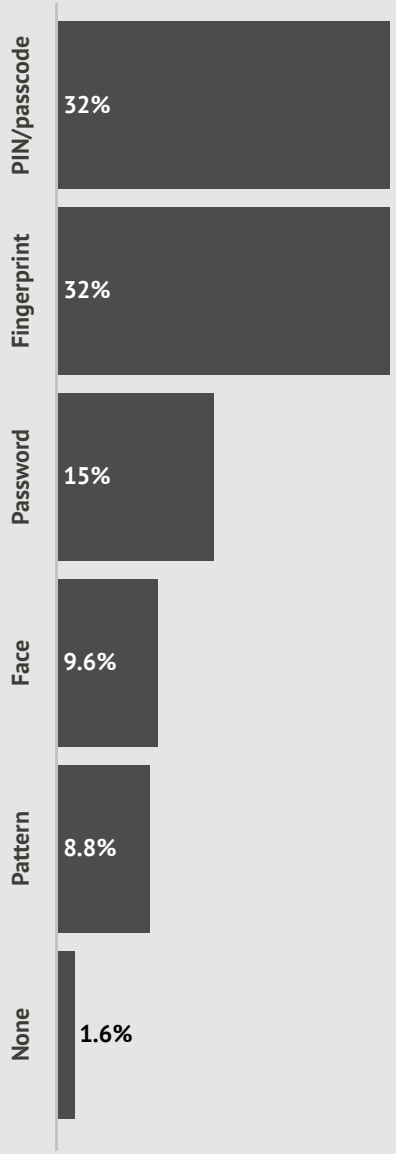


Fig.21 : Security measures participants take to lock mobile phone screens

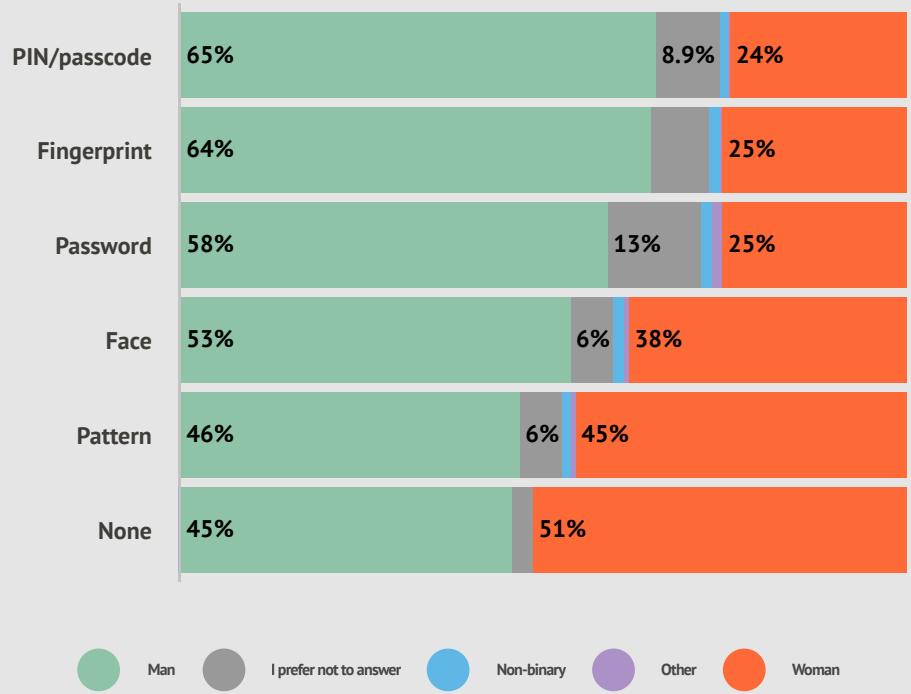
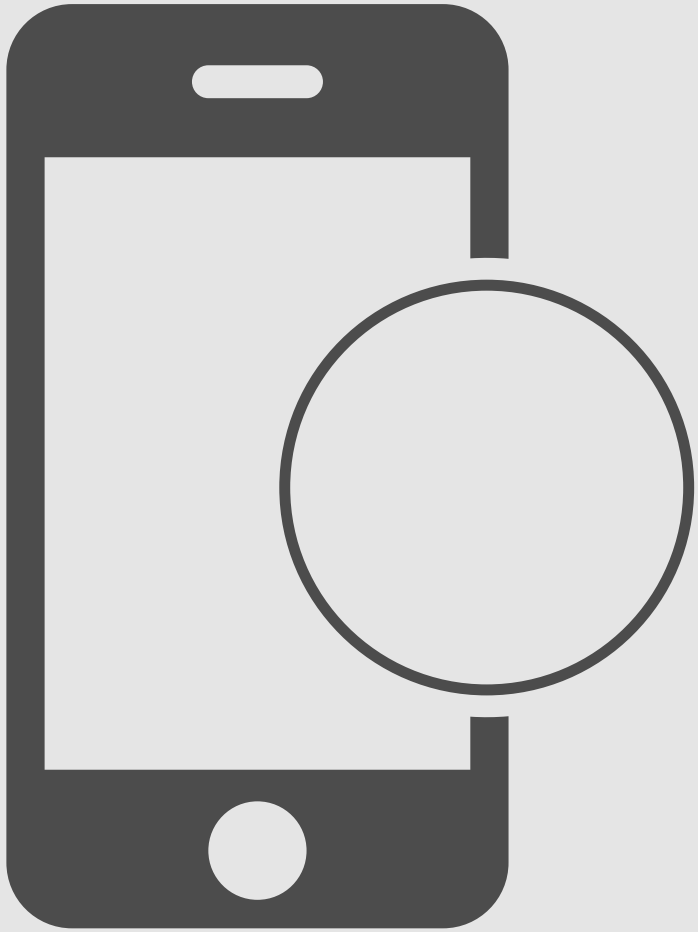


Fig. 22: Percentage of gender per security measure

Fingerprint is used by 64% of men in comparison with 25% of women choosing this type of measure. Similarly, PIN/passcode is more popular among men (65%) than women (24%).



59%

Percentage of participants who think it is important to be able to share real-time location updates with others privately and securely. More women (58%) than men (31%) are interested in the subject.

55%

Percentage of participants who say they know how information is shared by their phones. Men (48%) claim having more knowledge than women (12%), and more CalyxOS (60%) than Android (21%) and iOS (26%) users.

40%

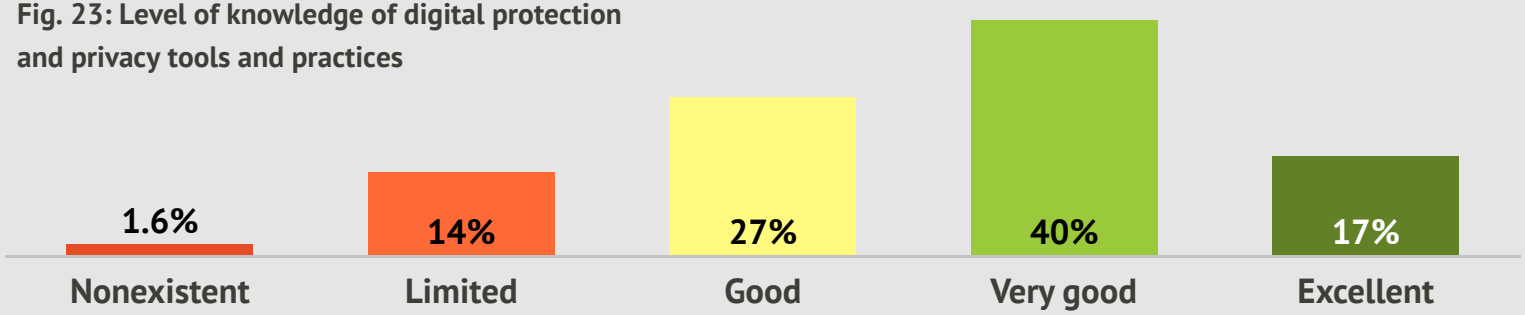
Percentage of participants who report being unsure about privacy or security breaches on their phones. Only 5% affirm to have experienced a security breach.

1

Knowledge of digital protection and privacy tools and practices

Fifty-seven percent of participants believe they have very good knowledge about digital protection and privacy tools.

Fig. 23: Level of knowledge of digital protection and privacy tools and practices

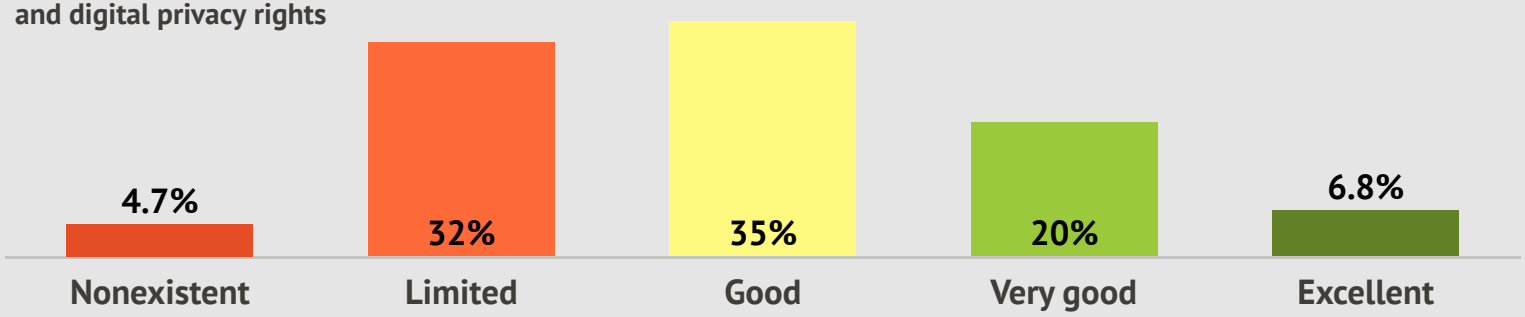


2

Knowledge of data protection laws and digital privacy rights

In contrast, only 27% claim to know very well data protection laws and digital privacy rights.

Fig. 24: Level of knowledge of data protection laws and digital privacy rights

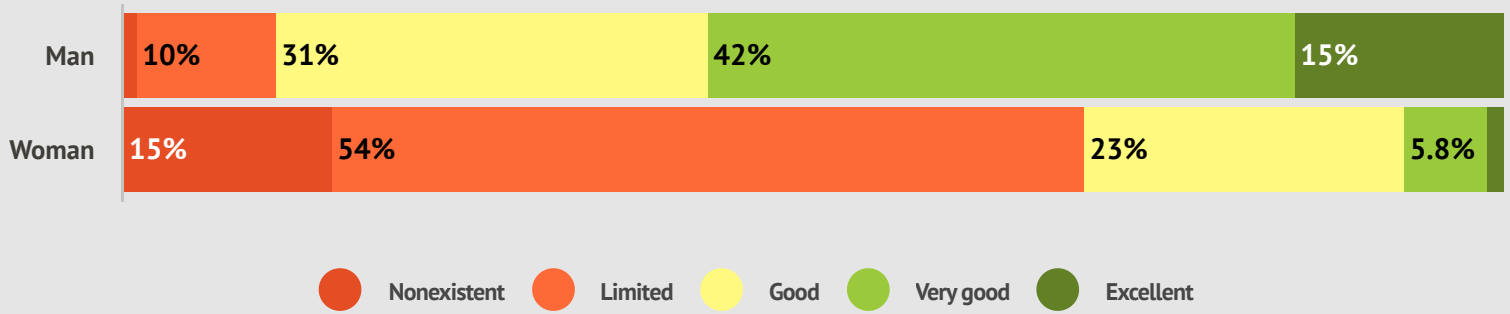


1

Knowledge of digital protection and privacy tools and practices

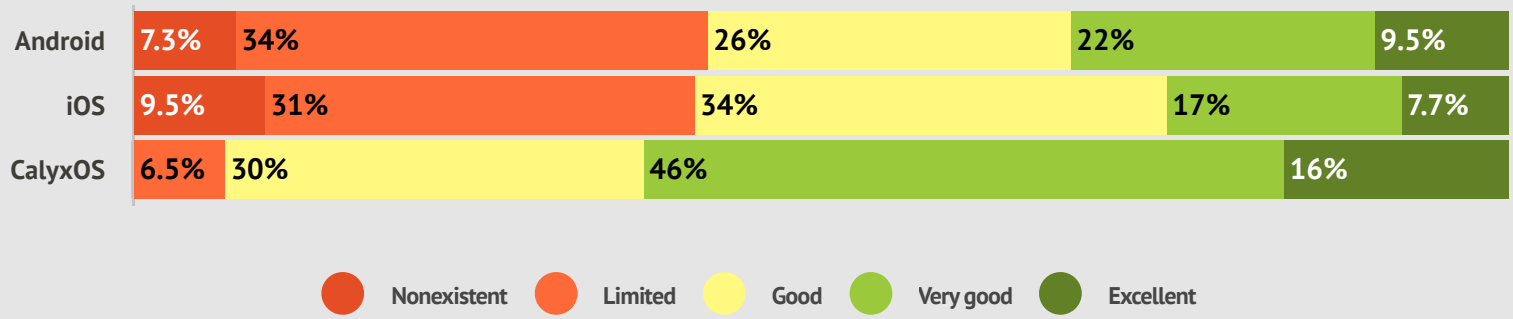
Women rate their knowledge as much more limited than men. Only 7% of women believe to have a very good knowledge in comparison with men (57%).

Fig. 25: Level of knowledge by gender



It comes as no surprise that users of alternative mobile OS feel they know more about digital protection. For instance, 62% of CalyxOS users rate highly their knowledge about protection in comparison with 31% of Android users and 24% of iOS users.

Fig. 26: Level of knowledge by mobile OS

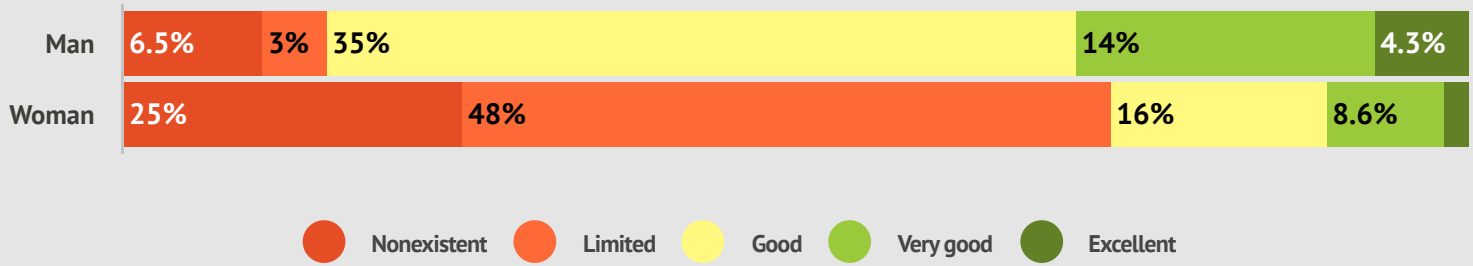


2

Knowledge of data protection laws and digital privacy rights

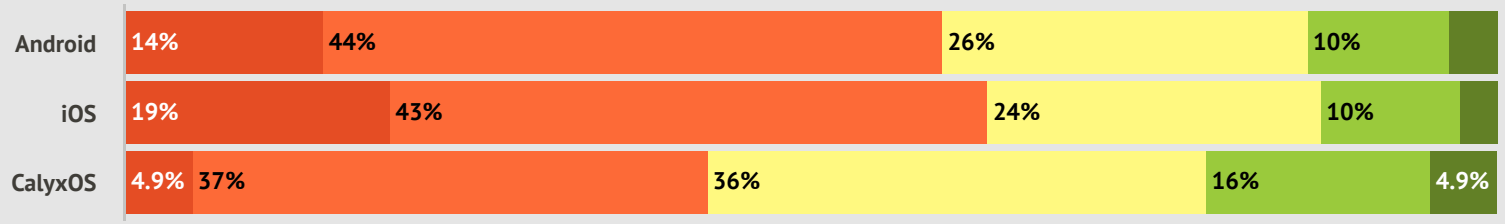
Only 27% of participants rate their knowledge of data protection laws and digital privacy rights highly, while 36% consider they don't know enough. Again, there are gender variations with women rating their knowledge as much more limited than men. Seventy-three percent of women believe they do not know enough about digital laws and rights, while only 9.5% of men who took part in this study feel the same way.

Fig. 27: Level of knowledge by gender

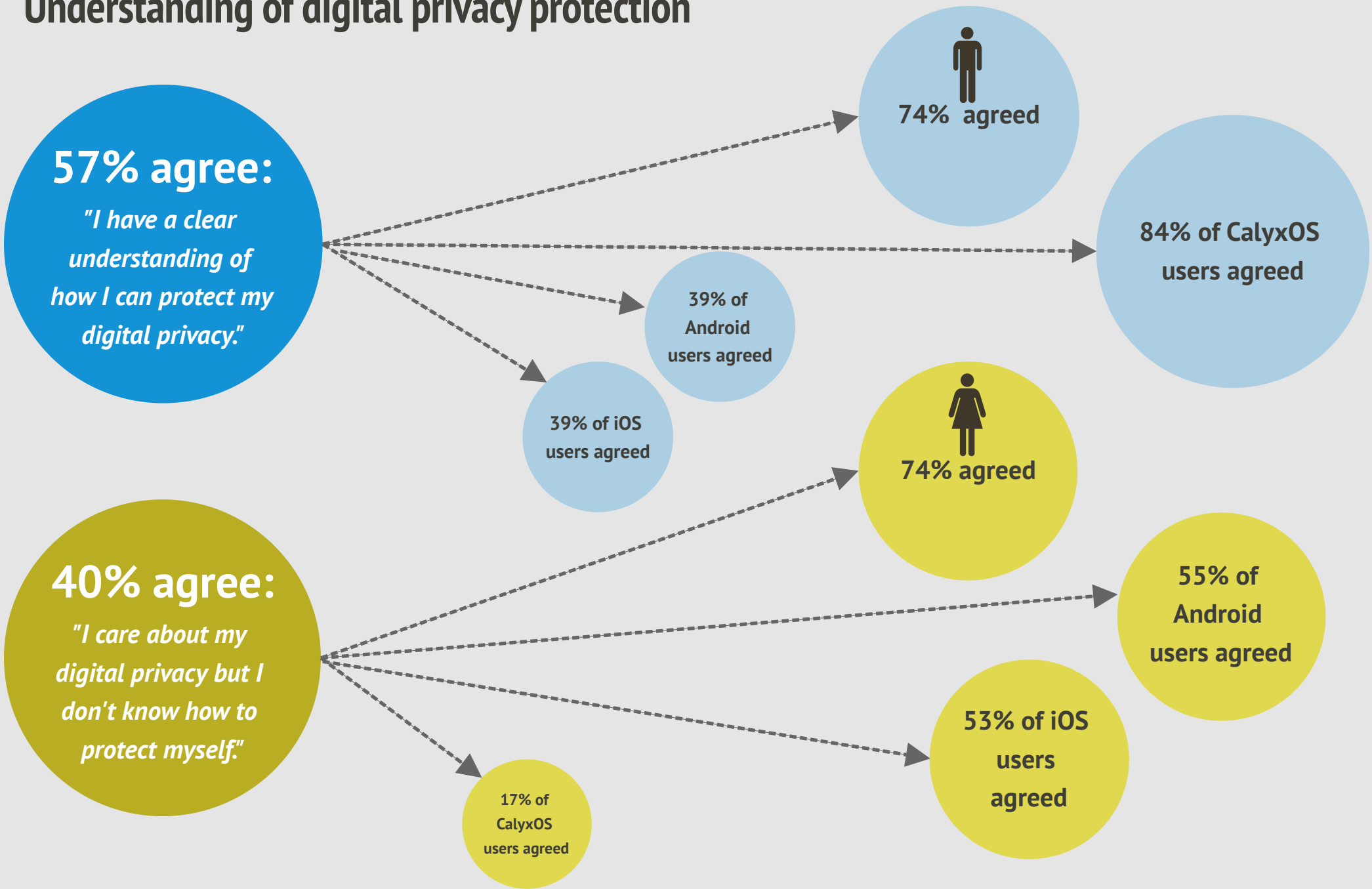


CalyxOS users rate their knowledge about digital privacy laws and rights better than Android and iOS users. Forty-two percent of CalyxOS users feel they don't know enough in comparison with 58% and 62% of Android and iOS users, respectively.

Fig. 28: Level of knowledge by mobile OS



Understanding of digital privacy protection



What challenges participants face regarding privacy solutions

The biggest challenges that participants face regarding privacy solutions and/or securing their devices are: not knowing which one to choose (17%), the solution is too complex to understand (15%), and the solution is too difficult to install and maintain (15%). In addition, 17 % of participants expect to find the solution already installed on their devices.

Fifty-five per cent of those stating they face no challenges are CalyxOS users in comparison with 19 % of Android users and 12% of iOS users. Only 12% of CalyxOS users say they would not know where to look for a solution, in contrast with 50% of Android users and 35% iOS users selecting this challenge.

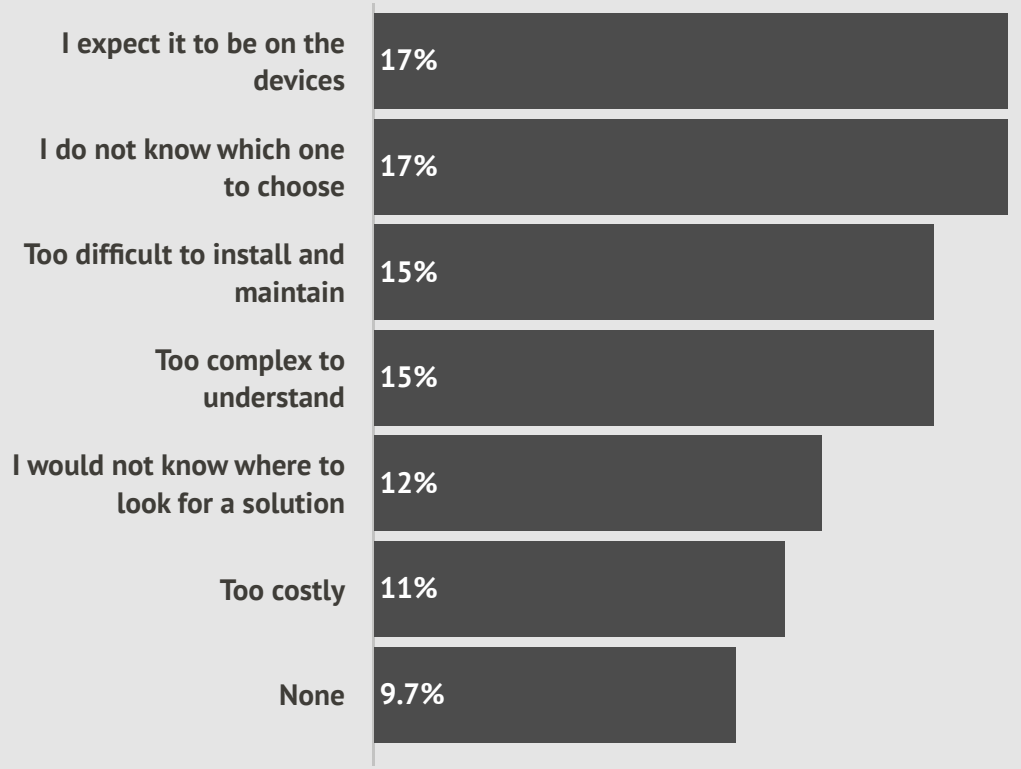
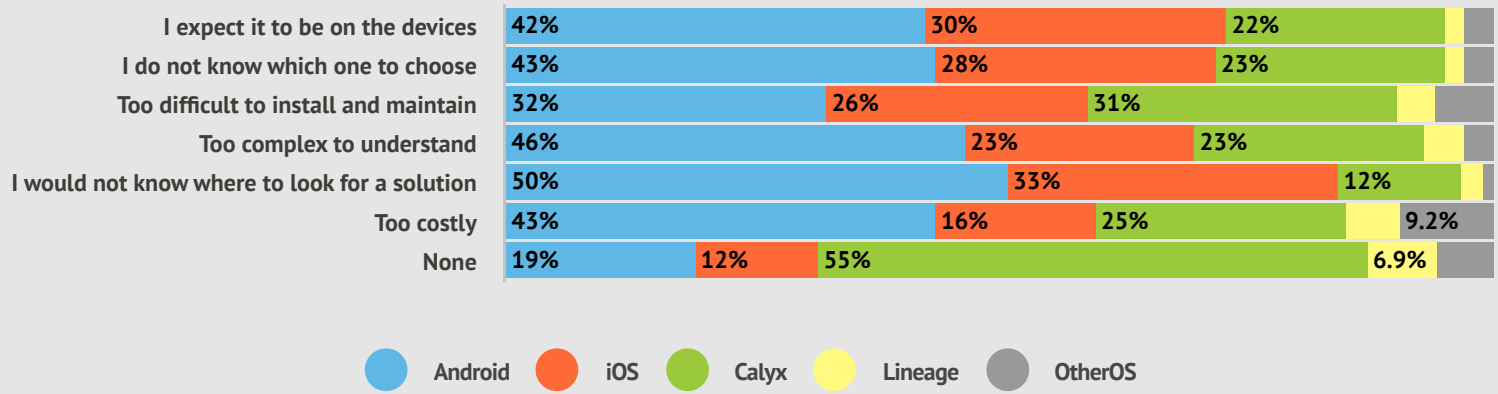


Fig. 29: Challenges regarding privacy solutions for mobile devices

Fig. 30: Percentage of OS by challenge

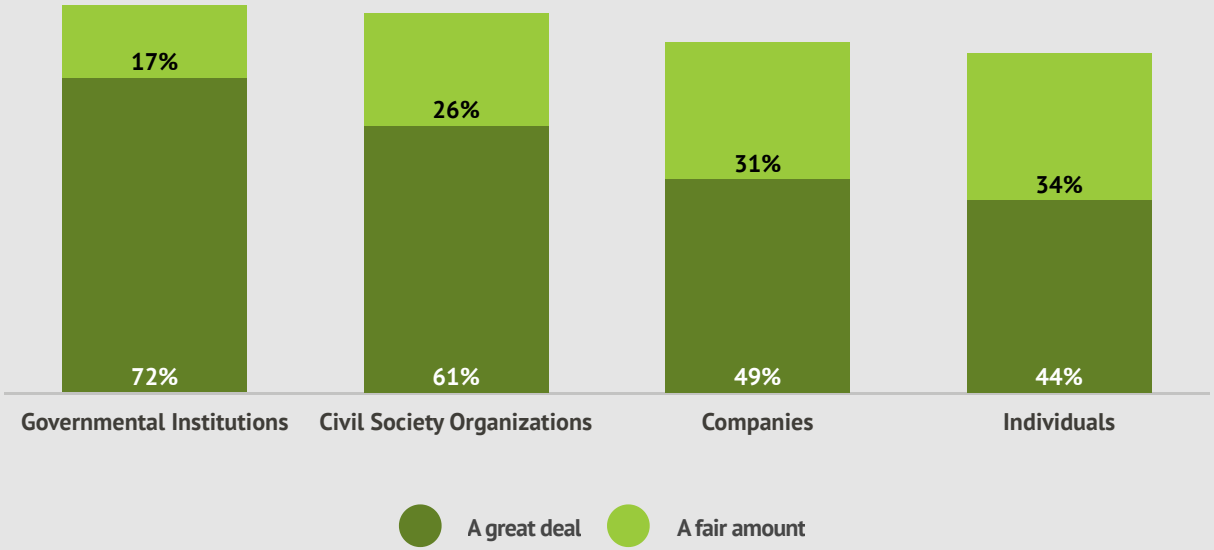


Who should have a big role in raising awareness about digital privacy and protection?

Almost half of survey respondents say companies and individuals themselves have the responsibility to raise awareness about digital privacy and protection, but even more say government (72%) and civil society organizations (61%) should have a big role to play. Women are more inclined to place responsibility on government than men, with 81% and 69% who voted with "a great deal" for this type of entity, respectively. In contrast, more men (65%) than women (51%) believe that civil society organizations should play a big role.

In addition, when asked what actions will help others to care more about digital privacy, participants rate informing society about violations of citizen's privacy and better communication and outreach on why should we care, higher than developing more tools for protection (see fig.32).

Fig. 31: Percentage of participants who voted with "a great deal" and 'a fair amount" for the role entities should play in raising awareness about digital privacy and protection



29% More information about the violations of citizens' digital privacy and how that impacts citizens

28% Better communications and outreach on why individuals should care about their digital privacy

22% More tools and applications that allow individuals to protect themselves

15% More information about individuals' rights to data privacy and legal recourse

Fig. 32: Percentage of votes per action

Who should have the ultimate responsibility for securing data?

Forty-three percent of participants think the ultimate responsibility for data security lies with the individual, 33% believe that both companies and government should be responsible, and only 7% consider that government should be that entity. Individual control over what data is shared and knowledge about how data is treated are also the decisive factors when choosing to share data with an organization (see fig. 33).

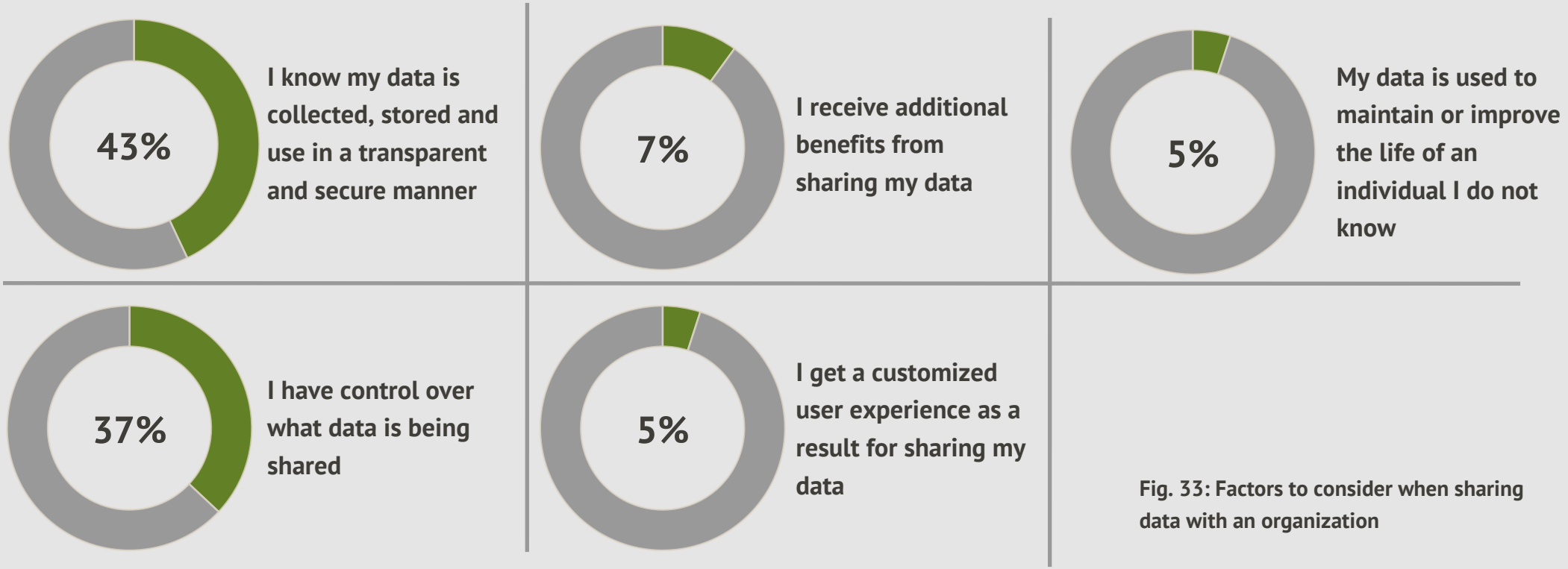


Fig. 33: Factors to consider when sharing data with an organization

How participants decide which sources to trust when it comes to digital privacy

The most important aspects that participants consider when deciding whether or not to trust a given digital source are how reputable/known is the service (22%), how familiar are they with the source (19%), and if the information about the service/project provided is clear and available on site (18%).

Under the open category of 'other' (20%) notable themes are FOSS, bitcoin and following your own intuition.
More men than women consider other factors, with 78% and 7% of votes for this category, respectively.

Other less important aspects for survey participants appear to be correct grammar and spelling (8%), recommendations by friends and family (8%), and nice visual design and professional look (3%).

Fig. 34: Aspects to consider when deciding whether to trust or not a given digital source

50%

Half of participants consider it likely for them to engage in activism to push laws and policies towards data protection and prevention of abuse.

Men are more inclined to engage in activism than women, with 57% stating it likely to engage in activities to push laws and policies which compares with 31% of women who believe the same.

59%

Almost 60% of participants feel more aware about how their data is used and collected than a year ago.

The survey was developed, conducted, analysed and presented in this report
by Maya Ninova on behalf of the Calyx Institute.
The report was designed with Infogram.

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Special thanks

First and foremost to all participants who took their time to fill in the survey and have let us make this exciting inquiry into their concerns, behaviors and opinions in relation to digital privacy and security. This work is also made possible through the generous support of our members (calyxinstitute.org/membership)

We are very grateful to Internews and their BASICS project (Building Analytical and Support Infrastructure for Critical Security Tools) for providing financial support and making this study possible, and also for helping us share the survey link with their network.

Big thanks to Trai and colleagues moderators of r/privacy and r/privacytoolsIO for letting us share the survey link with the community, to IFF and Sandra Ordoñez in particular, for including the survey link into their newsletter and for the moral support. Thanks to Flavita Banana for promoting the survey with her followers and to Rocio Juanillo for providing help with crunching the data.

Finally, thank to our Calyx membership team: Catie, Brandon and Ayesha for organising the survey outreach strategy for social media.