

Examining Socio-economic Equity in ISCED 2 to ISCED 3 Transition in Slovenia

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I FEEL
SLOVENIA

Slovenia

Population: 2 million

Capital: Ljubljana



ISCED 2 Education

2023/2024:

456 schools (with 315 dislocated units, 6 private, additionally 48 SEN schools)

196.371 students (20.812 entered grade 1)

18.824 teachers

*450 schools
200.000 students
20.000 teachers*

ISCED 3 Education

2023/2024:

149 schools (6 private, additionally 6 SEN schools)

80.685 students

7.605 teachers

*150 schools
80.000 students
8.000 teachers*

A map of ILSA in Slovenia

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
ISCED 2	Grade 1																									
	Grade 2																									
	Grade 3																			NPZ 3						
	Grade 4	PIRLS	TIMSS			PIRLS TIMSS				TIMSS	PIRLS			TIMSS		PIRLS	TIMSS		PIRLS	TIMSS						
	Grade 5																									
	Grade 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6		
	Grade 7																									
	Grade 8	SITES	TIMSS		ICCS		TIMSS		ICILS		TIMSS	ICCS		ICILS	TIMSS		ICCS	TIMSS- ICILS				TIMSS				
	Grade 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	ESLC NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	
	Grade 10	PISA			PISA			PISA		PISA		PISA		PISA		PISA		PISA		PISA		PISA		PISA		PISA
ISCED 3	Grade 11																									
	Grade 12																									
	Grade 13	Matura	Matura	TIMSS A	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	Matura	

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	Grade 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	
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	Grade 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	ESLC NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	NPZ 9	
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ISCED 3	Grade 11																									
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	Grade 7																									
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	Grade 10	PISA				PISA				PISA								PISA			PISA				PISA	
ISCED 3	Grade 11																									
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	Grade 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6	NPZ 6		
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Equity in ISCED 1&2

Equity in transition from ISCED 2 to ISCED 3

Equity in ISCED 3

The concept of equity ...

- ▶ „... equity-oriented policies should help *all* students become the best version of themselves.“ (PISA 2022 Vol I, p. 110)
- ▶ Frequently used dimensions for examining educational equity: gender, socio-economic background, immigrant status, ...
- ▶ Many measures of equity ...
- ▶ Two „famous“ measures:
 - Proportion of variance in achievement between schools
 - Proportion of variance in achievement explained by socio-economic background (socio-economic gradient)

What do we know about equity in ISCED 3?

- ▶ PISA 2022, Slovenia: Proportion of variance in (mathematics) achievement between schools is **45%**

(PISA 2022 Vol I, Table I.B1.2.12)

- ▶ Notes: As a percentage of the average total variation in mathematics performance across OECD countries
- ▶ Notes: 2. In some countries/economies, subunits within schools were sampled instead of schools; this may affect the estimation of between-school variation components.



45% is probably overestimated

- ▶ MATURA 2024 (ISCED 3 General) : Proportion of variance in achievement between (ISCED 3 General) schools is
14% Slovenian language
17% Mathematics
13% English



**Most variation is within
ISCED 3 (General) schools.**

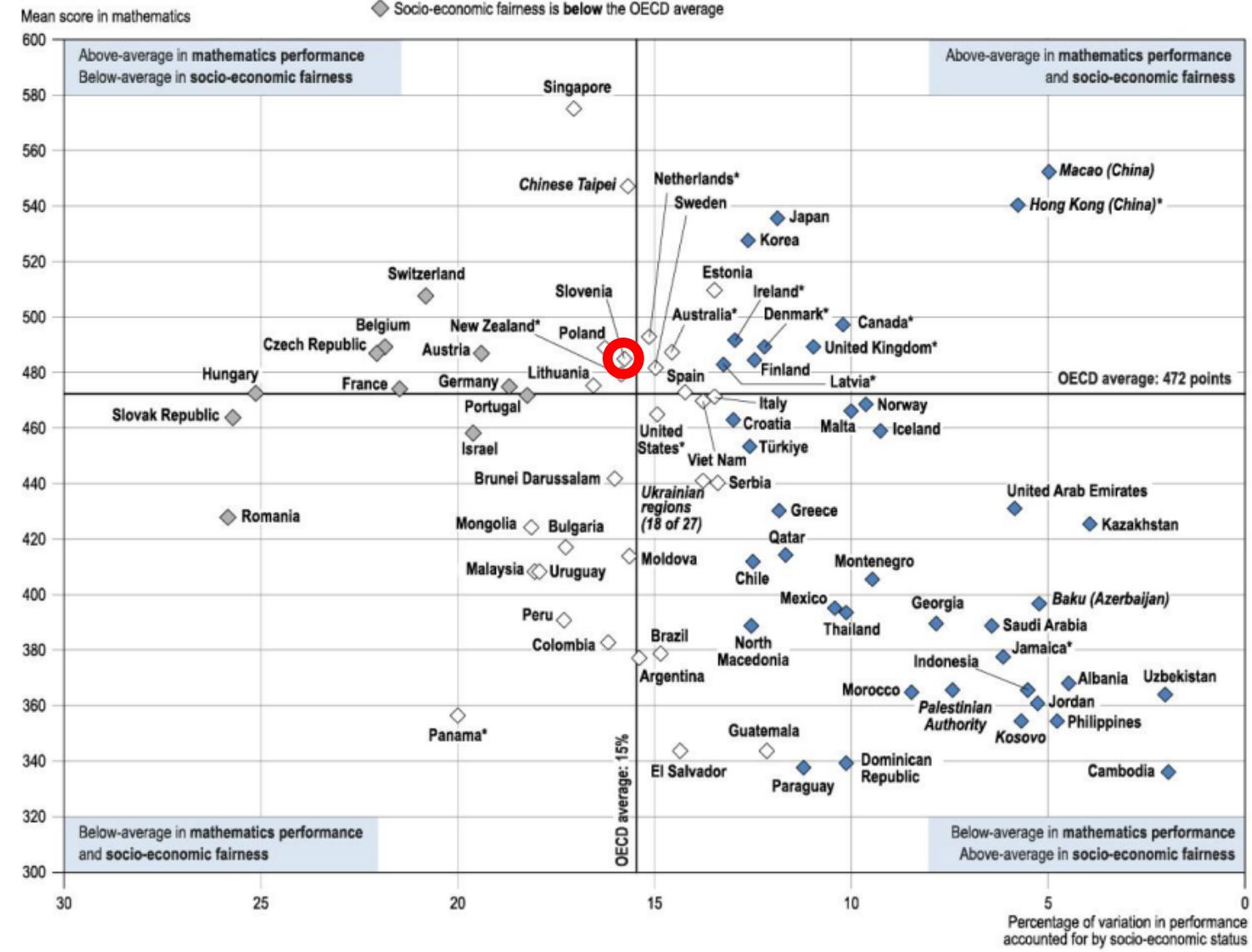
Figure I.4.2. Strength of socio-economic gradient and mathematics performance

Equity in ISCED 3

PISA 2022, Slovenia: socio-economic gradient in mathematics achievement

strength: 15.7 %
slope: 42 points

PISA 2022 Vol I, p. 116

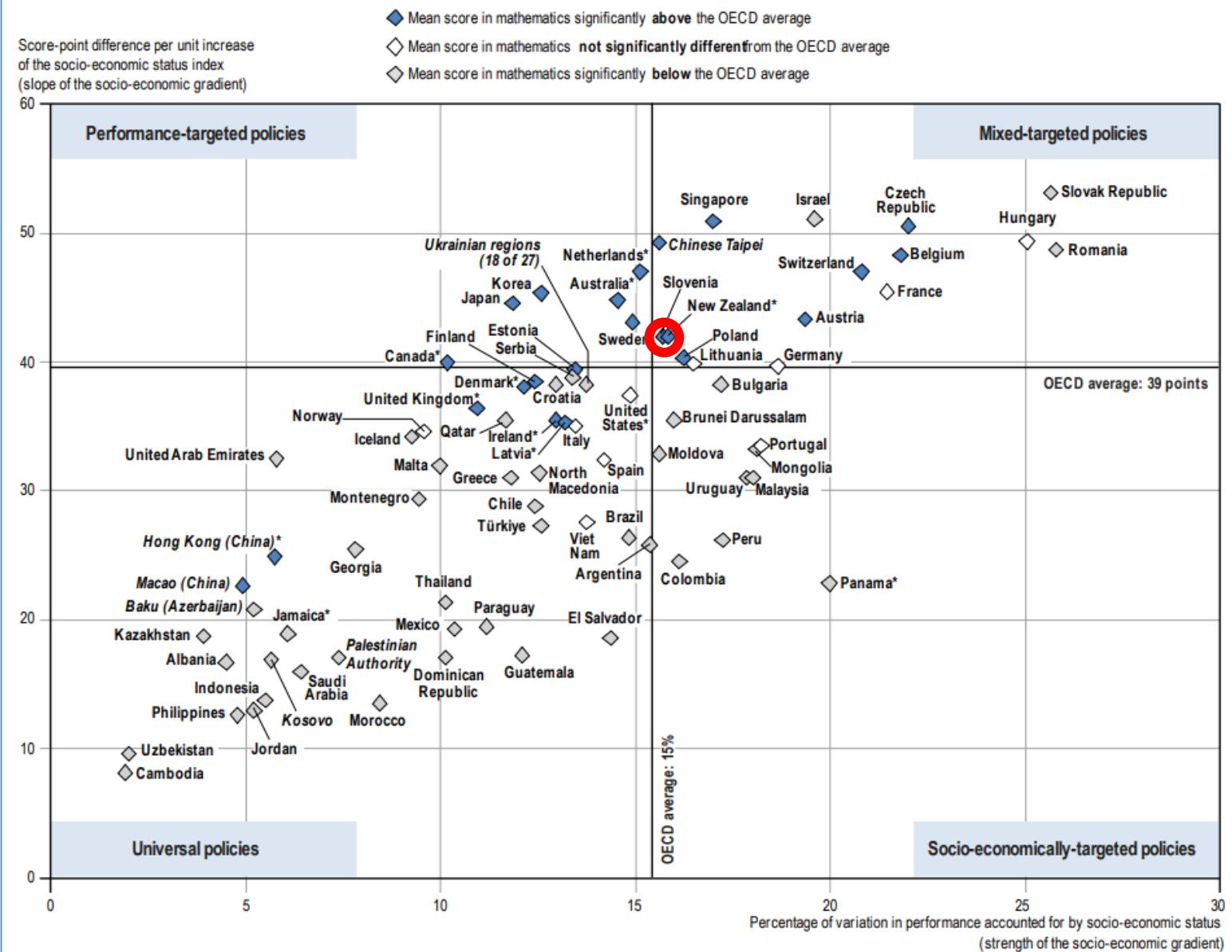


Relationship between strength and slope of socio-economic gradient

strength: 15.7 %
slope: 42 points

PISA 2022 Vol I, p. 132

Figure I.4.13. Strength and slope of the socio-economic gradient



What do we know about equity in ISCED 1&2?

- ▶ **ILSA:** Proportion of variance in achievement between schools is **about 10 %** (PIRLS, TIMSS grade 4, ICCS, ICILS, ...).
- ▶ Slovenia is consistently one of the countries with lowest proportions of variance in achievement between schools.
- ▶ Socioeconomic gradient:
 - ▶ ICCS 2022 Grade 8: strength=16.3 % and slope (β)=0.40
 - ▶ ICILS 2023 Grade 8: strength=7.8 % and slope (β)=0.28
- ▶ **National Assessment of Knowledge**
 - ▶ NPZ 2024 Mathematics, grade 6, last 5 years: 5.8 – 7.8%
 - ▶ NPZ 2024 Mathematics, grade 9, last 5 years : 8.5 – 11.8%



About 90% of variation in achievement is within ISCED 1&2 schools.

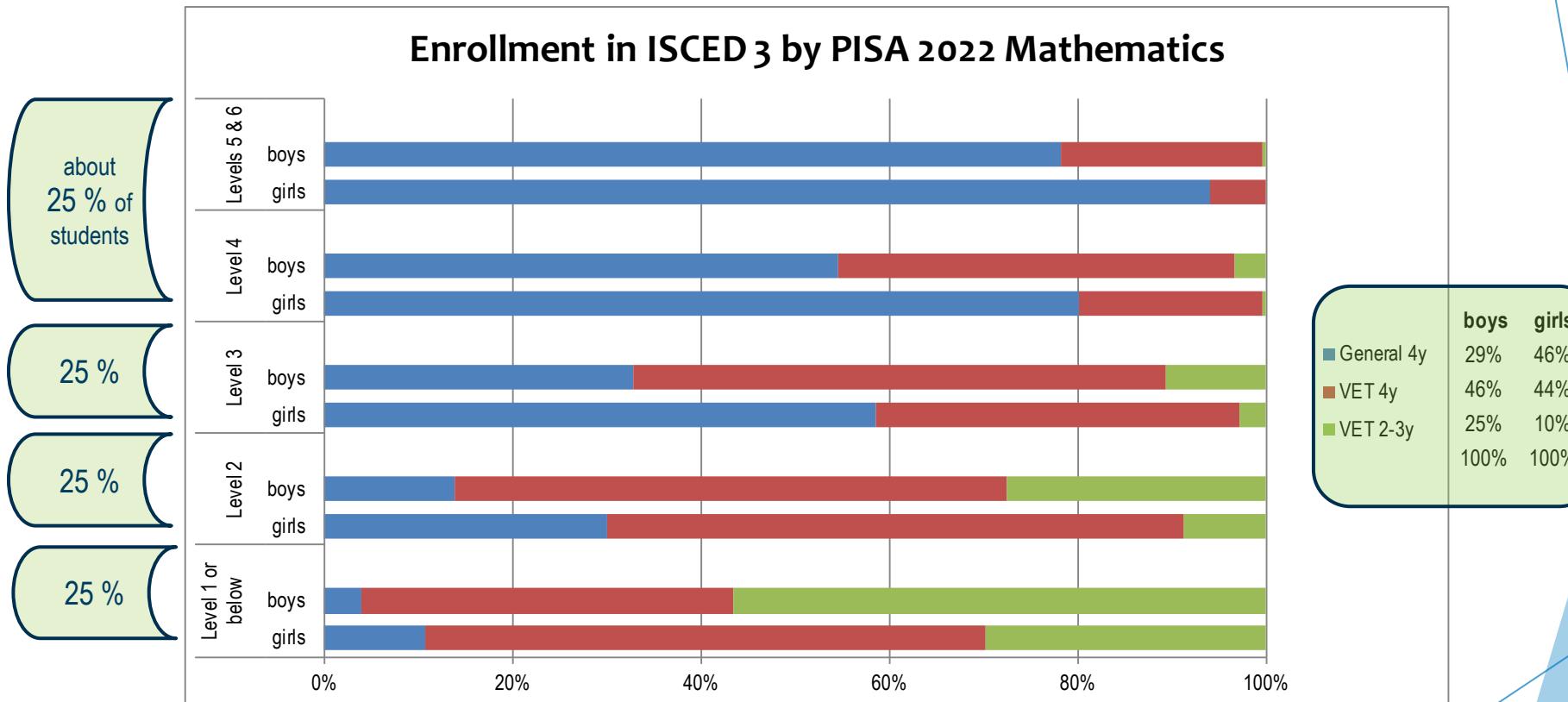
However, individual achievement is important in transitioning from ISCED 2 to ISCED 3.

The process of transition in Slovenia

- ▶ There are three major ISCED 3 educational programmes:
General (Gymnasia, 4 year), VET Professional (4 year), VET Vocational (2-3 year)
- ▶ Generally, students enter an ISCED 3 school and educational programme of their (and their parents') choice; transition rate is basically 100 %.
- ▶ If an educational programme at a particular school has too many applicants selection is carried out. (2024/25: 131 programmes on 58 schools)
 - ▶ Until 2023/2024: based on final grades in ISCED 2 (grades 7-9)
 - ▶ Problem of „grade inflation“
 - ▶ From 2024/2025:
 - ▶ based on final grades in ISCED 2 (Grades 7,8,9) (60% of total points) and
 - ▶ **achievement in NPZ Grade 9** (Mathematics and Mother Tongue) (40 % of total points)

Who enters different ISCED 3 programmes?

... by gender



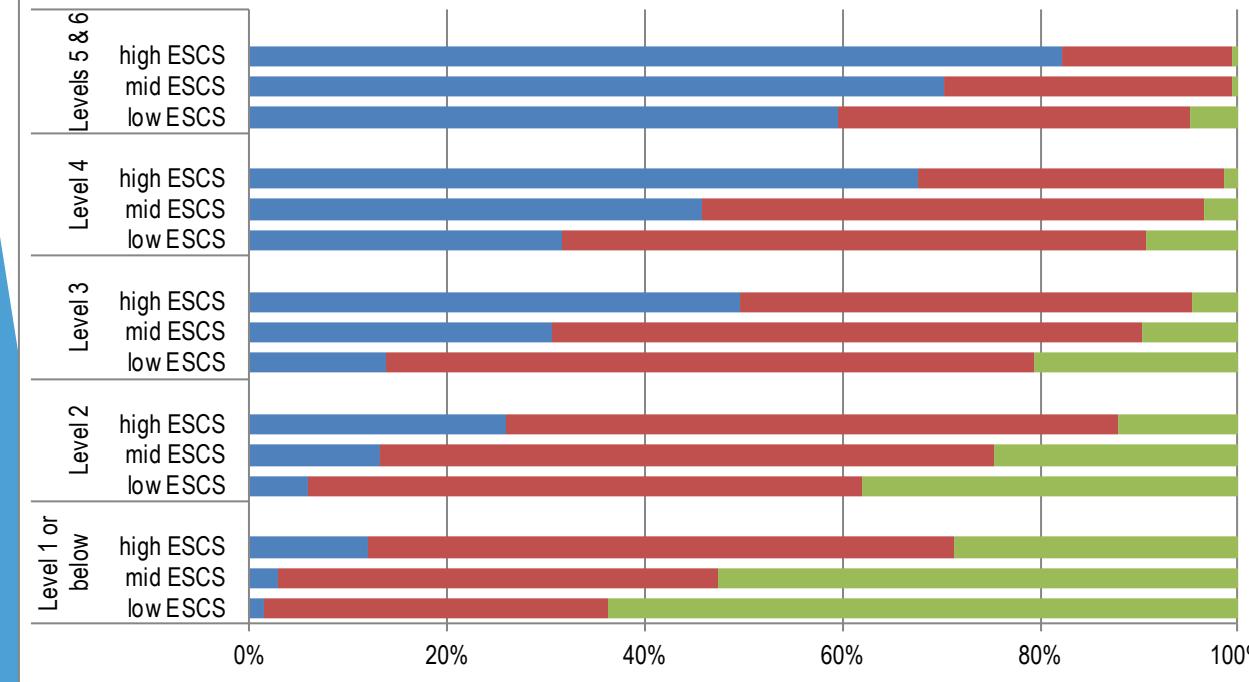
Mathematics achievement in PISA is used as a proxy for achievement at enrollment in ISCED 3.

There are no gender differences in PISA 2022 overall mathematics achievement, but there are major gender differences in choices of the ISCED 3 programmes.

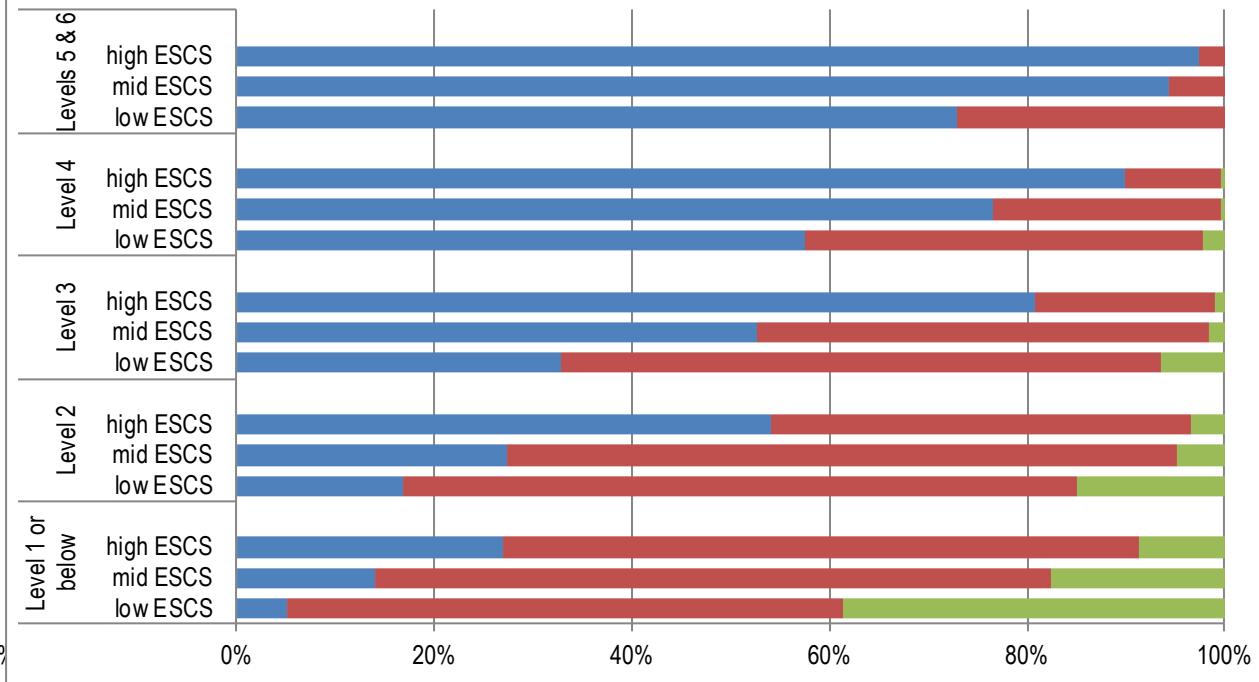
Who enters different ISCED 3 programmes?

... by gender and socio-economic background (top, middle and bottom third of distribution)

**Enrollment in ISCED 3 by PISA 2022 Mathematics,
Boys**



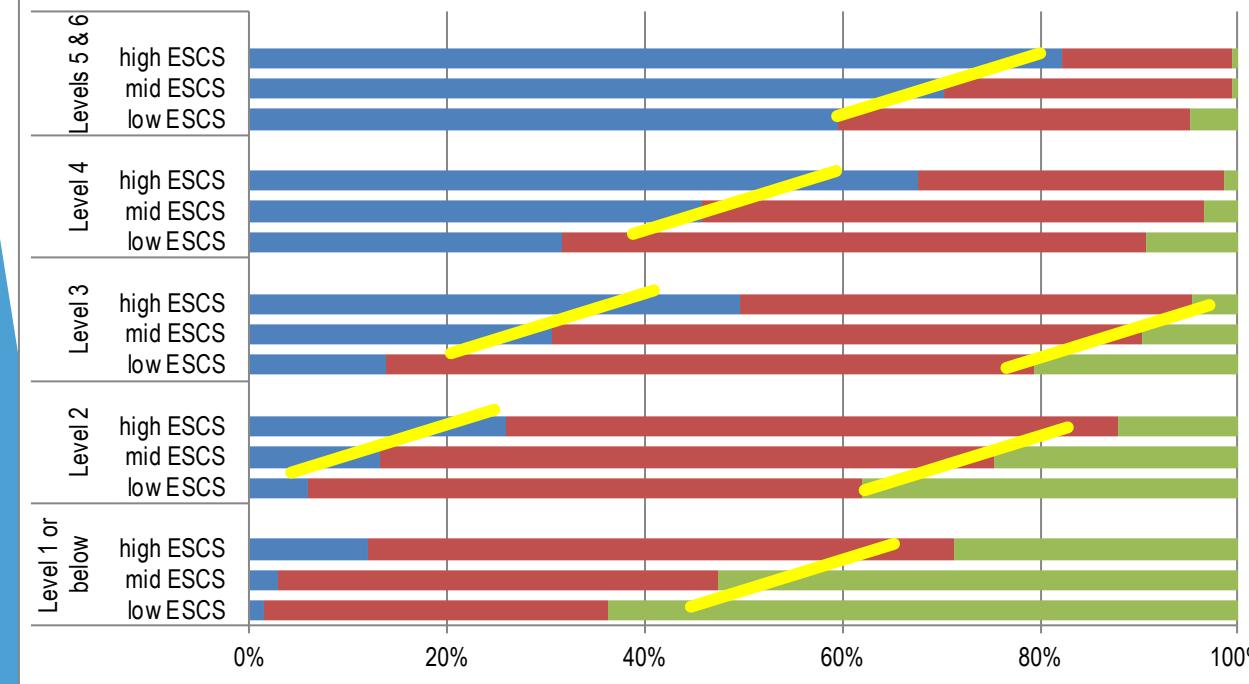
**Enrollment in ISCED 3 by PISA 2022 Mathematics,
Girls**



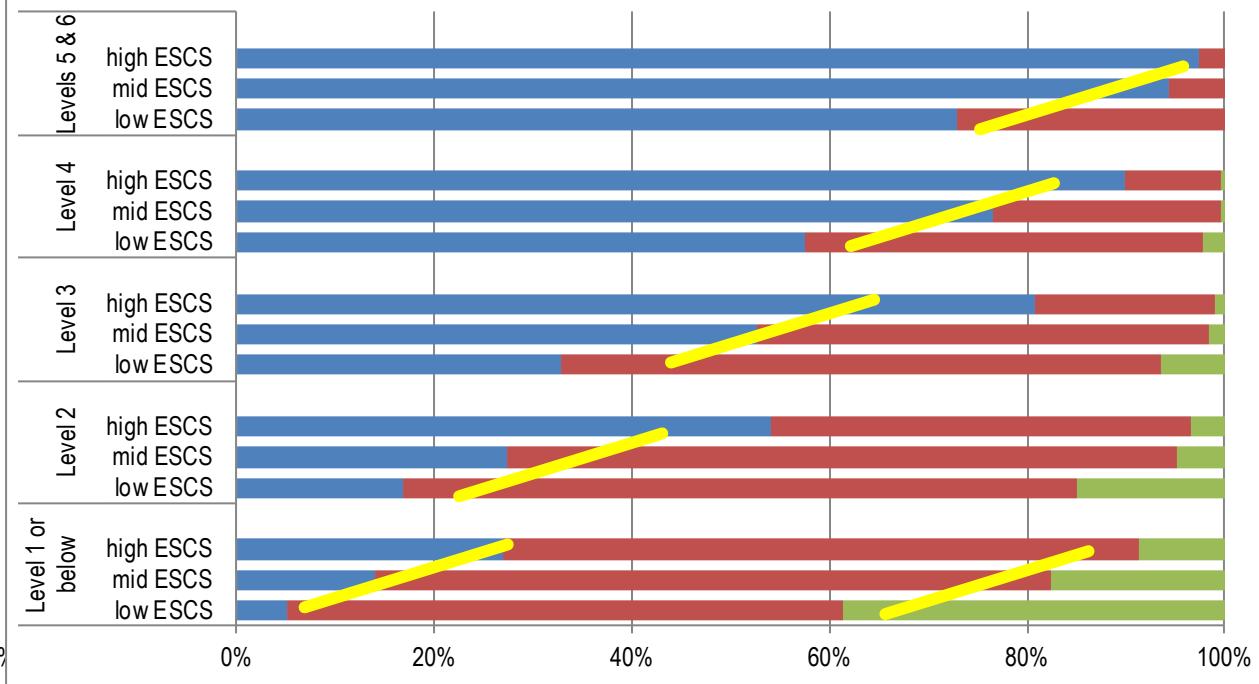
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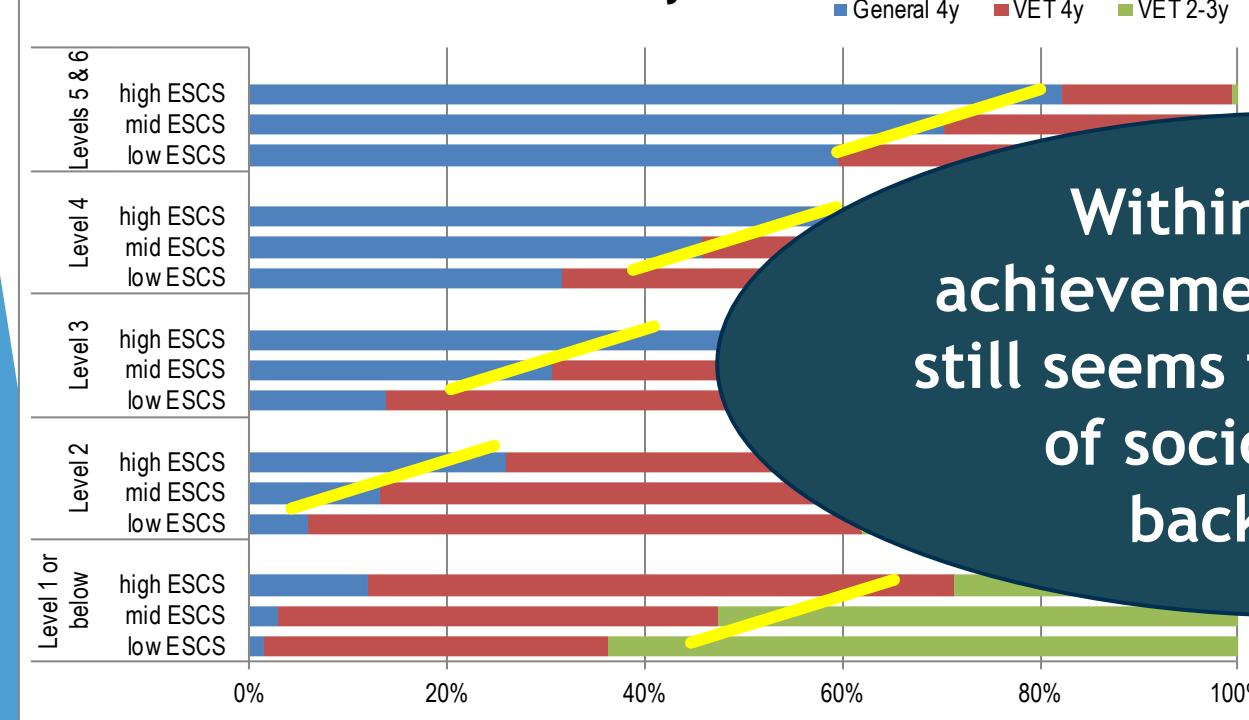
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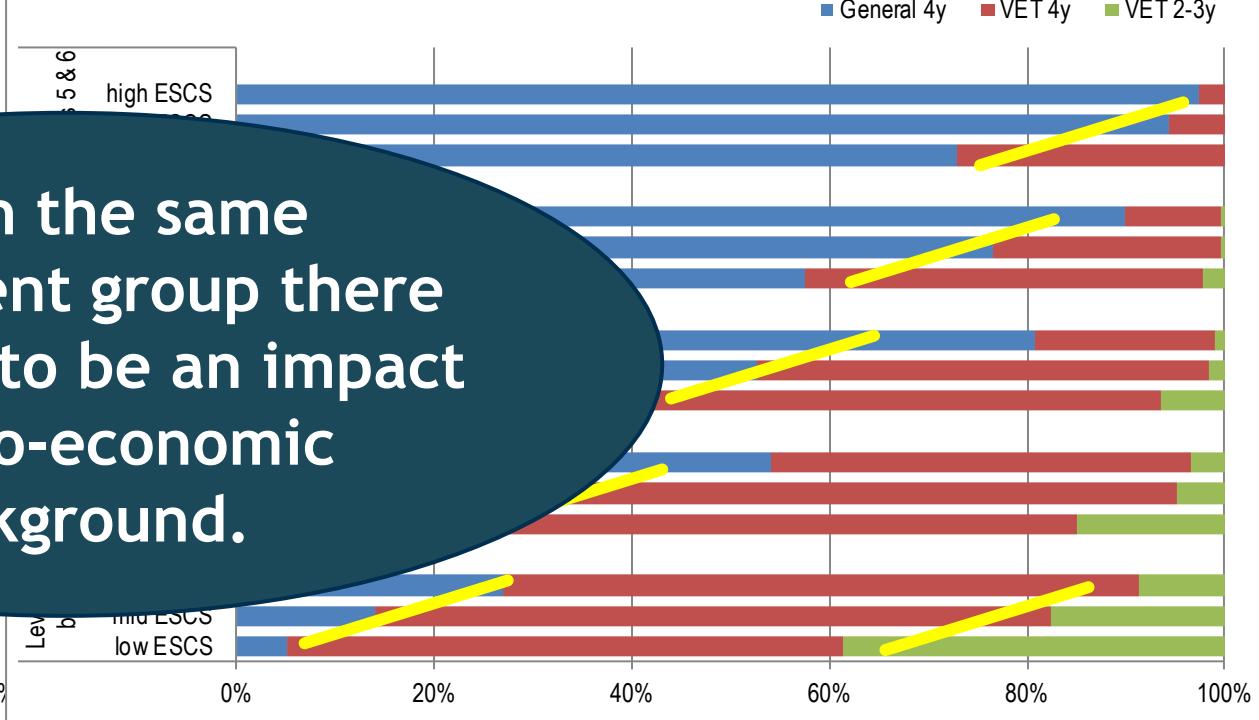
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Girls



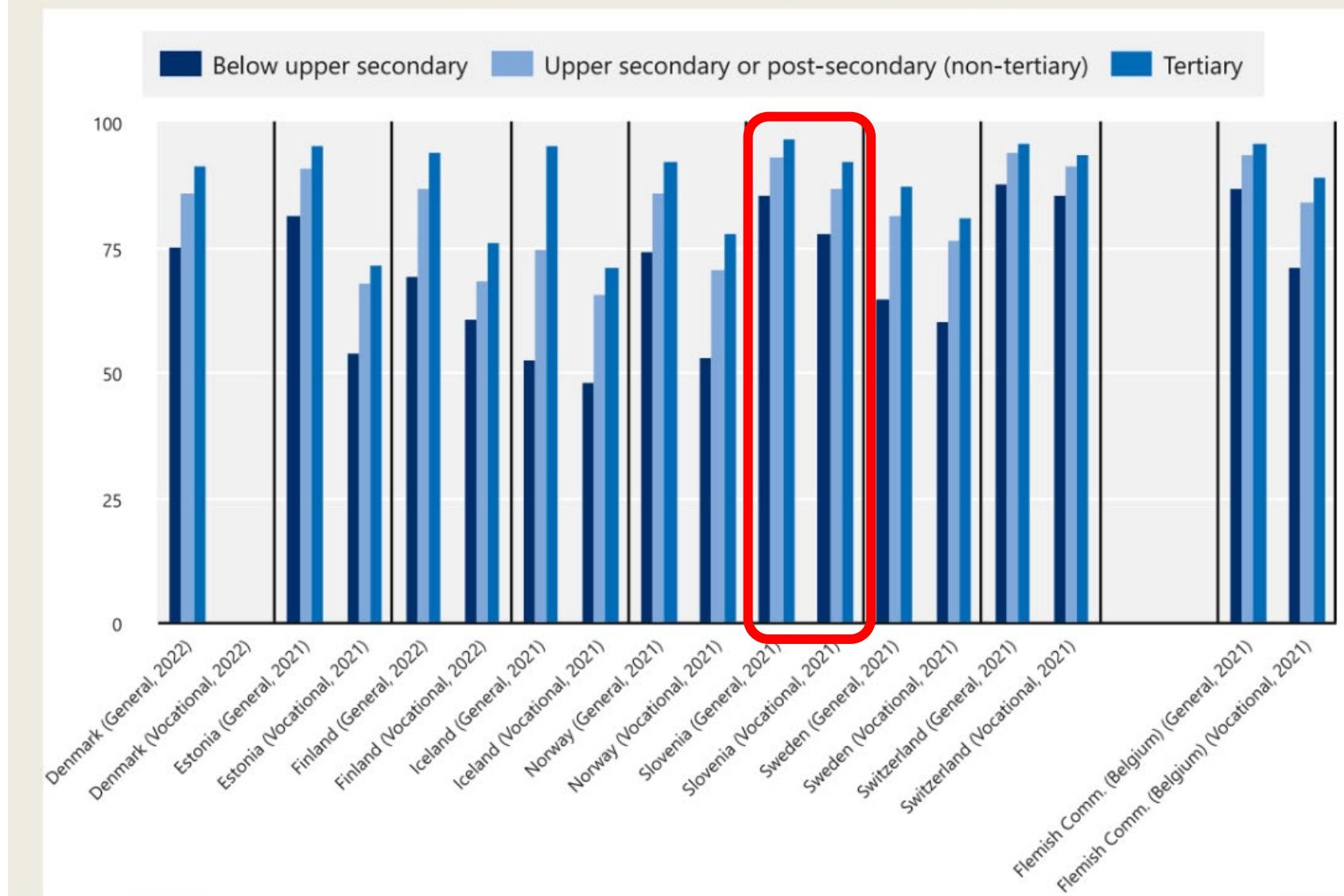
Within the same
achievement group there
still seems to be an impact
of socio-economic
background.

Completion of ISCED 3 programmes by parents' education

EAG 2024, p. 217

Figure B3.6. Upper secondary completion rates, by parents' educational attainment (latest available year)

Completion rate of full-time students by the theoretical duration plus two years, in per cent

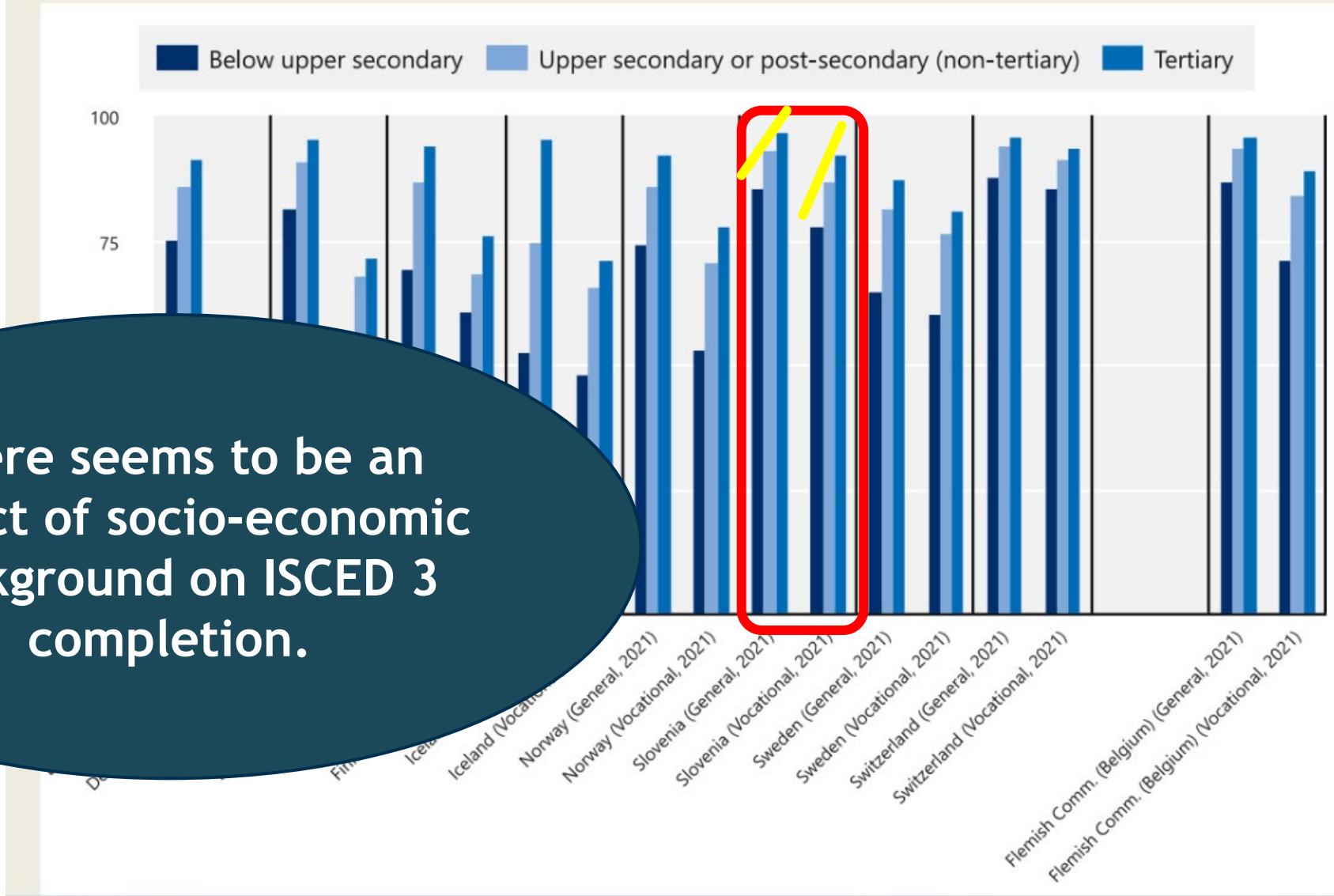


Completion of ISCED 3 programmes by parents' education

There seems to be an
impact of socio-economic
background on ISCED 3
completion.

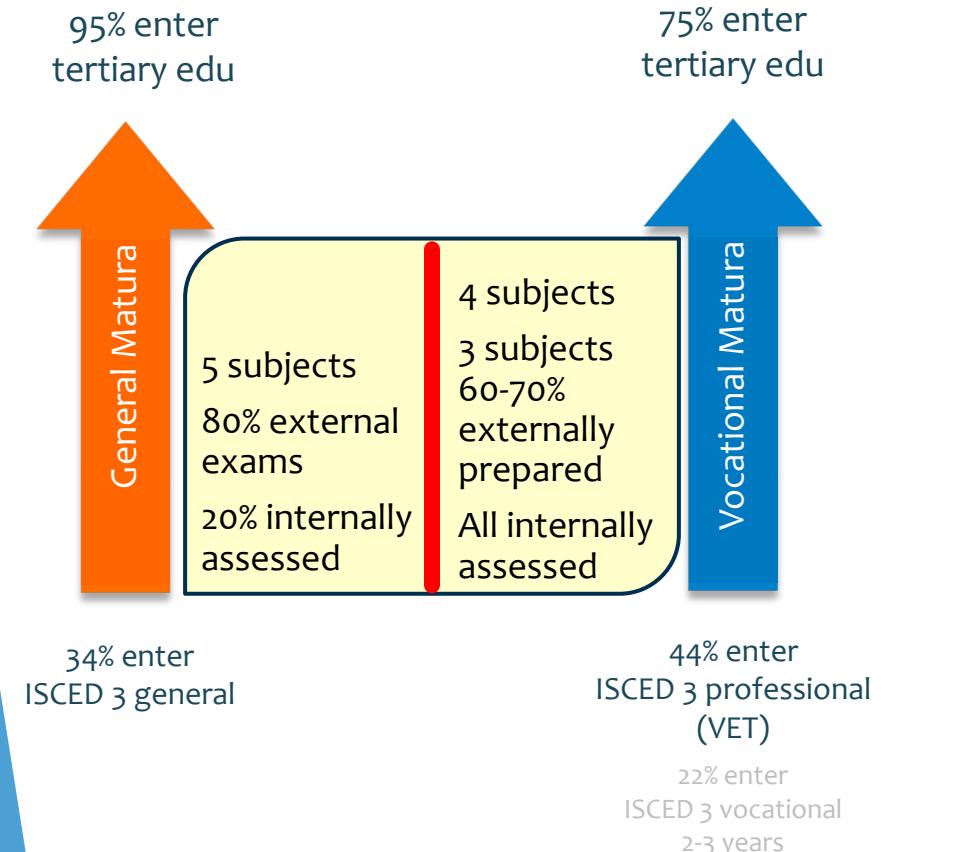
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Completion rate of full-time students by the theoretical duration plus two years, in per cent



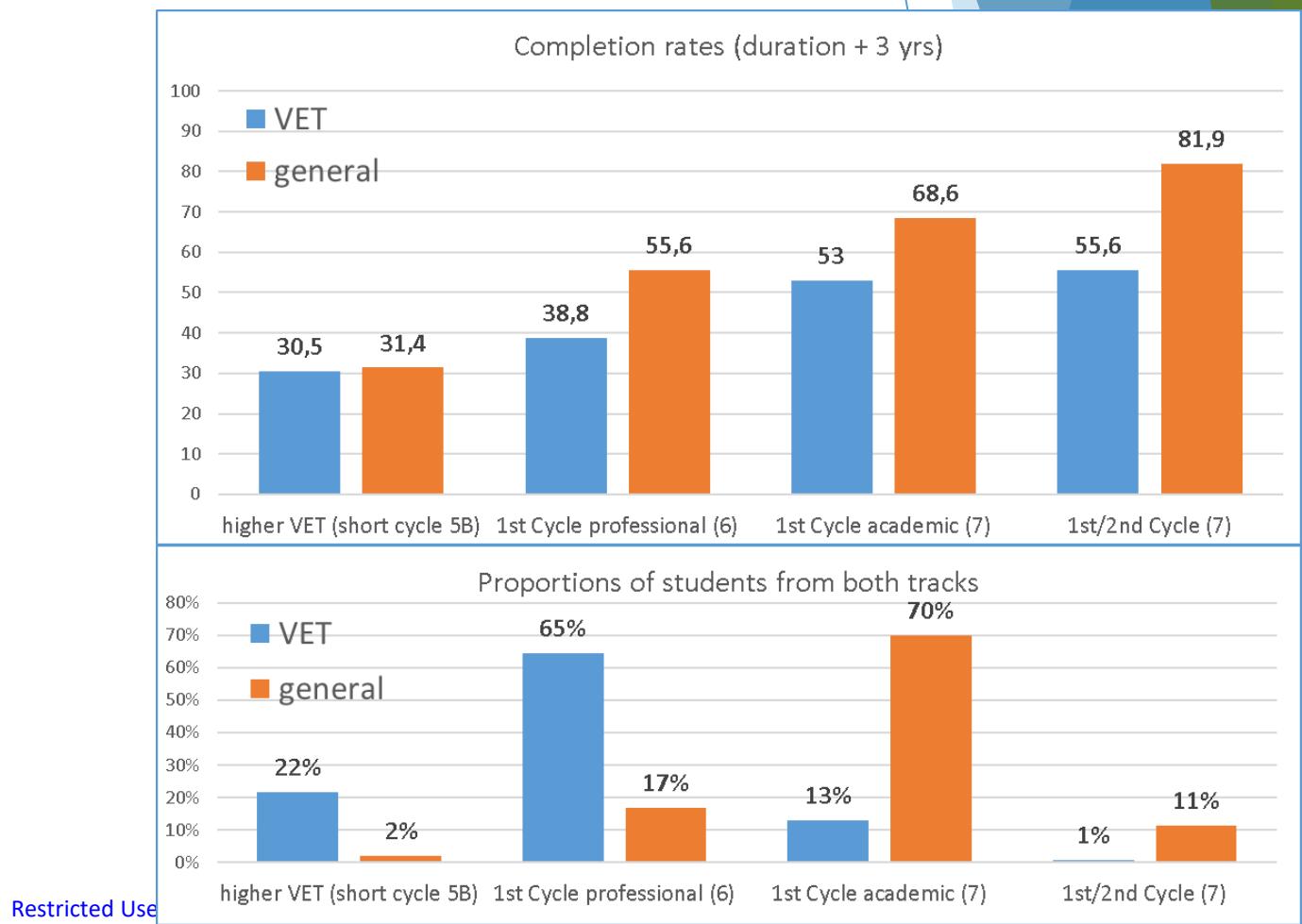
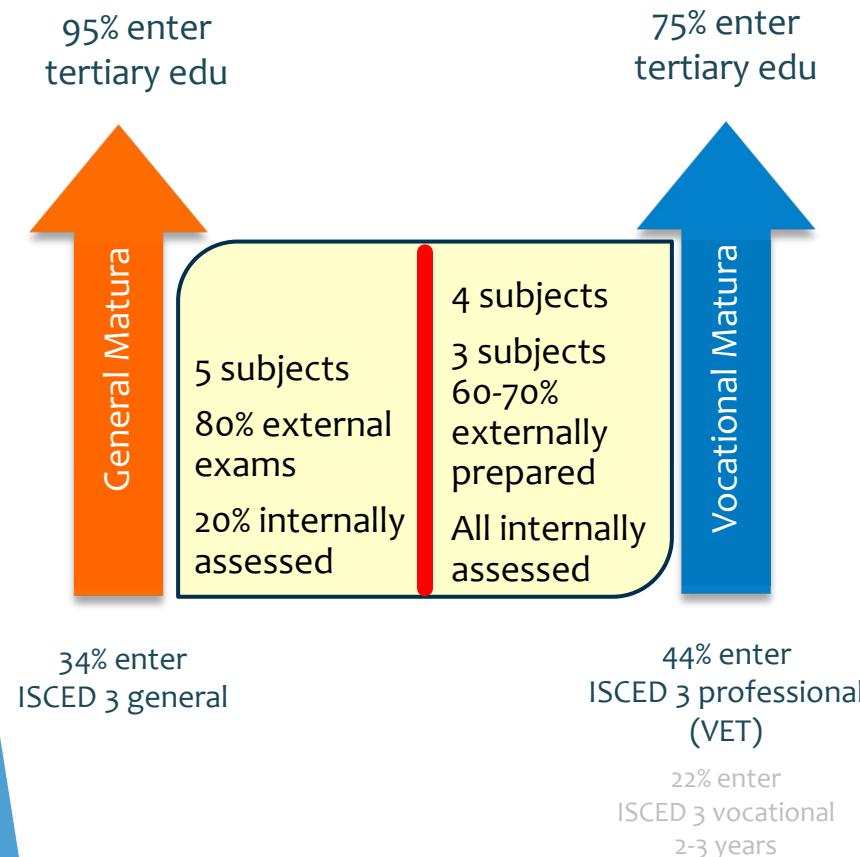
Completion rates at ISCED 5-7

How two certification paths from ISCED 3 to ISCED 5+...



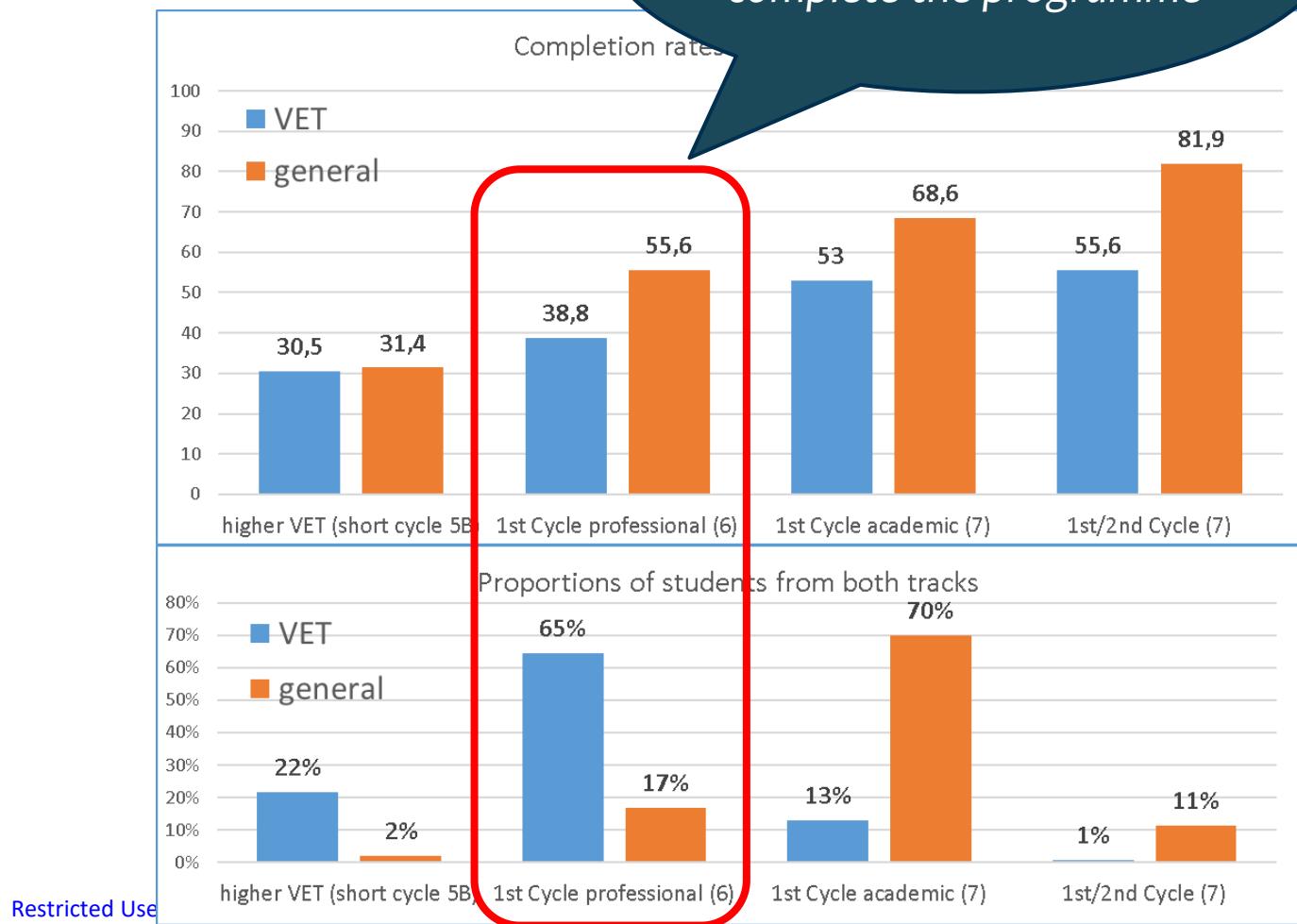
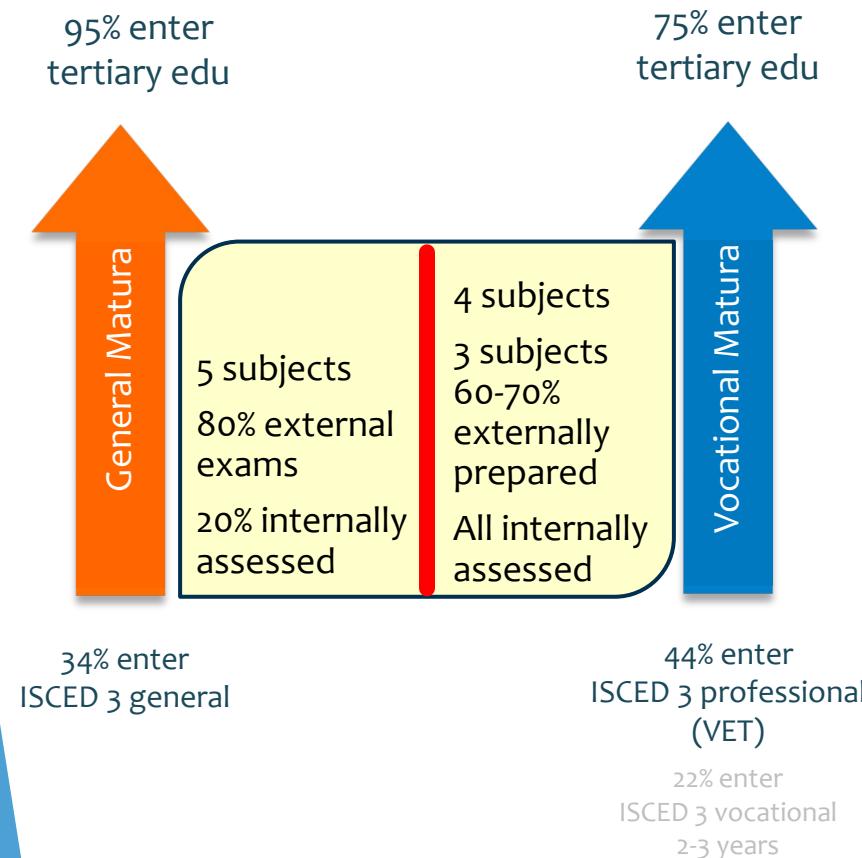
Completion rates at ISCED 5-7

How two certification paths from ISCED 3 to ISCED 5+... ... translate into success rates at ISCED 5+



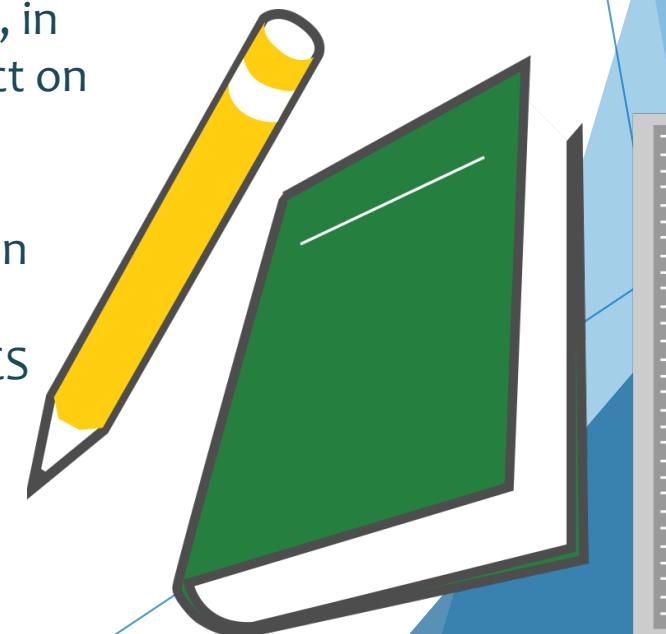
Completion rates at ISCED 5-7

How two certification paths from ISCED 3 to ISCED 5+... ... translate into success rates



Thoughts ...

- ▶ Possibly ISCED 3 VET 4y professional programmes are not equipping students sufficiently to be successfull at ISCED 6.
- ▶ Transition from ISCED 2 to ISCED 3 may influence transition from ISCED 3 to ISCED 5-7.
- ▶ Instead of an intended open-path system so that students can change their educational trajectories at all stages it seems that, in later stages, socio-economic background strengthens its impact on educational success.
- ▶ To further examine the impact of socio-economic background in transition from ISCED 2 to ISCED 3, we modelled probability of entering ISCED 3 general programme in Slovenia with PISA ESCS indicator as a predictor and (math) achievement as control.



Logistic regression

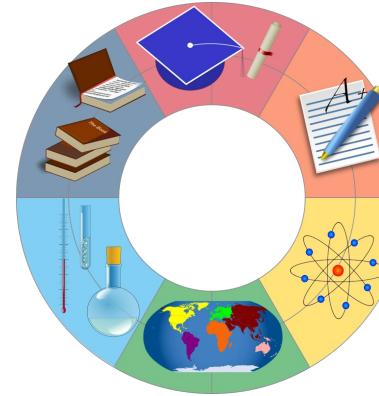
		All students		Boys		Girls	
		PISA 2022	PISA 2012	PISA 2022	PISA 2012	PISA 2022	PISA 2012
Index of economic, social and cultural status	Exp(b)	2,91	2,18	2,87	2,28	3,03	2,23
Mathematics Achievement	Exp(b)		3,74		7,16		4,63
Constant	Exp(b)	0,53	0,44	0,71	0,58	0,32	0,23
Explained variance	NKR	0,23	0,44	0,26	0,55	0,22	0,45
		All students		Boys		Girls	
		PISA 2018	PISA 2009	PISA 2018	PISA 2009	PISA 2018	PISA 2009
Index of economic, social and cultural status	Exp(b)	2,98	2,52	2,89	2,37	3,10	2,57
Reading Achievement	Exp(b)		4,32		7,44		4,32
Constant	Exp(b)	0,52	0,40	0,79	0,60	0,31	0,29
Explained variance	NKR	0,25	0,48	0,26	0,61	0,24	0,45

Logistic regression

		All students		Boys		Girls	
		PISA 2022	PISA 2012	PISA 2022	PISA 2012	PISA 2022	PISA 2012
Index of economic, social and cultural status	Exp(b)	2,91	2,18	2,87	2,28	3,03	2,23
Mathematics Achievement	Exp(b)		3,74		7,16		4,63
Constant	Exp(b)	0,53	0,44	0,71	0,58	0,32	0,23
Explained variance	NKR	0,23	0,44	0,26	0,55	0,22	0,45
		All students		Boys		Girls	
		PISA 2018	PISA 2009	PISA 2018	PISA 2009	PISA 2018	PISA 2009
Index of economic, social and cultural status	Exp(b)	2,98	2,52	2,89	2,37	3,10	2,57
Reading Achievement	Exp(b)		4,32		7,44		4,32
Constant	Exp						10,55
Explained variance	NKR						

Introducing achievement (and additional factor) as control in the model reduces the impact of socio-economic background on probability of entering the ISCED 3 general educational programme only to some (small) degree.

Concluding thoughts



While national and international data indicate relatively high (socio-economic) equity in ISCED1&2 education in Slovenia, student background may have unrecognized impact at the point of transition to ISCED 3 level influencing further educational trajectories. This may be because students and families from a disadvantaged background tend to choose „safer“ paths to a profession.

The question remains whether the new legislation will mitigate this impact of socio-economic background.