

**CYPRUS PUBLIC AND PRIVATE
MATERNITY UNITS**

**MODE OF SUBFERTILITY TREATMENT
/ ASSISTED FERTILIZATION
FOR THE YEAR 2017**

HEALTH MONITORING UNIT

November 2019

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Mode of subfertility treatment / assisted fertilization

Mode of subfertility treatment¹: is the number of women delivering liveborn or stillborn babies after the following fertility treatments: ovulation induction (OI), intrauterine insemination (IUI) with or without ovulation induction, in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), in vitro maturation (IVM) which may include frozen embryo transfers (*Euro-Peristat Indicator Definitions, R13²*).

The following tables and charts, are extracted from the Birth Registry³ of the Health Monitoring Unit and present birth data from all public and private maternity units placed in the Government Controlled Areas of Cyprus.

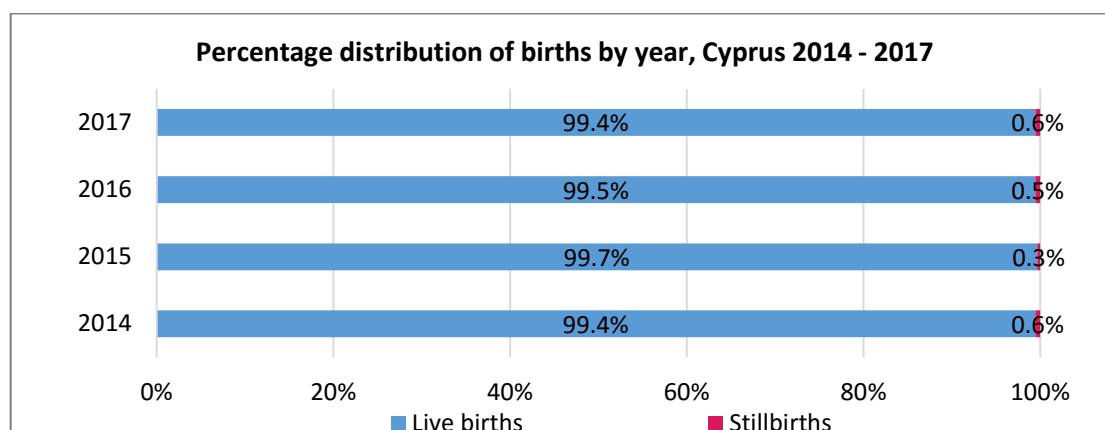
Birth Distribution by year

The absolute number of live births in 2017 were 9443, fewer births compared to 2016 (9670). Fetal deaths in 2017 were 53, much higher than in 2015 and at the same levels as in 2016 and 2014, giving a fetal mortality rate equal to 5.6 per 1000 total births.

Table 1. Birth distribution by year, Cyprus 2014 – 2017

Births by year	2014	2015	2016	2017	2014 - 2017
Live births	9499	9394	9670	9443	38006
Stillbirths	53	31	52	53	189
Total births	9552	9425	9722	9496	38195

Births per year	2014	2015	2016	2017	2014 - 2017
Live births	99.4%	99.7%	99.5%	99.4%	99.5%
Stillbirths	0.6%	0.3%	0.5%	0.6%	0.5%
% of total births	100.0%	100.0%	100.0%	100.0%	100.0%



¹ In this report we present only the following categories: In vitro fertilization (IVF), intra uterine insemination (IUI), ovulation induction (intra cytoplasmatic sperm injection (ICSI) and in vitro maturation (IVM) including frozen embryo transfers are not presented).

² <https://www.europeristat.com/index.php/our-indicators/indicators-of-perinatal-health.html>

³ The full report with the data for the previous years, 2014-2016 is in the following link: <https://www.moh.gov.cy/Moh/MOH.nsf/All/8DC461429CBC4DE7C22579CE002EF07D?OpenDocument>

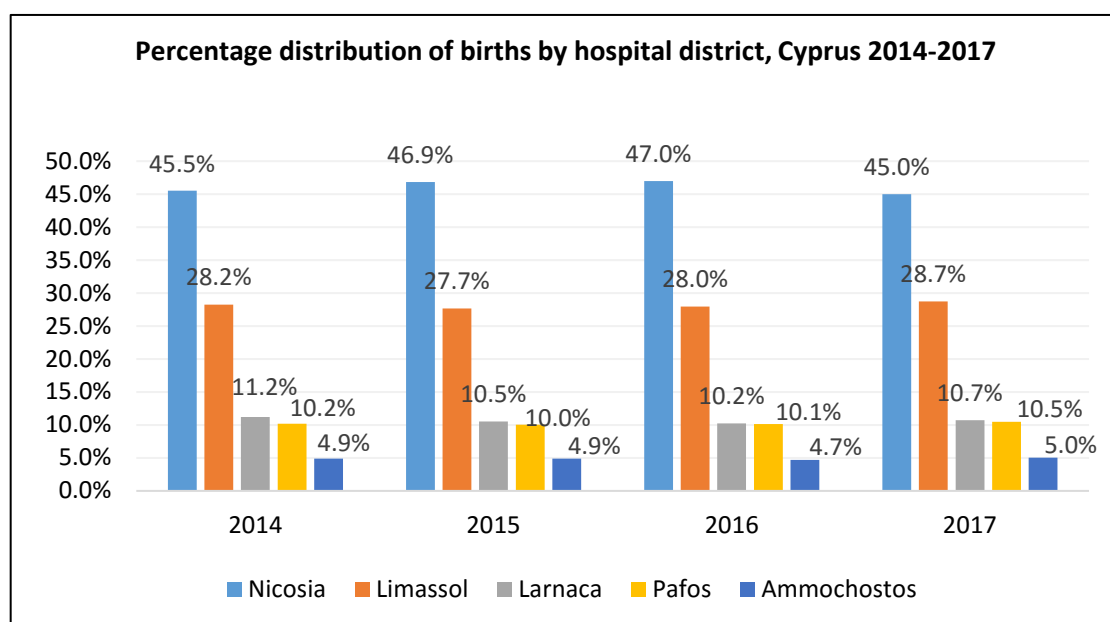
Birth Distribution by district

It makes sense that in the Nicosia District, births are higher than in other districts because of the higher population, because of the greater number of obstetric clinics and because of the NICU in the Archbishop Makarios III Hospital.

Table 2. Birth distribution by hospital district, Cyprus 2014 – 2017

District	2014	2015	2016	2017	2014-2017
Nicosia	4347	4416	4568	4274	17605
Limassol	2696	2608	2719	2730	10753
Larnaca	1069	991	994	1019	4073
Pafos	973	947	984	996	3900
Ammochostos	467	463	457	477	1864
Total births	9552	9425	9722	9496	38195

District	2014	2015	2016	2017	2014-2017
Nicosia	45.5%	46.9%	47.0%	45.0%	46.1%
Limassol	28.2%	27.7%	28.0%	28.7%	28.2%
Larnaca	11.2%	10.5%	10.2%	10.7%	10.7%
Pafos	10.2%	10.0%	10.1%	10.5%	10.2%
Ammochostos	4.9%	4.9%	4.7%	5.0%	4.9%
Total births	100.0%	100.0%	100.0%	100.0%	100.0%



Women by mode of subfertility treatment

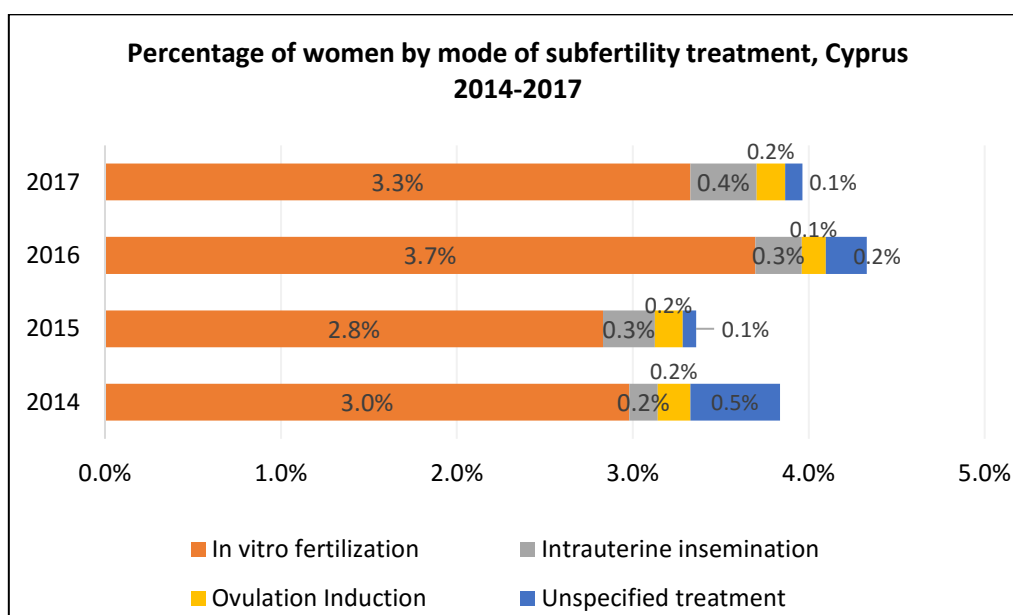
On average, 3.9% of women giving birth became pregnant after some form of assisted reproductive technique. Particularly, the percentage of in vitro fertilization (IVF) was on average 3.2%.

Table 3. Women by mode of subfertility treatment, Cyprus 2014-2017

Subfertility treatment	2014	2015	2016	2017	2014-2017
None	8859	8860	9060	8892	35670
In vitro fertilization	275	260	350	308	1192
Intrauterine insemination	15	27	25	35	102
Ovulation Induction	17	15	13	15	60
Unspecified treatment	47	7	22	9	85
Not stated	89	3	7	2	101
Total women	9301	9171	9477	9261	37210

Subfertility treatment	2014	2015	2016	2017	2014-2017
None	96.2%	96.6%	95.7%	96.0%	96.1%
In vitro fertilization	3.0%	2.8%	3.7%	3.3%	3.2%
Intrauterine insemination	0.2%	0.3%	0.3%	0.4%	0.3%
Ovulation Induction	0.2%	0.2%	0.1%	0.2%	0.2%
Unspecified treatment	0.5%	0.1%	0.2%	0.1%	0.2%
% of total women*	100.0%	100.0%	100.0%	100.0%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Women by mode of subfertility treatment by age

As it is expected, women more than 35 years old are more likely to follow treatment for subfertility. The percentage for IVF (in vitro fertilization) is very high for the age groups 30-34 and 35-39. However, the 9.4% for the age group 25-29 is not insignificant.

Table 4. Women by mode of subfertility treatment by age, Cyprus 2014-2017

Subfertility treatment / Mother's age	2014				2015				2016				2017			
	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total
None	144	7110	1605	8859	128	6905	1827	8860	159	6926	1975	9060	165	6825	1902	8892
In vitro fertilization	0	154	121	275	1	136	123	260	0	163	187	350	0	142	166	308
Other or unspecified	0	52	27	79	0	38	11	49	0	44	16	60	0	45	14	59
Not stated	0	71	18	89	0	3	0	3	1	4	2	7	0	2	0	2
Total women	144	7387	1770	9301	129	7081	1961	9171	160	7137	2180	9477	165	7014	2082	9261

Subfertility treatment / Mother's age	2014				2015				2016				2017			
	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total	Less than 20	20-34	35 or more	Total
None	100.0%	97.2%	91.6%	96.2%	99.2%	97.6%	93.2%	96.6%	100.0%	97.1%	90.7%	95.7%	100.0%	97.3%	91.4%	96.0%
In vitro fertilization	0.0%	2.1%	6.9%	3.0%	0.8%	1.9%	6.3%	2.8%	0.0%	2.3%	8.6%	3.7%	0.0%	2.0%	8.0%	3.3%
Other or unspecified	0.0%	0.7%	1.5%	0.9%	0.0%	0.5%	0.6%	0.5%	0.0%	0.6%	0.7%	0.6%	0.0%	0.6%	0.7%	0.6%
% of total women*	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

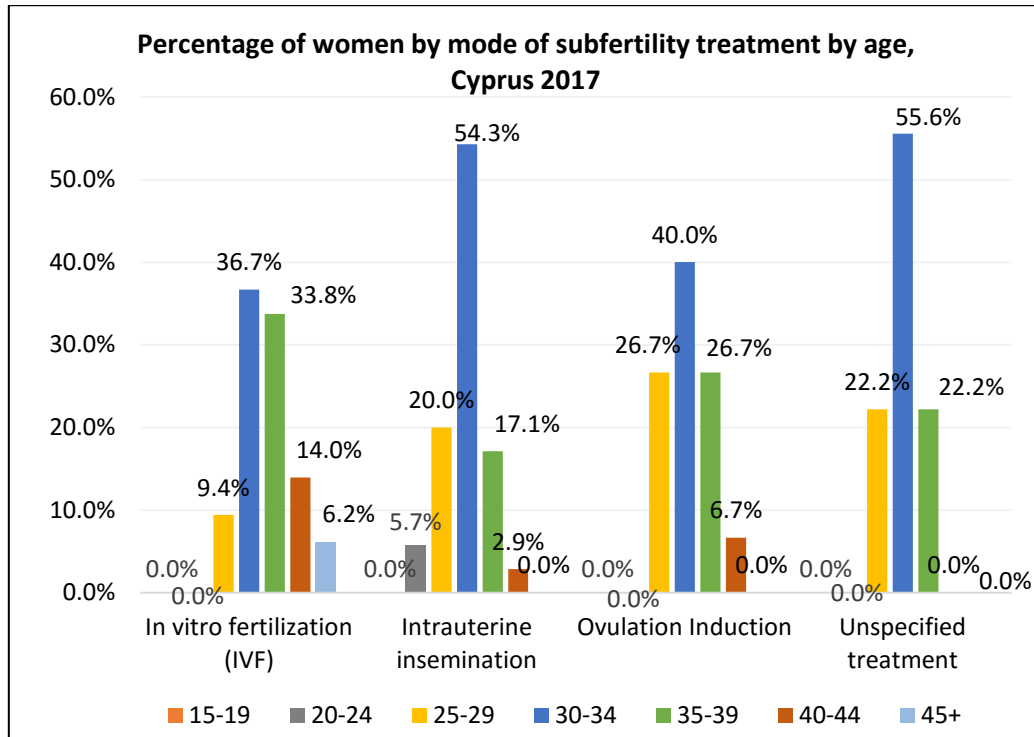
* "Not stated" cases are distributed in each category by a weighting factor

Table 5. Women by mode of subfertility treatment by age, Cyprus 2017

Subfertility treatment / Age	15-19	20-24	25-29	30-34	35-39	40-44	45+	2017
None	165	895	2518	3412	1602	285	15	8892
In vitro fertilization (IVF)	0	0	29	113	104	43	19	308
Intrauterine insemination	0	2	7	19	6	1	0	35
Ovulation Induction	0	0	4	6	4	1	0	15
Unspecified treatment	0	0	2	5	2	0	0	9
Not stated	0	0	0	2	0	0	0	2
Total women	165	897	2560	3557	1718	330	34	9261

Subfertility treatment / Age	15-19	20-24	25-29	30-34	35-39	40-44	45+	2017
None	1.9%	10.1%	28.3%	38.4%	18.0%	3.2%	0.2%	100.0%
In vitro fertilization (IVF)	0.0%	0.0%	9.4%	36.7%	33.8%	14.0%	6.2%	100.0%
Intrauterine insemination	0.0%	5.7%	20.0%	54.3%	17.1%	2.9%	0.0%	100.0%
Ovulation Induction	0.0%	0.0%	26.7%	40.0%	26.7%	6.7%	0.0%	100.0%
Unspecified treatment	0.0%	0.0%	22.2%	55.6%	22.2%	0.0%	0.0%	100.0%
% of total women*	1.8%	9.7%	27.6%	38.4%	18.6%	3.6%	0.4%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Women by mode of subfertility treatment by mode of delivery

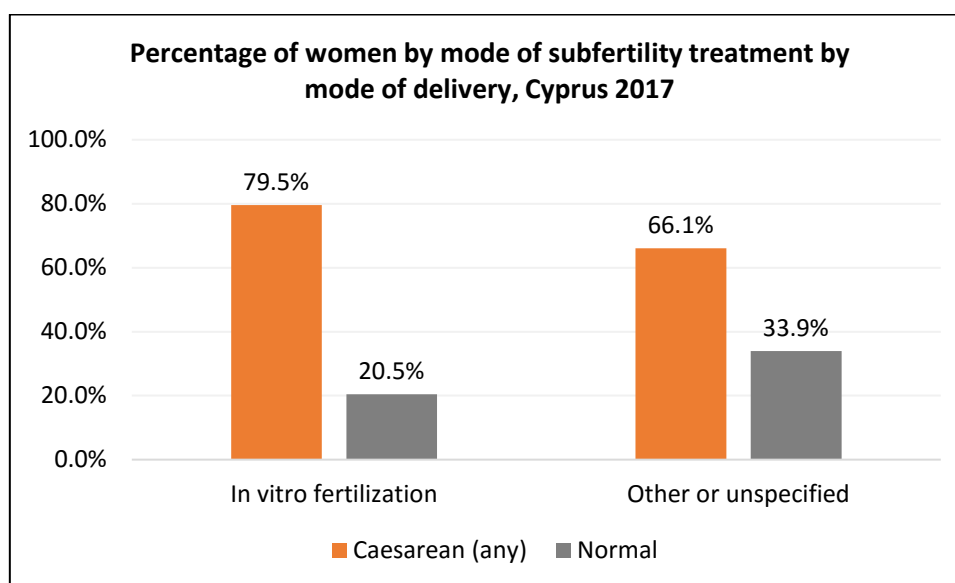
The percentage of caesarean sections in Cyprus is among the highest in the world. From 53.4% in 2008 became 56.9% in 2014 and 2015, in 2016 was 55.3% and in 2017 with a little bit of reduction, the percentage was around 53%. The World Health Organization (WHO), on its website, states that the "ideal rate" for caesarean section is between 10% and 15%, and that caesarean section should only be made when it is medically necessary, that is, when vaginal (normal) is risky to the mother or baby⁴. Women who follow a method of assisted fertilization are more likely to choose a caesarean section. It is observed that of the women assisted with IVF, 79.5% choose caesarean section.

Table 6. Women by mode of subfertility treatment by mode of delivery, Cyprus 2017

Subfertility treatment / Mode of delivery	Caesarean (any)	Normal	2017
None	4552	4340	8892
In vitro fertilization	245	63	308
Other or unspecified	39	20	59
Not stated	0	2	2
Total women	4836	4425	9261

Subfertility treatment / Mode of delivery	Caesarean (any)	Normal	2017
None	51.2%	48.8%	100.0%
In vitro fertilization	79.5%	20.5%	100.0%
Other or unspecified	66.1%	33.9%	100.0%
% of total women	52.2%	47.8%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



⁴ <http://www.who.int/mediacentre/news/releases/2015/caesarean-sections/en/>

Births by mode of subfertility treatment, by sector

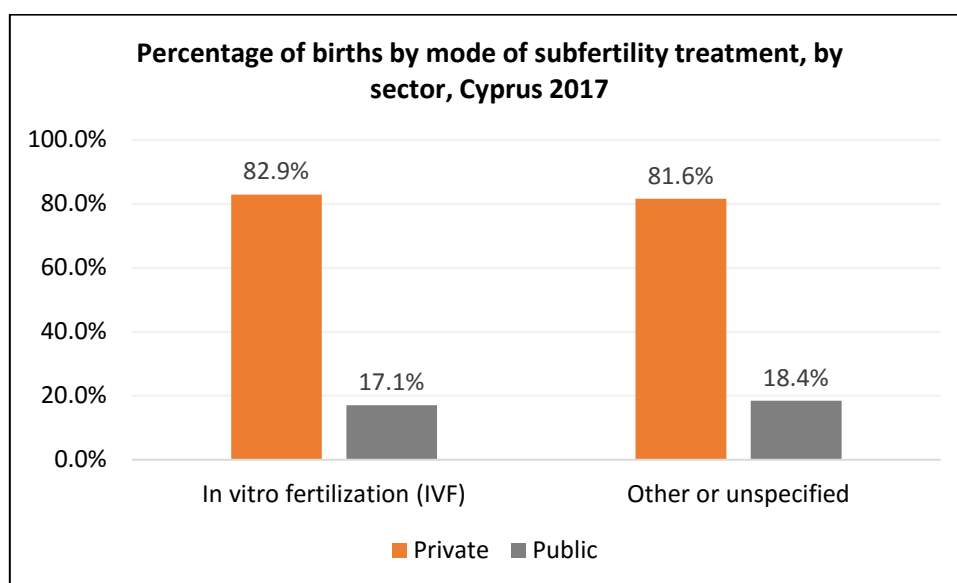
The percentages of women who follow a method of assisted fertilization are bigger in the private sector than of those in the public sector.

Table 7. Births by mode of subfertility treatment, by sector, Cyprus 2017

Subfertility treatment	Private	Public	2017
None	5865	3155	9020
In vitro fertilization (IVF)	330	68	398
Other or unspecified	62	14	76
Not stated	1	1	2
Total women	6258	3238	9496

Subfertility treatment	Private	Public	2017
None	65.0%	35.0%	100.0%
In vitro fertilization (IVF)	82.9%	17.1%	100.0%
Other or unspecified	81.6%	18.4%	100.0%
% of total women*	65.9%	34.1%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment, by hospital district

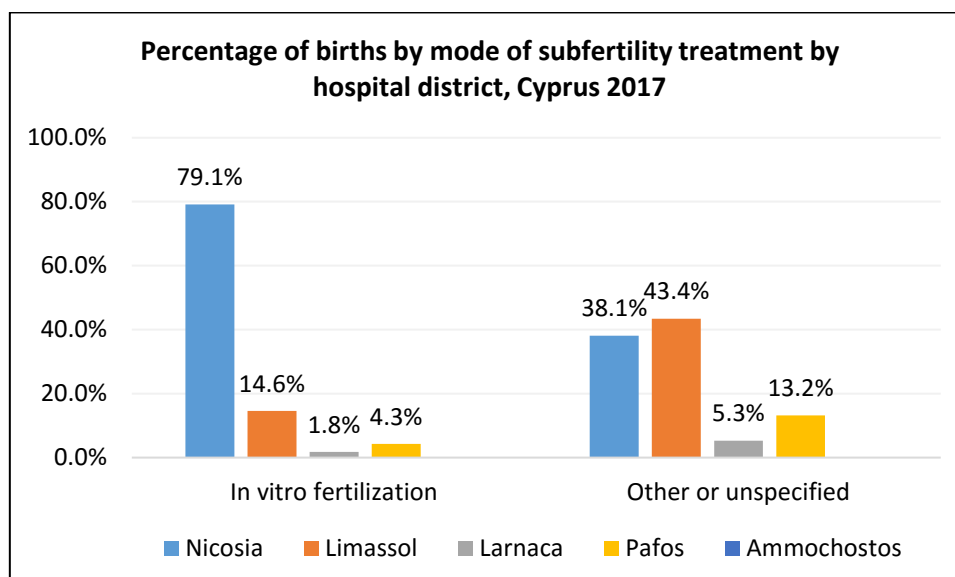
The percentage for IVF is bigger in Nicosia than in the other districts, and the percentage for other subfertility treatments is higher in Limassol than in the other districts.

Table 8. Births by mode of subfertility treatment by hospital district, Cyprus 2017

Subfertility treatment / hospital district	Nicosia	Limassol	Larnaca	Pafos	Ammochostos	2017
None	3930	2638	1007	969	476	9020
In vitro fertilization	315	58	7	17	1	398
Other or unspecified	29	33	4	10	0	76
Not stated	0	1	1	0	0	2
Total births	4274	2730	1019	996	477	9496

Subfertility treatment / hospital district	Nicosia	Limassol	Larnaca	Pafos	Ammochostos	2017
None	43.6%	29.3%	11.2%	10.7%	5.3%	100.0%
In vitro fertilization	79.1%	14.6%	1.8%	4.3%	0.3%	100.0%
Other or unspecified	38.1%	43.4%	5.3%	13.2%	0.0%	100.0%
% of total births*	45.0%	28.7%	10.7%	10.5%	5.0%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment, by vital status

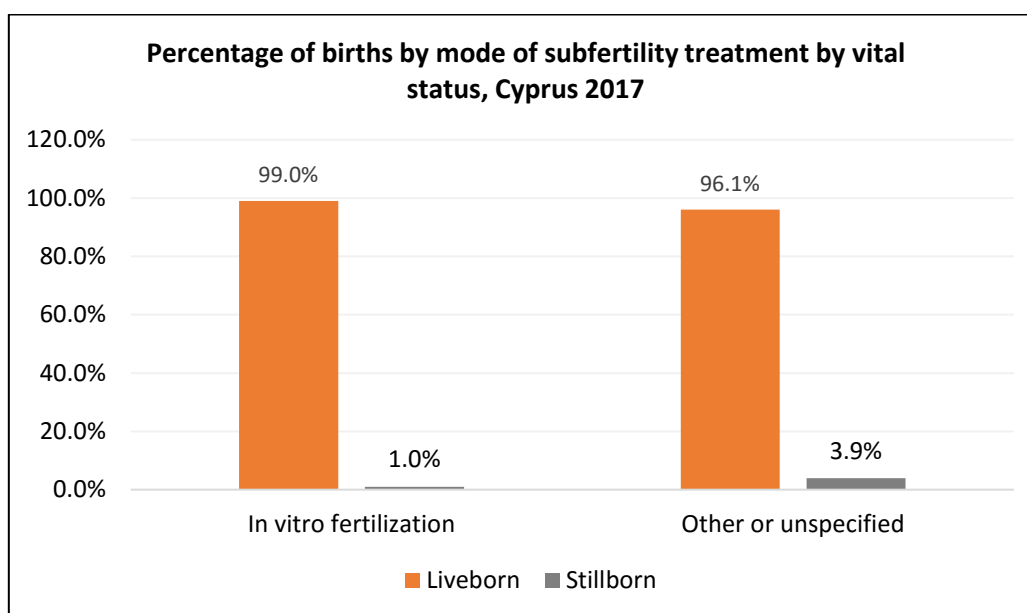
99% of births with IVF were liveborn and 1% stillborn. In general, the percentage of IVF in live births was 4.2% and in stillbirths 7.5%.

Table 9. Births by mode of subfertility treatment by vital status, Cyprus 2017

Subfertility treatment / vital status	Liveborn	Stillborn	2017
None	8974	46	9020
In vitro fertilization	394	4	398
Other or unspecified	73	3	76
Not stated	2	0	2
Total births	9443	53	9496

Subfertility treatment / vital status	Liveborn	Stillborn	2017
None	99.5%	0.5%	100.0%
In vitro fertilization	99.0%	1.0%	100.0%
Other or unspecified	96.1%	3.9%	100.0%
% of total births*	99.4%	0.6%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment by plurality

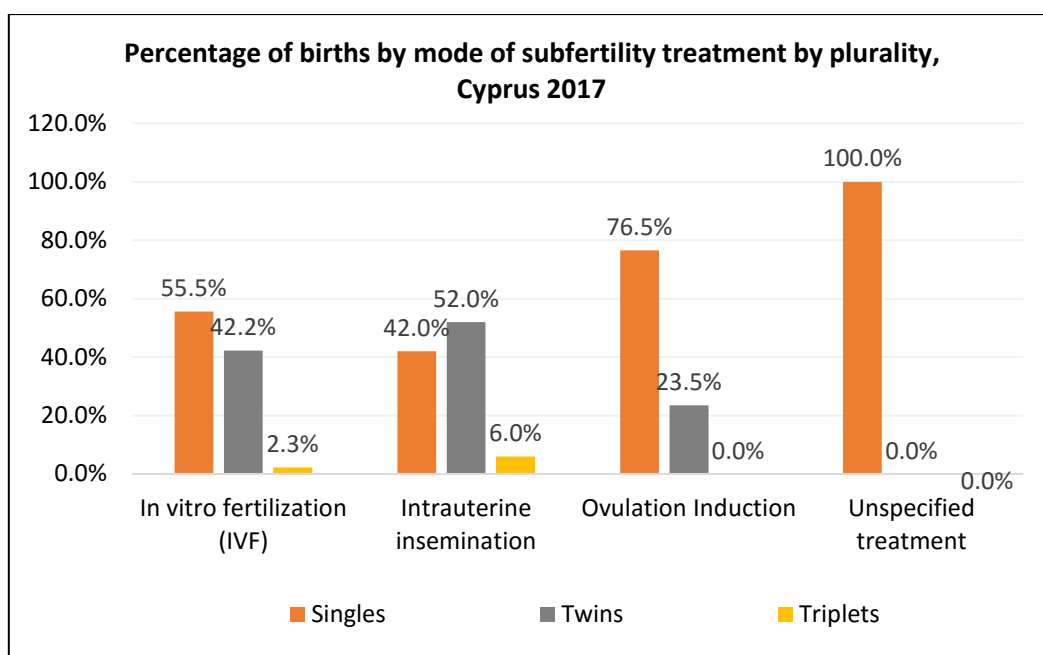
55.5% of births with IVF were single pregnancies, 42.2% were twin pregnancies and 2.3% were triplet pregnancies. 43.9% of the twin babies and 80% of the triplet babies were outcome of a subfertility treatment.

Table 10. Births by mode of subfertility treatment by plurality, Cyprus 2017

Subfertility treatment / Plurality	Singles	Twins	Triplets	2017
None	8764	253	3	9020
In vitro fertilization (IVF)	221	168	9	398
Intrauterine insemination	21	26	3	50
Ovulation Induction	13	4	0	17
Unspecified treatment	9	0	0	9
Not stated	2	0	0	2
Total births	9030	451	15	9496

Subfertility treatment / Plurality	Singles	Twins	Triplets	2017
None	97.2%	2.8%	0.0%	100.0%
In vitro fertilization (IVF)	55.5%	42.2%	2.3%	100.0%
Intrauterine insemination	42.0%	52.0%	6.0%	100.0%
Ovulation Induction	76.5%	23.5%	0.0%	100.0%
Unspecified treatment	100.0%	0.0%	0.0%	100.0%
% of total births*	95.1%	4.7%	0.2%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment by birthweight

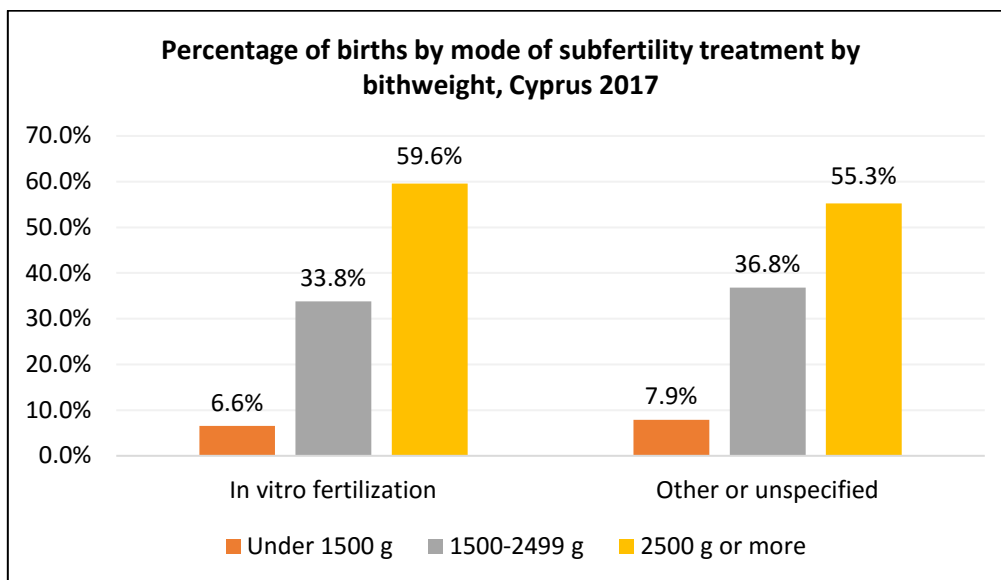
6.6% of births with IVF were under 1500 grams, 33.8% were between 1500-2499 grams and 59.6% 2500 grams or more.

Table 11: Births by mode of subfertility treatment by birthweight, Cyprus 2017

Subfertility treatment / Birthweight	Under 1500 g	1500-2499 g	2500 g or more	2017
None	108	670	8244	9022
In vitro fertilization	26	135	237	398
Other or unspecified	6	28	42	76
Total births	140	833	8523	9496

Subfertility treatment / Birthweight	Under 1500 g	1500-2499 g	2500 g or more	2017
None	1.2%	7.4%	91.4%	100.0%
In vitro fertilization	6.6%	33.8%	59.6%	100.0%
Other or unspecified	7.9%	36.8%	55.3%	100.0%
% of total births*	1.5%	8.8%	89.8%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment gestational age

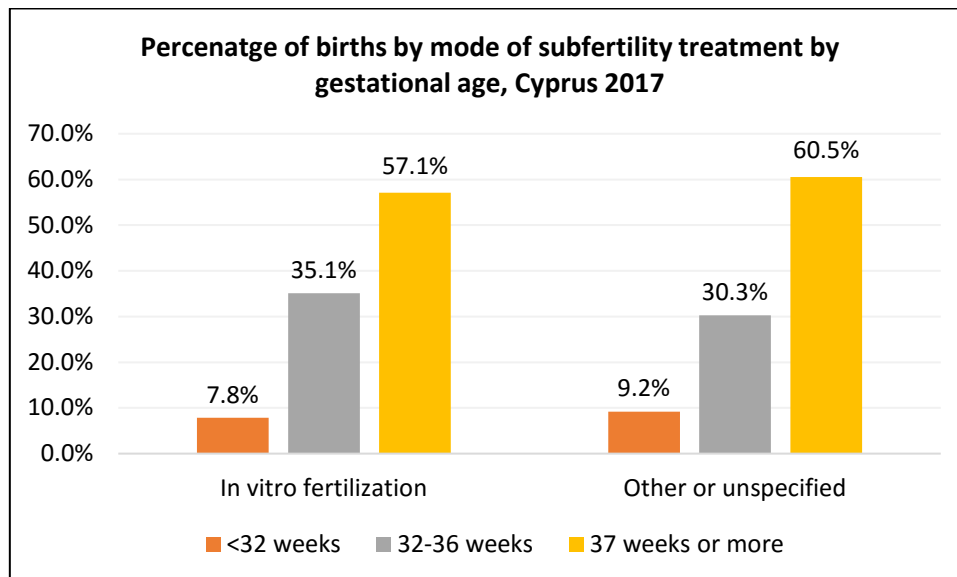
7.8% of births with IVF were less than 32 weeks of gestation (very preterm births), 35.1% were between 32-36 weeks of gestation (preterm births) and 57.1% were 37 weeks of gestation or more.

Table 12: Births by mode of subfertility treatment by gestational age, Cyprus 2017

Subfertility treatment / Gestational age	<32 weeks	32-36 weeks	37 weeks or more	2017
None	106	809	8107	9022
In vitro fertilization	31	140	227	398
Other or unspecified	7	23	46	76
Total births	144	972	8380	9496

Subfertility treatment / Gestational age	<32 weeks	32-36 weeks	37 weeks or more	2017
None	1.2%	9.0%	89.9%	100.0%
In vitro fertilization	7.8%	35.1%	57.1%	100.0%
Other or unspecified	9.2%	30.3%	60.5%	100.0%
% of total births*	1.5%	10.2%	88.2%	100.0%

* "Not stated" cases are distributed in each category by a weighting factor



Births by mode of subfertility treatment by admission to NICU, Cyprus 2017

75.1% of births with IVF were not admitted in NICU, while 24.9% of births with IVF were admitted in NICU.

Table 13: Live births by mode of subfertility treatment by admission to Neonatal Intensive Care Unit (NICU), Cyprus 2017

Subfertility treatment / NICU admission	No NICU Admission	Admitted in NICU	2017
None	8496	526	9022
In vitro fertilization	299	99	398
Other or unspecified	68	8	76
% of total births*	8863	633	9496

Subfertility treatment / NICU admission	No NICU Admission	Admitted in NICU	2017
None	94.2%	5.8%	100.0%
In vitro fertilization	75.1%	24.9%	100.0%
Other or unspecified	89.4%	10.6%	100.0%
% of total births*	93.3%	6.7%	100.0%

Denominator: Live births

* "Not stated" cases are distributed in each category by a weighting factor

