
**Central East
Health Information Partnership**

**Low Birth Weight:
Troubling Trend or Misguided
Measure (Extended Mix)**

A CEHIP Discussion Paper

May, 2000



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(Extended Mix)**

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Introduction – Purpose of the Study

Considerable attention has been paid recently to Ontario's apparent upward trend in its low birth weight rate.^{1,2} To address this issue we must understand what this low birth weight indicator tells us. The purpose of this report is to investigate low birth weight as an indicator and to consider alternative indicators using Ontario data as an example.

A low birth weight infant is categorized by The World Health Organization as an infant who weighs less than 2,500g at birth. This is commonly used as an indicator of pre-term birth as it is easy to measure and is available for practically all births, especially in developed countries. It is considered an indicator of health status and the level of social development³ since it is influenced by human biology, physical & social environment factors as well as by lifestyle and use of health services.⁴ Furthermore, the indicator is used widely in Ontario Public Health Units who have been mandated by the Public Health Branch of the Ontario Ministry of Health and Long Term Care to develop programs to reduce the low birth weight rate to four percent by the year 2010.⁵

The low birth weight indicator groups together three different types of small infants; (1) those who are small because they are born too early (pre-term), (2) infants who are small because their growth is retarded in utero and (3) infants who are small for both reasons. This indicator therefore ignores the distinction between growth-retarded and premature infants. Distinguishing between the two groups is important because of their inherent differences.

1. Different distributions - Birth rates for growth retarded infants are much higher in developing countries but are decreasing in developed countries. Conversely rates of premature infants are higher in developed countries and may be rising.^{5,6}
2. Different prognoses – Full term infants who are growth-retarded are at a lower risk of death and short-term morbidity than pre-term infants are. Pre-term infants are at increased risk of infant death, short and long-term pulmonary, ophthalmologic & neurologic morbidity and delayed psychomotor development.^{8,9} Growth retarded infants are at an increased risk of type II diabetes mellitus, hypertension and coronary artery disease later in life.¹⁰
3. Different risk factors - The risk factors for growth-retardation are fairly well understood, but the causes of pre-term births are less clear. Pre-pregnancy BMI and maternal weight gain have strong positive effects on fetal growth,⁷ but their effects on duration of gestation are inconclusive.^{6,11} Some risk factors such as cigarette smoking and low pre-pregnancy weight affect both gestation length and fetal growth.

This paper will demonstrate the importance of accounting for the association between birth weight and length of gestation when using low birth weight as an indicator.

Methods

Ontario data were used to compare trends in the rates of low birth weight and pre-term birth. Further investigation was completed to examine the effects of multiple births on these trends. Mean birth weight, proportion of births over 3,500g and infant mortality rate were also examined as alternative indicators.

Differences between the health planning regions within Ontario and Census Divisions within the Central East Region were examined. The Ontario Ministry of Health and Long Term Care's former planning regions were used for geographic comparison to reflect CEHIP's current partners (See Appendix 1). To provide more stable rates, Northwestern and Northeastern regions were grouped as the North. Similarly, within Central East Region, Northumberland, Peterborough, Victoria and Haliburton counties were grouped together, as were Muskoka and Parry Sound.

Vital Statistics data contained in the latest edition of the Ontario Ministry of Health Livebirth Database for 1981 to 1996 were used. Only births that occurred within Ontario to mothers who resided in Ontario were included. Live births with a birth weight less than 500g were excluded from the analysis to allow for regional comparisons since the registration of these births as live births or still births varies over time and geography.¹²

For the purpose of this report, traditional low birth weight (LBW) indicates the World Health Organization's definition of an infant who weighs less than 2,500g at birth. Pre-term births are defined as those occurring at less than 37 completed weeks of gestation.

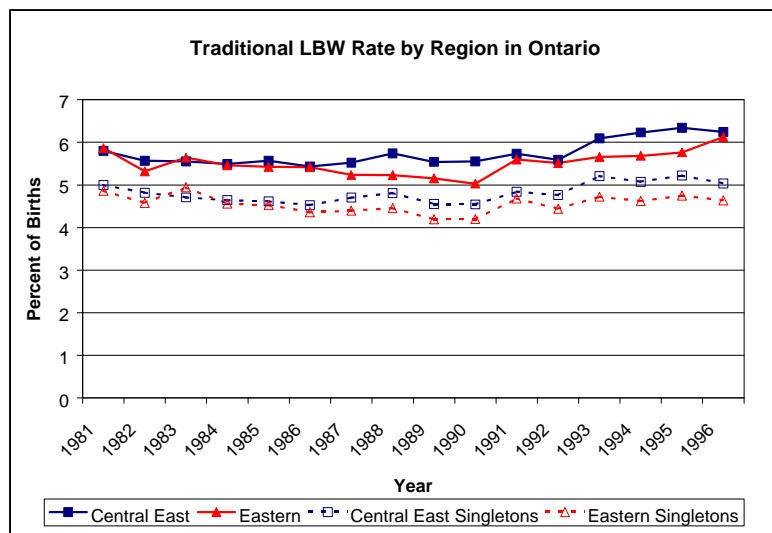
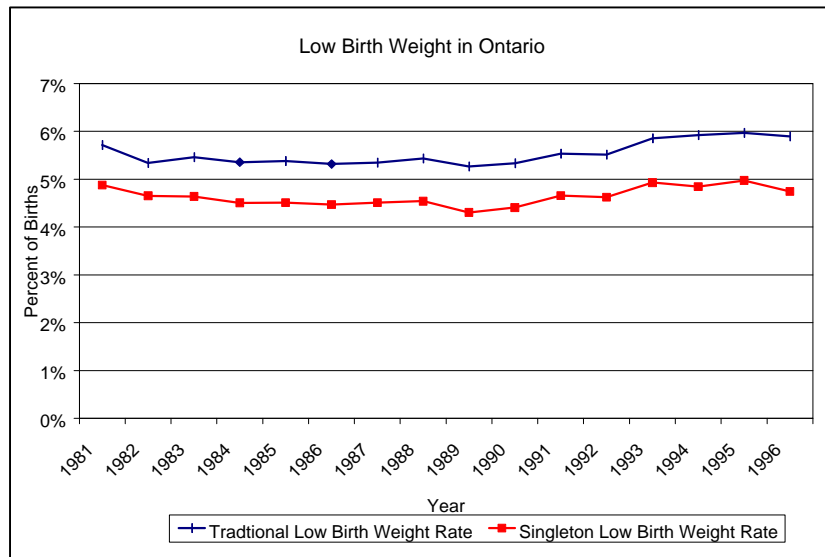
A comparison was made between the former Scarborough Health Department's in-house database for 1994 and 1995 and the Ministry's Livebirth Database. The Scarborough database was created using the Physician Notification of Birth forms which all health units received copies of until early 1996.

Results

Complete tables and graphs of results are included in the figures of Appendix 2. Refer to the Table of Contents for details.

Traditional Low Birth Weight

In Ontario the traditional low birth weight rate remained relatively stable between 1981 and 1989 but showed a gradual increase of 10% between 1989 and 1993. Between 1993 and 1996 the rate again leveled off, remaining at 5.9% in 1996. Since multiple births also showed an increasing trend over this time period, it is logical to examine the trend for singleton births. While removing multiple births caused the low birth weight rate to decrease, the trend did not change substantially. Traditional low birth weight rate showed a similar increasing trend between 1989 and 1993 and again leveled off between 1993 and 1996. The singleton low birth weight rate in 1996 was 4.7%.



When looking at the traditional low birth weight indicator by health planning region, rates again remained relatively stable between 1981 and 1989. Rates then increased for all regions between 1989 and 1993, mirroring the provincial trends. Between 1993 and 1996 rates continued to increase in Central East and Eastern regions but leveled off or decreased in the remaining regions.

As in Ontario, the rate of multiple births increased across all regions between 1981 and 1996. Again, removing multiple births lowered the rates. Similar trends were seen in most regions, but the increases in Central East and Eastern regions between 1993 and 1996 were not seen among singleton births.

Within the Central East Region, increases in the traditional low birth weight rate were evident after 1990 in all Census Divisions except Northumberland/ Peterborough/Victoria/Haliburton where rates were unstable. The rate in Toronto remained the highest in 1996 at 6.8/100 births. However, the rate in York Region increased at the fastest rate averaging 3% per year.

Rates for multiple births increased across all Census Divisions in Central East from 1981 onward. By removing multiple births the low birth weight rate is reduced across all Census Divisions. However, the increase in rates between 1990 and 1996 still remained in Toronto and Peel.

Low Birth Weight Among Full Term Births

By looking at low birth weight among full term infants only, rates in Ontario actually showed a gradual decrease between 1981 and 1989 and then show no changes between 1989 and 1996. Including only singleton full term infants in the analysis lowered the low birth weight rate but did not alter the trend.

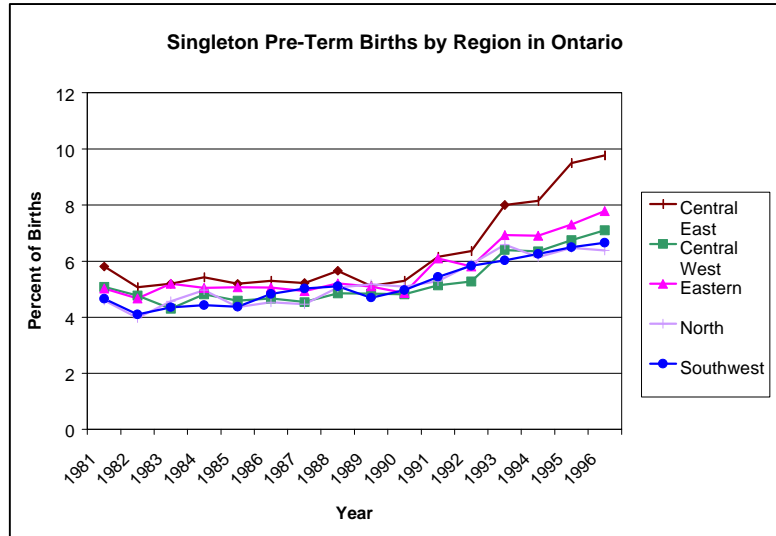
Within the regions, rates for full-term low birth weight infants mirrored the traditional low birth weight rate up until 1993. However, between 1993 and 1996, rates decreased for all regions except for Central East and the North which remained stable. The highest rate was in Central East at 2.6/100 live births in 1996. Among singleton full term infants, low birth weight rates followed similar patterns with overall lower rates. The Central East rate remained the highest at 2.3/100 live births in 1996.

Within Central East region the increase in the full term low birth weight rate between 1989 and 1993 experienced by the region as a whole was seen only in Toronto and Peel. In Peel, the rate continued to increase between 1993 and 1996 whereas in Toronto the rate began to decrease again. However, once again Toronto maintained the highest rate in 1996 at 2.9/100 births. Removing multiple births did not alter these patterns but did lower the rates. Toronto maintained the highest singleton full term low birth weight rate in 1996 at 2.6/100 births.

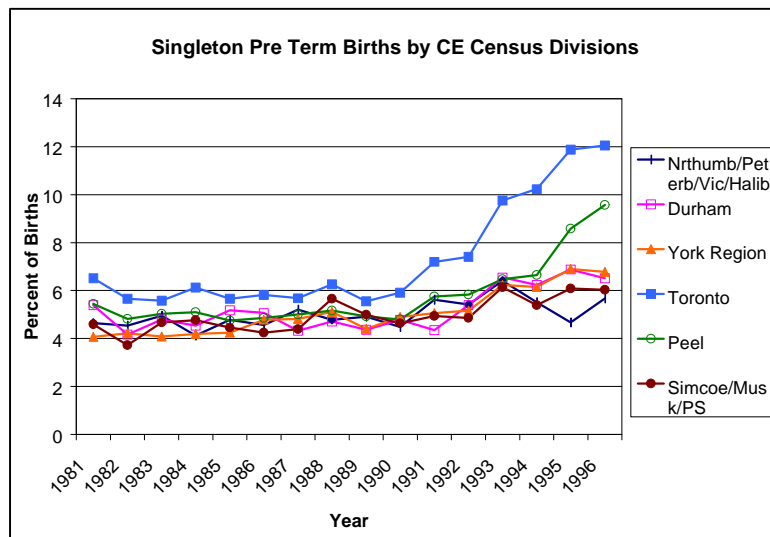
Pre-Term Births

Between 1981 and 1990 the pre-term birth rate in Ontario increased gradually by an average of 0.1% per year. However, between 1990 and 1996 the rate increased sharply, averaging almost 9% per year. The pre-term birth rate in Ontario in 1996 was 9.5%. Removing multiple births lowered the rate and stabilized the increase between 1981 and 1990. The rate of increase between 1990 and 1996 however, was not affected. The singleton pre-term birth rate in Ontario was 8.4% in 1996.

Pre-term rates increased in similar patterns across all five regions. The rate of increase between 1990 and 1996 was greatest in Central East at an average increase of 11% per year. The rate of increase in pre-term births in Central East also appeared to diverge from the other regions after 1992 resulting in a rate of 10.8/100 live births in 1996.



While rates for pre-term birth decreased after removing multiple births from the equation, the trends did not change. All regions continued to show a significant increase in rates between 1990 and 1996, with Central East continuing to show divergence in the rate of increase after 1992. The singleton pre-term birth rate in Central East in 1996 was 8.8/100 live births.



All Central East Census Divisions showed significant increases in the rate of pre term births between 1990 and 1996 after remaining relatively stable prior to 1990. Toronto and York Region showed the greatest rates of increase, at averages of 13% and 12% per year respectively. The rate in Toronto remained well above rates in the remaining Central East Census Divisions in 1996 at 13.0/100 births.

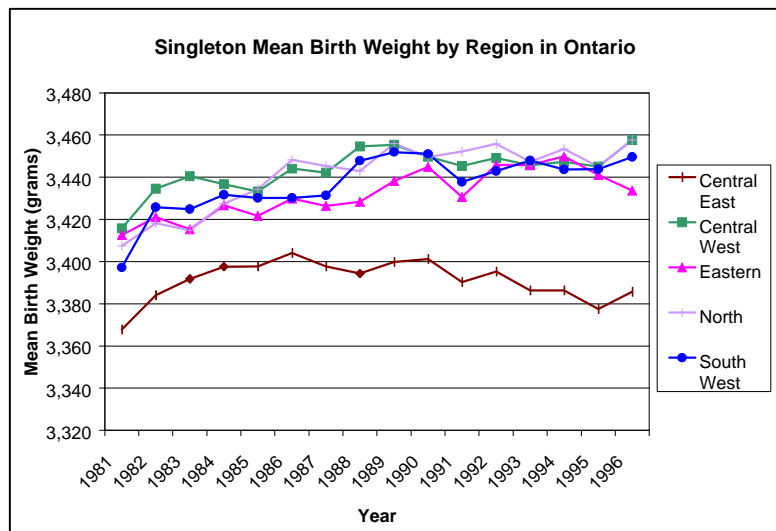
Once again, removing multiple births decreased the rates overall but did not greatly affect the trends. The singleton pre-term birth rates increased in all Census Divisions except Northumberland/Victoria/ Peterborough/ Haliburton between 1990 and 1996. Toronto and Peel continued to show the greatest rates of increase and Toronto maintained the highest rate of singleton pre-term births at 12.1% in 1996.

Mean Birth Weight & Births Over 3,500g

In Ontario mean birth weight increased between 1981 and 1984, remained stable between 1984 and 1992, and showed a very gradual decrease between 1992 and 1996. The mean birth weight in Ontario in 1996 was 3,392g. A similar pattern was seen with births over 3,500g, which

showed a gradual decrease between 1990 and 1996. In 1996, 43.4% of all live born infants weighed over 3,500g.

Both mean birth weight and the proportion of babies born at a weight greater than 3,500g were lower in Central East than in the other regions. In Central East mean birth weight increased between 1981 and 1986 and then leveled out until 1990 when it decreased again. In the other regions, the increase from 1981 continued until 1990 and then rates in these regions leveled out. The mean birth weight in Central East in 1996 was 3,386g. Births weighing more than 3,500g also increased in all regions until 1988 then leveled out with the exception of Central East region which experienced a decrease between 1988 and 1996. In 1996 in Central East region, 41.7% of all live born infants weighed over 3,500g.

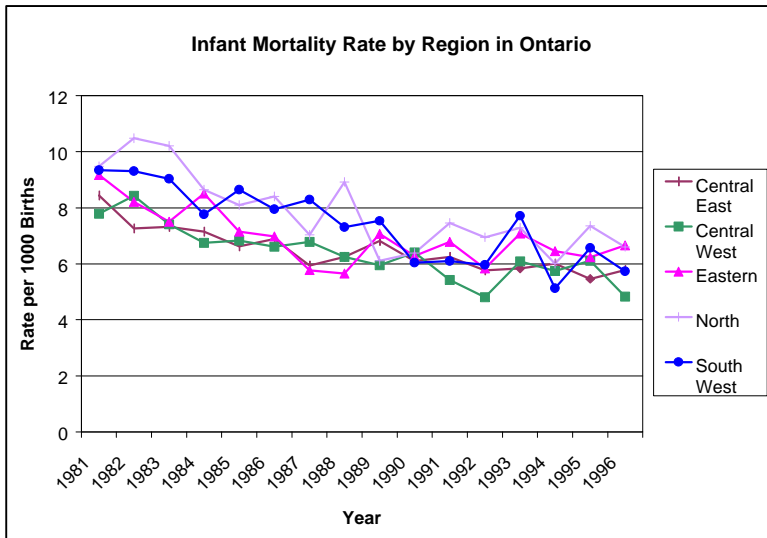


Mean birth weight followed varied trends across the Central East Census Divisions. In 1996, Toronto and Peel had the lowest mean weights at 3,346g and 3,386g respectively. Both CDs showed decreases in rates between 1986 and 1996. York Region and Durham also experienced decreases, however, not until after 1989. While the mean weight in Simcoe/Muskoka/Parry Sound remained relatively stable over this time frame the mean increased in Northumberland/Peterborough/Victoria/Haliburton yielding the highest mean birth weight in 1996 at 3,488g.

Rates for births over 3,500g followed similar trends to mean birth weight in Central East CDs. Decreases in rates were observed in Toronto, Peel, York Region and Durham from 1987 onward. While rates did not change significantly in Simcoe/Muskoka/Parry Sound, the high birth weight rate increased in Northumberland/Peterborough/Victoria/Haliburton from 1981 onward.

Infant Mortality

Infant mortality in Ontario decreased steadily from 1981 onward. The rate of decrease slowed between 1990 and 1996 but still decreased on average by over 1% per year. Trends for the rates within the regions mirrored those seen in the province as a whole despite fluctuation related to small numbers. Infant mortality rates were similar across all regions with a low of 5.6 deaths/1000 births in Central West region and a high of 6.7 deaths/1000 births in the North region for 1994 to 1996 combined.



Within Central East, trends by Census Division showed even more fluctuations due to small numbers and unstable rates. Overall, patterns were similar to those seen in the province as a whole and in the regions.

Data Quality Issues

Scarborough’s in-house database contained almost the same number of records of livebirths to residents of the former city of Scarborough in 1994 and 1995 as the Ministry’s database. Calculations for proportion of low birth weight and multiple births were very similar for each database. The calculation for proportion of pre-term births, however, was over 50% higher using the Ministry’s database.

Comparison of Scarborough’s In-House Database to Ministry of Health Livebirth Database

	Scarborough Database			Ontario Ministry of Health Livebirth Database		
	Number	Rate/100*	Missing	Number	Rate/100*	Missing
Total Live Births	16,653	-	-	16,657	-	-
Birth Weight <2,500g	1,211	7.35	160	1,214	7.28	52
Pre-Term Births	1,234	7.41	88	1,875	11.26	75
Full-Term <2,500g	446	2.93	129	457	3.11	28
Multiple Births	393	2.36	40	390	2.34	0
Births <500g	13	-	-	11	-	-
Stillbirths	113	-	-	98	-	-

*Rate/100 Live Births (Including those <500g)

It is not known which database provides a more accurate picture. The differences indicate that data based on the Physician Notification of Birth forms, as in the Scarborough database, are different than data based on the parent’s Statement of Live Birth form, as in the Ministry’s database. Prior to 1990 the Ministry’s database, produced by the Ontario Registrar General, also used data from the Physician Notification of Birth forms.

Discussion

The low birth weight rate in Ontario is following a similar upward trend to that seen throughout many of the Canadian provinces and in Canada as a whole.¹ In Ontario, much of this increase can be accounted for by the coinciding increase in pre-term births since low birth weight among full-term infants in Ontario remained relatively stable. The increasing pre-term rate in Ontario has also been found in the rest of Canada.¹³ In Ontario it is currently not known how much of this increase might be explained by data quality issues. Data entry practices of the Ontario Registrar General changed at some point between 1990 and 1991, particularly around the gestational age field. Accuracy of the gestational age field in the Ontario Ministry of Health's Livebirth database has been questioned and is currently being investigated. Comparison of the ORG data with Scarborough's in-house database of Physician Notification of Birth forms suggests that this effect may be substantial. However, the similarities in full-term low birth weight rates from the two databases further strengthen the argument that this variable better represents the low birth weight issue in Ontario.

Differences were also found among Ontario planning regions and among Census Divisions within the Central East planning region. Of note, Central East stands out among the regions as having higher rates for low birth weight and pre-term births as well as greater increases over time. Within Central East the Census Division of Toronto demonstrates the highest rates and greatest increases, although Peel also shows patterns of increase higher than the remaining Central East Census Divisions. Again without knowing the effect of the data quality issues it is difficult to hypothesize reasons for these geographic variations.

Mean birth weight and births greater than 3,500g are alternate indicators that show similar patterns to the low birth weight rate. These indicators seem to more clearly demonstrate the smaller area variation such as the differences between the Central East region and the other Ontario regions. They do not, however, take into account the differences between pre-term births and growth retarded births.

Infant mortality provides useful information to augment pre-term birth and low birth weight indicators. While rates for these indicators generally remained stable or increased over the study period, the infant mortality rate continued to decrease. This raises the question as to whether pre-term birth and low birth weight currently have as great an effect on infant mortality as they did in the past. This possibility requires further investigation.

The literature provides some suggestions as to why pre-term births are increasing in Canada including; increases in multiple births (addressed in this analysis), increases in obstetric intervention such as induction of pre-term labour and pre-term cesarean sections, greater registration of extremely early-gestation births (20-27 weeks) and increases in the use of ultrasound-based estimates of gestational age.^{14,15} Further study is required to investigate these possibilities in Ontario and to examine the geographic variation within the province. Prior to this however, current data quality problems must be addressed.

Despite the problems related to the gestational age variable, this report demonstrates the importance of accounting for the association between birth weight and length of gestation when using the low birth weight indicator. Low birth weight among full term infants, and pre-term birth should be examined as separate indicators from traditional low birth weight to account for this association. Furthermore, it is recommended that multiple births be excluded to help standardize rates for comparison over time and geography, since this has been shown to affect pre-term and low birth weight rates. Finally, these findings should be taken into account when choosing indicators to measure both population health status and the success of public health programs.

Appendix 1: Geography of Health Planning Region

Former Health Planning Region	Census Division(s)
Central East	Durham Regional Municipality
	Haliburton County, Northumberland County, Peterborough County & Victoria County
	Muskoka District Municipality & Parry Sound District
	Peel Regional Municipality
	Simcoe County
	Toronto Metropolitan Municipality
	York Regional Municipality
Central West	Brant County
	Dufferin County
	Haldimand-Norfolk Regional Municipality
	Halton Regional Municipality
	Hamilton-Wentworth Regional Municipality
	Niagara Regional Municipality
	Waterloo Regional Municipality
	Wellington County
Eastern	Frontenac County
	Hastings County
	Lanark County
	Leeds and Grenville United Counties
	Lennox and Addington County
	Ottawa-Carleton Regional Municipality
	Prescott and Russell United Counties
	Prince Edward County
	Renfrew County
	Stormont, Dundas and Glengarry United Counties
Northeastern	Algoma District
	Cochrane District
	Manitoulin District
	Nipissing District
	Sudbury District
	Sudbury Regional Municipality
	Timiskaming District
Northwestern	Kenora District
	Rainy River District
	Thunder Bay District
Southwest	Bruce County
	Elgin County
	Essex County
	Grey County
	Huron County
	Kent County
	Lambton County
	Middlesex County
	Oxford County
	Perth County

Figure 1: Low Birth Weight, LBW among Full Term Births, Pre-Term Births and Multiple Births in Ontario

Year of Birth	# LBW	Rate/100 Births	# Full-Term LBW	Rate/100 Births	# Pre-Term	Rate/100 Births	# Multiple	Rate/100 Births
1981	6,960	5.71%	3,096	2.54%	7,141	5.86%	2,196	1.80%
1982	6,649	5.34%	2,886	2.32%	6,554	5.26%	2,153	1.73%
1983	6,903	5.46%	2,895	2.29%	6,959	5.50%	2,505	1.98%
1984	7,009	5.35%	2,853	2.18%	7,536	5.76%	2,655	2.03%
1985	7,089	5.38%	2,853	2.16%	7,418	5.63%	2,659	2.02%
1986	7,094	5.31%	2,862	2.14%	7,593	5.69%	2,588	1.94%
1987	7,173	5.35%	2,901	2.16%	7,700	5.74%	2,719	2.03%
1988	7,478	5.43%	2,862	2.08%	8,441	6.13%	2,834	2.06%
1989	7,633	5.27%	2,904	2.00%	8,537	5.89%	3,224	2.22%
1990	8,022	5.33%	3,014	2.00%	8,909	5.92%	3,228	2.14%
1991	8,223	5.53%	3,234	2.17%	9,806	6.49%	2,950	1.95%
1992	8,261	5.51%	3,066	2.05%	10,237	6.81%	3,052	2.03%
1993	8,611	5.85%	3,285	2.23%	11,804	8.01%	2,921	1.98%
1994	8,674	5.92%	3,163	2.16%	12,072	8.23%	3,443	2.35%
1995	8,675	5.97%	3,196	2.20%	13,223	9.06%	3,477	2.38%
1996	8,223	5.89%	2,870	2.06%	13,251	9.49%	3,599	2.58%

LBW, Full Term LBW, Pre-Term and Multiple Births

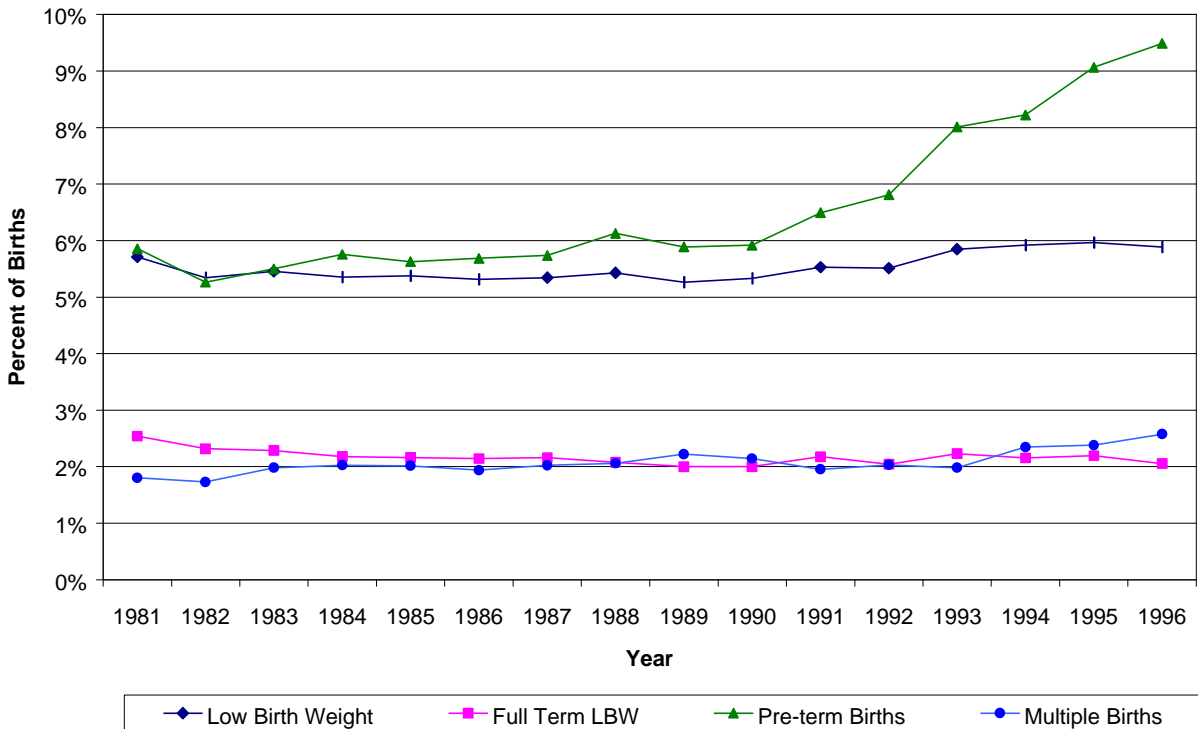


Figure 2: Singleton Low Birth Weight, LBW among Full Term Births, Pre-Term Births and Multiple Births in Ontario

Year of Birth	# LBW	Rate/100 Births	# Full Term LBW	Rate/100 Births	# Pre-Term	Rate/100 Births
1981	5,837	4.88%	2,669	2.23%	6,311	5.27%
1982	5,692	4.65%	2,526	2.07%	5,761	4.71%
1983	5,750	4.64%	2,471	1.99%	6,002	4.84%
1984	5,777	4.50%	2,439	1.90%	6,508	5.07%
1985	5,825	4.51%	2,471	1.91%	6,293	4.87%
1986	5,848	4.47%	2,423	1.85%	6,568	5.02%
1987	5,926	4.51%	2,535	1.93%	6,528	4.97%
1988	6,123	4.54%	2,502	1.86%	7,187	5.33%
1989	6,103	4.31%	2,475	1.75%	7,101	5.01%
1990	6,489	4.41%	2,557	1.74%	7,519	5.11%
1991	6,777	4.66%	2,816	1.93%	8,448	5.80%
1992	6,785	4.63%	2,690	1.83%	8,771	5.98%
1993	7,102	4.93%	2,883	2.00%	10,392	7.21%
1994	6,918	4.85%	2,702	1.89%	10,378	7.27%
1995	7,032	4.97%	2,743	1.94%	11,458	8.10%
1996	6,430	4.74%	2,474	1.82%	11,385	8.40%

Singleton LBW, Full Term LBW and Pre-Term Births

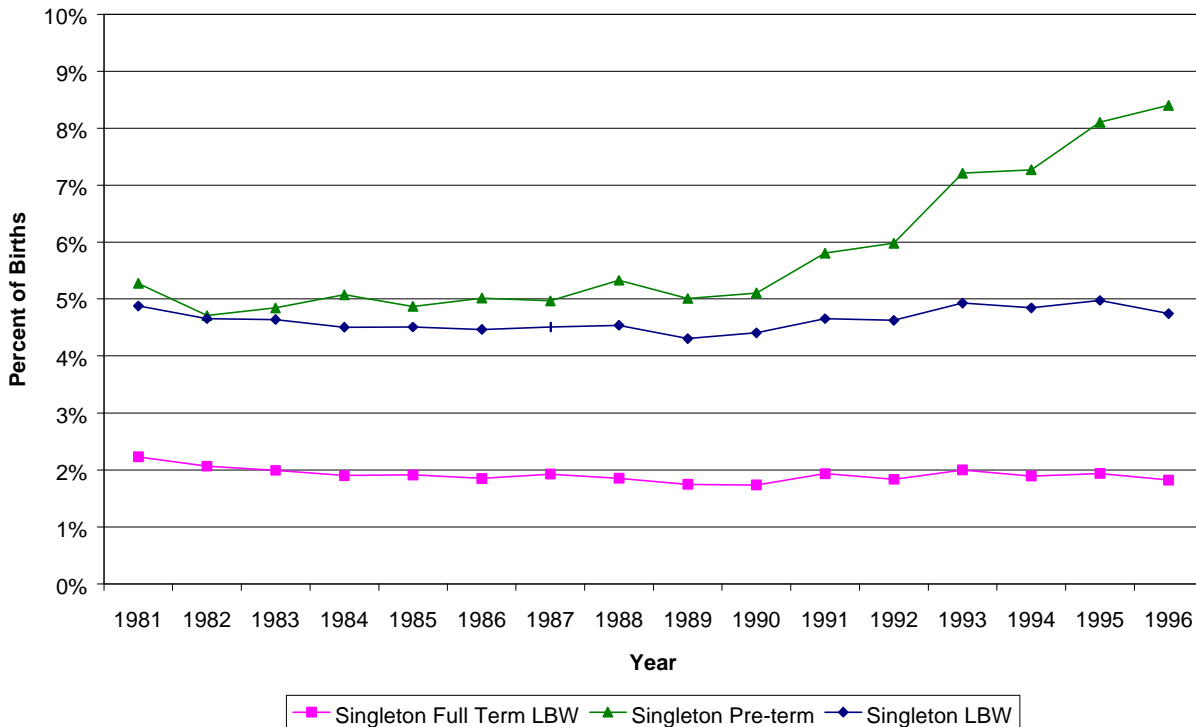


Figure 3: Mean Birth Weight and Births >3,500g in Ontario

Year of Birth	# >3,500g	Rate/100 Births	Mean Weight
1981	71,077	41.67%	3,374
1982	70,886	43.04%	3,392
1983	71,709	43.29%	3,393
1984	73,578	43.79%	3,398
1985	74,243	43.68%	3,396
1986	74,390	44.27%	3,404
1987	75,044	44.07%	3,399
1988	76,848	44.19%	3,401
1989	80,736	44.31%	3,405
1990	83,829	44.29%	3,405
1991	83,372	43.92%	3,397
1992	83,309	44.40%	3,402
1993	82,371	44.03%	3,398
1994	82,531	43.66%	3,395
1995	82,834	43.03%	3,388
1996	79,095	43.35%	3,392

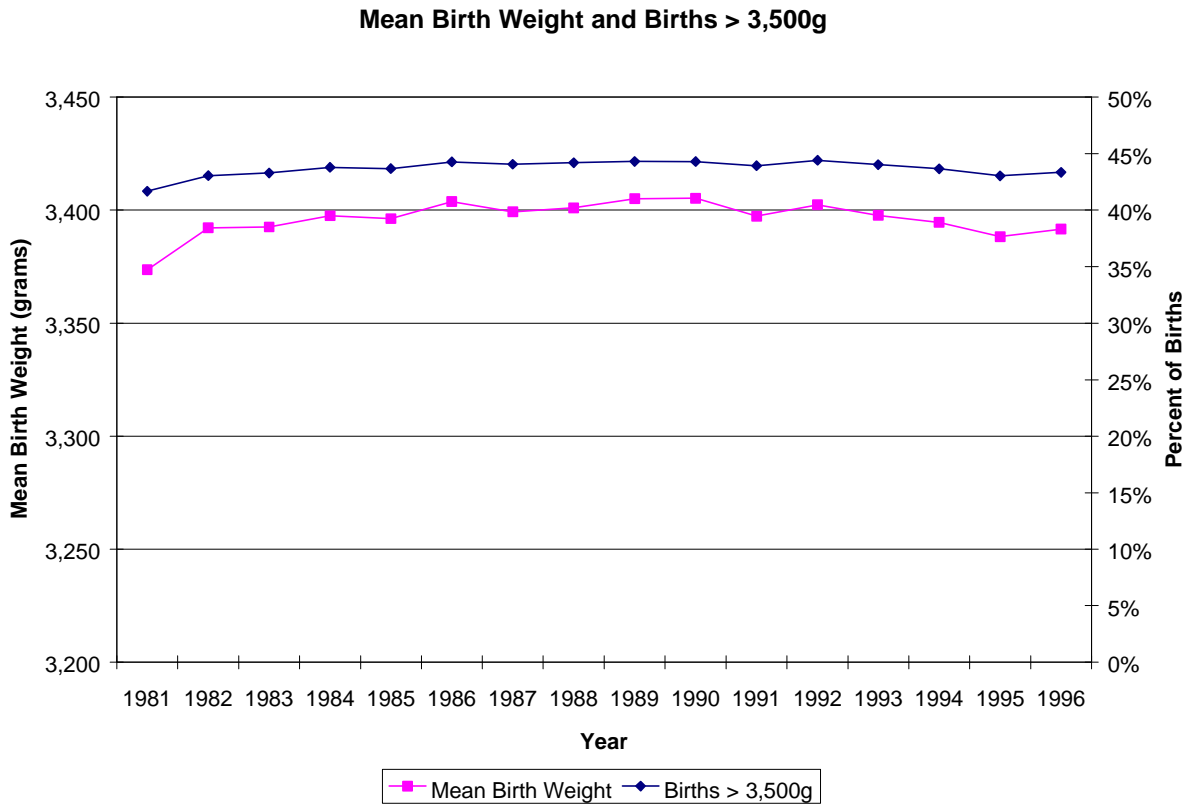


Figure 4: Infant Mortality Rate in Ontario

Year of Birth	# Deaths	# Births	Rate/1,000
1981	1,054	121,938	8.64
1982	1,024	124,569	8.22
1983	997	126,544	7.88
1984	979	130,985	7.47
1985	943	131,892	7.15
1986	951	133,558	7.12
1987	871	134,266	6.49
1988	898	137,754	6.52
1989	974	145,021	6.72
1990	939	150,555	6.24
1991	942	151,159	6.23
1992	872	150,317	5.80
1993	947	147,544	6.42
1994	864	146,839	5.88
1995	865	146,036	5.92
1996	797	139,781	5.70

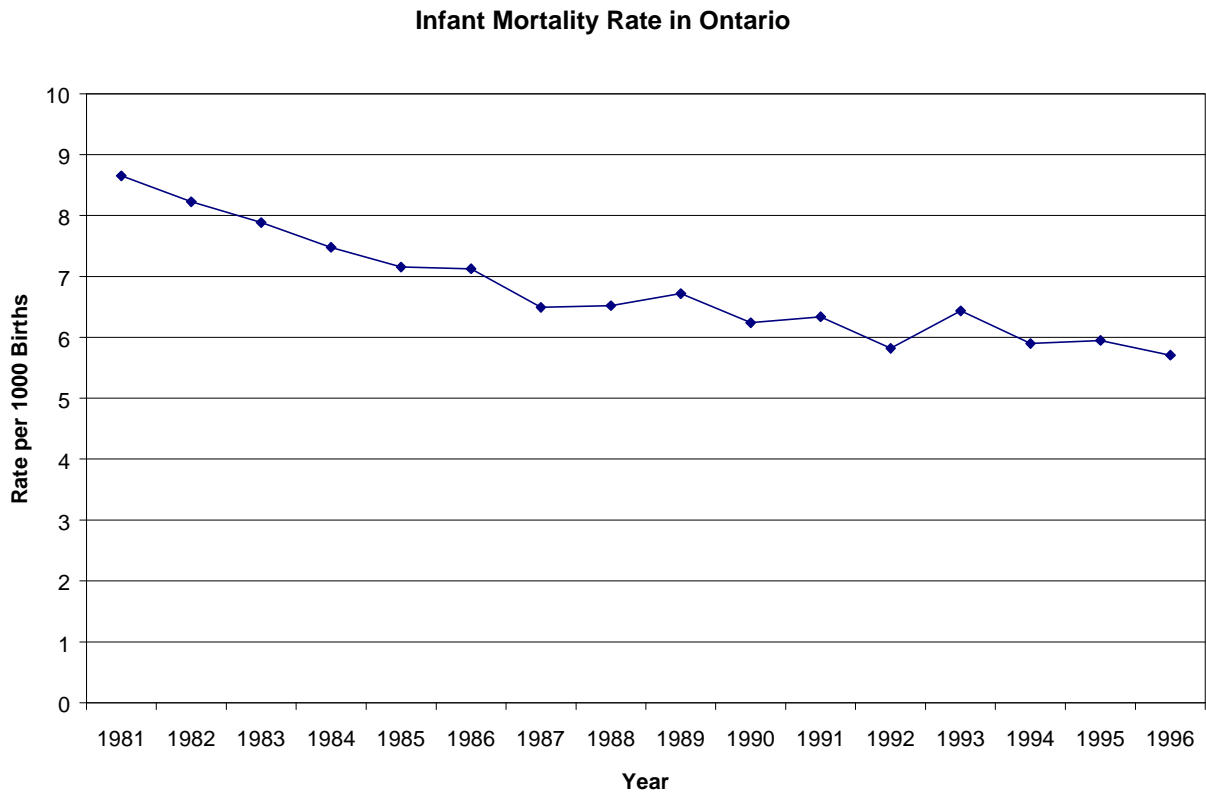


Figure 5: Traditional Low Birth Weight by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	3,014	5.80	1,290	5.49	921	5.87	1,052	5.71	679	5.55
1982	2,998	5.57	1,190	4.99	849	5.32	970	5.19	638	5.27
1983	3,057	5.56	1,182	4.92	947	5.64	1,028	5.49	679	5.73
1984	3,150	5.49	1,254	5.03	950	5.46	986	5.14	658	5.47
1985	3,255	5.57	1,279	5.11	949	5.43	1,019	5.34	580	4.94
1986	3,264	5.43	1,303	5.10	971	5.42	970	5.21	579	5.13
1987	3,396	5.52	1,316	5.10	916	5.23	994	5.35	548	5.07
1988	3,683	5.74	1,320	5.02	935	5.23	980	5.26	553	5.14
1989	3,750	5.54	1,381	4.95	963	5.16	976	5.03	556	4.92
1990	3,936	5.55	1,434	5.08	985	5.03	1,059	5.24	561	5.11
1991	3,976	5.73	1,424	5.05	1,090	5.60	1,080	5.54	576	5.24
1992	3,968	5.59	1,489	5.34	1,106	5.52	1,120	5.70	548	5.01
1993	4,307	6.09	1,482	5.47	1,110	5.66	1,109	5.78	588	5.64
1994	4,408	6.23	1,521	5.60	1,092	5.68	1,089	5.69	550	5.41
1995	4,470	6.34	1,438	5.42	1,081	5.77	1,091	5.73	543	5.55
1996	4,314	6.24	1,333	5.11	1,068	6.13	989	5.55	520	5.63

Traditional LBW Rate by Region in Ontario

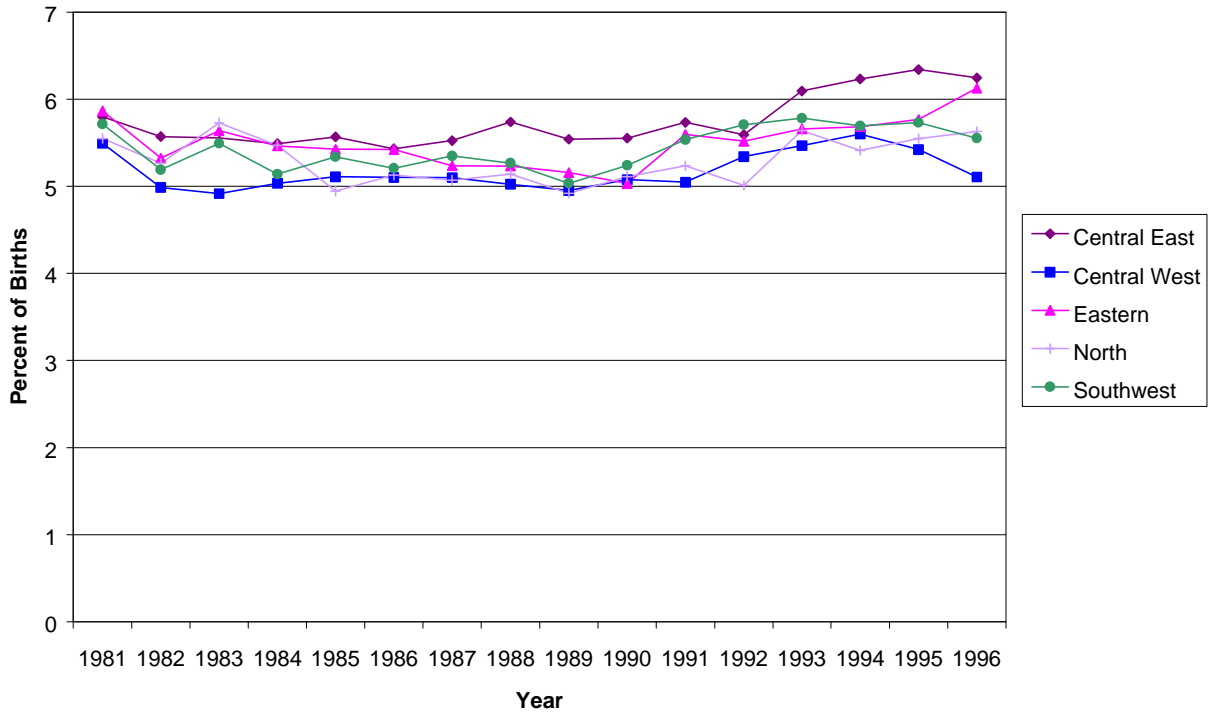


Figure 6: Low Birth Weight among Full Term Births by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	1,379	2.83	514	2.32	405	2.73	463	2.65	334	2.87
1982	1,289	2.54	504	2.23	333	2.20	429	2.41	327	2.82
1983	1,303	2.51	464	2.03	408	2.58	426	2.40	293	2.61
1984	1,296	2.40	486	2.06	392	2.39	409	2.25	270	2.38
1985	1,320	2.40	493	2.08	383	2.33	412	2.28	245	2.20
1986	1,361	2.41	505	2.09	382	2.27	366	2.08	248	2.31
1987	1,396	2.41	510	2.09	373	2.26	365	2.09	257	2.51
1988	1,440	2.40	482	1.95	361	2.15	347	1.98	232	2.29
1989	1,486	2.33	491	1.87	355	2.02	345	1.89	226	2.13
1990	1,505	2.26	544	2.04	362	1.96	375	1.97	215	2.08
1991	1,624	2.52	539	2.03	390	2.16	400	2.19	236	2.29
1992	1,524	2.31	556	2.13	391	2.10	379	2.07	196	1.92
1993	1,694	2.63	515	2.05	446	2.47	399	2.24	220	2.28
1994	1,658	2.59	496	1.97	384	2.18	408	2.30	198	2.10
1995	1,631	2.60	521	2.13	414	2.42	380	2.16	207	2.29
1996	1,580	2.58	420	1.76	338	2.14	321	1.96	188	2.20

LBW Rate Among Full-Term Births by Region in Ontario

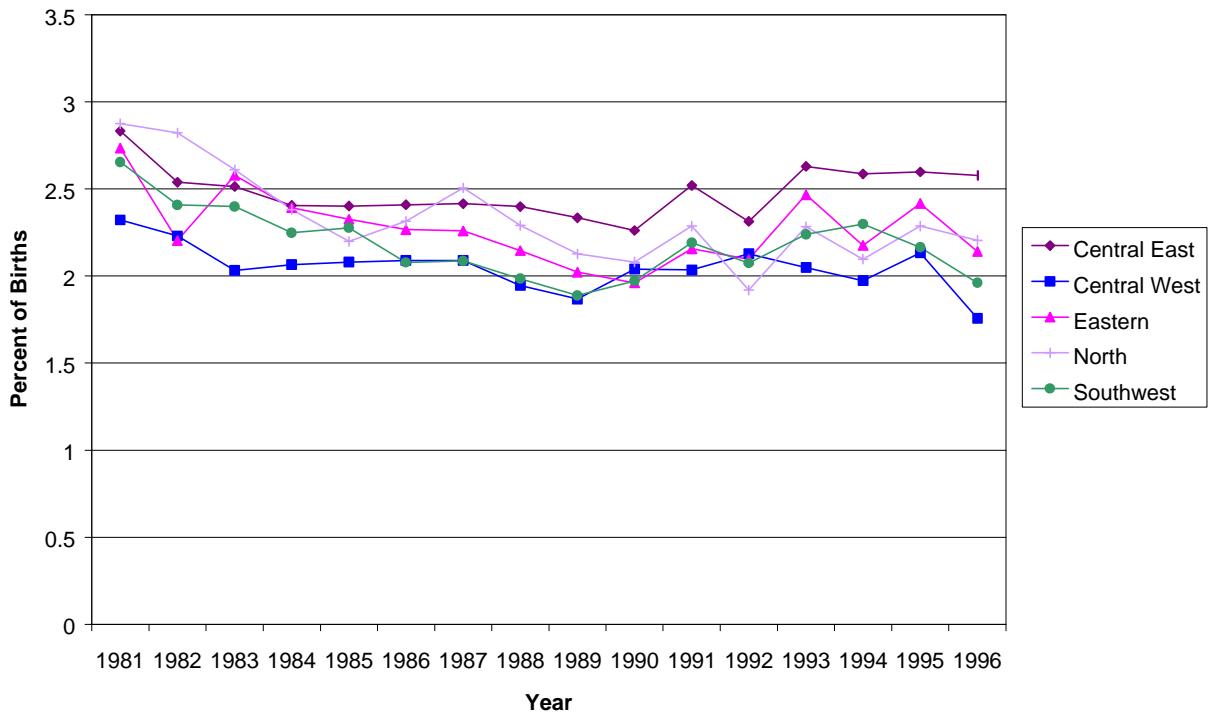


Figure 7: Pre-Term Birth Rate by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	3,289	6.33	1,355	5.77	893	5.69	971	5.27	621	5.07
1982	3,041	5.65	1,260	5.28	840	5.27	866	4.63	527	4.35
1983	3,185	5.79	1,204	5.01	960	5.72	961	5.13	626	5.28
1984	3,482	6.07	1,367	5.49	1,000	5.75	988	5.15	685	5.70
1985	3,489	5.97	1,335	5.33	1,015	5.80	984	5.16	586	4.99
1986	3,571	5.94	1,372	5.37	1,050	5.86	1,006	5.40	580	5.13
1987	3,664	5.96	1,388	5.38	992	5.67	1,092	5.88	549	5.08
1988	4,139	6.45	1,493	5.68	1,050	5.87	1,125	6.04	626	5.82
1989	4,030	5.95	1,599	5.73	1,116	5.98	1,112	5.73	673	5.96
1990	4,340	6.12	1,569	5.55	1,106	5.65	1,194	5.91	634	5.78
1991	4,750	6.86	1,697	6.02	1,359	6.98	1,228	6.30	663	6.04
1992	5,002	7.05	1,725	6.19	1,376	6.87	1,340	6.83	712	6.51
1993	6,157	8.72	1,943	7.17	1,515	7.73	1,346	7.02	780	7.49
1994	6,436	9.12	1,993	7.34	1,527	7.96	1,347	7.05	703	6.93
1995	7,342	10.47	2,000	7.57	1,560	8.34	1,431	7.54	707	7.24
1996	7,439	10.82	2,101	8.07	1,601	9.21	1,411	7.93	686	7.44

Pre-Term Birth Rate by Region in Ontario

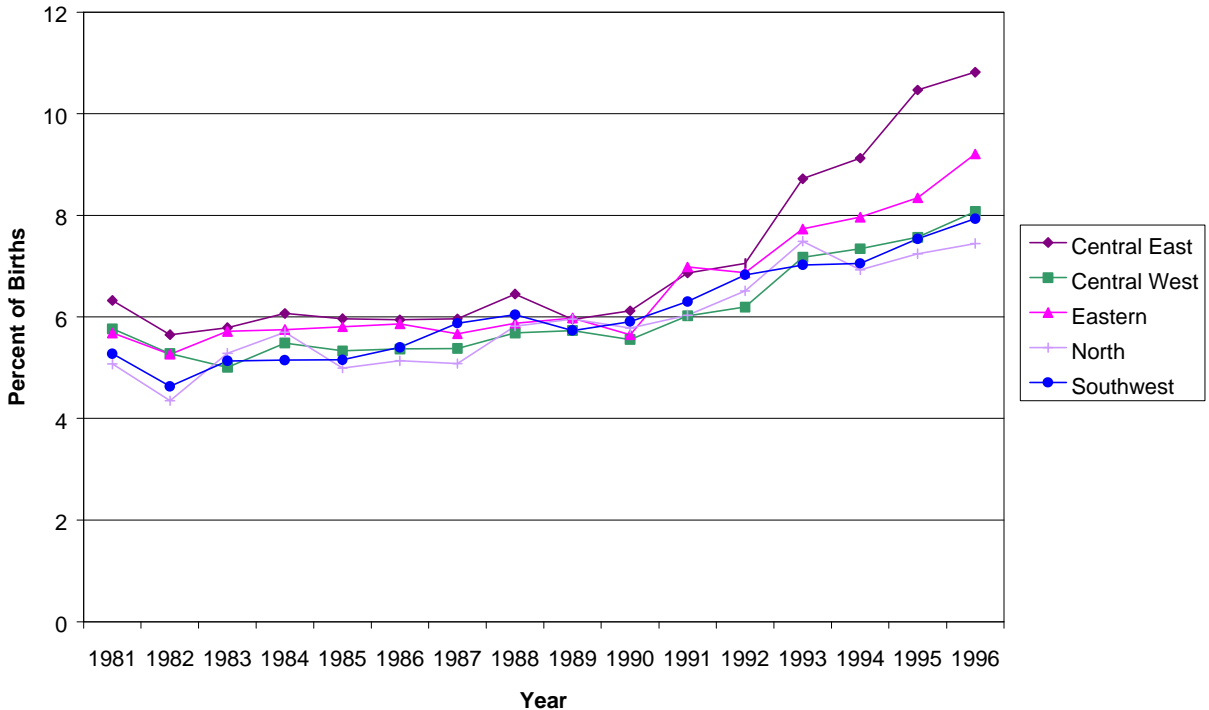


Figure 8: Multiple Birth Rate by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	921	1.77	457	1.95	298	1.90	331	1.80	186	1.52
1982	947	1.76	395	1.66	288	1.81	333	1.78	181	1.49
1983	1,121	2.04	495	2.06	288	1.71	376	2.01	216	1.82
1984	1,208	2.11	511	2.05	325	1.87	377	1.96	229	1.90
1985	1,234	2.11	516	2.06	346	1.98	367	1.92	195	1.66
1986	1,165	1.94	533	2.09	387	2.16	307	1.65	194	1.72
1987	1,191	1.94	601	2.33	360	2.06	373	2.01	190	1.76
1988	1,294	2.02	628	2.39	308	1.72	390	2.10	213	1.98
1989	1,454	2.15	636	2.28	392	2.10	491	2.53	248	2.20
1990	1,563	2.20	622	2.20	375	1.92	470	2.33	188	1.71
1991	1,398	2.02	598	2.12	362	1.86	368	1.89	191	1.74
1992	1,405	1.98	546	1.96	432	2.16	447	2.28	201	1.84
1993	1,378	1.95	526	1.94	372	1.90	419	2.18	217	2.08
1994	1,722	2.43	639	2.35	428	2.23	441	2.31	206	2.03
1995	1,713	2.43	608	2.29	426	2.27	495	2.60	185	1.89
1996	1,768	2.56	660	2.53	472	2.71	455	2.55	216	2.34

Multiple Birth Rate by Region in Ontario

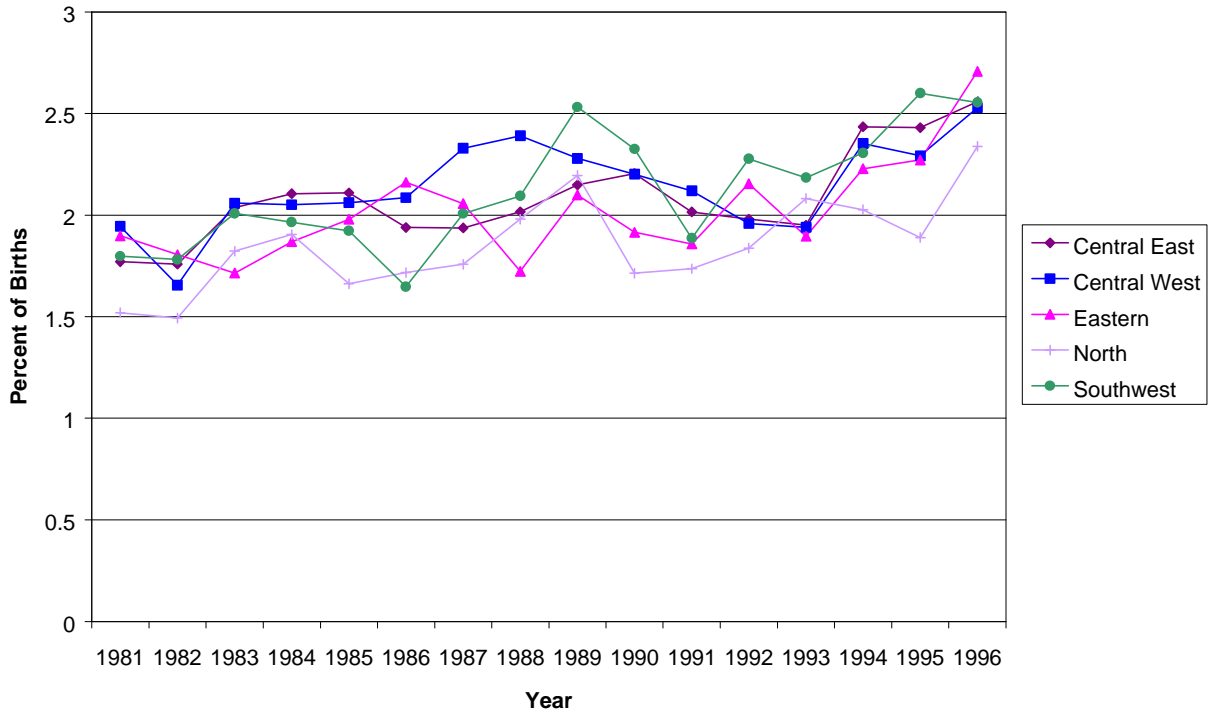


Figure 9: Singleton Low Birth Weight Rate by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	2,553	5.00	1,057	4.59	749	4.86	867	4.79	582	4.83
1982	2,548	4.82	1,027	4.38	717	4.58	814	4.43	542	4.54
1983	2,538	4.71	943	4.00	816	4.94	845	4.61	564	4.85
1984	2,607	4.64	1,014	4.16	778	4.56	797	4.24	542	4.60
1985	2,643	4.62	1,038	4.23	777	4.53	830	4.43	488	4.23
1986	2,668	4.53	1,066	4.26	763	4.35	824	4.50	484	4.36
1987	2,834	4.70	1,035	4.11	753	4.39	804	4.41	459	4.32
1988	3,026	4.81	1,031	4.02	783	4.46	771	4.23	464	4.40
1989	3,016	4.55	1,086	3.98	766	4.19	755	3.99	436	3.95
1990	3,149	4.54	1,157	4.19	806	4.20	832	4.21	469	4.35
1991	3,289	4.84	1,128	4.08	895	4.68	889	4.64	465	4.30
1992	3,313	4.76	1,198	4.38	871	4.44	885	4.61	465	4.33
1993	3,609	5.21	1,213	4.56	909	4.72	882	4.70	478	4.68
1994	3,502	5.08	1,195	4.51	868	4.62	888	4.75	452	4.54
1995	3,591	5.22	1,143	4.41	871	4.75	841	4.54	458	4.77
1996	3,391	5.04	1,018	4.00	787	4.64	748	4.31	406	4.50

Singleton Low Birth Weight by Region in Ontario

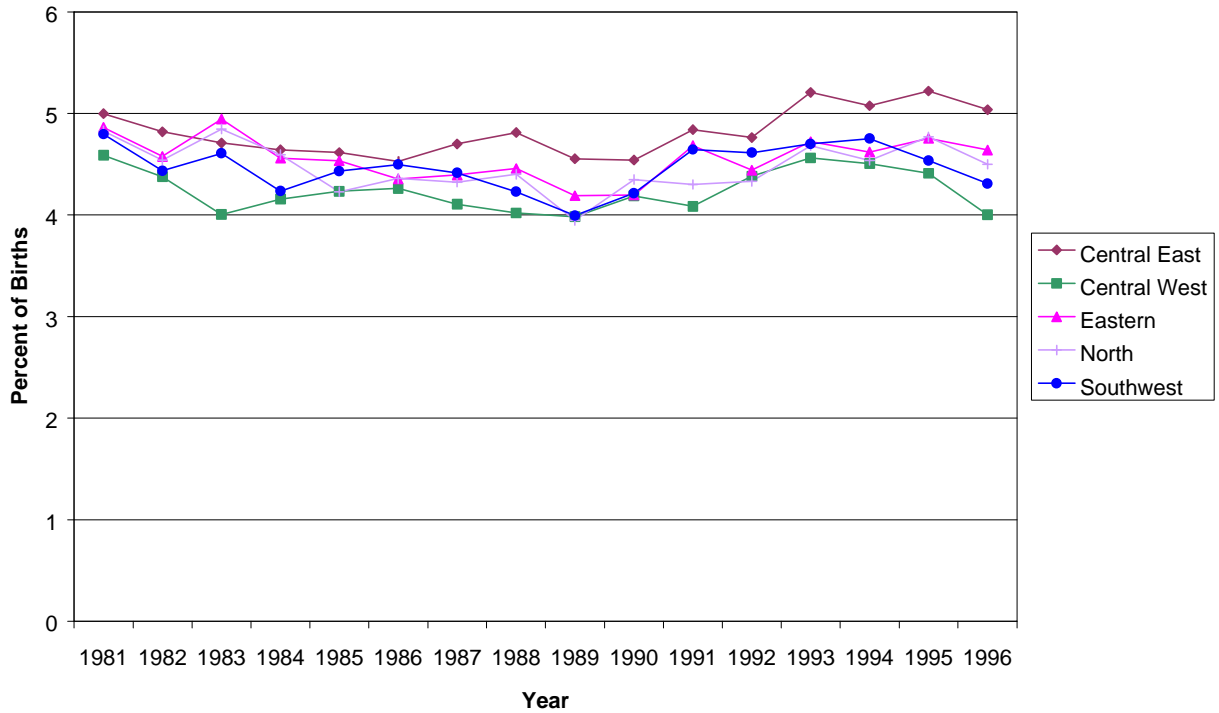


Figure 10: Singleton Low Birth Weight Rate among Pre-Term Births by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	1,205	2.50	438	2.00	341	2.33	390	2.26	295	2.57
1982	1,140	2.27	445	1.99	292	1.96	372	2.11	277	2.42
1983	1,102	2.16	384	1.70	353	2.26	376	2.14	255	2.30
1984	1,113	2.10	411	1.77	339	2.09	343	1.91	233	2.08
1985	1,136	2.09	427	1.83	323	1.99	362	2.02	223	2.02
1986	1,143	2.05	435	1.82	308	1.85	324	1.86	213	2.01
1987	1,239	2.17	431	1.79	320	1.96	317	1.83	228	2.25
1988	1,262	2.13	410	1.68	314	1.89	306	1.77	210	2.10
1989	1,262	2.01	421	1.62	305	1.76	301	1.67	185	1.77
1990	1,258	1.92	465	1.77	314	1.72	317	1.69	191	1.87
1991	1,413	2.22	465	1.78	352	1.96	352	1.95	208	2.03
1992	1,343	2.06	502	1.94	341	1.85	324	1.79	172	1.70
1993	1,503	2.36	447	1.80	389	2.17	352	2.00	189	1.98
1994	1,427	2.26	426	1.72	331	1.90	350	2.00	166	1.78
1995	1,401	2.26	439	1.82	374	2.21	324	1.87	188	2.10
1996	1,372	2.27	336	1.43	288	1.85	278	1.72	158	1.88

Singleton LBW among Full Term Births by Region in Ontario

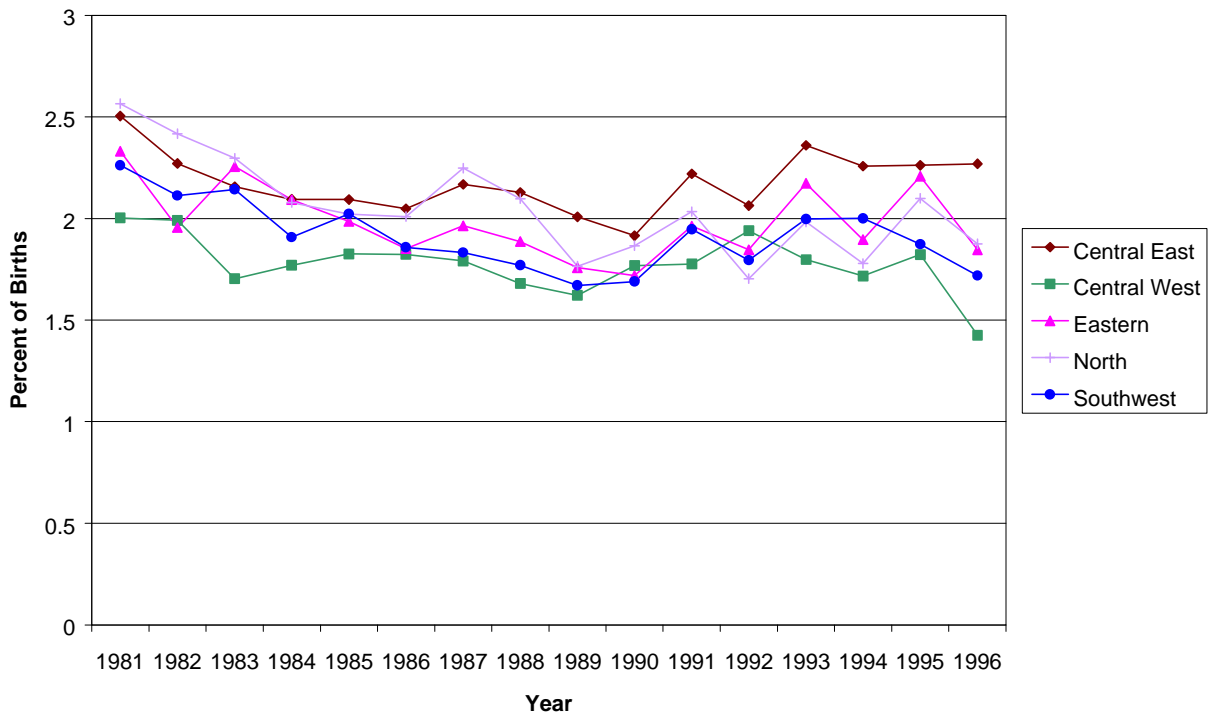


Figure 11: Singleton Pre-Term Rate by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	2,965	5.81	1,171	5.08	774	5.02	842	4.66	555	4.60
1982	2,681	5.07	1,120	4.77	732	4.67	753	4.10	474	3.97
1983	2,796	5.19	1,013	4.30	858	5.20	799	4.36	532	4.57
1984	3,044	5.42	1,175	4.82	861	5.05	834	4.43	586	4.97
1985	2,970	5.19	1,125	4.59	869	5.07	819	4.37	504	4.37
1986	3,122	5.30	1,167	4.67	886	5.06	885	4.83	503	4.53
1987	3,149	5.22	1,144	4.54	845	4.93	914	5.02	474	4.46
1988	3,556	5.66	1,245	4.85	915	5.21	931	5.11	533	5.05
1989	3,387	5.11	1,319	4.84	932	5.10	888	4.70	572	5.18
1990	3,674	5.30	1,331	4.82	934	4.86	981	4.97	550	5.10
1991	4,171	6.15	1,419	5.14	1,164	6.10	1,040	5.44	571	5.29
1992	4,418	6.36	1,439	5.27	1,139	5.81	1,118	5.83	632	5.89
1993	5,540	8.00	1,699	6.40	1,333	6.93	1,130	6.03	672	6.59
1994	5,606	8.15	1,682	6.35	1,295	6.91	1,167	6.25	611	6.14
1995	6,498	9.50	1,741	6.74	1,334	7.30	1,201	6.49	620	6.47
1996	6,543	9.77	1,799	7.09	1,317	7.78	1,154	6.66	574	6.38

Singleton Pre-Term Births by Region in Ontario

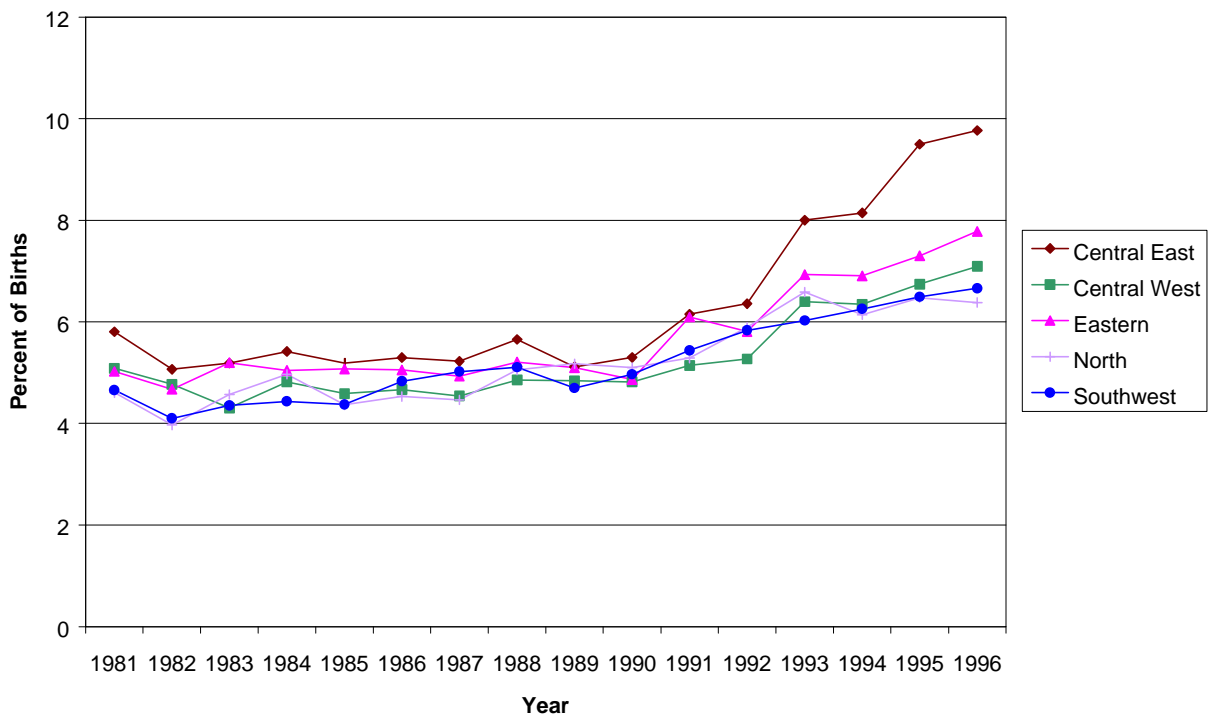


Figure 12: Mean Birth Weight by Region in Ontario

Year of Birth	Central East	Central West	Eastern	South-West	North
1981	3,368	3,416	3,413	3,397	3,407
1982	3,384	3,435	3,421	3,426	3,418
1983	3,392	3,441	3,415	3,425	3,415
1984	3,398	3,437	3,427	3,432	3,427
1985	3,398	3,433	3,422	3,430	3,434
1986	3,404	3,444	3,430	3,430	3,448
1987	3,398	3,442	3,426	3,431	3,445
1988	3,394	3,455	3,428	3,448	3,443
1989	3,400	3,455	3,438	3,452	3,456
1990	3,401	3,450	3,445	3,451	3,450
1991	3,390	3,445	3,431	3,438	3,452
1992	3,395	3,449	3,446	3,443	3,456
1993	3,386	3,446	3,446	3,448	3,447
1994	3,386	3,447	3,450	3,444	3,453
1995	3,378	3,445	3,441	3,444	3,445
1996	3,386	3,458	3,434	3,450	3,458

Singleton Mean Birth Weight by Region in Ontario

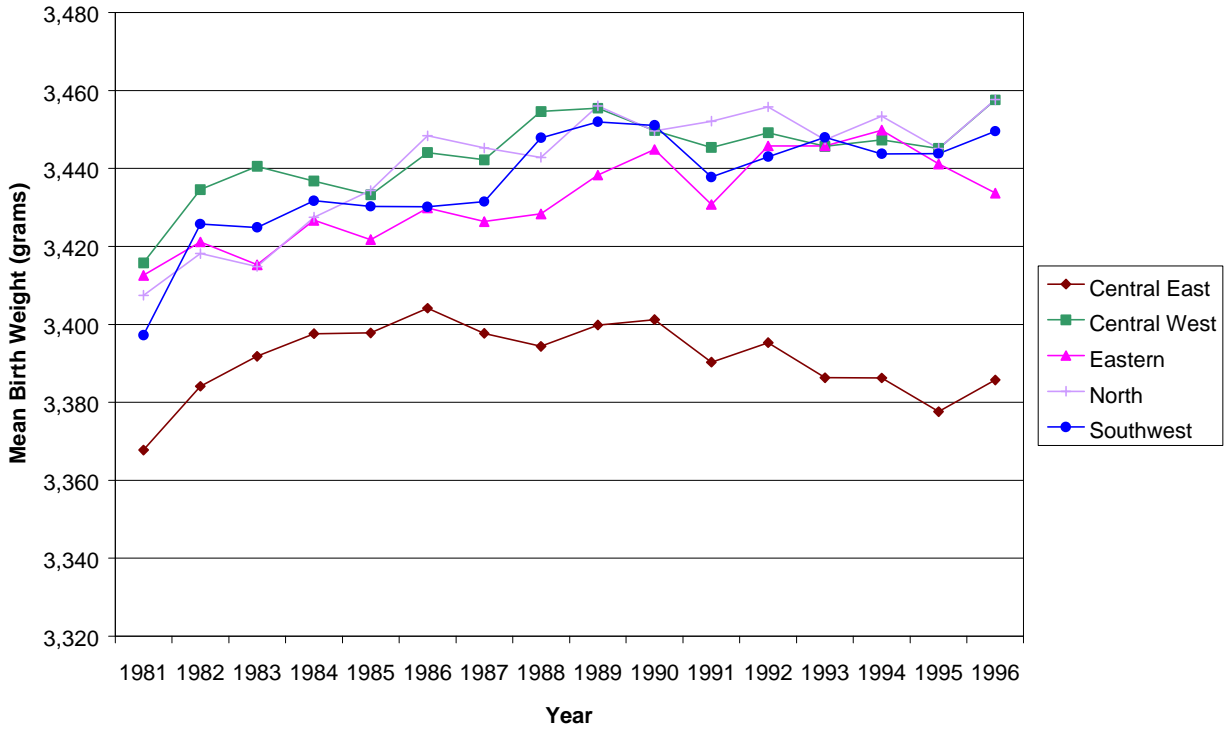


Figure 13: Births Greater than 3,500g by Region in Ontario

Year of Birth	Central East		Central West		Eastern		South-West		North	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	20,495	40.13	10,326	44.82	6,859	44.52	7,761	42.92	5,282	43.82
1982	22,025	41.65	10,842	46.19	7,018	44.81	8,318	45.31	5,300	44.41
1983	22,866	42.42	10,874	46.18	7,422	44.96	8,300	45.25	5,199	44.68
1984	24,064	42.84	11,375	46.62	7,792	45.66	8,616	45.80	5,395	45.74
1985	24,426	42.67	11,423	46.59	7,773	45.35	8,590	45.88	5,268	45.65
1986	25,555	43.37	11,775	47.07	7,986	45.58	8,453	46.13	5,226	47.07
1987	26,007	43.14	11,809	46.86	7,799	45.50	8,436	46.32	4,994	47.04
1988	26,858	42.72	12,313	48.01	7,991	45.49	8,693	47.70	4,903	46.50
1989	28,387	42.86	13,030	47.79	8,443	46.18	8,990	47.56	5,268	47.67
1990	29,932	43.17	13,081	47.35	8,932	46.51	9,325	47.24	5,068	46.99
1991	28,887	42.52	12,991	47.04	8,830	46.19	8,926	46.63	5,110	47.27
1992	29,645	42.62	13,100	47.92	9,307	47.45	9,066	47.26	5,187	48.31
1993	29,201	42.14	12,567	47.27	9,128	47.42	8,871	47.28	4,852	47.53
1994	28,905	41.89	12,472	47.03	8,934	47.56	8,729	46.72	4,759	47.79
1995	28,236	41.05	12,112	46.74	8,598	46.92	8,726	47.06	4,434	46.17
1996	28,041	41.65	12,081	47.49	7,838	46.21	8,223	47.37	4,288	47.53

Births >3500g by Region in Ontario

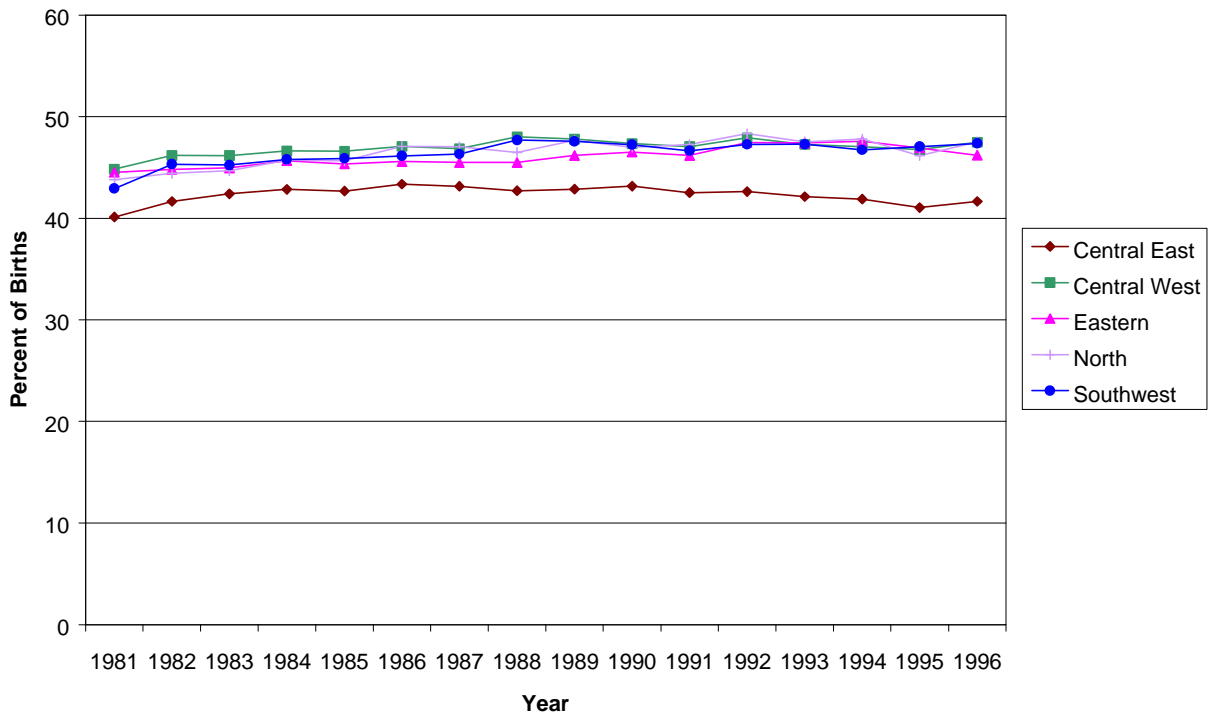


Figure 14: Infant Mortality Rate by Region in Ontario

Year of death	Central East			Central West			Eastern			South-West			North		
	# Deaths	# Births	Rate /1000	# Deaths	# Births	Rate /1000	# Deaths	# Births	Rate /1000	# Deaths	# Births	Rate /1000	# Deaths	# Births	Rate /1000
1981	439	51,993	8.44	183	23,495	7.79	144	15,703	9.17	172	18,414	9.34	116	12,241	9.48
1982	391	53,831	7.26	201	23,867	8.42	131	15,951	8.21	174	18,689	9.31	127	12,116	10.48
1983	403	55,026	7.32	178	24,044	7.40	126	16,795	7.50	169	18,720	9.03	121	11,852	10.21
1984	410	57,378	7.15	168	24,912	6.74	148	17,389	8.51	149	19,189	7.76	104	12,024	8.65
1985	387	58,478	6.62	171	25,033	6.83	125	17,486	7.15	165	19,088	8.64	95	11,734	8.10
1986	414	60,091	6.89	169	25,548	6.61	125	17,908	6.98	148	18,630	7.94	95	11,296	8.41
1987	365	61,479	5.94	175	25,804	6.78	101	17,502	5.77	154	18,585	8.29	76	10,807	7.03
1988	401	64,167	6.25	164	26,274	6.24	101	17,873	5.65	136	18,615	7.31	96	10,758	8.92
1989	461	67,686	6.81	166	27,903	5.95	132	18,675	7.07	146	19,392	7.53	69	11,298	6.11
1990	432	70,901	6.09	181	28,250	6.41	123	19,578	6.28	122	20,211	6.04	70	10,973	6.38
1991	433	69,334	6.25	153	28,214	5.42	132	19,478	6.78	119	19,510	6.10	82	11,001	7.45
1992	409	70,964	5.76	134	27,884	4.81	117	20,045	5.84	117	19,632	5.96	76	10,937	6.95
1993	412	70,681	5.83	165	27,113	6.09	139	19,620	7.08	148	19,182	7.72	76	10,426	7.29
1994	425	70,720	6.01	156	27,160	5.74	124	19,211	6.45	98	19,125	5.12	61	10,165	6.00
1995	385	70,495	5.46	162	26,520	6.11	117	18,750	6.24	125	19,038	6.57	72	9,789	7.36
1996	399	69,094	5.77	126	26,098	4.83	116	17,435	6.65	102	17,814	5.73	61	9,238	6.60

Infant Mortality Rate by Region in Ontario

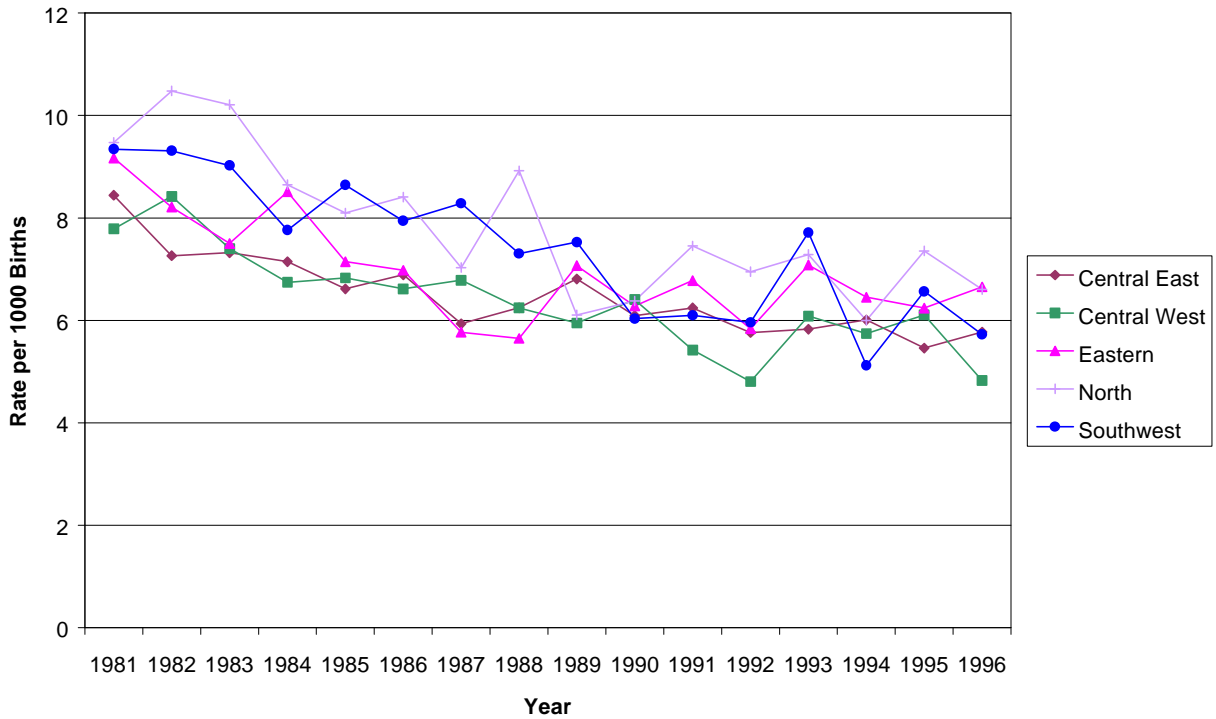


Figure 15: Traditional Low Birth Weight Rate by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	155	5.44	265	5.96	189	4.77	1,741	6.12	432	5.23	233	5.79
1982	152	5.04	238	5.22	192	4.45	1,741	5.97	442	5.09	235	5.73
1983	189	6.27	263	5.37	212	4.40	1,650	5.67	491	5.45	254	6.06
1984	152	4.92	236	4.56	238	4.51	1,782	5.95	508	5.24	237	5.62
1985	168	5.38	277	5.11	264	4.76	1,777	5.86	522	5.35	249	5.81
1986	185	5.88	251	4.56	286	4.57	1,764	5.74	539	5.36	241	5.47
1987	193	6.19	296	5.08	341	4.89	1,783	5.79	539	5.26	244	5.42
1988	187	5.68	337	5.22	389	5.11	1,868	6.01	614	5.65	292	6.03
1989	191	5.32	352	5.02	346	4.46	1,923	5.92	650	5.63	289	5.48
1990	184	5.06	386	5.20	396	4.86	1,990	5.98	672	5.38	310	5.25
1991	193	5.57	349	4.87	366	4.76	2,067	6.24	725	5.84	277	5.06
1992	185	5.32	350	4.84	387	4.93	2,062	6.11	734	5.72	256	4.39
1993	164	5.29	372	5.26	379	4.98	2,302	6.77	775	5.83	320	5.71
1994	176	5.90	367	5.44	383	5.07	2,389	6.94	800	5.93	296	5.35
1995	158	5.24	391	5.84	395	5.38	2,399	6.94	831	6.15	299	5.55
1996	145	5.04	346	5.35	442	5.98	2,275	6.75	836	6.17	273	5.38

* indicates combination of Census Divisions

Traditional Low Birth Weight Rate by CE Census Divisions

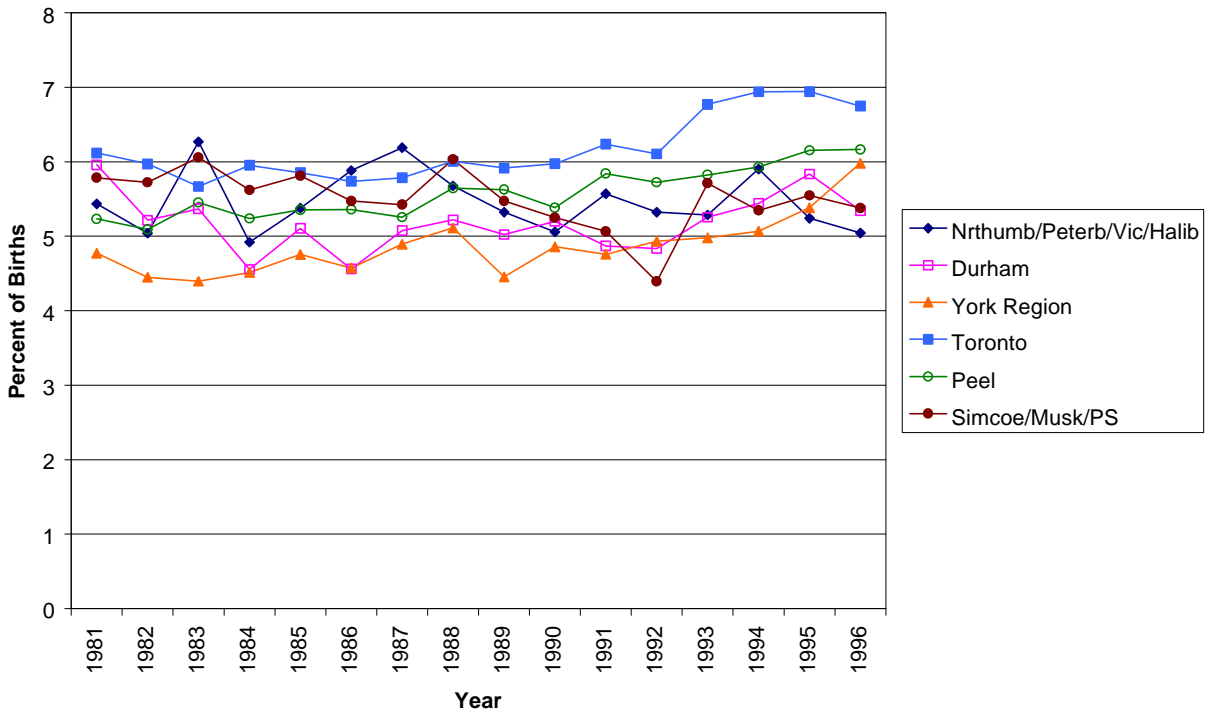


Figure 16: Low Birth Weight Rate among Full Term Birth by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	70	2.58	123	2.94	97	2.56	792	3.00	196	2.52	101	2.65
1982	60	2.09	104	2.39	82	1.99	744	2.72	178	2.17	121	3.08
1983	80	2.82	108	2.33	104	2.26	704	2.58	203	2.39	104	2.62
1984	63	2.15	90	1.83	97	1.94	740	2.65	206	2.26	100	2.50
1985	62	2.11	102	2.00	115	2.18	721	2.54	215	2.34	105	2.59
1986	73	2.46	85	1.64	119	2.01	756	2.63	229	2.41	99	2.37
1987	73	2.48	116	2.11	113	1.72	767	2.66	214	2.21	113	2.65
1988	69	2.23	121	1.99	143	2.00	745	2.57	247	2.41	115	2.54
1989	77	2.27	121	1.83	136	1.84	783	2.57	257	2.36	112	2.25
1990	77	2.23	152	2.17	164	2.13	746	2.40	248	2.10	118	2.12
1991	76	2.34	149	2.20	146	2.01	837	2.75	299	2.58	117	2.26
1992	73	2.25	126	1.85	149	2.02	799	2.58	279	2.33	98	1.78
1993	55	1.91	142	2.17	140	1.98	928	3.05	311	2.52	119	2.29
1994	62	2.23	128	2.05	138	1.97	889	2.92	313	2.52	128	2.47
1995	76	2.67	117	1.91	150	2.23	855	2.86	320	2.64	113	2.27
1996	52	1.94	120	2.01	143	2.12	840	2.88	314	2.60	111	2.36

* indicates combination of Census Divisions

Low Birth Weight Rate Among Full Term Births by CE Census Divisions

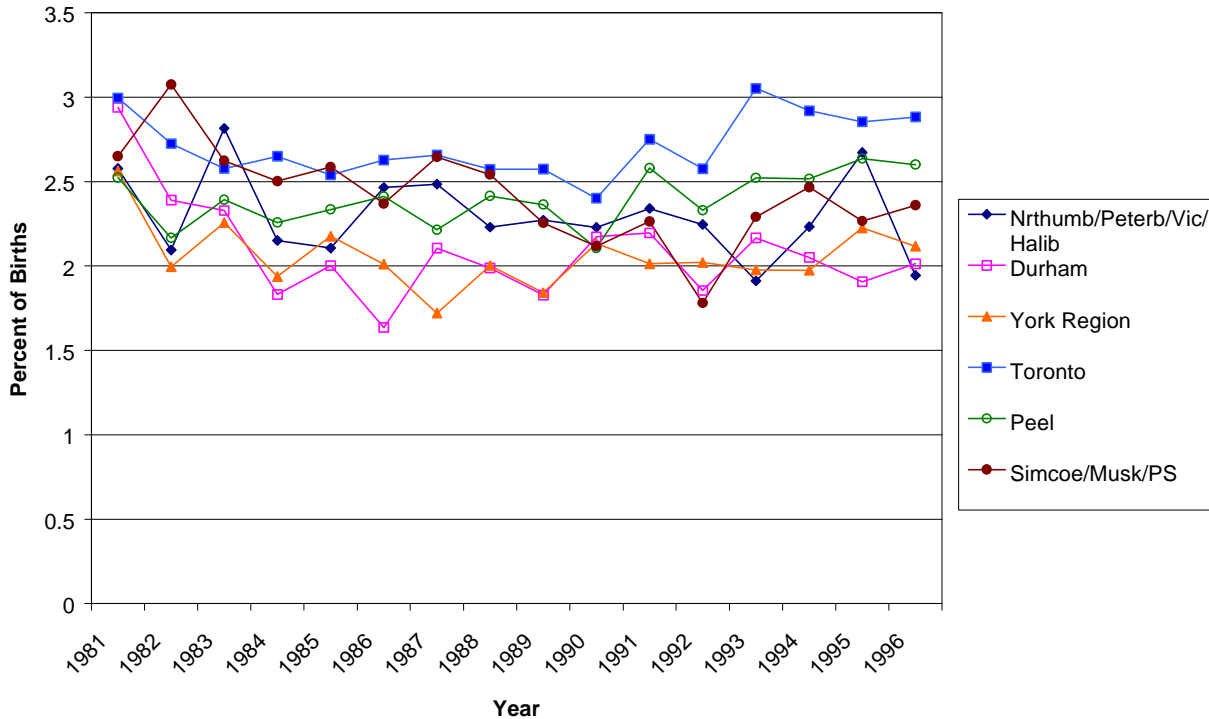


Figure 17: Pre-Term Birth Rate by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	136	4.77	262	5.89	174	4.40	2019	7.10	485	5.88	214	5.31
1982	150	4.98	210	4.60	203	4.70	1847	6.33	463	5.33	170	4.14
1983	173	5.74	260	5.31	214	4.44	1798	6.18	516	5.73	226	5.39
1984	158	5.12	264	5.10	267	5.06	2004	6.70	571	5.89	221	5.24
1985	180	5.76	329	6.07	265	4.78	1949	6.42	545	5.59	223	5.21
1986	183	5.82	303	5.51	334	5.34	1969	6.41	560	5.57	224	5.09
1987	179	5.74	319	5.47	401	5.76	1951	6.33	588	5.74	226	5.02
1988	199	6.04	369	5.72	466	6.13	2150	6.91	645	5.93	314	6.49
1989	199	5.55	387	5.52	380	4.89	2078	6.39	678	5.87	309	5.85
1990	181	4.98	427	5.75	464	5.69	2238	6.72	701	5.62	331	5.61
1991	214	6.18	373	5.21	436	5.67	2624	7.94	808	6.52	296	5.42
1992	221	6.37	440	6.08	470	5.99	2727	8.08	834	6.51	316	5.43
1993	223	7.19	515	7.28	525	6.90	3532	10.41	965	7.26	401	7.17
1994	202	6.78	490	7.28	556	7.37	3828	11.17	1023	7.60	340	6.15
1995	166	5.51	547	8.18	583	7.96	4376	12.75	1285	9.57	388	7.22
1996	199	6.93	501	7.75	620	8.41	4345	12.98	1417	10.50	358	7.07

* indicates combination of Census Divisions

Pre-Term Rate by CE Census Divisions

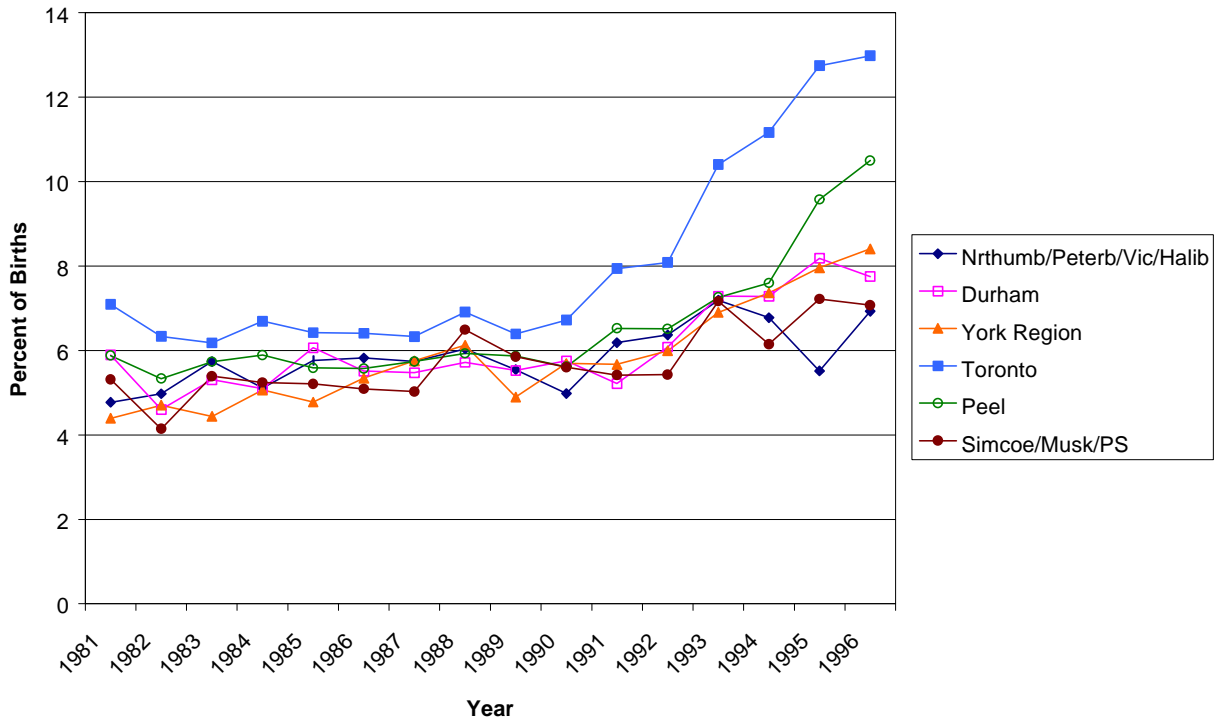


Figure 18: Multiple Birth Rate by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	31	1.09	64	1.44	57	1.44	532	1.87	154	1.87	83	2.06
1982	60	1.99	70	1.53	73	1.69	521	1.79	145	1.67	79	1.92
1983	67	2.22	77	1.57	97	2.01	582	2.00	218	2.42	82	1.96
1984	78	2.53	87	1.68	116	2.20	593	1.98	254	2.62	81	1.92
1985	63	2.02	116	2.14	108	1.95	629	2.07	237	2.43	81	1.89
1986	77	2.45	91	1.65	129	2.06	573	1.86	202	2.01	93	2.11
1987	60	1.92	143	2.45	143	2.05	559	1.81	202	1.97	84	1.87
1988	96	2.91	143	2.22	190	2.50	539	1.73	228	2.10	99	2.05
1989	82	2.29	180	2.57	150	1.93	655	2.02	290	2.51	98	1.86
1990	64	1.76	190	2.56	192	2.36	700	2.10	274	2.19	143	2.42
1991	63	1.82	148	2.07	139	1.81	686	2.07	285	2.30	77	1.41
1992	78	2.24	151	2.09	174	2.22	673	1.99	232	1.81	97	1.67
1993	70	2.26	137	1.94	169	2.22	638	1.88	241	1.81	125	2.23
1994	76	2.55	168	2.49	227	3.00	804	2.34	336	2.49	112	2.02
1995	79	2.62	169	2.52	194	2.64	796	2.30	345	2.55	130	2.41
1996	70	2.43	202	3.12	247	3.34	810	2.40	319	2.35	118	2.33

* indicates combination of Census Divisions

Multiple Birth Rate by CE Census Divisions

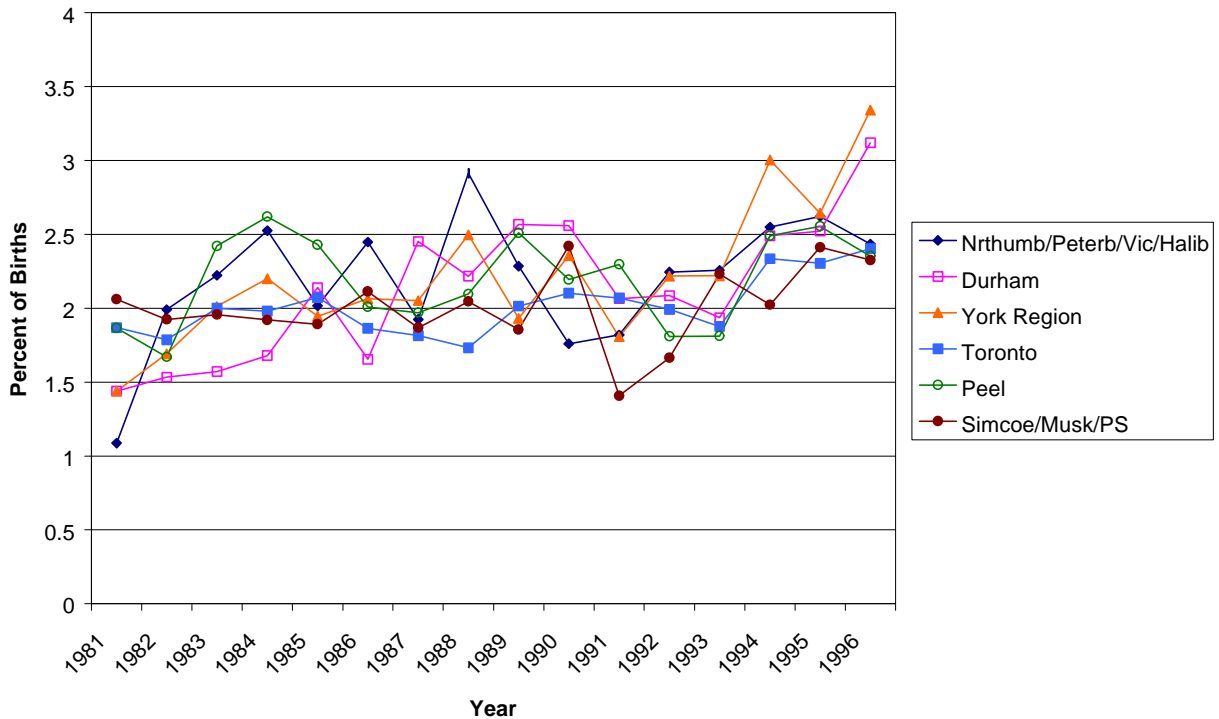


Figure 19: Singleton Low Birth Weight Rate by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe/Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	144	5.11	230	5.25	157	4.02	1,477	5.29	367	4.53	179	4.54
1982	127	4.30	207	4.61	161	3.80	1,477	5.16	381	4.46	196	4.87
1983	153	5.19	224	4.65	180	3.81	1,390	4.87	381	4.34	210	5.11
1984	118	3.92	195	3.83	189	3.67	1,510	5.15	394	4.17	203	4.91
1985	124	4.05	226	4.26	220	4.04	1,458	4.91	411	4.32	206	4.90
1986	134	4.37	221	4.09	228	3.72	1,465	4.86	434	4.40	188	4.36
1987	167	5.46	222	3.90	266	3.90	1,521	5.03	450	4.48	208	4.71
1988	137	4.28	261	4.14	296	3.99	1,594	5.22	506	4.75	235	4.96
1989	153	4.36	250	3.66	284	3.73	1,577	4.95	516	4.58	236	4.56
1990	152	4.26	287	3.97	310	3.90	1,627	4.99	539	4.41	236	4.10
1991	168	4.94	267	3.81	303	4.01	1,737	5.35	573	4.73	242	4.49
1992	151	4.45	280	3.95	309	4.03	1,744	5.27	624	4.96	211	3.68
1993	131	4.32	307	4.42	298	4.00	1,974	5.92	644	4.93	258	4.71
1994	128	4.41	269	4.09	265	3.61	1,967	5.85	636	4.84	239	4.41
1995	116	3.95	296	4.53	304	4.26	1,965	5.82	679	5.16	234	4.45
1996	110	3.92	250	3.99	300	4.20	1,849	5.62	672	5.08	214	4.32

* indicates combination of Census Divisions

Singleton Low Birth Weight Rate by CE Census Divisions

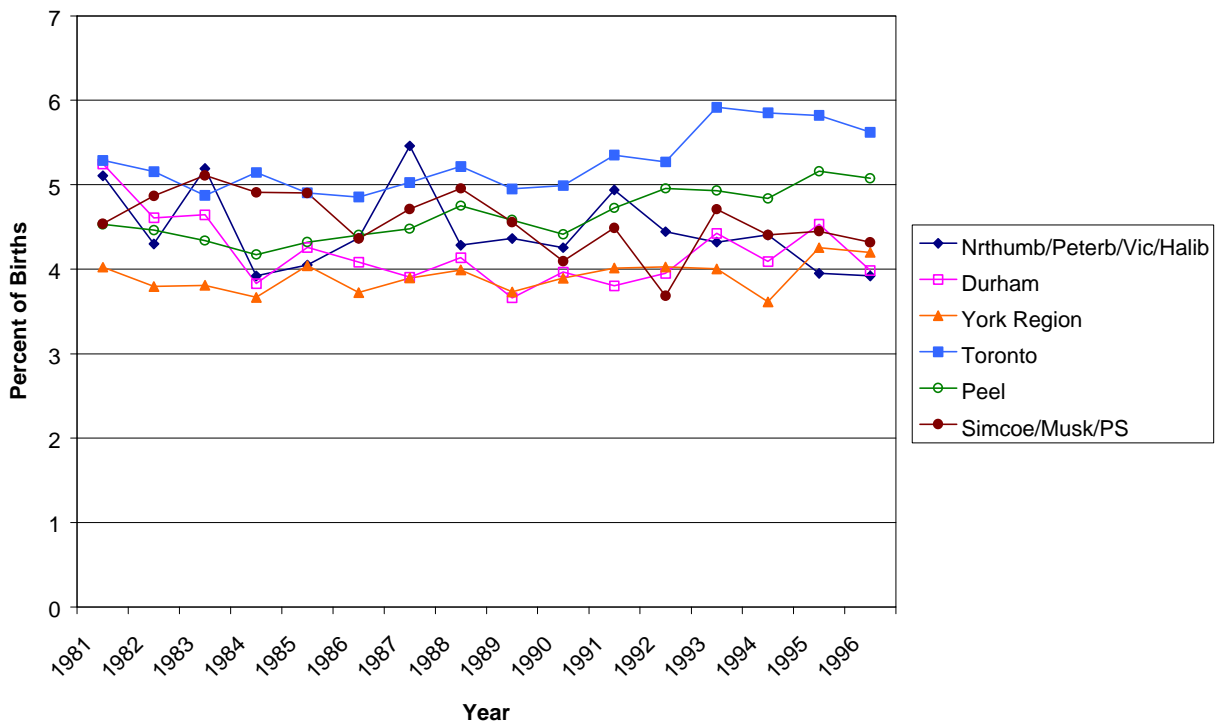


Figure 20: Singleton Low Birth Weight Rate among Full Term Births by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	62	2.31	111	2.68	78	2.08	708	2.71	166	2.17	80	2.13
1982	50	1.77	94	2.18	72	1.77	664	2.46	158	1.95	102	2.63
1983	68	2.43	94	2.05	89	1.96	605	2.25	156	1.87	90	2.30
1984	55	1.91	77	1.58	87	1.76	640	2.32	170	1.90	84	2.13
1985	50	1.72	91	1.81	98	1.88	631	2.25	177	1.95	89	2.22
1986	61	2.08	77	1.50	94	1.61	638	2.25	192	2.05	81	1.96
1987	62	2.14	97	1.78	99	1.52	685	2.40	197	2.06	99	2.35
1988	52	1.71	105	1.75	117	1.66	674	2.35	217	2.15	97	2.17
1989	60	1.80	93	1.42	112	1.54	687	2.28	217	2.03	93	1.89
1990	62	1.82	114	1.66	135	1.78	636	2.07	214	1.84	97	1.77
1991	67	2.09	125	1.86	126	1.76	741	2.47	245	2.15	109	2.13
1992	65	2.02	106	1.58	131	1.80	708	2.31	245	2.07	88	1.62
1993	43	1.52	123	1.90	110	1.58	837	2.79	282	2.31	109	2.12
1994	52	1.90	101	1.64	104	1.51	794	2.64	268	2.19	108	2.11
1995	60	2.15	96	1.58	124	1.87	735	2.49	284	2.38	102	2.07
1996	46	1.74	98	1.67	111	1.67	741	2.58	278	2.33	98	2.11

* indicates combination of Census Divisions

Singleton Low Birth Weight Among Full Term Births by CE Census Divisions

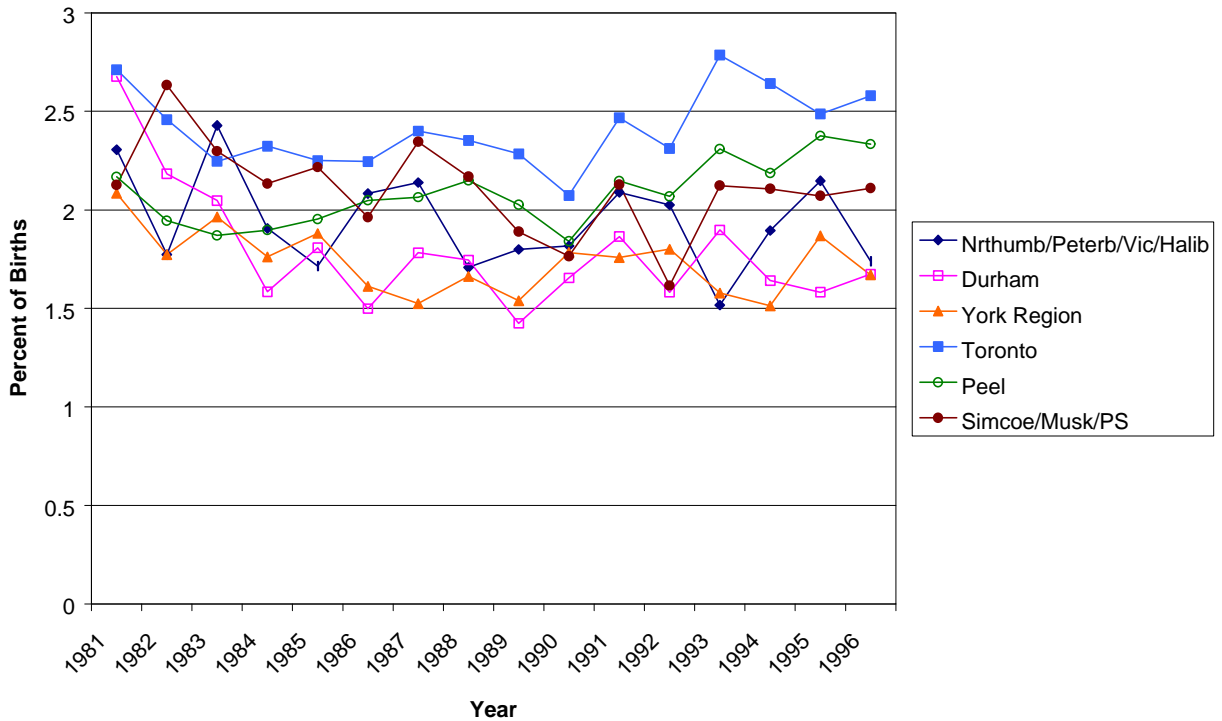


Figure 21: Singleton Pre-Term Rate by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	131	4.65	236	5.38	159	4.07	1,818	6.51	441	5.44	181	4.59
1982	134	4.54	187	4.16	179	4.22	1,621	5.66	411	4.82	150	3.73
1983	146	4.95	231	4.79	193	4.08	1,592	5.58	442	5.03	192	4.67
1984	124	4.12	231	4.54	216	4.19	1,796	6.12	482	5.11	197	4.76
1985	146	4.77	275	5.18	231	4.25	1,681	5.66	452	4.75	187	4.45
1986	140	4.56	274	5.06	293	4.79	1,755	5.82	479	4.86	183	4.25
1987	159	5.20	246	4.33	329	4.82	1,718	5.68	503	5.01	194	4.40
1988	153	4.78	297	4.71	379	5.11	1,912	6.26	550	5.17	268	5.65
1989	172	4.91	298	4.37	335	4.40	1,769	5.56	554	4.92	259	5.00
1990	160	4.48	345	4.77	390	4.90	1,929	5.92	585	4.79	267	4.63
1991	191	5.62	305	4.35	382	5.06	2,331	7.20	697	5.76	266	4.94
1992	184	5.42	382	5.39	396	5.16	2,450	7.41	734	5.84	278	4.86
1993	194	6.40	454	6.55	464	6.24	3,249	9.76	845	6.47	336	6.14
1994	160	5.51	409	6.23	450	6.15	3,425	10.23	872	6.64	292	5.39
1995	137	4.67	448	6.88	492	6.90	3,983	11.88	1,122	8.58	319	6.08
1996	159	5.67	408	6.52	483	6.78	3,937	12.05	1,261	9.57	298	6.03

* indicates combination of Census Divisions

Singleton Pre-Term Births by CE Census Divisions

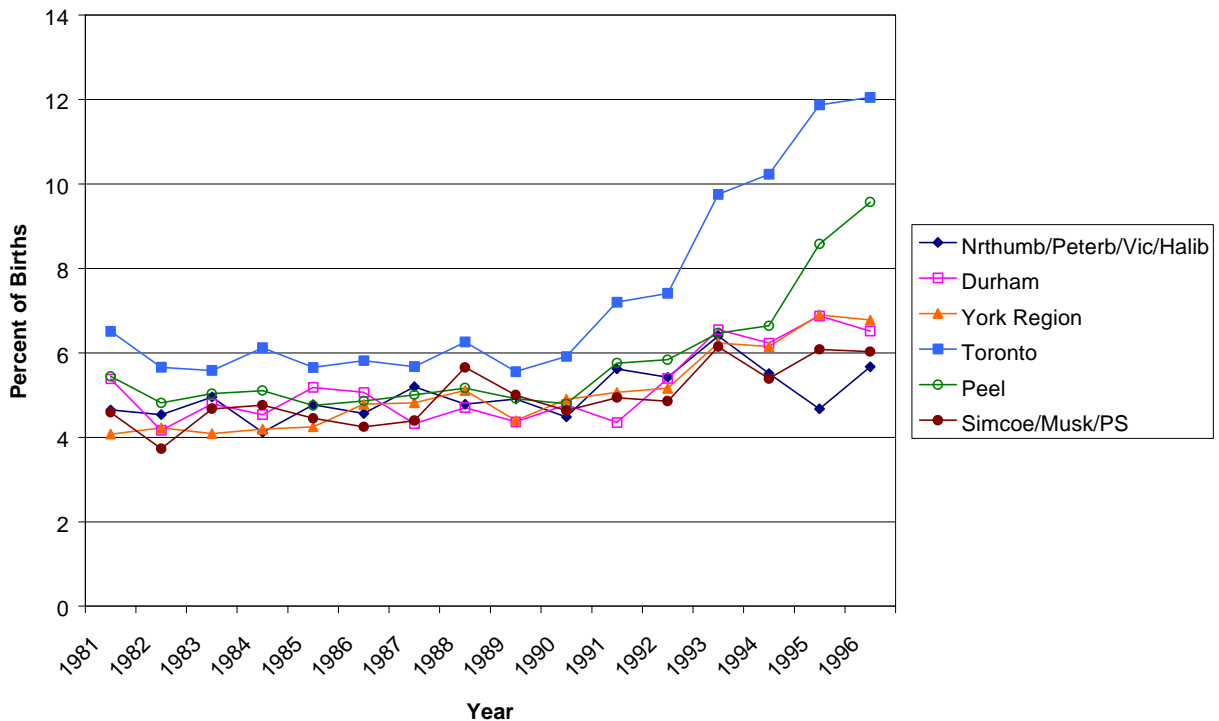


Figure 22: Singleton Mean Birth Weight by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*	Durham	York Region	Toronto	Peel	Simcoe /Musk/PS*
1981	3,407	3,405	3,388	3,345	3,391	3,389
1982	3,426	3,429	3,416	3,357	3,407	3,408
1983	3,423	3,447	3,419	3,366	3,411	3,413
1984	3,457	3,471	3,432	3,365	3,413	3,418
1985	3,428	3,452	3,443	3,367	3,415	3,427
1986	3,441	3,461	3,442	3,376	3,412	3,434
1987	3,423	3,468	3,432	3,365	3,416	3,421
1988	3,447	3,457	3,431	3,360	3,400	3,422
1989	3,459	3,474	3,440	3,362	3,400	3,432
1990	3,449	3,466	3,445	3,363	3,396	3,456
1991	3,444	3,461	3,429	3,354	3,386	3,437
1992	3,474	3,464	3,426	3,356	3,387	3,466
1993	3,482	3,456	3,421	3,346	3,382	3,453
1994	3,497	3,459	3,431	3,341	3,391	3,446
1995	3,484	3,444	3,399	3,339	3,385	3,434
1996	3,488	3,452	3,414	3,346	3,386	3,467

* indicates combination of Census Divisions

Singleton Mean Birth Weight by CE Census Divisions

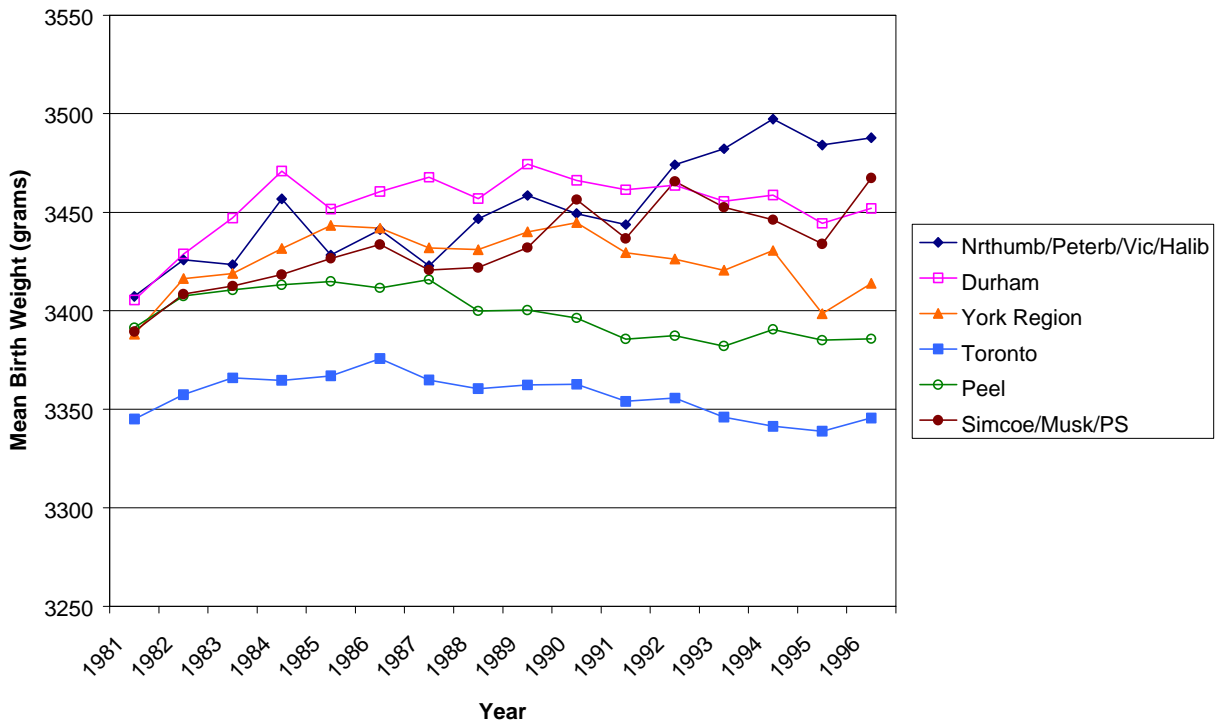


Figure 23: Singleton Births Over 3,500g by Central East Census Divisions

Year of Birth	Nrthumb/Vic/Peterb/Halib*		Durham		York Region		Toronto		Peel		Simcoe /Musk/PS*	
	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births	#	Rate/100 Births
1981	1,260	44.68	1,940	44.26	1,593	40.83	10,643	38.11	3,397	41.94	1,662	42.14
1982	1,332	45.09	2,085	46.42	1,875	44.20	11,269	39.35	3,661	42.89	1,803	44.80
1983	1,358	46.08	2,275	47.18	2,103	44.51	11,477	40.24	3,820	43.49	1,833	44.61
1984	1,449	48.14	2,523	49.55	2,329	45.17	11,771	40.12	4,159	44.05	1,833	44.33
1985	1,380	45.08	2,547	47.99	2,488	45.73	11,910	40.07	4,183	43.96	1,918	45.64
1986	1,421	46.32	2,616	48.35	2,828	46.19	12,392	41.08	4,307	43.71	1,991	46.21
1987	1,367	44.70	2,814	49.49	3,112	45.60	12,277	40.58	4,449	44.27	1,988	45.04
1988	1,482	46.34	3,015	47.78	3,366	45.38	12,250	40.08	4,539	42.63	2,206	46.54
1989	1,674	47.75	3,359	49.20	3,467	45.53	12,666	39.78	4,864	43.19	2,357	45.50
1990	1,707	47.79	3,534	48.86	3,646	45.82	13,019	39.93	5,257	43.05	2,769	48.06
1991	1,655	48.66	3,389	48.30	3,415	45.23	12,876	39.68	5,052	41.67	2,500	46.36
1992	1,660	48.87	3,403	48.03	3,459	45.08	13,149	39.73	5,242	41.64	2,732	47.70
1993	1,508	49.74	3,303	47.61	3,317	44.57	13,058	39.15	5,396	41.31	2,619	47.82
1994	1,506	51.84	3,117	47.41	3,257	44.43	12,968	38.58	5,488	41.73	2,569	47.36
1995	1,455	49.57	3,054	46.77	3,027	42.38	12,850	38.06	5,474	41.60	2,376	45.18
1996	1,382	49.27	2,988	47.65	3,054	42.74	12,702	38.61	5,518	41.69	2,389	48.21

* indicates combination of Census Divisions

Singleton Births Over 3,500g by CE Census Divisions

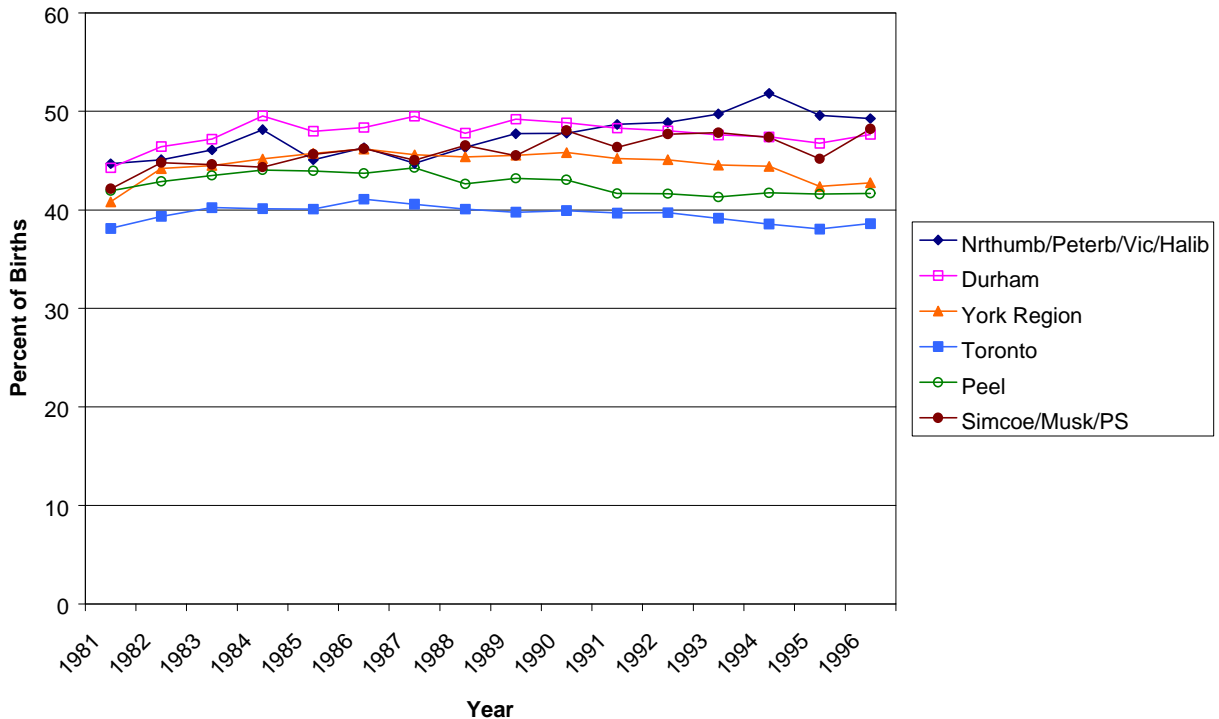
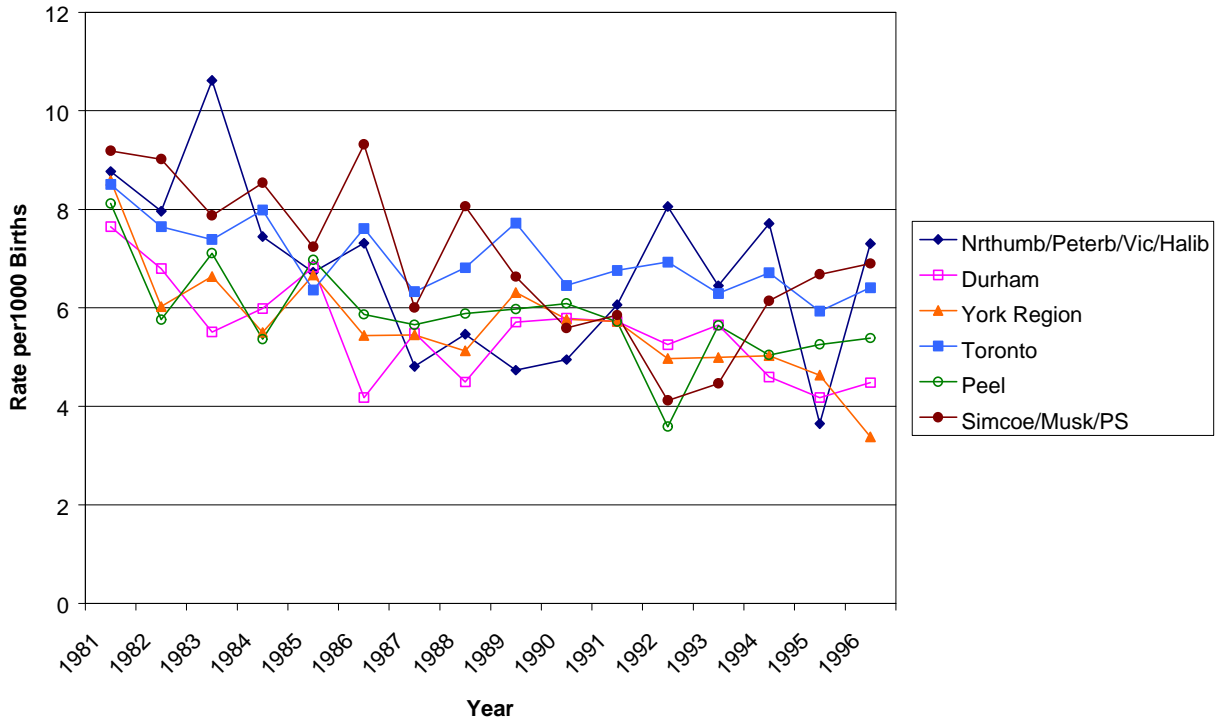


Figure 24: Infant Mortality Rate by Central East Census Divisions

Year of Death	Nrthumb/Vic/Peterb/Halib*			Durham			York Region			Toronto			Peel			Simcoe /Musk/PS*		
	# Births	# Deaths	Rate /1000	# Births	# Deaths	Rate /1000	# Births	# Deaths	Rate /1000	# Births	# Deaths	Rate /1000	# Births	# Deaths	Rate /1000	# Births	# Deaths	Rate /1000
1981	2,851	25	8.77	4,447	34	7.65	3,959	34	8.59	28,456	242	8.50	8,254	67	8.12	4,027	37	9.19
1982	3,014	24	7.96	4,562	31	6.80	4,315	26	6.03	29,158	223	7.65	8,680	50	5.76	4,104	37	9.02
1983	3,014	32	10.62	4,899	27	5.51	4,822	32	6.64	29,101	215	7.39	9,001	64	7.11	4,191	33	7.87
1984	3,088	23	7.45	5,179	31	5.99	5,272	29	5.50	29,930	239	7.99	9,696	52	5.36	4,216	36	8.54
1985	3,124	21	6.72	5,423	37	6.82	5,549	37	6.67	30,349	193	6.36	9,752	68	6.97	4,283	31	7.24
1986	3,145	23	7.31	5,501	23	4.18	6,252	34	5.44	30,738	234	7.61	10,055	59	5.87	4,402	41	9.31
1987	3,118	15	4.81	5,829	32	5.49	6,967	38	5.45	30,816	195	6.33	10,251	58	5.66	4,498	27	6.00
1988	3,294	18	5.46	6,453	29	4.49	7,608	39	5.13	31,102	212	6.82	10,875	64	5.89	4,839	39	8.06
1989	3,588	17	4.74	7,007	40	5.71	7,764	49	6.31	32,499	251	7.72	11,551	69	5.97	5,278	35	6.63
1990	3,636	18	4.95	7,423	43	5.79	8,150	47	5.77	33,304	215	6.46	12,485	76	6.09	5,905	33	5.59
1991	3,464	21	6.06	7,165	41	5.72	7,689	44	5.72	33,139	224	6.76	12,409	71	5.72	5,469	32	5.85
1992	3,475	28	8.06	7,236	38	5.25	7,847	39	4.97	33,766	234	6.93	12,821	46	3.59	5,825	24	4.12
1993	3,102	20	6.45	7,075	40	5.65	7,612	38	4.99	33,993	214	6.30	13,302	75	5.64	5,602	25	4.46
1994	2,981	23	7.72	6,743	31	4.60	7,558	38	5.03	34,419	231	6.71	13,486	68	5.04	5,536	34	6.14
1995	3,014	11	3.65	6,699	28	4.18	7,337	34	4.63	34,556	205	5.93	13,503	71	5.26	5,389	36	6.68
1996	2,875	21	7.30	6,473	29	4.48	7,392	25	3.38	33,707	216	6.41	13,556	73	5.39	5,073	35	6.90

* indicates combination of Census Divisions

Infant Mortality Rate by CE Census Divisions



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