



# Perinatal Services BC

An agency of the Provincial Health Services Authority

## **Projected frequency of maternal characteristics and obstetric conditions, British Columbia, 2017 and 2035**

**A Perinatal Services BC Surveillance Special Report**

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## Surveillance Special Report

**Projected frequency of maternal characteristics and obstetrical conditions, British Columbia, 2017 and 2035** is Volume 1 Issue No. 3, 2011 of the Perinatal Services BC's Surveillance Special Reporting Series. The goal of this publication is to provide to maternity health care providers, researchers and health information specialists population projection information for maternity and perinatal service planning in British Columbia

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### About Perinatal Services British Columbia

The Ministry of Health and the British Columbia Medical Association (BCMA) initiated the British Columbia Reproductive Care Program (BCRCP) in June 1988. One of the mandates of the BCRCP was "the collection and analysis of data to evaluate perinatal outcomes, care processes and resources via a province-wide computerized database". This mandate was fundamental to the development of the British Columbia Perinatal Data Registry (BCPDR), which was initiated in 1993. Individuals instrumental in the creation of the BCPDR included Dr. Sidney Effer, Dr. William J. Ehman, Dr. Margaret Pendray, Mr. Peter Hayles and Dr. Alan Thomson with the support of the BC Ministry of Health.

The BCRCP became part of the Provincial Health Services Authority (PHSA) in 2001 when the government of British Columbia introduced five geographically based health authorities and one provincial health service authority.

In 2007, with the addition of the Provincial Specialized Perinatal Services (PSPS), the BCRCP was renamed the BC Perinatal Health Program (BCPHP). The BCPHP continued to work towards optimizing neonatal, maternal and fetal health in the province through educational support to care providers, outcome analysis and multidisciplinary perinatal guidelines. The BCPHP was overseen by a Provincial Perinatal Advisory Committee with representation from the Ministry of Health Services (MOHS), the Provincial Health Services Authority (PHSA), Children's and Women's Health Centre of BC, Health Authorities, health care providers and academic organizations.

In 2010, Perinatal Services BC (PSBC) was created to replace its predecessors, the BC Reproductive Care Program and the BC Perinatal Health Program. PSBC is overseen by a Provincial Perinatal Services Oversight Council and provides strategic leadership on the full continuum of perinatal care throughout the province focusing on perinatal care planning, service delivery and quality improvement. PSBC works collaboratively with local health authorities and stakeholders to improve perinatal health outcomes and enhance the quality of perinatal services in BC.

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## Abstract

This *Report* was developed by Perinatal Services BC to aid health planning with regard to maternity and perinatal service requirements in British Columbia in 2017 and 2035. The total number of deliveries and the number of deliveries in specific high risk categories in British Columbia were estimated based on observed trends between 2004 and 2009. A simple linear regression equation was used for estimates pertaining to 2017, while more complex assumptions were required for estimates extending to 2035. Uncertainty in the estimates was captured using low and high estimates for each projection and face validity of the modeling was achieved by tailoring some assumptions based on similar estimates previously published by the Demographic Analysis and Projections Section of Statistics Canada.

There were 39,885 deliveries to residents of British Columbia in 2004 and 44,117 deliveries in 2009. The projected number of deliveries in 2017 was 52,356 (low growth scenario estimate 45,538; high growth scenario estimate 59,175). This estimate was approximately concordant with the same estimate made by Statistics Canada with the medium growth scenario differing by less than 3%. The projected number of deliveries in British Columbia in 2035 was 59,175 (low growth model 48,947 deliveries; high growth model 69,403 deliveries). Corresponding estimates made by Statistics Canada for British Columbia in 2035 were 47,800 (low growth), 59,100 (medium growth) and 71,900 (high growth) births.

The numbers of deliveries to older women ( $\geq 35$  years) was expected to increase from 9,932 in 2009 to 12,924 in 2017 (30% increase) and to 15,628 in 2035 (57% increase). Similarly, the number of deliveries to women with pre-pregnancy obesity (body mass index  $\geq 30$  kg/m<sup>2</sup>) was expected to increase from 3,764 in 2009 to 8,403 in 2017 (123% increase) and to 10,968 deliveries in 2035 (191% increase). The predicted rates of deliveries with hypertension were 5.4% and 5.1% in 2017 and 2035, respectively, while rates of deliveries to women with diabetes mellitus in pregnancy were predicted to be 10.5% in 2017 and 12.5% in 2035. Cesarean delivery rates were estimated to increase to 32.2% in 2017 and to 33.6% in 2035. Modeling showed that rates of postpartum hemorrhage and blood transfusion increased in 2017 and 2035 as did rates of postpartum hemorrhage and procedures to control bleeding. On the other hand, rates of postpartum hemorrhage with hysterectomy declined. Rates of placenta accreta increased in concordance with expected increases in deliveries to women with a previous cesarean delivery.

Models based on observed data from British Columbia (2004 to 2009) and simple assumptions suggest that the number of deliveries in the province will continue to increase substantially by 2017 and 2035. The numbers of high risk women with specific conditions will also increase. Health services planning needs to account for these projections, while also entertaining uncertainties inherent in predicting future health care needs.

## Introduction

Planning for future maternity service needs including labour and delivery and operating room requirements is an important health service activity. Reasonable population projections are a pre-requisite for such planning as the need for maternity services is dependent on the anticipated number of deliveries, especially high risk deliveries which may require highly specialized care. In this connection, Dr. Roanne Preston, Medical Director, Acute Perinatal Program, Women's Hospital of British Columbia is leading a health planning project to determine the anticipated need for maternity and perinatal services in British Columbia for the short-term and medium-term future.

This *Report* was developed by Perinatal Services BC to aid health planning with regard to maternity and perinatal service requirements in British Columbia in 2017 and 2035. Perinatal Services BC has a mandate to improve the capacity and processes of provincial perinatal services through strategic leadership. It maintains the BC Perinatal Data Registry which contains detailed information on all mothers and babies in British Columbia and this information provides an excellent basis for population projections.

The objective of this Report was to develop population projections for 2017 and 2035 for the residents of British Columbia with regard to the following maternal characteristics and conditions.

- a) Number of deliveries
- b) Number of deliveries to women aged 25-29, 30-34, 35-39 and  $\geq 40$  years
- c) Number of deliveries to women with a body mass index of 30-34, 35-39 and  $\geq 40$  kg/m<sup>2</sup>
- d) Number of deliveries to women with hypertension
- e) Number of deliveries to women with diabetes mellitus
- f) Number of cesarean deliveries
- g) Number of deliveries with postpartum hemorrhage requiring blood transfusion
- h) Number of deliveries with postpartum hemorrhage requiring surgical procedures to control bleeding.
- i) Number of deliveries with postpartum hemorrhage requiring hysterectomy
- j) Number of deliveries to women with placenta accreta.

## Methods

We used information on all deliveries in British Columbia for the years 2004 to 2009 for estimating population trends. This information was obtained from the British Columbia Perinatal Data Registry, a comprehensive, province-wide perinatal database containing information on perinatal events, outcomes and care processes at a hospital, regional and provincial level. Standardized antenatal, intrapartum, immediate postpartum and newborn data on all deliveries and births in British Columbia are included in the database. Data from April 1, 2004 to March 31, 2010 were used for the purposes of this report, and included all live births and stillbirths to residents of British Columbia. For convenience, the fiscal year from April 1, 2004 to March 31 2005 was referred to as year 2004, the year from April 1, 2009 to March 31, 2010 was referred to as 2009, etc.

The method used for extrapolating the indices of interest beyond the 5 years of available data involved combining the results of two different models. The first model was developed to predict the number of deliveries to residents of British Columbia in 2017 and 2035. This was accomplished by first describing the observed pattern in the number of deliveries to residents of British Columbia between 2004 and 2009 using a linear regression equation. The equation assumed a linear trend in the number of deliveries between 2004 and 2009 and this trend was projected for 8 years beyond 2009 to obtain the projected number of deliveries in 2017. Uncertainty in the prediction model was captured by also modeling a low growth and a high growth scenario. For this, the slope of the increase in the number of deliveries used in the regression equation was specified to be 50% less and 50% more than that estimated from the pattern observed in British Columbia between 2004 and 2009.

The face validity of this modeling procedure was assessed by comparing estimates of the number of deliveries obtained by the above mentioned modeling with similar estimates calculated by the Demographic Analysis and Projections Section of Statistics Canada [1] using the more complex components method (with assumptions regarding the various components of growth including fertility, mortality, immigration and emigration). Statistics Canada prediction are available for the number of births (i.e., slightly different from the number of delivering mothers, given twin and higher order multiple births) expected to occur in British Columbia in 2017. The Statistics Canada projection includes a low, middle and high growth scenario and models were based on historical data from 1986 to 2008 [1].

The second step in predicting the indices of interest (e.g., the number of cesarean deliveries in 2017) involved determining expected rates of events in future years. Thus, the anticipated rate of cesarean delivery in 2017 was estimated using a linear regression equation based on cesarean delivery rates observed in British Columbia between 2004 and 2009. The cesarean delivery rate for 2017 was obtained by projecting the linear trend for 8 years beyond 2009. A low estimate and a high estimate for the cesarean delivery rate was obtained by assuming that the estimated slope was 50% lower and 50% higher than that determined from the observed cesarean rate.

The number of cesarean deliveries in 2017 was then estimated by combining the number of deliveries predicted to occur in 2017 and the estimated rate of cesarean delivery in 2017. The low estimate for cesarean deliveries was obtained by combining the low estimate for the number of deliveries expected in 2017 with the low rate of cesarean deliveries predicted for 2017. Similarly, the high expected number of cesarean deliveries in 2017 was obtained by combining the number of deliveries anticipated under the high growth scenario for 2017 with the high estimated cesarean rate in 2017.

Extrapolation for the year 2035 was considered more challenging and the simple procedure of a linear extrapolation was deemed inappropriate. Instead a linear extrapolation for 15 years beyond 2009 was used under the assumption that unpredictable changes in maternal characteristics and obstetric technologies would cause a plateau in the cesarean rates at some point in the future. The arbitrary decision to extrapolate the linear trend for 15 years beyond 2009 was partly made posthoc by observing the magnitude of the predictions with regard to the number of deliveries and contrasting this with Statistics Canada predictions. Low and high estimates for cesarean rates were obtained by combining the projected number of deliveries under the low and high scenarios for 2035 with the low and high projected rates of cesarean delivery in 2035.

Data on maternal characteristics, such as maternal age and body mass index, were obtained from the British Columbia Perinatal Data Registry for the years 2004 to 2009 and these were used to predict the number of deliveries to women in specific age and body mass index categories. Similarly, the frequency of diagnoses such as hypertension, diabetes mellitus and placenta accreta among women delivering in British Columbia were obtained from International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> Revision, Canada (ICD-10-CA) codes available in the Database and used to estimate rates in 2017 and 2035. Codes for blood transfusion, hysterectomy and surgical procedures to control bleeding due to postpartum hemorrhage were obtained from the Canadian Classification of Health Interventions (CCI) codes in the Database.

Procedures to control bleeding included

- 1) suturing of uterus (e.g. B-Lynch suture)
- 2) embolization for control of bleeding, uterus and surrounding structures and
- 3) occlusion, vessels of the pelvis, perineum and gluteal region. The specific codes used to identify the diagnoses and procedures of interest are listed below.

Diagnosis/Procedure	ICD 10 code	CCI code
Hypertension	O10,O11, O13, O14, O15	
Diabetes mellitus	O24	
Postpartum hemorrhage plus blood transfusion	O72 plus blood transfusion	
Postpartum hemorrhage plus hysterectomy	O72 plus hysterectomy	1RM89LA, 1RM87LAGX, 5MD60KE 5MD60RC, 5MD60CB, 5MD60RD
Postpartum hemorrhage plus procedures to control bleeding	O72	1RM13, 1KT51, 5PC91LA
Placenta accrete	O43.2	

Rates of placenta accreta in British Columbia were not available for the period 2004 to 2008 as this code was only introduced into the Canadian version of ICD 10 in 2009. The rate of placenta accreta was therefore only available for 2009 (and for most of the deliveries that occurred in 2010). Modeling was therefore based on the available rates of placenta accreta and the predicted rates in 2017 and 2035 were based on the baseline rate in 2009 and anticipated changes in rates of previous cesarean delivery (since this is a critical risk factor for adherent placenta [2,3]).

## Results

There were 39,885 deliveries to residents of British Columbia in 2004 and 44,117 deliveries in 2009 (Table 1). The regression equation (Figure 1) estimated from the observed number of deliveries in British Columbia between 2004 and 2009 was:

$$\text{Number of deliveries in a given year} = 38,719 + (974 \times (\text{Index year} - 2003))$$

The projected number of deliveries in 2017 was 52,356 (Table 1). The low growth scenario estimate for the number of deliveries in 2017 was 45,538 and the high growth scenario yielded 59,175 deliveries. The concordance between these projections and the projections made by Statistics Canada using historical data from 1981 to 2008 was reasonable (Table 1), with the medium growth scenarios differing by 3.1%. Note that the estimates in this report projected the number of deliveries (i.e., mothers delivering) whereas Statistics Canada projections estimated the number of births (i.e., babies born). These typically differ by about 1-2% because of multiple births. Estimates reported from this study were in fact close to the Statistics Canada estimates.

The projected number of deliveries in British Columbia in 2035 was 59,175, with the low growth model predicting 48,947 deliveries and the high growth model predicting 69,403 deliveries in 2035 (Table 2). The corresponding estimates made by Statistics Canada for British Columbia in 2035 were 47,800 (low growth), 59,100 (medium growth) and 71,900 (high growth) births.

Tables 3 and 4 provide the rates and numbers of deliveries overall and by specific maternal characteristics and conditions. Appendix Figures 2 to 16 and Tables 5 to 32 provide details of the estimates including the numbers of deliveries and rates of interest between 2004 and 2009 and predicted numbers and rates from 2010 to 2018 and 2035.

The numbers of deliveries to older women ( $\geq 35$  years) was expected to increase from 9,932 in 2009 to 12,924 in 2017 (30% increase) and to 15,628 in 2035 (57% increase). Similarly, the number of deliveries to women with pre-pregnancy obesity ( $\text{BMI} \geq 30 \text{ kg/m}^2$ ) was expected to increase from 3,764 in 2009 to 8,403 in 2017 (123% increase)

and to 10,968 deliveries in 2035 (191% increase). The uncertainty around these estimates is provided in Tables 3 and 4.

The number of deliveries to women with hypertension decreased slightly from 5.8% in 2004 and 6.0% in 2005 to 5.7% in 2009. The predicted rates of deliveries with hypertension were therefore slightly lower in 2017 (5.4%) and 2035 (5.1%). Rates of deliveries to women with diabetes mellitus in pregnancy, on the other hand, increased from 6.9% in 2004 to 8.3% in 2009 and predicted rates were substantially higher in 2017 (10.5%) and 2035 (12.5%).

Cesarean delivery rates were estimated to increase to 32.2% in 2017 and to 33.6% in 2035. Rates of postpartum hemorrhage and blood transfusion were predicted to increase as were rates of postpartum hemorrhage and procedures to control bleeding. On the other hand, rates of postpartum hemorrhage with hysterectomy were expected to decline. Rates of placenta accreta were expected to increase in concordance with expected increases in deliveries to women with a previous cesarean delivery (Table 3 and 4).

## Discussion

Our study shows a substantial increase in the expected number of deliveries in British Columbia from the 44,117 deliveries observed in 2009 to 52,356 deliveries expected in 2017 and 59,175 deliveries anticipated in 2035. These estimates correspond closely with the estimates made by Statistics Canada [1]. Our projections also suggest that the numbers and rates of deliveries to older mothers and women with pre-pregnancy obesity will also be substantially higher in the future. Similarly, rates of deliveries to women with diabetes mellitus in pregnancy, cesarean delivery and postpartum hemorrhage with blood transfusion or surgical procedures to control bleeding will also be much higher in 2017 and 2035, while rates of deliveries with hysterectomy for postpartum hemorrhage will decrease. The rate of deliveries to women with hypertension will decrease as well, although the number of such deliveries will be higher in 2017 and 2035 compared with 2009.

The small decline in deliveries with hypertensive disorders of pregnancy observed in British Columbia between 2004 and 2009 was somewhat unexpected given observed changes in maternal characteristics over the same period (including increases in maternal age and pre-pregnancy obesity and declines in maternal smoking). However, this finding is supported by studies from other industrialized countries which also show a decline in hypertensive disorders of pregnancy [4]. The high rates of diabetes mellitus in pregnancy predicted for 2017 and 2035 are not surprising given anticipated population changes in maternal age and pre-pregnancy obesity. In fact, our modeling was based on observed increases in rates of diabetes mellitus in pregnancy in British Columbia between 2004 and 2009. Specifically, we did not attempt to model the higher rates of diabetes that can be expected with the adoption of newer criteria for the diagnosis of diabetes mellitus in pregnancy [5].

Rates of postpartum hemorrhage in association with blood transfusion or procedures to control bleeding have increased in British Columbia, as in the rest of Canada [6] and elsewhere [7-11]. This is associated with an observed increase in rates of atonic postpartum hemorrhage. Our prediction of a continued increase in rates of postpartum hemorrhage and blood transfusion or procedures to control bleeding is contingent on the cause of the increase not being identified and remedied. The decline in rates of postpartum hemorrhage and hysterectomy is an expected and welcome trend. Canada has high rates of hysterectomy for postpartum hemorrhage relative to other industrialized countries and British Columbia has relatively high rates compared with the rest of Canada [12]. If the decline in hysterectomy rates observed in British Columbia between 2004 and 2009 continues, rates and numbers of hysterectomy will fall appreciably by 2017 and 2035.

Predicting the future is challenging as it is not possible to anticipate the behavioral, lifestyle and technological changes that are likely to occur in 5 or 20 years. We used simple techniques for extrapolation and also provided low and high bounds to express the uncertainty in the estimates. It is very likely that the projections for 2017 will be more accurate than those for 2035.

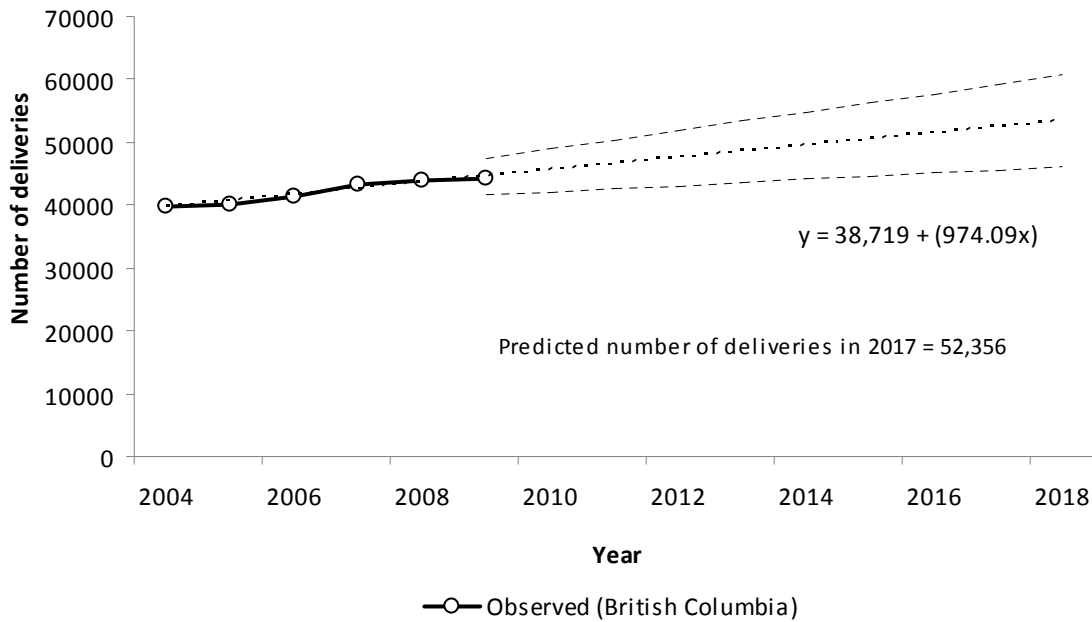
We chose to keep our extrapolation techniques simple because of the uncertainty inherent in extrapolating into the future. Although we could have examined data from the British Columbia Perinatal Data Registry for 10 years (2000 to 2009), we chose to restrict the observed patterns to a 5 year period. This was done to avoid the complexities of dealing with the diagnosis and procedure coding changes that occurred in 2004. Prior to this year diagnoses/procedures were coded using the International Statistical Classification of Diseases, Injuries and Causes of Diseases 9<sup>th</sup> Revision and Canadian Classification of Procedures.

## **Conclusion**

In summary, this study used observed patterns in British Columbia between 2004 and 2009 to model the expected number of deliveries and various maternal characteristics and conditions of interest in British Columbia in 2017 and 2035. Although predicting the future is challenging, the use of robust data from the British Columbia Perinatal Data Registry means that the projected rates and numbers in this Report can serve as a reasonable basis for health planning related to maternal services.

## Tables and Figures

**Figure 1. Observed and predicted number of deliveries in British Columbia, 2009-2018**



**Table 1. Observed and predicted number of deliveries, British Columbia, 2004-2018**

Year	Observed number of deliveries	PSBC projection			Statistics Canada projection*		
		Predicted number of deliveries 2017-2018			Predicted number of births 2017-2018		
		Low	Middle	High	Low	Middle	High
2004	39885	39206	39693	40180			
2005	40196	39693	40667	41641			
2006	41376	40180	41641	43102			
2007	43344	40667	42615	44564			
2008	43851	41154	43589	46025			
2009	44117	41641	44564	47486	44600	47500	48200
2010		42128	45538	48947	44700	48300	50400
2011		42615	46512	50408	44800	49200	52500
2012		43102	47486	51869	44900	50100	54800
2013		43589	48460	53330	44800	51000	57300
2014		44076	49434	54791	45400	51900	58400
2015		44564	50408	56253	45900	52700	59500
2016		45051	51382	57714	46400	53400	60500
2017		45538	52356	59175	46800	54000	61400
2018		46025	53330	60636	47100	54500	62200

\*Births (not deliveries) as estimated by Statistics Canada [1].

**Table 2. Predicted number of deliveries, British Columbia, 2035-2036**

Year	Observed number of deliveries	PSBC projection			Statistics Canada projection*		
		Predicted number of deliveries			Predicted number of deliveries		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		48947	59175	69403	47800	59100	71900

Source: BC Perinatal Data Registry

\*Births (not deliveries) as estimated by Statistics Canada [1].

**Table 3.** Predicted rate of deliveries to residents of British Columbia in 2017-2018 and 2035-2036 according to specific maternal characteristics and conditions

Maternal condition or characteristic	2017-2018			2035-2036		
	Low	Middle	High	Low	Middle	High
All deliveries	45538	52356	59175	48947	59175	69403
<b>By maternal age</b>						
Age 25-29 years	28.5	29.8	31.0	29.0	30.8	32.5
Age 30-34 years	30.0	30.8	31.6	28.7	30.0	31.2
Age 35-39 years	18.9	20.4	21.8	19.5	21.5	23.6
Age >=40 years	4.1	4.5	4.9	4.3	4.9	5.4
<b>By body mass index</b>						
30-34 kg/m2	8.3	9.7	11.1	9.0	11.1	13.3
35-39 kg/m2	3.3	4.1	4.8	3.7	4.8	5.9
>=40 kg/m2	1.8	2.2	2.6	2.0	2.6	3.3
Hypertension	5.1	5.4	5.7	4.7	5.1	5.5
Diabetes mellitus	8.5	10.5	12.5	9.5	12.5	15.5
Cesarean delivery	30.8	32.2	33.6	31.5	33.6	35.7
Blood transfusion	48.4	65.1	81.8	56.7	81.8	106.9
Proc. for bleeding	9.5	15.8	22.1	12.7	22.1	31.6
Hysterectomy	2.0	3.6	5.3	0.0	2.0	4.5
Placenta accreta	17.1	18.5	20.0	19.0	22.5	25.9

**Source:** BC Perinatal Data Registry

Rates were expressed per 100 deliveries except for blood transfusion, procedures to control bleeding, hysterectomy and placenta accreta which are expressed as 10,000 deliveries. Procedures to control bleeding include suturing of the uterus (e.g., B-Lynch suture), control of bleeding, uterus and surrounding structures and ligation of pelvic vessels for postpartum hemorrhage.

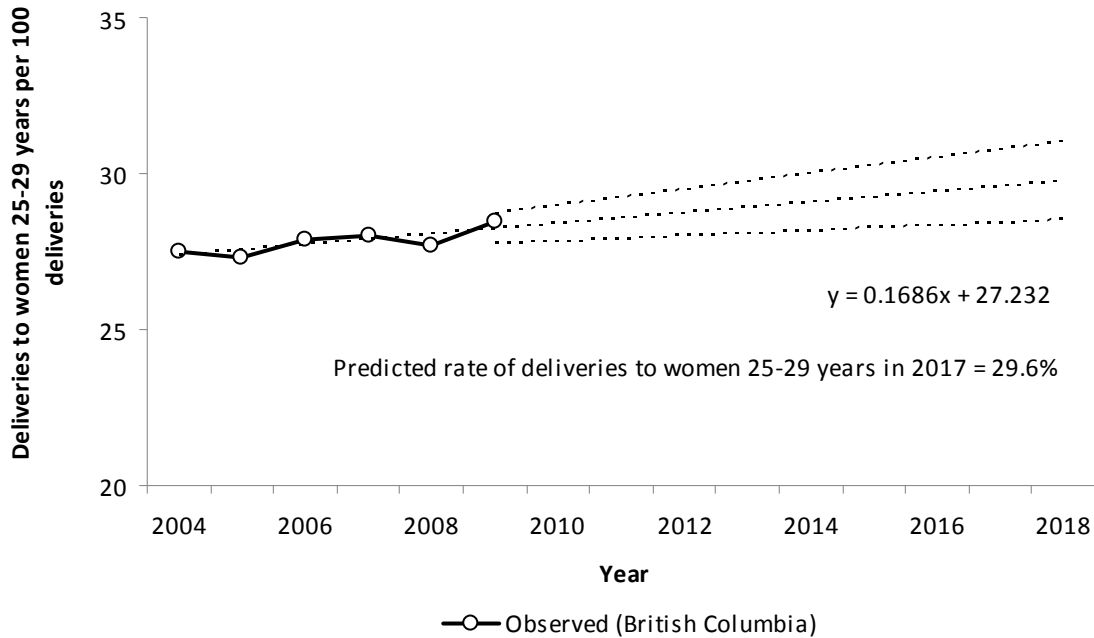
**Table 4.** Predicted number of deliveries to residents of British Columbia in 2017-2018 and 2035-2036 according to specific maternal characteristics and conditions

Maternal condition or characteristic	2017-2018			2035-2036		
	Low	Middle	High	Low	Middle	High
All deliveries	45538	52356	59175	48947	59175	69403
<b>By maternal age</b>						
Age 25-29 years	12938	15493	18210	14196	18210	22586
Age 30-34 years	13641	16114	18700	14058	17726	21646
Age 35-39 years	8568	10566	12750	9544	12750	16376
Age ≥40 years	1886	2357	2878	2116	2878	3750
<b>By body mass index</b>						
30-34 kg/m2	3760	5073	6583	4392	6583	9213
35-39 kg/m2	1524	2128	2829	1814	2829	4065
≥40 kg/m2	820	1202	1652	965	1556	2283
Hypertension	2325	2827	3370	2284	3022	3850
Diabetes mellitus	3873	5498	7397	4651	7397	10755
Cesarean delivery	14024	16861	19889	15419	19889	24792
Blood transfusion	220	341	484	278	484	742
Proc. for bleeding	43	83	131	62	131	219
Hysterectomy	9	19	31	0	12	31
Placenta accreta	79	99	121	93	133	180

**Source:** BC Perinatal Data Registry

Procedures to control bleeding include suturing of the uterus (e.g., B-Lynch suture), control of bleeding, uterus and surrounding structures and ligation of pelvic vessels for postpartum hemorrhage.

**Figure 2** Observed and predicted deliveries to women aged 25-29 years, British Columbia, 2004-2018



**Table 5.** Observed and predicted deliveries to women aged 25-29 years, British Columbia, 2004-2018

Year	Observed deliveries to women 25-29 years		Predicted rate (25-29 years)			Predicted number (25-29 years)*		
	Number	Rate	2017-18			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	10976	27.5	27.3	27.4	27.5	10710	10876	11043
2005	10987	27.3	27.4	27.6	27.7	10876	11212	11550
2006	11547	27.9	27.5	27.7	28.0	11043	11550	12065
2007	12143	28.0	27.6	27.9	28.2	11212	11892	12586
2008	12148	27.7	27.7	28.1	28.5	11381	12238	13115
2009	12554	28.5	27.7	28.2	28.7	11550	12586	13652
2010			27.8	28.4	29.0	11721	12938	14196
2011			27.9	28.6	29.3	11892	13293	14747
2012			28.0	28.7	29.5	12065	13652	15306
2013			28.1	28.9	29.8	12238	14014	15872
2014			28.2	29.1	30.0	12412	14379	16445
2015			28.2	29.3	30.3	12586	14747	17026
2016			28.3	29.4	30.5	12762	15119	17614
2017			28.4	29.6	30.8	12938	15493	18210
2018			28.5	29.8	31.0	13115	15872	18813

Source: BC Perinatal Data Registry

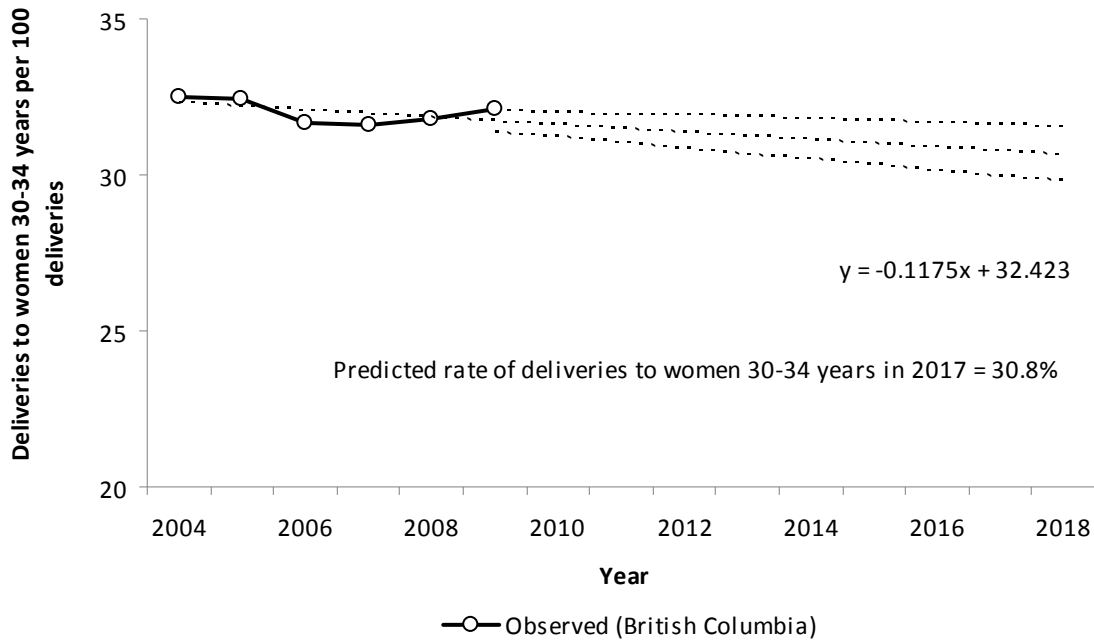
**Table 6.** Predicted deliveries to women 25-29 years, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (25-29 years)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		29.0	30.8	32.5	14196	18210	22586

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women 25-29 years based on projected rate of deliveries to women 25-29 years and predicted number of deliveries (Table 1 and 2).

**Figure 3.** Observed and predicted deliveries to women aged 30-34 years, British Columbia, 2004-2018



**Table 7.** Observed and predicted deliveries to women aged 30-34 years, British Columbia, 2004-2018

Year	Observed deliveries to women 30-34 years		Predicted rate (30-34 years)			Predicted number (30-34 years)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	12965	32.5	32.2	32.3	32.4	12643	12823	13004
2005	13035	32.4	32.1	32.2	32.3	12730	13090	13452
2006	13108	31.7	31.9	32.1	32.2	12815	13355	13899
2007	13685	31.6	31.7	32.0	32.2	12899	13617	14344
2008	13943	31.8	31.5	31.8	32.1	12981	13877	14787
2009	14155	32.1	31.4	31.7	32.1	13061	14135	15229
2010			31.2	31.6	32.0	13140	14390	15669
2011			31.0	31.5	32.0	13216	14643	16107
2012			30.8	31.4	31.9	13291	14894	16543
2013			30.7	31.2	31.8	13365	15143	16978
2014			30.5	31.1	31.8	13436	15389	17411
2015			30.3	31.0	31.7	13506	15633	17842
2016			30.1	30.9	31.7	13575	15875	18272
2017			30.0	30.8	31.6	13641	16114	18700
2018			29.8	30.7	31.5	13706	16351	19126

Source: BC Perinatal Data Registry

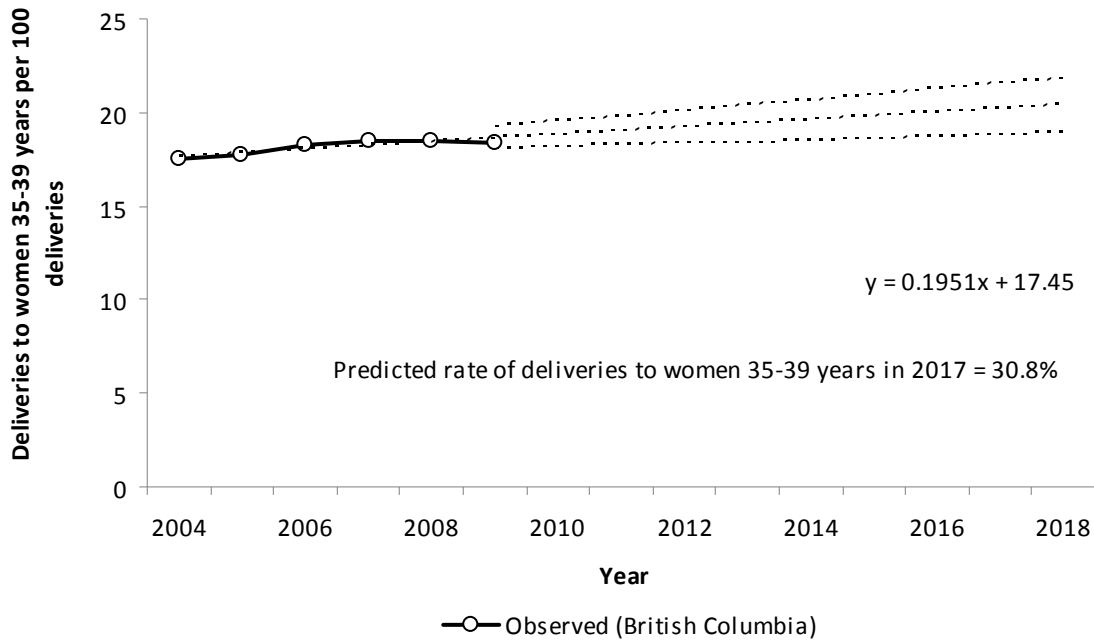
**Table 8.** Predicted deliveries to women 30-34 years, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (30-34 years)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		28.7	30.0	31.2	14058	17726	21646

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women 30-34 years based on projected rate of deliveries to women 30-34 years and predicted number of deliveries (Table 1 and 2).

**Figure 4.** Observed and predicted deliveries to women aged 35-39 years, British Columbia, 2004-2018



**Table 9.** Observed and predicted deliveries to women aged 35-39 years, British Columbia, 2004-2018

Year	Observed deliveries to women 35-39 years		Predicted rate (35-39 years)			Predicted number (35-39 years)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	6987	17.5	17.5	17.6	17.7	6880	7004	7129
2005	7122	17.7	17.6	17.8	18.0	7004	7255	7510
2006	7551	18.3	17.7	18.0	18.3	7129	7510	7900
2007	7990	18.4	17.8	18.2	18.6	7255	7769	8298
2008	8112	18.5	17.9	18.4	18.9	7382	8032	8705
2009	8108	18.4	18.0	18.6	19.2	7510	8298	9120
2010			18.1	18.8	19.5	7639	8568	9544
2011			18.2	19.0	19.8	7769	8842	9976
2012			18.3	19.2	20.1	7900	9120	10417
2013			18.4	19.4	20.4	8032	9402	10867
2014			18.5	19.6	20.7	8164	9687	11325
2015			18.6	19.8	21.0	8298	9976	11792
2016			18.7	20.0	21.3	8433	10269	12267
2017			18.8	20.2	21.5	8568	10566	12750
2018			18.9	20.4	21.8	8705	10867	13243

Source: BC Perinatal Data Registry

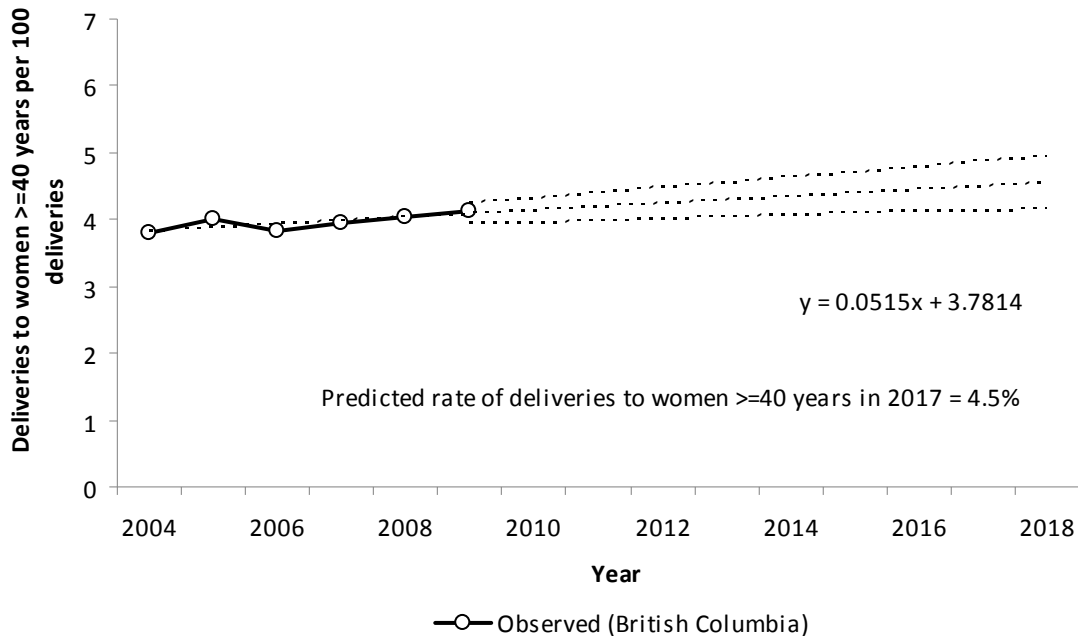
**Table 10.** Predicted deliveries to women 35-39 years, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (35-39 years)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		19.5	21.5	23.6	9544	12750	16376

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women 35-39 years based on projected rate of deliveries to women 35-39 years and predicted number of deliveries (Table 1 and 2).

**Figure 5.** Observed and predicted deliveries to women aged ≥40 years, British Columbia, 2004-2018



**Table 11.** Observed and predicted deliveries to women aged ≥40 years, British Columbia, 2004-2018

Year	Observed deliveries to women ≥40 years		Predicted rate (≥40 years)			Predicted number (≥40 years)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	1519	3.8	3.8	3.8	3.9	1493	1521	1550
2005	1614	4.0	3.8	3.9	3.9	1521	1580	1639
2006	1584	3.8	3.9	3.9	4.0	1550	1639	1730
2007	1714	4.0	3.9	4.0	4.1	1580	1699	1823
2008	1767	4.0	3.9	4.0	4.2	1609	1761	1918
2009	1824	4.1	3.9	4.1	4.2	1639	1823	2016
2010			4.0	4.1	4.3	1669	1886	2116
2011			4.0	4.2	4.4	1699	1950	2218
2012			4.0	4.2	4.5	1730	2016	2322
2013			4.0	4.3	4.6	1761	2082	2429
2014			4.1	4.3	4.6	1792	2149	2537
2015			4.1	4.4	4.7	1823	2218	2649
2016			4.1	4.5	4.8	1854	2287	2762
2017			4.1	4.5	4.9	1886	2357	2878
2018			4.2	4.6	4.9	1918	2429	2996

Source: BC Perinatal Data Registry

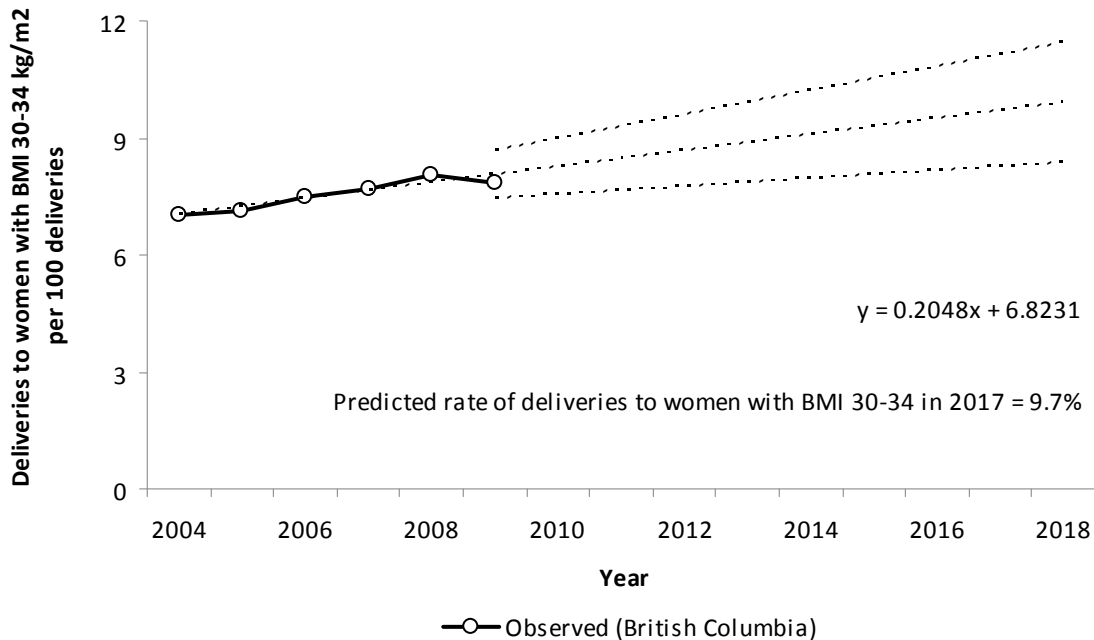
**Table 12.** Predicted deliveries to women ≥40 years, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (≥40 years)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		4.3	4.9	5.4	2116	2878	3750

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women ≥40 years based on projected rate of deliveries to women ≥40 years and predicted number of deliveries (Table 1 and 2).

**Figure 6.** Observed and predicted deliveries to women with BMI 30-34 kg/m<sup>2</sup>, British Columbia, 2004-2018



**Table 13.** Observed and predicted deliveries to women BMI 30-34 kg/m<sup>2</sup>, British Columbia, 2004-2018

Year	Observed deliveries to BMI 30-34 kg/m <sup>2</sup>		Predicted rate (BMI 30-34)			Predicted number (BMI 30-34)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	1950	7.0	6.9	7.0	7.1	2715	2790	2865
2005	2003	7.1	7.0	7.2	7.4	2790	2941	3097
2006	2104	7.5	7.1	7.4	7.7	2865	3097	3338
2007	2206	7.7	7.2	7.6	8.1	2941	3257	3588
2008	2291	8.1	7.3	7.8	8.4	3019	3421	3847
2009	2294	7.8	7.4	8.1	8.7	3097	3588	4115
2010			7.5	8.3	9.0	3176	3760	4392
2011			7.6	8.5	9.3	3257	3936	4678
2012			7.7	8.7	9.6	3338	4115	4973
2013			7.8	8.9	9.9	3421	4299	5277
2014			7.9	9.1	10.2	3504	4487	5590
2015			8.1	9.3	10.5	3588	4678	5912
2016			8.2	9.5	10.8	3674	4874	6243
2017			8.3	9.7	11.1	3760	5073	6583
2018			8.4	9.9	11.4	3847	5277	6931

Source: BC Perinatal Data Registry

Note: BMI denotes body mass index

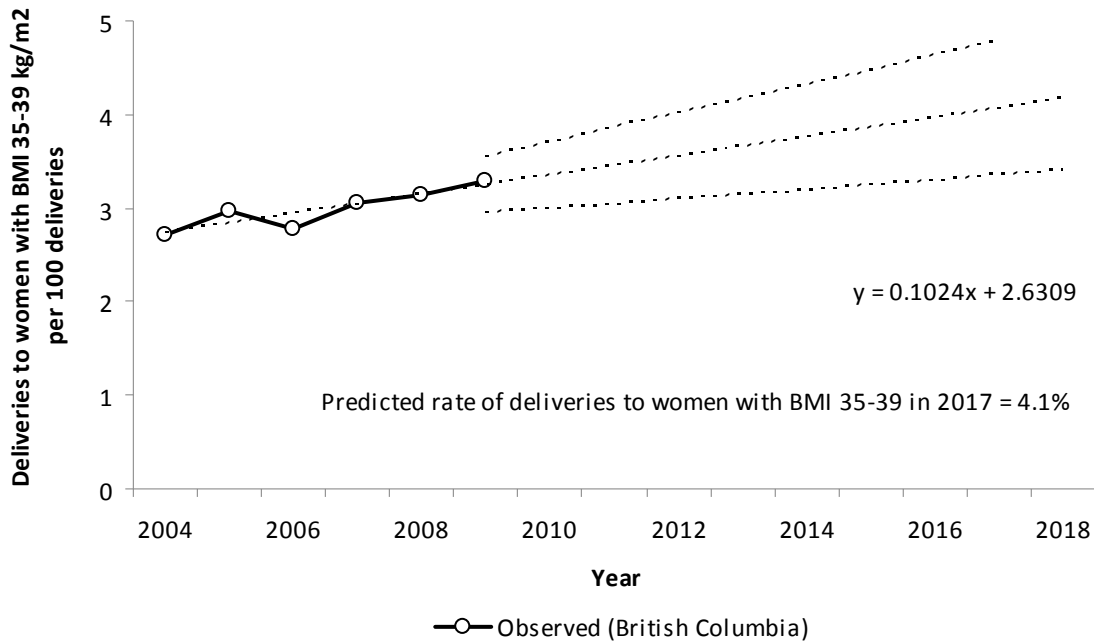
**Table 14.** Predicted deliveries to women BMI 30-34 kg/m<sup>2</sup>, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (BMI 30-34)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		9.0	11.1	13.3	4392	6583	9213

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women with BMI 30-34 based on projected rate of deliveries to women with BMI 30-34 and predicted number of deliveries (Table 1 and 2). BMI denotes body mass index.

**Figure 7.** Observed and predicted deliveries to women with BMI 35-39 kg/m<sup>2</sup>, British Columbia, 2004-2018



**Table 15.** Observed and predicted deliveries to women with BMI 35-39 kg/m<sup>2</sup>, British Columbia, 2004-2018

Year	Observed deliveries to BMI 35-39 kg/m <sup>2</sup>		Predicted rate (BMI 35-39)			Predicted number (BMI 35-39)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	754	2.7	2.7	2.7	2.8	1052	1085	1119
2005	836	3.0	2.7	2.8	2.9	1085	1153	1223
2006	782	2.8	2.8	2.9	3.1	1119	1223	1333
2007	875	3.0	2.8	3.0	3.2	1153	1296	1446
2008	889	3.1	2.9	3.1	3.4	1188	1370	1564
2009	960	3.3	2.9	3.2	3.6	1223	1446	1687
2010			3.0	3.3	3.7	1259	1524	1814
2011			3.0	3.5	3.9	1296	1605	1946
2012			3.1	3.6	4.0	1333	1687	2082
2013			3.1	3.7	4.2	1370	1771	2222
2014			3.2	3.8	4.3	1408	1857	2367
2015			3.2	3.9	4.5	1446	1946	2517
2016			3.3	4.0	4.6	1485	2036	2671
2017			3.3	4.1	4.8	1524	2128	2829
2018			3.4	4.2	4.9	1564	2222	2992

Source: BC Perinatal Data Registry

Note: BMI denotes body mass index

**Table 16.** Predicted deliveries to women with BMI 35-39 kg/m<sup>2</sup>, British Columbia, 2035-2036

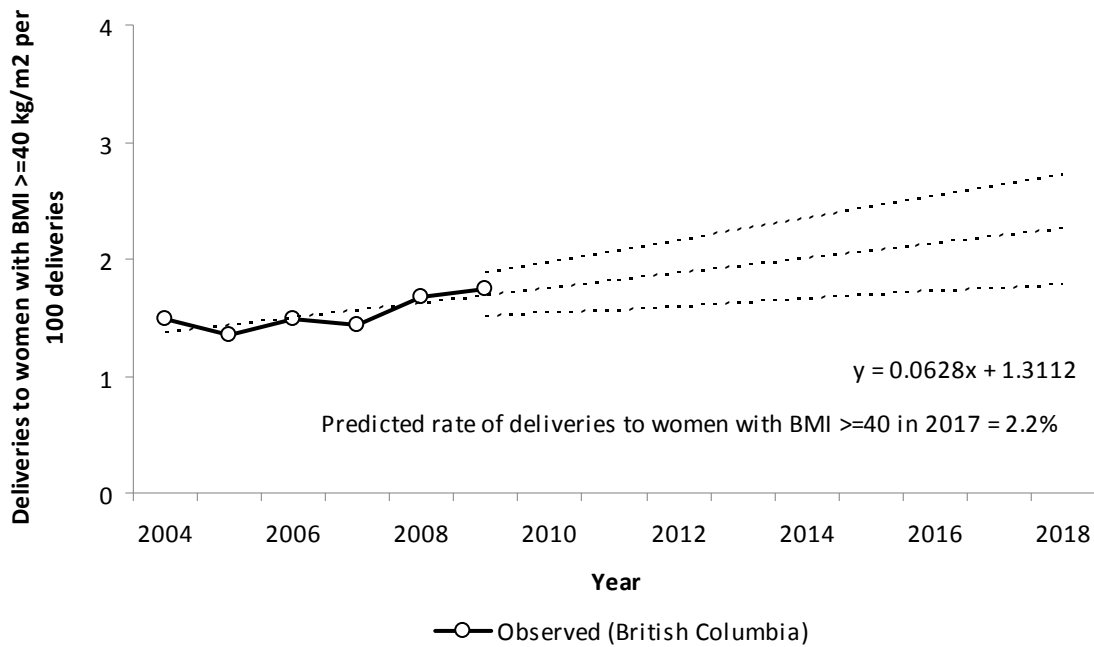
Year	Observed number of deliveries	Predicted del. rate (BMI 35-39)			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		3.7	4.8	5.9	1814	2829	4065

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women with BMI 35-39 based on projected rate of deliveries to women with BMI 35-39 and predicted number of deliveries (Table 1 and 2).

BMI denotes body mass index.

**Figure 8.** Observed and predicted deliveries to women with BMI  $\geq 40$  kg/m<sup>2</sup>, British Columbia, 2004-2018



**Table 17.** Observed and predicted deliveries to women with BMI  $\geq 40$  kg/m<sup>2</sup>, British Columbia, 2004-2018

Year	Observed deliveries to BMI $\geq 40$ kg/m <sup>2</sup>		Predicted rate (BMI $\geq 40$ )			Predicted number (BMI $\geq 40$ )*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	415	1.5	1.3	1.4	1.4	526	545	565
2005	378	1.3	1.4	1.4	1.5	545	584	624
2006	418	1.5	1.4	1.5	1.6	565	624	687
2007	413	1.4	1.4	1.6	1.7	584	666	752
2008	476	1.7	1.5	1.6	1.8	604	708	820
2009	510	1.7	1.5	1.7	1.9	624	752	891
2010			1.5	1.8	2.0	645	797	965
2011			1.6	1.8	2.1	666	844	1041
2012			1.6	1.9	2.2	687	891	1120
2013			1.6	1.9	2.3	708	940	1202
2014			1.7	2.0	2.3	730	990	1286
2015			1.7	2.1	2.4	752	1041	1373
2016			1.7	2.1	2.5	775	1093	1464
2017			1.8	2.2	2.6	797	1147	1556
2018			1.8	2.3	2.7	820	1202	1652

Source: BC Perinatal Data Registry

Note: BMI denotes body mass index

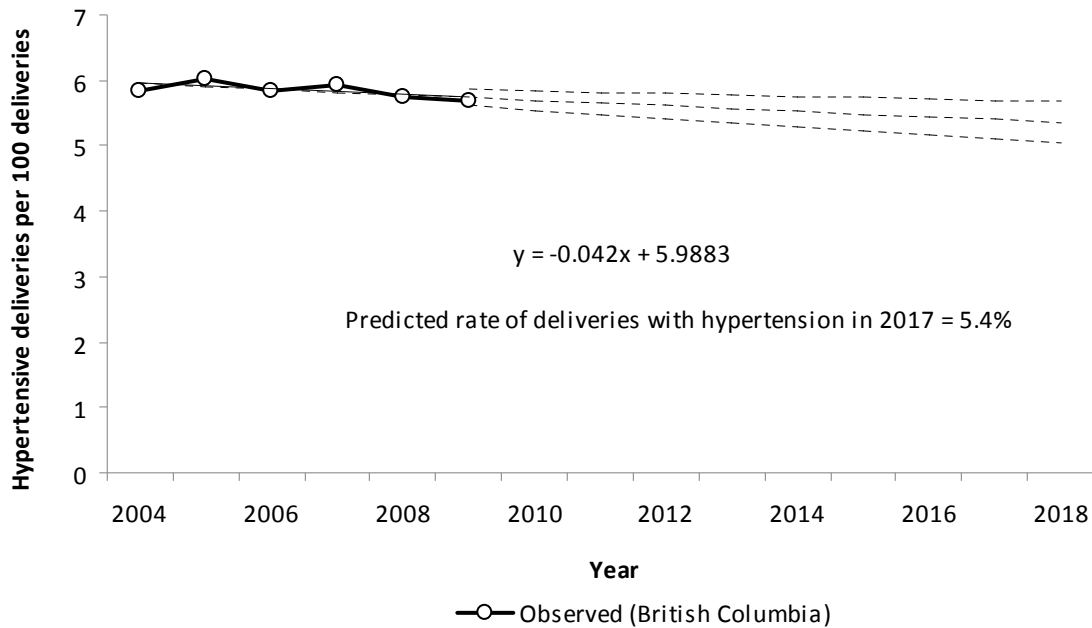
**Table 18.** Predicted deliveries to women with BMI  $\geq 40$  kg/m<sup>2</sup>, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted delivery rate (BMI $\geq 40$ )			Predicted delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		2.0	2.6	3.3	965	1556	2283

Source: BC Perinatal Data Registry

\*Projected number of deliveries to women with BMI  $\geq 40$  based on projected rate of deliveries to women with BMI  $\geq 40$  and predicted number of deliveries (Table 1 and 2). BMI denotes body mass index.

**Figure 9.** Observed and predicted deliveries with hypertension, British Columbia, 2004-2018



**Table 19.** Observed and predicted deliveries with hypertension (HT), British Columbia, 2004-2018

Year	Observed deliveries with hypertension		Predicted HT rate			Predicted HT number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	2331	5.8	5.9	5.9	6.0	2323	2360	2398
2005	2417	6.0	5.9	5.9	5.9	2327	2401	2476
2006	2412	5.8	5.8	5.9	5.9	2330	2441	2554
2007	2568	5.9	5.7	5.8	5.9	2333	2480	2631
2008	2519	5.7	5.7	5.8	5.9	2335	2519	2708
2009	2511	5.7	5.6	5.7	5.9	2336	2556	2784
2010			5.5	5.7	5.8	2337	2593	2859
2011			5.5	5.7	5.8	2337	2629	2934
2012			5.4	5.6	5.8	2337	2664	3008
2013			5.4	5.6	5.8	2336	2698	3082
2014			5.3	5.5	5.8	2334	2732	3155
2015			5.2	5.5	5.7	2332	2765	3227
2016			5.2	5.4	5.7	2329	2796	3299
2017			5.1	5.4	5.7	2325	2827	3370
2018			5.0	5.4	5.7	2321	2858	3440

Source: BC Perinatal Data Registry

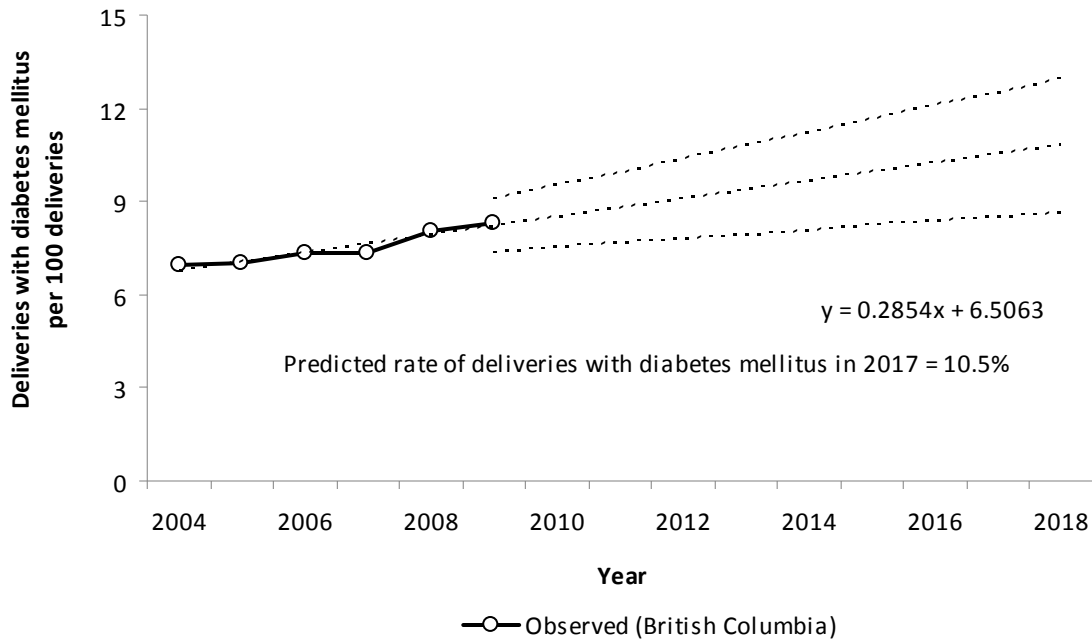
**Table 20.** Predicted deliveries with hypertension (HT), British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted HT delivery rate			Predicted HT delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		4.7	5.1	5.5	2284	3022	3850

Source: BC Perinatal Data Registry

\*Projected number of deliveries with hypertension based on projected rate of deliveries with hypertension and predicted number of deliveries (Table 1 and 2)

**Figure 10.** Observed and predicted deliveries with diabetes mellitus British Columbia, 2004-2018



**Table 21.** Observed and predicted deliveries with diabetes mellitus (DM), British Columbia, 2004-2018

Year	Observed deliveries with diabetes mellitus		Predicted DM rate			Predicted DM number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	2769	6.9	6.6	6.8	6.9	2607	2696	2786
2005	2823	7.0	6.8	7.1	7.4	2696	2878	3066
2006	3038	7.3	6.9	7.4	7.8	2786	3066	3358
2007	3189	7.4	7.1	7.6	8.2	2878	3259	3663
2008	3526	8.0	7.2	7.9	8.6	2971	3458	3980
2009	3673	8.3	7.4	8.2	9.1	3066	3663	4309
2010			7.5	8.5	9.5	3162	3873	4651
2011			7.6	8.8	9.9	3259	4088	5006
2012			7.8	9.1	10.4	3358	4309	5373
2013			7.9	9.4	10.8	3458	4536	5753
2014			8.1	9.6	11.2	3560	4768	6145
2015			8.2	9.9	11.6	3663	5006	6550
2016			8.4	10.2	12.1	3767	5249	6967
2017			8.5	10.5	12.5	3873	5498	7397
2018			8.6	10.8	12.9	3980	5753	7839

Source: BC Perinatal Data Registry

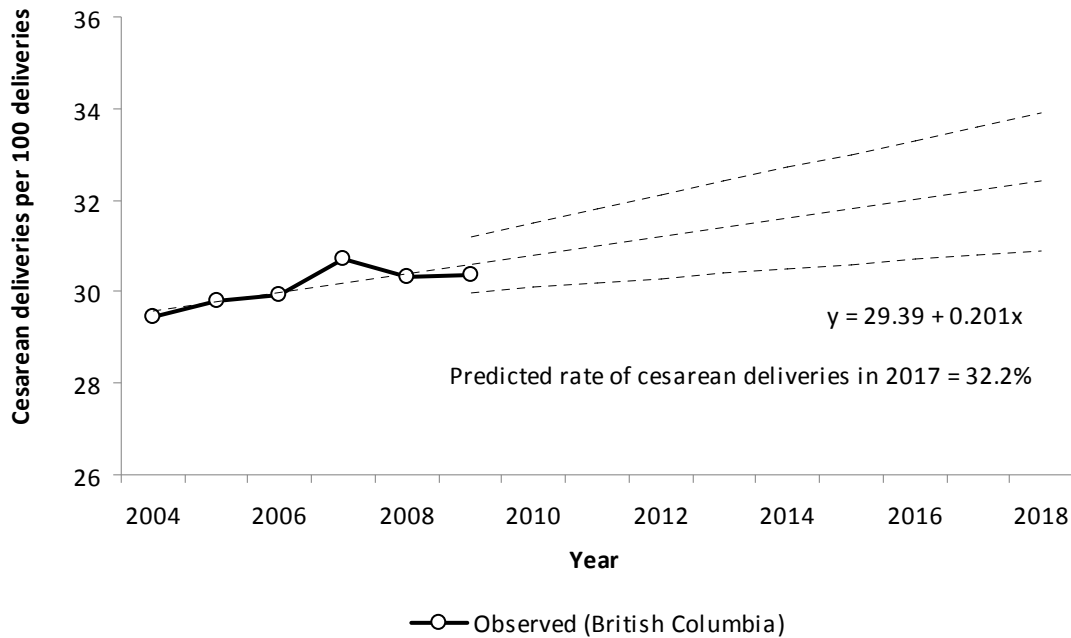
**Table 22.** Predicted deliveries with diabetes mellitus (DM), British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted DM delivery rate			Predicted DM delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		9.5	12.5	15.5	4651	7397	10755

Source: BC Perinatal Data Registry

\*Projected number of deliveries with DM based on projected rate of deliveries with DM and predicted number of deliveries (Table 1 and 2).

**Figure 11.** Observed and predicted cesarean deliveries British Columbia, 2004-2018



**Table 23.** Observed and predicted cesarean deliveries, British Columbia, 2004-2018

Year	Observed cesarean deliveries		Predicted cesarean rate			Predicted cesarean number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	11740	29.4	29.5	29.6	29.7	11562	11746	11930
2005	11976	29.8	29.6	29.8	30.0	11746	12116	12489
2006	12377	29.9	29.7	30.0	30.3	11930	12489	13058
2007	13319	30.7	29.8	30.2	30.6	12116	12867	13635
2008	13301	30.3	29.9	30.4	30.9	12302	13249	14220
2009	13392	30.4	30.0	30.6	31.2	12489	13635	14815
2010			30.1	30.8	31.5	12678	14024	15419
2011			30.2	31.0	31.8	12867	14418	16031
2012			30.3	31.2	32.1	13058	14815	16652
2013			30.4	31.4	32.4	13249	15216	17282
2014			30.5	31.6	32.7	13441	15622	17920
2015			30.6	31.8	33.0	13635	16031	18568
2016			30.7	32.0	33.3	13829	16444	19224
2017			30.8	32.2	33.6	14024	16861	19889
2018			30.9	32.4	33.9	14220	17282	20563

Source: BC Perinatal Data Registry

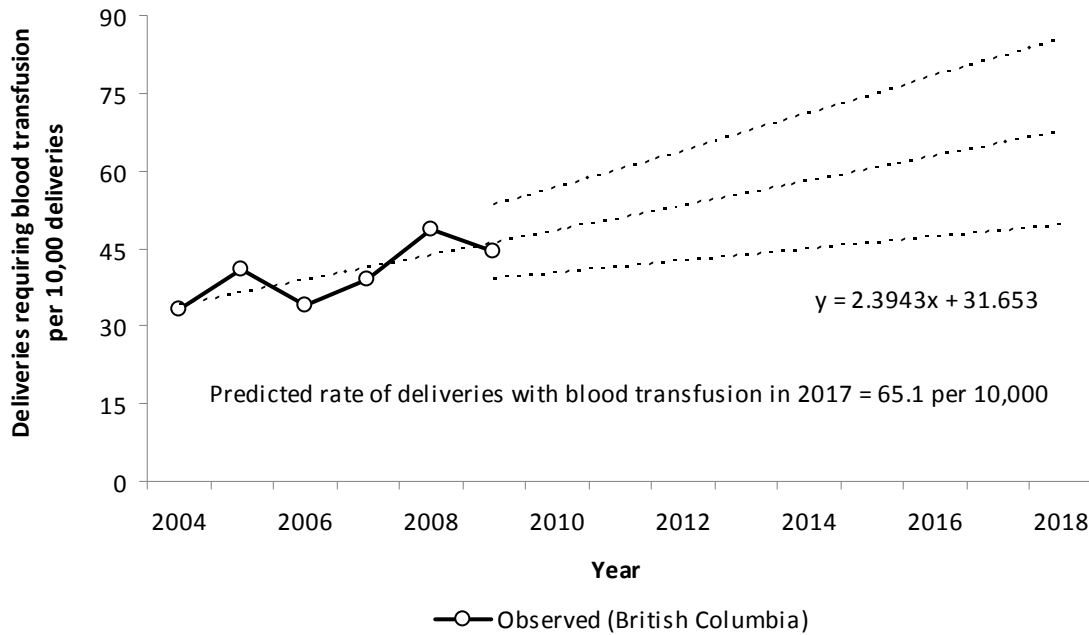
**Table 24.** Predicted cesarean deliveries, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted cesarean rate			Predicted cesarean number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		31.5	33.6	35.7	15419	19889	24792

Source: BC Perinatal Data Registry

\*Projected number of cesarean deliveries based on projected rate of cesarean deliveries and predicted number of deliveries (Table 1 and 2).

**Figure 12.** Observed and predicted deliveries requiring blood transfusion for postpartum hemorrhage, British Columbia, 2004-2018



**Table 25.** Observed and predicted deliveries requiring blood transfusion (BT) for postpartum hemorrhage, British Columbia, 2004-2018

Year	Observed deliveries with blood transfusion		Predicted BT rate			Predicted BT number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	133	33.3	32.8	34.0	35.2	129	135	142
2005	164	40.8	34.0	36.4	38.8	135	148	162
2006	141	34.1	35.2	38.8	42.4	142	162	183
2007	169	39.0	36.4	41.2	46.0	148	176	205
2008	213	48.6	37.6	43.6	49.6	155	190	228
2009	196	44.4	38.8	46.0	53.2	162	205	252
2010			40.0	48.4	56.7	169	220	278
2011			41.2	50.8	60.3	176	236	304
2012			42.4	53.2	63.9	183	252	332
2013			43.6	55.6	67.5	190	269	360
2014			44.8	57.9	71.1	197	286	389
2015			46.0	60.3	74.7	205	304	420
2016			47.2	62.7	78.3	213	322	452
2017			48.4	65.1	81.8	220	341	484
2018			49.6	67.5	85.4	228	360	518

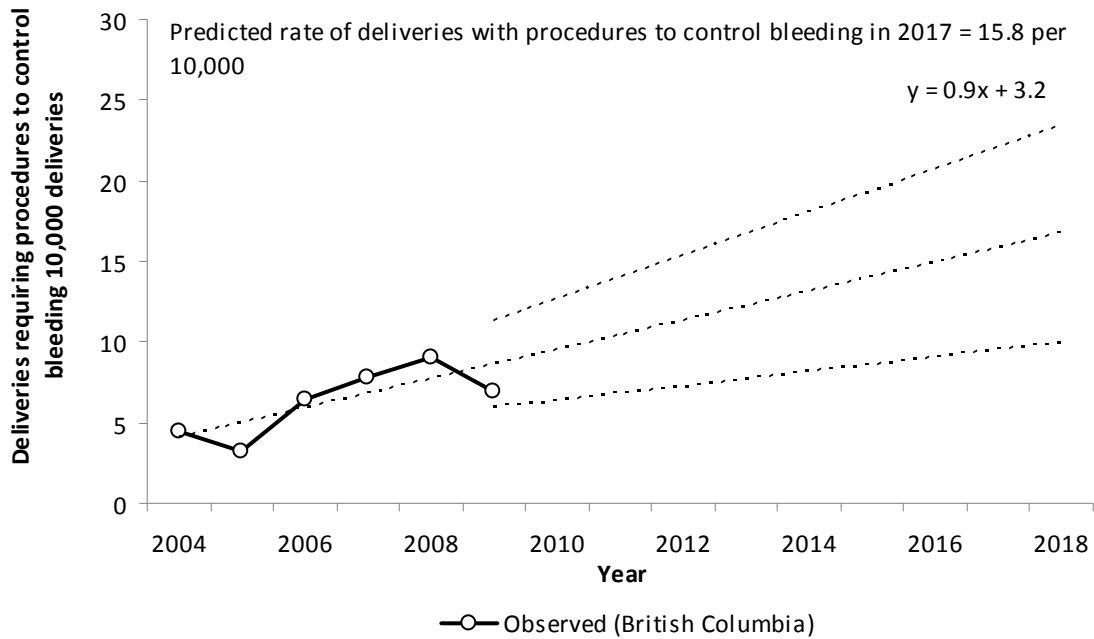
**Table 26.** Predicted deliveries with blood transfusion (BT) for postpartum hemorrhage, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted BT delivery rate			Predicted BT delivery number*		
		2035-36			2035-36		
		Low	Middle	High	Low	Middle	High
2035		56.7	81.8	106.9	278	484	742

Source: BC Perinatal Data Registry

\*Projected number of deliveries with BT and PPH based on projected rate of deliveries with BT and predicted number of deliveries (Table 1 and 2).

**Figure 13.** Observed and predicted deliveries requiring procedures to control bleeding due to postpartum hemorrhage, British Columbia, 2004-2018



**Table 27.** Observed and predicted deliveries requiring procedures to control bleeding (PB) due to postpartum hemorrhage, British Columbia, 2004-2018

Year	Observed deliveries with procedures		Predicted PB rate/10,000			Predicted PB number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004		4.5	3.7	4.1	4.6	14	16	18
2005		3.2	4.1	5.0	5.9	16	20	25
2006		6.5	4.6	5.9	7.3	18	25	31
2007		7.8	5.0	6.8	8.6	20	29	38
2008		9.1	5.5	7.7	10.0	22	34	46
2009		7.0	5.9	8.6	11.3	25	38	54
2010			6.4	9.5	12.7	27	43	62
2011			6.8	10.4	14.0	29	48	71
2012			7.3	11.3	15.4	31	54	80
2013			7.7	12.2	16.7	34	59	89
2014			8.2	13.1	18.1	36	65	99
2015			8.6	14.0	19.4	38	71	109
2016			9.1	14.9	20.8	41	77	120
2017			9.5	15.8	22.1	43	83	131
2018			10.0	16.7	23.5	46	89	142

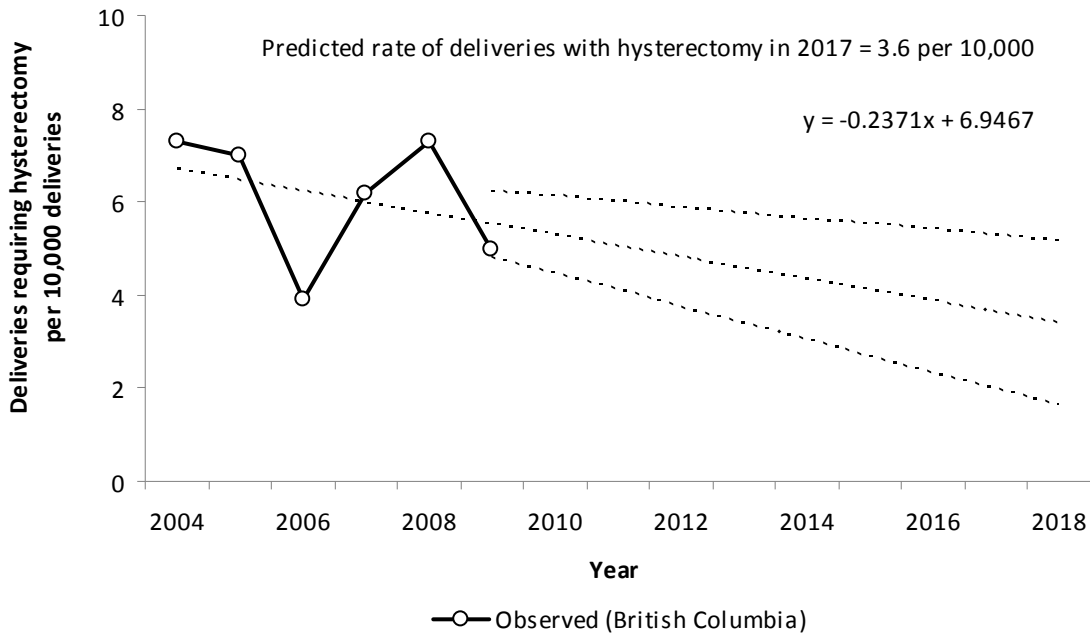
**Table 28.** Predicted deliveries with procedures to control bleeding (PB) due to postpartum hemorrhage, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted PB delivery rate			Predicted PB delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		12.7	22.1	31.6	62	131	219

Source: BC Perinatal Data Registry

\*Projected number of deliveries with PB based on projected rate of deliveries with PB and predicted number of deliveries (Table 1 and 2).

**Figure 14.** Observed and predicted deliveries requiring hysterectomy for postpartum hemorrhage, British Columbia, 2004-2018



**Table 29** Observed and predicted deliveries requiring hysterectomy (HYS) for postpartum hemorrhage, British Columbia, 2004-2018

Year	Observed deliveries with hysterectomy		Predicted HYS rate/10,000			Predicted HYS number*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	29	7.3	6.6	6.7	6.8	26	27	27
2005	28	7.0	6.2	6.5	6.7	25	26	28
2006	16	3.9	5.9	6.2	6.6	24	26	28
2007	27	6.2	5.5	6.0	6.5	22	26	29
2008	32	7.3	5.2	5.8	6.4	21	25	29
2009	22	5.0	4.8	5.5	6.2	20	25	30
2010			4.5	5.3	6.1	19	24	30
2011			4.1	5.0	6.0	17	23	30
2012			3.7	4.8	5.9	16	23	30
2013			3.4	4.6	5.8	15	22	31
2014			3.0	4.3	5.6	13	21	31
2015			2.7	4.1	5.5	12	21	31
2016			2.3	3.9	5.4	10	20	31
2017			2.0	3.6	5.3	9	19	31
2018			1.6	3.4	5.2	7	18	31

Source: BC Perinatal Data Registry

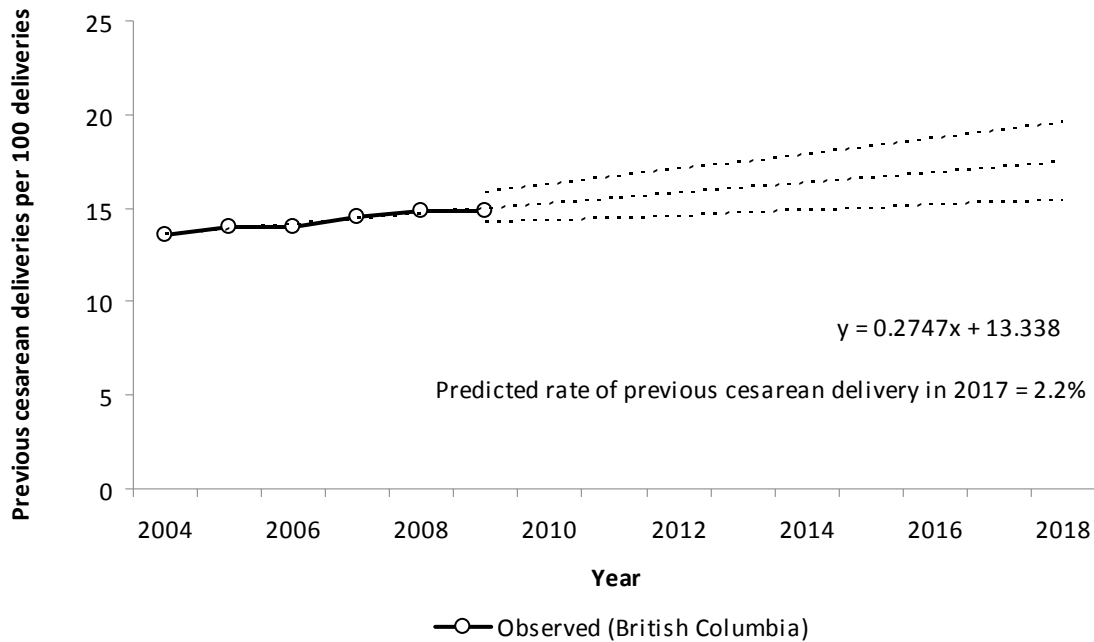
**Table 30** Predicted deliveries with hysterectomy (HYS) for postpartum hemorrhage, British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted HYS delivery rate			Predicted HYS delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		0.0	2.0	4.5	0	12	31

Source: BC Perinatal Data Registry

\*Projected number of deliveries with HYS based on projected rate of deliveries with HYS and predicted number of deliveries (Table 1 and 2).

**Figure 15.** Observed and predicted previous cesarean deliveries, British Columbia, 2004-2018



**Table 31.** Observed and predicted previous cesarean deliveries (PCS), British Columbia, 2004-2018

Year	Observed previous cesarean deliveries		Predicted rate (PCS)			Predicted number (PCS)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004	5407	13.6	13.5	13.6	13.8	5283	5403	5525
2005	5621	14.0	13.6	13.9	14.2	5403	5648	5897
2006	5793	14.0	13.8	14.2	14.6	5525	5897	6282
2007	6312	14.6	13.9	14.4	15.0	5648	6152	6678
2008	6509	14.8	14.0	14.7	15.4	5772	6413	7087
2009	6552	14.9	14.2	15.0	15.8	5897	6678	7508
2010			14.3	15.3	16.2	6024	6949	7940
2011			14.4	15.5	16.6	6152	7226	8385
2012			14.6	15.8	17.0	6282	7508	8842
2013			14.7	16.1	17.5	6413	7795	9311
2014			14.8	16.4	17.9	6545	8087	9792
2015			15.0	16.6	18.3	6678	8385	10284
2016			15.1	16.9	18.7	6813	8688	10789
2017			15.3	17.2	19.1	6949	8997	11306
2018			15.4	17.5	19.5	7087	9311	11835

Source: BC Perinatal Data Registry

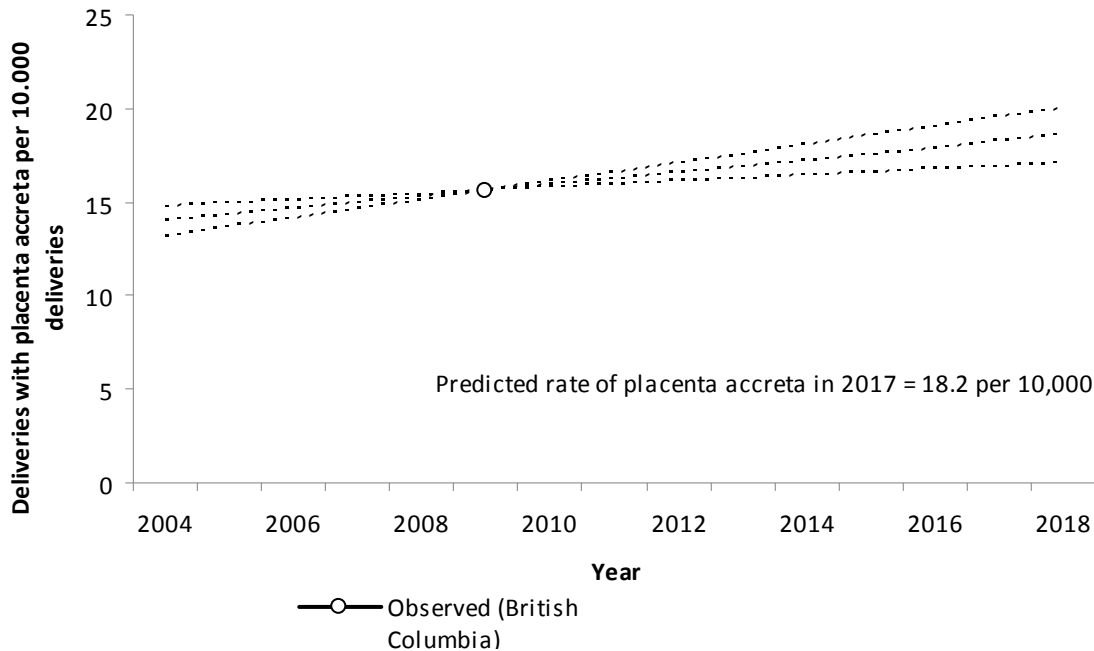
**Table 32.** Predicted previous cesarean deliveries (PCS), British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted PCS delivery rate			Predicted PCS delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		16.2	19.1	22.0	7940	11306	15262

Source: BC Perinatal Data Registry

\*Projected number of previous cesarean deliveries based on projected rate of previous cesarean deliveries and predicted number of deliveries (Table 1 and 2).

**Figure 16.** Observed and predicted deliveries with placenta accreta, British Columbia, 2004-2018



**Table 33.** Observed and predicted deliveries with placenta accreta (PA), British Columbia, 2004-2018

Year	Observed deliveries with placenta accreta		Predicted rate (PA)/10,000			Predicted number (PA)*		
	Number	Rate	2017-2018			2017-2018		
			Low	Middle	High	Low	Middle	High
2004			13.1	14.0	14.8			
2005			13.6	14.3	14.9			
2006			14.1	14.6	15.1			
2007			14.6	14.9	15.3			
2008			15.1	15.3	15.4			
2009	69	15.6	15.6	15.6	15.6	65	70	74
2010	40	11.3	15.8	15.9	16.1	66	73	79
2011			15.9	16.3	16.6	68	76	84
2012			16.1	16.6	17.1	69	79	89
2013			16.3	16.9	17.6	71	82	94
2014			16.4	17.2	18.1	72	85	99
2015			16.6	17.6	18.5	74	89	104
2016			16.7	17.9	19.0	75	92	110
2017			16.9	18.2	19.5	77	95	116
2018			17.1	18.5	20.0	79	99	121

Source: BC Perinatal Data Registry

**Table 34.** Predicted deliveries with placenta accreta (PA), British Columbia, 2035-2036

Year	Observed number of deliveries	Predicted PA rate/10,000			Predicted PA delivery number*		
		2035-2036			2035-2036		
		Low	Middle	High	Low	Middle	High
2035		19.0	22.5	25.9	93	133	180

Source: BC Perinatal Data Registry

\*Projected number of deliveries with placenta accreta based on projected rate of placenta accreta (see text for details) and predicted number of deliveries (Table 1 and 2). Slope for increase in placenta accreta rates assumed from data on rates of previous cesarean delivery.

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