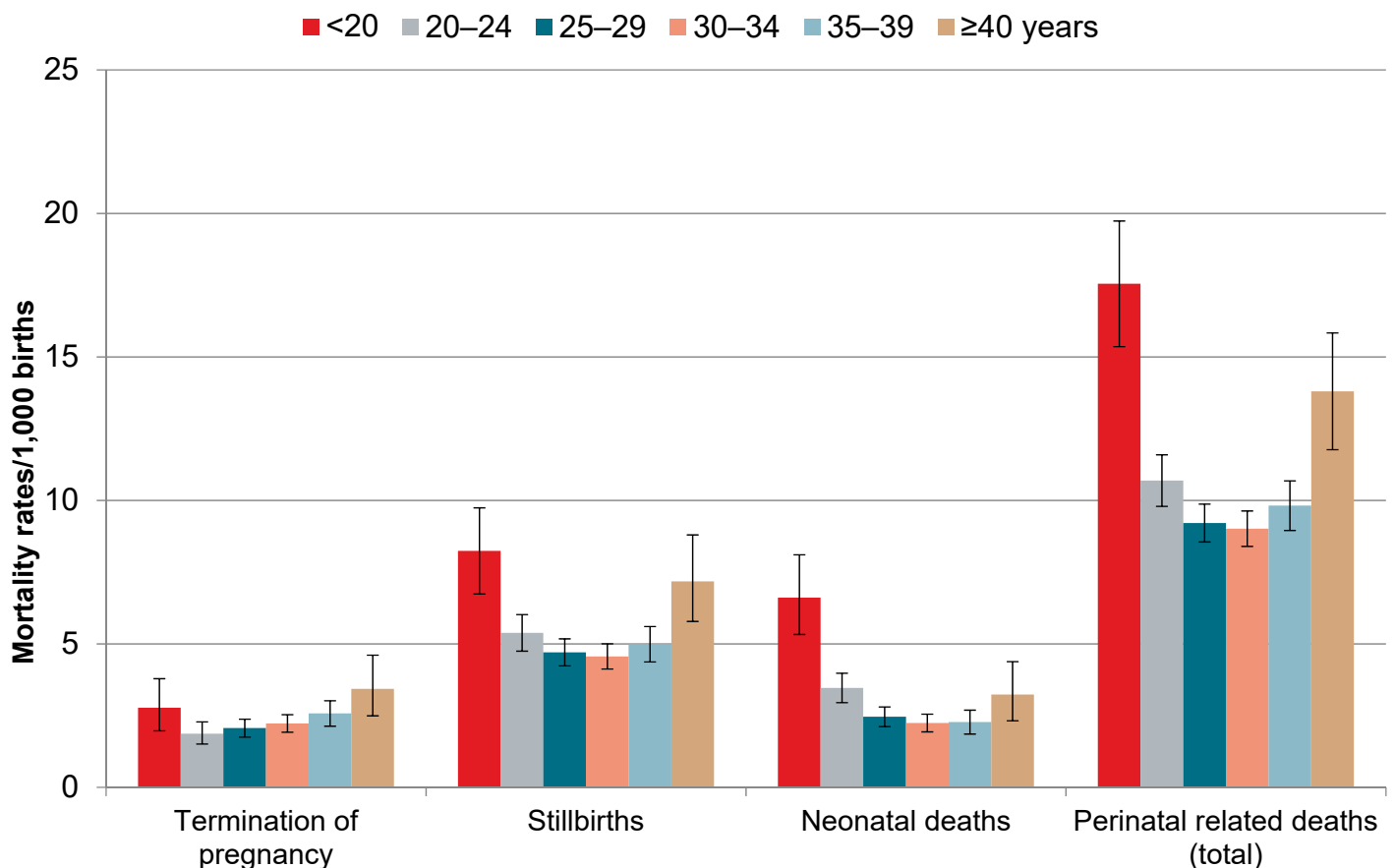


Te mate pēpi | Perinatal mortality

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, with mothers aged under 20 years and 40 years and over having the highest rates of stillbirth. 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) by maternal age (with 95% confidence intervals (CIs)) 2013–2017



Sources: Numerator: PMMRC's perinatal data extract 2013–2017; Denominator: MAT births 2013–2017.

Table 3.8: Perinatal related mortality rates (per 1,000 births) by maternal age 2013–2017

Maternal age (years)	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths (total)		
			Termination of pregnancy			Stillbirths								
	N=301,043		n=679		n=1,535		n=824			n=3,038				
	N	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
<20	14,077	4.7	39	5.7	2.77	116	7.6	8.24	92	11.2	6.61	247	8.1	17.55
20–24	50,888	16.9	95	14.0	1.87	274	17.9	5.38	175	21.2	3.46	544	17.9	10.69
25–29	81,438	27.1	168	24.7	2.06	383	25.0	4.70	199	24.2	2.46	750	24.7	9.21
30–34	91,189	30.3	203	29.9	2.23	416	27.1	4.56	203	24.6	2.24	822	27.1	9.01
35–39	50,530	16.8	130	19.1	2.57	252	16.4	4.99	114	13.8	2.27	496	16.3	9.82
≥40	12,826	4.3	44	6.5	3.43	92	6.0	7.17	41	5.0	3.23	177	5.8	13.80
Unknown	95	0.0	-	-	-	<3	x	-	-	-	-	<3	x	-

'x' indicates percentage suppressed due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract 2013–2017; Denominator: MAT births 2013–2017.

Over the past 11 years there has been little change in perinatal related mortality rates by maternal age group. There is some evidence of an increase in deaths of babies born to mothers younger than 20 years, and no evidence of any substantial change in any other age group (Table 3.9).

Table 3.9: Perinatal related mortality rates (per 1,000 births) by maternal age and year 2007–2017

Maternal age (years)	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017	
	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N
<20	61	5,118	85	5,336	80	4,910	57	4,625	65	4,128	63	3,968	65	3,382	51	3,047	45	2,829	54	2,491	32	2,328
20–24	140	11,371	133	11,868	142	12,086	164	12,258	116	11,939	126	11,697	115	11,007	116	10,477	86	10,137	124	9,776	103	9,491
25–29	161	15,812	153	15,904	169	16,003	162	16,305	147	15,866	149	16,265	139	15,598	165	16,015	150	15,991	143	16,893	153	16,941
30–34	163	18,630	169	18,012	169	17,841	149	18,105	160	17,608	163	17,854	147	17,130	175	17,983	158	18,296	169	18,745	173	19,035
35–39	124	11,778	125	11,977	138	11,765	136	11,396	145	11,028	119	10,676	89	10,317	111	9,940	107	9,976	89	10,199	100	10,098
≥40	31	2,463	35	2,503	32	2,568	40	2,732	34	2,648	50	2,801	45	2,678	40	2,596	32	2,528	30	2,482	30	2,542
Unknown	-	28	<3	23	-	29	-	28	-	25	-	19	-	21	<3	21	-	20	<3	14	-	19

Maternal age (years)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Chi-squared test for trend (p)
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	
<20	11.9	15.9	16.3	12.3	15.7	15.9	19.2	16.7	15.9	21.7	13.7	0.030
20–24	12.3	11.2	11.7	13.4	9.7	10.8	10.4	11.1	8.5	12.7	10.9	0.13
25–29	10.2	9.6	10.6	9.9	9.3	9.2	8.9	10.3	9.4	8.5	9.0	0.088
30–34	8.7	9.4	9.5	8.2	9.1	9.1	8.6	9.7	8.6	9.0	9.1	0.97
35–39	10.5	10.4	11.7	11.9	13.1	11.1	8.6	11.2	10.7	8.7	9.9	0.078
≥40	12.6	14.0	12.5	14.6	12.8	17.9	16.8	15.4	12.7	12.1	11.8	0.83
Unknown	-	-	-	-	-	-	-	-	-	-	-	-

Sources: Numerator: PMMRC's perinatal data extract 2007–2017; Denominator: MAT births 2007–2017.

Spontaneous preterm was the leading cause of perinatal related death in babies born to mothers under 24 years of age. In mothers aged 25–34 years, the leading category of perinatal related death was unexplained antepartum death. However, the rate of unexplained antepartum death was less than that seen in women aged 24 years and less, reflecting the overall lower perinatal related mortality rate in the 25–34-year age group. For mothers aged 35 years and over, the leading classification of death was specific perinatal conditions. Perinatal infection particularly affected mothers under 20 years of age, and hypertension was an uncommon cause of perinatal related death in this age group.

The rate of antepartum haemorrhage was highest in mothers under 20 years of age, and reduced with age until 40 years and over. Deaths due to specific perinatal conditions tended to increase with age. The rates of deaths classified as due to spontaneous preterm and fetal growth restriction were higher in mothers under 20 years of age, compared with other age groups (Table 3.10 and Figure 3.5). 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 abnormalities) by maternal age 2013–2017

Perinatal death classification (PSANZ-PDC)	Maternal age (years)														
	<20			20–24			25–34			35–39			≥40		
	N=14,026			N=50,768			N=172,204			N=50,369			N=12,751		
	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Perinatal infection	17	8.8	1.21	23	5.5	0.45	63	5.5	0.37	16	4.8	0.32	<3	x	s
Hypertension	<3	x	s	17	4.0	0.33	37	3.2	0.21	8	2.4	0.16	6	5.8	0.47
Antepartum haemorrhage	31	16.0	2.21	70	16.6	1.38	205	18.0	1.19	49	14.8	0.97	18	17.5	1.41
Maternal conditions	17	8.8	1.21	36	8.6	0.71	73	6.4	0.42	22	6.6	0.44	11	10.7	0.86
Specific perinatal condition	10	5.2	0.71	50	11.9	0.98	168	14.7	0.98	74	22.4	1.47	23	22.3	1.80
Hypoxic peripartum death	5	2.6	0.36	12	2.9	0.24	40	3.5	0.23	13	3.9	0.26	<3	x	s
Fetal growth restriction	21	10.8	1.50	30	7.1	0.59	107	9.4	0.62	32	9.7	0.64	8	7.8	0.63
Spontaneous preterm*	58	29.9	4.14	89	21.1	1.75	188	16.5	1.09	50	15.1	0.99	14	13.6	1.10
Unexplained antepartum death*	30	15.5	2.14	82	19.5	1.62	245	21.5	1.42	64	19.3	1.27	20	19.4	1.57
No obstetric antecedent	4	2.1	0.29	12	2.9	0.24	14	1.2	0.08	3	0.9	0.06	<3	x	s

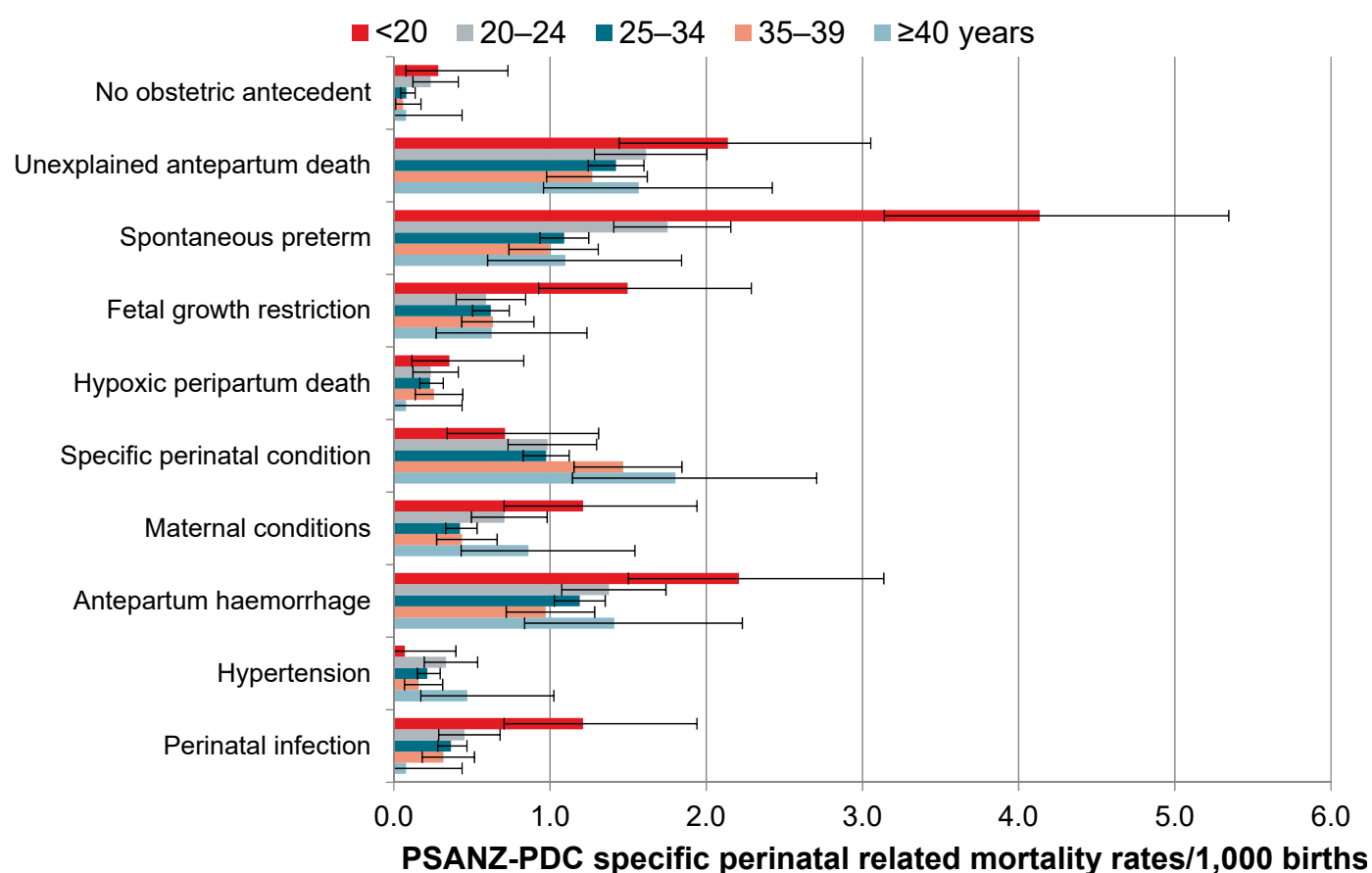
* Excludes two babies where maternal age was unknown.

'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 abnormalities) 2013–2017; Denominator: MAT births 2013–2017.

Figure 3.5: Perinatal death classification (PSANZ-PDC) specific perinatal related mortality rates (excluding congenital abnormalities) by maternal age (with 95% CIs) 2013–2017



Sources: Numerator: PMMRC’s perinatal data extract (excluding congenital abnormalities) 2013–2017; Denominator: MAT births 2013–2017.

Mothers under 20 years of age

Of mothers under 20 years of age, over 40% were 19 years of age. There were relatively few women living in the least deprived areas, with the highest proportion living in New Zealand Index of Deprivation 2013 (NZDep2013) quintile 5 (Table 3.11).

Table 3.11: Demographic and other characteristics of all births of mothers under 20 years of age by time period (2008–2012 and 2013–2017)

	2008–2012		2013–2017		2008–2017	
	N	%	N	%	N	%
Age (years)						
<16	764	3.3	471	3.3	1,235	3.3
16	1,956	8.5	1,114	7.9	3,070	8.3
17	4,188	18.2	2,308	16.4	6,496	17.5
18	6,740	29.3	4,040	28.7	10,780	29.1
19	9,319	40.6	6,144	43.6	15,463	41.7
NZDep2013 quintile						
1 (least deprived)	1,181	5.1	644	4.6	1,825	4.9
2	1,884	8.2	1,070	7.6	2,954	8.0
3	3,222	14.0	1,729	12.3	4,951	13.4
4	5,841	25.4	3,363	23.9	9,204	24.8
5 (most deprived)	10,576	46.0	7,151	50.8	17,727	47.9
Missing	263	1.1	120	0.9	383	1.0

Prioritised ethnic group (mother)

Māori	13,167	57.3	8,483	60.3	21,650	58.4
Pacific peoples	3,064	13.3	1,933	13.7	4,997	13.5
Asian	353	1.5	218	1.5	571	1.5
Indian	107	0.5	60	0.4	167	0.5
Other Asian	246	1.1	158	1.1	404	1.1
MELAA	168	0.7	121	0.9	289	0.8
European	6,204	27.0	3,318	23.6	9,522	25.7
NZ European	5,634	24.5	3,001	21.3	8,635	23.3
Other European	570	2.5	317	2.3	887	2.4
Unknown	11	0.0	4	0.0	15	0.0
Limited to LMC*	N=18,072		N=12,396		N=30,468	
Smoking at registration with LMC						
Yes	6,570	36.4	4,266	34.4	10,836	35.6
No	11,497	63.6	8,130	65.6	19,627	64.4
Missing	5	0.0	-	-	5	0.0
BMI at registration						
<18.50	746	4.1	463	3.7	1,209	4.0
18.50–24.99	9,576	53.0	5,846	47.2	15,422	50.6
25.00–29.99	4,863	26.9	3,497	28.2	8,360	27.4
30.00–34.99	1,972	10.9	1,728	13.9	3,700	12.1
35.00–39.99	630	3.5	601	4.8	1,231	4.0
≥40.00	229	1.3	239	1.9	468	1.5
Unknown	56	0.3	22	0.2	78	0.3
First registration with LMC						
First	7,184	39.8	6,349	51.2	13,533	44.4
Second	9,391	52.0	5,126	41.4	14,517	47.6
Third	1,392	7.7	838	6.8	2,230	7.3
Postpartum	104	0.6	83	0.7	187	0.6
Missing	<3	x	-	-	<3	x

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

BMI = body mass index.

MELAA = Middle Eastern, Latin American, or African.

LMC = lead maternity carer.

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

Source: MAT births of babies of mothers <20 years of age 2008–2017.

Of mothers under 20 years of age, 58% were Māori, and overall 65% did not smoke. Half of the mothers had a 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 2008 and 2017), 44% did so in their first trimester. However, because these data are limited to mothers who registered with a midwife, obstetrician or GP LMC, the actual percentages may be lower than this (Table 3.11).

For babies of mothers under 20 years of age, the stillbirth rate was 1.5 times higher than for mothers aged 20 years and over (7.42 per 1,000 births compared with 4.95 per 1,000 births respectively), and the neonatal mortality rate was two times higher (rate 5.4 per 1,000 births compared with 2.58 per 1,000 births). The rate for termination of pregnancy was similar between the two groups (Table 3.12).

Table 3.12: Perinatal death classification (PSANZ-PDC) among babies of mothers <20 years of age and those ≥20 years of age, 2008–2017

Perinatal death classification (PSANZ-PDC)	2008–2017			
	Mothers <20 years old		Mothers ≥20 years old	
	N=37,044		N=586,576	
	n	Rate	n	Rate
Termination of pregnancy (/1,000 births)	96	2.59	1,301	2.22
Stillbirth (/1,000 births)	275	7.42	2,905	4.95
Neonatal death (/1,000 live births)	198	5.34	1,514	2.58
Perinatal death classification (PSANZ-PDC)				
Congenital abnormality	133	3.59	1,632	2.78
Perinatal infection	32	0.86	202	0.34
Hypertension	<3	s	181	0.31
Antepartum haemorrhage	68	1.84	647	1.10
Maternal conditions	29	0.78	254	0.43
Specific perinatal conditions	35	0.94	640	1.09
Hypoxic peripartum death	17	0.46	172	0.29
Fetal growth restriction	46	1.24	397	0.68
Spontaneous preterm birth	126	3.40	743	1.27
Unexplained antepartum death	69	1.86	790	1.35
No obstetric antecedent	12	0.32	62	0.11

's' indicates rate suppressed due to small numbers.

Sources: Numerator: PMMRC's perinatal data extract, where matched to MAT data 2008–2017; Denominator: MAT births 2008–2017.

The 12th report of the PMMRC showed that mothers under 20 years of age had higher risk of perinatal related death (excluding from congenital abnormalities) from spontaneous preterm birth, fetal growth restriction, antepartum haemorrhage, and perinatal infection than any other age group.¹ World-wide, mothers who are pregnant under 20 years of age are viewed as a high-risk group.^{2,3} However, there is little strengths-based research involving this group to evaluate their perspectives and develop antenatal care pathways that meet their needs. In Aotearoa/New Zealand, a research study called E Hine was conducted to explore the lived realities of 44 Māori mothers under 20 years of age who were pregnant, and their babies. The study found that mothers in the study generally did not have a delay in diagnosing pregnancy, particularly those who were already engaged with a health service provider, such as a school-based health clinic or youth health provider. However, the research demonstrated that fragmentation of service delivery and poor communication around finding a midwife made accessing antenatal care difficult. This was further complicated by a lack of available midwives in their area for some mothers. Participants were more likely to experience continuous care in their pregnancy when the first health professional they saw ensured that their ongoing needs, particularly in terms of finding an antenatal care provider, were met. This research highlighted the fragmentation between primary non-LMC services and LMC services, which is negatively impacting on women's access to antenatal care.⁴

¹ PMMRC. 2018. *Twelfth Annual Report of the Perinatal and Maternal Mortality Review Committee: Reporting mortality 2016*. URL: <https://www.hqsc.govt.nz/assets/PMMRC/Publications/12th-PMMRC-report-final.pdf> (accessed 14 August 2019), p 100.

² Solivan AE, Wallace ME, Kaplan KC, et al. 2015. Use of a resiliency framework to examine pregnancy and birth outcomes among adolescents: A qualitative study. *Families, Systems and Health* 33(4): 349–55.

³ Chen XK, Wen SW, Fleming N, et al. 2007. Teenage pregnancy and adverse birth outcomes: A large population based retrospective cohort study. *International Journal of Epidemiology* 36: 368–73.

⁴ Makowharemahihi C, Lawton B, Cram F et al. 2014. Initiation of maternity care for young Māori women under 20 years of age. *New Zealand Medical Journal* 127(1393): 52–61.