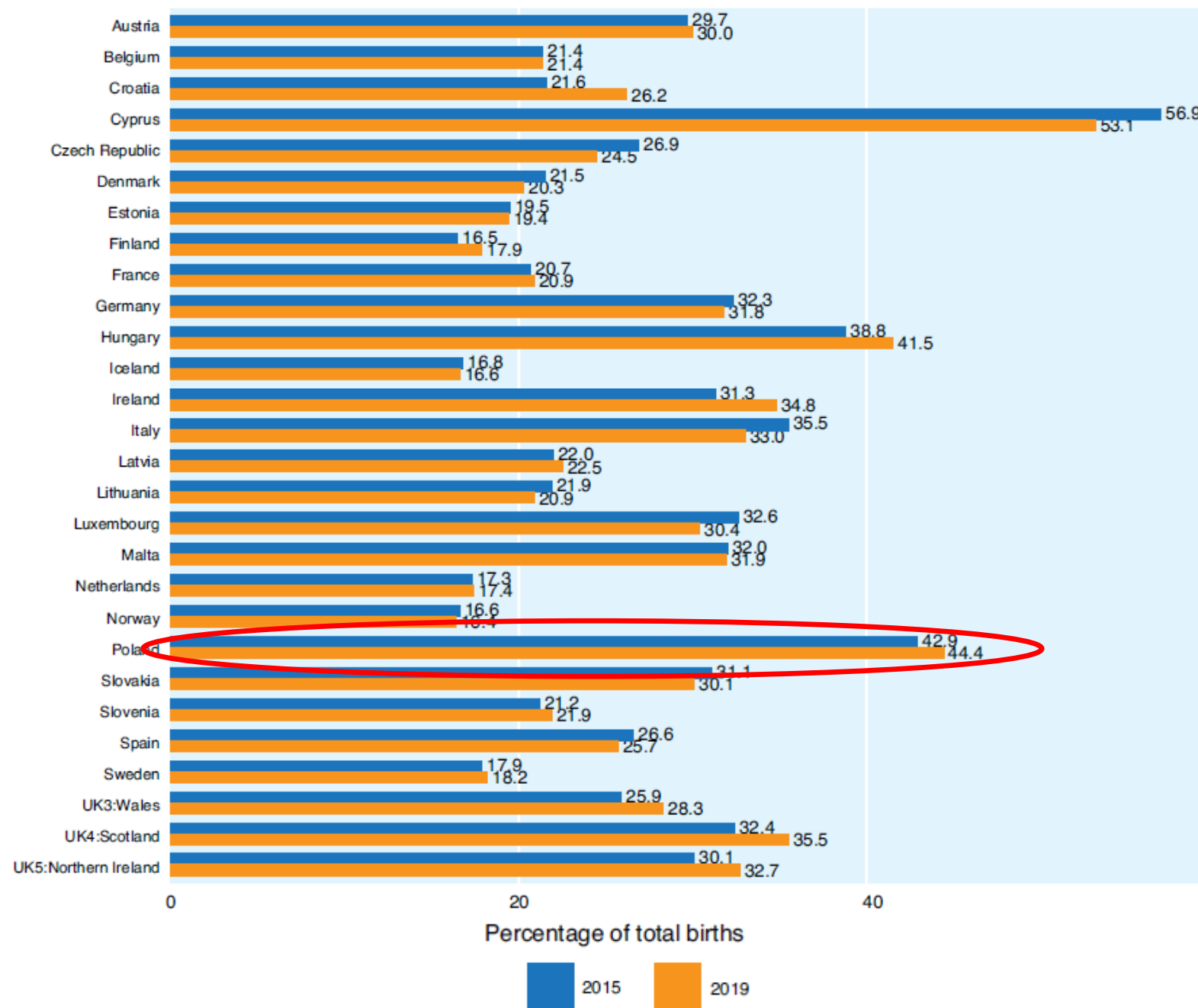


# Differences in Caesarean and other perinatal indicators in Poland

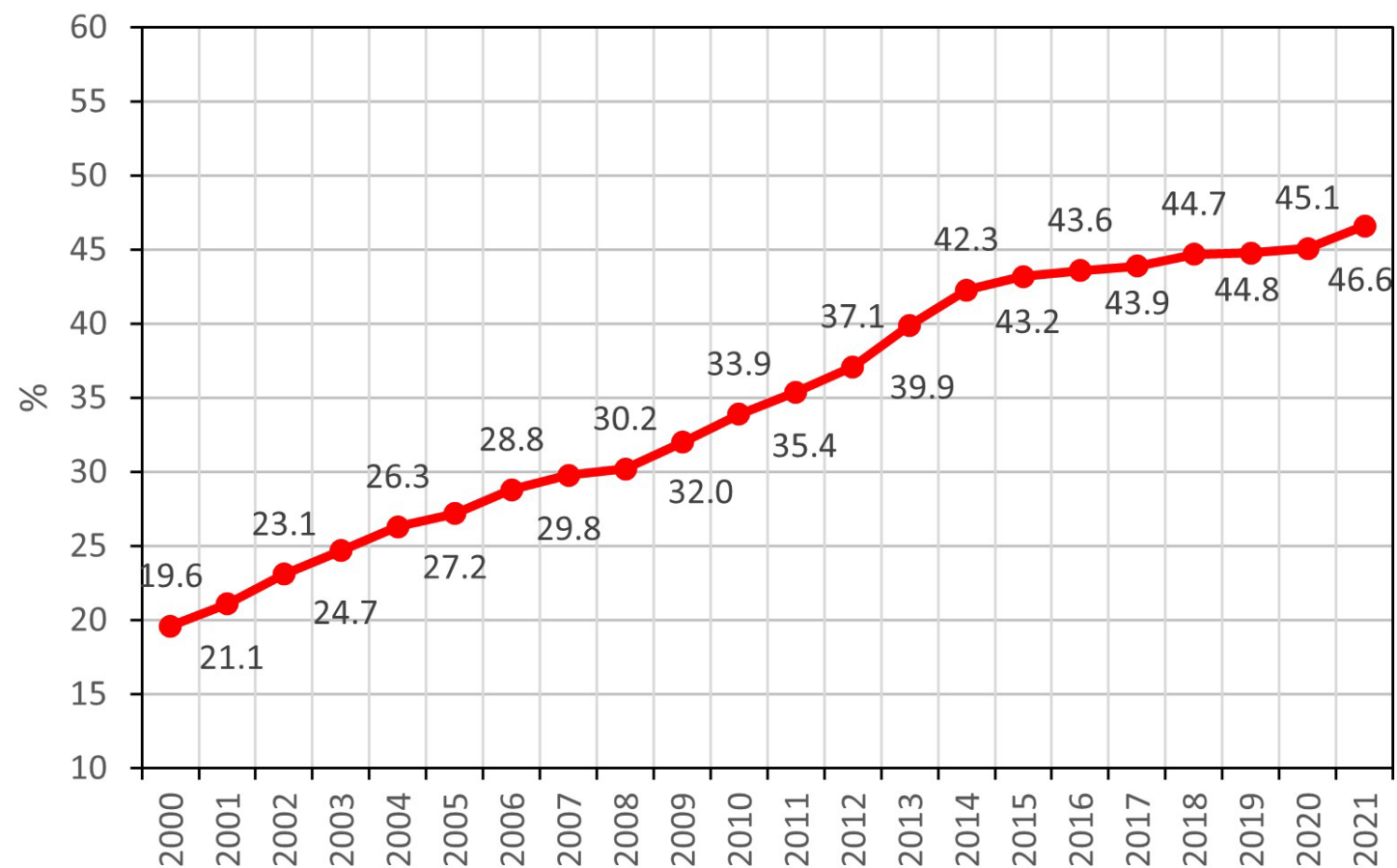
Katarzyna Szamotulska, Ewa Mierzejewska; Rolduc 27.03.2023



Figure C10.3:  
Percentage of  
births by  
caesarean  
section of all  
live births and  
stillbirths in  
Europe in 2015  
and 2019



# Caesarean sections in Poland 2000 -2021



# Caesarean sections in member countries of EU accessed before and after May 2004

## 2000 -2021



Members of the EU before May 2004 (eu15)  
Members of the EU after May 2004 (eu13)

## Polish health care system

- The main financing source is health insurance in the **National Health Fund**. Citizens are obligated to pay insurance fees (redistributed tax) which is **9% deducted from personal income** (7,75% is deducted from the tax, 1,25% covered by insured goes directly to the National Health Fund). The national budget covers around 5% of all health care expenses.
- About **70% of health expenses in Poland are covered by the National Health Fund**, with the remaining 30% coming from private health insurance.
- According to a study conducted by CBOS in 2016, out of 84% patients taking part in the survey, **40% declared use of both private and public health services**, 37% use only public health care, and **7% use only private health services**. 77% of all responders declared using private health care is caused by **long waiting** for public health care services

# Household out-of-pocket payments as current expenditure on health (all functions)

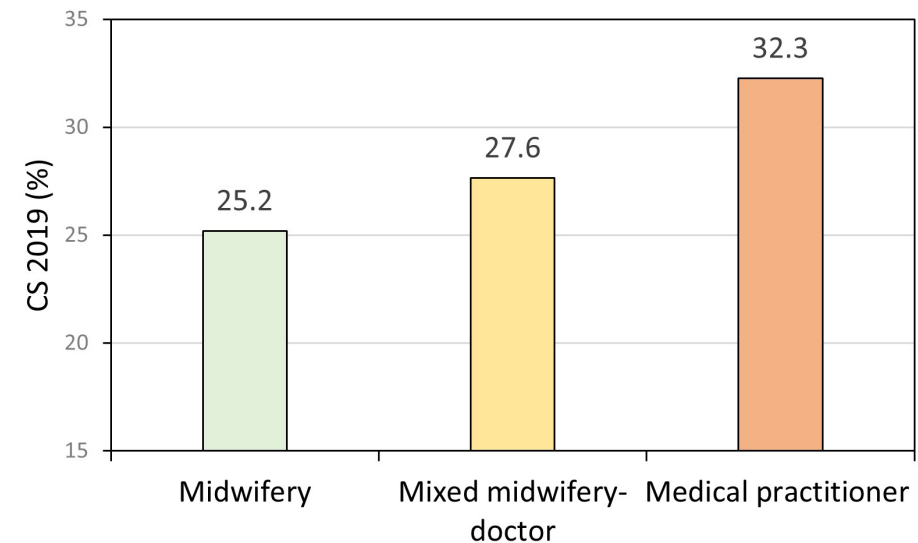
Year		2010	2015	2020
Country				
Austria	(D)	18.6	(D) 19.1	(D) 16.8
Belgium		19.7	18.7	16.0
Czech Republic		15.3	14.8	11.5
Denmark	(B)	13.7	13.5	12.8
Estonia		21.9	23.7	21.4
Finland		18.8	18.6	16.4
France		10.2	9.8	8.9
Germany		13.8	13.0	12.4
Greece		28.3	36.0	33.4
Hungary		27.4	27.5	25.5
Iceland		18.7	17.6	15.0
Ireland		13.8	13.2	10.5
Italy		20.5	23.5	21.3
Latvia		37.2	40.5	31.9
Lithuania		27.6	31.8	(P) 28.7
Luxembourg		10.2	10.7	8.4
Netherlands		9.1	11.3	9.3
Norway		15.0	14.1	13.9
Poland		23.7	23.0	19.5
Portugal		24.7	29.5	27.8
Slovak Republic		22.8	18.4	18.8
Slovenia		12.6	12.5	12.5
Spain		20.3	22.3	19.6
Sweden		16.4	14.9	(P) 13.0
Switzerland		26.2	25.9	22.0
United Kingdom		14.3	14.9	(P) 12.5
	Bulgaria	43.1	42.5	35.5
	Croatia	(E) 14.0	10.9	10.4
	Cyprus	43.1	43.6	14.0
	Malta	(E) 33.0	37.5	..
	Romania	19.6	21.3	19.0

Data extracted on 10 Mar 2023  
08:42 UTC (GMT) from OECD.Stat

# CS rates in 2019 by the main provider of antenatal care

(Topcu G., Provision of antenatal care in Europe-A scientific study commissioned by European Board and College of Obstetrics and Gynaecology (EBCOG); Eur J Obstet Gynecol Reprod Biol, 2022)

- Belgium, Denmark, Estonia, Finland, Ireland, Spain, and the UK reported an **active involvement of midwives** in provision of routine antenatal care, alone or in conjunction with obstetricians or family doctors.
- Antenatal care for **low-risk women** is provided by a midwifery-led service in **Denmark, Estonia, Finland, France, Ireland, Norway, Spain, and the UK**, while most countries provide a mixed midwifery-doctor antenatal care service for low-risk women. In **Austria, Czech Republic, Kyrgyzstan, Poland, Portugal, Romania, Serbia, and Slovakia** antenatal care for low-risk women is provided by a medical practitioner. Antenatal care for **high-risk women** is provided by a midwifery-led service in Estonia and Kyrgyzstan. In Denmark, France, Ireland, Slovenia, Turkey, Ukraine, and the UK it is provided by a mixed midwifery-doctor service. In the remaining countries it is provided by a medical practitioner.





# Indications and risk factors



## Indications (PTG 2018)

- Obstructed labour
- Fetal distress
- Abnormal lie
- Multiple pregnancy
- Fetal hypotrophy
- Fetal macrosomia
- Congenital anomalies
- Preterm birth
- Threat to the life or health of the woman (sudden cardiac arrest, pre-eclampsia, eclampsia, HELLP)
- Previous caesarean section
- Non-obstetrical conditions:
  - cardiological
  - pulmonological
  - orthopedic
  - neurological
  - ophthalmological
  - psychiatric (including tocophobia)
  - oncological
  - infectious

## Risk factors

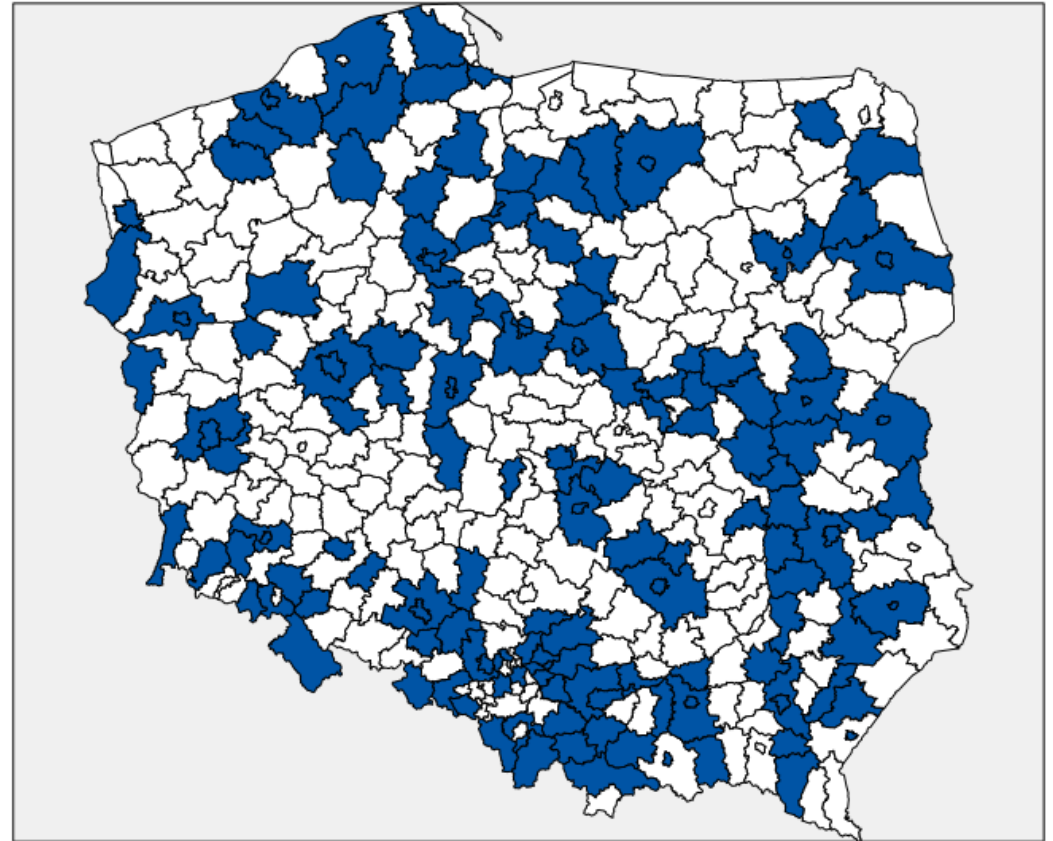
- Private vs public
- The role of midwife
- Medical skills and will
- Women's expectations
- Women's fear
- BMI
- Lack of physical activity
- ...

„Comprehensive epidemiological study  
on the diet and nutrition status of  
pregnant women, together with the  
identification of risk factors for eating  
disorders, an assessment of physical  
activity levels, nutritional awareness and  
the occurrence of health inequalities”

NATIONAL HEALTH PROGRAM 2016-2020

# Study design

- This study was **nationwide cohort** and was conducted by a **representative method** on a **sample** of women applying for their first visit during pregnancy to gynaecological and obstetric clinics in each province in the drawn counties in 2018-2020.
- Each woman participating in the study and recruited in the 1st trimester of pregnancy had an interview conducted 4 times (on the occasion of subsequent preventive visits during pregnancy): in the **1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> trimester and after childbirth**.
- The recruitment of women was carried out successively in each quarter of the year, in order to take into account the seasonality of nutrition.
- 2446 women were examined and the sample obtained is representative for the Polish population of pregnant women. There were 98 abortions and 125 losses to follow-up (5.6%).

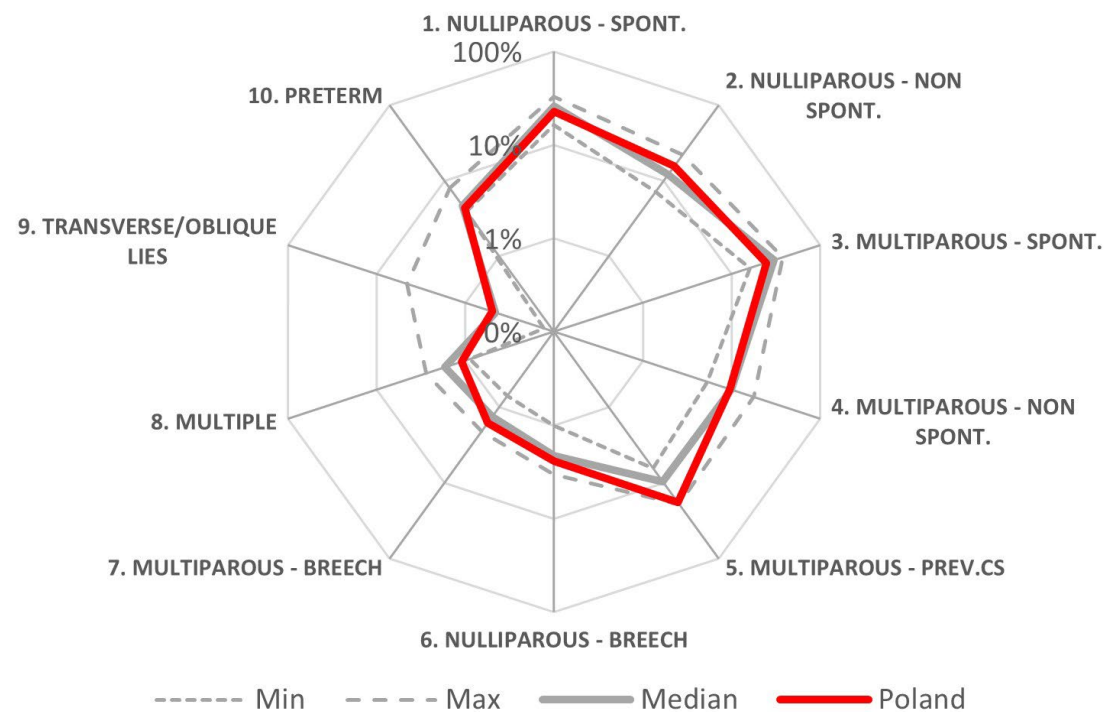


# Robson's Ten-Group Classification System: distribution of women, caesarean section rates within groups and contribution

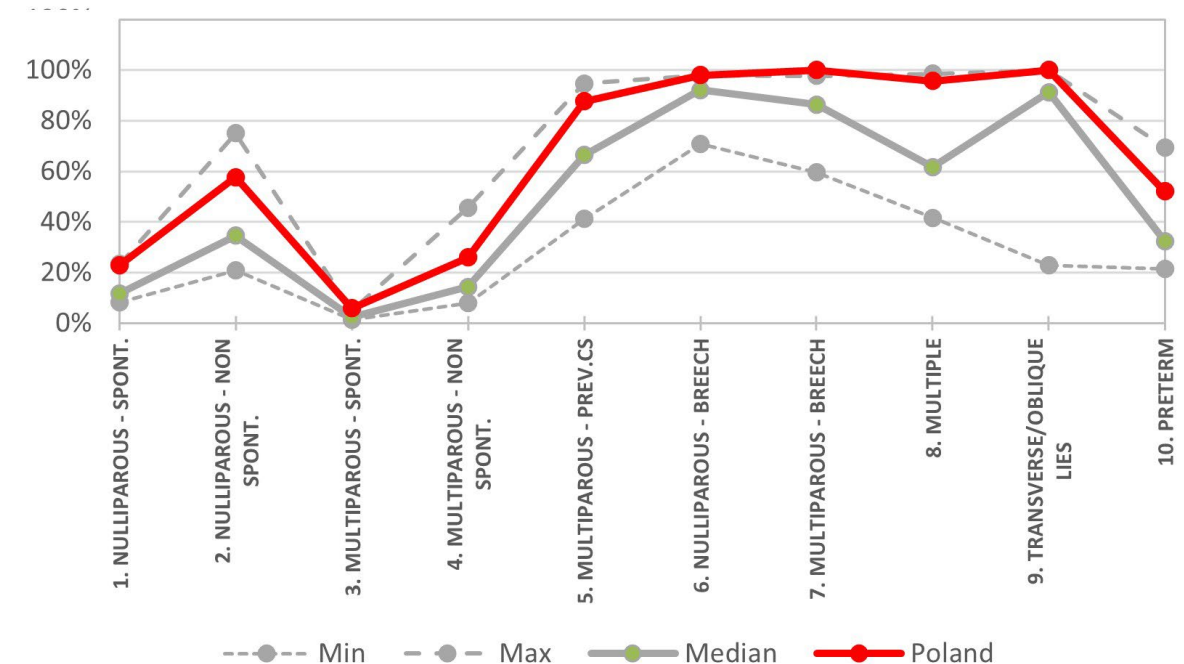
		Group	Deliveries		Caesarean sections		
			n	%	n	Proportion in the group (%)	Contribution of the group (%)
			(1)	(2)	(3)	(4)	(2)*(4)/100
Total		Total	2162	100.0	898	41.6	41.6
Nulliparous	spontaneous labour	1	489	22.6	112	23.0	<b>5.2</b>
	induction or CS before labour	2	335	15.5	193	57.6	<b>8.9</b>
Multiparous	spontaneous labour, no previous CS	3	527	24.4	31	5.9	1.4
	induction or CS before labour, no previous CS	4	208	9.6	54	26.0	2.5
	previous CS	5	390	18.0	342	87.7	<b>15.8</b>
Breech presentation	nulliparous	6	51	2.4	50	98.0	2.4
	multiparous	7	34	1.6	34	100.0	1.6
Multiple births		8	23	1.1	22	95.7	1.1
Abnormal lies		9	11	0.5	11	100.0	0.5
Preterm deliveries		10	94	4.3	49	52.1	2.2

# Robson's Ten-Group Classification System: Poland vs Euro-Peristat (BJOG 2021; 128: 1444-1453)

Distribution of delivering women



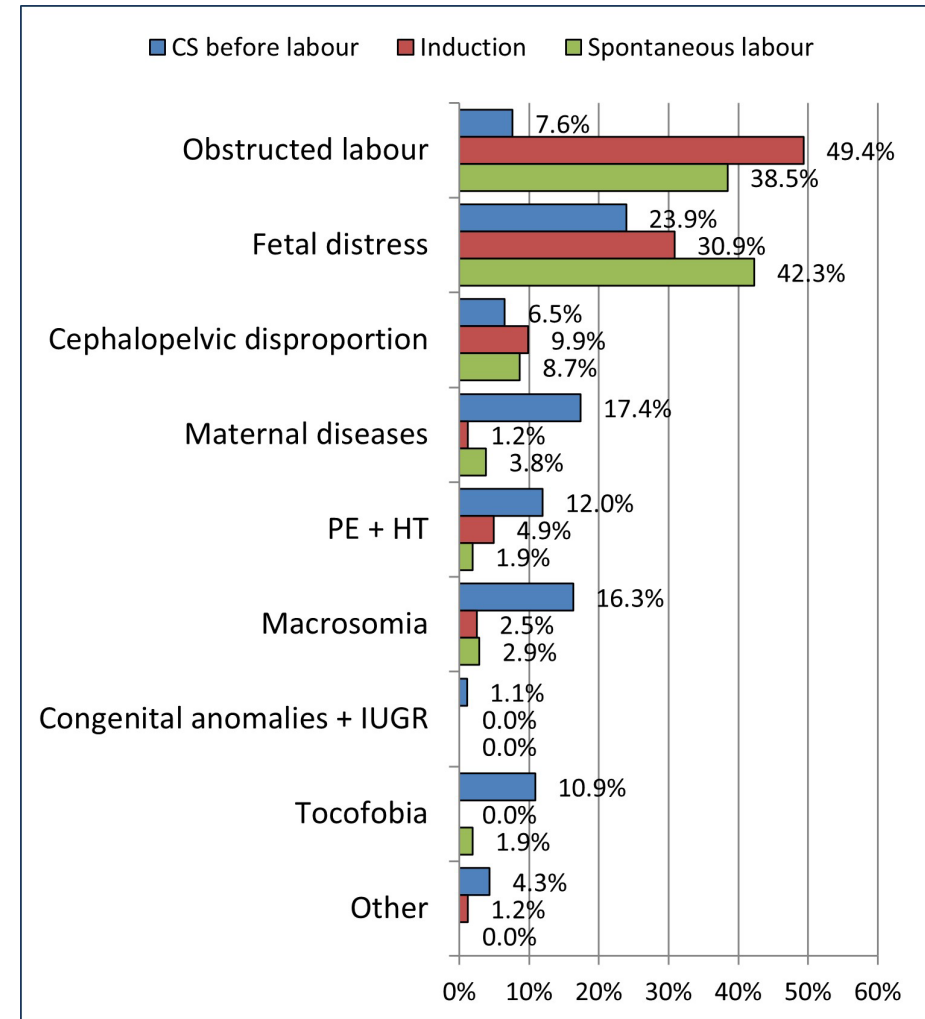
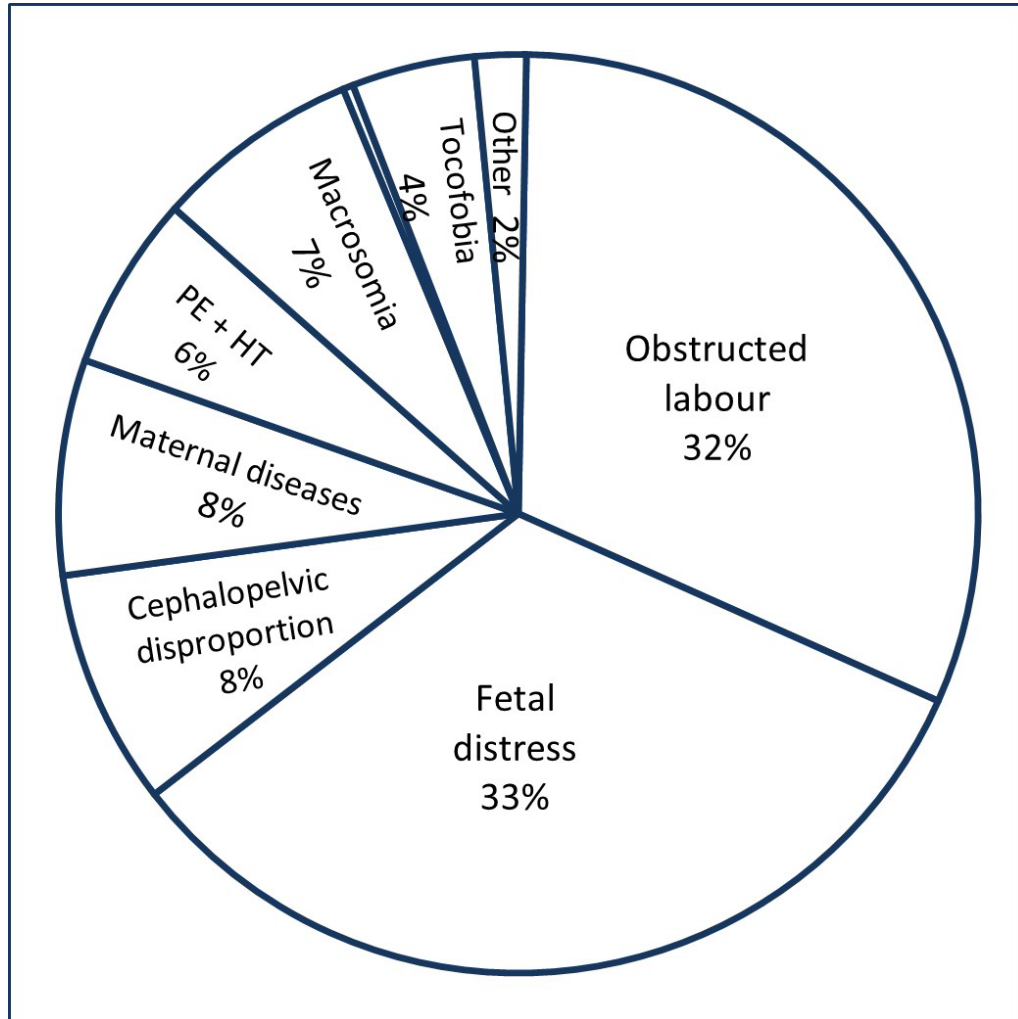
CS rates within groups



# Robson's Ten-Group Classification System: distribution of women, caesarean section rates within groups and contribution

		Group	Deliveries		Caesarean sections		
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# Indications for caesarean sections in nulliparous women (group 1+2) - preliminary results





# Risk factors of caesarean sections in nulliparous women (group 1+2) - preliminary results of univariate analysis

		n	Cesarean section (%)	p-value
BMI before the pregnancy	<25.0	604	33.1%	<b>&lt;0.001</b>
	≥25.0	202	49.5%	
	Missing data	18		
Absolute weight gain during pregnancy	Too low or adequate	487	34.9%	0.078
	Too high	286	41.3%	
	Missing data	51		
Age ≥35 years	No	763	35.6%	<b>&lt;0.001</b>
	Yes	51	60.8%	
	Missing data	10		
Educational level	Post-secondary and secondary	720	36.3%	0.068
	Vocational and primary	84	46.4%	
	Missing data	20		
Economic status (self assessment)	Very good and good	635	35.1%	<b>0.013</b>
	Less than good	162	45.7%	
	Missing data	27		

		n	Cesarean section (%)	p-value
Place of residence	City> 100 th. inhabitants	178	36.5%	0.633
	Town	347	39.2%	
	Village	278	35.6%	
	Missing data	21		
Public or public/private antenatal care	Only public	519	36.2%	0.475
	Public and private	289	38.8%	
	Missing data	16		
Participation in antenatal classes	Antenatal classes	215	34.0%	0.404
	Health promotion education (the 2 <sup>nd</sup> half of pregnancy)	218	36.2%	
	No	389	37.1%	
	Missing data	2		
Perceived Stress Scale (PSS-10)	Low	382	34.6%	0.366
	Moderate	236	36.9%	
	High	156	41.0%	
	Missing data	50		
Physical activity (at least 3.0 MET ≥150 minutes weekly)	Yes	231	37.2%	0.830
	No	530	36.4%	
	Missing data	63		



# Risk factors of caesarean sections in nulliparous women (group 1+2) – preliminary results of multivariate analysis

	Multivariate logistic regression		
	Exp( $\beta$ )	95% CI for exp( $\beta$ )	p-value
BMI before the pregnancy $\geq 25.0$	1.820	1.284-2.580	0.001
Absolute weight gain during pregnancy – too high	1.107	0.804-1.523	0.534
Age at delivery $\geq 35$ years	2.736	1.473-5.084	0.001
Educational level – vocational and primary	1.454	0.881-2.401	0.144
Economic status - less than good	1.404	0.967-2.039	0.075

# Conclusions

1. Very high proportion of caesarean sections in Poland results from steady increase for over 20 years
2. The above fact implies growing contribution of caesarean sections among multiparous women with previous CS in the overall proportion
3. The proportion of cesarean sections in Poland is higher in all Robson's groups than the median based on data from the 18 countries participating in the Euro-Peristat investigation (BJOG, 2018)
4. To decrease CS in Poland medical skills and will should be changed in all cases, as well as women's expectations regarding delivery. However, in a first line a focus should be on primiparous women (Robson's group 1 and 2). The higher risk of CS in this group is related to more advanced maternal age, overweight or obesity before the pregnancy and worse socio-economic status. However, further investigations on this topic should be undertaken.

# Robson's Ten-Group Classification System: distribution of women, caesarean section rates within groups and contribution

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	induction	2a	231	10.7	90	39.0	<b>4.2</b>
	CS before labour	2b	104	4.8	103	99.0	<b>4.7</b>
Multiparous	spontaneous labour, no previous CS	3	527	24.4	31	5.9	1.4
	induction , no previous CS	4a	159	7.3	10	6.3	0.4
	CS before labour, no previous CS	4b	49	2.3	44	89.8	2.1
	previous CS	5	390	18.0	342	87.7	<b>15.8</b>
Breech presentation	nulliparous	6	51	2.4	50	98.0	2.4
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