

Valuing goods online and offline: the impact of Covid-19

Diane Coyle and David Nguyen

ESCoE Discussion Paper 2020-10

July 2020

Valuing goods online and offline: the impact of Covid-19
Diane Coyle and David Nguyen
ESCoE Discussion Paper No. 2020-10
July 2020

Abstract

This paper uses a survey representative of the UK online population to assess the willingness to accept loss of certain goods. We had conducted an initial survey in February, focusing on 'free' online goods and some potential substitutes and comparators. Consistent with other contingent valuation studies, consumers on average assigned valuations to many of these goods, particularly when benchmarked against revenue figures for the services. Our pilot studies, discussed in a forthcoming paper, also suggested that the actual valuations are not well anchored, but the methodology can give consistent rankings among goods. It is also a useful way to assess changes in valuations. Repeating the survey in May, during the UK, lockdown, we observed significant changes in the valuations of different goods and services, with some large differences by age and gender. In this sense the lockdown has acted as a natural experiment testing for the extent to which digital goods and physical goods are substitutes. These valuation changes may indicate which services are most valuable in a post-pandemic world where more activity takes place online. They also provide important, policy-relevant insights into distributional questions.

Keywords: digital services, valuations, lockdown

JEL classification: D12, D60, I31, C43

Diane Coyle, University of Cambridge and ESCoE, dc700@cam.ac.uk and David Nguyen, NIESR and ESCoE, d.nguyen@niesr.ac.uk.

Published by:
Economic Statistics Centre of Excellence
National Institute of Economic and Social Research
2 Dean Trench St
London SW1P 3HE
United Kingdom
www.escoe.ac.uk

ESCoE Discussion Papers describe research in progress by the author(s) and are published to elicit comments and to further debate. Any views expressed are solely those of the author(s) and so cannot be taken to represent those of the Economic Statistics Centre of Excellence (ESCoE), its partner institutions or the Office for National Statistics (ONS).

Valuing goods online and offline: the impact of Covid-19¹

Diane Coyle² and David Nguyen³

This paper uses a survey representative of the UK online population to assess the willingness to accept loss of certain goods. We had conducted an initial survey in February, focusing on 'free' online goods and some potential substitutes and comparators. Consistent with other contingent valuation studies, consumers on average assigned valuations to many of these goods, particularly when benchmarked against revenue figures for the services. Our pilot studies, discussed in a forthcoming paper, also suggested that the actual valuations are not well anchored, but the methodology can give consistent rankings among goods. It is also a useful way to assess changes in valuations. Repeating the survey in May, during the UK, lockdown, we observed significant changes in the valuations of different goods and services, with some large differences by age and gender. In this sense the lockdown has acted as a natural experiment testing for the extent to which digital goods and physical goods are substitutes. These valuation changes may indicate which services are most valuable in a post-pandemic world where more activity takes place online. They also provide important, policy-relevant insights into distributional questions.

¹ We thank Avi Collis, Joel Rogers & YouGov, and to Richard Heys & colleagues at the Office of National Statistics for their help and comments. This work was funded by the Office for National Statistics through the Economic Statistics Centre of Excellence.

² University of Cambridge and ESCoE.

³ National Institute of Economic and Social Research and ESCoE.

1. Introduction

Contingent valuation methods have been widely used in environmental economics to estimate the value of ecosystem services, either with no market price or characterised by externalities that drive a wedge between the market and social values. We have been exploring the applicability of these methods to ‘free’ digital goods, following Brynjolfsson et al. (2018), who found high values for services such as Facebook and Google search for which users do not have to pay a monetary price. Specifically, we wanted to calibrate these valuations by comparing them to other free goods, such as access to parks, and to paid-for substitutes, such as newspapers.

We therefore ran a survey (using YouGov’s online panel) at the end of February and beginning of March (ahead of the UK lockdown), following a series of pilots, to elicit respondents’ valuations for 30 goods. Following the lockdown, we repeated the survey on 14th May (before easing measures had begun) to see how the values had changed, and what this might tell us about changes in the economic welfare provided by different goods during periods of lockdown, given people’s preferences and their consumption opportunities. We consider gender and age differences. Our forthcoming paper will consider the wider methodological issues and results.

The Covid-19 lockdown has acted as a natural experiment providing insight into the changes in valuations, varying by age and gender, for a range of digital goods which are free to use and therefore do not provide market signals. We found there were large changes in both usage and willingness-to-accept valuations of some of the goods and services, such as online grocery shopping, online learning, WhatsApp and Netflix. The valuation of public parks also increased. There were declines in the case of some of the goods and services, such as LinkedIn and personal emails.

Younger age groups valued some digital services, such as online learning and Instagram and Twitter, far more highly than did older age groups, and the valuations they stated increased by more between February and May. Older people increased their valuation of online grocery shopping by substantially more than did young people, however. Women’s stated values for online grocery shopping also increased by more than men’s.

As in other work using contingent valuation methods, we found high willingness-to-accept valuations for the goods and services considered. These might be considered implausible when compared to benchmark figures such as average revenue per user, but our results between February and May suggest there is useful insight to be gained from changes in valuations, in rankings of the stated values attached to different goods and services, and in the comparison of valuations as between different groups.

2. Previous literature

There is a large literature on the use of contingent valuation methods in environmental economics and cultural economics (see Carson, Flores & Meade, 2001 and McFadden & Train, 2017 for surveys). Recently the approach has been applied in the context of digital goods and services, for which there is no direct market price, or where there are likely to be significant externalities including network effects, as part of a debate

about whether and how these should be accounted for in aggregate economic measurement.

In one of the first of these contributions applying contingent valuation methods, Brynjolfsson, Collis & Eggers (2019) used large-scale online choice experiments to elicit valuations of consumer surplus and concluded that the welfare value was large. For instance, in the incentive-compatible discrete choice experiments, the median US Facebook user needed around \$48 to give it up for a month, and \$322 for one year. Others have reported a range of median valuations – a lower figure of \$59 willingness-to-accept and a median \$1 willingness-to-pay in Sunstein (2018) to over \$1000 in Corrigan et al (2018).

The method was extended by Brynjolfsson et al (2019b) to calculate an extended GDP, GDP-B, who used estimates of consumer welfare elicited from online discrete choice experiments for a number of goods to calculate growth in the wider measure compared to conventional GDP, concluding that it would add 0.05 to 0.11 percentage points a year to US growth.

In a recent study Allcott et al (2020) found median annual valuations for Facebook of around \$100 using similar methods, but queried aspects of the methodology. For example, some studies did not require users to actually deactivate their social media accounts. In particular, though, the paper finds that willingness-to-accept valuations are not firmly anchored, and changed after users in their experiment had gone without Facebook: “We find that four weeks without Facebook improves subjective well-being and substantially reduces post- experiment demand.”

In our ongoing work, we are seeking to understand such findings in the context of growing interest in wider measures of economic growth and welfare (Heys, Martin & Mkandwire 2019). We used a UK survey of willingness-to-accept measures for a range of digital goods, other free goods, and marketed substitutes for digital goods.

3. The Surveys

The main survey with a sample size of 10,500 adults was conducted by YouGov between 27 February and 3 March and a smaller follow-up with a sample size of 1,600 ran from 14 -15 May.⁴

Survey participants were asked about their willingness to accept giving up access to 30 different goods for a period of time. Specifically, participants were asked to choose a sum of money based on pre-determined valuation bands as shown in Figure 1. For the main survey, half of participants were asked to give up access for a period of one month, while the other half was asked to consider twelve months. In the follow-up survey, we asked only about the twelve months.

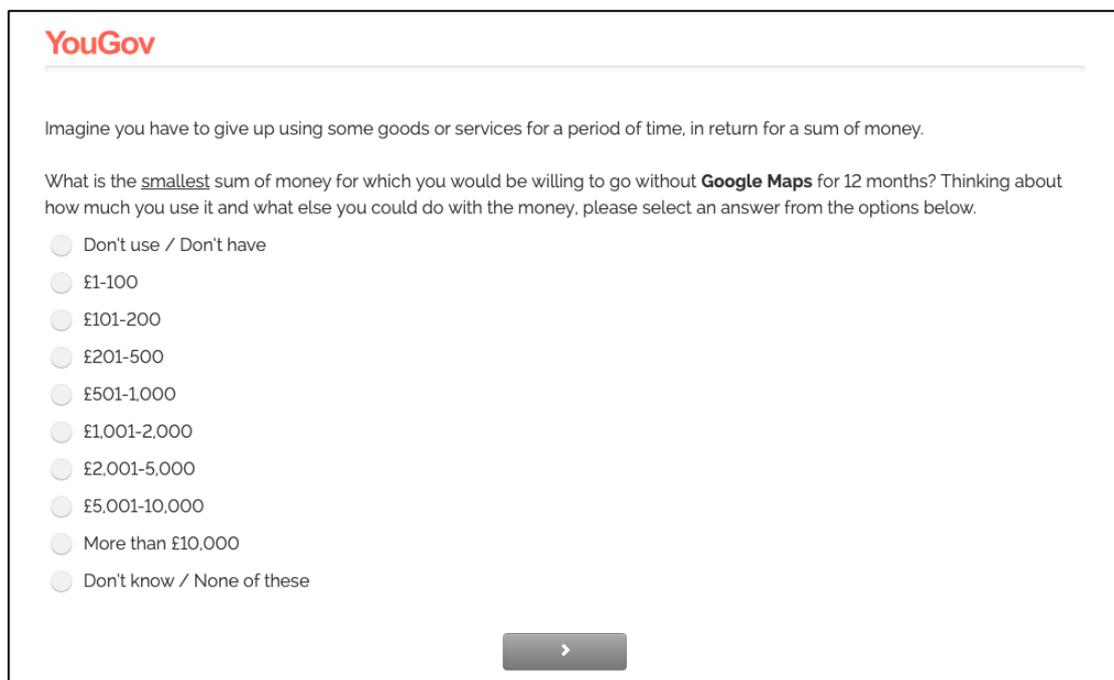
⁴ The first Covid-19 death in the UK occurred on the 5th March and the country officially went into lockdown on the 23rd March. The first steps in easing lockdown restrictions in the UK occurred on 13th May. Italy went into lockdown on the 9th March, the first country in Europe to do so. More details on the survey, including summary statistics can be found in Appendix 1.

Both surveys were representative of the population in terms socio-economic factors including age, gender, income, education and region. However, considering that 13% of households in the UK do not have access to the internet (Ofcom, 2019) our findings likely only hold for the UK's online population.⁵

In addition, we had previously run a number of pilots to test questions and valuation bands. A total of four pilots of approximately 1,600 adults each ran between March and November 2019. We tested:

- Open box questions versus using bands
- Different time periods (week, month, 3 months, 6 months, 12 months)
- Categories versus specific goods (e.g. “All social media” versus “Facebook”)
- Usage intensity

Figure 1. Typical survey question



The image shows a screenshot of a survey question from YouGov. The question asks: "What is the smallest sum of money for which you would be willing to go without **Google Maps** for 12 months? Thinking about how much you use it and what else you could do with the money, please select an answer from the options below." The options are radio buttons with the following labels: "Don't use / Don't have", "£1-100", "£101-200", "£201-500", "£501-1,000", "£1,001-2,000", "£2,001-5,000", "£5,001-10,000", "More than £10,000", and "Don't know / None of these". A grey arrow button is at the bottom right of the question area.

We selected 30 goods for the survey, based on 1) number of users and time spent on them; 2) goods used in the previous literature, to allow us to make some comparisons; 3) a wider coverage of categories than prior studies (for example including banking, gaming, news, and some non-digital goods that are potential substitutes). Where specific goods have high usage rates among the population (e.g. Facebook) we opted to asking about them specifically rather than at the category level (i.e. all social media). Asking about categories is more useful where there are many competing providers (e.g. ride-hailing services); however it is possible that people might not consider the full ramifications of giving up access (i.e. no substitutes) when compared to individual goods.

⁵ More details on the UK's online population can be found in Appendix 2.

4. The effects of lockdown on valuations: results

Usage change, February to May

There is a substantial variation in the level of usage of the different goods included in the survey (Figure 2). Personal email, search, TV and online banking are almost universally used among the online population, while some specific digital services are used by fewer people. Between the end of February and mid-May, there were some significant changes for some goods in the proportion of respondents saying they used or did not use them (Table 1).

As the two survey waves were only 10 weeks apart and people were asked to consider the next 12 months, one might not usually expect large changes in usage rates. However, due to the Covid-19 ‘shock’ we observe significant differences, which move in the expected direction.

While in February around 50% reported that they do not shop online for groceries, this had declined to 40% in the second survey wave. The share of people that do not use Skype, Facebook Messenger, Netflix and WhatsApp also decreased by around 5 percentage points. Other goods that saw a decline in non-usage rates are Facebook, online learning, mobile games, Amazon and Twitter.

On the other hand, the usage of various other goods has declined. For example, while in February around 41% reported they do not use consume newspapers this has increased to 48.5% by mid-May. In addition, the reported use of Google Maps, Radio, BBC iPlayer and cinemas has decreased somewhat.

Figure 2: Proportion (%) who *do not use*

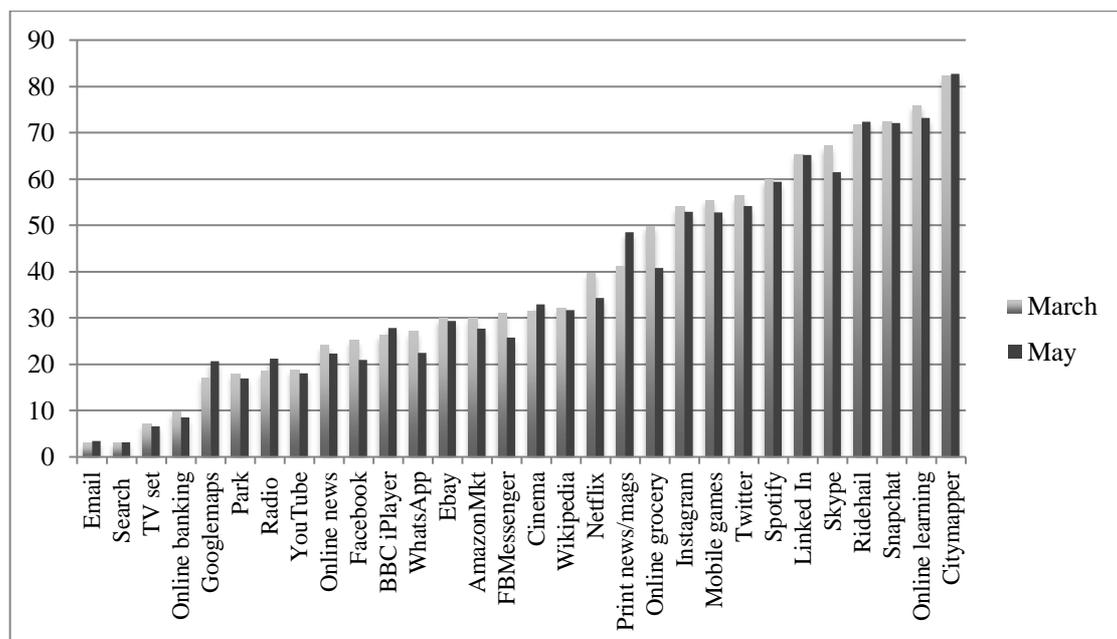


Table 1: Changes in usage, measured in % who *do not use*, ranked by February-May change (*in percentage points*)

Item	February	May	Change
Online groceries	49.84	40.76	-9.1%
Skype	67.10	61.47	-5.6%
Messenger	31.10	25.71	-5.4%
Netflix	39.69	34.37	-5.3%
WhatsApp	27.09	22.48	-4.6%
Facebook	25.26	20.89	-4.4%
Online learning	75.92	73.19	-2.7%
Mobile games	55.36	52.76	-2.6%
Amazon	29.99	27.64	-2.4%
Twitter	56.37	54.20	-2.2%
Online news	24.04	22.27	-1.8%
Online banking	9.80	8.53	-1.3%
Instagram	54.01	52.90	-1.1%
Public park	17.99	16.94	-1.1%
YouTube	18.81	18.03	-0.8%
Spotify	59.97	59.38	-0.6%
eBay	29.89	29.38	-0.5%
TV set	7.08	6.66	-0.4%
Wikipedia	32.14	31.75	-0.4%
Snapchat	72.41	72.09	-0.3%
LinkedIn	65.34	65.19	-0.2%
Online search	3.11	3.16	+0.1%
Citymapper	82.29	82.67	+0.4%
Personal email	2.94	3.37	+0.4%
Online ride hailing	71.67	72.38	+0.7%
Cinema	31.44	32.93	+1.5%
BBC iPlayer	26.28	27.78	+1.5%
Radio	18.43	21.24	+2.8%
Google maps	17.07	20.62	+3.6%
Printed newspapers	41.05	48.50	+7.5%

Changes in valuations, February to May

While the average valuations people report differ considerably across the 30 goods, we focus on the change in valuations over the period from end of February to mid-May. Table 2 shows the annual valuations in February and May as well as the percentage change. The magnitudes of the valuations themselves are largely consistent with the literature; our forthcoming paper will discuss in more detail on how to interpret them.⁶

The valuations changed in line with expectations and have increased the most for online grocery shopping (+47%), online learning (+25%), WhatsApp (+12%) and Netflix (+8%). They also increased for Facebook, public parks, physical TV sets at home, eBay, Facebook Messenger, mobile games, and Instagram.

At the same time valuations have decreased for Twitter (-27%), printed newspapers (-24%), Google Maps (-21%), and cinemas (-18%). There were also substantial

⁶ These are minimum valuations, as we are using the lower end of the valuation bands offered, shown in Figure 1 (i.e. £1, £101, £201, etc). While there is no obvious way to decide which value to choose, we err on the side of caution.

decreases in valuations for Citymapper, online ride hailing (e.g. Uber), Spotify, any radio (often listened to in cars), LinkedIn, personal email, and Wikipedia.

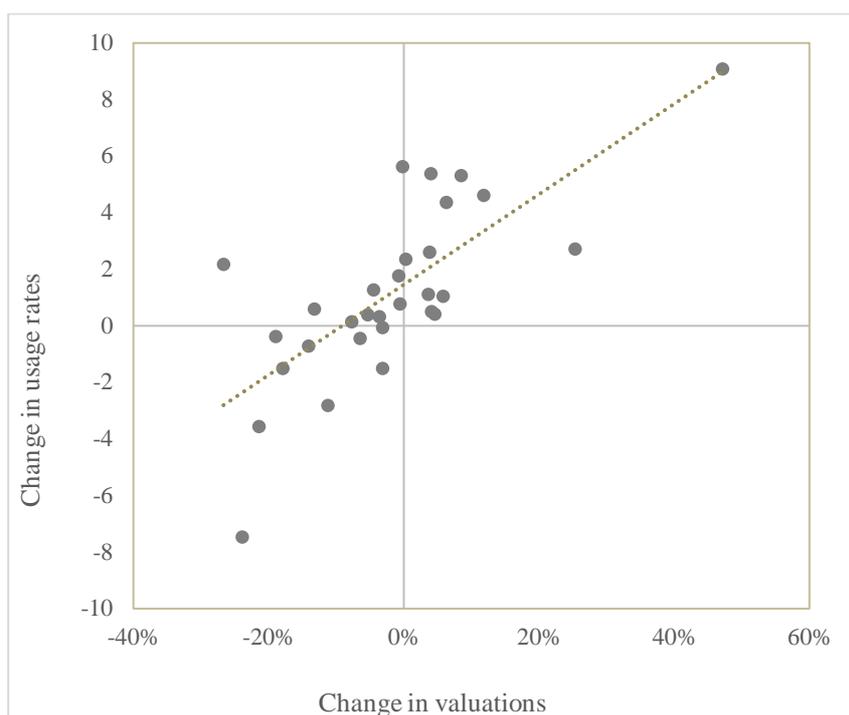
We also calculated the upper and lower 95% confidence bands for the annual valuations in both periods (see Table 2). This allows us to see whether the changes in valuations between February and May are statistically significant. In the case of increasing valuations, they are significant (i.e. outside the upper confidence band of February) in the case of online groceries, online learning, WhatsApp, Netflix, Facebook, public parks, and TV sets. For most of the decreasing valuations, the May valuations are outside the lower confidence band of the February figures, with the exceptions of online ride hailing, LinkedIn, Wikipedia and Snapchat.

Table 2. Annual valuations, ranked by February-May % change

Item	Feb	Conf. interval Feb		May	Conf. interval May		Change
	(in £)	(low)	(high)	(in £)	(low)	(high)	
Online groceries	720	656	783	1059	918	1199	+47.1%
Online learning	247	208	285	309	230	388	+25.3%
WhatsApp	1588	1496	1680	1774	1599	1950	+11.8%
Netflix	1267	1185	1349	1373	1219	1528	+8.4%
Facebook	1278	1195	1360	1358	1202	1514	+6.3%
Public park	1951	1848	2053	2063	1869	2258	+5.8%
TV set	3300	3182	3419	3449	3226	3673	+4.5%
eBay	787	723	852	819	696	943	+4.0%
Messenger	1088	1011	1166	1131	987	1275	+3.9%
Mobile games	592	534	650	614	506	721	+3.7%
Instagram	657	597	717	681	569	792	+3.6%
Amazon	1044	968	1119	1046	908	1185	+0.3%
Skype	335	290	379	334	251	416	-0.3%
YouTube	1399	1313	1485	1390	1234	1546	-0.6%
Online news	1253	1170	1336	1243	1092	1393	-0.8%
Online search	3095	2977	3214	2998	2777	3219	-3.1%
BBC iPlayer	821	757	885	795	677	914	-3.2%
Snapchat	350	304	396	337	255	419	-3.6%
Online banking	2790	2674	2906	2664	2455	2874	-4.5%
Wikipedia	694	633	756	657	547	767	-5.4%
Personal email	3402	3282	3522	3181	2958	3404	-6.5%
LinkedIn	238	201	275	220	155	284	-7.8%
Radio	1713	1617	1809	1520	1350	1689	-11.3%
Spotify	696	633	759	604	499	709	-13.3%
Online ride hailing	240	204	277	206	147	266	-14.1%
Cinema	719	657	780	589	486	693	-18.0%
Citymapper	174	142	207	141	90	192	-19.0%
Google maps	1307	1224	1390	1027	889	1164	-21.4%
Printed newspapers	566	510	621	430	342	518	-23.9%
Twitter	556	501	612	408	322	494	-26.7%

These changes in valuations were strongly positively correlated with changes in usage (Figure 3), with a correlation coefficient of 0.74.

Figure 3. Correlation between change in usage rates and change in valuations



The contingent valuation results can be compared to revenues per user for the service providers. Ofcom (2019) estimates various per capita revenues for online services in the UK in 2018.⁷ For example, online search was estimated to be £101, £45 for social media, £27 for free video streaming, £11 for online news, £1,094 for online shopping, £47 for online entertainment, and £63 for online gaming. For almost all of these (the exception being online grocery shopping in February), the stated valuations in our survey exceed these revenue per user figures by a large margin. This is consistent with findings of a large gap between willingness-to-accept and willingness-to-pay valuations (Sunstein 2019).

Age group differences, May

In order to compare the relative valuations of different age groups across goods, we computed the ratio of valuations reported by those aged under 50 to those aged 50 or above (Figure 4). On average, younger people tend to place a higher valuation on most of the goods included.

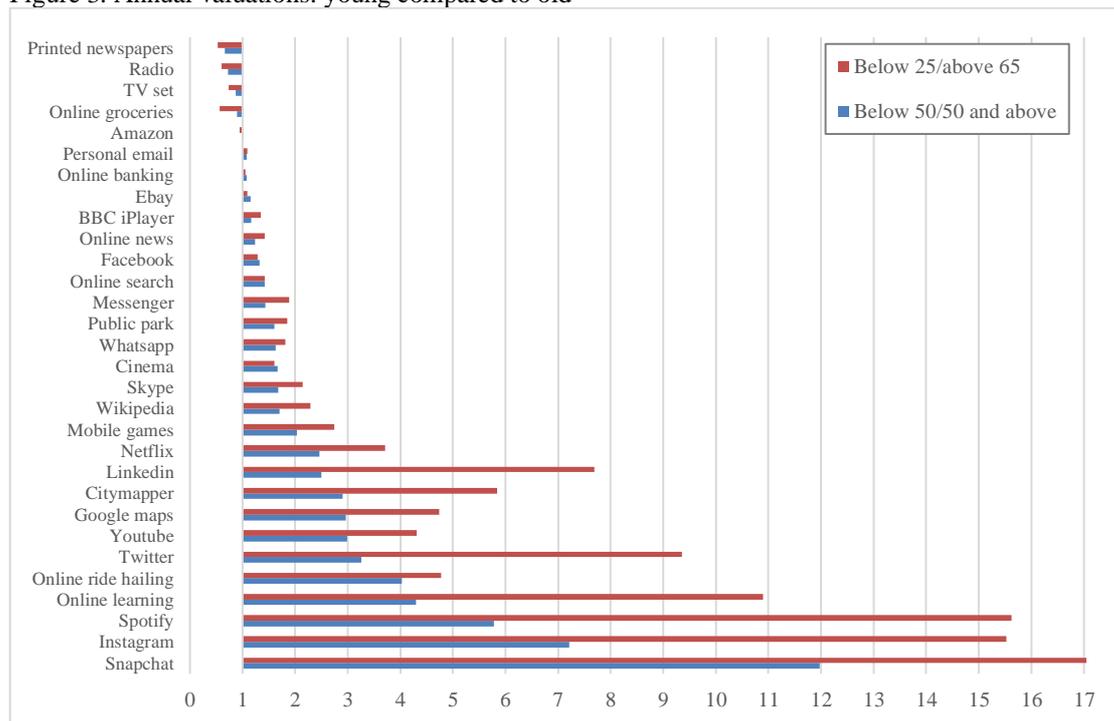
The relative difference is even more pronounced looking at the ratio between those aged 18-24 to those aged 65 or over. The difference in valuations in this case is most pronounced in the case of Snapchat (by 50 times), Instagram and Spotify (15 times), online learning and Twitter (10 times). The differences are less pronounced but still large when splitting respondents at the age of 50.

⁷ Based on estimations of UK market share in total global revenues of large businesses, averaged across population in the UK rather than actual users.

As expected, however, older people tend to value non-digital services more than the younger people. For instance, valuations of printed newspapers, radio, and a physical TV set were twice as high for those above 65 than for those aged 18-24. Older people also valued online grocery shopping more highly, which is perhaps also not a surprise given the age incidence of serious Covid-19 illness.

In the case of Amazon, personal email, online banking, eBay and BBC iPlayer there appear to be no significant difference in valuations between younger and older age groups.

Figure 3. Annual valuations: young compared to old



Notes: The ratio for Snapchat in the case of “Below 25/above 65” is off the scale with a value of 53. Category “Below 25/above 65” shows ratio of average valuations of those aged below 25 to those aged 65 and above. Category “Below/above 50” shows ratio of average valuations of those aged below 50 to those aged 50 and above.

Changes in valuations by age group, February to May

Changes in valuations differed across age groups. For example, while valuations of Facebook decreased by 2% to 4% for those aged 25-65, it increased by 26% for those aged 18-24 and by 38% for those aged above 65.

There were also stark differences in the case of online grocery shopping, which increased in value for all age groups apart from those aged 18-24. The value that people aged 65 and above attached to this increased by 127%, while for people between 25-64 it increased by 37%.

Wikipedia was another interesting contrast. For those aged 18-49 the value decreased by 13-16%, while for those aged 50 and above valuations increased by 14%.

Turning to the smaller changes, the valuation of mobile games decreased for the youngest and oldest age groups but increased for the two groups in the middle.

Online learning increased in stated value by between 20-40% for all age groups below 65, while its value decreased by 20% for those 65 and above.

The value that different age groups attached to public parks increased markedly for those aged 18-24 (+25%) and 25-49 (+13%), while it appeared to have decreased for the groups of 50-64 (-3%) and over 65 (-13%).

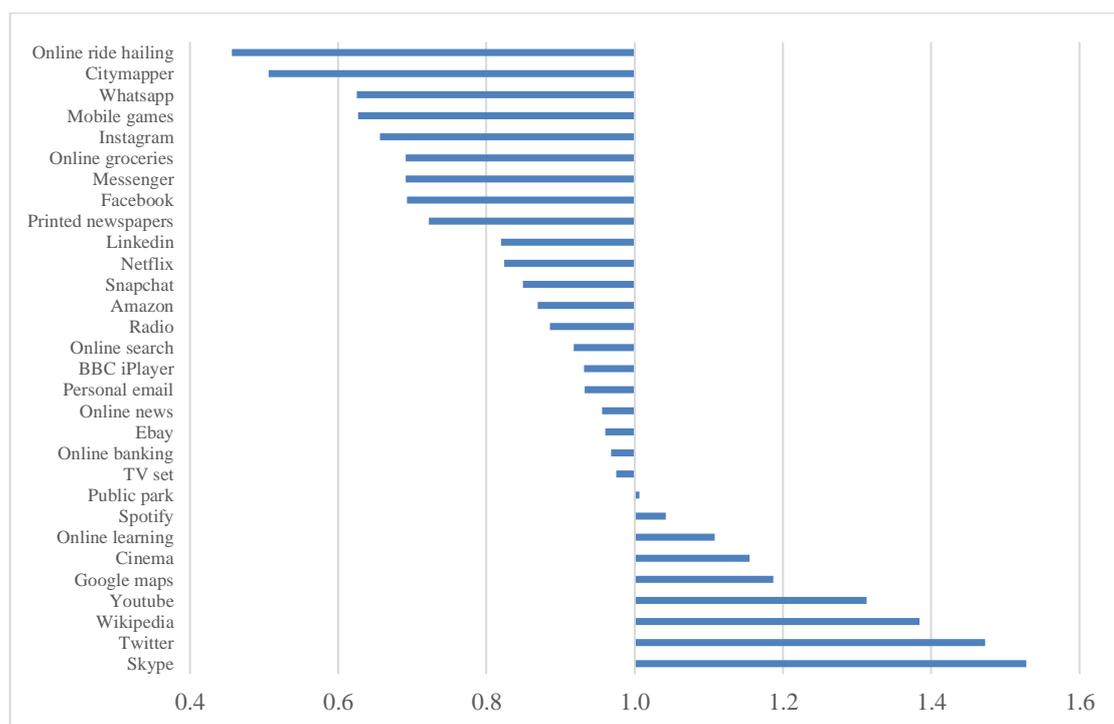
In another case, the value of the BBC iPlayer appears to have decreased for all age groups (between -2% to -9%), apart from those aged 18-24 (+16%). A similar pattern holds for radio.

Gender differences

Differences in valuations by men and women are also striking (see Figure 5). In the May results, for most of the goods, men appear to have a lower willingness to accept than women. The differences are most pronounced in the case of Skype and Twitter (male valuations around 50% higher) and online ride hailing and Citymapper (female valuations around 50% higher).

Valuations of women also were around a third higher for WhatsApp, mobile gaming, Instagram, online grocery shopping, Facebook Messenger, and Facebook. Men on the other hand attach higher valuations to Wikipedia (+38%), YouTube (+31%), and Google Maps (+19%).

Figure 5. Annual valuations: ratio of male to female, May 2020



There were some large changes between February and May. In February around 51% of men and 49% of women did not use online grocery shopping. Over the lockdown period these proportions decreased to 44% for men and 38% for women. Valuation for online grocery shopping thus increased relatively more for women (+51%) than for men (+41.5%).

We also found large difference in changes in valuations in the case of Skype (women -15%, men +14%), online news (women +15%, men -14%), online learning (women +62%, men +4%), LinkedIn (women +21%, men -30%), online ride hailing (women +25%, men -50%), mobile gaming (women +16%, men -12%), printed newspapers (women -2%, men -43%), and WhatsApp (women +18%, men +2%).

Changes in valuations by social group, February to May

Next we look at the changes in valuations by six socio-economic grades and we find stark differences across groups.⁸ In most cases the changes in valuations have different signs across the groups. The valuations increased for all groups (online grocery shopping) or decreased for all (cinema) for only a few goods.

Interestingly, the valuations for LinkedIn and online learning decreased for grades A to C2, but increased considerably for grades D and E. For example, in the case of online learning the WTA loss of access increased by more than 400% for semi-, unskilled and manual workers (grade D). This group also stands out as having the largest increase in valuations for Wikipedia, and various social media sites (excluding Facebook where their valuations were already the highest among all the social grades).

For people in grade A (*High managerial, administrative or professional*) valuations decreased for most goods and by the most for mobility apps (online ride hailing, Google Maps, and Citymapper) along with eBay, Twitter, printed newspapers and cinemas. Apart from online grocery shopping valuations of this group only markedly increased for YouTube (+17%).

Valuations for people in grade B (*Intermediate managerial, administrative or professional*) decreased the most for printed news, Skype and Snapchat, but increased for eBay, Facebook and online grocery shopping.

Valuations for grade C1 (*Supervisory, clerical and junior managerial, administrative or professional*) decreased considerably for Twitter, and printed newspapers, and increased significantly only for online grocery shopping.

For C2 (*Skilled manual workers*) valuations did not increase much, apart from online groceries and Amazon and to a lesser degree Netflix, Facebook, WhatsApp and a TV

⁸ The NRS six social grades are: A-High managerial, administrative or professional; B-Intermediate managerial, administrative or professional; C1-Supervisory, clerical and junior managerial, administrative or professional; C2-Skilled manual workers; D-Semi and unskilled manual workers; E-State pensioners, casual or lowest grade workers, unemployed with state benefits only. The social grades refer to the chief income earner in a household.

set at home. Their valuations went down considerably for Skype and cinemas and also Twitter, LinkedIn, Spotify and YouTube.

People in grade E (*State pensioners, casual or lowest grade workers, unemployed with state benefits only*) reported a large decrease in valuations for Spotify, Google maps and Snapchat as well as Wikipedia and Twitter. Apart from online groceries they saw an increase in the value of LinkedIn (+32%).

Conclusions

Our ongoing work looking at contingent valuation methods is assessing whether the methodology could be a useful way of accounting for the value of ‘free’ digital goods, either in economic welfare terms or particularly in terms of macroeconomic statistics. We used a survey representative of the UK’s online population, rather than incentive-compatible laboratory experiments, because the use of the method would need to be scalable for statistical production.

Consistent with other studies, we found that consumers on average assign high willingness-to-accept valuations to many of these goods, particularly when benchmarked against revenue figures for the services. Our pilot studies, discussed in our forthcoming paper, also suggested that the actual valuations are not well anchored, but the methodology can give consistent rankings among goods.

It is also a useful way to assess changes in valuations. During the lockdown, we observed rapid changes in the contributions different goods and services make to consumer welfare, with some significant differences by age group and gender. In this sense the lockdown has acted as a natural experiment testing for the extent to which digital goods and physical goods are substitutes. As many of the goods we considered are free to use, these valuation changes give useful insights into economic welfare and activity that are not captured by changes in prices. They act as a forward-look at which services are most valuable in a post-pandemic world where more activity takes place online, compared with the recent past. They also provide important, policy-relevant insights into distributional questions as between men and women and different age and socio-economic groups.

References

- Brynjolfsson, E., Collis, A., and Eggers, F. (2019a) Using massive online choice experiments to measure changes in well-being, *Proceedings of the National Academy of Sciences* 116 (15): 7250-7255.
- Brynjolfsson, E., Collis, A., Diewert, W. E., Eggers, F., and Fox, K. J. (2019b) *GDP-B: Accounting for the Value of New and Free Goods in the Digital Economy*. NBER Working Paper No. 25695, March 2019.
- Carson, R.T., Flores, N.E. & Meade, N.F. (2001) Contingent Valuation: Controversies and Evidence. *Environmental and Resource Economics* 19, 173–210.
- Corrigan JR, Alhabash S, Rousu M, Cash SB (2018) How much is social media worth? Estimating the value of Facebook by paying users to stop using it. *PLOS ONE* 13(12): e0207101.
- Heys, R. Martin, J. and Mkandawire, W. (2019) *GDP and Welfare: A Spectrum of Opportunity*, ESCoE Discussion Paper 2019-16.
- McFadden, D., & Train, K. (2017) *Contingent Valuation of Environmental Goods: A Comprehensive Critique*, Edward Elgar.
- Ofcom (2019) *Online Nation*, May 2019.
- Sunstein, C. (2019). Valuing Facebook. *Behavioural Public Policy*, 1-12.

Appendix

A1. Description of survey sample

The average age in our sample is 49 years of which just under 49% are male and 51% female. Around 30% hold a degree, 16% A-Levels, 14% GCSEs and 7% report no formal qualification (around one third of respondents do not report their highest degree). The median annual household income (of those reporting their income) is between £25-35k and hence the official ONS estimate of £29.6k for 2019 falls just in the middle.⁹ The regional distribution of our survey sample also closely matches the latest subnational population estimates by the ONS from mid-2019 (see Table A1).¹⁰ Finally, 60% of respondents took the survey on a phone or tablet while the remaining 40% used a laptop or desktop computer.

Table A1. Regional breakdown of sample and official population estimates

Region	Our sample	ONS estimates
North East	4.1%	4.2%
North West	11.4%	11.5%
Yorkshire and the Humber	8.6%	8.6%
East Midlands	7.8%	7.6%
West Midlands	8.8%	9.3%
East of England	9.5%	9.8%
London	12.0%	14.1%
South East	14.1%	14.4%
South West	10.0%	8.8%
Wales	5.1%	5.0%
Scotland	8.6%	8.6%

A2. The UK's 'online' population.

Following Ofcom (2019) around 13% of adults in the UK reported in 2019 that they do not use the internet. This share is higher for those aged 55-64 (19%), 65-74 (33%), and 75+ (48%). Further, 14% of people in social grades D (i.e. semi-skilled and unskilled manual workers) and E (i.e. state pensioners, casual and lowest grade workers, unemployed with state benefits only) do not use the internet, as compared to 4% of the rest. 47% of those not using the internet report that do not need it and 12% say that someone else is going online for them. Eurostat figures for 2019 show that 96% of people in the UK have used the internet in the past 3 months.¹¹ This share decreases to 85% for those aged 65-74.

⁹ Average household income, UK: financial year ending 2019, Office for National Statistics: <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/bulletins/householddisposableincomeandinequality/financialyearending2019>

¹⁰ We use data from the following ONS population released in May 2020 and recalculate the regional distribution by excluding Wales as our sample only covers Great Britain. <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2019#population-age-structures-of-uk-countries-and-english-regions>

¹¹ Eurostat, *ICT usage in households and by individuals (isoc_i)*, 2019.