Data Resource Profile: Better Outcomes Registry & Network (BORN) Ontario

Malia SQ Murphy,1 Deshayne B Fell,2 Ann E Sprague,3 Daniel J Corsi,2 Shelley Dougan,3 Sandra I Dunn,3 Vivian Holmberg,3 Tianhua Huang,3 Moya Johnson,3 Michael Kotuba3 et al.
The complete author list is available in the full version of the profile online.

Corresponding author: Mark C Walker, mwalker@toh.ca

Cite this as: The full version of this profile is available at IJE online and should be used when citing this profile.

Key words: BORN Ontario, birth registry, perinatal research, perinatal epidemiology, obstetrics, maternal–child health

Data Resource Basics: The Better Outcomes Registry & Network (BORN) Ontario is a provincial registry that maintains an ongoing collection of pregnancy, birth and newborn information and outcomes data to facilitate and improve maternal–newborn care in Ontario, Canada. BORN Ontario has achieved near-complete capture of all births in Ontario from 2012 to the present day and has captured >1.3 million records to date (Figure 1). BORN Ontario also maintains historical birth-registry data of predecessor organizations and programmes (2006–2012).

Data Collected: Data are submitted by over 250 hospitals, fertility clinics, birth centres, midwifery practice groups, primary-care organizations, and prenatal- and newborn-screening laboratories and treatment centres from across Ontario (Figure 1). Data are collected in real time by several mechanisms, including manual data entry into a secure portal by staff in clinics and birthing units, HL7 feeds or by automated extraction and uploads from electronic health-record systems. Data include maternal demographics, health behaviours, use of assisted reproductive technologies, prenatal screening, pregnancy interventions and complications, intrapartum events, peripartum outcomes, intensive-care and newborn-screening information. They are classified by the nature of the clinical encounter with the healthcare system. Record-level data can be linked to a wide range of provincial administrative and clinical data sets to track individuals from conception to birth and across the lifespan.

Data Resource Use: Contributing hospitals, labs, clinics and birth centres have access to their own data within the BORN Information System reporting portal to facilitate practice audits and quality-improvement initiatives. BORN Ontario data are available to external requestors to

![Figure 1](https://example.com/figure1.png)

Better Outcomes Registry & Network (BORN) Ontario data sources and architecture. BORN Ontario data are submitted on a voluntary basis by health-information custodians from across Ontario servicing the maternal–child population. Data are classified by the nature of the healthcare encounter and are linked to create aggregate records for each woman and child. CARTR, Canadian Assisted Reproductive Technologies Registry; MFM, maternal fetal medicine; NICU, neonatal intensive care unit; NIPT, non-invasive prenatal testing; SCN, special care nursery; HBHC, Healthy Babies Healthy Children.

©The Author(s) 2021. Published by Oxford University Press on behalf of the International Epidemiological Association. This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com
support programme evaluation, policy development, surveillance and research. BORN Ontario data have been used to enhance the quality of maternal–newborn care delivery in Ontario through data-quality assessments, introduction and evaluation of new health services, programmes and technology-based interventions. The BORN Ontario registry is also an invaluable research resource for addressing maternal and child health issues. It is extensively used to address research topics, including the developmental origins of health and disease, complications of pregnancy and childbirth, and evaluating short- and long-term maternal and child health outcomes.

**Reasons to be cautious:** Despite its scope and size, BORN Ontario data, as in other large information systems, may be incomplete and some misclassification and under-reporting can occur. There is a system of rigorous data checking to maintain high data quality. Some data are difficult to ascertain due to the reliance on patient recall (e.g. pre-pregnancy weight) and self-reporting of socially sensitive information (e.g. substance use/abuse, congenital infections, intimate-partner violence), but validation of key fields has shown agreement with other sources. Socio-economic information is not available through BORN Ontario, but may be determined through data linkage to other provincial data resources.

**Collaboration and data access:** Aggregate and record-level BORN Ontario data may be accessed pending the submission and approval of data requests to the BORN Data Access Request Team. BORN Ontario data dictionaries are openly available to browse online.

**Funding and competing interests:** Core funding is provided by the Ontario Ministry of Health. The authors declare no conflict of interest.

**Author affiliations:** ¹OMNI Research Group, Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Canada, ²Children’s Hospital of Eastern Ontario (CHEO) Research Institute, Ottawa, Canada and ³BORN Ontario, Children’s Hospital of Eastern Ontario, Ottawa, Canada