

Results from the Nordic Countries

Nordic Fertility Society Meeting

Göteborg 2019

Fieneke, Hillmar ,Christina & Kia, Liv, Anna

Nordic ART report based on ESHRE IVF monitoring group (EIM)

- Sweden Kia Borg and Christina Bergh
- Norway Liv Bente Romundstad
- Iceland Hilmar Björgvinsson
- Finland Anna Heino
- Denmark Josephine Lemmen

- Not all data are available in each country
- So endpoints are different fx pregnancies vs deliveries
- EIM data is on all cycles performed in each country

Demography

2016	Population	Infants born
Denmark	5,7 mill.	61.614
Finland	5,5 mill.	53.614
Iceland	0,3 mill.	4.039
Norway	5,2 mill.	59.073
Sweden	9,9 mill	121.511
Total	26,6 mill.	299.851

Demography / Number of clinics

2016	Population	Infants born	IVF clinics	IVF >1,000	IVF	IVF
					500-1,000	<500
Denmark	5,7 mill.	61.614	19	8	9	2
Finland	5,5 mill.	53.614	17	3	4	10
Iceland	0,3 mill.	4.039	1	0	0	1
Norway	5,2 mill.	59.073	11	1	5	5
Sweden	9,9 mill	121.511	17 (18)	4	10	3
Total	26,6 mill.	299.851	65	17	24	25

Demography / Number of clinics

2016	Population	Infants born	IVF clinics	IVF >1,000	IVF	IVF	IUI centers	IUI
					500-1,000	<500		>1,000
Denmark	5,7 mill.	61.614	19	8	9	2	33(35)	1
Finland	5,5 mill.	53.614	17	3	4	10	22	0
Iceland	0,3 mill.	4.039	1	0	0	1	1	0
Norway	5,2 mill.	59.073	11	1	5	5	11	0
Sweden	9,9 mill	121.511	17 (18)	4	10	3	0	0
Total	26,6 mill.	299.851	65	17	24	25	67	1

Performed treatments 2016

	IVF/ICSI	FER	OD (FER)	FOR	EMB. DON	IVM	PGD	IUI
Denmark	X	X	X	X	-	-	X	X
Finland	X	X	X	-	X	-	X	X
Iceland	X	X	X	-	-	-	-	X
Norway	X	X	-	-	-	-	-	X
Sweden	X	X	X	-	-	-	X	X

ART

2016	IVF/ICSI	FER (thaw)	OD (+FER)
Denmark	12.022	5.059	484
Finland	4.726	3.661	731
Iceland	361	229	54
Norway	6.917	3363	0
Sweden	12.323	6080	282
Cycles	36.349	18.392	1.551

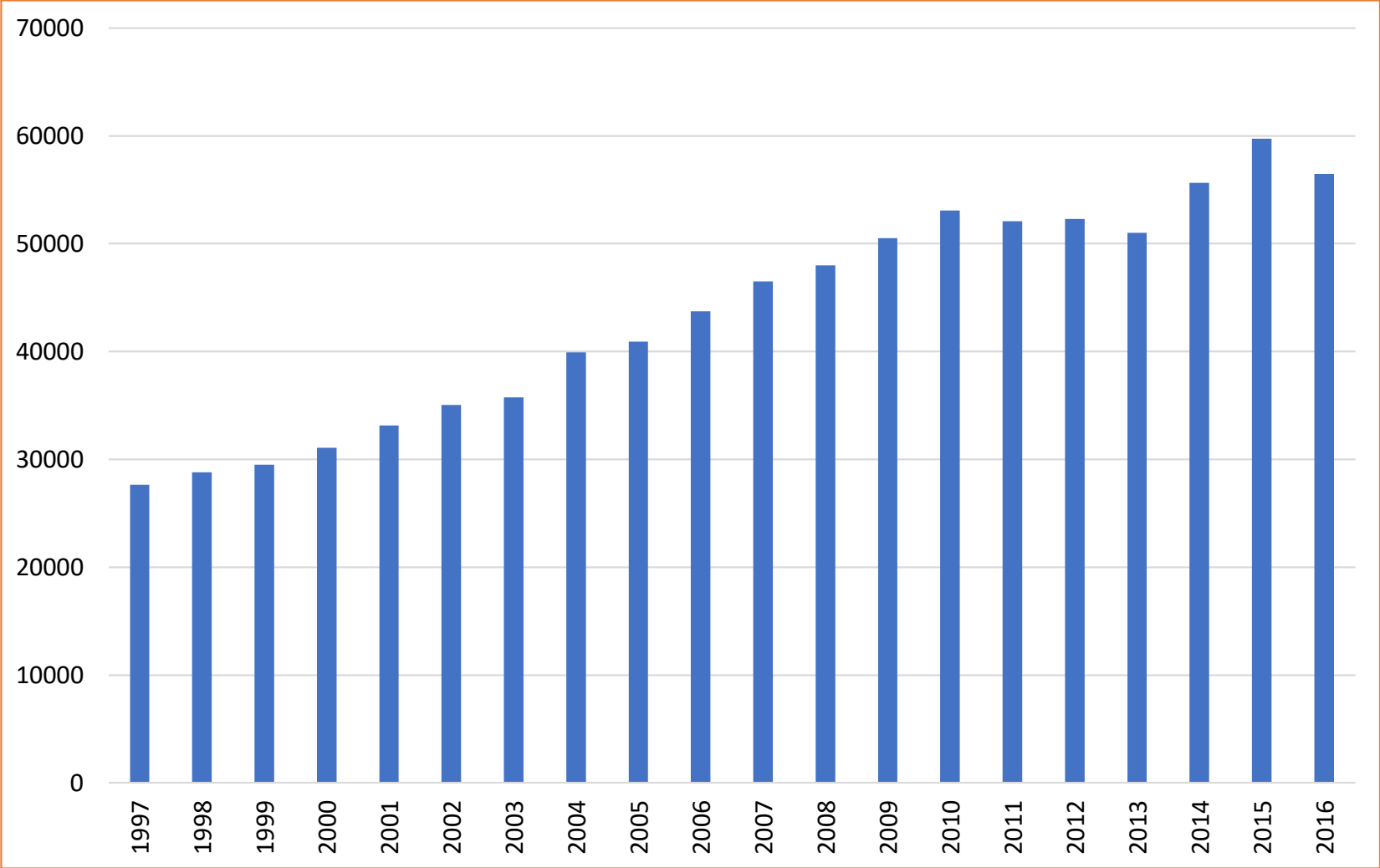
ART

2016	IVF/ICSI	FER (thaw)	OD (+FER)	FOR	EMB. DON	IVM
Denmark	12.022	5.059	484	19	-	-
Finland	4.726	3.661	731	-	155	-
Iceland	361	229	54	-	-	-
Norway	6.917	3.363	0	-	-	-
Sweden	12.323	6.080	282	-	-	-
Cycles	36.349	18.392	1.551	19	155	0

ART

2016	IVF/ICSI	FER (thaw)	OD (+FER)	FOR	EMB. DON	IVM	ALL
Denmark	12.022	5.059	484	19	-	-	17.584
Finland	4.726	3.661	731	-	155	-	9.273
Iceland	361	229	54	-	-	-	644
Norway	6.917	3.363	0	-	-	-	10.280
Sweden	12.323	6.080	282	-	-	-	18.685
Cycles	36.349	18.392	1551	19	155	0	56.466

ART cycles in the Nordic countries 1997-2016



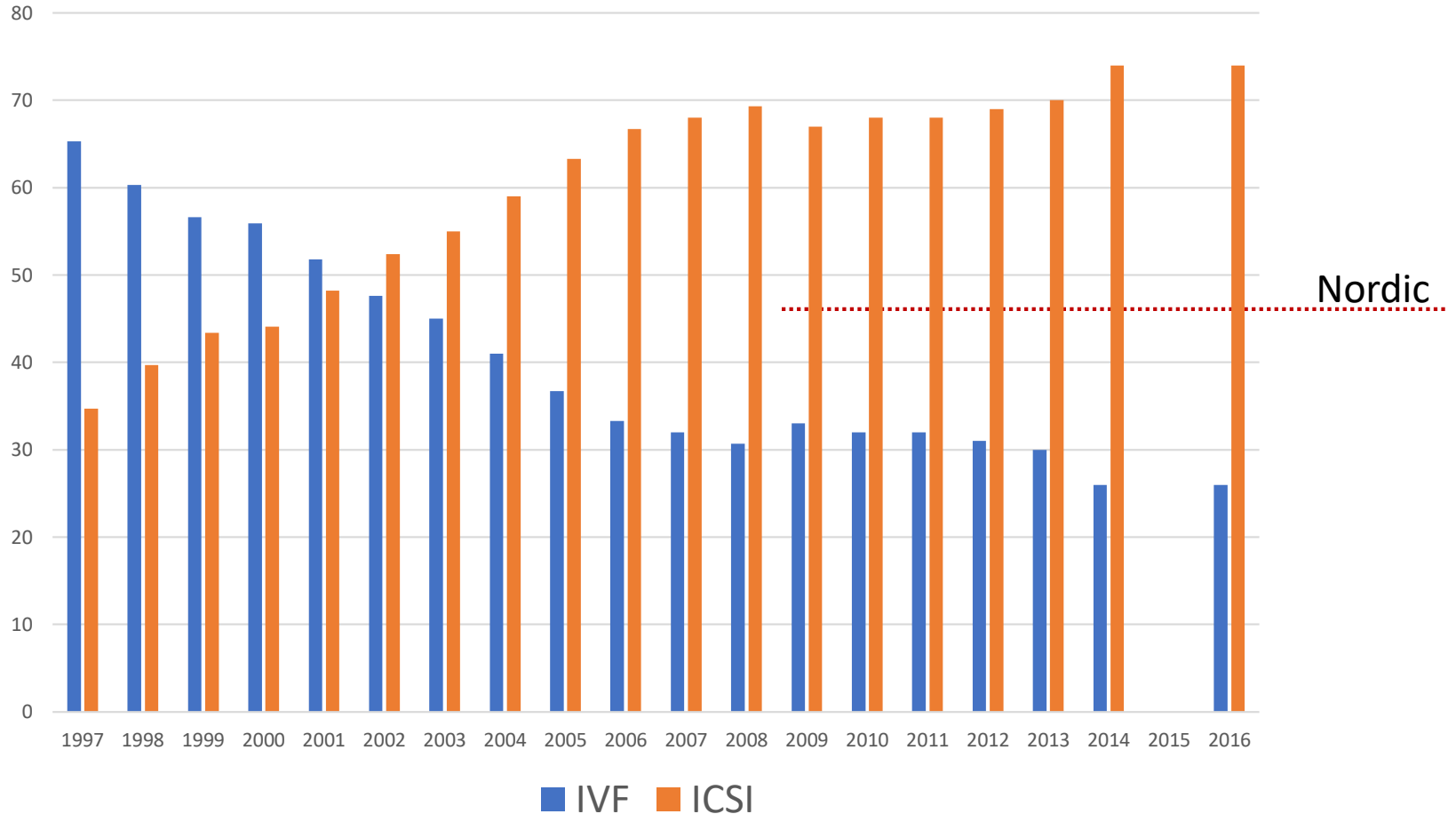
IVF/ICSI in the Nordic countries

2016	IVF/ICSI	IVF	ICSI
Denmark	12.022	6.319	5.703
Finland	4.726	2.756	1.970
Iceland	361	199	162
Norway	6.917	3.587	3.330
Sweden	12.323	6.235	6.088
Cycles	36.349	19.096	17.253

IVF/ICSI in the Nordic countries

2016	IVF/ICSI	IVF	ICSI	%ICSI
Denmark	12.022	6.319	5.703	47%
Finland	4.726	2.756	1.970	42%
Iceland	361	199	162	45%
Norway	6.917	3.587	3.330	48%
Sweden	12.323	6.235	6.088	49%
Cycles	36.349	19.096	17.253	47%

Distribution IVF/ICSI in Europe (1997-2016)



Pregnancy rates per aspiration IVF – 2016

Montenegro	57,1	Russia	29,9	Iceland	25,6
Lithuania	52,9	Portugal	29,4	Estonia	25,2
Latvia	36,9	Sweden	29,3	Switzerland	24,3
Ukraine	36,8	Poland	29,3	Finland	23,8
Austria	33,9	Norway	28,8	Bulgaria	21,7
Macedonia	33,8	Germany	28,8	Italy	21,6
Slovenia	33	Belgium	27,8	France	21,1
Romania	31,6	Spain	26,3	Denmark	20,9
Netherlands	31	Serbia	25,9		

Pregnancy rates per aspiration ICSI - 2016

Lithuania	42,6	Austria	28,5	Slovenia	25,8
Moldova	41,9	Romania	28,3	Switzerland	24,5
Serbia	41,4	Estonia	28	Belgium	24,2
Kazakhstan	41	Latvia	27,5	Finland	23,8
Albania	41	Sweden	27,4	Portugal	23
Macedonia	35,5	Germany	27	Czech Republic	22,5
Netherlands	32,9	Montenegro	27	Denmark	22,5
Iceland	30,2	Bulgaria	26,3	Spain	22,4
Ukraine	30,1	Poland	26	France	21,4
Norway	29,6	Russia	25,9	Italy	18,7

IVF / ICSI

2016	Initiated Cycles	Asp.
Denmark	12.022	12.010
Finland	4.726	4.452
Iceland	361	361
Norway	6.917	6.584
Sweden	12.323	11.547
Total	36.349	34.954

IVF / ICSI

2016	Initiated Cycles	Asp.	ET	Clin.preg
Denmark	12.022	12.010	9.567	2.603
Finland	4.726	4.452	3.396	1.061
Iceland	361	361	287	100
Norway	6.917	6.584	5.387	1.921
Sweden	12.323	11.547	9.482	3.277
Total	36.349	34.954	28.119	8.962

IVF / ICSI

2016	Initiated Cycles	Asp.	ET	Clin.preg	Clin.preg /asp
Denmark	12.022	12.010	9.567	2.603	22%
Finland	4.726	4.452	3.396	1.061	24%
Iceland	361	361	287	100	28%
Norway	6.917	6.584	5.387	1.921	29%
Sweden	12.323	11.547	9.482	3.277	28%
Total	36.349	34.954	28.119	8.962	26%

IVF / ICSI

2016	Initiated Cycles	Asp.	ET	Clin.preg	Clin.preg /asp	% clin /transf
Denmark	12.022	12.010	9.567	2.603	22%	27%
Finland	4.726	4.452	3.396	1.061	24%	31%
Iceland	unknown	361	287	100	28%	35%
Norway	6.917	6.584	5.387	1.921	29%	36%
Sweden	12.323	11.547	9.482	3.277	28%	35%
Total	36.349	34.954	28.119	8.962	26%	32%

IVF/ICSI per age group

2016	Asp	Age <35	Age 35-39	Age >39
Denmark	12.010	4.827	3.899	3.284
Finland	4.452	2.151	1.555	746
Iceland	361	183	120	58
Norway	6.584	3.412	2.244	928
Sweden	11.547	6.916	3.286	1.345
Total	34.954	17.489	11.104	6.361

IVF/ICSI per age group

Age distribution

2016	Aspirations	Age <35	Age 35-39	Age >39
Denmark	12.010	40%	32%	27%
Finland	4.452	48%	35%	17%
Iceland	361	51%	33%	16%
Norway	6.584	52%	34%	14%
Sweden	11.547	60%	28%	12%
Total	34.954	50%	32%	18%

IVF/ICSI per age group

Age distribution

2016	Aspirations	Age <35	Age 35-39	Age >39
Denmark	12.010	40%	32%	27%
Finland	4.452	48%	35%	17%
Iceland	361	51%	33%	16%
Norway	6.584	52%	34%	14%
Sweden	11.547	60%	28%	12%
Total	34.954	50%	32%	18%

IVF/ICSI per age group

Age distribution – clinical pregnancy rate

2016	Asp	Age <35	Age 35-39	Age >39
Denmark	12.010	40%	32%	27%
Finland	4.452	48%	35%	17%
Iceland	361	51%	33%	16%
Norway	6.584	52%	34%	14%
Sweden	11.547	60%	28%	12%
Total	34.954	50%	32%	18%
Clin.preg. /asp	26%	31%	24%	13%

IVF/ICSI per age group

Age distribution and rates

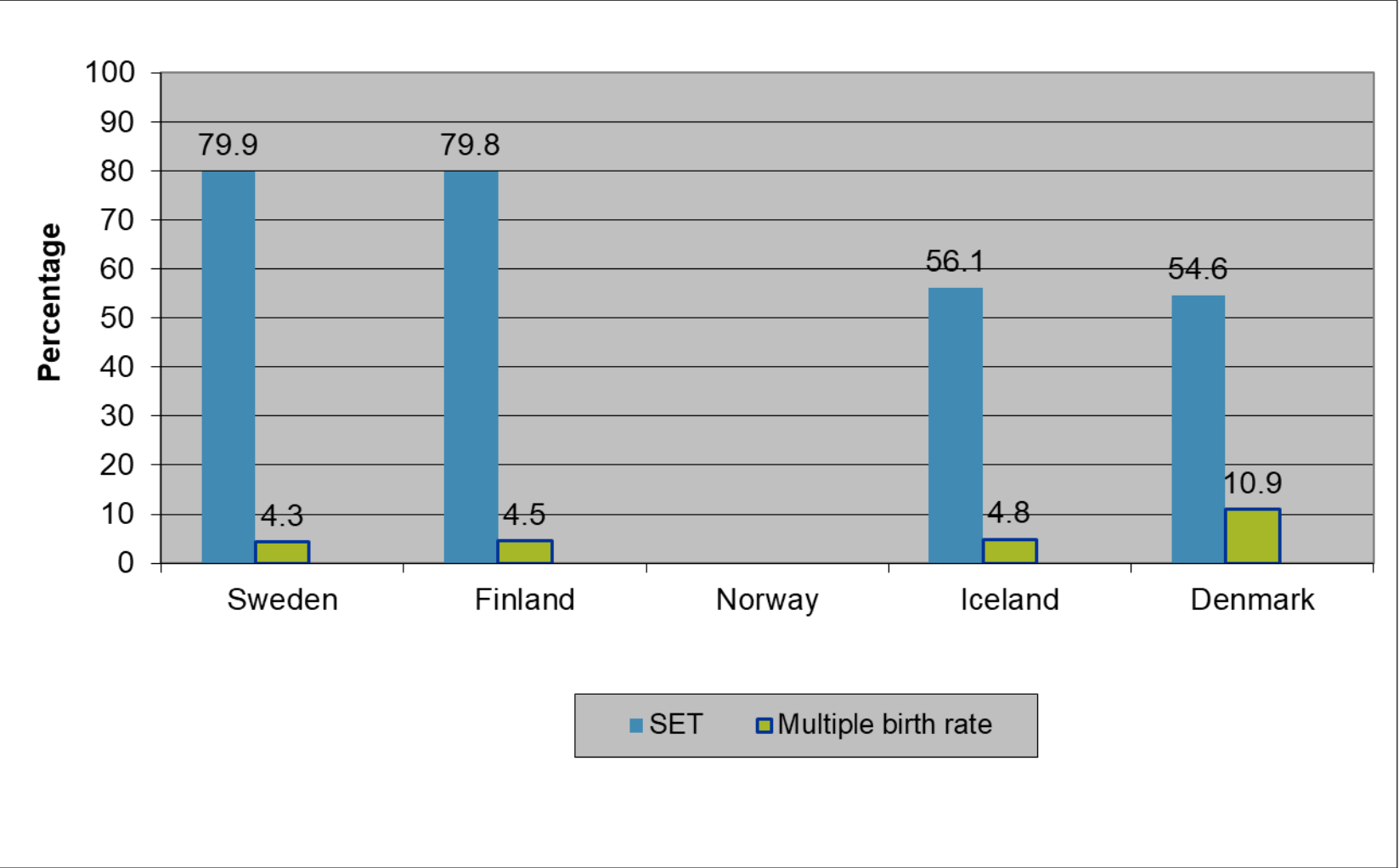
2016	Clin.preg. /asp	Asp	Age <35	Age 35-39	Age >39
Denmark	22%	12010	40%	32%	27%
Finland	24%	4452	48%	35%	17%
Iceland	28%	361	51%	33%	16%
Norway	29%	6584	52%	34%	14%
Sweden	28%	11547	60%	28%	12%
Total	26%	34954	50%	32%	18%
Clin.preg. /asp		26%	31%	24%	13%

IVF/ICSI

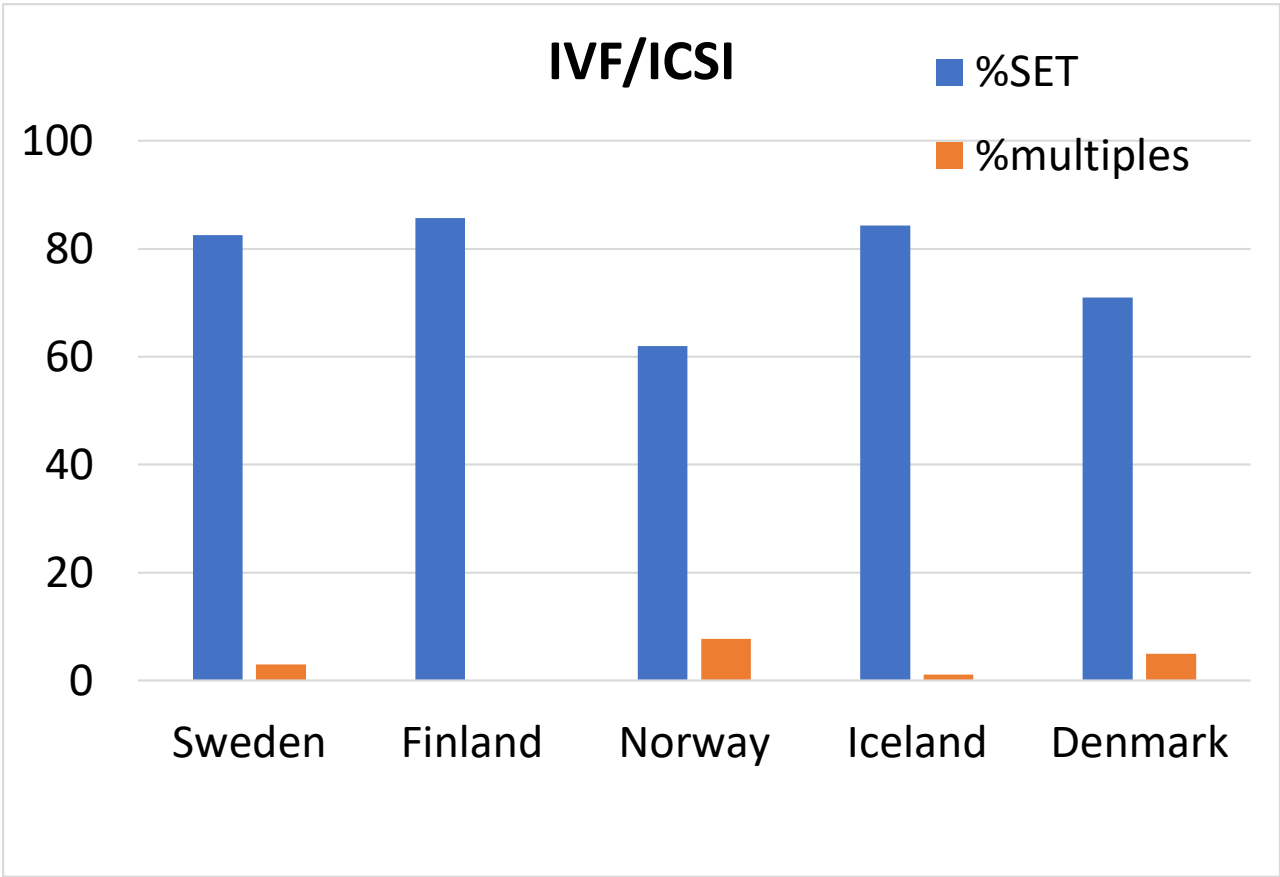
clin pregnancy rates per age group

2016	Age <35	Age 35-39	Age >39
Denmark	28,2%	22,1%	11,4%
Finland	28,9%	22,7%	11,4%
Iceland	33,8%	25,0%	13,8%
Norway	34,7%	26,4%	15,3%
Sweden	32,0%	24,7%	16,2%
Clin.preg. /asp all	31%	24%	13%

SET rate and multiple birth rate 2014



SET rate and multiple birth rate 2016



FER

2016	thaw	ET	Clin.preg	Clin.preg /thaw	% clin /transf	% Blast
Denmark	5.059	4.632	1.249	25%	27%	unknown
Finland		3.661	1.070		29%	unknown
Iceland	229	228	67	29%	29%	32%
Norway	3.363	2.948	789	23%	27%	unknown
Sweden	6.478	6.080	2.259	35%	37%	81%
Total	15.129	17.549	5.434		31%	0%

The proportion of FER

	Transfers		
2016	IVF/ICSI	FER	%FER
Denmark	9.587	4.632	33%
Finland	3.396	3.661	52%
Iceland	287	228	44%
Norway	5.387	2.948	35%
Sweden	9.482	6.080	39%
Total	28.139	17.549	38%

The optimal end-point

Cumulative delivery rates after IVF/ICSI and FER

	IVF/ICSI			FER	IVF + FER	IVF + FER	
2016	Aspirations	Deliveries	Deliveries / aspiration	Deliveries	Deliveries	Cumulative	Increase
Denmark	12010	1988 *	17%				
Finland	4452	810	18%				
Iceland	361	88	24%				
Norway	6584	1612	24%				
Sweden	11547	2831	25%				
Total	34954	7329	21%				

** High loss to follow up, due to no data on deliveries for crossborder patients*

The optimal end-point

Cumulative delivery rates after IVF/ICSI and FER

	IVF/ICSI			FER	IVF + FER	IVF + FER	
2016	Aspirations	Deliveries	Deliveries / aspiration	Deliveries	Deliveries	Cumulative	Increase
Denmark	12010	1988 *	17%	1052	3040	25%	8%
Finland	4452	810	18%	806	1616	36%	18%
Iceland	361	88	24%	48	136	38%	14%
Norway	6584	1612	24%	624	2236	34%	12%
Sweden	11547	2831	25%	1962	4793	42%	17%
Total	34954	7329	21%	4492	11821	34%	13%

** High loss to follow up, due to no data on deliveries for crossborder patients*

The optimal end-point

Cumulative delivery rates after IVF/ICSI and FER

	IVF/ICSI			FER	IVF + FER	IVF + FER	
2016	Aspirations	Deliveries	Deliveries / aspiration	Deliveries	Deliveries	Cumulative	Increase
Denmark	12010	1988 *	17%	1052	3040	25%	8%
Finland	4452	810	18%	806	1616	36%	18%
Iceland	361	88	24%	48	136	38%	14%
Norway	6584	1612	24%	624	2236	34%	12%
Sweden	11547	2831	25%	1962	4793	42%	17%
Total	34954	7329	21%	4492	11821	34%	13%
EIM	451.129	83.344	18,5%			28,9%	

** High loss to follow up, due to no data on deliveries for crossborder patients*

Intrauterine insemination Homolog

2016	cycles	Clin Preg	Deliveries	Children	% multiple
Denmark	9.977	1.217 (12,2)	1.118 (11,2)	1.232	10,0%
Finland	2936	328 (11,1)	-	-	-
Iceland	69	6 (8,7)	6 (8,7)	6	0%
Norway	325	53 (16,3)	47 (14,5)	55	17%
Sweden	NR				
Total	13.307	1.604 (12,1)	1.171	1.293	

No. in brackets: Clin pregnancies or deliveries per insemination

NR: Not reported

Intrauterine insemination

Donor

2016	cycles	Clin pregn	Deliveries	Children	% multiple
Denmark	9.390	989 (11)	535* (5,7)	604	5,6%
Finland	1.125	180 (16)	-	-	-
Iceland	167	23 (14)	21(12,6)	21	0%
Norway	614	141 (23)	119 (19,4)	124	4,2%
Sweden	1.168	219 (19)	196 (16,5)	202	3,1%
Total	12.464	1.552 (12,3)	871	951	

No. in brackets: Pregnancies or deliveries per insemination

** High loss to follow up, due to no data on deliveries for crossborder patients*

Performed treatments

2016	IVF/ICS I	FER (thaw)	OD (+FER)	FOR	EMB. DON	IVM	ALL
Denmark	12022	5059	484	19	-	-	17.584
Finland	4726	3661	731	-	155	-	9273
Iceland	361	229	54	-	-	-	644
Norway	6917	3363	0	-	-	-	10.280
Sweden	12.323	6080	282	-	-	-	18.685
Cycles	36349	18392	1551	19	155	0	56.466
Children	7329	4492	381	6	43	0	12251

All ART - % deliveries

2016	IVF/ICSI (%deliveries)
Denmark	12.010 (17)
Finland	4.552 (18)
Iceland	361 (24)
Norway	6.584 (24)
Sweden	11.547 (25)
Cycles	34.954 (21.5)
Children	7.329

All ART - % deliveries

2016	IVF/ICSI (%deliveries)	FER (thaw) (%deliveries)
Denmark	12.041 * (17)	5.059 (21)
Finland	4.726 (18)	3.661 (22)
Iceland	361 (24)	229 (21)
Norway	6.917 (24)	3.363 (19)
Sweden	12.323 (25)	6.080 (32)
Cycles	36.954 (21.5)	18.392 (24)
<i>Children</i>	7.335	4.492

*IVF/ICSI + FOR

All ART- % deliveries

2016	IVF/ICSI (%deliveries)	FER (thaw) (%deliveries)	OD (+FER) (%deliveries)
Denmark	12.041 * (17)	5.059 (21)	484 (20)
Finland	4.726 (18)	3.661 (22)	886** (27)
Iceland	361 (24)	229 (21)	54 (35)
Norway	6.917 (24)	3.363 (19)	-
Sweden	12.323 (25)	6.080 (32)	282 (26)
Cycles	36.954 (21.5)	18.392 (24)	1.706 (25)
<i>Children</i>	<i>7.335</i>	<i>4.492</i>	<i>424</i>

*IVF/ICSI + FOR
**OD + Embryo donation

All ART- % deliveries

2016	IVF/ICSI (%deliveries)	FER (thaw) (%deliveries)	OD (+FER) (%deliveries)	ALL (%deliveries)
Denmark	12.041 * (17)	5.059 (21)	484 (20)	17.584 (18)
Finland	4.726 (18)	3.661 (22)	886** (27)	9.273 (21)
Iceland	361 (24)	229 (21)	54 (35)	644 (24)
Norway	6.917 (24)	3.363 (19)	-	10.280 (22)
Sweden	12.323 (25)	6.080 (32)	282 (26)	18.685 (27)
Cycles	36.954 (21.5)	18.392 (24)	1.706 (25)	56.466 (22)
Children	7.335	4.492	424	12.251

*IVF/ICSI + FOR
**OD + Embryo donation

Children born in 2016

	National	ART	%ART
Denmark	61.614	3142	5,1%
Finland	53.614	1853	3,5%
Iceland	4.039	155	3,8%
Norway	59.073	2236	3,8%
Sweden	121.511	4865	4,0%
Total	299.851	12251	4,1%

Children born in 2016

	National	ART	%ART	IUI	ART+IUI	%ART+IUI
Denmark	61.614	3142	5,1%	1836	4978	8,1%
Finland	53.614	1853	3,5%	0	1853	3,5%
Iceland	4.039	155	3,8%	27	182	4,5%
Norway	59.073	2236	3,8%	179	2415	4,1%
Sweden	121.511	4865	4,0%	202	5067	4,2%
Total	299.851	12251	4,1%	2244	14495	4,8%

Crossborder in 2016

- No data from Finland, Iceland, Norway, Sweden

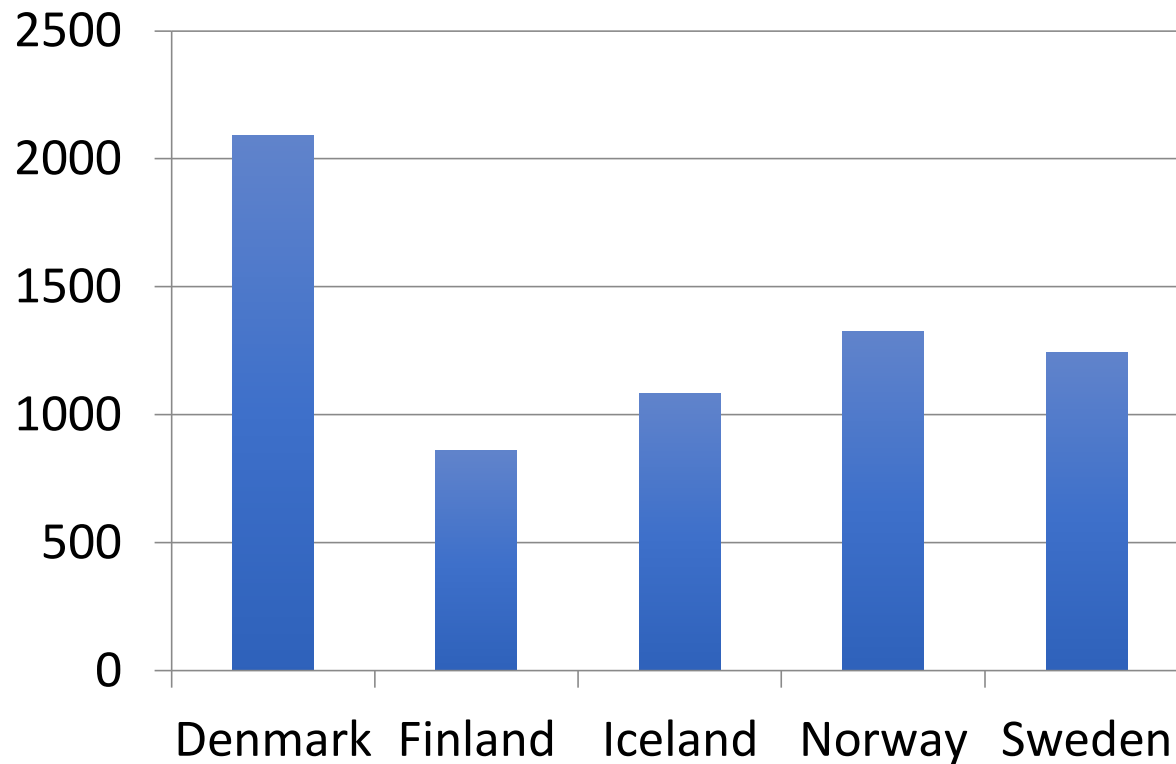
Denmark:

- 2945 IUI+IVF cycles on Swedish citizens - 323 reported ongoing
 - 1736 IUI+IVF cycles on Norwegian citizens - 201 reported ongoing
 - 6 IUI+IVF cycles on Icelandic citizens – 3 reported ongoing
 - 2 IUI+IVF cycles on Finnish citizens - 0
-
- Probably an underestimation of ongoing pregnancies especially after IUI

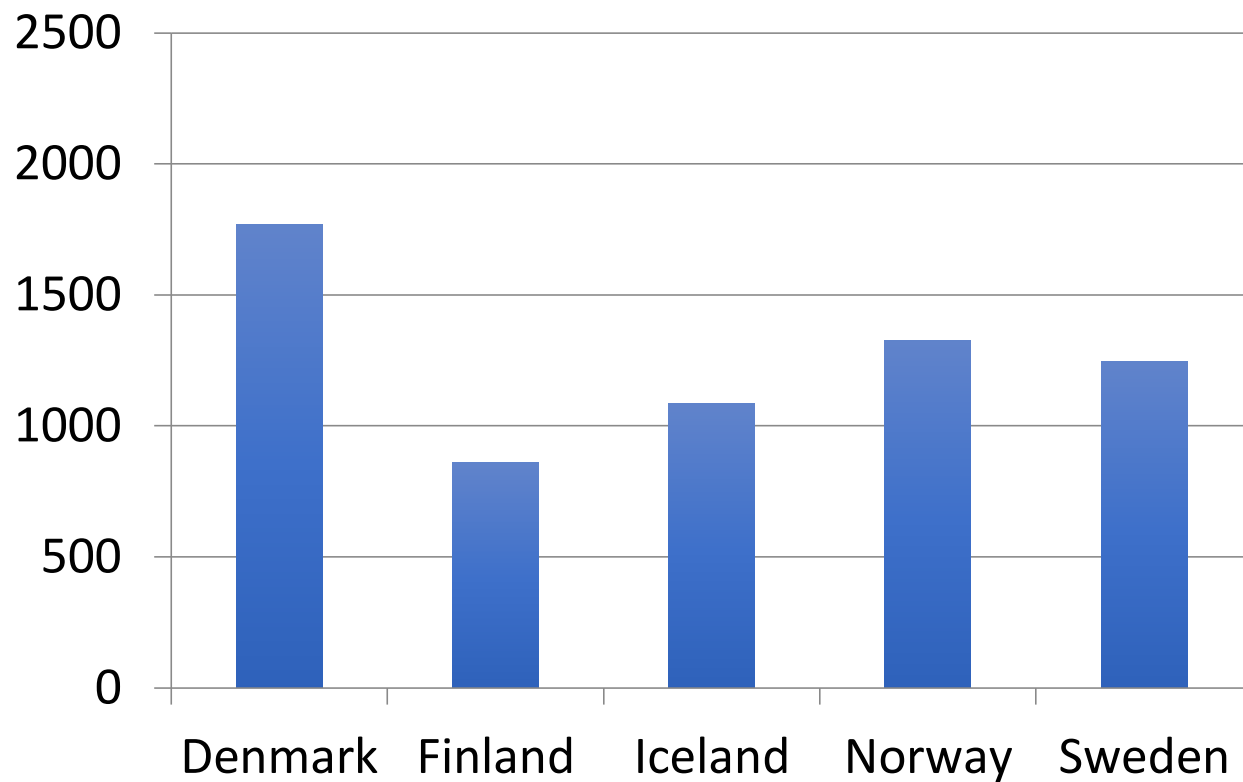
Crossborder in 2016

	National	change	ART+IUI	%ART+IUI	%ART+IUI
Denmark	61.614	none	4978	8,1%	8,1%
Finland	53.614	+0	1853	3,5%	3,5%
Iceland	4.039	+3	184	4,6%	4,5%
Norway	59.073	+201	2616	4,4%	4,1%
Sweden	121.511	+323	5400	4,4%	4,2%
Total	299.851		14495	4,8%	4,8%

Availability of treatment IVF cycles per million inhabitants



Availability of treatment IVF cycles per million inhabitants without crossborder



Summary 2016

65 IVF clinics and 67+ IUI clinics

- ART – 56.466 cycles
 - 34.954 IVF/ICSI incl. 19 FOR (DK)
 - 7335 babies born (1,1-7,7% multiple)
 - 18.392 FER
 - 4492 babies born (2,7-4,3% multiple)
 - 1551 Oocyt donations incl. 155 embryo donations (FI)
 - 424 babies born (0-18% multiple)
- ART
- 12,551 babies born (4,8% of all newborns)

Conclusion

Differences between the Nordic countries

- IVF/ICSI:
 - SET and multiple delivery rates
 - Finland, Iceland and Sweden; >80% SET and 1-3% multiple
 - Denmark; 71% SET and 4,9% multiple
 - Norway 62% SET and 7,7% multiple
- Proportion of women above 40 years of age
 - ~ 27% in Denmark
 - ~ 12-17% in the other countries
- Proportion of FER of all transfers
 - 52% in Finland and 33% in Denmark

Conclusion

Differences between the Nordic countries

- PGD only performed in Denmark, Finland and Sweden
- Oocyte donation in all countries except for Norway
- Embryo donation only in Finland
- IUI most common in Denmark
 - 80% of all reported IUI
- ART + IUI children:
 - ~8% of all new-borns in Denmark
 - ~4% in Finland, Iceland, Norway and Sweden

Conclusion

Similarities between the Nordic countries

Comparable pregnancy (delivery) rates in the same age groups

Similar relative use of ICSI (<50%)

High availability in the Nordic countries



Nordic ART report based on ESHRE IVF monitoring group (EIM)

- Sweden Kia Borg and Christina Bergh
- Norway Liv Bente Romundstad
- Iceland Hilmar Björgvinsson
- Finland Anna Heino
- Denmark Josephine Lemmen