
Canada: Longitudinal Monitoring of ECD Outcomes

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A major challenge now and for the future is to bring to scale early child development (ECD) interventions and programs that are of high quality and have been proven to be effective. Being able to measure and monitor both the need for and the outcomes of ECD interventions is critical—to assure that ECD policies are effective, political leaders are supportive, communities are involved, and interventions are appropriate.

Longitudinal, population-based research and data are essential for making policy decisions, designing interventions, and scaling up ECD programs. Governments have an essential role in all these efforts. In Canada, over the past 25 years, the findings from longitudinal, population-based research have supported ECD policies and programs. Six major efforts have led the way.

<p>Ontario Child Health Study</p> <p>Better Beginnings, Better Futures</p> <p>National Longitudinal Survey of Children and Youth</p> <p>Understanding the Early Years</p> <p>Community Research: Using the EDI</p> <p>Community Partnerships: Toronto First Duty</p> <p>Moving Forward</p>

Ontario Child Health Study

In 1983, Statistics Canada and McMaster University launched the Ontario Child Health Study (OCHS) to track the development of children into young adulthood over a 17-year period. The OCHS is a prospective, population-based, longitudinal study of the effects of early childhood experiences and development on later adult health, quality of life, and functioning. The survey was conducted by Statistics Canada on behalf of the Canadian Centre for Studies of Children at Risk at McMaster University in Hamilton, Ontario.

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The research team collected data on the mental and physical health of more than 3,000 children ages 4–16 years in two communities in Ontario. Since the initial survey, the researchers have conducted two follow-up studies of the same children, in 1987 and again in 2001, when the children were young adults ages 21–33 years (Offord and others 1987; Offord Centre for Child Studies 2006).

The availability of 17-year data tracking the health of young children into adulthood makes this study one of the most important efforts in early child development conducted anywhere during the past 30 years. Two of the early major findings are:

1. One in five children in Canada has a serious mental health (emotional or behavioral) problem that will compromise their later health and function as adults.
2. Children in poor families are at greater risk for developing these problems than are children in families with higher incomes.

In analyzing data from the three cycles of collection, researchers will be able to address a wide variety of questions on child development, such as:

- Which childhood emotional problems and difficulties disappear as a child matures and grows up and which tend to persist and need attention?
- Does childhood health, early family life or the childhood neighborhood exert an influence, on adult health, employment, lifestyle and satisfaction?

Additional information is available at <<http://www.offordcentre.com/ochs/index.html>>.

Better Beginnings, Better Futures

Better Beginnings, Better Futures is a planned, 25-year, longitudinal, primary prevention, research, and demonstration intervention for young children. It grew out of the OCHS, as well as primary prevention efforts supported by the Ontario Ministry of Community and Social Services since the late 1970s. In 1989, the ministry accepted a model for the longitudinal intervention, and in 1991, launched the initial effort, funding proposals submitted by eight Ontario communities.

Since then, the model has influenced new programs in communities in Ontario and across Canada, including the federal Community Action Programs for Children as well as Ontario's Healthy Babies, Healthy Children (McCain and Mustard 1999). The model supports both intervention and evaluations of the intervention and outcomes for young children and parents.

The intervention targets young children, ages 0–4 and 4–8 years, who reside in low-income neighborhoods and are at high risk of developmental problems. The participating families and communities are diverse, and the findings are being used in Canada to inform local and national policy decisions about children's health and development.

The model intervention is community-based and includes support for both children and families. Specific goals are outlined for children, parents and families, and neighborhoods and communities. The intervention consists of a comprehensive, integrated package of home- and center-based activities focusing on the prenatal-to-preschool and kindergarten years.

Researchers are collecting and analyzing data on more than 100 outcome measures pertaining to:

- Children's and parents' social and emotional functioning
- Children's behavioral and academic functioning
- Neighborhood and community variables.

A series of evaluations are under way and include economic, procedural, and organizational analyses. Researchers are documenting qualitatively and naturalistically the ways that communities are adapting the model to meet their needs.

Additional information is available at <<http://bbbf.queensu.ca/intro.html>>.

National Longitudinal Survey of Children and Youth

In 1994, the Government of Canada began its first nationwide survey of children's health and development—the National Longitudinal Survey of Children and Youth (NLSCY). Human Resources Development Canada (which is now Human Resources and Social Development Canada) and Statistics Canada jointly developed this comprehensive survey to measure factors that influence the development of Canada's children and to monitor the impact of factors over time.

Using questionnaires and direct measures, researchers are collecting a broad array of information on children, families, and communities. Questionnaires are completed by parents, older children, teachers, and school principals. Four- and five-year-old children's abilities are measured directly by NLSCY researchers. School teachers are enlisted to collect direct data for older children. Data are being obtained on:

- Education
- Health
- Learning
- Behavior
- Physical development
- Social environment
- Activities.

The NLSCY was first conducted in 1994–95 and has been repeated every 2 years since then. It yields a database that reflects the characteristics, development, and well-being of Canada's children from infancy to adulthood.

The initial survey consisted of a representative sample of more than 22,000 noninstitutionalized children ages 0–11 years in more than 13,000 households across Canada. This cohort continues to be followed longitudinally, with data collected at each 2-year cycle.

In addition, each cycle includes newly born children ages 0–23 months who are followed until they are ages 4–5 years, to gain additional data on early child development. The 5th survey cycle was completed in 2002–03, and the data from this cycle became available in early 2005 (Statistics Canada 2005).

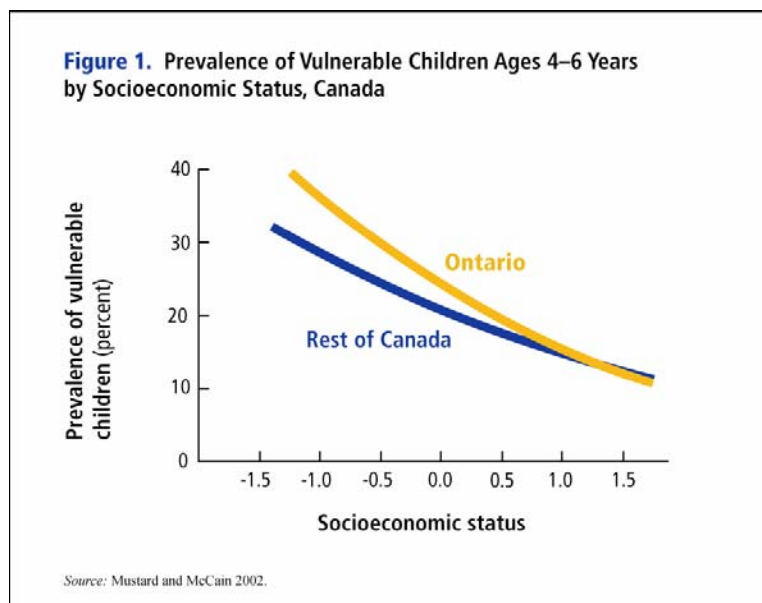
The NLSCY includes several longitudinal and cross-sectional samples, and the longitudinal samples are representative of the initial cohort of children. The information resulting from the NLSCY is widely used to inform government administrators and policymakers, as well as university researchers and scientists.

Social Gradients of Vulnerability

One of the major findings from the NLSCY is that—

Children in all socioeconomic classes in Canada are “vulnerable” (that is, they have a learning or behavioral problem).

Figure 1 illustrates this finding for children ages 4–6 years.



The specific data (Mustard and McCain 2002) are as follows:

- Low socioeconomic class (-1.5 socioeconomic status, or SES, on the figure)—almost 35 percent of children ages 4–6 years outside of the province of Ontario are vulnerable. Within Ontario, the percentage is even higher.
- Middle socioeconomic class (-1.0–1.0 SES)—15–25 percent or more of children are vulnerable.
- Affluent socioeconomic class (1.5 SES)—more than 10 percent of children are vulnerable.

Number of Children

The number of vulnerable children is an important data point. In Ontario, for example, which has 300,000 children ages 4–6 years, 75,000 of them across all social classes are vulnerable (McCain and Mustard 1999). Across Canada, the number of vulnerable children is spread thinly across the entire population, in all classes.

Because the middle class has the largest proportion of the population, it also has the largest number of children who are vulnerable (McCain and Mustard 1999).

Poverty or Gradient

The NLSCY data shed light on the question of whether poor child development reflects economic issues such as poverty. Many people believe that poor child development is primarily an economic issue and, thus, argue strongly for targeting ECD interventions to poor children and families.

Yet, the NLSCY data show that 65 percent of poor children ages 4–6 years are not considered vulnerable, while up to 25 percent of the middle class and more than 10 percent of affluent children are vulnerable. The critical question is, Why? The data indicate that income and poverty are not the only factors influencing early child development.

The NLSCY data clearly show a social gradient of vulnerability among *all* children, and this gradient tracks with broader socioeconomic gradients.

Furthermore, the socioeconomic gradients for vulnerable children ages 4–6 years in Canada are similar to the socioeconomic gradients for literacy competence among adults ages 16–65 years (OECD and Statistics Canada 2001). Some Canadian provinces have steep gradients (i.e., greater differences between literacy rates of high-SES and low-SES groups) for adult literacy. The similar gradients in vulnerability of children and literacy among adults probably reflect differences in early childhood experiences and environments (McCain and Mustard 1999).

The valuable evidence obtained about the vulnerability of all children in Canada is likely replicable in other industrialized countries and, possibly, developing countries. In no society do all social classes, or all children in any social class, perform as well as they could.

Because vulnerable children are found across social classes, countries should adopt policies that support universal ECD programs, not limited or targeted interventions that reach only a small percentage of children who are vulnerable.

In any country, the entire population of children needs to be “lifted up.” In Canada, the finding of a social gradient of vulnerability now underpins a broad governmental approach to early child development, to ensure equal outcomes for all children.

Additional information is available at

<<http://www11.hrdc-drhc.gc.ca/pls/edd/NLSCY.shtml>>.

Understanding the Early Years

In 1999, the Government of Canada introduced an initiative that drew on the country's accumulating longitudinal findings about the vulnerability and development of its young children. Seeking to "lift up" all children, the government began to support pilot research efforts to encourage communities across Canada to:

- Map community needs for ECD interventions
- Develop strategies to meet these needs and improve their children's outcomes.

This national initiative, Understanding the Early Years (UEY), currently involves 12 communities. Each community has received a 5-year grant to map ECD needs and plan ECD efforts. Five communities received funding in 2000–01, and seven received funding in 2002–03.

The 12 communities are preparing detailed reports of their findings (available at http://www.sdc.gc.ca/en/hip/sd/310_UEYReports.shtml). The reports will document the following:

- Children's readiness to learn
- Factors influencing child development in the family and community
- Availability of local resources for young children and families.

The information will be specific to neighborhoods and will be useful to communities for designing and implementing ECD policies and programs and for selecting investments to enable children to thrive during their early years.

This community-based process involves (i) measuring and monitoring needs and outcomes at the local level and (ii) developing effective community responses. The communities are collecting data about children (from parents, teachers, and the children themselves) and about the community's social and physical environments and services and programs for children.

Private, public, and nonprofit organizations and individuals are working together in all the participating communities to gather information and strategize for the future. The broad coalitions are developing comprehensive, integrated plans to improve all children's readiness to learn on entry into formal schooling.

Human Resources and Social Development Canada administers and funds the UEY. The UEY incorporates data from the NLSCY and utilizes, on a pilot basis, the Early Development Instrument: A Population-based Measure for Communities (EDI).

Additional information is available at http://www.sdc.gc.ca/en/hip/sd/300_UEYInfo.shtml.

The EDI

The EDI was developed by Canadian researchers at the Offord Centre for Child Studies, McMaster University, Toronto. It is designed to be used by teachers to monitor young children's readiness for school within their communities. The results for individual children can be aggregated up to an entire community. The EDI is being piloted across Canada and is becoming a standard measure of children's early development in all Canadian provinces.

- See “*The Early Development Instrument: A Tool for Monitoring Children’s Development and Readiness for School*,” by Magdalena Janus in this publication. Janus summarizes the EDI’s reliability, validity, and potential applicability in other settings.

Community Research: Using the EDI

The EDI is a useful tool for compiling and tracking data on vulnerable children in and across diverse communities and populations. This information is important for decisionmakers who are planning ECD policies and programs or scaling up ECD efforts. In British Columbia and Toronto, Canadian researchers are:

- Relating EDI data on children’s readiness to learn with other data (e.g., household income, reading assessments)
- Tracking changes in EDI scores in communities over time.

British Columbia

In the province of British Columbia, which includes the city of Vancouver, researchers are using the EDI to (i) identify vulnerable children and (ii) aggregate the number and percent of vulnerable children by quintile levels of vulnerability (from least to most vulnerable) throughout the province. The results clearly show a socioeconomic gradient of vulnerability related to household income (Kershaw and others 2006).

For example, the 2000 data for Vancouver show that:

- Vulnerability cuts across all districts.
- The largest percentage of kindergarten children scoring in the bottom 10 percent of EDI scores was in one of the poorest districts (55.2 percent).
- The smallest percentage of kindergarten children scoring in the bottom 10 percent of EDI scores was in one of the wealthiest districts (17.7 percent).
- The percentage of vulnerable kindergarten children in Vancouver who were ever at risk on any EDI scale ranged from 17.7 percent to 55.2 percent across all districts.

Changes in 2004

The researchers collected EDI data in 2004 to identify changes in the community and improvement in kindergarten children’s vulnerability over time. In 2004, the percentage of vulnerable children ever at risk on any scale declined in most (18) Vancouver districts, to a low of 11.1 percent, but increased in 5 districts, to a high of 75.0 percent (see figure 2) (Kershaw and others 2006).

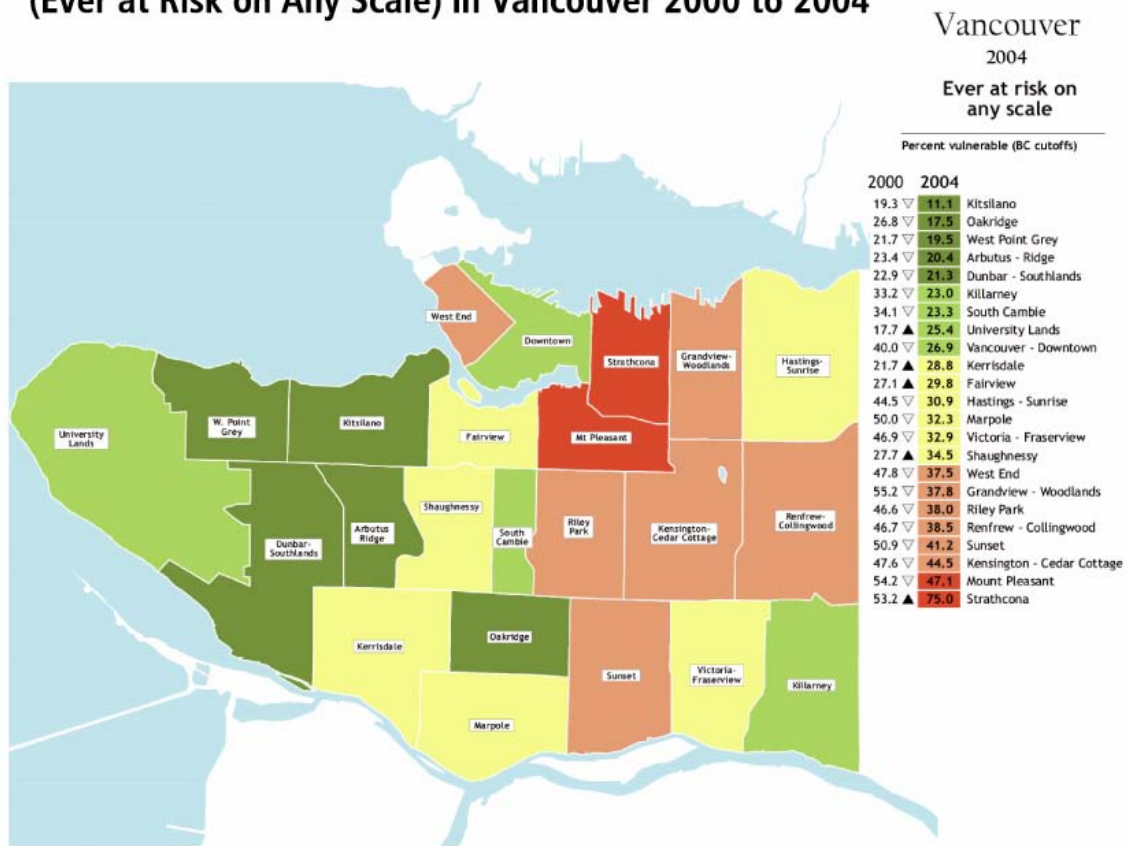
In two neighboring districts having a similar SES profile, the EDI scores moved in opposite directions between 2000 and 2004—

In 2000, the neighborhood of Strathcona had one of the city's highest percentage of vulnerable children, at 53.2 percent. Its percentage of vulnerable children rose to 75 percent in 2004.

In the neighboring community of Grandview-Woodlands, 55.2 percent of kindergarten children were vulnerable in 2000. However, in contrast with the Strathcona district, the percentage of vulnerable children dropped to 37.8 percent in 2004.

Both neighborhoods remained poor and were plagued by the suite of problems that accompanies poverty in urban environments. In Strathcona, between the 2000 and 2004 EDI data collections, the provincial government had drastically reduced access to preschool programs that included enriched developmental activities, a nutritious lunch, and support for parents. Grandview-Woodlands faced the same public policy action, but had managed to maintain and expand a large neighborhood child and family program that integrated numerous programs and services.

Figure 2. Change in Percent of Kindergartners Vulnerable (Ever at Risk on Any Scale) in Vancouver 2000 to 2004



Source: 2000, 2004 Early Development Instrument (EDI) data, Human Early Learning Partnership (HELP), Vancouver.

Throughout British Columbia, several broad coalitions are at work to mobilize ECD interventions. Again, the emphasis is on “lifting up” or flattening the gradient for all children while reaching those who are most vulnerable across different SES neighborhoods.

Additional information is available at <<http://www.earlylearning.ubc.ca/>>.

Toronto

Since 1999, the city of Toronto has reported each year on the health and well-being of its children. In the 5th Toronto Report Card on Children (City of Toronto 2003), the Toronto District School Board matches EDI data with Statistics Canada’s census data to document the level, extent, and types of vulnerability among children throughout the city.

The results obtained in Toronto are similar to those obtained in Vancouver. That is, there is a social gradient of vulnerability in which the children’s EDI scores track with the average income of families having at least one child under the age of 15 years. During the 2002–03 school year, an average of more than 25 percent of 4-year old children across two to three schools in the poorer and poorest economic districts of Toronto scored in the lowest 10th percentile in two or more domains of the EDI (City of Toronto 2003).

Still, vulnerability is a larger issue than simply SES. The Toronto Report Card on Children (2003) also relates EDI and census data to reading assessments conducted during 2001–02 among students in grades 3 and 6. The report card shows the following:

- On average, less than 40 percent of students in grade 3 across two to three schools in the *poorer and poorest* economic districts met the provincial reading standards for that grade [i.e., attained levels 3 or 4 of the Government of Ontario’s Educational Quality and Accountability Office (EQAO) assessment].
- Over time, the gradient becomes steeper. By grade 6, on average, less than 40 percent of the students in most schools in the *poorest* economic districts met the reading standards for that grade (City of Toronto 2003).

Additional information is available at

<<http://www.toronto.ca/children/report/repcard5/repcard5.htm>>.

Community Partnerships: Toronto First Duty

Toronto First Duty is a multiyear early childhood education, development, and care project supported by a partnership between local governments and the private sector. In 1999, the city of Toronto joined with the Atkinson Charitable Foundation and with automakers and the Canadian Autoworkers Union to formally launch and support this project—a community-based demonstration initiative to develop fully integrated ECD programs for children.

The government of Canada provided funding for research and evaluation. The funding from private sources is intended to be a catalyst to leverage, consolidate, and expand existing public resources.

Toronto First Duty is founded on:

- Scientific evidence concerning children's early years and organization of optimal early childhood environments
- Public policy research about creating system change
- Earlier Canadian longitudinal surveys and studies.

The partnership is supporting five neighborhood demonstration sites. The sites are located in low- and mixed-income Toronto neighborhoods, and all sites are linked with local public schools. The five sites received 3-year funding (2002–05) to:

Develop a working model of an integrated program of childcare, parental support and training, and early learning for children ages 0–6 years.

The goals are to:

- Meet all of a child's needs holistically in one program at one site, while supporting parents' ability to earn a living and raise their children and engaging them in their children's early learning and development
- Test-drive new public policy that could transform the existing array of program fragments into a 0–6 system that would meet the needs of children and families
- Determine cost-effective program delivery of optimal quality and intensity in community-based, school-linked programs.

The Toronto First Duty model is based on the findings of the Early Years Study (McCain and Mustard 1999). Researchers have comprehensively studied the process and impact of the model (Corter and others 2006). The results illustrate clear benefits for children, parents, early childhood staff, and communities. Toronto First Duty is a model that can be scaled up to other communities in Toronto and Canada.

Additional information is available at <<http://www.toronto.ca/firstduty>>.

Moving Forward

All communities and societies need to know how their children are doing and whether a community or society's environment is promoting or impeding its children's development in the present and over time.

Longitudinal research using well-designed instruments and measures is essential for measuring and monitoring children's trajectories from birth onward.

Communities can draw on many sources to collect, compile, and report data on all aspects of children's health and well-being. National and local governments are ready sources of social, economic, and demographic data that can be linked with data on children from health, education,

and social service agencies and with information on community resources and development opportunities.

Three main questions for longitudinal research on early child development in communities are:

- Are we doing the right things?
- Are we doing them right?
- Are we cost-effective?

These questions can be answered by monitoring all children closely and continuously and by documenting and reporting the findings to the community at large. The impact of the findings from this type of research can be powerful for increasing the public's awareness of the importance of ECD interventions, expanding the participation of children and families in these programs, gaining public and private investments in early child development, and ensuring the funding and sustainability of ECD programs over time.

Council for Early Child Development

In Canada, the Council for Early Child Development is championing community-based, integrated programs for early child development and parenting, as recommended in the Early Years Study (McCain and Mustard 1999) and now being implemented in Toronto First Duty. Founded in 2004, the Council brings together private citizens and public leaders from the business, health, education, and science sectors to help fulfill Canada's vision for appropriate early child development.

This vision is known as QUAD—Quality, Universality, Accessibility, Developmental. It applies to all children in Canada.

Integrated programs for early child development and parenting include six essential components:

- Problem-based play
- Parental/family participation
- Nutrition
- Pre- and post-natal supports
- Platform for access to specialized services as needed
- Full-time, full-year options for all children.

The Council puts science into action for children in communities, harnessing the evidence on early child development, fostering community connections, informing public policy, cultivating leaders, monitoring results, and promoting programs based on evidence. Without a doubt, as we move forward, quality is most important.

But quantity also matters—effective ECD programs must be available, accessible, and affordable to all children and parents. To make the greatest and most long-lasting impact, programs should embrace children ages 0–6 years and with children's entry into primary school. Canada is taking major steps in this direction.

Additional information is available at <<http://www.councilecd.ca>>.

WEB RESOURCES [as of November 2006]

Better Beginnings, Better Futures: <<http://bbbf.queensu.ca/intro.html>>
Council for Early Child Development: <<http://www.councilecd.ca>>
Human Early Learning Partnership: <<http://www.earlylearning.ubc.ca/>>
National Longitudinal Survey of Children and Youth: <<http://www.statcan.ca>>
Offord Centre for Child Studies: <<http://www.offordcentre.com/>>
Ontario Child Health Study: <<http://www.offordcentre.com/ochs/index.html>>
Toronto First Duty: <<http://www.toronto.ca/firstduty>>
Understanding the Early Years: <http://www.sdc.gc.ca/en/hip/sd/300_UEYInfo.shtml>

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