

Covenant Health Research Day 2017

DoMiNO Project: Data mining and newborn outcomes exploring environmental variables

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This interdisciplinary research project includes 24 members who investigate chemical and socioeconomic environmental influences on maternal/infant birth outcomes (low birth weight, preterm births, stillbirths and perinatal mortality). Using publicly funded databases (National Pollutants Release Inventory, Stats Canada, Canadian Neonatal Network, and Alberta Perinatal Health Program), we investigate association patterns among adverse birth outcomes (ABO), multiple pollutants released by industry/traffic to air and maternal and socioeconomic variables, across Canada. We employ *Geo-spatial distribution* of variables and *Newly developed Data mining methodologies* to explore multipollutant interactions, as well as potential interactions of these pollutants, with ABO and socioeconomic and maternal biological variables. The complexity of this project requires interdisciplinary expertise and collaboration, between academia and knowledge users, to obtain, analyze and interpret useful information from large sets of data to advance utilization of the research. The project design reflects an integrated knowledge translation strategy, resulting from collaboration between knowledge users from government, data-provider agencies, NGO's, and interdisciplinary researchers. This collaborative researcher- knowledge user team oversees development of the end-of-project knowledge translation strategy and evaluation of the initiative. Project outcomes include:

- 1) Identification of co-location/spatial association of ABO with multiple combinations of environmental and other known risk factors that can serve as foundation for future research focusing on identifying causal relationships.
- 2) Newly developed approach to data mining as a tool for exploring multi-factorial and multi-pollutant relationships to environmental health outcomes.
- 3) Evaluation of knowledge users and interdisciplinary researchers collaboration by conducting a research project in response to decision-maker/societal needs.