

Reading and maths skills and the life-course outcomes of young people in NZ

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**NEW ZEALAND
WORK RESEARCH INSTITUTE**

Disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit <https://www.stats.govt.nz/integrated-data/>.

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

The wider research programme

workresearch.aut.ac.nz/low-skills

- This project is a small part of a larger research programme
- Funded via the MBIE Endeavour programme
- 2019 – 2024
- Team of quantitative and qualitative researchers spanning a range of disciplines, and institutions.
- AUT; University of Waikato; Portland State University and the OECD
- Advisory group across policy makers and practitioners
- Aim: To deliver an empirical base for improved public policy delivery, interventions and wellbeing outcomes for adults living with low literacy and/or numeracy skills in NZ

This project

- What is the relationship between young people's reading and mathematics proficiency at age 15 and their life-course outcomes?
- We use Stats NZ's Integrated Data Infrastructure (IDI) to take measures of reading and maths skills of 15-year-old students from NZ's 2009 Programme of International Student Assessment (PISA) and link these to administrative data
- This allows us to follow a cohort of young people and track their outcomes for 11 years until they are about 26 years old
- We examine educational, labour market, health, family formation and justice outcomes

Data and method

The IDI

Integrated Data Infrastructure (IDI)



- Population-wide research database holding de-identified microdata about people and households.
- Sourced from government agencies, Stats NZ surveys and NGOs
- Individual data linked across datasets with an anonymised unique identifier

NZ PISA and the IDI

- Use Stats NZ's Integrated Data Infrastructure
- Population of interest: 2009 PISA participants
- Linked to IDI admin data allows us to follow 2009 PISA participants over time until 2020 (age approx. 26 years)
- Multiple IDI data sources used

PISA

Programme for International Student Assessment

- Worldwide study to assess key competencies of 15 year olds
- In 2009, 4,500 students from 163 schools in NZ participated (representative sample)
- Low skills: Below Level 2 in reading and/or maths
 - OECD: baseline level that enables students “to participate effectively and productivity in life” (OECD, 2010, p. 13)

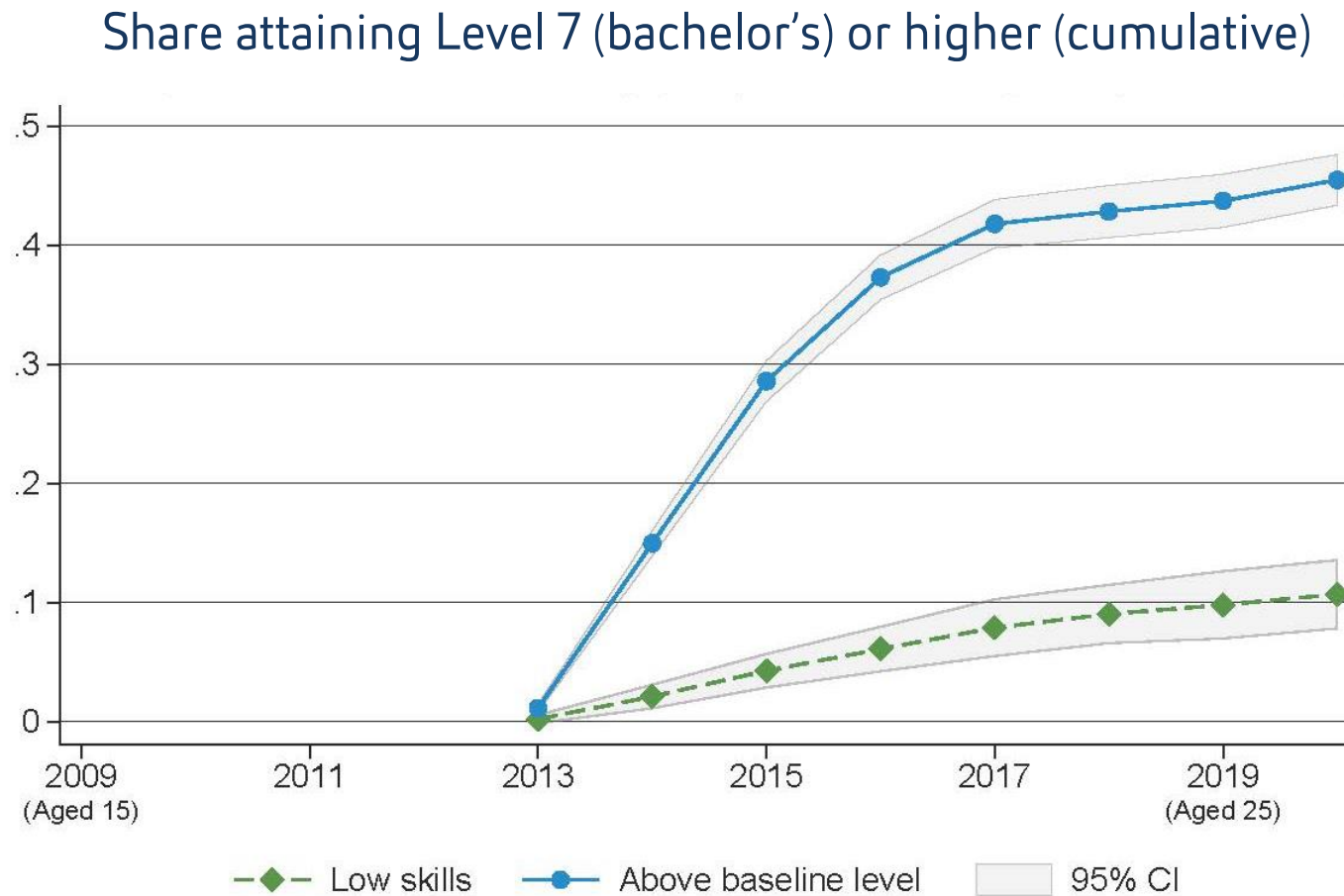
Population of interest

- 94% of PISA 2009 participants linked to IDI
- 19% have low skills (below Level 2 in either reading or maths); 81% have above-baseline skills
- Construct annual dataset of outcomes for each calendar year 2009-2020
- Exclude those who die or were overseas for >100 days in a given year

Results: Education

Educational attainment over time

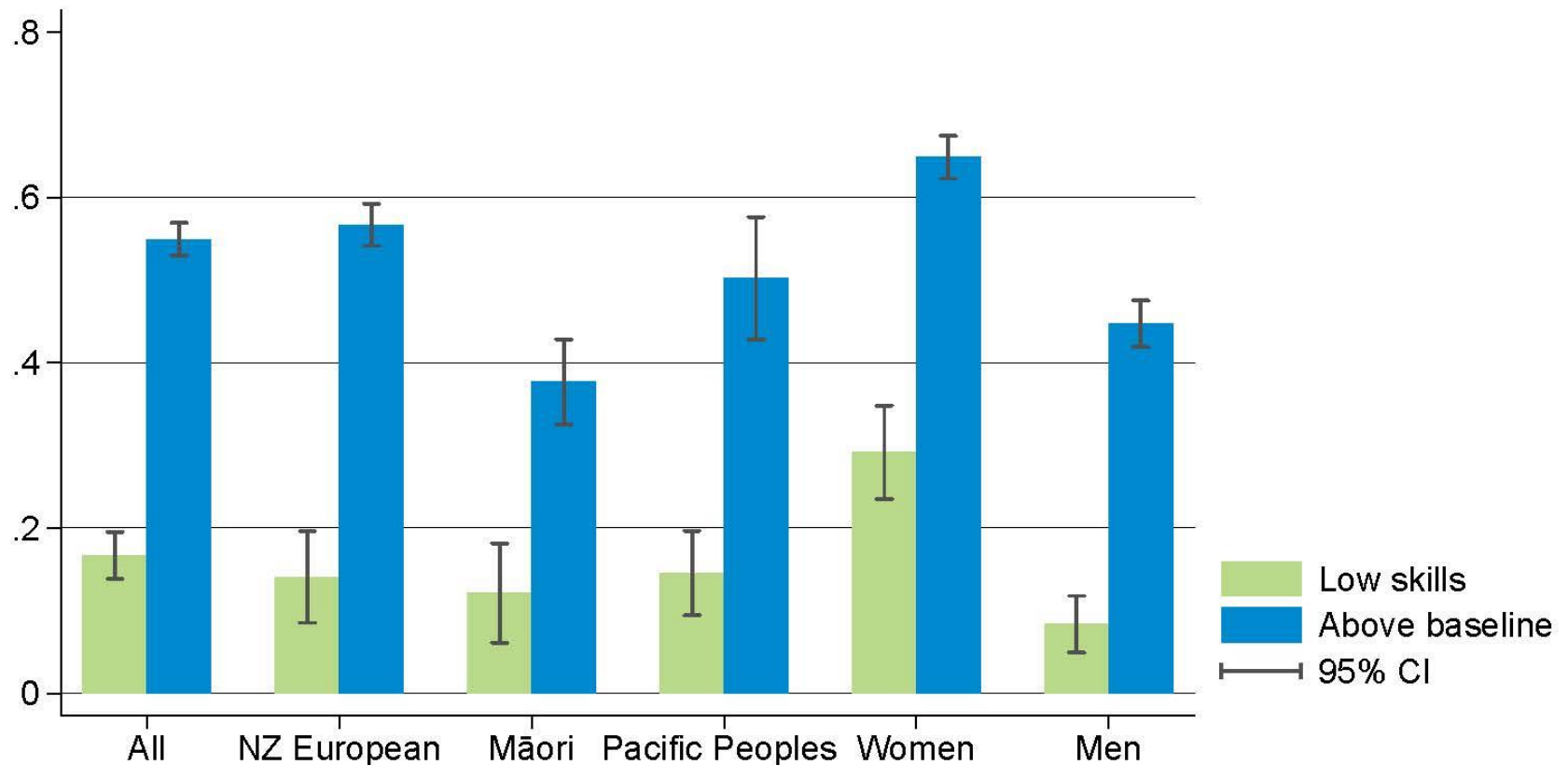
Low-skills group are much less likely to attain Level 7 or above



Bachelor's enrolment by characteristics

Above-baseline Māori are less likely to enrol in a bachelor's than above-baseline NZ Europeans

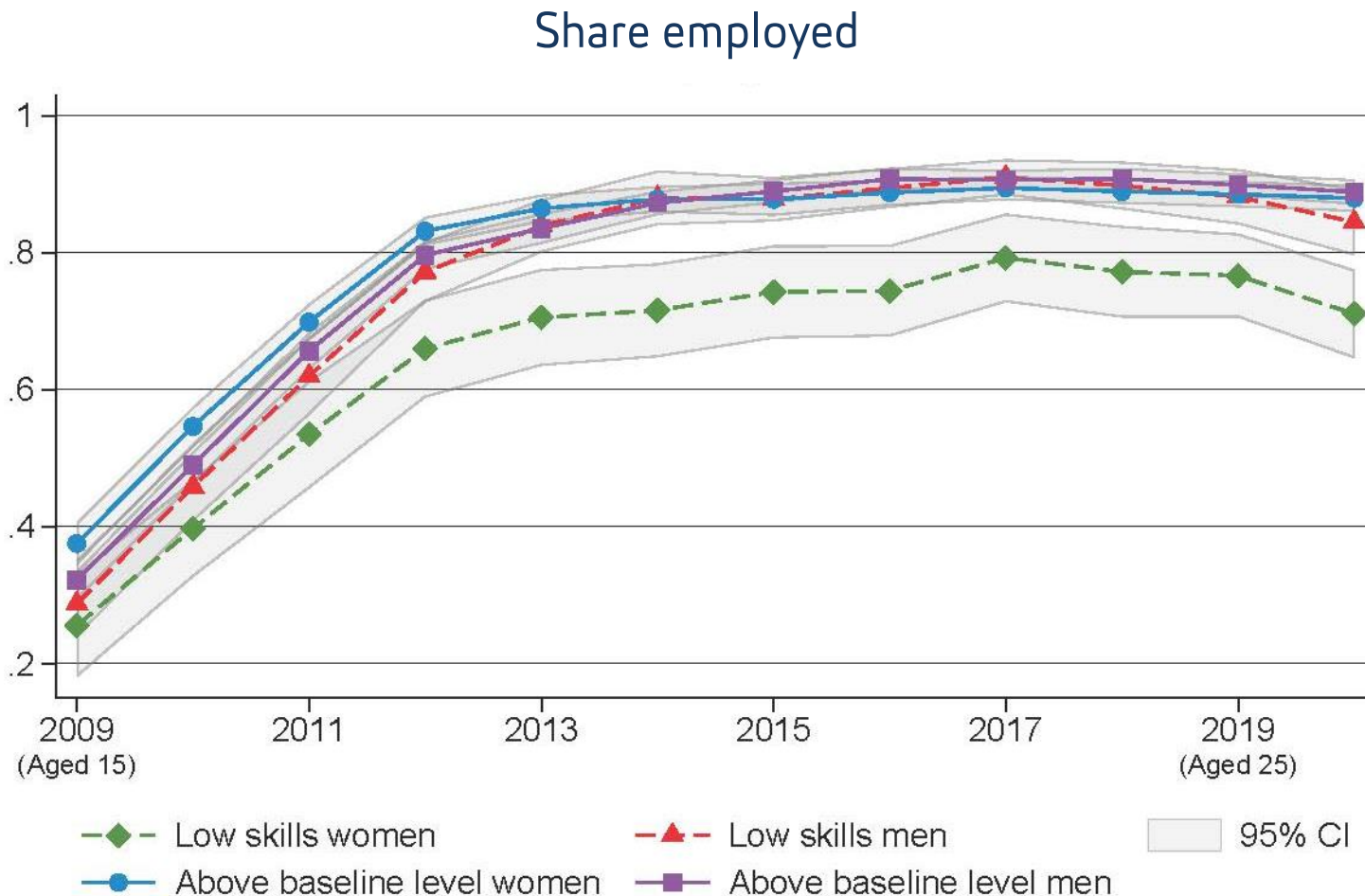
Share who have ever enrolled in a bachelor's degree



Results: Labour market

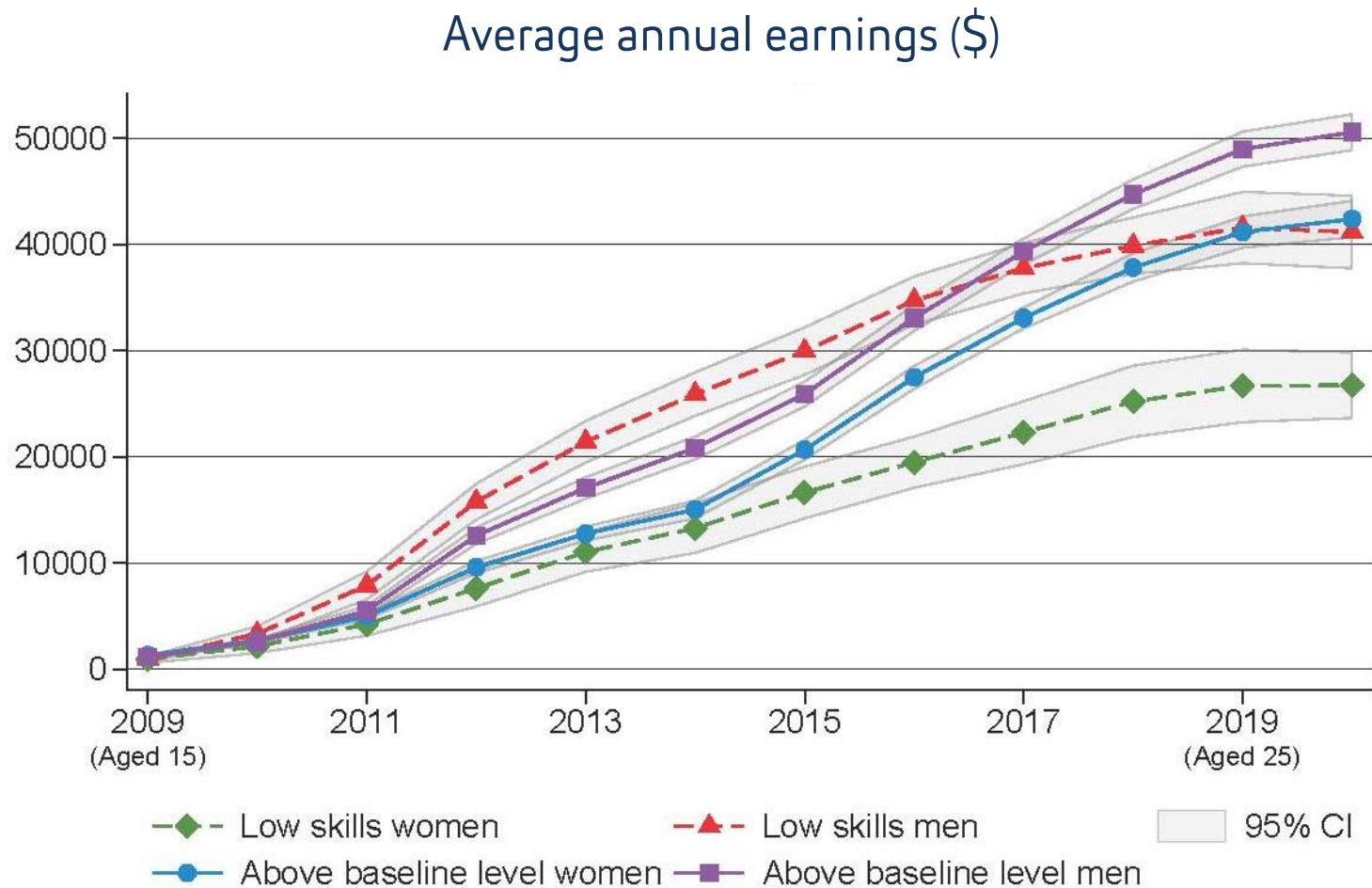
Employment over time

Women with low skills are less likely to be employed



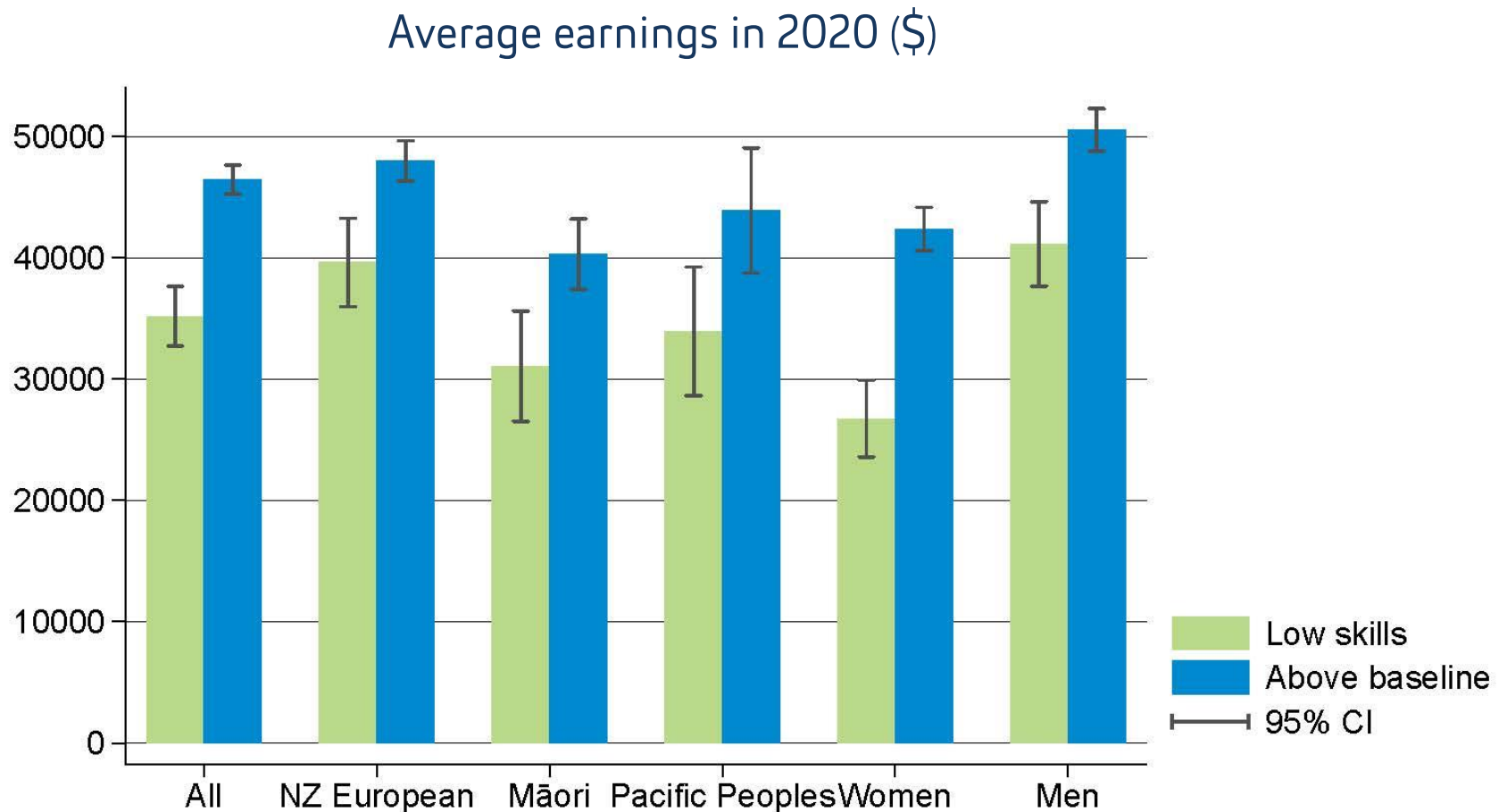
Earnings over time

Above-baseline men have highest earnings; low-skilled women have the lowest



Earnings by characteristics

Above-baseline Māori have similar average earnings to low-skilled NZ Europeans

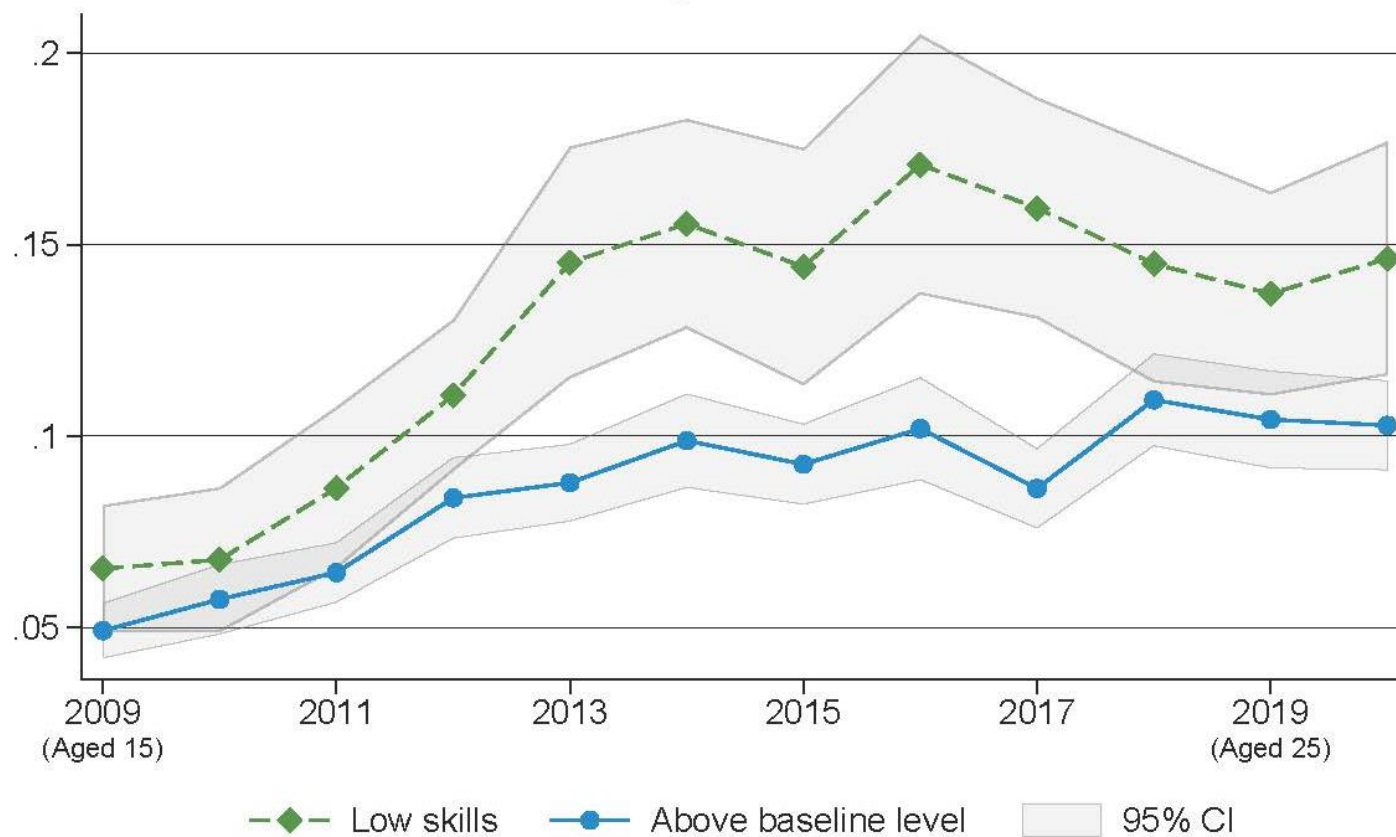


Results: Health

Hospitalisation rates

Those with low skills have higher rates of hospital admissions

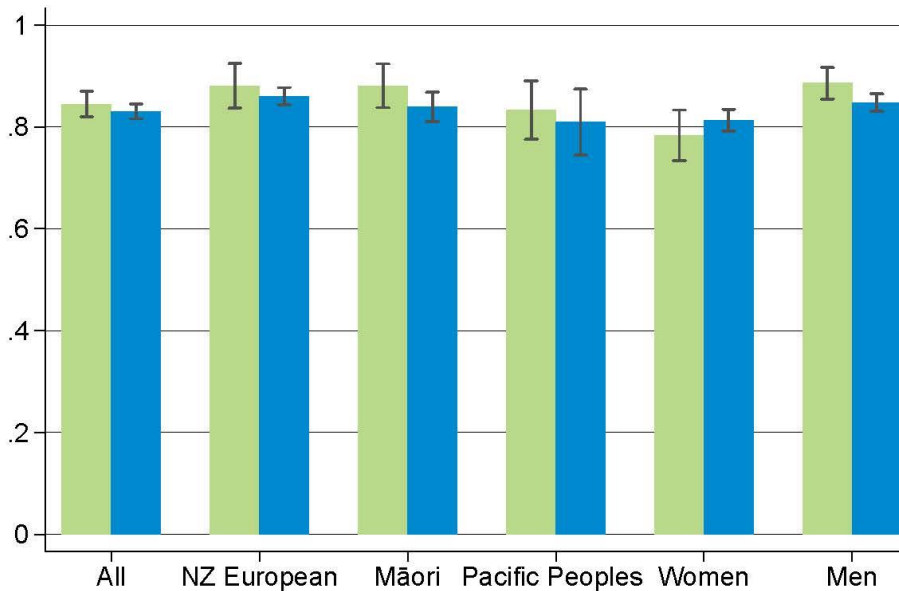
Share with hospital admissions



Injury rates

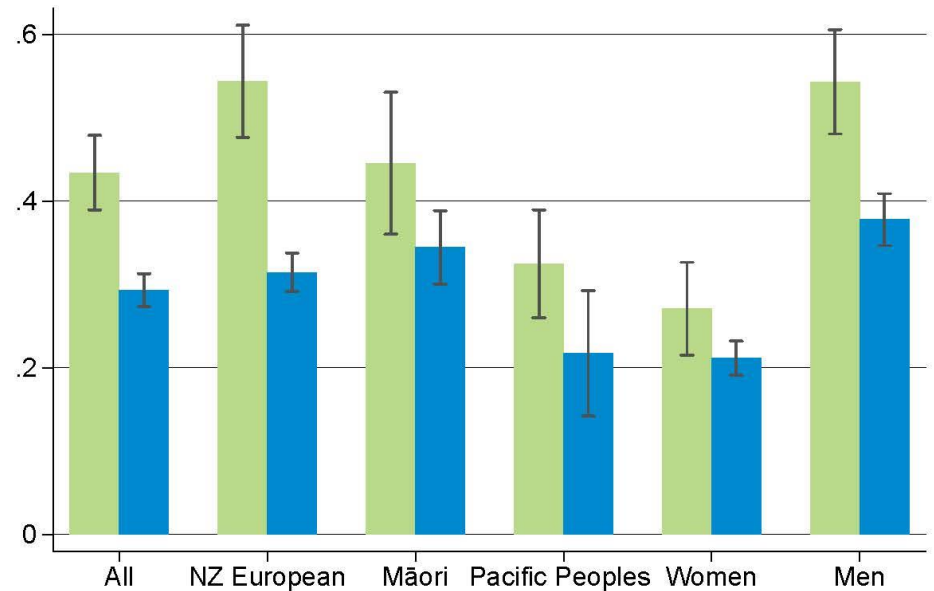
No difference in overall injury rates, but low-skills group have more work injuries

Share with any injury



Low skills
Above baseline
95% CI

Share with work-related injury

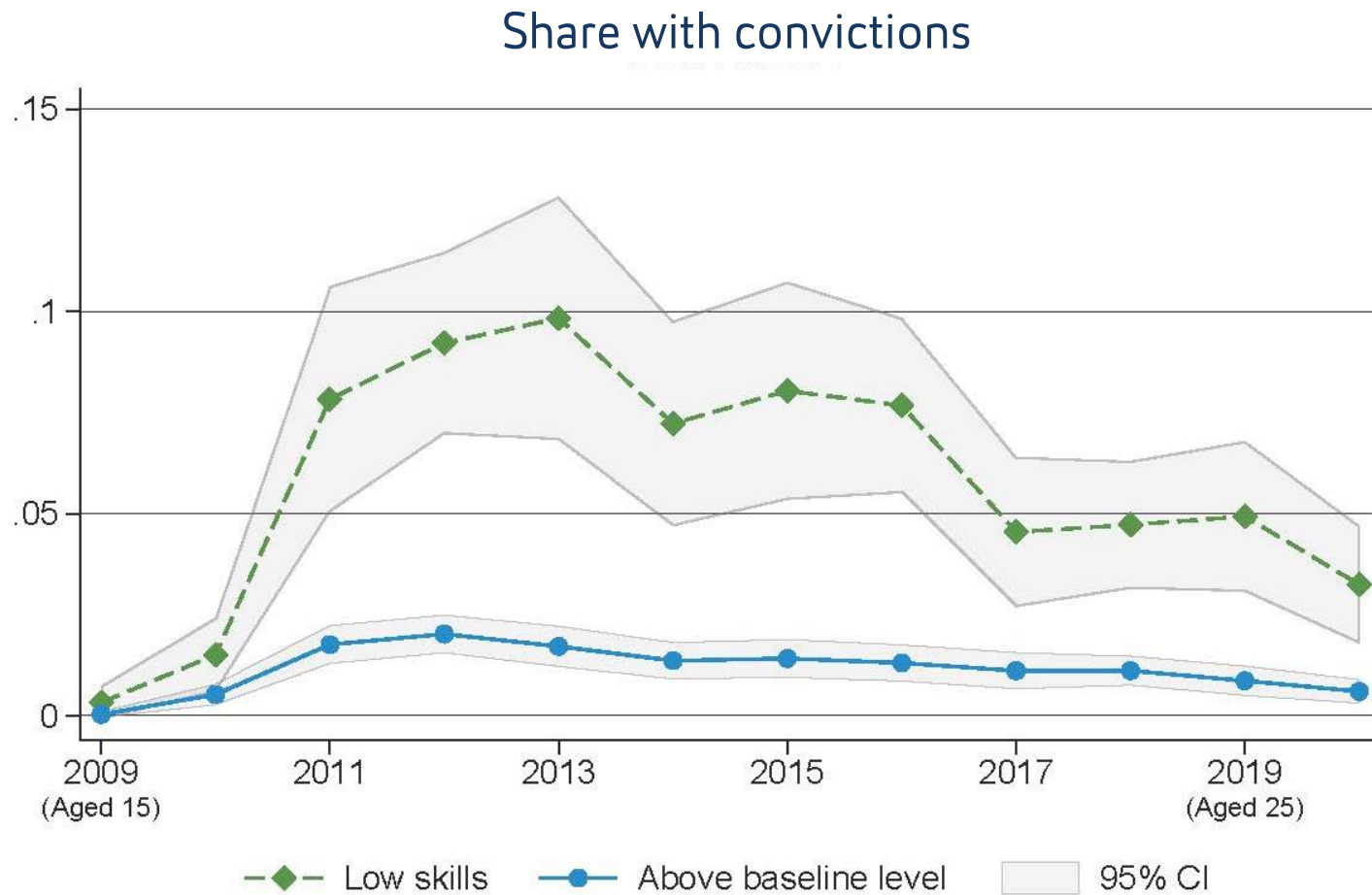


Low skills
Above baseline
95% CI

Results: Crime

Convictions over time

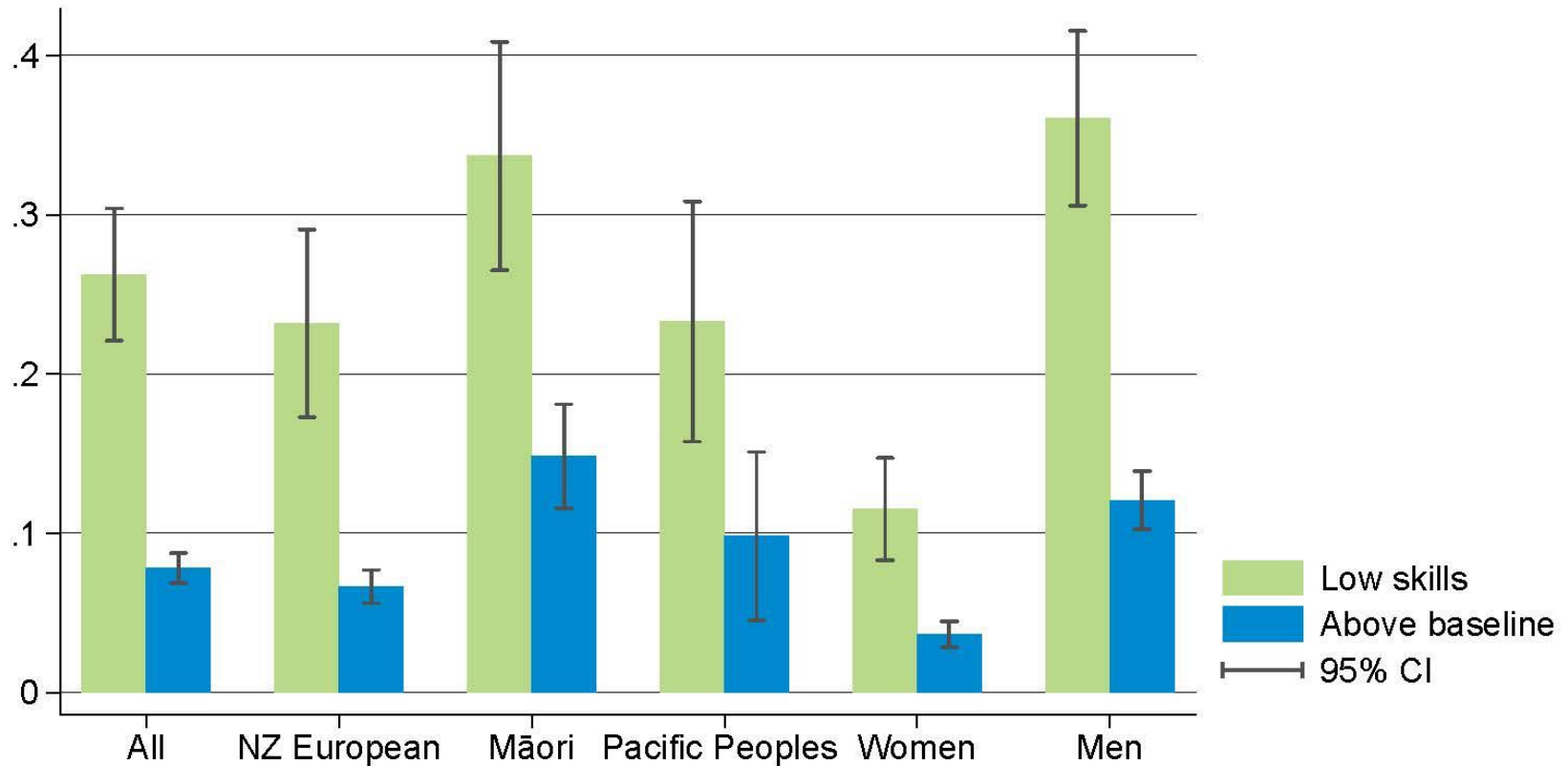
Those with low skills are more likely to have convictions



Convictions by characteristics

Low-skilled men and Māori have high conviction rates

Share with convictions



Controlling for differences in characteristics

Table 6: Labour market outcomes in 2019 when controlling for differences in characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
Employed	-0.06 (0.02) ^{***}	-0.04 (0.02) ^{**}	-0.03 (0.02)	-0.02 (0.02)	-0.04 (0.02) ^{**}	-0.01 (0.02)
Months employed	-1.18 (0.20) ^{***}	-0.96 (0.23) ^{***}	-0.74 (0.23) ^{***}	-0.62 (0.23) ^{***}	-0.81 (0.21) ^{***}	-0.45 (0.21) ^{**}
Earnings (NZ\$)	-9677.9 (1297.6) ^{***}	-6286.3 (1527.1) ^{***}	-4731.2 (1540.2) ^{***}	-4430.5 (1556.9) ^{***}	-4970.4 (1466.2) ^{***}	-2847.4 (1491.1) [*]
Controlling for						
Student/parental char.	No	Yes	Yes	Yes	Yes	Yes
Education pathways	No	No	Yes	No	No	Yes
Family formation	No	No	No	Yes	No	Yes
Health	No	No	No	No	Yes	Yes

Summary

- Students with low measured skills have less favourable outcomes in a number of areas
- They have lower rates of participation in, and completion of, further education compared with the above-baseline skills group
- They have lower rates of employment and average earnings
- Labour market differences between the low-skills and above-baseline groups are particularly stark among women
- They have higher rates of hospitalisation
- They have higher rates of criminal convictions
- Outcomes for Māori in both the low-skills and above-baseline groups are less favourable than those of their NZ European counterparts. E.g. Māori with above-baseline skills have similar average earnings to NZ Europeans in the low-skills group

THANK YOU

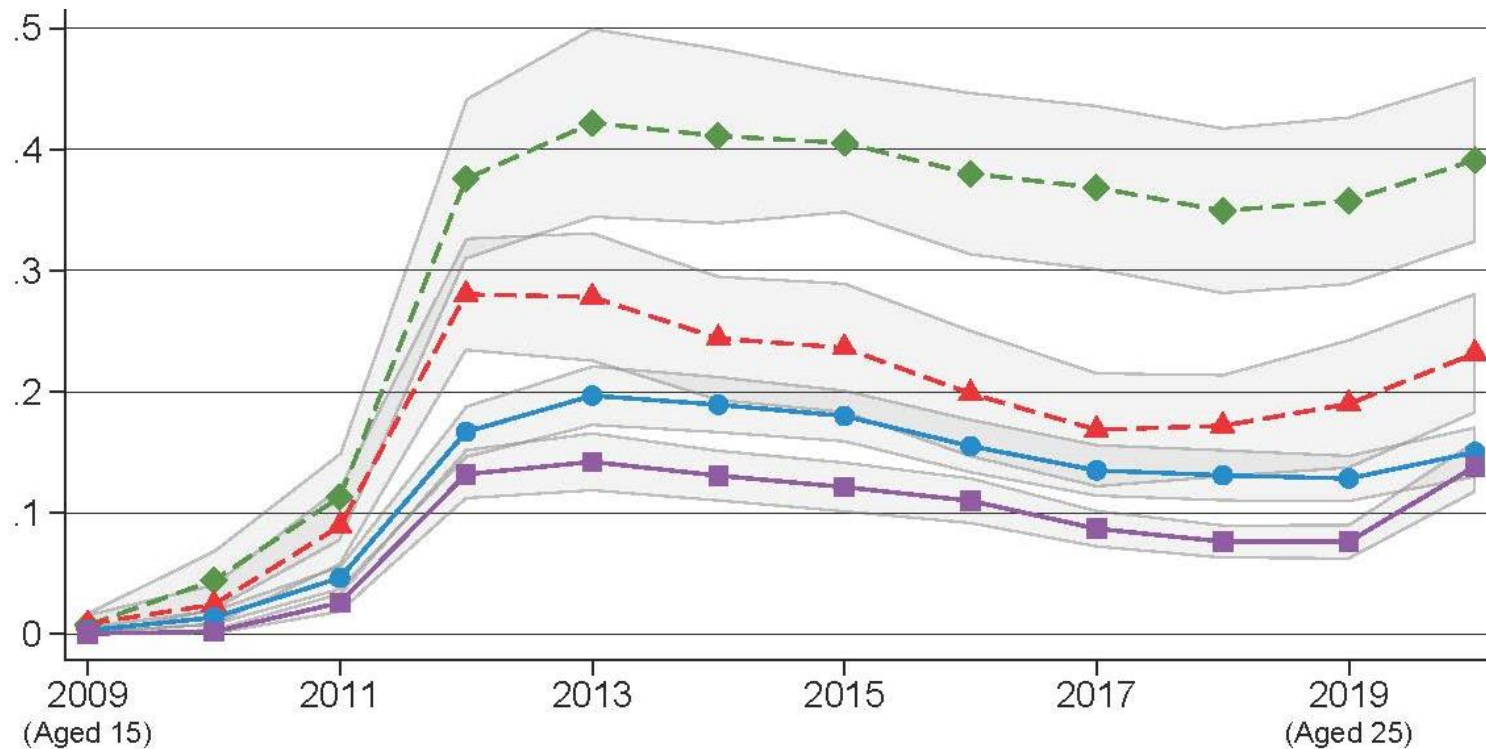
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EXTRAS

Benefit receipt

Women with low skills are more likely to receive a benefit payment



—◆— Low skills women

—▲— Low skills men

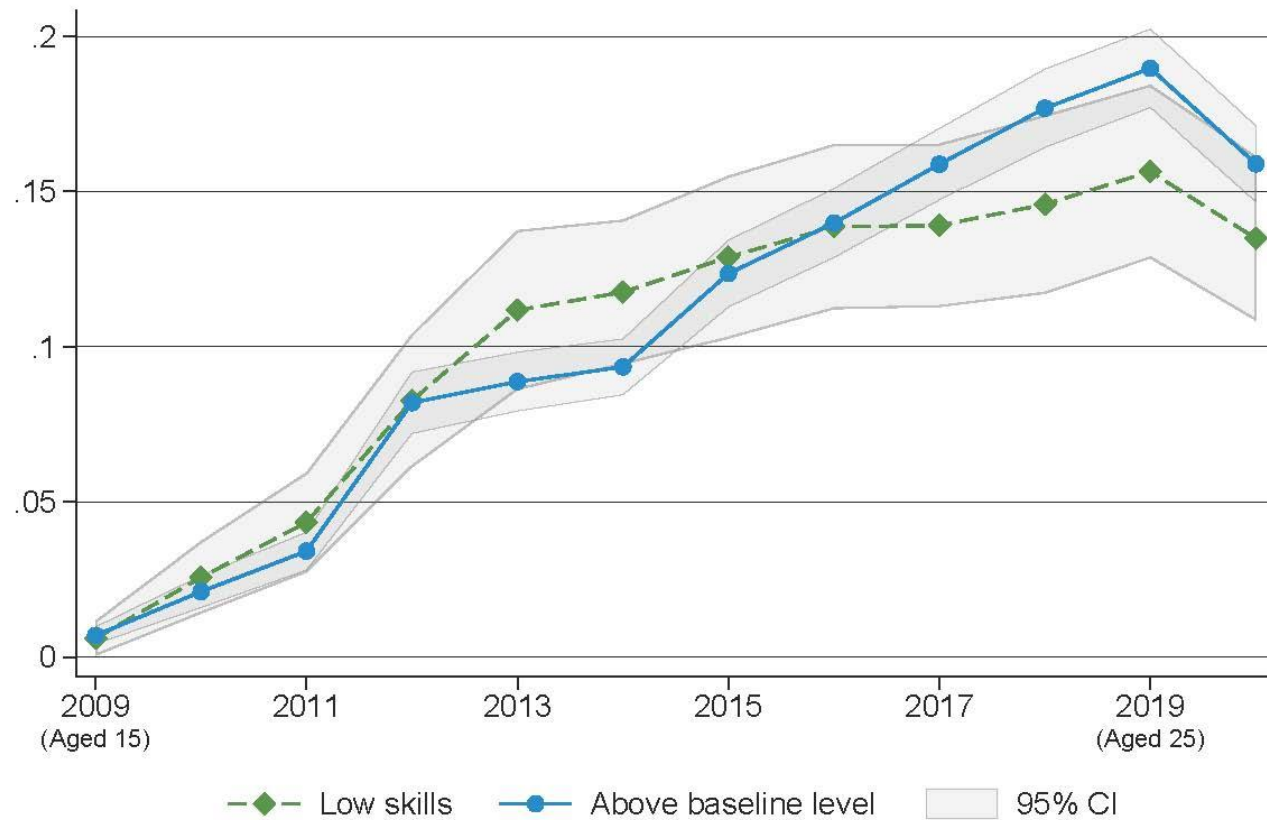
95% CI

—●— Above baseline level women

—■— Above baseline level men

Benefit payments

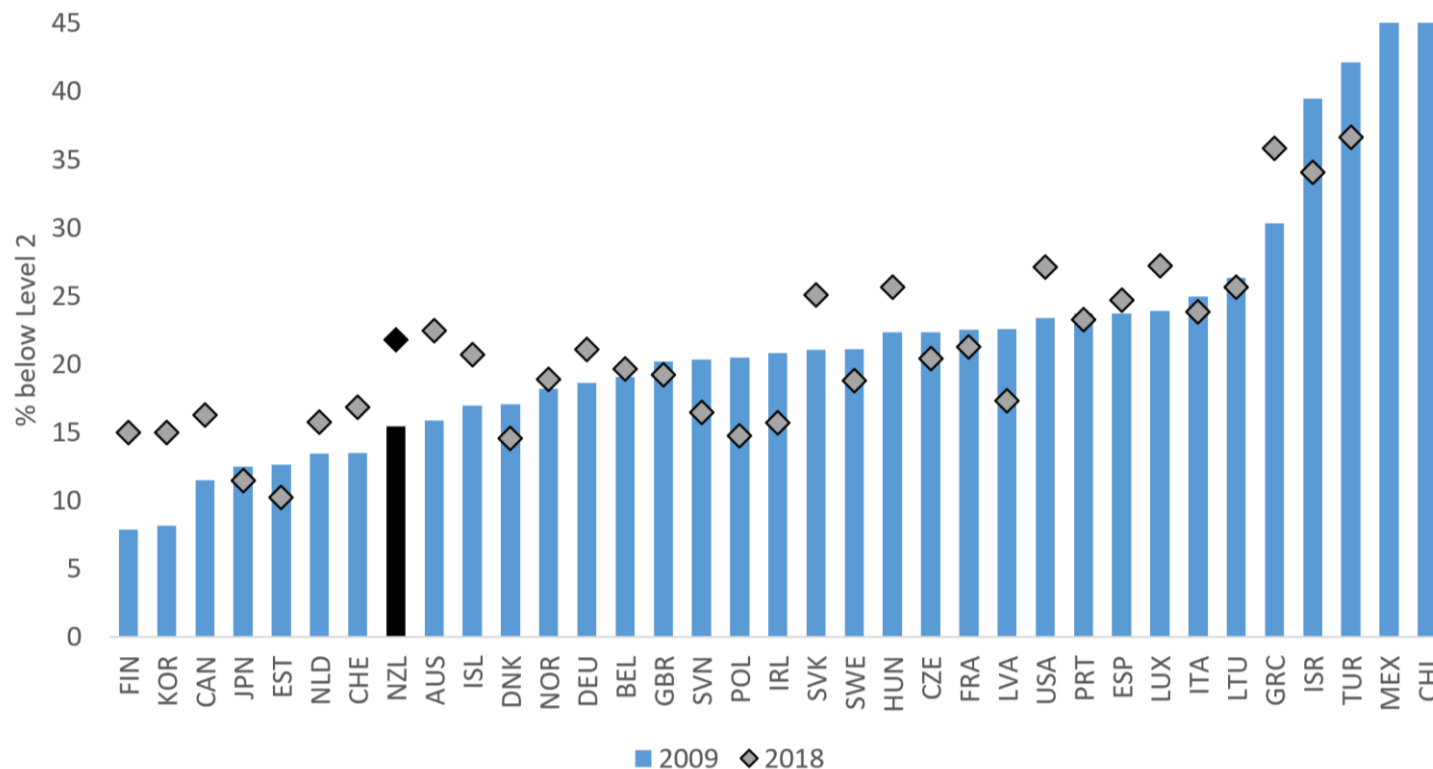
Women with low skills receive higher average benefit payments



NZ's PISA results

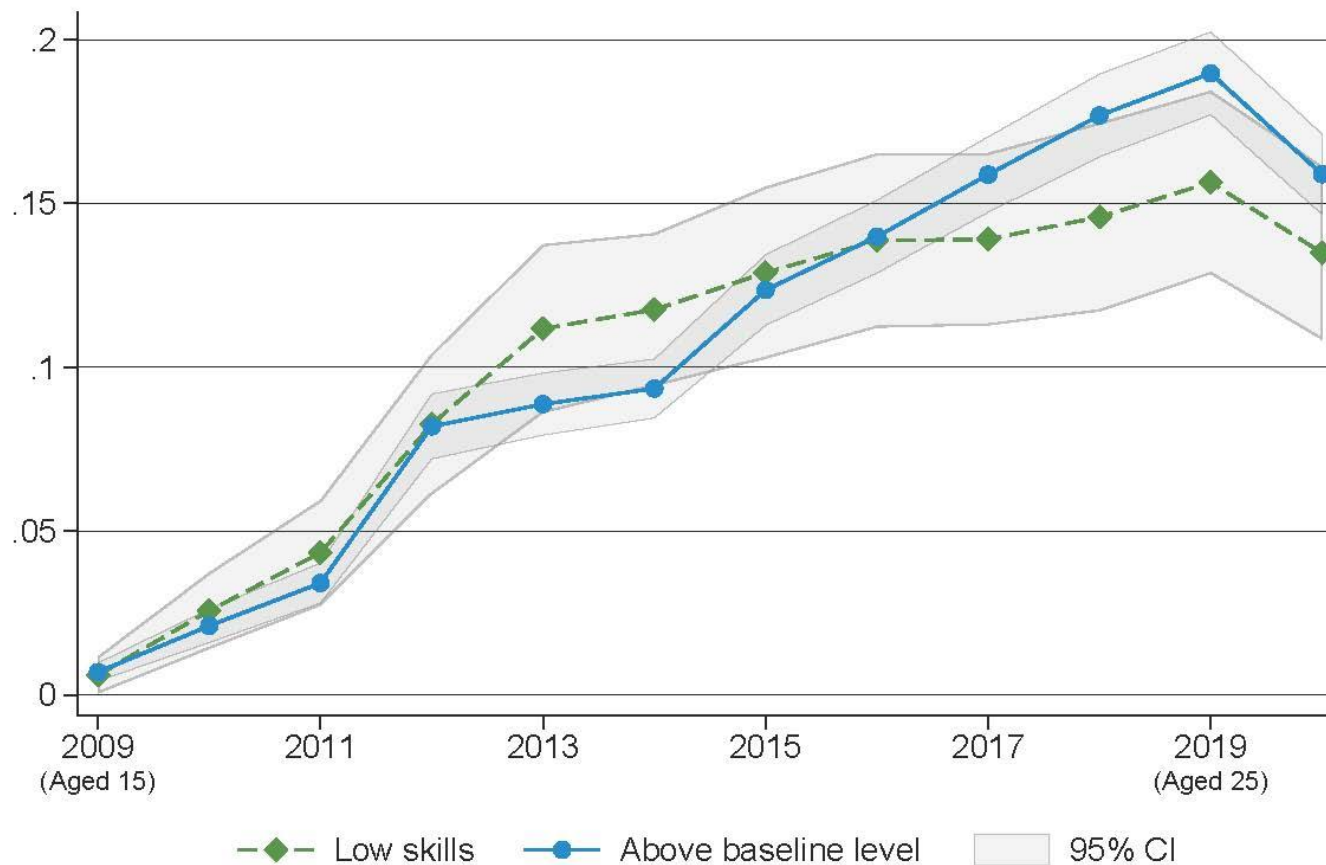
International comparison and over time

Percentage of students scoring below Level 2: Maths



Population of interest

Share of individuals excluded from the population of interest



Educational attainment over time

Low-skills group are less likely to attain Level 3 or higher qualification

Share attaining Level 3 or higher (cumulative)

