



HRSD

***Reading skills of young Canadian  
Immigrants: the effects of duration of  
residency, home language exposure and  
schools***

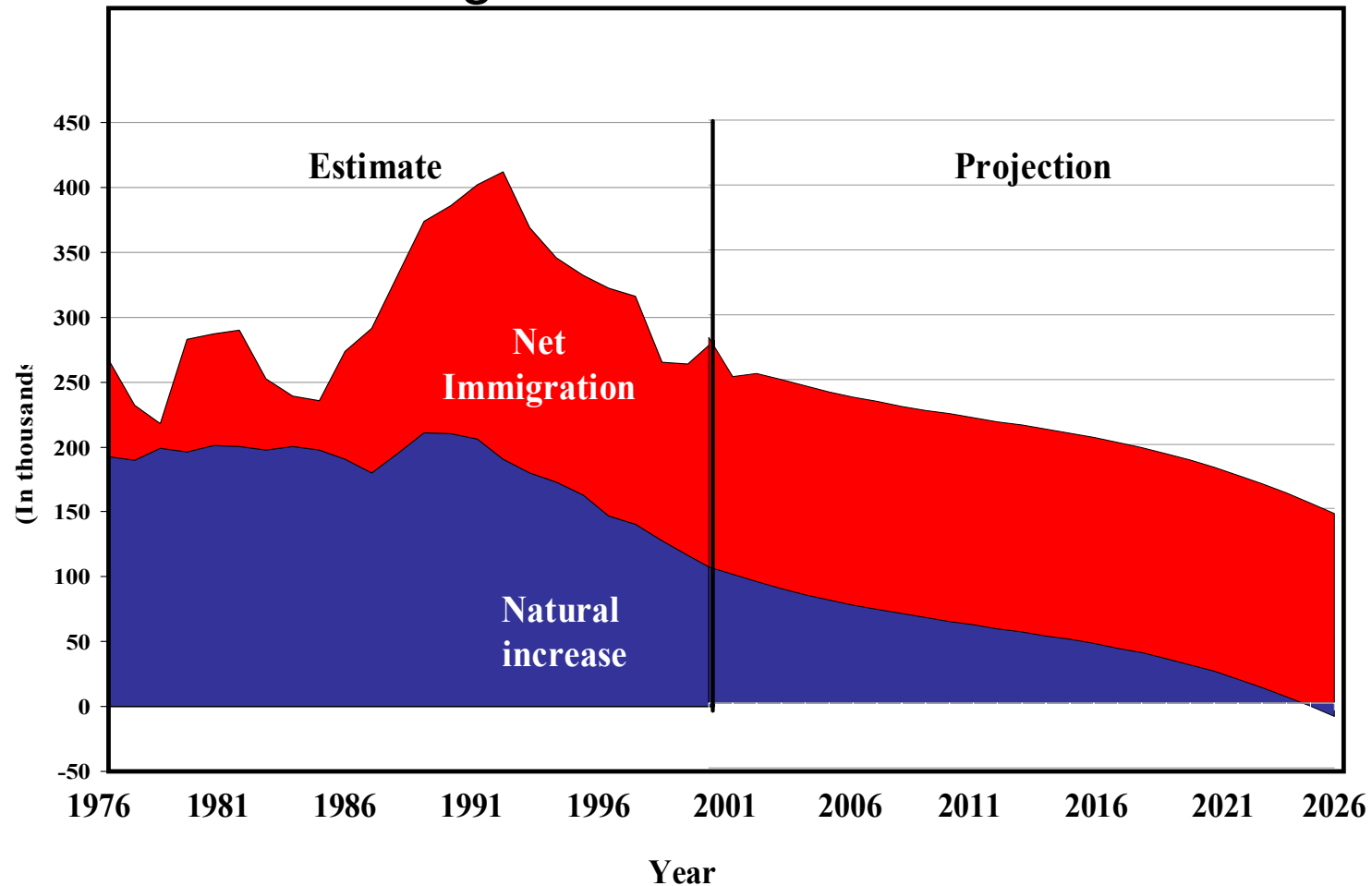
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**Canada**

## Canada's labour force growth is slowing due to aging demographics

- Immigrants will constitute a growing part of population and labour force growth.



## Motivation

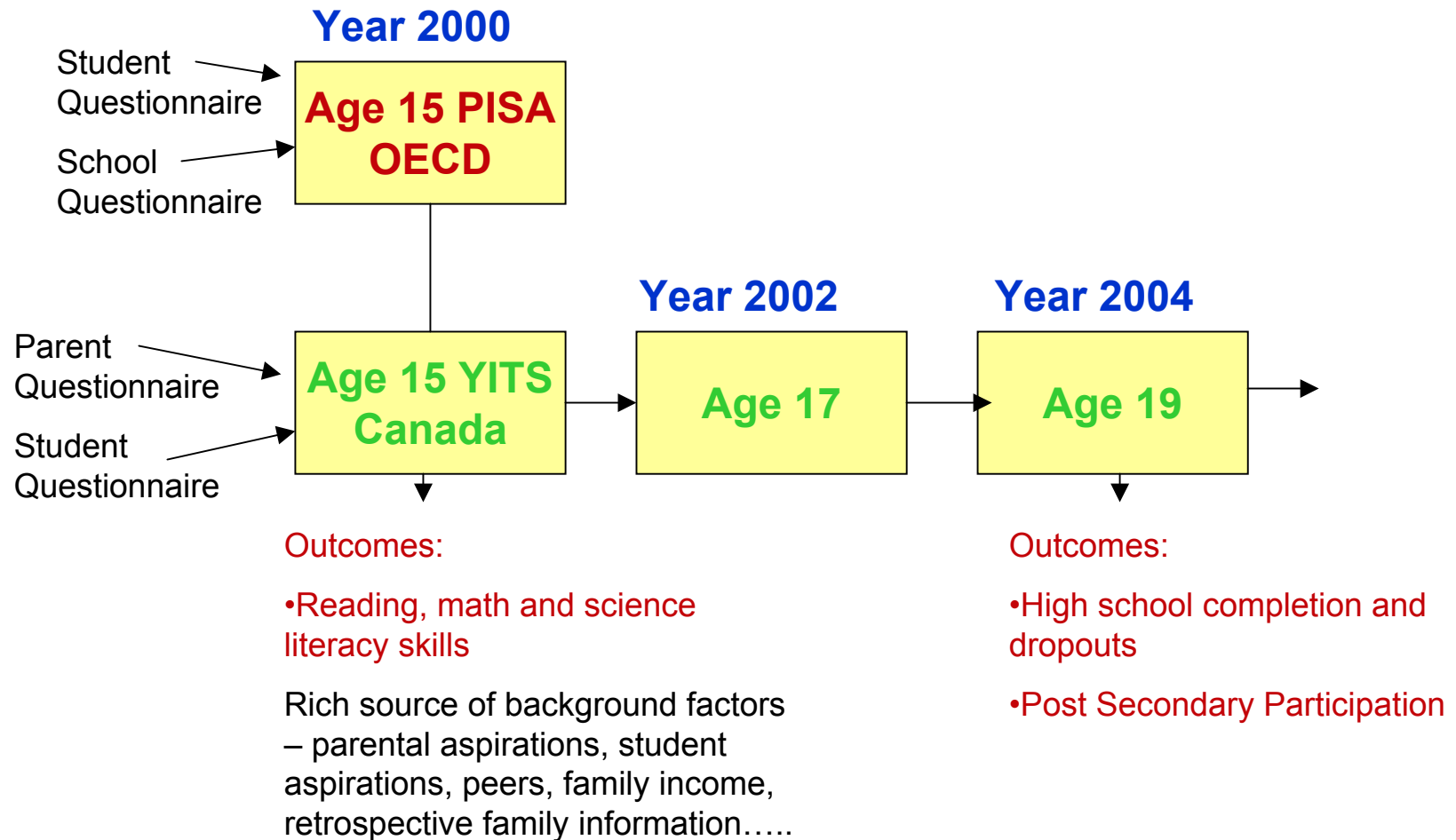
- ▶ Ageing population in Canada and the importance of immigration.
- ▶ Canadian immigrants often arrive with children who will eventually enter the Canadian labour market (in 2003, 37% of all new immigrants arriving in Canada were between the ages 0 and 24).
- ▶ High reading skills at young ages are linked to higher PSE participation (Bussière et al., 2004).

*Therefore, knowledge and understanding of outcomes of young immigrants are of great interest.*

## Research questions

- ▶ Does the age at which immigrant children arrive in Canada have an impact on their reading skills at age 15?
- ▶ Does exposure to different languages at home affect reading skills in French and English of immigrants?
- ▶ What are the relative influences of individual, family and school factors, and how do they differ from their Canadian counterparts?

## Longitudinal follow up of PISA 2000 Cohort in Canada



## Data

- ▶ **2000** Programme for International Student Assessment (PISA) and the Youth in Transition Survey (YITS).
  - Student questionnaire
  - Parent questionnaire
  - School questionnaire
- ▶ 30,000 Canadian 15-year olds from more than 1,000 schools, who are being followed every two-years since 2000.
  - Hierarchical sampling frame
- ▶ Tested in reading, mathematics and science
  - Reading a major domain
  - Not curriculum based

## Definitions

### Student classification

- **Native born student** – born in Canada with at least one parent also born in Canada
- **First generation student** – born in Canada with parents born outside of Canada
- **Immigrant students** – born outside of Canada

### Duration of residency

- **Recent immigrant** – in Canada for 5 years or less
- **Long residency** – more than 5 years in Canada

### Home language

- **Test language** – reported that language most often used at home is that of the PISA test (French or English)
- **Other** – reported that language most often used at home is different from that of the PISA test (French or English)

## 15-year old immigrants in Canada

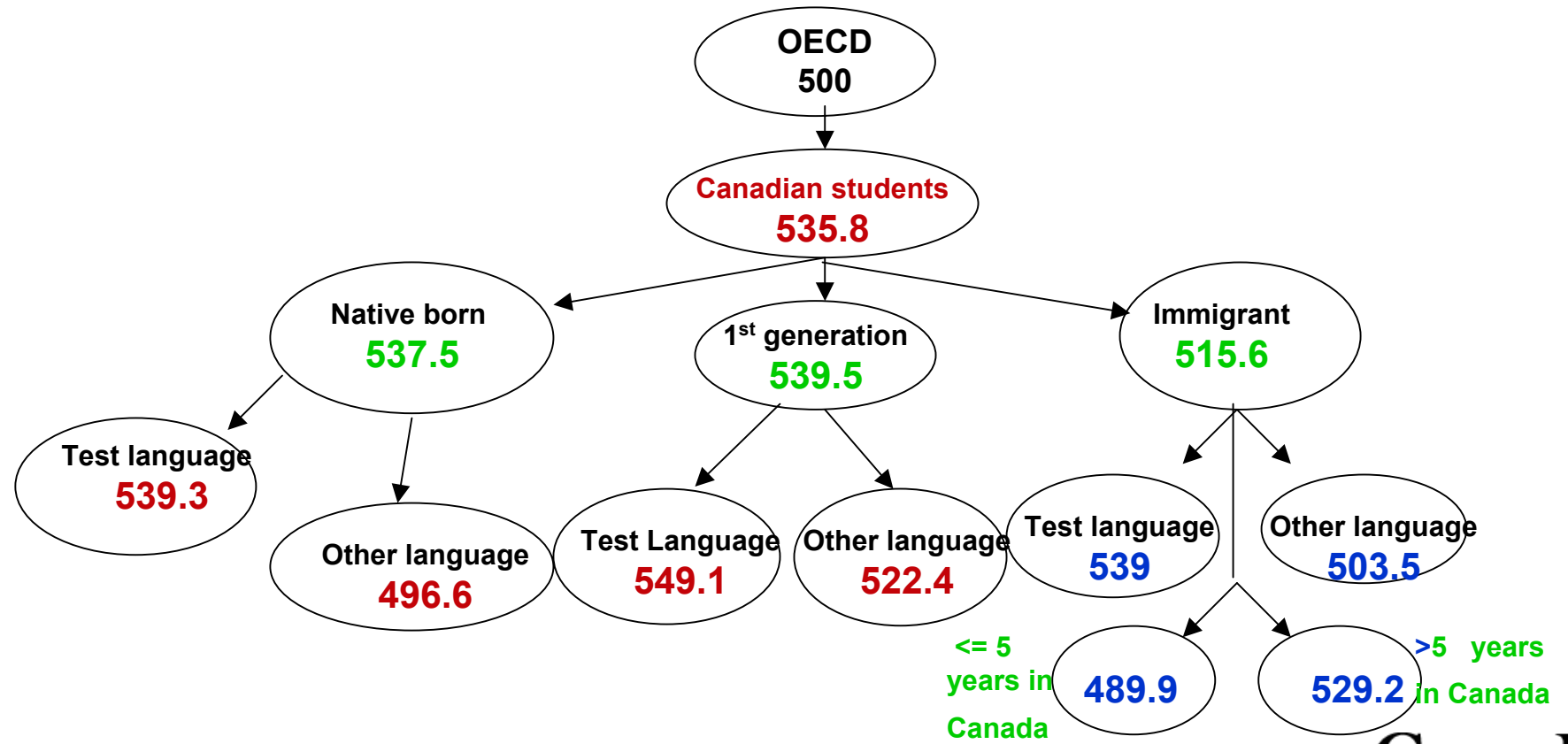
Distribution of 15-year olds by immigrant status, 2000

	<b>Population</b>	<b>Percent</b>
<i>Native born student</i>	276,823	80.7
<i>First generation student</i>	35,091	10.2
<i>Immigrant student</i>	30,971	9.0
Total	342,885	100

# Reading performance of Canadian immigrant youth

Average reading scores and population levels of Canadian 15-year-olds by immigration status, home language and length of residency,

2000.



## Duration of residency and home language exposure of Canadian immigrants

	Test language	Other language
Short residency (5 years or less)	<b>522.4</b>	<b>478.3</b>
Long residency (more than 5 years)	<b>545.8</b>	<b>521.4</b>

## Gender differences

	Mean score		Std. Error
	Difference		
<i>Native boy</i>	521.0		2.04
		33.3	
<i>Native girl</i>	554.3		1.91
<i>First generation boy</i>	521.7		5.29
		33.5	
<i>First generation girl</i>	555.2		4.42
<i>Immigrant boy</i>	499.7		5.75
		31.5	
<i>Immigrant girl</i>	531.2		6.67

## Multivariate analysis

- ▶ OLS methodology
- ▶ Dependent variable – PISA reading scores
- ▶ Five plausible values and 1000 balanced replicate weights
- ▶ Control variables: Province of residence, number of siblings in the household, family type, socio-economic status, parental education, gender
- ▶ Independent variables of interest: immigration status, gender, language at home, duration of residency in Canada

## Results – multivariate

- ▶ Immigrant type – native-born as reference
  - First generation: -13 points
  - Immigrant: -38 points
- ▶ Duration of residency – native-born as reference
  - Recent immigrant: -61 points
  - Long residency: -22 points
- ▶ Home language – native-born as reference
  - Test language for recent immigrant: NS
  - Test language for long residency: NS
  - Other language for recent immigrant: -75 points
  - Other language for long residency: -29 points

## Hierarchical Linear Modeling (HLM)

- ▶ Estimate individual and school level effects

Level 1:  $Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + r_{ij} \dots [1.1]$

Level 2:  $\beta_{0j} = \gamma_{00} + \gamma_{01}W_j + u_{0j} \dots [1.2]$

$\beta_{1j} = \gamma_{10} + \gamma_{11}W_j + u_{1j} \dots [1.3]$

$E(\beta_{0j}) = \gamma_0$  average school mean

$E(\beta_{1j}) = \gamma_1$

$Var(\beta_{0j}) = \tau_{00}$  population variance among the school means

$Var(\beta_{1j}) = \tau_{11}$

$Cov(\beta_{0j}, \beta_{1j}) = \tau_{01}$  population covariance between slopes and intercepts

## *Variables*

- ▶ *Student level variables*: native-born students, first generation students, non-native students, number of siblings in the household, student's family type (single parent...), socio-economic status, gender
- ▶ *School level variables*: school's average SES, region (Atlantic, Quebec, Ontario, Prairies and British Columbia)

## Analyses of variances

		<i>Null Model</i>	<i>Model 2 (random effects)</i>	<i>Model 3 (Level 1 model)</i>	<i>Model 4 (province)</i>	<i>Model 5 (province, SES)</i>
<i>Between school</i>	<i>Intercept (Native)</i>	<b>1603 (18%)</b>	<b>1632</b>	<b>1058</b>	<b>1056</b>	<b>1056</b>
	<i>First generation difference</i>		<b>1120</b>	<b>1131</b>	<b>1095</b>	<b>1026</b>
	<i>Immigrant difference</i>		<b>2583</b>	<b>2321</b>	<b>2335</b>	<b>2418</b>
	<i>DED</i>			<b>219</b>	<b>219</b>	<b>218</b>
	<i>BOYS</i>			<b>556</b>	<b>558</b>	<b>561</b>
<i>Within School</i>	<i>Level 1</i>	<b>7400 (82%)</b>	<b>7131</b>	<b>6123</b>	<b>6123</b>	<b>6124</b>

## Analyses of variances

		<i>Model 1 (random effects)</i>	<i>Model 2 (province)</i>	<i>Model 5 (province, SES)</i>
<i>Between school</i>	<i>Intercept Native</i>	1632	976	743
	<i>Intercept - First generation</i>	2438	1663	1126
	<i>Intercept- immigrant</i>	3328	2478	21953
<i>Within School</i>	<i>Level 1</i>	7131	6122	6113

## Results – multilevel

- ▶ Average reading scores varied across schools, with highest variation observed among the immigrants, followed by the first generation and then the native students.
- ▶ Province of residence and school's socio economic status (SES) were able to explain a good part of this variance among schools for the native students and the first generation students. Among immigrants, the variance was partly explained by the SES of the schools but not by province.

## Conclusions

- First generation immigrant students performed at the same level in reading as their native-born peers, whereas immigrant students performed significantly below but still higher than the OECD average.
- Longer exposure to formal schooling in Canada is positively associated with high reading performance among immigrants.
- Immigrants exposed to a home language which was different from the test language performed significantly lower in reading. This problem was much more pronounced among 15 year olds who had arrived in Canada in their teens.

## Conclusions – continued

- As expected, there was a high level of variation in reading scores at the individual level relative to the school level. At the school level, average SES was an important determinant.
- For first generation students, school characteristics explained only 14% of the variation in reading scores. For immigrant students, school characteristics (SES) were able to explain 37% of the variation. Suggesting that attendance of particular school is more important for immigrant students.
- For first-generation students, controlling for schools' SES, attending schools in the Atlantic, Prairies and BC regions was associated with higher performance than in Ontario.

## *Policy Implications*

- ▶ School system is performing well. First generation immigrants doing as well as their native-born counterparts.
- ▶ Language training for all immigrants, irrespective of those bound for the labour market.