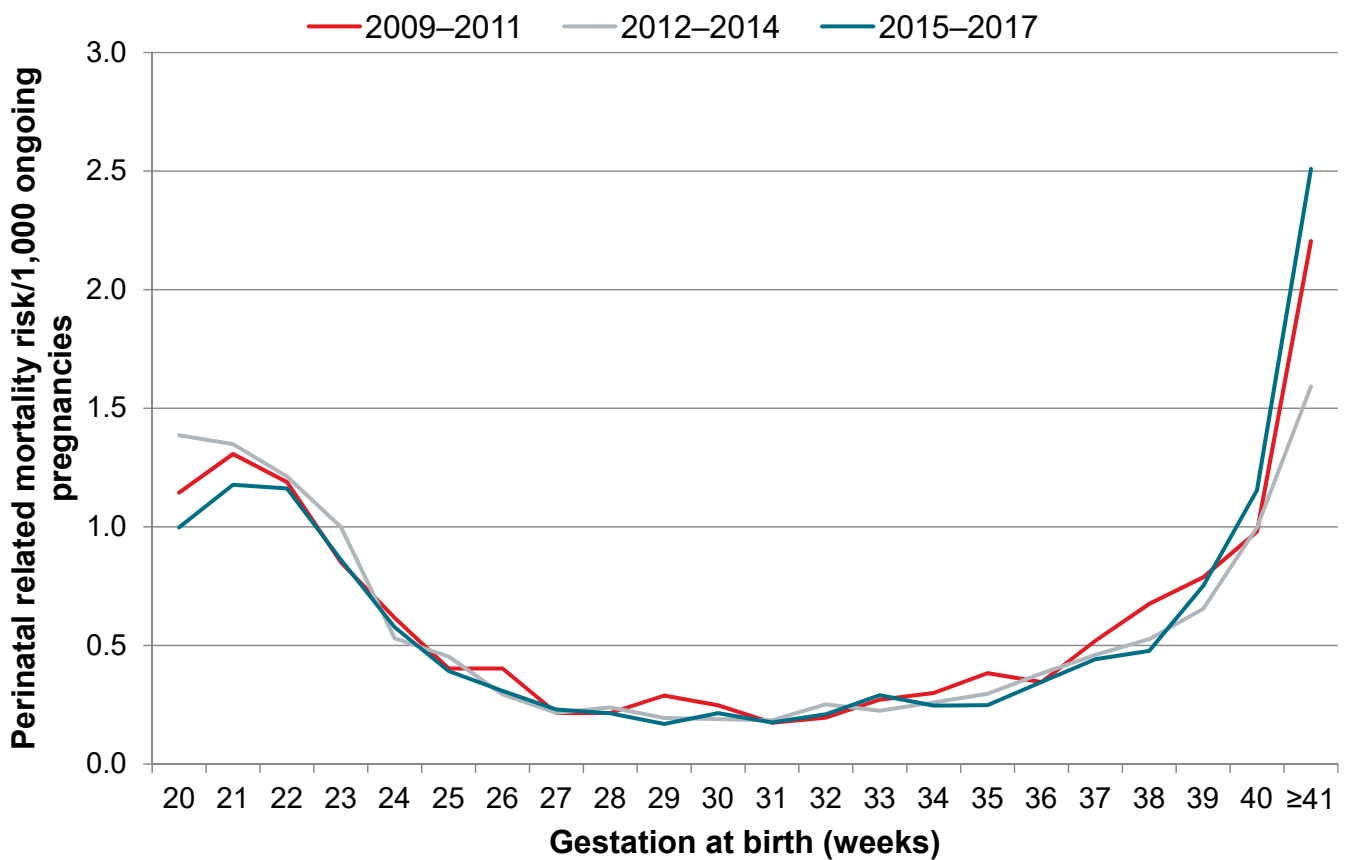


Te mate pēpi | Perinatal mortality

Gestational age and birthweight

There has been little change in perinatal related mortality by gestational age over the time period 2009–2017. While the risk of death appears highest from 41 weeks' gestation onwards, this is influenced by the number of ongoing pregnancies (the denominator). As there are fewer ongoing pregnancies at this gestation compared with 23–24 weeks' gestation, the mortality ratio (per 1,000 ongoing pregnancies) is higher from 41 weeks (Figure 3.20). While the rate of death at later gestations is lower (2.01 per 1,000 births at ≥ 40 weeks' gestation compared with 736.36 per 1,000 births at 23–24 weeks' gestation) (Table 3.25), a higher proportion of pregnancies at this gestation are at risk of adverse outcome.

Figure 3.20: Perinatal related mortality risk (per 1,000 ongoing pregnancies) by gestational age at birth and year 2009–2017



Sources: Numerator: PMMRC's perinatal data extract 2009–2017; Denominator: MAT births 2009–2017.

Table 3.25: Perinatal related mortality rates (per 1,000 births) by gestation and birthweight 2017

	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths (total)		
			Termination of pregnancy			Stillbirths								
	N=60,454		n=133			n=287			n=171			n=591		
	N	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Gestation at birth (weeks)														
20–22	210	0.3	81	60.9	*	72	25.1	*	56	32.7	*	209	35.4	*
23–24	110	0.2	25	18.8	227.27	27	9.4	245.45	29	17.0	500.00	81	13.7	736.36
25–27	212	0.4	16	12.0	75.47	30	10.5	141.51	18	10.5	108.43	64	10.8	301.89
28–31	474	0.8	5	3.8	10.55	30	10.5	63.29	13	7.6	29.61	48	8.1	101.27
32–36	3,730	6.2	5	3.8	1.34	48	16.7	12.87	23	13.5	6.26	76	12.9	20.38
37–40	46,621	77.1	<3	x	s	68	23.7	1.46	27	15.8	0.58	96	16.2	2.06
≥41	8,451	14.0	-	-	-	12	4.2	1.42	5	2.9	0.59	17	2.9	2.01
Unknown	646	1.1	-	-	-	-	-	-	-	-	-	-	-	-
Birthweight (g)														
<500	206	0.3	69	51.9	*	96	33.4	*	45	26.3	*	210	35.5	*
500–999	314	0.5	47	35.3	149.68	49	17.1	156.05	58	33.9	266.06	154	26.1	490.45
1,000–1,499	364	0.6	13	9.8	35.71	16	5.6	43.96	13	7.6	38.81	42	7.1	115.38
1,500–1,999	659	1.1	<3	x	s	25	8.7	37.94	7	4.1	11.06	33	5.6	50.08
2,000–2,499	2,227	3.7	<3	x	s	18	6.3	8.08	8	4.7	3.62	28	4.7	12.57
2,500–2,999	8,055	13.3	-	-	-	20	7.0	2.48	16	9.4	1.99	36	6.1	4.47
3,000–3,499	19,517	32.3	-	-	-	43	15.0	2.20	12	7.0	0.62	55	9.3	2.82
3,500–3,999	18,037	29.8	-	-	-	14	4.9	0.78	9	5.3	0.50	23	3.9	1.28
4,000–4,499	6,593	10.9	-	-	-	4	1.4	0.61	<3	x	s	6	1.0	0.91
≥4,500	1,359	2.2	-	-	-	<3	x	s	-	-	-	<3	x	s
Unknown	3,123	5.2	<3	x	s	<3	x	s	<3	x	s	3	0.5	-

* Denominator data unreliable where asterisk is present, and therefore rates have not been calculated.

'x' indicates percentage suppressed due to small numbers.

's' indicates rate suppressed due to small numbers.

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

Over the time period 2007–2017, there is some evidence of a statistically significant decrease in the risk of death for babies born at 28–31 and 37–38 weeks' gestation (Table 3.26).

Table 3.26: Perinatal related mortality risk (per 1,000 ongoing pregnancies) 2007–2017

	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017	
	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n
Gestation at birth (weeks)																						
20–22	204	217	207	218	210	216	231	248	230	235	231	247	215	217	245	253	169	175	206	214	210	209
23–24	117	81	131	98	137	105	122	81	129	95	119	94	123	85	137	98	117	92	126	84	110	81
25–27	232	64	241	62	237	70	228	73	185	52	219	70	192	55	187	49	206	52	187	50	212	64
28–31	530	57	559	65	539	66	560	52	511	58	503	50	471	49	462	46	458	41	482	48	474	48
32–36	3,842	88	3,959	80	3,978	90	4,004	101	3,909	87	3,931	73	3,723	91	3,727	85	3,648	78	3,817	79	3,730	76
37–38	12,852	65	13,019	59	13,145	78	13,610	62	13,171	64	13,440	65	13,399	38	13,678	56	13,600	42	14,484	59	14,658	45
39–40	34,367	73	34,736	82	34,630	72	34,593	65	33,877	59	33,589	51	32,205	51	32,161	60	32,125	69	32,067	56	31,963	51
≥41	12,330	34	11,667	37	11,740	32	11,550	26	10,729	17	10,325	20	9,478	14	9,092	12	9,071	29	8,781	20	8,451	17
Unknown	726	<3	1,104	-	586	<3	551	-	501	-	923	-	327	-	390	-	383	-	450	-	646	-
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Chi-squared test for trend (p)										
	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk											
Gestation at birth (weeks)																						
20–22	3.37	3.38	3.34	3.82	3.75	3.96	3.63	4.24	2.95	3.56	3.49	0.68										
23–24	1.26	1.52	1.63	1.25	1.52	1.51	1.43	1.65	1.55	1.40	1.36	0.76										
25–27	1.00	0.97	1.09	1.13	0.83	1.13	0.92	0.83	0.88	0.84	1.08	0.33										
28–31	0.89	1.02	1.03	0.81	0.93	0.81	0.83	0.78	0.70	0.80	0.81	0.049										
32–36	1.39	1.26	1.42	1.58	1.41	1.19	1.55	1.45	1.33	1.34	1.29	0.73										
37–38	1.09	0.99	1.31	1.04	1.11	1.13	0.69	1.02	0.77	1.07	0.82	0.023										
39–40	1.56	1.77	1.55	1.41	1.32	1.16	1.22	1.45	1.67	1.37	1.26	0.14										
≥41	2.76	3.17	2.73	2.25	1.58	1.94	1.48	1.32	3.20	2.28	2.01	0.074										
Unknown	-	-	-	-	-	-	-	-	-	-	-	-										

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

There has been no significant increase in termination of pregnancy rates by gestation (from 20 weeks' gestation onwards) over the study period 2007–2017 (Table 3.27).

Table 3.27: Termination of pregnancy rates (per 1,000 ongoing pregnancies) 2007–2017

Gestation at birth (weeks)	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017	
	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n
Termination of pregnancy																						
20–22	204	103	207	94	210	88	231	92	230	107	231	118	215	83	245	91	169	66	206	87	210	81
23–24	117	22	131	25	137	31	122	20	129	29	119	32	123	32	137	31	117	27	126	32	110	25
25–27	232	10	241	14	237	9	228	20	185	15	219	14	192	16	187	10	206	8	187	13	212	16
28–31	530	6	559	7	539	4	560	6	511	11	503	5	471	5	462	7	458	3	482	14	474	5
≥32	63,391	3	63,381	5	63,493	6	63,757	13	61,686	9	61,285	3	58,805	5	58,658	11	58,444	3	59,149	2	58,802	6
Unknown	726	-	1,104	-	586	-	551	-	501	-	923	-	327	-	390	-	383	-	450	-	646	-

Gestation at birth (weeks)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Chi-squared test for trend (p)
	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	
Termination of pregnancy												
20–22	1.60	1.46	1.36	1.42	1.71	1.89	1.39	1.52	1.11	1.45	1.35	0.21
23–24	0.34	0.39	0.48	0.31	0.46	0.52	0.54	0.52	0.46	0.53	0.42	0.11
25–27	0.16	0.22	0.14	0.31	0.24	0.23	0.27	0.17	0.14	0.22	0.27	0.62
28–31	0.09	0.11	0.06	0.09	0.18	0.08	0.08	0.12	0.05	0.23	0.08	0.39
≥32	0.05	0.08	0.09	0.20	0.15	0.05	0.09	0.19	0.05	0.03	0.10	0.78
Unknown	-	-	-	-	-	-	-	-	-	-	-	-

Sources: Numerator: PMMRC's perinatal data extract, terminations of pregnancy only, 2007–2017; Denominator: MAT births 2007–2017.

There is some evidence of a statistically significant decrease in stillbirths at 28–31 weeks' gestation, and at term (37–40 weeks) (Table 3.28). There is also some evidence of a statistically significant reduction in neonatal death in those born at ≥41 weeks' gestation, but a statistically significant increase in deaths at 20–22 weeks' gestation (Table 3.29).

Table 3.28: Stillbirth risk (per 1,000 ongoing pregnancies) 2007–2017

Gestation at birth (weeks)	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017	
	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n
Stillbirths																						
20–22	204	79	207	95	210	88	231	94	230	90	231	85	215	88	245	110	169	73	206	83	210	72
23–24	117	25	131	40	137	43	122	31	129	37	119	28	123	29	137	28	117	32	126	29	110	27
25–27	232	39	241	34	237	39	228	32	185	24	219	36	192	25	187	25	206	31	187	26	212	30
28–31	530	43	559	38	539	48	560	32	511	34	503	30	471	32	462	31	458	29	482	22	474	30
32–36	3,842	64	3,959	54	3,978	60	4,004	66	3,909	55	3,931	54	3,723	63	3,727	58	3,648	48	3,817	60	3,730	48
37–40	47,219	98	47,755	99	47,775	111	48,203	78	47,048	83	47,029	78	45,604	60	45,839	72	45,725	72	46,551	76	46,621	68
≥41	12,330	20	11,667	19	11,740	19	11,550	14	10,729	9	10,325	9	9,478	9	9,092	3	9,071	20	8,781	14	8,451	12
Unknown	726	<3	1,104	-	586	<3	551	-	501	-	923	-	327	-	390	-	383	-	450	-	646	-

Gestation at birth (weeks)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Chi-squared test for trend (p)
	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	
Stillbirths												
20–22	1.23	1.47	1.36	1.45	1.43	1.36	1.47	1.84	1.23	1.38	1.20	0.9993
23–24	0.39	0.62	0.67	0.48	0.59	0.45	0.49	0.47	0.54	0.48	0.45	0.44
25–27	0.61	0.53	0.61	0.50	0.38	0.58	0.42	0.42	0.52	0.43	0.50	0.18
28–31	0.67	0.59	0.75	0.50	0.55	0.49	0.54	0.52	0.49	0.37	0.51	0.012
32–36	1.01	0.85	0.94	1.04	0.89	0.88	1.07	0.99	0.82	1.01	0.82	0.65
37–40	1.65	1.67	1.87	1.31	1.44	1.36	1.09	1.31	1.31	1.37	1.23	0.0015
≥41	1.62	1.63	1.62	1.21	0.84	0.87	0.95	0.33	2.20	1.59	1.42	0.60
Unknown	-	-	-	-	-	-	-	-	-	-	-	-

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

Table 3.29: Neonatal death risk (per 1,000 ongoing pregnancies) 2007–2017

Gestation at birth (weeks)	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017	
	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n	Total births	n
Neonatal deaths																						
20–22	22	35	18	29	34	40	45	62	33	38	28	44	44	46	44	52	30	36	36	44	57	56
23–24	70	34	66	33	63	31	71	30	63	29	59	34	62	24	78	39	58	33	65	23	58	29
25–27	183	15	193	14	189	22	176	21	146	13	169	20	151	14	152	14	167	13	148	11	166	18
28–31	481	8	514	20	487	14	522	14	466	13	468	15	434	12	424	8	426	9	446	12	439	13
32–36	3,775	21	3,900	21	3,913	25	3,929	26	3,846	24	3,874	16	3,656	24	3,664	22	3,597	27	3,755	17	3,677	23
37–40	47,121	40	47,656	42	47,663	38	48,121	45	46,964	39	46,951	38	45,543	28	45,761	38	45,653	39	46,475	39	46,552	27
≥41	12,310	14	11,648	18	11,721	13	11,536	12	10,720	8	10,316	11	9,469	5	9,089	9	9,051	9	8,767	6	8,439	5
Unknown	725	-	1,104	-	585	-	551	-	501	-	923	-	327	-	390	-	383	-	450	-	646	-

Gestation at birth (weeks)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Chi-squared test for trend (p)
	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	Risk	
Neonatal deaths												
20–22	0.55	0.45	0.62	0.96	0.61	0.71	0.77	0.88	0.61	0.74	0.94	0.006
23–24	0.53	0.52	0.48	0.47	0.47	0.55	0.40	0.66	0.56	0.39	0.49	0.84
25–27	0.23	0.22	0.34	0.33	0.21	0.32	0.24	0.24	0.22	0.18	0.30	0.65
28–31	0.13	0.31	0.22	0.22	0.21	0.24	0.20	0.14	0.15	0.20	0.22	0.57
32–36	0.33	0.33	0.39	0.41	0.39	0.26	0.41	0.38	0.46	0.29	0.39	0.73
37–40	0.67	0.71	0.64	0.75	0.68	0.66	0.51	0.69	0.71	0.71	0.49	0.38
≥41	1.14	1.55	1.11	1.04	0.75	1.07	0.53	0.99	0.99	0.68	0.59	0.033
Unknown	-	-	-	-	-	-	-	-	-	-	-	-

Sources: Numerator: PMMRC's perinatal data extract specific neonatal deaths 2007–2017; Denominator: MAT births excluding fetal deaths 2007–2017.

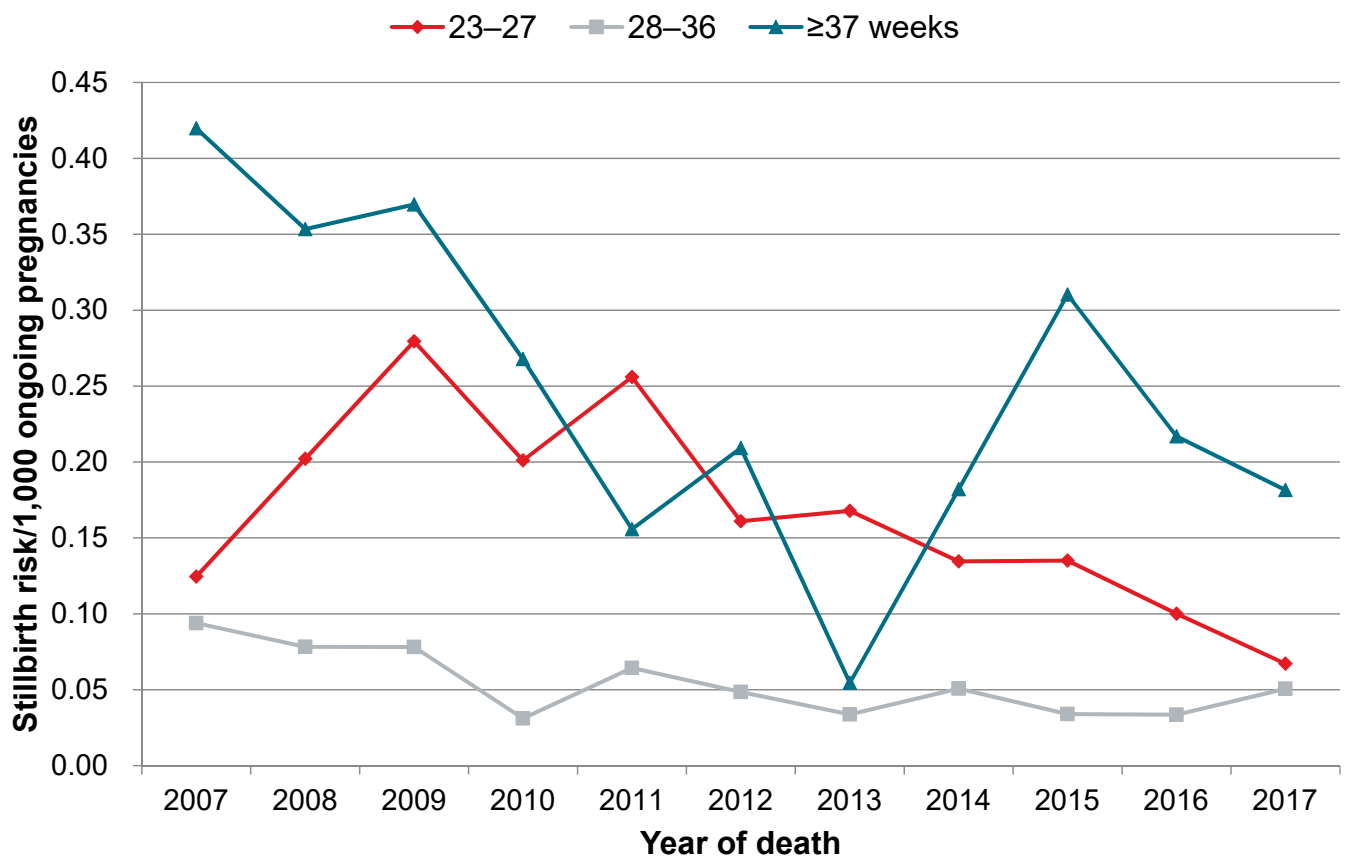
Over the time period 2007–2017, there was some evidence of a decrease in the mortality rate from intrapartum stillbirth in babies aged 23–27 weeks. There was strong evidence for a reduction in intrapartum stillbirth in babies born at term (37 weeks onwards) (Table 3.30 and Figure 3.21). The reduction in deaths of babies was similar in Māori mothers as in New Zealand European mothers (data not shown).

Table 3.30: Intrapartum stillbirth rates (per 1,000 ongoing pregnancies) by gestation excluding congenital abnormalities 2007–2017

Gestation at birth (weeks)	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
23–27	8	64,173	13	64,218	18	64,303	13	64,550	16	62,394	10	62,021	10	59,497	8	59,335	8	59,131	6	59,835	4	59,509
28–36	6	63,856	5	63,876	5	63,962	<3	64,243	4	62,115	3	61,725	<3	59,220	3	59,049	<3	58,841	<3	59,565	3	59,228
≥37	25	59,518	21	59,394	22	59,486	16	59,722	9	57,743	12	57,327	3	55,061	10	54,897	17	54,764	12	55,307	10	55,060
Gestation at birth (weeks)	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											
23–27	0.12	0.20	0.28	0.20	0.26	0.16	0.17	0.13	0.14	0.10	0.07	0.015										
28–36	0.09	0.08	0.08	0.03	0.06	0.05	0.03	0.05	0.03	0.03	0.05	0.094										
≥37	0.42	0.35	0.37	0.27	0.16	0.21	0.05	0.18	0.31	0.22	0.18	0.001										

Sources: Numerator: PMMRC's perinatal data extract, stillbirths only (excluding congenital abnormalities) 2007–2017; Denominator: MAT births 2007–2017.

Figure 3.21: Intrapartum stillbirth risks (per 1,000 ongoing pregnancies) by gestation at birth (weeks) excluding congenital abnormalities 2007–2017



Sources: Numerator: PMMRC’s perinatal data extract, stillbirths only (excluding congenital abnormalities), 2007–2017; Denominator: MAT births 2007–2017.