Investing Early for Lifelong Learning

Implications of New Survey Findings from Manitoba and Canada

Presented by Dr. Rob Santos, Healthy Child Manitoba Office, Healthy Child Committee of Cabinet, Government of Manitoba

Literacy: More Than Words – Pan-Canadian Interactive Literacy Forum – Manitoba: Literacy Works! Building a Skilled and Resilient Workforce – April 14, 2008 – Winnipeg, MB

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Presentation Overview

- Part I: Introduction: Retracing Our Steps
- Part II: Being Born in Manitoba: The Families First Postpartum Screening
- Part III: From the Early Years to Starting School: The Early Development Instrument (EDI)
- Part IV: Implications for Action

PART I:

Introduction: Retracing Our Steps

Human Capital and Economic Growth

- 42% of Canadians ages 16-55 have low levels of literacy (Levels 1 and 2)
- **1% increase in average literacy of the population would yield a permanent 1.5% increase in GDP per capita**
- 1.5% of Canada's GDP = $18 billion
- **1.5% of Manitoba's GDP = $577.5 million**
- **ECD** = key to improve overall literacy of the population
- Long-run impact (1960 – 1995) of investment in human capital was **3 times more important** than investment in physical capital

Source: Coulombe, S., Tremblay, J. F., & Marchand, S. (June 2004). *Literacy scores, human capital and growth across fourteen OECD countries.* Ottawa, ON: Statistics Canada.

Manitoba and Canada's Hidden Deficit: The Social Cost of Low Literacy Skills

1. **Opportunity costs** (benefits foregone): People unable to reach their full potential
2. **Remedial costs:** both social program costs (e.g., 65% of social assistance and 70% of offenders) and costs due to low literacy (e.g., workplace injury)
3. **Intergenerational costs:** Limits on parents with low literacy in helping their children achieve high literacy

Source: Maxwell and Teploca (2007)

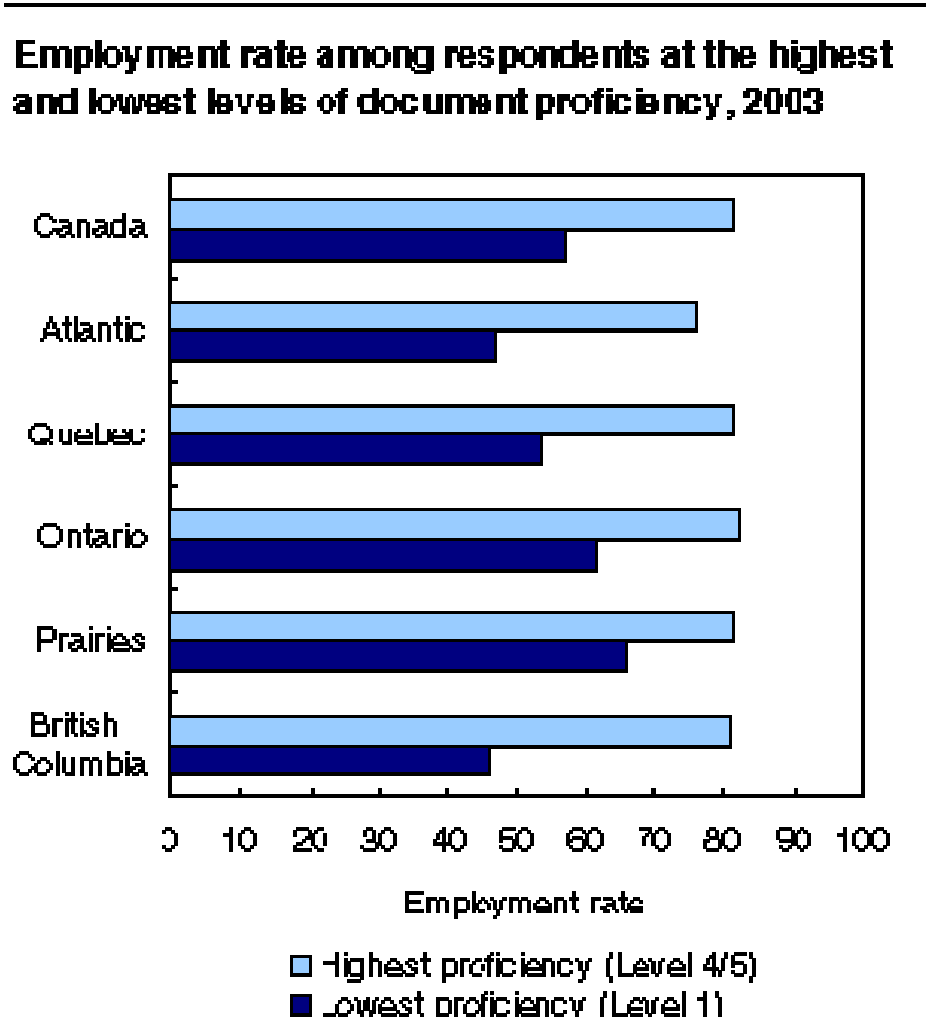
Manitoba and Canada's Hidden Deficit: The Economic Cost of Low Literacy Skills

1. Limits economy's ability to generate **wealth**
2. Generates undesirable levels of **social inequality** (including economic, health, educational)
3. Limits **effectiveness and efficiency** of investments in public goods and services (e.g., health, education)

Source: Murray and McCracken (2007)

Literacy Skills and Employment in Canada

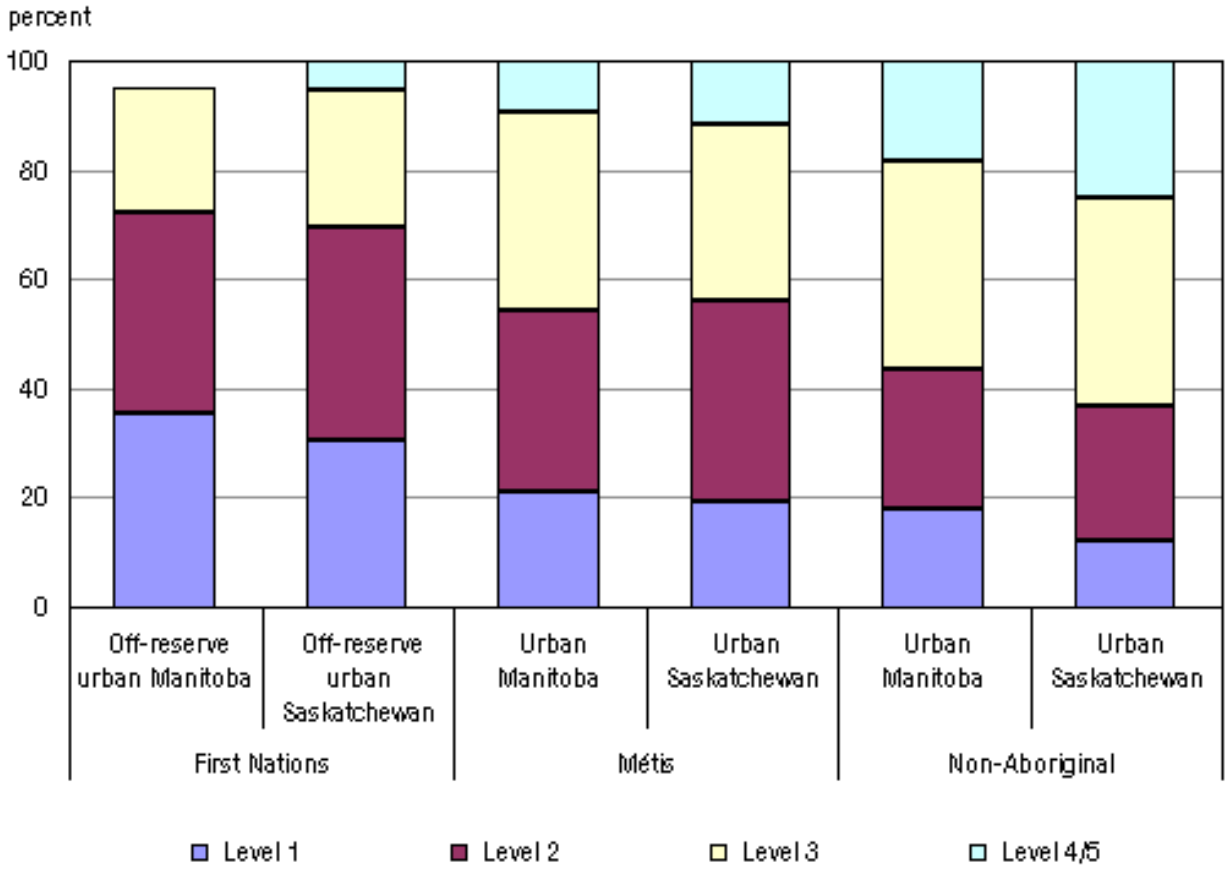
- Lowest literacy levels had the lowest employment rates
- About 57% (Level 1) vs. 80% (Level 4/5)
- Smallest differences in employment between lowest and highest literacy levels in the Prairies (levelling the playing field)



Source: Statistics Canada (2005) – IALSS 2003

Literacy Skills of Off-Reserve First Nations and Métis in Urban Manitoba and Saskatchewan, 2003

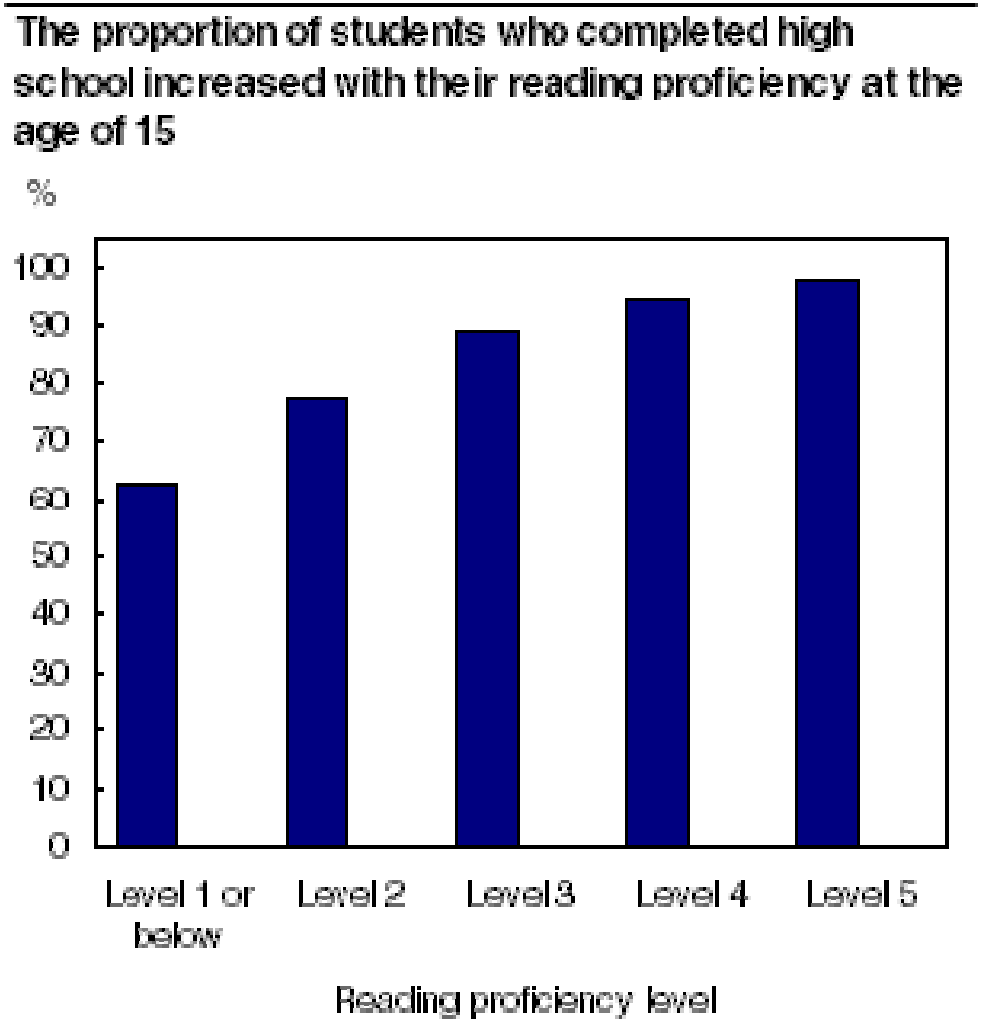
- Higher literacy associated with higher education
- Higher literacy associated with higher employment (in MB, about ¾ of FN and 92% of Métis scoring above Level 3 were employed)
- In MB, 72% of FN and 54% of Métis in urban MB scored below Level 3, compared to 44% in non-Aboriginal urban
- Differences due in part to both lower education and use of mother tongue different than language of literacy assessment



Source: Statistics Canada (2008) – IALSS 2003

Youth Literacy and High School Completion

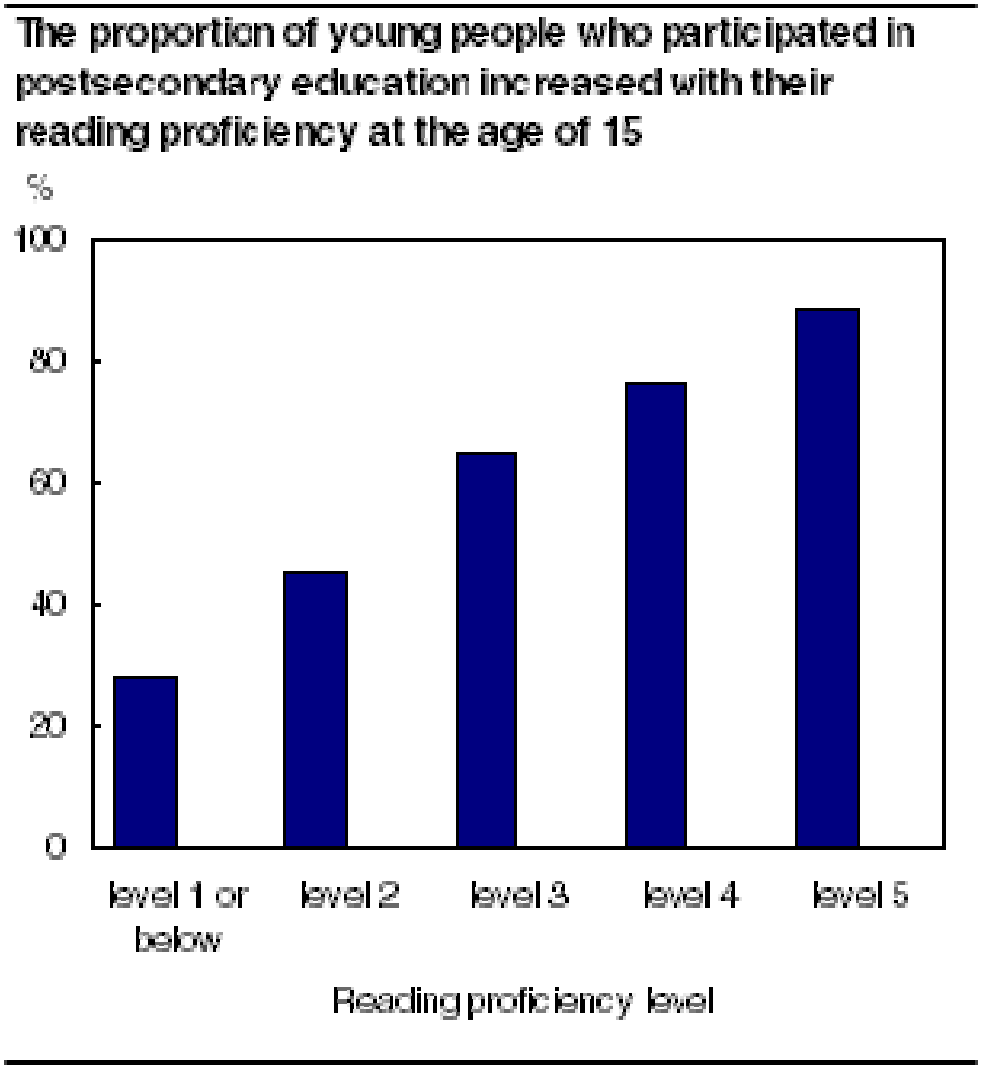
- Lower youth literacy associated with later high school drop-out
- On average, high school dropouts at one full reading proficiency level below high school graduates
- Only 62% of Level 1, 77% of Level 2 graduated, compared to nearly all at Level 3+
- Effect persists after controlling for gender, mother tongue, parental education, family income, location of residence, academic and social engagement
- Not necessarily deterministic: Many at Levels 1-2 graduate, whereas 2-11% at Levels 3+ do not



Source: Statistics Canada (2007) – PISA 2000 and YITS 2004

Youth Literacy and Post-Secondary Education (PSE) Completion

- Lower youth literacy associated with lower PSE pursuit
- On average, PSE participants at one full reading proficiency level below non-PSE participants
- Only 28% of Level 1 and 45% of Level 2 pursued PSE, compared to 65%, 76%, and 88% for Levels 3, 4, 5
- PSE pursuit was related to gender, parental education, family income, and mother tongue, but not location of residence
- PSE pursuit not deterministic or linear (may pursue later)

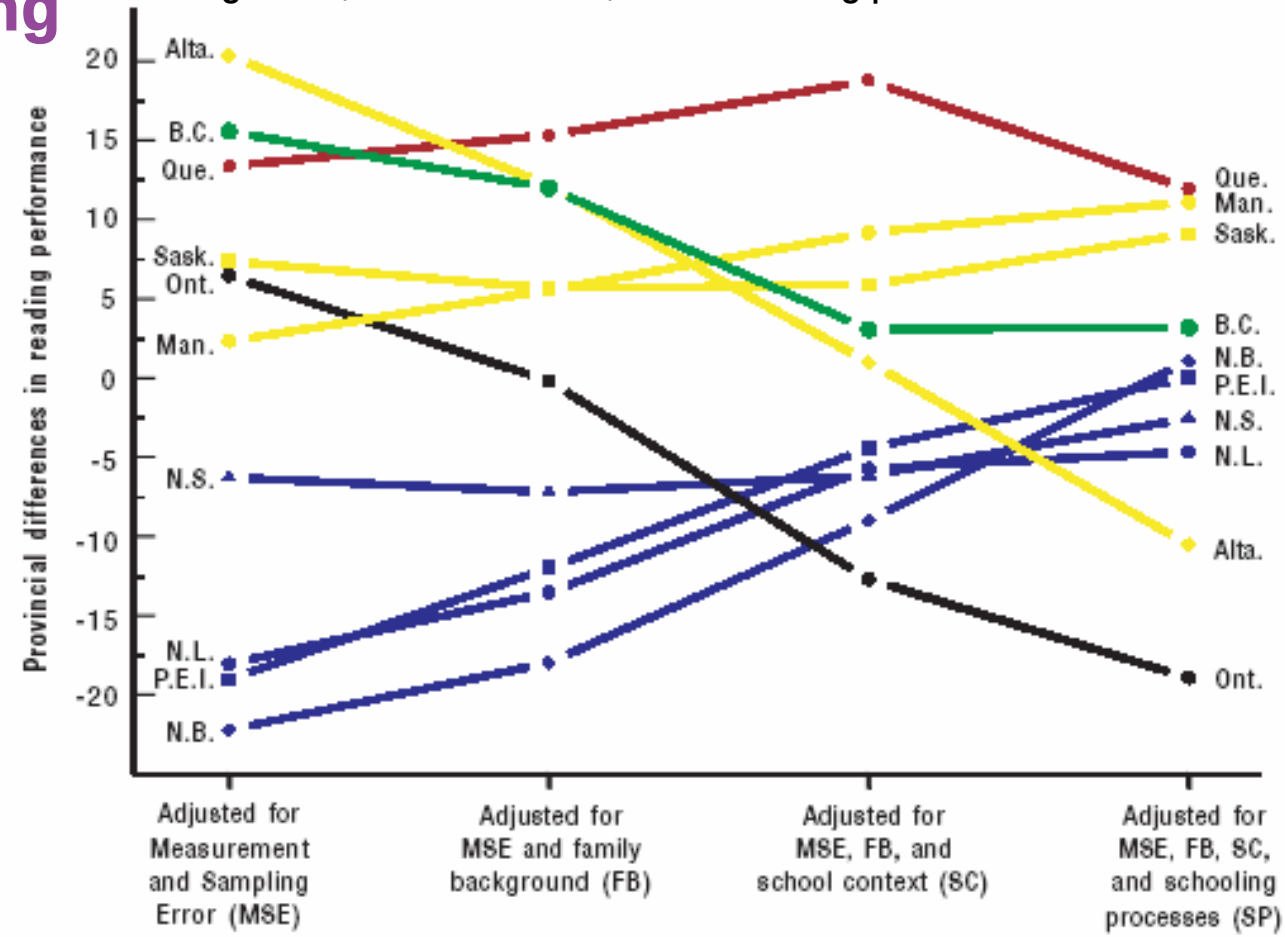


Source: Statistics Canada (2007) – PISA 2000 and YITS 2004

Youth Literacy in Manitoba: Levelling the Playing Field

- About 40% of differences between provinces due to family background
- About 63% of differences due to family background (e.g., SES) and school context combined
- Example: MB moves from 6th to 2nd place and AB moves from 1st to 9th place

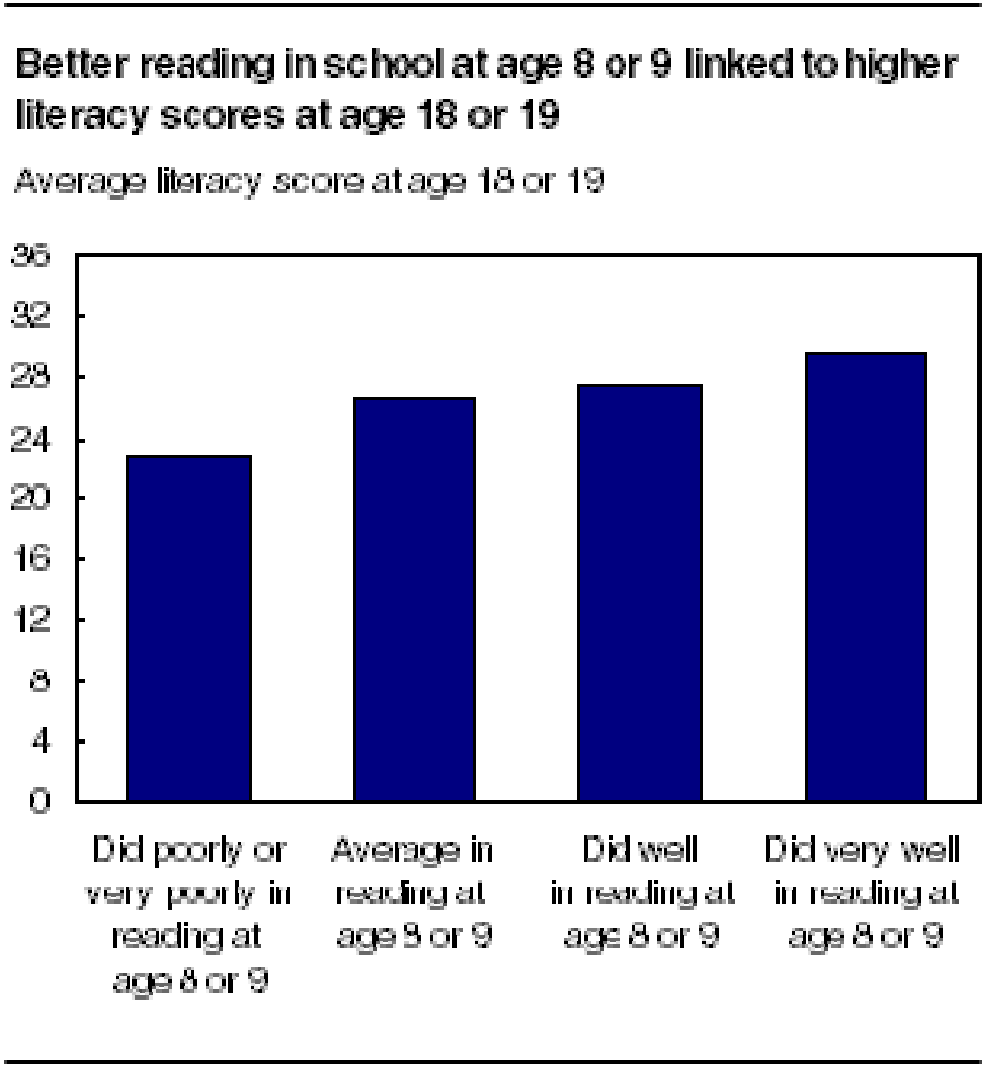
Variation in provincial reading performance explained by family background, school context, and schooling processes



Source: Willms (2004) - PISA 2000 data

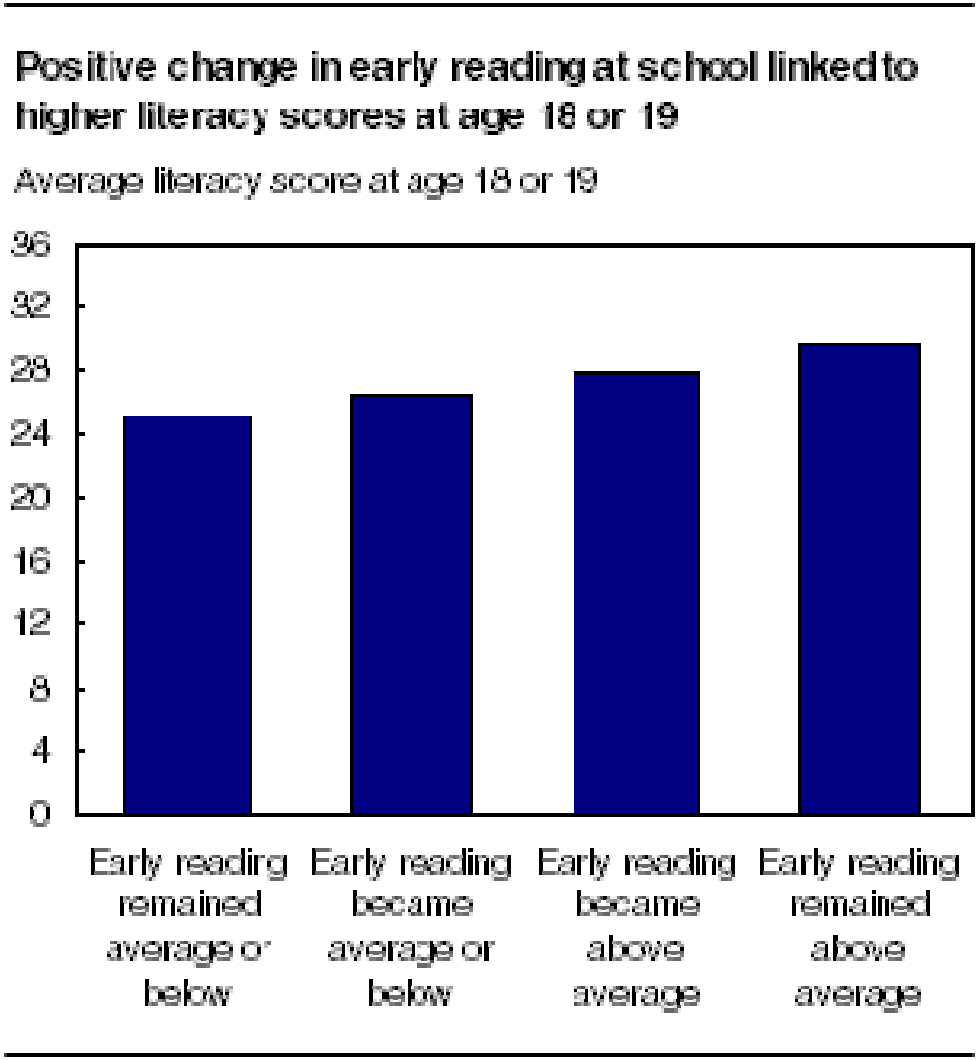
Early Reading Skills in Grade 3 and Literacy at the Transition to Adulthood

- Literacy at age 8/9 years predicted literacy a decade later
- Held true after controlling for sociodemographics, child behaviour, school-related factors, and parental literacy practices
- Low parental education also predicted lower later literacy
- Early hyperactivity also associated, but mediated by school-related factors (repeating elementary school grade; physical, emotional, behavioural limitations that required special help for school work; child disliking/hating school or skipping school at age 12/13 years)



Source: Statistics Canada (2006) – NLSCY 1994 - 2004

Improving Early Reading Skills and Later Literacy



Source: Statistics Canada (2006) – NLSCY 1994 - 2004

SHHH!

Brain Development in Progress:

By age 3 years, a young child's brain is apt to be more than TWICE AS ACTIVE as that of his or her PEDIATRICIAN

Sources:
Gopnik, Meltzoff, & Kuhl, 1999; Shore, 1997

Investing in Early Childhood Development: The Economic Imperative

- Leading economists have shown the importance of ECD to our province and country's economic future. Knowledge is the engine of the 21st century economy. Better brains and innovative ideas fuel economic growth, create jobs, increase wealth, and secure our financial future.

"The real question is how to use the available funds wisely. The best evidence supports the policy prescription:

Invest in the very young."

James J. Heckman, PhD
2000 Nobel Laureate in Economic Sciences

Shared Destiny:

Our Aboriginal Children and the Future of Manitoba

"Manitoba cannot prosper if Aboriginal people do not prosper."

-Honourable Oscar Lathlin, Minister of Aboriginal and Northern Affairs

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PART II:

Being Born in Manitoba: The Families First Postpartum Screening

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What is the Families First Screening?

- Healthy Child Manitoba Office (HCMO) partnership with Regional Health Authorities (RHAs) to screen all families with newborns for risk factors associated with poor child outcomes (est. 1999, revised 2003)
- Public Health Nurses (PHNs) collect information on 39 risk factors, including congenital anomalies, birth weight, multiple births, alcohol use and smoking during pregnancy, mother's age, education, marital status, mental health, and family social isolation
- Population-level data not available from other sources

What is the Families First Screening?

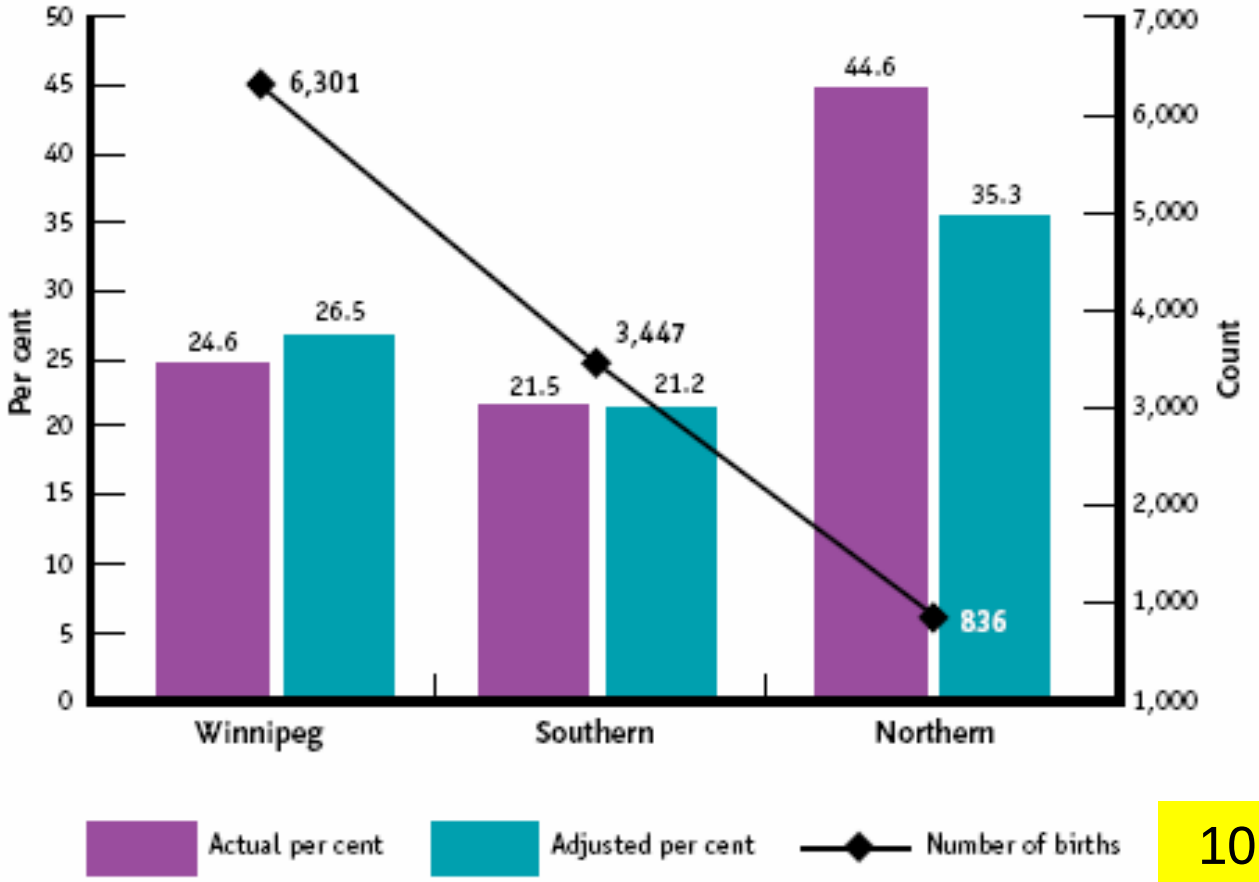
- Two-fold purpose: Public health intervention and population risk monitoring for policy development
- Recent evidence indicates good sensitivity (77%) and specificity (83%) in predicting later involvement with child welfare agencies (Brownell et al., 2007)
- On average, 11,700 Families First Screenings are completed each year (95% of all postpartum referrals and 83% of all births) in Manitoba
- The following data are for 2003-2006; group RHAs into Winnipeg, Southern, and Northern; and adjust for maternal age and education:

Table 1. Prevalence Rates of Risk Factors in Manitoba from 2003 to 2006

Risk Factors	2003	2004	2005	2006
Number of Births Screened	11,529	11,353	11,839	12,132
Three or More Risk Factors	23.4%	24.2%	24.8%	25.1%

1 in 4

FIGURE 1.
PREVALENCE RATES OF THREE OR MORE RISK FACTORS 2003-2006 BY REGION



10,584 babies

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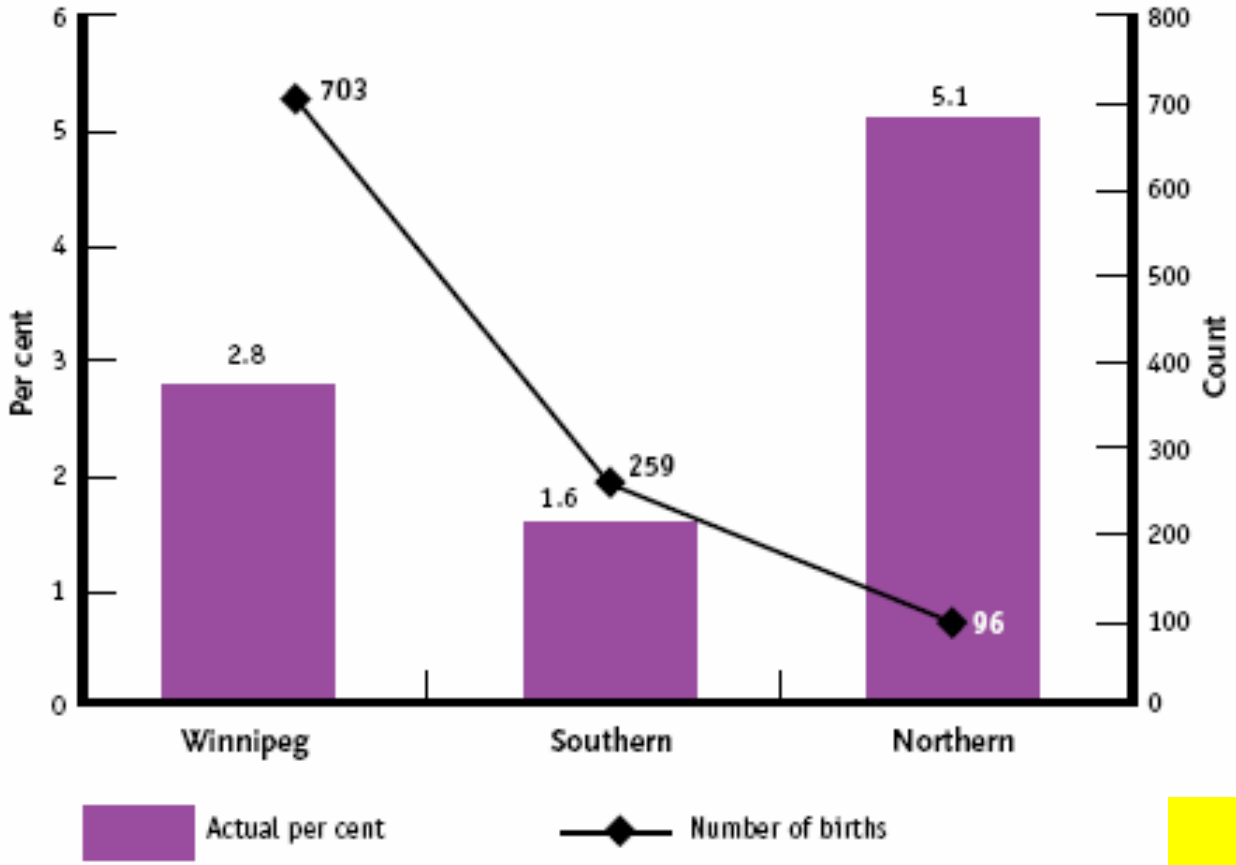
Table 1. Prevalence Rates of Risk Factors in Manitoba from 2003 to 2006

Risk Factors	2003	2004	2005	2006
Teenage Mother	2.5%	2.4%	2.6%	2.4%
Mother with Less than High School	21.9%	22.2%	21.1%	21.3%
Lack of Prenatal Care *	3.2%	3.0%	2.6%	2.8%

1 in 5

* Indicates statistically significant time trend

FIGURE 4.
PREVALENCE RATES OF TEENAGE MOTHERS 2003-2006 BY REGION



1,058 babies

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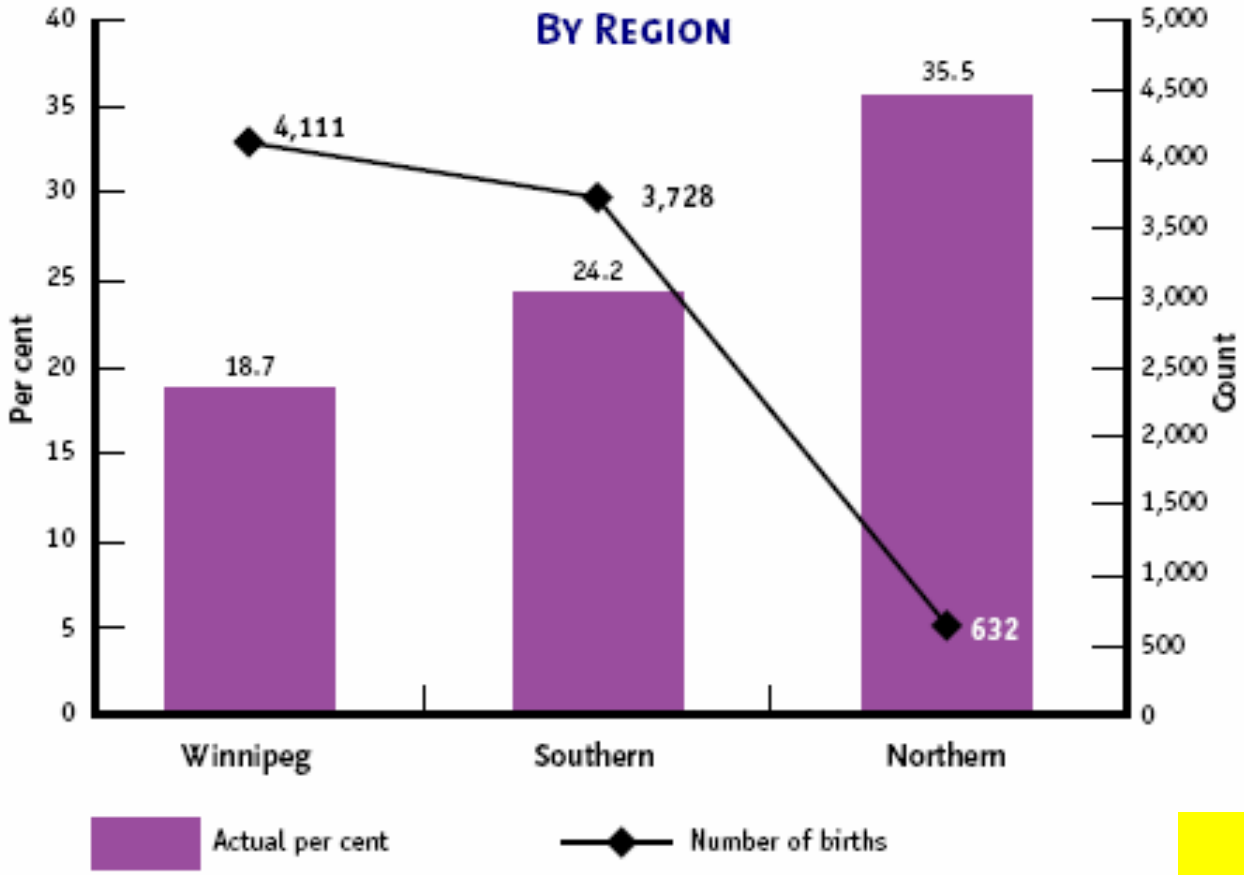
FIGURE 5.
PREVALENCE RATES OF MOTHERS WHO DID NOT GRADUATE FROM HIGH SCHOOL 2003-2006 BY REGION



8,471 babies

Families First Screening: Policy Implications

- Large proportion (1 in 4) of vulnerable children (≥3 risk factors) born every year in Manitoba (about 3000 newborns/year) – increasing population reach is essential
- Stability of risk factors from 2003-2006 provides a provincial baseline for measuring our future progress
- Pressing priorities for literacy:
  - helping young women graduate from high school
  - helping young women delay first childbirth until adulthood (cf. intergenerational transmission)

PART III:

From the Early Years to Starting School: The Early Development Instrument (EDI)

The Early Development Instrument (EDI)

- A population-based, community-level measure of early childhood development (ECD) and school readiness
- Kindergarten teachers from Manitoba's School Divisions complete the EDI on all Kindergarten-aged children (about 20 min per child)

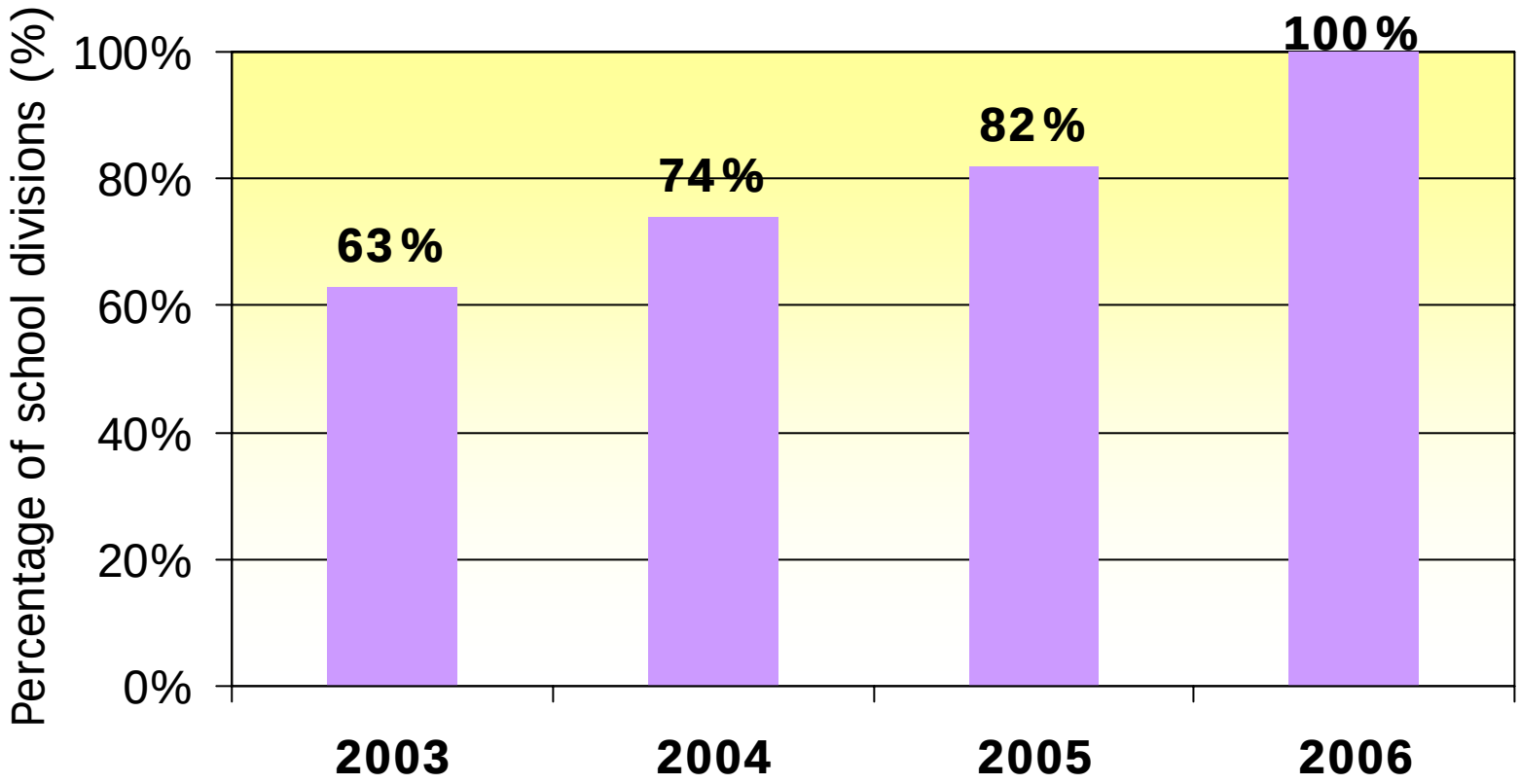
What does the EDI measure?

- Children's "readiness for school" across 5 different areas of child development:
  - Physical Health and Well-Being
  - Social Competence
  - Emotional Maturity
  - Language and Cognitive Development
  - Communication Skills and General Knowledge

History of the EDI in Manitoba (1998–present)

- **1998:** presentations by Dr. Fraser Mustard and Dr. Dan Offord
- **1999:** Understanding the Early Years (UEY) in Winnipeg School Division
- **2000:** UEY in South Eastman region
- **September 2001:** HCCC decision for province-wide, voluntary phase-in of EDI in Manitoba, funded and coordinated by the Healthy Child Manitoba Office (HCMO), Government of Manitoba
- **May 2002:** Dr. Dan Offord formally launches EDI in Manitoba
- **October 2002:** Dr. Magdalena Janus trains first school divisions in EDI
- **February 2003:** First school divisions implement the EDI in Manitoba

Implementation of the EDI in Manitoba:
Percentage of School Divisions, 2003-2006



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Using the EDI in Manitoba

1. **Measuring progress in ECD**
2. **Understanding progress and identifying priorities in ECD**
3. Influencing communities
4. Influencing public policy
5. Evaluating population-level effects of ECD investments

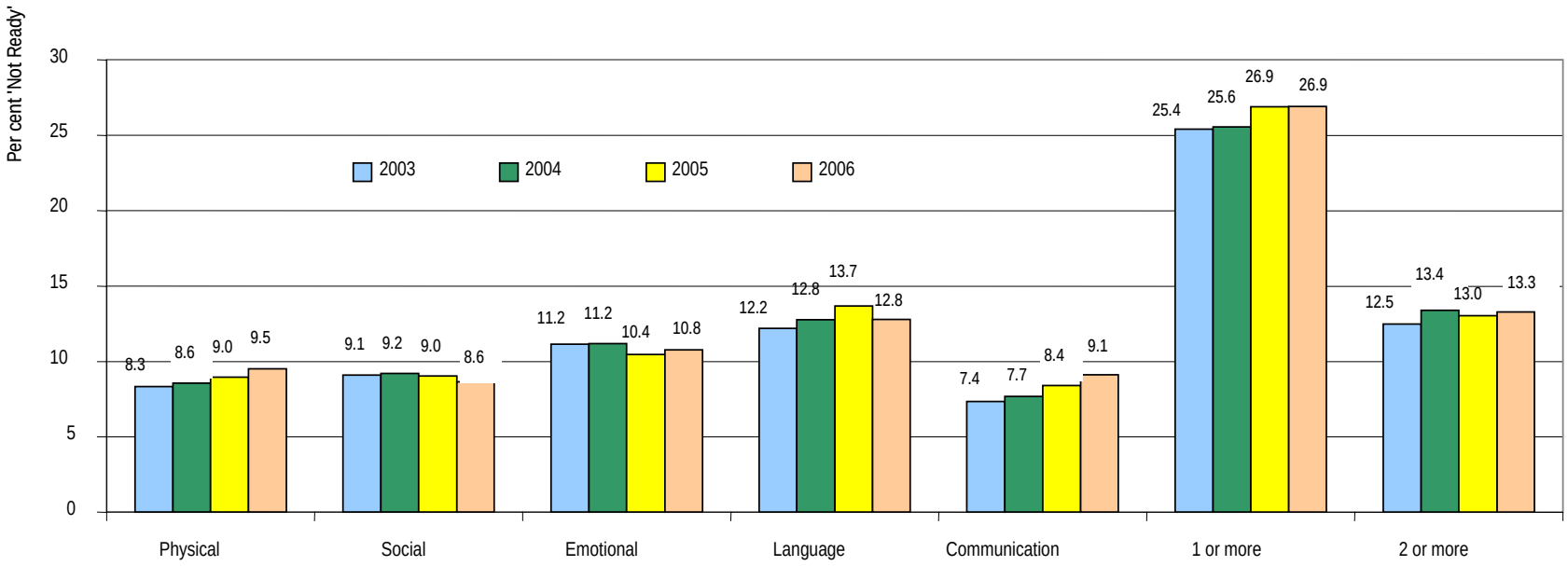
1. Measuring Progress in ECD

Measuring Progress in ECD

- First fully province-wide EDI collection in MB in February 2006 (n = 12,500)
- Note: the EDI is not yet being collected in schools on reserve, except those partnering with Frontier School Division
- Beginning February 2007, EDI will be collected province-wide every 2 years (can compare change within same school divisions over time)
- BC-MB-ON collaboration to develop common method for measuring trends in EDI over time (new EDI Handbook now available)

4-year Time Trends in EDI

Percentage of children NOT READY, Manitoba, 2003-2006



NOTE: Results represent only those school divisions that participated in the EDI in 2003, 2004, 2005, and 2006 (about 60%)

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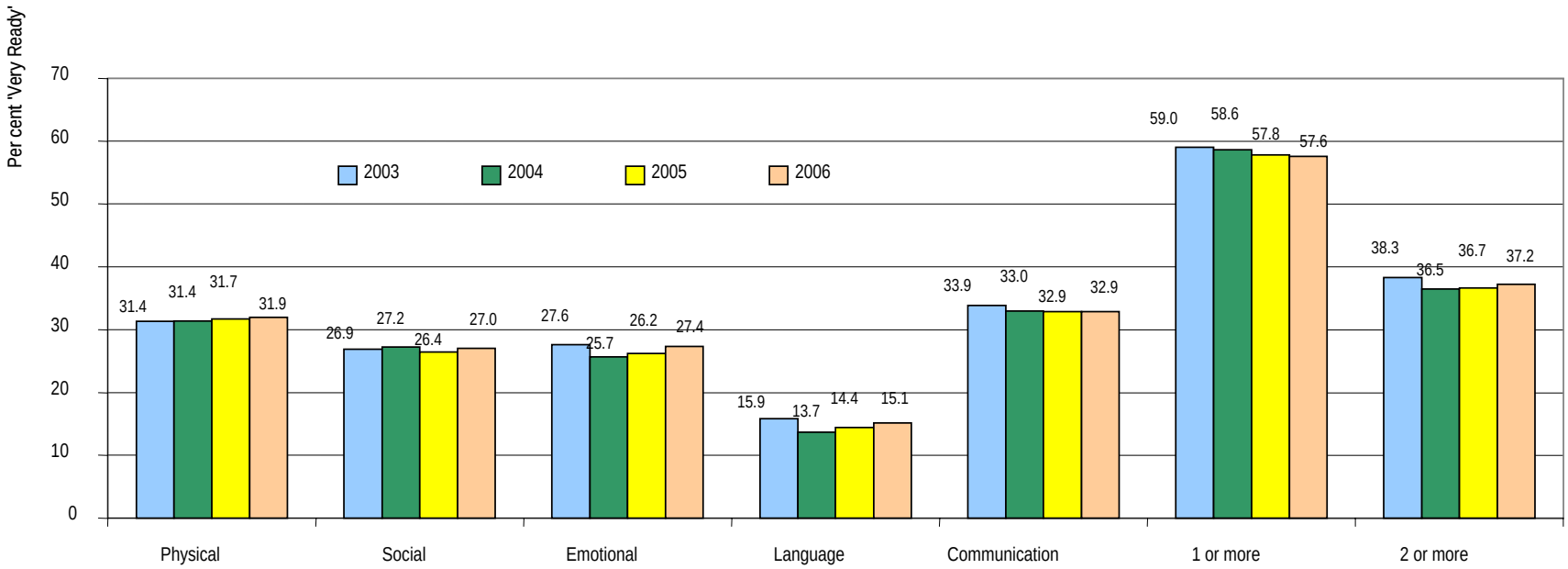
4-year Time Trends in EDI

Percentage of children VERY READY, Manitoba, 2003-2006



NOTE: Results represent only those school divisions that participated in the EDI in 2003, 2004, 2005, and 2006 (about 60%)

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2. Understanding Progress and Identifying Priorities in ECD

Understanding Progress and Identifying Priorities in ECD

- Aboriginal status, gender, SES and EDI
- EDI and EDI Parent Survey
  - **EDI Parent Survey**
    - Two random population sample surveys of 1000 parents (in 2004 and 2006) linked to EDI results
    - partners: Human Resources and Social Development Canada, Social Research and Demonstration Corporation, and POLLARA
- Predictive validity
- A further look at EDI and Aboriginal children in Manitoba

How Many Manitoba Children Were Not Ready* to Start School in 2006?

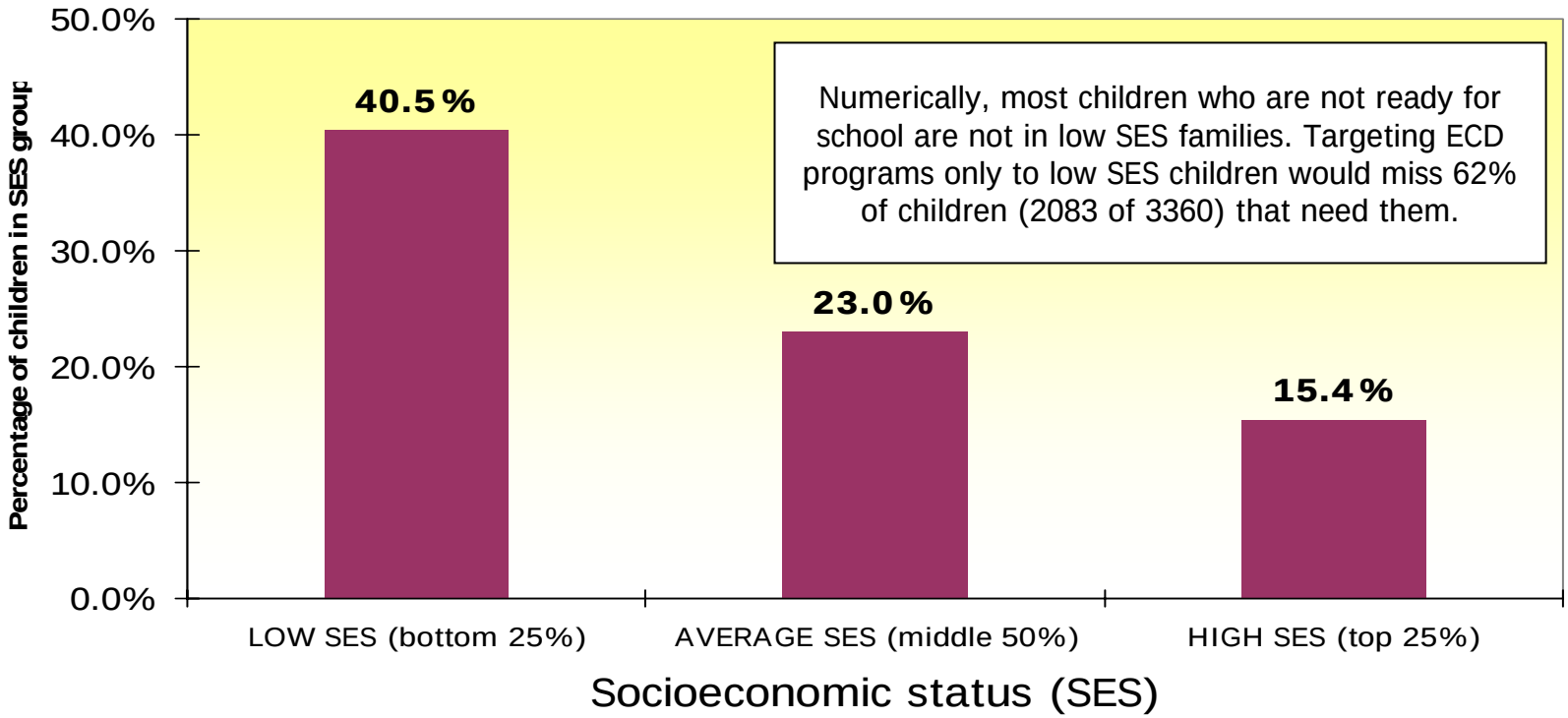
About 1 in 4 of all children (28%)

About 1 in 4 of non-Aboriginal children (24%)
and nearly 2 in 4 Aboriginal children (45%)

About 1 in 5 girls (19%) and 1 in 3 boys (32%)

** bottom 10% in one or more EDI domains*

SES and Children Not Ready to Learn in School – (age 5 years), Manitoba, 2006



Source: EDI Parent Survey 2006 and 2006 EDI results

NOTE: SES is a composite of household income and parental education. Low SES generally represents household income less than $20,000 per year and parental education less than high school.

How Many Manitoba Children Were Very Ready* to Start School in 2006?

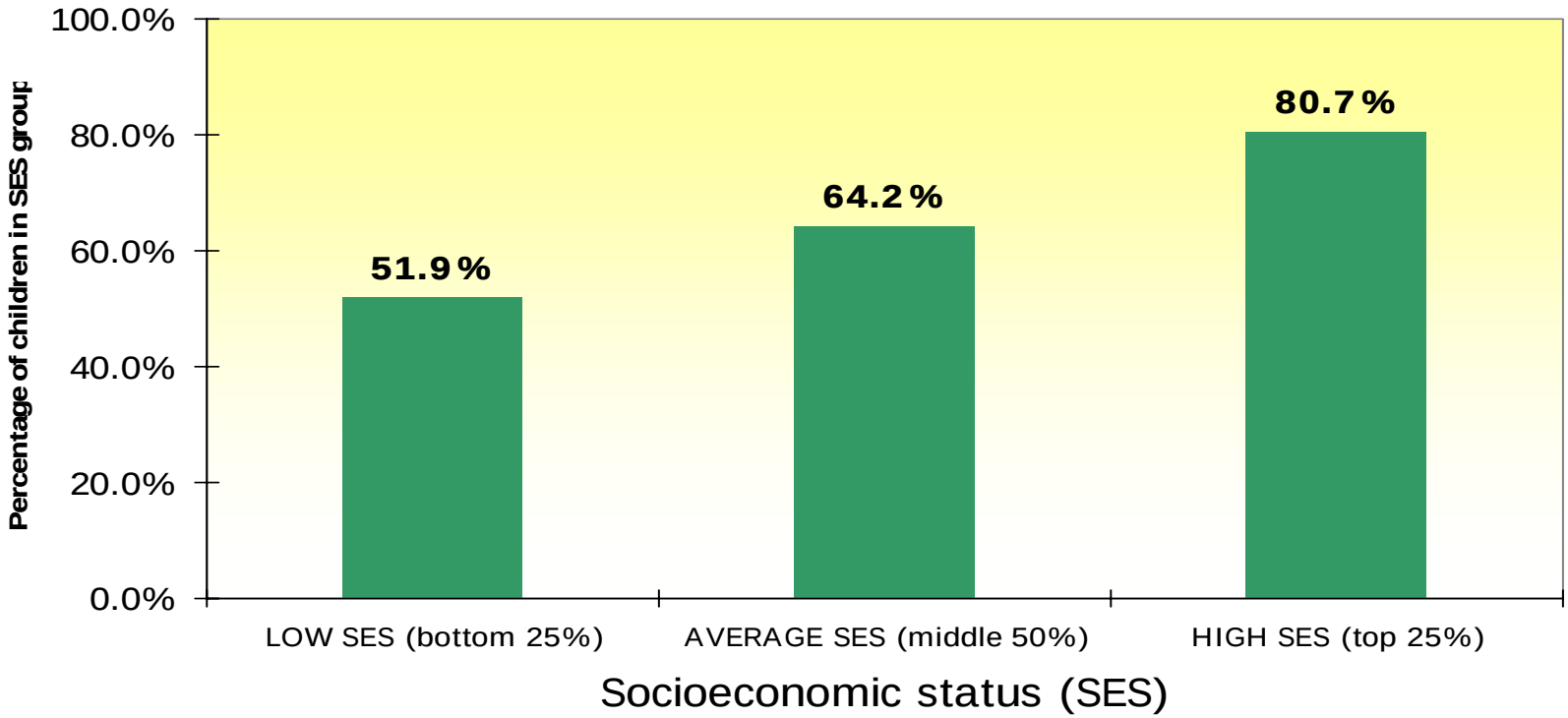
About 3 in 5 of all children (62%)

About 4 in 6 of non-Aboriginal children (66%)
and nearly 3 in 6 Aboriginal children (46%)

Over 2 in 3 girls (67%) and 1 in 2 boys (51%)

** top 30% in one or more EDI domains*

SES and Children Very Ready to Learn in School – (age 5 years), Manitoba, 2006

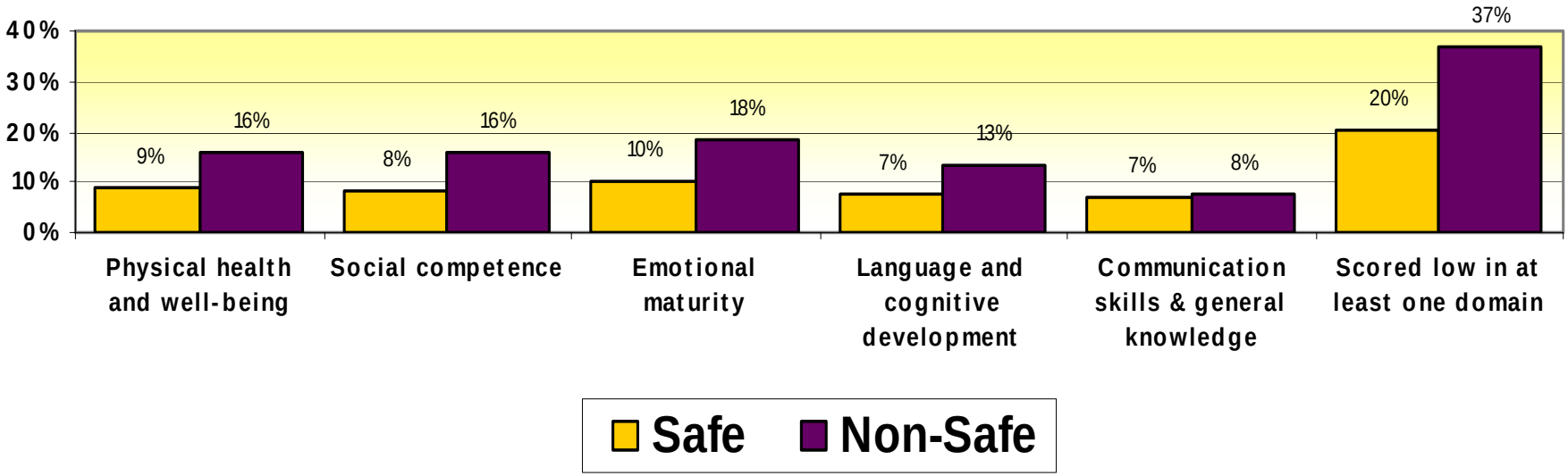


Source: EDI Parent Survey 2006 and 2006 EDI results

NOTE: SES is a composite of household income and parental education. Low SES generally represents household income less than $20,000 per year and parental education less than high school.

COMMUNITY MATTERS:

Neighbourhood Safety and Percentage of MB Children Not Ready to Learn in School, 2004



Source: 2004 EDI Parent Survey and 2004 EDI results

Note: Shorter bars are better

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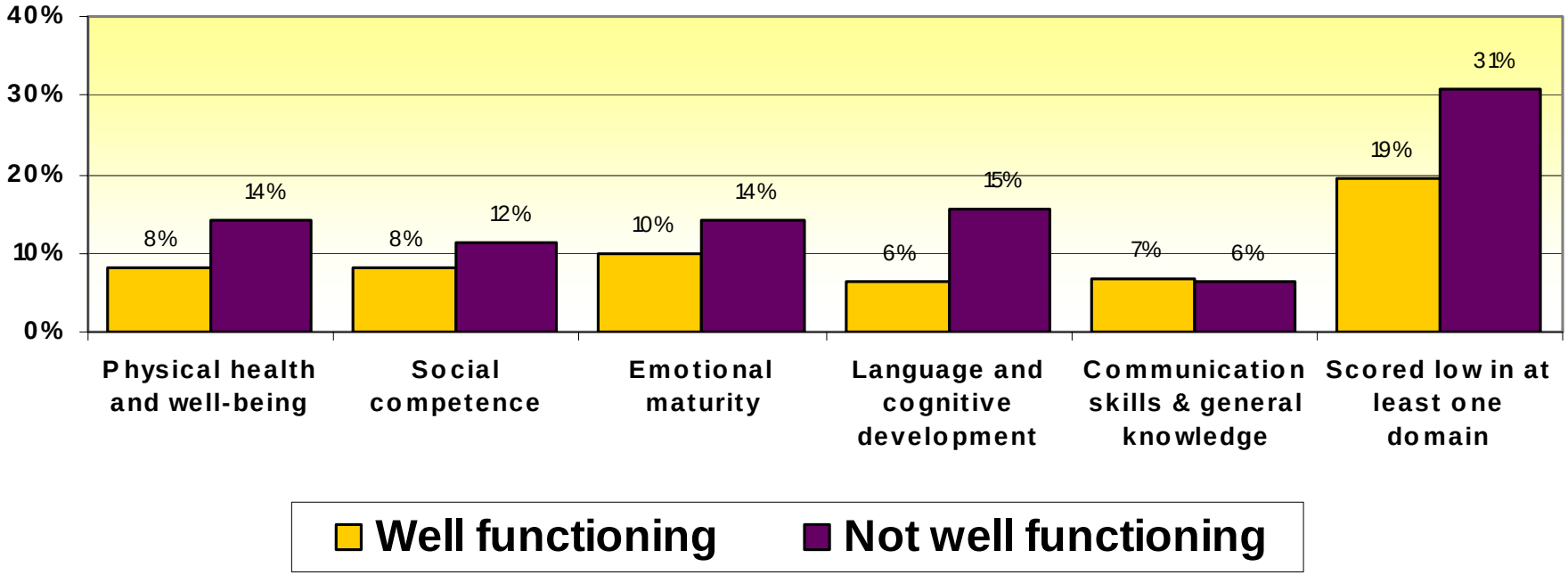
FAMILY WELL-BEING MATTERS:

Family Functioning and Percentage of MB Children Not Ready to Learn in School, 2004



Source: 2004 EDI Parent Survey and 2004 EDI results

Note: Shorter bars are better

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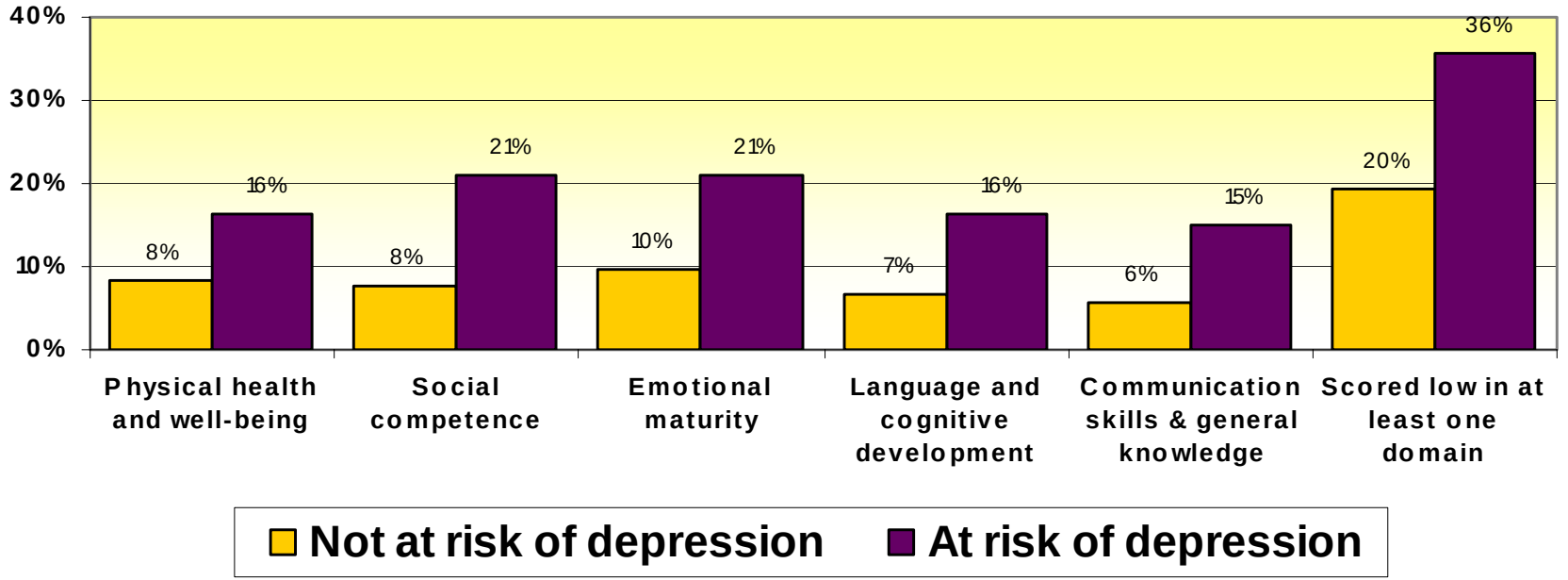
PARENT WELL-BEING MATTERS:

Parental Depression and Percentage of MB Children Not Ready to Learn in School, 2004



Source: 2004 EDI Parent Survey and 2004 EDI results

Note: Shorter bars are better

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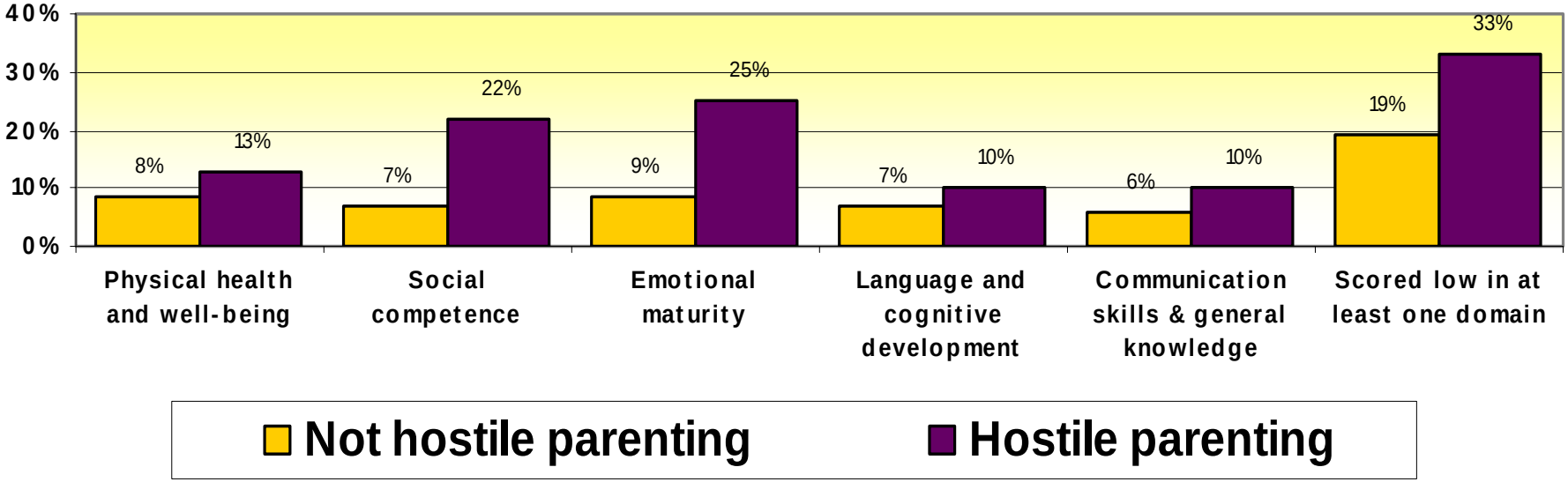
PARENTING MATTERS:

Hostile Parenting and Percentage of MB Children Not Ready to Learn in School, 2004



Source: 2004 EDI Parent Survey and 2004 EDI results

Note: Shorter bars are better

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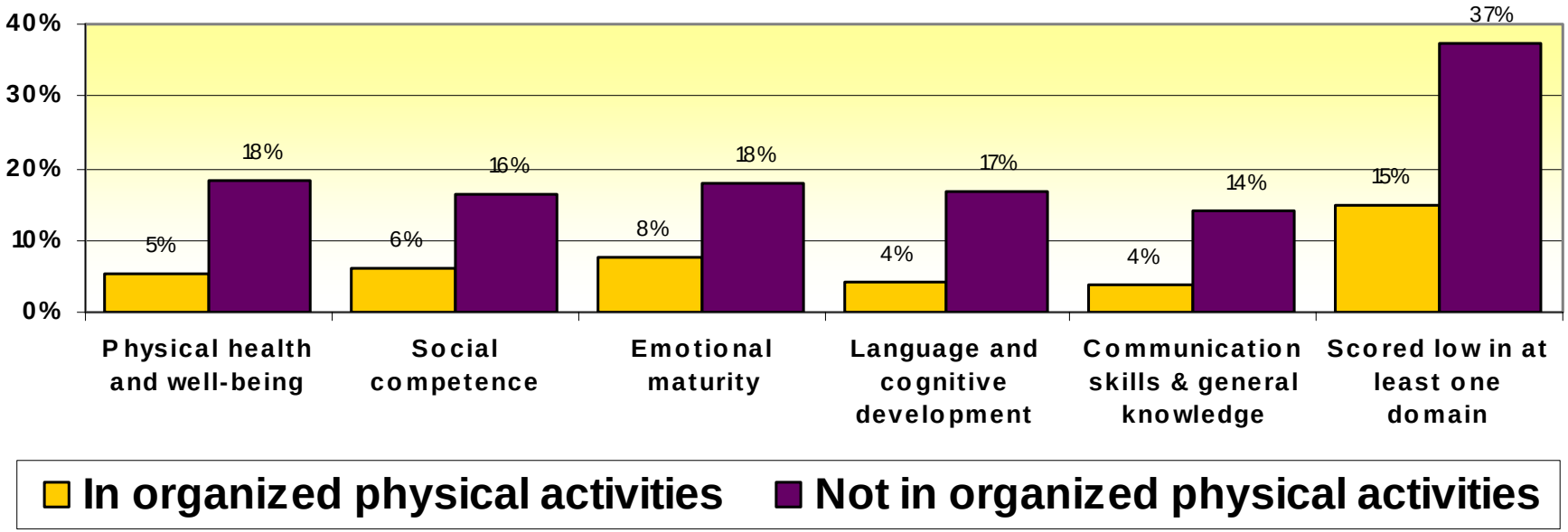
HEALTHY LIVING MATTERS:

Participation in Organized Physical Activities and Percentage of MB Children Not Ready to Learn in School, 2004



Source: 2004 EDI Parent Survey and 2004 EDI results

Note: Shorter bars are better

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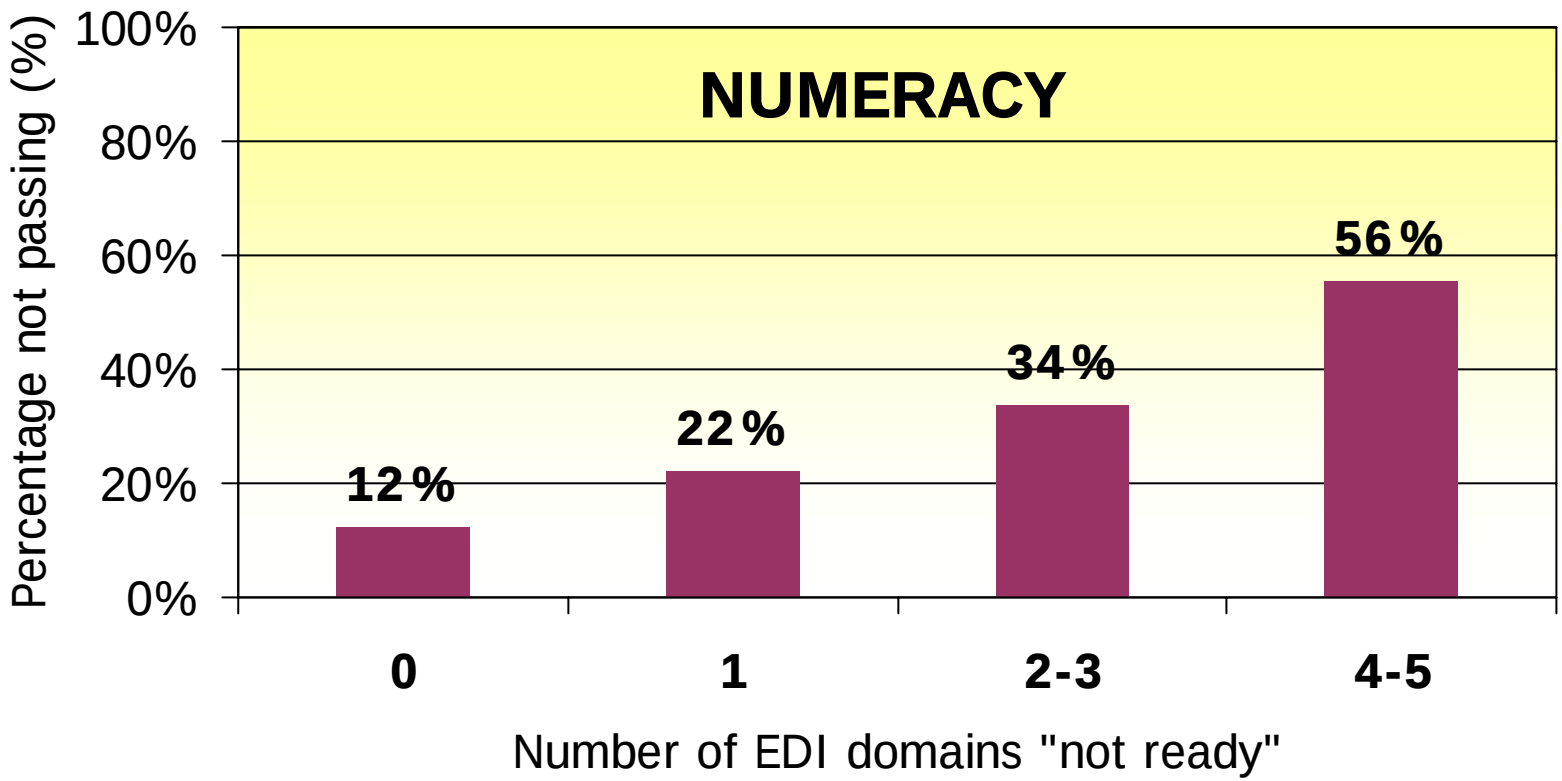
Predictive Validity of the EDI: "Not Ready" on the EDI (2000-2001) and Grade 4 Foundational Skills Assessments (FSAs) in British Columbia, 2004-2005



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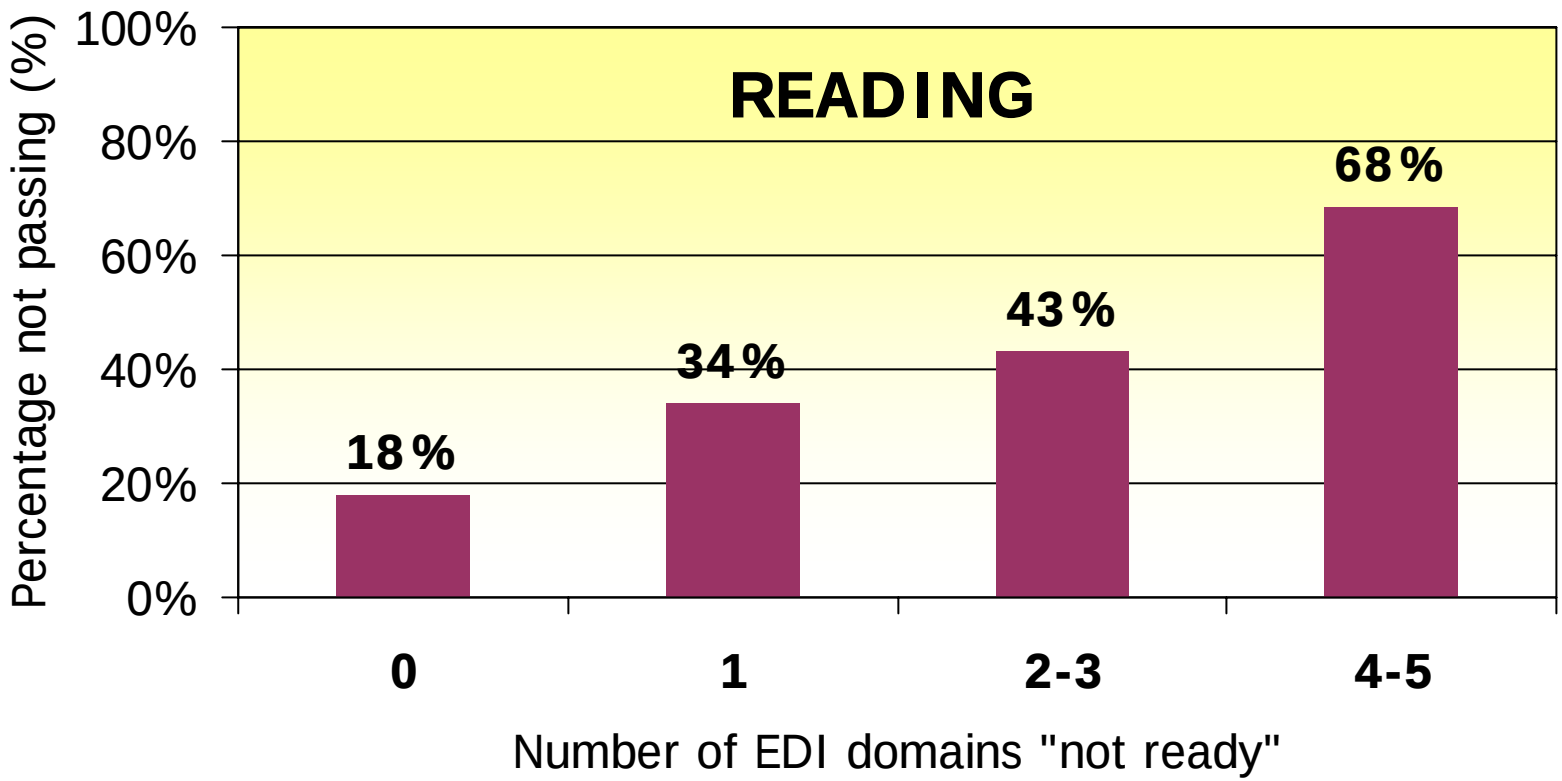
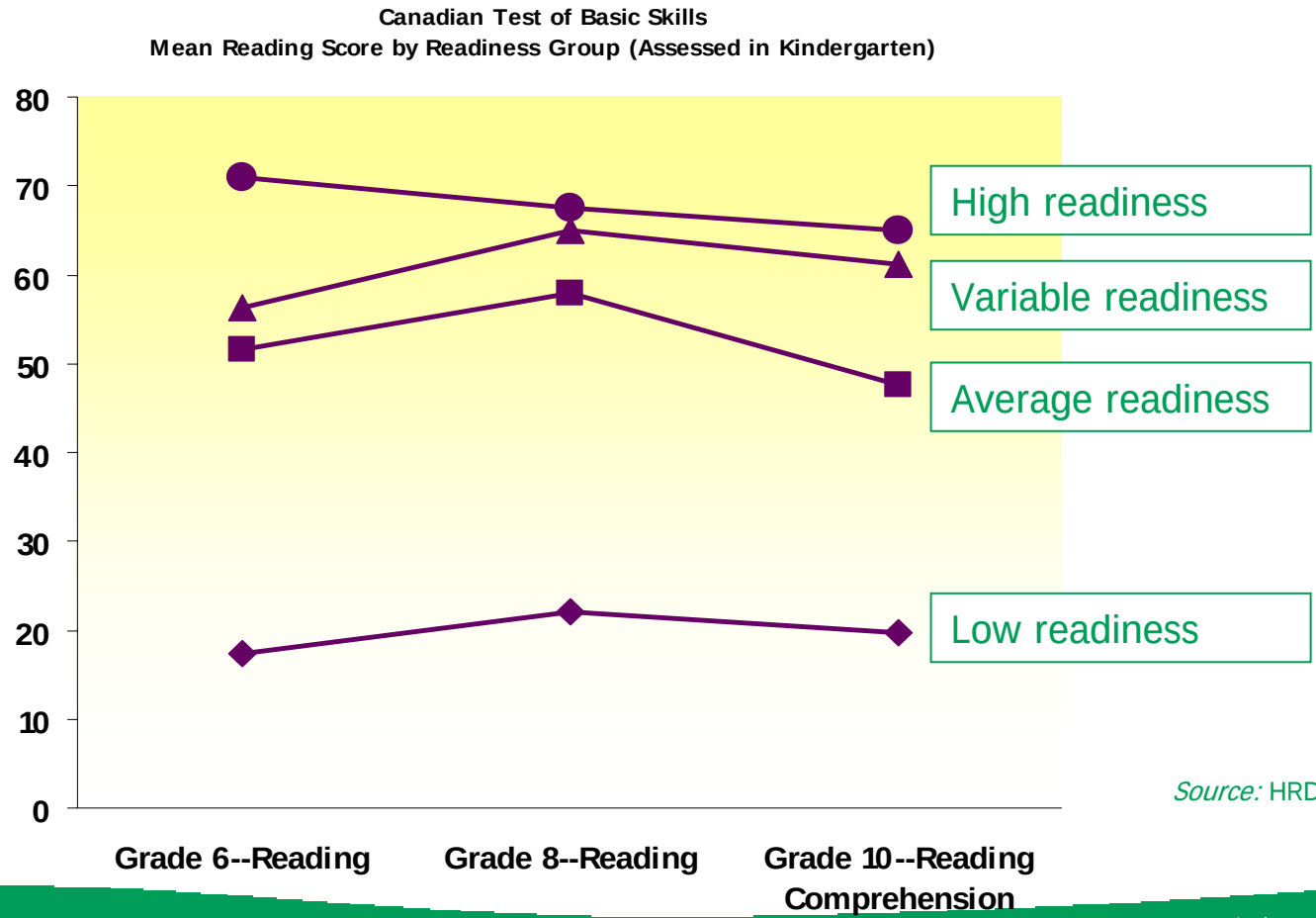


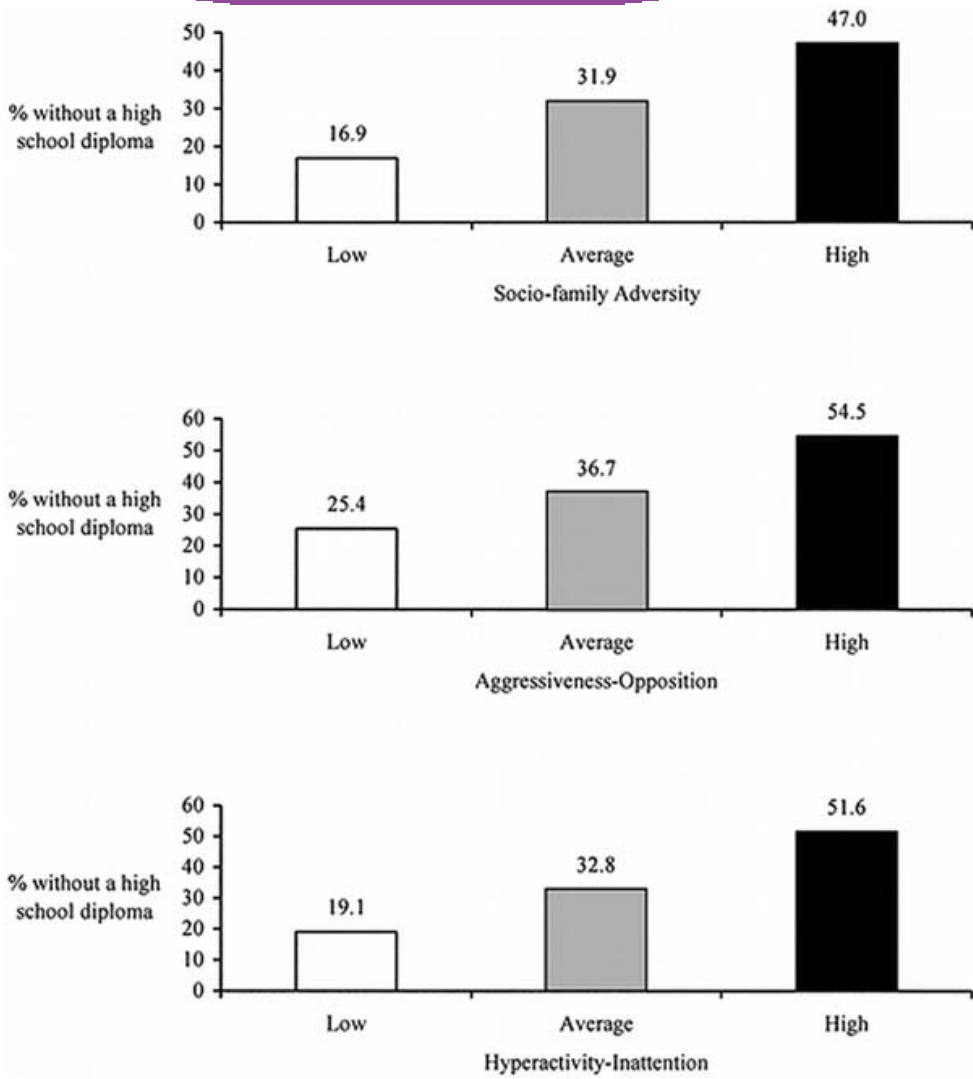
Early Differences in Readiness at School Entry Persist Through to Grade 10



Source: HRDC-ARB (2003).

Predicting High School Graduation in Kindergarten

- Children's aggression and attention/ hyperactivity problems in Kindergarten (using items similar to those in the EDI) are each associated with 2 to 2.5 times the risk of not completing high school
- This is similar to the magnitude of risk associated with family socioeconomic adversity

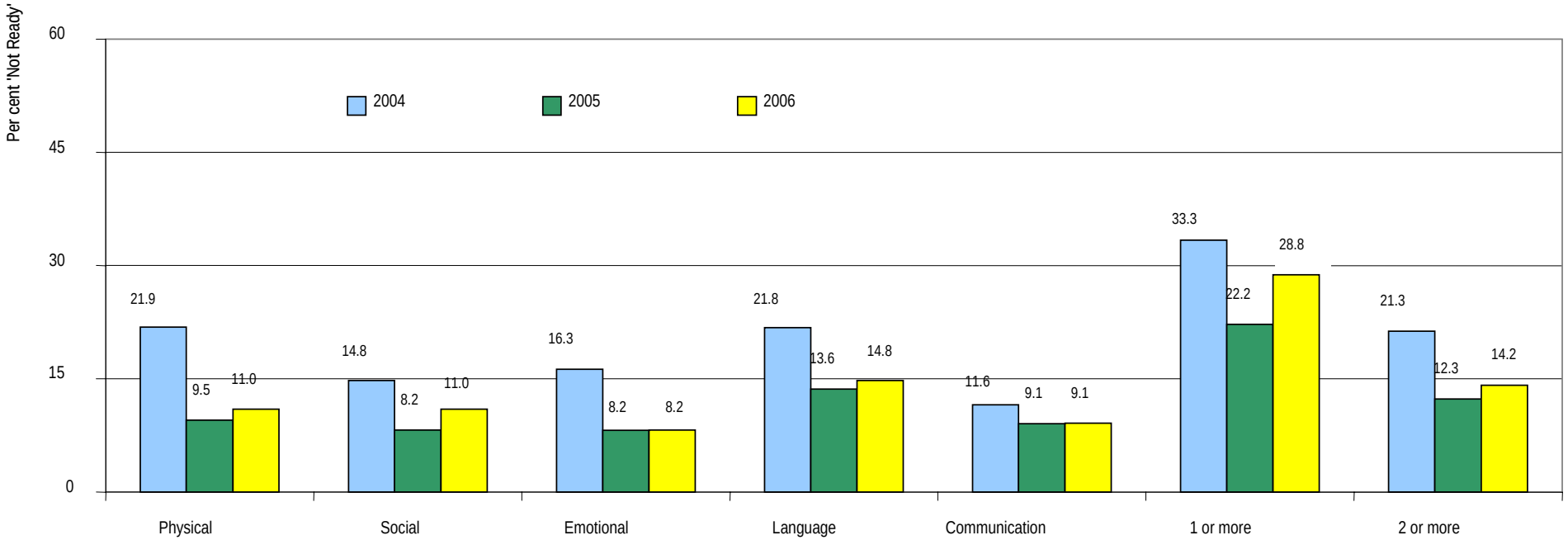


Vitaro et al. (2005)

Cause for Hope in Northern Manitoba?

3-year EDI Time Trends for School District of Mystery Lake

Percentage of children NOT READY, 2004-2006



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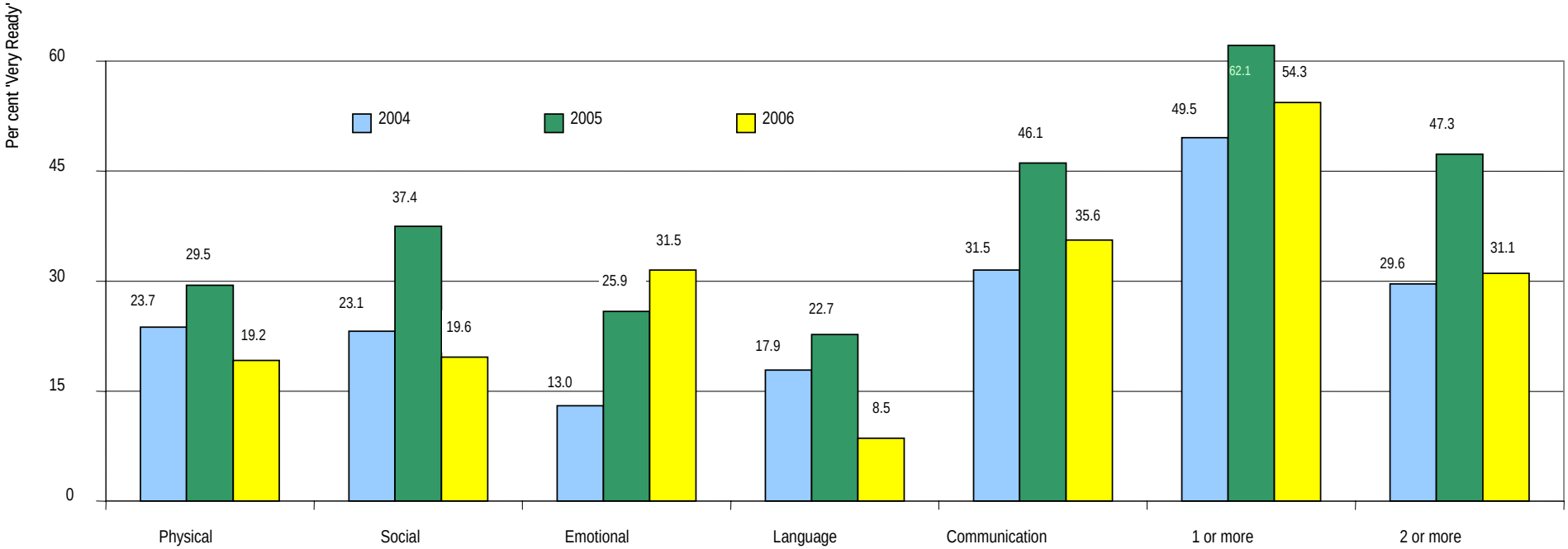
Cause for Hope in Northern Manitoba?

3-year EDI Time Trends in School District of Mystery Lake

Percentage of children VERY READY, 2004-2006



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A Further Look at EDI and Aboriginal Children in Manitoba

- Recent preliminary analyses:
  - which children are “Aboriginal” (teacher report vs. parent report)?
  - do EDI scores vary by teacher-perceived Aboriginal status?
  - what is the factor structure of the EDI in Aboriginal samples?
  - what other variables (e.g., SES) are related to EDI differences between Aboriginal and non-Aboriginal children?
  - what predictors differentiate Aboriginal children who are not ready for school vs. Aboriginal children who are very ready for school?
    - after controlling for child gender, single parent family status, and family income, Aboriginal children (a) with parents who have completed university are over 12 times more likely to be very ready for school (compared to Aboriginal children with lesser-educated parents) and (b) with attention-hyperactivity problems are almost 80% less likely to be very ready for school.

Policy Implications

- 2006 is the first year that province-wide EDI results from all 37 school divisions were available for MB (note: the EDI is not yet being collected in schools on reserve, except those partnering with Frontier School Division)

- Children represented in 2006 EDI results were born in 2000: These results reflect our investments in these children to date (prenatal to school entry)

- Significant proportions and numbers of Manitoba children continue to be vulnerable ("not ready") when starting school

- 2006 EDI results should serve as a provincial baseline for measuring Manitoba's progress for its children, into the future

Policy Implications

- Pressing policy priorities
  - language and cognitive development is consistently Manitoba's worst EDI outcome
  - need for more effective early literacy interventions (massive future economic implications)
- Vulnerable boys
  - especially in social competence (2.1x) and emotional maturity (2.2x), even after statistically controlling for child age and Aboriginal status
- Levelling the playing field: Reducing SES inequities
  - Statistically, two distinct groups of children: "not ready" (28%) and "very ready" (62%), with only 5% overlap, defined in large part by family SES
  - Similar for Aboriginal children: "not ready" (45%) and "very ready" (46%), with only 8% overlap, also largely defined by family SES
- Closing the gap for Aboriginal children
  - more likely to be not ready in physical (2.7x), social (2.1x), and language (1.9x), i.e., Aboriginal gap persists even after statistically controlling for child gender and family SES (but Aboriginal gap in "very ready" results disappears after controlling for gender and SES)
- Population reach: Success for all
  - most vulnerable children in Manitoba are neither low SES nor Aboriginal, e.g., only 30% of vulnerable children are Aboriginal (70% are non-Aboriginal)
  - significant change in future EDI results is unlikely without reaching all vulnerable children, e.g., across SES groups, through both universal and targetted programs

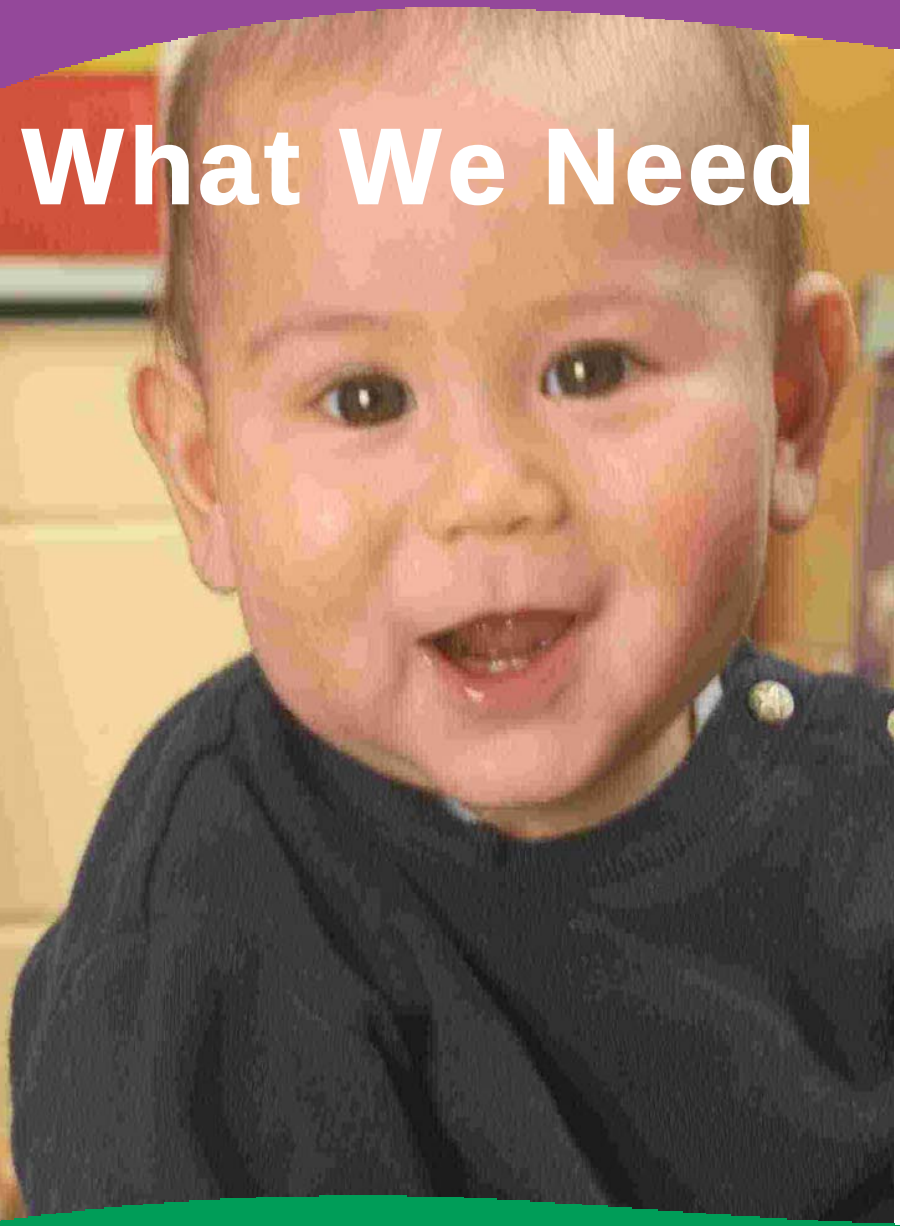
PART IV:

Implications for Action

Our ECD Challenge for 2008/09 and the Next Five Years:

Bridging the gap between
what we know
and what we do
to build what we need

What We Need



- A comprehensive Early Childhood Development (ECD) system:
  - publicly funded
  - evidence-based
  - multilevel: universal, targeted, clinical (best policy mix to reach all children that need support)
  - reduces risk factors for ECD
  - promotes protective factors for ECD
  - measures and monitors cross-sectoral ECD expenditures, activities, determinants, and outcomes across the life course and generations

Challenge #1 :

Reaching all parents and families that need support

Challenge #2 :

Reducing inequalities in children's ECD outcomes (flatten gradients)

Challenge #3 :

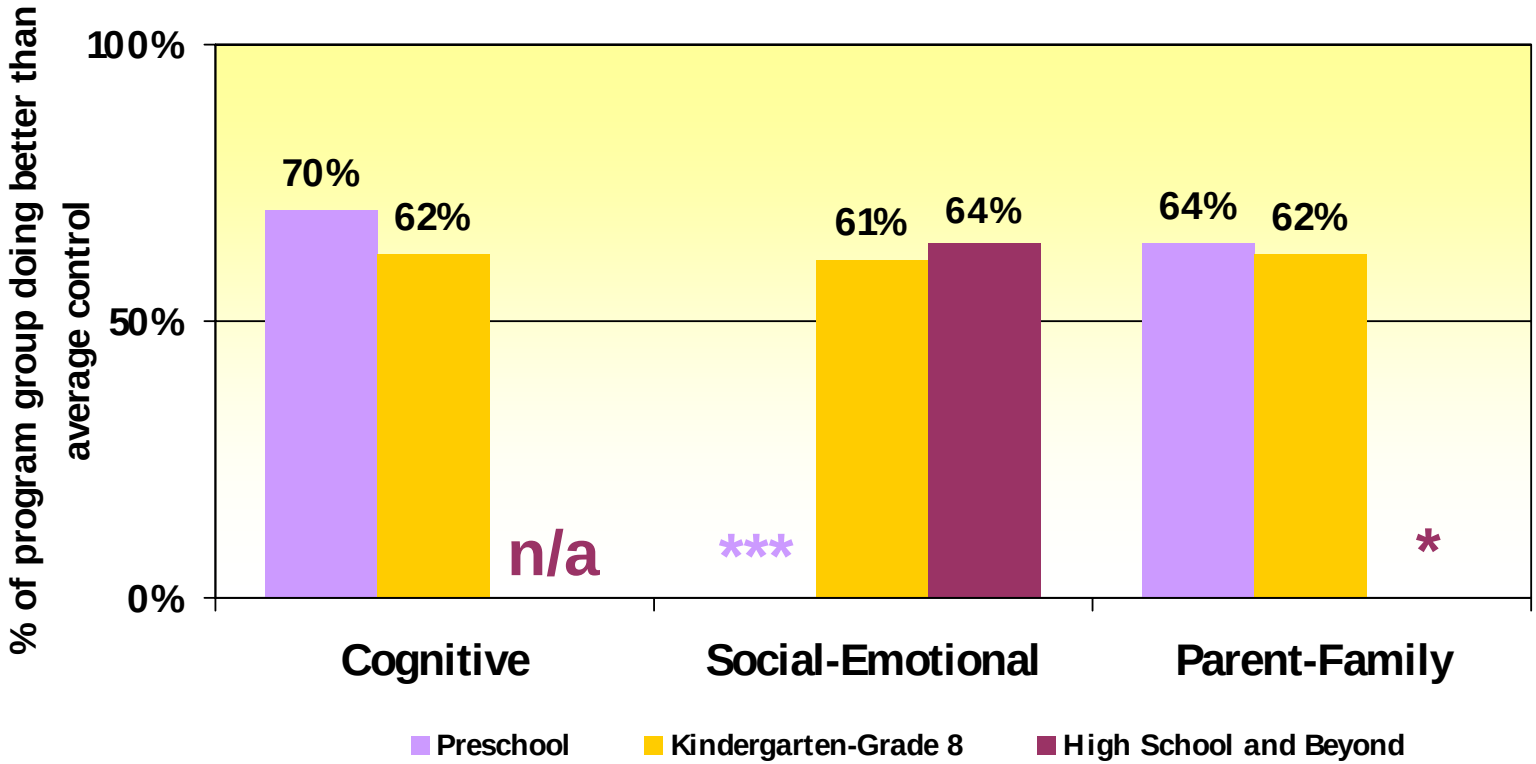
Improving children's developmental trajectories

Challenge #4 :

Building an integrated information system to measure progress in ECD

How Long Do the Effects of ECD Programs Last?

Meta-Analysis of Short-Term, Medium-Term, and Long-Term Effects



Source: Nelson et al. (2003) meta-analysis of 34 preschool programs

"The "head start" that children receive does make a difference in the long run." (Nelson et al., 2003)

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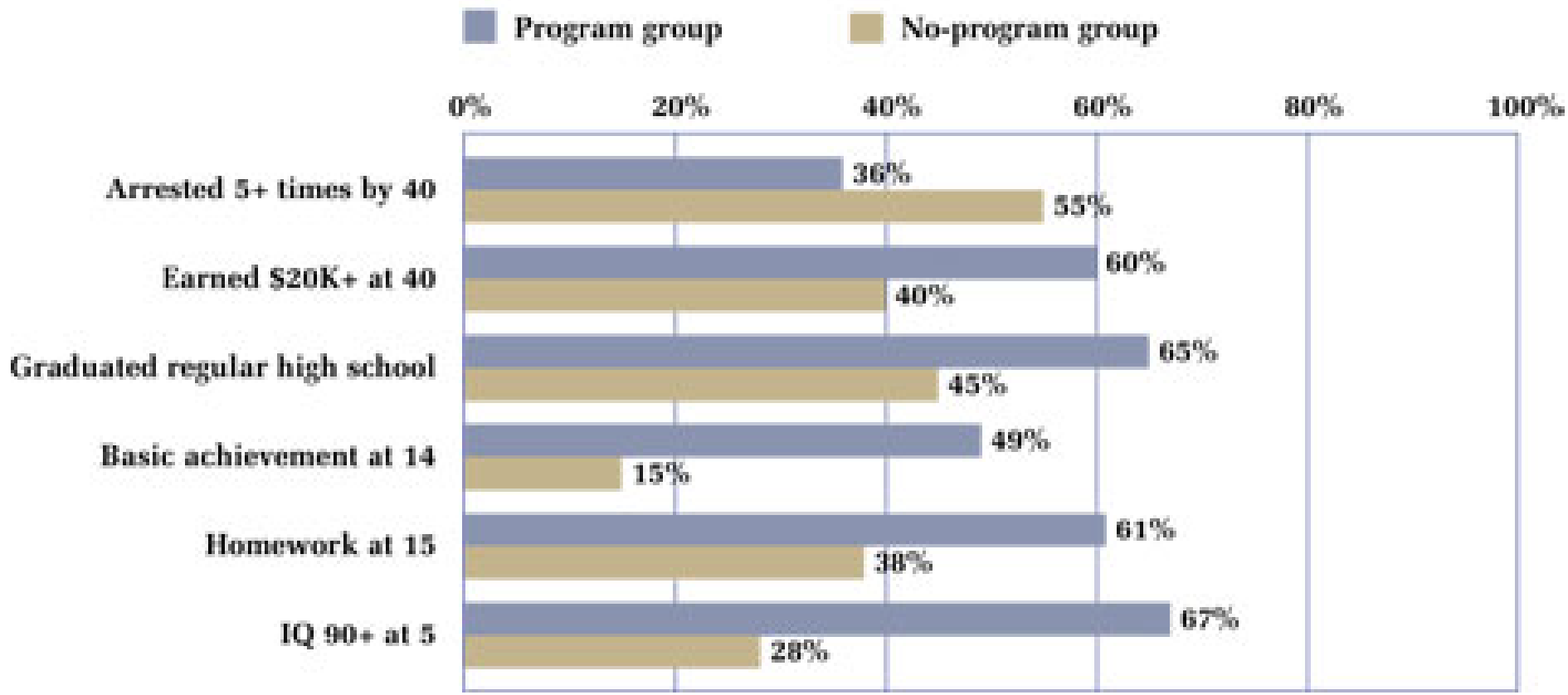
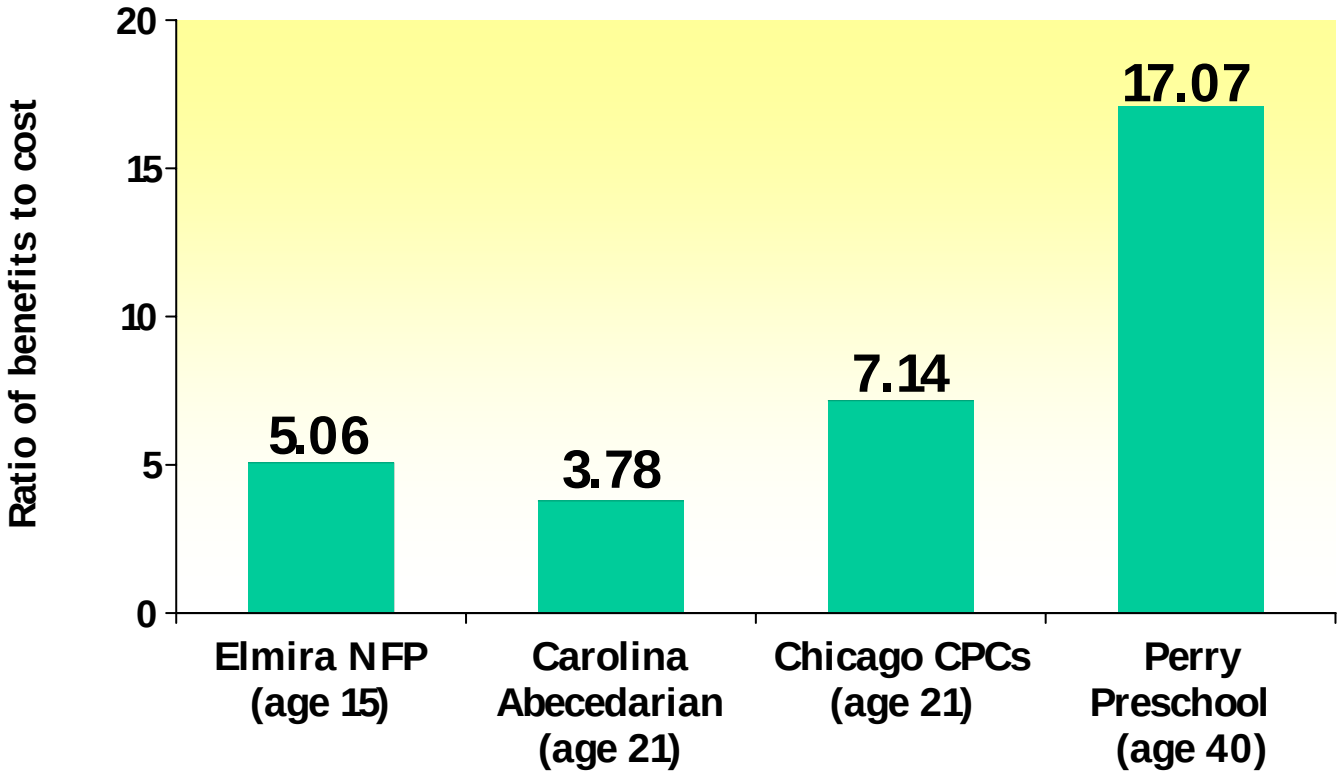
Major Findings: High/Scope Perry Preschool Study at 40



Exceptional Returns on Investment:

Long-Term Benefit-Cost Ratios for Four Exemplary ECD Programs



Up to 16% rate of return on investment in ECD, compared to the highly touted 6% rate of return of the U.S. stock market (1871-1998)

Sources: Lynch (2004), Rolnick & Grunewald (2003)

Sources: Karoly et al. (1998), Masse & Barnett (2002), Reynolds et al. (2002), Schweinhart et al. (2004)

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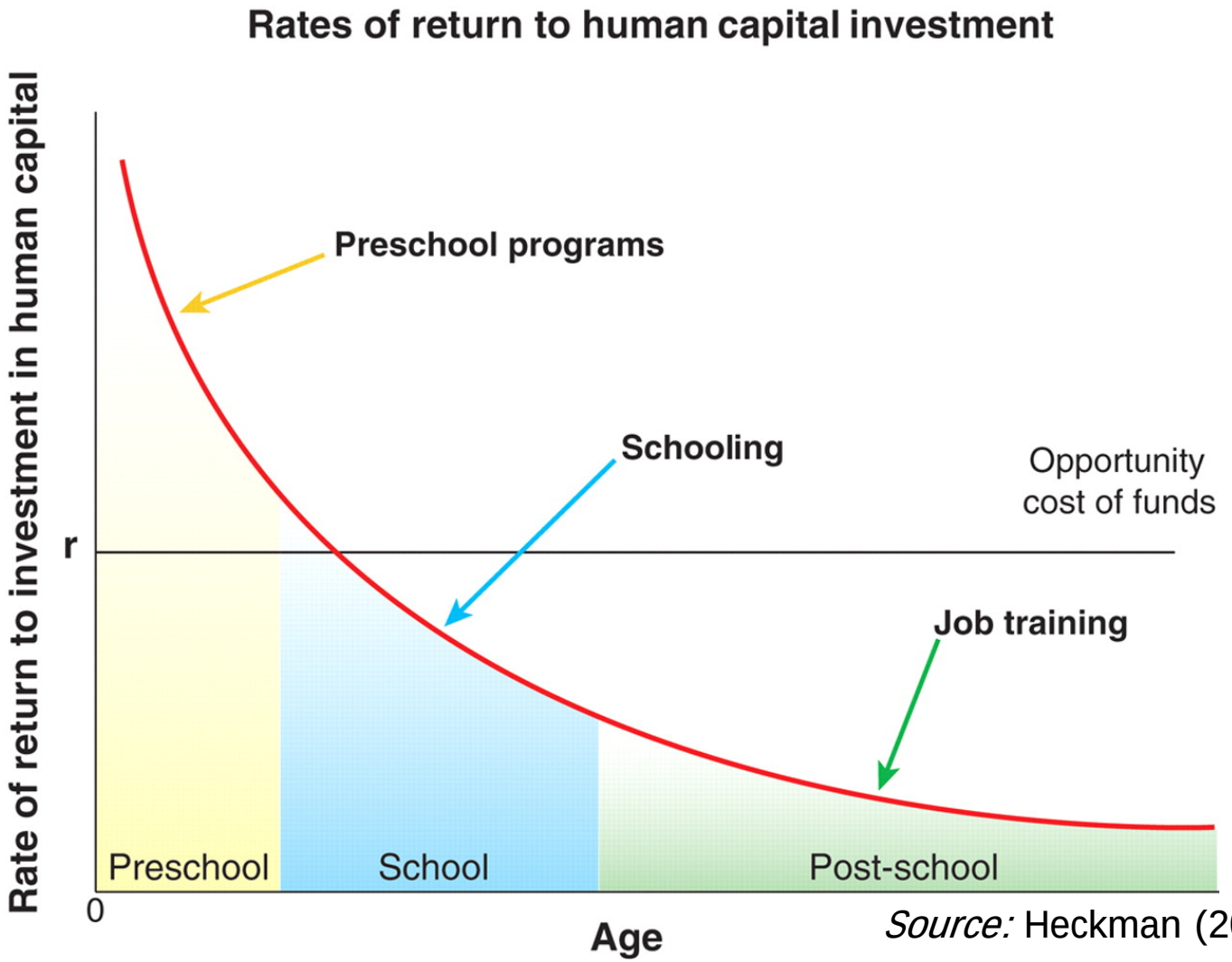
The Cost of Second Chances

"[We are] a second chance society. Our educational policy is based on a fundamental optimism about the possibility of human change. The dynamics of skill formation reveal that later compensation for deficient early family environments is very costly. If society waits too long to compensate, it is economically inefficient to invest in the skills of the disadvantaged. A serious trade-off exists between ***equity and efficiency*** *for adolescent and young adult skill policies.* ***There is no such trade-off for policies targeted toward disadvantaged young children.****"*

James J. Heckman, PhD
2000 Nobel Laureate in Economic Sciences

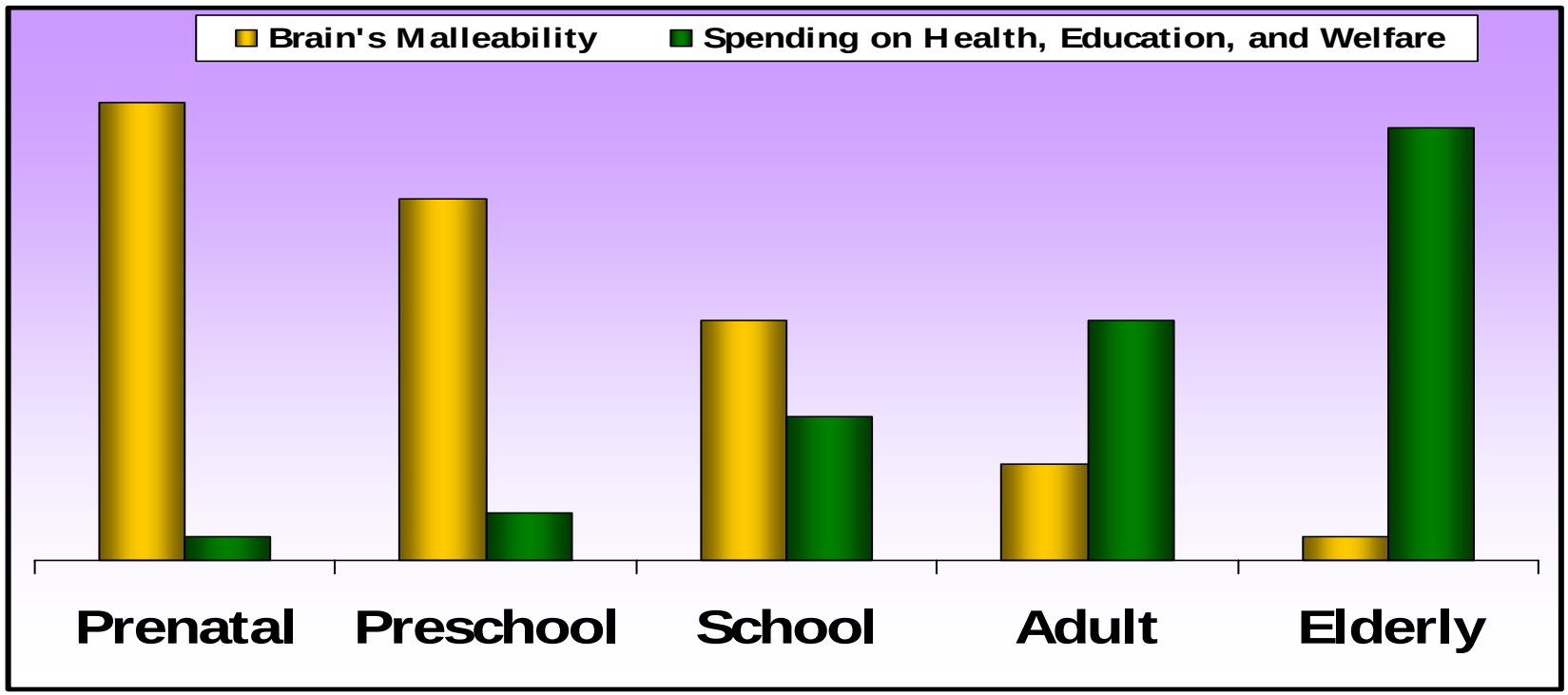
Source: Heckman (2006, p. 1901)



Source: Heckman (2006)

Opportunity Lost. . .

Addressing the Mismatch Between Opportunity & Investment



Adapted from: “How Nurture Becomes Nature: The Influence of Social Structures on Brain Development”
Bruce Perry, Baylor College of Medicine, Houston, Texas.

Conclusions and a Call to Action

- Our success in ECD is **an indicator of the success of our society and democracy**: equality of opportunity, fairness and justice, and social responsibility
- Our success in ECD is also **a forecast of our social and economic future** and is **the best economic investment**
- Communities, governments, researchers, and practitioners must **establish new partnerships**, building on the ECD accomplishments of the past decade to meet the most important ECD challenge of the next decade: **Bridging the gap between knowledge and action to build a comprehensive, effective ECD system for all children, supported by convincing evaluation evidence to help protect the system in the future**

Our Opportunity and Responsibility

"The charge to society is to blend the skepticism of a scientist, the passion of an advocate, the pragmatism of a policy maker, the creativity of a practitioner, and the devotion of a parent - and to use existing knowledge to ensure both a decent quality of life for all of our children and a promising future for the nation."

Source: National Research Council and Institute of Medicine (2000, p. 415)

Thank You

For more information, please visit the Healthy Child Manitoba website:
www.gov.mb.ca/healthychild

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