making communications work
for everyone

Online Nation

2022 report

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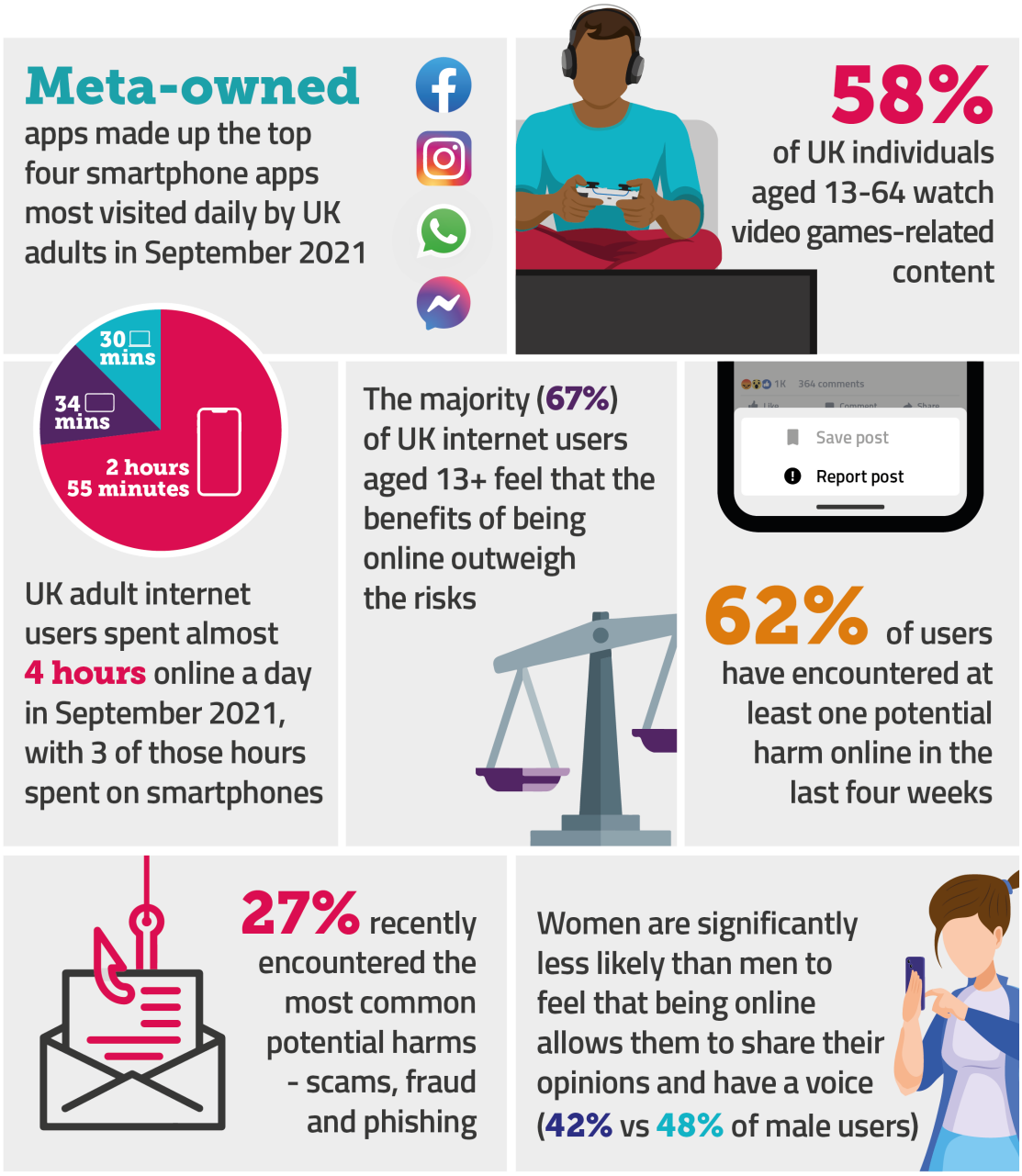
Overview

What we have found – in brief

For most people in the UK, being online is a major part of daily life. Being online allows people to connect with others, sometimes in ways they may not be able to do offline. Our data shows how we benefit from a range of online services, from messaging and calling platforms to gaming platforms, online news outlets and online shopping. However, we have also collected data that shows how the internet can pose risks through exposure to potential harmful content or behaviour from other users.



Online use in the UK

UK adult internet users spent four hours online a day in September 2021

UK adult internet users spent an average of 3 hours 59 minutes a day online in September 2021 on computers, tablets and smartphones. Young adults continue to spend the most time online, with 18-24-year-olds spending an average of 5 hours 6 minutes online a day, and those aged 55+ spending the least time (2 hours 58 minutes). Women spent more time online (4 hours 11 minutes) than men (3 hours and 46 minutes). Online adults in Scotland spent the most time compared to the other UK nations (at 4 hours 18 minutes), while online adults in Northern Ireland spent the least amount of time online (3 hours 25 minutes). Seventy-three per cent of the time spent online per day by UK online adults was on a smartphone; one in five people *only* use a smartphone to go online, compared to one in ten last year.

National and regional online information services are widely used across the UK

News and governmental public services are among the most-visited websites and apps in the UK. The UK Government online service, which includes gov.uk, was the internet domain with the seventh highest reach (71% of UK adult internet users) in September 2021. This may reflect use during the pandemic, with people accessing information on Covid-19 as well as financial and travel information. NHS online services were the ninth top reaching sites, reaching 67%. Among online news services, BBC News was the most visited in all four UK nations, and in total was visited by 71% of UK online adults. Most of the top ten news websites and apps for the whole of the UK were equally popular across each UK nation. But the high reach of Wales Online (the second most visited online news service in Wales), Belfast Live (second in Northern Ireland) and the Daily Record (fourth in Scotland) shows the importance of news tailored to audiences in each of the UK nations.

Meta-owned apps made up the top four smartphone apps most visited *daily* by UK adults in September 2021

In September 2021, 88% of UK online smartphone-using adults visited WhatsApp, the top-reaching smartphone app, followed by the Facebook app (87%). Comparing average daily visitors, Facebook was visited by 61%, WhatsApp by 50%, Instagram by 35% and Facebook Messenger by 27% of UK smartphone-owning adults who went online. Instagram was the top smartphone app among UK online 15-24s, of whom 60% visited it daily, on average. One in five adults use all three Meta-owned communication services.

Nearly all (94%) UK adult internet users aged 16+ said they used an online communications service for making voice/video calls or sending messages in 2021, and 80% of children aged 3-15 did the same. Eighty-seven per cent of adults said they used any of Meta's communication services: WhatsApp, Facebook Messenger or Instagram.

One in ten UK online adults visited an online dating service in September 2021

Tinder (owned by Match) was the highest-reaching online dating service, reaching 1.9 million (4%) online adults in September 2021. Online dating is particularly popular among internet users aged 25-34; 19% of them visited at least one service in September 2021.

Tinder remains the most popular dating service with younger age groups, visited by 15% of online adults aged 18-34; 62% of Tinder's UK adult visitors are male while 38% are female. OurTime, a dating service for the over-50s (also owned by Match), was visited by 1% of those aged 65+, making it the most-visited service for this age group.

Thirty-nine per cent of UK adults aged 16+ play games online, as do 56% of UK children aged 3-15

UK gamers aged 13-64 spent 7 hours 33 minutes a week gaming in Q4 2021. Online gameplay became increasingly important to children aged 8-17 during the pandemic: 85% of parents of children aged 8-17 said their child spent more time playing games online in 2021 than previously.

Candy Crush Saga is the top-reaching games app, visited by 1.2 million UK adults daily, while website-based game Wordle reached 1.8 million UK adults daily in February 2022

In 2021, 20% of British adults said they played free-to-play digital games at least monthly. *Candy Crush Saga*, released in April 2012, is the top-reaching games app on mobile devices in the UK and was visited by 2.5 million adults in February 2022. The game is particularly popular with women, with 1.7 million female adults visiting the app in February 2022 – making up 68% of its total UK adult visitors. In January 2022, Microsoft agreed to acquire gaming company Activision Blizzard, the owner of Candy Crush, for £51bn, the largest-ever agreed sale in the gaming industry.

Wordle had 8.4 million adult visitors in the UK in February 2022; 17% of UK online adults visited the site, with an average of 1.8 million daily adult visitors. The game has a higher monthly reach among women (19%) than men (15%).

Fifty-eight per cent of UK individuals aged 13-64 watch video games-related content

Watching games-related content on video platforms is important to many gamers as a way of feeling part of the gaming community: 37% of UK 13-64-year-olds who watch games-related content cite this as a reason for doing so, rising to 54% of 16-24-year-olds. YouTube is the most popular platform for watching games-related content, used by 74% of those who watch gaming content. Twitch, the gaming streaming service, is used by 25% of games content viewers; 2.9 million adults visited Twitch in September 2021, with UK adults spending on average 20 minutes per day on the platform via desktop, laptop or mobile devices.

Fifty-eight per cent of UK gamers aged 13-64 subscribe to a gaming subscription service

On average, UK gamers spend more on digital than on physical game purchases; this includes gaming subscription services. PlayStation Plus, the multiplayer gaming online console, was the most popular paid-for gaming subscription in the UK, with 3.2 million subscribers at the end of 2021. There were 2.1 million paying subscribers to cloud gaming services (a method of gaming by which devices connect to video games running on remote servers in data centres) at the end of 2021. Subscription service PlayStation Now is the most popular cloud gaming subscription service in the UK, reaching 7% of 13-64-year-olds.

Among UK VR gamers aged 13-64, 32% used the PlayStation VR headset – the most popular headset

We can expect immersive technologies such as augmented and virtual reality (AR and VR) to become more prominent in our everyday online lives. It is anticipated that there will be a shift from the current 2D use of the internet (i.e. websites and smartphone apps) to a 3D metaverse internet. There is a good deal of industry investment in VR, with gaming potentially becoming the first mass-market metaverse application. Virtual reality headsets can enhance the gaming experience by immersing users within entirely computer-generated environments. However, take-up of VR headsets remains low, with 3% of adults playing games on a VR headset.

User experiences

Most UK internet users feel that the benefits of being online outweigh the risks

The majority (67%) of internet users aged 13+ feel that the benefits of being online outweigh the risks, compared to 7% who believe that the risks outweigh the benefits. Forty-three per cent agree that being online has an overall positive impact on their mental health, while 14% disagree. Heavy users (those who spend more than 22 hours a week of personal time online) are more likely to agree that the online benefits outweigh the risks (73%) and are more likely to agree that being online has a positive effect on their mental health (50%).

However, younger adults, women and those from a minority ethnic group are more likely than others to believe that the risks of being online outweigh the benefits. Those from a minority ethnic group are twice as likely as white users to state that the risks of being online outweigh the benefits. Women and 18-34s are more likely than average to *disagree* that being online has an overall positive effect on their mental health. And women are significantly less likely than men to feel that being online allows them to share their opinions and have a voice.

More than six in ten (62%) internet users aged 13+ have encountered at least one potential harm online in the last four weeks. The most common potential harms encountered are scams, fraud and phishing

Users aged 18-34 and those from an ethnic minority background are more likely than average to say they have experienced at least one potential harm online in the past four weeks (65% and 68% respectively). Older users, those aged 55+, are less likely than average to have encountered potential harms (57%). The most commonly experienced potential harms are scams, fraud and phishing, encountered by 27% of users in the past four weeks. This is the only type of potential harm that was experienced by the 55+ age group at a higher rate than average. The second most frequently experienced type of potential harm was misinformation, with 22% having encountered it in the past four weeks.

People are most likely to come across potential harms while using social media, most notably Facebook

Almost half (47%) of internet users aged 13+ report coming across a potential harm while using social media.

Users are more likely to have encountered their most recent potential harm on Facebook than on any other platform: 45% of users said that the potential harm they had encountered most recently was on Facebook, more than three times the proportion who encountered it on the second most likely platform, Instagram (12%).

Women are particularly likely to be negatively affected by hateful, offensive or discriminatory content and trolling

Women are significantly more likely than men to say that they were bothered or offended by their most recently encountered potential harm (41% vs 28%). Sixty per cent of female users who had experienced trolling most recently said they were bothered or offended by that experience, compared to 25% of men. Women from a minority ethnic background are more likely than white women to have experienced at least one potential harm in the past four weeks (67% vs 61%).

Almost three-quarters of mixed ethnicity and Black internet users said they had encountered at least one online potential harm in the past four weeks. Mixed ethnicity and Black internet users are more likely than either Asian or white users to have encountered potential harms in the past four weeks (74% and 71% compared to 63% and 61% respectively).

Over half of users from a minority ethnic group were negatively affected by their most recently encountered potential harm. In particular, users with Black (56%), mixed ethnicity (51%), and Asian (49%) backgrounds were more likely than white users (36%) to report that they had been bothered or offended by that content or behaviour.

The majority (59%) of children aged 8-15 report that using social media, and messaging sites and apps, makes them happy *all* or *most of* the time

Almost all children aged 3-15 go online (98%) and nearly two-thirds (58%) use social media. Sixty per cent of children aged 8-15 say that using social media and messaging platforms makes them feel closer to their friends. More than three-quarters of children aged 12-15 said that being online can help with their school/ homework, while half said it can be used to learn a new skill.

We found that 58% of children aged 3-15 use social media such as YouTube, TikTok and Snapchat. Four in ten parents of 8-12-year-olds said they would allow their child to use social media before they reached the minimum age. The most popular social media platforms have a minimum age requirement (usually 13) for opening an account.

A third of children aged 8-15 who go online have seen worrying or upsetting content online in the past 12 months

Over six in ten (63%) children aged 8-15 who go online said they would always tell someone if they saw something 'worrying or nasty' online; 88% of these said they would tell a parent. A third (34%) of children aged 8-15 who go online said they had seen something 'worrying or nasty' online in the past 12 months; and one in five (21%) parents of this age group said that their child had told them about something they had seen online which had scared or upset them. Among children aged 8-15 who have experienced bullying, more than eight in ten (83%) had experienced it through a communications device such as a phone or laptop,[1] compared to 60% being bullied face-to-face.

Young adults aged 18-34 are at the highest risk of encountering potential harms online

Those aged 18-34 are more likely than average to have most recently experienced at least one potential harm (65% vs an average of 62% for all users), whereas users aged 55+ have a lower overall risk of encountering a potential harm (57%).

Younger adults, aged 18-24, are more likely to encounter hateful, offensive or discriminatory content (17% vs an average of 11%), and older users 55+ are more likely to encounter scams, fraud or phishing (31% vs an average of 27%). It is difficult to isolate a single reason why some encounter potential harms more than others, as many factors can influence this, such as a person's age, gender or ethnicity and how much they use the internet.

A fifth of users said they had reported or flagged the potentially harmful content or behaviour they encountered online

Six in ten users who encountered harmful content or behaviour took some sort of action. The most common types of action taken were unfollowing/ unfriending/ blocking the perpetrator (20%) and clicking the report or flag button or marking as junk (20%). Of those who reported or flagged content, a fifth said that the content had been removed. The most common reason for not taking action was that the user "didn't see the need to do anything". Users from a minority ethnic group were more likely than white users to take some form of action (68% vs 59%), and also more likely to report or flag (37% vs 31%). Children aged 13-17 were less likely to use reporting and flagging to inform platforms of potentially harmful content or behaviour they had seen, with only 14% doing this compared to an average of 20% for all users.

[1] This includes offline methods of device-based bullying such as SMS message and phone calls.

1. The online landscape

Introduction

This chapter sets out an overview of the UK online landscape in 2021. It explores consumer behaviour and use of online services, as well as industry market developments and data, to provide commentary on select online markets: search engines, social media, news, retail, finance (including digital currencies) and a forward look to the metaverse. We examine the key players in each sector, such as Meta, Amazon, Microsoft, Alphabet and Apple, as well as challenger firms that are making an impact.

This year our report includes measurement data on UK online adults aged 15+, provided by Ipsos iris, the UKOM-accredited online audience measurement currency. As Ipsos iris was only launched in 2021, year-on-year trend data is not available, so we mainly provide a snapshot of online use in September 2021. The report also includes data from Ofcom's Adults' Media Literacy Tracker, on adults aged 16+.

The global pandemic since March 2020 has resulted in significant changes in online behaviour; in particular, our online shopping habits that developed during lockdown periods appear to be here to stay. Overall, online companies grew in 2021. The largest online platforms' revenues and profits increased significantly during the lockdown periods and this growth continued in 2021. The growth is being driven by UK consumers' increasing spend on e-commerce and entertainment subscription services, while advertising revenues are also increasing with the continuing brand migration to online.

Key metrics

Figure 1.1: Percentage of UK adults who used the internet in 2021

Percentage of households	Internet access
2021	94%

Source: Ofcom Adults' Media Literacy Tracker 2021: Core survey and CATI omnibus survey. Q1 - do you or does anyone in your household have access to the internet at home (via any device, e.g. pc, mobile phone etc)? and do you personally use the internet at home? Base: All adults 18+ (3143).

Figure 1.2: Percentage of UK online adults accessing the internet, by device: 2021

Percentage of adult internet users	Smartphone	Tablet	Laptop	Smartphone only
2021	88%	43%	53%	21%

Source: Ofcom Adults' Media Literacy Tracker 2021: Core survey and CATI omnibus survey. IN1. Which of these devices do you use to go online? (MULTI CODE) Base: All adults 16+ that go online (at home or elsewhere) (excluding those who did not give a response at the postal survey) (3577)

Figure 1.3: Average time spent online across computers, tablets and smartphones, per UK adult visitor per day (hours: minutes): September 2021

UK age	15+	15-17	18-24	25-34	35-44	45-54	55+
Average daily time spent online (hours:mins) in September 2021	3:59	5:04	5:06	4:36	4:32	3:51	2:58

UK nation	England	Scotland	Wales	Northern Ireland
Average daily hours online (hours:mins) in September 2021				

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 - 30 September 2021, adults, age 15+, UK. Note: Custom data supplied by Ipsos.

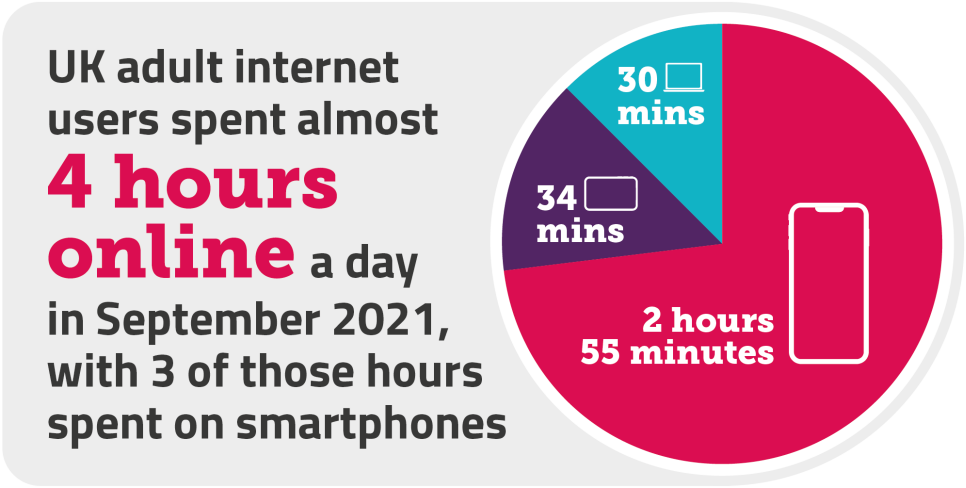
Internet take-up and use

UK adult internet users spent almost four hours online a day in September 2021, with three of those hours spent on smartphones[2]

Data from Ipsos iris shows that 49.9 million UK individuals aged 15+ accessed the internet on smartphones, tablets and computers in September 2021 (our sample month), spending an average of 3 hours 59 minutes a day online. Young adults continue to spend the most time online, with 18-24-year-olds spending a daily average of 5 hours 6 minutes, and the 55+ group spending the least time (2 hours 58 minutes). Women spent more time online (4 hours 11 minutes) than men (3 hours and 46 minutes). Online adults in Scotland spent the most time compared to the other UK nations (4 hours 18 minutes), while those in Northern Ireland spent the least (3 hours 25 minutes) (see figure 1.3 above).[3]

[2] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September– 30 September 2021, adults age: 15+, UK. Note: Custom data supplied by Ipsos.
[3] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September– 30 September 2021, adults age: 15+, UK. Note: Custom data supplied by Ipsos.

Figure 1.4: Average time spent online across computers, tablets and smartphones, per UK online adult per day: September 2021



Source: © Ipsos, Ipsos iris Online Audience Measurement Service 1 September 2021 - 30 September 2021, adults, age 15+, UK. Note: Custom data supplied by Ipsos. Infographic shows use of the following devices: smartphone, tablet and desktop computer.

Ninety-four per cent of adults have access to the internet at home

Six per cent of UK adults do not have access to the internet at home, and this increases with age, with a fifth of those aged 65+ not having home internet access, compared to just one per cent of 18-34s. Those aged 65+ are also the most likely to say that they have access to the internet but do not use it (7%), indicating that they either do not feel the need to use it or lack the necessary skills.[4] People in DE households are the most likely to not to have internet access at home (14%) compared to 2% of people in AB households.[5] The proportion of those with access to the internet at home remains unchanged since early 2021 for UK adults (94%).[6]

Ofcom research in 2021 found that among people who don't use the internet at home, the top reasons given for not going online were a perceived lack of need or interest (47%); that it was "too complicated" (31%) or cost (19%).[7] Ofcom estimates that in October 2021 about 2 million households were experiencing affordability issues with either their fixed broadband and/or smartphone. This suggests that a number of households in the UK do currently have access to the internet, but are at risk of having to modify or even cancel their service, or reduce household spending elsewhere. The latest estimate regarding the number of households which do not have

[4] Ofcom Adults' Media Literacy Tracker 2021: CATI omnibus survey.
[5] 'DE' and 'AB' households refer to socio-economic groups as a measure of occupation and affluence. 'AB' denotes those in the highest socio-economic groups, with more highly-skilled occupations, while 'DE' refers to the lowest socio-economic groups, including lower-skilled workers and the unemployed. Source: UK Geographics, UK Geographics - Social Grade, accessed 29 March 2022.
[6] Ofcom Technology Tracker CATI omnibus survey - 12 February to 5 March 2021, KDR06 - Do you or does anyone in your household have access to the internet at home (via any device, e.g., PC, mobile phone etc)? And do you personally use the internet at home? Base: 3126.
[7] Ofcom Adults' Media Literacy Tracker 2021: CATI omnibus survey. Q5 - Which of these are reasons that you have internet access at home? January 2021. Base: All UK adults (18+) without internet access at home (200).

internet access, at least partially due to cost, stands at 100,000, indicating the role that affordability plays in keeping people offline.[8] Half (49%) of the people who don't go online at home had asked someone to do something for them on the internet in the past year.[9] In December 2021, the most commonly-cited activity that adults without home internet access had asked someone to do for them was online shopping (64%), followed by accessing public services provided by the Government or council (18%), and accessing online health services (16%). The December holiday season and the Government 'Plan B' Covid-19 measures in force at the time may have been significant factors here.[10]

Figure 1.5: Proportion of adults with home internet access, by age, gender and SEG

	18+	18-24	25-34	35-44	45-54	55-64	65+
Do not have internet access at home	6%	1%	<1%	3%	2%	3%	20%
Have access at home and go online	92%	99%	99%	97%	97%	96%	73%
Have access at home but do not use it	2%	<1%	1%	<1%	1%	1%	7%

	AB	C1	C2	DE	England	Scotland	Wales	NI
Do not have internet access at home	2%	3%	5%	14%	6%	7%	9%	1%
Have access at home and go online	97%	96%	91%	82%	92%	91%	90%	95%
Have access at home but do not use it	1%	1%	4%	3%	2%	1%	1%	3%

Source: Ofcom Adults' Media Literacy Tracker 2021: CATI omnibus survey Q1 - Do you or does anyone in your household have access to the internet at home (via any device, e.g. PC, mobile phone etc)? And do you personally use the internet at home? (single coded) Base: All adults aged 18+ - 3143

Device take-up and use

One in five people *only* use a smartphone to go online in 2021, compared to one in ten in 2020

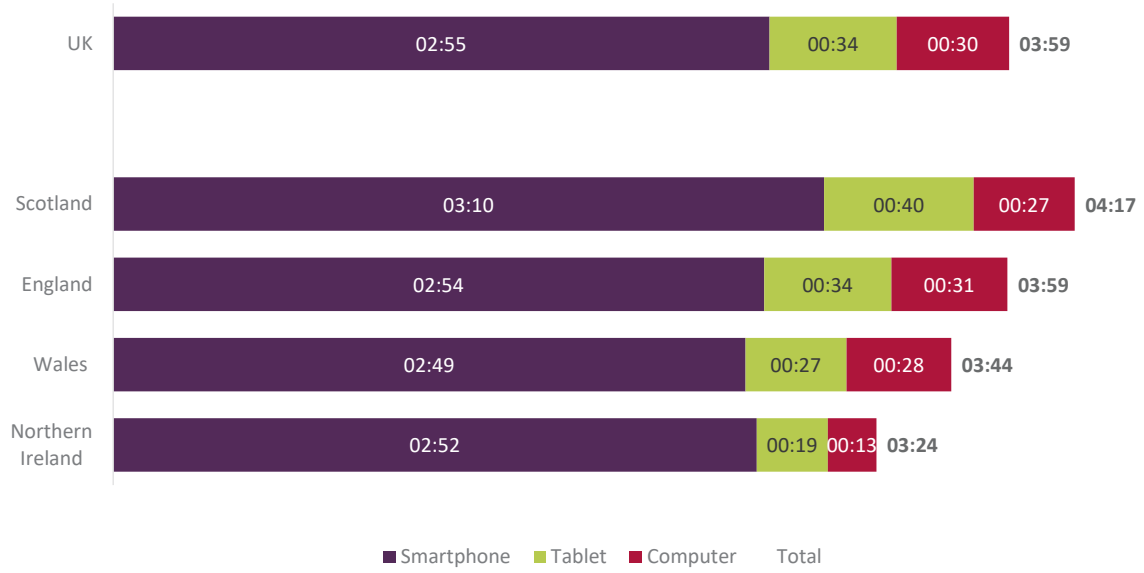
Smartphone adoption is widest among younger UK adults: 90% of 16-24s use a smartphone to go online compared to 68% of those aged 65+. Younger adults are also more likely to *only* use a smartphone to go online, with a third of 25-34s reporting this as the only way they go online,

[8] Ofcom Affordability of Communications Services report, 15 February 2022.
[9] Ofcom Adults' Media Literacy Tracker 2021: CATI omnibus survey. Q3 - In the past year, have you asked someone else to do something for you on the internet? Base: All UK adults (18+) who don't use internet at home or elsewhere (216).
[10] Ofcom Adults' Media Literacy Tracker 2021: CATI omnibus survey.

compared to 9% of the 65+ age group. This is also the group most likely to use tablets (52%), compared to 30% of 16-24s. More people are using only a smartphone to go online. People were more likely in 2021 than in 2020 to *only* use a smartphone to go online (21% vs 11% in 2020).[11] There could be many reasons, but this may be because people were spending more time at home in late 2020 and early 2021 than in late 2021, and therefore used a wider range of devices. It may also reflect the larger screen size and better-optimised app functions of many smartphones, making them easier and potentially more cost-effective to use as a sole device for accessing the internet.

In September 2021 73% of the time spent online by UK online adults per day was on a smartphone. UK online adults are also spending slightly more time using tablets than computers, demonstrating that there is a clear preference for using mobile devices to go online. Those aged 25 to 34 spend the highest proportion (85%) of their online time using a smartphone, followed by 35-44s (80%); 15-24s (78%); 45-54s (74%) and those aged 55+ (55%).[12]

Figure 1.6: Average daily time spent online by adults in September 2021, by device and UK nation (hours:minutes)



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021– 31 September 2021, adults age: 15+, UK. Note: Custom data supplied by Ipsos.

Smartphones and tablets are the devices of choice for children

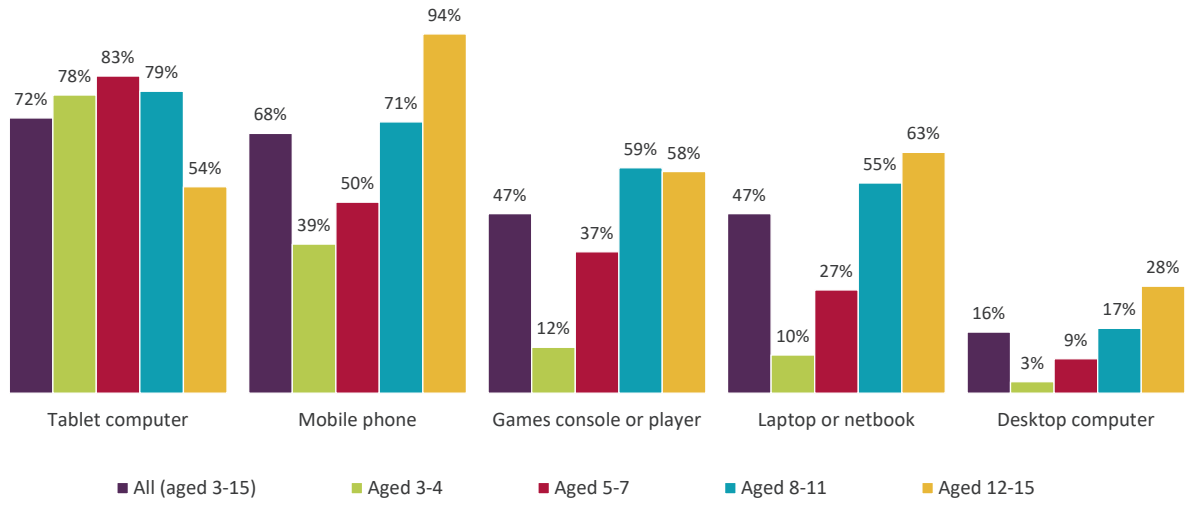
Research from Ofcom's Children's and Parents' Media Literacy Tracker shows that smartphones (68%) and tablets (72%) are the main ways for children aged 3-15 to go online, and this varies significantly by age. Children are increasingly likely to use a smartphone to access the internet as

[11] Ofcom Adults' Media Literacy Tracker 2021: Core survey IN1. Which of these devices do you use to go online? (single coded) Base: All adults aged 16+ who go online at home or elsewhere (excluding those who did not give a response at the postal survey) – 3,577.
[12] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September– 30 September 2021, adults age: 15+, UK. Note: Custom data supplied by Ipsos.

they get older; from 39% of 3-4-year-olds to 71% of 8-11-year-olds and 94% of 12-15s.[13] Our research shows that by the age of ten, the majority of children (61%) own their own smartphone. Use of tablets to go online tells the opposite story, with 83% of 5-7s using them to go online, compared to 54% of 12-15s. Tablets are likely to be the device that children use the first time they access the internet; the large screen adds to their appeal for children and parents, and there are many tablet devices designed specifically for young children.

Older children (aged 12-15) are the most likely to use either a laptop, netbook or desktop computer (77%), as they will be using these devices to complete schoolwork; 63% of these groups use a laptop or netbook and 28% a desktop computer. Access to a computer and to home internet is important for schoolchildren and has become more so during the pandemic, as remote learning continues to be used when for any reason the child cannot attend school. In 2021 11% of parents with primary-school-age children and 3% with secondary-school-age children at home said that the children in their household 'rarely' or 'never' had adequate access to an appropriate device for their schooling needs.[14] This is in line with figures that show that older children are more likely to have their own device suitable for use for schoolwork, such as a laptop or desktop computer.[15]

Figure 1.7: Devices used by children to go online, by age group



Source: Ofcom Children's and Parents' Media Literacy 2021: Parents Only survey. QP1. Please think about any reason your child may have for going online – maybe to look at a website or use an app, watch a TV programme, or videoclips on sites or apps like YouTube, to play games online, for social media, or to do school or homework. Does your child use any of these to go online at home or somewhere else? (MULTI CODE) goes online using any type of device. Base: All parents of children aged 3-15 (2,006)

[13] Ofcom Children's and Parents' Media Literacy 2021: Parents Only survey.
[14] Ofcom Media Literacy CATI omnibus survey. Q9/Q10 - To what extent do the children in your household at primary/secondary school have access to appropriate devices at home, which connect to the internet, for their schooling needs - such as home online learning and/ or online homework? Base 412.
[15] Ofcom Children's and Parents' Media Literacy 2021: Parents Only survey QP1).

Use of internet services

Leading online companies

Alphabet- and Meta-owned sites and apps are the most visited in the UK, used by almost all online adults

Alphabet, which owns Google and YouTube, is the organisation whose sites and apps are most visited[16] by UK adults, followed by Meta (the owner of Facebook, WhatsApp and Instagram) and Amazon. The Alphabet- and Meta-owned sites and apps have near-universal use among UK online adults, and the Amazon-owned website and apps are visited by at least 90% of online adults in all four UK nations. Taking all their subsidiary services together, the BBC and Reach PLC are the joint-highest-ranking UK-based organisations by reach (both 77%). In Scotland and Wales, the newspaper group Reach PLC – publisher of the Mirror, Daily Express and Daily Star, as well as local titles – is the UK-based organisation with the highest reach, whereas in Northern Ireland websites run by the UK Government have the highest reach. Online adults in Wales and Northern Ireland are more likely than those in Scotland or England to visit UK Government sites and apps (77% vs 66% and 71%). The high UK adult reach of Government sites may be partly due to the pandemic, with people accessing information about Covid-19 restrictions, financial support or travel requirements. Twitter appears in the top ten most-visited organisations for Scotland (65%) and Northern Ireland (59%) but not for England (62%) or Wales (58%). Two-thirds of people in Scotland visited Wikipedia in September 2021; this is the only nation in which Wikipedia's parent company appears in the top ten.[17]

NHS Sites appears in ninth position, reaching 67% of UK online adults in September 2021, and reach to NHS sites and apps increased to 80% of UK online adults in December 2021. The increase was likely due to the roll-out of the vaccine booster programme in response to the Omicron variant. Reach then dropped again to 67% by February 2022.[18]

[16] 'Organisations' are the parent companies of the groups of websites and apps; for instance, Alphabet organisations include Google Search, Gmail and YouTube; Meta includes Facebook and Messenger, Instagram and WhatsApp.

[17] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September – 30 September 2021, adults age: 15+, UK.

[18] © Ipsos, Ipsos iris Online Audience Measurement Service, NHS Sites (ORG), Monthly: 1 September 2021 – 28 February 2022, adults age: 15+, UK.

Figure 1.8: Top ten organisations visited by UK online adults on mobile/desktop devices, by nation

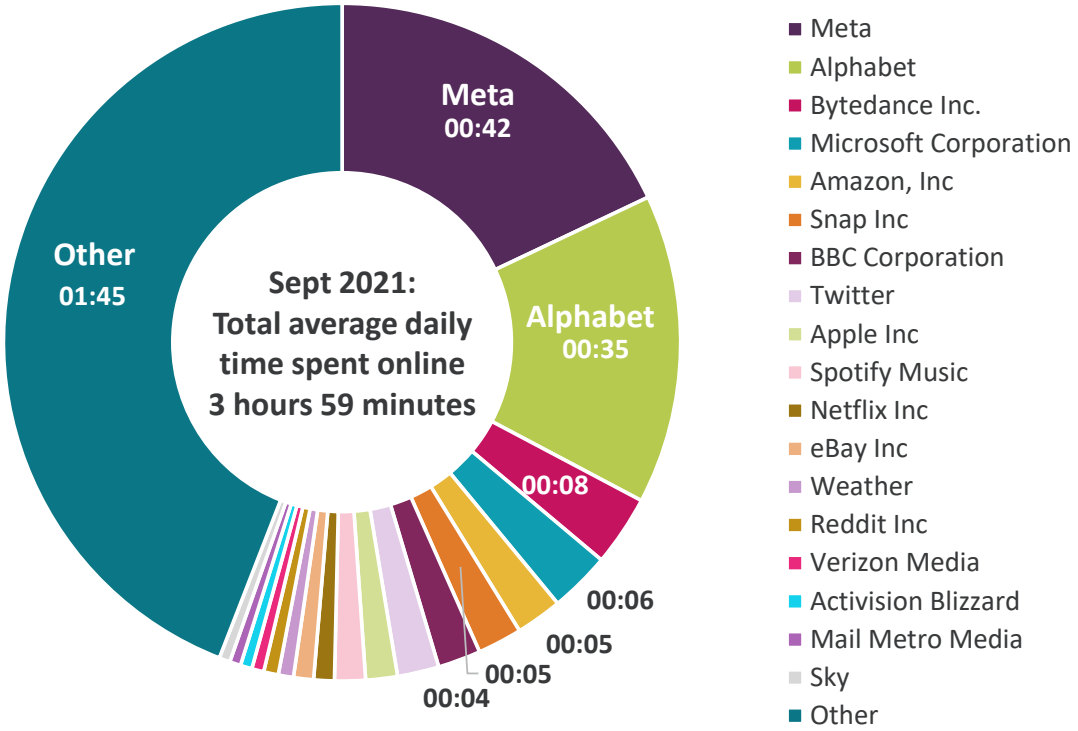
	UK		England		Scotland		Wales		NI	
Rank	Organisation	Reach	Organisation	Reach	Organisation	Reach	Organisation	Reach	Organisation	Reach
1	Alphabet	100%	Alphabet	100%	Alphabet	99%	Alphabet	100%	Alphabet	100%
2	Meta	98%	Meta	97%	Meta	98%	Meta	99%	Meta	96%
3	Amazon, Inc	91%	Amazon, Inc	91%	Amazon, Inc	92%	Amazon, Inc	96%	Amazon, Inc	92%
4	Microsoft Corporation	82%	Microsoft Corporation	82%	Microsoft Corporation	82%	Microsoft Corporation	80%	Microsoft Corporation	86%
5	BBC	77%	BBC	78%	Reach Plc	77%	Reach Plc	79%	UK Government	77%
6	Reach Plc	77%	Reach Plc	77%	BBC	75%	UK Government	77%	BBC	77%
7	UK Government	71%	UK Government	71%	Wikimedia Foundation Inc	66%	BBC	77%	Reach Plc	74%
8	eBay Inc	69%	NHS Sites	70%	eBay Inc	66%	eBay Inc	69%	eBay Inc	64%
9	NHS Sites	67%	eBay Inc	69%	UK Government	65%	Mail Metro Media	63%	PayPal Inc	59%
10	PayPal Inc	64%	PayPal Inc	65%	Twitter	65%	NHS Sites	62%	Twitter	59%

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 15+, UK.

UK adult internet users spent an average of 42 minutes a day on Meta-owned sites and apps and 35 minutes on Alphabet-owned sites and apps

By time spent, Alphabet and Meta remain the top two leading organisations accessed on smartphones, tablets and computers. Eighteen per cent of measured time spent online by UK adults in September 2021 was on Meta-owned apps and sites, and 14% was on Alphabet-owned apps and sites. Of the 42 minutes spent on Meta services, 28 minutes were spent on Facebook and Messenger, 7 minutes on WhatsApp and just under 7 minutes on Instagram. Time spent on Netflix is significantly understated, as the data only captures time spent on computers and mobile devices and excludes time spent watching Netflix on connected TV sets or smart displays. The same applies to YouTube, which will be captured under Alphabet's time. The figure for time spent on Spotify does not include time spent listening on smart devices or while the app is not active but audio is playing.[19]

Figure 1.9: Share of average time spent online per day by UK adult digital population, split by organisation (hours:minutes)



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Organisations, 1 September 2021 – 30 September 2021, adults age 15+, UK.

[19] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021– 30 September 2021, adults age: 15+, UK.

Applications

Smartphone app use

WhatsApp, Facebook and Google Maps were the top three smartphone apps by UK online adult reach in September 2021[20]

Eighty-eight per cent of UK online adults visited the WhatsApp app in September 2021; the high reach of WhatsApp across UK online adult age groups suggests that it has reached a level of saturation in the market and is now the 'go-to' communication app. Similarly, the Facebook app reached 87% of UK online adults while the Google Maps app reached 70%. Amazon is the most popular online shopping app for all three adult age ranges (Figure 1.10) and was most popular with 35-54s (69%). TikTok's audience is heavily concentrated among younger adults and was ranked in eighth place among 15-24-year-olds, compared to 33rd for 35-44-year-olds and 79th for those aged 65+. Instagram is also much more popular with younger users, used by 81% of 15-34s compared to only 44% of the 55+ group.[21]

Figure 1.10: Top ten smartphone apps by UK adult reach, by age: September 2021

Age	15-34		35-54		55+	
	App	Online reach	App	Online reach	App	Online reach
1	**WhatsApp**	90%	**WhatsApp**	90%	**WhatsApp**	86%
2	**Facebook**	88%	**Facebook**	89%	**Facebook**	83%
3	**YouTube**	82%	**Google Maps**	73%	**Google Maps**	62%
4	**Google Maps**	72%	**Facebook Messenger**	73%	**Facebook Messenger**	59%
5	**Instagram**	81%	**YouTube**	70%	**YouTube**	49%
6	**Facebook Messenger**	68%	**Amazon**	69%	**Gmail**	45%
7	**Amazon**	62%	**Instagram**	68%	**Amazon**	45%
8	**Gmail**	53%	**eBay**	56%	**Instagram**	44%
9	**eBay**	42%	**Gmail**	47%	**Google Play Store**	41%

[20] © Ipsos, Ipsos iris Online Audience Measurement Service, top smartphone apps by reach, 1 September 2021–30 September 2021, adults age: 15+, UK.
[21] © Ipsos, Ipsos iris Online Audience Measurement Service, smartphone apps only, 1 September 2021–30 September 2021, adults age: 15+, UK. See interactive report for top smartphones apps for adults age 15+.

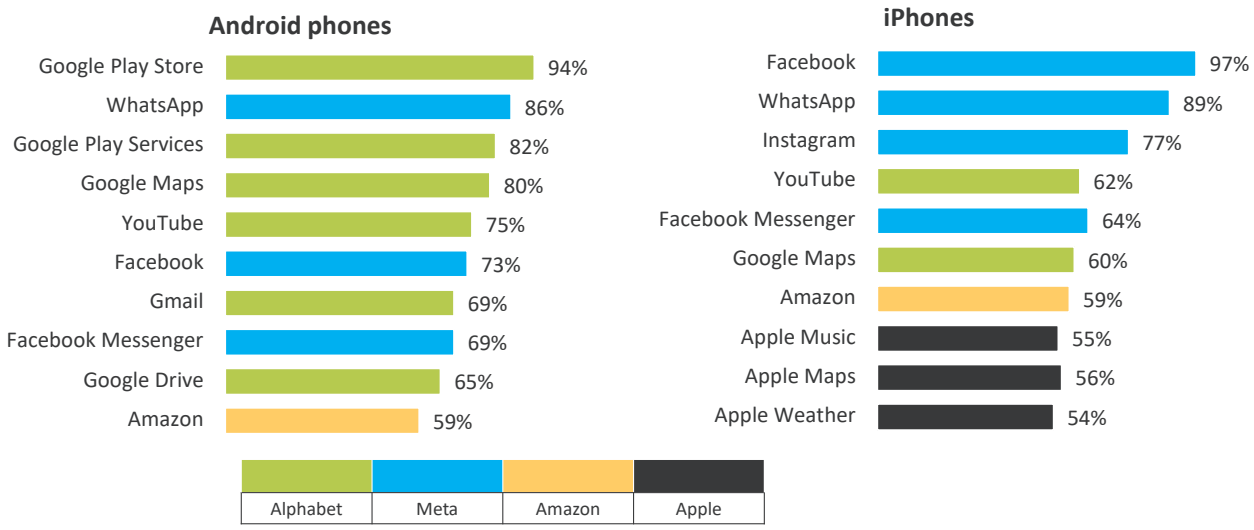
Age	15-34		35-54		55+	
10	**Google Play Store**	41%	**Google Play Store**	46%	**eBay**	34%

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, smartphone app, 1 September 2021– 30 September 2021, all adults age 15+, UK.

Alphabet-owned apps are the most-visited apps by UK adults on Android smartphones while Meta-owned apps are the most-visited apps on iPhones

Six of the ten most-visited apps on Android phones are owned by Alphabet, compared to three in ten Apple-owned apps on iPhones. [22] Many of these apps come pre-installed on devices, such as Google Play, Google Maps and Gmail for Android, and Apple Music and Apple Maps on iPhones. But Google Maps has higher reach than Apple Maps on iPhones, despite the fact that it is not preinstalled on iPhones, which suggests the ubiquity of Google Maps, and that users like its added functionality, such as being able to download maps for offline use.

Figure 1.11: Top ten smartphone apps, Android phones vs iPhones, based on reach as a % of the total smartphone app universe



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, app only Android vs iOS, smartphone only, 1 September 2021– 30 September 2021, adults age: 15+, UK. Note: Apple App Store is not measured by Ipsos iris.

Meta-owned Facebook, WhatsApp, Instagram and Facebook Messenger are the top four most-visited smartphone apps daily

Meta's apps also have a large daily reach: as the table below shows, four of the five apps with the highest daily reach on smartphones are owned by Meta. The top apps (by average daily visitors) can all be used for messaging or calls. Instagram is the smartphone app with the highest daily reach among 15-24s, visited by 60% on a daily basis in September 2021. The Facebook app has the next

[22] © Ipsos, Ipsos iris Online Audience Measurement Service, app only Android vs iOS, smartphone only, 1 September 2021–30 September 2021, adults age: 15+, UK.

highest reach in the 15-24 age group, at 60%, and Snapchat is third at 56%.[23] Seven in ten UK online adults aged 25-34 visited the Facebook app on a daily basis in September 2021, and this age group has the highest daily reach for Facebook.[24]

See the Communications Services chapter for more detail on these services.

Figure 1.12: Top five daily smartphone apps reached by UK online adults in September 2021

Rank	App	Parent company	Average daily UK online adult reach in September	Daily UK online adult reach in September
1	**Facebook**	Meta	61%	28.3m
2	**WhatsApp**	Meta	50%	23.0m
3	**Instagram**	Meta	35%	16.1m
4	**Facebook Messenger**	Meta	32%	14.8m
5	**Gmail**	Alphabet	27%	12.4m

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, top smartphone apps by daily reach, 1 September 2021 – 30 September 2021, adults age: 15+, UK.

App revenues

After an increase between 2019 and 2020, spending in app stores fell in 2021

App revenue data includes all purchases in app stores, including one-off purchases, in-app spend and recurring subscription payments. The data is built from credit and debit card transactions, so each account can include purchases by other people such as children or partners. UK iOS and Android App Store revenues increased significantly in 2020, helped by an increase in the number of active users:[25] from 47% in 2019 to 58% in 2020. In 2021, the overall user base increased by only one percentage point, to 59%. The average number of paid-for apps bought by people active in app purchasing went down from 2.9 to 2.6 per month, resulting in a 2% decline in total UK revenues.

Figure 1.13: Combined Apple and Google app store purchases per bill payer, by year

Year	Bill payer adoption	Monthly average spend	Average number of transactions per month	Spend per transaction
2019	47%	£26.36	2.9	£9.25

[23] © Ipsos, Ipsos iris Online Audience Measurement Service, top smartphone apps by daily reach, 1 September 2021–30 September 2021, age 15-24, UK.
[24] © Ipsos, Ipsos iris Online Audience Measurement Service, top smartphone apps by daily reach, 1 September 2021–30 September 2021, age 25-34, UK.
[25] Active users from Money Dashboard panel of 33k users aged 15+. Calculated as % of people in panel using the service divided by total panel.

Year	Bill payer adoption	Monthly average spend	Average number of transactions per month	Spend per transaction
2020	58%	£26.61	2.9	£9.02
2021	59%	£23.82	2.6	£9.24

Source: Ofcom analysis of cohort of 33k UK users aged 15+ from Money Dashboard.

Online sector revenue streams

Advertising comprises 68% of estimated total UK online revenues in 2021

UK online sector revenues grew in 2021, following record growth in 2020. The growth of sectoral revenues in 2021 was helped by increased consumer adoption and use during lockdown. Advertising, subscriptions and transactions are the main online revenue streams, and each grew in 2021.

Figure 1.14: Estimated UK online revenues[26] by revenue stream: 2017-2021

UK	2016	2017	2018	2019	2020	2021	5-year CAGR
Total revenue	£14.6bn	£17.1bn	£20.0bn	£23.2bn	£25.6bn	£33.5bn	18%
Annual growth %	21%	17%	17%	16%	10%	31%	
of which ...							
Advertising %	64%	65%	65%	65%	63%	68%	20%
Subscription %	14%	14%	15%	16%	17%	15%	21%
Transactional %	22%	20%	20%	19%	20%	16%	11%

Source: Ofcom estimates based on data from IAB UK/PwC Digital Adspend Study, PwC Global Entertainment and Media Outlook: 2020-2024 and 2021-2025, http://www.pwc.com./outlook, Ampere Analysis, Enders Analysis, AA/WARC Expenditure Report, and company reports and public filings. Both subscription and transactional revenues refer to revenues derived from sales of the relevant product or service, either on a repeating basis or through one-off sales, respectively. In the case of online news and consumer magazines, all such revenues are included under 'subscriptions'. In the case of online games, all revenues are included under 'transactional'. Figures are indicative only, with overlapping categories – and as such, data presented may differ from other industry sources due to differences in sectoral definition or other methodological differences. CAGR is compound annual growth rate over the five years.

Advertising revenue plays an important role in each of the sectors we cover; search, classified, social media, messaging and entertainment (which covers audio and visual, gaming, news and classified).

[26] The sectors combined are search, classified, social media and messaging, Entertainment – audio ad visual, gaming, news and classified. It excludes e-commerce.

Advertising comprises 68% of the total revenues for these combined sectors and is explored in more detail later in the chapter.

Subscription revenues grew by 19% in 2021, primarily due to two trends. Companies continued to develop products and promote subscription services as a premium alternative to advertising-funded services, such as online newspapers putting much of their content behind paywalls and video-on-demand services offering advertising-free options for a monthly subscription. The second driver was moving users from transaction-funded models to subscription models. Here, the primary example is gaming, where most of the major platforms and incumbents are looking to launch and develop existing games. Apple Arcade, Google Stadia, Microsoft and Sony are doing this; they are further developing their consumer 'all-you-can-eat' monthly subscription offer. Having a sufficiently large catalogue to choose from, ideally including exclusive content, is a key competitive factor and a driver of consolidation in the gaming industry: Microsoft and Sony have made major acquisitions, and many smaller independent games studios have been purchased in the last two years. See the Gaming chapter for more information on subscription services.

Transaction revenues primarily comprise one-off purchases of apps and digital downloads. Overall, transaction revenues grew by 6% in 2021 compared to 2020. This growth rate was slower than in previous years due to the tough comparison with 2020's record growth, and to a lesser extent because platforms were promoting subscription alternatives.

Advertising

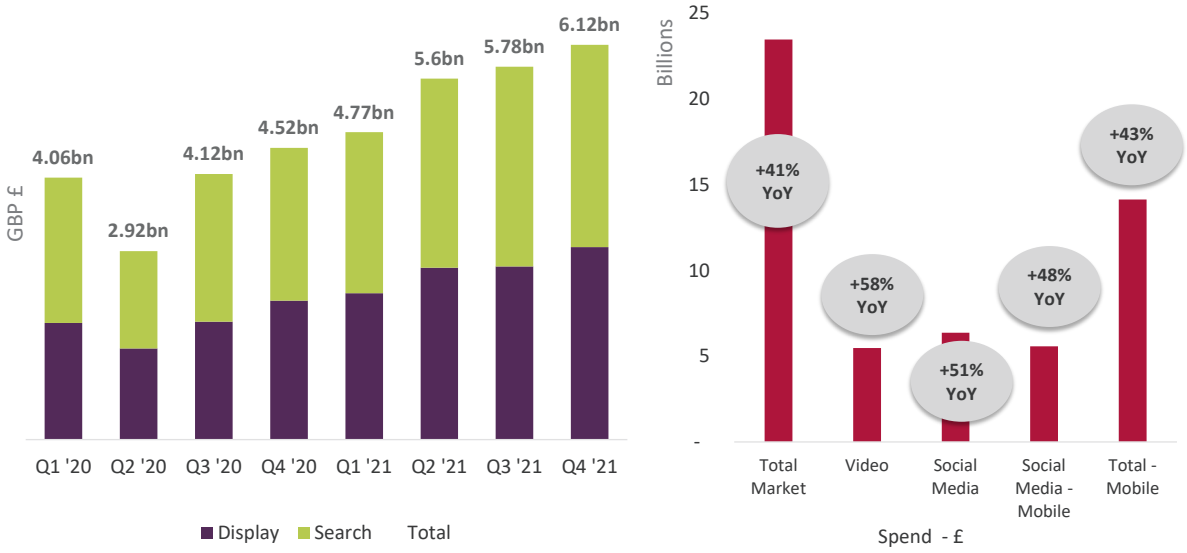
Due to the pandemic, UK online advertising revenue growth in 2020 was the lowest in over a decade at 7%. In 2021, UK online advertising revenue growth was the highest in over a decade at 41%, reaching £23.5bn in 2021 and up by £6.8bn since 2020

Advertising remains the most important revenue stream for many online businesses, and for many smaller publishers the only one. In the UK, all types of online advertising spend increased in 2021, with each segment growing broadly in line with overall online advertising growth (41%).[27] Some of the smaller segments, hit hardest during lockdown, have made a strong recovery. Classifieds, which were down 30% in 2020, were up 8% in 2021, with a strong recruitment market contributing to this growth. Online advertising grew year on year in each quarter in 2021, including a bounce-back of 90% in quarter 2, reflecting the significant impact of Covid on results in quarter 2 2020.

> *"The UK has held its position in 2021 as the largest advertising market in Europe through the pandemic and is now the third largest in the world, behind the USA and China."*
>
> - Stephen Woodford, Chief Executive of Advertising Association, 28 April 2022.

[27] AA/WARC Expenditure Report, 28 April 2022.

Figure 1.15: UK online market returns to strong steady growth, with mobile social media growing fastest



Source: AA/WARC Expenditure Report actuals and forecast for UK. Display excludes audio and Search excludes classifieds.

Both display and search advertising grew strongly in 2021, at 53% and 39% respectively.[28] The growth of online shopping during the Covid-19 lockdowns helped shopping search reach 30% of total search spend in 2021.[29]

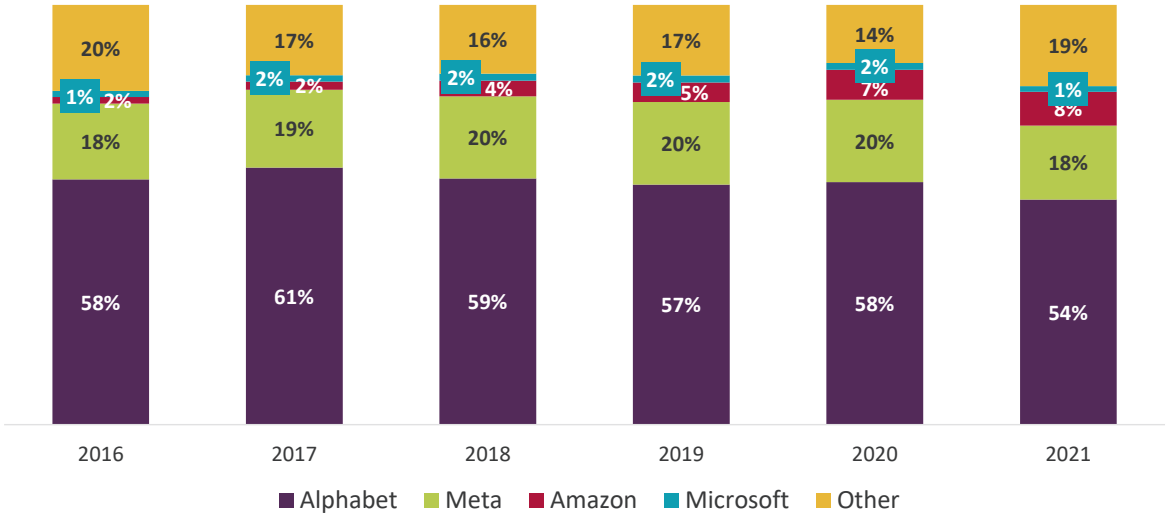
Audio and recruitment classified advertising are showing strong growth

Advertising revenues have also grown strongly beyond traditional search and display segments. The audio and podcast segment increased 51% to reach £157m. [30] Classified and directory services had their first year of growth in 5 years increasing revenues by 8% when compared to 2020. Recruitment classified recovered very strongly, growing 37% in 2021 compared to a 32% decline in 2020. BVoD (broadcast video on demand) increased by 40% in 2021 compared to the previous year and generated revenues of £733m.[31]

Alphabet maintains the largest share of UK online advertising revenues, followed by Meta. Amazon's share is growing, likely due to the increase in shopping search advertising.

[28] AA/WARC Expenditure Report, 28 April 2022.
[29] IAB UK / PwC Digital Adspend Study 2022.
[30] AA/WARC Expenditure Report, 28 April 2022.
[31] AA/WARC Expenditure Report, 28 April 2022.

Figure 1.16: Estimated UK online advertising revenue share, by year



Source: Ofcom estimates based on data from IAB UK/PwC Digital Adspend Study, company financials and Ofcom modelling. Excludes BVoD (broadcast video on demand). Estimates may vary from other sources due to company revenue definitions and Ofcom assumptions.

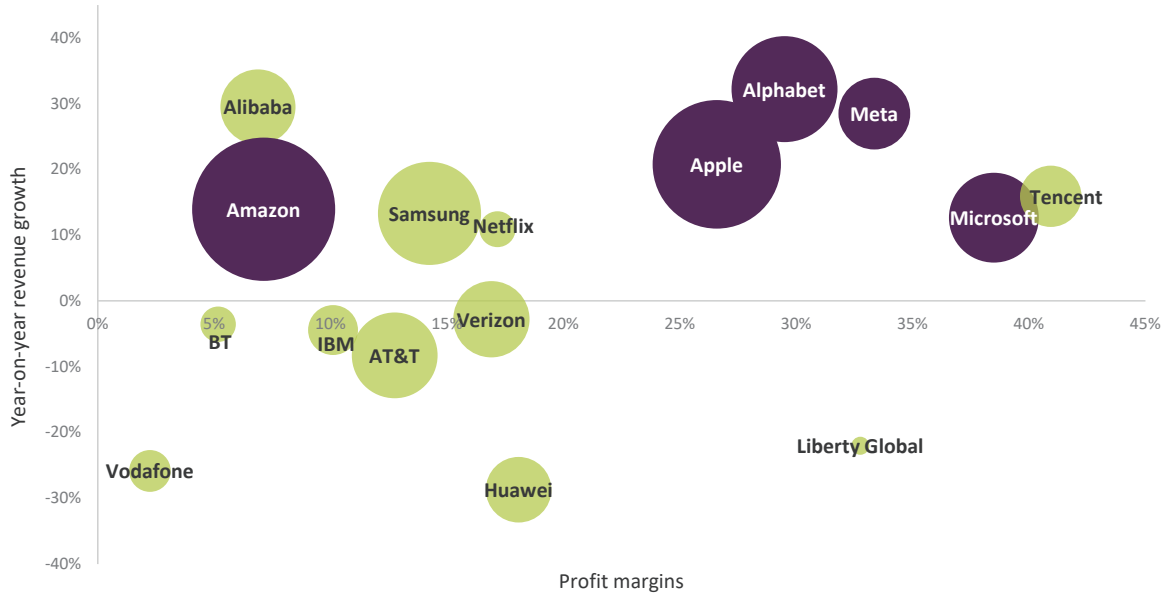
Areas of focus of the five largest online companies

The largest online companies by revenue in the UK are Meta, Apple, Microsoft, Amazon, and Alphabet ('MAMAA companies'[32]). In 2021 they continued to expand the revenue streams and functionality of their core products, as well as expanding into new areas, with record investment in research and development and another year of significant merger and acquisition activity. In 2021, MAMAA companies collectively accounted for about three-quarters of the top 40 online revenue-generating companies' UK online revenues (as in 2020). MAMAA companies spent over £100bn globally in research and development (similar to 2020) and globally acquired 40 companies (compared to 44 in 2020). Each company has a leading position in at least one online sector and most have multiple leading positions in either a particular sector or the supporting ecosystem.

Having a significant leadership position and / or multiple strong positions in various parts of the ecosystem can aid companies in defensive moves against challengers and support expansion activities into new ones.

[32] Meta, Apple, Microsoft, Amazon, and Google's parent company Alphabet, Fortune, Facebook's faceplant on Wall Street could be just the beginning for some tech stocks, 29 October 2021.

Figure 1.17: MAMAA global revenues, growth rates and profitability, vs others



Source: Company financials and stock market data from S&P Market Intelligence platform. Ofcom analysis and conversion to GBP. Relative size of circles represents size of 2021 revenue in GBP, YoY growth rate calculated in GBP.

Online platforms originating in the US and China are the high margin and growth companies of 2021

MAMAA companies are the biggest, fastest-growing and most profitable companies. Chinese companies are the closest challengers, with Tencent's high margins and AliBaba's high growth rates. ByteDance, TikTok's owner, is not shown on the graph above as it is a private company with limited public financial reporting. Reuters reported that in 2021 Bytedance increased its revenues by 70% to reach £42.5bn, following a reported 100% revenue increase in 2020.[33] TikTok is popular in both China and Western markets and is an exception to the general trend of major US and Chinese platforms, operating in different geographic markets and not competing head-to-head.

Following a major rise in market value of each of the MAMAA companies during the Covid-19 pandemic, in the early months of 2022 investor confidence waned. This was most evident for Meta, which had a fall in market capitalisation of 40% in Q1 2022, reflecting concerns about potential stagnation in total global user growth. However, YouTube and TikTok both grew faster in revenue terms, so competition may also be a factor.

Apart from advertising, an area for investor concern about future growth is the streaming video-on-demand services. By April 2022, Netflix's share price was down 62% since the beginning of 2022. Saturation of consumer demand and increasing competition have been identified as the main reasons for this.[34]

[33] Reuters, TikTok owner ByteDance's 2021 sales growth 70%, slows yr/yr -sources, 20 January 2022.
[34] Bloomberg, Netflix shares plunge 30% after massive subscriber loss, 21 April 2022.

Platform expansion continues, with 40 merger and acquisition deals in 2021 (vs 44 in 2020)

There were 40 merger and acquisition (M&A) deals by MAMAA companies in 2021; four less than in 2020. Microsoft had the most activity in this area, with 16 announcements in 2021 compared to 11 deals in 2020. The Activision announcement is excluded, as it happened in January 2022. The purchase of Nuance Communications[35] includes products like Dragon Medical One, a cloud-based speech recognition technology, and importantly, gives Microsoft access to the existing customer base of 10,000 healthcare customers and further strengthens Microsoft's 'cloud for healthcare' platform. It builds on the many new strategic partnerships with health-care players, most recently CVS healthcare in December 2021, with Forbes describing Microsoft as "one of the most powerful forces in health care".[36]

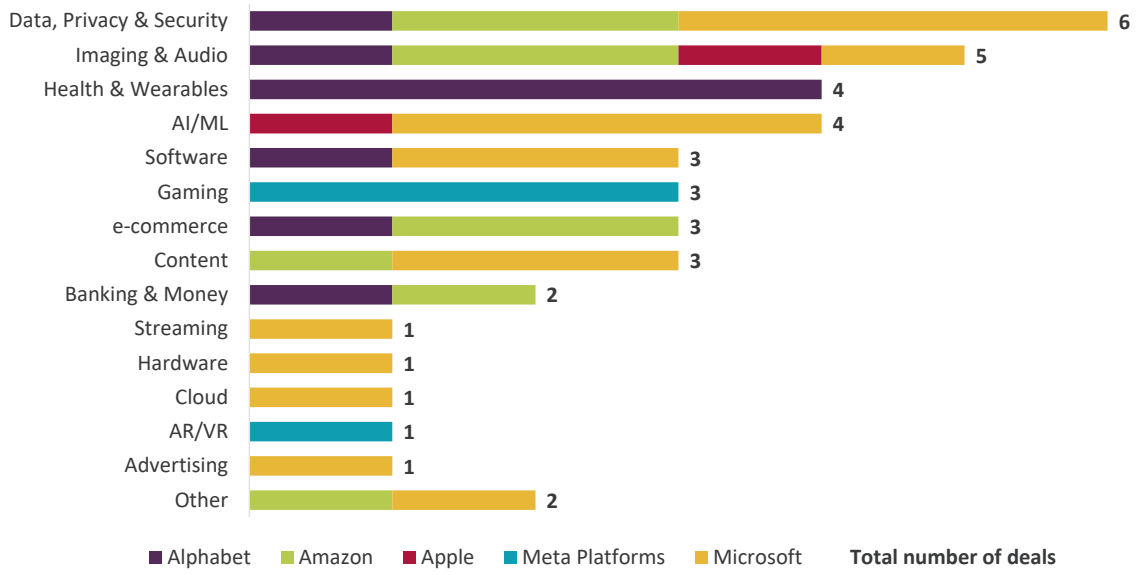
Alphabet expanded in the health and wearables sector in 2021 with the purchase of Signal Path, a clinical management system.[37] Three other purchases – of Dysonics, Pring and CompilerWorks – covered 3D audio, a money transfer app and data management respectively.

Meta's M&A transactions in 2021 were focused on VR gaming, with the purchase of Downpour Interactive,[38] Unit 2 Games[39] and BigBox VR.[40] Meta also purchased the virtual reality fitness app company Within Unlimited.

Amazon completed its second-ever largest deal with the purchase of MGM Studios for more than £6bn in 2021. It said that it hoped to leverage MGM's storied filmmaking history and wide-ranging catalogue of 4,000 films and 17,000 TV shows to help bolster Amazon Studios, its film and TV division.[41]

[35] TechCrunch, Microsoft is acquiring Nuance Commmunications for $19.7B, 12 April 2021.
[36] Forbes, Microsoft has become one of the most powerful forces in healthcare, with no signs of slowing down, 30 December 2021.
[37] Verily, Verily completes acquisition of SignalPath, expanding company's clinical research capabilities and marking company's first major acquisition, 31 August 2021.
[38] Meta Quest, Welcoming downpour interactive to Facebook, 30 April 2021.
[39] Facebook gaming blog, Welcome Unit 2 Games to Facebook Gaming, 4 June 2021.
[40] Meta Quest, Welcoming Bigbox VR to Facebook, 11 June 2021.
[41] About Amazon, MGM joins Prime Video and Amazon Studios, 17 March 2022.

Figure 1.18: Sector grouping of MAMAA M&A deals in 2021

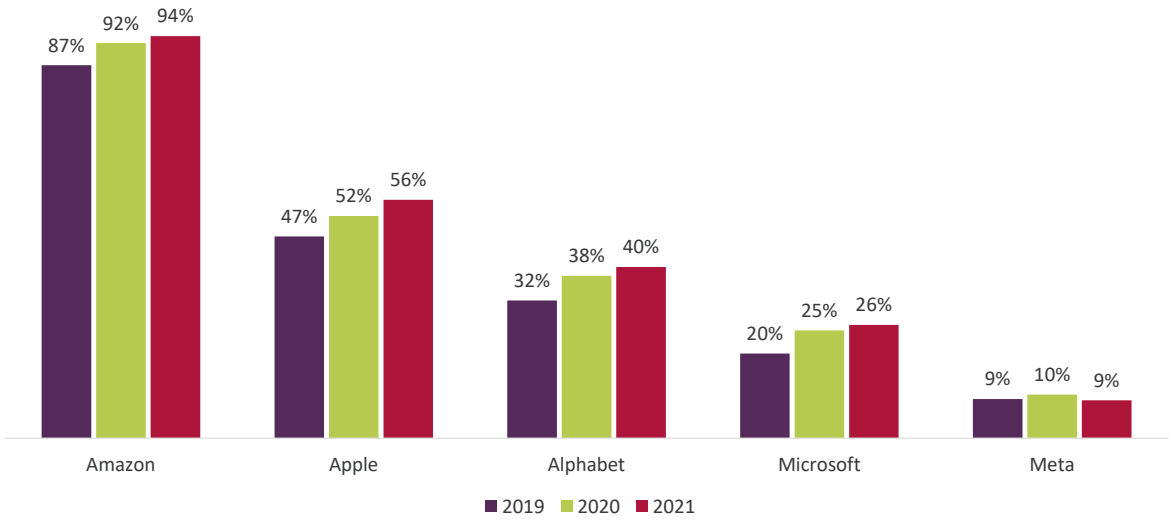


Source: S&P Capital IQ Merger and acquisitions by MAMAA companies in 2021.

The major platforms are steadily expanding their direct billing relationship with online adults

Unsurprisingly, Amazon leads the way in its direct billing relationships with online adults: its e-commerce and paid entertainment services are used by 94% of UK online adults.

Figure 1.19: Proportion of people buying products or services directly from the platform, by year



Source: Ofcom analysis of online adults via Money Dashboard app data of 30k+ people aged 15+.

MAMAA energy consumption

MAMAA companies consume huge amounts of electricity through their data centres. The combined power use by Amazon, Google, Microsoft, Facebook and Apple is more than 45 terawatt-hours a year, comparable to the total usage of New Zealand.[42]

The MAMAA companies have all pledged to meet a corporate net-zero greenhouse gas emissions target by a specific date: Meta, Microsoft, Apple and Alphabet by 2030, and Amazon by 2040.[43] A significant part of the strategy to achieve net-zero emissions is in renewable energy, which MAMAA companies have been investing in over the past ten years.[44] In 2019 Facebook announced its first direct investment, in a 300 MW solar panel plant in Andrews County, Texas.[45]

MAMAA companies' energy costs are very high and therefore there is a business need to become more energy efficient, as well as the environmental consideration. The investments that MAMAA companies have put into the green energy sector could help stimulate the sector.

Amazon has a larger energy consumption than other MAMAA companies, as alongside the energy required to power its data centres, it has to fuel its delivery network. This may be one reason why its target for net zero is ten years later than other tech companies. Amazon Web Services (AWS) provides cloud computing services to many of the larger technology companies. Use of cloud services can be a more efficient use of energy, although the benefits of this may not be long-lasting as cloud services become cheaper and therefore more heavily used.

Search

Google Search had a daily UK online adult reach of 78% in September 2021[46]

Google remains the highest-reaching search engine, reaching nearly all UK online adults in September 2021. However, six other search engines each have more than a million UK adult users.[47] Some of these, such as DuckDuckGo, differentiate themselves from Google Search by having a strong privacy focus. More detail on these privacy-focused search engines can be found in the case studies below.

[42] FT, How tech went big on green energy, 10 February 2021.
[43] Company press releases.
[44] FT, How tech went big on green energy, 10 February 2021.
[45] Facebook, 2020 Sustainability Report, p18.
[46] © Ipsos, Ipsos iris Online Audience Measurement Service, Search engine: Google, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[47] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: search engines, 1 September 2021 – 30 September 2021, adults age: 15+, UK.

Figure 1.20: UK online adult reach of top seven search engines: September 2021

Rank	Parent company	Media	Headquarters	Total adult reach in September	Online adult reach in September	Time spent in September per visitor (hrs:mins)
1	Alphabet	Google	US	49.5m	99%	7:03
2	Microsoft	Bing	US	16.2m	33%	0:21
3	DuckDuckGo	DuckDuckGo	US	5.7m	11%	0:11
4	Yandex LLC	Yandex	Russia	4.7m	10%	0:03
5	Apollo Global Management	Yahoo!	US	2.7m	5%	0:06
6	System1	Info.co.uk	UK	1.8m	4%	0:01
7	Apollo Global Management	AOL	US	1.5m	3%	0:30

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, Category: search engines, 1 September 2021 – 30 September 2021, adults age: 15+, UK. Note: Custom defined list by Ofcom.

Privacy-focused search engines

Mojeek[48]

A UK-based private search engine launched in 2004, Mojeek has a no-tracking privacy policy. It provides users with search results based on keywords typed into its search engine. The results are ranked according to what its algorithm considers the highest quality and most relevant'.[49] Mojeek is funded by individual capital investment and advertising based on search queries and location.[50]

DuckDuckGo

Launched in the UK in 2018, DuckDuckGo generates revenue from display advertising based on search terms and keywords. Three billion searches a month are undertaken on the platform, which has 166 employees.[51] In comparison, Google's parent company, Alphabet, had 156,000 employees as of December 2021, and Google has over 200 billion searches a day.[52] [53] DuckDuckGo, the third most-visited search engine by UK adults,[54] generated over £73.3m in global revenues in 2020 (latest figures available) compared to Google's search revenue of £109bn in the same year.[55]

UK search revenue grew 38% in 2021, with shopping-related advertising accounting for almost a third of the total

UK search market revenues increased by £3.2bn (38%) in 2021. Revenues have been augmented by the continued emergence of search shopping adverts, which accounted for 30% of search in 2021. These adverts appear in both traditional search engines and as sponsored listings on online marketplaces.[56] AA/WARC describes this trend as "the hallmark of a new era in advertising".

Search shopping is especially important in the UK. With an online retail spend of £1,940 per head, the UK has the world's highest spend per shopper.[57] Alphabet, the largest company in this segment, reported its global search revenue growth was 43% in 2021. The UK is a more mature online market than many other global markets, contributing to slower growth.

[48] Ipsos iris data for Mojeek unavailable due to not meeting reporting threshold.
[49] Mojeek official blog, Search that doesn't follow you around, 8 October 2018.
[50] Mojeek official blog, About Mojeek; Business model, surveillance, and privacy, 8 December 2020.
[51] DuckDuckGo, About DuckDuck Go, accessed 24 March 2021.
[52] Alphabet Alphabet announces fourth quarter and fiscal year 2021 results, accessed 5 May 2022.
[53] Oberlo, 10 Google Search Statistics, 2 January 2022.
[54] © Ipsos, Ipsos iris Online Audience Measurement Service, DuckDuckGo, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[55] TechRepublic How DuckDuckGo makes money selling search, not privacy, Google source: Ofcom modelling.
[56] IAB UK/PwC Digital Adspend Study 2021, April 2022.
[57] AA/WARC Expenditure Report, 28 April 2022. Ofcom conversion of USD to GBP.

Figure 1.21: Total annual UK search revenues

UK	2016	2017	2018	2019	2020	2021
Annual revenue	£5.1bn	£5.9bn	£6.8bn	£7.8bn	£8.4bn	£11.7bn
Annual growth	23%	16%	14%	15%	8%	38%
Mobile share	38%	45%	51%	57%	56%	56%

Source: Ofcom estimates and analysis based on online advertising data from IAB UK/PwC Digital Adspend Studyand company reports and public filings.

Social media

Since September 2021 Twitter's UK adult reach has been in decline while TikTok's continues to increase

Facebook, including Messenger, remains the highest-reaching social media platform among UK adults, with more than nine in ten UK adults visiting it in September 2021. UK online 15-24-year-olds are avid users of social media, and over half of them are visiting five social media platforms: 90% visited Instagram in September 2021, 90% visited either Facebook or Facebook Messenger, 70% visited Snapchat, 70% visited Twitter and 64% visited TikTok. Snapchat's popularity is youth-orientated; it was visited by 35% of 25-34s and 20% of 35-44s in September 2021. TikTok is less popular with those aged over 24, but still had at least one in four 25-54s visiting it in September 2021: 42% of 25-34s, 33% of 35-44s, and 25% of 45-54s.[58]

Figure 1.22: UK online adult reach of top ten social media sites/apps: September 2021

	Media	Parent company	Total adult reach in September	Online adult reach in September	Average daily adult audience in September 2021
1	**Facebook and Messenger**	Meta	46.7m	94%	34.3m
2	**YouTube**	Alphabet	45.6m	92%	20.9m
3	**Instagram**	Meta	36.3m	73%	17.6m
4	**Twitter**	Twitter	30.8m	62%	11.4m

[58] © Ipsos, Ipsos iris Online Audience Measurement Service, Social Media, 1 September 2021– 30 September 2021, adults age: 15+, UK.

	Media	Parent company	Total adult reach in September	Online adult reach in September	Average daily adult audience in September 2021
5	**LinkedIn**	Microsoft	18.8m	38%	4.6m
6	**Pinterest**	Pinterest	16.6m	33%	2.7m
7	**TikTok**	Bytedance	15.4m	31%	5.4m
8	**Reddit**	Reddit Inc	14.1m	28%	2.9m
9	**Snapchat**	Snap	11.8m	24%	6.9m
10	**Nextdoor**	Nextdoor	9.2m	18%	2.4m

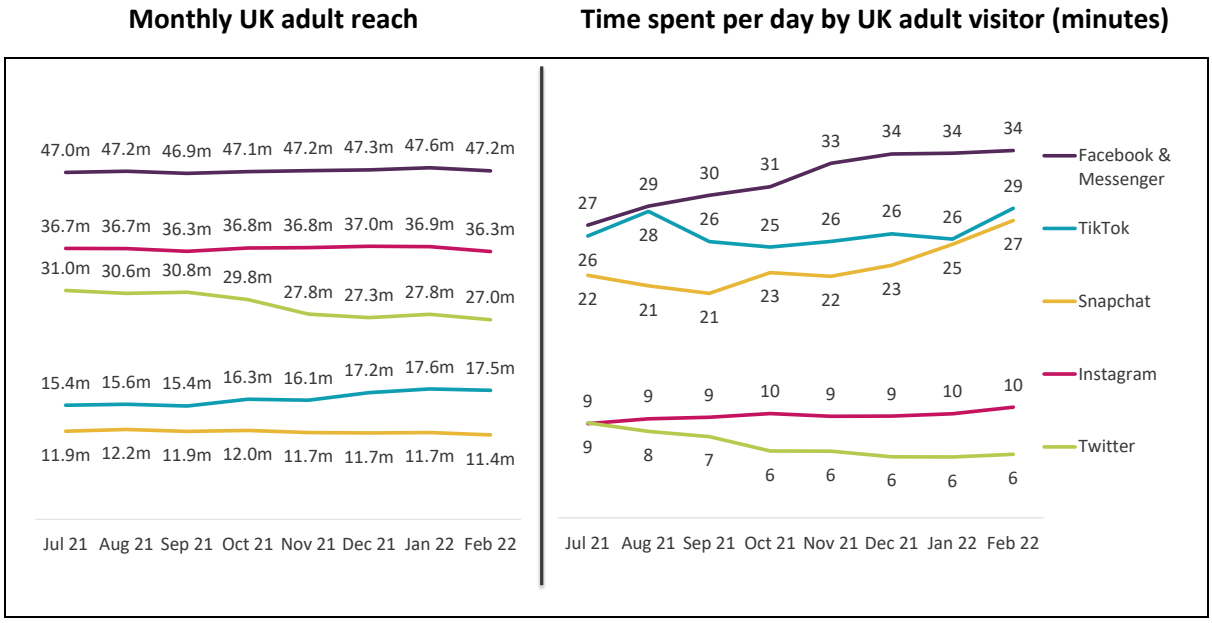
Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September – 30 September 2021, social media, adults age: 15+, UK. Note: TV set and smart display use not included. Custom-defined list by Ofcom.

UK adult TikTok visitors spent 29 minutes per day on the platform in February 2022, almost as much as Facebook visitors spent on Facebook (34 mins) [59]

Meta's Facebook and Instagram monthly UK adult reach remained fairly stable between July 2021 and early 2022. In February 2022 the five million UK 15-24-year-old TikTok visitors spent almost an hour (56 minutes) on TikTok per day, while the five million 15-24 Snapchat visitors spent 49 minutes per day. In comparison, visitors aged 15-24 to Facebook/Messenger and Instagram spent 25 and 21 minutes per day respectively.[60] Meta, in its Q1 2022 earnings call, said that Reels (Meta's version of short-form video) would be core to its business strategy and future growth. The company highlighted that 20% of the time spent on Instagram globally was spent on Reels, and video overall makes up 50% of the time that people spend on Facebook. Meta is investing in developing artificial intelligence (AI) that will choose pieces of content for users, regardless of any social connection to the viewer. Currently Reels is not monetised to the same extent as the Feed;[61] Meta says that it expects Reels to take several years to reach Feed-level monetisation.[62] Online video advertising is one of the fastest-growing segments in the UK, reaching £5.4bn in 2021; a 56% increase on the previous year.[63]

[59] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 February 2022– 28 February 2022, adults age: 15+, UK.
[60] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 February 2022– 28 February 2022, adults age: 15-24, UK.
[61] Feed is the constantly updating list of stories in the middle of the home page of Facebook. Feed includes status updates, photos, videos, links, app activity and likes from people, Pages and groups that that the user follows on Facebook. On Instagram it includes posts from accounts the user follows, suggested posts and ads from businesses.
[62] Meta, Meta Q1 2022 Earnings call transcript, 27 April 2022.
[63] IAB UK/PwC Digital Adspend Study, April 2022.

Figures 1.23: Social media reach and time spent by UK adult visitors, by platform: July 2021–February 2022



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Monthly: 1 July 2021 – 28 February 2022, adults age: 15+, UK. Note: Due to methodology enhancements there may be a break in trend from January 2022.

UK social media revenues grew 46% in 2021, with YouTube and TikTok growing faster than the market average

Advertising makes up 91% of social media revenues, with subscriptions comprising the rest. Within advertising the fastest-growing segment is video, which includes the 'online video - pre/mid/post roll' segment. These are the adverts that are inserted before, in the middle and at the end of videos and which reached UK revenue totals of £2.2bn in 2021, up by 75% since 2020.

Meta's combined social media properties remain by far the largest of any company, using any measure, including revenue. However, globally-reported US dollar revenue results from Alphabet show that YouTube revenues grew by 43% in 2021, while Meta reported 37% revenue growth for the same period. TikTok's parent company Bytedance reported a 70% increase.

Figure 1.24: Total annual UK social media revenues

UK	2016	2017	2018	2019	2020	2021
Annual revenue	£1.8bn	£2.5bn	£3.2bn	£4.0bn	£4.7bn	£7.0bn
Annual growth	37%	38%	28%	24%	18%	48%

Source: Ofcom estimates based on data from IAB UK/PwC Digital Adspend Study and publicly available company filings.

In April 2022 Elon Musk agreed to purchase Twitter for £35.5bn.[64] In Q1 2022 Twitter reported global revenue of £750m - an increase of 16% since Q1 2021. The majority of this was from advertising revenue of £810m.[65]

News

The BBC is the online news service with the highest reach across all the nations of the UK

On average, three in ten (30%) UK online adults visited the BBC online news service daily in September 2021. This was followed by The Daily Mail (Mail Online) and The Sun, both visited by 8% of UK adults daily. The Guardian was visited by 7% daily, and the Mirror by 6%.[66]

Although the BBC commands the top spot for the news site with the highest online adult reach in all nations of the UK (as seen in Figure 1.25), national titles also have high levels of reach. In September 2021, the Daily Record site was accessed by 42% of online adults in Scotland, Wales Online by 60% of online adults in Wales and Belfast Live by 47% of online adults in Northern Ireland. In Scotland, 24% of online adults access the Scottish Sun, which is just under half of the 53% visiting the UK-wide The Sun site or app, suggesting that the national version of the paper is popular, but does not account for the majority of overall visits to the service. The online news services appearing in the top ten all offer some, if not all, of their content free of charge to users.[67] The Guardian is the only online broadsheet paper to appear in the top ten; the Times, The Daily Telegraph and the Financial Times all have a paywall which may constrain their reach. News brands overall continued their migration to digital with online revenues reaching £620m and comprising 46% of total revenues in 2021 up from 40% in 2020.

The majority of adult BBC News visitors also visit other online news services

In Wales, 85% of online adults who visited Wales Online and 88% who visited The Guardian also visited BBC News.[68] In Scotland, 85% of online adults who visited the Daily Record and The Scotsman also visited BBC News, and 64% of online adults who visited the Scotsman also visited the Daily Record site.[69] This indicates that, typically, online adults visit various online news sources, rather than getting their news from a single source.

The Apple news aggregator service, which brings together news stories from a variety of sources, has its highest reach among adults in England (42%), compared to Scotland (35%), Northern Ireland (35%) and Wales (29%).[70]

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[64] BBC, Elon Musk strikes deal to buy Twitter for $44bn, 26 April 2022.
[65] Twitter, Twitter Q1 2022 earnings release, 28 April 2022.
[66] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[67] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021– 30 September 2021, adults age: 15+, UK nations.
[68] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 15+, Wales.
[69] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 15+, Scotland.
[70] © Ipsos, Ipsos iris Online Audience Measurement Service, apple news, 1 September 2021 – 30 September 2021, adults age: 15+, Scotland.

Figure 1.25: UK online adult reach to top ten online news services, by UK nation: September 2021

	UK		England		Scotland		Wales		Northern Ireland	
Rank	Brand	Reach	Brand	Reach	Brand	Reach	Brand	Reach	Brand	Reach
1	BBC	71%	BBC	72%	BBC	70%	BBC	70%	BBC	75%
2	The Sun	46%	The Sun	46%	The Sun	53%	Wales Online	60%	Belfast Live	47%
3	Mirror	44%	Mirror	43%	Mirror	45%	Mirror	50%	Mirror	41%
4	Mail Online	42%	Mail Online	43%	Daily Record	42%	The Sun	44%	Belfast Telegraph	37%
5	Apple	40%	Apple	42%	Mail Online	42%	Mail Online	39%	The Sun	37%
6	The Guardian	37%	The Guardian	37%	The Guardian	38%	The Guardian	39%	Mail Online	37%
7	Daily Express	35%	Yahoo!	36%	Apple	35%	The Independent	36%	Apple	35%
8	Yahoo!	35%	Daily Express	36%	Daily Express	35%	Yahoo!	34%	Daily Express	30%
9	Metro	31%	Metro	31%	Metro	32%	Daily Express	33%	The Guardian	29%
10	The Independent	31%	The Independent	30%	The Scotsman	32%	Metro	30%	Daily Star	26%

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, 1 September 2021 – 30 September 2021, adults age: 15+, UK.

Figure 1.26: Annual UK online news revenue

UK	2016	2017	2018	2019	2020	2021
Annual revenue	£1.0bn	£1.1bn	£1.2bn	£1.3bn	£1.2bn	£1.4bn
Annual growth	5%	14%	7%	6%	-4%	16%

Source: Ofcom estimates based on data from IAB UK/PwC Digital Adspend Study, PwC Global Entertainment and Media Outlook: 2020-2024 and 2021-2025, http://www.pwc.com/outlook, AA/WARC Expenditure Report, and company reports and public filings.

Shopping

Online retail and commerce

Almost nine in ten UK online adults visited Amazon, the most-visited e-commerce platform, in September 2021[71]

On average, 32% (15.9 million) of UK online adults visited Amazon and 19% (9.3 million) visited eBay each day in September 2021.[72] Amazon's Q1 2022 global results reported a 3% drop in global online sales – the first decline since 2015.[73] Apple's global sales rose 9% year on year to £71.3bn, and profits climbed more than 10% to £18bn. Etsy, the vintage and crafts e-commerce online marketplace, grew rapidly in 2020; growth continued after the UK lockdown and peaked at 18.9 million UK adult visitors in December 2021.[74]

Figure 1.27: UK online adult reach to top ten retail and commerce platforms: September 2021

Rank	Retail and commerce	Total adult reach in September	Total adult reach in September
1	**Amazon**	44.6m	89%
2	**eBay**	33.3m	67%
3	**Apple**	23.1m	46%
4	**Argos**	19.3m	39%
5	**Tesco**	16.1m	32%

[71] © Ipsos, Ipsos iris Online Audience Measurement Service, Brand: Amazon, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[72] © Ipsos, Ipsos iris Online Audience Measurement Service, Brand: Amazon and eBay, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[73] Amazon Investor Relations, Amazon.com Announces First Quarter Results, 28 April 2022.
[74] © Ipsos, Ipsos iris Online Audience Measurement Service, Brand: Etsy, 1 December 2021 – 31 December 2021, adults age: 15+, UK.

Rank	Retail and commerce	Total adult reach in September	Total adult reach in September
6	**Google Shopping**	14.0m	28%
7	**Etsy**	13.6m	27%
8	**Boots**	13.4m	27%
9	**Sainsbury's**	12.9m	26%
10	**Marks & Spencer**	12.5m	25%

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Group brand, Category: Retail & commerce, 1 September 2021 – 30 September 2021, all adults age 15+, UK. Average September spend is the average total of online and offline spend across a sample of 30k adult users aged 15+ from Money Dashboard.

Online supermarkets

Seventy-five per cent of UK online adults visited one of the top ten (by reach) online supermarket services in September 2021[75]

Shopping online has decreased since its lockdown peak, but home-delivered groceries continued to be popular in 2021.[76] A quarter of UK online adults visited Sainsbury's online in September 2021, with a similar proportion visiting Asda.

Amazon opened its first Amazon Fresh 'just walk out' till-less grocery store in the UK in 2021, and by early 2022 it had 16 stores.[77] In the 'just walk out' stores the customer scans a QR code generated by the shopping app when they enter the store. A series of sensors, cameras and weight-sensitive shelves record what a customer puts in their basket, and the bill is automatically charged to the shopper's app account when they leave. In November 2021 Sainsbury's became Amazon's first international third-party customer to use Amazon's 'just walk out' technology, with the opening of its Smartshop Pick & Go in Q4 2021.[78] Tesco opened a similar service, GetGo, in Q4 2021.[79] Both the Sainsbury's and the Tesco stores opened in Holborn, London.

[75] © Ipsos, Ipsos iris Online Audience Measurement Service, Profiling report, Brand group, Category: Grocery/Supermarket shopping, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[76] BBC, Kantar: Shoppers return to supermarkets for festive feasts, 5 January 2022.
[77] Retail Technology Innovation Hub, Amazon hits Southwark, London as it opens 16th UK Amazon Fresh store, 2 March 2022.
[78] Amazon News, Sainsbury's becomes first international third-party customer to use Amazon's Just Walk Out technology, 29 November 2021.
[79] Tesco Plc, Tesco opens new checkout-free store, 'GetGo', 19 October 2021.

Figure 1.28 UK online adult reach and time spent of top ten grocery/supermarket services, ranked by reach: September 2021

Rank	Grocery/supermarket	Total adult reach in September	Online adult reach in September	Average time spent per adult visitor (mins:secs)
1	Sainsbury's	12.9m	26%	15:17
2	Asda	12.0m	24%	19:18
3	Tesco	11.6m	23%	28:01
4	Marks & Spencer	11.3m	23%	09:21
5	Lidl UK	10.0m	20%	13:50
6	Morrisons	8.6m	17%	14:17
7	Aldi	7.9m	16%	06:28
8	Waitrose	4.4m	9%	11:27
9	Co-op Food	4.0m	8%	05:30
10	Ocado	3.9m	8%	29:30

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, Brand group, Category: Grocery/Supermarket shopping, 1 September 2021 – 30 September 2021, adults age: 15+, UK

On-demand grocery delivery services

2021 saw several new entrants to the on-demand grocery delivery market

A number of online-only grocery stores, offering grocery delivery within as little as 10 minutes, have emerged in the past two years. Deliveroo and UberEats, which started delivering the UK in 2013 and 2016 respectively, started offering grocery deliveries in the first half of 2020, when the UK was in lockdown.[80] Getir launched in the UK in January 2021, and Gopuff in November 2021.[81] [82] [83] Consolidation of these services has already started taking place: Getir acquired Weezy in November 2021 and Gopuff acquired Fancy and Dija before its UK launch in January 2021.[84] These companies mainly operate in large UK cities, whereas the longer-established players Deliveroo and UberEats have wider coverage. Some, such as Getir, Gorillas and Gopuff, operate from 'dark stores' which are

[80] The Grocer, Asda partners with Uber Eats for 30-minute grocery delivery, 8 July 2020.
[81] Gopuff, Instant Needs Pioneer Gopuff Launches in the UK; Establishes Immediate Presence Across London and Nine Major Cities, 9 November 2021.
[82] UK Tech News, Getir, 10-minute grocery delivery service enters London, eyes to expand in more cities in UK, 2 February 2021.
[83] Guardian, Aldi partners Deliveroo for 30-minute grocery delivery service, 18 May 2020.
[84] TechCrunch, Turkey's instant grocery giant Getir grabs UK's Weezy in latest delivery consolidation, 23 November 2021.

retail outlets and distribution centres that cater exclusively for online shopping. US-based Gopuff announced a partnership with UK supermarket Morrisons in March 2022 to offer Morrisons products on its app, with Morrisons acting as the wholesaler providing Gopuff's 'dark stores'.[85] Companies such as Deliveroo and UberEats operate using couriers who collect groceries from supermarkets and convenience stores and deliver direct to the consumer.

Figure 1.29 Timeline of UK launches of on-demand grocery delivery services

Source: Ofcom desk research

Getir

The super-fast grocery delivery company, Getir, was founded in Turkey in 2015 and launched in the UK in early 2021. By March 2022 it was operating in 48 cities across the UK, Europe and the US, as well as 81 cities in Turkey. In February 2022, 1.4 million UK adults visited Getir: 703k of them were aged 18-34, half its online UK adult visitor base.[86] In March 2022 Getir secured an additional £581.7m in funding, taking its value to over £8bn.[87]

As of April 2022, Getir delivered in London, Birmingham, Manchester, Brighton, Bristol, Cardiff, Liverpool, Southampton, Sheffield, Portsmouth, Nottingham, Bradford, Leeds, Cambridge and Leicester. London-based customers comprised a very large proportion of Getir's total users, and Leicester has a high number of users for its population (see figure 1.30).

Figure 1.30: UK adult reach of Getir, by customer location: February 2022

UK Location	London	Birmingham	Leicester	Liverpool	Manchester
Adult reach	641k	30.9k	20.8k	17.7k	16.6k

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Profiling report, Getir, 1 February 2022 – 28 February 2022, adults age: 15+, UK

[85] Retail Insight Network, Morrisons and Gopuff partner to offer rapid delivery across UK, 25 March 2022.
[86] © Ipsos, Ipsos iris Online Audience Measurement Service, Profiling report, Getir, 1 February 2022 - 28 February 2022, adults age: 15+, UK.
[87] Evening Standard, Super-fast grocery delivery startup Getir worth $11 billion in funding deal, 17 March 2022.

Personal finance

PayPal was the online financial service with the highest reach to UK adults in September 2021, visited by 59% of UK online adults[88]

About one in five UK adults visited the Barclays, NatWest and Nationwide online banking services in September 2021.[89] Online-only bank Monzo is visited most by 25-34-year-olds (18%), compared to only 1.5% of those aged 65+.[90] American Express is also most likely to be visited by 25-34s (13%), and least likely to be visited by 18-24s (3%), probably because a smaller proportion of this group have credit cards.[91]

A third (32%) of online adults in Scotland visited the Bank of Scotland in September 2021, while 20% visited Royal Bank of Scotland (RBS).[92] In Northern Ireland, 9% of online adults visited Ulster Bank in September 2021.[93]

Figure 1.31: UK adult reach and time spent to top ten personal finance services, ranked by reach: September 2021

Rank	Online personal finance service	Adult reach in September	Online adult reach in September	Average time spent per visitor in September (mins:secs)
1	PayPal	29.1m	59%	07:31
2	Barclays	10.0m	20%	18:24
3	Nationwide	8.8m	18%	30:32
4	NatWest	8.4m	17%	36:09
5	Halifax	8.2m	16%	18:24
6	Lloyds Bank	7.5m	15%	19:48
7	HSBC	7.2m	14%	31:30
8	Santander	5.8m	12%	16:15
9	Tesco	4.7m	9%	15:28
10	Monzo	4.3m	9%	37:59

[88] © Ipsos, Ipsos iris Online Audience Measurement Service, PayPal, 1 September 2022 - 30 September 2022, adults age: 15+, UK.
[89] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: banking, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[90] © Ipsos, Ipsos iris Online Audience Measurement Service, Monzo, 1 September 2021 - 30 September 2021, adults age: 15+, UK.
[91] © Ipsos, Ipsos iris Online Audience Measurement Service, AMEX, 1 September 2021 - 30 September 2021, adults age: 15+, UK.
[92] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: banking, 1 September 2021 - 30 September 2021, adults age: 15+, Scotland.
[93] © Ipsos, Ipsos iris Online Audience Measurement Service, Ulster Bank, 1 September 2021 - 30 September 2021, adults age: 15+, Northern Ireland.

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Category: banking, 1 September 2021 – 30 September 2021, adults age: 15+, UK

Buy now, pay later

Six per cent of UK adults visited BNPL service Klarna in September 2021[94]

Buy-now-pay-later (BNPL) services are short-term money-lending agreements similar to store credit schemes; they enable customers to purchase goods on credit and pay for them after a set interest-free period, or in instalments.[95] Klarna and Laybuy are examples of BNPL services. Revenue for BNPL service providers usually comes from charging retailers a percentage of the transaction fee. Data from Money Dashboard shows that the average payment via the biggest BNPL in the UK, Klarna, was £39.61 in 2021, meaning that if the customer chose to pay in three instalments the total transaction would be about £140.[96] BNPL sites tend to be more popular with younger age groups, although not exclusively; BNPL's highest-growth sector is the 50-69 age group, as more people use the service as an alternative to traditional forms of credit.[97]

BNPL companies have started to expand into traditional credit facilities, while digital-first banks are expanding into BNPL options. In January 2022 Klarna launched a credit card that allows users to delay payments for up to 30 days.[98] Klarna was Europe's most valuable start-up in 2021, valued at £35.5bn after its recent funding round, and it has 16 million customers and 20,000 merchants in the UK.[99] Digital-only banks Monzo (valued at £3.3bn)[100] and Revolut (valued at £24bn)[101] have launched their own versions of BNPL services.[102] In March 2022 NatWest became the first high-street bank to announce that it was launching a BNPL service that will allow customers to split purchases into several repayments.[103]

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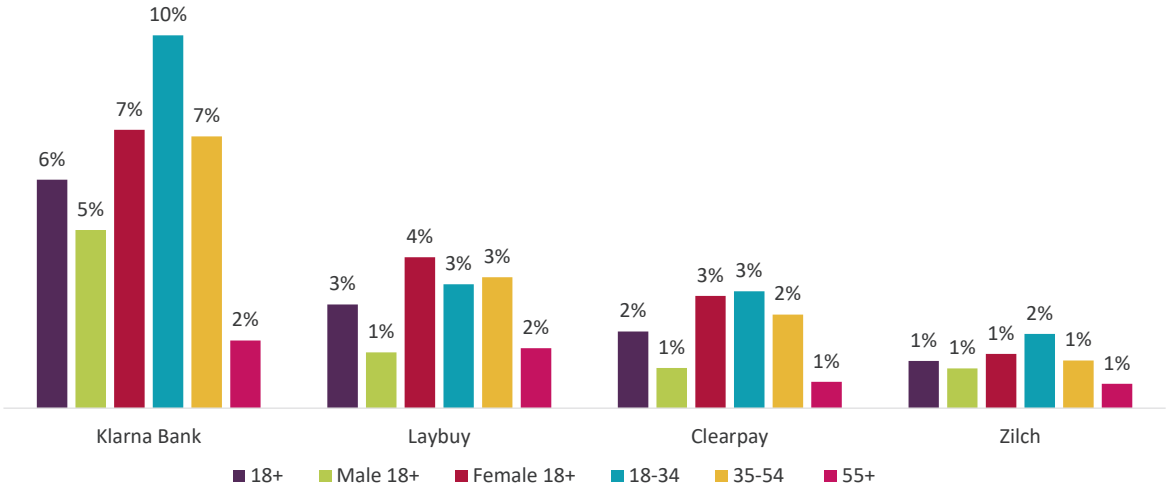
[94] © Ipsos, Ipsos iris Online Audience Measurement Service, Klarna, 1 September 2021 - 30 September 2021, adults age: 15+, UK.
[95] Money Helper, What are Buy Now Pay Later purchases?, accessed 16 May 2022.
[96] Money Dashboard, Klarna, averaged spend per transaction 2021.
[97] BBC, More than 17 million have used buy now, pay later services, 29 November 2021.
[98] Klarna, Klarna brings transparent, sustainable credit to instore payments everywhere with launch of a physical card, 26 January 2022.
[99] This is Money, Boss of buy-now, pay-later giant on his troubled childhood and expansion masterplan: 'We want Klarna to be old style bank manager – for digital age', 22 April 2022.
[100] Reuters, Monzo valuation jumps to $4.5 billion after fresh funding round, 8 December 2021.
[101] TechCrunch, Revolut confirms a fresh $800M in funding at a $33bn valuation to supercharge its financial services super app, 15 July 2021.
[102] City AM Hot on the heels of Revolut, Monzo targets buy now pay later, 10 September 2021.
[103] NatWest, NatWest Buy Now Pay Later, accessed 22 March 2022.

Figure 1.32 UK online adult reach of selected BNPL services, by gender and age: September 2021



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 18+, UK.

Zilch case study

Zilch is a UK-based BNPL company, launched in 2018. It allows consumers to delay their payment for goods online wherever Mastercard is accepted.[104] This differentiates Zilch from other BNPL providers such as Klarna, which have deals with retailers. Zilch does not charge late fees for missed payments but will prevent these customers from using the service until payment is made. Zilch acquired the US-based commercial fintech lender NepFip in August 2021 as part of establishing itself in the US market.[105] In November 2021 Zilch closed a £81m Series C funding round led by Ventura Capital and Gauss Ventures, making it the fastest privately-owned company in Europe to reach a valuation of £1.5bn.[106]

Zilch has a partnership with the supermarket Iceland, whereby customers have the option to split payments, interest free, over six weeks. It has also promoted home deliveries of food and drink, such as takeaway pizzas and coffee, using the BNPL service.[107] This suggests that BNPL is being used for a variety of transactions, not just fashion or high-value foods. As a UK-based company, Zilch is one of the few BNPL companies regulated by the Financial Conduct Authority (FCA).

[104] Evening Standard, Zilch: London buy now, pay later startup scores $2bn valuation and plans US rollout, 10 November 2021.
[105] Zilch, Zilch gears up for U.S. launch and bolsters international presence with acquisition of NepFin , 13 August 2021.
[106] Business Leader, UK fintech Zilch becomes fastest European 'double unicorn' following $110m Series C funding round 16 November 2021.
[107] The Guardian, Buy now, pay later grocery schemes are a 'debt trap' for struggling families, 29 January 2022.

Future online landscape

Cryptocurrency

Cryptocurrency is digital or virtual currency that is secured by cryptography

Cryptocurrencies became increasingly relevant in 2021; Google Trends data shows that 'cryptocurrency' as a search term in the UK peaked in May 2021[108] and they have become less obscure as they connect more closely with familiar parts of society such as football through advertising and sponsorship.

Cryptocurrencies are decentralised networks based on blockchain technology – peer-to-peer electronic transaction systems – that keep track of all transactions; the first blockchain-based cryptocurrency was Bitcoin. Cryptocurrencies or crypto tokens are denoted by coins or tokens and are usually not issued by a central authority. Cryptocurrencies have their own blockchain, whereas crypto tokens are built on an existing blockchain.[109] Cryptocurrencies can be mined or purchased on cryptocurrency exchanges. Cryptocurrency can provide cheaper and faster money transfers as they do not require the use of third-party intermediaries and can be difficult to counterfeit, but there are downsides; these include price volatility, high energy consumption for mining activities (see below) and criminal activity.

Stablecoins are a type of cryptocurrency backed by 100% real-world reserves and pegged to traditional currencies, normally the US dollar, so that they do not fluctuate in price in the same way as other cryptocurrencies. In April 2022 the UK Government set out its plan for stablecoins to be recognised as a valid form of payment and for Britain to be a "global hub for cryptoasset technology and investment".[110] The Government's plans include introducing a 'financial market infrastructure sandbox' and "establishing a Cryptoasset Engagement Group to work more closely with the industry". There are also plans for the Government to work with the Royal Mint on a non-fungible token (NFT), which would be available for sale by summer 2022.

Cryptocurrencies have attracted interest as trading instruments;[111] figure 1.33 below shows the monetary growth of Bitcoin from its inception in the late 2000s to its price collapses during the Covid-19 pandemic.[112]

At the end of January 2022 Meta confirmed that it sold the assets from its cryptocurrency venture, Diem, to Silvergate, a crypto-focused bank. The plan for a cryptocurrency was launched by Facebook as 'Libra' in 2019, and was rebranded as Diem in December 2020, in order to demonstrate organisational independence ahead of regulatory approvals.[113] In a statement released by Diem on the sale of assets, it indicated that federal regulators had prevented the project from going ahead.[114]

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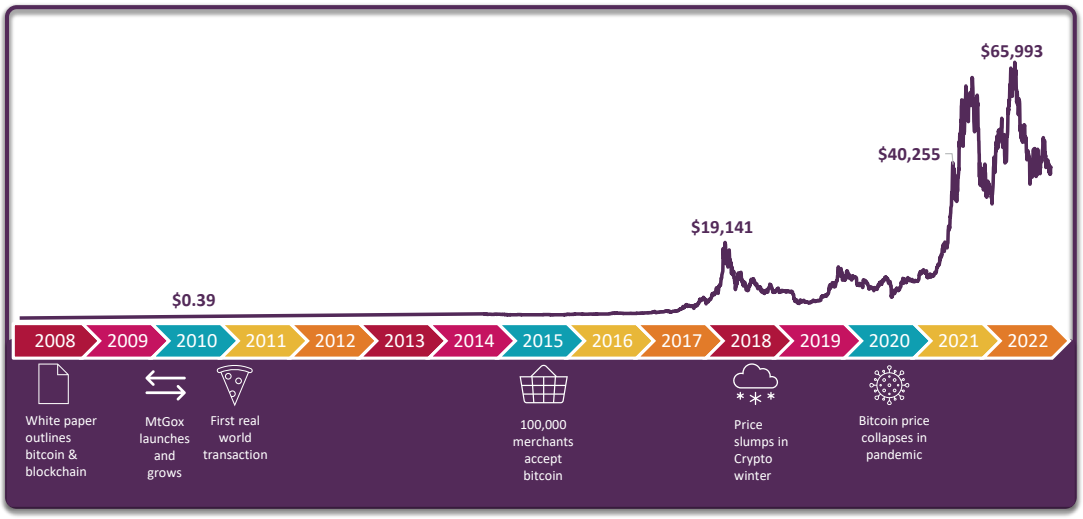
[108] Google Trends, Explore: Topic - Cryptocurrency, accessed 14 April 2022.
[109] Cryptopedia, Digital Assets: Cryptocurrencies vs. Tokens, 17 May 2021.
[110] Gov.UK, Government sets out plan to make UK a global cryptoasset technology hub, 4 April 2022.
[111] Investopedia, Cryptocurrency, 11 January 2022.
[112] The Verge, Libra cryptocurrency project changes name to Diem to distance itself from Facebook, 1 December 2020.
[113] Diem, https://www.diem.com/en-us/, accessed 12 April 2022.
[114] Diem, Statement by Diem CEO Stuart Levey on the sale of the Diem group's assets to Silvergate, 31 January 2022.

Figure 1.33 Bitcoin timeline and closing prices in USD



Source: Ofcom desk research, Bitcoin prices from 2014 from Yahoo! Finance[115]

Seven per cent of UK online male 18-34-year-olds visited cryptocurrency trading platform Coinbase in September 2021[116]

Coinbase launched in 2012; it is the largest cryptocurrency exchange platform in the US by trading volume.[117] In September 2021 just under 3% of UK online adults visited the platform: half a million (7%) UK online men aged 18-34, compared to 1.4% of UK online women in the same age group.[118]

Figure 1.34 Top cryptocurrency trading platforms by UK online adult reach: September 2021

		UK adults 15+		Male 15-34		Female 15-34	
Rank	Media	Audience	Online adult reach	Audience	Online adult reach	Audience	Online adult reach
1	Coinbase	1,276k	2.56%	495k	7.08%	97k	1.43%
2	Binance	496k	1.00%	233k	3.33%	38k	0.56%
3	Crypto	301k	0.60%	66k	0.94%	31k	0.46%
4	Kraken	105k	0.21%	31k	0.44%	Not available*	Not available*
5	The Block	100k	0.20%	18k	0.26%	2k	0.04%

[115] Yahoo!, Bitcoin USD (BTC-USD), 17 September 2014 to May 5 2022.
[116] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 - 30 September 2021, adults age: 15+, UK.
[117] Bloomberg News, Coinbase expands institutional services with Tagomi purchase, 27 May 2020.
[118] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021– 30 September 2021, adults age: 15+, UK.

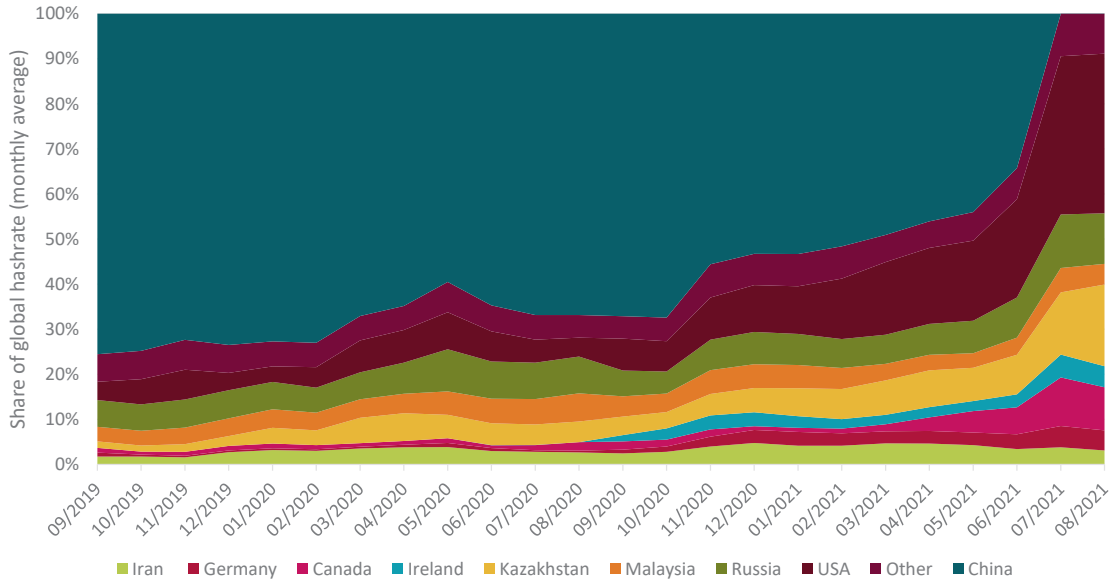
*Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 - 30 September 2021, adults age 15+, UK. Note: *Data for Kraken female 15-34 unavailable due to not meeting reporting threshold.*

Mining Bitcoin uses huge amounts of electricity

The process to create Bitcoin, known as mining, requires high electricity consumption; globally, the electricity used to mine bitcoins exceeds the energy consumption of Sweden.[119] New bitcoins are created or 'mined' in the process of adding a set or 'block' of data to a transaction record known as a blockchain. To add a new block to the blockchain, Bitcoin miners must solve a complex equation generated by the blockchain, and once they do this the set of rules written into Bitcoin's chain awards the miner a quantity of bitcoins. People use mining rigs, which are computers, to solve the equations more quickly, and therefore the more computing power a miner has, the more easily and quickly they can mine bitcoins. Bitcoin was designed to become more difficult to mine as more people start to do it, so that the finite supply of Bitcoin is not mined too quickly, with the result that the energy required to mine one bitcoin is steadily increasing.[120]

For the past few years, most Bitcoin mining has been happening in China, although this changed when the Chinese Government banned the mining of bitcoin in 2021. Since then, the US has become the biggest producer, followed by Kazakhstan.[121] As Bitcoin requires large amounts of electricity to mine, this is more likely to be done in countries where the cost of electricity is relatively low, which goes some way to explain why Bitcoin is not mined in any great quantity in the UK. In August 2021, the average UK monthly share of global hashrate was 0.25%. A hashrate is how many guesses or attempts to solve the 'equation' a mining rig can manage per second (the UK population as a share of global population is about 0.85%).[122]

Figure 1.35 Evolution of countries' share of Bitcoin mining



[119] Cambridge Bitcoin Electricity Consumption Index.
[120] PC Mag, How does Bitcoin Mining work?, 9 December 2021.
[121] CCAF, Bitcoin mining map.
[122] CCAF, Bitcoin mining map, ONS Population statistics.

*Source: Cambridge Bitcoin Electricity Consumption Index, Cambridge Centre for Alternative Finance * To our knowledge, there is little evidence of large mining operations in Germany or Ireland that would justify these figures. Their share is likely significantly inflated due to redirected IP addresses via the use of VPN or proxy services. UK figures are too small to feature in the chart.*

Meta is reportedly exploring creating virtual coins as part of its metaverse development

Meta is reportedly creating a suite of products to reduce its reliance on advertising, as it looks to the future of its metaverse. Meta's financial arm Meta Financial Technologies is leading on the creation of the products. These products include 'social tokens' or 'reputation tokens' which users could use as rewards. Another product which would be used by influencers on Instagram is 'creator coins'.[123]

[123] Financial Times, Facebook owner Meta targets finance with 'Zuck Bucks' and creator coins, 6 April 2022.

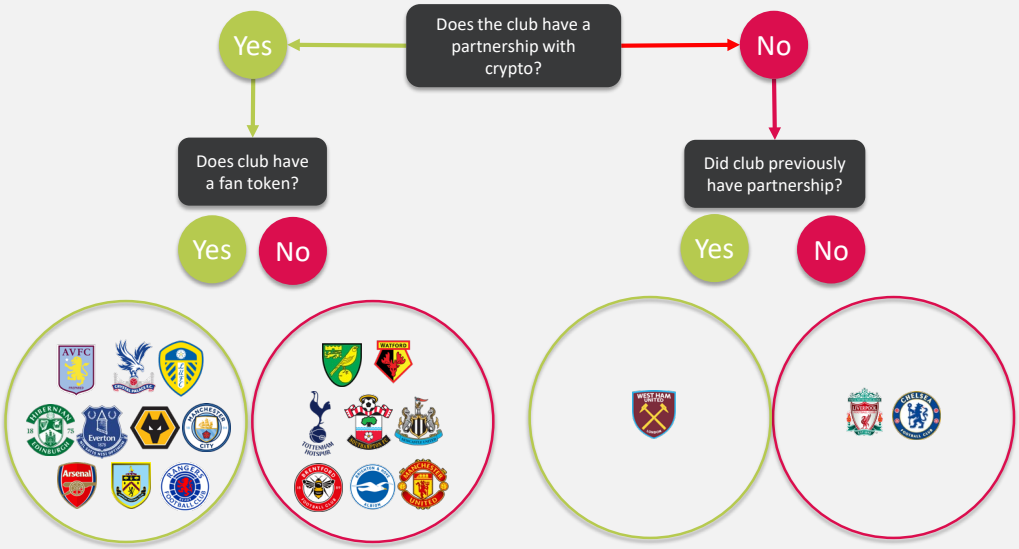
Football cryptocurrency case study

As of December 2021, 17 of the 20 football clubs in the English Premier League had signed deals with cryptocurrency exchange platforms. Several high-profile players and former players have personally endorsed cryptocurrencies and advertised them on their social media accounts. Several clubs have launched 'fan tokens', some in association with the app Socios. Fan tokens can be viewed as a digital share of the football club and allow token buyers to vote on decisions such as the pre-match music.[124]

Bitcoin and other cryptocurrencies have also been used for monetary transactions in 2021, including for players and sponsorship. In January 2021 Spanish club DUX Internacional de Madrid became the first club to pay for a player, David Barral, using Bitcoin. The club is sponsored by a crypto selling platform, Criptan.[125] Watford FC announced in July 2021 that its sponsorship deal with the online betting company Stake was paid for using cryptocurrency, and at the time of transfer did not disclose details of which cryptocurrency was used or the equivalent value in pounds.[126]

There has been a degree of controversy over the increased collaborations between football clubs and players with crypto companies, and the promotions associated with these connections. In December 2021 the Advertising Standards Authority said that the promotion of Arsenal football club's 'fan tokens' which ran online in August 2021 were irresponsible and breached the CAP (the UK Code of Non-broadcast Advertising and Direct & Promotional Marketing).[127]

Figure 1. Football clubs with a crypto partnership



Source: Ofcom desk research, press releases. Fan tokens refer to official football club-branded 'fan tokens' promoted by the club. Correct as of February 2022.

The metaverse

The metaverse is anticipated to become the next generation of the internet

Metaverses, in their broadest sense, are persistent 3D virtual spaces in which users can interact with computer-generated environments and other users. They can be viewed through conventional interfaces such as mobile phones, TVs and monitors, but also through immersive technologies such as augmented and virtual reality (AR and VR). AR technology lets users superimpose digital content onto a real-world environment. This digital content might include any combination of sound, video, text or graphics. VR technology uses headsets to immerse users within entirely computer-generated environments. Scenes and objects can be viewed, as well as interacted with, through peripherals such as controllers, and by using spatial and motion-tracking technologies. Metaverses do not require the spaces to be exclusively accessed via VR or AR. It is anticipated that at some point there will be a shift away from the current 2D use of the internet (i.e. websites and browsers) to a 3D metaverse internet.

To realise the full ambition of what a metaverse might have to offer, four key sectors are seeking to build and develop their own types of metaverse experiences:

(1) **Gaming-led metaverses:** Social games that democratise game creation but are often self-contained and centralised experiences controlled and operated by one platform. Examples include *Fortnite*, *Roblox* and *Minecraft*. (See Gaming chapter.)

(2) **Social-led metaverses:** Where companies like Meta and Snap look to leverage their existing expertise in social platforms to build social 3D virtual worlds. Examples include Horizon Worlds and Venues by Meta.

(3) **Decentralised metaverses**: Built from the ground up, the control of the platform lies with the community rather than with a central authority. This enables users to control the way the metaverse is built and operates. Examples include Decentraland, a 3D world platform, and The Sandbox, an Ethereum-based virtual world where users can buy and sell digital assets such as NFTs (non-fungible tokens).

(4) **Enterprise metaverses:** covering education and work domains, these metaverse spaces are focused on virtual collaboration, remote support, design, modelling and visualisation, as well as training tools.[1] Examples include Microsoft Mesh and Horizon Workrooms by Meta. (See Communications Services chapter)

Many companies have been working on developing a metaverse infrastructure, including Epic Games with its *Fortnite* game, *Roblox*, *Rec Room* and *Snap*. However, in October 2021 Mark Zuckerberg increased awareness of the metaverse in society by announcing that the metaverse

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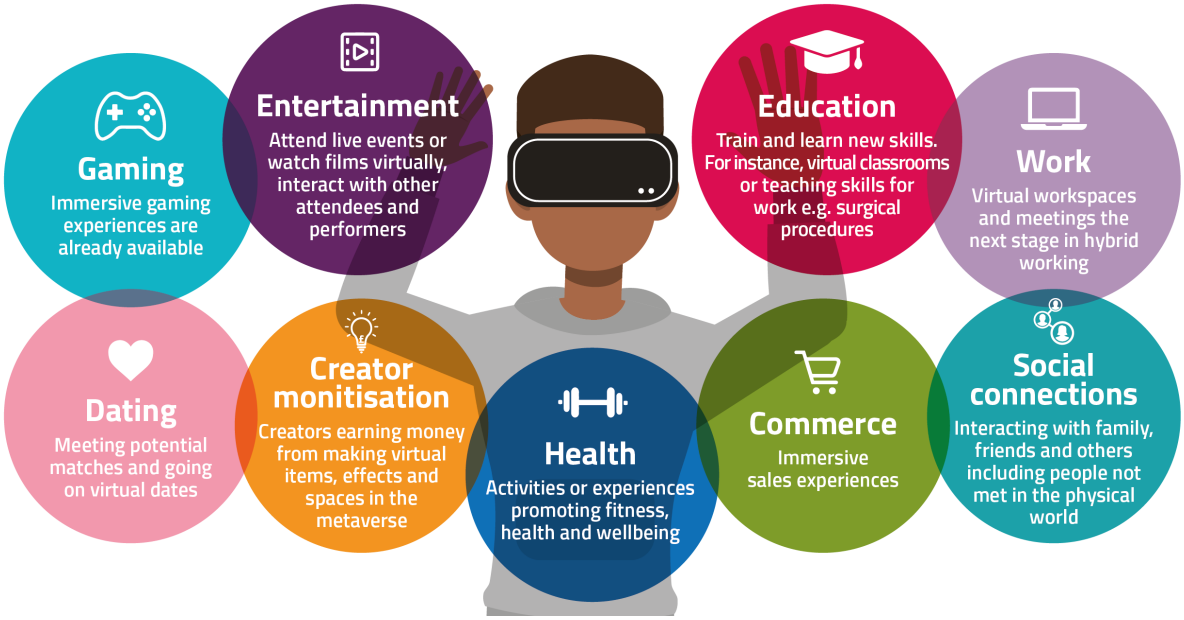
[124] The New Statesman, Football cryptocurrencies herald a dystopian future where fandom isn't free, accessed 24 March 2022.
[125] Daily Mail, Third division Spanish side make transfer history by becoming first professional team ever to buy a player with BITCOIN as ex-Real Madrid B striker David Barral joins Inter Madrid, 19 January 2021.
[126] BBC, Watford FC: New shirt sponsor deal paid in cryptocurrency, 22 July 2021.
[127] BBC, Arsenal fan token posts broke advertising rules, says watchdog, 22 December 2021.

would be a strategic focus for Facebook over the next ten years, and that Facebook was to be rebranded as Meta, thereby igniting a conversation about how the metaverse might affect people's everyday lives.[128] Before this announcement, Meta had already been developing the metaverse for a number of years; in 2014 it bought the VR headset developer Oculus for £1.5bn,[129] in 2021 it spent £7.3bn on Meta Reality Labs, its Metaverse division,[130] and in 2022 it was reported that it had already spent £2.7bn in the first quarter of the year. See Gaming chapter for information on VR headsets.

Gaming was an early adopter of metaverse technology, using advancing technologies to enable expansion of the gaming industry and to intensify the user experience. Live-service games such as *Second Life*, *Fortnite*, *Roblox* and *Minecraft* have been regarded as early or proto-metaverses in that they have leveraged, but not fully realised, many of the potential technologies and uses. Previous limitations due to cost and the relative immaturity of the technology are gradually being addressed through advances in areas such as cloud delivery, sensors, processing power and efficiency. In conjunction with the increasing number of possible uses beyond gaming, such as social, communication, entertainment, work, and education, this could enable further growth of the industry by creating broader and more compelling user experiences. Meta expects the immersive digital world to impact what the future online landscape looks like for the UK and globally, affecting user interactions and industry trends. Meta forecasts that the metaverse will reach a billion people by the next decade.[131]

Figure 1.36: Examples of activities in the metaverse



[128] Meta, Mark Zuckerberg, Founder's letter 2021, 28 October 2021.
[129] Meta, Facebook to acquire Oculus, 25 March 2014.
[130] Meta, Meta investor relations, 2 February 2022.
[131] Meta, Mark Zuckerberg, Founder's letter 2021, 28 October 2021.

Avatars will provide users with a 3D graphical representation of themselves in the metaverse. Using Mesh, Microsoft plans to enable users to customise their own avatars, which can then join a team meeting in 2D or 3D instead of using a static image or video. This might provide an engaging alternative if users do not want to turn on their cameras. Virtual workspaces could allow users to skip the commute but still "mix and mingle, collaborate on projects and experience those serendipitous encounters".[132] Virtual fitting rooms are another use case for avatars: users' avatars match their body measurements and thereby help them find the best-fitting clothes. This could impact the fashion industry, enhancing the online shopping experience, with virtual fitting rooms for fashion retailers becoming the norm.[133]

We can expect to see increased competition and new market entrants in developing metaverses

In December 2021 Meta launched Horizon Worlds in North America. This is a free virtual reality space, available to those aged 18 and over, in which users can explore, play, and create with others in VR. Users can design and build the VR community.[134] In the virtual world people will be able to buy virtual items and effects within the world, such as accessories in a fashion world, or to pay for access to a new part of a world.[135] It has been reported that since Horizon Worlds was rolled out to all Quest users in the US and Canada, its monthly user base has grown by a factor of ten, to 300,000 people.[136] In 2022 Meta plans to release a web version of Horizon Worlds, which will help attract users to the metaverse as they will not need to acquire a headset.[137]

Meta is not the only technology company working on a metaverse strategy; others, including Alphabet, Apple and Microsoft, are also innovating in this space. Apple is rumoured to be launching an Apple AR/VR headset in 2022,[138] while Alphabet expects to release its AR headsets in 2024,[139] and Sony plans to release its PlayStation VR2.[140] See the Gaming chapter for more market developments in the virtual reality headset space.

In the communications services sector, Microsoft has announced plans to introduce a metaverse feature in Microsoft Teams. Microsoft Mesh will allow people to join shared holographic experiences while using Teams' productivity workplace tools.[141] VRChat permits users to interact with other users and can be used on various devices including Meta's Quest & Steam VR headsets, and can also be used in desktop mode. See the Communications Services chapter for further discussion.

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[132] Microsoft – Innovation Stories, Mesh for Microsoft Teams aims to make collaboration in the 'metaverse' personal and fun, 2 November 2021.
[133] The PHA Group, The technology powering virtual fitting rooms , 4 February 2022.
[134] Meta, Opening Horizon Worlds to Everyone 18+ in the US and Canada, 9 December 2021.
[135] Meta, Testing New Tools for Horizon Worlds Creators To Earn Money, 11 April 2022.
[136] The Verge, Meta's social VR platform Horizon hits 300,000 users, 17 February 2022.
[137] Meta, Meta Q1 2022 Earnings call transcript, 27 April 2022.
[138] Tech Advisor, Apple AR/VR headset: Everything you need to know, 8 March 2022.
[139] Forbes, The Metaverse set off a battle between tech giants Google, Apple, Microsoft and Meta to build virtual and augmented reality headsets, 21 January 2021.
[140] Sony at CES 2022.
[141] Microsoft, Mesh for Microsoft Teams aims to make collaboration in the 'metaverse' personal and fun, 2 November 2021.

As metaverses develop, safety measures will need to be developed alongside them

Meta has created personal Safe Zones which can be accessed through the wrist menu of its VR headsets. When users enter the personal safe zone they can mute, block or report people and content around them. Meta states that when the users mute, block or report someone, a trained safety specialist, who will not appear as an avatar, may remotely observe and record the situation to ensure their safety. The safety specialist can submit additional evidence for Meta to review, and can temporarily ban someone from Horizon while Meta reviews reports.[142]

In 2022 Meta introduced Personal Boundary for Horizon Worlds, a distance of approximately 4 feet between the user's avatar and others', that will remain on by default for non-friends. Users will be able to adjust their personal boundary in the settings menu to apply the 4-foot distance to everyone or to remove it for everyone, but there will still be a small personal boundary to prevent unwanted interactions.[143] VRChat and Rec Room also offer personal space boundaries. See the Gaming chapter for more on safety measures.

A report in February 2022 found that a researcher, when posing as a 13-year-old girl in VR Chat, (the minimum age requirement for VRChat), was able to witness "grooming, sexual material, racist insults and a rape threat" on the platform.[144] Just as safety measures need to be considered for 2D internet, as the virtual reality internet space develops, users' safety will need to be addressed.

[142] Meta, Facebook Horizon welcomes its first virtual explorers, 27 August 2020.
[143] Meta, Introducing a personal boundary for Horizon Worlds and Venues, 4 February 2022.
[144] BBC News, Metaverse app allows kids into virtual strip clubs, 23 February 2022.

2. The online experience

Introduction

Key metrics

Figure 2.1: Proportion of UK internet users aged 13+ who agree with the statements on the benefits of being online

Statement	Proportion who agree
Accessing goods and services online is more convenient for me	83%
I feel I have a good balance between my online and offline life	74%
It gives me space to pursue my hobbies and interests in a way I couldn't do offline	62%
I can share my opinions and have a voice online more easily or effectively than I can offline	45%
Being online has an overall positive effect on my mental health	43%
I feel more free to be myself online	36%

Source: Ofcom, Online Experiences Tracker 2021. Q3. To what extent, if at all, do you agree or disagree with the following statements about being online? Base: UK internet users aged 13+ (6,619)

Figure 2.2: UK internet users' experience of any potential harms online in the last four weeks, by demographic

Gender		Age		Ethnicity	
Male	64% ↑	**13-17**	65%	**White**	61%
Female	60% ↓	**All adults**	62%	**Minority ethnic group**	67% ↑
		18-34	65% ↑	**Mixed ethnicity**	74% ↑
		35-54	64%	**Black**	70% ↑
		55+	57% ↓	**Asian**	65%

Source: Ofcom, Online Experiences Tracker 2021. Q8. Which, if any, have you seen or experienced online in the last four weeks? Base: UK internet users, aged 13+ UK internet users, aged 13+ (6,619). Arrows indicate a figure that is significantly higher or lower than the average for all internet users, tested at 95% confidence level. See Methodology for groups included in the ethnicity categories.

The integration of online and offline life

For many internet users, particularly the young, online and offline life are increasingly integrated

As online technologies and services become more embedded in people's day-to-day activities and habits, it is increasingly hard, and increasingly less meaningful, to draw a distinction between online and offline life. Through our longitudinal Children's Media Lives research, we have seen that the online and offline experiences of children in this study have become increasingly 'blurred' or

'integrated'.[145] An average teenager is likely to see no real difference between talking to friends over WhatsApp and talking to them at school. The internet touches nearly every aspect of people's lives: working, socialising, entertainment, shopping, finding out information, accessing services and engaging as a consumer and a citizen. As such, although this chapter is about people's attitudes to and experiences of being online, online experiences are becoming just experiences, integrated into their lives without any distinction between connected experiences and disconnected ones. As innovation continues in technology, and particularly if immersive metaverse-type services are more widely adopted by society, the border between online activity and 'in real life' (IRL) may break down further.

This chapter reports on data from multiple sources, but primarily from Ofcom's Online Experiences Tracker, a new tracking study examining the positive and negative online experiences of UK users. Fieldwork for the Online Experiences Tracker was conducted in November-December 2021 among a UK-representative sample of 6,640 online users aged 13 to 85.[146] Unless otherwise specified, the UK online users referred to in this chapter fall within this age group. Ofcom's Adults' Media Literacy Tracker and Children's and Parents' Media Literacy Tracker are also referred to in this chapter.

User attitudes to the risks and rewards of using the internet

The balance of positive and negative

Overall, UK users[147] feel that the benefits of being online outweigh the risks…

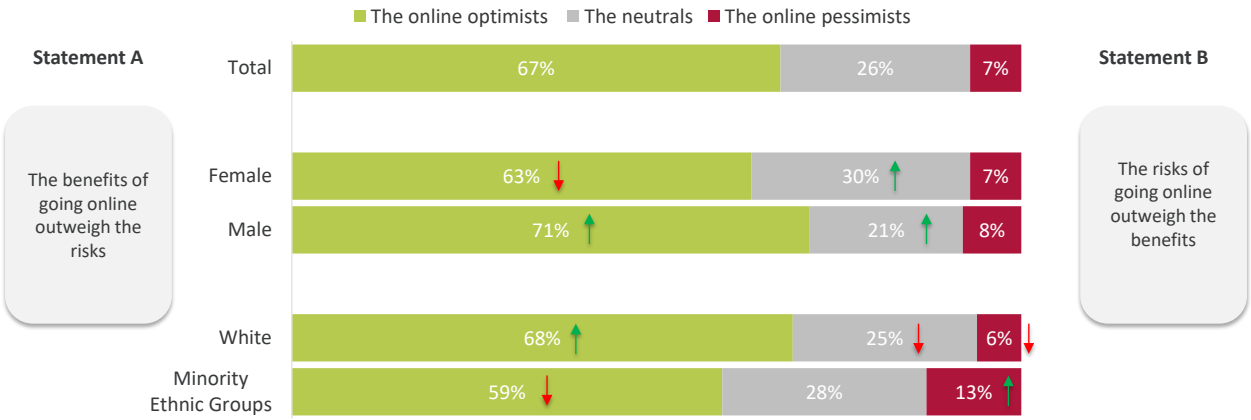
User attitudes towards the internet are complex; internet users are able to distinguish between the practical and social advantages of being online while acknowledging its potential risks to both individuals and society as a whole. Over eight in ten agree that "accessing goods and services online is more convenient for me"[148] and three-quarters of adults agree that using social media, video and messaging apps "helps me to keep in touch with my friends and family".[149] Overall, the majority of internet users (67%) feel the benefits of being online outweigh the risks, compared to just 7% who believe the opposite.[150] And more than four in ten (43%) also agree that being online has an overall positive impact on their mental health, over three times the number that disagree with this statement (14%).

The 'neutral' response from a quarter of UK users indicates that a sizeable proportion are undecided or unsure about issues of online safety and risk. Slightly less than a quarter (23%) gave a neutral

[145] Ofcom, Children's Media Lives, 2022.
[146] Thirteen is the minimum age requirement on many apps and sites which have user-generated content, as well as some online services. This includes Facebook, Instagram, TikTok, YouTube, Twitter, Snapchat, Reddit, Spotify, Quora, Google+ and Ask.fm. The minimum age for use of WhatsApp is 16.
[147] 'Users' is used throughout to refer to users of the internet aged 13+.
[148] Ofcom, Online Experiences Tracker 2021. Unless otherwise stated, all data in this section is taken from the Online Experiences Tracker.
[149] Ofcom, Adults' Media Literacy 2021: Online Behaviours and Attitudes survey.
[150] Findings from Ofcom's Adults' Media Literacy Tracker 2021 found a slightly lower figure: 58% of internet users aged 16+ agreed that the benefits of being online outweigh the risks, compared to 14% who disagreed. The disparity may be influenced by differing methodologies: the Adults' Media Literacy Tracker used a combined online panel, post-to-web and post-to-paper methodology, so it is likely to have reached respondents who use the internet less.

response when asked to choose between statements about the sufficiency of common sense in avoiding potentially harmful content online, suggesting that they did not agree with either of the statements more strongly than the other. More than a quarter were neutral when asked to choose between statements weighing up the importance of supporting online free speech vs protecting users from offensive views. This may indicate that a significant minority of UK internet users are either ambivalent or undecided about some aspects of internet safety.

Figure 2.3: Proportion of UK users agreeing with one of two statements about benefits vs risks of being online



Source: Ofcom, Online Experiences Tracker 2021. Q1. Below are listed several pairs of statements. In each case, please indicate [on a scale of 1 to 10] which statement is closest to your own opinion on a scale, where 0 means complete agreement [with Statement A and 10 complete agreement with Statement B]. Base: UK internet users, aged 13+ (6,619). 'Online optimists' = respondents giving a response of 0, 1, 2 or 3. 'Neutrals' = respondents giving a response of 4, 5 or 6. 'Online pessimists' = respondents giving a response of 7, 8, 9, 10.

…but some groups are less likely than average to be positive about the internet and the impact of being online on their mental health

Internet users who are younger, female or from a minority ethnic group are more likely to believe that the risks of being online outweigh the benefits. Women,[151] and people aged 18-34 are more likely than average to *disagree* that being online has an overall positive effect on their mental health (16% and 18% compared to an average of 14%). Users with a minority ethnic background are more likely to agree that being online has an overall positive effect on their mental health, whereas white users are more likely to feel neutral about this. Women are also *less* likely than average to be 'online optimists' who feel that the benefits of going online outweigh the risks (63% for women vs 71% for men). Asian and Black users are more likely than average to be 'online pessimists' who believe that the risks outweigh the benefits (14% and 12% respectively) and users in minority ethnic groups are twice as likely as white users to share this opinion (13% vs 6%).

Boys aged 13-17 are the group most likely to agree that being online has a positive effect on their mental health: 61% agreed with this statement, compared to 51% of girls aged 13-17, 45% of men over the age of 18 and 40% of women over 18. In contrast, women aged 18-34 were more likely than

[151] Throughout this chapter female internet users aged 13+ are referred to as 'women' and male internet users aged 13+ are referred to as 'men'.

any other group to report a negative overall impact on mental health, with 23% of this group disagreeing with the statement.

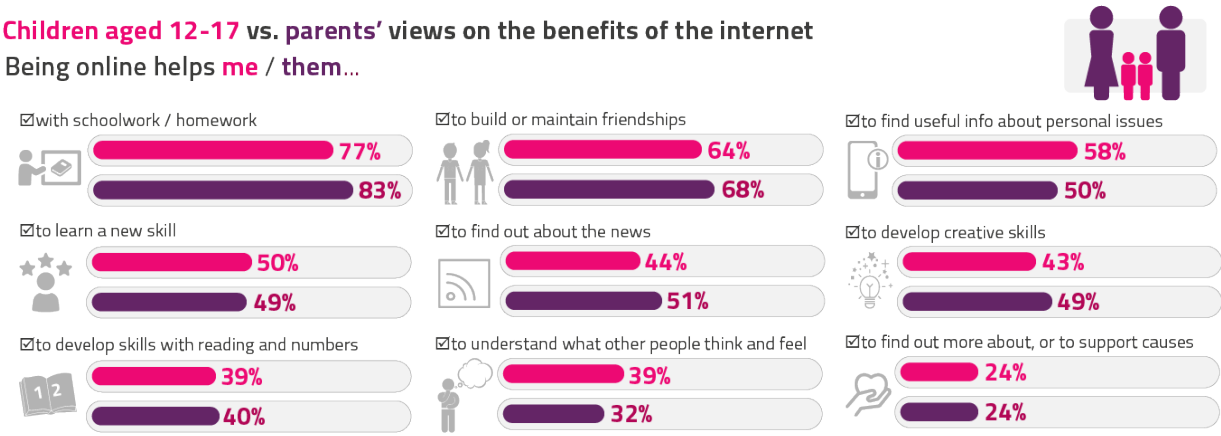
Differences also arise in relation to specific ethnicities. Nearly a quarter (23%) of Black women disagree that being online has a positive effect on mental health, almost twice as high as among Asian women (12%) and also higher than white women (16%) and women from a mixed ethnicity background (16%).[152]

Heavy users of the internet[153] are more likely to be online optimists (73%) and more likely to agree that being online has a positive effect on their mental health (50%). The same is also true of broad users[154] of the internet (those who report having used many new sites and apps in the past month) of whom 75% are online optimists and 55% agree that being online has a positive effect on their mental health.

Many children and parents agree that online services can bring benefits

The majority (59%) of children aged 8-15 report that that using social media, and messaging sites and apps, makes them happy *all* or *most* of the time, and 60% say that using these platforms makes them feel closer to their friends.[155] More than three-quarters of children aged 12-15 said that being online can help with their school/ homework, while half said it can be used to learn a new skill. Parents of 12-15s expressed similar opinions. [156]

Figure 2.4: Parents' and children's use of the internet to learn and build social skills



Source: Ofcom, Children's and Parents' Media Literacy Tracker 2021: Parents Only survey and Online Knowledge and Understanding survey. QC13. Being online can help you do many different things. Which of these does it help you with? Base: Children aged 12-15 who go online (1,245) QP53. Thinking about what your child does online, which – if any – of these applies to them? Being online helps them... Base: Parents of children aged 12-15 who go online (940)

[152] Ofcom, Online Experiences Tracker 2021.
[153] 'Heavy' use is defined as those who spend 22 hours or more a week online for personal reasons (that is, not for work, school or university).
[154] 'Broad internet users' is defined as those who report having used many new sites and apps in the past month.
[155] Ofcom, Children's and Parent's Media Literacy 2021: Online Knowledge and Understanding survey.
[156] Ofcom, Children's and Parent's Media Literacy 2021: Online Knowledge and Understanding survey.

Self-expression online

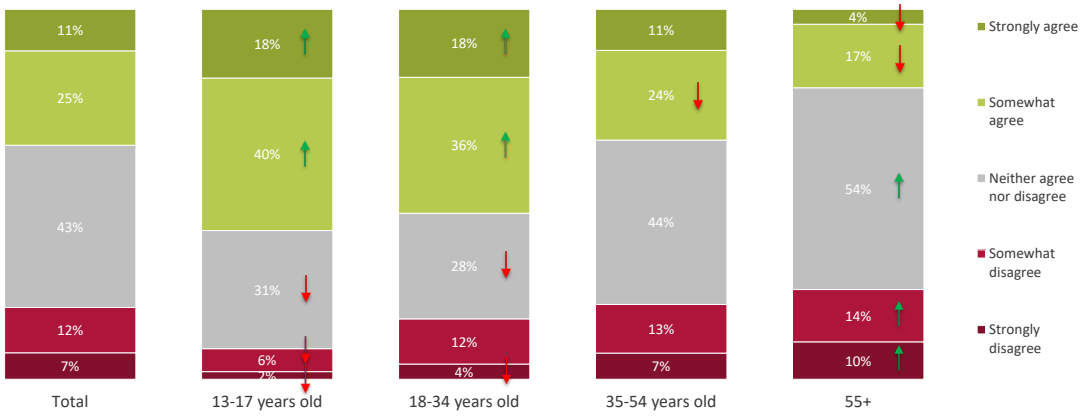
Being online allows people to connect with others, sometimes in ways they may not be able to do offline

Online technologies allow users to connect with others around the world to share their interests and outlooks, and potentially to reach a large online audience when they speak out. Sixty-two per cent of users agree that being online "gives me space to pursue my hobbies and interests in a way I couldn't do offline", while 45% agree that "I can share my opinions and have a voice online more easily or effectively than I can offline" and 36% agree that "I feel more free to be myself online".

Ofcom's research shows that some groups of people benefit particularly from the self-expression enabled by being online. For example, the proportion of users agreeing that they "feel more free to be myself online" is significantly higher among gay, lesbian and bisexual users than heterosexual users. Similarly, bisexual, gay and lesbian users are more likely to agree that being online allows them to "share my opinions and have a voice", with 58% and 48% respectively agreeing with the statement.

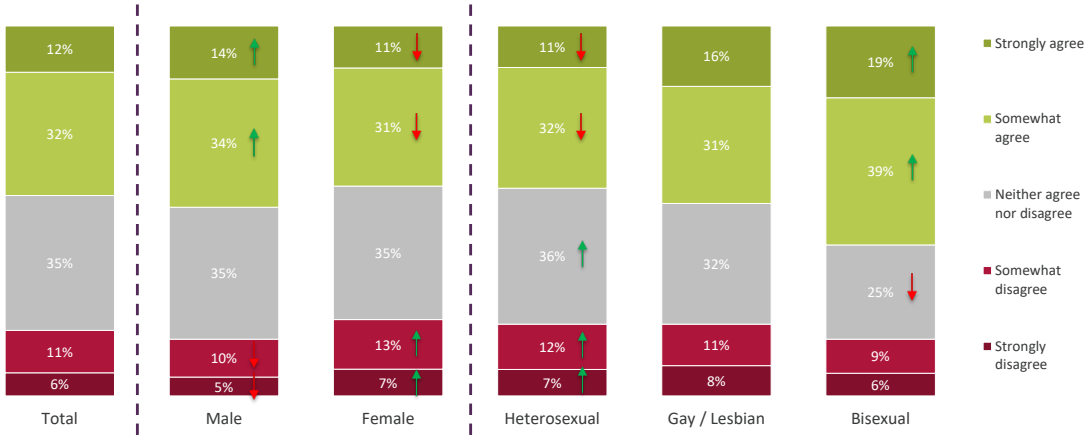
The self-expression benefits of being online are also more strongly felt by younger users. Users aged 13-34 are more likely than average to feel that they are "more free to be themselves online", and that they can "share their opinion and have a voice", whereas users aged 55 and over are more likely to disagree with these statements. Users with a minority ethnic background are also more likely than white users, on average, to agree with these statements.

Figure 2.5: Agreement with statement 'I feel more free to be myself online', by and age



Source: Ofcom, Online Experiences Tracker 2021 – Q3. To what extent, if at all, do you agree or disagree with the following statements about being online? Base: UK internet users, aged 13+ (6,619). Arrows indicate a figure that is significantly higher or lower than the average for all internet users, tested at 95% confidence level.

Figure 2.6: Agreement with statement "I can share my opinions and have a voice", by gender and sexuality



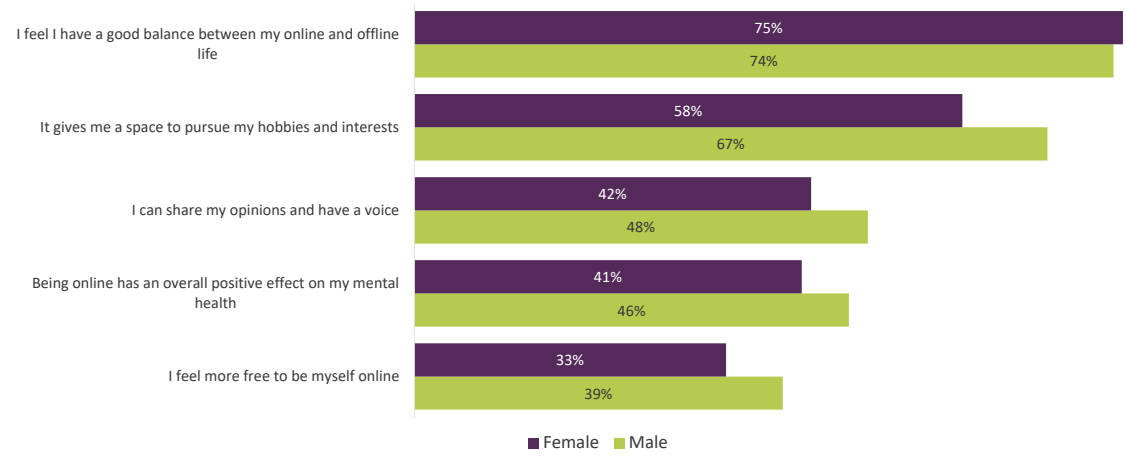
Source: Ofcom, Online Experiences Tracker 2021 – Q3. To what extent, if at all, do you agree or disagree with the following statements about being online? Base: UK internet users, aged 13+ (6,619). Arrows indicate that the figure is significantly higher/lower than the average, at 95% confidence.

The offline space is part of, not separate from, society; and what happens offline is often brought online

The integration of online life into 'real life' means that the internet is not isolated from wider society, but a part of it. This means that online life can replicate harmful discriminatory dynamics or behaviours that exist in wider society: what happens offline is brought online. For example, when comparing gender, women are significantly less likely than men to feel that being online allows them to share their opinions and have a voice (42% of women vs 48% of men). Women are also significantly less likely than men to agree that they feel "more free to be myself" online, although for both genders only a minority agreed, at 33% and 39% respectively.[157]

[157] Ofcom, Online Experiences Tracker 2021.

Figure 2.7: Proportion of UK users agreeing with positive statements about being online, by gender



Source: Ofcom, Online Experiences Tracker 2021 – Q3. To what extent, if at all, do you agree or disagree with the following statements about being online? Base: UK internet users, aged 13+ (3,244 male; 3,361 female)

Social media take-up and use

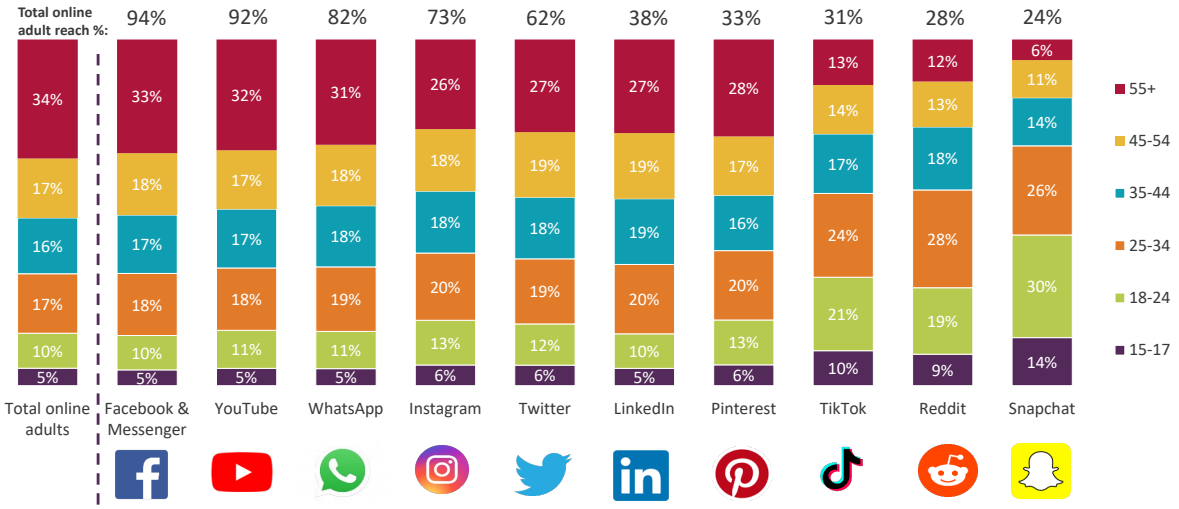
TikTok and Snapchat have a younger adult user base than the other top reaching social media platforms

For most of the social media platforms with high adult reach, their audience composition is in line with the UK online adult audience composition. However, the audiences for Snapchat and TikTok skew towards younger adults. Over half of both Snapchat's and TikTok's UK adult visitors were aged 15-34 in September 2021 (51% and 52% respectively). Meanwhile, UK adult visitors to Reddit are more likely than average to be male and aged 18-24 (33% of Reddit visitors were 18-24 males in September 2021).[158]

The following sections explore experiences and attitudes to online platforms such as social media as well as other online services. In addition to larger platforms such as YouTube and Facebook, we also include analysis of UK-established social video services which fall under the current regulation of video-sharing platforms (VSPs).[159] This includes platforms such as OnlyFans, which reached 4% of UK online adults in September 2021, Vimeo, which reached 6% and BitChute, and Brand New Tube and Imgur which each reached less than 1% of the UK online adult population. We also discuss communication services such as Telegram, which reached 3% of UK online adults in September 2021, and Discord, which reached 10%.[160]

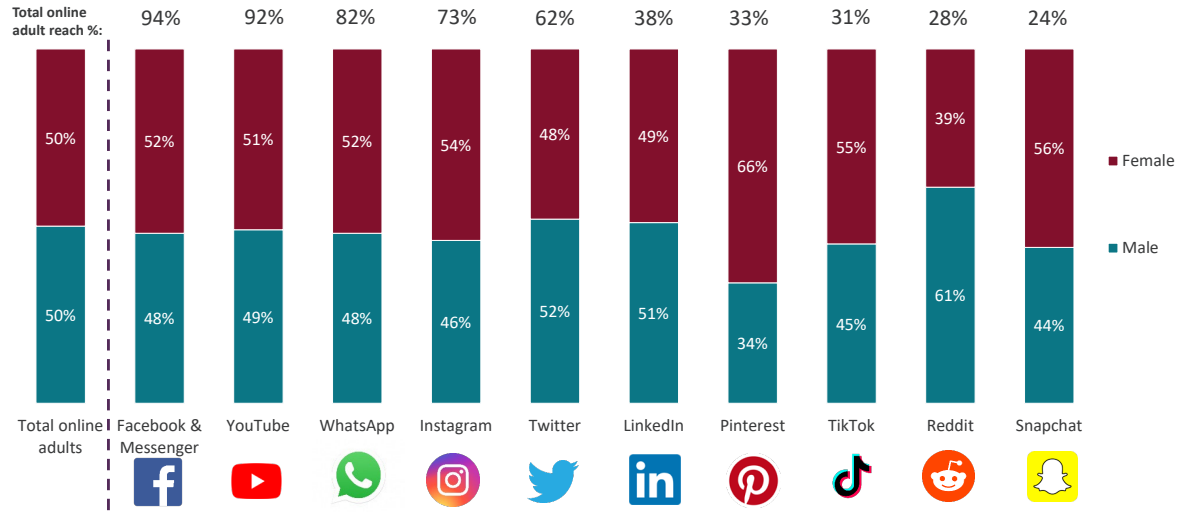
[158] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 - 30 September 2021, all adults age 15+, UK.
[159] For more information on Ofcom's role in VSP regulation see: Video-sharing platform (VSP) regulation - Ofcom.
[160] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 - 30 September 2021, all adults age 15+, UK.

Figure 2.8: Top ten social media platforms by UK adult reach, adult audience composition by age: September 2021



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021- 30 September 2021, adults age: 15+, UK. Note: The platforms shown in the chart represent the top ten social media platforms by UK adult reach. See the Online Landscape chapter.

Figure 2.9: Top ten social media platforms by UK adult reach, audience composition by gender: September 2021



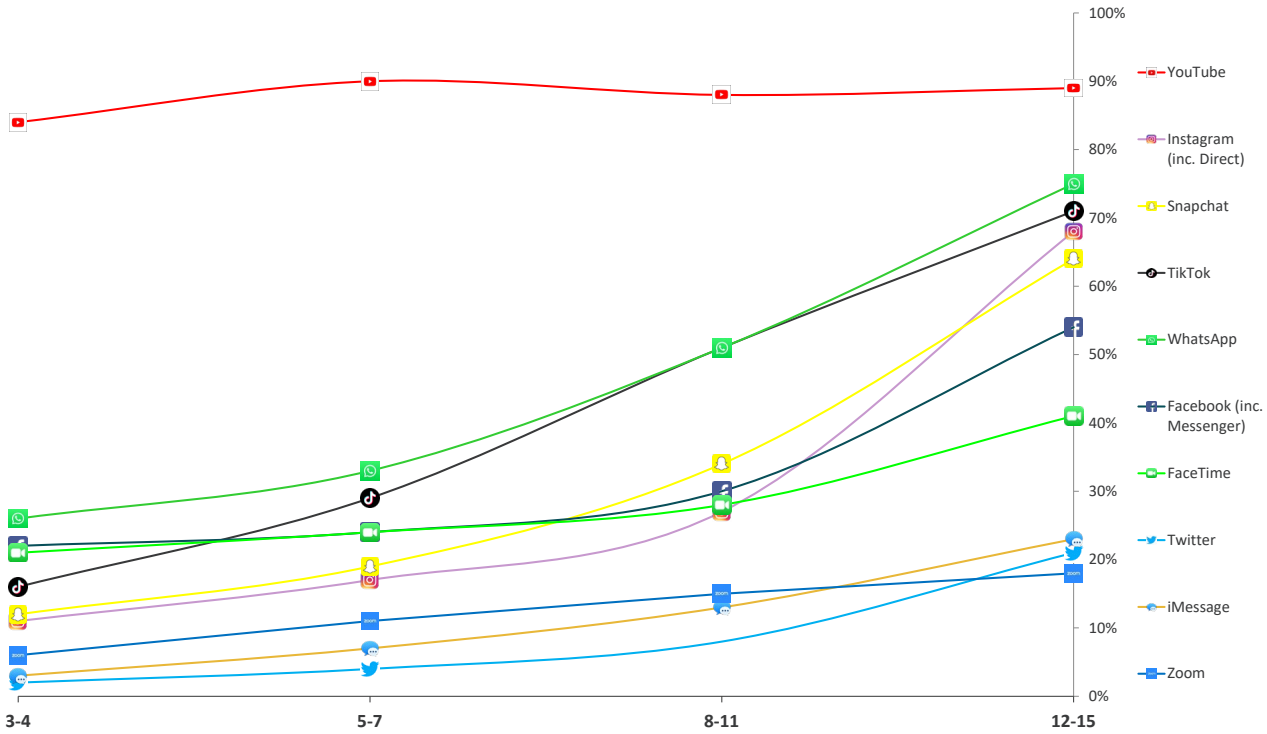
Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021- 30 September 2021, adults age: 15+, UK. Note: The platforms shown in the chart represent the top ten social media platforms by UK adult reach.

58% of 3-15-year-old children use a social media platform, despite most not meeting the minimum age requirement

The most popular social media platforms have a minimum age requirement (usually 13 years old). However, Ofcom's Children's and Parents' Media Literacy Tracker 2021 shows that 98% of children

aged 3-15 go online and 58% use social media. Four in ten parents of 8-12-year-olds said they would allow their child to use social media before they reached the minimum age.[161]

Figure 2.10: Top ten most-used online platforms among children aged 3-15



Source: Ofcom Children Media Literacy Tracker 2021: Children's Online Behaviours and Attitudes survey, QP4/QC3, QP5/QC4, QP13/QC13, QP10/QC9. Summary to show the top apps/ sites used by children aged 3-17 across all categories of use (responses from parents of 3-7-year-olds and from children aged 8-15) chart shows all apps/ sites used by 5% or more of all children aged 3-15. Base: All children aged 8-15 and parents of children aged 3-7 (5,861)[162]

Potentially harmful online experiences

Although most people believe that the benefits of being online outweigh the risks, the online environment also has the potential to cause harm. Not all incidences of content or behaviour which have the potential to cause harm actually result in harm being caused; for this reason, in the following discussion they are referred to as '*potential* harms'. The discussion will also refer to *'most recently encountered potential harm'* which is the potentially harmful content or behaviour the user most recently encountered in the four weeks before their survey response.

[161] Ofcom, Children's and Parent's Media Literacy 2021: Online Behaviours and Attitudes survey. Thirteen is the minimum age to use most apps and sites which rely on user-generated content, as well as some online services. This includes Facebook, Instagram, TikTok, YouTube, Twitter, Reddit, Spotify, Quora and Ask.fm. Google requires users to be 13 to have a Google+ account and to access Gmail, but the search engine can be used by those under 13. Snapchat has a minimum age of 16.

[162] The figures shown here for YouTube include both the main YouTube app (minimum age requirement 13) or the YouTube Kids app. Ofcom's data shows that 28% of children aged 3-11 who use YouTube *only* use the YouTube Kids app, compared to 72% who use the main YouTube app at least some of the time, and 53% who *only* use the main YouTube app.

Over six in ten users have encountered at least one potential harm online in the last four weeks

When looked at individually, most potentially harmful pieces of content and behaviour are encountered by a relatively low proportion of UK users (see figure 2.12). When potential harms are considered collectively, however, 62% encountered at last one form of potentially harmful content or behaviour in the last four weeks.[163] The average number of potential harms experienced in the last four weeks was three. Contact harms and content harms are more likely to be experienced than commercial harms.

Figure 2.11: Overview of the 'three C's': content, contact and commercial harms

Source: Ofcom, Online Experiences Tracker 2021 – Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? Base: UK internet users, aged 13+ (6,619)

By far the most common commercial harm, and the most common potential harm of all, is scams, fraud and phishing, encountered by 27% of users in the past four weeks; this is also the only potential harm which those aged 55+ experience at a higher level than the average and is one of the two potential harms (alongside unwanted sexual messages) which a significant proportion of users encountered via email.

[163] Ofcom, Online Experiences Tracker 2021. Fieldwork was conducted in October-November 2021. All data in this section, unless otherwise stated, is sourced from the Online Experiences Tracker.

Figure 2.12: Top 20 online potential harms encountered by UK users in the past four weeks

Potential harm	*% of users experiencing in last four weeks*
Scams, fraud and phishing	27%
Misinformation	22%
Generally offensive or 'bad' language[164]	21%
Unwelcome friend/follow requests or messages	20%
Content encouraging gambling	16%
Trolling	15%
Hateful, offensive or discriminatory content that targets a group or person based on specific characteristics	11%
Content depicting violence	9%
Content which objectifies, demeans or otherwise negatively portrays women	8%
Bullying, abusive behaviour or threats	8%
Unwanted sexual message	8%
Content relating to negative body image, excessive dieting and/ or eating disorders	8%
Animal cruelty	7%
Paid-for/sponsored content which was not clearly marked as such, e.g. astroturfing	7%
Fake or deceptive images/videos, e.g. 'deepfakes'	7%
'Content glamourising unhealthy or abusive lifestyles, e.g. binge drinking, drug taking	7%
Sexual/pornographic content inappropriate for the site/app	7%
Group shaming, boycotting, or excluding someone based on their views, opinions on actions, including online 'pile-ons'	6%
People pretending to be another person (e.g. catfishing)	6%
Content negatively affecting self-esteem	5%

Source: Ofcom, Online Experiences Tracker 2021 – Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? Base: UK internet users, aged 13+ (6,619). Pink = content harms; yellow = contact harms; purple = commercial harms.

Almost half (47%) of internet users report coming across a potential harm while using social media

Social media was more likely than average to be the type of platform in use when users encountered group-shaming, boycotting or excluding someone based on their views (72%),[165] hateful, offensive or

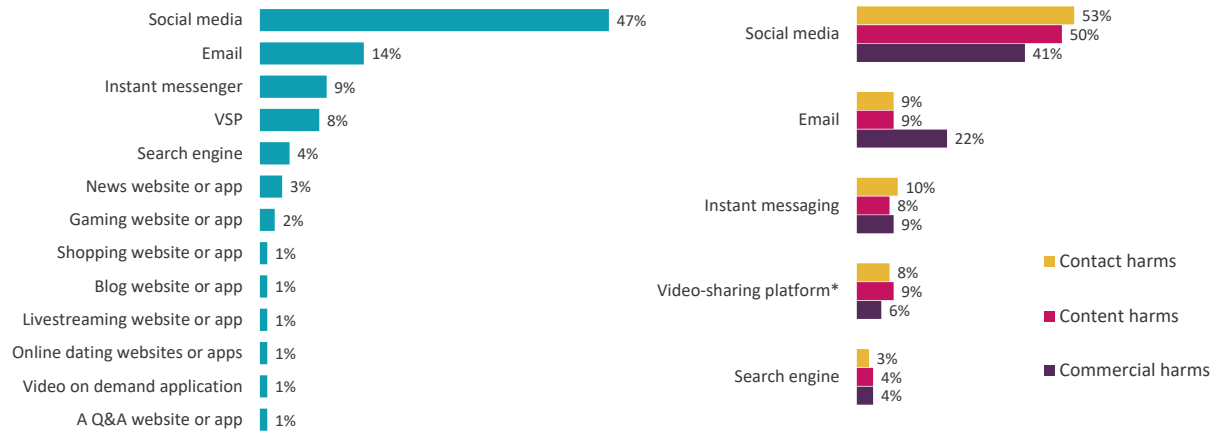
[164] Generally offensive or 'bad' language could include swearing, rudeness or language which is offensive to the user but does not meet the requirements of other codes. Bad language in itself is unlikely to cause harm to most users, although 19% of those who experienced this potential harm most recently reported being bothered or offended by it, including 4% who were said that "It really bothered me or I found it extremely offensive".

[165] CAUTION: LOW BASE (<100). 'Group shaming' is used to describe the phenomenon in which a particular person is 'called out' for their actions or beliefs online, with potentially negative psychological and social consequences. This is sometimes referred to as 'cancelling' or referred to as a 'pile-on'.

discriminatory content (64%), animal cruelty (62%), generally offensive or 'bad' language (62%), content which negatively impacted on a user's self-esteem (61%)[166] and misinformation (61%).

Social media was the most common source of potential harm for nearly all the content and behaviours respondents were asked about, with the exception of two types – scams, fraud and phishing and unwanted sexual messages – for which the most common source was email.[167]

Figure 2.13: Type of service in use when users encountered their most recent potential harm

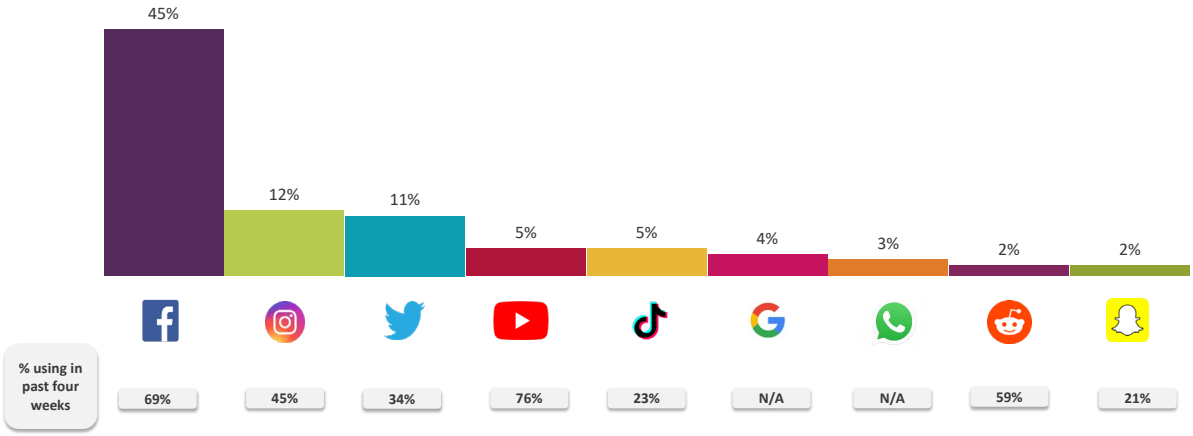


*Source: Ofcom, Online Experiences Tracker 2021 – Q21. What type of site or service were you using when you experienced…? Base: UK internet users, aged 13+ experiencing potential harm most recently (3,843). * A video-sharing platform is a type of online video service where users can upload and share videos. Examples include YouTube and TikTok.*

Users were more likely to have encountered their most recent potential harm on Facebook than on any other website or app: 45%, over three times the proportion as on the second most likely site/app, Instagram (12%). Despite YouTube being the most-used app among the sample of UK users surveyed (78%), only one in 20 (5%) of all the most recently encountered potential harms was encountered on YouTube.[168]

[166] CAUTION: LOW BASE (<100).
[167] This excludes some low-incidence potential harms with base sizes under 50. See the Communications Services chapter for more on email services.
[168] Ofcom, Online Experiences Tracker 2021.

Figure 2.14: Platform on which most recently encountered potential harm was experienced



Source: Ofcom, Online Experiences Tracker – Q22-Q28. Combined experience of potential harms across platforms. Base: UK internet users, aged 13+ experiencing [ANY POTENTIAL HARM] most recently on any type of website or app (2,728). N.B. Google refers to Google search only.

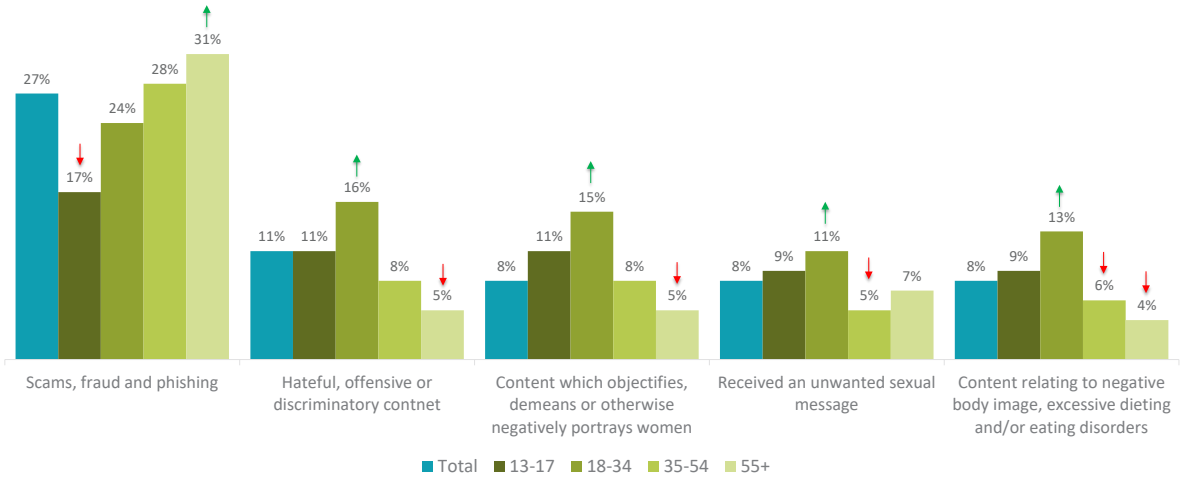
Young adults are at the highest risk of encountering potential harms

Young adults aged 18-34 are more likely than average to have most recently experienced at least one potential harm (65% vs an average of 62% for all users), whereas users aged 55+ have a lower overall risk of encountering a potential harm (57%). Certain age groups are more likely to encounter certain types of potentially harmful content or behaviour. For example, young people aged 18-24 are significantly more likely to encounter hateful, offensive or discriminatory content (17% vs an average of 11%); whereas users aged 55+ have a higher risk of encountering scams, fraud and phishing (31% vs an average of 27%).[169] But many factors besides age can influence the likelihood of experiencing harmful content or behaviour. A key factor is how much people use the internet: heavy users of the internet[170] are more likely to experience potential harms.

[169] For a full list of potential harms that are more commonly experienced by certain age groups, see accompanying data tables and interactive report.

[170] Heavy users of the internet are defined in the Online Experiences Tracker as those who spend over 22 hours a week online, excluding time spend online for work, school or university. This could include time using social media and messaging, watching films, TV programmes and videos online, playing games online or on video calls. Medium users of the internet are those spending between 5 and 22 hours a week. Light users spend less than 5 hours a week.

Figure 2.15: Experience of selected potential harms, by age group[171]



Source: Ofcom, Online Experiences Tracker 2021 – Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? Base: UK internet users, aged 13+ (6,619). Arrows indicate that the figure is significantly higher/lower than the average at 95% confidence.

Almost three-quarters of mixed ethnicity and Black internet users had encountered at least one online potential harm recently

Mixed ethnicity and Black internet users are more likely than both Asian and white users to have encountered potential harms in the last four weeks (74% and 71% compared to 63% and 61% respectively). Users from Black, Asian, and mixed ethnicity backgrounds are more likely than average to encounter a range of different potential harms. Black men are significantly more likely than almost all other groups to have experienced at least one potential harm (74%).[172]

Women from a minority ethnic background (and Black, Asian and mixed ethnicity women specifically[173]) are more likely than white women to have experienced at least one potential harm in the last four weeks (67% vs 61%).Women from a minority ethnic background are also more likely than white women to have experienced some specific harms: for example, they are almost twice as likely to have received an unwanted sexual message (11% vs 6%), three times as likely to have seen or experienced sharing of intimate images without consent (3% vs 1%), and four times as likely to have received an unwanted or unsolicited sexual/nude image or video (8% vs 2%).

[171] Covers harms experienced in the past four weeks. Potential harms chosen by Ofcom for illustrative purposes.
[172] Significantly more likely than: white men (66%), white women (61%), men from any minority ethnic background (72%), women from any minority ethnic background (71%), Asian women (67%) and Asian men (67%). *CAUTION: LOW BASE SIZE (<100)
[173] 79% of women from a mixed ethnicity background*, 74% of Black women and 67% of Asian women experienced at least one potential harm in the last four weeks. *CAUTION: LOW BASE SIZE (<100)

Figure 2.16: Proportion of UK users encountering potential harms in past four weeks, by ethnicity

Potential harm	All	White	Mixed ethnicity	Asian	Black
Any potential harm	**62%**	**61%** ↓	**74%** ↑	**63%** ↑	**70%** ↑
Misinformation	22%	22%	29% ↑	19%	25%
Hateful, offensive or discriminatory content	11%	9% ↓	22% ↑	16% ↑	18% ↑
Content depicting violence	9%	9%	13%	9%	14% ↑
Unwanted sexual messages	8%	7%	14% ↑	10% ↑	17% ↑
Bullying, abusive behaviour or threats	8%	8%	10%	9%	12% ↑
Content glamourizing unhealthy or abusive lifestyles, e.g. binge drinking, drug taking	7%	7%	17% ↑	6%	8%
Sexual or pornographic content inappropriate for the site or app	7%	6% ↓	7%	11%	18%
Fake or deceptive images/videos	7%	7% ↓	6%	10% ↑	12% ↑
Group shaming, boycotting, or excluding someone based on their views, opinions or actions	6%	6%	10% ↑	5%	7%
People pretending to be another person, e.g. 'catfishing'	6%	5% ↓	9%	7%	13% ↑
Collection or use of data without knowledge or permission	4%	4%	8% ↑	5%	7%
Sale or advertisement of illegal goods	4%	4% ↓	4%	6% ↑	5%
People sending unwanted/unsolicited sexual or nude images or videos, e.g. 'cyberflashing'	3%	3% ↓	10% ↑	7% ↑	11% ↑
Intentional harassment during gaming, e.g. 'griefing'	3%	2% ↓	5%	4% ↑	5%
Private conversations shared without consent	3%	2% ↓	2%	5% ↑	8% ↑
Unintentionally spending money on in-app purchases or gifts	3%	2% ↓	4%	4% ↑	5%
Content encouraging extremism, radicalisation or terrorism	2%	2%	3%	4% ↑	3%
Pressure to send photos or personal information to someone	2%	2% ↓	5% ↑	4% ↑	5% ↑
Stalking, cyberstalking or intrusive behaviour	2%	2% ↓	4%	5% ↑	2%
Private/intimate information made public, e.g. 'doxxing'	2%	1% ↓	2%	4% ↑	6% ↑
Sharing of intimate images without consent	1%	1% ↓	2%	3% ↑	5% ↑
Content depicting the sexual abuse of children	1%	1% ↓	1%	3% ↑	3% ↑
Promotion of FGM	1%	1% ↓	1%	2% ↑	2% ↑

Source: Ofcom, Online Experiences Tracker 2021 – Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? This includes any images, videos, audio or text, either comments, posts or messages you have seen and/or those shared directly to you. Please select all that apply. Base: UK users aged 13+ (Total 6,619; white 5,656; NET minority ethnic group 896; mixed ethnicity 163; Asian 476; Black 218) Only ethnicities with a base size of >50 are shown.

Animal cruelty and hateful, offensive or discriminatory content are the potential harms which are more likely to bother or offend users

While exposure to any type of potentially harmful content or behaviour may negatively affect users' online experience, our research shows that not all potentially harmful online content or behaviour has the same degree of negative impact. Some groups of users feel more impacted than others when encountering potential harms. As part of our research into online experiences, Ofcom asked UK online users to rate how badly they were affected by the potential harm they had experienced most recently, on a scale from 1, "It didn't bother me at all / It didn't offend me" to 5, "It really bothered me / I found it extremely offensive."

The content and behaviours most likely to bother or offend users are: animal cruelty (84%); hateful, offensive or discriminatory content that targets a group or person based on specific characteristics (78%); group-shaming, boycotting or excluding someone based on their views, opinions or actions (73%);[174] content which objectifies, demeans or otherwise negatively portrays women (71%);[175] and bullying, abusive behaviours and threats (68%).[176]

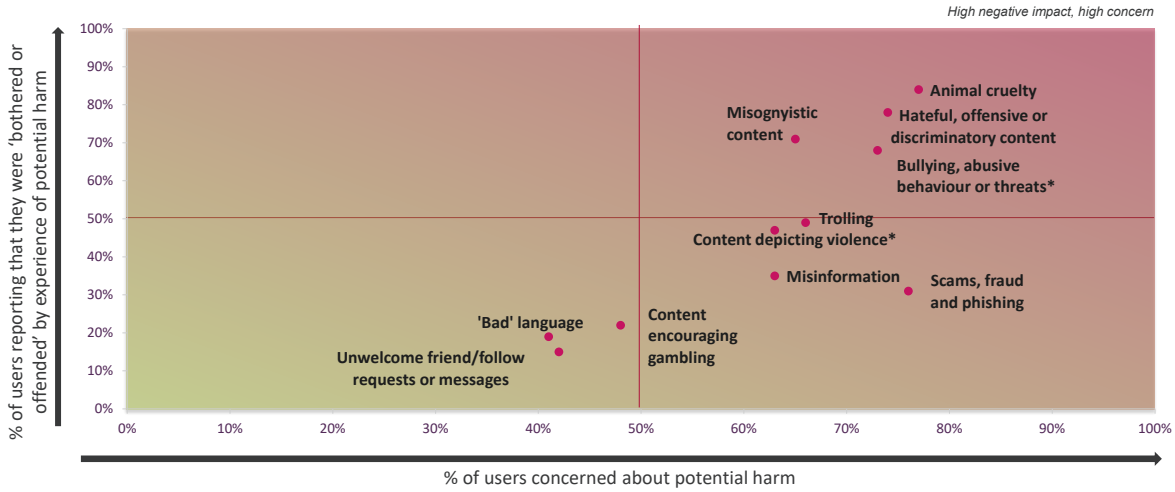
Some potential harms may have a negative impact that is cumulative; a one-off experience may cause little harm, but the combination of many such experiences may cause significant harm. Conversely, some users may have experienced negative impact or harm when encountering a potential harm for the first time, but then may have become desensitised to it after repeated exposure. Those who were *not* bothered or offended by their most recently experienced potential harm were more likely to have encountered that potential harm ten times or more.

The impact of potential harms correlates with the level of concern users have about them

Even if users have not encountered potentially harmful content themselves, they may still be concerned about its presence on the internet, and the possibility that they or others will come across it in the future. Ofcom research finds that internet users have the highest level of concern about content depicting child sexual exploitation and abuse (CSEA; 86% were fairly or very concerned), content encouraging extremism, radicalisation and terrorism (79%), promotion of female genital mutilation (FGM; 77%), animal cruelty (77%) and scams, fraud and phishing (76%).

[174] CAUTION: LOW BASE SIZE (<100).
[175] CAUTION: LOW BASE SIZE (<100).
[176] Only potential harms which were experienced most recently by at least 50 respondents are shown. Some potential harms with very low incidence are not reported as their base sizes are too low to be statistically reliable.

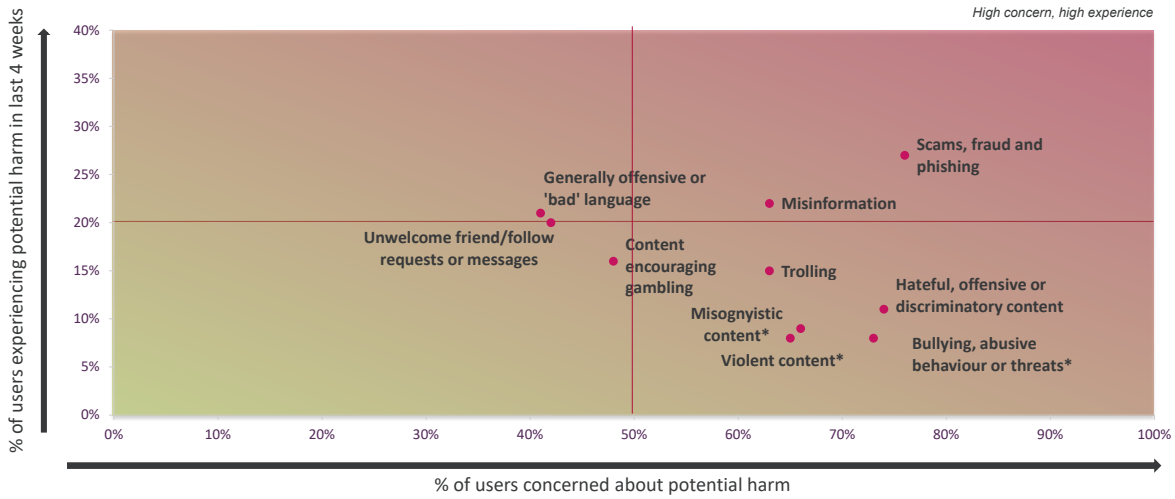
Figure 2.17: Impact of potential harm compared to concern



Source: The Online Experiences Tracker Wave 1 – Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? Q 14. On a scale of 1 to 5, where 1 means 'It didn't bother me at all/It didn't offend me' and means 'It really bothered me/I found it extremely offensive', when you last saw or experienced ..., would you say the content or experience was...? Base Q8: UK internet users, aged 13+ (6,155). Base Q14: All those experiencing [potential harm] most recently (3,843). This chart shows the top ten potential harms by negative impact. Only potential harms with base sizes of >50 are shown.

When the level of concern about a potential harm is compared with reported exposure to it, two types of potentially harmful content have both high levels of concern and relatively high levels of exposure: misinformation; and scams, fraud and phishing.[177]

Figure 2.18: Concern about potential harms compared with incidence of experience



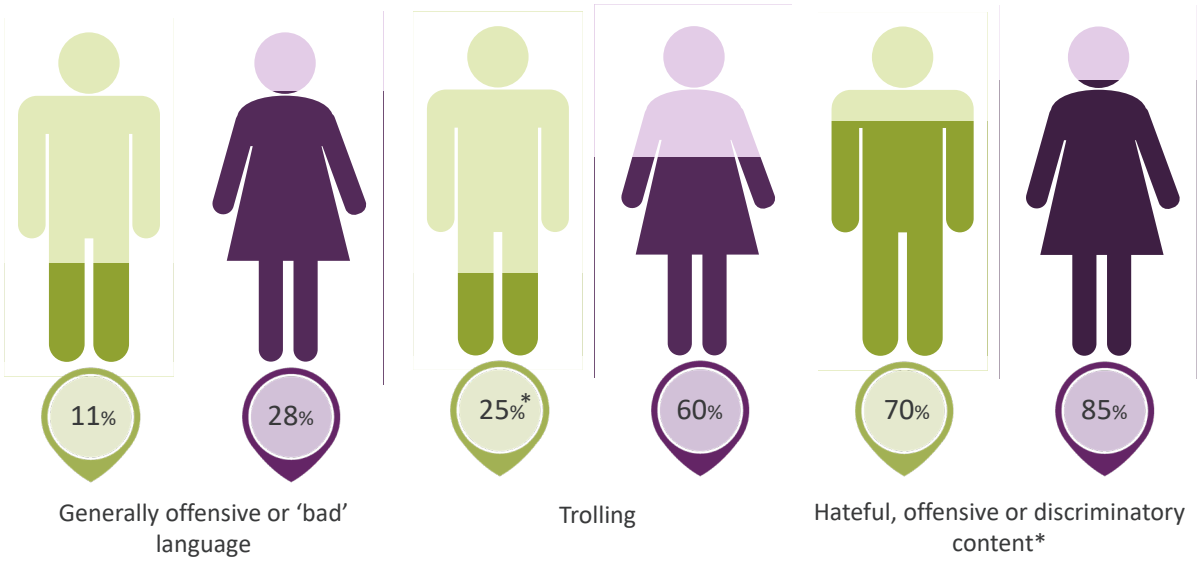
Source: Ofcom, Online Experiences Tracker Wave 1 – Q7. Below is a list of things that someone may come across on the internet. Please tell me on a scale of 1 to 5, where 1 means 'mildly concerned' and 5 means 'very concerned', how concerned you are about each. Q8. Which, if any, of the following have you seen or experienced online in the last 4 weeks? Base: UK internet users, aged 13+ (6,619). This chart shows the top ten potential harms by incidence, as well as the top five potential harms by concern.

[177] 'Relatively high levels of exposure and concern' are defined here as >50% of users being fairly or very concerned about this potential harm *and* >20% of users reporting exposure in the past four weeks.

Women are more likely than men to say that they were harmed by certain online content or behaviour

There are clear differences in the degree of negative impact experienced by users depending on their age and gender. Women are significantly more likely than men to say that they were bothered or offended by their most recently encountered potential harm (41% vs 28%). The youngest people we surveyed, aged 13-17, were also more likely than average to say that they were bothered or offended (45% compared to 38% average and 33% among users aged 55+) by their experience. Women are particularly likely to be negatively affected by hateful, offensive or discriminatory content and trolling when compared to men.

Figure 2.19: Proportion of users saying that they were bothered or offended by potential harm, by gender



*Source: Ofcom, Online Experiences Tracker 2021 – Q14. On a scale of 1 to 5, where 1 means 'It didn't bother me at all/It didn't offend me' and means 'It really bothered me/I found it extremely offensive', what level of offence did the content or experience cause you? Base: UK internet users, aged 13+ experiencing…most recently at Q9 (generally offensive or 'bad' language male, 205; (generally offensive or 'bad' language female, 182; trolling male, 74; trolling female, 124; hateful, offensive or discriminatory content, male 67; hateful, offensive or discriminatory content female, 79) *CAUTION: Low base size (<100)*

More than half of all users in minority ethnic groups were negatively impacted by their most recently encountered potential harm

Users with any minority ethnic background – and from Black (56%), mixed ethnicity (51%), and Asian (49%) backgrounds specifically – were more likely than white users (36%) to report that they had been bothered or offended by their most recently encountered potential harm. Users from an ethnic minority background were also significantly more likely than average to report the highest level of negative impact (25% vs 14%).[178] Black men in particular were likely to do this: 63% were bothered

[178] That is, giving an answer of 5, 'It really bothered me / I found it extremely offensive'.

or offended by their most recent potentially harmful experience, compared to 30% for white male counterparts and an average of 38% for all genders and ethnicities.

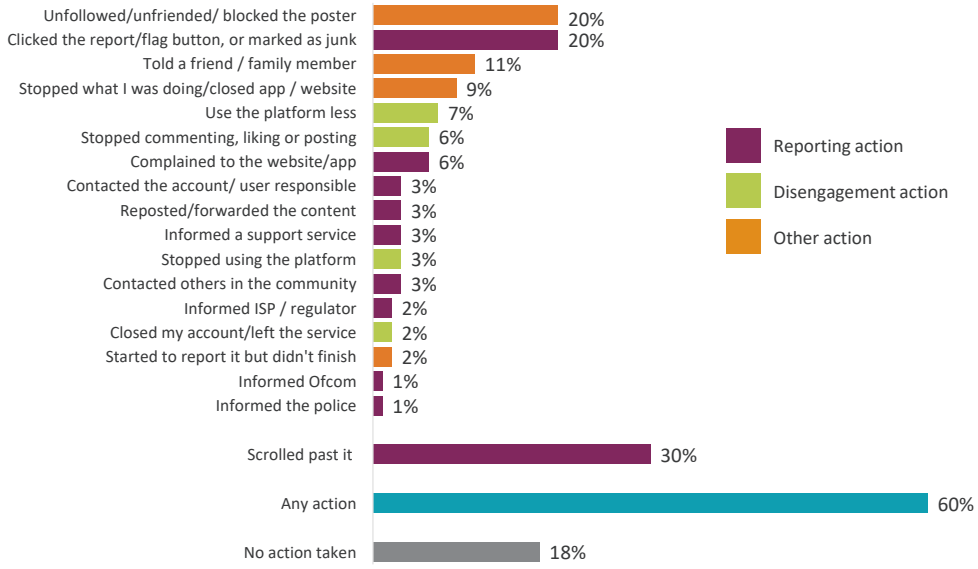
Action taken after encountering potentially harmful online content or behaviour

Internet users' experience of reporting content

Over three-quarters (77%) of those who were bothered or offended by their experience took some form of action[179]

Users were more likely to take action after encountering potential harms which had a high negative impact on them. Overall, six in ten users who had encountered a potential harm reported taking some sort of action as a result of their most recent experience. Actions taken ranged from fairly limited responses, such as scrolling past the content, to more proactive reporting behaviour such as clicking the flag, report or junk button, or contacting charities. The most common types of proactive action after encountering a potential harm were unfollowing, unfriending or blocking the poster or perpetrator, and clicking the report or flag button or marking it as junk, both enacted by a fifth of users who took action.[180] A fifth of users reported or flagged the potentially harmful content or behaviour they encountered.

Figure 2.20: Action taken after most recently experienced potential harm



Source: Ofcom, Online Experiences Tracker 2021 – Q15. When you saw ... on that occasion, which of the following actions did you take, if any? Base: UK internet users, aged 13+ experiencing any potential harm most recently at Q9 (3,843).

[179] Ofcom, Online Experiences Tracker 2021. All data in this section, unless otherwise stated, is taken from the Online Experiences Tracker 2021.

[180] On some sites and apps, users have the option to use the flagging and reporting functions bring potentially harmful content to the attention of a platform's moderators and moderation systems, so that it can be assessed against the platform's terms and conditions and action potentially taken if there is a breach.

A fifth of users said that as a result of having encountered the potential harm they either disengaged or engaged in a different way online. This included 9% who closed the app or website after having encountered the potential harm, 7% who said they used the platform less after having encountered a potential harm, and 6% who said they stopped commenting, liking or posting on the platform as a result. Three per cent of users who had experienced a potential harm said they stopped using the platform altogether.

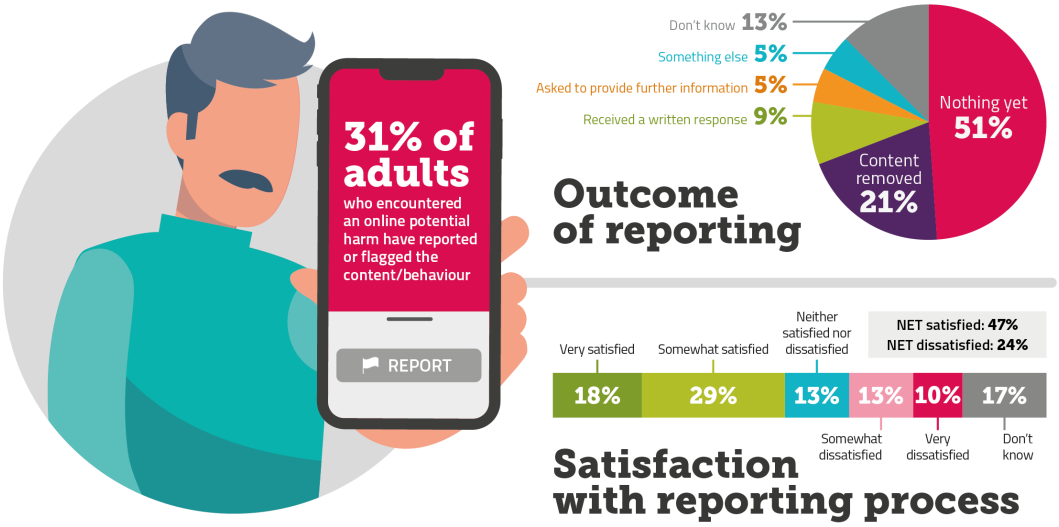
Users in a minority ethnic group were more likely than white users to take some form of action (68% vs 59%) and were also more likely to report or flag the item (37% vs 31%). They were also more likely to disengage or change their engagement behaviour as a result of having encountered a potential harm (27% vs 19%).

The youngest users in our sample, aged 13-17, were more likely than average to disengage or change their behaviour after encountering a potential harm online (27% vs an average of 20% for all ages), and they were more than twice as likely to say they had stopped using the platform altogether after such an experience (7% vs 3%). However, this age group was *less* likely than average to click the reporting or flagging button, or to mark content as junk, with only 14% doing this compared to an average of 20% across all age groups.

Of those who reported or flagged content, a fifth said that the content had been removed

Half of those who had reported content said that nothing had happened since doing so, whereas a fifth (21%) said that the content had been removed, and one in ten (9%) said that they had been asked to provide further information. Slightly less than half (47%) were at least somewhat satisfied with the reporting process as a whole, compared to 24% who were dissatisfied.

Figure 2.21: Reporting behaviours and outcomes following users' most recently encountered online potential harm



Source: Ofcom, Online Experiences Tracker 2021. Q15. When you saw ... on that occasion, which of the following actions did you take, if any? Base: UK internet users 13+ who experienced any potential harm most recently (3,843) Q17. You

mentioned you reported the .... What happened as a result? Base: UK internet users 13+ who experienced any potential harm most recently and reported the potential harm (792).

Slightly more than a fifth (22%) said that they did not take action because they didn't think that doing so would make a difference

The most common reason for not taking action was that the user 'didn't see the need to do anything'. Half of users who did not take action after encountering a potential harm did not do so for reasons relating to low impact or concern. A quarter (26%) said that they did not take action because they were not directly affected, and the same proportion (26%) said they "didn't see the need to do anything". A fifth (19%) said that "I didn't like it, but I didn't consider it bad enough to do something about", and 17% said that they "didn't consider the content or behaviour to be harmful, disturbing or offensive".

Children are relatively unlikely to use reporting and flagging to inform platforms of potentially harmful content or behaviour they have seen

Of the 93% of 8-17s who would tell someone if they saw something worrying or nasty online, only 8% would tell the website/app where they encountered the harmful content/behaviour about what they had seen. This may be partly because of low awareness of the function itself: only a third of 12-17s said that they knew how to use a reporting or flagging function, and of those only 14% said they had used it before. Evidence from our qualitative Children's Media Lives 2022 study suggests that attitudes to reporting and flagging may also play a part in this low use. Some children in our sample reported having a very high bar for using these functions, and expressed a general feeling that flagging or reporting content or behaviour was getting involved in something which is "none of my business".[181]

Platforms' reporting of content moderation

Some online platforms have procedures in place to detect and take action against potentially harmful content on their service

Many social media platforms have terms and conditions and acceptable use policies that set out the types of content that are and are not permitted on their service. They can then use various methods (or a combination of these) to detect and act against potentially harmful content or content which violates their rules. These include automated content detection and removal, review by human content moderators, reducing how often content appears in recommendation lists, making content harder to search for, and providing and offering flagging and reporting tools for the user community. Certain platforms publish data in transparency reports about the content they have removed for violating their policies (among other things).

[181] *Children's Media Lives 2022.*

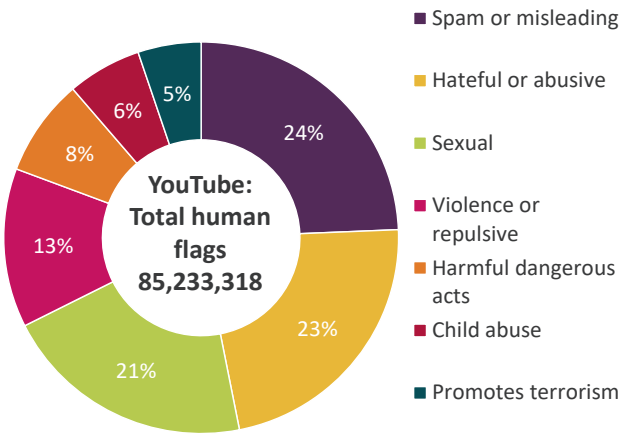
Transparency reports indicate that most of the content removed by the popular social media platforms was detected using their automated tools

Data from the transparency reports of Facebook, YouTube and TikTok indicate that the majority of content that was removed from the platforms in Q3 2021 was detected by the platform first, with a smaller proportion being flagged or reported by users.[182]

In Q3 2021, TikTok removed 91.4 million videos, with 95% being detected by the platform and 5% having been flagged or reported by users.[183] Meta acted on 153 million pieces of content on Facebook in Q3 2021, with 4% of content removals made after users' reporting.[184]

YouTube reported that it removed 6.2 million videos globally in Q3 2021. This was a decrease of 21% compared to Q3 2020. The higher number of removals in 2020 may have been caused by increased reliance on automated removals due to staff shortages during the pandemic, and moderation of content during the US elections and misinformation around Covid-19. Of the videos removed in Q3 2021, 95% were detected by YouTube's automated tools and 5% had been flagged by a user or moderator.[185] The total number of human flags on YouTube was 85.2 million, down slightly (3%) year on year in Q3 2021. However, users flagged more content than ever before: 17.9 million YouTube unique videos received at least one flag in Q3 2021, an increase of 13% since Q3 2020.[186] Almost a quarter of the human-flagged videos on YouTube were categorised as 'spam or misleading' and 'hateful or abusive', followed by a fifth which were flagged as 'sexual content'.[187]

Figure 2.22: Human flags on YouTube, by category of harm: Q3 2021



Source: YouTube, YouTube Community Guidelines enforcement, Q3 2021. Note: Videos can receive multiple flags and be flagged for different harms – 17.9 million videos were flagged by humans at least once. Almost all these flags came from

[182] Note: Many organisations follow an online content moderation workflow that might include one or both of the following: 1) Pre-moderation: when the uploaded content is moderated before publication, typically using automated systems. 2) Post- or reactive-moderation: when content is moderated after it has been published and it has been flagged by other users or automated processes as potentially harmful, or which was removed previously but requires a second review upon appeal. Source: Ofcom and Cambridge Consultants, Use of AI in content moderation, report produced by Cambridge Consultants on behalf of Ofcom, 2019.
[183] TikTok, TikTok Community Guidelines Enforcement, Q3 2021.
[184] Meta, Facebook Community Standards Enforcement Report, Q3 2021. Removal figures exclude fake accounts and spam.
[185] YouTube, YouTube Community Guidelines enforcement, Q3 2021.
[186] Flagging a video does not necessarily lead to its removal.
[187] YouTube, YouTube Community Guidelines enforcement, Q3 2021.

users, and an extremely small proportion (<1%) came from Trusted Flaggers, government agencies or non-governmental organisations.

In some cases when a piece of content is removed by the platform, users can appeal the decision and the platform will decide whether to restore the content. In Q3 2021 Facebook reported 3 million content removal appeals, of which around 16% were successful. In the same period, 37% of 244k of appeals on YouTube were successful.[188]

Figure 2.23: Content moderation transparency global data published by selected platforms, Q3 2021

		Facebook[189]	YouTube[190]	TikTok[191]
Content removal	Number of pieces of content taken down by platform	153,200,000	6,229,882 (Videos only)	91,445,802 (Videos only)
Detection by platform	Proportion of removed content that was detected by platform	96.00%	94.72% (Videos only)	95.09%
Detection by user	Proportion of removed content that was flagged or reported by users	4.00%	3.75% (Videos only)	4.91%
Turnaround time	Proportion of content removed within 24 hours of upload	N/A	N/A	93.86%
Appeals	Pieces of removed content, appealed	3,008,200	244,080	N/A

Source: Publicly available transparency reports published by each platform. All figures are global. The figures for Facebook (excludes Instagram as the data for this platform is reported separately) do not include spam or fake accounts. The Facebook totals and proportions that were detected by platform/user have been calculated by Ofcom from the splits by harm provided in Meta's public reports.

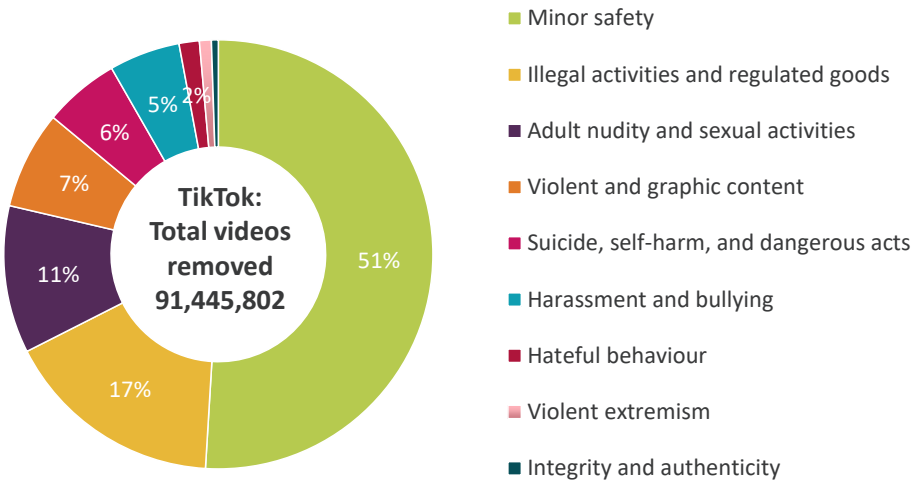
Content that violates child safety policies is the most-removed content from YouTube and TikTok, while adult and nudity content is the most-removed from Facebook and Instagram

Platforms report on differing content categories. Content categorised by YouTube as violating child safety policies is the content most often removed from that platform, making up 32% of removals in

[188] Percentages are calculated by Ofcom based on the number of appeals and the number of restorations after appeal, as reported by the platforms. They are indicative only: appeals received and restorations may relate to take-downs in previous quarters. Platforms can also decide to restore content without having received an appeal.
[189] Meta, Community Standards Enforcement Report, Q3 2021.
[190] YouTube, YouTube Community Guidelines enforcement, Q3 2021.
[191] TikTok, TikTok Community Guidelines Enforcement, Q3 2021.

Q3 2021.[192] TikTok reports on 'minor safety',[193] which is consistently the highest proportion of videos removed from the platform, making up 51% of removals in Q3 2021. It is also the category with the quickest removals on TikTok; 97% of content is removed within 24 hours, and most content is removed before it has been viewed by any user (95%).[194] Meanwhile, adult and nudity content is the most-removed type of content for Facebook and Instagram (23% for each platform).[195]

Figure 2.24: Proportion of videos removed on TikTok, by category of harm: Q3 2021



Source: TikTok, TikTok Community Guidelines Enforcement, Q3 2021

Misinformation is another key moderation focus for online platforms

Some online platforms have policies to tackle misinformation on their platform. Some, such as Twitter, TikTok and Pinterest, publish information on their enforcement of this type of content. In Q3 2021 almost 17,000 pieces of 'Covid-19 misleading information' were reportedly removed from Twitter.[196] On TikTok, Covid-related videos can be tagged or labelled in an attempt to prevent the spread of misinformation and to guide users to trustworthy information, namely the platform's Covid hub[197] which is an information centre that contains authoritative information regarding Covid-19. In Q3 2021 there were almost 3 million visits to TikTok's Covid hub, and over 3.5 million banners added to videos – these were viewed 22.6 million times.[198] Platforms can publish additional information as well as their regular reporting. Most recently, TikTok published an update on its moderation of harmful misinformation in the context of the conflict in Ukraine. Between 24

[192] Note that YouTube has a broad definition of the 'child safety' category which overlaps with other categories: any content that endangers the emotional and physical well-being of minors – sexualisation, harmful, emotional distress, misleading family content, cyberbullying. Source: YouTube, YouTube Help, 14 April 2022.
[193] TikTok defines 'minor safety' as "prohibiting activities that perpetuate the abuse, harm, endangerment, or exploitation of minors on TikTok. Any content, including animation or digitally created or manipulated media, that depicts abuse, exploitation, or endangerment of minors". This includes "sexual exploitation of minors, grooming behaviour, nudity and sexual activity involving minors, harmful activities by minors, physical and psychological harm of minors and crimes against children." Source: TikTok, Community Guidelines, 7 April 2022.
[194] TikTok, TikTok Community Guidelines Enforcement, Q3 2021.
[195] Meta, Community Standards Enforcement Report, Q3 2021.
[196] Twitter, Twitter Transparency Center - Covid-19 misinformation report, Q3 2021.
[197] TikTok, Covid-19 hub, "Resources for our community", accessed 6 May 2022.
[198] TikTok, TikTok Community Guidelines Enforcement, Q3 2021.

February and 31 March 2022 TikTok's safety team focused on the Ukraine war removed 41,191 videos, 87% of which violated TikTok's policy against harmful misinformation. The majority (78%) of these were identified proactively. [199]

Pinterest removed almost 1.2 million 'pins' or pieces of content labelled as misinformation in Q2 2021. These included civic and medical misinformation, as well as conspiracy theories. However, for all misinformation sub-categories, at least two-thirds of the pins were removed before anyone viewed them.[200] The platform has also recently implemented a policy to remove false or misleading climate change information, to combat the spread of information "that denies the existence or impact of climate change" or that contradicts "well-established consensus". This ban applies to users' content as well as advertisements.[201]

User attitudes to safety measures and free speech

Although half of adult internet users believe that further safety measures are needed online, there is no consensus about how best to balance free speech with protecting users

Less than one in four UK users (23%) believe that the current level of online safety measures is sufficient. Women, young people and those in a minority ethnic group are more likely than average to say that they think more safety measures are needed, and they are also more likely to report being negatively impacted by a potentially harmful online experience.

However, there is no consensus among UK online users about whether platforms should prioritise free speech, or protection of their users from potentially offensive views. When asked to choose between two statements on the issue, 34% agreed more strongly with the statement "The internet has an important role in supporting free speech, even when some users might find the content offensive". This compares to 38% who said they agreed more with the statement "It is important for sites to monitor and delete offensive views to protect other users." Women are more likely than men to prioritise user protection (44% vs 33% men), whereas men are more likely to prioritise free speech (41% vs 28%).

Data from our Adults' Media Literacy Tracker, however, suggests that opinions may be shifting in favour of protection of users. The proportion of adult internet users who agreed that "internet users must be protected from seeing inappropriate or offensive content" increased from 61% to 65% between 2020 and 2021. For the first time in 2021, a majority of users (55%) *disagreed* with the statement "I think it is important that people can say what they want online even if it is controversial or hurtful to others", up from 47% in 2020.[202]

More than four in ten agree that responsibility for what is posted on a website or app lies with the platform itself rather than the individual

Although a significant minority (43%) agreed that "It is the responsibility of the website or app to control what is posted on their website", compared to just 23% who agreed that "It is the

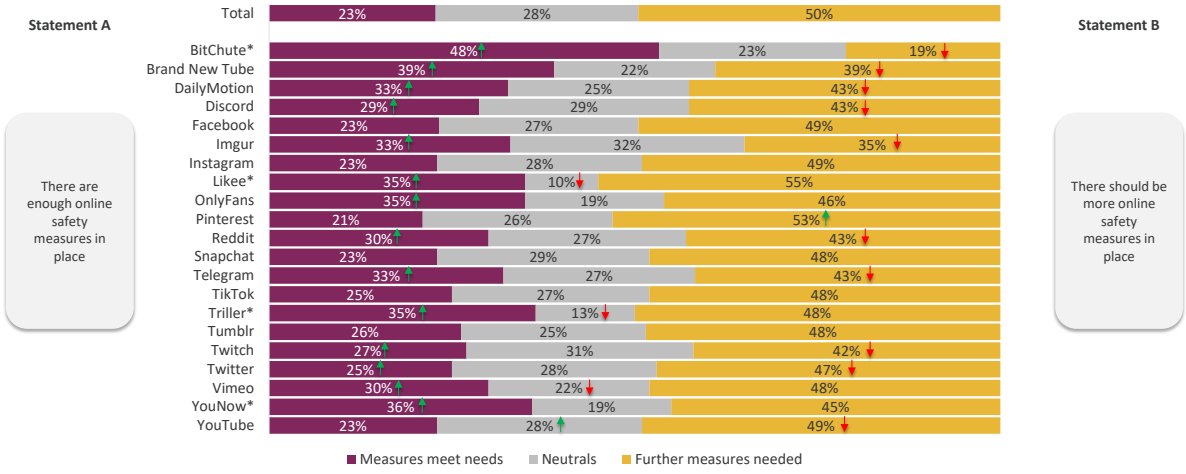
[199] TikTok, Bringing more context to content on TikTok, 12 April 2022.
[200] Pinterest, Transparency report, Q2 2021.
[201] Pinterest, Combating climate change misinformation on Pinterest, 6 April 2022.
[202] Ofcom, Adults' Media Literacy 2021: Core survey (see above) and Adults' Media Literacy Tracker 2020.

responsibility of the individual to ensure what they are posting is appropriate for other users", a substantial minority (34%) did not agree with either statement. This may suggest indecision or uncertainty as to where the responsibility lies, or it could indicate that respondents believe that the responsibility is shared equally.

Users of some smaller platforms are significantly more likely than users of large platforms to lean towards protecting free speech rather than strengthening user protection

Attitudes to online safety issues differ significantly among users of different platforms. Our Online Experiences Tracker shows that among users of the video-sharing platform BitChute the proportion who think that the current level of online safety measures is sufficient is more than twice as high as the average (48% vs 23%).[203] This proportion was also higher among the user base of Brand New Tube (55%), OnlyFans (35%), Imgur (33%), Telegram (33%), Vimeo (30%) and Discord (29%). Users of these platforms were also significantly more likely than average to agree that "the internet has an important role in supporting free speech" rather than a similar statement about prioritising the protection of users.

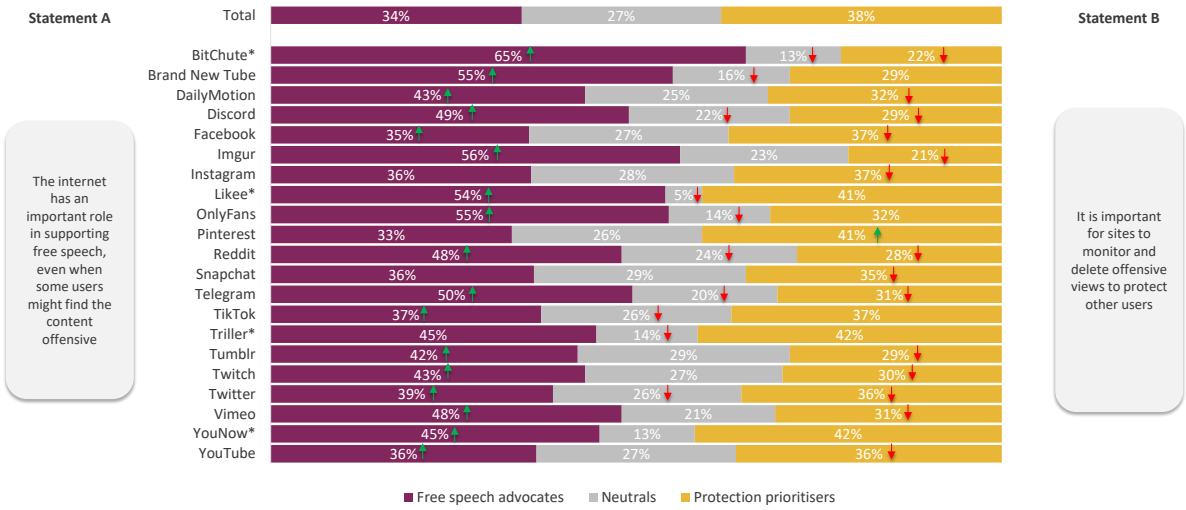
Figure 2.25: Proportion of UK users agreeing with opposing statements about sufficiency of current online safety measures[204]



Source: Ofcom, Online Experiences Tracker – Q1. Below are listed several pairs of statements. In each case, please indicate [on a scale of 1 to 10] which statement is closest to your own opinion on a scale, where 0 means complete agreement [with Statement A and 10 complete agreement with Statement B]. Base: UK internet users, aged 13+ (6,619). 'Measures meet needs' = respondents giving a response of 0, 1, 2 or 3. 'Neutrals' = respondents giving a response of 4, 5 or 6. 'Further measures needed' = respondents giving a response of 7, 8, 9 or 10. Arrows indicate that the figure is significantly higher/lower than the average, at 95% confidence.

[203] CAUTION: LOW BASE (<100). Data should be taken as indicative only.
[204] Platforms chosen by Ofcom for illustrative purposes, including some smaller platforms with significant difference from the average.

Figure 2.26: Proportion of UK users agreeing with opposing statements about balance between free speech and protection of users[205]



Source: Ofcom, Online Experiences Tracker – Q1. Below are listed several pairs of statements. In each case, please indicate [on a scale of 1 to 10] which statement is closest to your own opinion on a scale, where 0 means complete agreement [with Statement A and 10 complete agreement with Statement B]. Base: UK internet users, aged 13+ (6,619). 'Free speech advocates' = respondents giving a response of 0, 1, 2 or 3. 'Neutrals' = respondents giving a response of 4, 5 or 6. 'Protection prioritisers' = respondents giving a response of 7, 8, 9 or 10. Arrows indicate that the figure is significantly higher/lower than the average, at 95% confidence.

[205] Platforms chosen by Ofcom for illustrative purposes, including some smaller platforms with significant difference from the average.

3. Gaming

Introduction

Figure 3.1: UK gaming: 2021 key metrics

Key metrics	2021
UK adults aged 16+ who play games online	39%[1]
UK children aged 3-15 who play games online	56%[2]
Average time spent gaming in the last week by UK gamers aged 13-64 (Q4 2021)	7 hours 33 minutes[3]
UK gamers aged 13-64 subscribed to a gaming subscription service (Q4 2021)	58%[3]

Source: [1]Ofcom Adults' Media Literacy Tracker 2021: Core survey. [2]Ofcom's Children's and Parents' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey. Base: All children aged 8-15 and all parents of children aged 3-7 (5,774). [3]Ampere Games – Consumer, Q4 2021, gamers aged 13-64, UK.

The increased time spent at home during the Covid-19 lockdown periods over the past couple of years has led to an increase in gaming activity. The pandemic increased the take-up of gaming across all demographics, but as the pandemic begins to abate the permanence of these gains will be tested. Globally, gaming has increased incrementally year on year, in numbers of gamers, revenue generated, and industry value. According to games market analysts NewZoo, in 2021 there were 3 billion gamers in the world, a 5.3% increase on 2020,[206] suggesting that the lockdown increases may be here to stay.

Gaming has grown in many ways, from traditional single and local multiplayer experiences, to online multiplayer gaming connecting users across the world, to the advent of live-service games[207] delivering frequent content updates to maximise engagement. A subsequent market has appeared around livestreaming, 'let's-play',[208] and discussions of games on services like Discord and Twitch.

This chapter sets out the online gaming landscape in the UK, before exploring online gaming communities, which are virtual groups of individuals brought together on an online platform to interact within games or discuss video games. These communities bring people with a shared interest together but can also lead to community members potentially experiencing harm. We examine the online business models and the rise of gaming subscription services, and conclude by exploring virtuality reality gaming (see the Online Landscape chapter for an overview of the metaverse).

[206] NewZoo, Global games market report, 2021.
[207] Live service games have a constant stream of new content added to the game post launch of game in order to maintain continue gameplay, unlike traditional single-player games, which can be completed in a set number of hours. Fortnite is an example of a live-service game.
[208] Let's Play is a video (or screenshots accompanied by text) documenting the playthrough of a video game, usually including commentary and/or a camera view of the gamer's face.

This chapter uses data from Ofcom's Adults' Media Literacy research and Children's and Parents' Media Literacy research, where people in the UK were asked about their gaming habits, whether on a console, a smartphone or another device. We also draw on third-party data, including Ampere's research. We use a broad definition of gaming and gamers, encompassing video games, apps and sites on phones, and desktop and virtual reality gaming. We do not cover casino, poker or other forms of gambling games that require wagering something of value, usually real money (rather than virtual currency) to win a prize.

Take-up and use

Gamers

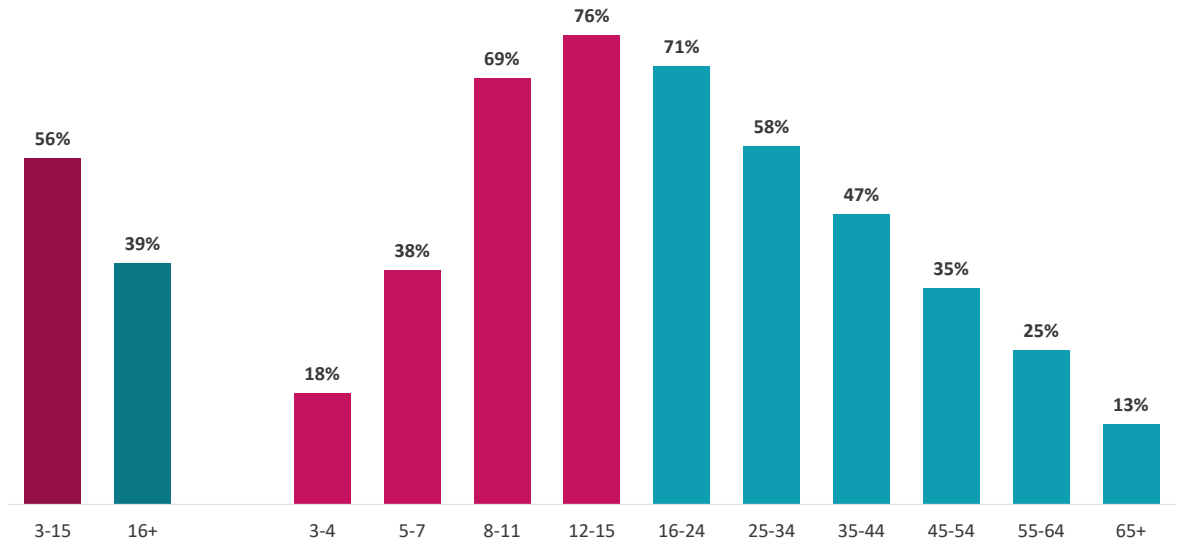
Thirty-nine per cent of UK adults aged 16+ play games online, as do 56% of UK children aged 3-15[209]

Fieldwork for Ofcom's Media Literacy research ran from October to December 2021, when lockdown restrictions had largely eased and other face-to-face social activities once again became possible. Nonetheless, the research found that gaming remained popular with 60% of UK adults aged 16+ and 91% of 3-15-year-olds stating that they played games on console, desktop or smartphone devices either on- or offline. Among gamers, most UK gamers play games online: 56% of UK adult gamers play games online, as do 66% of child gamers.[210]

UK Safer Internet Centre research found that for 65% of 8-17-year-olds, playing games online was an important part of their life in 2021, and that 70% of young people who played online games said they had enjoyed doing so more than ever in the past year.[211]

[209] Adults' Media Literacy Tracker 2021: Core survey; Children's and Parent's Media Literacy Tracker 2021: Online Behaviours and Attitudes.
[210] Adults' Media Literacy Tracker 2021: Core survey; Children's and Parent's Media Literacy Tracker 2021: Online Behaviours and Attitudes.
[211] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.

Figure 3.2: UK individuals who play games online



Source: 3-15-year-olds: Ofcom Children's and Parent's Media Literacy Tracker 2021 – Online behaviours and attitudes. Base: All children aged 3-15 (5,861). 16+: Ofcom Adults' Media Literacy Tracker 2021: Core survey. G3A. Do you play games online? (single coded). Base: All adults (excluding those that did not give a response at the postal survey) (3656)

Time spent gaming

UK gamers aged 13-64 spent 7 hours 33 minutes a week gaming

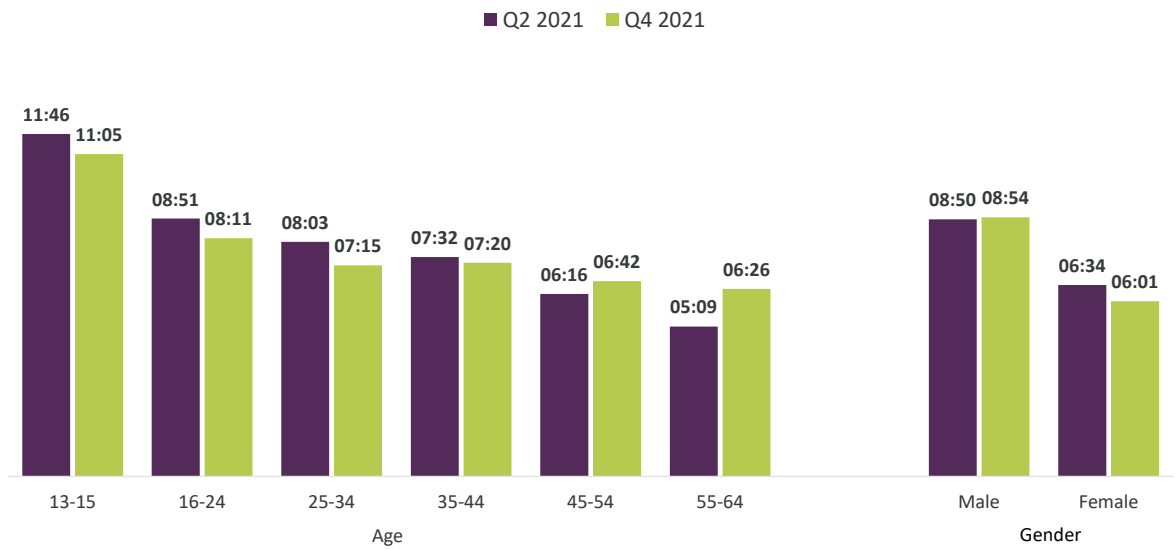
The time that gamers reported they spent gaming declined slightly from an average of 7 hours 43 minutes a week in Q2 2021 to 7 hours 33 minutes in Q4 2021. Compared with Q2 2021, younger gamers are spending less time gaming. In contrast, older gamers are playing for longer, with UK gamers in the 55-64 age group reporting an increase of 25% in the time they spent playing games in the previous week in Q4 2021 compared to Q2 2021.[212]

UK Safer Internet Centre research found that online gameplay had become increasingly important to children aged 8-17 during the pandemic. The vast majority (85%) of parents of children aged 8-17 said their child spent more time playing games online in 2021 than previously.[213]

Most adult gamers are comfortable with the amount of time they spend gaming, but 17% of adult gamers said they spent too much time playing games.[214]

[212] Ampere Games – Consumer, Q2 2021 & Q4 2021, gamers aged: 13-64, UK.
[213] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.
[214] Ofcom Adults' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey.

Figure 3.3: Average time spent gaming in the past week, UK (hours:minutes)



Source: Ampere Games – Consumer, Q2 2021 & Q4 2021, gamers aged: 13-64, UK.

Gaming devices

Smartphones are the leading gaming device among adults, while games consoles lead among children[215]

Thirty-seven per cent of UK adults use smartphones to play games; their near-ubiquitous adoption brings wide access to games apps and websites. Thirty per cent of adults use games consoles, which are more commonly used by younger adults: 60% of 16-24-year-olds use one, compared to 2% of those aged 65+.[216] Ninety-one per cent of children aged 3-15 play games on any device. Consoles are the leading gaming device among children aged 3-15 (59%), followed by tablet (54%); smartphone (53%); PC (31%); smart TV (10%) and 1% use a VR headset. Console usage among children is most common among 8-11-year-old boys (89%). Boys are significantly more likely than girls to play games on consoles (73% of boys, vs 44% of girls), desktops, laptops or netbooks (34% vs 29%) and virtual reality headsets (7% vs 3%).[217]

Research by CHILDWISE in 2021 found that 14% of children aged 5-16 have a Microsoft Xbox Series X or an Xbox Series S. Boys are twice as likely as girls (18% vs 9%) to have one at home, with ownership highest among 11-16-year-olds (20%). One in ten children have access to a PlayStation 5 at home, twice as many as last year (10%; 5% last year). Boys are again more likely than girls (12% vs 8%) to have access, and this also varies by age. One in three (34%) console-owning households have a Nintendo Switch (including Switch Lite). Boys and girls are equally likely to have access at home.[218]

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[215] Ofcom Adults' Media Literacy Tracker 2021: Core survey and Children's and Parent's Media Literacy 2021: Parents Only survey.
[216] Ofcom Adults' Media Literacy Tracker 2021: Core survey.
[217] Children's and Parent's Media Literacy 2021: Parents Only survey.
[218] CHILDWISE Monitor report 2022, fieldwork September 2021 to November 2021. For more information, please see: http://www.childwise.co.uk/.

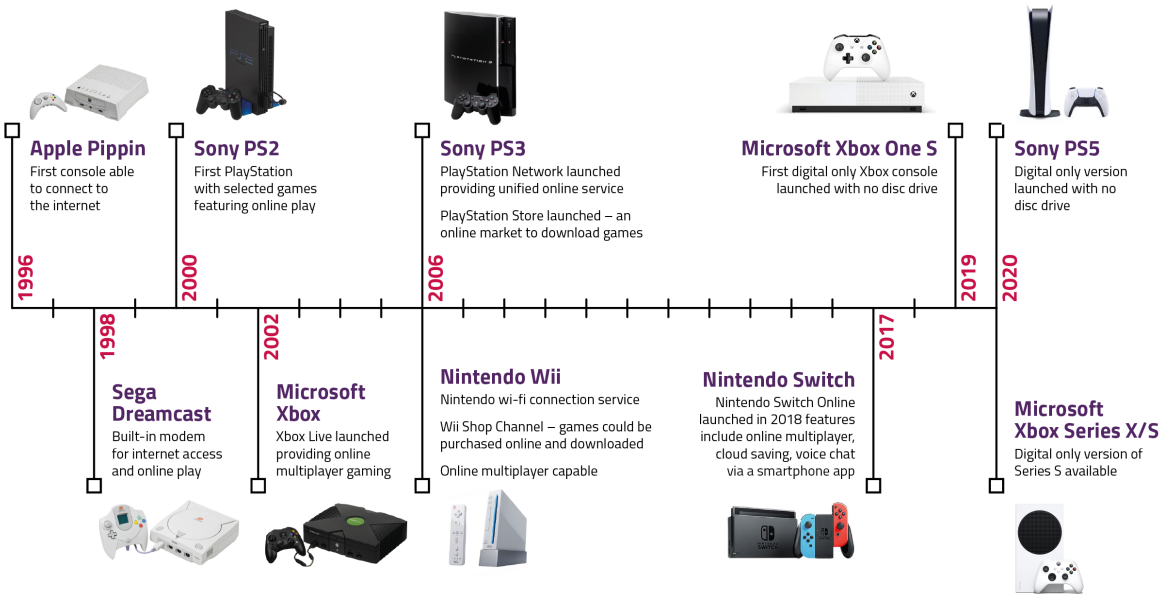
Digital-only versions of consoles, such as the PlayStation 5 or Xbox Series S, do not have a disc drive and therefore need an internet connection to buy digital games or access games on a streaming service.

Figure 3.4: Devices used to play games, by adult age and gender

			Age						Gender	
		Total	16-24	25-34	35-44	45-54	55-64	65+	Men	Women
	Base	3657	436	603	652	566	571	802	1749	1830
	Mobile phone/ smartphone	37%	50%	50%	47%	47%	28%	11%	33%	41%
	Games console/ player	30%	60%	55%	41%	23%	11%	2%	39%	22%
	Tablet	19%	18%	20%	22%	21%	19%	14%	16%	21%
	Laptop	14%	29%	19%	15%	11%	10%	6%	18%	11%
	Desktop computer	12%	23%	18%	15%	8%	7%	4%	18%	6%
	Smart TV	4%	7%	8%	7%	3%	1%	1%	5%	3%
	Virtual reality gaming headset	3%	6%	4%	6%	2%	1%	0%	4%	2%
	PLAYS GAMES ON ANY DEVICE	60%	88%	79%	73%	62%	47%	26%	63%	56%

Source: Ofcom Adults' Media Literacy 2021: Core survey and Children's and Parent's Media Literacy 2021: Parents Only survey
G1. Do you play games at home or elsewhere in any of these ways? (multi coded).
Base: All adults aged 16+ (excluding those that did not give a response at the postal survey) – 3657. All parents of children aged 3-15 (2,006)
Coloured boxes show differences (99% level) by age compared to all adults and between men and women

Figure 3.5: Timeline of online features introduced to games consoles



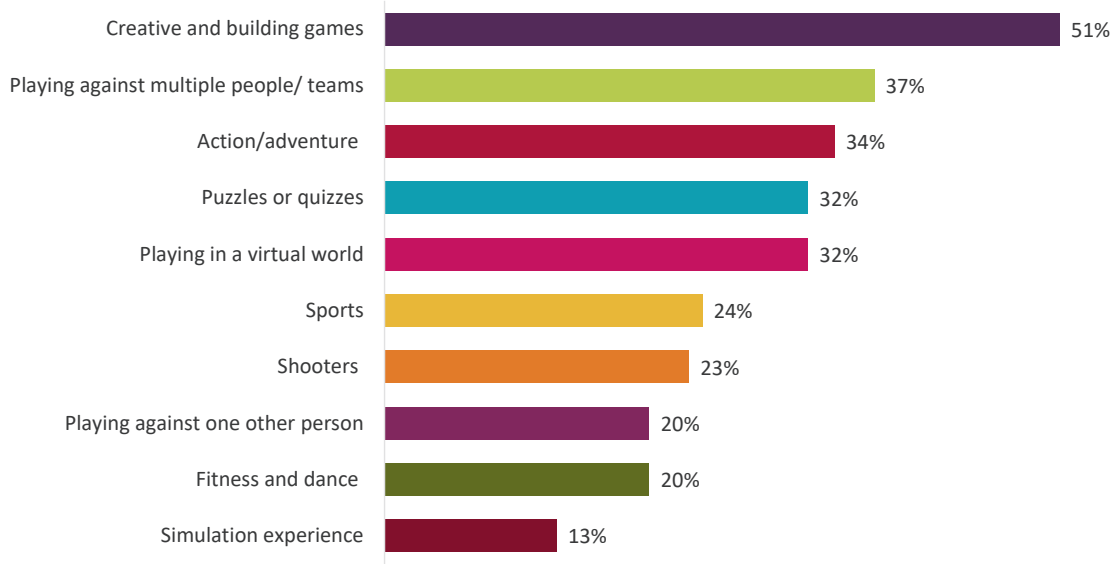
Source: Ofcom, from publicly available information

Genres

Half of the UK children who play games play creative and building games,[219] with *Minecraft* being the most popular game[220]

Creative and building games such as *Roblox* and *Minecraft* are the most popular games among children. This peaks among 8-11-year-old gamers, of whom 57% play such games, but declines to 47% by the age of 12-15.[221] Research by CHILDWISE found that *Minecraft* was the most popular game among 7-16-year-olds, with 40% stating that they had played the game in the past week. Fifty-two per cent of boys compared to 27% of girls said that they had played *Minecraft* in the past week. Play is highest among 9-10-year-olds (at 52%), with two in three boys this age playing (66%). Thirty-eight per cent of 7-16-year-olds said they had played Roblox in the past week, followed by 28% saying they played *Among Us*, the multiplayer social deduction game.[222]

Figure 3.6: Types of games 3-15-year-old child gamers play



Source: Ofcom Children's and Parents' Media Literacy 2021 – Online Behaviours and Attitudes survey. QP24/ G2. Which of the following types of games do they play? Base: All children aged 8-15 who play games and all parents of children aged 3-7 who play games (5,389).

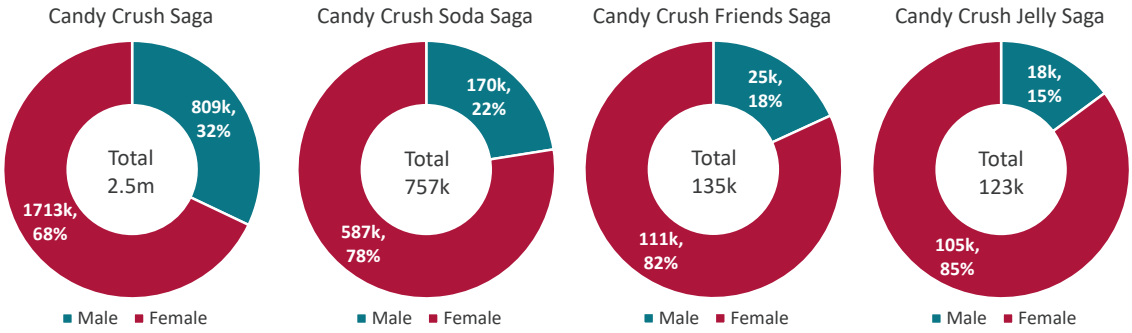
[219] Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.
[220] CHILDWISE Monitor report 2022, fieldwork September 2021 to November 2021. For more information, please see: http://www.childwise.co.uk/.
[221] Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.
[222] CHILDWISE Monitor report 2022.

Games apps and websites

Candy Crush Saga, released ten years ago, is the top-reaching games app, visited by an average of 1.2 million UK adults a day in February 2022[223]

Candy Crush Saga, the free-to-play puzzle video game released in April 2012, is the top-reaching games app on mobile devices in the UK. Free-to-play games are those which players do not have to pay to play; they are monetised through advertising or in-app purchases. In 2021, 20% of British adults said they played free-to-play games at least monthly.[224] *Candy Crush Saga,* the original Candy Crush game, was visited by 2.5 million adults in February 2022. It is popular with women; in February 2022 1.7 million women visited the app, making up 68% of its total UK adult visitors that month.[225] Since *Candy Crush Saga's* launch, other games have been released in the series; these have an audience reach of less than a million (see figure 3.7). In 2020 Candy Crush had more than 200 million monthly users globally and generated £921m in revenue.[226] In 2022 Microsoft agreed to buy the owner of Candy Crush, Activision Blizzard, for £51bn, the largest-ever sale in the gaming industry.[227]

Figure 3.7: UK mobile adult reach of Candy Crush franchise apps, by gender: February 2022



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Mobile app, 1 February – 28 February 2022, adults age: 15+, UK.

[223] © Ipsos, Ipsos iris Online Audience Measurement Service, Candy Crush Saga app, 1 February 2022 - 28 February 2022, adults age: 15+, UK.
[224] IPA TouchPoints 2021. Base: GB adults, age: 15+.
[225] © Ipsos, Ipsos iris Online Audience Measurement Service, Candy Crush Saga app, 1 February 2022 - 28 February 2022, adults age: 15+, UK.
[226] Activision Blizzard, Annual report 2020.
[227] Microsoft News Center, Microsoft to acquire Activision Blizzard to bring the joy and community of gaming to everyone, across every device, 18 January 2022.

Figure 3.8: Top ten games apps, by UK adult reach: February 2022

Rank	Gaming app	Total adult reach in February	Online adult reach in February	Average daily adult audience in February	Release date
1	**Candy Crush Saga**	2.5m	5.0%	1,211k	2012
2	**Pokemon Go**	1.6m	3.1%	725k	2016
3	**Roblox**	1.5m	3.0%	322k	2012
4	**Wordscapes**	1.4m	2.8%	579k	2017
5	**Solitaire - Grand Harvest**	1.4m	2.7%	660k	2017
6	**Google Play Games**	1.2m	2.3%	100k	2013
7	**Coin Master**	1.1m	2.1%	552k	2010
8	**Words with Friends – word game**	1.1m	2.1%	636k	2010
9	**8 Ball Pool**	1.0m	2.0%	313k	2010
10	**Royal Match**	0.8m	1.6%	400k	2020

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Mobile app, 1 February 2022 – 28 February 2022, adults age: 15+, UK.
Note: Custom-defined list by Ofcom.

Wordle

In January 2022 the New York Times acquired Wordle "for a price in the low seven figures",[228] and in February took over the running of the game from its creator Josh Wardle.

Wordle is a free-to-play (at the time of writing) website-based word game, launched in October 2021. The game challenges players to guess a five-letter word, with only six attempts to get the correct answer. Only one word can be guessed each day, and the word is the same for every player. Wordle became popular after players began sharing their scores by text, email or on social media – in particular Twitter. The ability to share results without revealing the word of the day has fostered a Wordle community.

In the UK 8.4 million adults (17% of UK online adults) visited the game site in February 2022, with an average of 1.8 million daily adult visitors – about 4% of total daily internet adult users.[229] Powerlanguage.co.uk, the original game's URL, featured in the top 20 daily websites for audience reach.[230] The game has a higher reach among women (19% of UK online female adults) than men (15%).[231] Off the back of Wordle's popularity various spin-off versions have entered the market: Quordle, Nerdle, Worldle, Heardle, Taylordle, to name a few. The success of Wordle and the launch of spin-offs indicates that there is space for website-based games in the online market.

Gaming communities

Multiplayer games

60% of online adult gamers play with or against another gamer[232]

Gamers can play with or against other gamers online via consoles, or via apps and websites on smartphones or other internet-connected devices. More than seven in ten (72%) children aged 3-15 who play games online do so with or against other gamers whom they know, or have met in person, and 31% play with or against strangers or people they have not met in person.[233] The proportion of children playing games with or against strangers increases with age, peaking at 37% among 12-15s.[234] The ability to play with known people often depends on the gamer's contacts having access to the same game and device platform. Many games are increasingly using cross-play – a mechanism by which players on different platforms can play together (interoperability), reducing the friction of having access to a specific platform. *Final Fantasy XI* was the first game to allow gamers across

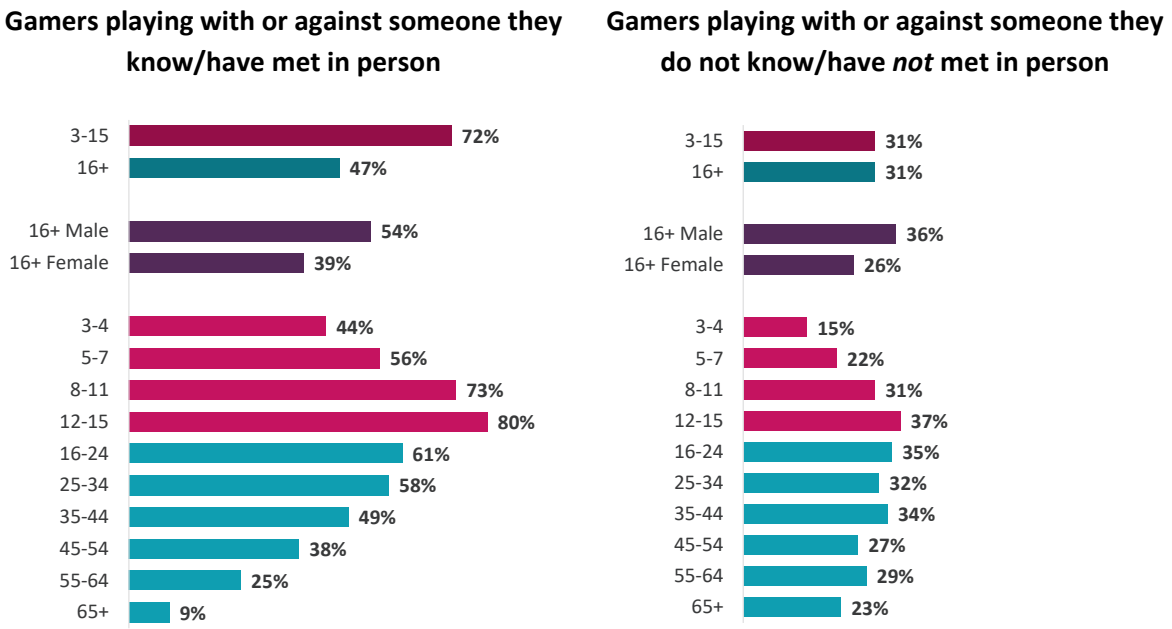
[228] The New York Times, The New York Times Buys Wordle, 31 January 2022.
[229] © Ipsos, Ipsos iris Online Audience Measurement Service, New York Times - Wordle, 1 February 2022 – 28 February 2022, adults age: 15+, UK.
[230] © Ipsos, Ipsos iris Online Audience Measurement Service, Daily dashboard, Powerlanguage.co.uk, 31 January 2022 – 8 February 2022, adults age: 15+, UK.
[231] © Ipsos, Ipsos iris Online Audience Measurement Service, New York Times - Wordle, 1 February 2022 – 28 February 2022, adults age: 15+, UK.
[232] Ofcom Adults' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey.
[233] Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.
[234] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes survey and Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.

multiple platforms (Xbox 360, PS2 and PC) to play together.[235] *Fortnite* and Player Unknown's *Battleground* (PUBG) also use cross-play.

Just under a third of both online adult[236] and child gamers aged 3-15[237] play with someone they do not know. In multiplayer video games this is usually done using a player matchmaking process to connect players together for online play sessions. Fifty-three per cent of adult console gamers say that they play games with or against someone else. This is most likely among younger adults: 67% of 16-24-year-old console gamers say that they play with or against someone else, as do 35% of 55-64s. Adult console gamers are more likely to play with someone they have met in person rather than with a stranger (44% vs 31%).[238] Figure 3.9 shows gamers who play on consoles, PCs, mobiles or TV sets, and who play with people they have met, or not met, in person.

Playing games with others online can provide an opportunity to socialise and connect with others, which can have a positive impact on wellbeing. UK Safer Internet Centre's research in 2021 found that 70% of parents think online games have helped their child connect with their friends, and 60% of children aged 8-17 years old said that playing online games made them feel less lonely.[239]

Figure 3.9: Proportion of UK online gamers playing with or against other people

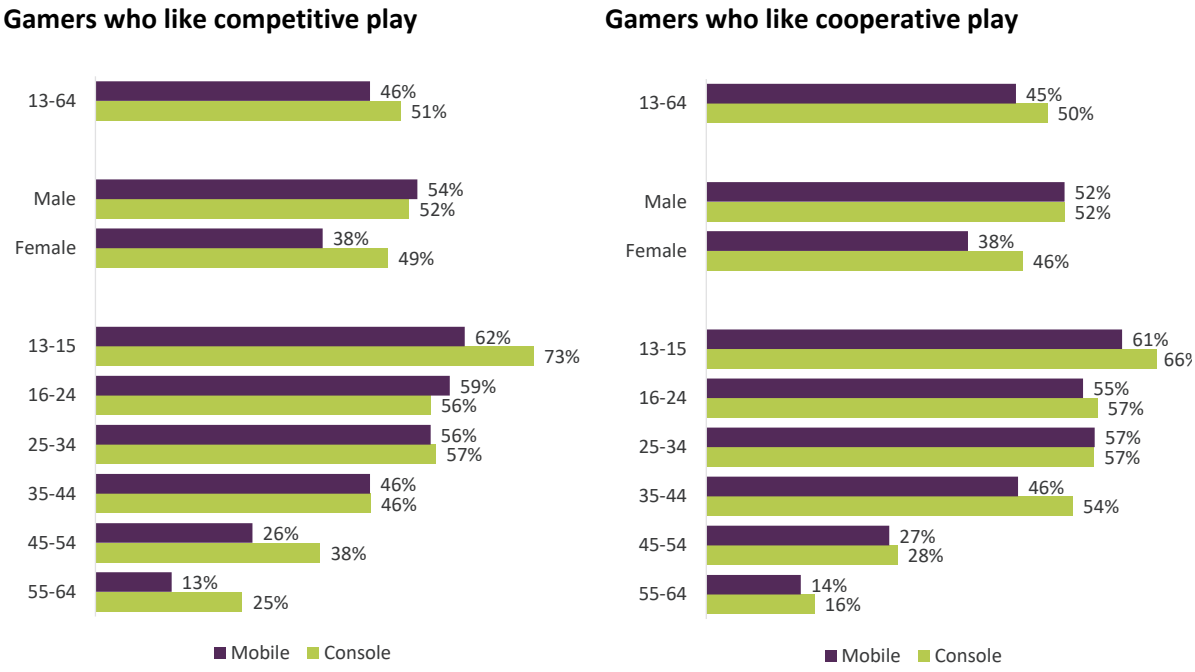


Source: Ofcom Adults' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey and Children's and Parents' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey (3,067)
G3B. When you play games online, which of these describe how you play? (MULTI CODE)
Base: All respondents who play games online (3101)

[235] Guinness World Records, First cross-platform online role-playing game, accessed 27 May 2022.
[236] Ofcom Adults' Media Literacy Tracker 2021: Online Behaviours and Attitudes survey.
[237] Ofcom Children's and Parent's Media Literacy 2021: Online Behaviours and Attitudes survey.
[238] Ofcom Adults' Media Literacy Tracker 2021. See interactive report for data by age.
[239] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.

Playing with other gamers online can help build life skills. Competitive and cooperative games can, for instance, develop strategic thinking, teamwork, communication, leadership, and problem-solving. Forty-three per cent of UK gamers aged 13+ like competitive play, and the same is true for cooperative play (also 43%). Competitive play is particularly liked by 13-15-year-old gamers who use consoles, at 73%, while 66% of 13-15-year-old gamers who use consoles like cooperative play.[240] UK Safer Internet Centre's research in 2021 found both children and parents agreeing that online gaming can help children build skills. Specifically, 61% of parents and 66% of 8-17-year-olds agreed that playing games online has helped them to develop transferable skills, including concentration, teamwork, determination and problem solving.[241]

Figure 3.10: UK gamers aged 13-64 who like different types of play



Source: Ampere Games – Consumer, Q4 2021, gamers aged 13-64, UK. Note: Device use not exclusive.

Video streaming

58% of UK individuals aged 13-64 watch video-game-related content[242]

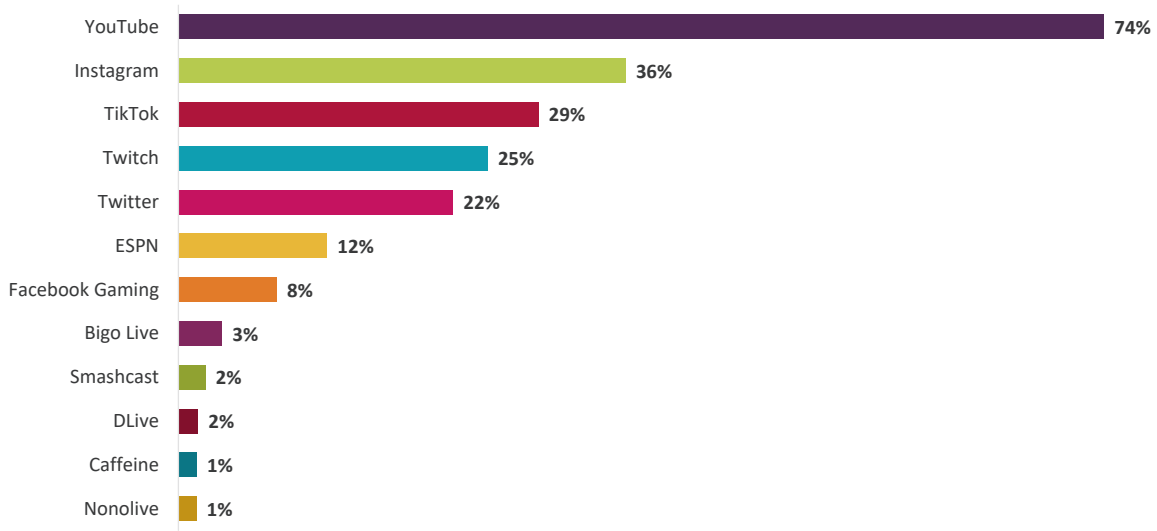
Gaming communities use a broad spectrum of adjacent platforms to reach out and interact with other gamers. Using social media to discover games, sharing and viewing gaming content, and engaging with influencers and other players all play a large part in the social gaming ecosystem.

Teenagers and young adults are the most likely to watch video-game-related content: 84% of 13-15-year-olds and 90% of 16-24-year-olds say that they do this.[243] Thirty-seven per cent of UK 13-64-

[240] Ampere Games – Consumers, Q4 2021, gamers aged: 13-64, UK. Note: Device usage not exclusive.
[241] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.
[242] Ampere Games – Consumer, Q4 2021, age: 13-64, UK.
[243] Ampere Games – Consumer, Q4 2021, age: 13-64, UK. See interactive report for age breaks.

year-olds who use video platforms to watch games-related content do it to feel part of a gaming community; 54% of 16-24 years old viewers stated this as a reason.[244] YouTube, Instagram and TikTok – platforms with a wide range of content – are the most used for gaming content, ahead of the gaming-first platform Twitch. In December 2021 YouTube announced that the 12 years' worth of content on its platform relating to the Microsoft-owned video game *Minecraft* had been viewed one trillion times, making it the most-watched game on the platform.[245] For publishers, there is potential in leveraging an audience of advocates to build buzz around games and increase engagement.

Figure 3.11: Video platforms used for gaming content (% of those who watch video game content including esports)



Source: Ampere Games – Consumer, Q4 2021, age 13-64, UK
Base: % of those who watch video game content including esports

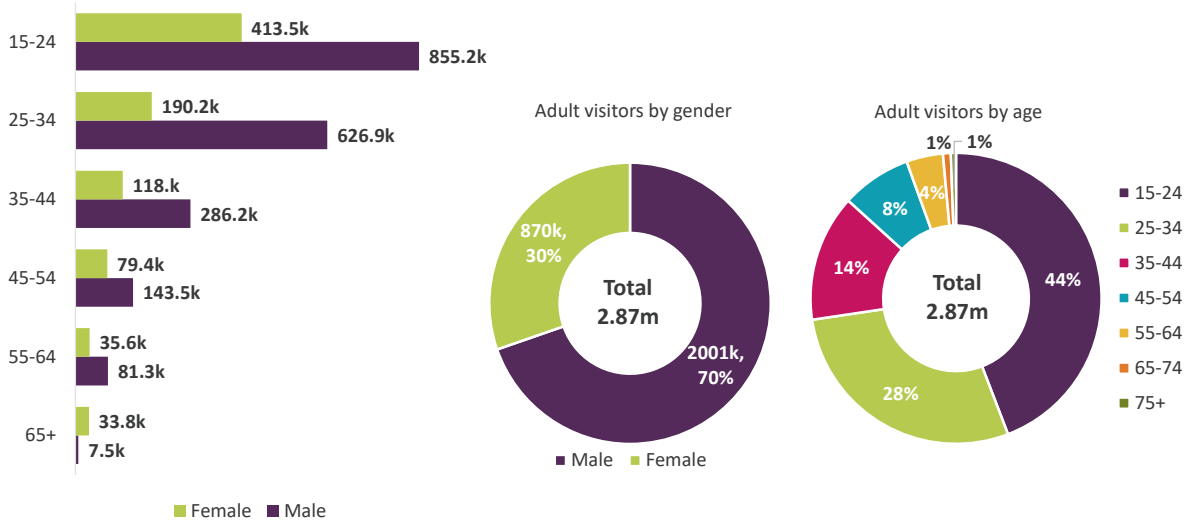
2.9 million adults visited Twitch in September 2021[246]

Twitch is the live video-streaming service focusing on video game live streaming, including broadcasts of esports competitions, but also offering music and other creative broadcasts. Unlike YouTube, Instagram and TikTok, Twitch also offers monthly free games and in-game items and is integrated with Amazon Prime gaming.[247] Twitch had 8.5 million channels streaming monthly in 2021; 1460 billion minutes of content was viewed on Twitch globally in 2021, up by 31% since 2020.[248] UK adults using Twitch spent an average of 1 hour 39 minutes on the platform via desktop, laptop or mobile devices in September 2021; 70% of its UK adult audience are male (see figure 3.12),

[244] Ampere Games – Consumer, Q4 2021, age: 13-64, UK.
[245] YouTube Culture and Trends, One trillion Minecraft views, 15 December 2021.
[246] © Ipsos, Ipsos iris Online Audience Measurement Service, Mobile app, 1 September – 30 September 2021, adults age: 15+, UK.
[247] Prime gaming, accessed 22 March 22.
[248] TwitchTracker, Twitch achievements through the years, accessed 22 March 22.

although Twitch's female audience spend more time on the platform: women spent an average of 2 hours 8 minutes in September 2021 compared to 1 hour 27 minutes spent by UK men.[249]

Figure 3.12: UK online adult reach for Twitch in September 2021



Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Twitch (WG), 1 September – 30 September 2021, adults age: 15+, UK.

Steam, a video game distribution service, also offers video streaming and social networking. Of the 2.6 million UK adults who visited Steam in September 2021 (5% of UK online adults), 80% were male.[250]

Gaming communication

Communication platform Discord, popular for games-related chat, was visited by 11% of UK online adults in September 2021[251]

Discord is a group-chat platform, originally built for gamers, that has become a general-use platform for many kinds of communities. Discord is divided into servers, each of which has its own members, topics, rules, and channels.[252] The vast majority of servers are private, invitation-only spaces for groups of friends and communities. There are also larger, more open communities, generally centered around specific topics such as popular games like *Minecraft* and *Fortnite*. All conversations are opt-in, to give users control over who they interact with.[253] Game developers also use Discord to communicate directly with players.[254] In the UK, Discord was visited by 11% of online adults in

[249] © Ipsos iris Online Audience Measurement Service, Twitch (WG), 1 September – 30 September 2021, all adults age: 15+, UK.
[250] © Ipsos, Ipsos iris Online Audience Measurement Service, Steam (BG), 1 September – 30 September 2021, all adults age: 15+. UK.
[251] © Ipsos, Ipsos iris Online Audience Measurement Service, Discord Inc (ORG), 1 September – 30 September 2021, all adults age: 15+. UK.
[252] Business Insider, What is Discord? A guide to the popular group-chatting app, 24 March 2021.
[253] Discord, What is Discord?, accessed 23 March 2022.
[254] Discord, How To Build An Active And Engaged Indie Game Community With Discord, 7 December, 2016.

September 2021 and is particularly popular with online 15-24-year-olds, of whom 32% visited the platform.[255]

Reddit is a collection of discussion forums where users can share news and content or comment on other users' posts. It is divided into many communities, known as subreddits, each covering a different topic. Gaming is the fourth most subscribed-to subreddit with 32 million global subscribers.[256] In the UK 14.1 million adults visited Reddit in September 2021; 61% of its audience were male and 39% female.[257]

75% of online gamers aged 8-17 chat in a game to other people who are playing, through messaging or by using a microphone / headset

The activity of chatting with others increases with age, with 70% of 8-11-year-old online gamers saying they do this, compared to 80% of 16-17-year-old gamers. Eighty-eight per cent of the gamers aged 8-17 who chat with other people chat to friends, or people they know outside the game, while 44% chat to people that they only know through playing the game.[258] In 2021 61% of 8-17-year-olds described how playing games online has helped them to spend more time with their friends online than in real life, and 70% of parents agree that online games have helped their child to connect with their friends over the past year.[259]

PlayStation and Xbox also have their own apps which can be used for messaging and voice chats. 1.1 million and 1.0 million UK online adults respectively visited the PlayStation and Xbox apps on smartphone or tablets in September 2021. The majority of the adult users of these two apps were male (80% PlayStation and 74% Xbox).[260]

Gaming and wellbeing

Gaming can be used to regulate mental health, but it does have pitfalls

As well as providing entertainment, gaming can provide stress relief or be used as a form of escapism. A study conducted by Oxford University in 2020 found that time spent playing games is positively associated with wellbeing.[261] UK Safer Internet Centre's research found that the majority of young people reported positive and enjoyable experiences of online gaming. Over half of 8-17-year-olds (58%), say that playing games online changes their mood positively, 59% say it makes them

[255] © Ipsos, Ipsos iris Online Audience Measurement Service, Discord Inc (ORG), 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[256] Metrics for Reddit, Top Subreddits, accessed 21 March 2022.
[257] © Ipsos, Ipsos iris Online Audience Measurement Service, Reddit Inc (ORG), 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[258] Ofcom Children's and Parent's Media Literacy: Online Behaviours and Attitudes survey.
[259] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.
[260] © Ipsos, Ipsos iris Online Audience Measurement Service, PlayStation app and Xbox app, 1 September 2021 – 30 September 2021, adults age: 15+, UK.
[261] Oxford University, Video game play is positively correlated with well-being, November 2020.

feel good about themselves and 71% of children who play online games say doing so makes them feel relaxed and happy.[262]

However, many young people who play online games have also had a negative gaming experience: 68% have experienced offensive or mean comments from other players and 67% say they have had rude comments from people they don't know.[263]

Some video game streamers do it as their full-time job and earn via direct advertising revenue, such as product placements or sponsorships, merchandising, tips/gifts from viewers and/or from the platforms themselves. But concerns have been raised about the length of time some streamers spend broadcasting and the impact on their mental health. One Twitch streamer reported that spending 60+ hours a week streaming led to anxiety, a loss of confidence and symptoms of agoraphobia. In January 2022 Twitch stated that it was "developing targeted programming to support Twitch streamers with challenges like burnout, boundary-setting, and other pressures that come with a career in online content creation."[264]

Ofcom's Online Experience Tracker research of UK people aged 13+ found that 2% of those who had experienced a potential harm online experienced their most recent potential harm on a gaming website or app.[265] The most common potential harms experienced on gaming websites or apps were generally offensive or 'bad' language (e.g. swearing or rudeness) followed by intentional harassment during gaming, sometimes known as griefing.[266]

Market context and business model

Gaming revenue in the UK reached £7.16bn in 2021

The UK consumer games market was valued at £7.16bn in 2021, up 2% from £7bn in 2020.[267] UK gamers are on average spending more on digital than physical game purchases. Research by Ampere found that UK gamers aged 13-64 spent on average just under £30 on digital games related purchases in the 30 days leading up to the survey. Digital games are purchased online via a digital store and downloaded, in contrast to physical games on discs or cartridges. This indicates the increasing need to access the internet in order to play games, whether to buy games, for in-game spending or to play with other gamers via subscription services. 13-15-year-old gamers on average spent almost £11 on in-game spending during the month, almost double the average for UK gamers.[268]

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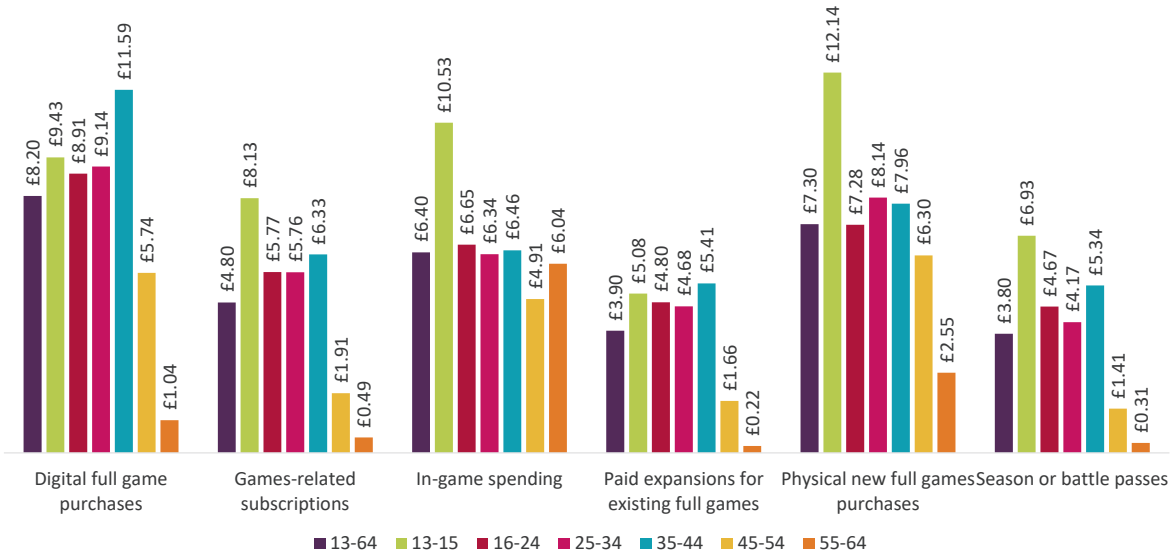
[262] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.
[263] UK Safer Internet Centre, All fun and games? Exploring young people's experiences of respect and relationships in online games, 8 February 2022.
[264] BBC News, Twitch: Concerns over streamers' mental health, 28 January 2022.
[265] Ofcom, Online Experiences Tracker. Q21. What type of site or service were you using when you experienced…?
[266] Ofcom Online Experience Tracker 2021. CAUTION: low base (<100). A griefer is a player in a multiplayer video game that goes out of his or her way to annoy other players.
[267] Annual valuation report released by trade body, the Association for U.K. Interactive Entertainment (Ukie)
[268] Ampere Games – Consumer, Q4 2021, gamers aged: 13-64, UK.

Figure 3.13: UK 13-64-year-old gamers' average spend on games and related products in the past month: Q4 2021



Source: Ampere Games – Consumers, Q4 2021, gamers aged 13-64, UK

58% of UK gamers aged 13-64 subscribe to a gaming subscription service[269]

Cloud gaming is a method of playing video games using remote servers in data centres; the games do not need to be downloaded or installed on a PC or console. The streaming services use an internet connection to send the gaming information to an app or browser installed on the recipient's device. The game is rendered and played on the remote server, but the gamer sees and interacts with everything locally on their own device.[270] By the end of 2021 there were 2.1 million UK paying subscribers to cloud services capable of streaming games (this figure increases to 2.9 million users when including those who access the free GeForce Now and Google Stadia tiers).[271] Microsoft in its Q3 earnings call said that globally 10 million people had streamed games over Xbox Cloud Gaming which is available as part of its Xbox Game Pass Ultimate tier.[272] Subscription service PlayStation Now is the most popular cloud gaming subscription service in the UK.[273]

Figure 3.14: Reach to UK gamers aged 13-64, by subscription type

Content streaming only	Content download only	Content download and streaming	Platform (online multiplayer)	PC in the cloud
8%	20%	12%	23%	4%

[269] Ampere Games – Consumers, Q4 2021, gamers aged: 13-64, UK.
[270] Digital trends, What is cloud gaming?, 29 March 21.
[271] Ampere Games – Subscription. Cloud services included: Xbox Game Pass Ultimate, PlayStation Now, Google Stadia & Nvidia GeForce Now.
[272] Microsoft, Microsoft Fiscal Year 2022 Third Quarter Earnings Conference Call , 26 April 2022.
[273] Ampere Games – Consumers, Q4 2021, gamers aged: 13-64, UK.

Source: Ampere Games – Consumer, Q4 2021, gamers aged 13-64, UK. See figure 3.15 for examples of subscription service types. PC in Cloud subscriptions lets users access a virtual computer where they can install their existing games from existing digital distribution platforms, and play them remotely example includes GeForce Now.

Amazon's Prime Games service, where users can download and install games, was the highest-reaching subscription service in Q4 2021 that was not linked to a games console ownership.[274] In March 2022 Amazon launched Amazon Luna, its cloud-based gaming subscription service, in the USA after being available by invite only for the past couple of years. Amazon Luna offers games through its channels, and its subscribers can broadcast live to Twitch.[275] Cloud-gaming subscription services that are not tied to a console could make gaming more accessible, as it removes the requirement to purchase a dedicated gaming device and can instead be accessed through connected devices such as Fire TV using an iPhone or Android phone as the controller.

Another example of leveraging internet connected devices came from Samsung at the Consumer Electronics Show 2022, where Samsung showcased its *Samsung Gaming Hub* – a section of the menu system on some of its 2022 smart TV models that will include the gaming libraries of Google Stadia, Nvidia GeForce Now and Utomik.[276]

In November 2021, Netflix made several mobile games accessible to all its customers at no extra cost, which in the UK equates to it being available in 16.5 million households.[277] Ofcom's video-on-demand survey, conducted in February 2022, found that 54% of people aged 13+ who have used Netflix in the past three months are aware that Netflix offers games, 8% have played a Netflix game, and 5% say they have played one of the *Stranger Things* games.[278]

Apple also offers mobile-first games. For £4.99 per month, Apple Arcade offers 200 premium games and can be shared by the subscriber with up to five other family members, using Family Sharing with one all-inclusive subscription.[279] Apple Arcade games do not include advertising or any in-app microtransactions.[280] Most of the iOS app store revenue is generated from games, so Apple's move into gaming could be lucrative.

PlayStation Plus was the most popular paid-for gaming subscription in the UK with 3.2 million subscribers at the end of 2021, followed by Xbox Game Pass (all versions) (2.6 million), Xbox Live Gold (1.5 million) and Nintendo Switch Online (1.49 million).[281] PlayStation announced that in June 2022 it would expand its PlayStation Plus service, merging PlayStation Now and offering three tiers of PlayStation Plus: Essential, Extra, and Premium. The Essential version is the PlayStation Plus that

[274] Ampere Games – Consumers, Q4 2021, gamers aged: 13-64, UK.
[275] Amazon, Amazon Luna Cloud Gaming Service Now Available to Everyone in Mainland U.S. with Unique Offer for Amazon Prime Members, 1 March 2022.
[276] Samsung at CES 2022, YouTube: A next-level experience: Samsung gaming hub and odyssey ark, 5 January 2022.
[277] BARB Establishment survey Q4 2021.
[278] Ofcom VoD survey February 2022. Full research to be published alongside Ofcom's Media Nations report in August 2022.
[279] Apple Newsroom, Apple services enrich peoples' lives throughout the year, 10 January 2022.
[280] Apple, Apple Arcade, accessed 8 April 2022.
[281] Ampere Games–Subscription.

subscribers know today, offering two monthly downloadable games, cloud storage, and access to online multiplayer.[282]

Figure 3.15: Reach of top ten gaming subscription services to UK 13-64-year-olds: Q4 2021

Rank	Subscription type	Service	UK 13-64-year-old reach
1	Online console multiplayer gaming	PlayStation Plus	14%
2	Online console multiplayer gaming	Nintendo Switch Online	10%
3	Content and cloud streaming	PlayStation Now	7%
4	Content	Xbox Game Pass (Console)	6%
5	Content and cloud streaming	Xbox Game Pass Ultimate	6%
6	Content	Prime Gaming	6%
7	Content	EA Play for Xbox	5%
8	Cloud streaming	Google Stadia / Stadia Pro	5%
9	Online console multiplayer gaming	Xbox Live Gold	5%
10	Content	Apple Arcade	3%

Source: Ampere Games – Consumer, Q4 2021, age: 13-64, UK. Note: see interactive report for further services.

Just over a quarter of 13-64-year-old gamers said they had unsubscribed from a games subscription service

Twenty-six per cent of 13-64-year-old gamers said they had unsubscribed from a games subscription service which offered a games catalogue, such as Apple Arcade. The most-cited reason for doing this was due to friends being on other services; 37% of 13-64-year-olds who had unsubscribed to such services cited this as their reason. Of those who unsubscribed from Apple Arcade, 31% gave this as their reason. In contrast, those who cancelled their subscriptions for online multiplayer/platform services linked to consoles (PS Plus, Xbox Live Gold, Switch Online) did so because they were not using the service (24%), and for platform and content services (e.g. PS Now, Game Pass) the most-cited rationale was that they "couldn't afford it" (23%).[283]

Virtual reality gaming

42% of 13-64 year old gamers have played VR games using a headset. PlayStation VR is the most popular VR headset in the UK[284]

Metaverses, in their broadest sense, are persistent 3D virtual spaces in which users can interact with computer-generated environments and other users. Today's live-service games such as *Fortnite*, *Roblox*, and *Minecraft* have been regarded as early or proto metaverses as players have freedom to explore and interact at their own pace, in a virtual world that evolves through frequent developer updates or is shaped by players building their own content and experiences to share with other

[282] PlayStation Blog, PlayStation Plus and PlayStation Now come together; players can choose from three flexible options, 29 March 2022.
[283] Ampere Games – Consumer, Q4 2021, age: 13-64, UK.
[284] Ampere Games – Consumer, Q4 2021, gamers aged: 13-64, UK.

players. Metaverses seek to build upon these games by providing tools and technologies to facilitate the building of new use cases for a broader audience.

Augmented reality (AR) is technology that overlays digital content onto a real-world environment. This digital content can include a combination of video, text, and graphics. In 2021, 5% of British adults said they played AR games at least monthly.[285] Microsoft HoloLens, Snapchat and Pokemon Go are examples of products and services that leverage AR technology.

In contrast, virtual reality (VR) employs headsets to immerse users within entirely computer-generated environments, with scenes and objects that can be viewed, as well as interacted with, through controllers, and spatial and motion-tracking technologies. Three per cent of adults play games on a VR headset.[286] Tethered VR headsets require a constant connection to an external processing device such as a computer or video game console. For example, PlayStation VR must be tethered to a PlayStation 4 or 5 console, while the Oculus Rift and HTC Vive must be tethered to a PC. The PlayStation VR headset, launched in 2016, is currently the UK market leader, having been used by 14% of UK gamers, while 10% of gamers have used the Meta-owned Quest headset.[287]

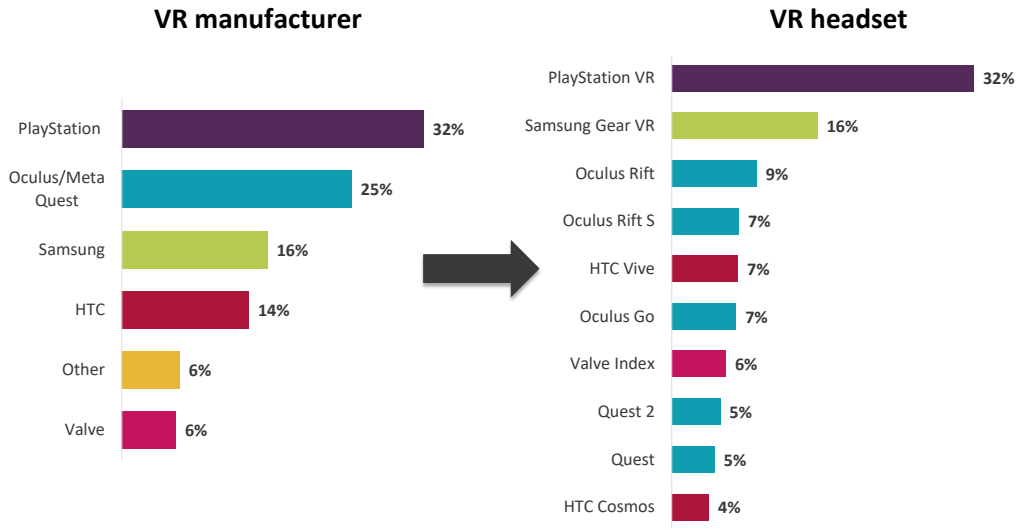
There are two types of untethered headsets. Firstly, there are standalone VR headsets, which do not require a computer or smartphone to deliver the VR experience but instead have purpose-built hardware with all the necessary components such as the screen, processor, and sensors built into the headset itself. Secondly, mobile VR users can attach their smartphones into the headset case, using the smartphone screen, sensors, and processing capability as a virtual reality headset. Examples include Google Cardboard and Samsung GearVR. Due to the ubiquitous nature of smartphones, this can make VR more accessible; mobile VR headsets are cheaper than tethered or standalone VR headsets. Twenty-five per cent of UK gamers use a tethered VR headset, while 7% use untethered headsets like the Quest 2 and Samsung Gear VR.[288]

Among VR gamers, 32% use the PlayStation VR headset, up by 6 percentage points since Q4 2020, overtaking Oculus headsets which were the most popular in Q4 2020.[289] However, adoption has been slow; less than 5% of PlayStation 4 and 5 owners have a PSVR headset.[290] This may change, as Sony announced at the Consumer Electronics show 2022 that it would be releasing the PlayStation VR2.[291] Consumer adoption of VR headsets is still in its infancy, which could be due to various factors: the current absence of compelling games; headsets not reasonably fitting all users well and therefore being potentially uncomfortable to use; and tethered headsets being an additional cost on top of a console or another computing device. However, with the largest online companies investing in gaming and the metaverse, this is an area that may experience increase take-up and attract new entrants. 2022 will see the release of Meta's higher-end VR headset – Meta Quest 2 Pro, Apple is

[285] IPA TouchPoints 2021. Base: GB adults, age: 15+.
[286] Ofcom Adults' Media Literacy Tracker 2021: Core survey.
[287] Ampere Games - Consumer, Q4 2021, gamers aged: 13-64, UK.
[288] Ampere Games - Consumer, Q4 2021, gamers aged: 13-64, UK.
[289] Ampere Games - Consumer, Q4 2020 & Q4 2021, VR gamers aged: 13-64, UK.
[290] Ampere Games - Consumer, Q4 2021, 13-64-year-olds, UK.
[291] Sony at CES 2022.

rumoured to be launching an Apple AR/VR headset in 2022[292] and Google is reportedly working on its AR headset, internally codenamed Project Iris.[293]

Figure 3.16: VR manufacturers and VR headsets for gaming, by reach to UK VR gamers: Q4 2021



Source: Ampere Games – Consumer, Q4 2021, 13-64-year-olds, UK. Base: UK VR gamers. Note: Meta has rebranded Oculus to Meta Quest

As metaverses develop, user safety may need to be addressed

The terms of service for the Meta Quest headset require users to be aged 13 or over. Similarly, the PlayStation VR states that it is not for use by children under the age of 12.[294] In March 2022 Meta Quest announced that it would begin rolling out VR parental supervision tools for all its Quest headsets, with the plan to provide "platform-level controls for parents and teens ages 13+". Meta plans to expand the functionality of its existing unlock pattern on Quest headsets. An 'unlock pattern' operates like a password; the headset user draws a pattern to unlock their device or access certain features and prevent others without permission from accessing the device or saved passwords.[295] The unlock pattern can be used to lock specific apps directly from VR. Once a given app is locked, the headset user will need to draw the set unlock pattern to unlock and launch it. This provides parents with a tool to prevent teens aged 13+ from accessing games and experiences that are not age-appropriate, using an unlock pattern to lock access to those apps. In addition, Meta Quest will automatically block teens aged 13+ from downloading or purchasing age-inappropriate rated apps in the Quest Store.[296] However, age inappropriate and potentially harmful behaviour by other users can occur even on platforms which have a low age rating.

[292] Tech Advisor, Apple AR/VR headset: Everything you need to know, 8 March 2022.
[293] The Verge, Google is building an AR headset, 20 Jan 2022.
[294] PlayStation, PlayStation VR, accessed 8 April 2022.
[295] Meta Quest, Managing your unlock pattern with Meta Quest 2 and Quest headsets, accessed 12 May 2022.
[296] Oculus Blog, Introducing future VR parental supervision tools to help support families, March 2022.

The Lego Group and Epic Games announced in April 2022 that they had formed a partnership to create a place for children to play in the metaverse. The announcement stated that the companies had agreed to ensure that they create digital spaces that protect children's right to play by making safety and wellbeing a priority, safeguarding children's privacy and providing children and adults with tools that give them control over their digital experience.[297]

[297] Epic Games, The LEGO Group and Epic Games Team Up to Build a Place for Kids to Play in the Metaverse, 7 April 2022.

4. Communications services

Introduction

Figure 4.1: UK online communications services: 2021 key metrics

	2021
Adults (16+) who use online platforms to send messages or make calls	94%[1]
Children (3-15) who use online platforms to send messages or make calls	77%[2]
UK WhatsApp adults aged 15+ – reach in September 2021	82% (41 million)[3]
UK online adults aged 15+ – reach of email platforms in September 2021	82%[3]
UK online adults aged 15+ – reach of dating platforms in September 2021	10%[3]

Sources: [1]Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes survey. Base: All adult internet users aged 16+, Wave 1 - 3552, Wave 2 – 3014. [2] Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey (5,861)*; [3] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021- 30 September 2021, all adults age: 15+, UK.*

Online communications services comprise a wide range of apps and websites, including messaging and call platforms like WhatsApp and Telegram, email like Gmail and Hotmail, and dating services like Tinder and Bumble. Many of these services offer functions that are not available through traditional telephony, such as group chat or message boards, and they can also be lower-cost alternatives to phone calls or text messages. Since the start of the Coronavirus pandemic, the use of online communications services to keep in touch with friends and family, and for work and education, has increased.

While these services are an intrinsic part of our daily interactions, challenges exist in relation to the interoperability of the services and ensuring user safety. The ability to connect immediately with strangers via random chat and online dating sites, although playing an important role in building connections, also creates safety risks. Additionally, the move towards greater levels of encryption within many online communications services has implications for some existing measures taken to protect consumers, raising questions on how best to balance user privacy and security with user safety.

This chapter focuses on the online services that consumers use to communicate as an alternative to more traditional fixed and mobile communications services. Here, we define an online communications service as a service which is used to communicate directly with a specific person or group of people and has at least one of the following features: online voice calling, video calling, or other direct instant messaging functionality (such as text, photos, videos or voice messages), and web-based email. Communication services known to be used for gaming chat, such as Discord, are discussed in the Gaming chapter.

Figure 4.2: Summary of selected* online communications services' functionalities

Parent company	Service	Voice calling	Video calling	Text messages or chat	Group chat/calling	Image/video messages
Alphabet	Google Chat	✓	✓	✓		✓
Alphabet	Google Meet	✓	✓			✓
Alphabet	Google Messages			✓		✓
Apple	Facetime	✓	✓		✓	
Apple	iMessage			✓		✓
Bytedance	TikTok			✓		
Discord Inc	Discord	✓	✓	✓	✓	✓
Meta	Facebook Messenger	✓	✓	✓	✓	✓
Meta	Instagram	✓	✓	✓	✓	✓
Meta	WhatsApp	✓	✓	✓	✓	✓
Microsoft	Microsoft Teams	✓	✓	✓	✓	✓
Microsoft	Skype	✓	✓	✓	✓	✓
Signal Technology Foundation	Signal	✓	✓	✓	✓	✓
Snap	Snapchat	✓	✓	✓	✓	✓
Telegram	Telegram	✓	✓	✓	✓	✓
Rakuten	Viber	✓	✓	✓	✓	✓
Zoom	Zoom	✓	✓	✓	✓	✓

*Source: Publicly available information as of March 2022. Note: other features may also be available. *Selection includes Meta, Apple, Microsoft, Alphabet services and the top ten ranking services by UK adult reach in September 2021, as reported by Ipsos iris, see figure 4.6.*

Messaging- and calling-capable services

Use of online communication services is ubiquitous in the UK

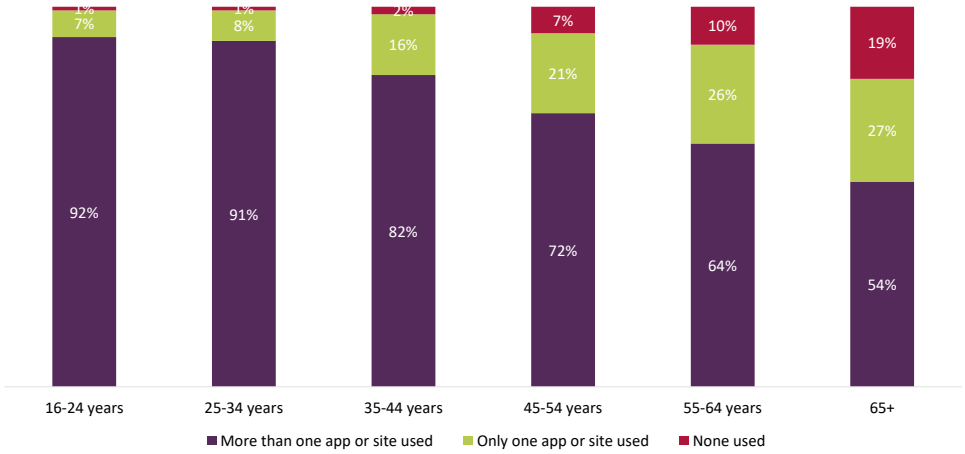
Our Adults' Media Literacy Tracker 2021 research found that 94% of UK internet users aged 16+ used an online communications service for making voice/ video calls or sending messages. The popularity of these communication methods applies across all age groups, including older consumers, among whom 90% of internet users aged 55-64, and 81% aged 65+, used them.[298] Ofcom's Children's and Parents' Media Literacy Tracker 2021 found that 69% of children aged 3-15 used an online communications service for making voice/video calls or sending messages.[299]

Many adults use more than one online communications service to connect with their networks. Younger adults are more likely to use a greater number of services or apps, with 92% of internet users aged 16-24 using more than one site or app, compared to 54% of those aged 65+.[300] Unlike telephony services, most online communication services are not interoperable, i.e. it is not possible to call or send a message to someone on a different service; for example, it is not possible to call a WhatsApp user using Apple's FaceTime app. Currently, online any-to-any connectivity between different online communication services is generally limited to email; users of online calling and messaging services can generally only communicate with other users of the same service.

This may be one reason consumers use more than one online communication service. However, this may be about to change – under the EU Digital Markets Act, the largest messaging services (such as WhatsApp, Facebook Messenger and iMessage) will have to open up and interoperate with smaller messaging platforms, if they request it. This means that users of communication services such as WhatsApp would be able to exchange messages, send files or make video calls across messaging apps, thereby giving them more choice.[301]

[298] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes survey.
[299] Ofcom Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.
[300] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes Survey.
[301] European Parliament, Deal on Digital Markets Act: ensuring fair competition and more choice for users | News | European Parliament, 24 March 2022.

Figure 4.3: Number of communication apps/sites used to send messages, chats and voice/video calls

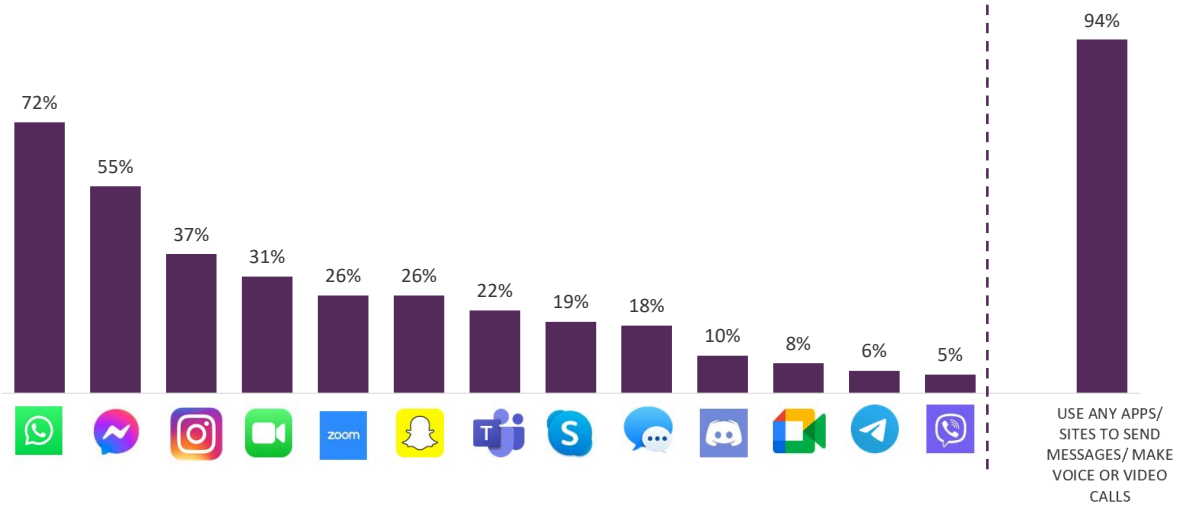


Source: Ofcom Adults' Media Literacy Tracker 2021: Online Behaviours and Attitudes Survey. IN6. Which, if any, of these apps or sites do you use to send messages or make video or voice calls? (multi coded). Base: All adult internet users aged 16+, Wave 1 - 3552, Wave 2 – 3014.

WhatsApp remains the most popular platform used to send messages or make calls, used by more than seven in ten UK online adults

Among all online over-16s, WhatsApp, Facebook Messenger and Instagram (all owned by Meta) were the most popular online communication services in 2021. While WhatsApp was the most popular service for users in all other age groups, among those aged 16-24 Instagram was the most popular, reaching 75%; WhatsApp was used by 74%. Snapchat was also favoured by younger age groups: it was used by 73% of 16-24-year-olds, compared to just 7% of internet users aged 55-64 and 1% of those aged 65+.[302]

Figure 4.4: Online services used to send messages or make video or voice calls



Platforms listed from left to right: WhatsApp, (Facebook) Messenger, Instagram (Direct), Facetime, Zoom, Snapchat, Microsoft Teams, Skype, iMessage (by Apple), Discord, Google Chat / Google Meet / Google Duo, Telegram and Viber.

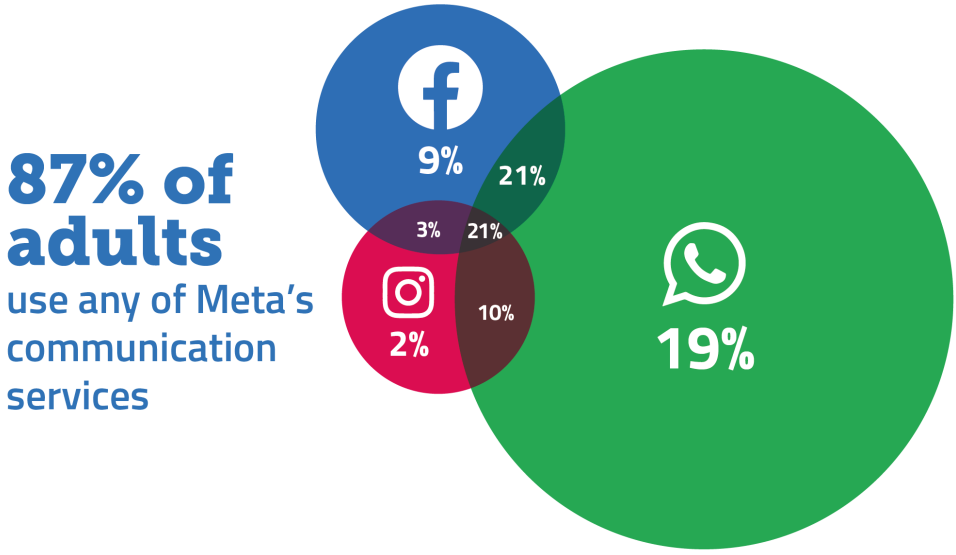
[302] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes survey.

Source: Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes Survey. IN6. Which, if any, of these apps or sites do you use to send messages or make video or voice calls? (multi coded). Base: All adult internet users aged 16+, Wave 1 - 3552, Wave 2 – 3014. Only sites/ apps with use of 5% or more among all adult internet users are shown. TikTok was not surveyed as a messaging service.

One in five UK adults use all three Meta-owned communication services,[303] with 23 million accessing WhatsApp daily in September 2021[304]

Eighty-seven per cent of adults used any of Meta's services to send messages or make calls in 2021. Older users were more likely to say they only used Facebook, and neither WhatsApp nor Instagram, with 17% of adults aged 65+ saying this, compared to 3% of 16-24-year-olds. Thirty-six per cent of 25-34-year-olds used all three Meta services for communication, making this age group the most likely to do this, compared to 5% of those aged 65+. Twenty-six per cent of women use all three services, compared to 16% of men.[305]

Figure 4.5: Adults' use of Meta-owned communication services



Source: Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes Survey
IN6. Which, if any, of these apps or sites do you use to send messages or make video or voice calls? (multi coded)
Base: All adult internet users aged 16+, Wave 1 - 3552, Wave 2 - 3014

One in five UK adults accessed Zoom in September 2021

Beyond the large Meta-owned platforms, a variety of online communications services are available in the UK which have a smaller reach. Alphabet-owned services YouTube and Google Search are among the highest-reaching online services (see Online Landscape chapter), yet in the messaging

[303] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes Survey. See interactive report for demographic data.
[304] © Ipsos, Ipsos iris Online Audience Measurement Service, Monthly: 1 September 2021– 31 September 2021, adults age: 15+, UK.
[305] Ofcom Adults' Media Literacy 2021: Online Behaviours and Attitudes Survey. See interactive report for demographic data.

and calling market, Alphabet's UK adult userbase of Google Messages, Google Duo, Google Chat and Google Meet are significantly lower than its competitors; for example, video-calling service Google Meet reached just 0.6% of the UK online adult population in September 2021, compared to Zoom which reached 21%.[306] Some online platforms, such as social media services like Instagram and Snapchat, are predominantly focused on sharing communications publicly but also have multiple functionalities which may include direct messaging and/or voice/video calling. These are not listed in the table below.

Figure 4.6: UK online adult reach of platforms focused on messaging or calling, September 2021

Rank	Communication services	Total adult reach in September	Online adult reach in September	Average daily adult visitors in September
1	**WhatsApp**	41.1m	82.4%	23.2m
2	**Facebook Messenger app***	31.8m	63.7%	15.5m
3	**Zoom**	10.6m	21.2%	1.20m
4	**Google Messages app**	7.2m	14.5%	3.70m
5	**Discord**	5.3m	10.6%	1.70m
6	**Google Duo app**	3.1m	6.2%	0.22m
7	**Skype**	2.6m	5.3%	0.42m
8	**Telegram**	1.7m	3.5%	0.51m
9	**Signal**	1.5m	3.0%	0.39m
10	**Viber**	0.8m	1.5%	0.22m
11	**Kik**	0.7m	1.4%	0.23m
12	**Google Chat⁺ app**	0.5m	1.1%	0.13m
13	**WeChat**	0.3m	0.6%	0.98m
14	**Google Meet app**	0.3m	0.6%	0.02m
15	**Imo**	0.2m	0.5%	0.04m

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021– 30 September 2021, adults age: 15+, UK.
*Note: Custom list of entities defined by Ofcom. *Facebook messaging service can be accessed via the main Facebook platform which is not counted here. Data for Apple iMessage and FaceTime not measured. Microsoft Teams not included as desktop app use not measured. ⁺Google Chat formerly known in September 2021 as Google Hangout.*

Half of 3-15-year-olds use WhatsApp, despite the minimum age requirement of 16

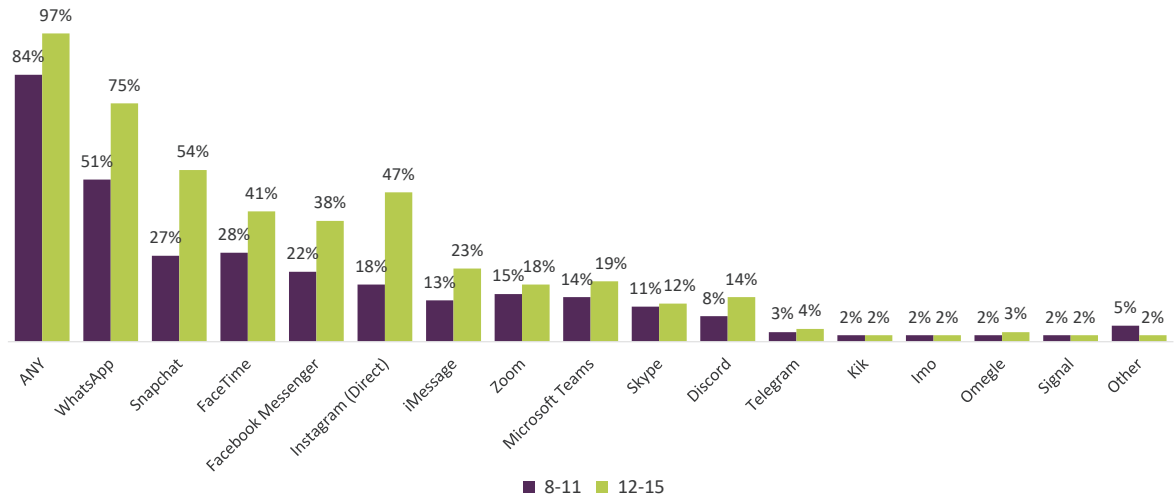
Online communications services often have a minimum age requirement, typically 13 years, although some have a minimum age of 16. Despite having a minimum age requirement of 16,

[306] © Ipsos, Ipsos iris Online Audience Measurement Service, 1 September 2021 – 30 September 2021, adults age: 15+, UK.

introduced in 2018,[307] WhatsApp was the most popular online communications service among children in 2021 for sending messages or making video and voice calls, used by 50% of children aged 3-15.

Half (51%) of 8-11-year-olds used WhatsApp in 2021, rising to 75% of 12-15s. But the remaining Meta services did not dominate the top three for children, as they did for adults. The second and third highest-reaching services for communication were Snapchat and FaceTime, each reaching 30% of children aged 3-15. However, a significant minority of children also used services which are less mainstream. Fourteen per cent of 12-15-year-olds used Discord, a social gaming communications platform (see the Gaming chapter for further information), and 2% used Signal.[308]

Figure 4.7: Online communications services used by children aged 8-15



Source: Ofcom Children Media Literacy Tracker 2021: Children's Online Behaviours and Attitudes Survey Wave 1 and Wave 2. QP4/ QC3. Which, if any of these apps or sites does your child use to send messages or make video or voice calls? Base: All children and parents of children aged 8-15 (3,197)

Nine per cent of UK internet users aged 13+ who had experienced an online potential harm in the last four weeks, encountered their most recent potential harm on an instant messaging platform

Of those aged 13+ who had received a recent unwelcome friend request, follow request, or message, for 22% this was via an instant messaging service.[309]

[307] WhatsApp General, Security and Privacy, About minimum age to use WhatsApp, accessed 9 March 2022.
[308] Ofcom, Children's and Parents' Media Literacy 2021: Online Behaviours and Attitudes survey.
[309] Ofcom, Online Experiences Tracker 2021.

Figure 4.8: Type of harm experienced by UK users experiencing their most recent potential harm over instant messaging services

Unwelcome friend or follow requests, or messages	Received an unwanted sexual message	People pretending to be another person, e.g. catfishing*	Content depicting violence*	Bullying, abusive behaviour or threats*
22%	22%	14%	10%	10%

*Source: Ofcom, Online Experiences Tracker – Q21 What type of site or service were you using when you experienced…? Base: All users aged 13+ experiencing… most recently (3,843; unwelcome friend or follow requests, or messages 520; received an unwanted sexual message 134; people pretending to be another person 65; content depicting violence 99; bullying, abusive behaviour or threats 69). *CAUTION: LOW BASE (<100).*
Note: Only potential harms experienced by 50 users or more are shown.

Email

Email services had a daily UK online adult reach of 51% in September 2021[310]

Email remains widely used, with 82% (41 million) of UK online adults visiting an email service in the month of September 2021. Google Gmail was the highest-reaching email service among adults in September 2021, reaching 53% of UK online adults, closely followed by Microsoft's email services (Hotmail and Outlook) which reached 47%. But although Gmail was the highest-reaching email service for UK online adults aged 25+, Microsoft's email services were the highest-reaching services among UK online 15-24-year-olds (65%).[311] The top four email services all have a daily use ratio of about half or more of their userbase.

Figure 4.9: Top ten email services by UK online adult reach: September 2021

Rank	Email service	Total adult reach in September	Online adult reach in September	Average daily audience in September
1	**Google Gmail**	26.4m	53.0%	13.35m
2	**Microsoft Outlook & Hotmail**	23.2m	46.6%	11.51m
3	**Yahoo Mail**	4.8m	9.5%	2.83m
4	**Samsung Email**	4.0m	8.0%	2.31m

[310] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: Email, 1 September– 30 September 2021, adults age: 15+, UK. Note: Excludes desktop apps.
[311] © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, 1 September– 30 September 2021, adults age: 15+, UK.

Rank	Email service	Total adult reach in September	Online adult reach in September	Average daily audience in September
5	**Apple Mail**	3.3m	6.7%	0.20m
6	**AOL**	1.8m	3.6%	0.67m
7	**Mail.com**	0.3m	0.7%	0.07m
8	**Postageapp**	0.2m	0.4%	0.08m
9	**Sony Email**	0.2m	0.4%	0.05m
10	**Gmx**	0.1m	0.2%	0.03m

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, 1 September 2021– 30 September 2021, adults age: 15+, UK.

Scams, fraud and phishing are the most commonly-encountered potential harms on email services

Scams, fraud and phishing are the most commonly experienced potential harms, encountered by 27% of UK online users in the past four weeks (see the Online Experience chapter). Of those experiencing a potential harm, 14% encountered it on an email service, with scams, fraud and phishing being the most experienced potential harms on this type of service. Older users aged 55+ are more likely than average to have encountered their most recently experienced potential harm via email: (25% compared to an average of 14%). The opposite was true of younger users: only 5% of 18-24s had encountered their most recent hazard while using email.[312]

Figure 4.10: Types of harm experienced by UK users encountering their most recent potential harm on email services

Scams, fraud and phishing	Received unwanted sexual message	People pretending to be another person, e.g. catfishing*	Content encouraging gambling	Sexual or pornographic content inappropriate for the site/app*
58%	32%	11%	8%	4%

*Source: Ofcom, Online Experiences Tracker – Q21 What type of site or service were you using when you experienced…? Base: All users aged 13+ experiencing… most recently (3,843; scams, fraud and phishing 672; received an unwanted sexual message; people pretending to be another person 65; content encouraging gambling 269; unwelcome friend or follow requests, or messages 520; sexual or pornographic content inappropriate for the site/app 85). *CAUTION: LOW BASE (<100). Note: Only potential harms experienced by 50 users or more are shown.*

[312] Ofcom, Online Experiences Tracker 2021.

Online dating

One in ten UK online adults visited an online dating service in September 2021[313]

Online dating services provide users with the opportunity to form romantic connections directly online via messaging and calls. Adults aged 25-34 in the UK are most likely to use online dating services; 19% of this online age group visited a dating platform in September 2021.[314] US company Match Group owns and operates the largest global portfolio of online dating services, including Tinder, Hinge, OKCupid, Match.com, Plenty of Fish and OurTime, together reaching 6% of UK online adults in September 2021.[315]

Tinder remains the most popular dating site with younger age groups, visited by 8% of online adults aged 18-34. Sixty-two per cent of Tinder's adult audience is male, versus 38% female, whereas for Bumble, where women message their matches first, its audience is split evenly between men and women.[316] Plenty of Fish was the most popular dating site for UK online 55-64s, with 1% visiting its site or app.[317] OurTime, a dating service for the over-50s, was visited by 1% of those aged 65+, making it the most-visited service among this age group.[318]

Figure 4.11: Top 15 UK online adult reach of dating services: September 2021

Rank	Dating services	Total adult reach in September	Online adult reach in September	Average daily adult visitors in September
1	**Tinder**	1,949k	3.91%	816k
2	**Bumble**	1,222k	2.45%	470k
3	**Hinge**	966k	1.94%	439k
4	**Grindr**	820k	1.64%	379k
5	**Shag**	747k	1.50%	34k
6	**Squirt**	734k	1.47%	105k

[313] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: Online dating, 1 September 2021– 30 September 2021, adults age: 15+, UK.

[314] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: Online dating, 1 September 2021– 30 September 2021, age: 25-34 UK. Note: see interactive report to see rankings by age group.

[315] © Ipsos, Ipsos iris Online Audience Measurement Service, Match Group, 1 September 2021– 30 September 2021, adults age: 15+, UK.

[316] © Ipsos, Ipsos iris Online Audience Measurement Service, Category: Online dating, Tinder and Bumble, 1 September 2021– 30 September 2021, adults age: 15+, UK.

[317] © Ipsos, Ipsos iris Online Audience Measurement Service, Match Group, 1 September 2021– 30 September 2021, adults age: 15+, UK.

[318] © Ipsos, Ipsos iris Online Audience Measurement Service, OurTime, 1 September 2021– 30 September 2021, adults age: 15+, UK.

Rank	Dating services	Total adult reach in September	Online adult reach in September	Average daily adult visitors in September
7	**Plenty of Fish**	495k	0.99%	149k
8	**Badoo**	360k	0.72%	142k
9	**OurTime**	180k	0.36%	20k
10	**Match**	176k	0.35%	42k
11	**LuckyCrush**	162k	0.33%	9k
12	**Zoosk**	161k	0.32%	43k
13	**OkCupid**	126k	0.25%	26k
14	**eHarmony**	119k	0.24%	8k
15	**Secretbenefits**	94k	0.19%	5k

Source: © Ipsos, Ipsos iris Online Audience Measurement Service, Ranking report, 1 September 2021 – 30 September 2021, adults age: 15+, UK. Note: See interactive report to see rankings by age group.

'Random chat room' services

Random chat room platforms are digital spaces where platform users, who do not know each other in advance, are connected for real-time messaging or calls. They may not require the user to have a profile or for the user to provide identifying information. In some cases, users may be connected based on shared interests or characteristics, although this is not always the case. Omegle and LuckyCrush[319] are examples of random chat room services.

Launched in March 2009, Omegle is a free online chat website that randomly pairs users on live video calls. Users chat anonymously and no registration is required. Users can add their 'interests' before connecting to the chat, in order to be paired with those with similar interests. In September 2021 187k UK online adults visited Omegle and 52% (98k) of Omegle's adult audience were aged 15-24.[320] The website has both moderated and unmoderated sections, and specifies that users must be either over 18, or over 13 with parental supervision, but does not ask users to verify their age.[321] Omegle has attracted criticism as some investigations have identified instances or child sexual exploitation[322] and other forms of harmful and exploitative sexual practices on the platform.[323]

Launched in 2019, Lucky Crush is a browser-based dating site which connects users with a random user of the opposite sex located anywhere in the world. In September 2021 Lucky Crush reached 162k UK online adults, with an average daily audience of 9,000 users.[324] Under its terms and conditions, users of Lucky Crush must be 18 or over and they are prohibited from exchanging contact information with other users or engaging in illegal or harmful behaviour.[325]

In 2022, UK Finance reported that two in five people who dated someone they met online had been asked for money

Since the start of the pandemic, there have been increasing reports of 'sweetheart' or romance scams, where users of online dating services are manipulated by fraudsters into sending them money or goods. In 2022, UK Finance reported that two in five people (38%) who had dated someone they met online[326] were asked for money, with 57% of them saying that they gave it or lent it. The three most common reasons people were asked for money were: to pay for an emergency (37%); to pay for the person's travel to meet them (36%); and to make an investment (29%). The average amount of money people were asked for was £345, although 6% reported being asked for more than £1,000.[327] There have also been reports that perpetrators of dating scams are using AI-powered deepfake videos to convince victims that the person they have met online looks like the

[319] Data for random chat service Chatroulette was unavailable on Ipsos iris.
[320] © Ipsos, Ipsos iris Online Audience Measurement Service, Omegle, 1 September 2021– 30 September 2021, adults age: 15+, UK.
[321] Omegle, Terms of Service, accessed 28 March 2022.
[322] BBC News, Omegle: Children expose themselves on video chat site, 18 February 2021.
[323] BBC News, Omegle: 'I'm being used as sex-baiting bot' on video chat site, 14 April 2021.
[324] © Ipsos, Ipsos iris Online Audience Measurement Service, LuckyCrush, 1 September 2021– 30 September 2021, adults age: 15+, UK.
[325] LuckyCrush, General Terms and Conditions, 10 January 2021.
[326] Not limited to dating sites, for instance could include social media or gaming platforms.
[327] UK Finance, Nearly 40 per cent of people looking for love online were asked for money, 10 February 2022.

person they claim to be.[328] Ofcom's Online Experiences research found that 11% of the people who had experienced 'someone pretending to be someone else', also known as 'catfishing', had encountered this most recently on an online dating service.[329]

Business models

Many online communications services rely on the monetisation of consumer data

Online communication services are typically available to download and use without payment. Where payment is required, it is typically for access to enhanced functionality, security, or privacy features (such as Zoom's premium features)[330] or services which are targeted at business users (such as Cisco Webex).

Until 2016, WhatsApp was free for the first year, with a 99p fee charged for every subsequent year, although long-term users of the iOS version were given free use for life. In 2016, the fee requirement was removed, with Meta (then Facebook) instead opting to earn revenue by monetising communication between businesses and individuals.[331] In Meta's Q4 2021 earnings call, COO Sheryl Sandberg stated that Meta was largely focusing its monetisation effort on *Click to Messaging* ads, where users click on an ad in their Facebook or Instagram feed and it opens a chat with the business in Messenger, Instagram Direct or WhatsApp. More than 150 million users globally view business product catalogues on WhatsApp each month.[332] In Facebook's Q1 2021 earnings call, CEO Mark Zuckerberg stated that there were nearly a million businesses using Click to WhatsApp ads.[333]

Figure 4.12 below outlines some of the other monetisation techniques used by messaging, voice and video calling services. Where online communications services are free of charge, they typically rely on monetisation of the data collected from the user's device or account. The data collected may be used to facilitate targeted search or display advertising, based directly on the user's online activity, or by identifying connections or contacts between consumers through the creation of a social graph.[334] The services may generate revenue directly from these strategies, by sharing data with other services or companies within its wider corporate group, or in some cases by sharing with third parties, enabling other companies or services to develop their products and services.

[328] iNews, Valentines Day: Online romance fraud nearing an 'industrial scale' as criminals embrace deepfake technology, 14 February 2022.
[329] Ofcom, Online Experiences Tracker 2021.
[330] Zoom, Zoom Video Conferencing Plans & Pricing | Zoom - Zoom, accessed 28 March 2022.
[331] WhatsApp Blog, Making WhatsApp free and more useful, 18 January 2016.
[332] Meta Q4 2021 earnings call, Meta Q4 2021 Earnings Call Transcript, 2 February 2022.
[333] Facebook, Inc., First Quarter 2021 Results Conference Call, 28 April 2021.
[334] A social graph is a representation of the interconnection of relationships in an online social network (Social graph – Wikipedia).

Figure 4.12: Monetisation techniques used by messaging, voice and video calling services

Monetisation type	Description	Examples
Online advertising	Third-party sellers pay the communication provider to advertise on its service, which may be based on the number of adverts displayed ('impressions') and/or the number of times a user clicks on an advert ('pay per click'). Adverts are often targeted at consumers based on the data the service monitors from the user.	Facebook Messenger[335] and Snapchat[336]
In-app purchases	Purchases are made from inside the application, typically to access special features or functionalities of the service.	Snapchat[337] and iMessage[338]
Sponsored content	Providers are paid to include content from third parties, such as advertising or messages.[339]	Telegram[340]
'Conversational Commerce' business services[341]	Some online communications service providers offer business services to third-party retailers. By signing up to these services, online retailers can provide in-app offers, promotions, sales or customer service through the communications service.[342]	Facebook Messenger,[343] Instagram and WhatsApp[344]
Donations	Signal is funded solely by donations received via the Signal Foundation to fulfil its stated mission to "develop open-source privacy technology that protects free expression and enables secure global communication".[345] It collects no data on its users.	Signal

[335] Facebook, Facebook Messenger Ads: Your Ads on Messenger | Meta for Business, accessed 28 March 2022.
[336] Snapchat, Snapchat Ads | Snapchat for Business, accessed 28 March 2022.
[337] Snapchat, Snapchat on the App Store, accessed 6 April 2022.
[338] Apple, Use iMessage apps on your iPhone, iPad and iPod touch – Apple Support (UK), accessed 28 March 2022.
[339] Facebook, Sponsored Messages - Messenger Platform, accessed 28 March 2022.
[340] Telegram, Telegram Ads, accessed 6 April 2022.
[341] Apocalypse Retail, Conversational Commerce: Everything you need to know to implement it in 2022, 11 July 2021.
[342] WhatsApp, WhatsApp Business App, accessed 30 March 2022.
[343] Meta, LEGO: Facebook ads case study | Meta for Business, accessed 30 March 2022.
[344] WhatsApp, WhatsApp Business App, accessed 6 April 2022.
[345] Signal Foundation, Signal Foundation, accessed 30 March 2022.

The most popular UK email services use a range of monetisation techniques, including targeted advertising

Gmail earns revenue directly through display advertising on email accounts and collects subscription fees from users who take its premium G-suite package. Advertising on Gmail accounts is targeted based on users' online activities while signed into Google, but not on the content of messages.[346]

Microsoft Hotmail does not require any direct financial payment, while Microsoft Outlook is provided with Office 365, which requires a paid license. Consumers can alternatively use outlook.com as a standalone service, either free of charge or by purchasing a premium version which includes enhanced security and privacy options.[347] The free version relies on online advertising shown on the account inbox screen; however, like Google, Microsoft does not use the content of emails for targeted advertising. In contrast to other large online platforms, much of Microsoft's revenue comes from business customers and it is more focused on communications services that are integrated into its suite of business software. In addition to its business subscriptions, Microsoft has reported over 56 million Office 365 consumer subscriptions.[348]

Popular dating services earn revenue primarily through offering paid subscriptions that unlock additional functionality

Popular dating services such as Tinder and Bumble offer a basic free service as well as premium paid subscription services with additional features and features available through one-off purchases.[349] Platforms may encourage free users to upgrade to paid subscriptions by limiting features available in the free service. Daily 'swipe' or 'like' limits[350] [351] are common examples of this. Not all platforms publish the number of limits, and limits can be personalised based on the individuals use of the service, but it is estimated that non-paying users of Bumble are permitted 25 swipes,[352] and Hinge allows eight likes per day.[353]

Match Group generated £2,186m in global revenue in 2021, of which £2,142m was direct customer revenue, including subscriptions and microtransactions. Its most popular service, Tinder, generated over half of Match Group's direct customer revenue, globally generating nearly £1.25bn in direct revenue in 2021, up 22% since 2020.[354] Tinder offers three paid subscription options, with monthly costs ranging from £4.99 to £18.14.[355] Tinder Platinum, the most expensive option, includes features such as being able to message before matching, and to see the likes that users have recently sent.[356] Match group earned £13m in advertising revenue in 2021. A Which? Investigation found that the

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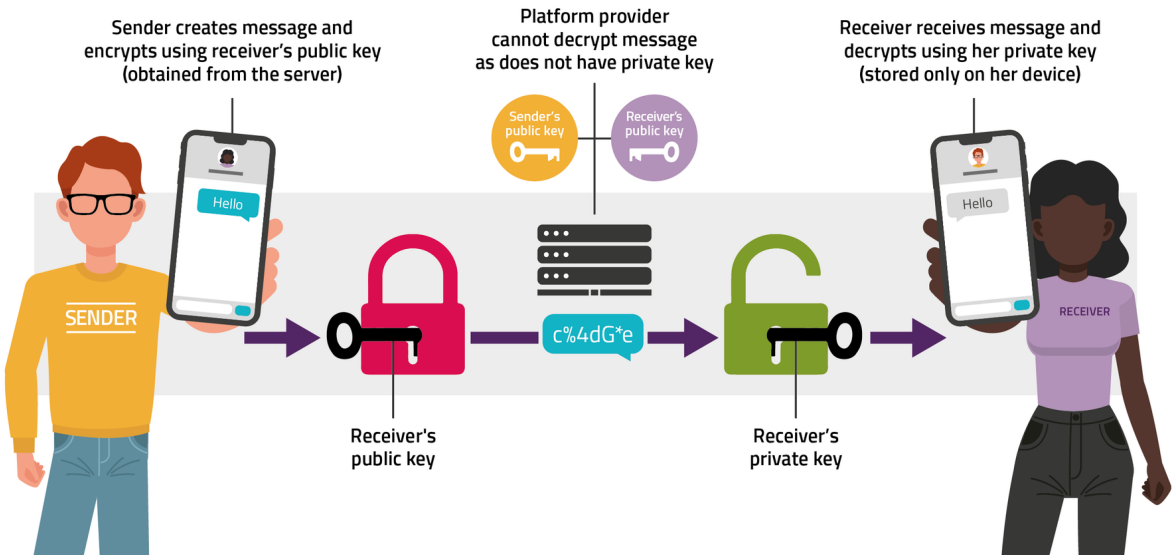
[346] Google, How Gmail ads work - Gmail Help, accessed 30 March 2022.
[347] Microsoft, Premium features in Outlook.com for Microsoft 365 subscribers, accessed 6 April 2022.
[348] Microsoft, FY22 Q2 - Press Releases - Investor Relations - Microsoft, 25 January 2022.
[349] The Match Group's CEO revealed in 2019 that 70% of Tinder's revenue comes from subscriptions. Source: NYT, Wait, People Pay for Tinder?, 6 August 2019.
[350] Platforms often limit the amount of times users can 'swipe' or 'like', which means to make a choice on whether to pursue or dismiss each personal profile they see.
[351] Bumble, Does Bumble have a swipe limit?, accessed 12 April 2022.
[352] Techzillo, Does Bumble have a swipe limit?, 30 June 2021.
[353] Hinge, How many likes can I send per day and when do they reset?, accessed 12 April 2022.
[354] Match Group, Letter to shareholders, Q4 2021, 1 February 2022.
[355] Tinder Plus costs £4.99 per month, Gold costs £13.99 and Platinum costs £18.14, as of February 2022.
[356] Tinder, Subscription tiers, accessed 12 April 2022.

price of Tinder+ in the UK, one of Tinder's subscription plans, can vary depending on the age of the subscriber, with 18-29-year-olds paying less. Which?'s investigation found that a year's access to Tinder Plus ranged from £26.09 to £116.99. Tinder confirmed to Which? that it offers discounts in 'some geographies'.[357] Bumble, which owns Badoo and became a public company in 2021, generated £554m globally in 2021, a 41% year-on-year increase. Bumble app's global paid users increased by 358k to 1.5 million by the end of 2021.[358]

The most popular online communications services continue to add new features aimed at providing user security and privacy

Many online communication platforms use encryption: a process of encoding information or data to protect it from unauthorised access. End-to-end encryption (E2EE) and client-to-server encryption (C2SE) are examples of this. With C2SE, the data is encrypted before it is transmitted to the server, but the service provider can access the message data. In contrast, E2EE converts the original sent message data using specific keys that are known only by the devices participating in the communication. The service provider cannot access data from the message, as it does not have the necessary keys to decipher it. E2EE is intended to prevent data being read or secretly modified other than by the true sender and recipient(s). E2EE has been the default setting on WhatsApp since 2016 and is available as an option on Messenger.[359] WhatsApp also enables E2EE for message backups.[360] Snapchat only encrypts photos taken within the app with E2EE.

Figure 4.13: Diagram of end-to-end encryption process



[357] Which?, Tinder's unfair pricing algorithm exposed, 27 January 2022.
[358] Bumble, Bumble Inc. Announces Fourth Quarter and Full Year 2021 Results, 8 March 2022.
[359] Meta, Updates to End-to-End Encrypted Chats on Messenger, 27 January 2022.
[360] Meta, How WhatsApp is enabling end-to-end encrypted backups, 10 September 2021.

Various other security and privacy features can also be used. Often, having a phone number or an email account is a requirement, so that this service can be used to confirm identity and authorise access. Multi-factor authentication (MFA; encompassing authentication, or Two-factor authentication, along with similar terms) is an electronic authentication method by which a user is granted access to a website or application only after successfully presenting two or more pieces of evidence (or factors) to an authentication mechanism: knowledge (something only the user *knows*), possession (something only the user *has*), and inherence (something only the user *is*).

Figure 4.14: Privacy and security features on selected communications services

	End to End encryption	Phone number required	Email required	Cloud backup	Two-factor authentication
WhatsApp	✓	✓		✓	✓
iMessage	✓		✓		✓ optional
Facebook Messenger	✓ optional		✓	✓	✓ optional
Instagram	✓ optional		✓		✓ optional
Google Message	✓ optional[361]	✓	✓	✓	✓ optional
Google Chat			✓		✓ optional
Telegram	✓ optional	✓			✓ optional
Signal	✓	✓		✓	✓ optional
Viber	✓	✓		✓	✓ optional

Source: Publicly available information as of March 2022

E2EE communications protect users' privacy and provide data security, keeping people safe from having their data hacked and used by criminals. However, it has implications for other aspects of online safety, as it prevents platforms from being able to identify harmful content and it reduces the

[361] Google, Use end-to-end encryption in Messages - Messages Help (google.com), accessed 31 March 2022.

ability of law enforcement agencies to gather evidence about the dissemination of illegal content, such as terrorist communication or child sexual abuse material.

In January 2022, a government-funded coalition which includes several prominent child protection agencies launched the No Place to Hide campaign, calling on online service providers to restrict the use of E2EE, at least until such time as effective measures are in place to ensure that children will not be put at greater risk of, for instance, sexual exploitation and grooming.[362] The Information Commissioner's Office highlighted that the potential risks of E2EE should be considered alongside the benefits, such as E2EE enhancing children's online safety by protecting their data privacy as well as preventing criminals accessing their pictures or location; and enabling businesses to share information securely.[363] The ongoing debate highlights the challenges faced in effectively balancing consumers' online privacy and security with their safety.

In April 2022 Apple announced that a safety feature using AI technology to scan messages sent to and from children would soon be available on British iPhones. The feature, referred to as 'communication safety in Messages', allows parents to turn on warnings for their children's iPhones. When enabled, all photos sent or received by the child using the Messages app will be scanned for nudity. If nudity is found in photos received by a child with the setting turned on, the photo will be blurred. The child will see a warning that the photo may contain sensitive content and nudged towards resources from child safety groups. If nudity is found in photos sent *by* a child, similar protections kick in, and the child is encouraged not to send the images and given an option to 'Message a Grown-Up'. All the scanning is carried out 'on-device', meaning that the images are analysed by the iPhone itself, and Apple does not see either the photos being analysed or the results of the analysis.[364]

Virtual reality communication

Online communications services are preparing for the metaverse

Recent metaverse-type developments may give some insight into how online communications services may evolve in the future. In March 2021, Microsoft announced that it was taking steps towards creating a mixed reality environment, with the roll-out of its Microsoft Mesh[365] platform, which it said would enable developers to build immersive, multi-user, cross-platform mixed reality apps. Microsoft anticipates that customers will use Mesh to enhance virtual meetings, conduct virtual design sessions, learn together virtually and host virtual social gatherings and meet-ups. In November 2021, Microsoft announced plans to integrate Mesh into Microsoft Teams, combining its mixed reality work with meetings and video calls in which users can participate using an animated avatar.[366]

[362] No place to hide campaign, accessed 6 May 2022.
[363] ICO, ICO in the media | ICO– full response, 21 January 2022.
[364] The Guardian, Apple to roll out child safety feature that scans messages for nudity to UK iPhones, 20 April 2022.
[365] Microsoft, Microsoft Mesh, 2 March 2021.
[366] Microsoft – Innovation Stories, Mesh for Microsoft Teams aims to make collaboration in the 'metaverse' personal and fun, 2 November 2021.

In August 2021, Meta launched Horizon Workrooms in beta; a free download for its Meta Quest 2 VR headset. Workrooms uses VR to bring users together to work in the same virtual room. Users can join a meeting in VR as an avatar, or dial into the virtual room from their computer by video call. Horizon Workrooms uses features like mixed-reality desk and keyboard tracking, hand tracking, remote desktop streaming, video conferencing integration, spatial audio, and Oculus Avatars.[367]

Discussions around dating in the metaverse are also taking place. Match Group CEO, Renate Nyborg, stated in an interview that there have been internal discussions about "a Tinderverse, which is more about blurring the boundaries between offline and online". Bumble also stated during its November 2021 earnings call that it wants to prepare for "whatever emerges in the metaverse." [368]

While the concept of a unified, interoperable metaverse may have the potential to revolutionise online communications, it is still largely an untested concept. The current use of immersive virtual online spaces is already presenting challenges for ensuring user privacy and safety, for example in protecting users from inappropriate behaviour.[369] With Ofcom research showing that 3% of UK adults currently use a VR headset,[370] it will be important to monitor future developments in this field.

See the Online Landscape and Gaming chapters for further discussion on the metaverse.

[367] Meta, Introducing Horizon Workrooms: Remote Collaboration Reimagined, August 2021.
[368] Reuters, Welcome to the Tinderverse: Tinder's CEO talks metaverse, virtual currency, 2 December 2022.
[369] BBC, Metaverse app allows kids into virtual strip clubs, 23 February 2022.
[370] Ofcom's Adults' Media Literacy 2021: Online Behaviours and Attitudes survey.

A1. Methodology

Ofcom research sources

Ofcom Adults' Media Literacy Tracker 2021

The Adults' Media Literacy Tracker is an annual survey providing evidence on media use, attitudes and understanding among UK adults aged 16 and over.

This year, the Tracker comprised four surveys:

- Online behaviours and attitudes: Two waves a year, delivered via an online panel, with a total sample of 6,566 adults aged 16+ (3,552 in wave 1 and 3,014 in wave 2). The fieldwork for wave 1 was conducted in June-July 2021, and for wave 2 in September-October 2021. This survey explored the topics of social media, gaming and online attitudes.
- Online knowledge and understanding: One wave a year, delivered via an online panel, with a sample of 3,095 adults aged 16+. The fieldwork was conducted in November-December 2021. This survey explored the topics of critical understanding, personal data, trust and online advertising.
- Core survey: One wave a year, delivered via a mix of post-to-web, post-to-paper and online panel methodology, with a sample of 3,660 adults aged 16+. The fieldwork was conducted in October-December 2021. This survey explored the topics of breadth of internet use and device use and attitudes.
- Media Literacy CATI Omnibus Survey: This year, we also conducted an additional CATI (telephone) omnibus survey in November-December 2021 with a sample of 3,143 adults aged 18+, replicating a similar Technology Tracker study carried out in February-March 2021. This survey aimed to provide detailed evidence on use of the internet at home or elsewhere and ask further questions of those without home internet access to understand their reasons for and experience of being offline.

Ofcom Children's and Parents' Media Literacy Tracker 2021

The Children's and Parents' Media Literacy Tracker provides evidence on media access, use, attitudes and understanding among children and young people aged 3-17. The survey also asks parents for their views about their children's media use, and how parents of children and young people aged 3-17 monitor and manage their children's use.

The Tracker comprises three surveys:

- Online behaviours and attitudes: Two waves a year, delivered via online panels, with a sample of c. 3,300 children per wave aged 8-17 and parents of children aged 3-17. This survey was conducted across two waves so that we could capture children's use of rapidly changing media, such as social media, live streaming and video-sharing platforms. The fieldwork for the first wave was conducted in July-August 2021, and for the second wave in September-October 2021.

- Online knowledge and understanding: One wave a year, delivered via online panels, with a sample of c. 2,100 children aged 8-17. The fieldwork was conducted in November-December 2021.
- Parents only: One wave a year, delivered via a mix of online panels and post-to-web surveys, using a sample of c.2,400 parents of children aged 3-17. The mixed methodology enabled us to reach a broader sample of respondents. The fieldwork was conducted in October-December 2021.

Further details on the methodology of the Children's and Parents' Media Literacy Tracker 2021 can be found in the 2021 Technical Report.

Ofcom Children's Media Lives 2022 – Wave 8

The Children's Media Lives project follows, as far as possible, the same group of children aged 8 to 18, conducting filmed interviews each year to learn about their media habits and attitudes.

It provides evidence about the motivations and the context for media use, and how media is a part of their daily life and domestic circumstances. The project also provides rich details of how children's media habits and attitudes change over time, particularly in the context of their emotional and cognitive development.

This year, we increased the sample from 18 to 21, to allow us to explore the media lives of children in a wider range of circumstances, including additional vulnerabilities.

Ofcom Online Experiences Tracker 2021

About the Online Experiences chapter

The Online Experience chapter brings together data from industry, passive monitoring research and quantitative surveys to build a holistic picture of online experiences among UK users.[371] We combined previously published research from the Ofcom's Adults' and Children's and Parents' Media Literacy Trackers with new data from Ofcom's Online Experience Tracker.

About the Online Experiences Tracker survey

The Online Experiences Tracker is a quantitative tracking survey providing evidence on UK users' use and experiences of, and attitudes towards, online platforms and services. It is conducted using an online panel methodology with a sample of over 6,000 UK internet users aged 13+, with boosts applied for UK nation, ethnicity and religion (see below). Fieldwork for Wave 1 was conducted in October - November 2021.

Boosting ensured a minimum sample size of 100 respondents for most ethnicities and religious groups, or 50 in the case of hard-to-reach groups. Further details, including the sample sizes for each subgroup, can be found in the accompanying Online Experiences Tracker technical report.

[371] Passive monitoring is a research method which uses software securely and anonymously collect information about the apps and websites that respondents visit on their smartphones, tablets and computers. The resulting data is aggregated and anonymous to ensure data privacy.

In order to reflect the differentiated experiences of each subgroup, we detail differences between individual groups, or individual groups and the average, where these exist. However, where significant differences do not exist at the subgroup level but do exist when groups are netted, we report on netted subgroups. The makeup of subgroups for ethnicity is outlined below.

Minority ethnic background	Black	Asian	Mixed ethnicity	Other ethnic group
All Black backgrounds All Asian backgrounds All mixed ethnicity backgrounds Other ethnic group	Black Caribbean Black African Any other Black / African / Caribbean background	Indian Pakistani Bangladeshi Chinese Any other Asian background	White and Black Caribbean White and Black African White and Asian Any other mixed/multiple ethnic background	Arab Any other ethnic background

Researching online experiences poses methodological challenges above and beyond those found when researching linear or 'traditional' media. This is partly as a result of the factors mentioned above, and as a result of the highly personalised nature of online experiences, with each user having a mix of different expectations, sensitivities and understandings of the phenomena studied, researching online experiences poses methodological challenges above and beyond those found when researching linear or 'traditional' media.

Ofcom Technology Tracker CATI Omnibus 2021

Due to the Covid-19 pandemic, Ofcom took the decision to suspend all face-to-face fieldwork from March 2021 onwards, across all consumer research projects. This decision was made to protect the safety of everyone involved in the research. Ofcom's Technology Tracker was affected by this decision. As a result, the 2021 survey, with fieldwork conducted between 14 January and 31 March 2021, used a mixed-mode methodology. This included an online and a postal survey, as well as a small subset of questions that were placed on Ipsos MORI's weekly CATI omnibus survey, to ensure that we had a nationally representative sample and that representative proportions of offline participants were included. The total sample for this CATI survey was 3,126 people aged 18+ (rolled across three waves). Quotas were set on age, gender, working status and geographical regions. The GB sample was supplemented with interviews with households in Northern Ireland.

Ofcom Digital Exclusion Survey

The Digital Exclusion Survey was conducted as an ad-hoc piece of research during a Covid-19 lockdown, aiming to reach those who are offline and to understand their reasons for being so. Fieldwork was conducted in January 2021 using the random-probability NatCen Panel with the option to complete the survey via telephone. The NatCen Panel is formed of people recruited from the random-probability British Social Attitudes (BSA) survey.

Ofcom VoD survey February 2022

Ofcom commissioned this survey to explore use of and attitudes towards video-on-demand services. This was a quantitative survey among an online sample of 2,000 UK nationally representative people aged 13+ (with a boost to reach at least 150 respondents per nation), via Yonder's online panel. This survey was conducted in February 2022. The full research will be published alongside Ofcom's Media Nations report in August 2022.

Third-party research sources

Ipsos - Ipsos iris

Launched in early 2021, Ipsos iris is the UKOM-endorsed currency for the measurement of audiences of online content among UK adults aged 15+ who use the internet at least once a month.

Ipsos iris uses a hybrid methodology with several data sources including:

- A passive single-source panel of over 10,000 adults who use the internet. The panellists install passive tracking software onto their personal digital devices that access the internet (smartphones, computers and tablets), with data collected continuously. The panel is recruited to be representative of the internet population demographically, geographically and by type of device used.
- Census measurement of publisher websites and apps to collect measurements of visitor time spent and page views at a total level.
- The Establishment Survey to produce universe targets. The Ipsos iris panel is then weighted to the internet population of UK adults aged 15+ and demographic sub-groups.
- External first-party data from accredited and approved sources with additional website or app-level targets.

Reporting on daily and monthly data, all sources are fused together to create a synthetic dataset with more than one million records to represent the UK online infrastructure of websites and apps. These can be analysed and reported at many demographic and geographic levels. As this is a synthetic dataset, it is not possible to provide confidence intervals/ranges for extrapolated population estimates. However, it should be noted that all extrapolated population figures provided are estimates that will have some margin of error.

The term 'visitor' is used to represent UK adults who open a website or app. Visitors do not represent account holders where websites or apps offer account logins for their service.

For the reports used here, we have mainly used Ipsos iris monthly data from September 2021. The passive panel for this month covered a continuously measured sample of 10,950. The panel size by nation is shown below. As this is a continuous panel, the reporting profile for other months will be similar. More detail on the Ipsos iris methodology can be found here.

Nation	Sept 2021 Ipsos iris panel size	Proportion of total panel
England	9,131	83%
Scotland	995	9%
Wales	579	5%
Northern Ireland	245	2%
Total	10,950	100%

Please note:

- In January 2022 Ipsos removed desktop apps from the 'other internet' category resulting in a 34% decrease in time spent. This was to address challenges in reliably measuring active online usage of these applications. Therefore, time spent would have been inflated at a total internet level prior to January 2022.
- For analysis within this report where September 2021 total time spent is referenced, Ipsos has generated a custom file specifically for September 2021 removing desktop app time spent at total internet level. Therefore readers should expect to not be able to recreate all data points included in the report for September 2021.
- In January 2022 improvements were made to demographic modelling and embedded browser content was introduced from additional sources such as Linkedin and Google News. This has introduced step changes in monthly data from these areas.

Ampere Games – Consumer survey

Ampere Analysis is a research and data analysis company which focuses on media and communications. The Ampere Games – Consumer survey is run in 12 global markets, and this report uses UK data.

There are two survey waves each year, in Q2 and in Q4. Two surveys are run within each wave:

- A survey of 2,000 respondents aged 16-64 which is nationally representative of the UK online population.
- A smaller survey of UK 13-15-year-olds (120) which is not nationally representative.

Where age groups are not defined, the two sets of responses have been combined.

Platform transparency data

Several online platforms publish data about the enforcement of their Terms of Service and/or community guidelines. The information is publicly available on the platforms' own websites (usually published annually, biannually or quarterly). Examples of information included in transparency reports are:

- the number of content take-downs;
- the use of automated detection and moderation tools;
- the proportions of content views that were of violative content;

- the amounts of content reported by users, governments or other flaggers;
- the number of appeals received from users;
- the number of legal requests for user data; and
- commentary about changes to policies or trends in the data.

In some cases data is split by harm category, as defined by the platform. Ofcom conducts its own monitoring and analysis of this data.

UK Safer Internet Centre

The UK Safer Internet Centre published its report on 8 February 2022: All fun and games? Exploring young people's experiences of respect and relationships in online games. The quantitative survey was conducted online by Censuswide in November 2021, with a representative sample of 2,013 parents of children aged 8-17 years old and their children aged 8-17 years old (4,026 in total). Censuswide is a full-service research consultancy specialising in consumer and B2B research. The research was conducted on Censuswide's education network and participants under the age of 16 were contacted via their parents or guardians. Qualitative research was also conducted by Childnet with over 50 young people, aged 8-18 years old, in focus groups.

CHILDWISE

The CHILDWISE Monitor Report 2021 is based on data collected from September to November 2021, from 2,727 children and young people aged between 5 and 16 years, from 84 schools across the UK. Schools were drawn from the CHILDWISE Schools Panel and selected to give a representative mix of demographics (e.g. urban/ suburban/ rural, range of abilities, across nations). Children completed online surveys in school, lasting for 20-25 minutes, and focusing on children and their media, the child as a consumer, and children's attitudes and activities. Final data were weighted to restore representation by age and gender and grossed to be indicative of the total number of 5- to 16-year-olds in the UK (in 1,000s).

Industry sectors: data sources and methodology

Ofcom has conducted data collection, analysis and broader sector insight for key UK online sectors from 2015 to 2021: search, e-commerce, directories, media and audio-visual entertainment, gaming, news and social media. UK figures are provided for each sector by revenue stream (advertising, subscription, transactional and public funding).

Figures are based on estimates from publicly-available company reports and industry sources including the IAB UK/PwC Digital Adspend Study, PwC Global Media and Entertainment Outlook: 2020-2024 and 2021-2025, Office for National Statistics, Ampere Analysis, AA/WARC Expenditure Report and Enders Analysis, or modelled where applicable and appropriate. The figures presented should be treated as indicative only. They are designed to provide a general context of online markets in the UK and may differ from other estimates in the industry due to differences in sector definition or other methodological differences. This report is not intended to act as an economic analysis exercise and the categories defined in it are subjective and may overlap.

Ofcom has changed to current pricing in this report instead of constant pricing as used in previous years. This is for two reasons: to align with the view that applying UK inflation to online industries does not improve long-term trend comparisons; and to ensure consistency with industry sources and company results which almost entirely operate on a current price method.

Ofcom used a top-down approach, starting with data from industry sources such as IAB UK, PwC, Ampere, ONS and Enders, to estimate sector or segment sizes. This was coupled with a bottom-up approach, focusing on the revenues of the largest market participants, to fill sectoral gaps and quality-assure other industry estimates.

The combined total of each of the applicable revenue streams gave the market size for that sector, and the combined totals of all revenue streams gave the total market size. The e-commerce sector (UK-only) was considered separately to other industry sectors, and figures from e-commerce (consumer spend) are not included in total market size.

Industry sources used to estimate online industry sector data include the following:

IAB UK/ PwC Digital Adspend Study

IAB UK is the online advertising trade association of the UK and publishes an annual advertising spend study sizing the online advertising market. The Digital Adspend study 2021 (produced with PwC) is used in *Online Nation* as the primary source for UK online advertising revenues covering search, display (comprising both video and non-video), audio and classified advertising formats. It is used to consider the digital advertising market individually, a key revenue stream of many online businesses, and is also one of the sources used for the analysis and modelling of industry data across several sectors.

AA/WARC

The Advertising Association is a trade body representing the advertising industry in the UK. WARC is a marketing intelligence firm that supports advertisers, agencies and media platforms. They collaborate on an annual Expenditure Report, providing data and analysis on the UK advertising market. Data was used primarily to estimate the advertising revenues for digital magazines (entertainment and audiovisual media sector) and online news brands (news sector) in the UK.

PwC Global Media and Entertainment Outlook (GEMO)

Global professional services network PwC conducts data analysis across a wider range of areas. GEMO is one of the sources used for the analysis and modelling of sectoral online industry data for this report. It provides historical and forecast data and commentary for various segments of the entertainment and media industry globally and for the UK, including advertising, free and paid-for video, music, news and gaming. We have used data from both GEMO 2020-2024 (for the years 2015-19) and GEMO 2021-2025 (for 2020 and 2021) in this report. The data for 2015-2019 have been adjusted by Ofcom so they are consistent with currency exchange rates used in GEMO 2021-2025.

Enders Analysis

Enders Analysis is a research and data analysis company which focuses on media and telecommunications in Europe. Its data on the classified advertising market was a primary source used to model the online directories market, in combination with other industry and modelled data.

Ampere Analysis

Ampere Analysis is a research and data analysis company which focuses on media and communications. Its data was used in *Online Nation* to estimate the UK video segment of the entertainment and audiovisual media sector, primarily paid-for (subscription and transactional) revenues. Ampere Analysis also provided some data on users of subscription gaming services.

Money Dashboard

Money Dashboard is a consumer financing app that provides users with various free banking services including consolidation of accounts, budgeting tools and cost-saving offers in exchange for permissioned anonymized data analysis of their data. Ofcom has generated a cohort of over thirty thousand users with three years of financial history to generate consumer spend insight in various online categories. We use the consumer spend amounts, including all debit cards, credit cards and banking transactions. This excludes cash transactions, but these are assumed to be minimal for online services. Individual transactions are allocated to online sectors and filtered by demographics including age, gender, income and nation.

Office for National Statistics

The ONS is a non-ministerial department of the UK government which collects statistics related to the UK economy and society. The Retail Sales Index internet sales data formed the basis for the estimates and analysis on the e-commerce sector in the UK presented in this report. Ofcom used the ONS average weekly sales data (seasonally adjusted) for different store types, including food and drink, and household, to estimate monthly and annual sales total for e-commerce.

References to other third-party sources

Ofcom references publicly-available information and third-party data sources throughout the report. These include press releases, blogs, earnings reports, transparency reports and other publicly-available corporate information. Other third-party providers cited in *Online Nation 2022* include:

- Amazon
- Apocalypse Retail
- Apple
- Apple Newsroom
- ASA
- BARB Establishment Survey Q4 2021
- BBC
- BitChute
- Business Insider
- Business Leader
- Business of Apps
- Cambridge Bitcoin Electricity Consumption Index
- CCAF
- City A.M.
- Daily Mail
- Digital Trends
- Discord
- DuckDuckGo
- Ethereum
- European Parliament
- Evening Standard
- Facebook/Meta
- Fortune
- Google
- Guinness World Records
- iNews
- IPA TouchPoints
- Klarna
- Lucky Crush
- Microsoft
- NatWest
- Newzoo Global Games Market Report
- Oberlo
- Omegle
- Oxford University
- Pay Zilch
- PC Mag
- PlayStation Blog
- Prime Gaming
- Retail Technology Innovation Hub
- Reuters
- Consumer Electronics Show 2022
- Search Engine Watch
- Signal Foundation
- Snapchat
- TechCrunch
- TechRepublic
- TechZillo
- The Guardian
- The New Statesman
- The Verge
- TikTok
- Twitch Tracker
- UK Finance
- VRChat
- Washington Post
- WhatsApp
- Which?
- WIK-Consult
- Wikipedia
- Yahoo! Finance
- YouTube
- Zoom
- UK Geographics
- Retail Think Tank