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Educational Inequalities Among Immigrant Children in Industrialised Countries

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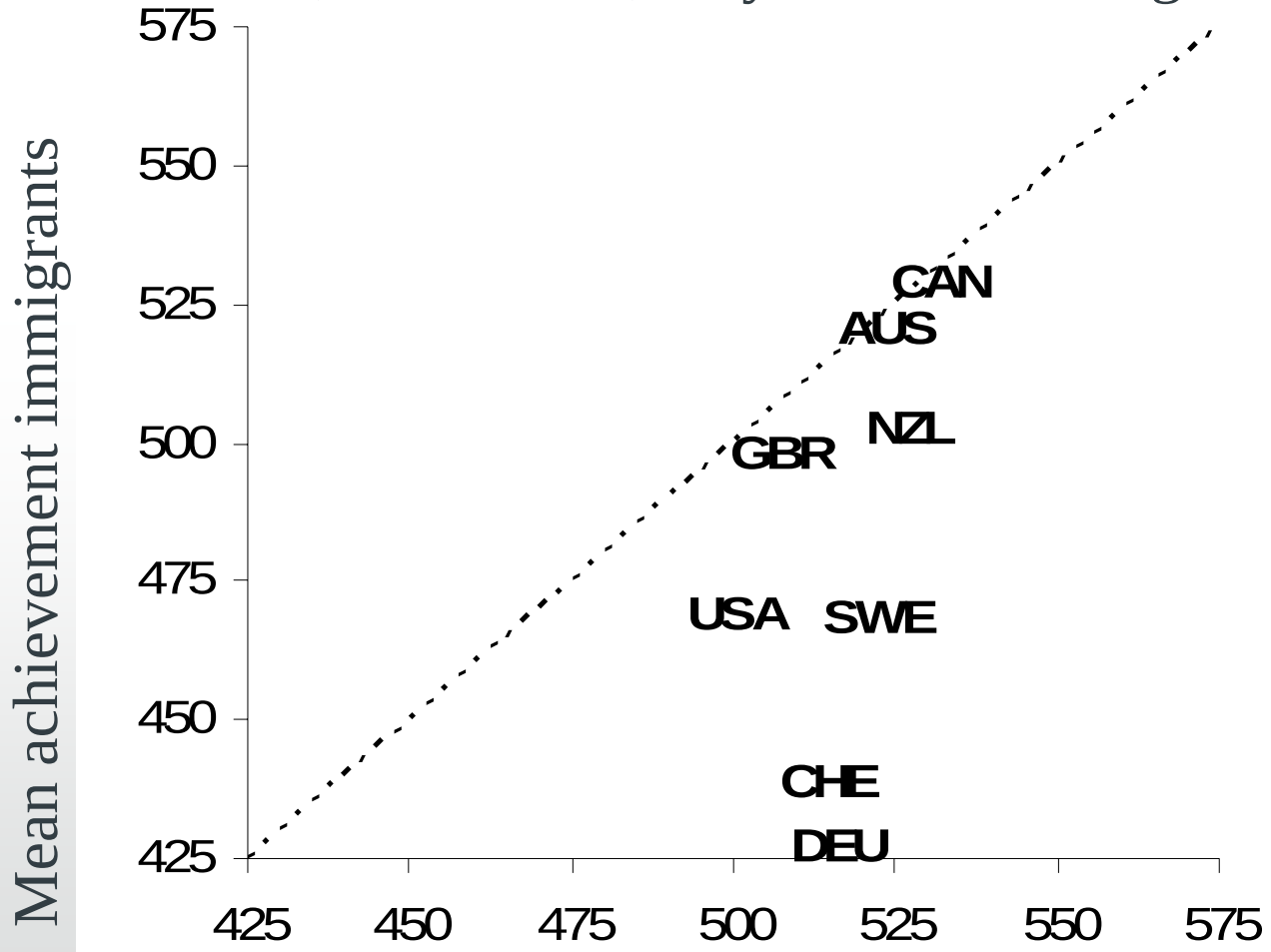
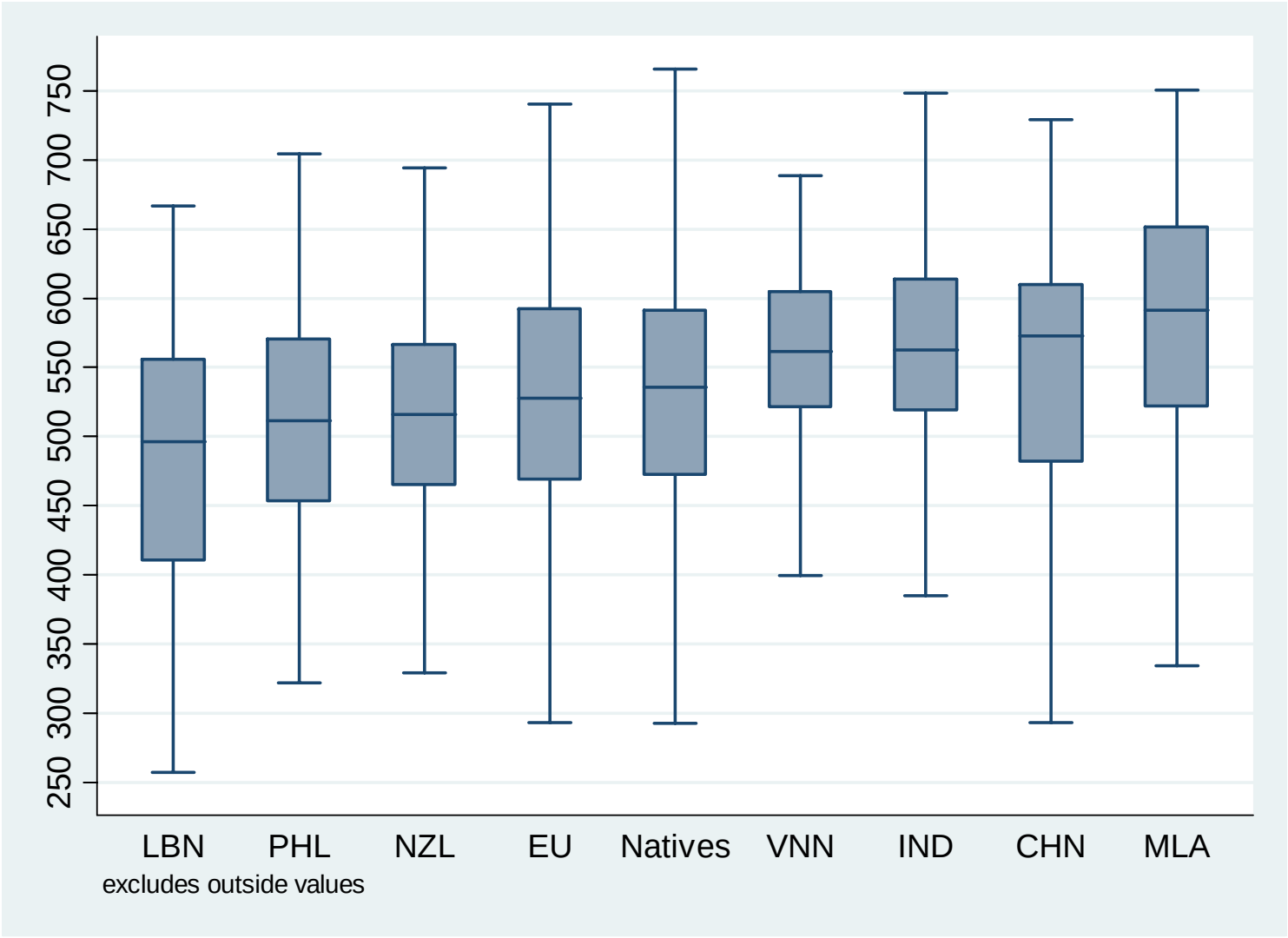
Average measure on achievement

Australia, PISA 2003, 15 year olds reading



Differences in immigrants' achievement

Australia, PISA 2003, 15 year olds reading



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Motivation to focus on inequalities among immigrants

- Focus on mean achievement disguises dispersion
- Applied models (OLS, multi-level) assume that impact of pupil's characteristics on achievement the same for high and low achieving students
- Policy formulation: the "mean" immigrant
- Low achieving immigrants of special concern. Focus on inequalities can answer questions:
  - How much behind are low achieving immigrants?
  - Which factors explain their low achievement?

Aim: **Examine educational inequalities among immigrants**

Extent of educational inequalities

- Age (primary vs. secondary school pupils)
- Subject (maths vs. reading)
- Time in country (first vs. second-generation immigrants)

Explanations for high educational inequalities

- Differences in achievement distribution between immigrants and natives
- Socio-economic factors impacting on achievement of low and high achieving immigrants (quantile regressions)

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Data sources used (1)

	Reading		Maths	
	4th graders	15 year olds	4th graders	8th graders
Data source	**PIRLS**	**PISA**	**TIMSS**	**TIMSS**
Year	**2001**	**2003**	**2003**	**2003**

- Sample of children in school
- Students' answers on a set of question on subjects are summarised into one achievement score using Item Response Models
- Family background info for students available

Data sources used (2)

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- Immigrant status:
  - First-generation immigrant: child and parents born abroad
  - Second generation immigrants: both parents born abroad, child born in host country
- Item non-response
- Percent of immigrants (UK lowest fg 3 % and sg 5 %; AUS, CAN, CHE 10 % fg and sg respectively)
- Sample size for each immigrant group between 200 and 1400 pupils, average 500

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Tools for measuring inequality

- Scores scaled mean 500 and standard deviation 100 across all pupils and countries.
- Choice item response models impacts on shape of estimated proficiency distribution
- Focus here simply on ventiles of achievement scores, $95^{th} - 5^{th}$ percentile

Extent of inequalities among immigrants

% of **first-generation** immigrants dispersion expressed as that of natives (P95-P5)

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	Maths		Reading		Average TIMSS 8th / PISA
	TIMSS 4th	TIMSS 8th	PIRLS 4th	PISA 15 year olds	
UK	108.4	122.5	97.6	113.0	117.7
Canada	121.2	117.2	105.1	103.0	110.1
Sweden		99.9	104.8	122.4	111.2
USA	99.1	113.2	101.6	111.2	112.2
Australia	111.2	120.0		109.0	114.5
Germany		119.0	103.6	113.6	116.3
New Zealand	106.3	115.9	102.0	108.7	112.3
Switzerland		133.0		119.7	126.4

% of **second-generation** immigrants dispersion expressed as that of natives (P95-P5)

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	Maths		Reading		Average TIMSS 8th / PISA
	TIMSS 4th	TIMSS 8th	PIRLS 4th	PISA 15 year olds	
UK	97.1	102.8	93.2	97.6	100.2
Canada	105.8	107.2	89.7	95.4	101.3
Sweden		99.4	100.7	104.9	102.1
USA	99.9	105.7	96.0	102.8	104.2
Australia	107.0	120.1		101.6	110.8
Germany		111.3	104.9	110.5	110.9
New Zealand	97.4	116.3	107.7	108.1	112.2
Switzerland		122.4		109.9	116.2

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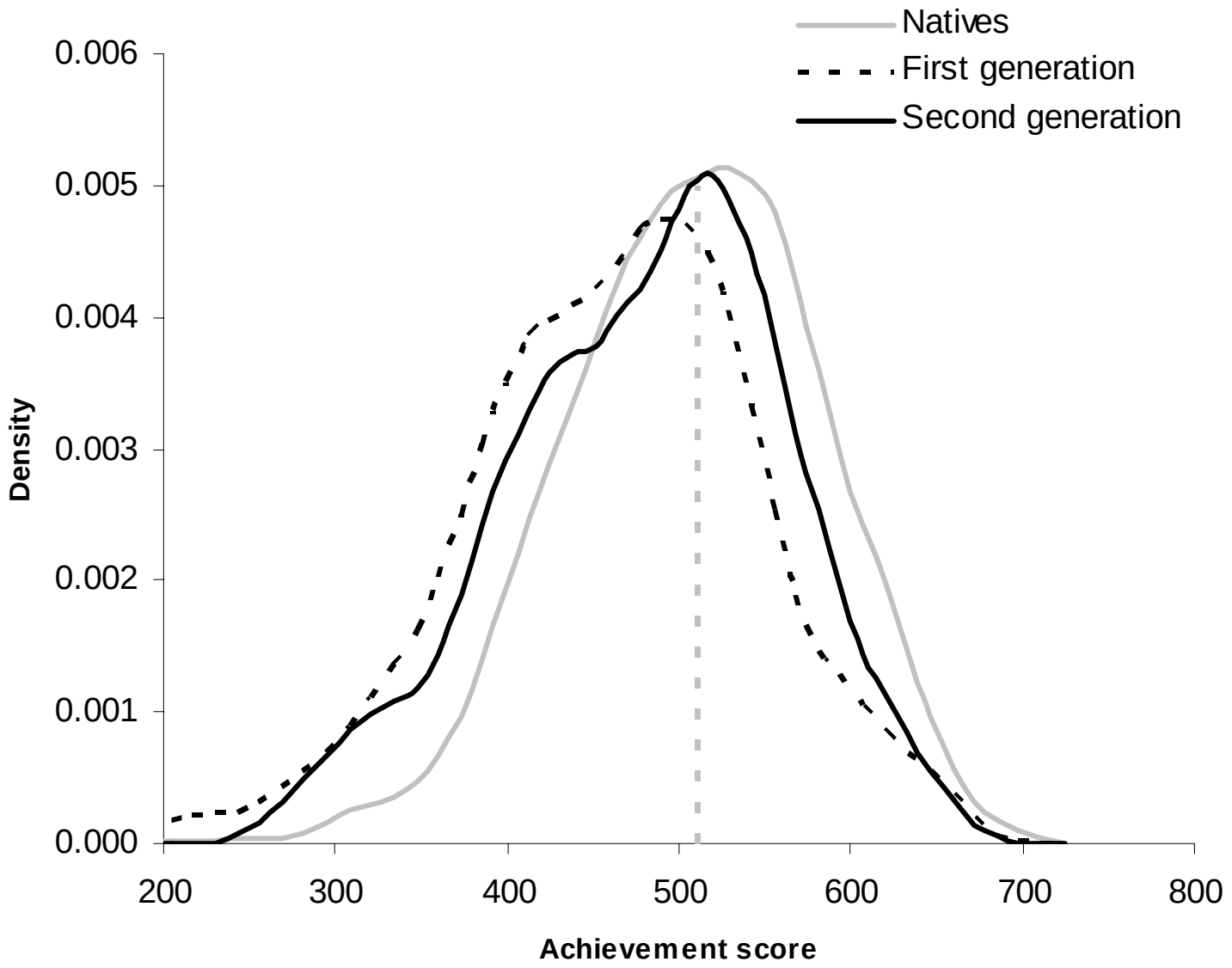
Explanation for high inequalities among immigrants

German 8th graders maths achievement distributions, by migration status (TIMSS)



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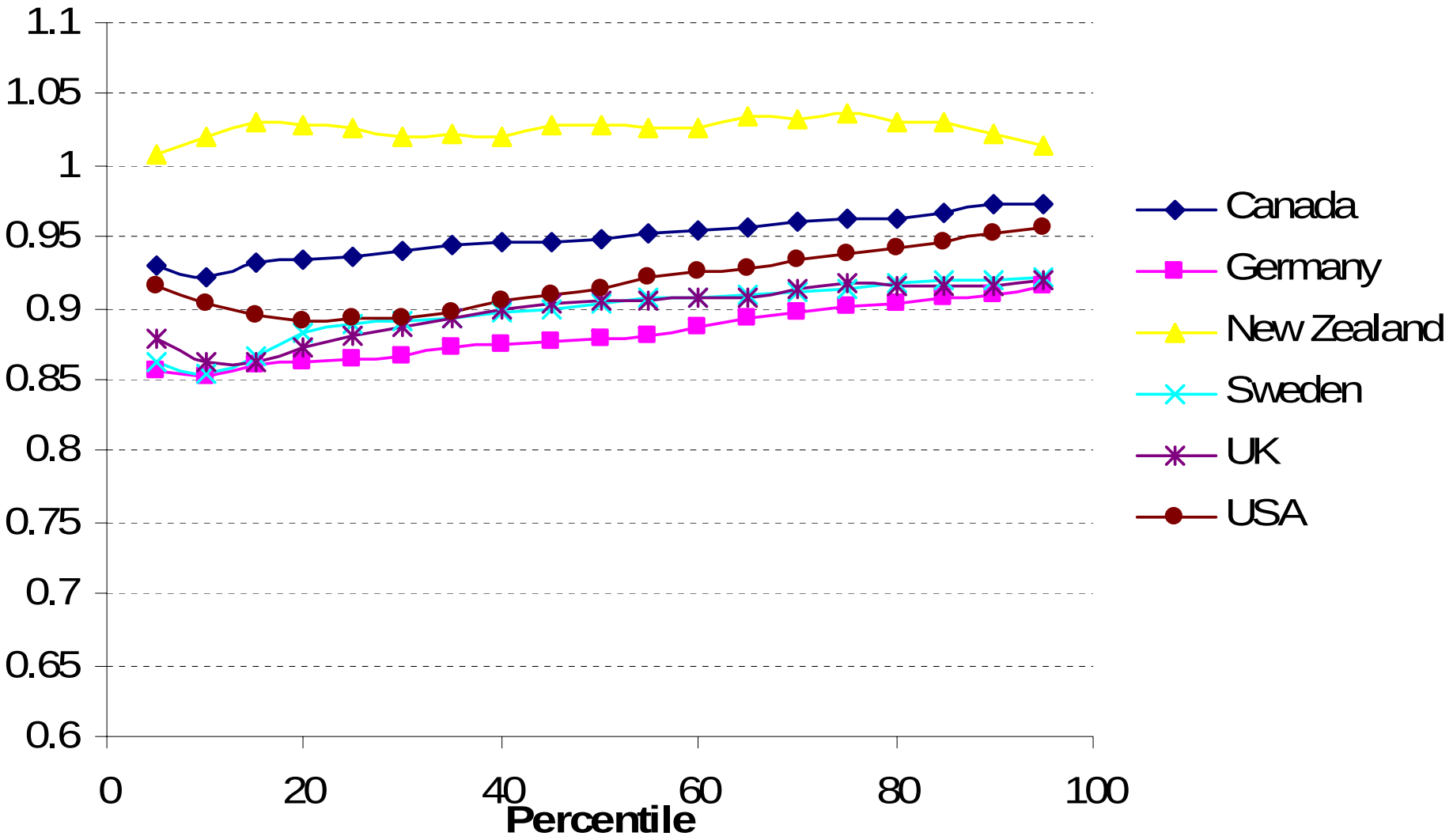
First-generation PIRLS, 4th graders



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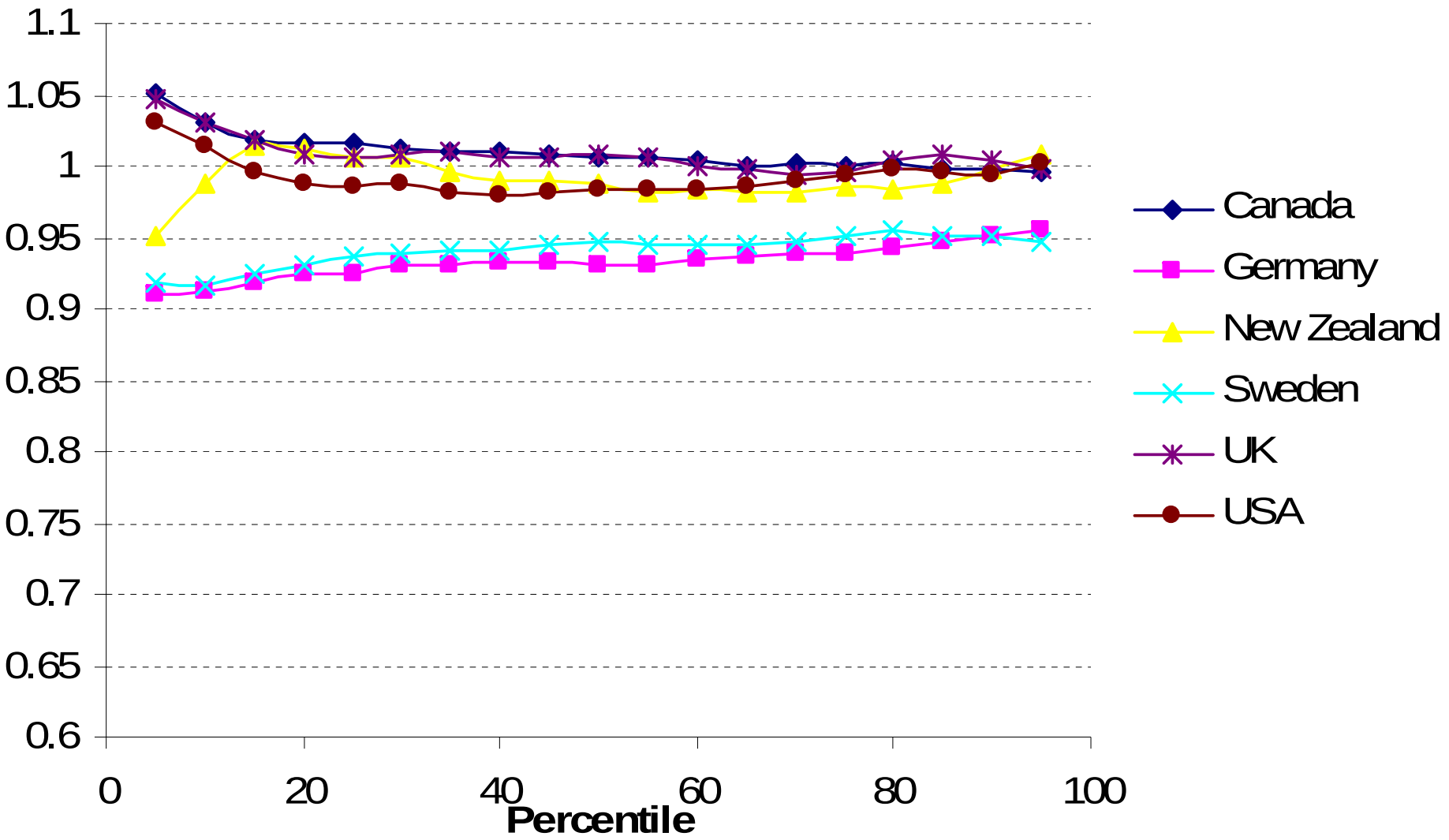
Second-generation PIRLS, 4th graders



First-generation PISA, 15 year olds

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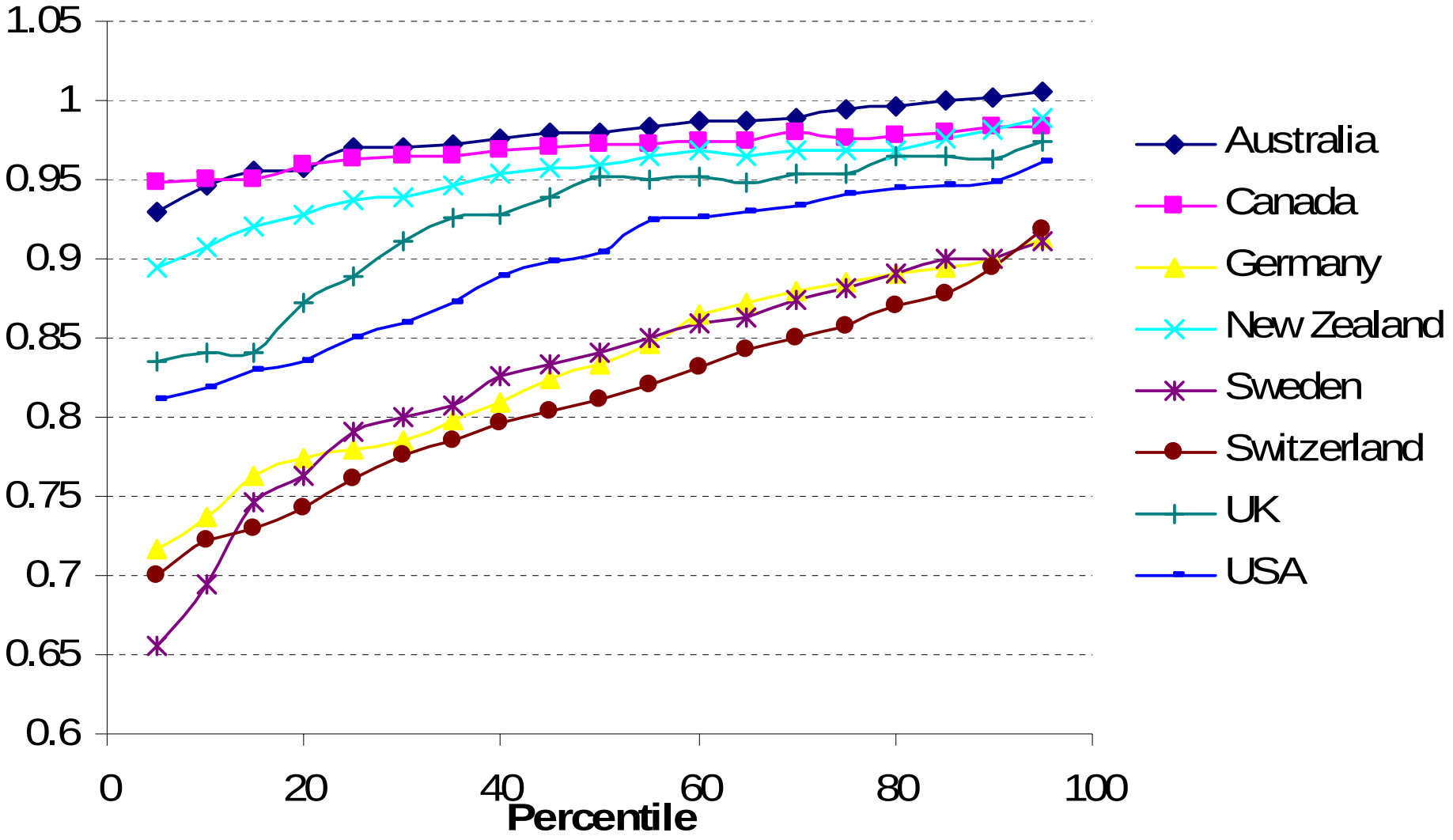

Second-generation PISA, 15 year olds

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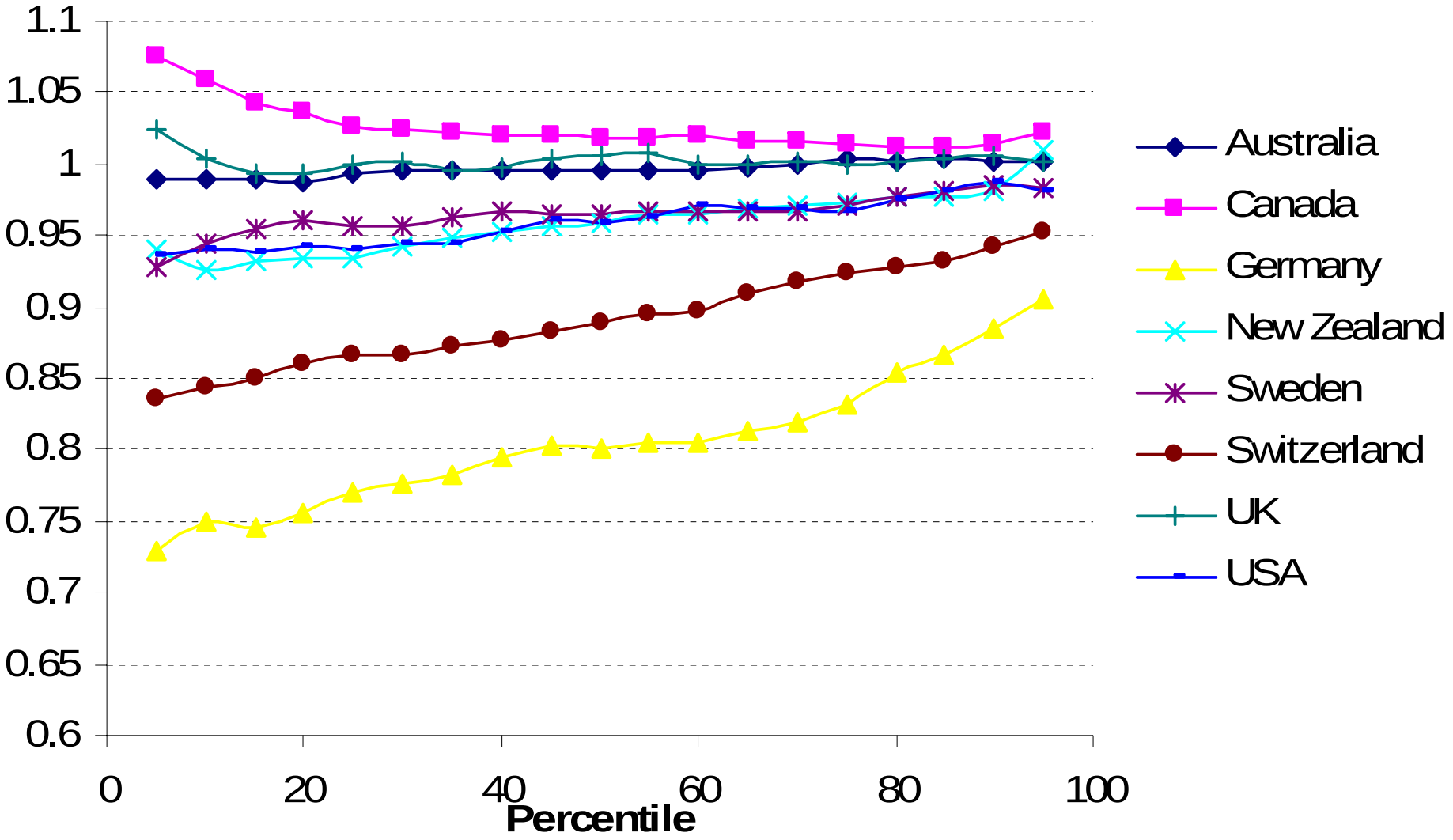


Ratio of natives' to immigrants achievement, PISA

	First-generation immigrants			Second-generation immigrants		
	P5	P50	P95	P5	P50	P95
Canada	0.95	0.97	0.98	1.07	1.02	1.02
UK	0.84	0.95	0.97	1.02	1.01	1.00
Australia	0.93	0.98	1.01	0.99	0.99	1.00
USA	0.81	0.90	0.96	0.94	0.96	0.98
New Zealand	0.89	0.96	0.99	0.94	0.96	1.01
Sweden	0.66	0.84	0.91	0.93	0.96	0.98
Switzerland	0.70	0.81	0.92	0.84	0.89	0.95
Germany	0.72	0.83	0.91	0.73	0.80	0.91
Average	0.81	0.91	0.96	0.93	0.95	0.98

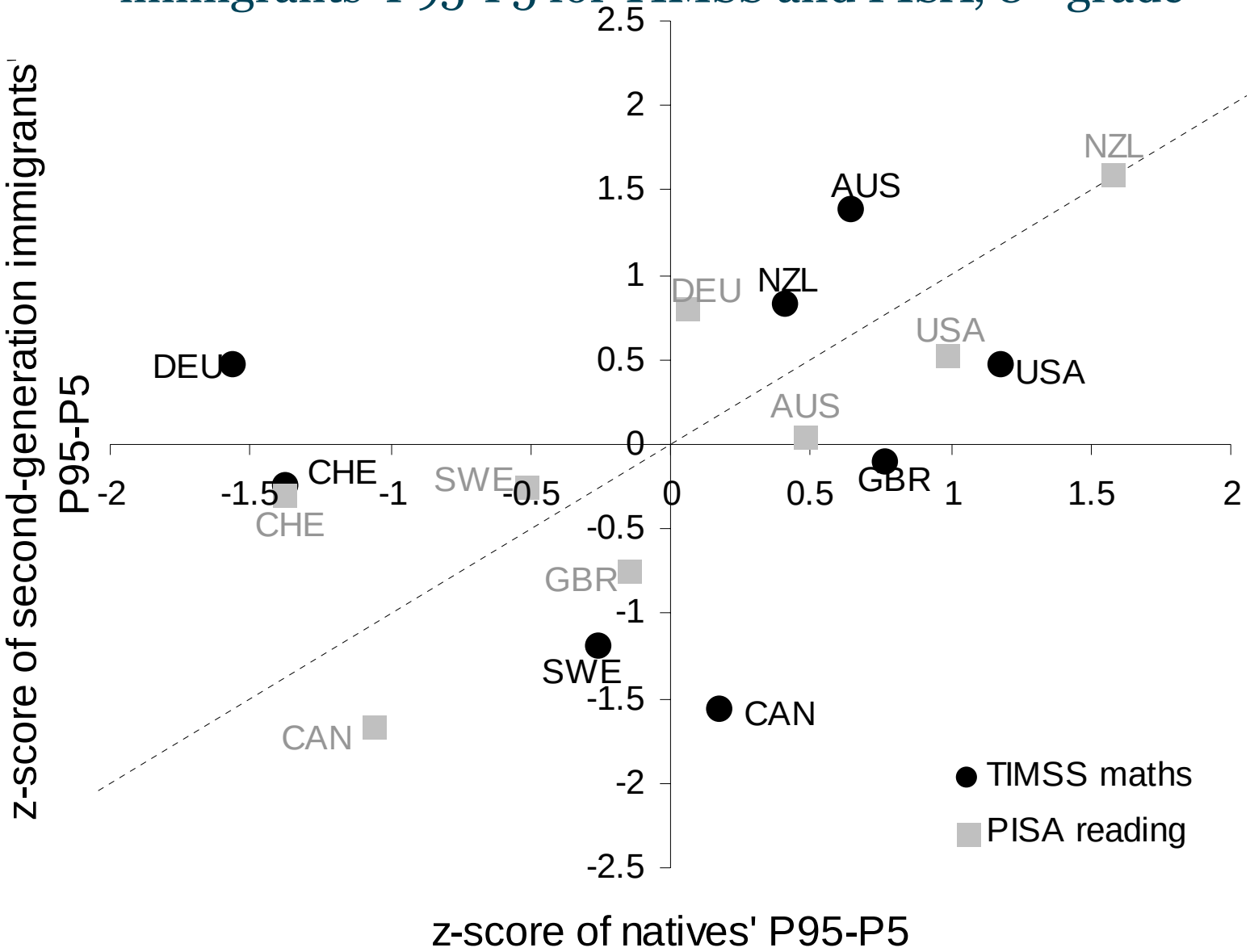
Ratio of natives' to immigrants achievement conditional on students' individual background, PISA

	First-generation immigrants			Second-generation immigrants		
	P5	P50	P95	P5	P50	P95
Canada	1.06	1.01	1.01	1.09	1.03	1.03
UK	1.02	0.98	0.98	1.11	1.03	1.03
Australia	0.96	0.99	1.01	0.98	1.00	1.02
USA	1.02	1.00	1.02	1.04	1.03	1.02
New Zealand	0.98	1.00	1.01	0.91	1.01	1.02
Sweden	0.84	0.90	0.94	1.02	1.00	1.00
Switzerland	0.84	0.92	0.95	0.91	0.96	0.98
Germany	0.88	0.92	0.98	0.94	0.87	0.95
Average	0.95	0.96	0.99	1.00	0.99	1.00

Selection of quantile regression results (fgi)

	Percentile	Girl	Low lang	>100 books	M second	M tertiary
Australia	***5***	**57**	**-33**	**39**	**O**	**31**
	50	**37**	**-18**	**38**	**O**	**27**
	95	**23**	**O**	**30**	**O**	**25**
Canada	***5***	**50**	**-59**	**32**	**24**	**O**
	50	**28**	**-28**	**33**	**29**	**13**
	95	**17**	**-23**	**29**	**O**	**11**
USA	***5***	**44**	**-63**	**46**	**27***	**O**
	50	**30**	**-26**	**51**	**26**	**12**
	95	**13**	**-23**	**39**	**44**	**0**
Germany	***5***	**40**	**-61**	**46**	**38**	**0**
	50	**34**	**-51**	**51**	**27**	**18**
	95	**12**	**-34**	**40**	**12***	**O**
Sweden	***5***	**34**	**-65**	**28**	**25**	**O**
	50	**34**	**O**	**40**	**29**	**O**
	95	**27**	**O**	**31**	**19**	**O**

Z-scores of natives' and **second-generation** immigrants' P95-P5 for TIMSS and PISA, 8th grade



Conclusions

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Size of immigrants' educational dispersion

- Immigrants' dispersion consistently higher than that of natives
- Higher for maths than for reading
- Higher for immigrants in secondary compared to primary school
- Considerably higher for first- compared to second-generation immigrants (time in country)
- Countries with higher inequalities among natives also among immigrants (Australia, New Zealand), in contrast to Canada

Conclusions

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Explanations for high educational disadvantage

- Due to very low achieving first-generation immigrants at the bottom of the distribution for pupils in secondary school (especially former guest worker countries and US)
- Due to time spent in countries? Focus second-generation immigrants
- Gap shrinks considerably once controlled for SES and proxy for language skills
- Not only due to compositional differences at different percentiles but also
- Language skills and gender higher ‘effect’ on achievement at the bottom than at the top of the achievement distribution