

# Device use in web surveys: evidence from the Generations and Gender Survey Round II

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## Research background

Web survey is becoming a popular way of collecting data for scientific purposes. Several large cross-national surveys such as the European Social Survey, the Generations and Gender Survey, and the Survey of Health, Ageing and Retirement in Europe, are (gradually) moving in the direction of conducting web or mixed-mode surveys.

Compared to face-to-face surveys, the survey cost is substantially lower for web surveys. Data quality for sensitive questions is better in web surveys, as recent research has shown that respondents filling out web surveys tend to provide less socially desirable, and therefore more truthful, answers. Recent technological advancements in mobile devices as well as the outbreak of the COVID-19 pandemic have further accelerated the move from face-to-face survey to web surveys. Along with this trend, survey methodologists started to highlight the potential problem of device use in web surveys. Web surveys, unlike face-to-face surveys, can be completed using multiple devices including smartphones, tablets, laptops or desktop PCs, and a combination of these devices. Recent research has found an association between certain demographic characteristics, such as gender and age, and smartphone use in web surveys (Maslovskaya et al., 2019; Lugtig, Toepoel & Amin, 2016). Socioeconomically disadvantaged groups, such as lower educated and migrants, are also more likely to use smartphones than the other devices (Lugtig, Toepoel & Amin, 2016). However, these recent studies either use a small scale web survey or focus primarily on one country. Empirical evidence on device use in large cross-national surveys is still limited. Moreover, our knowledge on the response process such as interview duration and break-off by devices is largely outdated. The idea that respondents may not be used to answering relatively demanding scientific surveys on mobile devices is challenged by digitalization as well as the complete shift to online platforms during the pandemic. We need a better understanding of the patterns of response process by devices.

The Generations and Gender Survey (GGS) is a large cross-national panel survey on family dynamics, gender and generations. The age range of the target population is 18 to 79. The second round of GGS (GGS-II), which started officially in 2020, has updated the survey instrument, allowing countries to use web for data collection. This offers us a unique opportunity to look into device use and response process for multiple countries. In this paper, therefore, we aim to tackle the following research questions using data from GGS-II web surveys:

1. *What are the associations between respondents' sociodemographic characteristics and device use in web surveys?*
2. *How do the interview duration and break-off patterns differ among users of smartphones, tablets, and PCs in web surveys?*

## Data and method

### Survey data and sample selection

We used data from the Generations and Gender Survey Round II (GGS-II), Wave 1 from six<sup>1</sup> countries in which the GGS-II was fielded as a web survey (Austria, Czech Republic, Estonia, Finland, Norway) or as a mixed mode survey with a web component (Uruguay). Data from the six

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<sup>1</sup>In a later stage, we will add data from GGS-II Croatia, Hong Kong and the Netherlands as well.

countries were collected between 2020 and 2023. In all these countries, random samples were drawn from either the population register (Austria, Estonia, Finland and Norway) or from an address or household list (Czech Republic and Uruguay). On average, the baseline questionnaire takes between 50 to 60 to complete. Respondents can pause the survey and resume later and they can use the device of their choice and switch devices during the survey.

For analyses on respondents characteristics, interview duration and device use, we restricted our sample to respondents who completed the survey. This sample size ranges from 915<sup>2</sup> in Uruguay to 8,155 in Estonia. For break-off analyses, we needed to include respondents with incomplete questionnaires. We included all respondents who completed at least the first six questions, so that we could control for their gender, age, migratory background and education.

### Variables and analytical strategy

We used variables derived from survey answers as well as from the paradata. Paradata are data generated automatically during the process of response. It provides insights on the behavior of the respondent during the data collection, such as devices and time stamps. From the paradata we derived the following variables: **Device type**, distinguishing three device types used to fill out the web questionnaire: (1) smartphone, (2) PC (desktop/laptop), and (3) tablet. The device type indicates the device on which the respondent started the survey. **Interview duration** indicates the duration from logging in to the questionnaire to completion, minus the duration of breaks during which a respondents was logged off the questionnaire.

From the survey data we derived the following respondent characteristics as predictors of device type: **sex** (1 = female, 0 = male), **age** (years), **educational level** (7 ISCED levels), **employed** (1 = employed, 0 = not employed), **subjective income** (5 levels ranging from household is able to make ends meet with great difficulty to very easily), **immigrant** (1 = born abroad, 0 = born in country of residence), **has partner** (1 = yes, 0 = no); and **household size**.

To investigate who uses which device type, we conducted binary logistic regressions contrasting the two most used device types. Furthermore, we investigated differences in interview duration between device types by conducting OLS regressions of interview duration, with device type as the main independent variable. In this analysis we controlled for the potential predictors of device type mentioned above, and for **the number of questions** a respondent received. The latter is necessary because the questionnaire is routed heavily, so there is great variation in the number of questions a respondent has to answer. Finally, to investigate break off patterns, we conducted binary logistic regressions with **survey completion** (1 = questionnaire completed, 0 = broke off after the 6th question) as the dependent variable and device type as the main independent variable, controlling for a few background characteristics which were asked in the first six questions.

## Preliminary results

### First device and device switch

Countries vary substantially in the first device in the web survey. Table 1 shows that in Czech Republic, the majority of the surveys are completed by respondents who started the survey on PCs. On the contrary, in Norway, Finland and Uruguay, a substantially larger proportion of the completed surveys are done on smartphones. In Austria and Estonia, the size of smartphone users and PC users is comparable. Tablets, however, are the least used device in all six countries.

Table 1. The distribution of device use by country

Czech Republic	Austria	Estonia	Finland	Uruguay	Norway
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<sup>2</sup> Only 14% of the respondents in Uruguay were web respondents, as GGS Uruguay was a mixed-mode survey.

PC	75%	55%	53%	37%	28%	27%
Phone	23%	43%	45%	61%	69%	72%
Tablet	2%	2%	2%	2%	4%	1%
N	5,109	7,591	8,155	3,041	915	4,521

The frequency and patterns of device switch is important to our analytical strategy. If people often switch between devices, investigating the association between individual characteristics and device use becomes problematic. As shown in Table 2, the majority of the respondents who completed the survey did not switch between devices. A small proportion of people switched device once during the survey.

Table 2. Device switch

	Czech Republic	Austria	Estonia	Finland	Uruguay	Norway
1 switch	2.0%	0.8%	3.6%	1.7%	7.5%	6.0%
2+ switches	0.4%	0.2%	0.7%	0.1%	2.6%	2.6%

### Individual characteristics and device use

Based on the descriptive findings on device types and device switch, we will focus on the first device that respondents used. We will also show results based on the two most used device types: smartphone and PC, as the sample size for tablet users is small in all six countries.

The associations between individual characteristics and device use vary across the six countries. However, certain groups of people have a consistent preference for smartphones compared to PCs in all six countries. Women and economically disadvantaged people are more likely to use smartphones than PCs. Younger and people with a partner are also more likely to use phones than PCs, except for Uruguay in which these associations are not significant. Less educated people are also more likely to use smartphones than PCs in the other five countries except for Finland. Household size is also positively associated with smartphone use. Respondents living in large households are more likely to use smartphones than PCs. These findings are largely in line with what have been found in previous research, which suggest that the socioeconomically disadvantaged people are more likely to use smartphones than PCs to fill in the web survey. This may be because of the accessibility to a PC is limited for these people. Previous research has also noted that unemployed people and migrants may be more likely to use phones more than PCs (Lugtig, Toepoel & Amin, 2016). The association between these two characteristics and smartphone use is, however, mixed in our study: the associations are in opposite directions in different countries.

Table 3. Multivariate binary logistic regression models of phone vs PC

	Austria	Czech Republic	Estonia	Finland	Norway	Uruguay
Female	+	+	+	+	+	+
Age	-	-	-	-	-	n.s.
Educational level	-	-	-	n.s.	-	-
Immigrant	+	+	n.s.	n.s.	-	n.s.
Subjective income	-	-	-	-	-	-
Employed	n.s.	-	-	+	+	n.s.
Has partner	+	+	+	+	+	n.s.
Household size	+	n.s.	+	+	+	n.s.
N	6,229	4,683	7,152	2,782	4,115	697

Note: n.s. indicates not statistically significant. We used “+” sign for a statistically significant positive relationship and “-” for a statistically significant negative relationship. The result table with regression estimates is available upon request.

### Interview duration and break-off by device

The median interview duration ranged between 46 to 67 minutes in the six countries. Previous research has highlighted the problem that users of smartphones take a longer time to finish the survey because of scrolling or being more easily distracted on phones than other devices (Toepoel & Lugtig, 2015). We, however, did not find such a clear association. Respondents who used smartphones took a bit longer to complete the survey than PC users in Estonia and in Uruguay, but not in the four other countries we studied (in Austria smartphone users were even slightly faster). Furthermore, we found that tablet users took a significantly longer time to complete the survey compared to phone users. However, given the sample size of tablet users in all six countries, the finding on tablet usage may be inconclusive.

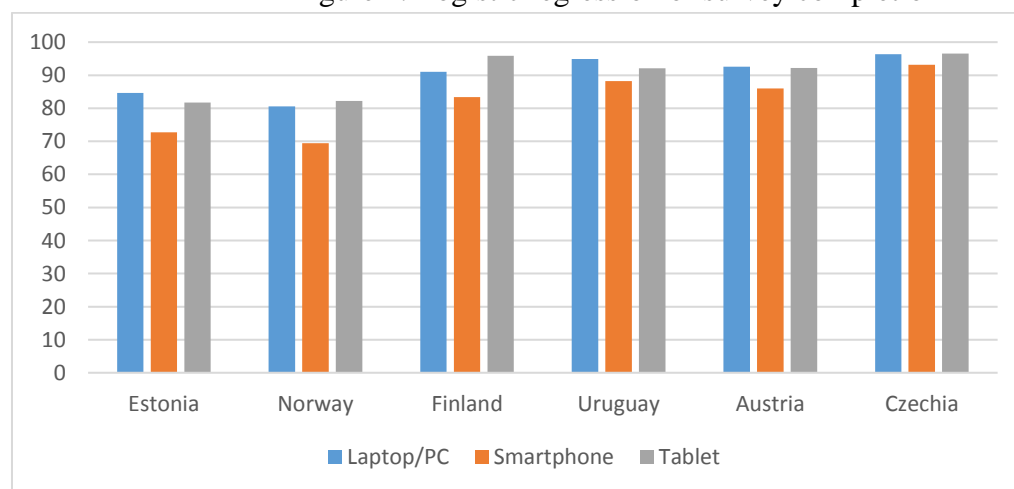
Table 4. OLS regressions of device use on interview duration among completed surveys

	Austria	Czech Republic	Estonia	Finland	Norway	Uruguay
Median duration (all devices)	48 min	67 min	57 min	47 min	46 min	64 min
PC vs. phone	+1.1 min	n.s.	-2.8 min	n.s.	n.s.	-4.5 min
Tablet vs. phone	+4.4 min	n.s.	+6.3 min	+ 8.0 min	+7.9 min	n.s.
N	5,995	3,994	6,340	2,709	3,812	635

Note: The median duration included only surveys that are completed within 2 hours. All indicated duration differences are statistically significant. We controlled for number of questions, age, gender, education, migratory background, employment status, subjective income, partnership and household size in the regression analyses. The results table with regression estimates is available upon request.

Figure 1 shows the predicted probabilities of survey completion for each device type per country, keeping the control variables constant at their means. The difference in the likelihood of survey completion between smartphone users and PC users is significant in each country. The differences range from about 12 percentage points in Norway and Estonia to about 3 percentage points in Czech Republic. The difference in the likelihood of survey completion between smartphone and tablet users is not significant in all countries.

Figure 1. Logistic regression of survey completion



Note: We controlled for age, gender, migratory background and educational level.

The findings on the response process by device types suggest that the multi-device characteristic of web surveys is not as problematic as previous research has suggested. Smartphone users do not take a longer time to finish the survey, though they are more likely to break off, compared to other users.