



Factors associated with perinatal mortality in twin pregnancies

Caroline O'Connor^{1,2}, Sara Leitao^{1,3}, Paul Corcoran³, Keelin O'Donoghue^{1,2}

1. Pregnancy Loss Research Group, Department of Obstetrics and Gynaecology, University College Cork, Ireland 2. INFANT Research Centre, University College Cork, Ireland 3. National Perinatal Epidemiology Centre (NPECC), University College Cork, Ireland

Background

The birth rate is declining in Ireland, however the twin birth rate has remained constant. Perinatal mortality is a devastating outcome, and it is acknowledged that twin pregnancies are at higher risk of perinatal death than singletons. National data on perinatal mortality are available in few countries and the ability to improve perinatal care for multiple pregnancies is facilitated in part by an assessment of these reported findings. In Ireland these data are available from the National Perinatal Epidemiology Clinic national clinical audit of perinatal mortality

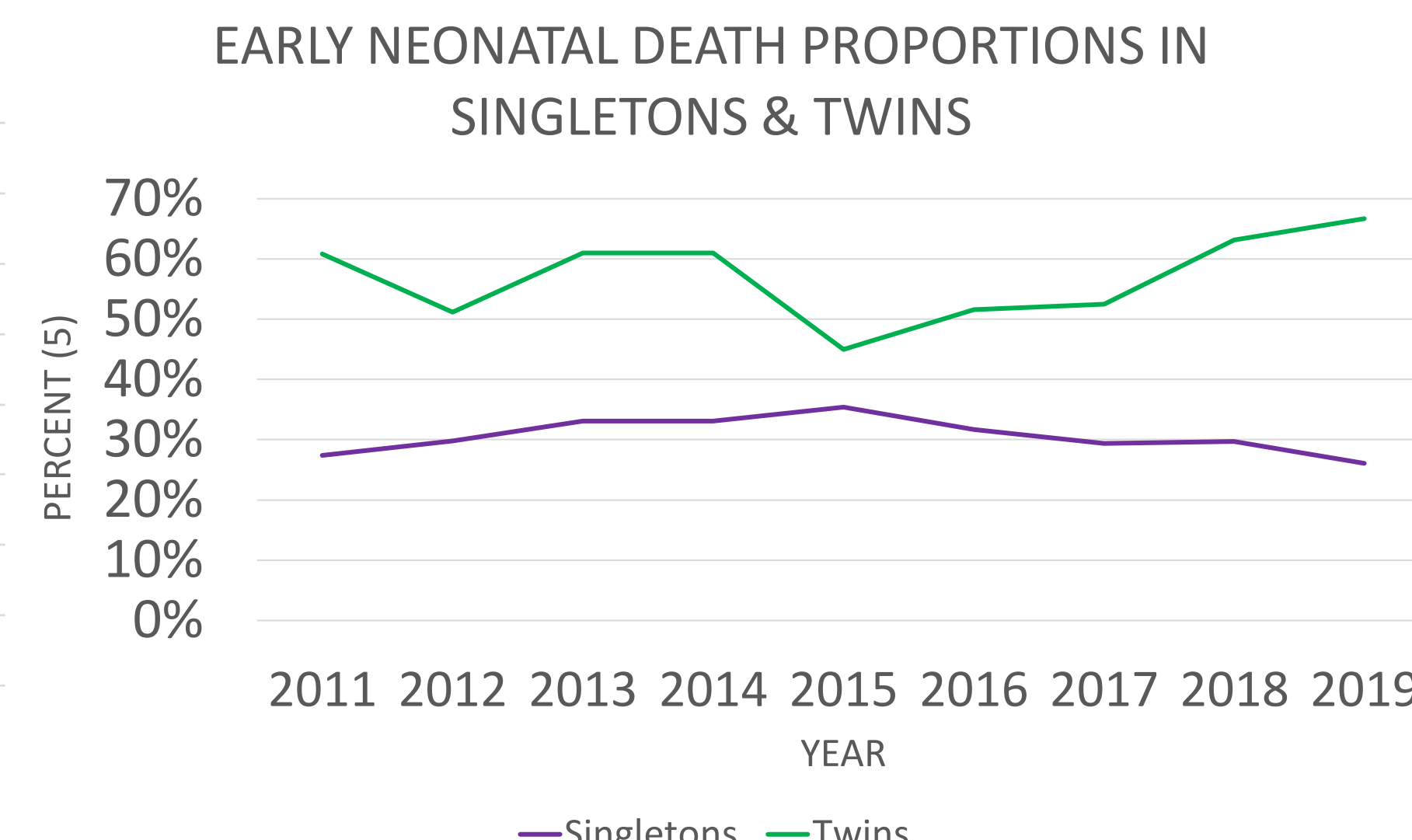
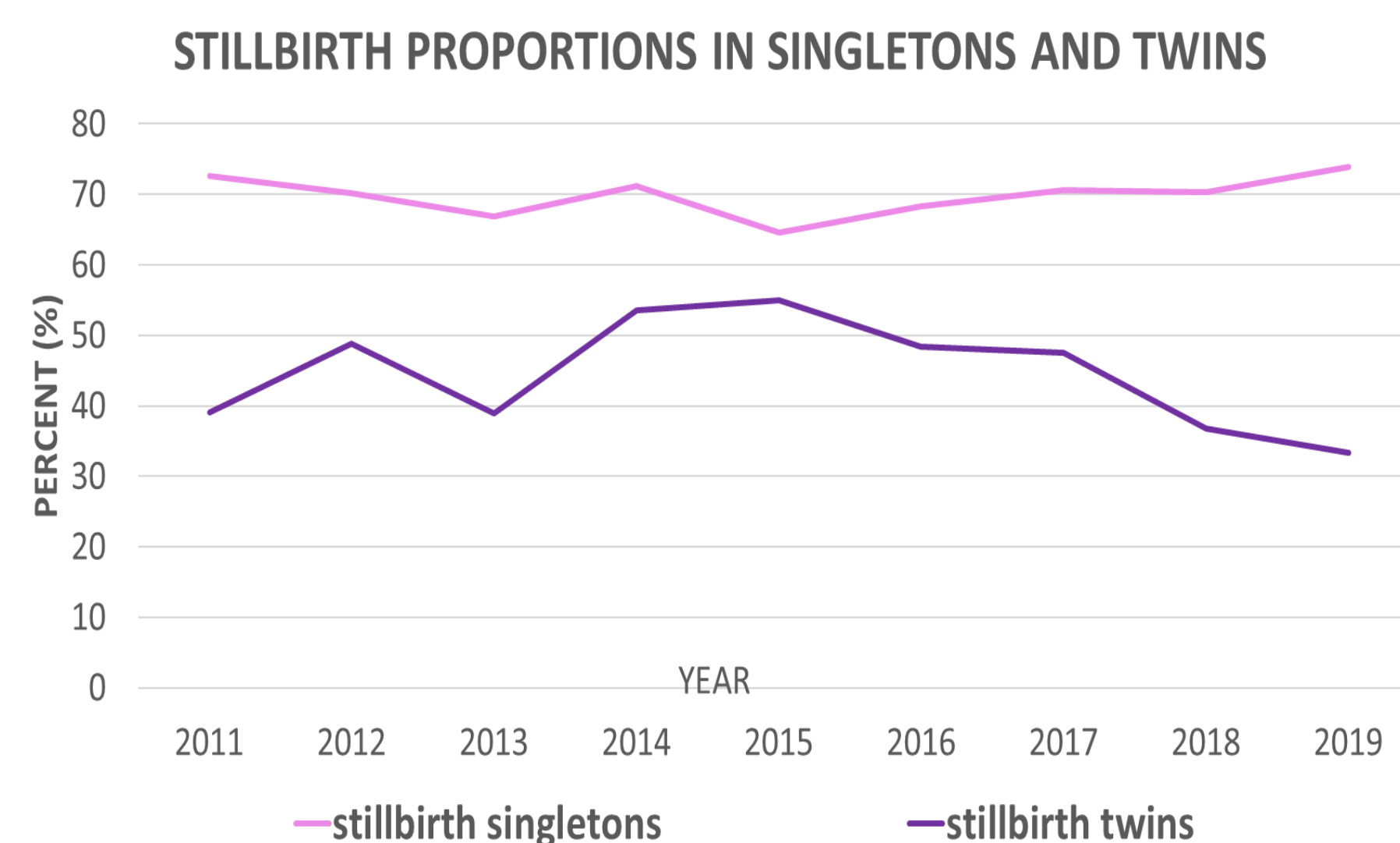
This study aimed to examine perinatal mortality in twins compared to singletons and investigate associated characteristics using national perinatal audit data.

Methods

This retrospective study includes 3668 perinatal deaths (with a birthweight $\geq 500g$ or gestational age at delivery ≥ 24 weeks) occurring in any of the 19 maternities within the Republic of Ireland, from 2011-2019. There were 2459 (67%) stillbirths and 1209 (33%) early neonatal deaths in this period. Data was collected by the Irish National Perinatal Epidemiology Centre for the annual perinatal mortality clinical audit.

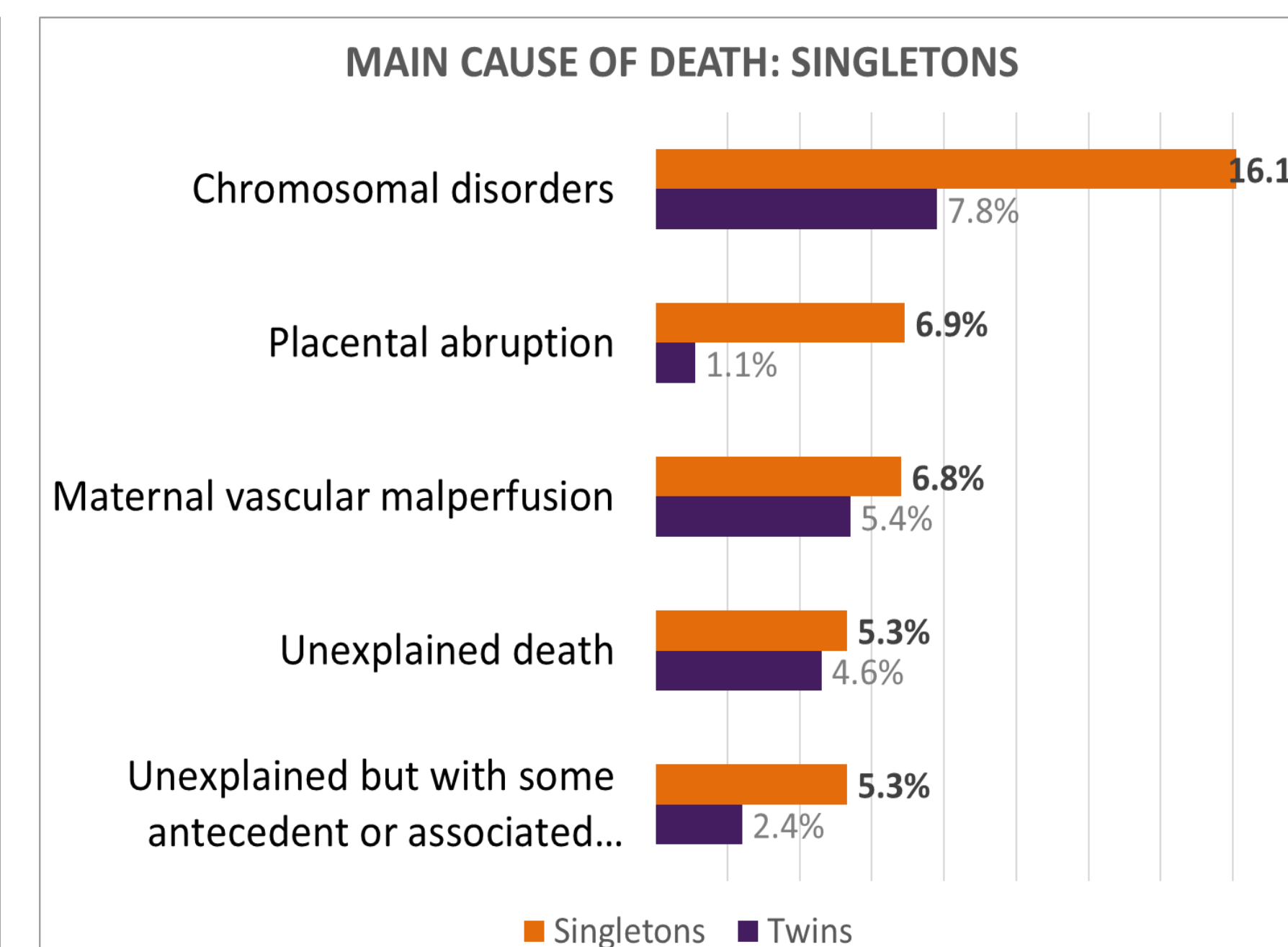
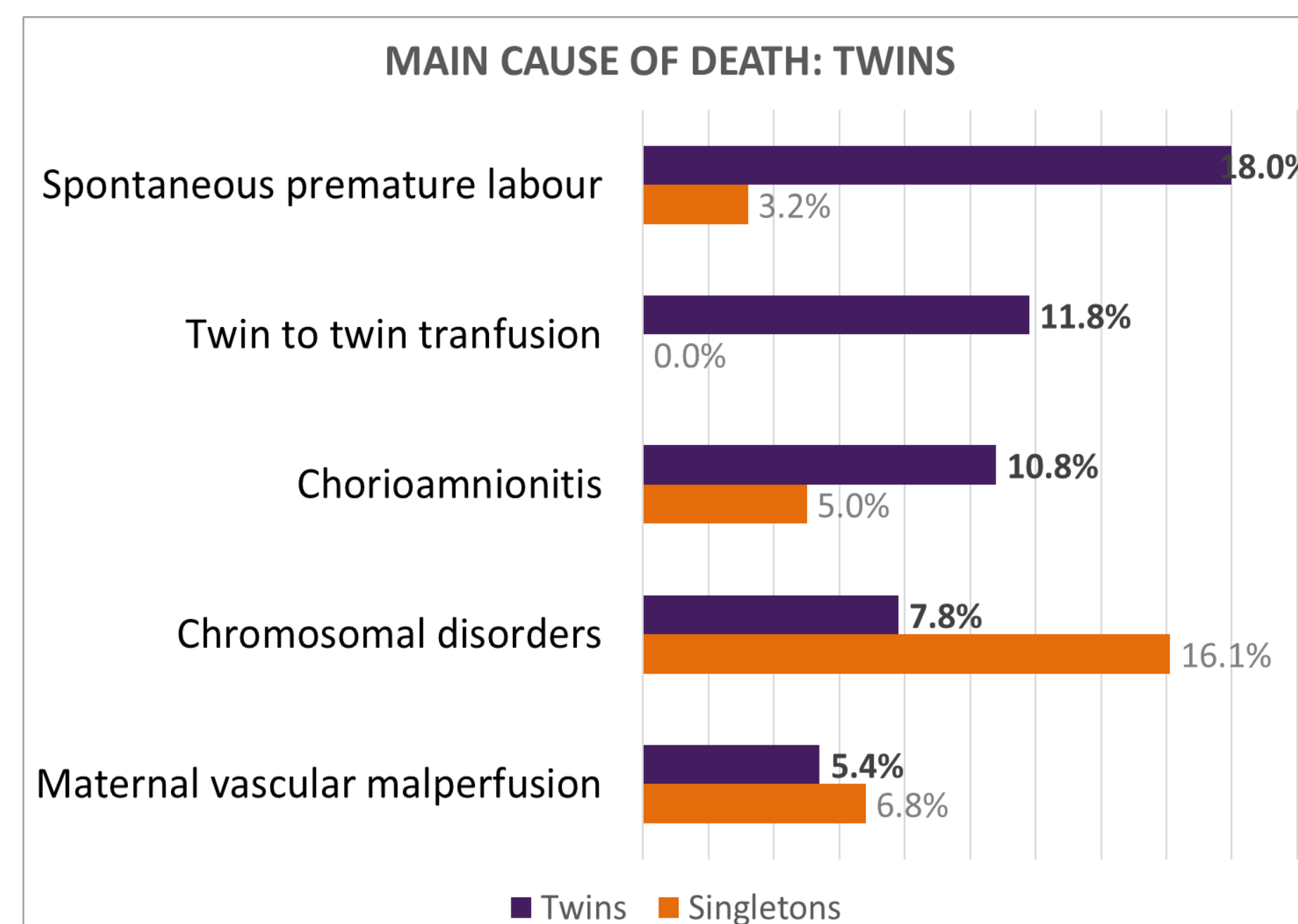
The type of perinatal mortality, maternal characteristics, antenatal care factors and causes of death were analysed. Pearson chi-squared tests studied the difference between mortality in singletons and twins.

Results

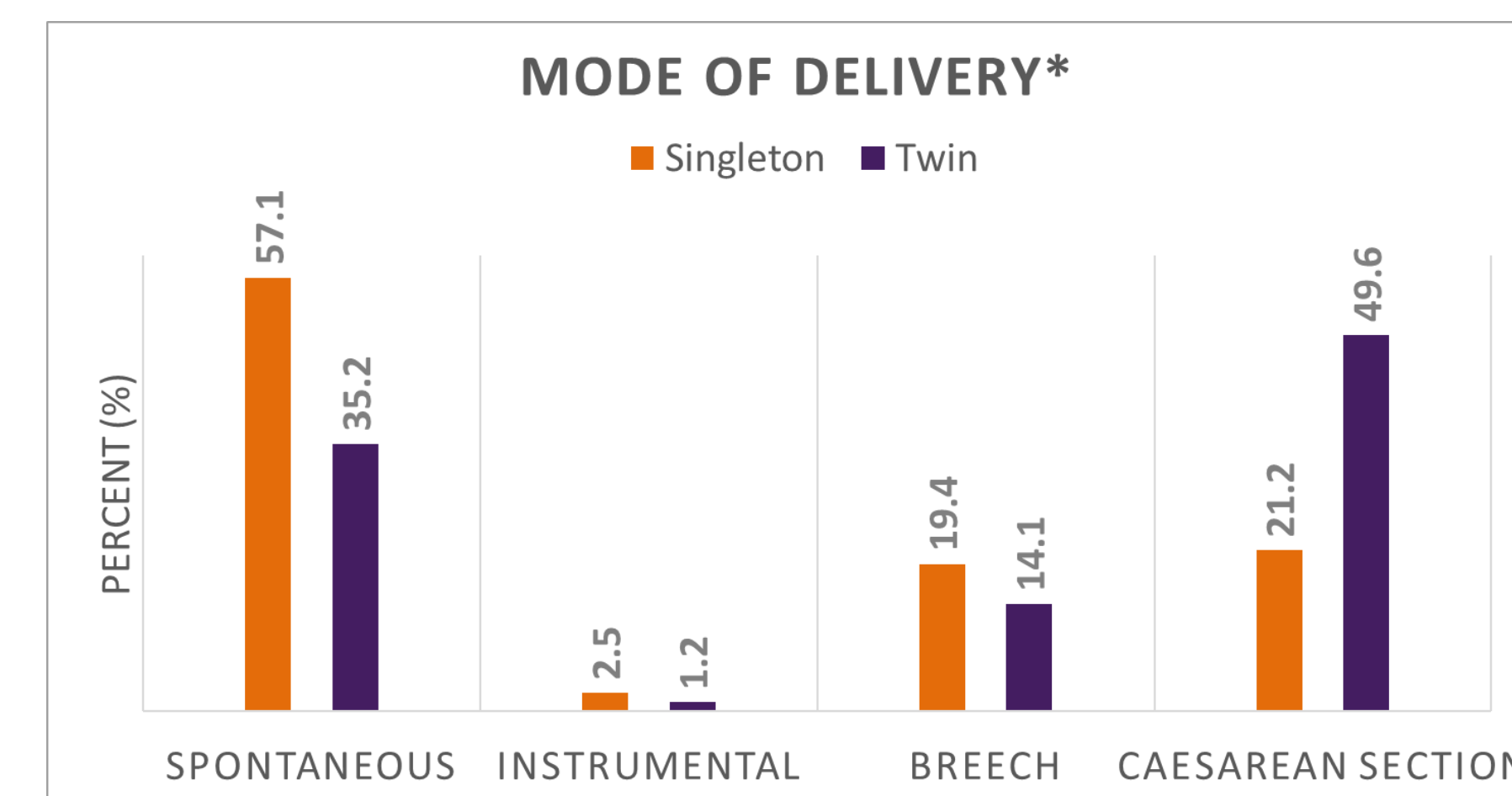
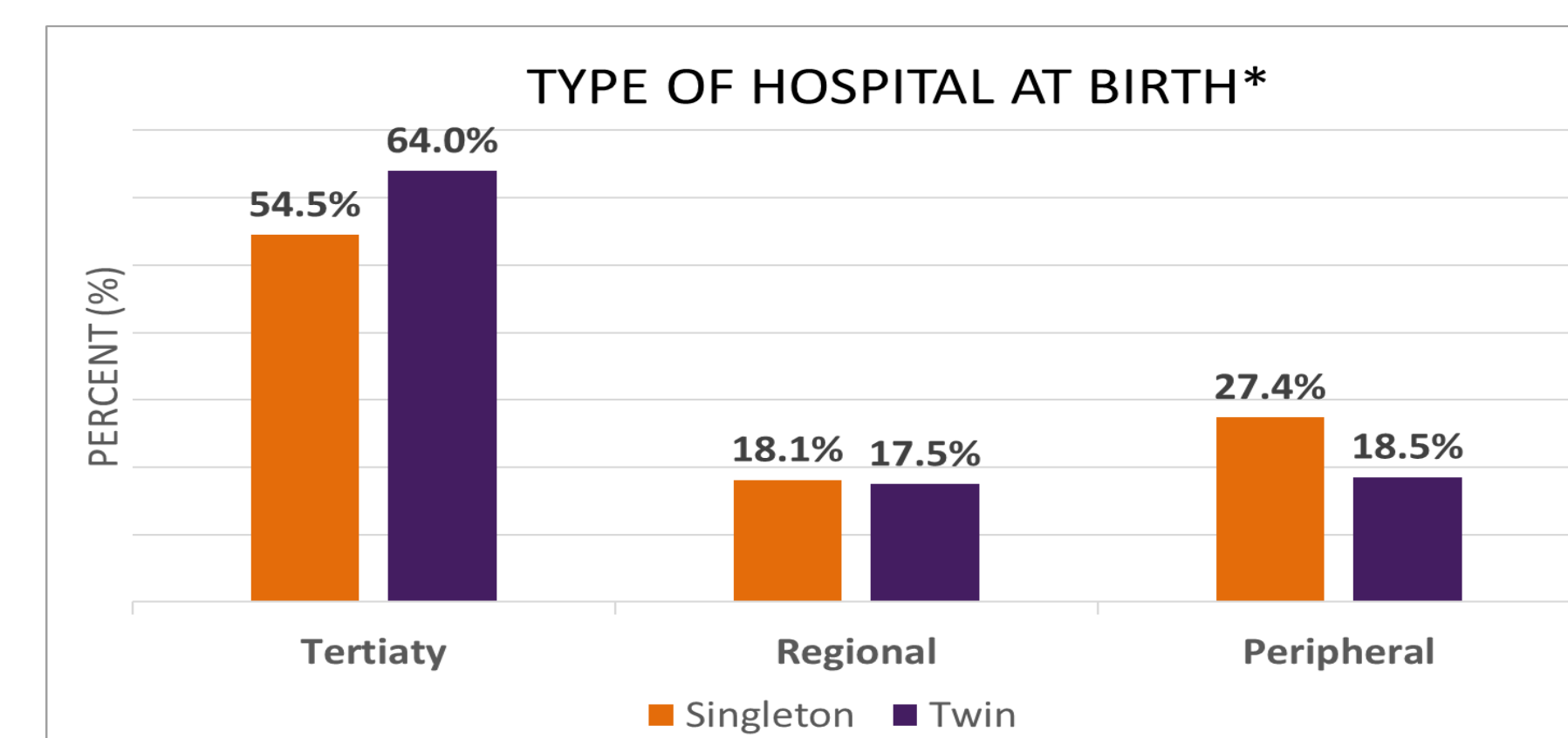


- Higher proportion of stillbirths in singletons (69.6% singletons. v 45.7% twins).
- Higher proportion of early neonatal deaths in twins (54.3% twins v 30.4% singletons), $p < .001$.

Spontaneous premature labour was the main cause of perinatal death in twins, in contrast to the main cause of perinatal death in singletons; chromosomal disorders.



- Significant association of perinatal mortality in twins compared to singleton deliveries at tertiary, regional and peripheral hospital units ($p < .001$).
- The number of twin deliveries in peripheral hospitals has not significantly changed between 2011-19.



- A significantly higher proportion of twins were transferred to another hospital during pregnancy.
- Significant association between the mode of delivery and a twin/singleton pregnancy.

Table 1: Maternal characteristics of perinatal mortality in twins and singletons

Maternal characteristics	Twins n (%)	Singletons n (%)	p value %
Age Note: bolded font indicates statistical significance.			
<20	10 (2.7%)	88 (2.7%)	
20-24	26 (7.0%)	347 (10.7%)	
25-29	60 (16.2%)	518 (17.9%)	
30-34	120 (32.3%)	995 (30.7%)	
35-39	109 (29.4%)	905 (27.9%)	
>39	46 (12.4%)	322 (9.9%)	0.186
Ethnicity			
White Irish	284 (76.5%)	2378 (72.9%)	
Irish traveller	9 (2.4%)	96 (2.9%)	
Other white	42 (11.3%)	419 (12.8%)	
Asian	6 (1.6%)	120 (3.7%)	
Black	14 (3.8%)	133 (4.1%)	
Mixed	6 (1.6%)	73 (2.2%)	0.111
Assisted conception	70 (21.9%)	127 (4.5%)	<0.001
Smoking (at booking)	35 (9.5%)	537 (16.6%)	<0.001
Previous pregnancies	2292 (59.4)	221 (70.2%)	<.001
Parity			
0	126 (40.4%)	849 (29.8%)	
1	104 (33.3%)	962 (33.8%)	
2	48 (15.4%)	606 (21.3%)	
3	19 (6.1%)	254 (8.9%)	
>3	15 (4.8%)	174 (6.1%)	0.001
Pre-existing medical problems	114 (30.8%)	1134 (34.8%)	.017
Renal disease	2 (0.6%)	40 (1.2%)	.249
Hypertension	4 (1.1%)	94 (2.9%)	.045
Diabetes	13 (3.6%)	83 (2.6%)	.255
Disorders present during pregnancy			
Pre-eclampsia	8 (2.2%)	114 (3.5%)	.180
Abruption	10 (2.7%)	291 (8.9%)	<.001
Oligohydramnios	12 (3.3%)	161 (5.1%)	.127
Polyhydramnios	16 (4.4%)	126 (4.0%)	.678
Chorioamnionitis	67 (16.1%)	252 (7.8%)	<.001

Conclusion

- This study highlights the difference in the maternal characteristics, mode of delivery and main cause of death in twins and singletons. This provides clinicians with **better data with which to counsel parents of twins regarding associated risks.**
- This data can also **inform the care** of twin pregnancies and deliveries to **potentially improve their outcomes.**
- These findings indicate that **focusing greater attention on planning for delivery of twins in tertiary centres can have implications in the care and outcomes of twin pregnancies.**

