Q-IVF
Nationellt kvalitetsregister
för assisterad befruktning

Fertility treatments in Sweden

Annual Report 2025

Refers to treatments started in 2023

RESULTS and TRENDS

Photo of Juan Manuel Sanches, Unsplash

Table of contents

Notes from the head of the Registry

Christina Bergh, Head of Q-IVF

The first child in the world born as a result of in vitro fertilization (IVF) was born in 1978. During the 47 years since the start of IVF, techniques have developed immensely, both in terms of birth rates and in terms of maternal and child safety. Furthermore, today IVF can be offered to a wider range of patients, and treatments have been much simplified. As a result of IVF, to date over 13 million children have been born worldwide.

Since the first child was born in Sweden as a result of IVF in 1982, legislation on assisted reproduction has been changed or amended several times. Applicable regulation on assisted reproduction can today be found in *Lagen om genetisk integritet* (The Genetic Integrity Act, SFS 2006:351).

Some milestones reached in the last twenty years in Sweden are:

- 2003: Oocyte donation becomes allowed.
- 2005: IVF-treatment of lesbian couples becomes allowed.
- 2016: IVF-treatment of single women becomes allowed.
- 2019: The legal requirement of maintaining a genetic link between at least one parent and child is removed. Treatments where both the oocyte and the sperm have been donated now become allowed, as well as treatments with donated embryos.
- 2019: The period during which cryopreserved embryos can be stored is extended to ten years.
- 2019: It is decided that neither commercial nor altruistic surrogate motherhood is allowed in Swedish healthcare.

In Sweden, both privately and publicly owned care providers perform fertility treatments. In total, just over 24 500 treatments were performed in 2023, including fresh and freeze cycles and inseminations (with donor sperm). The couple's own gametes are used in a majority of the treatments, with about 24 percent of the treatments being performed with either donated oocytes or donated sperm or both. Lately, the possibility of freezing unfertilized oocytes with good success rates has also emerged. This means that women who suffer from a disease where the cure or treatment may damage the function of the ovaries can now cryopreserve their oocytes with the possibility of having children later. This also applies to women who want to freeze oocytes for social reasons or gender dysphoria. For men who will have a treatment that is harmful to sperm production, fertility-preserving sperm freezing has been possible for a long time. Donated sperm is also frozen and has long been used primarily for intrauterine inseminations but also for IVF treatment. Sperm freezing procedures *per se* are not registered in Q-IVF.

The National Quality Registry for Assisted Reproduction (Q-IVF) was introduced in 2007. Consequently, this years' report is the 17th from Q-IVF. It covers all treatments (except inseminations with partner's sperm) initiated in 2023 at the six public and 17 private IVF-clinics that were affiliated to Q-IVF during that year. Data was not reported from two private clinics.

The aim of Q-IVF is to monitor treatment results and identify potential risks for women and men who have undergone IVF-treatment as well as children born as a result of IVF. The registry likewise is a valuable data source for clinics to benchmark their development and qualitative work, as well as being a base for research.

The Regional Board of Västra Götaland was at the start of Q-IVF 2007 the authority responsible for the registry and handling of personal data. This responsibility was transferred to Karolinska University hospital in Stockholm during 2021. The head of the Registry is Professor Christina Bergh, Gothenburg and the registry coordinator is midwife Linda Kluge. The steering group consists of representatives from all reporting IVF clinics in Sweden and statistician Karin Källén. The steering group meets twice a year, with alternating chairpersons every 2-4 years. The current chair is Associate Professor Evangelia Elenis, Uppsala University hospital. The register is financially supported by SKR and the state, fees from extraction of research data and through fees from affiliated clinics.

Q-IVF is affiliated with Registercentrum (QRC) in Stockholm which supports quality registries.

Data from Q-IVF is used in several research projects, including projects that involve short and long-term follow-up studies on children born as a result of IVF, and their mothers. Q-IVF reports aggregated data to "Vården i siffror", the Nordic Fertility Society (NFS) and to the European Society of Human Reproduction and Embryology (ESHRE).

Christina Bergh, Head of Q-IVF

Steering Committee

Working group

Christina Bergh, head of the registry, MD, Professor emerita, Sahlgrenska University Hospital, Gothenburg

Linda Kluge, Registry Coordinator, Midwife, PhD, Livio Gothenburg

Evangelia Elenis, Chair of the Steering Committee, MD, Associate Professor, Uppsala University Hospital

Karin Källén, MD, statistician, Professor, Lund University

Representatives for participating clinics

Chair of the Steering Committee: Evangelia Elenis, MD, Associate Professor, Uppsala University Hospital

Nona Sargisian, MD, Sahlgrenska University Hospital

Carin Lindén, MD, PhD, Karolinska University Hospital, Huddinge

Susanne Liffner, MD, PhD, University Hospital, Linköping

Margareta Kitlinski, MD, PhD, Skåne University Hospital, Malmö

Juliane Baumgart, MD, University Hospital, Örebro

Jan Holte, MD, PhD, Carl von Linnaeus Clinic, Uppsala

Anna Karin Lind, MD, PhD, Livio Sweden

Cina Nyberg, MD, Livio Stockholm

Arthur Aanesen, MD, PhD, Sophiahemmet, Stockholm

Eva Lundborg, MD, Nordic IVF Gothenburg

Pia Saldeen, MD, Associate Professor, Nordic IVF Sweden

Sujata Lalit Kumar, MD, PhD, Stockholm IVF

Johanna Schmidt, MD, PhD, Göteborgs IVF klinik

Zahra Sabeti Rad, MD, PhD, Lund IVF Center

Renata Gustafsson, embryologist, Gynhälsan Jönköping

Lana Joelsson, MD, PhD, Västerås IVF

Adam Abdulmajeed, embryologist, CMedical Stockholm

Other

Ulla-Britt Wennerholm, obstetrician, MD, Professor, Sahlgrenska University Hospital, Gothenburg

Stina Järvholm, Behavioral Scientist, Associate Professor, Sahlgrenska University Hospital, Gothenburg

A representative of the "National Association of Involuntary Childlessness"

Dictionary Terms and definitions

Assisted reproduction	Use and manipulation of gametes (oocytes and sperm) outside of the body
Biochemical pregnancy	A positive pregnancy test (urine or serum) ahead of an ultrasound verification of a gestational sac
Blastocyst	An embryo five to six days after fertilization
Clinical pregnancy	A pregnancy where a gestational sac is visible on an ultrasound
DET	Double embryo transfer: transfer of two embryos
Delivery	The complete expulsion or extraction from a woman of one or more fetuses, after at least 22 completed weeks of gestational age, irrespective of whether they are live births or stillbirths
Double donation	A treatment cycle including both donated oocytes and donated sperm
Embryo	A fertilized egg having reached the cell division stage
Embryo donation	A treatment with donated embryos
ET	Embryo transfer: transfer of an embryo or embryos into the uterus
Fertility preserving oocyte freezing	Treatments when oocytes are frozen due to oncological, other medical or non-medical reasons (social freezing) to preserve fertility.
FET	Frozen embryo transfer: transfer of a cryopreserved embryo
Freeze-all	All embryos are cryopreserved for use later, and no transfer of embryos taking place in the fresh cycle
Freeze cycle	Treatment cycle with cryopreserved embryos
Fresh IVF-cycle	A treatment cycle with or without hormone stimulation aiming for oocyte retrieval and embryo transfer
Gamete	Reproductive cell, an oocyte (egg) or a sperm
ICSI	Intracytoplasmic sperm injection: fertilization using microinjection, where a sperm is injected directly into the oocyte via a thin needle; a method used when the sperm count is low, where the sperm motility is low, or after a previous cycle with no or very low fertilization after St. IVF
IUI-D	Insemination with donor sperm
IVF	In vitro fertilization: fertilization occurring outside of the woman's body
Multiple birth	The complete expulsion or extraction from a woman of more than one foetus, after 22 completed weeks of gestational age, irrespective of whether it is a live birth or stillbirth. Births refer to the individual newborn; for example, a twin delivery represents two births
Multiple pregnancies	A pregnancy where the women is pregnant with multiple foetuses
OPU	Ovum pick up; oocyte retrieval from the ovaries
Own gametes	The couple's own oocytes and sperm are used in a treatment
SET	Single embryo transfer
St. IVF	Standard IVF: oocyte and sperm placed together in a petri dish filled with nutrient solution and the sperm fertilizing the oocyte
Treatment cycle	A treatment initiated either by hormones or by start of menstruation

Background - childlessness and its causes

Infertility, or involuntary childlessness, is defined by the WHO as no pregnancy occurring despite unprotected sexual intercourse regularly for one year. Primary infertility means that a woman has never been pregnant, or that a man has never given rise to a pregnancy. Secondary infertility means that a woman has been pregnant, or that a man has given rise to a pregnancy but then he or she has difficulty achieving another pregnancy.

Fertility problems affect 10–15% of all heterosexual couples. The cause for these problems differs. About one third of the problems are related to the man (e.g. low sperm count, low sperm motility), about one third of the problems are related to the woman (ovulation disorders, blocked fallopian tubes, endometriosis, etc.), and about one third of the problems are related to both the man *and* the woman. In some cases, no explanation is found, then called unexplained infertility.

Fertility treatment

It is estimated that about two thirds of all subfertile couples/patients can become pregnant and have children after check-ups and treatment. By treatment, we refer to various medical treatments to help a woman get pregnant, including sperm insemination and in vitro fertilization (IVF). Both insemination and IVF can be performed either using own or donated gametes.

During insemination, sperm from the husband or donor is inserted into the woman's uterus at the time of ovulation. This report only presents the results from insemination with donated sperm (IUI-D).

During IVF, oocytes are retrieved from a woman's ovaries and fertilized by sperm in a laboratory. Fertilization is achieved by adding sperm to the oocytes in a special dish (Standard IVF) or by injecting a sperm directly into the oocyte. The latter method is called microinjection or intracytoplasmic sperm injection (ICSI). If the oocyte fertilizes and an embryo is developed, it can be transferred into the uterus. In this report, we use the term IVF to denote both St IVF and ICSI, unless otherwise stated. We present data both on IVF using own and donated gametes.

In most cases, the aim of an IVF-treatment is for the woman who undergoes the treatment to get pregnant in the same treatment cycle or soon thereafter in case of freezing of all embryos. However, the treatment can also be used to retrieve oocytes for donation purposes or for oocyte/embryo freezing in order to preserve a woman's fertility (see below). Thus, not all started treatments result in an immediate transfer of an embryo into the uterus.

A treatment cycle

A fertility treatment, such as IVF, usually takes a couple of weeks, and is referred to as a treatment cycle. An IVF treatment can be performed either as a fresh treatment cycle or by transfer of frozen/thawed embryos. In recent years, more freeze cycles are carried out than fresh cycles. In about half of all fresh cycles, the method of fertilization is standard IVF (St IVF) and in the other half it is ICSI.

How we collect data

The number of started treatments (own and donated gametes) has increased from about 3000 in 1992 to just above 24 500 in 2023. Of children born after fertility treatments in Sweden, for the present year (treatment start 2023), 5508 children have been conceived through IVF (own or donated gametes) and 296 children through donor insemination. It is important to follow up the results of the treatments to be able to confirm that these treatments are as safe and effective as possible.

The company Omda has been the register's IT platform since 2014, and in 2019 extensive development work was carried out regarding reporting. Data is since 2020 reported digitally with daily updates and continuous presentation of results, replacing the previous system using yearly compilations. This on-line system allows individual clinics to make use of much more up-to-date data, which is supporting the clinics' pursuit of qualitative work.

How should we interpret data?

A common measure of treatment outcome is the proportion of started treatments that results in a live birth. However, IVF treatment involves many steps. There are several reasons why a started treatment does not lead to the transfer of a fertilized egg. A treatment cycle can be cancelled due to either few or no ovarian follicles being developed, to the fertilization process or embryo development is failing, or due to other complications, such as ovarian hyperstimulation syndrome (OHSS). When there is a risk of OHSS, one often chooses to cryopreserve all embryos, which reduces the risk of OHSS. The freezing methods today are very effective, with a high rate of embryo survival after thawing. The woman can then have a thawed embryo transferred later without risk of OHSS and with a remaining high chance of pregnancy and live birth.

In some cases, a treatment cycle is started without the objective of transferring an embryo, for example when women cryopreserve oocytes or embryos, ahead of chemotherapy or other medical indications, for later use. These cycles are thus excluded when calculating live birth per started cycle in this report. Comparing the number of live births per embryo transfer is another way to measure effectiveness and this measure of treatment outcome is also used in this report. The effectiveness of the cryopreservation cycles is increasing, something that is primarily associated with extended culture to the blastocyst stage and improved cryo techniques. Culturing embryos to the blastocyst stage facilitates the selection of embryos which are more viable. In addition, the freezing methods have improved, thus a larger part of embryos survive freezing and thawing.

How data can be used

Each participating clinic can, after secure login, access their own data via the register's website and compare them against national data. An annual report is presented to the public with treatment results and trends as well as so-called "open comparisons" of live birth rates and patient care satisfaction at individual clinics.

In the meeting with patients, the clinics can use national data to demonstrate, for example, how the birth outcomes vary in different age groups. Using Q-IVF's annual report, patients can also themselves check the effectiveness of the different methods of assisted reproduction. This information may make it easier to better understand the treatment and chances of getting pregnant.

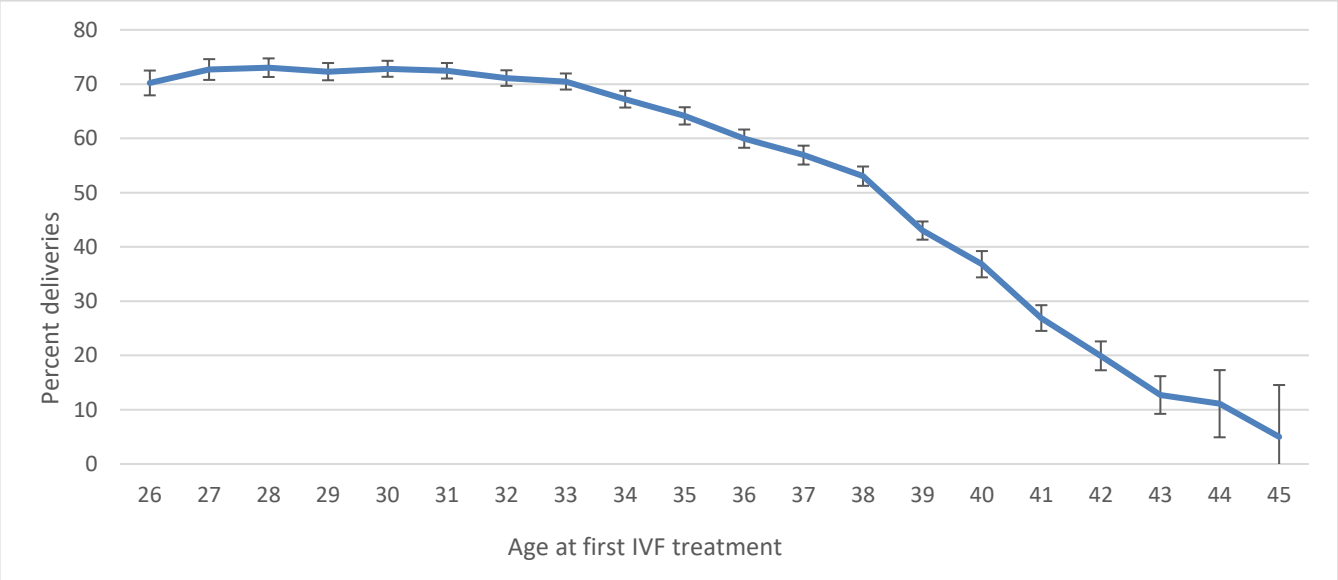
Introduction

Will we/I succeed in having a baby with IVF treatment?

This question cannot be answered with certainty. You can succeed in having a baby despite unfavourable circumstances and you could be unsuccessful even though your circumstances are favourable. The different factors affecting the chances of having a bab are discussed at the appointment with the treating doctor at the clinic.

The woman's age is the most important factor in determining your chances of success, since the quantity and quality of a woman's oocytes become poorer as she ages. A man's age is also of some importance, but much less, since sperms are produced in the testicles continuously. The importance of the female age factor is shown in the graph below. The graph shows the chance of delivering a baby after an 18-month-treatment period, a period that may include one or several treatment cycles.

Figure 1 *Proportion of women achieving a delivery within 18 months of their first started IVF-treatment (One or more fresh and/or frozen embryo transfers). Own gametes.*



The graph above includes women who underwent their first oocyte retrieval during the period 2012-01-01 to 2022-06-30. The age indicates a women's age at start of the first treatment.

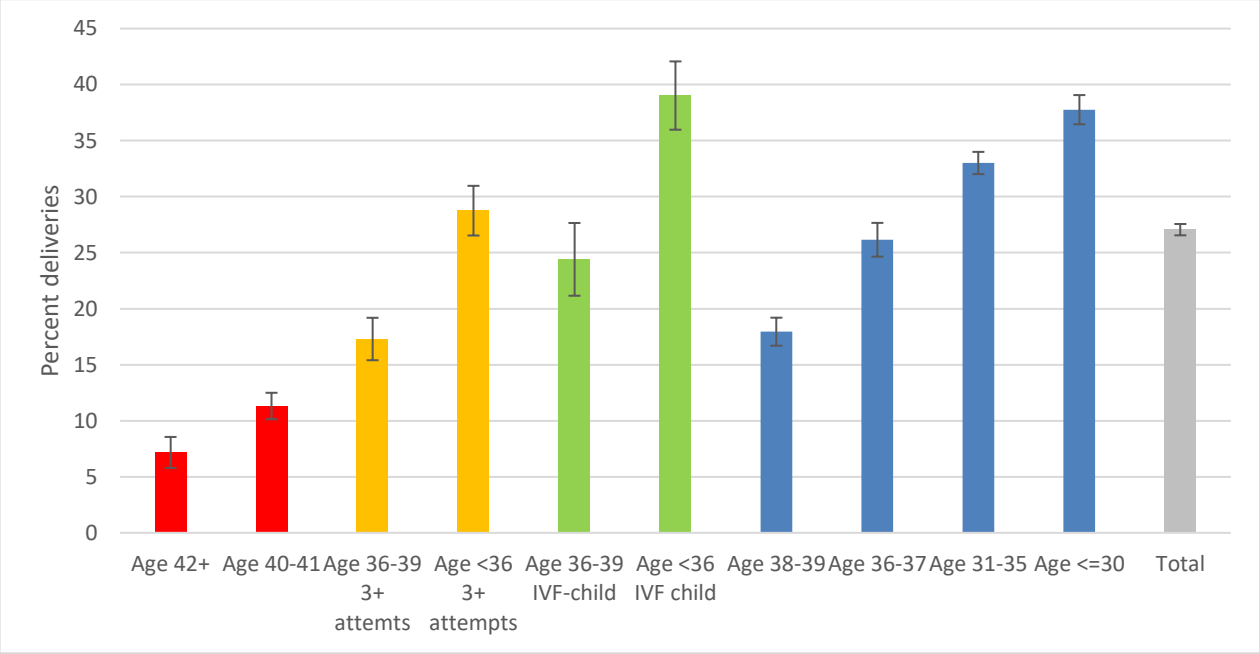
AMH (Anti Müllerian Hormone) is a hormone which is measured in the blood and indicates a woman's ovarian reserve. The level of AMH is used to predict how many oocytes can be retrieved during IVF-stimulation. However, the level of AMH is not associated with the oocyte quality. Another way to evaluate a woman's ability to produce oocytes is to count the number of small (undeveloped) ovarian follicles. The level of AMH can vary greatly between different women of the same age.

Sperm quality (sperm count and motility) affects one's chance of having a baby with spontaneous conception but is less important in determining the chance of succeeding with an IVF-treatment.

How long time a couple has tried to become pregnant and have a baby is important for the assessment of when it is reasonable to initiate an IVF-treatment.

Having had an **IVF-baby** in an earlier treatment increases the chance of succeeding again. This is shown in Figure 2, where the green bars show the probability of success for women already having IVF children. Figure 2 also shows that more than three prior unsuccessful IVF-treatments affect one's chances negatively when the individuals continue undergoing IVF treatment (yellow bars). The red bars in the chart show the impact of advanced age on success rate.

Figure 2 *Delivery rate per first embryo transfer after a fresh oocyte retrieval (with fresh transfer or, if the first treatment resulted in a so-called "freeze-all", first embryo transfer of a cryopreserved embryo). Also includes oocyte retrievals that did not lead to any transfer. Applies for IVF with one's own oocytes/sperm.*



The graph above shows results from the period 2021-01-01 to 2023-06-30
The blue bars indicate the groups who have undergone one, two or three treatments. The yellow bars indicate groups who have undergone more than three treatments. The red bars indicate the groups over 40 years of age. The latter (40-year-old group) is not divided into sub-categories based on the number of undergone treatments (since this would make the groups small and results more uncertain). The green bars indicate the chance of succeeding again if one already has a baby born as a result of IVF.

Which clinic should we/I choose?

Generally, IVF-treatments at all clinics in Sweden are of high quality and performed in a similar manner. The clinics reporting to Q-IVF can compare their results with other reporting clinics and also learn from each other. In the section "Individual clinics" (figure 36 and figure 37) of this annual report, we have tried to show the results of the different clinics as objectively and accurate as possible.

Other aspects that are important to take into consideration when choosing a clinic is a clinic's location (how long it takes to travel there), and the contact with and treatment of the staff. The personal treatment by the staff at the different clinics is evaluated every other year with the use of a patient questionnaire (KUPP - quality from the patient's perspective). The results are shown in the end of this report under "Patient satisfaction".

General information

Figure 3 Different types of treatments started in 2023. *Proportions of initiated treatment.*

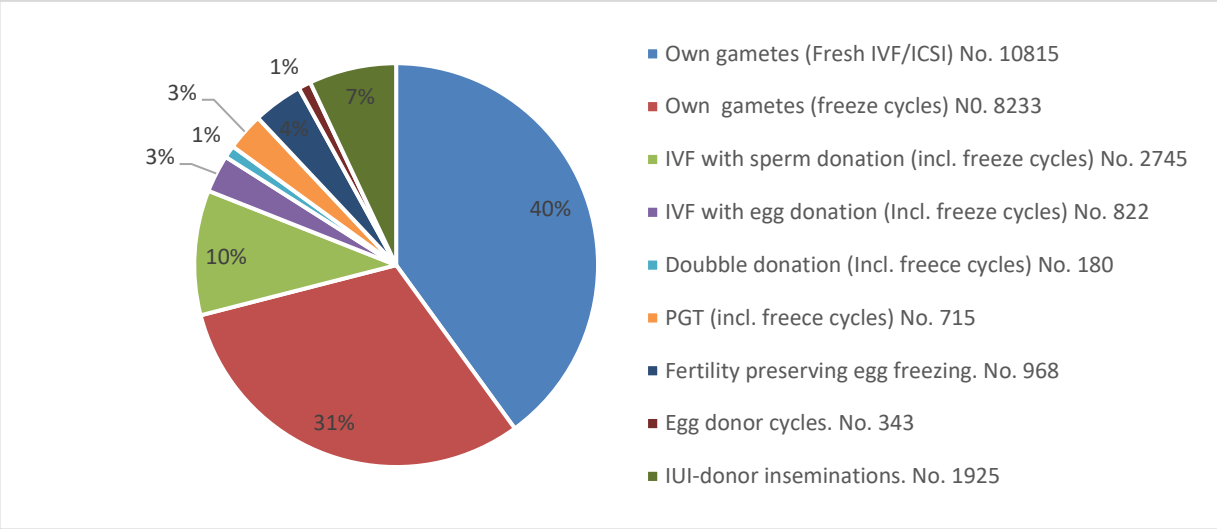
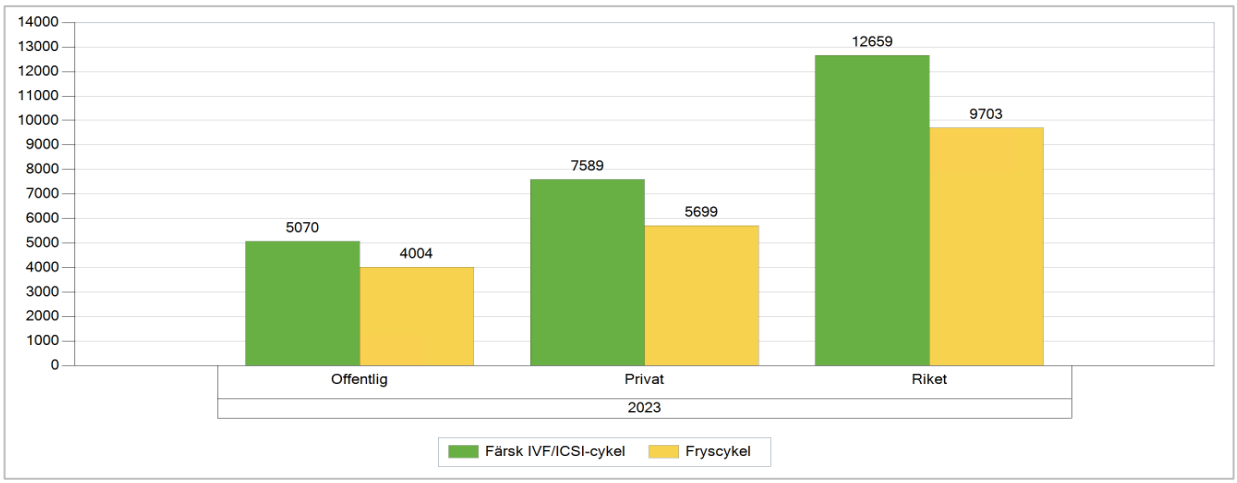


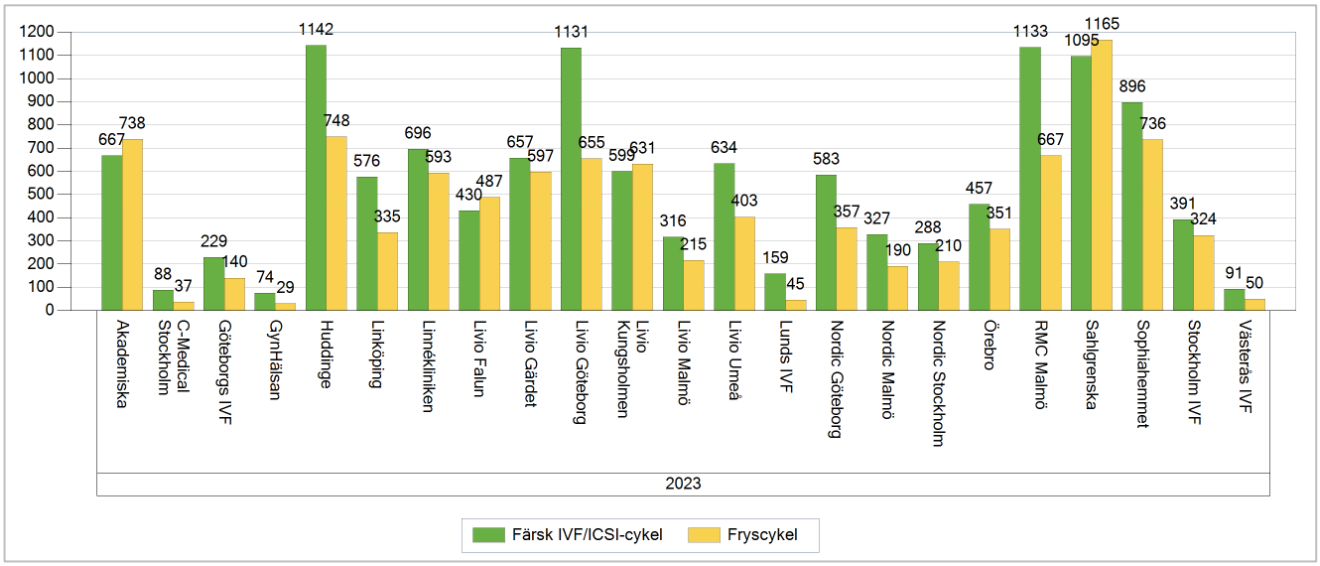
Figure 4 *Number of started treatment cycles in public and private clinics as well as in total. Fresh IVF and freeze cycles. Own and donated gametes and PGT.*



Offentlig = Public, Privat = Private, Riket = In total, Färsk = Fresh, Fryscykel = Freeze cycle.

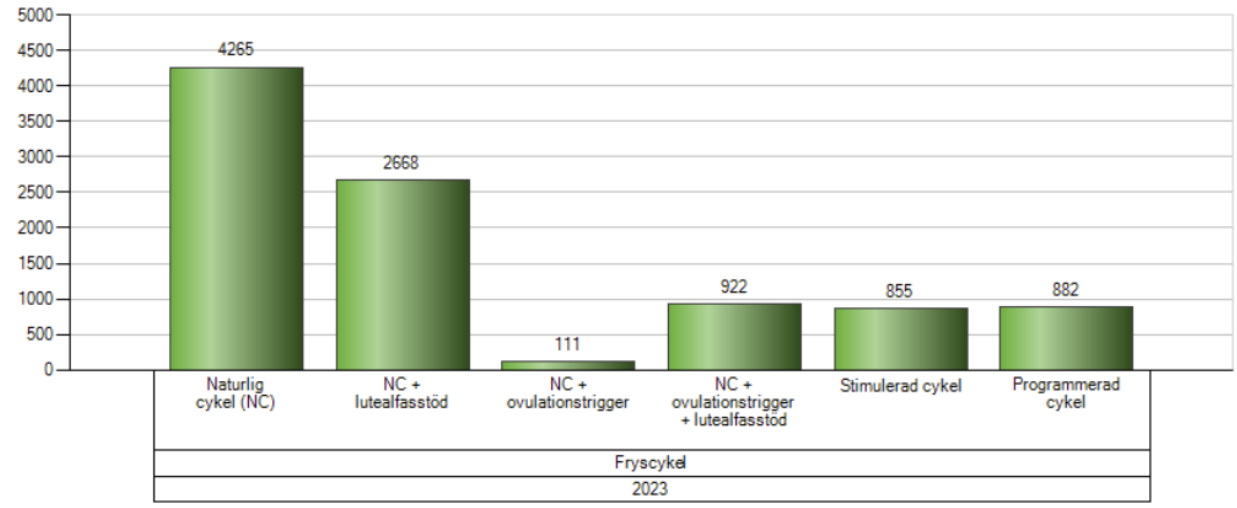
Some of the treatments given at private clinics are paid for by the state since the regional council sometimes buy treatments from the private clinics. See Figure 8.

Figure 5 *Number of treatments started per clinic. Fresh IVF and freeze cycles (FET). Own and donated gametes and PGT.*



Färsk = Fresh, Fryscykel = Freeze cycle.

Figure 6 *Number of started freeze cycles, different methods. Including treatments with own and donated gametes and PGT.*



A natural cycle refers to a cycle with spontaneous ovulation. A stimulated cycle means that the ovulation has been triggered by medication. A programmed cycle means that no ovulation occurs; instead, the uterine lining is built up with the help of hormones.

Figure 7 *Number of women who started their first IVF treatment, total number of women who underwent IVF treatment and total number of treatments. Fresh IVF with own and donated gametes and PGT.*

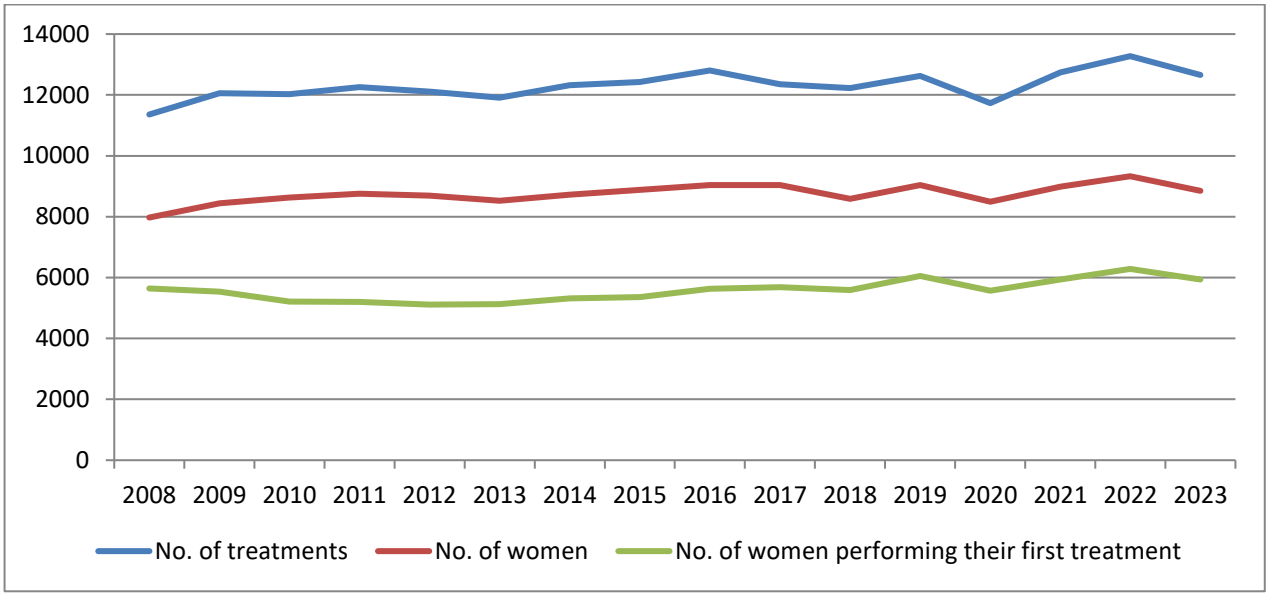
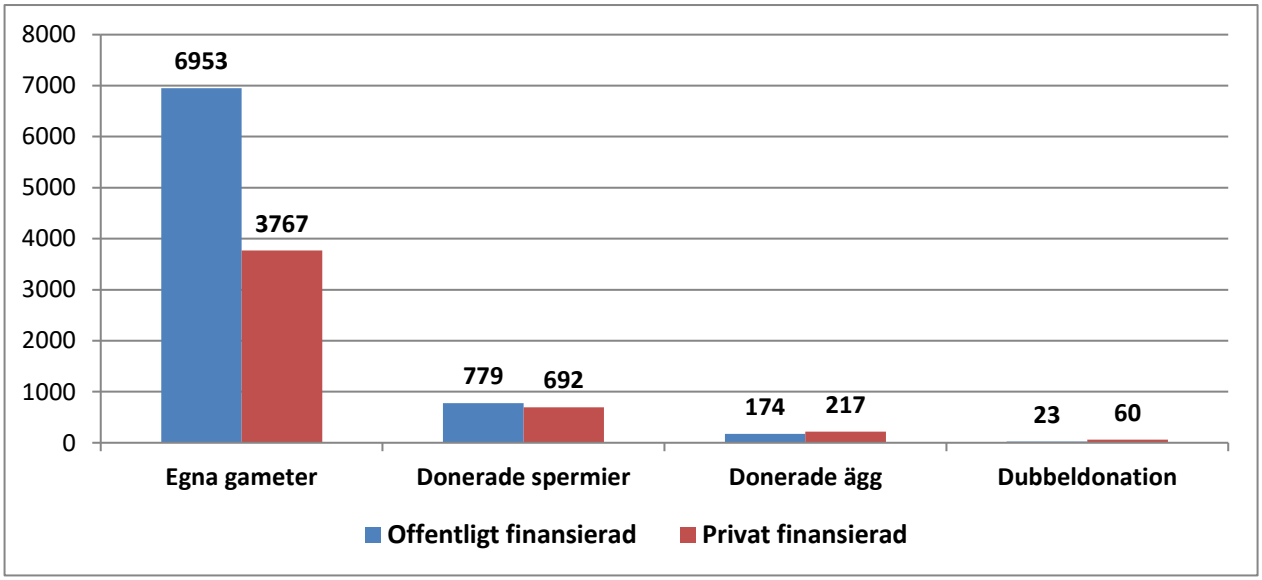


Figure 8 *Number of public and private funded treatments. Fresh IVF with own and donated gametes and PGT.*



Egna gameter = Own gametes, Donerade spermier = Donated sperm, Donerade ägg = Donated oocytes, Dubbeldonation = Double donation.
Offentligt betald = Publicly funded, Privat betald = Privately funded.

NB! A proportion of publicly paid treatments take place in private clinics.

Table 1 *Lost to follow up 2023, IVF treatments with own or donated gametes where we do not know the result. The reason may, for example, be that the patient did not become pregnant/had a miscarriage but did not report this or underwent IVF in Sweden and then moved abroad.*

	Embryo transfer performed, pregnancy result is missing	**Positive pregnancy test is indicated; further result is missing**	**Clinical pregnancy is indicated; further result is missing.**
Fresh IVF	27	33	28
Freeze cycle	34	67	55
In total	**61**	**100**	**83**

IVF with own gametes (PGT not included)

A summary of the treatments started in 2023

Table 2 *Number of treatments, pregnancies, birth rates per treatment type.* Own gametes.

	St. IVF	ICSI		Fresh IVF Total	Freeze Cycle	In total Fresh and FET
		ICSI Ejaculated	ICSI epididymis/ Testicle			
Started cycles	**4846**	**5141**	**298**	**10 285**	**7664**	**17 949**
Oocyte aspirations	4527	4699	295	9521		
Embryo transfers	**2927**	**3015**	**176**	**6118**	**7479**	**13 667**
Positive pregnancy tests*	1120	1185	67	2372	3788	6160
Biochemical pregnancies	140	158	14	312	427	739
Clinical pregnancies†	**968**	**1011**	**52**	**2031**	**3297**	**5328**
Spontaneous abortions < week 13#	148	154	13	315	464	779
Spontaneous abortions Week 13-22	11	13	0	24	38	62
Ectopic pregnancies	10	10	<3	21	19	40
Number of stillborns week 22-27	<3	<3	0	3	4	7
Number of stillborns ≥ week 28	4	6	0	10	12	22
Deliveries singletons†	738	794	36	1613	2678	4291
Deliveries, twins	9	23	<3	33	46	79
Deliveries, triplets	0	<3	0	<3	0	<3
Total number of deliveries	**792**	**818**	**37**	**1647**	**2724**	**4371**
Total number of live born children	**796**	**835**	**38**	**1669**	**2754**	**4423**

* *Missing outcome of 93 positive pregnancy tests, of which 29 are fresh cycles and 64 are freeze cycles.*
† *Missing outcome of 76 clinical pregnancies; Fresh cycles 24, freeze cycles 52.*
# *Spontaneous abortions refer to miscarriages before gestational week 13 and include a few legal abortions.*

Figure 9 *Proportion of women who started a fresh IVF treatment in 2023 by age. Own gametes.*

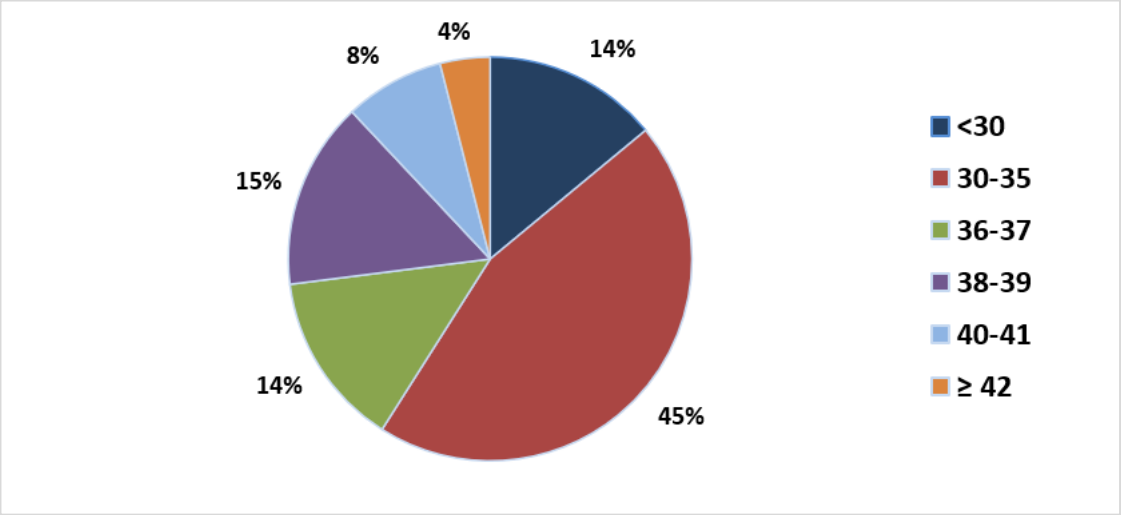
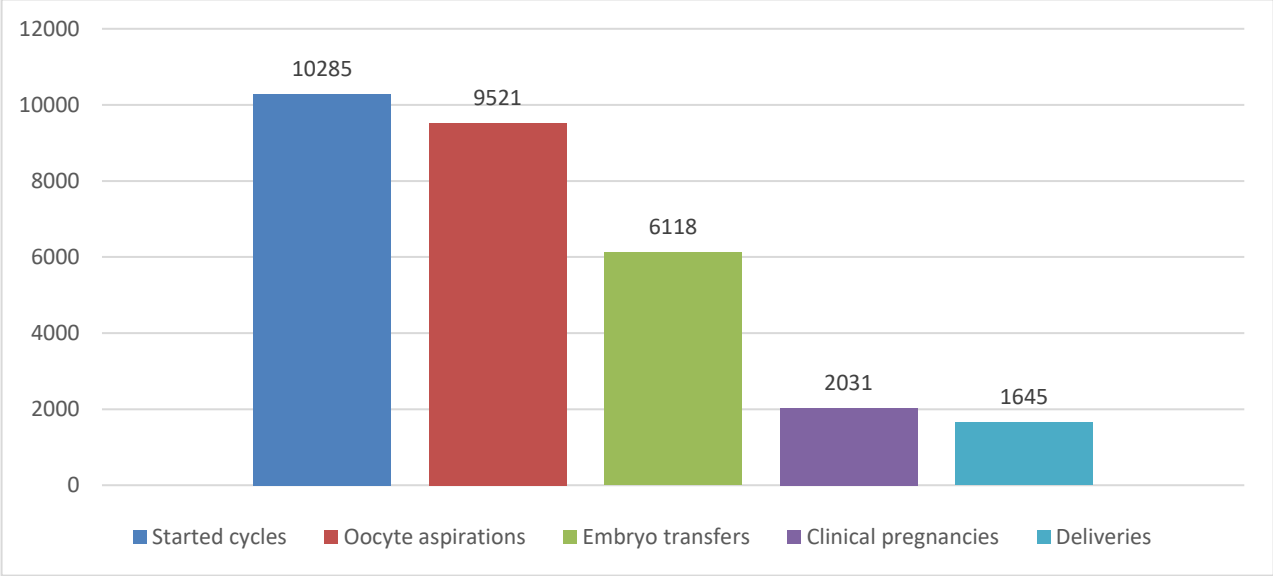


Figure 10 *Number of treatments reaching different steps in the treatment process. Fresh IVF. Own gametes.*



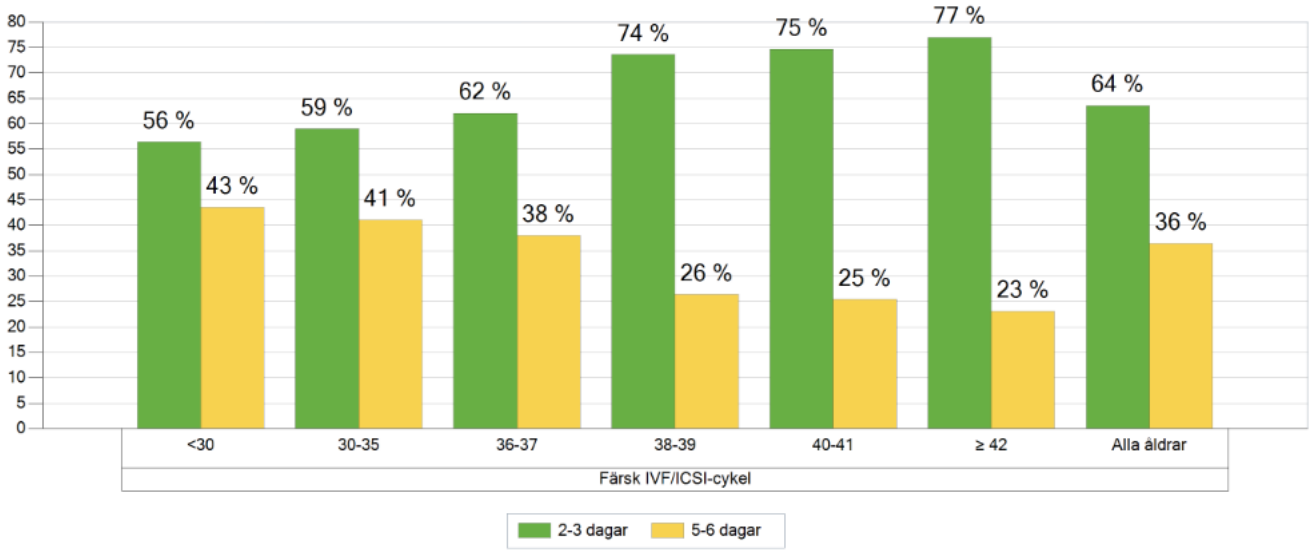
Many things can happen during the various treatment stages. Sometimes stimulation is discontinued before oocyte retrieval. The reasons behind it may be that the number of ovarian follicles growing is too small, that the prescribed medication is not taken correctly, or other medical or personal reasons.

Of the treatments that led to oocyte retrieval, fresh embryo transfer was performed in about 64% of them. The most common reason for not performing a fresh embryo transfer is that there is a risk of OHSS and thus all good quality embryos are frozen in order to reduce this risk. The decision to freeze all embryos delays embryo transfer but does not reduce the chance of pregnancy. Other reasons why treatments don't lead to an embryo transfer are that no mature oocytes are obtained during oocyte retrieval, that the oocytes are not fertilized normally or that no embryo develops that is suitable for transfer. Out of the 6118 fresh embryo transfers performed, 27% resulted in childbirth.

How long was the embryo cultured before transfer?

There are several reasons determining the day of embryo transfer of the embryo. Transferring an embryo that has been cultured for 5–6 days leads to a higher chance of pregnancy per embryo transfer than transferring an embryo cultured for 2–3 days. This is because embryos that survive in culture until day 5–6 are more viable and therefore have a higher implantation rate. The disadvantage with day 5-6 culture is that it is not known if embryos that do not survive during the prolonged culture period would have been able to generate a pregnancy and a child if being transferred on day 2–3. If there is only one or a few embryos by day 2–3, probably nothing is gained by extending the culture until day 5–6. Concerning embryo freezing, embryos that have been cultured for 5–6 days have a higher survival rate (97–98 %) than embryos cryopreserved at day 2 or 3 (about 60% survival rate). However, the same potential disadvantages exist here as well i.e. viable embryos are potentially lost in the culture period from day 2-3 to day 5–6. Still, today almost 100% of all freeze cycles take place after culture for 5–6 days since the advantages of culturing until day 5–6 is believed to outweigh the disadvantages of loss in culture.

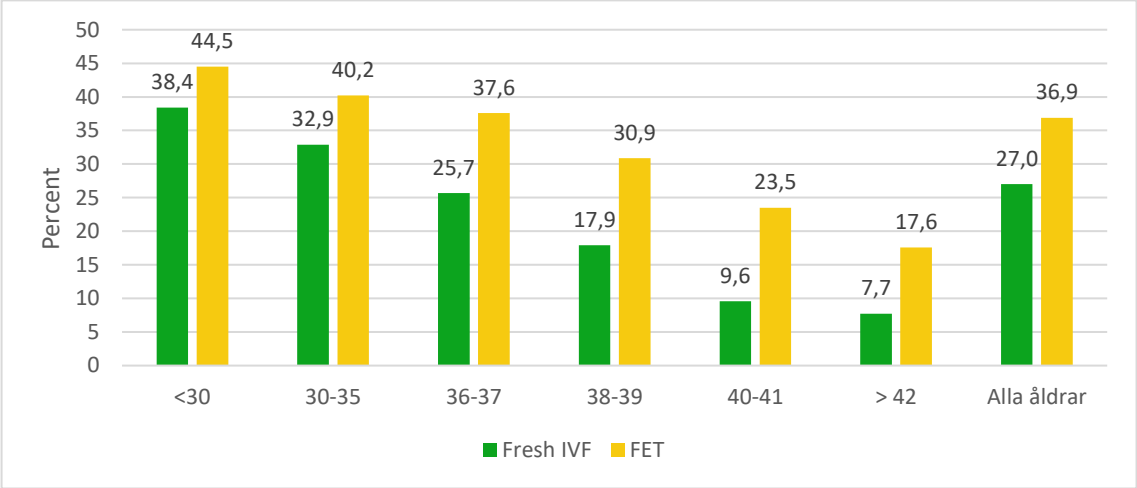
Figure 11 *Proportion of embryo transfer days 2-3 and 5-6 per age group.* Fresh IVF. Own gametes.



Result

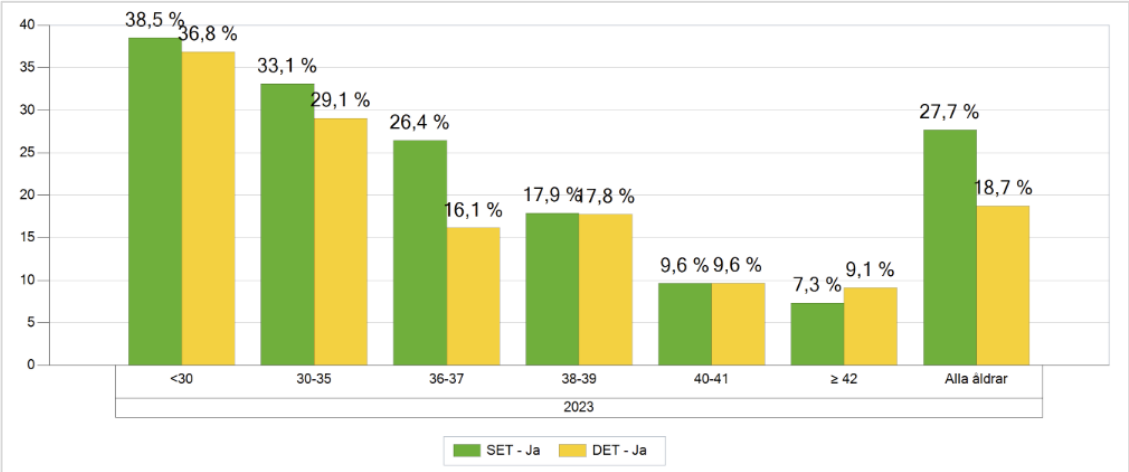
The results from fresh IVF-treatments have been stable over the years, while the results from freeze cycles have improved in recent years. This is largely associated with extended culture duration aiming at the blastocyst stage and with improved freezing methods. Younger women have a higher chance, while older women have a lower chance of pregnancy and live birth. The woman's age is the most important factor for the chance of becoming pregnant and having a child. At a higher age, both the oocyte numbers and the quality of the oocytes decrease.

Figure 12 *Proportion of deliveries per embryo transfer in different age groups. Fresh IVF and FET. Own gametes.*



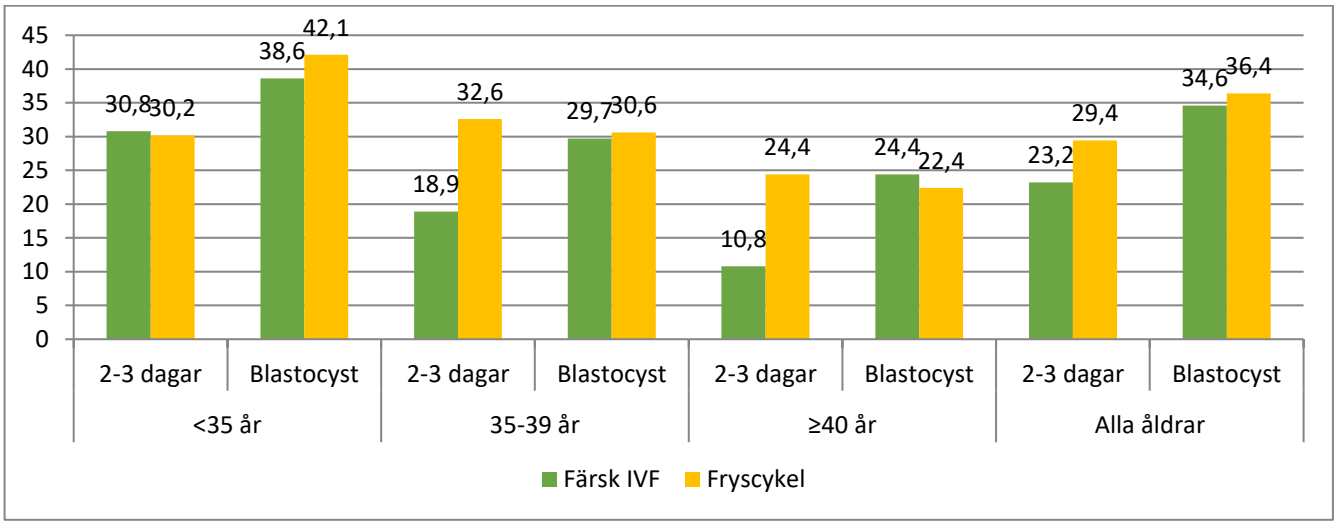
The reason for seeing a higher proportion of deliveries after FET compared to fresh treatment is that a higher proportion of embryo transfers are performed with blastocysts compared to fresh cycles. In addition, the embryos may have been frozen at a younger age, which can be important especially if the woman is older at the time of transfer. A third reason why a higher birth rate appears to exist in freeze cycles is that a larger proportion of women in the fresh cycle group only develop one fresh embryo and no extra embryos that can be frozen. More available embryos are a positive predictor of birth. The results should therefore not be interpreted as if an indication that it is "better to freeze".

Figure 13 *Proportion of deliveries per embryo transfer and SET/DET in different age groups. Fresh IVF/ICSI. Own gametes.*



The delivery rate is not directly comparable between SET and DET in the different age groups because the reason why one or two embryos are transferred varies with the prognosis of the individual patient. Therefore, one cannot conclude that SET yields a higher delivery rate than DET for different age groups nor for all age groups combined. The difference is instead due to the fact that patients with a better prognosis have received SET and patients with somewhat less good prognosis have received DET.

Figure 14 *Delivery rate per culture time, day 2-3 and blastocysts, and per age group. Fresh IVF/ICSI versus FET*. Own gametes.*



*During 2023 only 61 transfers with embryos frozen day 2-3 have been performed .

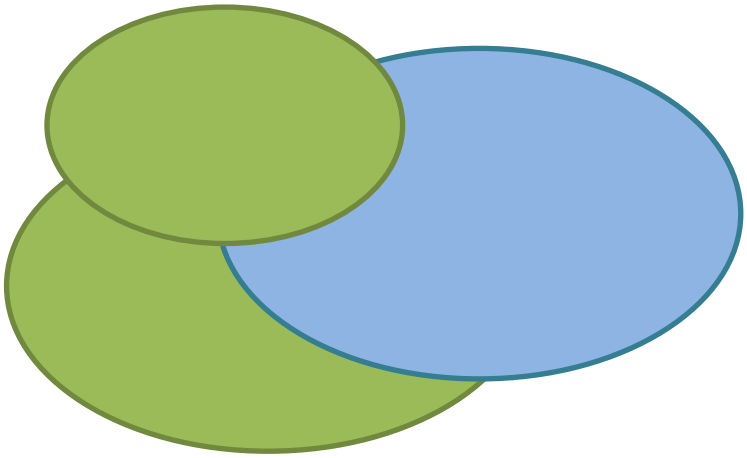
The figure shows that if one separates day 2-3 treatments from blastocysts, no major differences exist in delivery rates between fresh and FET when a blastocyst was transferred.

IVF with donated gametes (sperm and oocytes)

Sperm and oocyte donation for IVF purposes became legal in Sweden in 2003. However, until 2019 such treatments were permitted only at university hospitals. In 2019, private clinics were also authorized to offer IVF-treatments with donated sperm/oocytes.

For the year 2023, the chance of becoming pregnant and having a child, as a result of IVF with one's own oocytes and donated sperm, was 28% after a fresh transfer and 36,5% after a FET. Similarly to IVF with autologous gametes, the result should not be interpreted as indicating that FET cycles result in higher delivery rates than fresh treatments, as the proportion of blastocyst transfers is much higher in frozen than in fresh cycles. And blastocysts are associated with higher live birth rates.
Further, the patient groups may be different in terms of age and other prognostic factors.

The chance of becoming pregnant and having a baby with an embryo that stems from a donated oocyte is not influenced by the age of the woman who receives the embryo. The donor's age, however, is important. Consequently, the donors are mostly younger women.
For donated oocytes, the delivery rate per FET was 27% in 2023 compared to 33% in 2022. Overall, for fresh and FET cycles after oocyte donation, the delivery rate was approximately 31% per embryo transfer.



Summary of treatments performed in 2023

Table 3 *Number of treatments, pregnancies, deliveries and children by treatment type. IVF with donor sperm/eggs or double donation (IVF with both donor sperm and eggs).*

	IVF with donated sperm		IVF with donated oocytes		IVF with double donation		In total, donated sperm, oocytes and double donation
	Fresh IVF	Freeze Cycle	Fresh IVF	Freeze Cycle	Fresh IVF	Freeze Cycle	Fresh and freeze cycles
Started cycles	1464	1162	391	460	83	89	3649
Embryo transfers	957	1141	224	453	49	88	2912
Positive pregnancy tests*	387	588	118	204	30	52	1379
Biochemical pregnancies	52	82	14	53	<3	6	208
Clinical pregnancies†	334	504	103	150	27	46	1164
Spontaneous abortions <week 13#	58	79	15	20	4	7	183
Spontaneous abortions, week 13–22	4	4	<3	6	0	0	14
Ectopic pregnancies	5	<3	0	0	<3	0	<10
Stillborns gestational week 22–27	<3	<3	0	<3	0	0	4
Stillborns gestational week ≥ 28	0	<3	0	0	<3	0	3
Deliveries, singletons†	265	411	85	120	20	39	940
Deliveries, twins	<3	6	<3	<3	0	0	10
Deliveries, triplets	0	0	0	0	0	0	0
Total number of deliveries	266	417	86	122	20	39	950
Total number of live born children	266	419	87	123	19	39	955

**There are missing outcomes after positive pregnancy test: 3 sperm donation, 2 oocyte donation, 2 double donation.*
†There are missing outcomes of 4 clinical pregnancies: 3 sperm donation, 3 oocyte donation, 2 double donation
#Spontaneous abortions before week 13 include some legal abortions

Results IVF with donated sperm

Figure 15 *Delivery rate per embryo transfer for different age groups. Fresh IVF and FET. Donated sperm.*

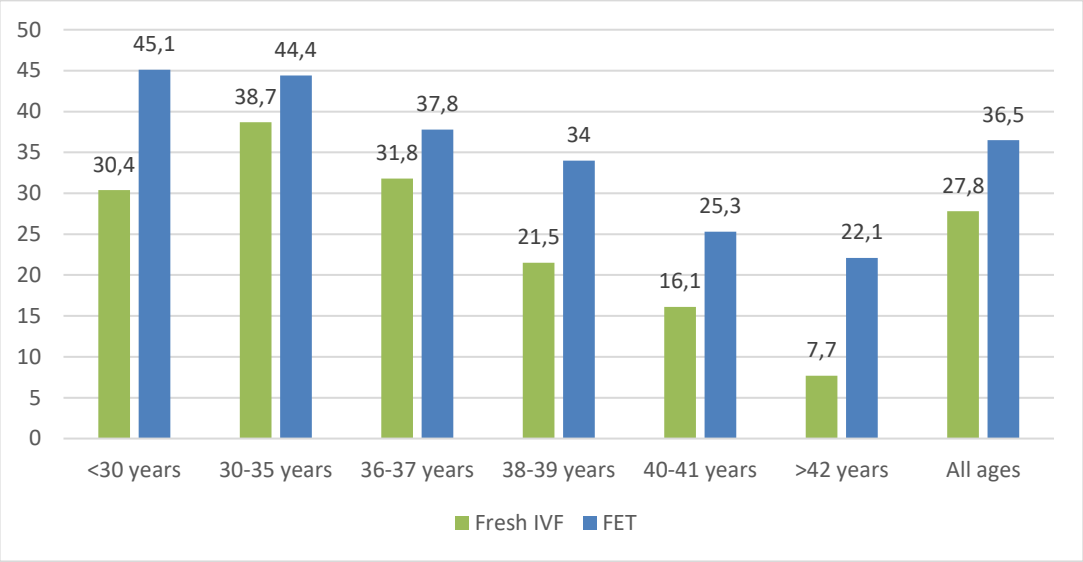
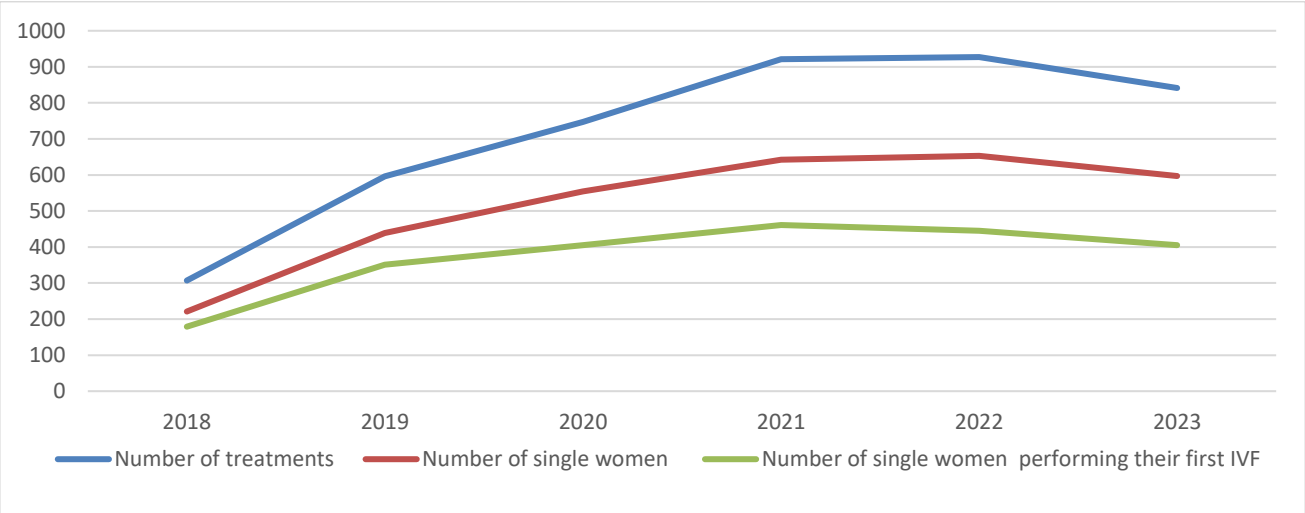


Table 4 *Number of embryo transfers and deliveries in different age groups. Fresh IVF and FET. Donated sperm.*

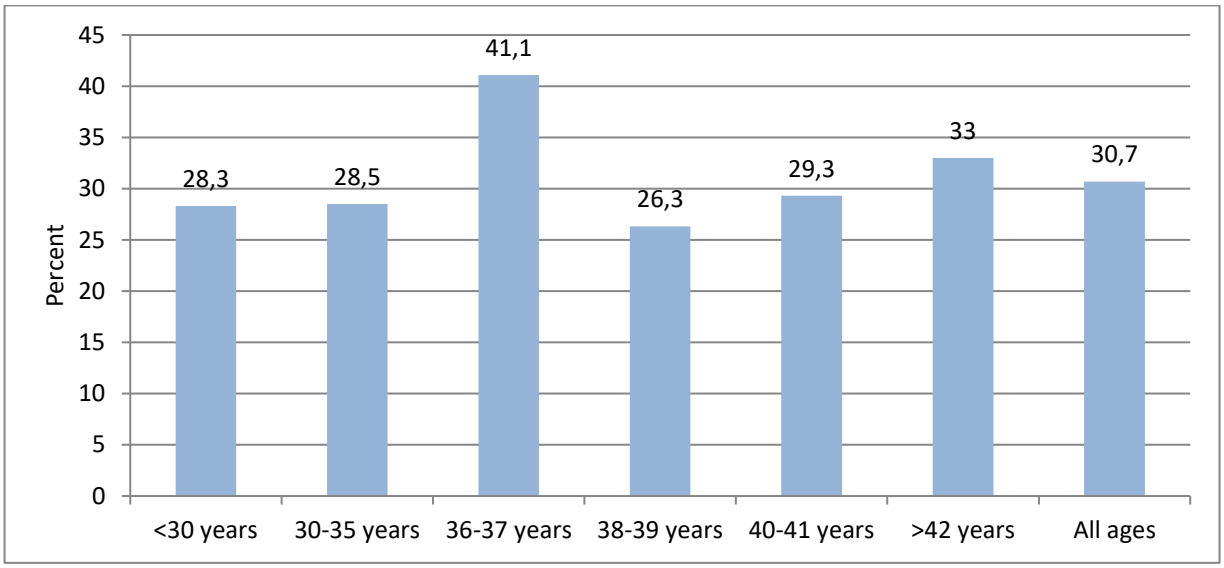
Age	Number of ET Fresh IVF	Number of deliveries Fresh IVF	Number of ET Freeze cycles	Number of deliveries Freeze cycles
<30	46	14	71	32
30-35	303	117	403	179
36-37	173	55	156	59
38-39	265	57	241	82
40-41	118	19	166	42
≥ 42	52	4	104	23

Figure 16 *Number of single women who started their first IVF treatment, total number of single women who have performed IVF treatment, and total number of treatments. Fresh IVF with donated sperm.*



Results: IVF with donated oocytes

Figure 17 *Proportion of deliveries per embryo transfer and age, 2023 (total, fresh IVF and FET) Donated oocytes.*

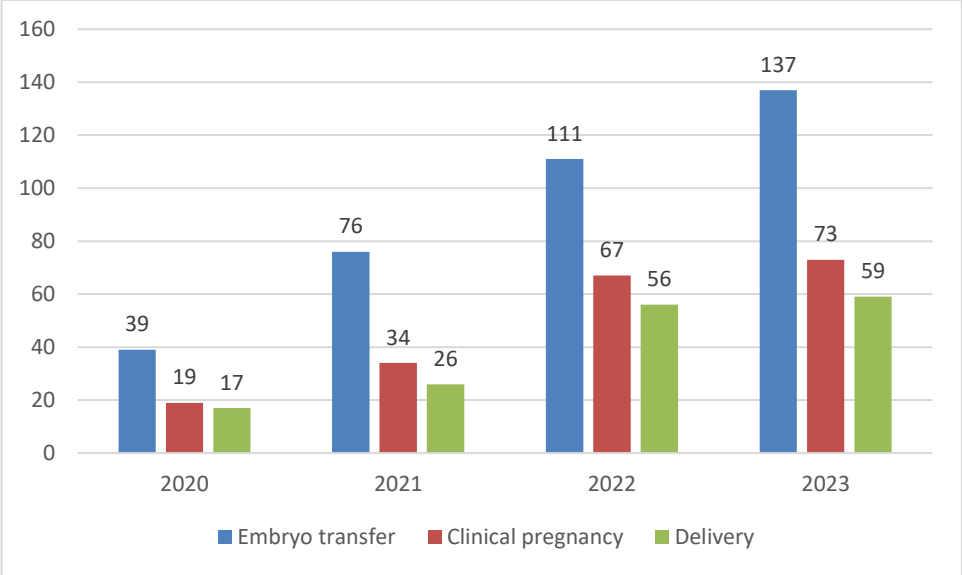


For donated oocytes, the age of the woman who is attempting to become pregnant is not as important for the result of the treatment as when using own gametes. The oocyte donor's age is more important. Please note that the number of oocyte donation treatments in different age groups is low and that the estimated rates therefore may be uncertain.

Table 5 *Number of embryo transfers and deliveries in different age groups. Fresh IVF and FET. Donated oocytes.*

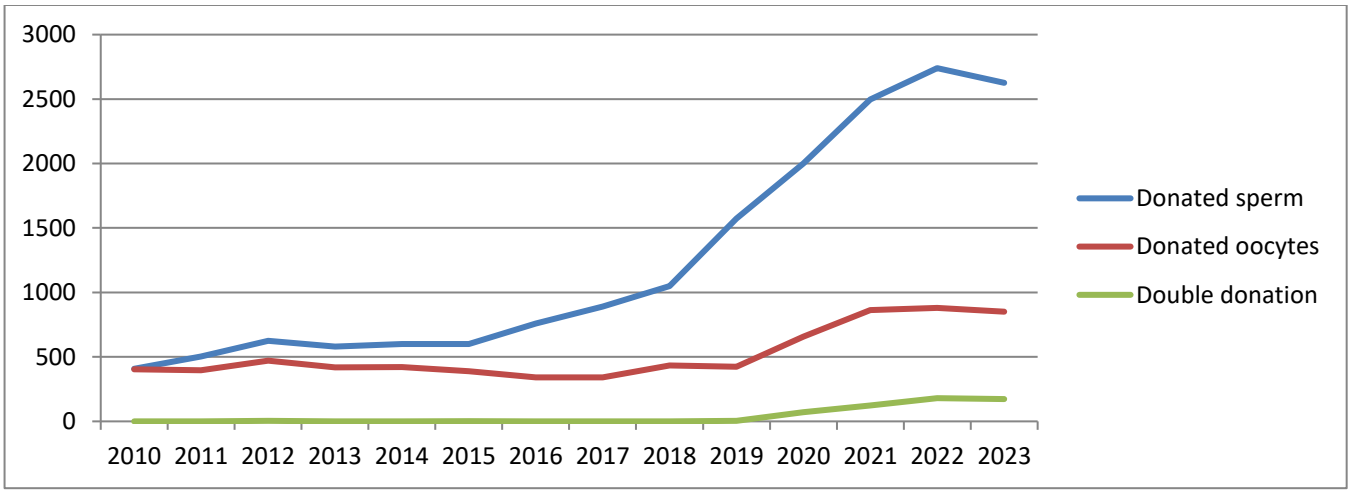
Age	Number of ET Fresh IVF	Number of deliveries Fresh IVF	Number of ET FET	Number of deliveries FET
<30	16	8	30	5
30-35	55	17	98	26
36-37	27	15	46	15
38-39	38	10	80	21
40-41	27	8	72	21
≥ 42	61	28	127	34

Figure 18 *Number of treatments with double donation 2020 – 2023.*



Double donation means that both oocytes and sperm are donated. This type of treatment was legalized in Sweden in 2019 and in that year 4 treatments were carried out. An annual increase was noted thereafter. Most of these treatments are performed at private clinics and paid for by the patient.
Single women underwent 16 embryo transfers with double donation in 2020. This number increased to 37 in 2021, 43 in 2022 and 78 in 2023.

Figure 19 *Number of started IVF treatments (Fresh and FET) with donated gametes over the years.*



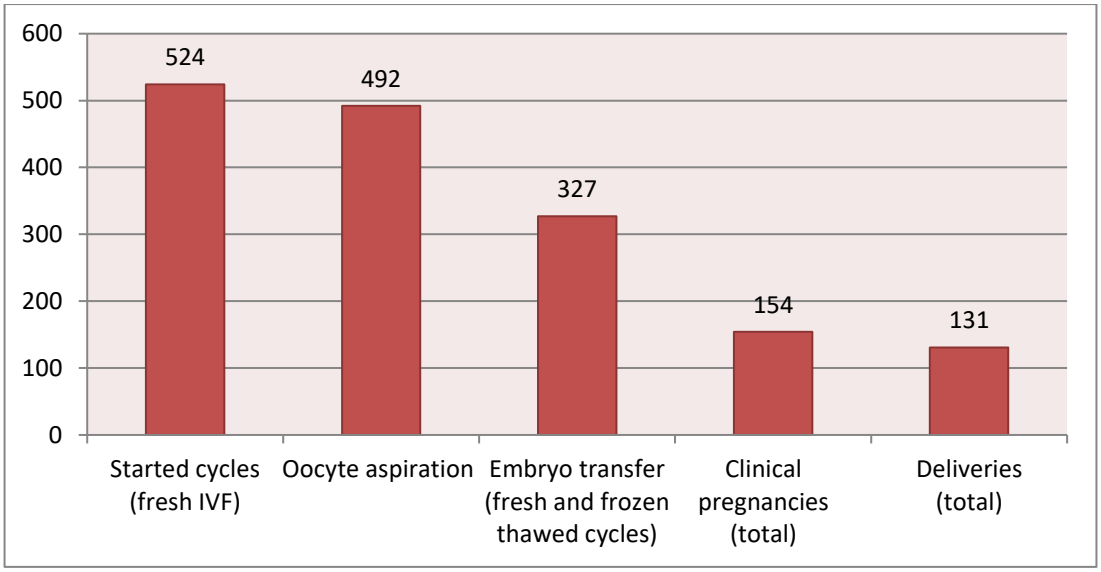
PGT - Preimplantation Genetic Testing

Preimplantation genetic testing (PGT) was introduced in 1989 as an alternative to prenatal diagnostics for known severe hereditary diseases and the first child after PGT was born in 1992. The technique has recently changed its abbreviation from PGD (preimplantation genetic diagnosis) and PGS (preimplantation genetic screening) to PGT-M (monogenic disorders), PGT-SR (structural rearrangement) and PGT-A (aneuploidy screening). PGT-A is a parallel method where the aim is to select an embryo without chromosomal abnormalities and thereby increase the live birth rate. In these cases, the analysis is not performed due to a known severe hereditary disease.

PGT-M and PGT-SR are offered to couples with monogenic diseases and hereditary chromosomal abnormalities, while PGT-A is only allowed in Sweden as a part of a clinical trial. During PGT, an embryo biopsy is performed, where 5 to 10 cells from the growing embryo, preferably from the trophectoderm (future placenta), are taken out and analyzed using genetic techniques. In 2010, FISH was replaced by microarray technology (CGH array, SNP array), which allowed the analysis of all chromosomes. The microarray technology has gradually been replaced by whole genome sequencing (NGS, next generation sequencing), where the entire genetic material is examined.

An embryo that, upon testing, is considered healthy with regard to the specific disease, can be transferred into the uterus. This reduces the risk of a baby being born with the disease in question from 25%–50% to 0.1%–0.5%. The first child in Sweden born from a process involving PGT was born in Gothenburg in 1996 and in the end of 2023 more than 1000 children have been born from a process involving PGT in Sweden. PGT is performed in Gothenburg and in Stockholm.

Figure 20 *Number of started fresh PGT treatments and oocyte aspirations performed in 2023 as well as results for embryo transfers for both fresh IVF and frozen/thawed cycles.*



If the biopsy is performed at the blastocyst stage, which is the most used method today, the embryos are cryopreserved, and transferred instead in an upcoming frozen/thawed cycle.

How many embryos are transferred?

Due to the relatively high incidence of twins as a result of IVF, the Swedish National Board of Health and Welfare decided in 2003 that, as a rule, only one embryo should be transferred into the woman. If the risk of a twin pregnancy is estimated to be low, two embryos can be transferred. The couple or the single woman should then be informed about the risks that twin pregnancies can entail. Although most twin pregnancies go well, there are significantly increased risks of complications compared to single pregnancies, both for the children as well as the mother. Before deciding on the number of embryos that are to be transferred, an individual assessment is made as to whether there are any other risk factors, including diseases and previous complications related to pregnancy or delivery, for example caesarean section.

The risk of premature delivery and low birthweight is much higher for twin pregnancies than for singleton pregnancies. Premature births and low birth weight are associated with increased medical risks for the children. Multiple pregnancies also entail an increased risk of hypertensive disorders of pregnancy and pre-eclampsia as well as other severe obstetrical complications for the mother. These increased risks are the reasons why in Sweden only one embryo at a time is transferred in most cycles.

Figure *21a* *Proportion of transfers of one (SET) or two (DET) embryos. Fresh IVF and freeze cycles with own and donated gametes and PGT.*

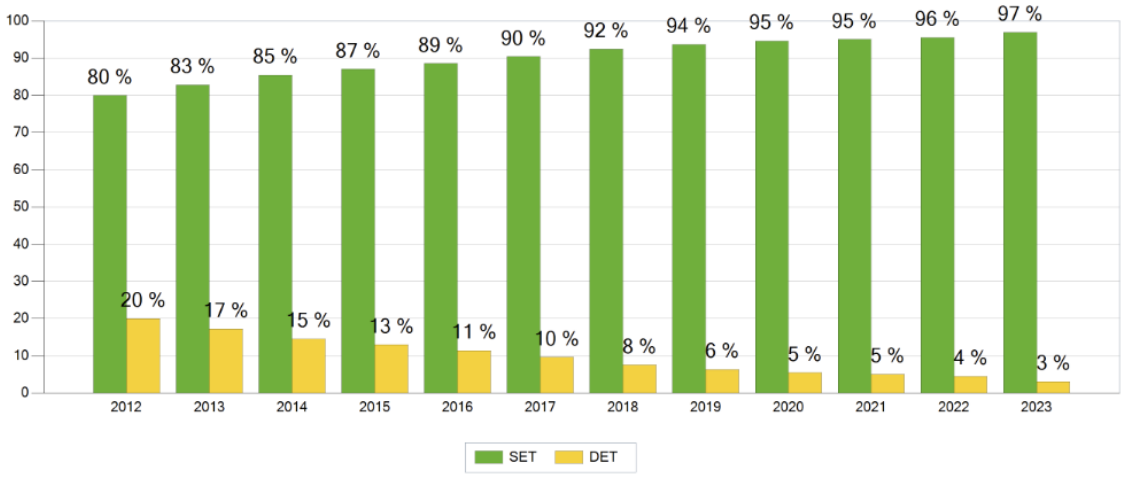


Figure 21b *Proportion of transfers of one (SET) or two (DET) embryos. Freeze cycles own and donated gametes and PGT.*

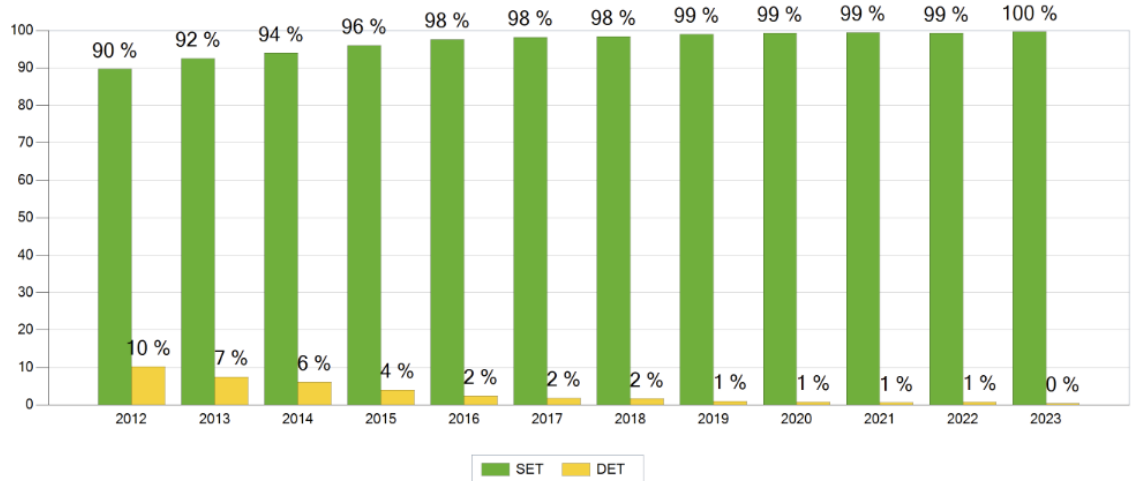
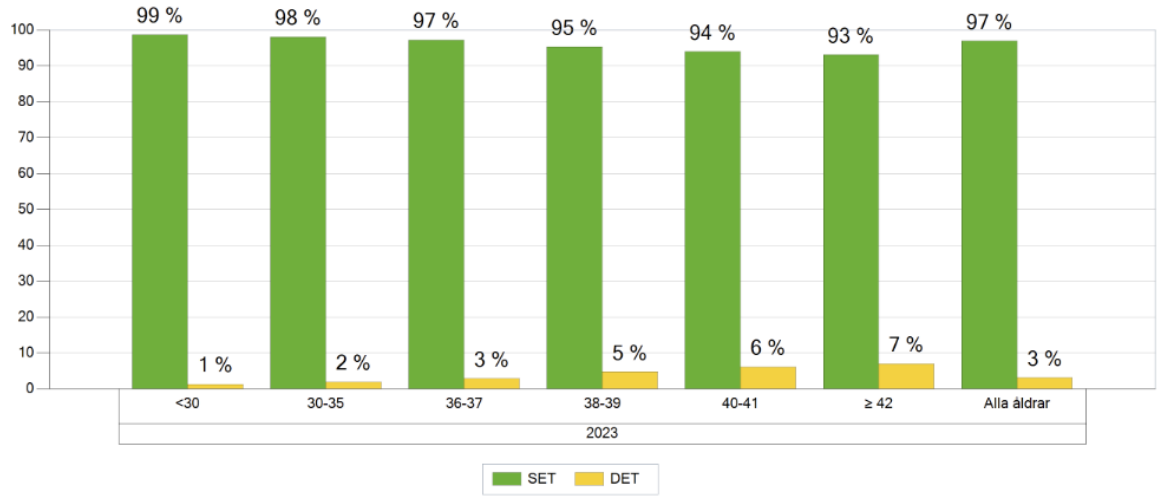
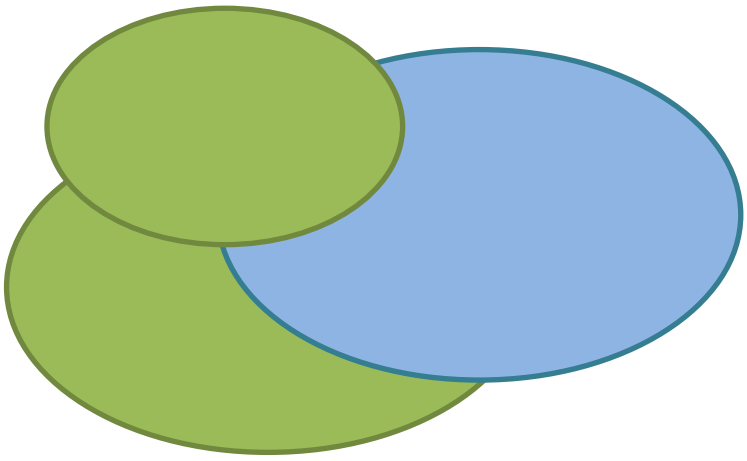


Figure 21c *Proportion of SET/DET per embryo transfer in different age groups. Fresh IVF and freeze cycles with own and donated gametes and PGT.*





Incidence of multiple births because of IVF-treatments

There has been a dramatic decline in multiple births in Sweden in the last twenty years due to the one-embryo-transfer policy being introduced and broadly adopted. Despite only one embryo now being transferred at a time, the total delivery rate has remained stable or even increased. The increased delivery rate is particularly apparent for IVF with FET and is associated with long term embryo culture and vitrification as a cryopreservation method.

The multiple birth rate in Sweden after IVF is among the lowest in the world. Several countries still have multiple birth rates of 20-25%. The frequency of multiple births in spontaneous conception is about 1%. Multiple births can occur even though only one embryo is transferred. In some cases, an embryo may divide after being transferred to the uterus. Identical twins also occur after spontaneous pregnancy. The table below shows the number of multiple births in total and when single embryo transfer was performed. Multiple births after SET occur some more often in freeze cycles.

Figure 22a *Multiple birth rate per delivery. Fresh IVF and Frozen/thawed cycles with own and donated gametes and PGT.*

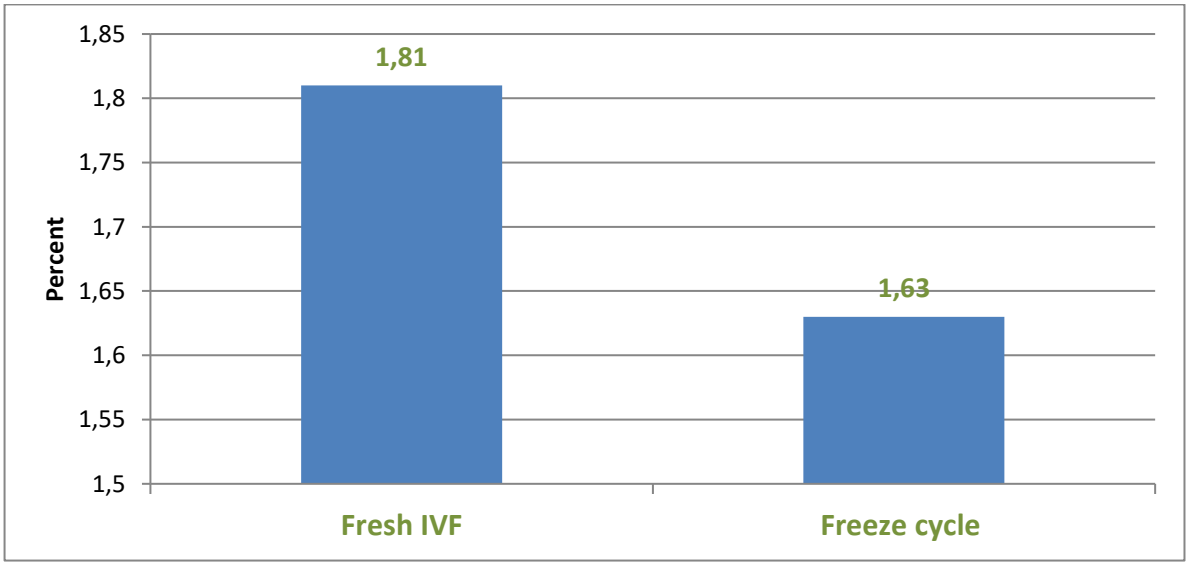


Figure 22b *Multiple birth rate per delivery at transfer of single embryo (SET). Fresh and Frozen/thawed cycles with own and donated gametes and PGT.*

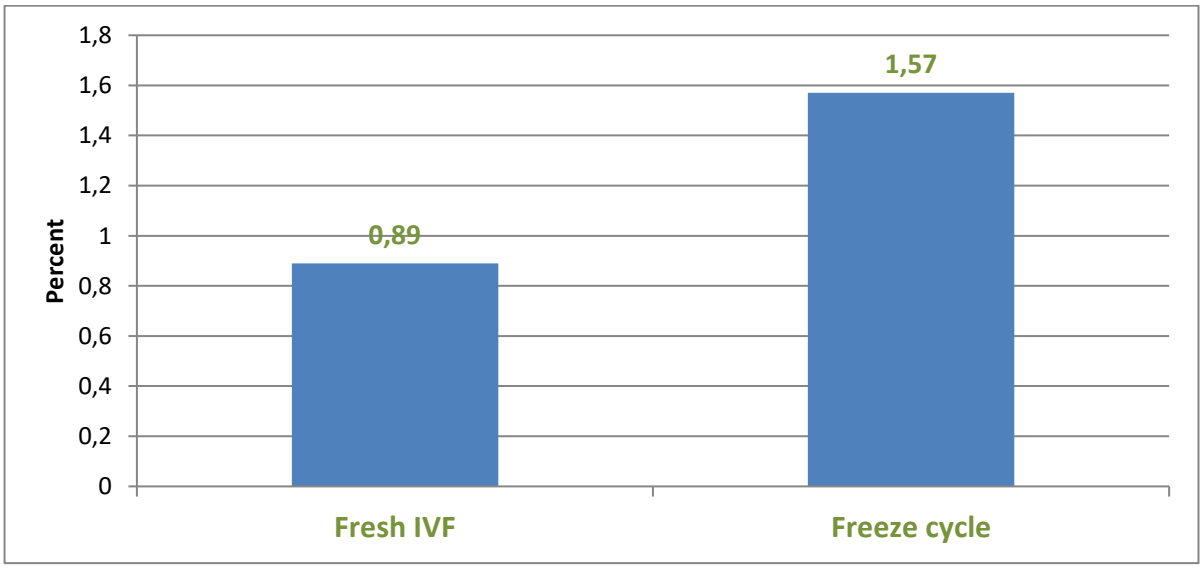


Table 6 Number of multiple births, in total and *after transfer of one embryo (SET). IVF with own and donated gametes and PGT for the years 2021, 2022 and 2023.*

2021	Number of twin deliveries	Number of triplet deliveries		Number of twin deliveries	Number of triplet deliveries
Fresh IVF - Total	56	<3	*After SET*	22	<3
Freeze cycle - Total	44	<3	*After SET*	41	<3
2022					
Fresh IVF - Total	55	0	*After SET*	27	0
Freeze cycle - Total	73	0	*After SET*	65	0
2023					
Fresh IVF - Total	35	<3	*After SET*	17	0
Freeze cycle - Total	55	0	*After SET*	54	0

A decrease in multiple births is noted *compared to 2022.* Despite the fact that 99% of *freeze cycles* are SET, a number of multiple pregnancies still occur. As shown in the table, 98% of the twins within *freeze* cycles are SET twins. It is known that blastocyst transfers (which is more common in *freeze cycles*) is linked to monozygotic twins.

Figure 23a *Multiple birth rate per year. Fresh IVF, freeze cycles and in total.* Own and donated gametes and PGT.

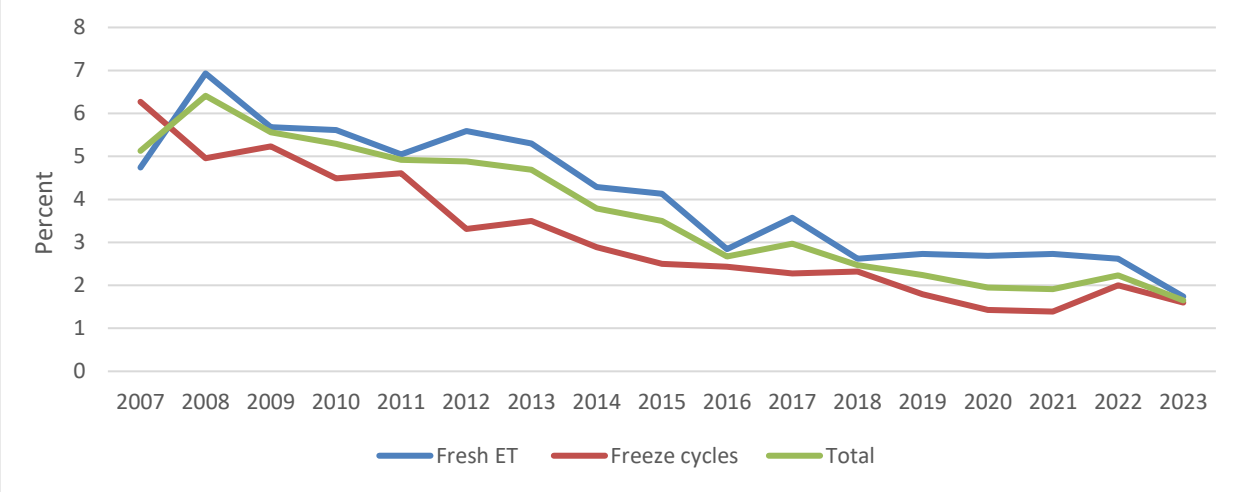
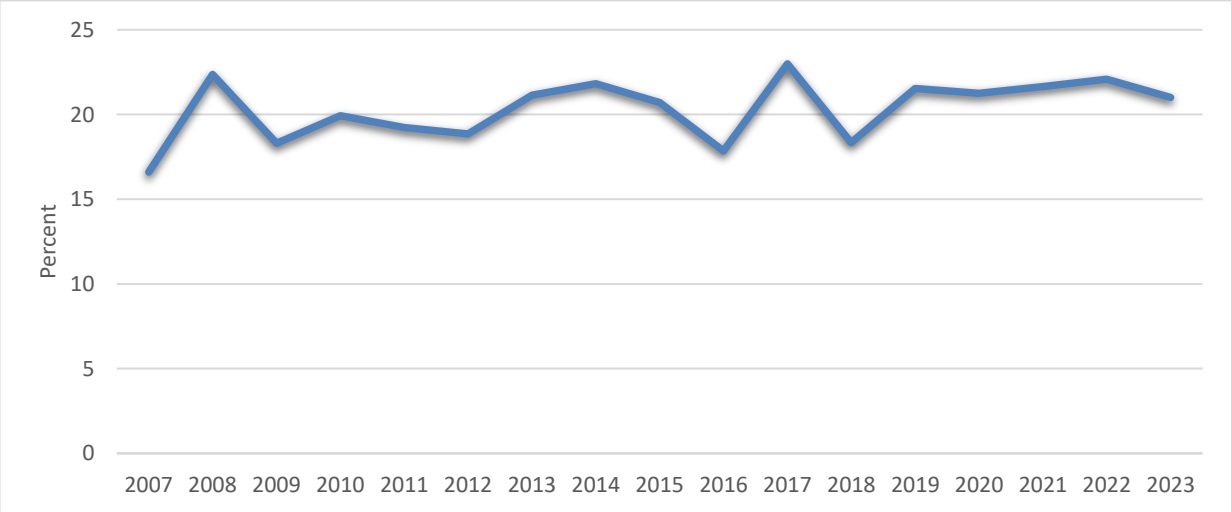


Figure 23b *Multiple birth rate when two embryos are transferred. Total for fresh IVF and freeze cycles.* Own and donated gametes and PGT.



The multiple birth rate in Sweden has thus decreased continuously, but for those who receive two embryos, the multiple birth rate remains steady at around 20%. Meaning that we have not improved in selecting women for double embryo transfer without risk of multiple birth.

Complications arising from IVF treatments

Generally, complications arising from IVF-treatments are few, the most common being Ovarian hyperstimulation syndrome (OHSS). This syndrome may show up in women undergoing IVF who have high AMH levels, or many ovarian follicles in their ovaries. During OHSS, blood vessels start leaking fluid into the abdomen. The fluid leaking into the abdomen will eventually be resorbed and returned to the blood stream, but sometimes it is beneficial for the patient if the fluid is drained. Milder forms of OHSS are quite common and occur in up to 10 % of women. Moderate or severe forms of OHSS, where the patient has been hospitalized, are observed in 0.4% of women.

Severe forms of OHSS can today in most cases be prevented through different treatment strategies. The risk of thrombosis increases in case of OHSS and in some cases medical drugs preventing thrombosis are administered. Severe forms of OHSS resulting in hospitalization or draining of fluid from the abdomen are reported to Q-IVF.
The risk of infection in the ovaries or abdomen after oocyte retrieval is low, about 0.2%. Prophylactic antibiotics are not routinely administered and only given if there is an increased risk of infection.

Minor bleeding after egg retrieval is common, either as bleeding from the vagina or as a minor bleeding in the abdomen that generally stops and disappears on its own. In 1-2 cases out of 1000 oocyte retrievals, a major bleeding occurs in the abdomen that requires observation in hospital and sometimes surgical/medical intervention.

Among the reported complications from fresh IVF-treatments initiated in 2023, there were 40 hospitalized cases of OHSS, 5 cases of bleeding, 19 cases of infection and 5 cases of ovarian torsion, a situation when the ovary has twisted around its own stem. Data regarding type of complication is missing from one clinic.

Figure 24 *Proportion of reported complications in IVF with own or donated gametes, PGT, oocyte freezing cycles and donor cycles.*

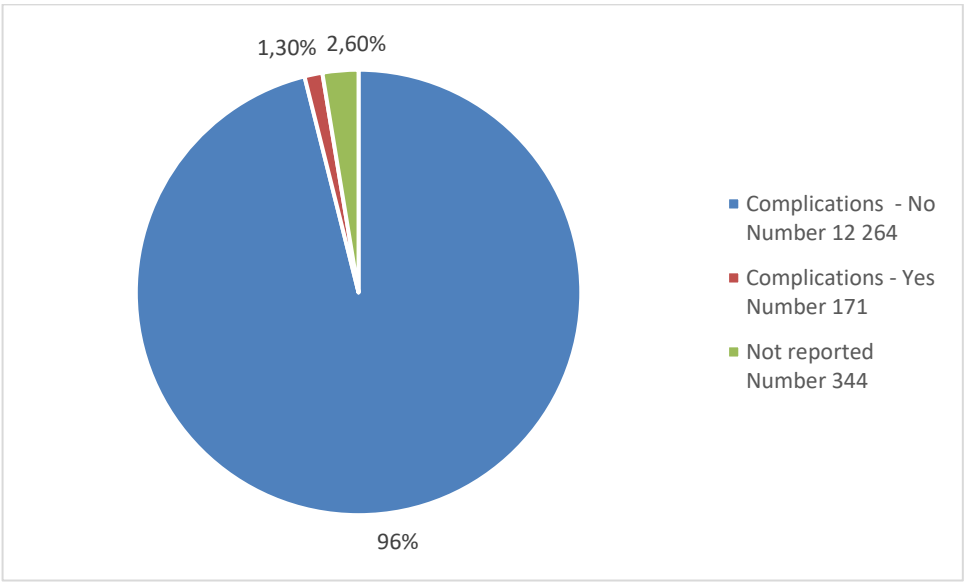
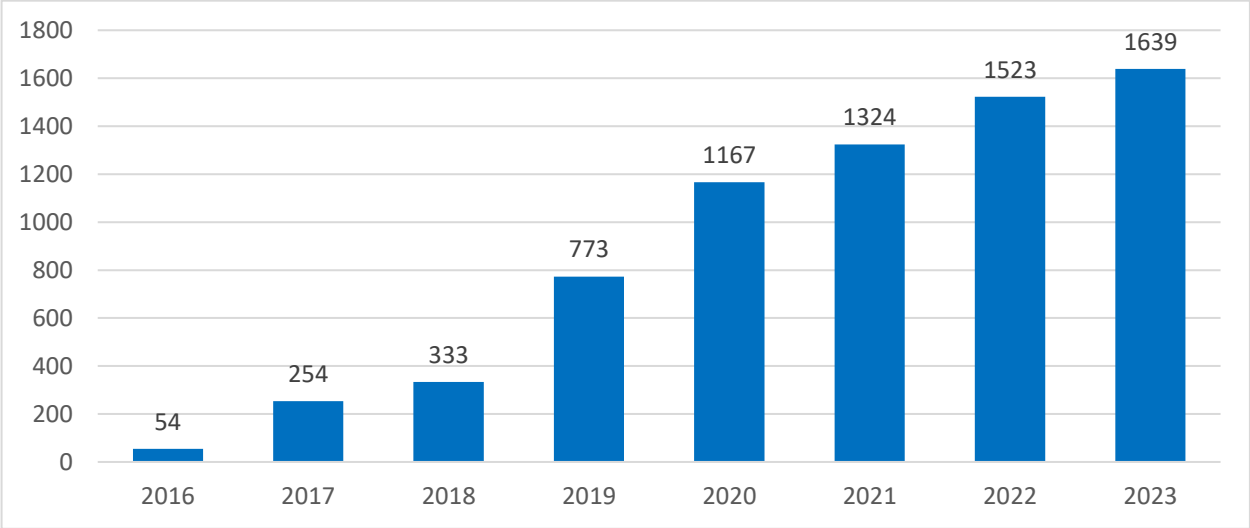


Figure 25 *Number of fresh cycles with "freeze-all" due to the risk of OHSS. Fresh IVF with own and donated gametes and PGT.*



Increasing numbers of treatments are performed where all embryos are cryopreserved and no fresh embryo transfer takes place. These ”freeze-all” cycles, followed by a frozen-thawed embryo transferred, result in similar pregnancy and delivery rates as fresh cycles, probably associated with use of blastocyst culture and new cryopreservation methods-vitrification. The advantage with freeze-all is the almost complete elimination of OHSS and the method has thereby become popular for clinics as well as patients. The increasing number of freeze-all cycles reflect this development and is thus not a sign of an increasing rate of established OHSS.

Trends

Figure 26 *Number of embryo transfers per year for various treatment methods. Own gametes. St IVF and ICSI refer to fresh cycles.*

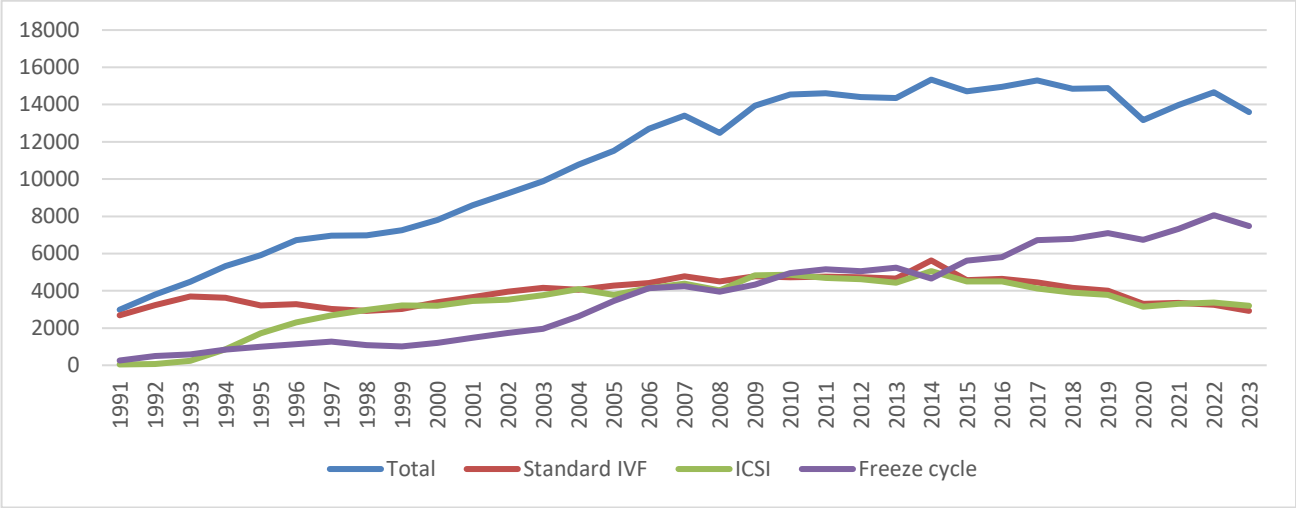


Figure 27 *Proportion of deliveries per embryo transfer and year of treatment for various treatment methods. Own gametes.*

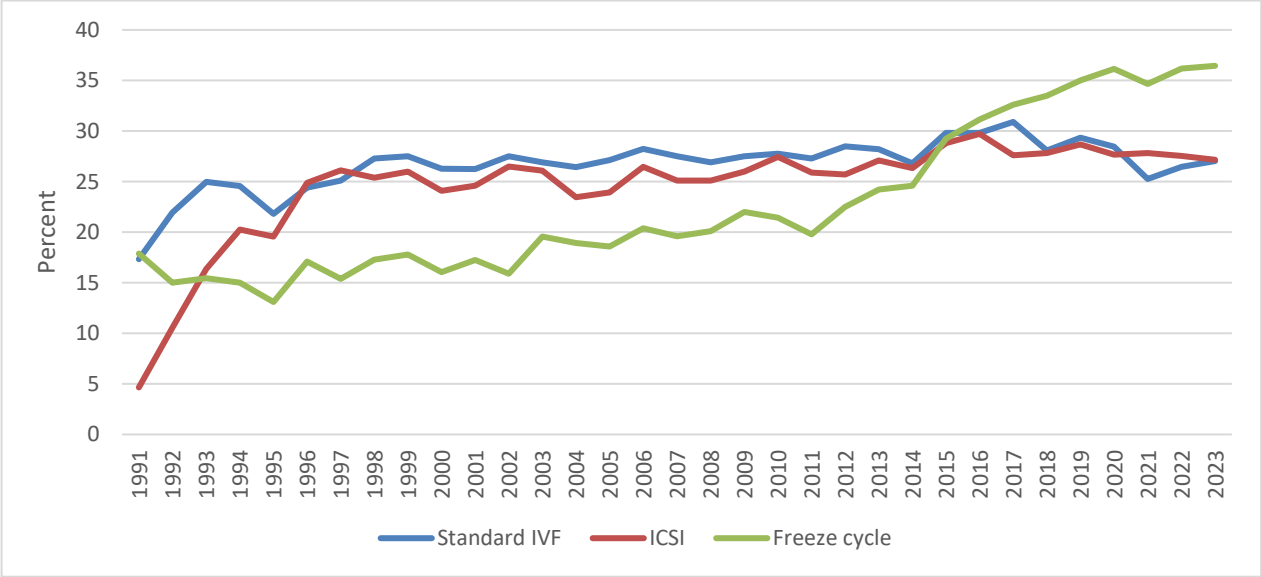


Figure 28a *Proportion of deliveries per embryo transfer - multiple births and SET per year. Fresh IVF. Own gametes.*

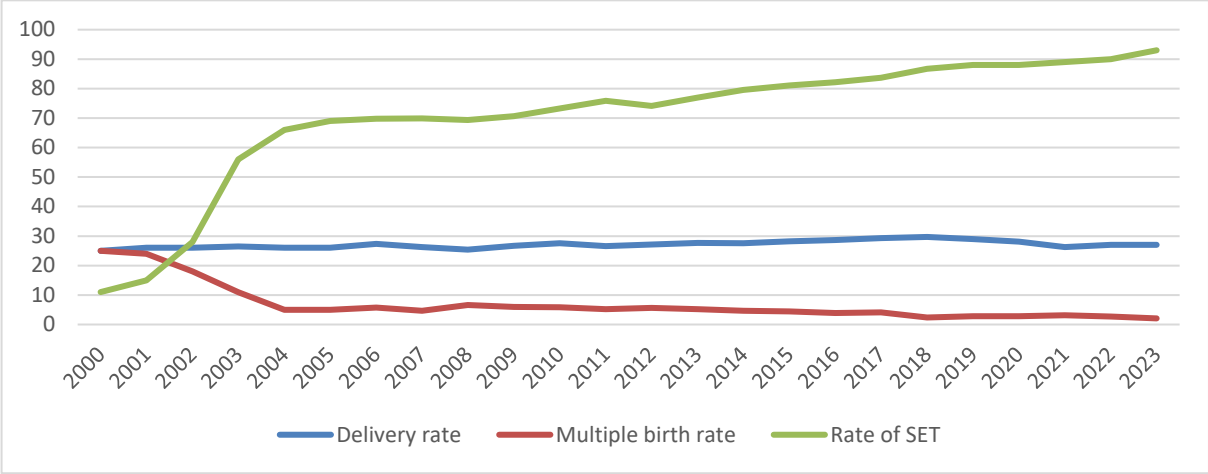
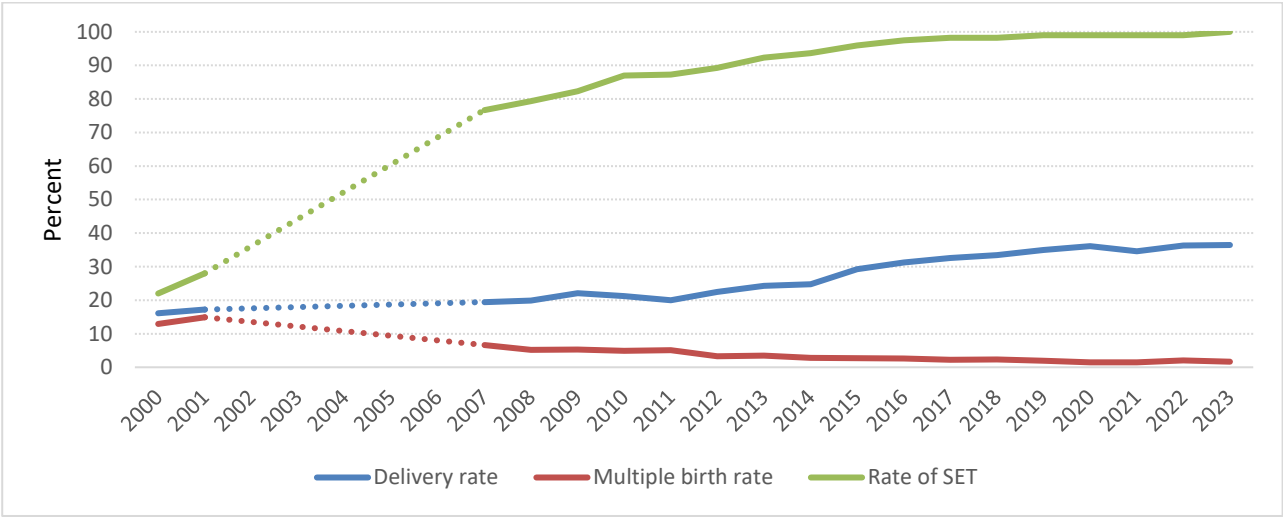
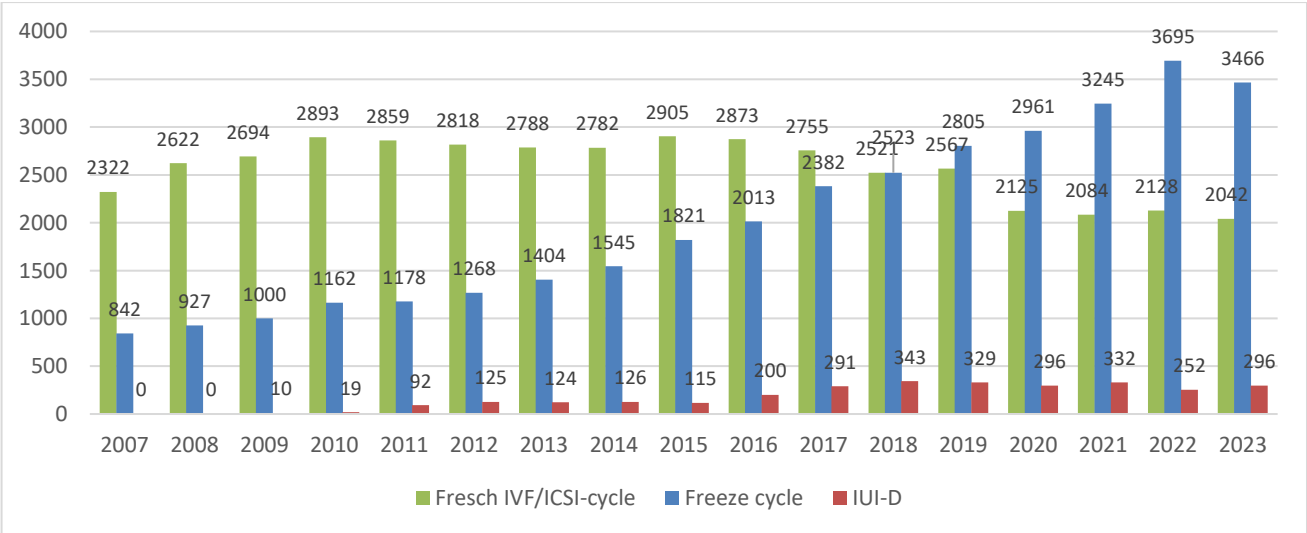


Figure 28b *Proportion of deliveries per embryo transfer, multiple births and SET per year. Freeze cycles. Own gametes.*



Data for the years 2002-2006 are missing, the data points from 2001-2007 are linked with a straight dotted line.

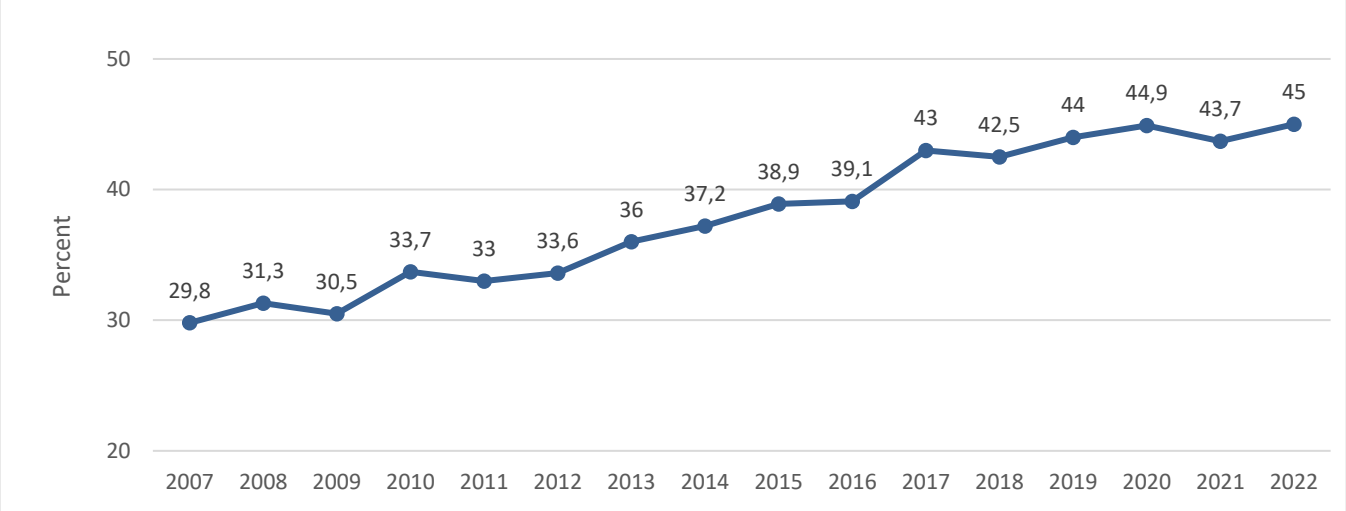
Figure 29 *Number of live born children per year, fresh IVF and freeze cycles with own and donated gametes, PGT and insemination with donated sperm (IUI-D).*



Cumulative results

Cumulative live birth rate is here defined as live birth rate per oocyte retrieval, including one fresh cycle (with or without a fresh transfer) and all subsequent embryo transfers from the same oocyte retrieval within one year after the oocyte retrieval.
This way to present data may be regarded the most accurate way. When results are assessed per embryo transfer, the number of transferred embryos may vary as well as culture days, both known to affect the results.

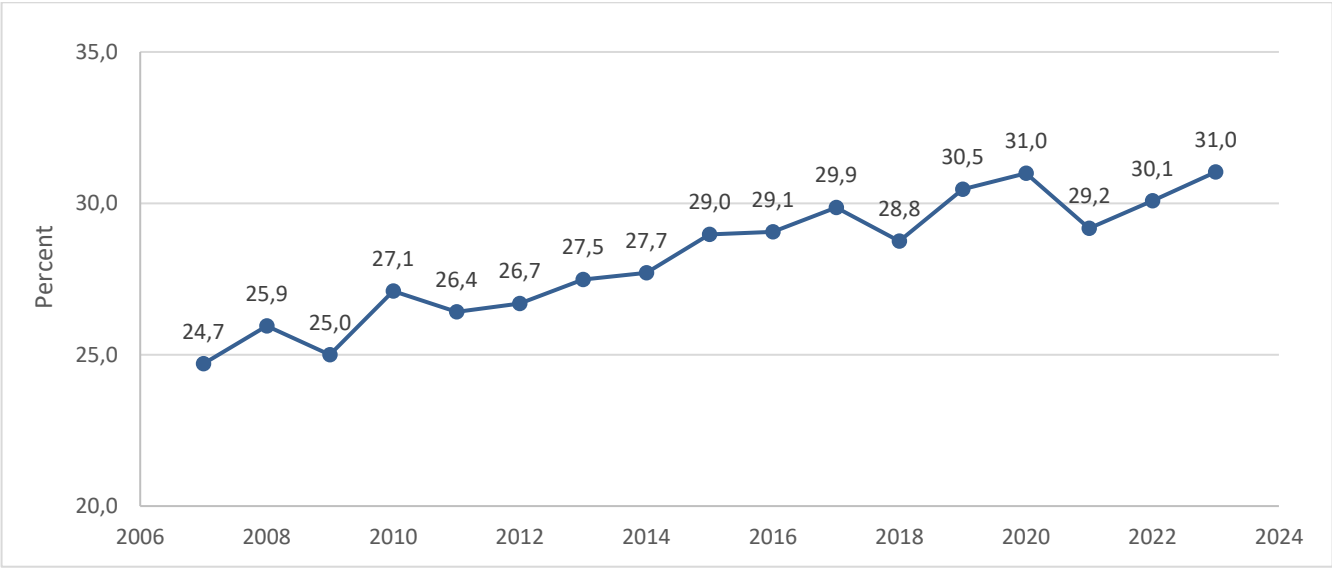
Figure 30a *Cumulative delivery rate per oocyte retrieval, including all embryo transfers (fresh/frozen) within one year. IVF with own gametes. Note- Only includes treatments that resulted in one or more embryo transfers.*



This figure presents results per year for all oocyte retrievals performed until December 31, 2022.

One can also count the delivery rate per oocyte retrieval (OPU) and the first embryo transfer (fresh or frozen) within 6 months of the current oocyte retrieval.

Figure 30b *Delivery rate per oocyte retrieval and first embryo transfer (fresh or frozen) within 6 months. IVF with own gametes. Note- Only includes treatments that resulted in an embryo transfer.*



This figure presents results for all oocyte retrievals performed until June 30, 2023, and takes into account the increasing number of "Freeze all" in a better way than reporting births per started fresh cycle.

Table 7 *Number of deliveries and number of live born children. All kind of treatments.*

	Number of deliveries	Number of deliveries with live born children	Number of multiple deliveries	Total number of live born children	Number of live born children after multiple births
2007	3155	3001	165	3164	326
2008	3356	3333	218	3549	433
2009	3736	3492	212	3704	423
2010	3896	3863	211	4074	421
2011	3954	3930	198	4129	397
2012	4061	4018	199	4211	390
2013	4160	4115	204	4316	404
2014	4344	4288	172	4453	335
2015	4746	4680	166	4841	326
2016	4996	4947	138	5086	276
2017	5341	5274	162	5428	315
2018	5324	5262	129	5387	252
2019	5640	5576	127	5701	252
2020	5312	5274	103	5375	204
2021	5563	5504	110	5614	217
2022	5995	5944	132	6075	263
2023	5748	5709	95	5804	191

Between 2007 and 2022, there has been a sharp increase in the number of deliveries, almost a doubling. Correspondingly, the number of live born children has increased. There is a small decrease in the number of treatments and children born in 2023 compared to 2022. The percentage of multiple deliveries has decreased from 5.2% to 1.7%.

Insemination with donor sperm (IUI-D)

The first inseminations with donated sperm (IUI-D) were officially carried out during the 1960s. In 2005 a change in the Swedish legislation allowed same sex couples the possibility of IUI-D at public clinics. In April 2016, another legislative change made it possible for single women to undergo assisted reproduction. In connection with the change in the law, private clinics could obtain permission from the Health and Social Care Inspectorate (IVO) to perform insemination with donated sperm (IUI-D) for heterosexual couples, single women, and same sex couples (women).

Summary of treatments performed in 2023

Table 8 *Number of treatments, pregnancies, deliveries and children born.*

Insemination with donated sperm IUI-D	
Started cycles	2259
Inseminations	1957
Positive pregnancy tests	383
Biochemical pregnancies	44
Clinical pregnancies†	339
Miscarriages <week13*	35
Miscarriages week 13-22	<3
Ectopic pregnancies	5
Stillborns week 22-27	0
Stillborns ≥ week 28	4
Singleton deliveries	294
Twin deliveries	3
Triplet deliveries	0
Total number of deliveries	**297**
Total number of live born children	**296**

**Miscarriage before gestational week 13 also includes some legal abortions*
†Missing outcome of 1 clinical pregnancy

Figure 31 *Number of IUI-D (insemination with donated sperm) per year*

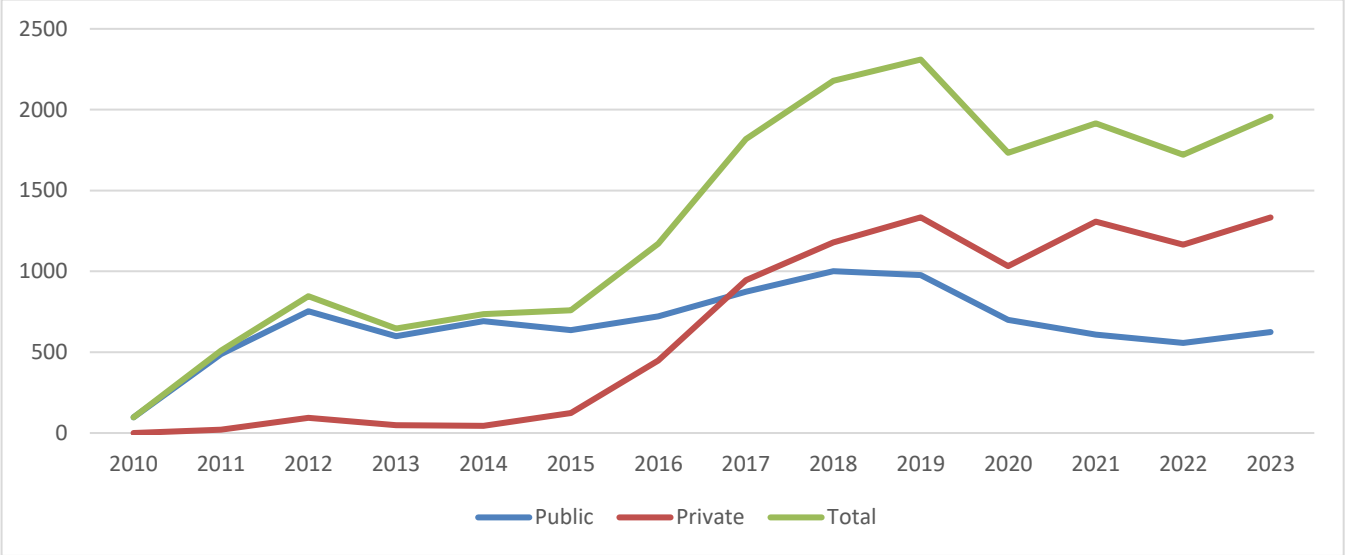
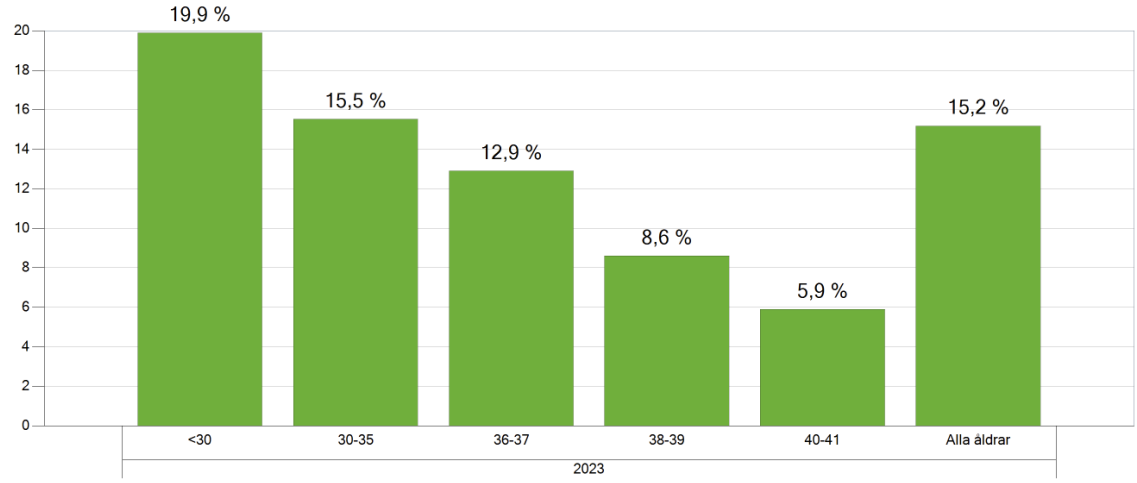


Figure 32 *Delivery rate per insemination (IUI-D) in different age groups.*

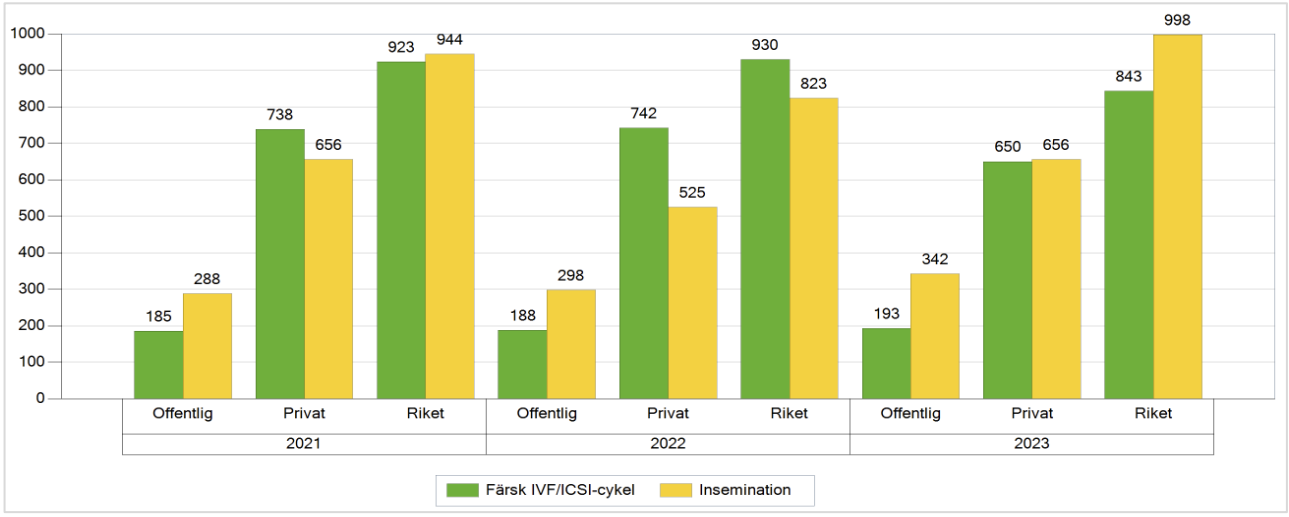


Alla åldrar = All ages

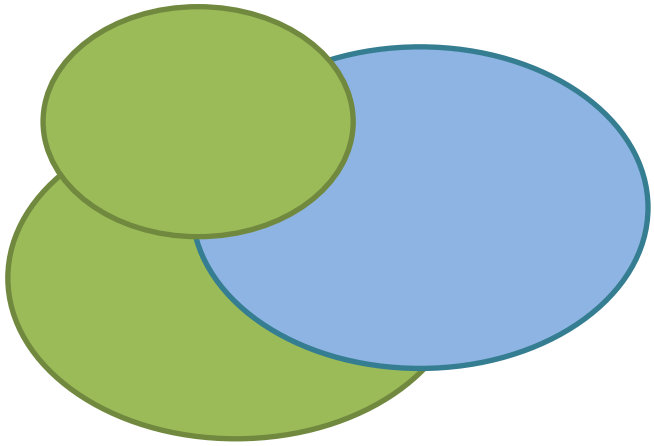
Table 9 *Number of inseminations and deliveries in different age groups in 2023.*

Age	< 30 years	30-35 years	36-37 years	38-39 years	40-41 years	≥ 42 years
Number of IUI-D treatments	352	1141	287	128	34	15
Number of deliveries	70	177	37	11	<3	0

Figure 33 *Number of IVF and IUI-D treatments started in single women in 2021, 2022 and 2023. In public, private clinics and in total.*



Offentlig = Public, Privat = Private, Riket = Total, Färsk = Fresh



Oocyte freezing

The technique of cryopreserving embryos (fertilized eggs) is reliable and has been used for many years. However, it has been much more difficult to freeze unfertilized oocytes. Today the technique of vitrification makes it possible to cryopreserve oocytes more effectively than earlier. Oocyte cryopreservation can be done for medical reasons or non-medical reasons. One medical reason to cryopreserve oocytes is to preserve fertility in cases where a woman suffers from cancer and needs to undergo chemotherapy and/or radiation, since the cancer treatment may be harmful to ovaries and oocytes ("oncological indication"). Other medical reasons may be sex reassignment, surgery/gender confirmation surgery, severe endometriosis or risk of premature menopause. Non-medical reasons for women to cryopreserve oocytes could be the desire to delay the starting of a family. It is also possible to cryopreserve donor oocytes to more easily coordinate an oocyte donation cycle with a recipient cycle.

Oocyte freezing is reported in the registry for oncological reasons, other medical reasons, non-medical reasons and oocyte freezing before gender reassignment. In 2023, 186 oocyte freezing treatments were performed on basis of oncological indication, which is an increase compared to the previous year. In addition, there were 865 oocyte freezing treatments for non-medical reasons, which is a decrease compared to last year.

Figure 34 *Number of cycles with freezing of own oocytes. Public/private/in total.*

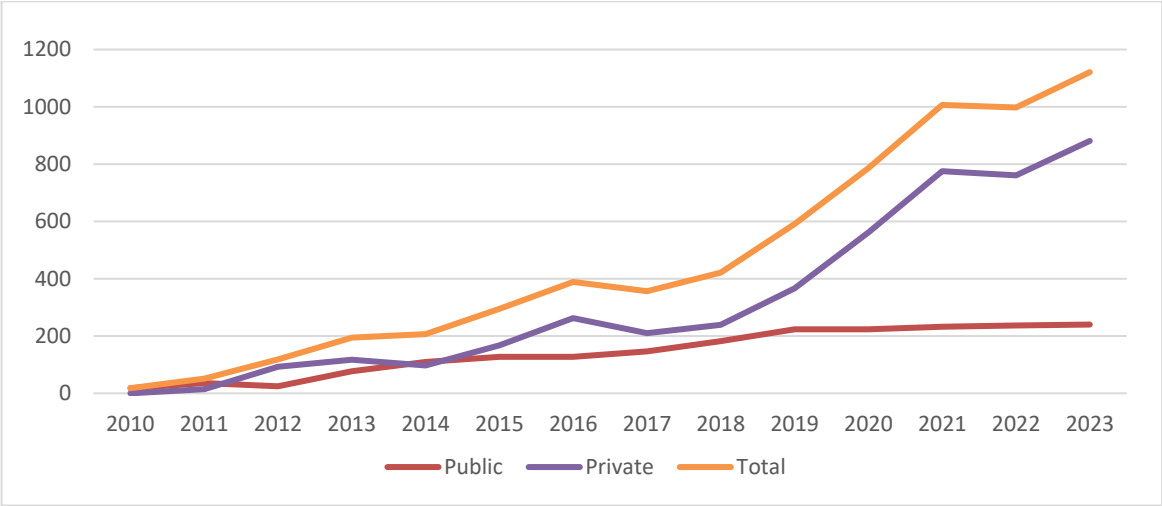
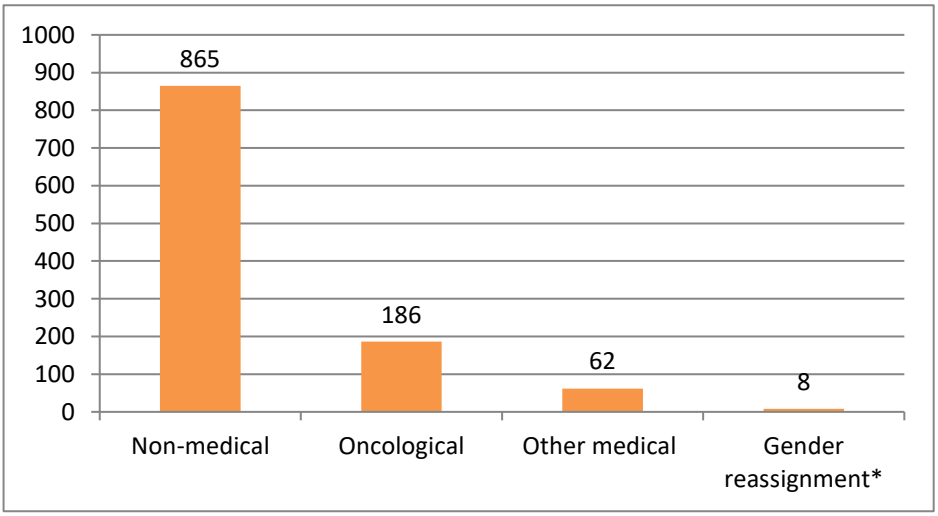


Figure 35 *Reasons for oocyte freezing in 2023.*



*A number of treatments for gender reassignment are missing due to errors in reporting to Q-IVF from a few clinics. These have been recorded as other medical.

Individual clinics

In this yearly report, we present results from individual clinics. The reader should consider that the clinics perform treatments in different types of patients and different age groups. A clinic that performs treatments on younger patients will have better results than a clinic that performs treatments on somewhat older women. Furthermore, women who have already had a baby, and who then undergo an IVF-treatment, have better chances of success than women who have not had a baby earlier. In addition, the number of patients treated in each clinic influences the reliability of the results. To achieve more reliable results, data from several years have been combined.

How important are the group sizes?

We present many of the results separated into different age groups. When looking at results between groups, one should consider how large the groups are. The larger the groups, the more reliable results, and the smaller the groups, the more unreliable results. In addition, group sizes vary by year and between clinics. If, for example, there are 300 deliveries from 1 000 treatment cycles in the youngest age group one year, the delivery rate is 30%. If, in the same year, only ten treatment cycles are performed in the oldest age group, and they result in three deliveries, the delivery rate for this group is also 30%. Given that the number of treatment cycles for both the youngest and the oldest age group stays the same, one less birth in the youngest age group yields a birth rate of 29.9% (almost no change), while one less birth in the oldest age group would yield a birth rate of only 20% (seemingly a considerable decline)

Regarding the number of days an embryo has been cultured, the graphs do not discriminate the results between day 2–3 embryos and day 5–6 embryos (blastocysts). Concerning fresh embryo transfers, day 2–3 embryos make up a considerable proportion of all embryo transfers, while in freeze cycles day 5–6 embryos are most common (99%). In Figure 36, results from the first embryo transfer are presented, irrespective of whether it is done in a fresh or in a freeze cycle. The reason for this is the growing number of cycles where all embryos have been cryopreserved and where the first transfer becomes a freeze transfer. The spectrum of treated patients and variation in the number of culture days and other treatment strategies may differ between clinics and could lead to somewhat different results.

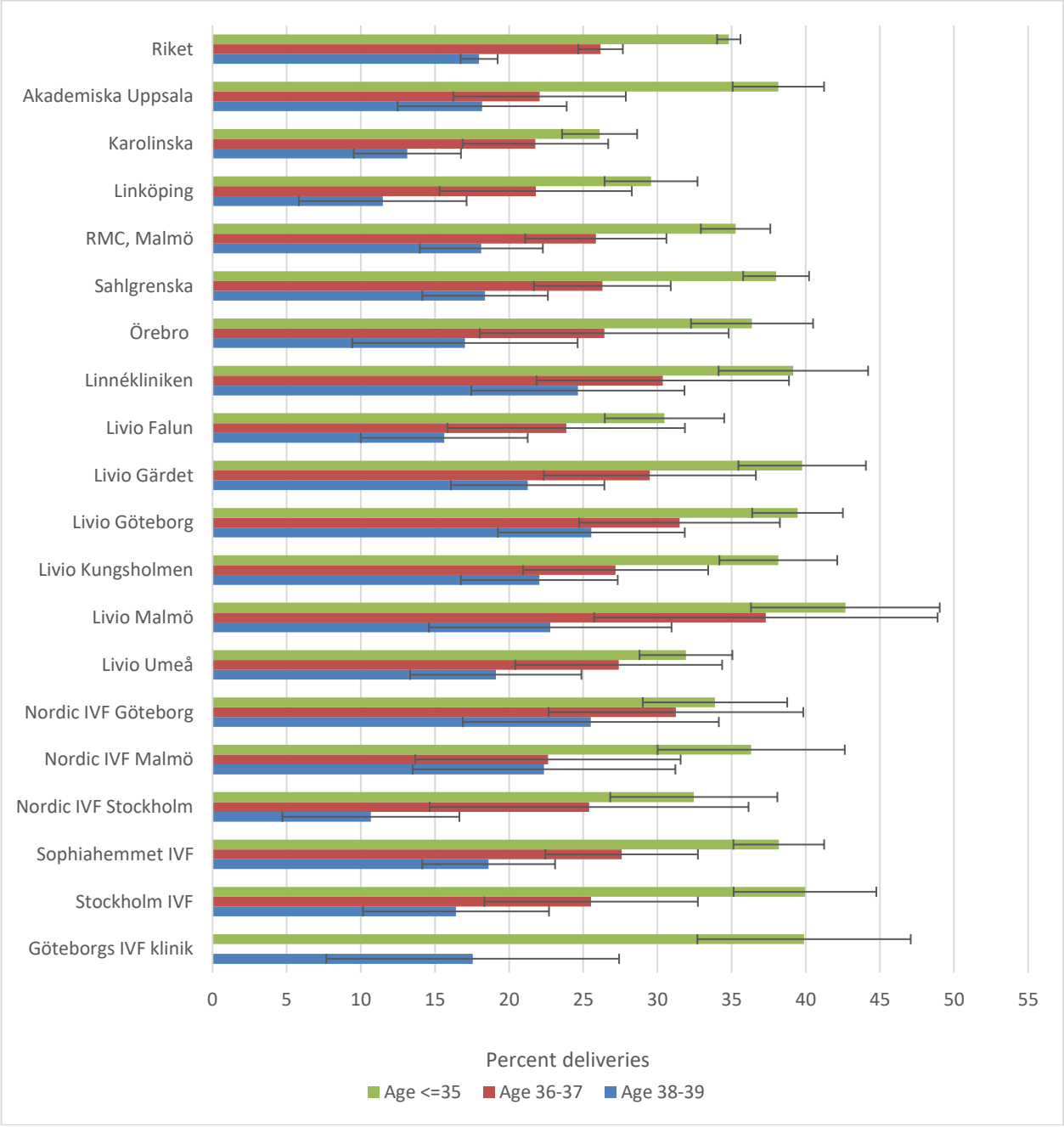
As explained above, the reliability of the results varies due to the number of embryo transfers, and as reliability indication, the confidence intervals are shown as a black line across the top of every bar. The longer the black line is, the less embryo transfers are included, and the less reliable are the results. The national results for Sweden are very reliable, since treatments from all reporting clinics are included in these results.

Four clinics (CMedical Stockholm, Gynhälsan IVF Jönköping, Lunds IVF Center och Västerås IVF) are included in the National data but data from the clinics are not reported individually. The reason is that they are all relatively new clinics where a limited number of cycles have been performed, and the treatments do not cover the entire time period addressed.

Individual clinics - deliveries per oocyte retrieval

Figure 36. *Proportion of deliveries per oocyte retrieval and first embryo transfer (fresh transfer or first embryo transfer with a cryopreserved embryo if the fresh treatment resulted in "freeze-all") within 6 months after oocyte retrieval (Includes also oocyte retrievals that have not resulted in any embryo transfer).*

The compilation only applies for those women doing oocyte retrieval 1–3 during the period January 1, 2021, to June 30, 2023, *and who have not had children earlier as a result of IVF. Treatments with oocyte donation, as well as "freeze-all" done for fertility preservation purposes (embryo banking/medical reasons)) are excluded.*



For clinics where the number of treatments in each age group is less than 50, the results are only shown in tables, as the number of treatments and the number of deliveries. No percentages and no confidence intervals are given. See also Table 10.

Confidence interval: The lines in the bars denote the confidence intervals. The confidence interval is an estimation of the reliability of the estimates of delivery rates. The longer the line, the more unreliable are the estimates of delivery rates. The factor affecting reliability is the number of treatments per age group.

Table 10 *Number of oocyte retrievals included in the figure above.*

The compilation only applies for those women doing oocyte retrieval 1–3 during the period January 1, 2021, to June 30, 2023, *and who have not had children earlier as a result of IVF. Treatments with oocyte donation, as well as "freeze-all" done for fertility preservation purposes (embryo banking/medical reasons) are excluded.*

University Clinics

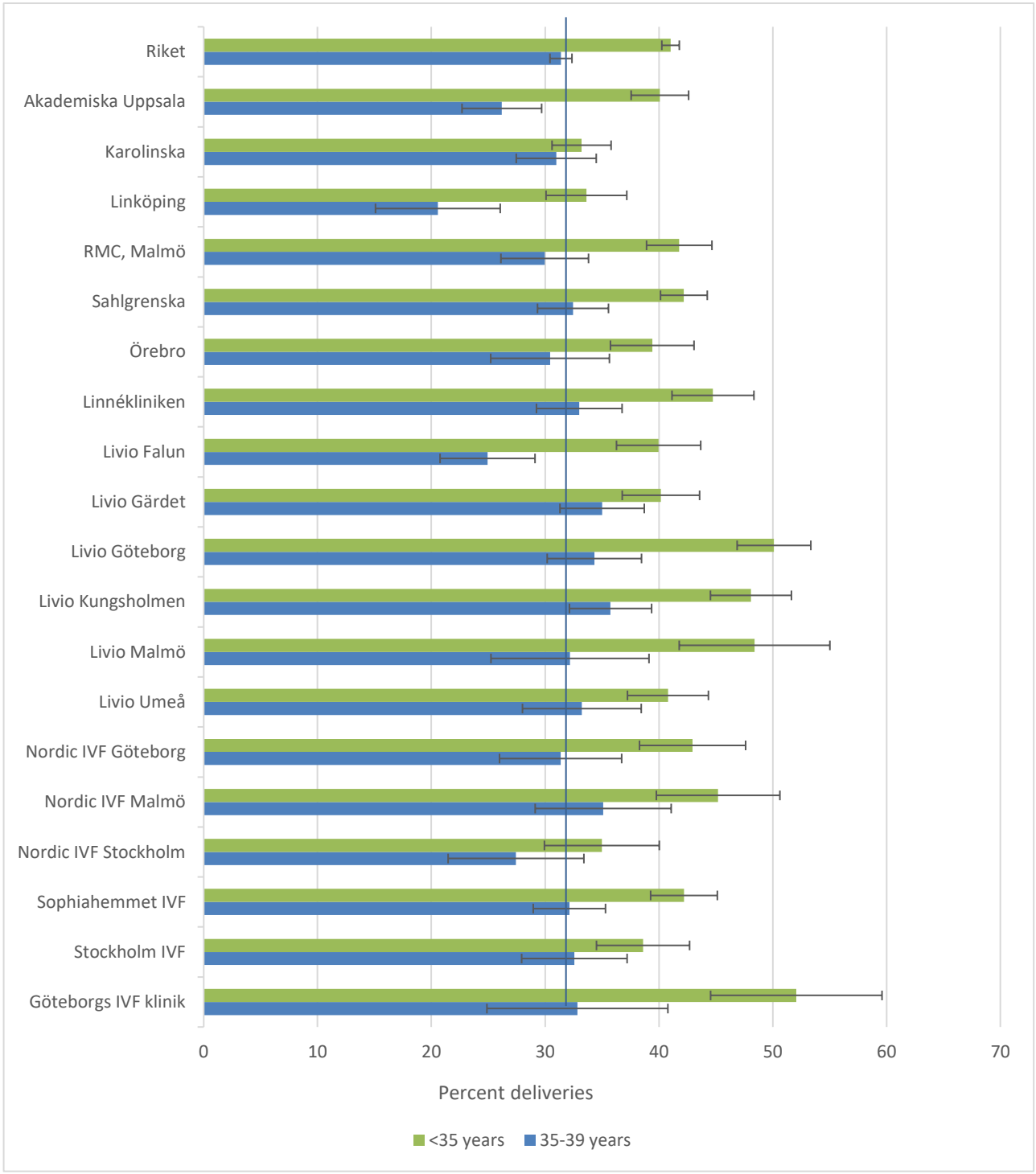
Age	≤35 years		36-37 years		38-39 years	
	Number of treatments	Number of births	Number of treatments	Number of births	Number of treatments	Number of births
Akademiska Uppsala	954	364	195	43	176	32
Karolinska Stockholm	1157	302	271	59	335	44
RMC Linköping	815	241	156	34	122	14
RMC Malmö	1599	564	325	84	331	60
Sahlgrenska Göteborg	1834	697	350	92	321	59
Örebro	525	191	106	28	94	16

Private clinics

Age	≤35 years		36-37 years		38-39 years	
	Number of treatments	Number of births	Number of treatments	Number of births	Number of treatments	Number of births
Linnékliniken	360	141	112	34	138	34
Livio Falun	502	153	109	26	160	25
Livio Gärdet	498	198	156	46	240	51
Livio Göteborg	981	387	181	57	184	47
Livio Kungsholmen	574	219	195	53	236	52
Livio Malmö	232	99	67	25	101	23
Livio Umeå	852	272	157	43	178	34
Nordic Göteborg	363	123	112	35	98	25
Nordic Malmö	223	81	84	19	85	19
Nordic Stockholm	265	86	63	16	103	11
Sophiahemmet	969	370	290	80	290	54
Stockholm IVF	398	159	151	36	134	22
Göteborgs IVF klinik	178	71	45	14	57	10

Individual clinics-deliveries per frozen embryo transfer

Figure 37 *Proportion of deliveries per embryo transfer of frozen/thawed embryos. The woman's age at the time of the oocyte retrieval is applied.* ***Freeze cycles with own gametes 2021-2023.*** *The compilation includes all freeze cycles, some of which are also included in the graph above. Freeze cycles with donated oocytes are excluded.*



Confidence interval: The lines in the bars denote the confidence intervals. The confidence interval is an estimation of the reliability of the estimates of delivery rates. The longer the line, the more unreliable are the estimates of delivery rates. The factor affecting reliability is the number of treatments per age group.

Table 11 *Number of embryo transfers included in the figure above (figure 37).* ***Freeze cycles.***

University Clinics

Age	<35 years		35-39 years	
	Number of treatments	Number of births	Number of treatments	Number of births
Akademiska Uppsala	1447	580	607	159
Karolinska Stockholm	1265	420	665	206
RMC Linköping	681	229	209	43
RMC Malmö	1132	473	554	163
Sahlgrenska Göteborg	2216	935	866	281
Örebro	680	268	299	91

Private clinics

Age	<35 years		35-39 years	
	Number of treatments	Number of births	Number of treatments	Number of births
Linnékliniken	733	328	600	198
Livio Falun	673	269	413	103
Livio Gärdet	799	321	637	223
Livio Göteborg	916	459	504	173
Livio Kungsholmen	757	364	667	242
Livio Malmö	219	106	174	56
Livio Umeå	733	299	313	104
Nordic Göteborg	433	186	287	90
Nordic Malmö	323	146	245	86
Nordic Stockholm	343	120	215	59
Sophiahemmet	1090	460	831	267
Stockholm IVF	544	210	393	128
Göteborgs IVF klinik	169	88	134	44

Research

Q-IVFs' data offers great possibilities for researchers. Approval from the ethical committee and a "secrecy assessment" are required. Application forms to access data from Q-IVF can be found on our homepage. There can also be found scientific articles published after data retrieval from Q-IVF.

Many studies based on Q-IVF data have been performed in Sweden. In many of these studies, the researchers have cross-linked data from the Medical Birth Registry, the Registry of Birth Defects, the Cancer Registry, the Patient Registry, or other health or national quality registries. In this way, it has been possible to detect what type of risks IVF-children and IVF-mothers may run, compared to children born from spontaneous conception and their mothers. Globally, the largest risk involved in IVF is the large proportion of multiple pregnancies that lead to babies being born prematurely and with low birth weight. In Sweden, we have been able to drastically reduce the number of multiple pregnancies through the one-embryo-transfer policy. This makes Sweden one of the leading countries in the world in this area of IVF. Though some risks remain, these risks are quite limited, and most children conceived through IVF in Sweden are healthy. Additionally, research into how patients experience the IVF-treatment is performed, especially when the treatment fails. Both childlessness and the IVF-treatment itself are known to be stressful.

Patient satisfaction

KUPP (Quality from a Patient's Perspective) is a patient survey often used in Swedish health care. Swedish IVF clinics use a variant of this survey named IVF-KUPP, containing specific questions for IVF-patients. The survey is scientifically validated.

The patients answer different types of questions. They are asked to assess how the clinic and the staff handle different parts of the IVF treatment. They are also asked to assess how important the handling and the specific parts of the treatment were to themselves.

The survey is administered by Q-IVF in collaboration with the company Improveit and is performed in all IVF-clinics connected to Q-IVF at a 1½-2-year interval. The answers of the survey constitute data on which the presentations of IVF clinics in this report are based. The responses from the partner, although recorded, are not included in the report; generally, partners are more satisfied than the patient (the person who has undergone the treatment)

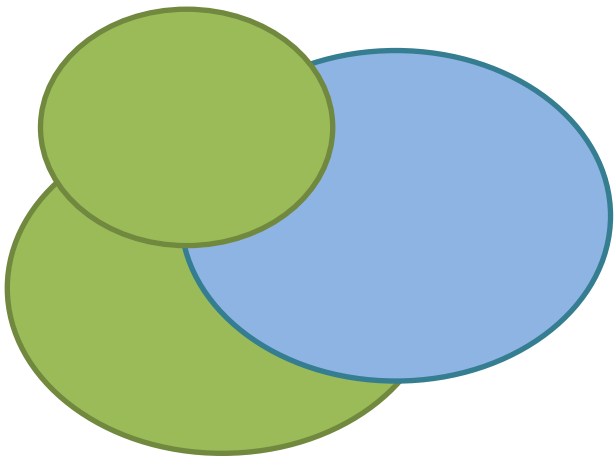
In 2024 (during a period of three months), the survey IVF-KUPP was performed for the eighth time. Each of the clinics is given the results of the questionnaires filled out by their own patients as well as national data, in order to learn and make improvements.

In total, more than 4800 questionnaires were sent out to patients and partners undergoing treatment. The response rate was 76% for the individual undergoing treatment and 54% for the partner, in total about 3200 responses.

58% did their first treatment and the remaining 42% had undergone IVF treatment earlier. 83.5 % had undergone IVF with their own oocytes and sperm, 13.6 % with their own oocytes and donated sperm, 2% with donated oocytes and the partner's sperm, and 0.9% underwent double donation.

The patient population varies between clinics in term of age, treatment indication, etc., and this may possibly affect patient satisfaction to different degrees.

Two clinics underwent major reorganizations when the survey was carried out, which may have influenced their results.



The presentation is divided into five main categories.

- Medical care: We received the best possible health care as far as we can tell (1 question)
- Accessibility: It was easy to get in touch with the clinic, easy to get an appointment (2 questions)
- Information: Treatment, medications, results of examinations, complications (5 questions)
- Treatment: Empathy, respect, engagement (6 questions)
- Participation: Participation in decisions (2 questions)

The answers apply to the proportion of respondents who answered “completely agree” or “mostly agree” to the selected questions from the survey.

Figure 38 *Average rate per category regarding all clinics combined throughout the last 9 years.*

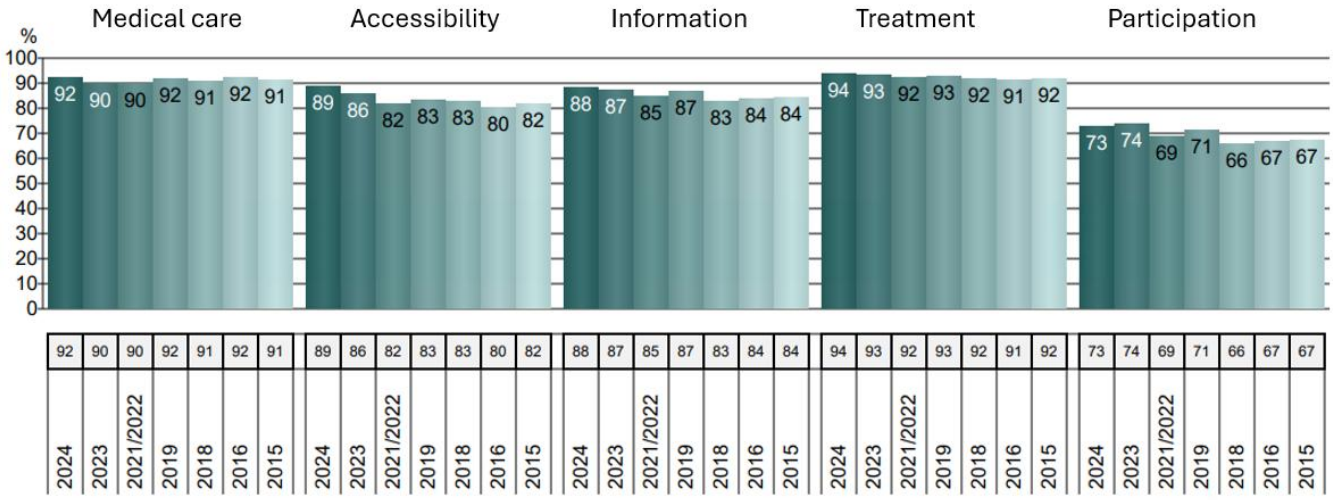
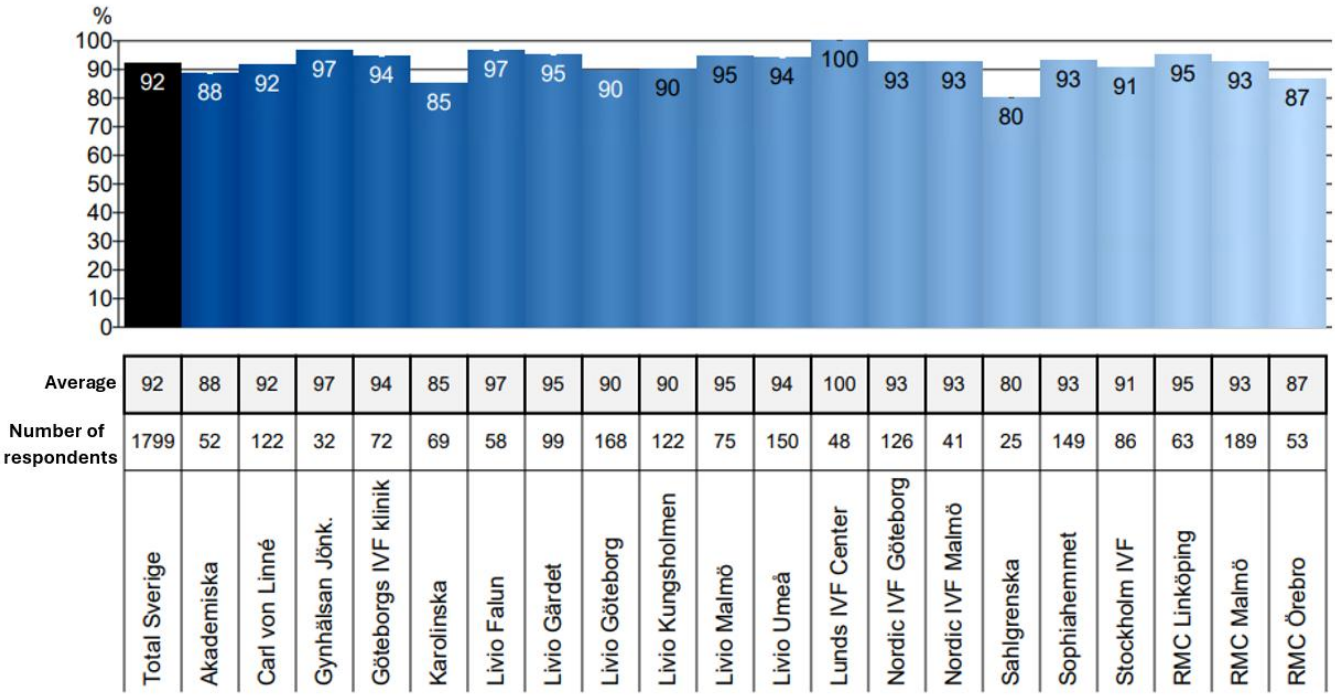
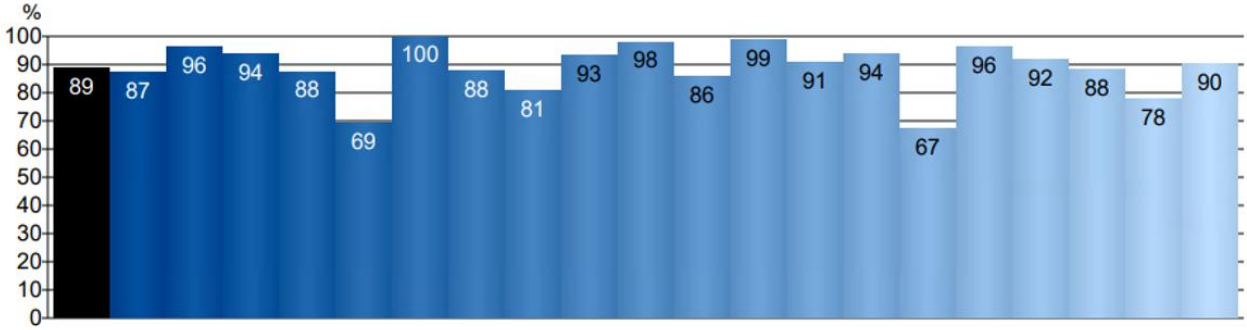


Figure 39 *Medical care category. Satisfaction rate per clinic during the latest IVF-KUPP (2024).*



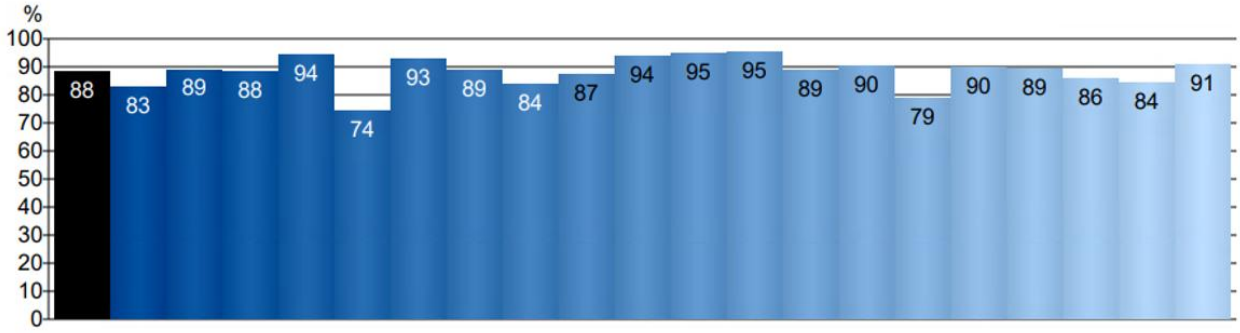
Average	92	88	92	97	94	85	97	95	90	90	95	94	100	93	93	80	93	91	95	93	87
Number of respondents	1799	52	122	32	72	69	58	99	168	122	75	150	48	126	41	25	149	86	63	189	53
	Total Sverige	Akademiska	Carl von Linné	Gynhälsan Jönk.	Göteborgs IVF klinik	Karolinska	Livio Falun	Livio Gärdet	Livio Göteborg	Livio Kungsholmen	Livio Malmö	Livio Umeå	Lunds IVF Center	Nordic IVF Göteborg	Nordic IVF Malmö	Sahlgrenska	Sophiahemmet	Stockholm IVF	RMC Linköping	RMC Malmö	RMC Örebro

Figure 40 *Accessibility category. Satisfaction rate per clinic during the latest IVF-KUPP (2024).*



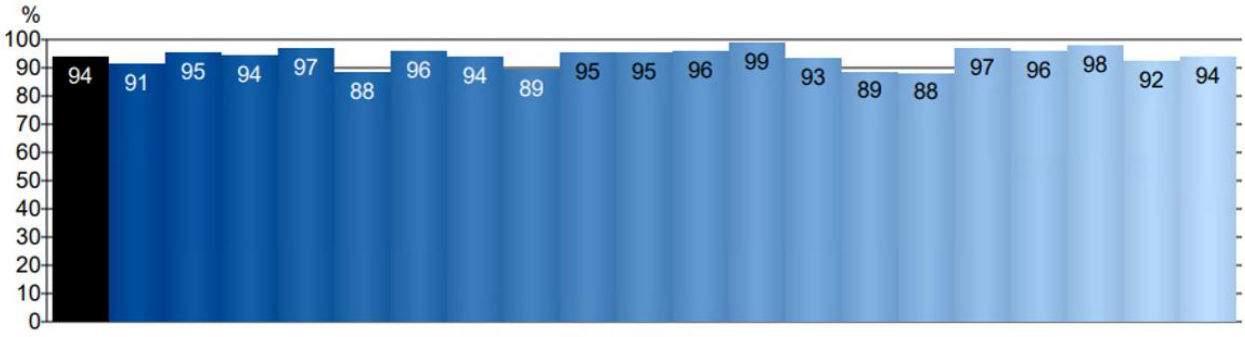
	Total Sverige	Akademiska	Carl von Linné	Gynhälsan Jönk.	Göteborgs IVF klinik	Karolinska	Livio Falun	Livio Gärdet	Livio Göteborg	Livio Kungsholmen	Livio Malmö	Livio Umeå	Lunds IVF Center	Nordic IVF Göteborg	Nordic IVF Malmö	Sahlgrenska	Sophiahemmet	Stockholm IVF	RMC Linköping	RMC Malmö	RMC Örebro
Average	89	87	96	94	88	69	100	88	81	93	98	86	99	91	94	67	96	92	88	78	90
Number of respondents	1799	52	122	32	72	69	58	99	168	122	75	150	48	126	41	25	149	86	63	189	53

Figure 41 *Information category. Satisfaction rate per clinic during the latest IVF-KUPP (2024).*



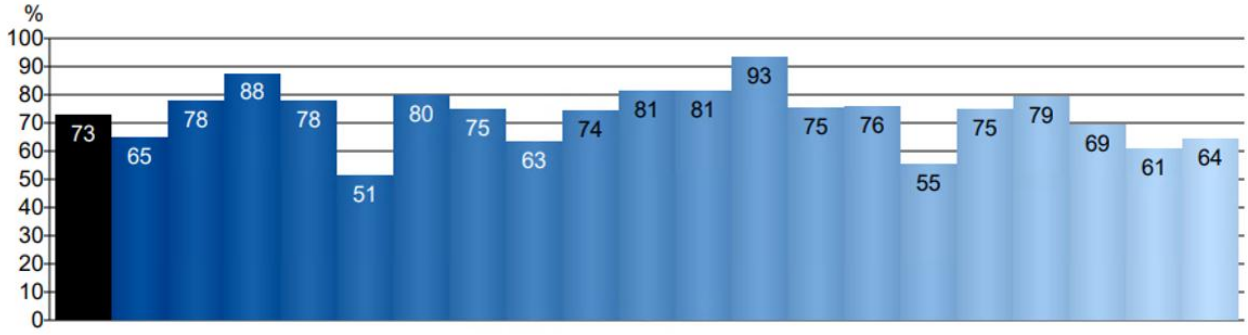
	Total Sverige	Akademiska	Carl von Linné	Gynhälsan Jönk.	Göteborgs IVF klinik	Karolinska	Livio Falun	Livio Gärdet	Livio Göteborg	Livio Kungsholmen	Livio Malmö	Livio Umeå	Lunds IVF Center	Nordic IVF Göteborg	Nordic IVF Malmö	Sahlgrenska	Sophiahemmet	Stockholm IVF	RMC Linköping	RMC Malmö	RMC Örebro
Average	88	83	89	88	94	74	93	89	84	87	94	95	95	89	90	79	90	89	86	84	91
Number of respondents	1799	52	122	32	72	69	58	99	168	122	75	150	48	126	41	25	149	86	63	189	53

Figure 42 *Treatment category. Satisfaction rate per clinic during the latest IVF-KUPP (2024).*



	Total Sverige	Akademiska	Carl von Linné	Gynhälsan Jönk.	Göteborgs IVF klinik	Karolinska	Livio Falun	Livio Gärdet	Livio Göteborg	Livio Kungsholmen	Livio Malmö	Livio Umeå	Lunds IVF Center	Nordic IVF Göteborg	Nordic IVF Malmö	Sahlgrenska	Sophiahemmet	Stockholm IVF	RMC Linköping	RMC Malmö	RMC Örebro
Average	94	91	95	94	97	88	96	94	89	95	95	96	99	93	89	88	97	96	98	92	94
Number of respondents	1799	52	122	32	72	69	58	99	168	122	75	150	48	126	41	25	149	86	63	189	53

Figure 43 *Participation category. Satisfaction rate per clinic during the latest IVF-KUPP (2024).*



	Total Sverige	Akademiska	Carl von Linné	Gynhälsan Jönk.	Göteborgs IVF klinik	Karolinska	Livio Falun	Livio Gärdet	Livio Göteborg	Livio Kungsholmen	Livio Malmö	Livio Umeå	Lunds IVF Center	Nordic IVF Göteborg	Nordic IVF Malmö	Sahlgrenska	Sophiahemmet	Stockholm IVF	RMC Linköping	RMC Malmö	RMC Örebro
Average	73	65	78	88	78	51	80	75	63	74	81	81	93	75	76	55	75	79	69	61	64
Number of respondents	1799	52	122	32	72	69	58	99	168	122	75	150	48	126	41	25	149	86	63	189	53

Concluding remarks

Q-IVF is one of the world's most complete quality registries for assisted reproduction with just over 360 000 registered cycles (2007 - 2023), from both public and private healthcare providers in Sweden. In 2023, approximately 26 500 treatments were started in the clinics affiliated to Q-IVF.

The chance of getting pregnant after a fresh IVF treatment has remained at the same level during the last years (2023, 27% per embryo transfer). The chance for a woman of achieving a pregnancy is, however, strongly related to the woman's age. The chance of getting pregnant from a transfer of a cryopreserved embryo has increased, mostly associated with new, effective methods of freezing and extended culture of excess embryos. The proportion of multiple births in Sweden is very low due to only one embryo being transferred in most cycles.

In the last years, extended culture of embryos has increased, particularly of embryos for freezing. Transfer of blastocysts now constitutes 99% of all transfers performed with cryopreserved embryos.

Freezing of unfertilized oocytes, a technique that has much improved in recent years, is used by both public and private clinics. Since the woman's age has a significant impact on the quality of her oocytes, oocyte freezing is increasing mainly among women younger than 39 years.

Since the change in the Swedish legislation April 2016 that made it possible for single women to undergo assisted reproduction, insemination with donated sperm has increased. In this report, we present the proportion of these treatments performed in single women.

Having children is a central part of most people's lives and those undergoing IVF treatment usually have high expectations for the treatment. In recent years, we have been able to measure in a validated manner how well the profession meets these expectations through the national quality survey KUPP. We are proud to be able to show that we meet expectations well and strive to become even better. This report is one tool to help the IVF providers make the improvements they aim for.

Photo: Adele Morris, Unsplash