eccdc
early childhood community development centre
Understanding the Early Years

Niagara Region

Presentation:

The Science of Early Child Development

Tiffany Gartner, Data Analysis Coordinator, Ontario Early Years Niagara Region
Glory Ressler, Coordinator, Understanding the Early Years – Niagara Region

Agenda

Purpose of presentation

1. Increase familiarity with Science of Early Child Development resource
2. Consider resource in relation to local knowledge and initiatives
3. Identify ways to effectively use resource locally

Background

The Science of Early Child Development (ECD) is a curriculum resource, presented in a flexible, interactive multimedia format, and inspired and informed by the following questions:

- **What is the new framework for studying child development?**
- **Why is it important for front-line Early Childhood Educators to understand science related to young children?**
- **How can we narrow the gap between research and practice?**

It was developed by Red River College (Manitoba), in partnership with the Atkinson Centre for Society and Child Development, Ontario Institute for Studies in Education, University of Toronto. The authors are: Jane Bertrand, Elin Ibrahim and Janet Jamieson.

The researchers interviewed for this project and currently featured in The Science of ECD are:

Ron Barr	**Megan Gunnar**	**Clyde Hertzman**	**Daniel Keating**	**Bryan Kolb**	**Fraser Mustard**
Charles Nelson	**Michael Rutter**	**Fiona Stanley**	**Steve Suomi**	**Richard Tremblay**	**Janet Werker**

Other researchers are featured in articles, links and presentations (i.e. Doug Willms, Rob Santos, the late Dan Offord). The resource also includes the voices of caregivers and parents.

The resource is basically multimedia textbook that has been designed to be used in many different ways:

- To enhance, update, and enrich several different courses within a program. Pieces of the resource can be added to existing content.
- As the foundation and content for an entire course. Although changing the content of the resource is not permitted, you can build a course around it a make it your own.
- As an on-line distance education course (i.e. Manitoba Child Care Assistant Course – 40 hrs).
- As a resource for instructors/presenters – show video clips, explore links, and play games.
- As a 'text' to read either at home, in class, at work, or in a library.

Accessing the Resource

There are two types of licensing available in either online (streaming videos) and/or CD versions:

1. Projection; for instructors or professors who would like to use the resource to enhance classes, or presenters who would like to use it as a training tool ($249/2 yrs).
2. Individual; for students and individual users who would like access for personal use ($79 / 2 yrs).

You can currently access The Science of Early Child Development through the ECCDC's Projection License (online and CDs). The CDs are available for loan through the ECCDC Library. In order to access the resource online, you will need to enter a username and password to login. Follow these login steps:

1. **Go to** http://courses.scienceofecd.com/
2. **Enter username eccd** in the username textbox.
3. **Enter the password k8p62lms**
4. **Select Windows Streaming** (online) or **Windows CD** (DVDs) **version**

Figure 1: THE SCIENCE OF EARLY CHILD DEVELOPMENT online resource home page

Once you enter the resource, the screen below will be displayed.

Overview of Content

The resource consists of 5 modules:

1. Developmental Health
2. Brain Development
3. Genetics & Experience
4. Coping & Competence
5. Communicating & Learning

Each module is a combination of pop-up readings, videos, links to related websites, case histories, audio clips and interactive activities such as games. You can move through the various media by clicking on icons such as **View**, **Read**, **Visit**, **Play**, and **Listen**.

The resource is currently designed for Early Childhood Educators but could potentially have farther reaching applications. Most of the content that is specific to ECE's is found in the Reflection sections.

Module 1: Developmental Health

Learning Outcome: Discuss human development from a developmental health perspective.

This section covers the following:

1. Developmental health perspective (developmental psychology + population health).
2. Individual pathways of development.
3. Population developmental pathways.
4. Pathways of childhood vulnerability and well-being.
5. The importance of investment in the early years in the context of individual and population developmental health.

Questions examined in this module include:

- Why do some children thrive and others do not?
- Is it true that most 'vulnerable' children are from poorer families in our society?
- Are the early years really that important in terms of lifelong outcomes?
- Why is it said that the work of early childhood educators is one of the most important jobs anyone can do in working towards a better world?

Conditions in the early years set lifelong pathways (average tendencies) for groups, although individual outcomes may very widely. The factors highlighted as important for populations include:

- Socioeconomics
- Parenting style
- Neighbourhoods (cohesion, mixed, safe)
- Accessibility and quality of resources (i.e. child care, etc…)

This module also discusses the gradient effect (flatten and raise) as well as targeted vs. universal programming (addressing vulnerability across gradient).

Module 2: Brain Development

Learning Outcome: Apply current scientific findings about the brain to ECE practice.

This section covers the following:

1. The importance of brain development to early childhood education.
2. Brain development.
3. The ways scientists study and learn about the brain.
4. Implications for effective practices based on recent findings on brain development.

Questions examined in this module include:

- Have you ever noticed how you can't think as well when you are tired or stressed?
- Why do some people seem more easily stressed than others?
- Have you ever wondered how Mozart's or Einstein's brains are different than the rest of ours?
- What is it about the brain that makes people different?

The module introduces the field of neuroscience and stresses the importance of the prenatal and infancy period. It highlights human and animal research that informs our understanding of:

- Neural proliferation and differentiation
- Cell migration
- Wiring and sculpting of neural pathways
- Brain plasticity
- Sensory and perceptual systems
- Stress pathways (controlled by interconnected neural pathways and hormone systems)

It also discusses identifying knowledgeable and reliable information.

Module 3: Genetics & Experience

Learning Outcome: Apply understanding of the interplay of genetics & experience to supporting children's development.

This section covers the following:

1. The evolution of current thinking about gene - experience interaction.
2. Interaction between genes and experience.
3. Experience-based brain development.
4. The major environmental influences on development during the early years.
5. How early childhood experiences shape optimal development.

Questions examined in this module include:

- Does a child's genetic make-up determine his/her development?
- How important are a child's early experiences in shaping brain development?

Module 3: Genetics & Experience (continued)

- Is early development mostly predetermined or is it primed to seize on environmental influences when they matter the most?
- What environments or contexts are important?
- What is it about these environments that make a difference?

Module 3 (Genetics & Experience) supports and encourages:

1. Problem-solving, play-based learning,
2. Experience-based brain development strategies, and
3. Optimal early childhood environments, consisting of:
   - Participation of parents and other primary caregivers
   - Management of sensory stimulation
   - Encouragement of exploration
   - Mentoring in basic skills
   - Recognition and celebration of developmental advances
   - Guided rehearsal and extension of skills
   - Protection from inappropriate disapproval, shaming, teasing or punishment
   - A rich and responsive language environment

Module 4: Coping & Competence

Learning Outcome: Support children's acquisition of coping & competence skills.

This section covers the following:

1. Self-regulation (coping and competence) in young children
2. Current research findings related to coping & competence
3. Practices that support the development of competence and coping abilities in young children

Questions examined in this module include:

- How do children learn to control their behaviour?
- How do they learn to cope with strong feelings such as fear and anger, and with stressful experiences such as separation?
- Why are there such differences among 5-year olds in their ability to pay attention, plan, wait their turn, play well with others, and successfully manage other 'readiness' skills?
- Is there a link between emotional control and readiness to learn?
- How can we help children learn to cope?
- How can we support competence?

The module explores the topic by discussing two parallel and interconnected developmental processes: emotional regulation (learning to cope) and executive function (developing competence). Barr's work on crying and self-regulation and his application of biological embedding, Suomi's work related to modifying the stress response, Tremblay's study of aggression trajectories and Gunnar's examination of animal studies in relation to the stress reactivity system are all highlighted.

Application of information in this module includes the importance of nurturing relationships and appropriate physical environments for the development of self-regulation in young children.

Module 5: Communicating & Learning

Learning Outcome: Support children's communication and learning.

This section covers the following:

1. Children's communication and learning.
2. Current research findings related to communicating and learning.
3. Practices that support children's communicating and learning.

Questions that will be examined in this module include:

- How do children learn about, and make sense of, the world around them?
- How do they learn to communicate?
- Is it true that babies are born 'wired to learn'?
- How much does experience matter?
- How can we best support children's cognitive and language development?

The module stresses that although children's abilities are clearly influenced by their genetic potential, research supports the fact that a child's experiences, in and out of the home, are crucial. The following main findings are covered:

- Strong link between the development of vocabulary and socioeconomic status
- Frequency, variety, and quantity of exposure to language experiences/interactions matters

The application of the above findings highlighted in this section include: the importance of play-based learning and the value of both a bottom-up and top-down approach to language development and emergent curriculum.

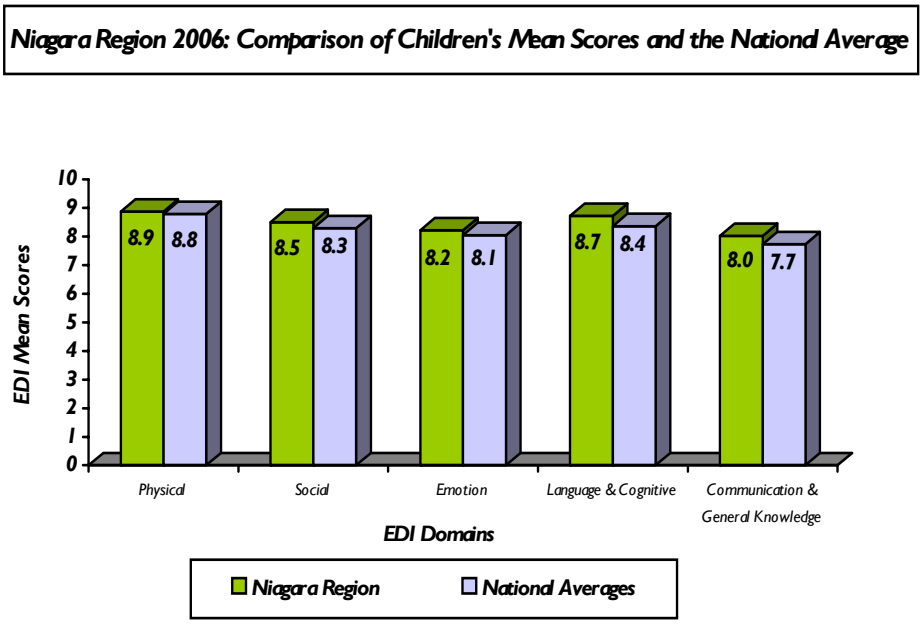
Notes on resource:

Related Local Data

In Niagara, we are fortunate to have a variety of local data that closely relates to the materials and concepts covered in The Science of Early Child Development resource. This includes information gathered through the:

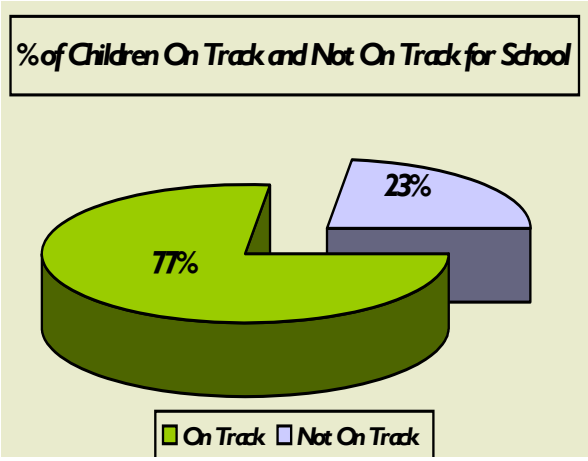
- Census
- National Longitudinal Study of Children and Youth (NLSCY)
- Early Development Instrument (EDI)
- Parent Interviews and Direct Assessment of Children (PIDACS)
- Community Resource Inventory
- Integrated Services for Children Information System/ISCIS (i.e. Parkyn Postpartum Screen, Larson Prenatal Screen, Brief Assessment, In-Depth Family Assessment, and Nipissing Screens)

Early development, as measured in terms of readiness to learn in school (EDI), shows generally good results in Niagara:

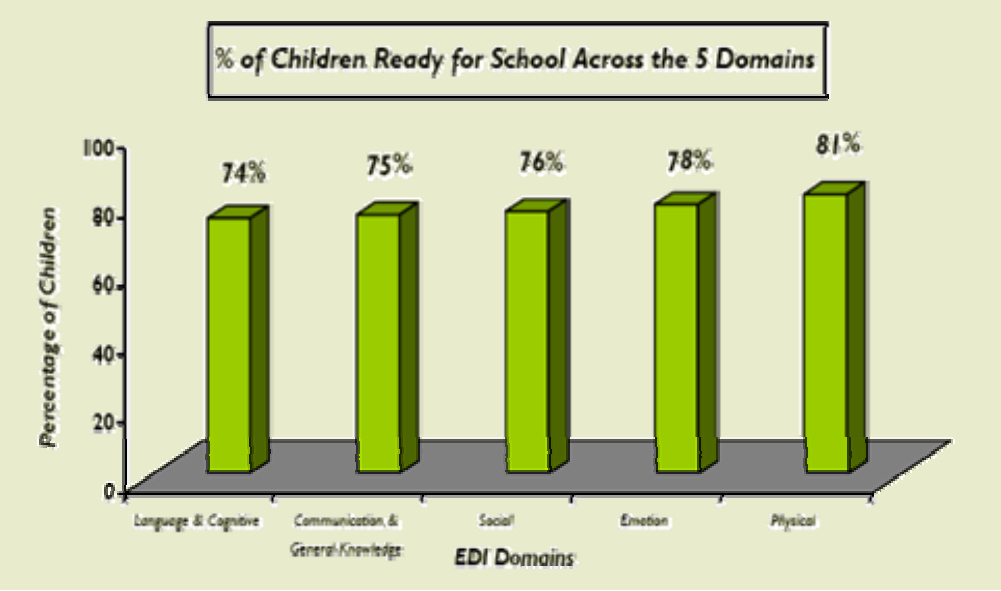


We scored above the national average in all five of the EDI domains!

The majority of SK children who participated in the 2006 implementation were 'on track' for learning in school.

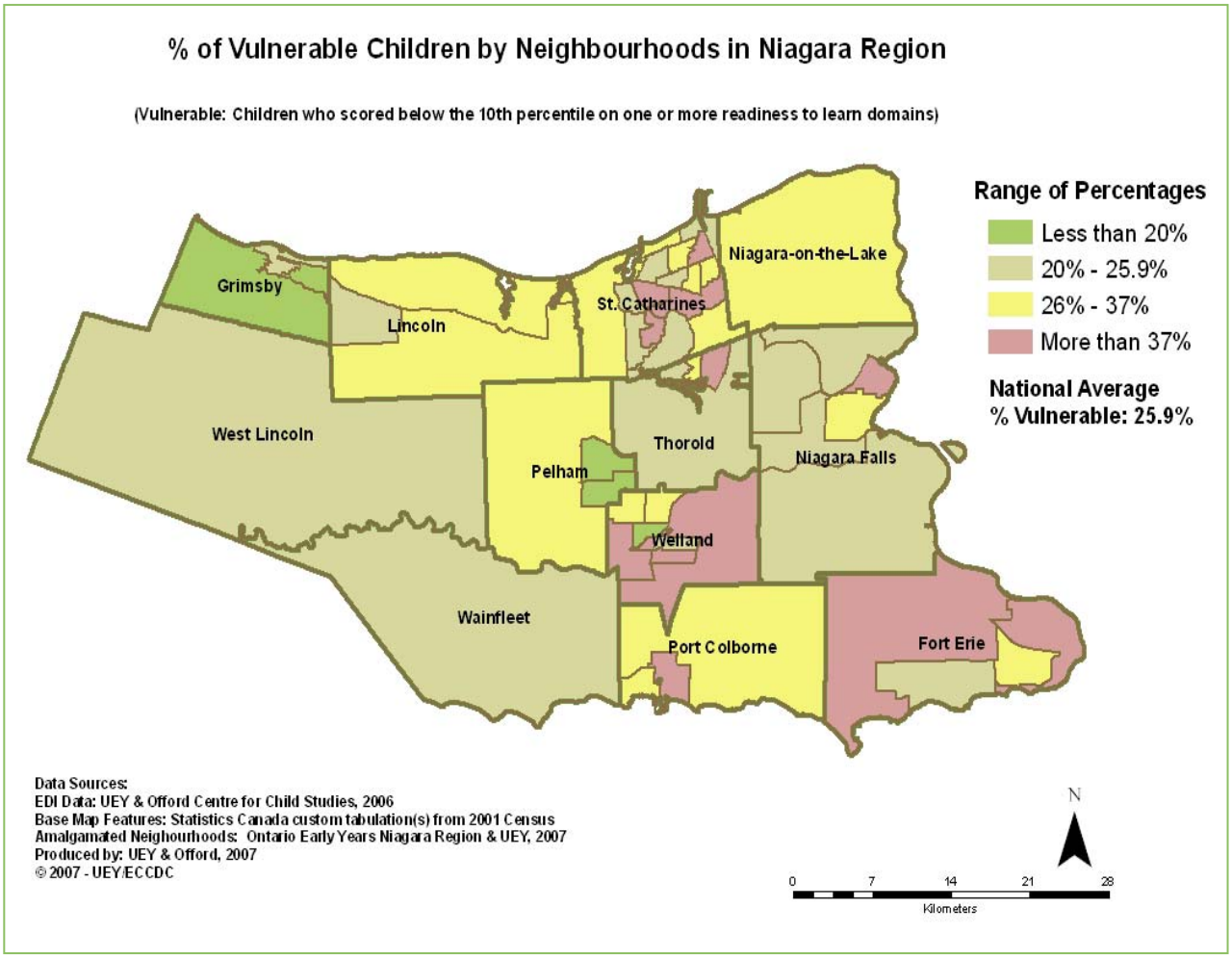


'On track' is defined as scoring above the 25th percentile. This information can also be examined by domain:



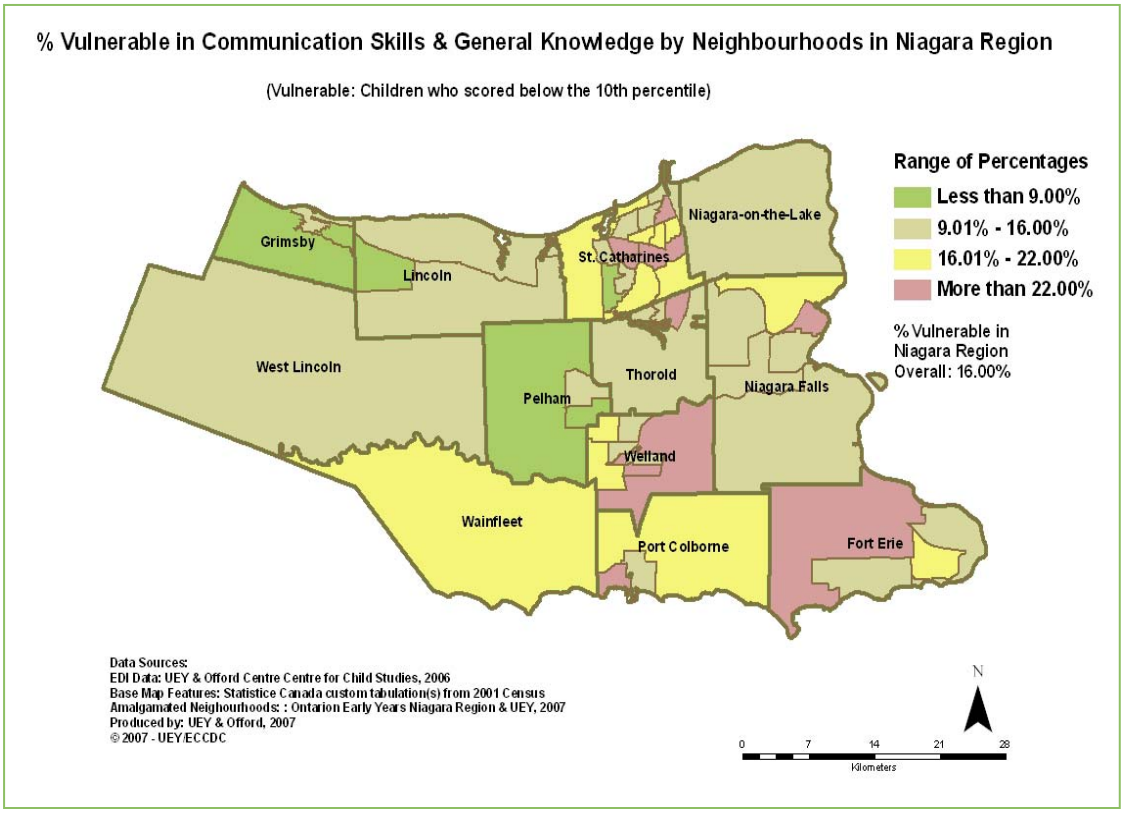
While the majority of children are ready to learn in school and all domains are above the national averages, there is some variance among the domains in Niagara. Language and Cognitive development scored the lowest at 74%.

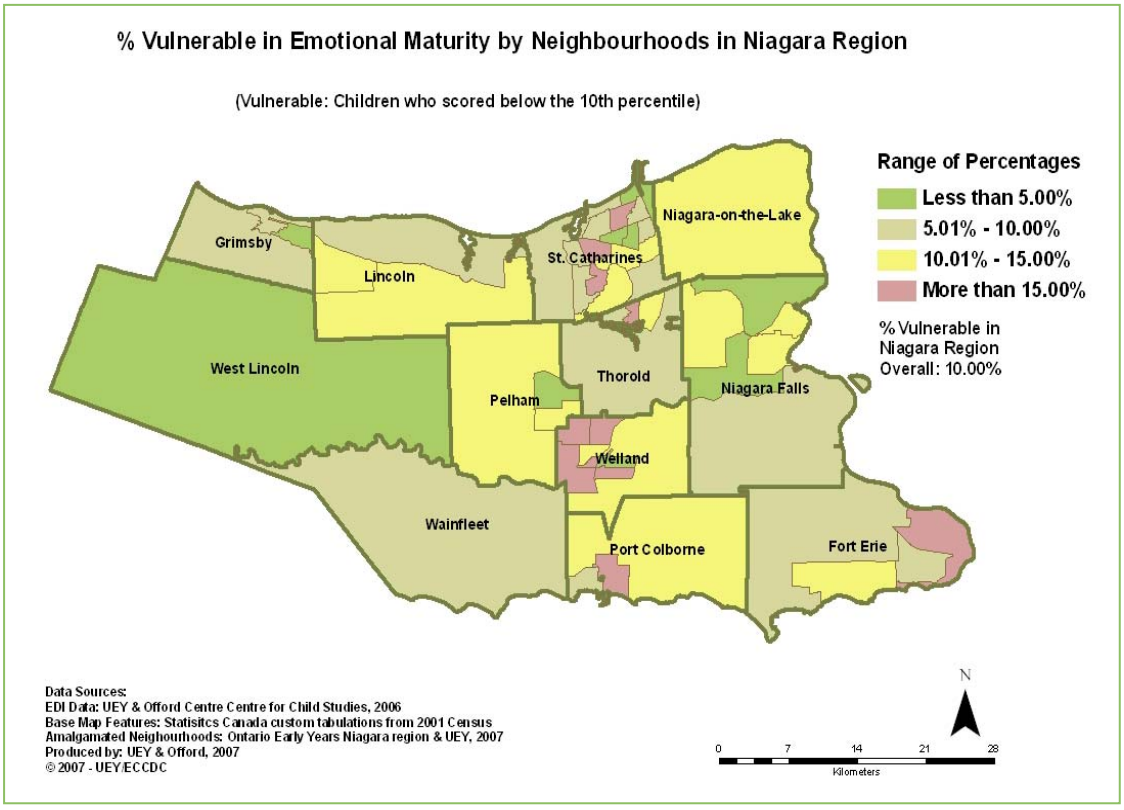
While the majority of children are faring well, there is vulnerability (scoring in the lowest 10th percentile on one or more domains) and it varies across the municipalities and neighbourhoods:

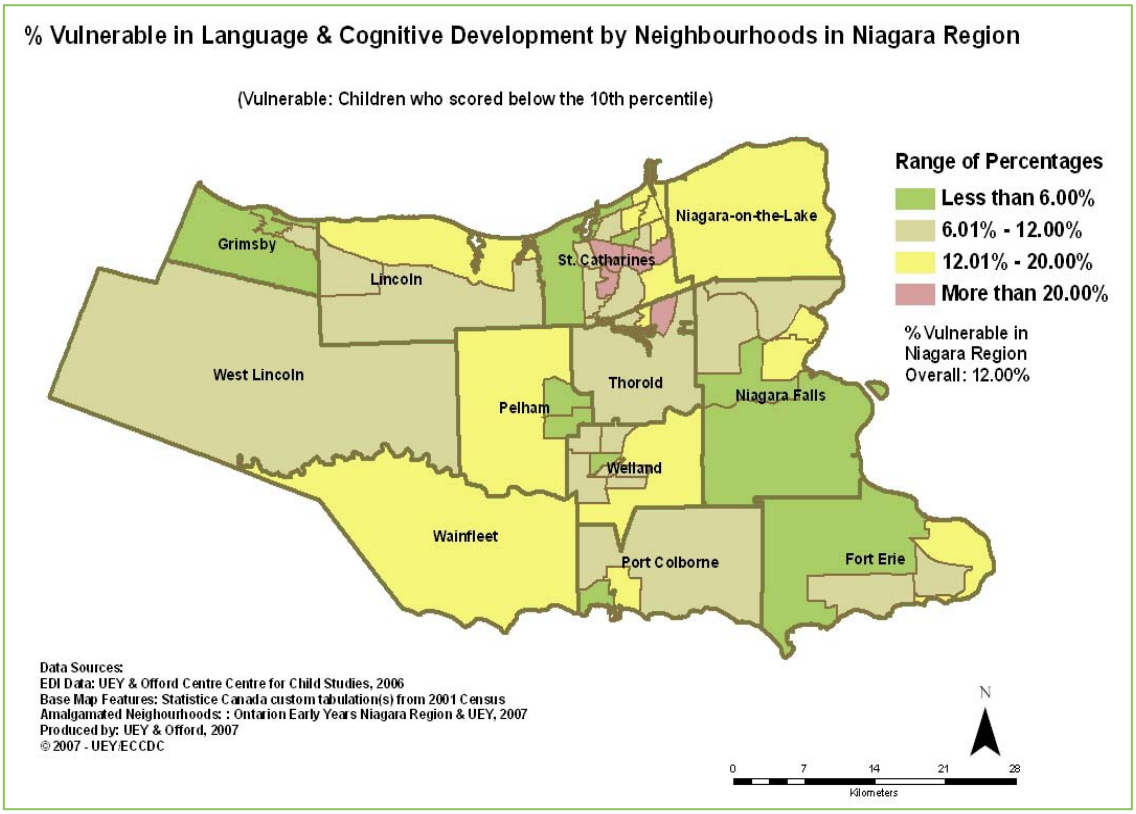


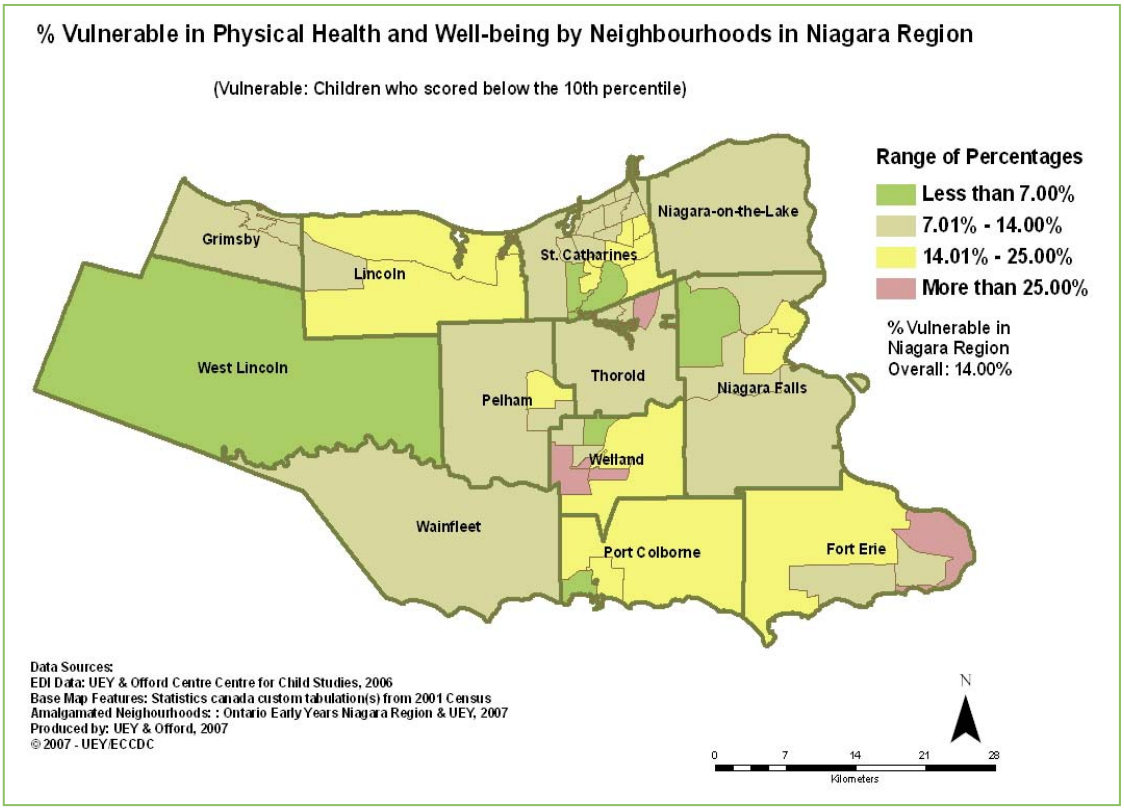
Areas in the maps (above and on page 12) that are yellow or rose indicate percentages of vulnerability that are above the national average. Fort Erie, Welland, St. Catharines, Port Colborne, Niagara-on-the-Lake and Pelham show higher than national averages in terms of vulnerability.

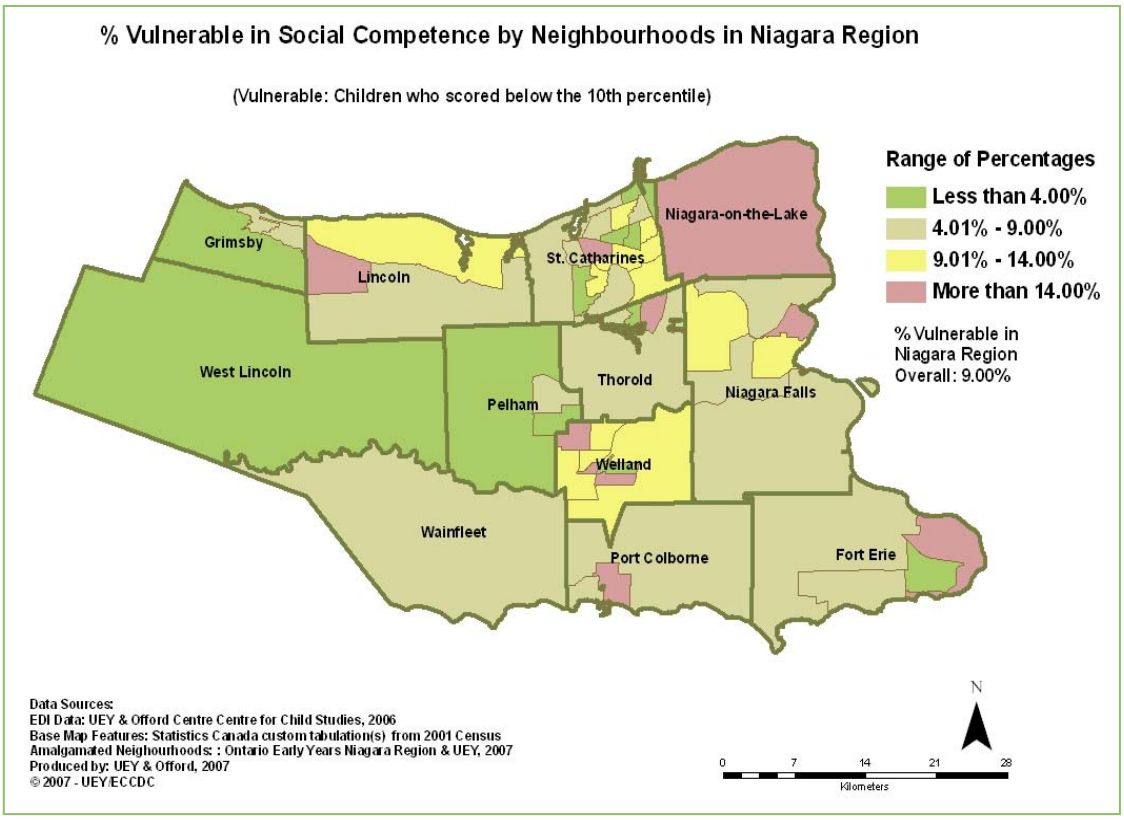
This can also be examined by EDI domain:



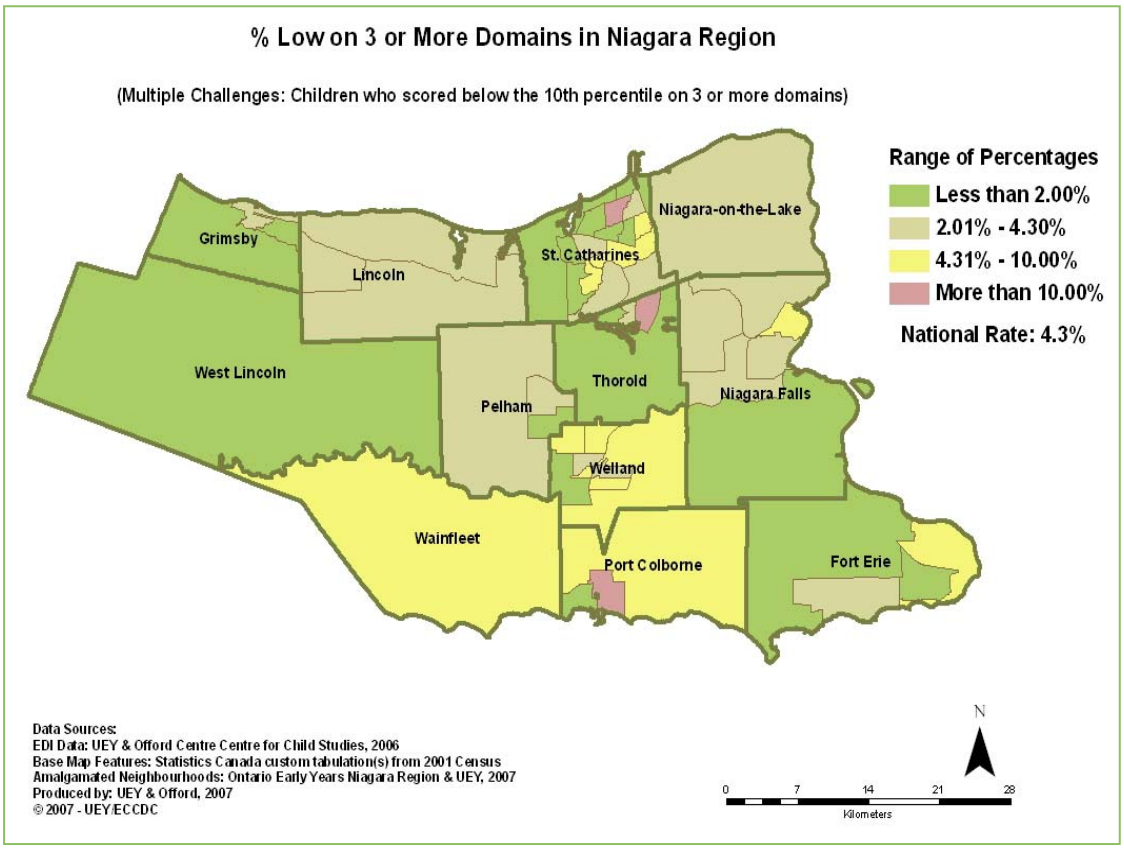



% Vulnerable in Language & Cognitive Development by Neighbourhoods in Niagara Region
(Vulnerable: Children who scored below the 10th percentile)
Range of Percentages
Less than 6.00%
6.01% - 12.00%
12.01% - 20.00%
More than 20.00%
% Vulnerable in Niagara Region Overall: 12.00%
Grimsby
Lincoln
St. Catharines
Niagara-on-the-Lake
West Lincoln
Pelham
Thorold
Niagara Falls
Welland
Wainfleet
Port Colborne
Fort Erie
Data Sources:
EDI Data: UEY & Offord Centre Centre for Child Studies, 2006
Base Map Features: Statistice Canada custom tabulation(s) from 2001 Census
Amalgamated Neighourhoods: : Ontarion Early Years Niagara Region & UEY, 2007
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC
N
0 7 14 21 28
Kilometers


% Vulnerable in Physical Health and Well-being by Neighbourhoods in Niagara Region
(Vulnerable: Children who scored below the 10th percentile)
Range of Percentages
Less than 7.00%
7.01% - 14.00%
14.01% - 25.00%
More than 25.00%
% Vulnerable in Niagara Region Overall: 14.00%
Grimsby
Lincoln
St. Catharines
Niagara-on-the-Lake
West Lincoln
Pelham
Thorold
Niagara Falls
Welland
Wainfleet
Port Colborne
Fort Erie
Data Sources:
EDI Data: UEY & Offord Centre Centre for Child Studies, 2006
Base Map Features: Statistics canada custom tabulation(s) from 2001 Census
Amalgamated Neighourhoods: : Ontario Early Years Niagara Region & UEY, 2007
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC
N
0 7 14 21 28
Kilometers



Additionally, there are higher than national averages with regard to multiple challenges in some areas of the region:



Given the importance of socioeconomic conditions to early child development, we can also examine this through individual socioeconomic variables, as well as the Social Risk Index (SRI). The SRI is comprised of:

1. Employment rate
2. Educational attainment
3. Family Status
4. Mobility
5. Language
6. Home Ownership
7. Immigrant Status
8. Reliance on Government Transfer Payments (GTPs)
9. Average Household Income

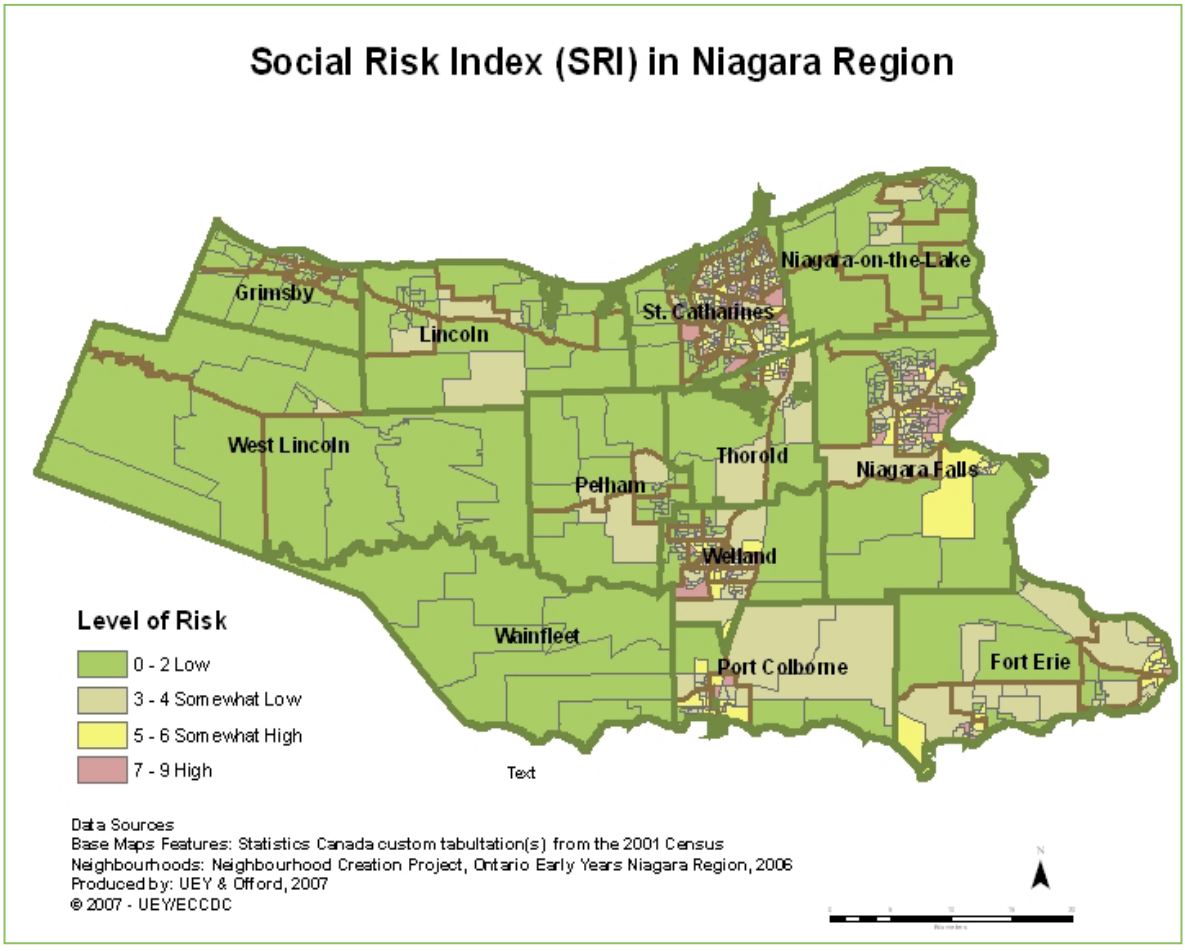
Risk is measured as follows:

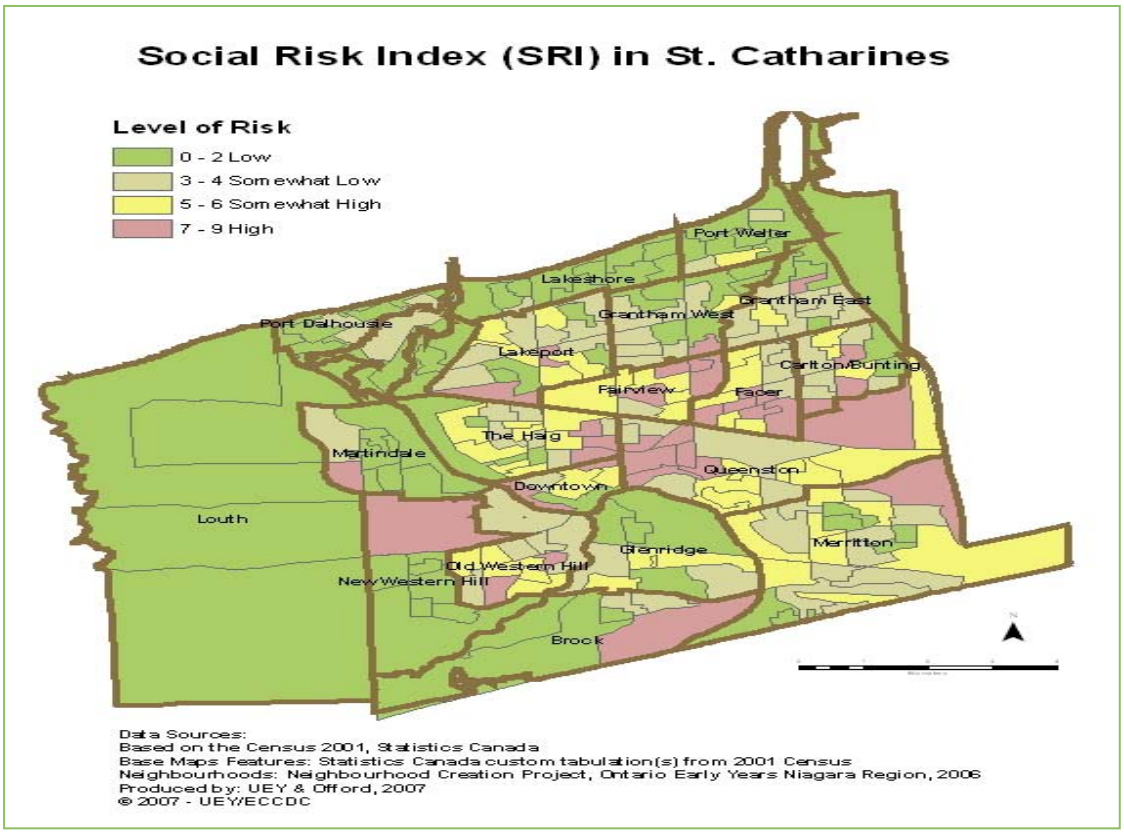
Low – 0 to 2 risk factors (green on maps)

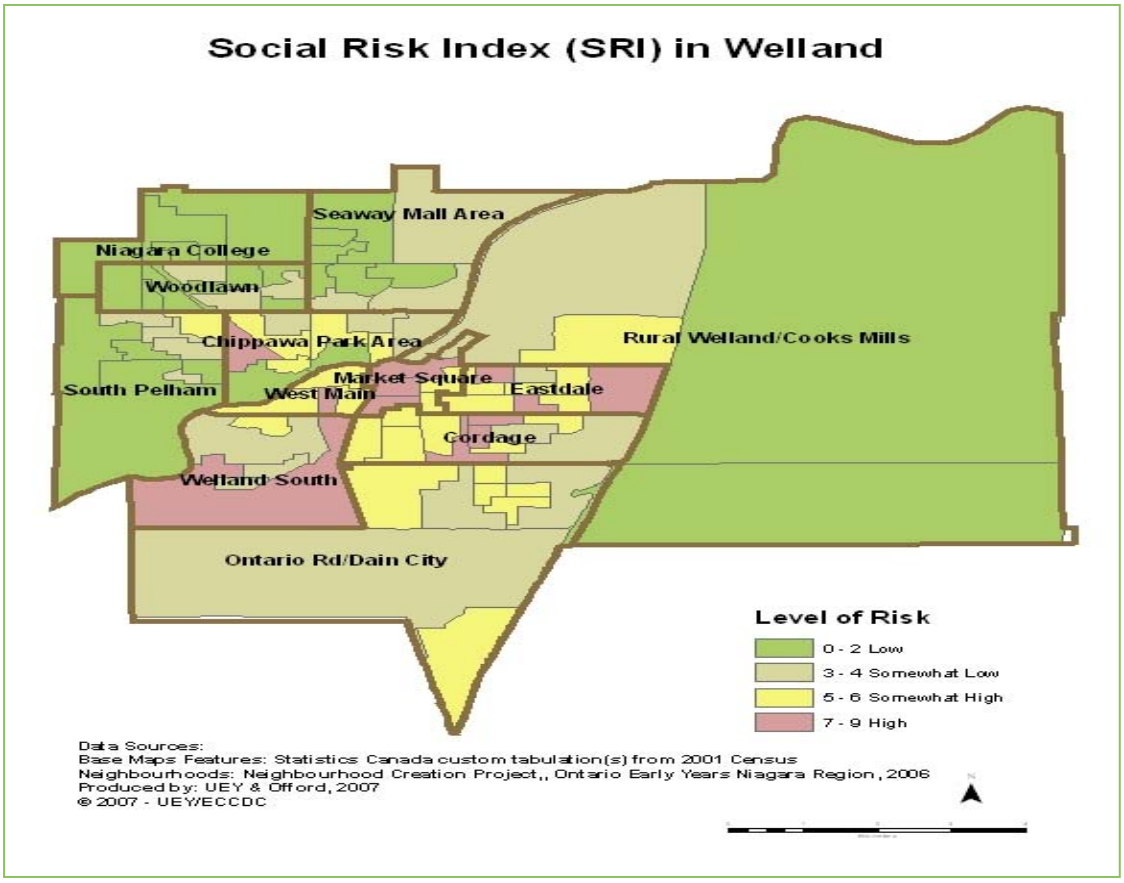
Somewhat Low – 3 or 4 risk factors (beige on maps)

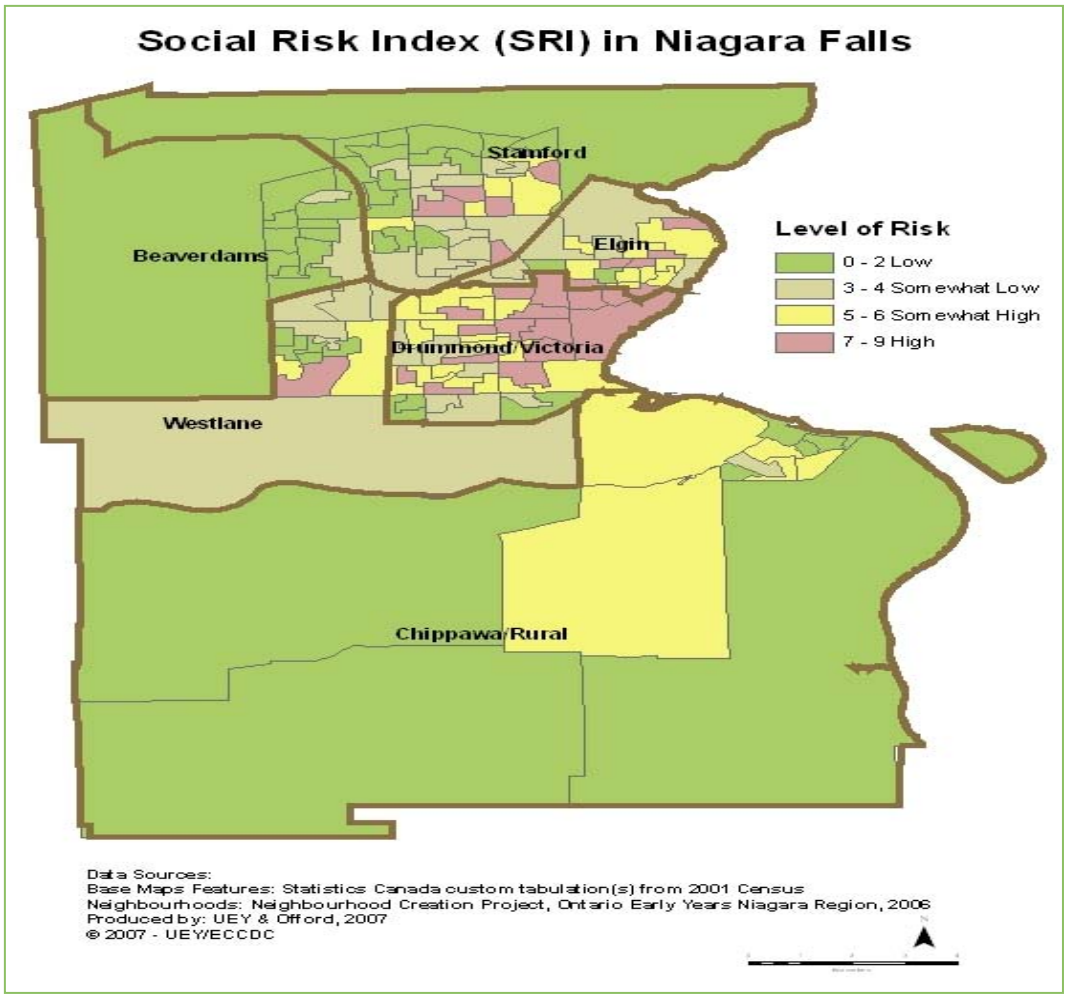
Somewhat High – 5 or 6 risk factors (yellow on maps)

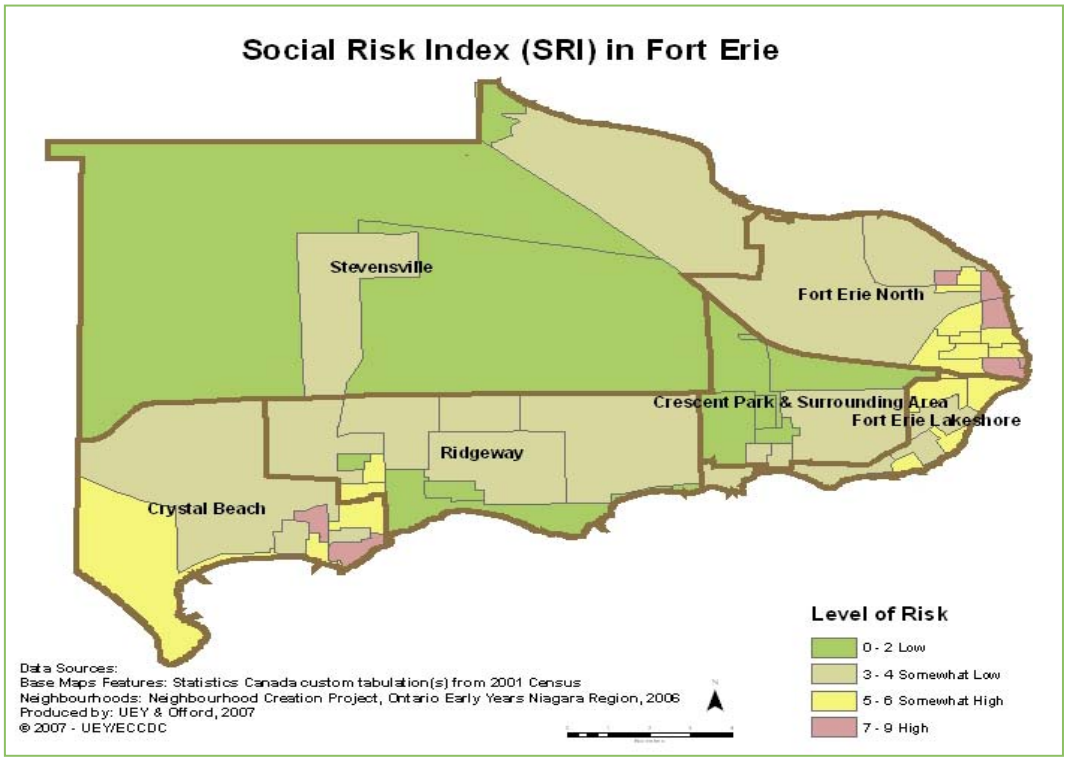
High – 7 or more risk factors (rose on maps)

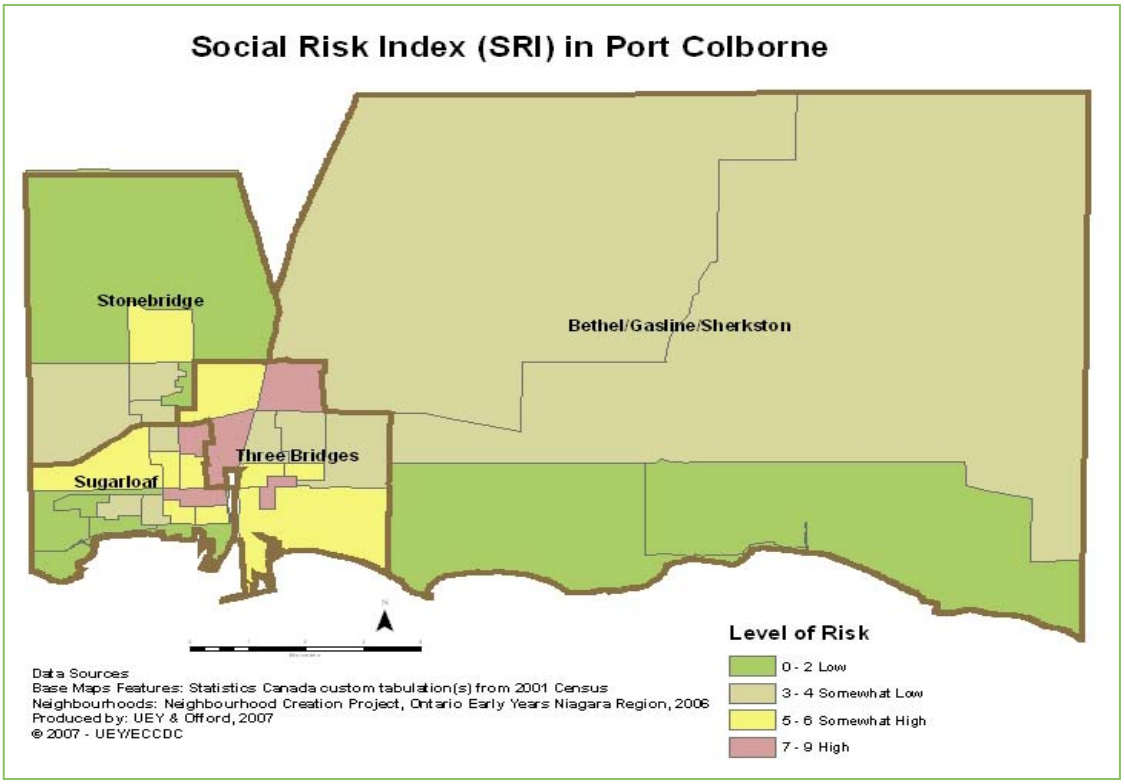



Social Risk Index (SRI) in St. Catharines
Level of Risk
0 - 2 Low
3 - 4 Somewhat Low
5 - 6 Somewhat High
7 - 9 High
Port Weller
Lakeshore
Grantham East
Grantham West
Port Dalhousie
Lakeport
Carlton/Bunting
Fairview
Facer
The Haig
Martindale
Queenston
Downtown
Louth
Merritton
Glenridge
Old Western Hill
New Western Hill
Brock
Data Sources:
Based on the Census 2001, Statistics Canada
Base Maps Features: Statistics Canada custom tabulation(s) from 2001 Census
Neighbourhoods: Neighbourhood Creation Project, Ontario Early Years Niagara Region, 2006
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC


Social Risk Index (SRI) in Welland
Seaway Mall Area
Niagara College
Woodlawn
Chippawa Park Area
Rural Welland/Cooks Mills
South Pelham
Market Square
West Main
Eastdale
Cordage
Welland South
Ontario Rd/Dain City
Level of Risk
0 - 2 Low
3 - 4 Somewhat Low
5 - 6 Somewhat High
7 - 9 High
Data Sources:
Base Maps Features: Statistics Canada custom tabulation(s) from 2001 Census
Neighbourhoods: Neighbourhood Creation Project,, Ontario Early Years Niagara Region, 2006
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC


Social Risk Index (SRI) in Niagara Falls
Stamford
Beaverdams
Elgin
Drummond/Victoria
Westlane
Chippawa/Rural
Level of Risk
0 - 2 Low
3 - 4 Somewhat Low
5 - 6 Somewhat High
7 - 9 High
Data Sources:
Base Maps Features: Statistics Canada custom tabulation(s) from 2001 Census
Neighbourhoods: Neighbourhood Creation Project, Ontario Early Years Niagara Region, 2006
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC


Social Risk Index (SRI) in Fort Erie
Stevensville
Fort Erie North
Crescent Park & Surrounding Area
Fort Erie Lakeshore
Ridgeway
Crystal Beach
Level of Risk
0 - 2 Low
3 - 4 Somewhat Low
5 - 6 Somewhat High
7 - 9 High
Data Sources:
Base Maps Features: Statistics Canada custom tabulation(s) from 2001 Census
Neighbourhoods: Neighbourhood Creation Project, Ontario Early Years Niagara Region, 2006
Produced by: UEY & Offord, 2007
© 2007 - UEY/ECCDC



Notes on local data:

Areas of region with socioeconomic risk and vulnerability:

_____

_____

_____

Vulnerability among domains:

_____

_____

_____

Other local knowledge:

_____

_____

_____

Discussion

Over and above ECEs, who else might benefit from exposure to this resource?

Are some modules more applicable to certain audiences? If yes, how so?

How might the resource and local data be best used in Niagara?

Thank you for your time and attention!

Tiffany & Glory

The Understanding the Early Years initiative is funded by Human Resources and Social Development Canada. For further information, visit www.hrsdc.gc.ca.