The Swedish Pregnancy Panel at SU/Östra

Technical Report

Elias Markstedt[1,2], Petrus Olander[1], Lucy Zheng[1], and Elin Naurin (PI)[1]

[1]Department of Political Science, University of Gothenburg
[2]The SOM Institute, University of Gothenburg

April 2, 2024

With Helen Elden, Karolina Linden, Verena Sengpiel, and Dietlind Stolle

UNIVERSITY OF
GOTHENBURG

From the project Gothenburg Research Program on Pregnancy and Politics (PregDem) financed by the Swedish Research Council, Knut and Alice Wallenberg Foundation and University of Gothenburg.

Contents

1 Background

The Gothenburg Research Program on Pregnancy and Politics (PregDem, `https://www.gu.se/en/pregdem`) is a collaboration between political scientists, midwives and obstetricians from the University of Gothenburg and McGill University to investigate the impact of pregnancy and childbirth on individuals' views of society. The Swedish Pregnancy Panel at SU/Östra (hereafter SPP) is a six-wave longitudinal survey study fielded initially in 2019 by PregDem.

This technical report describes the design and data collection procedures of SPP. It also gives the SPP sample statistics as well as SPP sample statistics in comparison to other pregnant women and partners, and to Swedes in general. More information is available in our publications and upon request to principal investigator Elin Naurin (elin.naurin@pol.gu.se).

2 Study Design

The six-wave SPP was launched on September 16, 2019, lasting a total of two and a half years per respondent: from the participant's 12^{th}–19^{th} week of pregnancy, to the child(ren)'s second birthday. The rolling recruitment design means that the study went on for a bit more than three years in total. The last answer was recorded on the 18 October 2022.

Pregnant women and their partners (participants) were recruited in-person in the ultrasound clinic's waiting area at Sahlgrenska University Hospital East (SU/Östra) in Gothenburg, Sweden, as they were waiting for their appointment. Study information was also available on paper. Participants signed consent forms on paper and filled in a self-administered profile survey (wave 0) on tablets. Surveys after recruitment (wave 0) were self-administered through web surveys. Each survey took approximately 15–20 minutes to finish. All participants received incentives of 100 SEK vouchers after finishing wave 2.

Surveys were performed in Swedish, English, Arabic and Somali. The participant could choose different languages for each survey item if they preferred to go back and forth between languages. Survey distribution, data collection and panel maintenance were organized by the PregDem team and by an out-sourced actor – the company 101Digital – who contributed with coding for automated distributions and other programming solutions.

Figure 1: Waiting room at ultrasound clinic at SU/Östra

3 Recruitment Procedure Details

The recruitment took place in the waiting room of the ultrasound clinic at (SU/Östra) in Gothenburg, between September 16, 2019 and March 18, 2020. Pregnant women and their partners saw a banner ("Do you want to be part of a study on how pregnancy affects views of society? Participate in the Pregnancy Panel!"), printed information, and a presentation of the project running on a TV-screen, all including the logos of the University of Gothenburg and of Västra Götaland Region. While the information was there to catch the eye of the participants, recruitment was handled by one of five recruiters: two midwives and three political scientists. Most participants were recruited by the midwives who were hired for the purpose. The political scientists were the project's PI, the project's program manager and a project assistant. At least one, sometimes two, recruiter(s) were present during opening hours of the ultrasound clinic (7.00–16.00).

The picture below (Figure 1) illustrates the actual recruitment situation at SU/Östra. The recruiting mid-wife is standing next to the banner of the study, while the TV screen shows brief study information on ongoing studies.

Pregnant women and partners were asked if they would like to participate in the panel. Upon agreement, they were given a consent form on paper where they provided

contact information, their social security number (personnummer) and signature. The consent forms were then signed by the recruiter and saved in a folder. Participants were then asked to fill out a short recruitment survey (wave 0) using a tablet. There were eight tablets available, so several couples could complete the recruitment survey at the same time. When the recruitment survey was finished, the invite to wave 1 was triggered to be sent to the participant's email.

3.1 Who were in the ultrasound clinic's waiting room at SU/Östra?

In Sweden, maternity care and care that "cannot be deferred" are covered by the publicly funded universal health care for all legal residents and undocumented adults. Policy is set at the national level (Ministry of Health and Social Affairs) but implementation of these regulations (including care related to pregnancy, delivery, and postnatal care) is determined by the 21 regions individually. There are both public and private providers of maternity care; however, users do not pay for the care they receive.

Sahlgrenska University Hospital East (SU/Östra), is a public tertiary hospital serving the city of Gothenburg and its metropolitan area with a population of 1,049,262 (2020). To manage SU/Östra the elected assembly of Västra Götaland Region appoints a board of politicians. It is the regional assembly that sets the income tax that finances the bulk of the operation with contributions from the national level. Users of maternity related services do not pay a users fee, but are charged for food during stays at the hospital. The hospital hosts the only (public or private) delivery and postnatal ward within a 60 kilometer radius, and is one of four delivery hospitals in the Västra Götaland Region. Around 10,000 babies are delivered at the hospital annually. This means that it is the largest birthing hospital in Sweden.

In Sweden, all pregnant women are offered a so-called routine ultrasound screening (Swedish: rutinultraljud, RUL) at some point between the 18^{th} and 20^{th} pregnancy week. In the Västra Götaland region, they are also offered a prenatal ultrasound screening (Swedish: tidigt ultraljud, TUL) between the 12^{th} and 15^{th} pregnancy week. Most of these RUL and TUL of Västra Götaland took place at the ultrasound clinic at SU/Östra during the studied period, which was the reason recruitment was conducted in this waiting room specifically. In fact, as many as 96 percent of all the RUL in the city area and around 55 percent of all the TUL were performed at the hospital during the studied period. This means that 96 percent of all pregnant women in the area visited the ultrasound clinic's waiting area, and that around half of these did so around pregnancy week 12, and more or less all did so around pregnancy week 19

A total of 6,837 out of the 6,940 participants who completed the recruitment survey

Table 1: Modes of recruitment

	Pregnant	Partner	N (Row %)
Personally recruited in the hospital	3,775	3,062	6,837 (98.51)
Recruited by partner who met a recruiter in the hospital	–	35	35 (0.51)
Met us at the hospital, but did not have time/did not want to do the recruitment survey in the waiting area, so brought home the link to the recruitment survey.	51	16	67 (0.98)
Opt-ed in without having met us personally in hospital (via e-mail request)	1	0	1 (0.00)
N (Row %)	3,827 (55.1)	3,113 (44.9)	6,940 (100)

Table 2: Target groups and actual pregnancy week (PW) for each wave response

Wave	w0	w1	w2	w3	w4	w5	w6
Period survey was aiming for:	week 12–19	week 12–19	week 22–24*	week 36	2 mths post-partum	1 yr post-partum	2 yrs post-partum
Actual PW:							
1st quartile	14	14	22	36	49	93	144
Median	18	19	23	37	50	94	146
Mean	17.0	18.0	23.8	37.1	50.1	93.8	145.8
3rd quartile	19	20	25	38	51	95	147

Note: *The week the respondents were sampled to changed from week 22 to 23 on March 17, 2020. This was changed as the time between the first and the second wave was in practice shorter than was initially expected.

were recruited in the same way at the hospital.[1] 3,826 were pregnant women and 3,062 were partners of pregnant women. If the partner was not present in the waiting room, the woman was asked if she wanted to bring home information to them, and this resulted in 35 partner respondents. In 67 cases, the woman or the partner did not have time to fill out the survey in the waiting room, and instead used the opportunity to bring home login information to fill out the recruitment survey later. For an overview of the modes of recruitment, see Table 1.

The recruitment was aimed to take place as early as possible during the respondent's pregnancy. In practice this meant that we reached women in pregnancy week 12 to 19. Table 2 displays the targeted pregnancy weeks for each wave and information about what the actual pregnancy week was when each survey was completed.

[1] 6,989 started the survey, with 43 partial responses removed, the profile rate is $PROR = 99.4\%$

3.2 Recruitment non-participation

During recruitment, recruiters logged data on reasons for non-participation: 1) the number of respondents who declined to be in the study: number of respondents who already participated in the study or had been asked to participate on an earlier occasion; 2) the number of respondents who were approached but who were not in the population, such as those too late in the pregnancy or not expecting a child; and 3) the number of respondents who were not asked, for instance, due to lack of time, i.e., we could not ask before the respondent was called by midwife or doctor, or there was a language problem we couldn't get past.

Based on the numbers in Table 3, which shows the statistics from the logbook, a total of 9,625 eligible (or potentially eligible) respondents were approached.[2] We exclude the 3,693 who either were already recruited or who were not part of the population of interest. This results in a recruitment rate of 72 percent.[3] 30–70 pregnant women and partners per week declined participation and 267 pregnant women and partners agreed to participate per week, resulting in a refusal rate of around 19 percent.

Table 3: Reasons for non-participation

	Declined to participate	Missed[a]	Not part of population[b]	Total
Pregnant	740	714	317	1,771
Partner	656	532	203	1,391
Total	1,396	1,246	520	3,162

Note: [a] We did not have time to ask them, they were called by doctor, etc. We don't know what category they belong to. [b] Too late in pregnancy or not expecting. Furthermore, in 3,173 instances, we approached individuals who had already been approached (i.e., were already part of the recruited group or the group that declined to participate).

[2] 6,940 completed recruitment surveys + 43 partial recruitment surveys + 1,396 refusals + 1,246 missed.

[3] According to the hospital, there were 6,133 booked ultrasound examinations reported in the hospital registries. 6,133 is the number of unique personal numbers recorded as having been booked for one of or a combination of the following: early ultrasound examination, routine ultrasound examination, or CUB screening. However, it is not uncommon to not show up for examinations. Using this number, the recruitment rate of this study is 56 percent ($6,133 \times 2 = 12,266$). Also, about 5,300 of the pregnant women we could have recruited during this period, the ones who were booked for an examination during our recruitment period, should have given birth at Östra: $10,156/2 = 5,274$. 10,156 is the number of births during 2020. This corresponds well with the estimate that 86 percent gave birth at Östra according to registries.

4 Survey Details

4.1 Survey languages

The surveys could be taken in Swedish, English, Arabic and Somali, although most respondents answered in Swedish. Arabic and Somali are two of largest minority languages spoken in Gothenburg. The distribution of survey languages is presented in Table 4. Although we recruited few and lost many of the foreign language respondents, having the translated surveys in Arabic and Somali during recruitment was valuable, as it helped us convey a sense of inclusion and understanding. We were able to match register information for 5,924 of our respondents (85 percent): 83 percent of these respondents were born in Sweden, 6.9 in Asian (most of which in Iraq, Iran, Syria, and India) and 1.8 in African countries (many foreign born in Sweden speak good enough Swedish and English and those have often taken the survey in those languages).

Table 4: Language distribution by survey

Wave	Swedish		English		Arabic		Somali		
	N	Percent	N	Percent	N	Percent	N	Percent	N total
0	6,447	93.0%	408	5.9%	64	0.9%	16	0.2%	6,935
1	4,447	93.9%	255	5.4%	28	0.6%	5	0.1%	4,735
2	3,995	94.1%	218	5.1%	30	0.7%	2	0.0%	4,245
3	3,463	94.6%	178	4.9%	18	0.5%	2	0.1%	3,661
4	3,136	95.3%	136	4.1%	16	0.5%	1	0.0%	3,289
5	2,638	95.5%	115	4.2%	8	0.3%	1	0.0%	2,762
6	2,253	95.8%	91	3.9%	6	0.3%	1	0.0%	2,351

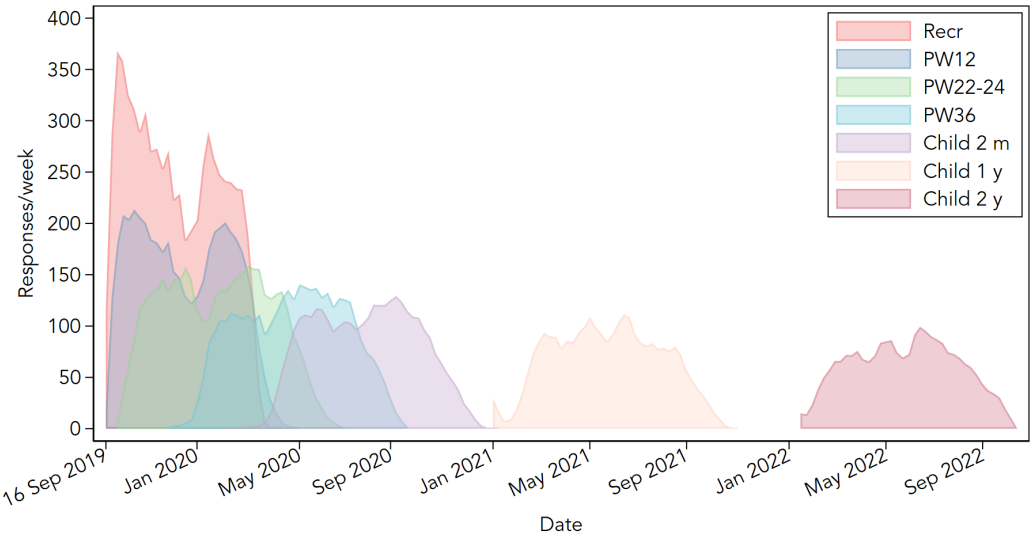
4.2 Survey distribution after recruitment

An invitation to wave 1 was sent automatically after being registered (completing wave 0 survey at recruitment). Survey distribution was done through Qualtrics, with consultation from company 101Digital.

Every Wednesday, survey invites and reminders were sent, with participants selected each week based on 1) Participant's calculated pregnancy week, and 2) A minimum threshold of 21 days since the preceding wave was completed.

Originally, we intended to maintain a balanced panel, in that participants who did not complete the survey at one wave were not sent the survey for the following wave. However, due to concerns about COVID-19's impact on willingness to participate (see point 6 below), which may affect responding at a particular wave, we decided to send

Figure 2: Weekly inflow of responses



surveys to those who had missed one or more waves. Weekly influx of survey responses for each wave is visualized in Figure 2.

In Table 5, we describe the response rates. The number of participants invited to each wave make up the gross sample size (GSS). In wave 0, the GSS count describes the people agreeing to participate in the PregDem panel. In the later waves the GSS consist of the people that have received an email invite to that particular wave. The response rate is calculated by dividing the number of completed responses for each wave by that particular wave's GSS.

4.3 Reminders

The participants received an invitation to respond to the survey based on the due date (during pregnancy and the first wave after birth), and the birth date (in wave 5 and 6). Participants that did not respond within one week received an email reminding them of the invitation, and again after another week. The invitations and the reminders did not vary across respondents and survey, except during Wave 2 when the emails included a note about the incentive, a gift card of 100 SEK, which they would receive upon completion of that survey. Participants that did not respond after the second reminder received a telephone reminder.

Table 5: Response rates

PregDem wave	0	1	2	3	4	5	6
Gross sample size (GSS)	9,630	6,935	5,268	6,038	6,511	6,051	6,296
Completed responses[a]	6,251	4,577	4,132	3,555	3,199	2,695	2,294
Partials and breakoffs	684	42	18	19	15	41	7
Response rate (RR5[b])	65%	66%	78%	59%	49%	45%	36%
Retention rate[c]		66%	60%	51%	46%	39%	33%
No. of field days[d]	217	233	281	300	340	314	272

Note: [a] Completed responses are defined as less than 20 percent item nonresponse, which is why this number can deviate from corresponding wave totals. [b] The response rate is calculated as the completed responses divided by GSS. This rate corresponds to response rate 5 (RR5) as defined in the American Association for Public Opinion Research's standard definitions (AAPOR). [c] The retention rate is calculated as the proportion of completed responses divided by the number of recruited respondents in wave 0. [d] No. of field days refers to the number of days that the survey was open and could be completed.

5 Comparisons With Other Samples

Who do we reach with our recruitment for the SPP? How many and what type of participants chose to answer our surveys?

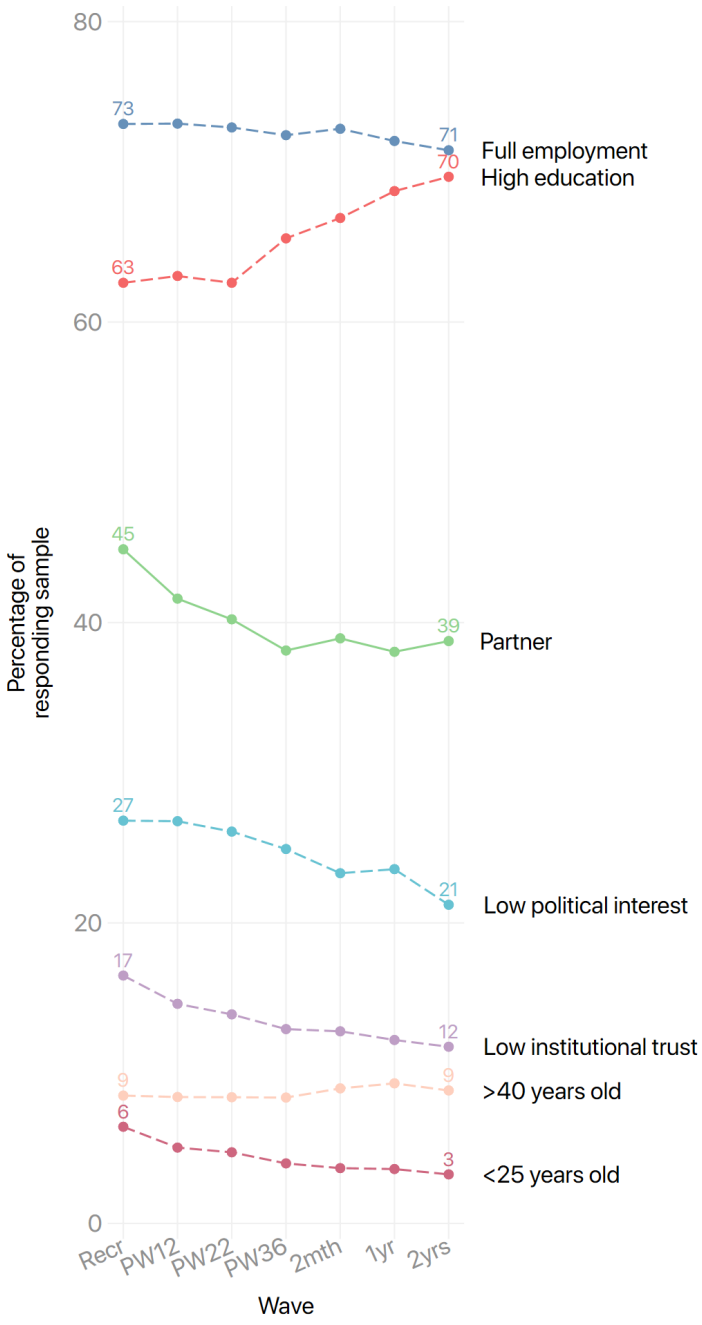
The aim of this section is to show how participants in SPP compare to two groups: 1) Swedes in general,[4] 2) pregnant participants in the Swedish Citizen Panel (SCP).[5]

Figure 3 displays a summary of some characteristics that are either known to correlate with high panel participation rates, or interesting given our unique research environment.

[4]Data obtained from different sources, including survey data from the Society, Opinion, and Media (SOM) surveys and register data from Statistics Sweden (SCB)

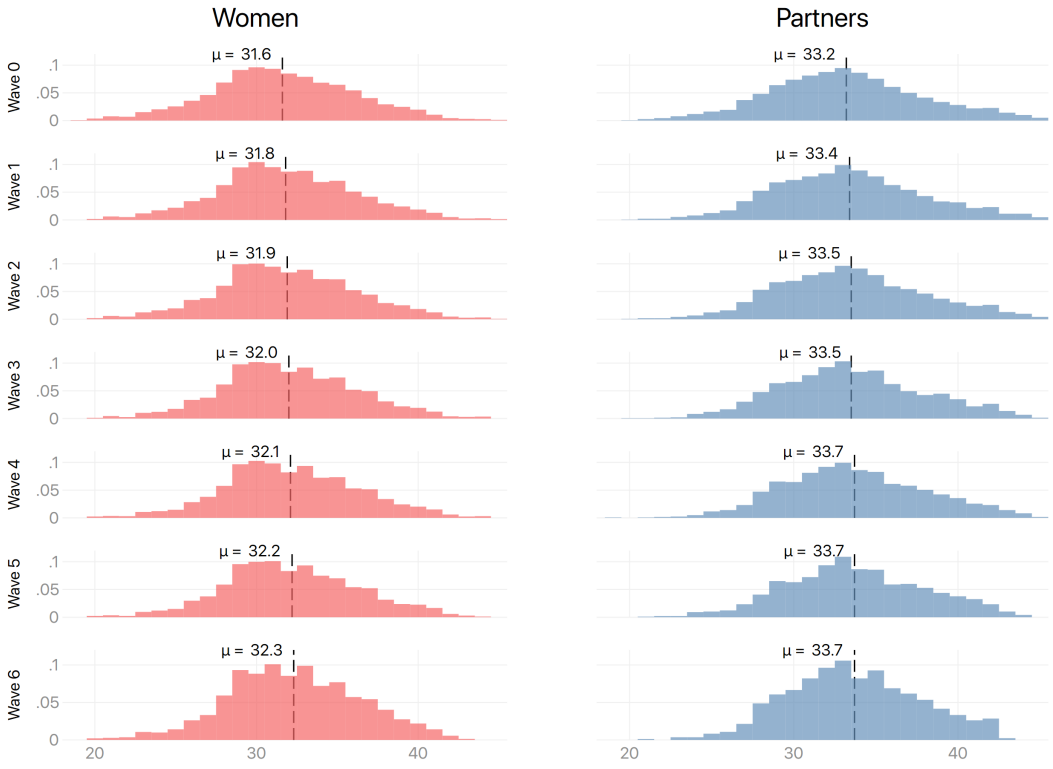
[5]Data obtained from The Swedish Citizen Panel (about $N = 75,000$), a large non-probability online citizen panel administered by the Laboratory of Opinion Research (LORE), University of Gothenburg.

Figure 3: Proportions of different participant characteristics over waves



Note: The variables have been recoded into dichotomous variables to report proportions of different important characteristics among the responding SPP sample in each survey wave. When applicable, the first available response is used. High education (partial or completed university degree) was first measured in wave 2. Low political interest is defined as response options 1–3 on a six-point scale. Low institutional trust is defined as respondents who, on average, score lower than three on a five-point scale. Political interest and institutional trust were first measured in wave 1.

Figure 4: Age by wave



Note: The histogram shows the age among the responding sample at the time of recruitment.

5.1 Age

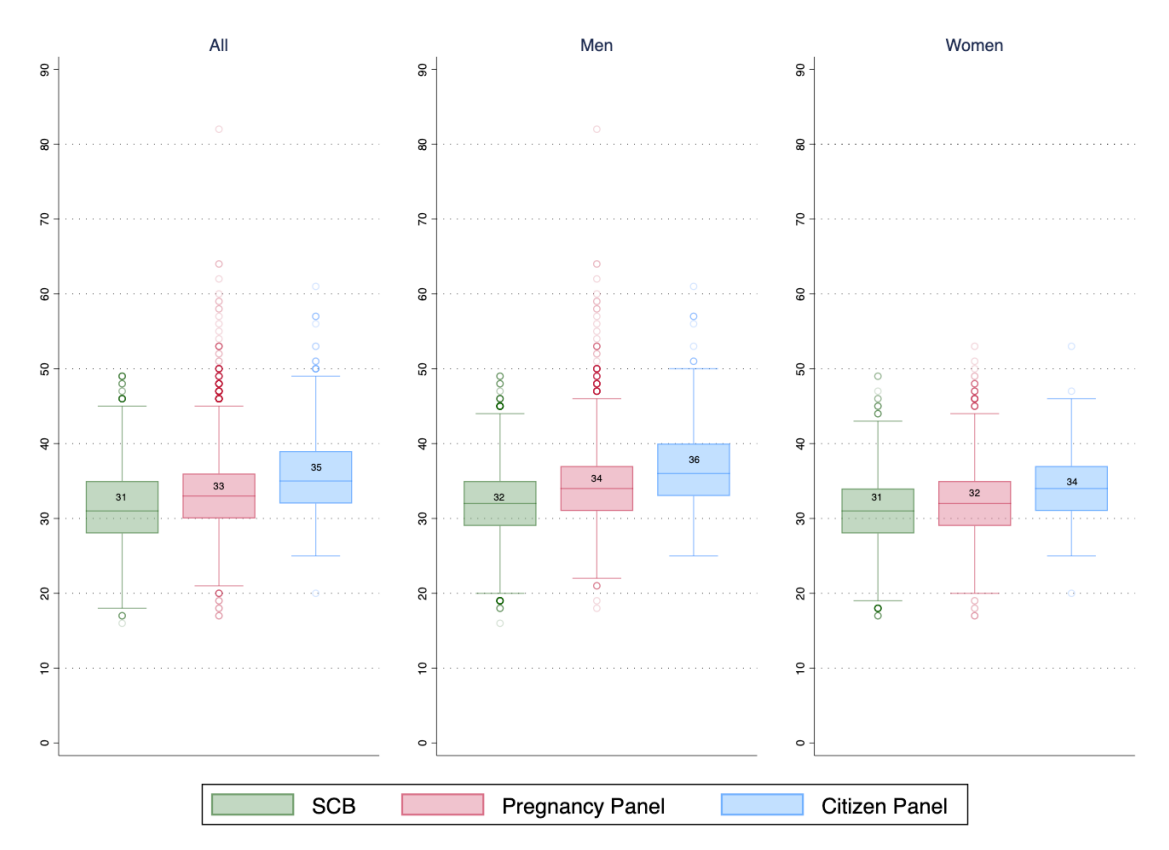
In this section, we cover the age distribution of participants in the SU/Östra Pregnancy Panel and compares them to the pregnant sample of the Swedish Citizen Panel (SCP)[6] and register data from Statistics Sweden (SCB).[7]

In Table 4, we show the age distribution in seven waves, 0 to 6 by pregnant and partner participants, while Table 6 shows the same categorical distribution from three different data sources mentioned above, by sex. Box plots of ages from these data sources are visualized by sex in Figure 5.

[6]The data from the SCP is defined by domiciles of Greater Gothenburg and registered births in any wave that a respondent reported that they had given birth, meaning that years span over 2015 to 2020.

[7]The data from SCB is based on the parents ages at the time of all births in the Greater Gothenburg area, defined by SCB. The Greater Gothenburg area includes 13 municipalities: Kungälv, Stenungsund, Tjörn, Öckerö, Gothenburg, Mölndal, Partille, Härryda, Lerum, Ale, Alingsås, Lilla Edet and Kungsbacka. See: `https://www.scb.se/contentassets/1e029349874242259b730c5e9a82f7e74/storstadsomr_karta.pdf`

Figure 5: Age distribution – comparisons between different data



Note: The boxplots represent various statistics of the age distribution. The box represents the first (25th percentile), second (median, reported number inside each box) and third quartile (75th percentile). Whiskers represent minimums and maximums, calculated by subtracting (lower whisker) or adding (upper whisker) the product of 1.5 * (75th percentile–25th percentile) from the lower and upper quartiles, respectively. Values beyond the whiskers are upper and lower outliers represented by the hollow dots in the graph.

Table 6: Age groups – comparisons between different data sources

	Stats Sweden (SCB)			Pregnancy Panel (SPP)			Citizen Panel (SCP)			Δ SPP–SCB	Δ SCP–SCB
Age groups	Man	Woman	Total	Man	Woman	Total	Man	Woman	Total	Total	Total
15-20	0.9	1.7	1.3	0.1	0.3	0.2	0.0	0.3	0.1	1.1	-1.2
21-25	7.9	11.0	9.4	3.0	6.1	4.7	0.2	1.0	0.6	4.7	-8.8
26-30	31.0	36.2	33.5	19.1	29.3	24.8	7.7	16.8	11.4	8.6	-22.1
31-35	38.4	34.7	36.6	42.2	40.9	41.5	34.6	43.8	38.3	4.8	1.7
36-40	18.2	14.0	16.2	23.8	19.5	21.4	33.4	29.5	31.8	5.2	15.6
40+	3.7	2.3	3.0	11.8	3.9	7.4	24.1	8.6	17.8	4.4	14.7
Total	100	100	100	100	100	100	100	100	100	4.8	10.7
N	6424	5927	12351	2967	3778	6745	428	292	720	–	–

Note: *The week the respondents were sampled to changed from week 22 to 23 on March 17, 2020. This was changed as the time between the first and the second wave was in practice shorter than was initially expected..

5.2 Education

To capture levels of educational attainment, participants are asked to choose the most fitting alternative among nine possible options. In this comparison, they were were reduced to six options, in order to harmonize with the levels in the SCB and SCP sample. Table 11 shows the distribution as compared to SCB and SCP.

Table 7: Educational attainment – comparisons between data sources

	SCB			Pregnancy Panel (W2)			Citizen Panel			$\Delta SPP-SCB$	$\Delta SCP-SCB$
Educational attainment	Man	Woman	Total	Man	Woman	Total	Man	Woman	Total	Tot	Tot
Compulsory school	7.8	10.4	9.1	1.6	1.2	1.4	0.0	0.0	0.0	-7.8	-9.1
High school. shorter than 3 years	8.6	12.2	10.4	1.7	1.7	1.7	0.6	0.9	0.7	-8.7	-9.7
High school. 3 years or longer	26.2	30.8	28.5	19.4	14.2	16.2	5.3	3.6	4.6	-12.2	-23.9
Tertiary education. shorter than 3 years	18.3	17.8	18.1	16.3	15.8	16.0	13.1	9.3	11.5	-2.1	-6.5
Tertiary education. 3 years or longer	37.8	27.2	32.4	55.5	63.3	60.2	74.4	82.0	77.6	+ 27.8	+ 45.2
Postgraduate education	1.3	1.7	1.5	5.5	3.9	4.5	6.6	4.2	5.6	+ 3.0	+ 4.1
Total	100	100	100	100	100	100	100	100	100	10,3	16,4
N	213113	218656	431769	2331	1483	3814	473	334	807	–	–

Note: *The week the respondents were sampled to changed from week 22 to 23 on March 17, 2020. This was changed as the time between the first and the second wave was in practice shorter than was initially expected.

6 Adjustments to design due to ”the SWEPIS study” and the Covid-19 pandemic

In longitudinal data collections, there is sometimes a need to be able to adjust to unforeseen events. In our case such events had to do with a study performed at the hospital and with the COVID-19 pandemic.

6.1 The SWEPIS study on inducing births

In November 2019, a study published in the British Medical Journal showed a significant difference in perinatal deaths between those who had induction carried out in week 41 and those who had it in week 42 (Wennerholm et al.). The effects were that the hospital had to reorganize its care around induction of births so that women got induced before week 42. This meant that more rooms needed to be available, and more staff were tied up with inductions. It also became a talking point among patients late in pregnancy and appeared in local news papers. One suggestion that came up among obstetricians at the hospital was to solve the problem with lack of rooms by allowing healthy women to go home for a while after having been induced by the obstetrician. SPP was asked to participate in the preparation of this potential change of procedures at the hospital by asking respondents in the panel whether they preferred to stay at the hospital or go home for a while after having been induced. The item was included in wave 2 between January 15 and March 24. The answers were used in a research application to study further the possibility of staying home during induction.

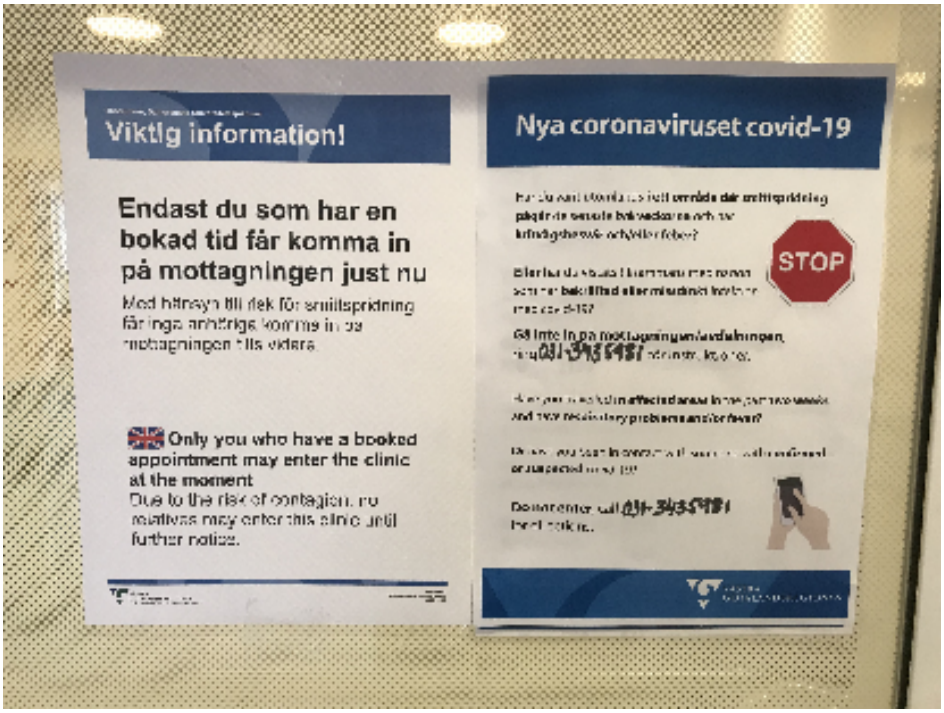
6.2 The Covid-19 pandemic

Due to the COVID-19 pandemic, we had to end recruitment in the waiting area of the ultrasound clinic on March 18, 2020. Recruitment had been impacted also the month before. The open-ended answers and comments that we got from the participants in the panel showed that the pandemic was on top of their minds and that the surveys needed some changes in order to appear updated to the them. These changes facilitated our understanding of how pregnant women and partners were affected by the pandemic. Table 8 shows the series of events during early 2020, at the onset of the pandemic.

Table 8: Series of Covid-19-related events that impacted recruitment

Date	Event	Impact	Action
February 26, 2020	This is the first day that our recruiting midwifes logged that one respondent did not want to hold the tablet computer, stating Covid-19 as the reason. Since then until the end of the recruitment a few people each week say the same.	First indication of a possible future decrease in the number of recruited. There are signs in open ended survey responses that corona is on the mind of some respondents.	Hygiene measures had been taken from start, wiping tablets with sanitizers between each respondent. We did not change these measures, but noticed that respondents noticed this.
March 12, 2020	Partners are prohibited to join pregnant visitors in the waiting room and their ultrasound screenings.	Instead of accessing the waiting room, partners wait for the pregnant woman in the public entrance. We cannot recruit partners in person anymore.	The recruitment strategy changes. Women still do surveys on the tablet, but bring recruitment material home to their partner. We also arrange for the possibility to do the survey on their own phone and bring information to their partners. All participants are given their own pen and bring it home.
March 17, 2020	All early ultrasound screenings (so called TUL) are canceled indefinitely.	A lower number of potential pregnant recruits is expected at this point	None
March 18, 2020	The recruitment effort is canceled by the hospital. The Pregnancy Panel is one of the last studies to be paused at the hospital. Many other are put on hold before us.	No new participants are recruited	We withdraw our recruitment activities from the ultrasound clinic at Östra
March 24, 2020	Questions related to the coronavirus are added to the survey. We include attention- and worry-items with similar formulations as the pregnancy items on attention and worry. We also include an item on how much you are personally affected (closed and open ended). We move from a balanced to an unbalance sampling, so that all get the next survey, no matter if they answered the one before.	Surveys become 1 minute longer, but more relevant to respondents.	See “Event” column.
April 14, 2020	Some of our corona items and original items are included in the SOM Institute’s Corona survey (launched April 14) to understand the extent to which pregnant respondents and partners are differently affected	We thus begin our effort to compare to a nationally representative sample earlier than planned and triple the efforts (see also next line)	
October 2020	The National SOM survey and the Gothenburg SOM survey are lauched by the SOM Institute and we are part of both to compare our sample to theirs	We enlarge the comparison to to non-pregnant samples to include not only the Gothenburg’s municipality, but also a Sweden-wide population-based sample.	

Figure 6: Picture of the sign on the door to the waiting room the 12 of March 2020 prohibiting partners from entering the waiting room)



References

AAPOR. *Standard definitions: final dispositions of case codes and outcome rates for surveys, 9th edition*. The American Association for Public Opinion Research, 2016.

Wennerholm, Ulla-Britt, et al. "Induction of labour at 41 weeks versus expectant management and induction of labour at 42 weeks (SWEdish Post-term Induction Study, SWEPIS): multicentre, open label, randomised, superiority trial". *bmj* 367 (2019).