

First Reproductive Experiences: New Survey Module Compared with Health Register Data

Anna Šťastná and Jitka Slabá, *Department of Demography and Geodemography, Charles University, Prague*

Eva Beaujouan, *Department of Demography, University of Vienna, Austria*

Introduction

The timing and sequencing of first reproductive events—such as first conception, birth, or pregnancy loss—constitute crucial indicators of fertility behaviour and reproductive health. While administrative health registers provide high-quality data on reproductive events, they often lack contextual information about intentions, experiences, and social determinants. Conversely, survey data have the potential to capture these subjective aspects but may be affected by recall bias and reporting errors. The aim of this paper is to compare information on first reproductive experiences collected through the *First Reproductive Experiences module* (Beaujouan et al. 2025) with data on first reproductive events recorded in the National Register of Reproductive Health, administered by the Institute of Health Information and Statistics of the Czech Republic (IHIS). The *First Reproductive Experiences module* was developed recently in response to the lack of data on the onset of the reproductive trajectory within the broader study of the fertility postponement process and was implemented for the first time in the second wave of the Czech Generations and Gender Survey fielded in 2025.

The *First Reproductive Experiences module* was designed to be included in nationally representative family surveys to collect retrospective information on individuals' first attempts to conceive or on unplanned pregnancies (Beaujouan et al. 2025). Its aim is to capture the onset and course of these efforts (including time to pregnancy) as well as their discontinuation, phenomena that cannot be observed in conventional statistics, which typically record only discrete events as outcomes of reproductive attempts. The module also seeks to examine how the timing and circumstances of these first reproductive experiences relate to later life outcomes, including partnership formation, mental health, family size, and broader population-level fertility patterns such as subfertility and unmet fertility goals (Beaujouan et al. 2025).

A key question concerns the expected level of accuracy and reliability of responses, given that first reproductive experiences have been infrequently studied in quantitative socio-demographic research. To address these concerns and ensure respondents' comprehension, the initial version of the survey module underwent cognitive testing in Czechia and was subsequently revised based on the findings of the pilot phase. The evaluation indicated a generally positive reception of the questions, with respondents reporting minimal difficulty in addressing topics such as unplanned pregnancies, infertility, the use of assisted reproductive technologies, or abortion (Beaujouan et al. 2025).

The aim of this paper is to compare the survey responses and the reproductive patterns identified with existing statistical data. While statistical data do not capture all circumstances and types of reproductive attempts, they offer robust information on reproductive events—including births and pregnancy losses—and on attempts to conceive using assisted reproductive methods. As the fieldwork for the second wave of the Czech GGS was completed on 30 September 2025, the data on first reproductive experiences are not yet available to the national team. At the time of abstract submission, only preliminary insights can be presented, specifically illustrating patterns of reproductive onset among selected cohorts based on health registry data.

Data

For this analysis, data from the Institute of Health Information and Statistics of the Czech Republic (IHIS) will be used, specifically the Maternal, Abortion, and Assisted Reproduction modules of the Reproductive Health Register. The dataset covers reproductive events from 1994 to 2022 and was created by linking events across the different modules using a unique identifier for each woman. The records compile information from both inpatient and outpatient providers, including general hospitals, ambulatory clinics, and private gynaecological practices. While reporting is legally mandated for all medical facilities, partial under-reporting may occur, particularly for early pregnancy losses. Data on assisted reproductive technology (ART) is available only from 2007 onwards, which may lead to some underestimation.

The reproductive events considered include live births, miscarriages, induced abortions, other abortions (including ectopic pregnancies or illegal procedures), stillbirths, and ART treatments. ART data are limited to in vitro cycles aimed at achieving pregnancy (e.g., IVF, oocyte retrieval, embryo transfer), reflecting events consequent to reproductive difficulties, while procedures such as egg donation, preimplantation genetic diagnostics, and cryopreservation were excluded. Detailed timing information in the register (month and year) allows identification of events marking the onset of women's reproductive trajectories.

We track selected cohorts that reflect varying reproductive ages and behaviours, primarily capturing the fertility postponement process, which began with cohorts born in the mid-1960s and was most pronounced among women born in the 1970s in Czechia (Kocourková et al. 2022). Since the register covers events from 1994 onwards, our focus is on cohorts born in 1976, 1979, 1982, 1985, 1988, and 1991 (women born in 1976 were 18 in 1994, allowing near-complete capture of their reproductive trajectories). The final dataset comprises 368,088 women and 912,061 reproductive events between ages 18 and 40. The observed reproductive events are expressed relative to the total number of women in each cohort, with cohort sizes taken from the Human Fertility Database (HFD) to include also women without recorded events in the health registers.

Preliminary Results – Reproductive Onsets from the Perspective of Health Registry Data

Preliminary findings indicate a marked cohort shift in the timing of reproductive onset. By age 31, 19.5% of women born in 1976 had not experienced any recorded reproductive event, compared to 34.3% in the 1991 cohort („eventless“ in Tab. 1). Correspondingly, the share of women whose first reproductive event was a live birth declined from 62.5% to 50.8%, while those starting with an induced abortion or miscarriage decreased from 11.4% to 7.8% and from 6.1% to 4.4%, respectively (Tab. 1). However, miscarriages are likely underreported, especially in early pregnancies not yet reaching gynaecological care; comparison with self-reported survey data may thus contribute to a more accurate estimation and deeper understanding of early reproductive trajectories. Among the youngest cohorts, an increasing proportion of women initiate reproduction through ART, reaching 2% by age 31.

Focusing on women who experienced at least one reproductive event by age 31, the first reproductive event across cohorts is most commonly a live birth, accounting for 77% of women, with a slight decline in the 1980s cohorts (Tab. 2). This decline likely reflects more complete ART registration, increasing their representation in this group. Conversely, more than one-fifth of women experience a first reproductive event other than a live birth, mainly reproductive losses - induced abortions, miscarriages, other abortions, or stillbirths. Except for induced abortions, which decline over time,

early reproductive losses by age 31 show no notable increase. In contrast, the share of women initiating reproduction via ART rises.

Tab. 1. Type of first reproductive event by age 31, selected cohorts, Czechia (%)

first reproductive event	1976	1979	1982	1985	1988	1991
live birth	62.5%	56.7%	52.0%	49.1%	49.3%	50.8%
miscarriage	6.1%	5.4%	5.2%	4.8%	4.7%	4.4%
induced abortion	11.4%	10.8%	9.3%	8.5%	8.0%	7.8%
other abortion	0.5%	0.5%	0.4%	0.3%	0.4%	0.5%
stillbirth	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
ART	0.0%	0.0%	1.0%	1.9%	2.3%	2.1%
Total	80.5%	73.5%	68.0%	64.8%	64.8%	65.7%
<i>Eventless</i>	19.5%	26.5%	32.0%	35.2%	35.2%	34.3%

Tab. 2. Type of first reproductive event by age 31, selected cohorts, Czechia (% of women with events)

first reproductive event	1976	1979	1982	1985	1988	1991
live birth	77.6%	77.1%	76.6%	75.9%	76.0%	77.3%
miscarriage	7.5%	7.4%	7.6%	7.4%	7.3%	6.7%
induced abortion	14.1%	14.7%	13.7%	13.1%	12.3%	11.9%
other abortion	0.6%	0.6%	0.6%	0.5%	0.6%	0.7%
stillbirth	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%
ART	0.0%	0.0%	1.5%	2.9%	3.6%	3.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Comparing cohorts of women who have reached age 40, the proportion of “eventless” women rises across cohorts. Between the 1976 and 1982 cohorts, this share more than doubled, from 4.6% to 10.9%. Consequently, the proportions of women experiencing other reproductive events declined: the share whose first event was a live birth decreased, as did the share undergoing induced abortion, which fell across the entire reproductive trajectory, not only at younger ages. The proportion of other reproductive losses also declined slightly. In contrast, the use of ART increased; however, this trend should be interpreted cautiously, as data limitations hinder complete capture of ART prior to year 2007, particularly during the early reproductive years of the oldest cohorts.

Tab 3. Type of first reproductive event by age 40, selected cohorts, Czechia – all women and women with at least one reproductive event (%)

first reproductive event	all women			women with at least one "event"		
	1976	1979	1982	1976	1979	1982
live birth	73.7%	69.7%	67.0%	77.3%	75.8%	75.2%
miscarriage	7.4%	6.8%	6.8%	7.7%	7.4%	7.6%
induced abortion	12.3%	11.8%	10.3%	12.9%	12.8%	11.6%
other abortion	0.6%	0.6%	0.5%	0.7%	0.6%	0.6%
stillbirth	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
ART	1.3%	2.9%	4.3%	1.4%	3.2%	4.9%
Total	95.4%	91.9%	89.1%	100.0%	100.0%	100.0%
<i>Eventless</i>	4.6%	8.1%	10.9%	x	x	x

A closer look at the subgroup of women who experienced at least one reproductive event shows that by age 40, the type of first reproductive event remained largely unchanged in the oldest cohorts (Tab. 3). The share of women initiating reproduction via ART increased proportionally, with corresponding slight decreases in other reproductive events—declines of about 2 percentage points for live births and 1.3 percentage points for induced abortions. The share of other reproductive losses (miscarriage, other abortion, and stillbirth) for medical reasons remained stable across cohorts.

Although the registry-based statistics reveal important information on first reproductive experiences and their cohort dynamics, many questions remain that health registry data alone cannot address.

1. There is a pronounced increase in the proportion of women who, by both observed age milestones, have experienced no reproductive events. However, it remains unclear whether this reflects a deliberate choice to remain childfree or whether delayed reproduction reduces the likelihood of success. What proportion of women attempted pregnancy but were unsuccessful, without ever using ART, and are therefore invisible in the registry data? First reproductive experiences module data could also help capture the duration of reproductive attempts—does the proportion of eventless women, particularly by age 31, reflect delayed initiation of childbearing and prolonged attempts? How many eventually give up, and what are the reasons behind this decision?
2. Statistical data indicate a rising use of ART among younger cohorts. However, attempts at medically assisted reproduction (MAR) other than ART—ranging from medical consultations and prescribed medications to artificial insemination reported in surveys—are not captured in registry data, which, like the Czech registry, primarily records in vitro procedures. It is reasonable to assume that the increase in ART use is accompanied by a parallel rise in the use of other MAR methods. These questions highlight that the group classified as eventless in registry statistics is likely highly heterogeneous. Self-reported data can help disentangle these patterns.
3. Another important aspect is the distinction between planned and unplanned pregnancies. Although the declining share of UPTs reflects a positive reproductive trend in Czechia, UPTs encompass diverse reasons. Only the most recent data allow distinction between medical and other reasons, meaning that not all UPTs represent unintended pregnancies, and not all live births result from planned pregnancies. The new module can provide more detailed insight into these dynamics.

Beyond evaluating how effectively the new module on first reproductive experiences, piloted in the Czech GGS, captures initial reproductive events compared with national health registry data, this study will also explore some of the questions above. The aim is to better understand reproductive losses and strategies in cohorts experiencing delayed fertility, as well as in younger cohorts where late fertility patterns have stabilized.

References

- Beaujouan, E., Singh, S., Stastna, A., Kreidl, M., Dvořák, D., Hubatková, B., Kmentová, D., Slabá, J., Passet-Wittig, J., Goisis, A., Väisänen, H. (2025). First reproductive experience: a survey module. SocArXiv. March 26. https://doi.org/10.31235/osf.io/rkcbm_v1
- Kocourková, J., Slabá, J., Šťastná, A. 2022. The role of cohorts in the understanding of the changes in fertility in Czechia since 1990. *AUC Geographica* 57(1): 61–74, DOI: <https://doi.org/10.14712/23361980.2022.6>