Produits numériques gratuits et mesures agrégées de l'activité économique

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Annexe en ligne

S1 – Pilot Surveys

A total of four pilots of approximately 1,600 adults each ran between March 2018 and November 2019. We tested:

- Open-ended questions *versus* using a menu of bands
- Different time periods (1 week, 1 month, 3 months, 6 months, 12 months)
- Categories *versus* specific goods (e.g. "All social media" *versus* "Facebook")
- Usage intensity

We drew on the pilots to select an approach for use in the main survey in February-March 2020 and the supplementary COVID-19 survey in May 2020. A sample question from the first (March 2018) pilot, presenting an open box for the answer is: *Imagine you had to give up access to some goods or services for a period of time, in return for a sum of money. For what sum of money would you be willing to go without access to social media for one [month/week]? This would include all social networking sites like Facebook, Twitter or Snapchat, and all video sharing sites like YouTube. Please write the amount in the box below. If you would not be willing to do this for any amount of money, please write '0'.*

Results are shown in Table S1-1.

Table S1-1 – **Median values from 1st pilot, March 2018**

	1 week (£)	1 month (£)
All social media	50	100
Personal email	100	200
Physical TV	100	250
Mobile phone	100	400
Personal internet access	200	600

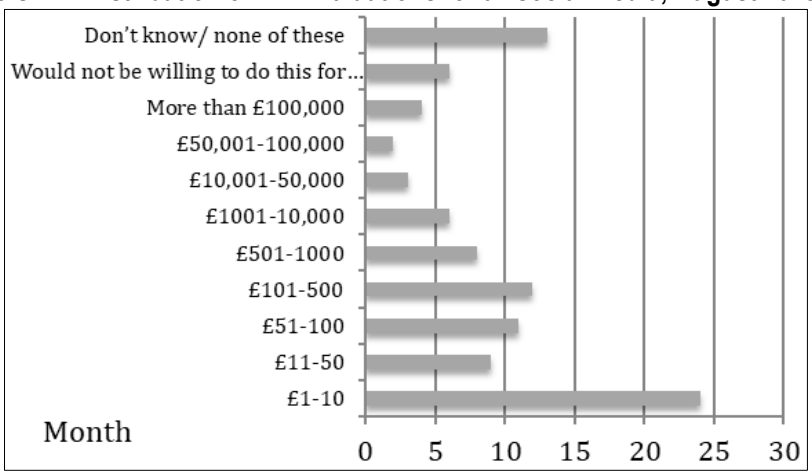
We next tested a menu card of pre-defined price bands, and also added a question about the intensity with which people used each good/service (on a scale from 'several times a day' to 'never'). The question format was: *Imagine you had to give up access to some goods or services for a period of time, in return for a sum of money. What is the lowest sum of money for which you would be willing to go without access to all forms of social media for one week/month/year? Please select an answer from the options below.*

£1-10
£11-50
£51-100
£101-500
£501-1000
£1,001-10,000

£10,001-50,000
£50,001-100,000
More than £100,000
Would not be willing to do this for any sum of money
Don't know/none of these

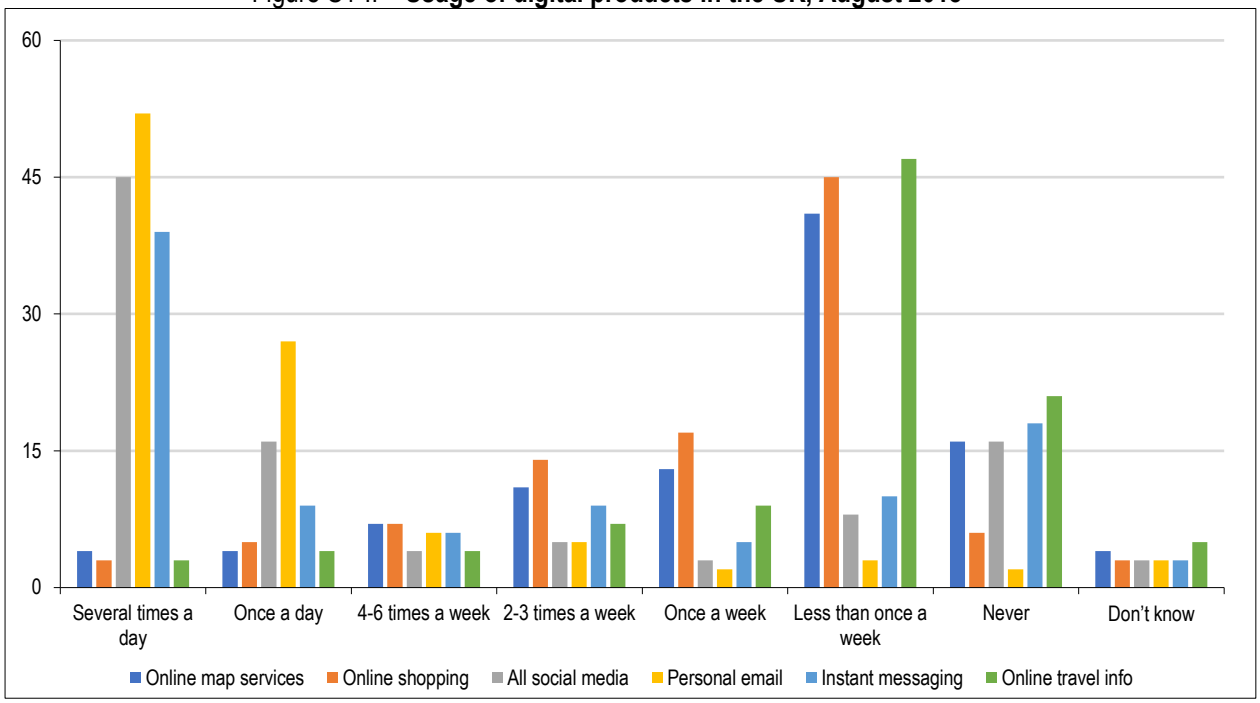
Figure S1-I shows the one-month results for 'all social media'. The profile was similar for week and year, but as with the first pilot the values over the different time periods were not wholly internally consistent, with some evidence of annual valuations being 'understated' relative to shorter period valuations. We also identified some socio-demographic differences in responses to explore in the full survey, age, gender and social class.

Figure S1-I – **Distribution of WTA valuations for all social media, August 2018 pilot**



Additionally, we found greatest intensity of use of personal email, social media and instant messaging, and least usage of online shopping, mapping, and travel information services (Figure S1-II).

Figure S1-II – **Usage of digital products in the UK, August 2018**



In the September 2019 pilot, having added a question about usage, we asked about only three different categories of digital services but tested three different answer sets per question and two time periods (week and month). The categories were: All forms of social media; Online instant messaging (e.g. Snapchat, WhatsApp, Instagram, Facebook Messenger, WeChat, etc.); Personal email accounts (but NOT including email use needed for work).

The answer categories were:

- Open box, i.e. no price bands (*N*=1,600)
- Pre-defined price band 1 (*N*=850), see below
- Pre-defined price band 2 (*N*=850), see below

Pre-defined price band 1	Pre-defined price band 2
Less than £1	Less than £1
£1-3	£1-5
£4-8	£6-10
£9-12	£11-20
£13-20	£21-50
£21-50	£51-100
More than £50	More than £100
Would not be willing to do this	Would not be willing to do this
Don't know	Don't know

We were mainly worried that changing the options bands per se would alter responses. In other words, when respondents would see options going up to £100 (price band 2) instead of just £50 (price band 1) they would be more inclined to opt for higher valuations). To test this, we randomly provided

respondents with either price band 1 or price band 2, but never both. Table S1-2 compares the results from this exercise, and we are confident that there is no huge bias arising from this. For instance, around 6-7% opt for "less than £1" in both samples and 39-42% choose "more than £50". There is some indication that providing respondents with more answer options (e.g. four options in the range £1-20 in price band 1 as opposed to three in price band 2) could entice more respondents to choose one of them. However, we need to keep in mind that sample sizes are relatively small so we would not generalise this point. More testing in this regard would certainly be useful to consider in future research.

Table S1-2 – **Comparison of price bands**

	Band 1	Band 2
Less than £1	7	6
£1-20	16	13
£21-50	8	12
More than £50	42	39
Would not be willing to do this for any sum of money	16	18
Don't know	10	13

The results led us to test in November 2019 four categories of specifically named services (Facebook, Google Search, personal email, WhatsApp) and four time periods (1/3/6/12 months) to understand better the 'time inconsistency' and whether there were differences between specific and generic descriptions. This time we used one set of price band options, adjusted in the light of earlier pilot results suggesting an extended scale and less division in the low bands would be appropriate:

£1-10
£11-20
£21-50
£51-100
£101-200
£201-500
£501-1,000
More than £1,000
I do not use Facebook
I would not be willing to do this for any sum of money
Don't know

For all four services there was a U-shaped WTA profile, with the highest proportions selecting either the lowest of highest price band options. Furthermore, and in line with our expectations, moving from 1 month to 12 months, the share of respondents opting for £1-10 decreases (e.g. from 22 to 13% for Facebook), while the share choosing £1,000+ increases (from 6 to 16%). This pattern holds for all four services we considered.

S2 – Main Survey Details

- Wave 1: 27 Feb – 3 March 2020 N = 10,500 UK adults
- Wave 2: 14 – 15 May 2020 N = 1,600 UK adults
- Wave 3: 25 Feb – 9 March 2021 N = 10,500 UK adults

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 (none were asked about both). In the follow-up May 2020 survey, we asked only about the twelve-month valuations. Both the surveys were representative of the UK population in terms of socio-economic factors including age, gender, income, education and region. However, considering that 6% of households in the UK do not have access to the internet (Ofcom, 2021) our findings likely only hold for the UK's online population.[1]

According to YouGov the average respondent takes around 15 minutes to complete a survey of this length. Survey respondents are provided with the following information before the first question:

"This survey is being conducted by researchers at the University of Cambridge and the National Institute of Economic and Social Research in order to help them understand better some aspects of the digital economy, particularly some widely-used online services. There is no commercial involvement in this research. The findings will help develop better official statistics on the economy and the final results will be published.

Your YouGov Account will be credited with 50 points for completing the survey.

We have tested the survey and found that, on average it takes around 14 to 16 minutes to complete. This time may vary depending on factors such as your Internet connection speed and the answers you give."

The actual question read as the following, where [GOOD] is replaced by the precise formulation as shown in the Table S3 below:

"Imagine you have to give up using some goods or services for a period of time, in return for a sum of money.

[1] *In 2019, 10% of the UK adult population were internet non-users, lowest in London and highest in N Ireland. More than half the non-users were women and the great majority over 75. By the end of 2021, the proportion had fallen to 6% See https://www.ofcom.org.uk/__data/assets/pdf_file/0022/234364/digital-exclusion-review-2022.pdf and https://www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/articles/exploringtheuksdigitaldivide/2019-03-04*

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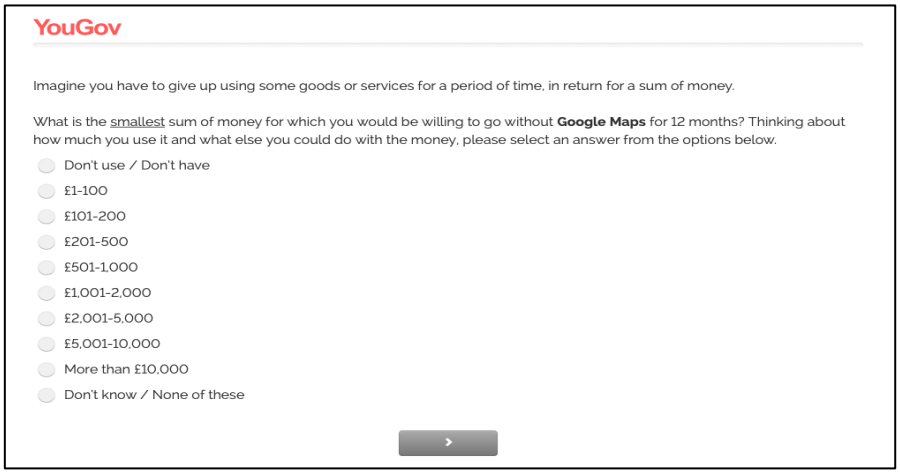
What is the smallest sum of money for which you would be willing to go without [GOOD] for [1/12] month[s]? Thinking about how much you use it and what else you could do with the money, please select an answer from the options below."

Table S2-1 – **List of goods and related survey question by survey wave**

Good	Precise formulation in survey	Asked in wave
Facebook	Facebook	1,2,3
Instagram	Instagram	1,2,3
Twitter	Twitter	1,2,3
LinkedIn	LinkedIn	1,2,3
Snapchat	Snapchat	1,2,3
Online search	Online search (e.g. Google Search)	1,2,3
Personal email	All personal email services (e.g. Gmail, Outlook, Hotmail, and Yahoo mail)	1,2,3
WhatsApp	WhatsApp	1,2,3
Facebook Messenger	Facebook Messenger	1,2
Skype	Skype	1,2,3
Amazon	Amazon Marketplace	1,2,3
eBay	eBay	1,2,3
Online groceries	Online grocery shopping *via* any provider	1,2,3
Online ride hailing	Online ride-hailing services (e.g. Uber, Gett, Ola, Mobike)	1,2,3
Google Maps	Google Maps	1,2,3
Citymapper	Citymapper	1,2
Online news	Access to any online news (e.g.bbc.co.uk, dailymail.co.uk, theguardian.com, etc.)	1,2,3
Mobile games	Mobile games (e.g. Fortnite, Pokémon Go, Candy Crush Saga, Angry Birds, etc.)	1,2,3
Spotify	Spotify	1,2,3
YouTube	YouTube	1,2,3
Netflix	Netflix	1,2,3
BBC iPlayer	BBC iPlayer	1,2,3
Wikipedia	Wikipedia	1,2,3
Online learning	Any online learning tools (e.g. Khan Academy, Coursera, uDemy, edX)	1,2,3
Online banking	Any online banking services	1,2,3
TV set	A physical TV set at home	1,2,3
Printed news	Printed newspapers and magazines	1,2,3
Cinema	Any cinema	1,2,3
Radio	Any radio	1,2,3
Public parks	Access to any public parks	1,2,3
TikTok	TikTok	3
Zoom	Zoom (only personal use, not for work)	3



The full survey (February 2020 and 2021) contains data for 10,500 individuals per wave, randomly split in half to provide valuations for one month and 12 months periods. None of the survey participants answered questions on monthly and annual valuations. This means we have around 5,250 responses for the annual valuations per wave, which are also used in the regression analysis.

Our sample is weighted and representative of GB adult population (18+) by age, gender, education level, social grade, region, and political attention (see YouGov website for further details on sample representativeness). The average age in our February 2020 sample is 49.9 years, with a median of 51. 42.6% of respondents are male, and 27.6% hold a university degree of any kind. Overall 26.6% of our sample falls within a high-income group, which we define as those with an average gross household income of more than £40,000. Similarly, 20.8% fall into a low-income group of below £20,000. Around 8.1% are captured by a "London" dummy. Finally, we include a dummy which captures the fact that 58.4% of respondents took the survey on a mobile device or tablet. Table S2-2 shows the correlations.

Table S2-2 – **Correlation matrix of key respondent characteristics, February 2020**

	Female	Age	Mobile	Degree	London	High inc
Female	1.0000					
Age	−0.1042	1.0000				
Mobile	0.1567	−0.3386	1.0000			
Degree	−0.0057	−0.1628	0.0131	1.0000		
London	−0.0102	−0.0789	0.0113	0.0722	1.0000	
High inc	−0.0680	−0.1738	0.0802	0.1621	0.0617	1.0000

We selected the following goods:

- **Social media**: Facebook, Messenger, Instagram, WhatsApp, LinkedIn, Snapchat, Twitter
- **Offline *versus* online "substitutes"**:
  - TV, cinema & Radio vs iPlayer, Netflix, YouTube & Spotify
  - Printed newspapers *vs.* online news
  - Public parks
- **Online substitutes**: Skype, online groceries, eBay, Amazon, online banking, Wikipedia, personal email, online search, online learning, gaming
- **Mobility**: Google Maps, Citymapper, ride-hailing

S3 – Sample Design and Response Quality

The survey design (sample size, weighting scheme) is chosen with the aim of making the variables representative by gender, age group, region, social grade, household income, and education level. In turn a combination of characteristics (e.g. age group and region) would not necessarily be representative, despite the large sample. Table S3 shows the number of observations by sub-group for the first survey wave.

Table S3 – **Number of observations by sub-group (February 2020)**

Sample sub-group	**Number of observations (weighted)**
All respondents	10,587.00
Age 18-24	1,153.98
Age 25-49	4,414.78
Age 50-64	2,551.47
Age 65+	2,466.77
Gender: Male	5,145.28
Gender: Female	5,441.72
Region: North East	433.67
Region: North West	1,208.51
Region: Yorkshire and the Humber	909.29
Region: East Midlands	828.80
Region: West Midlands	928.64
Region: East of England	1,004.81
Region: London	1,270.44
Region: South East	1,488.19
Region: South West	1,064.23
Region: Wales	539.94
Region: Scotland	910.48
Education: No formal qualification	705.86
Education: GCSE	1,418.65
Education: A-Level	1,624.23
Education: Degree	3,059.55
Education: Other	3,257.71
Social Grade A	1,234.31
Social Grade B	1,730.05
Social Grade C1	3,070.23
Social Grade C2	2,223.27
Social Grade D	1,145.13
Social Grade E	1,184.01
Income: Low (<20k GBP)	2,243.32
Income: High (>20k GBP)	5,593.56
Income: Don't know	731.13
Income: Prefer not to answer	2,018.99

S4 – Stated Values, Further Details

February-May 2020

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%. 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%).

Gender differences
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
Looking at the changes in valuations by six socio-economic grades,[2] we find in most cases the changes in valuations have different signs across the social gradient. The valuations increased for all groups (online grocery shopping) or decreased for all (cinema) for 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). 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). Apart from online grocery shopping valuations of grade A 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 increased for online groceries and Amazon and to a lesser degree Netflix, Facebook, WhatsApp and a TV set at home. Their stated values 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 stated an increase in the value of LinkedIn (+32%).

[2] *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.*