Are Computer-Administered Web Surveys Leading to Lower Survey Representativeness in Population Research? The Case of the Generations and Gender Survey

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Extended Abstract

Introduction

Population research is urgently needed to address today's and tomorrow's challenges, conflicts, and inequalities. Within population research, surveys are widely used as a technique to collect and explore preferences, thoughts, and behaviors of populations. Traditionally, such demographic surveys were administered with an interviewer, either in face-to-face mode (CAPI) or over the phone (CATI). This was the case in the first round of the Generations and Gender Survey (GGS-I), the Demographic and Health Survey (DHS) and MICS (Multiple Indicators Cluster Survey). However, in recent years, and confronted with the rapidly rising cost of interviewers, surveys have been gradually shifting to self-completed web mode (CAWI). This is the case with the second round of the Generations and Gender Programme (GGS-II), where 12 countries have already collected the data or are planning to collect the data exclusively in CAWI, while seven countries are planning to collect the data using mixed modes.

A critical challenge is making sure that this shift in survey administration mode does not adversely affect the representativeness of the sample, as a non-representative sample may lead to biased and invalid conclusions. For example, people with a low level of reading are less likely to participate in self-completed mode compared to interviewer set-up, and people without access to internet or a phone might be less represented in surveys administrated online.

Hence, the goal of the present paper is to provide empirical evidence by investigating whether the shift to CAWI has exacerbated overrepresentation or underrepresentation of certain subgroups in our societies. Specifically, we will investigate over- and underrepresentation in educational level, migration background and age in two rounds of GGS data collection.

Data

In this study, data from both rounds of the GGS will be used. The GGS (Gauthier *et al*., 2025) provides a unique opportunity to explore the characteristics of seven country samples (Austria, Estonia, the Netherlands, Czechia, France, Germany and Sweden) who participated in both GGS rounds: the first round of data collection (2008-2009) and the second round of data collection (2022-2024). In the first round (GGS-I), all 7 countries used face-to-face interviews. In the second round, four countries used only CAWI, two used CAWI and self-administered paper questionnaire, and one used CAWI and telephone interviewing. This enables us to investigate whether there are differences in sample representativeness between countries using different strategies (only CAWI vs. countries using mixed modes). Note that to assess the degree of sample representativeness in both rounds, we compare the GGS data to (relatively) objective demographic data sources, such as Eurostat.

Methods

We will first provide descriptive statistics for both GGS rounds, such as the proportion of the various educational levels present in the data, the distribution of age, and the percentage of people with a migration background. In addition, visual overviews and comparisons between the rounds will be provided (e.g., bar charts). Second, we will compare the aforementioned proportions from each GGS round to the objective demographic data. This comparison will be conducted using a z-test for proportions. If significant differences arise, this would provide evidence for under- or overrepresentation on a specific characteristic in the GGS data. Third, we will compare the proportions in GGS-I to GGS-II using the same z-test. Note that to minimize the influence of between-country effects, we will compare each country to itself rather than to other countries. In these comparisons, countries that switched away from traditional administration methods to CAWI are of particular interest. For example, if the proportion of participants with a migration background significantly decreases between round I and round II, this provides some evidence for our hypothesis. However, when comparing data across the two rounds, it is important to acknowledge that differences cannot be attributed solely to changes in survey mode. Other factors, such as broader shifts in survey participation and societal attitudes toward research between the rounds of data collection may also influence response patterns.

Theoretical Background and Expected Findings

Individuals with lower educational attainment are often less likely to participate in CAWI due to lower digital literacy and limited access to digital devices or stable internet connections. Research shows that online survey participation requires not only technical access but also confidence in navigating online interfaces, which tends to correlate positively with education level (Mulder and De Bruijne, 2019). Consequently, as GGS-II increasingly relies on CAWI, the proportion of low-educated respondents is expected to decrease relative to more educated groups, thereby decreasing educational representativeness. Hence:

H1: Compared to GGS-I, GGS-II exhibits a stronger negative response bias with respect to educational attainment, reflected in a larger underrepresentation of individuals with lower education levels relative to their population share.

While migrants may already be underrepresented in traditional face-to-face surveys due to language or cultural barriers, the shift to CAWI is likely to deepen this bias. Online surveys reduce opportunities for clarification or assistance from interviewers, which can be crucial for respondents with limited proficiency in the survey language. Moreover, CAWI assumes a certain level of digital access and literacy that may be unevenly distributed among migrant groups (Seibel and Haan, 2022). These factors together make participation less accessible, increasing the likelihood that individuals with a migration background are underrepresented in GGS-II compared to the earlier round. Thus:

H2: Compared to GGS-I, GGS-II exhibits a stronger negative response bias with respect to migration background, reflected in a larger underrepresentation of individuals with a migration background relative to their population share.

Older people are generally less likely to participate in online surveys because they tend to have lower levels of digital literacy and less frequent use of internet-connected devices compared to younger cohorts. As the GGS-II increasingly relies on CAWI, these technological barriers may reduce participation among older respondents, resulting in their underrepresentation relative to younger individuals. Therefore:

H3: Compared to GGS-I, GGS-II exhibits a stronger negative response bias with respect to age, reflected in a larger underrepresentation of older individuals relative to their population share.

In conclusion, this study will provide empirical evidence on how shifts in survey mode affect sample representativeness across key demographic groups by systematically comparing two waves of GGS data. The findings will inform future population survey design and highlight strategies to mitigate mode-related biases in cross-national research.

References

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Short abstract (250 words)

Surveys are widely used to gain information on thoughts, behaviors, and attitudes of participants. While they were traditionally administered via face-to-face settings or over the telephone, there has been a shift to a self-completed web mode (CAWI) for various reasons. This shift is exemplified in the Generations and Gender Survey (GGS) rounds I and II, with an increasing number of countries adopting a fully CAWI or a mixed modes approach in round II. A key issue is ensuring that this shift to CAWI does not adversely affect the representativeness of the sample.

For this reason, the present study examines whether the shift to CAWI has decreased the data representativeness in the GGS-II. We analyze data from seven countries (Austria, Estonia, the Netherlands, Czechia, France, Germany and Sweden) who participated in both GGS rounds, and we compare their samples to (relatively) objective demographic data from trusted sources to assess underrepresentation. We hypothesize the following: since CAWI may require a higher degree of technical access and confidence, we expect that its adoption will lead to a larger underrepresentation of individuals who are older or have a lower education level. Additionally, the level of language proficiency required may be higher for CAWI, leading to underrepresentation of individuals with a migration background. The results of the study are discussed and recommendations for future practice are provided.