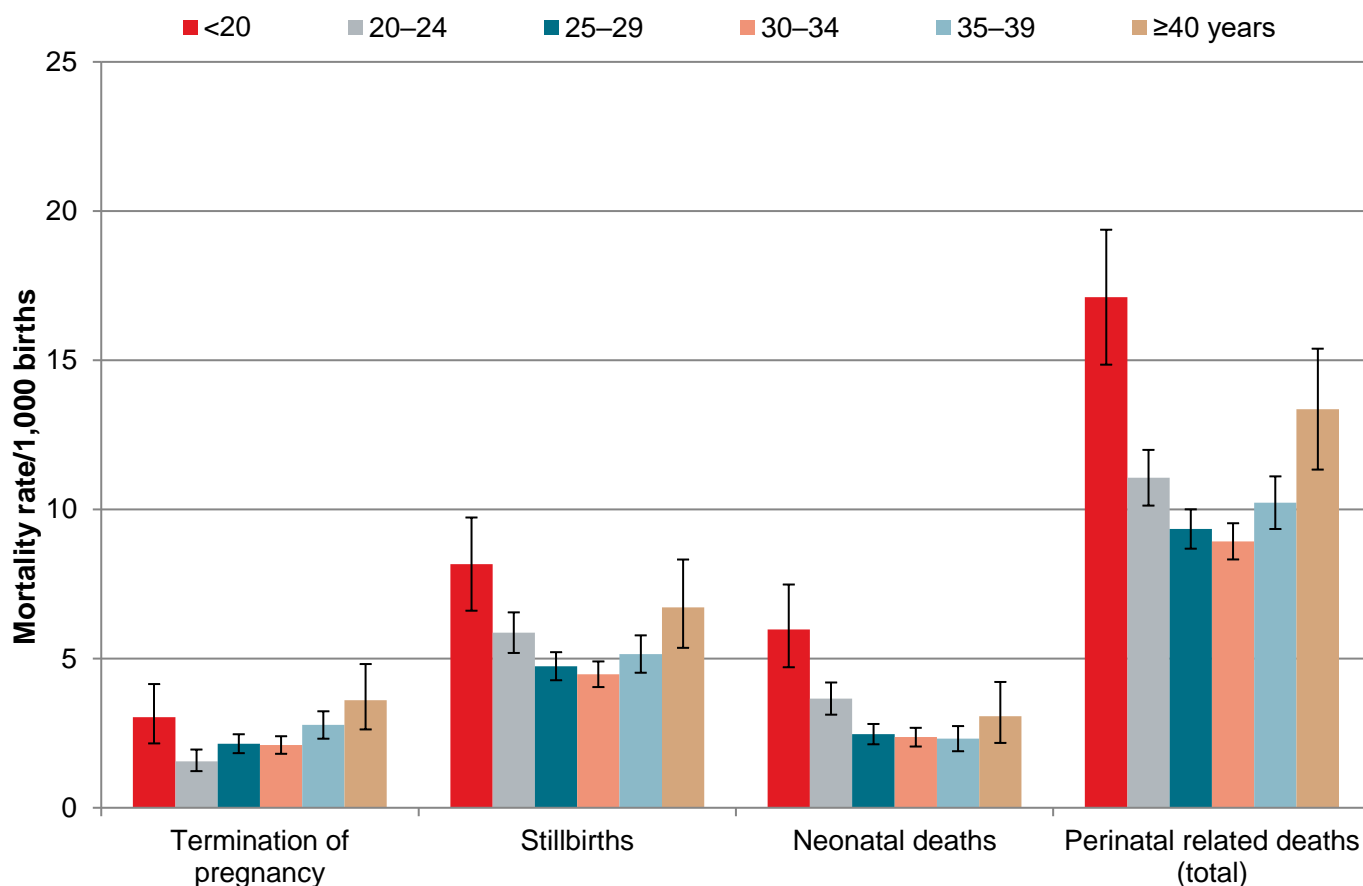


Maternal age

Perinatal related mortality rates have a U-shaped trend by maternal age, with the highest rates at the extremes of childbearing age. This is particularly evident for stillbirths, where rates are highest for mothers aged under 20 years and aged 40 years and over. Neonatal deaths were highest in babies of mothers who were under 20 years of age (Figure 3.4 and Table 3.8).

Figure 3.4: Perinatal related mortality rates (per 1,000 births, with 95% confidence intervals (CIs)) by maternal age 2014–2018



Sources: Numerator: PMMRC's perinatal data extract 2014–2018; Denominator: MAT births 2014–2018.

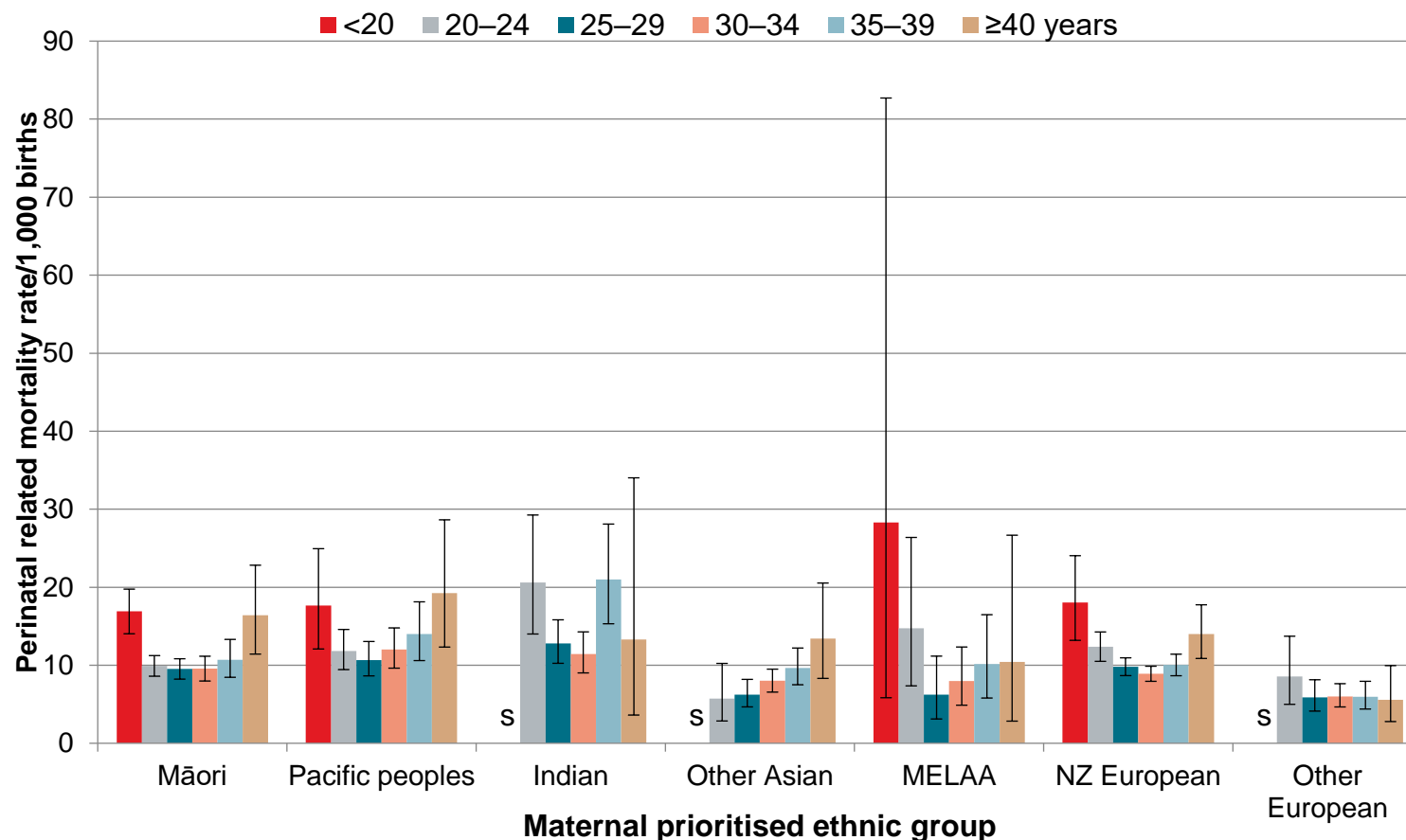
Table 3.8: Perinatal related mortality rates (per 1,000 births) by maternal age 2014–2018

Maternal age (years)	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths (total)		
			Termination of pregnancy			Stillbirths								
	N=300,205		n=673		n=1,545		n=828		n=3,046					
	N	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
<20	12,856	4.3	39	5.8	3.03	105	6.8	8.17	76	9.2	5.98	220	7.2	17.11
20–24	48,728	16.2	76	11.3	1.56	286	18.5	5.87	177	21.4	3.66	539	17.7	11.06
25–29	82,405	27.4	177	26.3	2.15	391	25.3	4.74	202	24.4	2.47	770	25.3	9.34
30–34	93,168	31.0	196	29.1	2.10	417	27.0	4.48	219	26.4	2.37	832	27.3	8.93
35–39	50,461	16.8	140	20.8	2.77	260	16.8	5.15	116	14.0	2.32	516	16.9	10.23
≥40	12,499	4.2	45	6.7	3.60	84	5.4	6.72	38	4.6	3.07	167	5.5	13.36
Unknown	88	0.0	-	-	-	<3	x	-	-	-	-	<3	x	-

'x' indicates percentage suppressed due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract 2014–2018; Denominator: MAT births 2014–2018.

Figure 3.5: Perinatal related mortality rates (per 1,000 births, with 95% CIs) by maternal age and prioritised ethnic group 2014–2018



MELAA = Middle Eastern, Latin American, or African.

's' indicates rate not calculated due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract 2014–2018; Denominator: MAT births 2014–2018.

The study period 2007–2018 saw little change in perinatal related mortality rates by maternal age group. Some evidence indicates an increase in deaths of babies born to mothers younger than 20 years, but no evidence suggests any substantial change in any other age group (data not shown). Table 3.9 presents the rates of perinatal related deaths by maternal age for the period 2009–2018.

Figure 3.5 shows the perinatal related mortality rates by maternal age for each prioritised ethnic group. The U-shaped trend by maternal age was evident for babies of Māori, Pacific and New Zealand European mothers.

Table 3.9: Perinatal related mortality rates (per 1,000 births) by maternal age and year 2009–2018

Maternal age (years)	2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N
<20	80	4,910	57	4,625	65	4,128	63	3,967	65	3,382	51	3,047	45	2,828	54	2,491	32	2,328	38	2,162
20–24	142	12,085	164	12,259	116	11,940	126	11,697	115	11,011	116	10,477	86	10,139	125	9,779	104	9,497	108	8,836
25–29	169	16,005	162	16,307	147	15,866	149	16,267	139	15,598	165	16,016	150	15,992	143	16,893	153	16,946	159	16,558
30–34	169	17,840	149	18,104	160	17,608	163	17,855	147	17,129	175	17,983	158	18,296	169	18,746	174	19,038	156	19,105
35–39	138	11,765	136	11,395	145	11,028	119	10,676	89	10,318	111	9,940	107	9,977	90	10,202	100	10,103	108	10,239
≥40	32	2,569	40	2,731	34	2,648	50	2,805	45	2,678	40	2,596	32	2,531	30	2,481	30	2,546	35	2,345
Unknown	-	29	-	28	-	25	-	19	-	21	<3	21	-	20	<3	14	-	20	-	13

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
<20	16.3	12.3	15.7	15.9	19.2	16.7	15.9	21.7	13.7	17.6
20–24	11.8	13.4	9.7	10.8	10.4	11.1	8.5	12.8	11.0	12.2
25–29	10.6	9.9	9.3	9.2	8.9	10.3	9.4	8.5	9.0	9.6
30–34	9.5	8.2	9.1	9.1	8.6	9.7	8.6	9.0	9.1	8.2
35–39	11.7	11.9	13.1	11.1	8.6	11.2	10.7	8.8	9.9	10.5
≥40	12.5	14.6	12.8	17.8	16.8	15.4	12.6	12.1	11.8	14.9
Unknown	-	-	-	-	-	-	-	-	-	-

Sources: Numerator: PMMRC's perinatal data extract 2009–2018; Denominator: MAT births 2009–2018.

The leading cause of perinatal related death for all maternal age groups was spontaneous preterm labour or rupture of membranes (ROM). The highest rate of mortality due to spontaneous preterm labour/ROM was seen in babies born to mothers under 20 years of age. The relationship between spontaneous preterm labour/ROM and the demographic characteristics of the mother (such as maternal age, ethnicity and/or deprivation) should be the subject of future research.

For women aged 20–24 years, antepartum haemorrhage and unexplained antepartum fetal death were the next most frequent causes after spontaneous preterm labour/ROM. In mothers aged 25–34 years, spontaneous preterm labour/ROM and unexplained antepartum death accounted for nearly 40% of perinatal related deaths. However, the rates for both categories were lower than the rates for women aged 24 years and younger, reflecting the overall lower perinatal related mortality rate in the age group of 25–34 years. Maternal conditions and placental dysfunction or causative placental pathology particularly affected mothers under 20 years of age, whereas hypertension was an uncommon cause of perinatal related death in this age group.

The rate of placental dysfunction or causative placental pathology was highest in mothers under 20 years of age, and reduced with age until 40 years and over. Deaths due to hypertension or to specific perinatal conditions tended to increase with age (Table 3.10 and Figure 3.6). See Table 3.11 for further information on women under 20 years of age who were pregnant, and Table 3.12 for information about perinatal related deaths in this age group.

Table 3.10: Perinatal death classification (PSANZ-PDC) specific perinatal related mortality rates (excluding congenital anomalies) by maternal age* 2014–2018

Perinatal death classification (PSANZ-PDC)	Maternal age (years)														
	<20			20–24			25–34			35–39			≥40		
	N=12,856			N=48,728			N=175,573			N=50,461			N=12,499		
	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Perinatal infection	14	8.2	1.09	28	6.6	0.57	66	5.7	0.38	13	3.8	0.26	<3	x	s
Hypertension	<3	x	s	16	3.8	0.33	43	3.7	0.24	10	2.9	0.20	5	5.6	0.40
Antepartum haemorrhage	26	15.2	2.02	69	16.2	1.42	201	17.4	1.14	45	13.3	0.89	16	17.8	1.28
Maternal conditions	22	12.9	1.71	34	8.0	0.70	82	7.1	0.47	21	6.2	0.42	11	12.2	0.88
Complications of multiple pregnancy	<3	x	s	19	4.5	0.39	57	4.9	0.32	23	6.8	0.46	7	7.8	0.56
Specific perinatal conditions	4	2.3	0.31	28	6.6	0.57	82	7.1	0.47	29	8.6	0.57	8	8.9	0.64
Hypoxic peripartum death	4	2.3	0.31	11	2.6	0.23	35	3.0	0.20	14	4.1	0.28	<3	x	s
Placental dysfunction or causative placental pathology	22	12.9	1.71	54	12.7	1.11	127	11.0	0.72	41	12.1	0.81	7	7.8	0.56
Spontaneous preterm labour or rupture of membranes (<37 weeks' gestation)	53	31.0	4.12	93	21.9	1.91	229	19.8	1.30	77	22.7	1.53	17	18.9	1.36
Unexplained antepartum fetal death	21	12.3	1.63	64	15.1	1.31	220	19.0	1.25	63	18.6	1.25	15	16.7	1.20
Neonatal death without obstetric antecedent	<3	x	s	9	2.1	0.18	15	1.3	0.09	3	0.9	0.06	<3	x	s

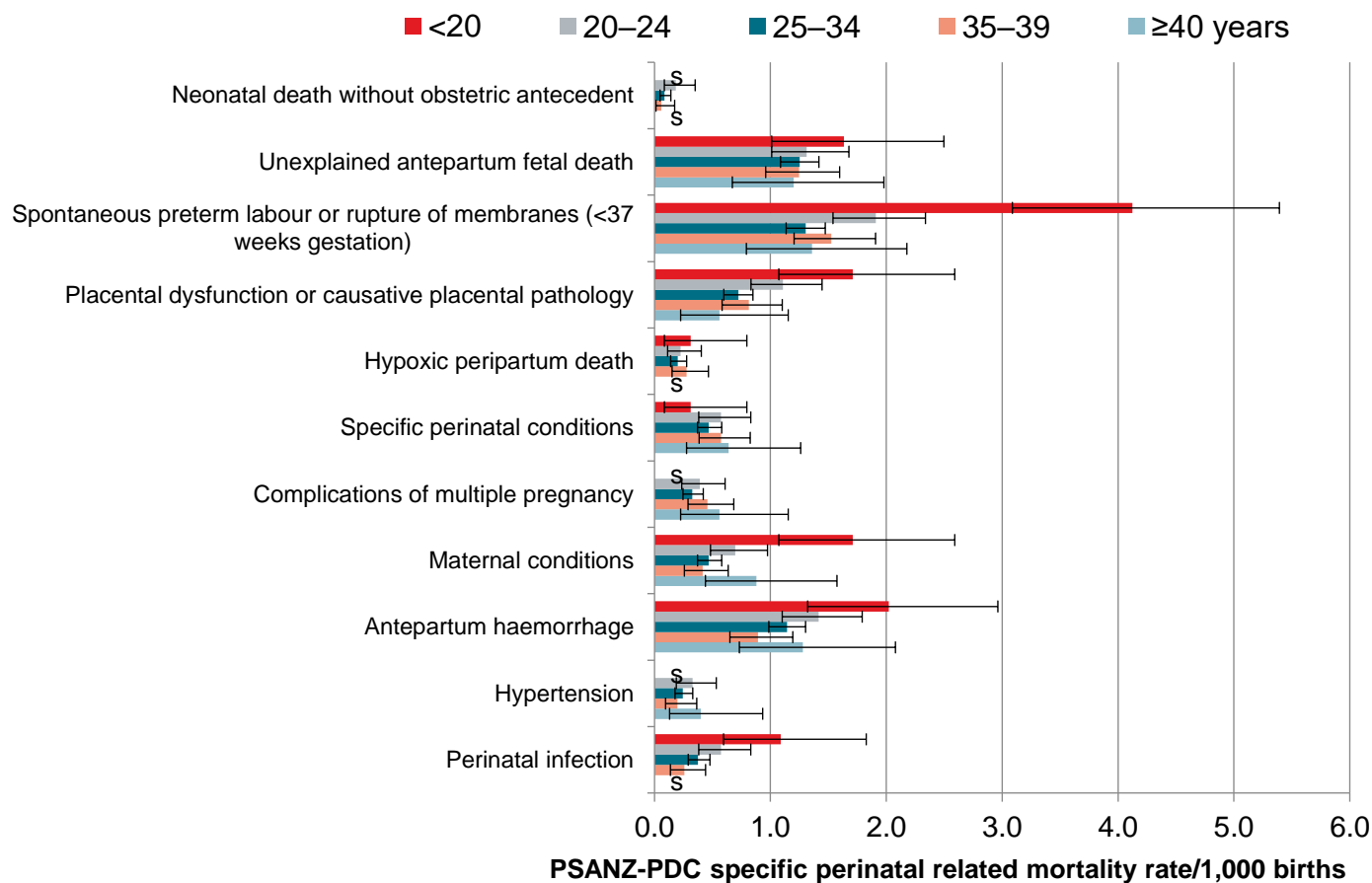
* Excludes two babies where maternal age was unknown.

'x' indicates percentage not calculated due to small numbers.

's' indicates rate not calculated due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract (excluding congenital anomalies) 2014–2018; Denominator: MAT births 2014–2018.

Figure 3.6: Perinatal death classification (PSANZ-PDC) specific perinatal related mortality rates (excluding congenital anomalies, with 95% CIs) by maternal age 2014–2018



's' indicates rate suppressed due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract (excluding congenital anomalies) 2014–2018; Denominator: MAT births 2014–2018.

Mothers under 20 years of age

Of mothers under 20 years of age who experienced a perinatal related death, over 40% were 19 years of age. Relatively few women in this age group were living in the least deprived areas; the highest proportion lived in quintile 5 on the New Zealand Index of Deprivation 2013 (NZDep2013) (Table 3.11).

Of mothers under 20 years of age who experienced a perinatal related death, 59% were Māori, and overall 65% did not smoke. Half of the mothers had a body mass index (BMI) in the normal range. Ninety-nine percent of the mothers registered with an LMC during their pregnancy. Of the mothers under 20 years of age who were recorded as having registered with an LMC during their pregnancy (between 2009 and 2018), 47% did so in their first trimester. However, because the data set is limited to mothers who registered with a midwife, obstetrician or GP LMC, the actual percentage of women who registered within their first trimester may be lower than this (Table 3.11).

Table 3.11: Demographic and other characteristics of all mothers under 20 years of age by time period (2009–2013 and 2014–2018)

Mothers aged under 20 years	2009–2013		2014–2018		2009–2018 (Total)	
	N=21,012		N=12,856		N=33,868	
	N	%	N	%	N	%
Age (years)						
<16	653	3.1	436	3.4	1,089	3.2
16	1,767	8.4	980	7.6	2,747	8.1
17	3,736	17.8	2,069	16.1	5,805	17.1
18	6,124	29.1	3,696	28.7	9,820	29.0
19	8,732	41.6	5,675	44.1	14,407	42.5
Deprivation quintile						
1 (least deprived)	1,096	5.2	587	4.6	1,683	5.0
2	1,668	7.9	1,002	7.8	2,670	7.9
3	2,948	14.0	1,526	11.9	4,474	13.2
4	5,301	25.2	3,026	23.5	8,327	24.6
5 (most deprived)	9,769	46.5	6,612	51.4	16,381	48.4
Missing	230	1.1	103	0.8	333	1.0
Prioritised ethnic group						
Māori	12,143	57.8	7,930	61.7	20,073	59.3
Pacific peoples	2,809	13.4	1,811	14.1	4,620	13.6
Asian	321	1.5	191	1.5	512	1.5
Indian	96	0.5	54	0.4	150	0.4
Other Asian	225	1.1	137	1.1	362	1.1
MELAA	163	0.8	106	0.8	269	0.8
European	5,567	26.5	2,817	21.9	8,384	24.8
NZ European	5,037	24.0	2,552	19.9	7,589	22.4
Other European	530	2.5	265	2.1	795	2.3
Unknown	9	0.0	<3	x	10	0.0
Limited to LMC*						
	N=16,982		N=11,416		N=28,398	
Smoking at registration with LMC						
Yes	6,129	36.1	3,868	33.9	9,997	35.2
No	10,853	63.9	7,548	66.1	18,401	64.8
Missing	-	-	-	-	-	-
BMI at registration						
<18.5	687	4.0	399	3.5	1,086	3.8
18.5–24.9	8,824	52.0	5,253	46.0	14,077	49.6
25.0–29.9	4,625	27.2	3,236	28.3	7,861	27.7
30.0–34.9	1,961	11.5	1,654	14.5	3,615	12.7
35.0–39.9	610	3.6	622	5.4	1,232	4.3
≥40.0	228	1.3	235	2.1	463	1.6
Unknown	47	0.3	17	0.1	64	0.2
First registration with LMC						
First	7,292	42.9	5,954	52.2	13,246	46.6
Second	8,314	49.0	4,594	40.2	12,908	45.5
Third	1,284	7.6	768	6.7	2,052	7.2
Postpartum	91	0.5	100	0.9	191	0.7
Missing	<3	x	-	-	<3	x

* All data limited to mothers who were registered for care with an LMC (a midwife, obstetrician or GP) claiming from the Section 88 Primary Maternity Services Notice.

MELAA = Middle Eastern, Latin American, or African.

LMC = lead maternity carer.

BMI = body mass index.

'x' indicates percentage not calculated due to small numbers.

Source: MAT births of babies of mothers <20 years of age 2009–2018.

The stillbirth rate for babies of mothers under 20 years of age (7.15 per 1,000 births) was approximately 1.5 times higher than for mothers aged 20 years and over (4.93 per 1,000 births), and the neonatal mortality rate was two times higher (5.46 per 1,000 births compared with 2.61 per 1,000 live births). The rate for termination of pregnancy was similar between the two groups (Table 3.12). In our 13th report, we highlighted that it is important for cohesive primary maternity services to be responsive to and appropriate for mothers aged under 20 years.²⁴

Table 3.12: Perinatal death classification (PSANZ-PDC) among babies of mothers <20 years of age and those ≥20 years of age 2009–2018

Perinatal death classification (PSANZ-PDC)	2009–2018			
	Women <20 years		Women ≥20 years	
	N=33,868		N=583,445	
	n	Rate	n	Rate
Termination of pregnancy (per 1,000 births)	97	2.86	1,296	2.22
Stillbirth (per 1,000 births)	242	7.15	2,874	4.93
Neonatal death (per 1,000 live births)	183	5.46	1,511	2.61
Perinatal death classification (PSANZ-PDC)				
Congenital anomaly	124	3.66	1,661	2.85
Perinatal infection	26	0.77	201	0.34
Hypertension	<3	s	179	0.31
Antepartum haemorrhage	62	1.83	645	1.11
Maternal conditions	34	1.00	267	0.46
Specific perinatal conditions	15	0.44	217	0.37
Hypoxic peripartum death	14	0.41	293	0.50
Fetal growth restriction	12	0.35	151	0.26
Spontaneous preterm birth	42	1.24	469	0.80
Unexplained antepartum death	126	3.72	844	1.45
No obstetric antecedent	55	1.62	701	1.20

's' indicates rate suppressed due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract, where matched to MAT data 2009–2018; Denominator: MAT births 2009-2018.

²⁴ PMMRC. 2019. *Te Pūrongo ā-Tau Tekau mā Toru o te Komiti Arotake Mate Pēpi, Mate Whaea Hoki | Thirteenth Annual Report of the Perinatal and Maternal Mortality Review Committee: Te tuku pūrongo mō te mate me te whakamate 2017 | Reporting mortality and morbidity 2017*. Wellington: Health Quality & Safety Commission. URL: <https://www.hqsc.govt.nz/assets/PMMRC/Publications/13thPMMRCreport/13thPMMRCAnnualReportWebFINAL.pdf> (accessed 6 May 2020).