

# Appendix C: Market Outcomes

## Introduction

1. This appendix presents preliminary data on market outcomes, including revenues, shares of supply and prices. We first present data on the consumer side of the platforms, focusing particularly on general search and social media. We then set out data on search and display advertising. Finally, we present different estimates of the size of the open display sector and shares of supply in the ad tech stack, as well as estimates of Google and Facebook's ad tech revenues as a proportion of advertiser spend.
2. We are continuing to check consistency of information provided so far by the parties and collect additional data. The results presented below should therefore be treated as preliminary. We indicate in the text below where there are particular issues with the data which we are working to resolve, and where we are planning to do additional analysis following the interim report.

## Consumer outcomes

3. In this section we present analysis of:
  - how consumers spend their time online, including the time spent on online entities and the 'reach' of the largest entities;
  - market outcomes for the general search sector, including: the number of consumers accessing different search engines; shares of supply; consumer 'cross-visiting' behaviour across search engines; and the extent to which Google generates traffic to specialised search providers;
  - market outcomes for the social media sector, including: the number of consumers accessing different social media platforms; shares of supply; and consumer 'cross-visiting' behaviour across social media platforms.
4. The data underlying this analysis was sourced from third parties, specifically:
  - **Comscore** data underlies the majority of the analysis described above. The data is sourced from Comscore's MMX Multi-Product (MP) interface.
  - **Statcounter**. We used Statcounter's shares as one measure of search engines' shares of supply and to inform our assessment of browsers' shares.

5. We outline the methodologies of each of these providers below, before presenting our analysis. For the final report we intend to compare the data from Comscore and Statcounter with information provided directly by market participants.

## **Sources of data**

### *Comscore*

6. Comscore delivers online audience measurement across different devices (desktop, tablet, smartphone) for different types of content (including page content, apps, video). Comscore is endorsed by UKOM, the body that sets and governs the UK standard for the online digital measurement industry.

### *Methodology*

7. Comscore uses a 'hybrid approach' known as 'Unified Digital Measurement' (UDM), combining both 'panel' and 'census' data, where:
  - the panel data consists of recruited respondents who install metered software on their devices. Comscore's UK panel consists of roughly 130,000 users, including 66 thousand users for desktop and over 12 thousand users for mobile (tablet and smartphone).<sup>1,2</sup>
  - the census data is measured by Comscore 'tags' that media owners apply to their content.
8. These two sets of data are unified by Comscore and deduplicated,<sup>3</sup> to create an overall view of individual consumer behaviour online. For our analysis we used Comscore's MMX MP data. The MMX MP interface includes data from desktop, smartphone and tablet sources.
9. We have previously identified the following aspects of Comscore's methodology that may result in limitations of the output:<sup>4</sup>
  - Comscore's methodology is complex and involves a combination of modelling and direct measurement. Comscore's modelling relies on

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<sup>1</sup> As of October 2019.

<sup>2</sup> Comscore told us that it measures the activity of 'users' or 'visitors' of online entities rather than 'consumers'. However, we consider that Comscore's definition of a 'user' or 'visitor' is consistent with our use of the term 'consumer' within this publication. Throughout this publication we use the terms 'user' and 'consumer' interchangeably and generally refer to individuals as consumers, including in our descriptions of the outputs based on Comscore's data.

<sup>3</sup> To ensure that a single user, using more than one device, is not counted twice.

<sup>4</sup> See [Annex E](#) of the Fox/Sky Phase 2 Report.

assumptions, based on insights from panel and enumeration data sources. This modelling is likely to be less robust than direct measurement.

- Comscore's panel methodology could suffer from the same issues that affect online panels generally ie the results generated from Comscore's panel may not be representative of the wider population as online panellists tend to be heavier internet or technology users.
- As media owners may choose which of their web pages/apps/videos to tag, not all web entities are measured using the census data. Additionally, because the tags are applied at the discretion of the publisher, making direct comparisons between sites is difficult.

10. Comscore has previously responded to us regarding the limitations we identified:

- In relation to the issues we identified with Comscore's modelling and panel-based methodologies, Comscore explained that integrating both of these allows it to overcome the limitations suffered by each. For example:
  - Panel data: provides cookie-to-person conversion factors at the site level; allows for identifying and quantifying the extent of coverage gaps; and provides demographic information.
  - Census data: allows for increased granularity and stability, particularly for smaller media entities; facilitates quick coverage of new websites; delivers platform de-duplication insights; assures that all consumer activity within a media entity is credited; and provides an opportunity for calibration.
- Comscore explained that it applies intensity weighting to its panel data to overcome the possibility that its panel is not representative of the population. This aligns the panel data with the actual intensity of use observed in the population as captured by the census data.
- In relation to content tagging, Comscore explained that ideally all content would be tagged, but that there are a number of reasons why content may not be fully tagged or tagged at all. In these cases, Comscore works with existing information about entities' audiences to report on their complete audience:
  - where content is not fully tagged, Comscore calculates the census tag coverage of the media entity. Comscore then uses its UDM methodology to account for the non-tagged portions of the entity,

allowing it to report on the entity's entire audience. Comscore added that it works with UKOM and The Publishers' Audience Measurement Company (PAMCo) to help publishers tag their content completely.

- where entities are not tagged at all, they are measured through the panel data only, using weighted sample projections. For sites with lower traffic, this can be less robust than UDM based on both panel and census data.

11. We note that the limitations that we have identified previously have been addressed to some extent by Comscore in its response. Moreover, notwithstanding any remaining concerns we have relating to these limitations, we believe Comscore to be the most comprehensive and accurate source of data on consumer behaviour online available to us. Comscore is widely used both within the industries we are examining and by other government bodies.

#### *Level of measurement*

12. Media owners have the option of segmenting their entities on Comscore to obtain audience metrics for a hierarchy of (sub)sections. Comscore offers six 'tiers' of measurement, which in descending order are: Property (P); Media Title (M); Channel (C); SubChannel (S); Group (G); and SubGroup (SG).
13. In relation to the general search sector, several search engines are operated by a company that owns many other non-search engine sites. The 'highest level' of reporting for these companies encompasses all these sites. For example, the 'highest level' of reporting for Google, is 'Google Sites' (P).<sup>5</sup> However, each search engine provider also offers a segmentation to the 'level' of their search engine, for example Google Search (C). Generally, this was the tier of segmentation used in our analysis as outlined in Table C.1.

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<sup>5</sup> This includes all Google owned websites including YouTube, Google Search, Gmail etc.

**Table C.1: Comscore entities analysed in general search sector**

Search Engine	Publishers (P)/ Media title (M)/ Channel(C)/ Subchannel (S) Analysed	Notes	Level of unification
Google	Google Search (C)	Consists of: Google Search (Mobile App); Google Web Search; Google Images Search; Google Video Search; Google News Search; Google Book Search; and Google Scholar Search.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Bing	Bing (M)	Consists of: Bing Web; Bing Images; Bing Videos; Bing Maps & Local; Bing Search (Mobile App); Bing News; Bing Travel; and Microsoft Translator.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Not measured; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.
Yahoo!	Verizon Media – Search Sites (M)	Consists of: Yahoo Search; Yahoo Answers; Yahoo Local Network; and AOL Search Network.  AOL was incorporated into Verizon Search Sites in October 2017.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Not measured; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Not measured; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.
DuckDuckGo	DUCKDUCKGO.COM (P)	No further splits.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Not measured; Smartphone Android Browser: Panel only; Smartphone Android Apps: Not measured; Tablet iOS Browser: Panel only; Tablet iOS Apps: Not measured; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Ask*	ASK.COM Sites (M)	Consists of: Ask Reply Page; Ask Image Search; Ask Videos; Ask.co.uk.	Desktop Browser: Partially unified; Smartphone iOS Browser: Partially unified; Smartphone iOS Apps: Not unified; Smartphone Android Browser: Partially unified; Smartphone Android Apps: Not measured; Tablet iOS Browser: Census only; Tablet iOS Apps: Not measured; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.
Yandex*	Yandex Web Search (C)	No further splits	Desktop Browser: Panel only; Smartphone iOS Browser: Not measured; Smartphone iOS Apps: Not measured; Smartphone Android Browser: Panel only; Smartphone Android Apps: Not measured; Tablet iOS Browser: Not measured; Tablet iOS Apps: Not measured; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
HotBot*	HOTBOT.COM (M)	No further splits.	Desktop Browser: Not measured; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Not measured; Smartphone Android Browser: Not measured; Smartphone Android Apps: Not measured; Tablet iOS Browser: Not Measured; Tablet iOS Apps: Not Measured; Tablet Android Browser: Not Measured; Tablet Android Apps: Not Measured.
AOL*	AOL Search Network (M)	No meaningful further splits.  AOL was incorporated into Verizon Search Sites in October 2017.	Desktop Browser: Fully unified; Smartphone iOS Browser: Partially unified; Smartphone iOS Apps: Not measured; Smartphone Android Browser: Partially unified; Smartphone Android Apps: Not measured; Tablet iOS Browser: Fully unified; Tablet iOS Apps: Not measured; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.†

Source: Comscore MMX MP.

Notes: The entities included above are ordered in terms of user time spent as of June 2019.

\* These search engines were aggregated into an 'other' category for the purposes of our analysis.

† As of September 2017, prior to being merged with Verizon Search Sites.

14. In relation to the social media sector, the 'highest level' of segmentation available was the most relevant for our analysis for every platform except Facebook. Facebook Inc. owns WhatsApp and Instagram, and the highest tier of segmentation, Facebook (P), includes these platforms in addition to the Facebook platform. We outline the entities analysed in the social media sector in Table C.2 below.

**Table C.2: Comscore entities analysed in social media sector**

<i>Social Media Platform</i>	<i>Publishers (P)/ Media title (M)/ Channel(C)/ Subchannel (S) Analysed</i>	<i>Notes</i>	<i>Level of unification</i>
YouTube	YOUTUBE.COM (M)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Facebook	Facebook And Messenger (M)	Includes both the Facebook platform and Facebook's Messenger product.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Snapchat	Snapchat, Inc (P)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
WhatsApp	WhatsApp (M)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Instagram	INSTAGRAM.COM (M)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Twitter	Twitter (P)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
LinkedIn	Linkedin (P)		Desktop Browser: Fully unified; Smartphone iOS Browser: Partially unified; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Partially unified; Smartphone Android Apps: Panel only; Tablet iOS Browser: Fully unified; Tablet iOS Apps: Panel only; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.
TikTok	TIKTOK.COM (M)		Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Not measured; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.

Pinterest	Pinterest (P)	Prior to July 2017, PINTEREST.COM (P) was used.	Desktop Browser: Panel only; Smartphone iOS Browser: Panel only; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Panel only; Smartphone Android Apps: Panel only; Tablet iOS Browser: Panel only; Tablet iOS Apps: Panel only; Tablet Android Browser: Not measured; Tablet Android Apps: Not measured.
Reddit	Reddit (P)		Desktop Browser: Partially unified; Smartphone iOS Browser: Fully unified; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Fully unified; Smartphone Android Apps: Panel only; Tablet iOS Browser: Partially unified; Tablet iOS Apps: Panel only; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.
Tumblr	Tumblr (M)	Prior to June 2016 TUMBLR.COM* (M) was used.	Desktop Browser: Fully unified; Smartphone iOS Browser: Partially unified; Smartphone iOS Apps: Panel only; Smartphone Android Browser: Partially unified; Smartphone Android Apps: Panel only; Tablet iOS Browser: Partially unified; Tablet iOS Apps: Panel only; Tablet Android Browser: Census only; Tablet Android Apps: Not measured.

Source: Comscore MMX MP.

Notes: The entities included above are ordered in terms of user time spent as of June 2019. Unification information as of June 2019.

### *Statcounter data*

15. Statcounter is a web analytics service which uses tracking code to record page views to its 'member sites', numbering roughly 2 million websites globally. Using the data generated, Statcounter publishes its Global Stats. These include shares of supply for search engines and browsers.<sup>6</sup>
16. These shares are calculated on the basis of page 'referrals':
  - the share for a given search engine represents the quantity of page referrals generated through that search engine, as a proportion of total page referrals generated through search engines. Statcounter generates shares for the top 17 search engines.
  - the share for a given browser represents the quantity of page referrals generated through that browser as a proportion of total page referrals generated through browsers.<sup>7</sup>
17. We consider that possible limitations to Statcounter's methodology may include:
  - the 'member sites' for which Statcounter records data may not be representative of the population. Statcounter does not reweight its data to correct for any potential issues relating to this.

<sup>6</sup> In addition to other data including OS Market Share, Screen Resolution Stats, Social Media Stats etc.

<sup>7</sup> See further [Statcounter Global Stats](#), [Search engine shares](#), accessed 01/11/2019.



- it is possible that some consumers' adblockers and browser preferences may prevent data on consumers' visits from being sent to Statcounter.
  - the way in which a search engine sends referrals may also affect the data's accuracy, with some search engines sending referrals in such a way that they are not recorded by Statcounter.
18. Statcounter does not currently produce material assessing the extent of measurement error in its data.
19. However, we note that its 'Global Stats' resource is widely used within the general search industry to assess shares. Moreover, we have examined Statcounter's shares in tandem with shares based on Comscore data. The results we found are broadly consistent.

### ***Consumer behaviour online***

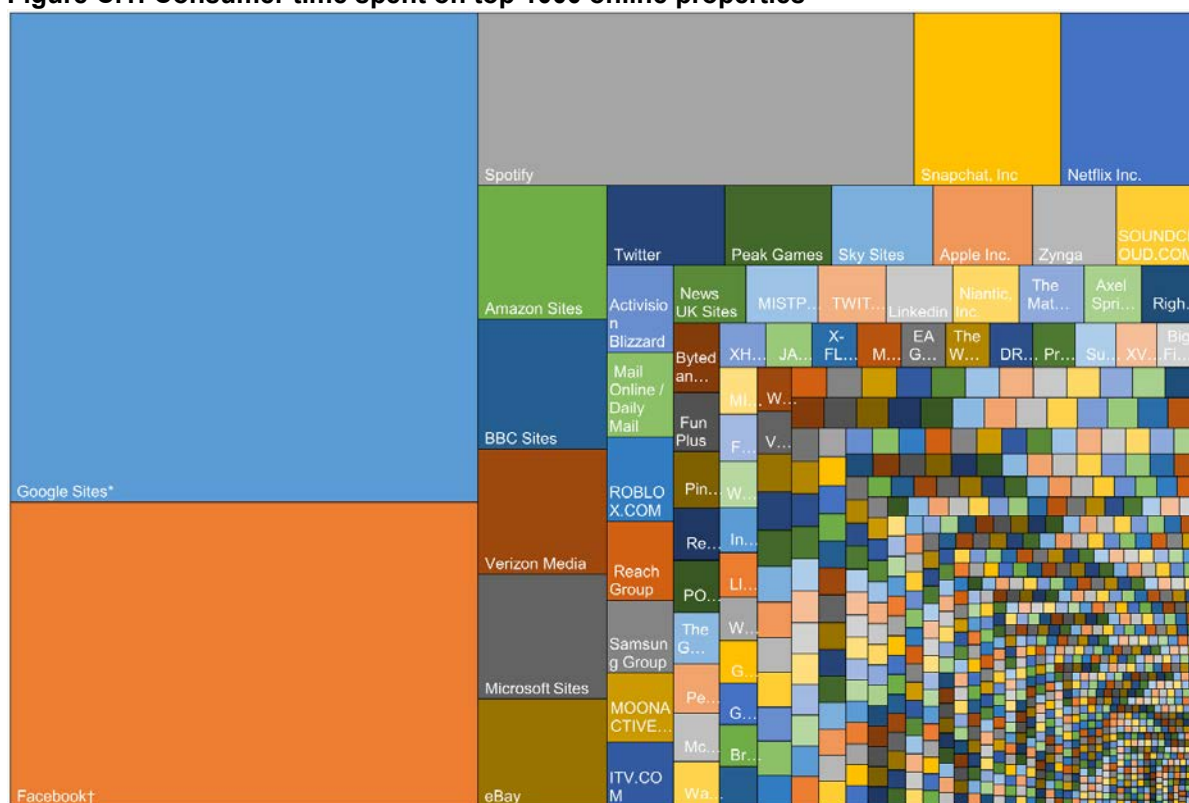
20. We used Comscore data to assess how consumers spend their time online in general.<sup>8</sup> Consumers spend 34% of their time on Google sites (including YouTube) and Facebook sites (including Instagram and WhatsApp) combined, with 21% of time being spent on Google sites and 13% being spent on Facebook sites.<sup>9</sup>

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<sup>8</sup> For the analysis presented below, we used the 'highest level' of reporting available through Comscore rather than the entities specified in Tables C.1 and C.2 eg Google Sites (P) rather than Google Search (C). This was to prevent double counting.

<sup>9</sup> Where Google Sites includes all properties owned by Google eg YouTube, Google Search, Gmail etc.

**Figure C.1: Consumer time spent on top 1000 online properties**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.

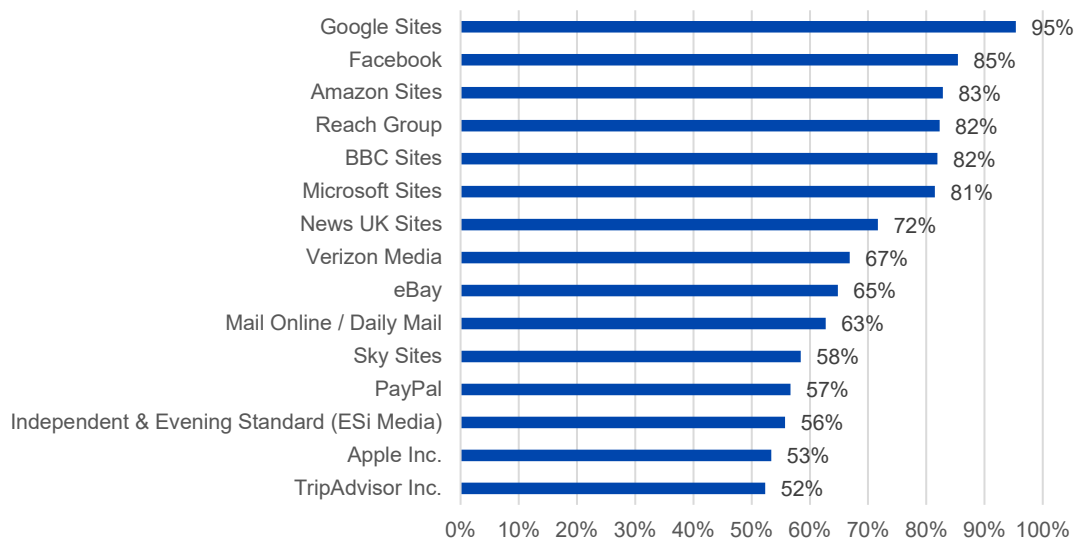
Notes: Top 1000 properties account for 86% of total user time spent online.

\* Where 'Google Sites' includes all Google owned properties eg YouTube and Google Search.

†Where 'Facebook' includes Facebook, Instagram and WhatsApp.

21. The top 1000 properties in terms of time spent are presented on Figure C.1. Consumers spend 86% of their total time online on these top 1000 properties. Figure C.1 demonstrates that users spend the majority of their time online on a limited set of websites, with the remainder being spent on a 'long tail' of websites.
22. We also assessed the reach of the top websites in the UK, which is presented below in Figure C.2. 'Reach' is defined here as the percentage of the UK's online population that accesses an online entity within a calendar month. As shown below, Google sites have the greatest reach at 95%, followed by Facebook with 85%.

**Figure C.2: Top 15 properties by reach**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.

### ***Search: shares of supply***

23. Given the ‘zero-price’ nature of the services offered to consumers by general search providers, we are unable to calculate shares of supply on the basis of providers’ direct revenues from users.
24. We consider that the number of searches conducted on each search engine would be the most appropriate metric for calculating shares amongst general search engines. However, we are not aware of a robust source of third-party evidence for this data. We requested data on number of searches from providers of general search services. However, we have identified inconsistencies in this data and are therefore currently unable to present outputs based on this data. We intend to present our findings using providers’ data in the second half of the Study.
25. In the absence of robust data on the number of searches made through search engines, we have considered the following alternative measures:
  - number of unique visitors;<sup>10</sup>
  - shares calculated on the basis of page views;
  - shares calculated on the basis of consumer time spent on search engines; and

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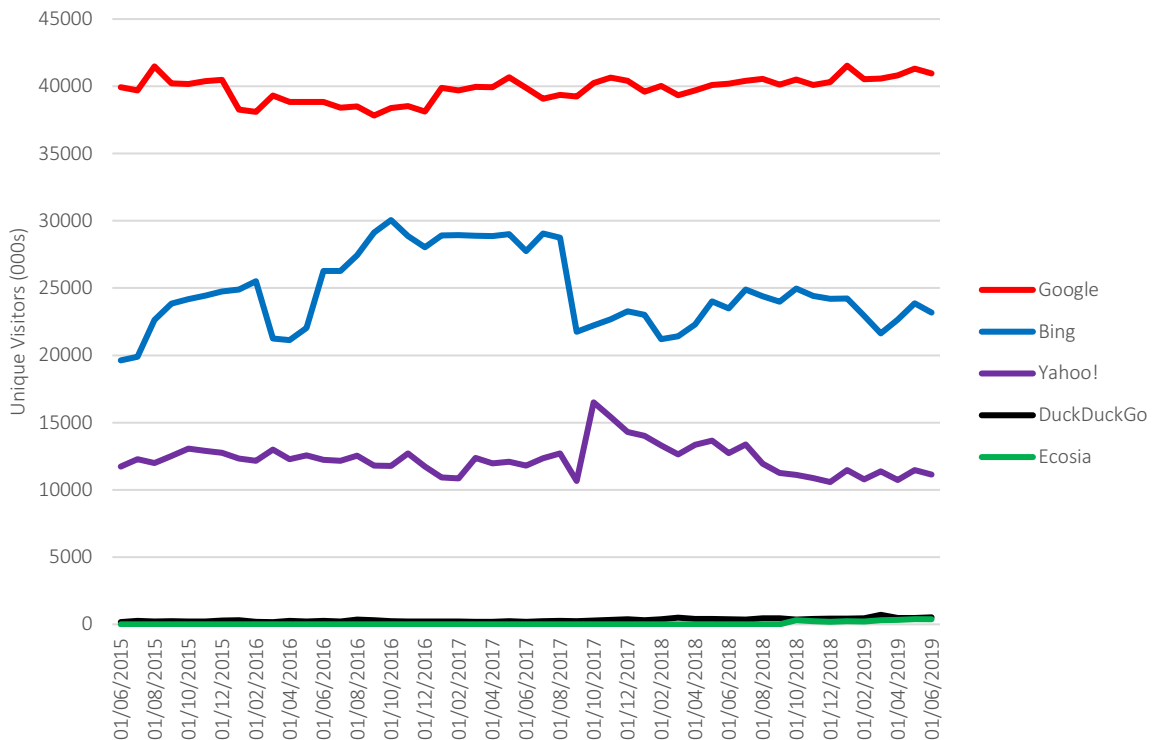
<sup>10</sup> Or active users.

- shares based on the number of page referrals made by a search engine.

*Search: unique visitors*

26. This data was sourced from Comscore and represents the number of unique visitors to a search engine within a calendar month.
27. We present the number of unique visitors to each of Bing, DuckDuckGo, Ecosia, Google and Yahoo! at Figure C.3 below. Google has the far greatest number of unique visitors at nearly 41 million consumers, followed by Bing with roughly 23 million unique visitors.

**Figure C.3: Monthly unique visitors from June 2015 to June 2019**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2015 - June 2019, UK.

28. We note that the monthly unique visitors measure does not capture the intensity with which consumers use different search engines.

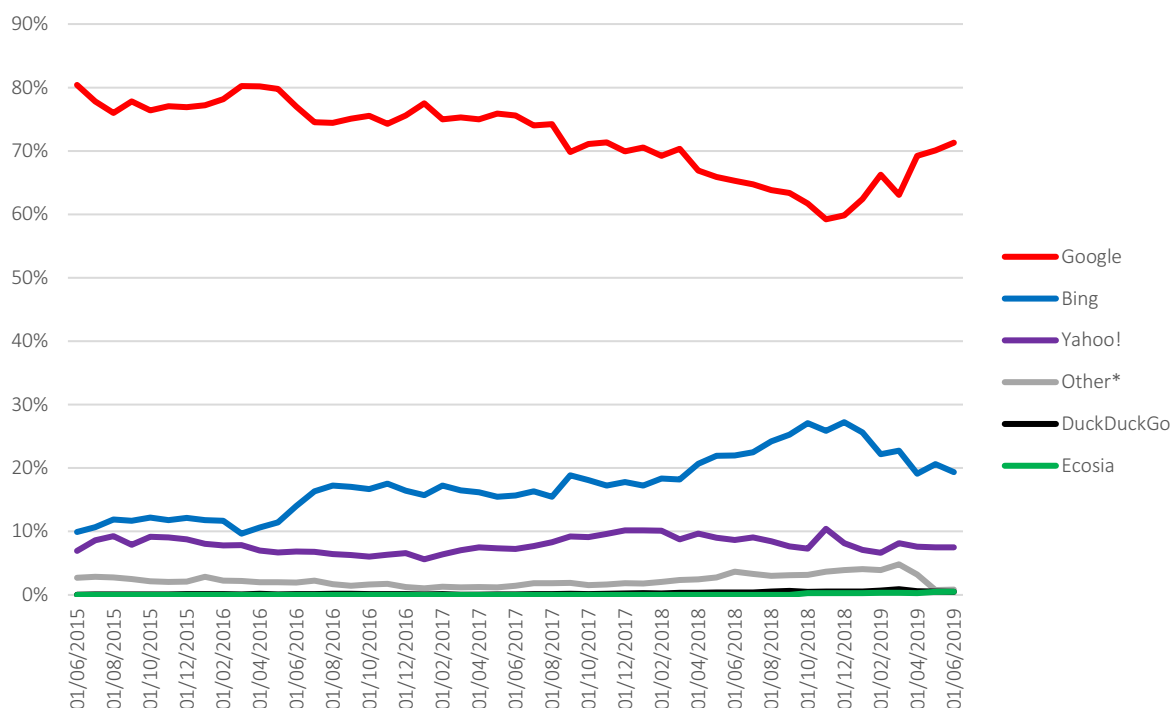
*Search: shares by 'total views'*

29. The underlying data for these shares was sourced from Comscore. 'Total views' represent the total number of page views and desktop video views on a website within a calendar month. We consider that shares calculated on the basis of page views provide a limited assessment of search engines' shares because the measure does not account for page views made on apps and features sometimes offered by search engines where results from visual,

video, shopping or other results pages are incorporated into the main results page may reduce the number of page views on the search engine.

30. Figure C.4 shows search engines' shares of supply based on the number of page views made by consumers.
31. On the basis of this metric, Google has a lower share compared to the value calculated using any of the other measures we present here, ranging between 61% and 80%. Bing and Yahoo! both have a higher share in comparison to that calculated on the basis of any other metric, ranging from 10% to 28% and from 6% to 11% respectively.

**Figure C.4: Shares of supply by page views from June 2015 to June 2019**



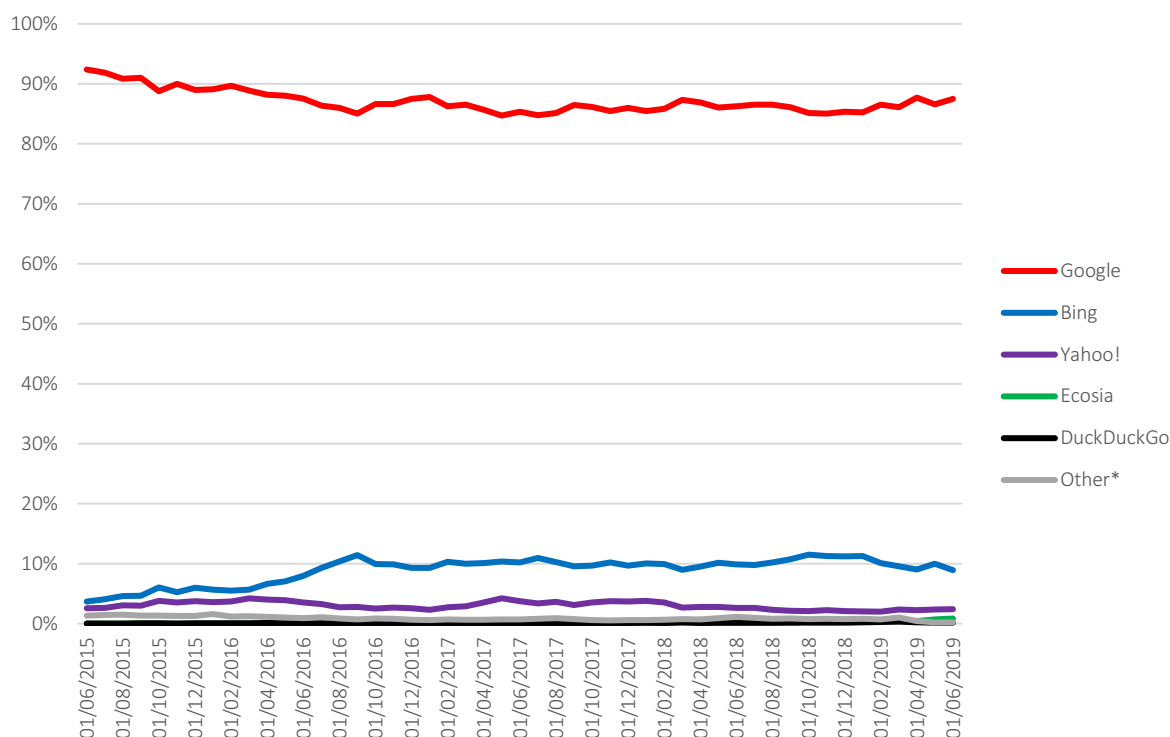
Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2015 - June 2019, UK.  
 \* 'Other' consists of: Ask; AOL, prior to October 2017; HotBot.com; and Yandex.

**Search: shares by consumer time spent**

32. The underlying data for these shares was sourced from Comscore. We consider that shares calculated on the basis of consumer time spent on search engines provide a limited assessment of search engines' shares. This is because time spent by consumers on search engines' websites may not closely capture the intensity with which they use these services.
33. Figure C.5 presents shares of supply based on consumer time spent for the largest general search engines in the UK over the last five years.
34. As shown by Figure C.5, Google has had a very high and stable share for the duration of the period for which we have data. Google's share ranges

between 85% and 92%. Bing is the next largest search engine with a share of between 4% and 11%.

**Figure C.5: Shares of supply by consumer time spent from June 2015 to June 2019**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2015 - June 2019, UK.  
 \* 'Other' consists of: Ask; AOL, prior to October 2017; HotBot.com; and Yandex.

### *Search: shares by page referrals*

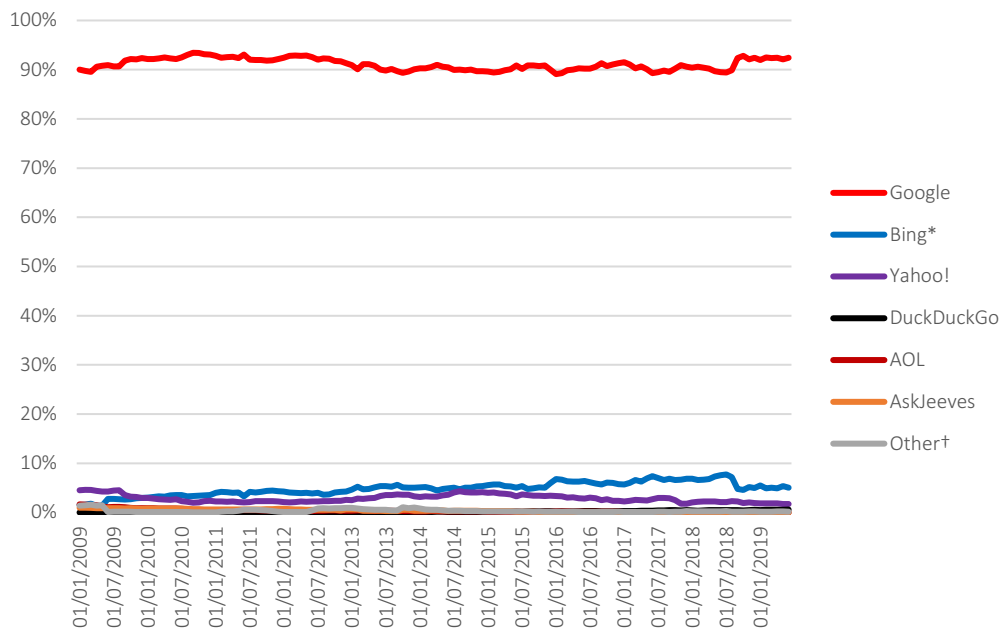
35. In addition to calculating shares of supply using Comscore data, we assessed search engines' shares using Statcounter's Global Stats.<sup>11</sup> Statcounter generates shares on the basis of search engines' 'page referrals'.
36. We consider that shares calculated on the basis of page referrals are the best measure of general search engines' shares available to us. We believe that page referrals more accurately represent users' intensity of use of different search engines, compared to either user time spent or page views. Page referrals are not subject to the same limitations as page views or consumer time spent.
37. However, we note that these may not be as accurate as shares based on the number of searches made on search engines. This is because page referrals will not account for search engine usage where the answer desired by the consumer is displayed directly on the results page, eg through 'instant

<sup>11</sup> See above for a discussion of Statcounter's methodology.

answers'. As stated above, we plan to calculate search engines' shares using providers' data in the second half of the study.

38. Shares by page referrals are presented below in C.6. Consistent with the shares calculated using Comscore's time spent data, Google holds a very high and stable share of supply throughout the entire ten-year period, with its share ranging between 89% and 93%. Bing's share ranges between 1% and 8% throughout this period.
39. Consistent with the shares calculated using Comscore's data, Google holds a high and stable share of supply throughout the entire ten-year period, with its share ranging between 89% and 93%. Bing's share ranges between 1% and 8% throughout this period.
40. We note that the parties included in the shares presented in Figure C.6 and the shares calculated using Comscore data differ slightly. This is because:
  - Statcounter calculates shares for the top 17 search engines in terms of number of page referrals. On the basis of Statcounter's metrics, Ecosia is not included in the top 17 search engines.
  - AOL and Ask have held a very low share for the past five years. As we only have access to Comscore data for this period, we have included AOL and Ask in the aggregated 'other' category, rather than presenting their shares separately in Figures C.3-C.5 above.

**Figure C.6: Shares of supply by page referrals from January 2009 to June 2019**



Source: [Statcounter Global Stats](#).

Notes: UK data.

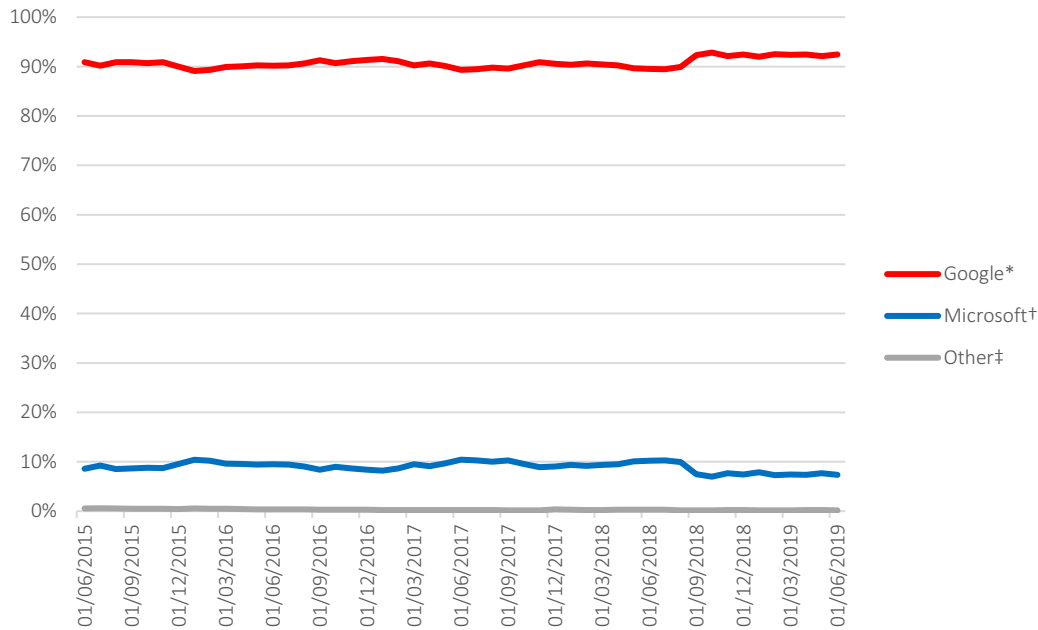
\* Bing's share represents that of Bing and MSN Search. MSN Search was rebranded as Bing in 1998.

† 'Other' consists of: AlotSearch; AVGSearch; Babylon; Baidu; Conduit; NortonSafeSearch; Snapdo; Webcrawler; WindowsLive; Yandex; and 'other'.

41. As discussed in Chapter 3, only Google and Bing maintain an at-scale English-language index of webpages, with other search engines buying organic links and adverts from Google or Bing through syndication agreements. In Figure C.7 below we present syndication partners' shares of supply by combining the shares of search engines that syndicate through each of Google and Microsoft respectively.



**Figure C.7: Shares of supply amongst syndication partners by page referrals from June 2015 to June 2019**



Source: [Statcounter Global Stats](#).

Notes: UK data for June 2015 – June 2019.

\* Google's share consists of Google Search.

† Microsoft's share consists of: Bing; DuckDuckGo; and Yahoo!.

‡ 'Other' consists of: AlotSearch; AVGSearch; Babylon; Baidu; Conduit; NortonSafeSearch; Snapdo; Webcrawler; WindowsLive; Yandex; and 'other'.

### *Search: shares by device type*

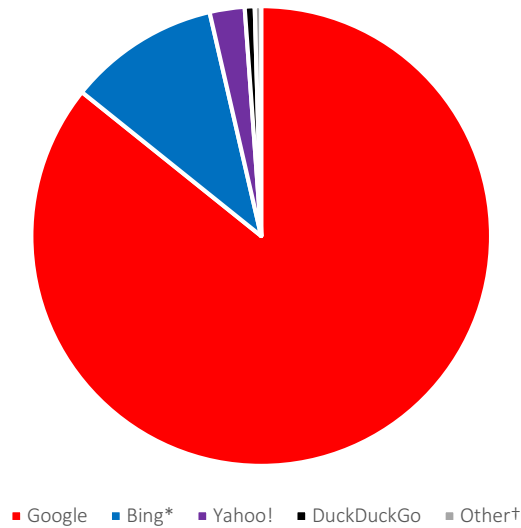
42. We have also calculated search engines' shares of supply by device type. We used the share of page referrals metric based on Statcounter data to obtain these estimates.<sup>12</sup>
43. Calculating search engines' shares using page referrals made on desktop devices yields a slightly lower share for Google compared to its overall share.<sup>13</sup> Specifically, in June 2019 Google's share was 92% overall and 86% on desktop devices.<sup>14</sup> On desktop devices Bing has a share of 11%, which is substantively higher than its overall share of 5%. Search engines' shares on desktop devices are presented in Figure C.8 below.

<sup>12</sup> We do not have access to data from Comscore that would enable us to calculate browsers' shares.

<sup>13</sup> Where desktop devices includes laptop devices.

<sup>14</sup> On the basis of page referrals.

**Figure C.8: Shares of supply by page referrals made on desktop devices**



Source: [Statcounter Global Stats](#).

Notes: UK data for June 2019. Laptops are included in desktop devices.

\* Bing's share represents that of Bing and MSN Search. MSN Search was rebranded as Bing in 1998.

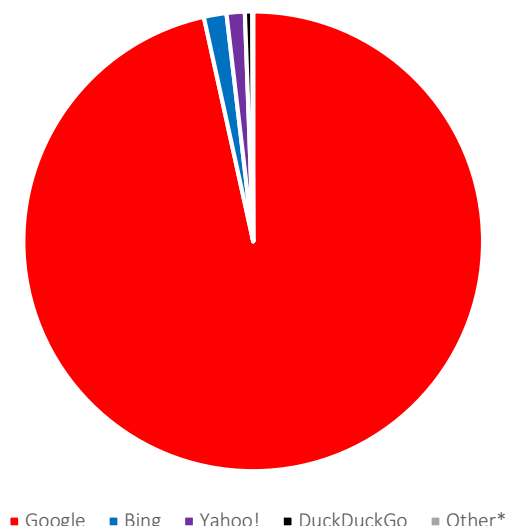
† 'Other' consists of: Norton Safe Search; Naver; Quant; Search; Baidu; Lycos; Babylon; Metacrawler; Dogpile; Yandex; and 'other'.

44. By contrast, Google's share on mobile devices is 97%, significantly greater than its overall share of 92%. Bing's share on mobile devices is less than 2%. Search engines' shares on the basis of page referrals made on mobile devices are presented in Figure C.9 below.<sup>15</sup>

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<sup>15</sup> Where mobile devices includes tablets.

Figure C.9: Shares of supply by page referrals made on mobile devices



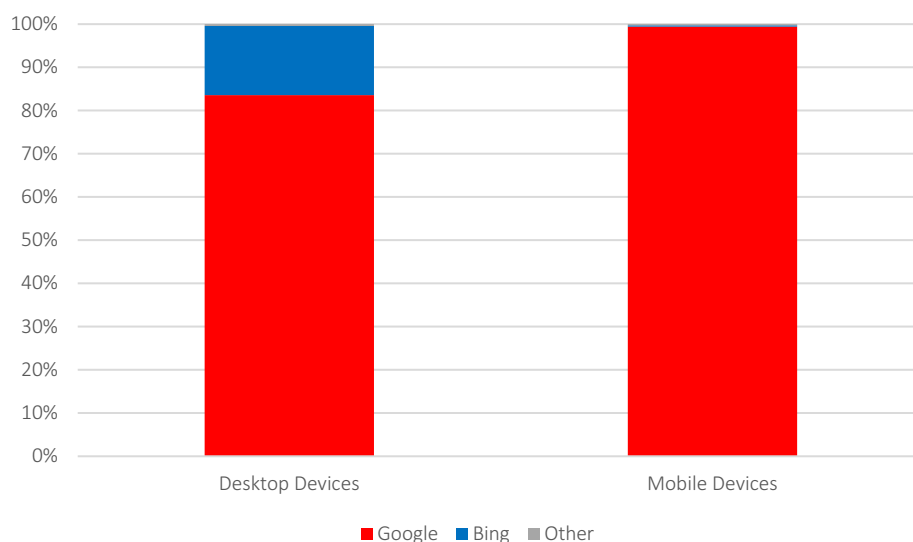
Source: [Statcounter Global Stats](#).

Notes: UK data for June 2019. Tablets are included in mobile devices.

\* 'Other' consists of: Baidu; Yandex; and 'other'.

45. As discussed in Chapter 3, defaults play an important role in influencing consumers usage of search engines. As part of our assessment of the role of defaults, we calculated the proportion of the desktop and mobile browser sectors for which Google and Bing hold default search engine positions.
46. As shown below, Google holds default positions across a relatively larger part of the UK mobile browser sector (99%) than the UK desktop browser sector (84%). In turn, Google has a relatively higher share of supply in mobile search (97%) than it does in desktop search (86%). A similar correlation can be observed for Bing. Bing holds default positions across 16% of the UK desktop browser sector and almost none of the UK mobile browser sector. Bing's share of supply is much higher in desktop search (11%) than in mobile search (less than 2%).

**Figure C.10: Proportion of desktop and mobile browser sectors for which Google and Bing hold default search engine positions**



Source: CMA Analysis of [Statcounter Global Stats](#).

Notes: UK data for June 2019. Laptops are included in desktop devices. Tablets are included in mobile devices.

### **Search: consumer cross-visiting**

47. We used Comscore’s ‘cross-visiting’ data to assess the extent to which users access more than one search engine.
48. Table C.3 summarises consumers’ cross visiting behaviour for the five largest search engines in the UK. The percentages in each cell represent the proportion of consumers of the ‘row search engine’ that also accessed the ‘column search engine’ in the same month. Table C.3 appears to show a fairly high prevalence of user cross-visiting, particularly between the consumers of each of the smaller search engines and Google. Specifically: 84% of Bing users accessed Google; 88% of Yahoo! users accessed Google; 99% of DuckDuckGo users accessed Google; and 93% of Ecosia users accessed Google.

**Table C.3: Consumer cross-visiting behaviour**

	Google	Bing	Yahoo!	DuckDuckGo	Ecosia
Google	N/A	48%	24%	1%	1%
Bing	84%	N/A	34%	2%	1%
Yahoo!	88%	70%	N/A	1%	0%
DuckDuckGo	99%	84%	25%	N/A	1%
Ecosia	93%	72%	11%	1%	N/A

Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.

49. Therefore, this evidence suggests that that many consumers access more than one search engine per month. However, Comscore’s cross-visiting data does not account for intensity of use. If a consumer accesses one search

engine's home page but performs all of their monthly searches via another search engine, that consumer will still be recorded as having 'cross-visited' between the two search engines. It is therefore plausible that proportion of users that 'cross-visit' as recorded in Table C.3 above is greater than the proportion of users that regularly access, or intend to access, multiple search engines. When it comes to intensity of use, as noted in Chapter 3, the evidence we have seen generally suggests that many consumers mostly use one general search engine.

### ***Search: source of traffic***

50. As discussed in Chapter 5, a number of the specialised search providers that were identified by Google as competitors to its general search services, appear to be reliant on Google's search engine for generating traffic. We used Comscore's 'Source/Loss' report to assess the proportion of traffic to 21 specialised search websites that originates from Google. Table C.4 below presents the proportion of 'entries' to the vertical search providers sourced from Google Sites and Google Search, where entries are defined as the number of clicks into the specified entity.<sup>16</sup> Table C.4 also presents Google Sites' ranking with respect to the number of entries generated to each of these providers. A ranking of '1' indicates that Google Sites accounted for the greatest number of entries to the provider.
51. We present proportions for both Google Sites and Google Search.<sup>17,18</sup> We consider that the values presented for Google Sites provide a better indication of these providers' reliance on Google for user traffic than those presented for Google Search. We found the proportions reported for Google Search to be lower than expected, given the evidence we have gathered from stakeholders. Comscore explained that it uses a 'linear attribution' model to calculate the proportion of entries, whereby a user's 'source' is the website that the user was active on immediately before accessing the target. For example, if a user is active on another tab and then switches to a tab where the 'target' website is open, this will be captured as an entry with the 'source' recorded as the website open in the first tab. As a result, this method of assessing source traffic does not only show the source of 'new' user traffic to specialised search providers, for which Google Search likely accounts for a greater proportion than those presented below.

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<sup>16</sup> Comscore's Source/Loss report also provides data on the proportion of entries sourced from 'Logon' where users arrive at the entity either by accessing it directly or from a link outside of the browser.

<sup>17</sup> As noted above, Google Sites is the 'highest level' of reporting for Google.

<sup>18</sup> For Priceline.com Comscore did not provide a value for 'Google Search' in August 2019. Comscore explained that this is because an insufficient number of panellists accessed the site in this period for it to reach the minimum reporting standard.

52. Generally, we also found the proportions reported for Google Sites to be lower than expected, given the evidence we have gathered from other sources. Again, we consider that the proportion of entries calculated using the 'linear attribution' model may be greater than the proportion of 'new' user traffic each search provider receives from Google Sites.
53. We do not provide a 'ranking' for Google Search as we consider that it would be misleading to compare the value for an entity that is lower within Comscore's reporting hierarchy with that of the 'highest level' of reporting (eg Google Sites or Microsoft Sites).
54. Table C.4 shows that Google Sites account for a substantial proportion of specialised search providers' source traffic, suggesting that these providers are reliant on Google for generating traffic. For 17 out of the 21 providers we considered, Google Sites accounts for the greatest proportion of traffic arriving at their sites.

**Table C.4: Source traffic to specialised search providers**

<i>Specialised Search Provider</i>	<i>Comscore Entity Analysed</i>	<i>Source</i>	<i>% of Entries</i>	<i>Ranking</i>
Airbnb	[P] Airbnb Sites	Google Sites	35%	1
		Google Search	13%	N/A
Amazon	[M] Amazon	Google Sites	25%	1
		Google Search	12%	N/A
Booking.com	[M] Booking.com Europe	Google Sites	29%	1
		Google Search	11%	N/A
Britannica	[M] Britannica.com Sites	Google Sites	29%	1
		Google Search	26%	N/A
Comparethemarket.com	[M] COMPARETHEMARKET.COM	Google Sites	27%	1
		Google Search	16%	N/A
Expedia	[M] Expedia Sites	Google Sites	20%	1
		Google Search	9%	N/A
GoCompare	[P] GOCOMPARE.COM	Google Sites	31%	1
		Google Search	19%	N/A
Hertz	[M] HERTZ.CO.UK	Google Sites	17%	2
		Google Search	12%	N/A
Hotels.com	[M] HOTELS.COM Sites	Google Sites	12%	1
		Google Search	7%	N/A
Kayak	[P] Kayak.com Network	Google Sites	9%	1
		Google Search	4%	N/A
MoneySuperMarket	[M] MONEYSUPERMARKET.COM	Google Sites	29%	1
		Google Search	24%	N/A
Netflix	[P] Netflix Inc.	Google Sites	29%	1
		Google Search	9%	N/A
OpenTable	[M] OpenTable	Google Sites	7%	2
		Google Search	5%	N/A
Opodo	[M] Opodo	Google Sites	6%	2
		Google Search	4%	N/A
Priceline	[M] Priceline.com	Google Sites	28%	1
Skyscanner	[M] SkyScanner Sites	Google Sites	36%	1
		Google Search	24%	N/A
TravelZoo	[M] TRAVELZOO.COM	Google Sites	6%	3
		Google Search	4%	N/A
TripAdvisor	[M] TripAdvisor Sites	Google Sites	33%	1
		Google Search	23%	N/A
Trivago	[M] Trivago Sites	Google Sites	17%	1
		Google Search	12%	N/A
Wiki	[P] Wikimedia Foundation Sites	Google Sites	62%	1
Yelp	[P] Yelp	Google Sites	48%	1
		Google Search	42%	N/A

Source: Comscore MMX MP, Desktop only, Desktop aged 6+, August 2019, UK.

### ***Social media: shares of supply***

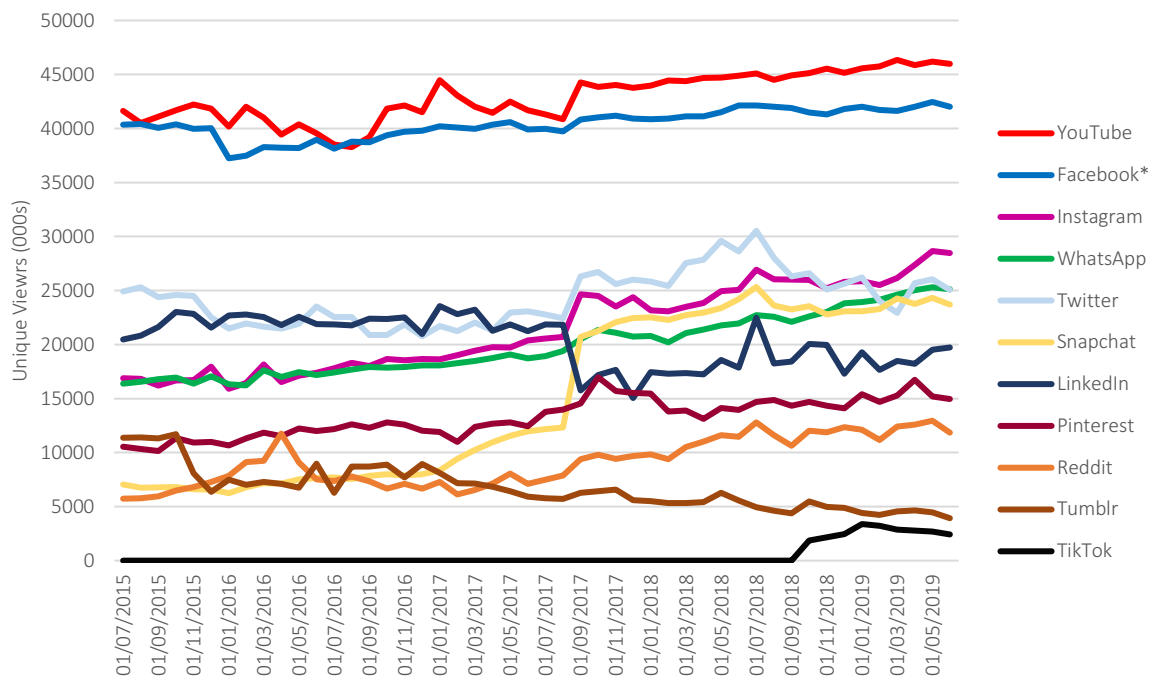
55. In this section we present market outcomes for a sample of 11 of the largest social media platforms in the UK. The platforms included here are: Facebook (including Messenger), Instagram, LinkedIn, Pinterest, Reddit, Snapchat, TikTok, Tumblr, Twitter, WhatsApp, and YouTube.
56. We present these platforms' shares of supply, and other measures that may be indicative of the platforms' shares, using the metrics listed below:
- unique visitors or 'active users', including 'reach';
  - shares of supply calculated on the basis of consumer time spent on social media platforms.
57. We also have access to data from Comscore on the number of page views consumers make on social media platforms. However, we consider that this data is unsuitable for calculating shares amongst social media platforms. The structure of some social media platforms, particularly those that are predominantly accessed via mobile devices, means that consumers do not need to view several pages to engage with the service. As a result, we do not believe that page views give an accurate indication of consumers' engagement with social media platforms or of the platforms' competitive positions.

### ***Social media: unique visitors***

58. This data was sourced from Comscore's MMX MP product. We consider that a social media platform's active users, or 'unique visitors', give a meaningful indication of its competitive strength because of the role of network effects in the social media sector. A larger consumer audience will likely make the platform more valuable to both consumers and advertisers.
59. Figure C.11 below presents monthly unique visitors for each of the 11 social media platforms from July 2015 to June 2019. As shown by Figure C.11, Facebook and YouTube have the largest number of active users and both appear to be growing.



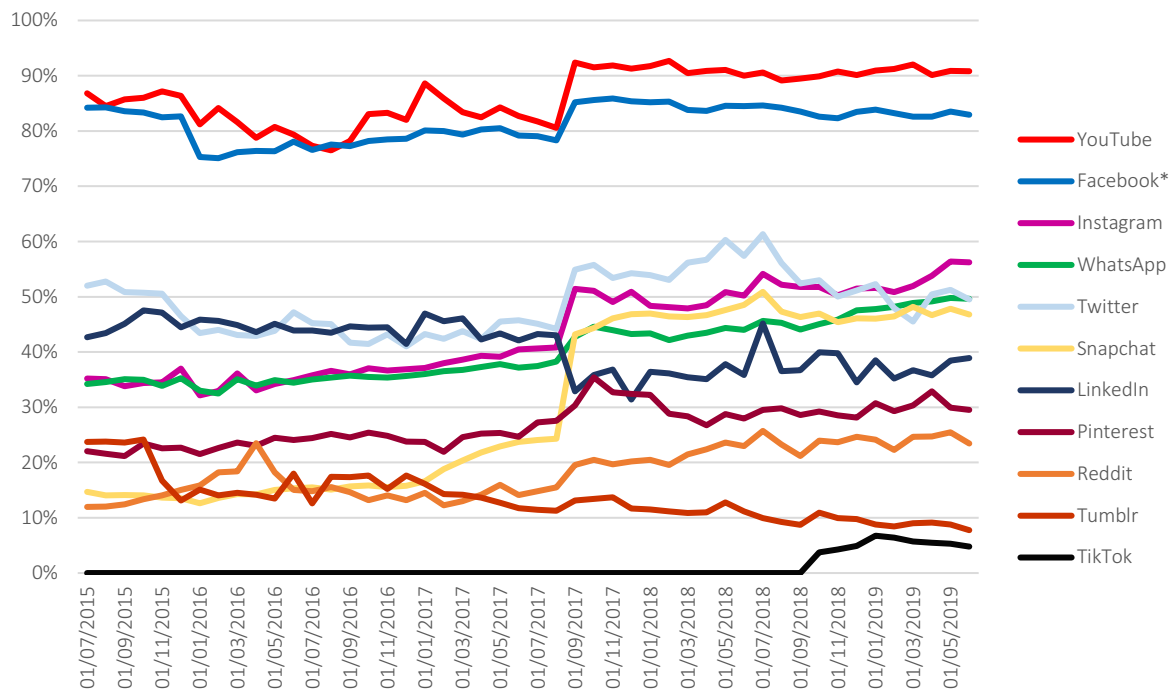
**Figure C.11: Monthly active users from July 2015 to June 2019**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, July 2015 - June 2019, UK  
 Notes: In November 2018, Comscore altered its methodology which contributes to the discontinuities in the data around this date.  
 \* Including Messenger.

60. Figure C.12 below shows the 'reach' of each of the 11 social media platforms. As explained above, reach is the percentage of the UK's online population that accesses an online entity. Facebook and YouTube also have the greatest reach of the social media platforms. In June 2019, Facebook had a reach of 83% and YouTube had a reach of 91%. Instagram, with the next greatest reach, had 56%.

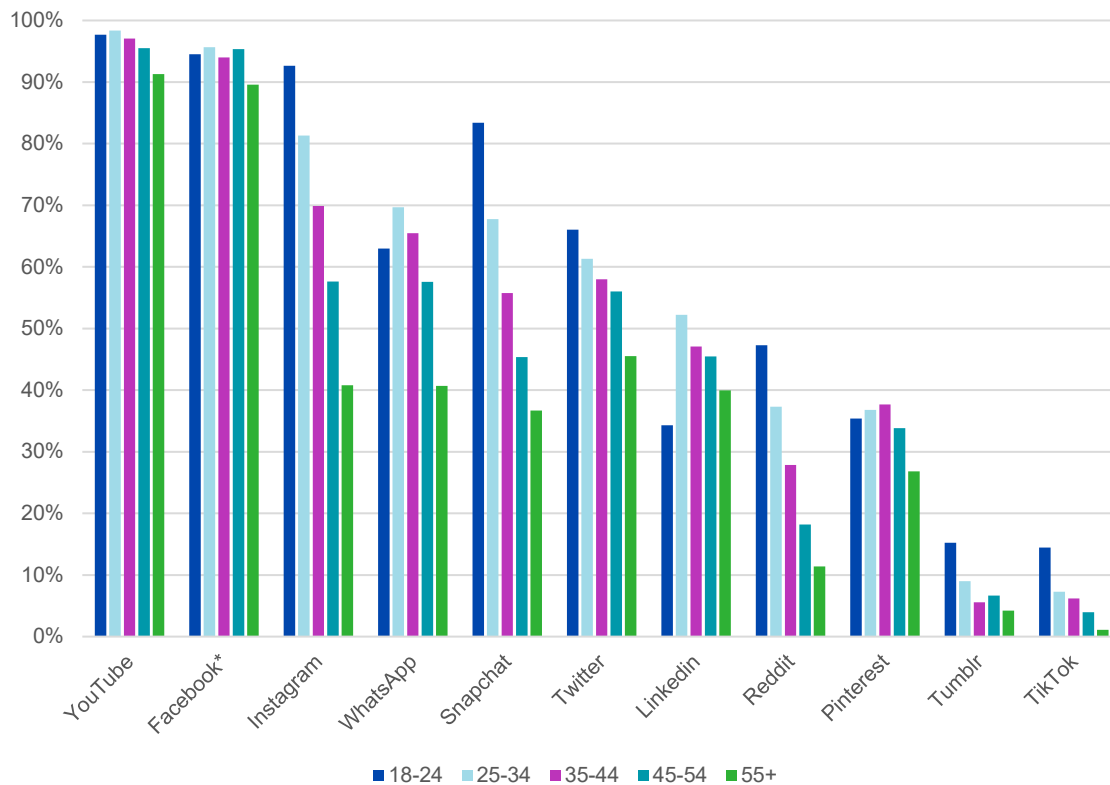
**Figure C.12: Reach from July 2015 to June 2019**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, July 2015 - June 2019, UK.  
 Notes: In November 2018, Comscore altered its methodology which contributes to the discontinuities in the data around this date.  
 \*Including Messenger.

61. As discussed in Chapter 3, social media platforms may be differentiated on the basis of their user base, with certain platforms being particularly popular amongst consumers within different age segments. To assess this, we examined platforms' reach amongst five consumer age segments, presented at Figure C.13 below.

**Figure C.13: Reach by age segment**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.  
\*Including Messenger.

62. Facebook and YouTube have the greatest reach amongst all age segments. With the exception of LinkedIn, the age segment with the lowest reach for every social media platform is 55+. We note that some platforms have particularly strong reach amongst the youngest age segments eg Instagram, Snapchat, Reddit, Tumblr and TikTok.

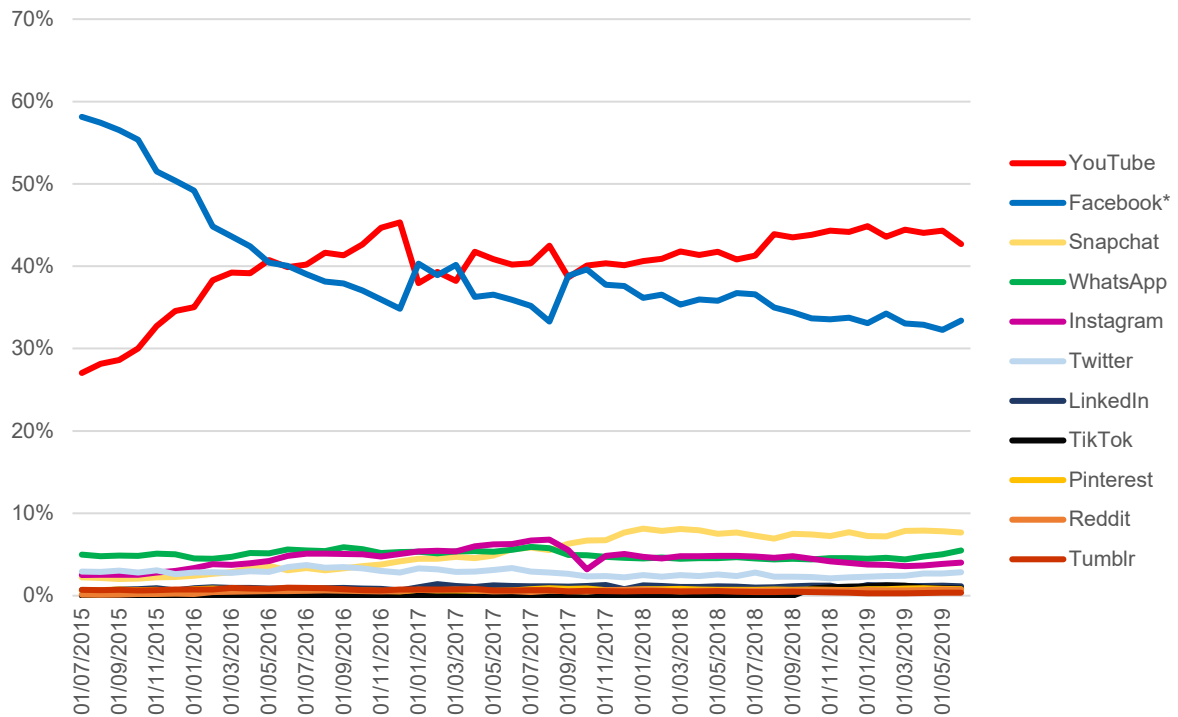
*Social media: shares of supply by consumer time spent*

63. We calculated shares for the 11 social media platforms using data on consumer time spent on social media platforms sourced from Comscore’s MMX MP product. We consider that consumer time spent on social media platforms is the best measure of social media platforms’ shares as this directly represents consumer engagement with the platforms’ services.

64. Figure C.14 below presents the shares for each of the 11 platforms. Facebook and YouTube hold the largest shares, having 33% and 43% respectively in June 2019. Snapchat has the next largest share with 8%.

65. Generally, YouTube’s share has been increasing, from 27% in July 2015 to 43% in June 2019. Facebook’s share has decreased over the period analysed, from 58% in July 2015 to 33% in June 2019.

**Figure C.14: Shares of supply by user time spent from July 2015 to June 2019 (including YouTube)**

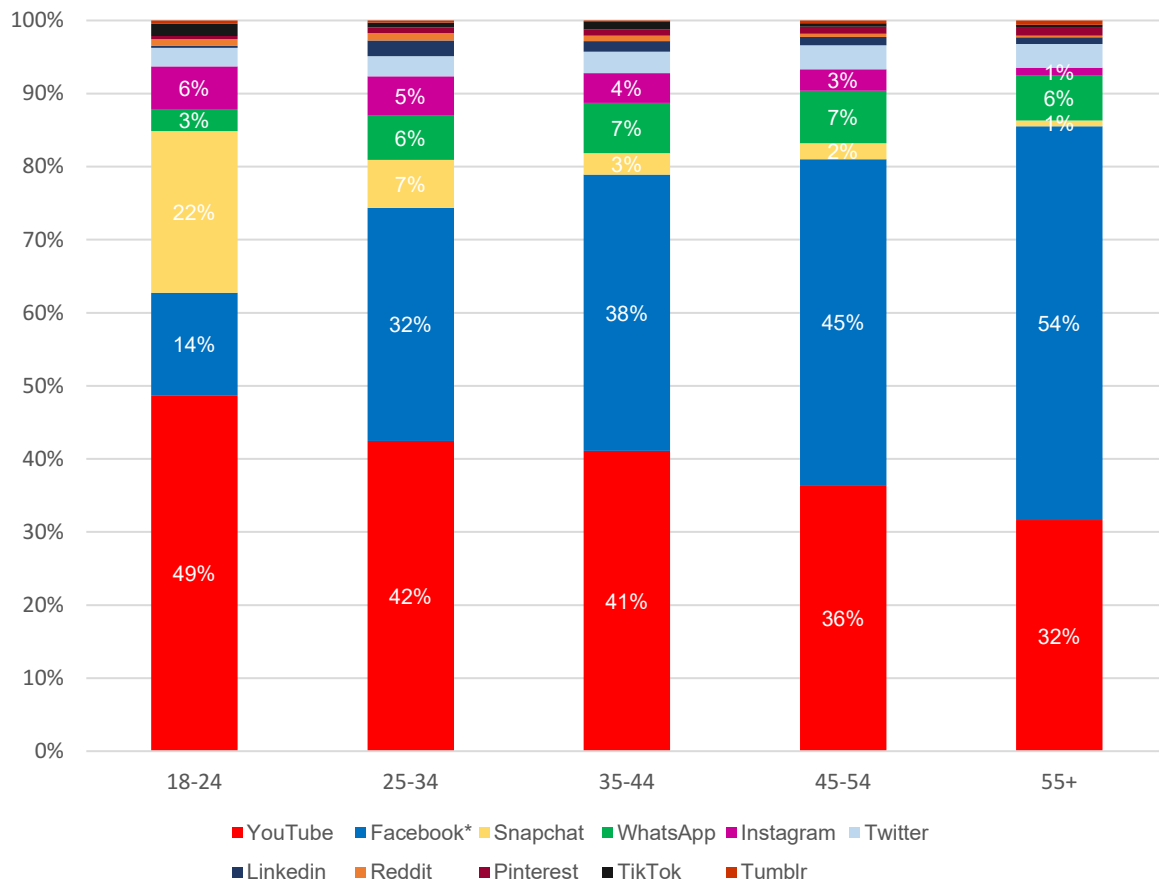


Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, July 2015 - June 2019, UK  
 Notes: In November 2018, Comscore altered its methodology which contributes to the discontinuities in the data around this date.

\*Including Messenger.

66. To further assess social media platforms' positions amongst consumers of different ages we calculated the platforms' shares by age segment. These are presented below at Figure C.15. Figure C.15 shows that YouTube and Snapchat are relatively more popular with younger consumers. In contrast, Facebook is relatively more popular with older age segments.

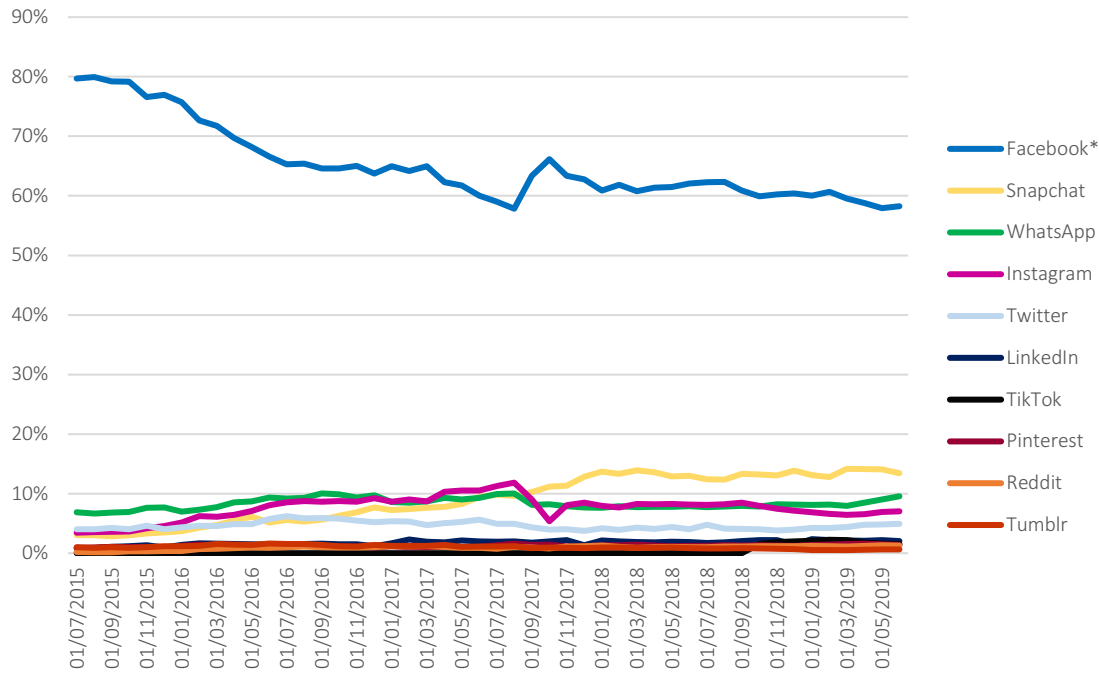
**Figure C.15: Shares of supply by age segment by user time spent (including YouTube)**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.  
 \*Including Messenger.

67. As discussed in Chapter 3, it is plausible that YouTube is accessed by users for a materially different set of purposes than the other social media platforms we have included. We therefore consider that it may be insightful to consider the shares of the remaining 10 platforms excluding YouTube. On this basis, Figure C.16 shows that Facebook has the largest share of supply, accounting for 58% of consumer time spent on social media platforms in June 2019.

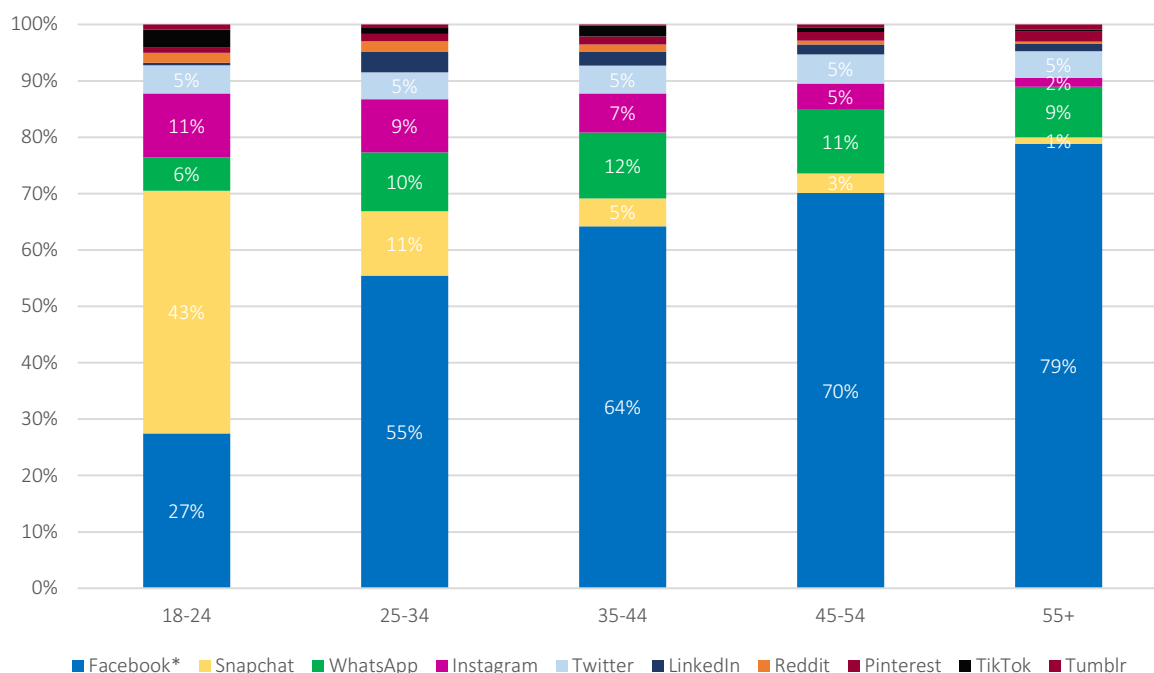
**Figure C.16: Shares of supply by user time spent from July 2015 to June 2019 (excluding YouTube)**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, July 2015 - June 2019, UK.  
 Notes: In November 2018, Comscore altered its methodology which contributes to the discontinuities in the data around this date.  
 \*Including Messenger.

68. We also calculated the remaining 10 platforms' shares by age segment, as shown in Figure C.17. The varying distributions amongst the different age segments of consumer engagement on different platforms are again clearly evident, particularly in relation to Facebook and Snapchat.

**Figure C.17: Shares of supply by age segment by user time spent (excluding YouTube)**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.  
\*Including Messenger.

### **Social media: consumer cross-visiting**

69. We used Comscore's 'cross-visiting' data to assess the extent to which consumers access multiple social media platforms.<sup>19</sup> Table C.5 summarises the results for a sample of ten of the largest platforms. The percentages in each cell represent the proportion of users of the 'row platform' that also accessed the 'column platform' in the same month.

**Table C.5: Consumer cross-visiting behaviour**

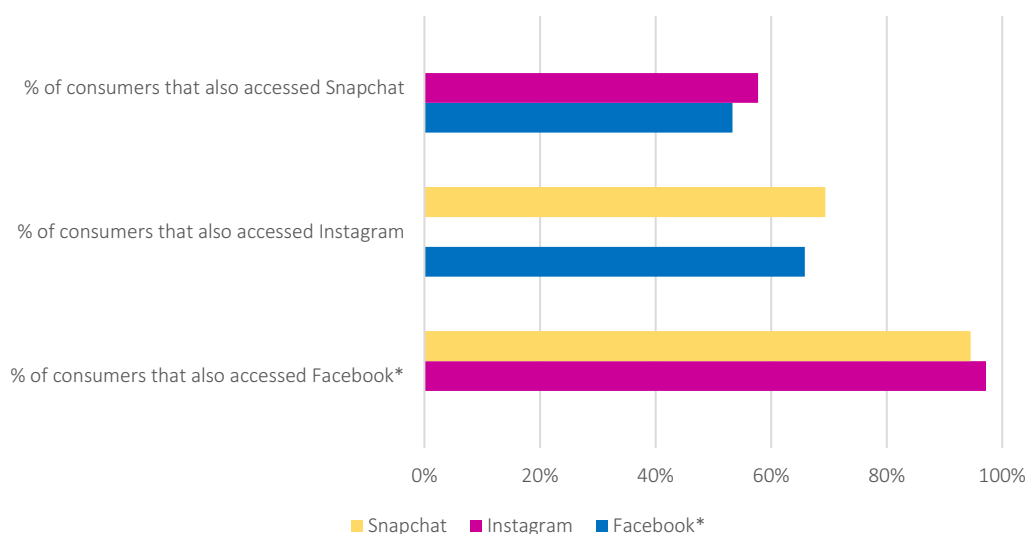
	Facebook*	Instagram	WhatsApp	Twitter	Snapchat	LinkedIn	Pinterest	Reddit	Tumblr	TikTok
Facebook*	N/A	66%	58%	56%	53%	44%	33%	24%	6%	4%
Instagram	97%	N/A	69%	63%	58%	49%	37%	29%	10%	7%
WhatsApp	97%	78%	N/A	66%	59%	54%	37%	28%	8%	7%
Twitter	93%	71%	66%	N/A	60%	54%	42%	39%	12%	7%
Snapchat	95%	69%	63%	64%	N/A	44%	39%	29%	9%	9%
LinkedIn	94%	70%	68%	69%	53%	N/A	38%	35%	13%	8%
Pinterest	93%	70%	62%	70%	61%	51%	N/A	34%	13%	6%
Reddit	86%	70%	59%	82%	57%	58%	43%	N/A	16%	8%
Tumblr	73%	80%	57%	91%	65%	77%	57%	57%	N/A	7%
TikTok	70%	84%	68%	76%	86%	62%	36%	41%	10%	N/A

Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK.  
\*Including Messenger.

<sup>19</sup> This analysis informed our assessment of user multi-homing in the social media sector. See further Chapter 3.

70. As demonstrated by Table C.5, we observe high rates of consumer cross-visiting across all ten of the platforms considered. Additionally, the overwhelming majority of platforms' users cross-visit with Facebook. In contrast, substantively lower proportions of Facebook's audience cross-visit with each of the remaining platforms.
71. This is illustrated by Figure C.18 below, which examines cross-visiting behaviour amongst three of the largest platforms (Facebook, Instagram and Snapchat).

**Figure C.18: Consumer cross-visiting behaviour amongst Facebook, Instagram and Snapchat**



Source: Comscore MMX MP, Total Digital Population, Desktop aged 6+, Mobile aged 13+, June 2019, UK  
 \*Including Messenger.

72. As explained previously, Comscore's cross-visiting data does not account for intensity of use. We are also unable to assess the extent to which individual consumers cross-visit across more than two platforms, eg the proportion of consumers that accessed three or four platforms within the month.

## Advertising outcomes

73. In this section we examine outcomes for advertisers. Our analysis is broken down to firstly present analysis on background trends. Separating out analysis on search and display secondly, we examine shares of supply then industry trends.

### Search advertising

74. In this subsection we present our analysis on the size of UK search advertising. We rely on data the parties have provided to estimate the overall size of the UK search advertising in terms of revenue. We also estimate the share of search advertising revenue passing through media agencies. Finally,



we examine how Bing-generated revenue splits into revenue generated by Bing own branded products and by Bing's syndication and sub-syndication partners. In what follows we introduce the sources of data we use to produce our estimates; then, for each outcome in turn, we present the methodology we employ and our main results.

### *Sources of data*

75. Our primary source of data consists of the datasets we received from Google and Microsoft in response to our information requests, along with the accompanying explanatory notes and the responses to our related clarification questions.
76. Google has provided us with data on:
  - its total annual revenue from search advertising in the UK from 2009 to 2018;
  - its monthly revenue generated from search advertising in the UK through the owned and operated channel from July 2016 to June 2019, split by consumer service (ie Google Search, Google Image Search, Google Maps and Google Shopping); and
  - its monthly revenue generated from search advertising in the UK through the intermediated channel for impressions sold by publishers on Google's AdSense for Search from July 2016 to June 2019.
77. Microsoft has provided us with data on:
  - Bing's and Bing's syndication and sub-syndication partners' combined total annual revenue from search advertising in the UK from 2010 to 2018; and
  - Bing's and Bing's syndication and sub-syndication partners' monthly revenue generated from search advertising in the UK from July 2016 to June 2019, split by Bing's service (eg Bing Search, Bing Shopping and Bing Maps) and syndication partner (eg Verizon Media, Ecosia and AOL).
78. Throughout this section, we refer to the sum of revenue generated by Bing own branded consumer products and by Bing's syndication and sub-syndication partners' consumer products as 'Bing-generated revenue'.
79. We have identified the following limitations in the data submitted by Google and Microsoft that we use to produce our estimates:

- In providing annual revenue data, Google attributes revenue to the UK based on the country where advertisers were billed, while Microsoft attributes Bing's revenue based on users' location (e.g. where Microsoft believes that advertisement was clicked on by a user then located in the UK). While this poses potential issues in terms of the comparability of the two datasets, given the relatively small scale of Bing-generated revenue compared to Google's, this is not likely to materially impact findings based on these estimates.
  - Google's reported total annual revenue from search advertising in 2017 and 2018 is net of accounting adjustments (eg sales incentives and invoicing adjustments due to invalid clicks), while revenue reported for years prior to 2017 is gross of accounting adjustments. Hence, we expect figures for 2017 and 2018 to be more conservative than figures for other years.
  - Bing-generated revenue includes revenue generated by Bing's syndication and sub-syndication partners only for those periods when the agreement with Bing was in place. This implies that fluctuations in Bing-generated revenue could potentially be attributed or offset by new syndication agreements put in place or old syndication agreements being terminated.
80. We identify additional limitations in the data that are specific to the outcome we estimate and the methodology we employ. We discuss such limitations in the relevant methodology subsections.
81. We have also received data from the largest media agencies active in the UK, namely:
- Dentsu Aegis;
  - Interpublic;
  - Omnicom;
  - Publicis Media; and
  - WPP.
82. These media agencies have provided us with monthly or annual data on their clients' total UK expenditure on digital advertising and on search and display advertising separately over a period of between ten and four calendar years.

## *The size of the UK search advertising sector and of its major suppliers*

### *Methodology*

83. From our discussions with industry parties we understand that the UK general search advertising sector comprises two main groups of suppliers: Google; and Bing and its syndication and sub-syndication partners.<sup>20</sup>
84. We use Google's and Bing's UK total annual revenue from search advertising. We use annual data rather than monthly data because:
- the parties reported annual revenue over a considerably longer period of time with respect to what they did for monthly data; and
  - the annual data comprises revenue generated from the sale of search advertising on third-party properties, while the monthly data does not.
85. One limitation of the annual revenue data is that it includes revenue generated from vertical search services. Ideally, we would like to exclude revenues from vertical search from our estimate of total search advertising revenues. However, in our view the inclusion of these revenues is unlikely to have a significant impact on our overall estimates. We note from that the share of revenue generated through vertical search over total search revenue was very low [0-5]% for both Google and Bing in 2017 and 2018.
86. Both Google and Microsoft have provided total annual revenue from search advertising in the UK expressed in U.S. dollars (US\$). We convert revenue from US\$ to pound sterling (GBP) using the Bank of England reported annual average US\$ into GBP annual average spot exchange rate (XUAAUSS).
87. We convert monetary figures from nominal to real to observe the evolution of revenue over time net of fluctuations due to changes in the UK economy general price levels. We use 2018 as a base period.<sup>21</sup>

### *Outcomes*

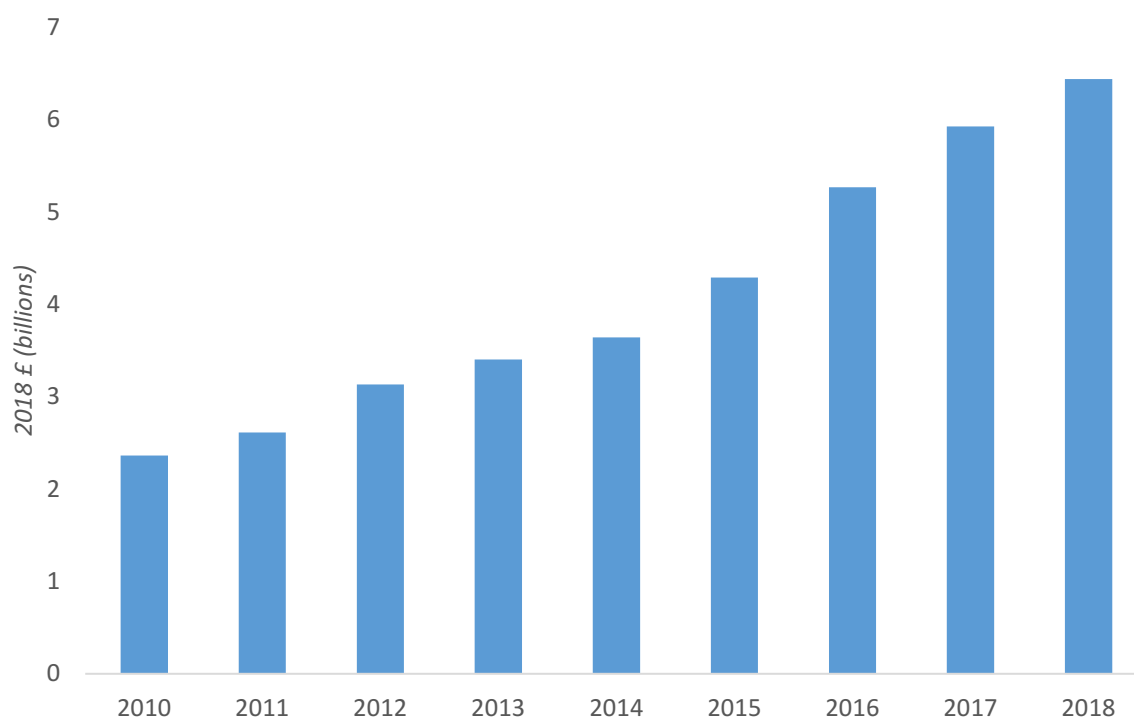
88. Figure C.19 shows our estimates for the size of the UK search advertising sector by year from 2010 to 2018 in real 2018 GBP.

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<sup>20</sup> Providers of search services that focus on languages other than English have been excluded from this analysis. Search providers whose focus is on vertical search have been excluded from this analysis. As a point of comparison, we compute Amazon's UK revenues from search advertising based on the data Amazon provided us using the same methodology outlined in this section for Google and Bing. Whilst these have increased significantly in recent years, they are still only approximately 5% of Google's revenue.

<sup>21</sup> We use the Office for National Statistics All Items CPI Index 00 (D7BT/MM23) as a source of general price levels in the UK economy.

**Figure C.19: Estimated UK search advertising revenues by year (2010-2018)**



Source: CMA analysis of platforms' data.

89. As shown in Figure C.19, the UK search advertising sector has been growing rapidly, with total revenue increasing from around £2.4bn in 2010 to £6.4bn in 2018. This implies an average real compound annual growth rate of around 13%.<sup>22</sup> Both Google and Bing contributed positively to this growth.

- Google's revenue from search advertising increased from £2.3bn in 2010 to £6.0bn in 2018, reflecting a compound annual growth rate of around 12%.<sup>23</sup>
- Bing-generated revenue increased from around £20m in 2010 to £460m in 2018. However, care is needed when evaluating Bing-generated revenue growth path, as this might be partially driven by the implementation of new syndication agreements and/or the end of syndication agreements previously in place.<sup>24</sup>

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<sup>22</sup> Notice that our estimates are close to those of the Internet Advertising Bureau (IAB), which estimates the UK search advertising to be worth £6.66 billion in 2018. For more information on the IAB estimates see: IAB (2018), Digital Adspend - IAB / PwC Digital Adspend 2018.

<sup>23</sup> We note these estimates are based on internal figures provided by Google that had not been subject to audit.

<sup>24</sup> Given the relatively small size of Bing, this effect is not likely to materially impact the overall search advertising growth trend.

90. Google has been by far the largest player in all the years considered. In 2018 Google generated more than 90% of search advertising revenues, more than an order of magnitude greater than its next closest rival, Bing.

*Share of search advertising revenue passing through media agencies*

91. In this subsection we estimate the share of the UK total search advertising revenue passing through the five major media agency groups in 2018. The media agencies we consider are:

- Dentsu Aegis;
- Interpublic;
- Omnicom;
- Publicis Media; and
- WPP.

92. We estimate advertisers' expenditure on search advertising passing through media agencies as the sum of individual media agencies reported expenditure on search advertising. As an estimate of the total UK search advertising revenue in 2018, we use the £6.4bn figure estimated in the previous subsection.

93. We convert monetary figures from nominal to real to ensure comparability with our estimate for the total UK search advertising revenue. We use December 2018 and 2018 as a base period for monthly and annual data respectively.<sup>25</sup>

94. This approach produces an estimate of around £800m for media agencies' combined expenditure on search advertising in 2018, which corresponds to around 13% of the total UK search advertising revenue.

*Composition of revenue generated from use of Bing search technology*

95. In this subsection we estimate the relative shares of revenue generated by Bing's own branded search products and by its main syndication partners.

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<sup>25</sup> We use the Office for National Statistics All Items CPI Index 00 (D7BT/MM23) as a source of general price levels in the UK economy.

## *Methodology*

96. We use the monthly data Microsoft provided us to compute the relative shares of revenue generated by Bing's own branded search products and by its main syndication partners.
97. In addition to the general limitations already presented, the monthly data Microsoft submitted also presents some limitations specific the outcome we estimate in this subsection:
- Revenue from the sale of search advertising on third-party properties is not included.
  - Sub-syndication partners' revenues are included in their respective direct Bing syndication partner's revenue (eg Yahoo!'s and DuckDuckGo's revenues are included in Verizon Media's share).
  - Microsoft has not separately identified revenue generated from vertical search products for all of Bing's syndication partners. Hence, for consistency we include revenues generated from vertical search products for each Party. However, we note that these represent a negligible share of revenue in all the instances for which it was possible to compute it. Therefore, we do not expect this to materially impact our estimates.

## *Outcomes*

98. Figure C.20 presents our results on the composition of revenue generated from use of Bing search technology (ie it is inclusive of revenue retained by syndication and sub-syndication partners) in 2018.

**Figure C.20: Composition of Bing-generated revenue in the UK search advertising owned-and-operated channel (2018)**

[✂]

Source: CMA analysis of Microsoft's data.

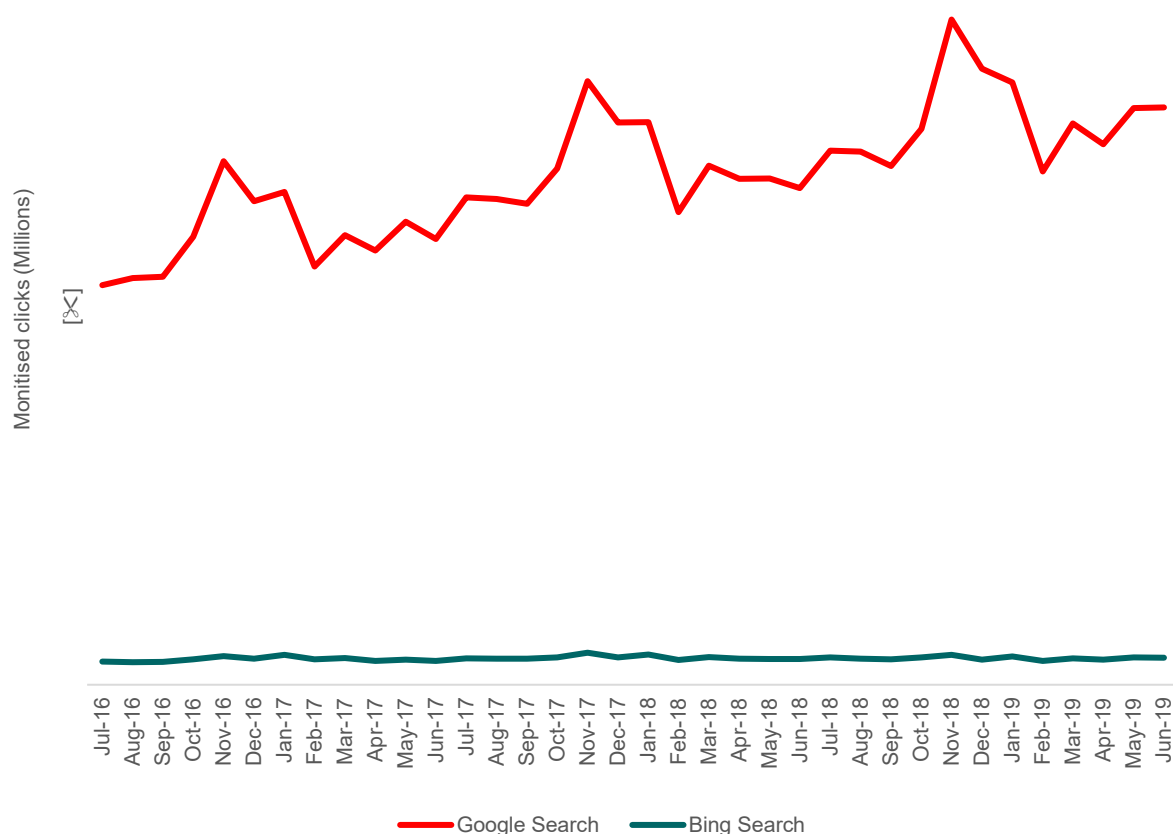
99. As shown in Figure C.20, in 2018 the majority of Bing-generated search advertising revenue derived from Bing's own branded search products. This also applies to the previous year, when Bing's own branded search products' share was seven percentage points lower. The second largest share was captured by Verizon Media, which owns Yahoo! and which also holds sub-syndication agreements for the supply of search advertising with other search providers, most notably DuckDuckGo. The other syndication partners generated only a minor share of Bing-generated search advertising revenue.

## Search advertising industry trends

### Monetised clicks

100. Figure C.21 shows the monthly total of monetised clicks<sup>26</sup> for Google and Bing in the UK from July 2016 to May 2019.

Figure C.21: Monthly total monetised clicks (UK) from July 2016 to May 2019



Source: CMA analysis of parties' data.

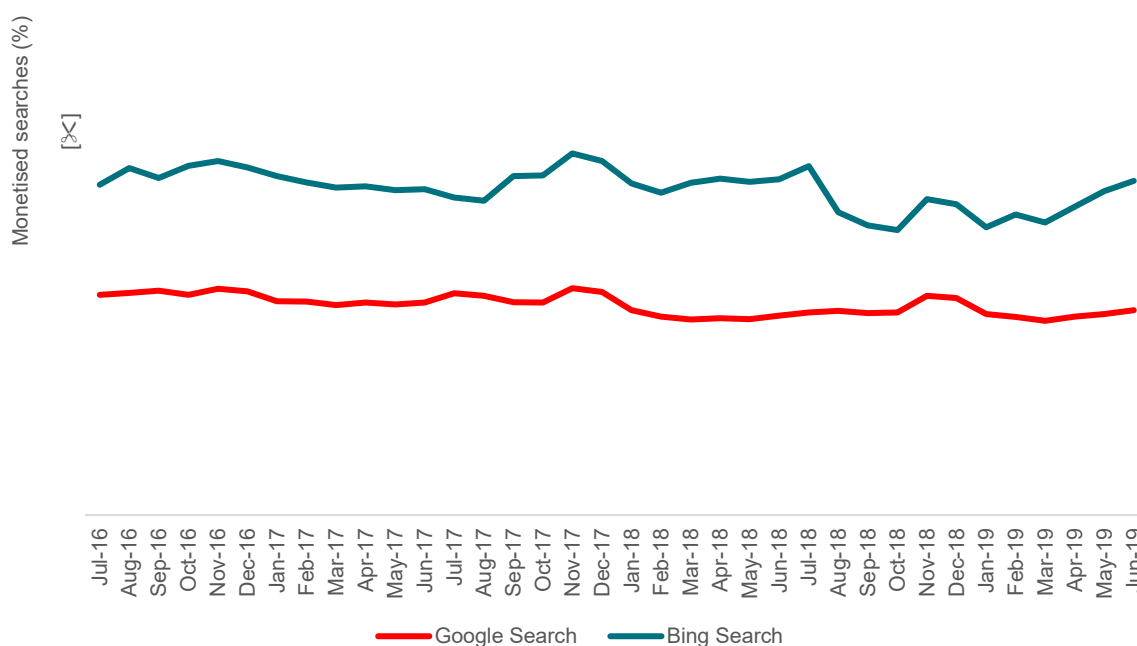
101. This chart shows that Google has consistently had a higher volume of monetised clicks than Bing, making it by far the largest provider of search advertising in the UK.
102. Google has grown total monetised clicks at a steady rate over this period. Bing has monetised a stable but relatively low number of clicks over the same time frame.

<sup>26</sup> Monetised clicks include a small number of clicks that were not billable to advertisers eg house ads

### Searches with ads shown

103. Figure C.22 shows the total monthly number of searches with ads shown as a proportion of all searches in the UK.

**Figure C.22: Monthly proportion of searches with ads shown from July 2016 to May 2019**



Source: CMA analysis of platform data.

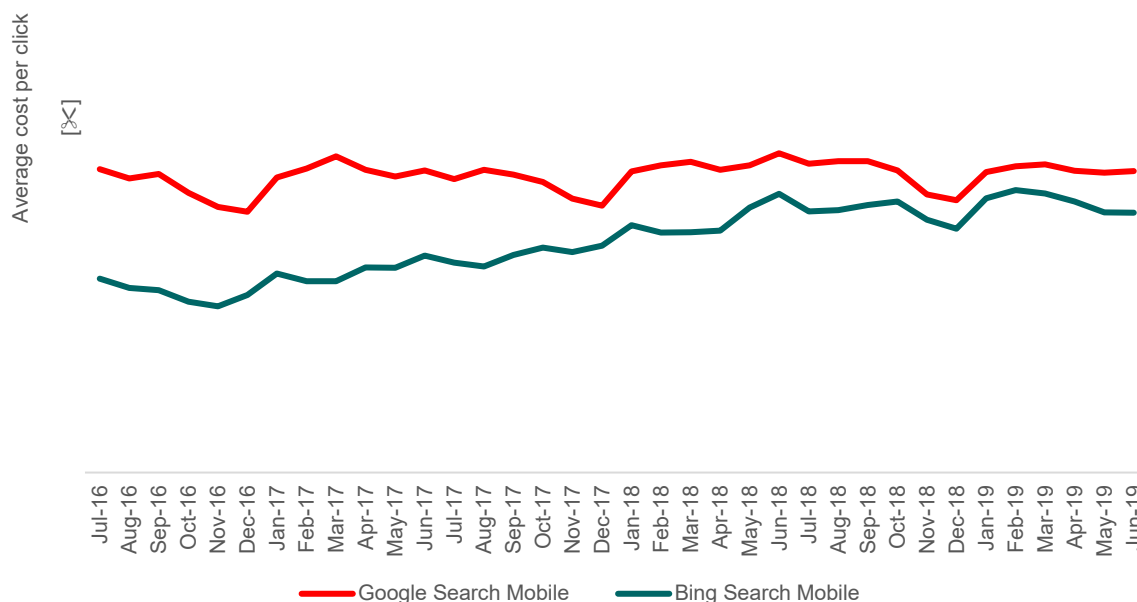
104. This shows Google has had a consistently lower proportion of searches with ads shown compared to Bing. We are cautious in interpreting what causes this difference. It may either be due to differences in policy between Google and Bing of whether to show ads for certain searches or due to differences in the distribution of searches. We intend to carry out further analysis on this point in the second half of the market study.

### Pricing trends

105. Figure C.23 shows the average cost per click for all mobile search advertising for Google and Bing in the UK from July 2016 to May 2019.



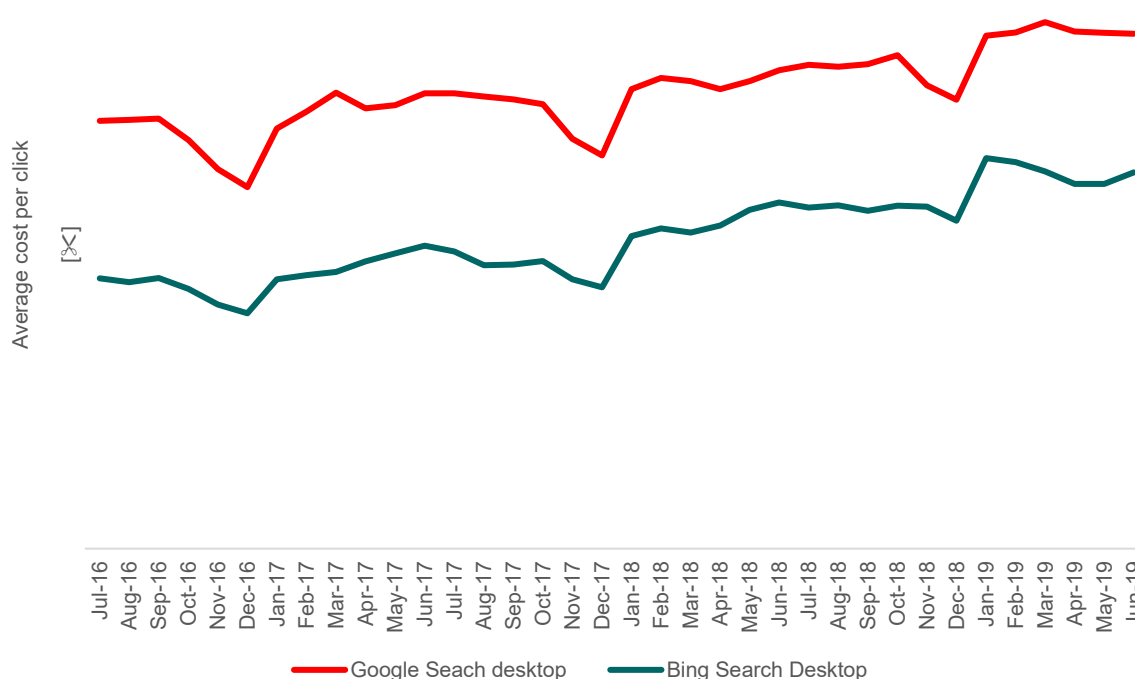
**Figure C.23: Monthly average cost per click for mobile search advertising from July 2016 to May 2019**



Source: CMA analysis of platform data.

106. On mobile, Google has had a consistently higher cost per click on average, but Bing’s average cost per click is becoming closer over time. However, we apply caution in interpreting this data. Higher average cost per clicks do not necessarily imply that Google’s like-for-like prices are higher.
107. Observed differences in cost per click may be explained by many different factors:
  - Differences in search terms entered by users;
  - Differences in user conversion rates;
  - Differences in the population of advertisers using either platform; and
  - Differences in the degree of audience targeting or in how performance is measured.
108. Figure C.24 shows the average cost per click for desktop search advertising for Google and Bing in the UK from July 2016 to May 2019.

**Figure C.24: Monthly average cost per click for desktop search advertising from July 2016 to May 2019**



Source: CMA analysis of platform data.

- 109. Compared to their mobile search cost per click, desktop search cost per click is substantially higher for both Google and Bing.
- 110. Bing and Google have both experienced price increases for desktop search advertising across the period. Google has maintained a higher average price than Bing. However, as for mobile, observed differences may reflect many factors and do not imply that Google’s like-for-like prices are higher.

**Display advertising**

- 111. In this section we present our analysis of advertiser outcomes in UK display advertising. We begin by setting out the data we have collected with an overview of its overall size and the shares of supply of display advertising in the UK.
- 112. We assess the total size of display advertising supply in the UK. We use this to compute individual platforms’ share in terms of advertising expenditure as well as the share of advertising expenditure passing through media agencies. We also analyse display advertising expenditure in the UK split by video and non-video.

113. Finally, we use monthly platform data to analyse the trends in key industry outcomes (expenditure, price, proportion of video advertising) for Google, Another display advertiser and Facebook owned and operated platforms.

#### *Sources of data*

114. Our primary source of data consists of the datasets we received from the parties in response to our information requests, along with the accompanying explanatory notes and the responses to our related clarification questions.

115. We have received annual revenue and monthly detailed data on display advertising from the following parties:

- Amazon;
- Facebook (inclusive of data on Instagram's revenue);
- Google (on YouTube's revenue);
- Microsoft (on LinkedIn's revenue);
- Pinterest;
- Snapchat;
- TikTok;
- Twitter; and
- Verizon Media.

116. The annual revenue data refers to the total revenue earned by the parties from the sale of display advertising. It generally covers a period of between eight and ten calendar years.<sup>27, 28</sup>

117. The monthly data refers to the revenue earned by the parties from the sale of display advertising on their platforms through the owned and operated channel. The data includes total revenue, total active users and total impressions. The data can be split between mobile and desktop, and between

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<sup>27</sup> Some parties provided data on their revenue over a more limited time period. This is due the fact that some platforms only started monetising their services through the sale of digital advertising in the UK at a later stage, or that some parties experienced technical and/or engineering difficulties in collecting and providing the data for a longer time period.

<sup>28</sup> Annual data on LinkedIn's revenue provided by Microsoft does not include revenue generated from LinkedIn online self-serve purchases paid via credit card. We expect this to represent a minor share of LinkedIn revenue generated through display advertising.

video or non-video. It generally covers a period of between two and three calendar years.<sup>29, 30</sup>

118. We have identified the following limitations in the data submitted by the parties:
- Some of the parties attributed revenue to the UK based on advertisers' billing address, while others did so based on users' location. While this poses potential issues in terms of the comparability of the datasets, given the relatively small scale of the parties that provided the data based on advertisers' billing address, this is not likely to materially impact our estimates.<sup>31</sup>
  - The monthly data submitted by the parties have missing data for some months. Where possible, we have used all available information contained in the parties' responses. This does not affect our ability to draw inferences from the trend analysis.
119. For our trend analysis, we only display data for months where a platform has over a billion impressions. This reduces the likelihood that inappropriate inference is drawn from a small sample of advertising impressions.
120. We also use the data we received from media agencies on expenditure on display advertising.

### *Display advertising expenditure shares*

#### *Methodology*

121. We estimate expenditure shares in a three-step process. First, we calculate the size of total expenditure in the owned and operated channel. Second, we add this to our estimate of expenditure in the open display channel to give us an estimate of total UK display advertising expenditure. Finally, we estimate individual expenditure shares as expenditure on each platform over total advertising expenditure.
122. We have estimated the size of display advertising supply in terms of advertising expenditure rather than revenue in order to make like for like

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<sup>29</sup> Some parties provided data on their revenue over a more limited time period. The reasons for this are similar to those for the annual data.

<sup>30</sup> Facebook's submission does not provide monthly desktop revenue split between video and non-video.

<sup>31</sup> The following parties specified they have provided data based on users' location: Amazon, Facebook, Google, Pinterest, Verizon Media and TikTok. The following parties have provided the data based on advertisers' billing address: Microsoft, Snapchat and Twitter.

comparisons across the owned and operated and open display channels. This has the effect of including the fees charged by intermediaries in the open display channel for services that are provided in-house by owned and operated platforms.<sup>32</sup>

123. As an estimate for the size of the UK open display advertising in 2018, we use the £2.0bn figure introduced in the section on the open display advertising outcomes below.
124. To estimate the size of the owned and operated display channel we sum the revenue generated by each individual platform. We consider a platform's revenue generated in the owned and operated channel as equivalent to the advertising expenditure on that platform.
125. The platforms we consider are:
  - Amazon;
  - Facebook
  - Instagram;
  - YouTube;
  - LinkedIn;
  - Pinterest;
  - Snapchat;
  - TikTok;
  - Twitter; and
  - Verizon Media.
126. Whenever possible we use monthly data, to ensure consistency with the estimation of the size of the display advertising and the shares of advertising expenditure for the video and non-video display advertising individually.<sup>33</sup>
127. Some of the platforms provided data on revenue expressed in US\$. We convert revenue expressed in US\$ from US\$ to GBP using the Bank of England reported US\$ into GBP annual average spot exchange rate

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<sup>32</sup> For both the owned and operated and open display channels we exclude media agency and advertiser ad server fees.

<sup>33</sup> We use annual data for LinkedIn only, as we do not deem the monthly data of sufficient quality.

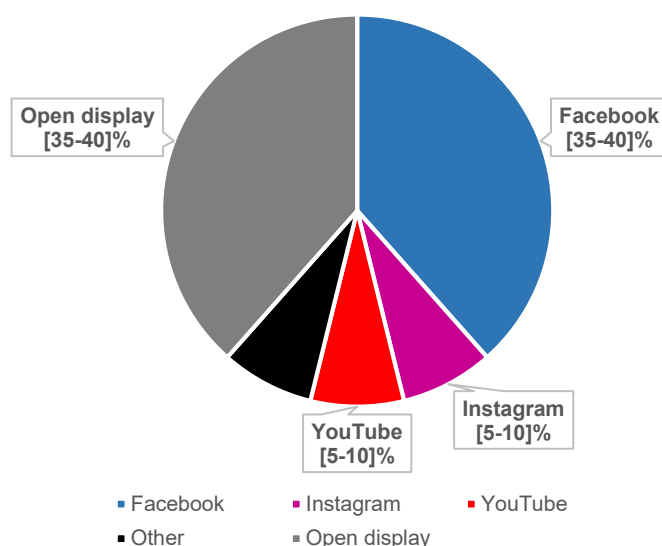
(XUAAUSS) for the annual data and using the bank of England reported US\$ into GBP monthly average spot exchange rate (XUMAUSS) for the monthly data.

128. We convert revenue figures from nominal to real to ensure figures can be compared across different time periods, and we aggregate monthly figures by year.<sup>34</sup>

### Outcomes

129. Following the methodology outlined above, we obtain an estimate of £3.1bn for the size of the UK owned and operated display advertising in 2018. Adding our estimate for the size of the open display channel, this leads us to estimate the overall size of the UK display advertising at £5.1bn.
130. Our estimate is similar to the IAB's (2018) estimate for the size of 'social display' advertising in 2018 of £3.04bn. The definition of social display advertising employed by the IAB is likely to include a set of platforms similar to those we consider in the owned and operated channel.
131. Figure C.25 shows the individual platforms' shares of advertising expenditure and the share of expenditure on the open display channel over the overall size of the display advertising in 2018.

**Figure C.25: Shares of expenditure in the UK display advertising (2018)**



Source: CMA analysis based on parties' data.

Note: Segments shown in the chart are illustrative, based on mid-points of the stated ranges rather than actual revenue figures.

<sup>34</sup> We use 2018 as a base period for the annual data and December 2018 for the monthly data. We use the Office for National Statistics All Items CPI Index 00 (D7BT/MM23) as a source of general price levels in the UK economy.

132. As shown in Figure C.25, in 2018 Facebook was by far the largest player in the UK display advertising. Including Instagram, its share of expenditure amounted to [40-50]% of the UK display advertising in 2018, which corresponds to around £[2-2.6]bn. The second largest share of expenditure ([35-40]%) was captured by the open display channel; followed by YouTube, with a share of [5-10]%. The remaining [5-10]% of expenditure was fragmented among the other platforms.

#### *Video vs. non-video*

133. In this section we present data on the size of the UK display advertising and individual platforms' shares of expenditure for video and non-video impressions separately. In what follows we present the methodology we employ and the results we obtain.

- *Methodology*

134. We follow the same methodology presented above for the overall display advertising sector, with some additional steps needed to separate revenue into revenue generated from video and non-video impressions.

135. The data we have available does not allow us to split expenditure between video and non-video in the open display channel without making strong assumptions.<sup>35</sup> For this reason, we favour applying the IAB's 2018 estimated percentage revenue split into video and non-video for 'non-social' display to our estimate for the overall size of the open display channel. The IAB estimates the size of the 'non-social' display to be £2.21bn, 23% of which attributable to video and 77% to non-video.<sup>36</sup> Applied to our estimate for the overall size of the open display channel, this leads us to estimate its size at £0.5bn for video and £1.5bn for non-video.

136. For the owned and operated display channel, the parties generally provided us with their revenue split into video and non-video in the monthly data. Where possible we use the split the parties provided directly. This is not possible in two cases: Facebook (including Instagram) and LinkedIn. For these two cases we proceed as follows:

- Facebook provided its revenue split into video and non-video for mobile only. For each month, we compute the percentage of revenue generated from video and non-video in mobile and apply this to total revenues. We

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<sup>35</sup> While we know the number of video and non-video impressions, we would need to make assumptions on the CPM of video and non-video impressions for the non-Google programmatic channel.

<sup>36</sup> See IAB (2018) for more information on the IAB estimates.

do this for Facebook and Instagram separately to capture systematic differences between the services in the percentage of video and non-video ads they display.

- We use annual data for LinkedIn, which does not split revenue into video and non-video.<sup>37</sup> To split LinkedIn revenue into video and non-video we compute the percentage of revenue generated from owned and operated video and non-video advertising for all the other platforms we consider, and apply this proportionally to LinkedIn’s revenue.

- *Outcomes*

137. Following the methodology outlined above, we estimate the UK owned and operated channel video display advertising to be worth around £1.5bn in 2018. Adding our £0.5bn estimate for the video open channel, this leads us to a total estimate of £1.9bn for the size of the UK video display advertising sector in 2018.<sup>38</sup>

138. We estimate the owned and operated channel non-video display advertising to be worth £1.6bn in 2018. Adding our £1.5bn estimate for the non-video open display channel leads us to a total estimate of £3.2bn for the size of the UK non-video display advertising in 2018.<sup>39</sup> Table C.6 summarises our results.

**Table C.6: Estimated size of the UK display advertising split by video and non-video (2018)**

Channel	2018 GBP (billions)		
	Estimated size		
	Total	Video	Non-video
Owned and operated	3.1	1.5	1.6
Open display	2.0	0.5	1.5
Total	5.1	1.9	3.2

Source: CMA analysis.

Note: Totals might differ from sum of individual figures due to rounding.

139. Our analysis suggests that non-video accounted for more than 60% of UK display advertising in 2018, equivalent to £3.2bn. Non-video advertising captured the majority of the open display advertising (around 75%), with an estimated value of £1.5bn compared with £0.5bn for video advertising. The

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<sup>37</sup> We do not use monthly data as we do not deem it of appropriate quality.

<sup>38</sup> The total differs from the sum of the individual figures due to rounding.

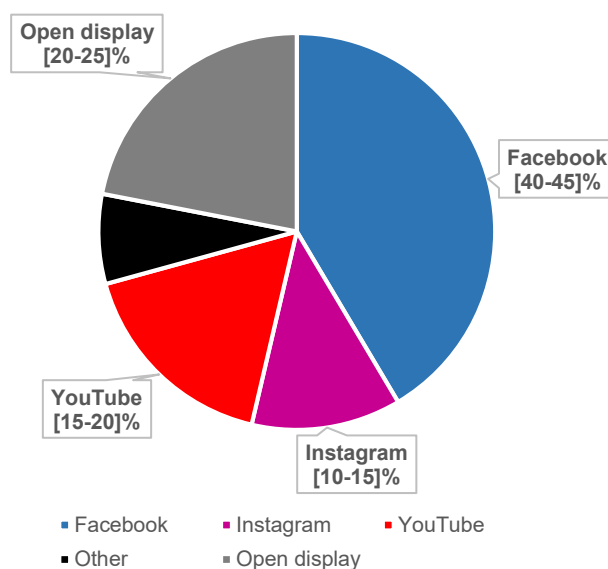
<sup>39</sup> The total differs from the sum of the individual figures due to rounding.



divergence between video and non-video falls for the owned and operated channel, for which non-video accounted for nearly 52% in 2018.

140. Figure C.26 shows the individual platforms' shares of advertising expenditure and the share of expenditure on the intermediated channel over the overall size of the UK video display advertising sector in 2018.

**Figure C.26: Shares of expenditure in the UK video display advertising (2018)**

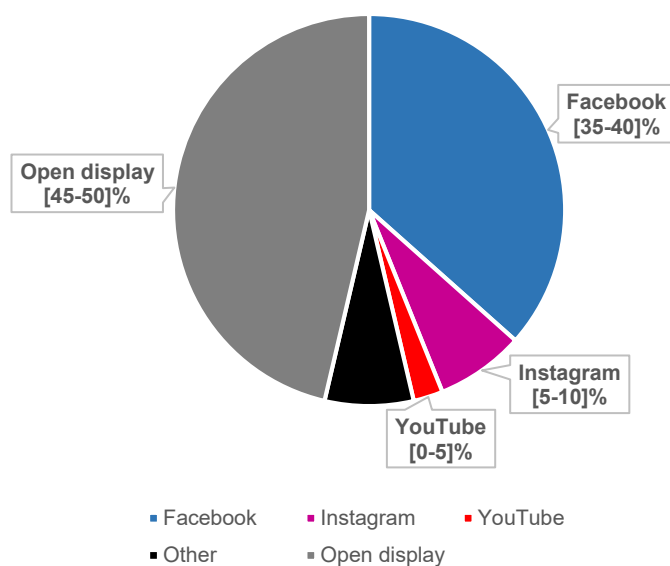


Source: CMA analysis based on parties' data.

Note: Segments shown in the chart are illustrative, based on mid-points of the stated ranges rather than actual revenue figures.

141. As shown in Figure C.26, in 2018 Facebook was by far the largest player in the UK video display advertising; including Instagram, its share of expenditure amounted to [50-60]% of the UK video display advertising in 2018. The second largest shares of expenditure was captured by the open display channel ([20-25]%), followed by YouTube, with a share of [15-20]%. The remaining [5-10]% of expenditure was fragmented among the other platforms.
142. Figure C.27 shows the individual platforms' shares of advertising expenditure and the share of expenditure on the open display channel over the overall size of the UK non-video display advertising in 2018.

**Figure C.27: Shares of expenditure in UK non-video display advertising (2018)**



Source: CMA analysis based on parties' data.

Note: Segments shown in the chart are illustrative, based on mid-points of the stated ranges rather than actual revenue figures.

143. As depicted in Figure C.27, in 2018 the open display captured a large share of the expenditure in non-video display advertising ([45-50])%. Facebook was the largest platform; including Instagram, its share of expenditure amounted to [40-50]%. The remaining [5-15]% of expenditure was fragmented among the other platforms.

#### *Share of display advertising expenditure passing through media agencies*

144. In this subsection we estimate the share of the UK total search advertising expenditure passing through media agencies in 2018.

145. We use the same methodology we used to estimate the share of search advertising revenue passing through media agencies.

146. We estimate a total of £2.3bn for media agencies' combined expenditure on display advertising in 2018, which corresponds to around 44% of the total UK display advertising expenditure.

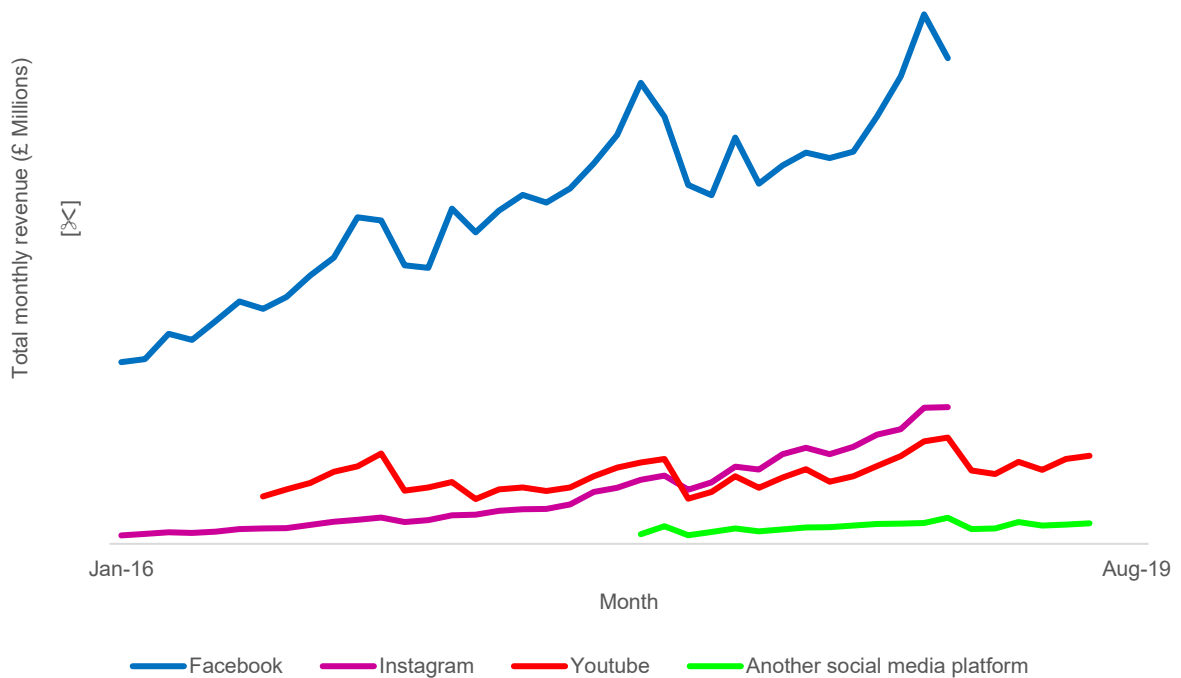
#### *Display advertising industry trends*

147. This section sets out background data on display advertising revenue and price trends.

#### *Expenditure trends*

148. Figure C.28 shows monthly expenditure on selected display advertising providers from July 2016 to May 2019.

**Figure C.28: Monthly total expenditure on selected display advertiser platforms from January 2016 to July 2019**



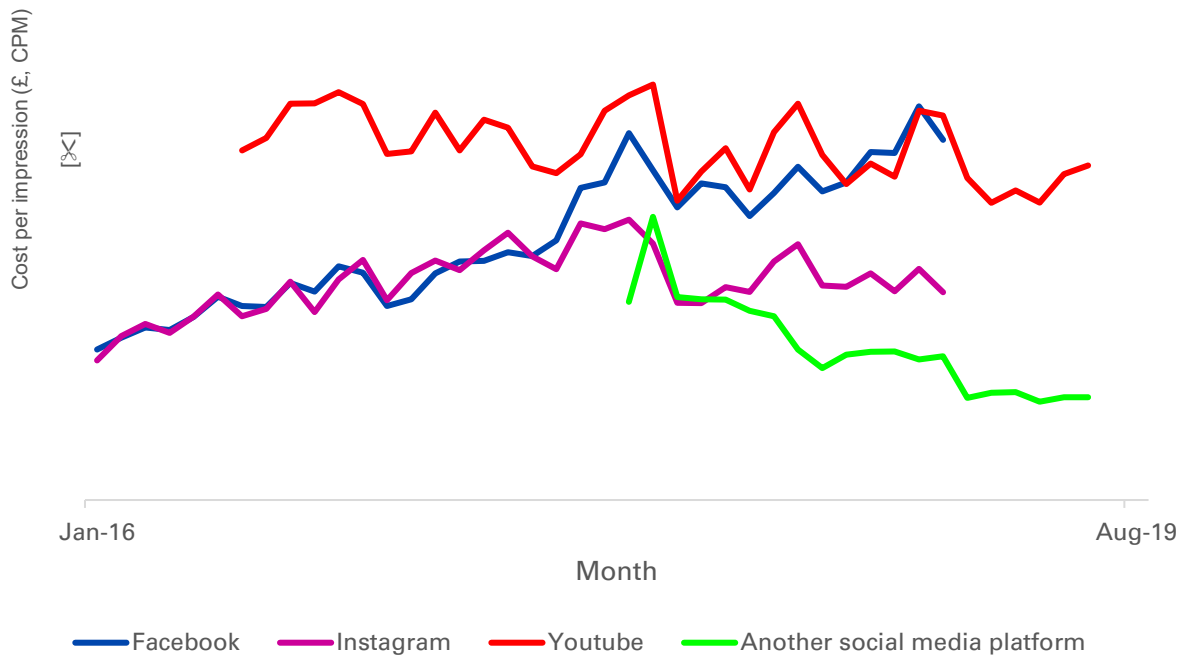
Source: CMA analysis of platform data.

149. Over the past three years Facebook and Instagram have grown the advertising expenditure they are winning to a greater extent than YouTube. This partly reflects the scale of their inventory and consumer attention.

*Pricing trends*

150. Figure C.29 shows UK display advertising yields for selected display advertising platforms from January 2016 to July 2019. Yields are measured as the cost per thousand advertising impressions (CPM).

**Figure C.29: Monthly cost per impression (£, CPM), for selected display advertiser platforms, from January 2016 to July 2019**



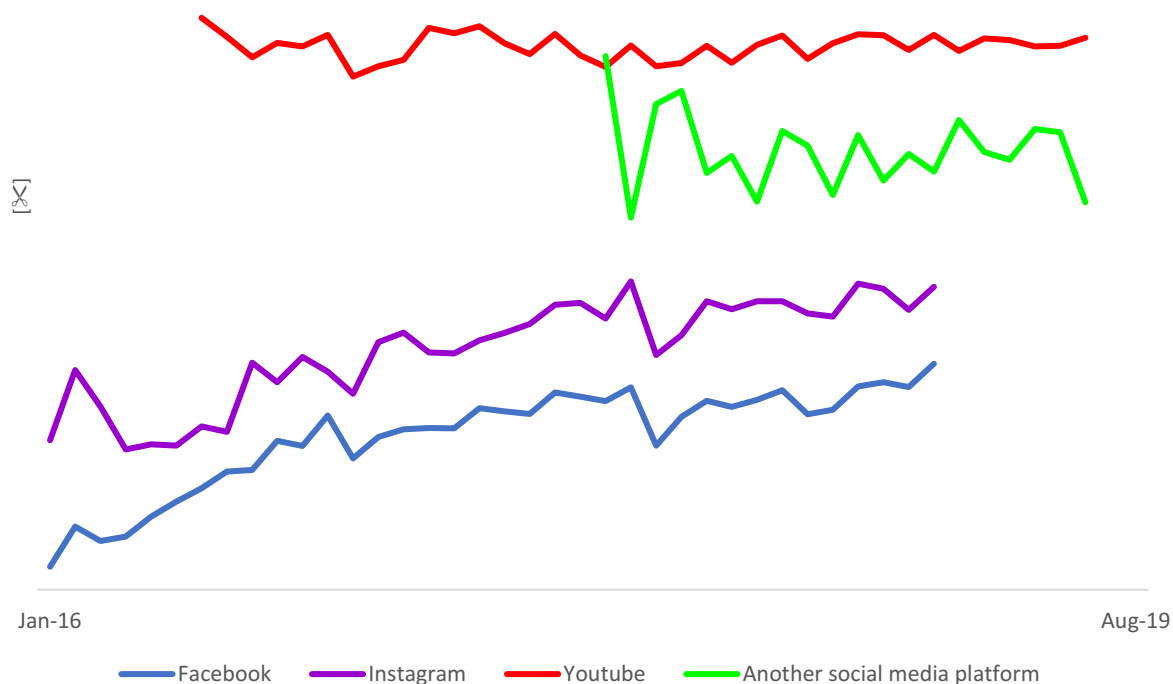
Source: CMA analysis of platform data.

151. Facebook's prices have risen over the last three years. Instagram's prices rose until September 2017 then started to fall, at the point that Instagram's volume of impressions sharply increased. Youtube has experienced steady prices in line with steady revenue and number of impressions. Another provider experienced a general decline in their prices from November 2017 to June 2019.
152. One confounding factor when looking at average prices may be the composition effects, particularly between video and non-video advertising. We have undertaken additional analysis to assess how the importance of video has changed over time.

## Video trends

153. Figure C.30 shows the monthly proportion of display advertising revenue accounted for by video in the UK from January 2016 to July 2019.<sup>40</sup>

**Figure C.30: Monthly proportion of video advertising revenue for selected display advertiser platforms, January 2016 to July 2019**



Source: CMA analysis of platform data.

154. This chart shows the proportion of display revenue accounted for by video. Facebook has historically offered a smaller proportion of video advertising than some of its rivals. However, over the past three years there has been a convergence towards video advertising.

### **Proposed further analysis of advertising outcomes**

155. We considering a number of options for further work in the second half of the study:

<sup>40</sup> Facebook's data submission does not provide monthly desktop revenue split between video and non-video. For Facebook we assume the total revenue split is the same as the mobile revenue split.

- analysis of revenue shares for different segments of customers (for example segmenting by size or by whether or not customers use a media agency);
- further analysis on the distribution of prices and comparisons of prices across suppliers; and
- further analysis of the extent of monetisation and how this has changed over time.

## Open display advertising outcomes

### *Introduction*

156. This section examines a number of features of the open display advertising market by collating market data collected from most of the largest advertising intermediaries supplying the UK market, including the Google ad tech stack. We also draw on evidence from other relevant published studies that look at open display advertising in the UK.
157. For the purpose of this analysis, open display advertising includes all digital display ads (including Video, Banner and Native formats) that are purchased and sold via a digital advertising intermediary<sup>41</sup> which is not the publisher itself (therefore, this does not include digital display advertising that is purchased from publishers who own the inventory, such as Facebook via an online portal or interface – the ‘owned and operated’ channel). Also included is all other UK display advertising which is not sold through the owned and operated channel. Most notably this will include so-called ‘direct deals’, which are purchased and sold via manual processes such as insertion orders, directly from the publisher. The sections below outline analysis of the following features of open display advertising in the UK:
- the size of open display advertising in the UK;
  - market shares of the major supply side platforms (SSPs)<sup>42</sup> supplying the UK market;

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<sup>41</sup> Such as a DSP or ad network, for these purposes we do not count media agencies as a digital advertising intermediary.

<sup>42</sup> We use a broad definition of SSPs which includes all publisher-facing intermediaries. This includes ad networks, such as Facebook Audience Network (FAN) or Taboola, which provide end to end intermediation for the sale of digital advertising between advertisers and publishers.

- market shares of the major demand side platforms (DSPs) supplying the UK market; and
- the average fees charged by DSPs and SSPs supplying the UK market.

### ***The size of the open display advertising in the UK***

158. We estimated value of media spend by advertisers through the open display channel using a the ‘top-down’ method that uses data from Google’s publisher ad servers: Google Ad (in its capacity as an ad server), Google AdSense and Google AdMob as the basis of the estimate.
159. The publisher ad server is the tool that places digital display advertising on a content publisher’s website or app. All display advertising is placed on a website or app by an ad server. From our discussions with industry participants we understand that Google’s share of ad serving in the UK is very high (circa 90%). Therefore, the vast majority of display advertising served to UK users will be served by Google. We therefore consider that data from Google’s ad servers is a reasonable basis for an estimate of the size of open display advertising spending in the UK.
160. From our discussions with Google we understand that the total number of display ads that are served by Google to third-party (ie non-Google owned and operated) websites or apps is the sum of ads served to third parties via Google Ad Manager, Google AdSense and Google AdMob. Google has provided us with data on the number and value of ads served by Google Ad Manager, Google AdSense and Google AdMob to UK IP addresses. We have used this data to estimate the total value of open display advertising in the UK. We explain in more detail how we have constructed such estimate below.
161. The data can be broken down into two main categories:
- ads that have been through Google’s programmatic auctions such as AdX Authorised Buyers and Exchange Bidding; and
  - ads that have arrived at Google ad servers from other routes, including from third-party ad networks or SSPs via header bidding, directly from third-party ad networks or SSPs, and ‘direct reservations’ ie deals arranged directly between advertisers and content publishers.
162. The total value of display ads served to third-party websites by Google is the sum of the total value of ads in these two categories. However, although Google is able to directly observe the price of ads that pass through its own programmatic auctions (‘Google programmatic’), it is not able to observe the price of those ads that arrive at ad servers via other routes (‘non-Google

programmatically'). It is, however, able to observe the number of non-Google programmatic ads.<sup>43</sup> In order to estimate the total value of the non-Google programmatic ads we have had to make assumptions about the average price of these and multiply this by the number of ads.<sup>44</sup>

163. We have then made an upwards adjustment to the estimated values of both Google programmatic and non-Google programmatic ads to account for the fact that values reported by Google do not include fees charged by demand or supply side intermediaries. This adjustment has the effect of converting the estimated ad value from the amount received by publishers to something closer to the amount spent by advertisers. As Google explains, the reported ad values are 'the value the publisher would realise if it had a 100% revenue share in Google's programmatic auction. Demand-side and supply-side fees (that is, what the CMA is referring to as gross commissions) are not included in this value whether the ads passed through the Google ecosystem or not'.<sup>45</sup> We have made an upward adjustment to the ad values to reflect typical charges made by demand and supply-side intermediaries likely to have been deducted from the ad value before it reaches the Google ecosystem<sup>46</sup> (note that in the case of some ad spend other fees in addition to these may also have been deducted before it reaches the Google ecosystem).<sup>47</sup> The adjustment differs depending on whether the ads are Google programmatic or non-Google programmatic, as the former can only have incurred demand side fees before entering the Google ecosystem,<sup>48</sup> whilst the latter are likely to have incurred both demand-side and supply-side fees.<sup>49</sup>

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<sup>43</sup> See 'Introduction to questions relating to ad server data' from 'Google Digital Advertising Market Study Submission due 28 October 2019'.

<sup>44</sup> We have assumed the average CPM of non-Google ads is \$2. This is based on the average CPM of ads delivered to UK users passing through SSPs and ad networks. We have analysed data from the major SSPs and ad networks for a similar time period and whilst there is some considerable variation in the average CPM across them, the weighted average CPM is slightly in excess of \$2.

<sup>45</sup> Google Digital Advertising Market Study Submission due 28 October 2019, paragraph 36.

<sup>46</sup> This adjustment is based on our analysis of fees charged by SSPs, DSPs and ad networks, which suggests that average DSP fees are 19% of media spend, average SSP fees are 15% and average ad network fees are 32%.

<sup>47</sup> Other fees would include media agency/trading desk fees, third-party data costs, third-party attribution and ad verification costs. At the stage of the interim report we do not have good quantitative data on the value of these and therefore have not made any adjustment to the value of ads served to account for them. It is our understanding that fees charged by demand and supply-side intermediaries account for the majority of fees likely to be deducted before ad spend reaches the Google ecosystem.

<sup>48</sup> Google programmatic auction operates on a revenue share basis, whereby it deducts its charges for these services from the ad value it passes on to publishers. According to Google's definition of its reported ad values for Google programmatic ads, these supply-side charges will be included in the ad value. Based on our analysis of DSP fees we assume that on average DSP fees charged on ads entering the Google programmatic auction to be 20%.

<sup>49</sup> This includes where ads enter the Google programmatic auction via an ad network which has both advertiser and publisher facing services. Based on our analysis of DSP, SSP and ad network fees we assume that on average the fees charged on non-Google programmatic ads to be 35%.



**Table C.7: Estimated value of display advertising spend on ads served by Google**

		<i>Value of ad spend (£m)</i>
Total ads served by Ad Manager	From Google programmatic auctions	£350-£400
	From non-Google programmatic auctions	£1,100-£1,150
Total Ads served via AdSense		£100-£150
Total Ads Served by AdMob		£150-£200
<b>Total</b>		<b>£1,500-£2,000</b>

Source: CMA analysis of Google's data.<sup>50</sup>

164. The estimates in table C.7 show that the value of display ads served by Google was £1,500-2,000bn in 2018. If ads served by Google account for around 90% of all display ads, as our discussions with industry parties suggest, then this would suggest that the value of advertising spend on open display advertising in the UK was around £2bn in 2018.<sup>51</sup>
165. The top-down estimate for the value of UK open display advertising is similar to an IAB estimate of £2.26bn for UK 'non-social' display advertising expenditure.<sup>52</sup> Differences between our estimate and the IAB could arise for a number of reasons, including the definitions of the market segments,<sup>53</sup> the scope of the coverage of the types of transaction<sup>54</sup> and methodological differences.<sup>55</sup>

### ***SSP shares of supply***

166. We have used the data collected from individual publisher-facing intermediaries, described above, to calculate some indicative shares of supply for SSPs. We use a broad definition of SSPs which includes all publisher-facing intermediaries. This includes ad networks, such as FAN or Taboola, which provide end-to-end intermediation for the sale of digital advertising between advertisers and publishers. We calculated the shares of supply for each individual SSP and ad network as the value of ads sold by each as a

<sup>50</sup> We note these estimates are based on internal figures provided by Google that had not been subject to audit.

<sup>51</sup> These estimates are sensitive to the underlying assumptions about the average CPM for non-Google programmatic ads and the share of advertising spend taken by advertising intermediaries before it reaches the Google ecosystem. If we assume that the average CPM of non-Google programmatic ads is \$1.5, then the estimated value of UK display advertising in 2018 falls to £1.67bn, while it increases to £2.1bn if the assumed average CPM of these ads is \$2.2. A reduction in the assumed 'take-rate' of demand and supply-side intermediaries from both Google (from 20% to 10%) and non-Google programmatic (from 35% to 25%) spend before it reaches the Google ecosystem reduces the estimate to £1.74bn, whereas an assumed 10% increase in these take rates increases the estimate to £2.3bn.

<sup>52</sup> Social display includes advertising on platform such as Facebook, Snapchat, Instagram and YouTube.

<sup>53</sup> Our understanding is that the IAB definition of 'non-social' display advertising closely corresponds to our definition of open displays advertising.

<sup>54</sup> The IAB definition of the UK is perhaps slightly wider than the CMA's, being 'revenue earned by internet media companies in the UK, designed and intended for an audience in the UK.', whereas the CMA definition is for ads delivered to UK users.

<sup>55</sup> The IAB bases its estimate on an extensive survey of publishers, media agencies and digital advertising intermediaries and modelled revenues for a number of market participants, including Google and Facebook. As with the CMA estimate, a number of assumptions will need to be made to turn the raw data into an overall estimate.

percentage of the total value of ads sold by all publisher-facing intermediaries for which the CMA received data.<sup>56</sup>

167. We set out estimates of SSP shares of supply in Table C.8 below. As we are estimating market shares of entities that operate at the same point in the supply chain, we have not made any adjustments to the values of ads sold to reflect fees deducted from advertising expenditure before reaching the SSP or ad network.

**Table C.8: Estimated shares of supply of SSPs (July 2018 to Jun 2019)**

<i>SSP/Ad exchange</i>	<i>Market share (as % of the value of ads sold)</i>
Google AdX	[25%-35%]
Google AdMob	[10%-20%]
FAN	[5%-15%]
Google AdSense	[5%-15%]
Others (Appnexus, Rubicon Project, Teads, Index Exchange, Outbrain, OpenX, Pubmatic, Triplelift, Smart, Verizon-Oath)	[25%-35%]

CMA analysis of SSPs' and Ad Exchanges' data.

168. The SSP share of supply estimates set out in Table C.8 show that the Google family of publisher-facing intermediaries have a strong market position. Google accounts for [40% to 60%] of the value of ads sold across all of the SSPs and ad networks.<sup>57,58</sup> Of the pure SSP intermediaries, Google AdX is by far the largest, with its share of value of ads sold being [25% to 35%], which is more than double that of the next largest SSP.

### ***DSP shares of supply***

169. We have received data on the value of UK display advertising inventory purchased from all major DSPs who operate in the UK. Our understanding is that these DSPs will account for the vast majority of UK digital display advertising inventory purchased via a DSP.<sup>59</sup> We set out estimates of DSP shares of supply in Table C.9 below. We calculated the market shares for each individual DSP as the value of ads purchased by the DSP as a percentage of the total value of ads sold by all DSPs for which the CMA received data.

<sup>56</sup> The CMA also notes that there will be a number of SSPs or ad networks, outside of those the CMA has received data from, who supply into the UK. Whilst there are a wide range of publisher facing intermediaries who sell UK advertising inventory, our understanding is that the vast majority of UK display advertising is sold by a fairly small number of intermediaries

<sup>57</sup> By way of comparison, the Plum Consulting Report 'Online Advertising in the UK' suggested an indicative range of 25% to 35% for Google's share of the 'revenue from online display advertising inventory traded in the open market, excluding video' passing through SSPs. It is unclear exactly what has been included in the definition of SSP in these calculations and whether, for example, it includes Google AdSense and Google AdMob, which are often referred to as ad networks rather than SSPs.

<sup>58</sup> We note these estimates are based on internal figures provided by Google that had not been subject to audit.

<sup>59</sup> Whilst there are a wide range of DSPs who purchase UK display advertising inventory, our understanding is that the vast majority of UK display advertising is purchased through a fairly small number of intermediaries.

**Table C.9: Estimated shares of supply of DSPs (July 2018 to Jun 2019)**

<i>DSP</i>	<i>Market share (as % of value of ads purchased)</i>
Google DV 360	[35%-45%]
Google Ads	[15%-25%]
Appnexus - Xandr	[5%-15%]
TTD	[5%-15%]
Others (Criteo, Amazon DSP, Quantcast, Verizon, Adobe, DataXu, Adform)	[15%-25%]

Source: CMA analysis of DSPs' data.

170. The DSP market share estimates show that Google is by far the largest player in the market, accounting for [50% to 70%] of the total value of ads purchased (via DV 360 and Google Ads) by the DSPs from whom the CMA received data.<sup>60</sup>

### ***Fees/charges and revenues shares of DSPs and SSPs***

171. When digital display advertising is sold and purchased through the intermediated channel, there are a number of fees/charges that are deducted from the initial advertisers' expenditure by the various intermediaries that are involved in the sales/purchase of the advertising inventory before it reaches a content publisher. This is often referred to as the 'ad tech tax'.

172. As we explain in Appendix H, there are a number of different routes across the intermediated supply chain that advertising expenditure can follow. The exact number and scale of deductions from the initial spend will therefore depend on the number and types of intermediaries that are involved in the sale/purchase of advertising inventory, as well as the types of services that publishers and advertisers purchase from these intermediaries. The deductions from the initial advertising spend will include some or all of the following:

- Media agency/Trade desk fees – fees associated with the planning and execution of digital ad campaigns on behalf of advertisers;
- Demand-side/DSP fees – fees associated with the purchasing of digital display advertising on behalf of advertisers or media agencies; services provided by demand-side intermediaries include provision of the technology platform to make the purchase, audience targeting and bid optimisation;

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<sup>60</sup> By way of comparison, the Plum Consulting Report 'Online Advertising in the UK' suggested an indicative range of 30% to 50% for Google's DV 360's share of the 'Share of revenue from online display advertising inventory traded in the open market, excluding video' passing through DSPs.

- Supply-side/SSP fees – fees associated with the sale of digital advertising on behalf of publishers, with services including provision of the technology platform and ad exchange services;
- Publisher ad server fees – fees associated with the final selection of the ad to be displayed on a website or app and delivery of the ad creative to the website or app;
- Targeting data fees – many advertisers and, to a lesser extent, publishers purchase data from third-party data providers for the purpose of achieving better targeted advertising; and
- Ancillary services fees – fees for services such as ad verification and attribution.

173. In the sections below we set out the initial evidence we have gathered on demand-side/DSP and supply-side/SSP fees.

#### *Demand-side/DSP fees*

174. We have received evidence about fees/charges from all of the major DSPs who operate in the UK. The evidence contains details on how they charge for the services they offer as well as the total amount they charge for these services.
175. DSP have reported the fees that they charge directly for DSP services. What is covered by these direct DSP fees varies across DSPs depending on the services they provide. At the most basic level advertisers can purchase ‘self-service’ DSP services, in which case the DSP essentially provides the technology platform for advertisers to execute the purchase of advertising inventory and little else. However, some DSPs also offer ‘managed services’ whereby staff from the DSP may offer input into the planning and optimisation of an ad campaign (so that the DSP is operating in a similar manner to a media agency’s trading desk). In addition, many DSPs also offer more advanced service options such as audience targeting, bid/expenditure optimisation, the ability to track ad viewability, frequency capping and the ability to manage ad campaigns across domains, formats and devices.
176. These direct DSPs’ fees are typically charged as a percentage of advertisers’ media expenditure on the platform and the fees are netted off the expenditure by the advertiser prior to the DSP submitting a bid on behalf of advertisers for media inventory. This fee will typically vary depending on the exact services purchased by an advertiser. In addition, it is common for DSPs to also charge for some of the services mentioned above outside of their main percentage

spend charge. These additional charges are typically volume-based charges (CPM) and they generally represent a very small proportion of the overall charge to advertisers. There are also a couple of atypical charging models amongst DSPs, including one DSP that charges a main fee as a fixed CPM charge (instead of a percentage of media spend) and another whose main fee is charged as a fixed monthly fee (which varies, to some extent, with the volume of bid traffic from an advertisers on the platform). It is common that the overall size of the fees DSPs charge to advertisers will vary with the overall level of an advertiser's spend and this can be based on a standard 'rate-card' or determined by individual negotiation of rebate/discounts with individual advertisers or media agencies.

177. In addition to the fee charged directly for their services, DSPs may also levy fees to advertisers on behalf of third parties whose services can be purchased through the DSP. Most commonly these include data/audience targeting services and ad verification services.
178. We have analysed data on direct DSP charges. This analysis does not include charges made by DSPs on behalf of third parties, which will be in addition to direct DSP fees (the scale of these fees is something that will be looking at in the second part of the market study). In relation to ads seen by UK users, DSPs have reported to us data on the 'value of ads purchased' by the DSP and the total value of 'fees charged directly for the provision of DSP services'. The fee percentage is then calculated as the total direct DSP fees divided by the value of ads purchased.
179. The weighted average fee percentage across all DSPs for whom we have data is 18%. There is significant variation in the proportion of media spend retained by DSPs as charges for their services. This variation largely reflects differences in the services that have been provided – for example one DSP may be exclusively a self-service platform whereas for another almost all of its customers may purchase managed services – and for this reason comparison between the fees charged by different DSPs is not straightforward.

#### *Supply-side/SSP fees*

180. We have received evidence about fees/charges by all the major SSPs and ad networks who operate in the UK. The evidence contains details on how they charge for the services they offer as well as the total amount they charge for these services.
181. The evidence shows that there is a significant difference between the level of charges of SSPs and those of ad networks. This difference reflects differences in the way in which SSPs and ad networks operate. SSPs are

purely publisher-facing and offer publishers services through which they can sell advertising inventory. However, advertisers cannot purchase inventory directly from an SSP; instead, they must do this through a demand-side intermediary which in turn purchases inventory from an SSP. Ad networks, on the other hand, are both publisher and advertiser-facing and offer services both to publishers to sell advertising inventory and also to advertisers to purchase it. As a consequence, the charges by ad networks tend to be much higher than those of SSPs.

182. SSPs and ad networks generally charge on a revenue share basis, whereby they take a percentage of the revenue generated on behalf of publishers for the sale of advertising inventory. All SSPs and ad networks we received evidence from stated that they operated mostly on a revenue share basis and that this revenue share constituted the vast majority of their overall revenue. It was noted by most SSPs/ad networks that the scale of the revenue share tended to vary depending on whether the inventory was sold via a private marketplace or an open auction (with a higher revenue share retained for open auctions).<sup>61</sup> None of the SSPs or ad networks stated that they charged any form of the controversial so called 'buy-side' fees,<sup>62</sup> although this is something that we would like to explore in more detail in the second half of the market study. This may reflect moves towards greater transparency in the digital advertising supply chain through industry initiatives.<sup>63</sup>
183. We have examined evidence on the scale of fees charged by the major SSPs operating in the UK as a percentage of expenditure on their platforms.<sup>64</sup> SSPs have reported to us data in relation to ads seen by UK users on the 'value of ads sold' by the SSP and the total value of 'fees charged directly for the provision of SSP services'.<sup>65</sup> The fee percentage is then calculated as the total direct SSP fees divided by the value of ads sold.
184. The overall weighted average of SSP/ad network fees as a percentage of expenditure on the platform was 22%. As discussed above, there is a significant difference between the fee percentages charged by SSPs and by

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<sup>61</sup> For an explanation of the different paths through which digital advertising can be sold, including open auctions and private marketplaces, see Appendix H.

<sup>62</sup> This describes when an SSP takes an additional share of revenue by, for example, deducting an amount from a bid submitted by a buyer before passing it to the publisher ad server.

<sup>63</sup> See, for example, the open letter signed by a number of leading SSPs committing to a number of transparency principles including 'No hidden fees of any kind. One clear fee assessed per auction, with fee arrangements made explicit to the party being charged' and 'Auditability of supply source, requests, winning bids, impressions, and clicks through every step in the supply chain'. See: <https://rubiconproject.com/insights/thought-leadership/principles-better-programmatic-marketplace-open-letter-advertisers-publishers/>.

<sup>64</sup> Note this will be less than total media spend as demand side fees will have been deducted prior to the expenditure reaching an SSP.

<sup>65</sup> As was the case for the DSP fee data, directly charged fees relate only to fees charged directly by SSPs and ad networks for their services. Some SSPs do charge fees in addition to these on behalf of third parties however, this tends to be much less common and on a lower scale than is the case for DSPs.

ad networks. The weighted average fee percentage charged by pure SSPs is 15%, whereas the fee percentage for ad networks it is 33%.

### ***Share of revenues that Google and Facebook pass to publishers when acting as an intermediary on behalf of publishers***

#### *Introduction*

185. We also requested 2018 revenues and associated outpayments (ie revenues shared with publishers) in relation to UK open display advertising from both Google and Facebook.
186. Where Google and Facebook provide the whole of the ad tech stack from taking advertisers' money through to sharing digital advertising revenues with publishers, then the proportion that such outpayments comprise of revenues earned should, in principle, provide an estimate of the level of the ad tech tax.

#### *Google*

187. In the Table C.10 below we set out the revenues Google handles on behalf of publishers by broad type of publisher, splitting these revenues out between whether the revenues remained wholly within the Google ecosystem or not. We then have the total outpayment for each broad type of publisher to deduce the amount of revenue retained by Google.

**Table C.10: Google's total UK display advertising intermediation revenues, outpayments & retained revenues for 2018, USD millions**

[X]

Source: CMA analysis based on Google's data.

188. We have included in this analysis the advertising revenues Google raises when YouTube content providers satisfying Google's qualifying conditions then opt to monetise their content. In this context Google is acting as an intermediary on behalf of YouTube content providers.
189. In Table C.11 below we use the total revenues and outpayments figures set out in Table C.10 above to derive the proportion of total revenues retained by publishers.

**Table C.11: proportion of Google's revenues shared with publishers / retained by itself for UK display advertising intermediation (% for 2018)**

[X]

Source: CMA analysis based on Google data.

190. Based on this analysis, small publishers using Google’s AdSense for Content product to monetise their advertising inventory retain on average [60-70] % of the revenues earned by Google from advertisers. This proportion rises to [70-80] % for large publishers using Google Ad Manager. The figure for publishers of apps is [60-70] % and [60-70] % for those YouTube content providers monetising their content.
191. The analysis above, however, does not fully reflect the extent to which Google’s publisher customers may be incurring an ad tech tax for the following reasons:
- Firstly, the analysis reflects Google’s revenues and outpayments: if other intermediaries are involved at some point in the sales / purchase chain and charge for services provided, then there will be some missing charges. An example of such an intermediary would be a non-Google DSP which an advertiser uses but which in turn uses a Google SSP to purchase inventory.
  - Secondly, whilst Google handles all the monies it receives from advertisers to purchase inventory, it only shows as revenue the full value received from advertisers where it also sets the price for that inventory.<sup>66</sup> We are aware of two situations where Google does not set the price and therefore only shows the commission it receives for the service it has provided within its revenues and not the full advertiser expenditure:
    - where Google facilitates a ‘direct deal’ between advertisers and publishers over its programmatic platform; here advertisers and publishers establish the price as part of their direct negotiations; and
    - where Google’s DSP is used by its advertiser clients to handle a particular campaign and that DSP then transacts with non-Google DSPs and SSPs to purchase advertising inventory. In these cases, it will be a non-Google SSP who will be setting the price where the inventory in question is sold by auction.
  - Thirdly, non-Google firms may charge for some essential ad tech services (eg advertiser or publisher ad serving) directly to advertisers or publishers, rather than their fees being deducted from amounts passing down the value chain to Google’s SSP publisher customers.

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<sup>66</sup> This approach reflects the standard approach to accounting for revenues reflecting the distinction that where a firm is acting as an agent, rather than as a principal, it only reports as revenue the commission it earns.



192. In the second case outlined in the above paragraph Google will only report its commission within revenues and no amount will be included in outpayments (because the commission is net of outpayments). The first and third cases reflect services not provided by Google and therefore will not be reflected in Google's numbers at all.
193. The first and third reasons set out in paragraph 193 will lead the percentages referred to in paragraph 192 to understate the level of the 'tax'. The impact of the second reason is directionally unclear.<sup>67</sup>
194. This means that, depending on the significance of these type of transactions for the publisher groups identified in the tables, the proportions highlighted will understate the extent of the 'ad tech tax'. Using Google's accounting information, we are currently unsighted as to the materiality of the commission-only figures included within the UK revenue figures Google has provided us.
195. We continue to seek to understand the basis of Google's reporting to us of its UK open display revenues and outpayments.

### *Facebook*

196. In Table C.12 below we set out the revenues Facebook handles on behalf of publishers by broad type of publisher. Facebook acts as a display advertising intermediary only in so far as it seeks to acts as an SSP on behalf of independent publisher customers (mobile web and apps only). Furthermore, as the only way for advertisers to reach these users using Facebook's user data for targeting purposes is to purchase through Facebook's own (DSP) purchase platform, the revenues earned by Facebook will equate to the gross amount of advertiser spend with Facebook.

**Table C.12: Facebook's total UK display advertising intermediation revenues, outpayments & retained revenues for 2018, USD millions**

[X]

Source: CMA analysis based on Facebook's data.

197. Facebook's definition of small and large publishers is not the same as Google's, so there may be limited comparability between the two sets of information in this respect.

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<sup>67</sup> Where only commission is reported, outpayments to publishers would be reported as zero whereas revenues would include the commission earned. As we don't know what the proportion that these commission only figures are of ad spend, it is not possible to determine the impact.

198. In the C.13 below we use the total revenues and outpayments figures set out in the table above to derive the proportion of total revenues retained by publishers.

**Table C.13: proportion of Facebook' revenues shared with publishers / retained by itself for UK display advertising intermediation (% for 2018)**

[X]

Source: CMA analysis based on Facebook's data.

199. As in the case of Google, some advertisers and publishers using FAN may incur additional ad tech fees regarding this inventory, eg for advertiser and publisher ad serving.

### ***Proposed further analysis of ad tech fees and charges***

200. We are intending to carry out further work to investigate money flows along the intermediation chain and the level of the 'ad tech tax' in the second half of the study, building on the analysis outlined above.

201. First, we plan to update and extend our analysis of fees/charges and aggregate revenue shares of different ad tech players. We anticipate there being two main elements to this work:

- Confirming the existing analysis of DSP and SSP revenues and charges – we are currently clarifying our data with market participants to ensure it has been provided on a consistent basis and that we understand what is included within different revenue figures. We are also seeking to clarify whether there is a difference between the amount that is billed to advertisers and the reported value of ads sold and if so, what this difference is.
- Extending the analysis to other parts of the ad tech stack – this could include: fees charged by DSP and SSPs on behalf of third parties; fees charged by media agencies/trading desks; fees charged by third party data providers and DMPs; and ad verification/ad attribution service charges.

202. This additional work should allow us to compare our own estimates of aggregate revenues across the ad tech stack with external estimates of the 'ad tech tax', for example as estimated by the ANA/ACA.

203. Second, we plan to extend our accounting analysis of Google and Facebook's ad tech revenues. Using this analysis we hope to gain further intelligence about how the aggregate fees charged break down between different activities.

204. Third, we are intending to compare the results of our aggregate level analysis of fees and charges with an analysis of transactions-level data – i.e. examining advertiser payments, intermediary fees and publisher revenues for transactions involving specific pieces of inventory.
205. As noted by several external parties who have attempted to estimate financial flows in the open display market, a major challenge for any analysis is in being able to match transactions between different intermediaries in the absence of common identifiers or very granular time stamp information.
206. Therefore, our intention is to focus on gathering transactions-level data from Google and assessing prices and revenues for transactions where they provide both DSP and SSP services. This would only provide a partial analysis of overall fees (in contrast with our aggregate analysis, which covers the whole market). However, it would allow us to understand in greater detail where revenues are earned and how these vary across different transactions. It would also allow us to assess whether there is scope for intermediaries to earn 'hidden fees'.