APHEO Core Indicators for Public Health In Ontario

Focus on Reproductive Health Core Indicators

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In partnership with Public Health Ontario

Outline

- Overview of Core Indicators for Public Health in Ontario
- APHEO-Public Health Ontario Collaboration
- Reproductive Health Core Indicators
- What has Changed with the Revisions
- Three Data Sources: Vital Statistics, Hospitalization, BORN
- Top Five Things Epidemiologists Ask
- Summary
- Next Steps

Core Indicators for Public Health in Ontario

- A key project of the Association of Public Health Epidemiologists in Ontario (APHEO):
  - Aims to systematically define and operationalize a core set of population health indicators
  - Core Indicators were originally created to link to objectives outlined in the *Ontario Ministry of Health and Long-Term Care's Mandatory Health Programs and Services Guidelines* and are now being revised to reflect the *Ontario Public Health Standards*
- Over 120 Core Indicators in the areas of:
  - Population
  - Environment and Health: Social, Physical, Built Environment
  - Mortality, Morbidity and Health-related Quality of Life
  - Chronic Diseases and Injuries
  - Behaviour and Health: Smoking, Alcohol, Physical Activity, Nutrition & Healthy Weights, UV Radiation Exposure
  - Family Health: Sexual Health, **Reproductive Health,** Child & Adolescent Health
  - Mental Health
  - Infectious Diseases
  - Use of Health Services

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Core Indicators for Public Health in Ontario

What's in a Core Indicator?

- Name, Description, Specific indicators
- Corresponding outcomes from OPHS
- Corresponding indicators from Statistics Canada, CIHI & other sources
- Data Sources (& alternative data sources)
- ICD codes, if applicable / Survey questions, if applicable
- Analysis check-list
- Method of calculation
- Basic categories
- Indicator comments
- Definitions
- Cross-references to other indicators
- Cited references, Other references
- Changes made (with dates)
- Acknowledgements

APHEO Public Health Ontario Collaboration

- PHO has partnered with the APHEO Core Indicators Work Group (CIWG) to revise and develop Core indicators in the areas of:
  - Built Environment
  - Injury and Substance Misuse Prevention
  - Social Determinants of Health
  - Healthy Eating Active Living
  - **Reproductive Health**
- Documents:
  - *Alignment of APHEO Core Indicators with the Ontario Public Health Standards (OPHS)*
  - *Gaps in Public Health Indicators and Data in Ontario*
- PHO will incorporate Core Indicators into the central analytics *Snapshot@PHO* tool that will support standardized public health status reporting in Ontario.

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Reproductive Health Core Indicators

14 Reproductive Health Core Indicators and 9 related resources have been recently revised or newly developed:

Core Indicators
Crude Birth Rate
Fertility Rates
Total Fertility Rate
Pregnancy Rate
Preterm Birth Rate
Multiple Birth Rate
Birth Weights
Congenital Anomalies
Congenital Infections
Perinatal Mortality and Stillbirth Rates
Neonatal and Infant Mortality Rates
Age of Parent at Infant's Birth
Folic Acid Supplementation
Smoking During Pregnancy

Core Indicator Resources
Reproductive Health Core Indicators Documentation Report
HELPS Resource
Vital Statistics Live Birth Data
Vital Statistics Stillbirth Data
Canadian Congenital Anomalies Surveillance System (CCASS) Data Source
Integrated Services for Children Information System (ISCIS)
Hospitalization Data
Better Outcomes Registry & Network (BORN) Information System (formerly Niday Perinatal Database)
Therapeutic Abortion Data

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What has Changed with the Revisions

- Three data sources listed with no specific recommendation on which to use: 1) Vital Statistics, 2) Hospitalization births or obstetric deliveries, 3) BORN Information System.
- No longer exclude infants with birth weight < 500 g.
- Addition of *Small-for-Gestational Age* (SGA) and *Large-for-Gestational Age* (LGA) definitions under *Birth Weight* indicator. (SGA preferred over Low Birth Weight. No longer have High Birth Weight).
- Therapeutic Abortion (TA) data – change in IntelliHEALTH in 2011 to include TAs provided in private physician offices.

What has Changed with the Revisions, cont'd

- *Therapeutic Abortions* no longer an indicator – information included in *Pregnancy Rate* indicator.
- *Neural Tube Defects* indicator broadened into *Congenital Anomalies*.
- *Congenital infections* indicator now includes total incidence.
- *Smoking during Pregnancy*, *Folic Acid Supplementation* indicators now use BORN data, not CCHS.
- Expanded Analysis Check-List, Indicator Comments, References.
- More predefined reports in IntelliHEALTH.
- Information about the data has moved from the indicator to the specific data source resource, e.g. *Vital Statistics Live Birth Data*.

Three Data Sources for Reproductive Health Core Indicators

1. Vital Statistics
2. Hospitalization (Discharge Abstract Database)
3. BORN (Better Outcomes Registry & Network) Information System

Vital Statistics – Live Births, Stillbirths

- Vital Statistics historically provided the "official" numbers.
- Inaccuracy led to the exclusion of Ontario data from national reports by the Canadian Perinatal Surveillance System.
- Advantages:
  - Historical data back to 1986
  - Contains postal code, birth weight, gestation, maternal age, multiples
  - Easy to work with
- Disadvantages:
  - Data quality affected by administrative practices, e.g. registration fees (under-registration of certain infants – disadvantaged families, infants that die), using parent form (gestation incorrect from 1990 to 1998)
  - Generally 3-4 years out of date (currently have 2009 CY)
- Data more complete, especially with electronic reporting.

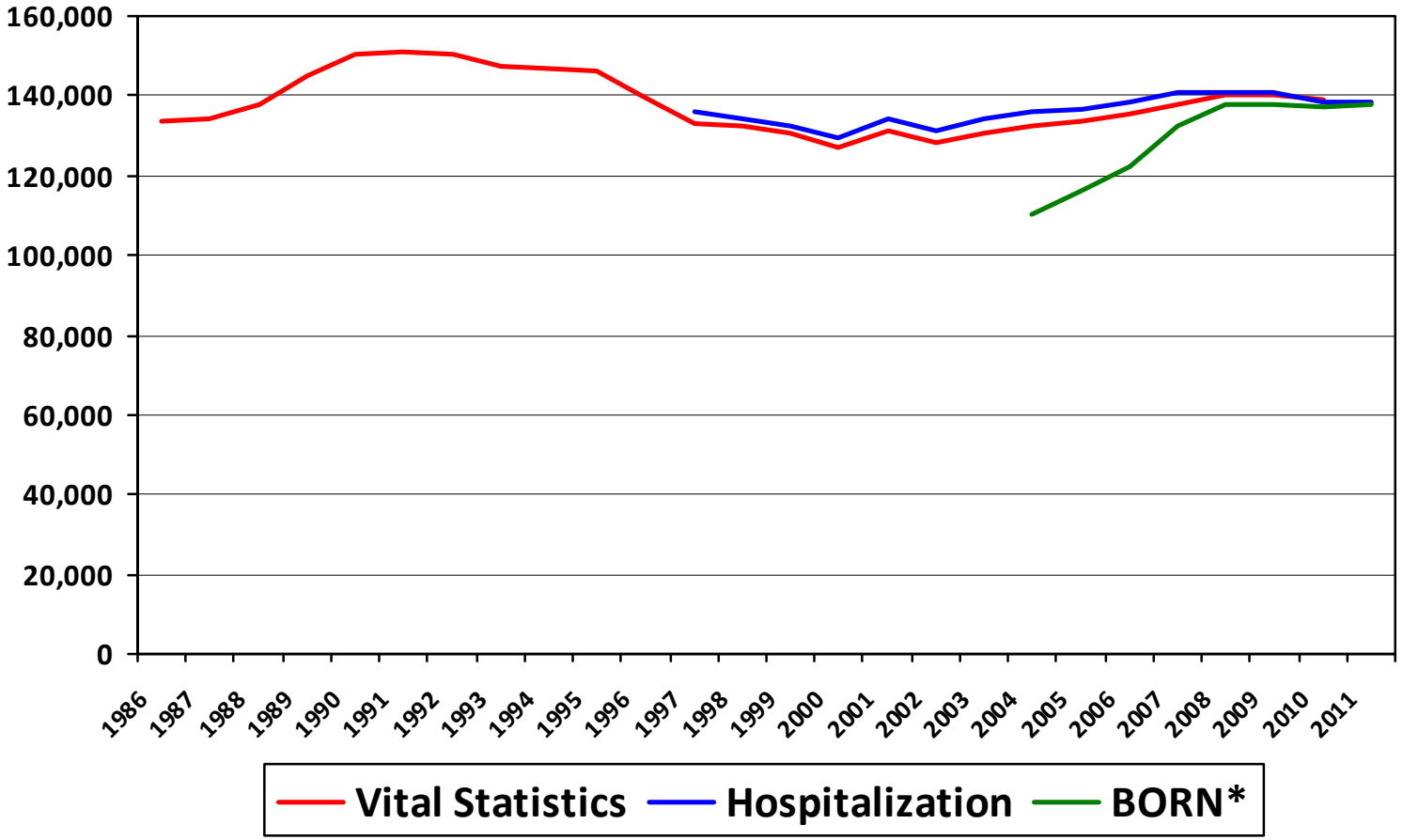
Hospitalization – Live Births, Stillbirths, Deliveries

- Information from newborn and maternal records.
- Advantages:
  - Historical data back to 1997
  - Number of hospital births in Ontario > registered births
  - Postal codes complete
  - Data up-to-date (currently have 2011 CY, 2011/12 FY)
- Disadvantages:
  - Excludes home births (about 1.7% of annual births)
  - Different information on newborn and maternal records – cannot cross-tabulate birth weight and maternal age
  - Some indicators (multiple birth, preterm birth) only recently became available
- Data quality and information improving, e.g. addition of codes for Artificial Reproductive Technologies (ART) in 2010.

BORN Information System

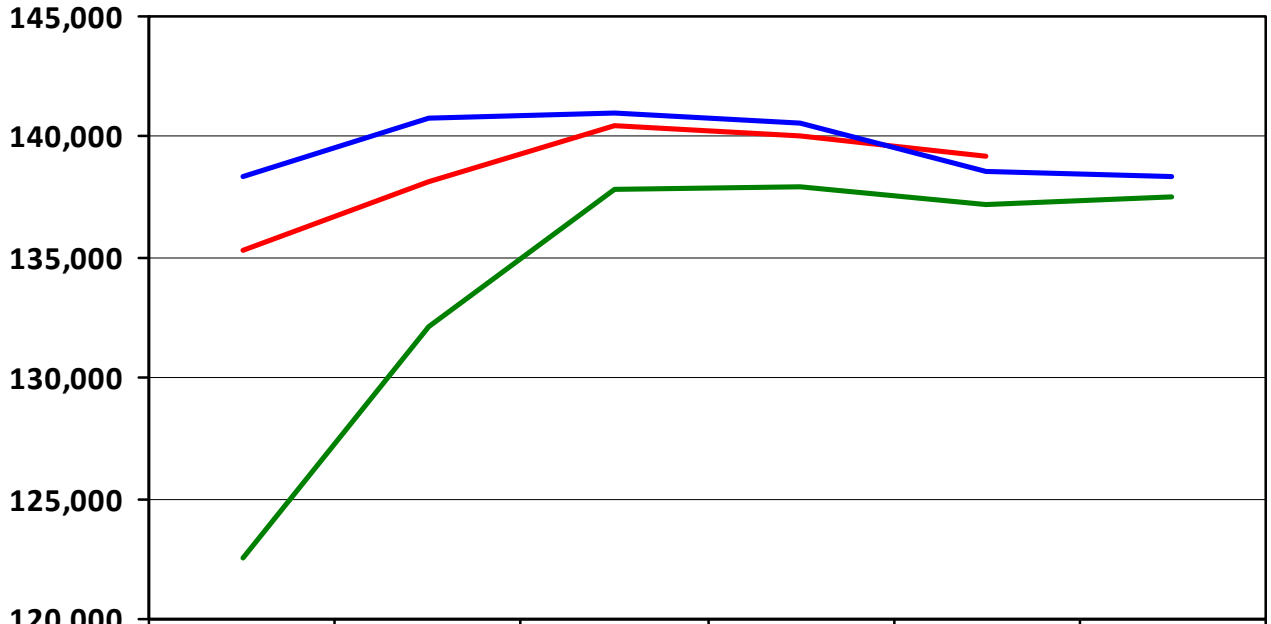
- Launched in 2012, integrating 5 sources: 1) Niday Perinatal Database, 2) Fetal Alert Network, 3) Prenatal Screening Ontario, 4) Newborn Screening Ontario, 5) Midwifery.
- Advantages:
  - More complete source of maternal child health data
  - Maternal demographics and health outcome data
  - Additional data collected on maternal BMI and weight gain
- Disadvantages:
  - System launched in 2012, historical (Niday) data completeness varies
  - Data cubes will only available to health units meeting privacy requirements
- Public health reports in development for all PHUs.
- Data quality steadily improving – opportunities to link with other data (e.g., 18-month well-baby visit, EDI, EQAO).

Number of Live Births to Ontario Mothers in Ontario by Data Source and Calendar Year, 1986 to 2011



* BORN number includes hospital births only.
Source: Reproductive Health Core Indicators Documentation Report, http://www.apheo.ca/index.php?pid=282.

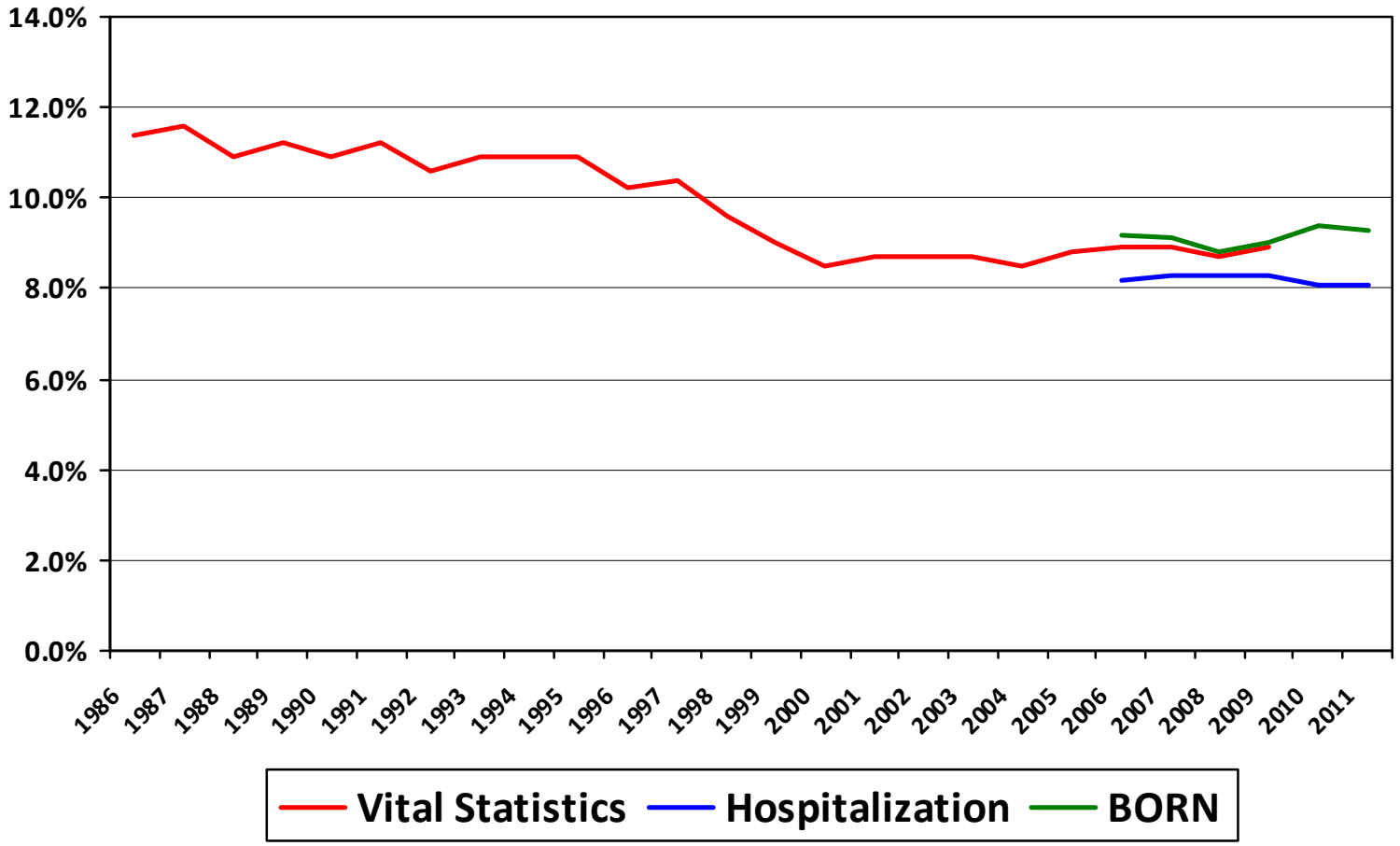
Number of Live Births to Ontario Mothers in Ontario by Data Source and Calendar Year, 2006 to 2011



	2006	2007	2008	2009	2010	2011
Vital Statistics	135,291	138,118	140,501	140,074	139,177	
Hospitalization	138,317	140,744	141,008	140,609	138,616	138,329
BORN*	122,488	132,139	137,782	137,954	137,178	137,533

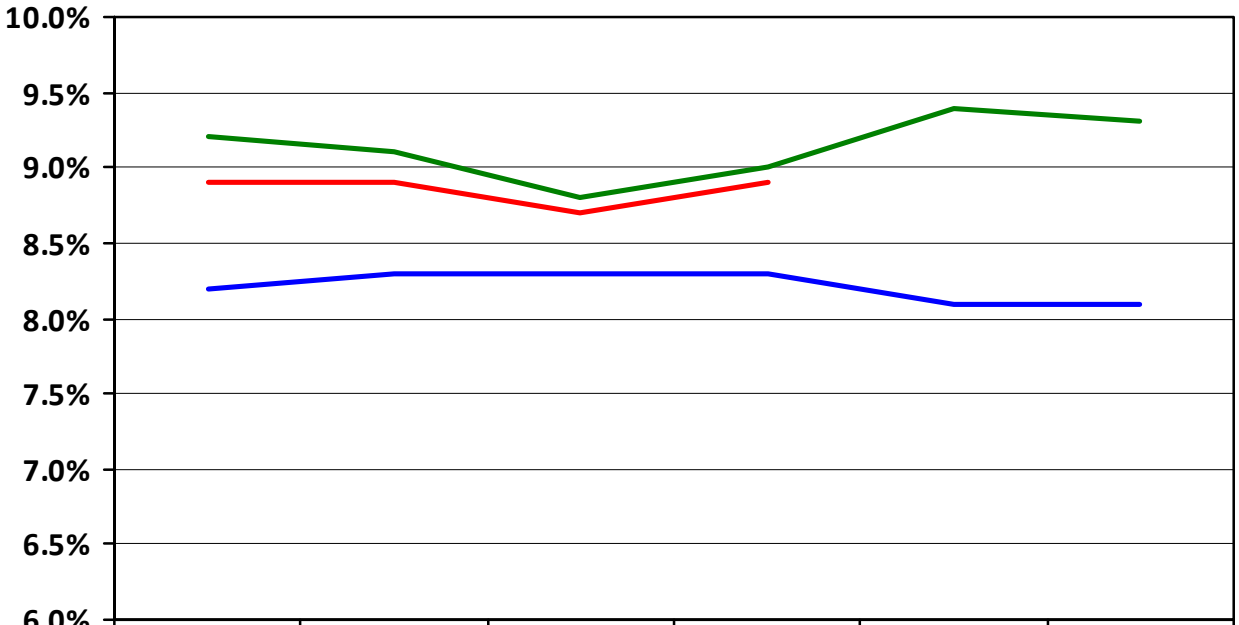
* BORN number includes hospital births only.
Source: Reproductive Health Core Indicators Documentation Report, http://www.apheo.ca/index.php?pid=282.

Small-for-Gestational Age (SGA) Rate in Ontario by Data Source and Calendar Year, 1986 to 2011



Sources: Vital Statistics from IntelliHEALTH tabulated by Peel Region Health Department; Hospitalization from IntelliHEALTH predefined report "Births – small-, large-for-gestational age - PHU 2006-2011"; BORN from *BORN Information System, 2006-2011.*

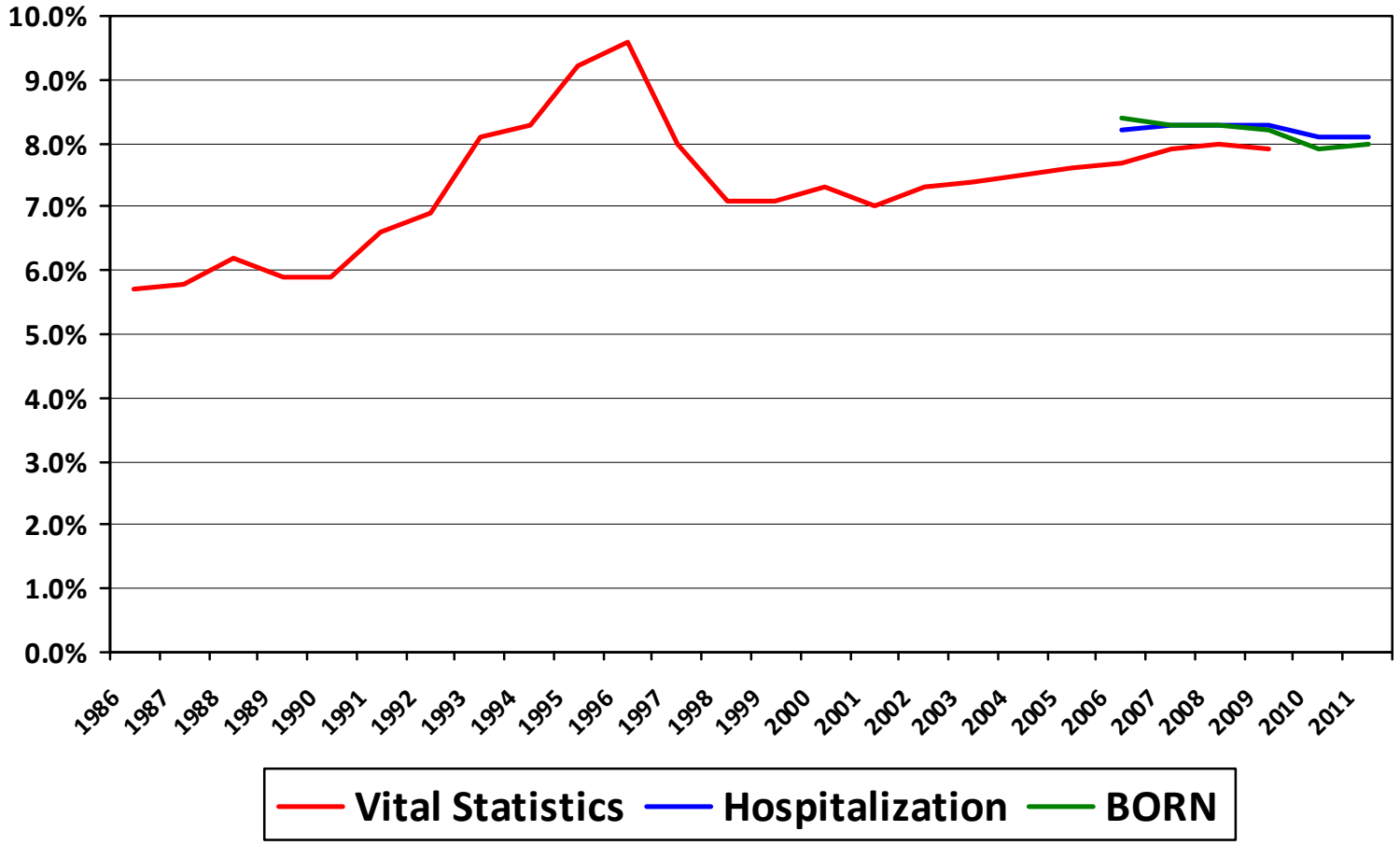
Small-for-Gestational Age (SGA) Rate in Ontario by Data Source and Calendar Year, 2006 to 2011



	2006	2007	2008	2009	2010	2011
Vital Statistics	8.9%	8.9%	8.7%	8.9%		
Hospitalization	8.2%	8.3%	8.3%	8.3%	8.1%	8.1%
BORN	9.2%	9.1%	8.8%	9.0%	9.4%	9.3%

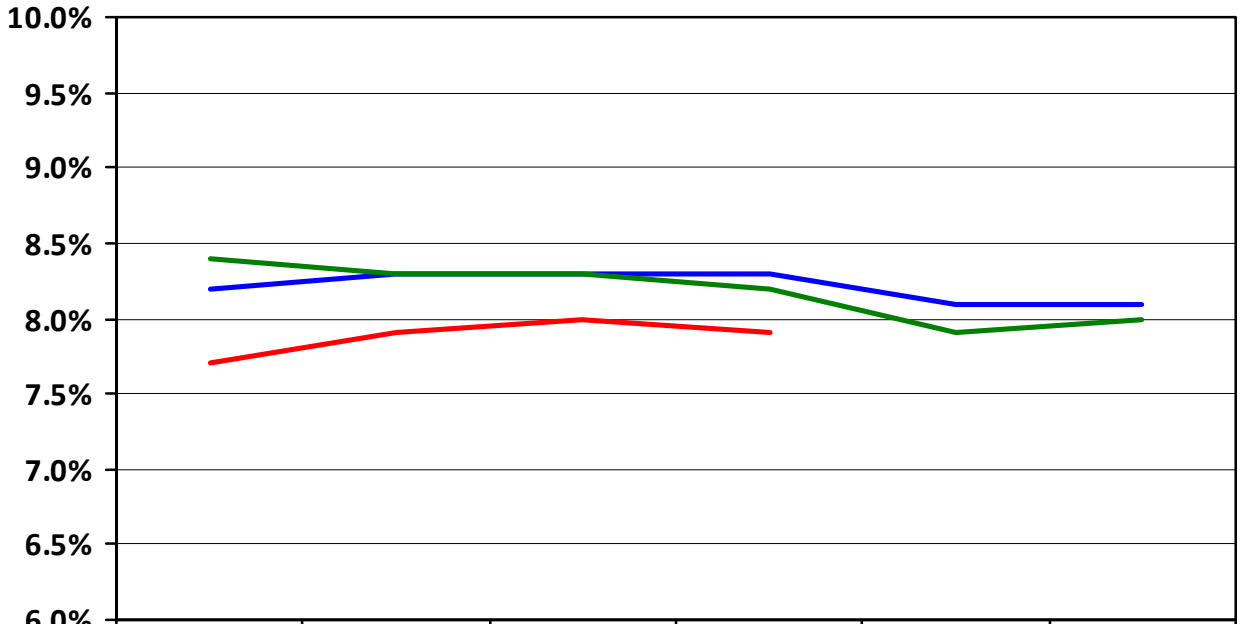
Sources: Vital Statistics from IntelliHEALTH tabulated by Peel Region Health Department; Hospitalization from IntelliHEALTH predefined report "Births – small-, large-for-gestational age - PHU 2006-2011"; BORN from *BORN Information System, 2006-2011.*

Preterm Birth Rate in Ontario
by Data Source and Calendar Year, 1986 to 2011



Sources: Vital Statistics from IntelliHEALTH tabulated by Peel Region Health Department; Hospitalization from IntelliHEALTH tabulated by Durham Region Health Dept; BORN from *BORN Information System, 2006-2011.*

Preterm Birth Rate in Ontario
by Data Source and Calendar Year, 2006 to 2011



	2006	2007	2008	2009	2010	2011
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Hospitalization	8.2%	8.3%	8.3%	8.3%	8.1%	8.1%
BORN	8.4%	8.3%	8.3%	8.2%	7.9%	8.0%

Sources: Vital Statistics from IntelliHEALTH tabulated by Peel Region Health Department; Hospitalization from IntelliHEALTH tabulated by Durham Region Health Dept; BORN from *BORN Information System, 2006-2011.*

Bottom Line

- Analysis has shown inconsistencies between data sources that vary provincially and by health unit.
- There is no gold standard at this time.
- Health units should decide data source depending upon their requirements and the data issues in their area.
- Pick one data source and use it consistently for most of your reproductive health indicators.
- All data sources improving in quality.

Top Five Things Epidemiologists Ask About Reproductive Health Indicators

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Top Five Things Epidemiologists Ask About Reproductive Health Indicators

#5. *What is the definition of High Birth Weight (HBW)?*

- Core Indicators formally defined HBW as >4,000 g.
- Statistics Canada defines HBW as ≥ 4,500 g.
- Not a lot of consistency in the literature.
- HBW is no longer a Core Indicator – the recommendation is to use large-for-gestational age (LGA) instead.
- Low birth weight is still listed as an indicator because of its historical importance – recommend using small-for-gestational age (SGA).

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#4. *Why are fetal losses not included in teen pregnancy rates?*

- Teen pregnancies includes live births & stillbirths (or deliveries) and therapeutic abortions.
- Statistics Canada does include miscarriages from hospitalization data, however the codes are not consistent over time.
- There have been initiatives over the years to count fetal losses (miscarriages, ectopic pregnancies) from IntelliHEALTH combining hospitalization and NACRS data.
- This requires detailed work and analysis to determine the appropriate methods and codes. It has not been a priority and the work still needs to be done.
- Most teen pregnancy rates do not include fetal losses.

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Top Five Things Epidemiologists Ask About Reproductive Health Indicators

#3. *How do I get congenital anomaly data?*

- Congenital anomalies data are from the *Canadian Congenital Anomalies Surveillance System* (CCASS).
- Detailed information is in the CCASS Data Source under Core Indicator Resources.
- Aggregated data are available directly from the Maternal and Infant Health Section of the Public Health Agency of Canada. Email ccasn@phac-aspc.gc.ca to request data. Data are provided in Excel spreadsheets with rates and confidence intervals calculated.
- Data currently available: 1974-2010.

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Top Five Things Epidemiologists Ask About Reproductive Health Indicators

#2. *Why are births with birth weights < 500g no longer excluded?*

- Prior to revision, Core Indicators excluded births with birth weight < 500g. Rationale: registration of these births varied over time, geography.
- Although numbers are small, rates of births at this borderline of viability are increasing in Canada. These infants experience high mortality.
- In consultation with experts at the Canadian Perinatal Surveillance System (CPSS), it was decided to include all births regardless of birth weight.
- Ideally, live births and stillbirths <500g should be excluded from perinatal, neonatal and infant mortality rates BUT this is not feasible with our data (birth weight is not recorded on the death certificate, cannot link birth and death records).
- For the most part, inclusion/exclusion has little effect on most rates.
- For Stillbirth Rate, suggest *Crude Stillbirth Rate* and *Stillbirth Rate ≥ 500g*.
- Refer to *Reproductive Health Core Indicators Documentation Report*.

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Top Five Things Epidemiologists Ask About Reproductive Health Indicators

#1. *What is the difference between a birth and a delivery?*

- Hospital records for newborns and mothers are separate.
- Live births and stillbirths can be identified by Entry code = "N" for newborn or "S" for stillbirth. Information available includes gestation, birth weight. No information about age of mother.
- Note that calendar year of admission is used.
- Obstetric deliveries include births and stillbirths, and count multiple births as one delivery – identified since 2003 with ICD10 code Z37. Type of delivery (i.e. multiple) is incorporated in Z codes.
- An ID number can be used to link newborn and maternal records.

Summary

- Core Indicators form the foundation for community health status reporting in public health in Ontario and can provide information to support evidence-based public health program and service delivery.
- Core Indicators provide detailed information that public health epidemiologists need – reproductive health particularly complex.

Next Steps

- IntelliHEALTH predefined reports and BORN data cubes and public health reports consistent with Core Indicators.
- Sub-Group focusing on developing new indicators:
  - Substance use (including alcohol) during pregnancy
  - Maternal weight gain / Maternal obesity
  - Maternal mental health, including post-partum depression
- BORN Information System will provide new indicator data.

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Ministry of Health and Long-Term Care

Core Indicators for Public Health in Ontario

Core Indicators available from:
http://www.apheo.ca/index.php?pid=55

Core Indicators resources, including data sources and:

- *Gaps In Public Health Indicators and Data in Ontario**
- *Alignment of APHEO Core Indicators with the Ontario Public Health Standards (OPHS)**

Available from **http://www.apheo.ca/index.php?pid=261**

(*also available from: **http://www.oahpp.ca/resources/reports.html**)

Core Indicators for Public Health In Ontario

References

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Questions??