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

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NEW ZEALAND
WORK RESEARCH INSTITUTE

AUT

Disclaimer

The wider research programme

workresearch.aut.ac.nz/research/low–literacy–and–numeracy–research

- 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

Background

Programme for International Student Assessments (PISA)

PISA

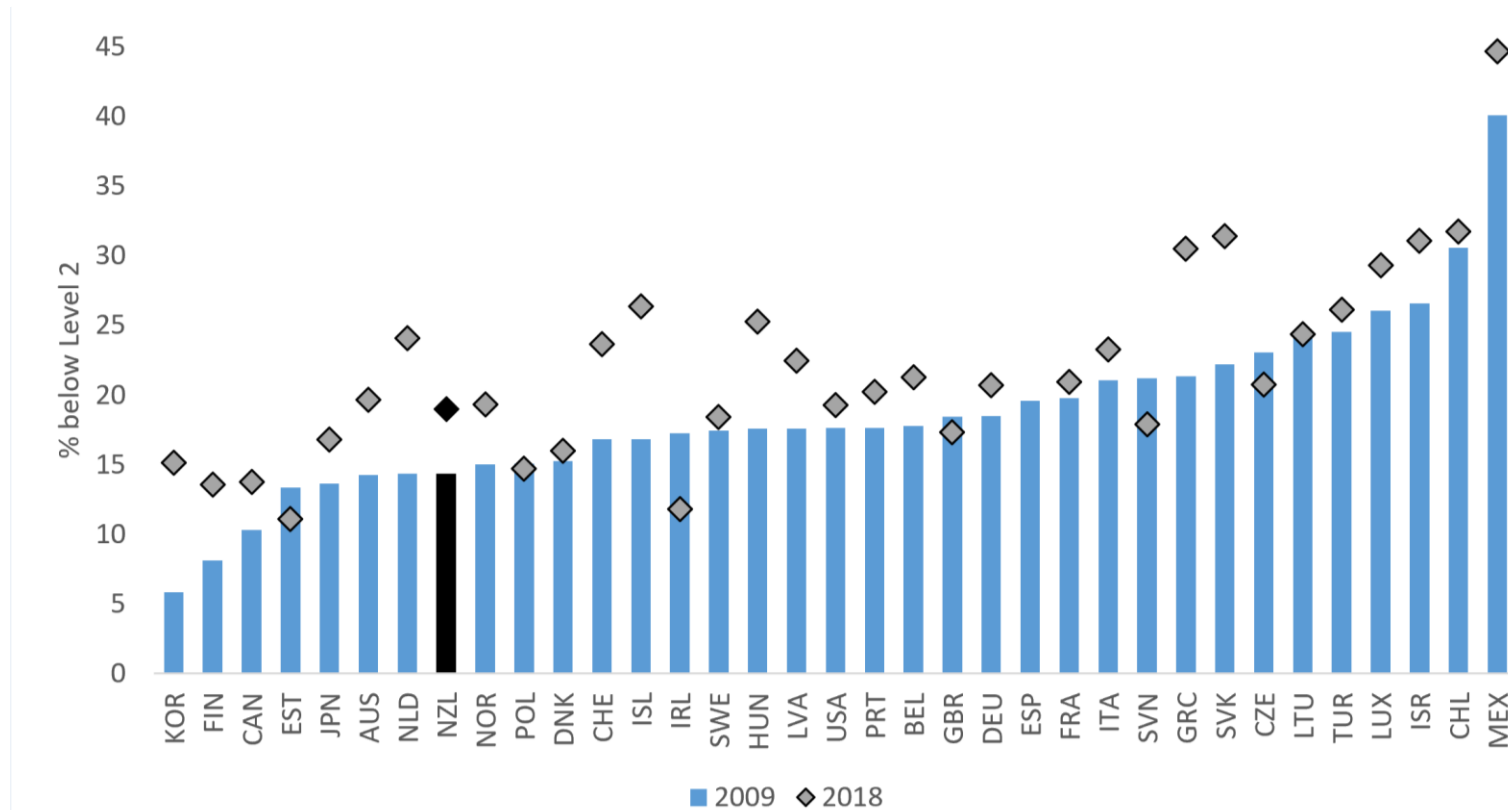## Programme for International Student Assessment

- Worldwide study to assess key competencies of 15 year olds
- Aims to measure students' capacity to apply their knowledge to real-life settings and solve problems in a variety of settings
- In 2009, 4,500 students from 163 schools in NZ participated (representative sample)
- We compare life-course outcomes of those with low reading and/or maths proficiency to those with above-baseline proficiency
- 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)

NZ's PISA results

International comparison and over time

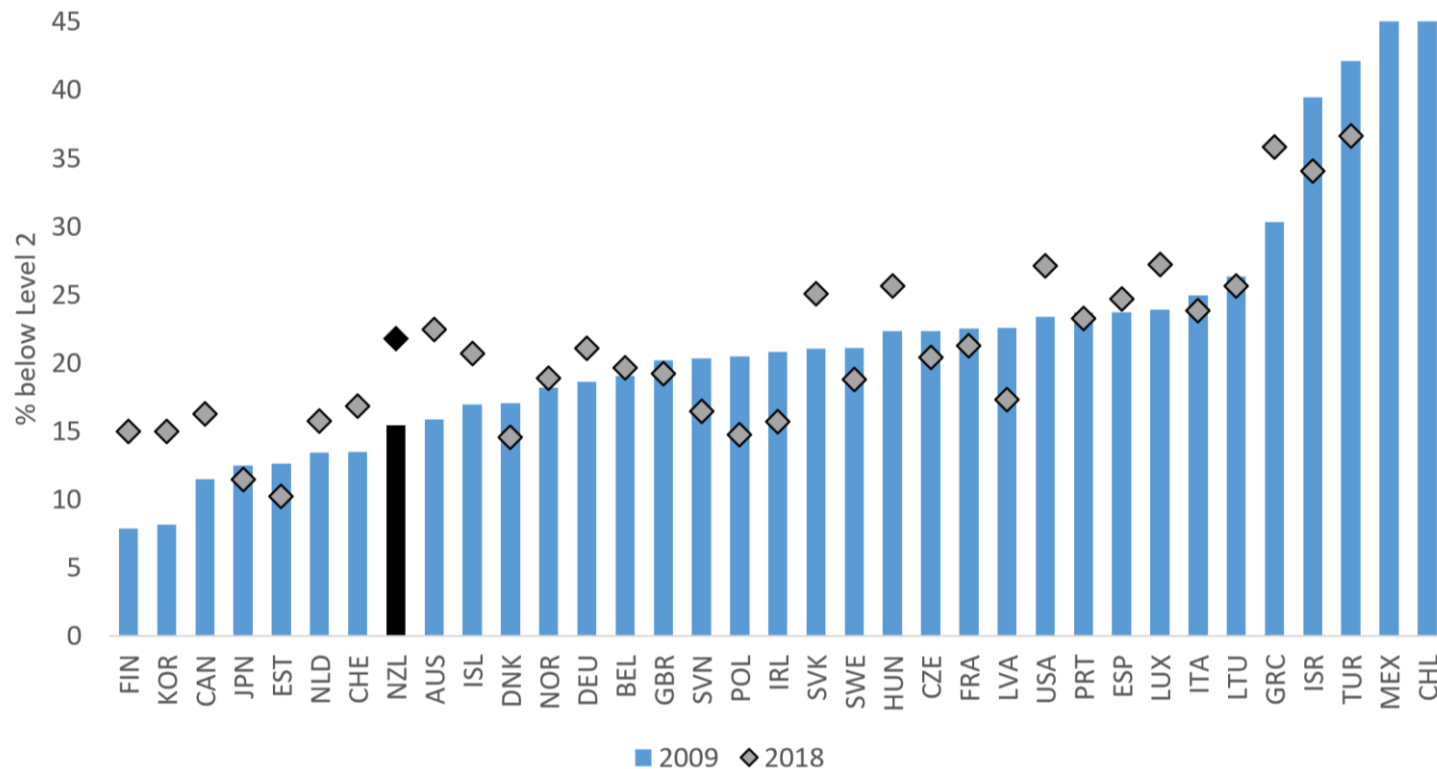## Percentage of students scoring below Level 2: Reading

Source: OECD (2019). *PISA 2019 Results (Volume1): What Students Know and Can Do*

NZ's PISA results

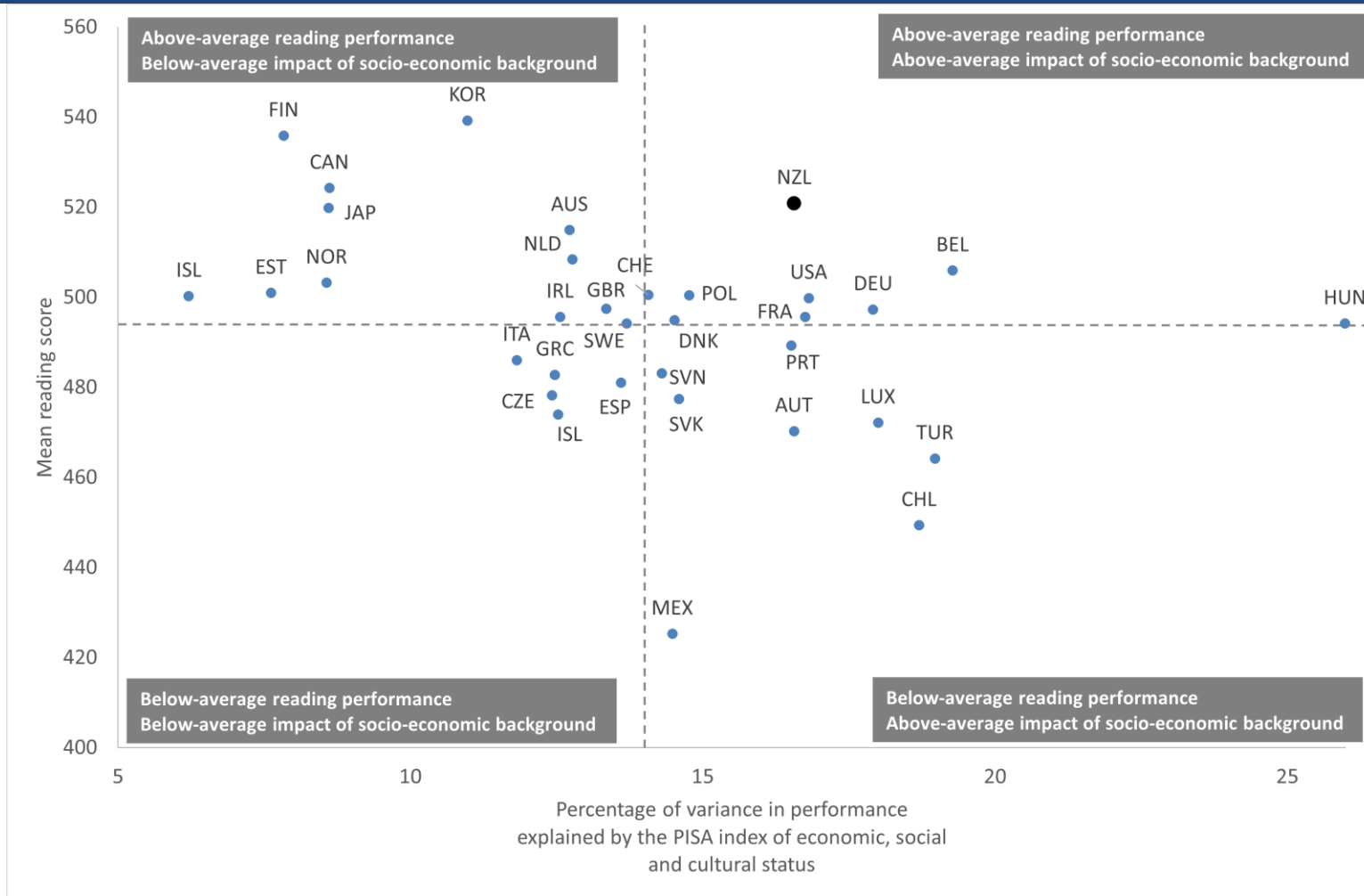International comparison and over time

Percentage of students scoring below Level 2: Maths

NZ's PISA results

Relationship between performance and socio–economic background

Source: OECD (2010). *PISA 2009 Results: Overcoming Social Background: Equity in Learning Opportunities and Outcomes (Volume II).*

Data and method

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)
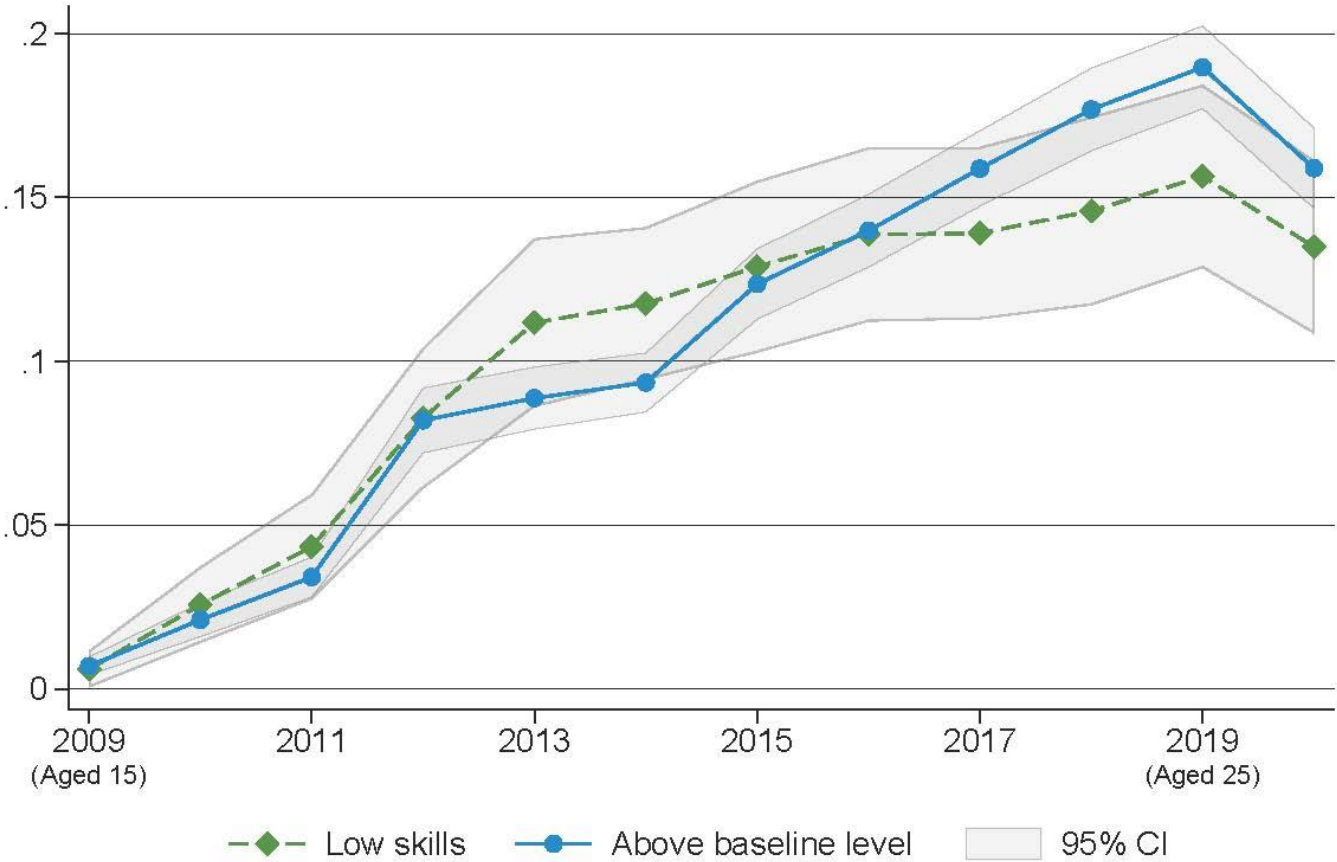- Multiple IDI datasources used

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 students' outcomes for each calendar year 2009-2020

- Exclude those who die or were overseas for >100 days in a given year

Population of interest

Share of individuals excluded from the population of interest
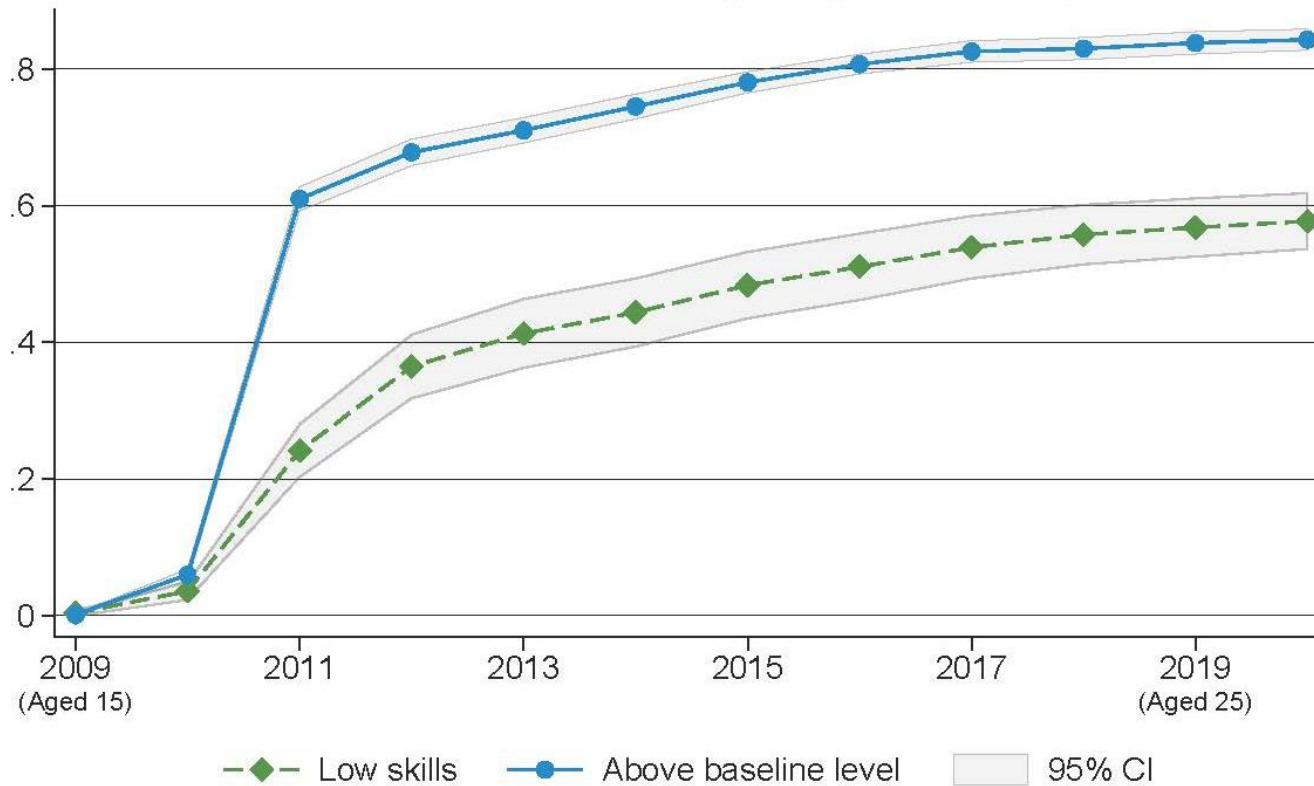
Results: Education

Educational attainment over time

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

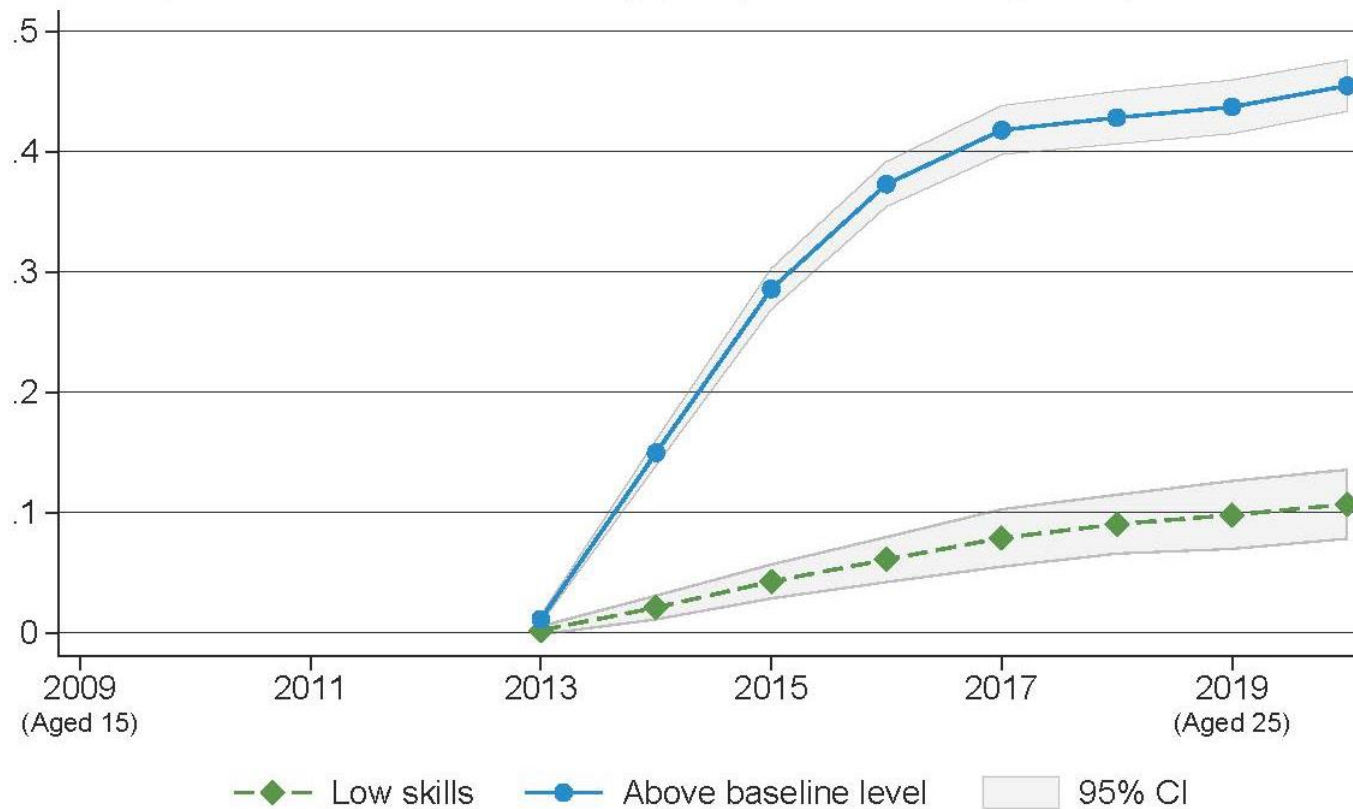Share attaining Level 3 or higher (cumulative)

Educational attainment over time

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

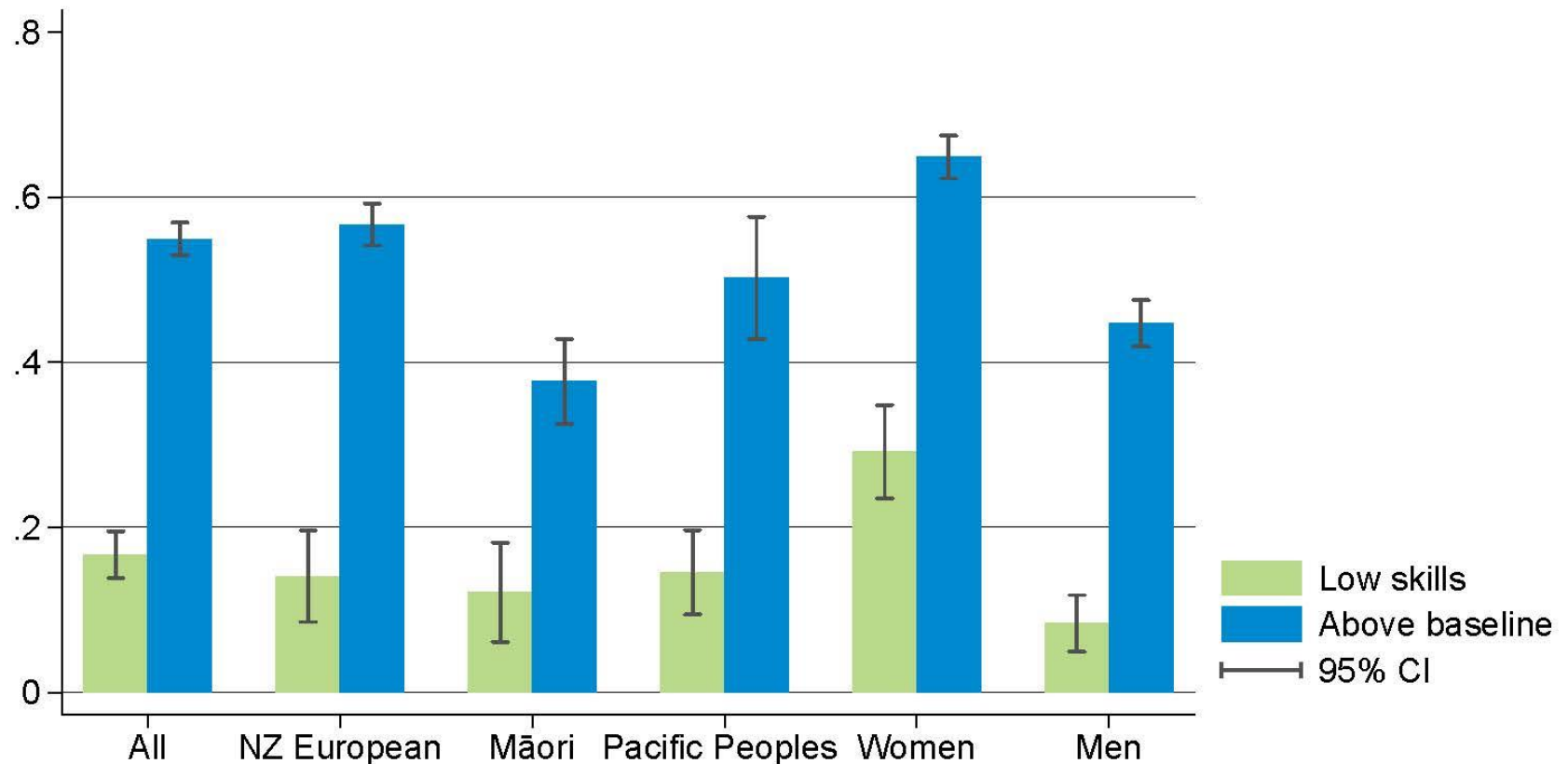Share attaining Level 7 (bachelor's) or higher (cumulative)

Bachelor's enrolment by characteristics

Above-baseline Māori have much likely to enrol in a bachelor's than above-baseline NZ Europeans
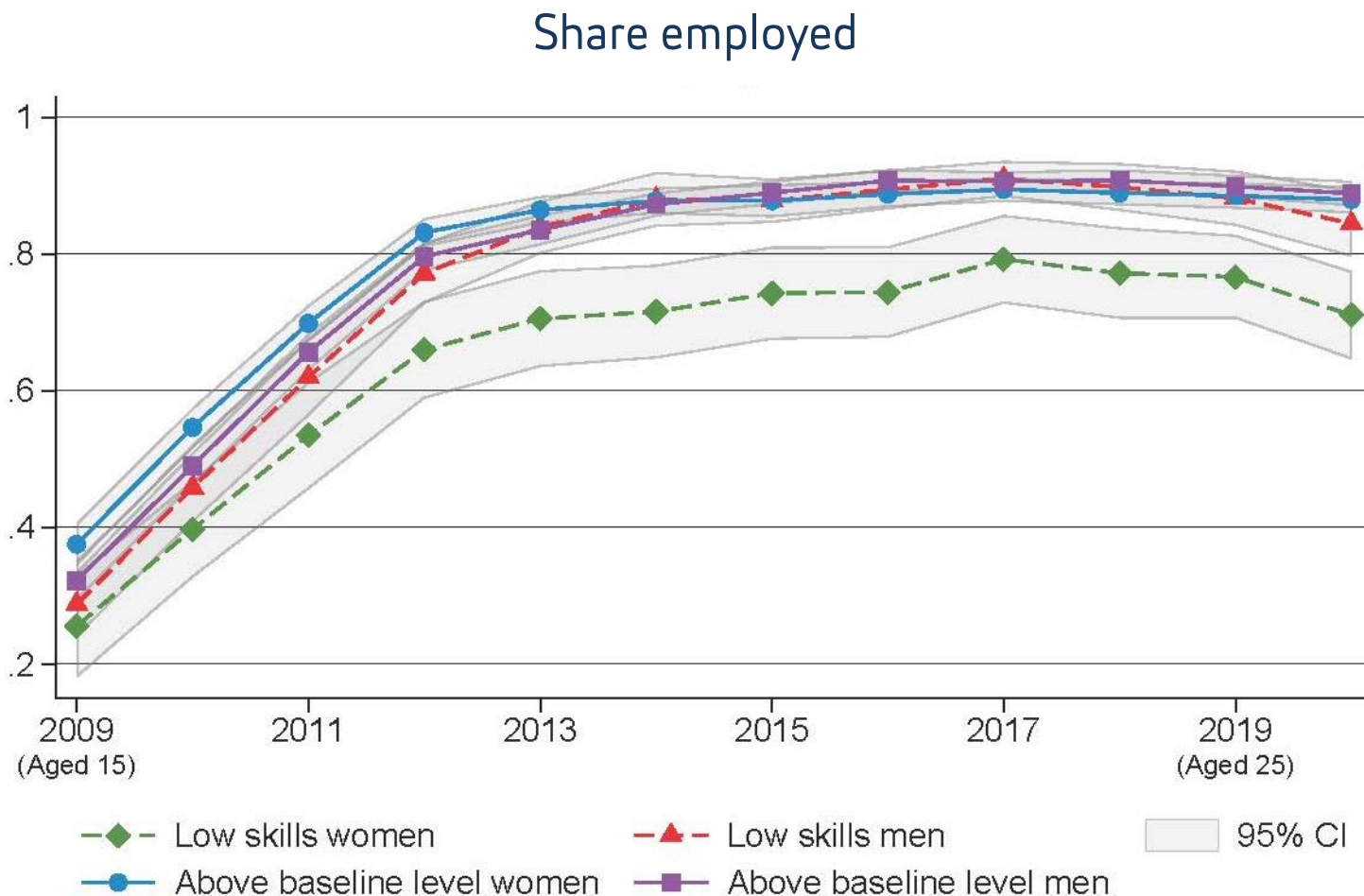
Share who have ever enrolled in a bachelor's degree

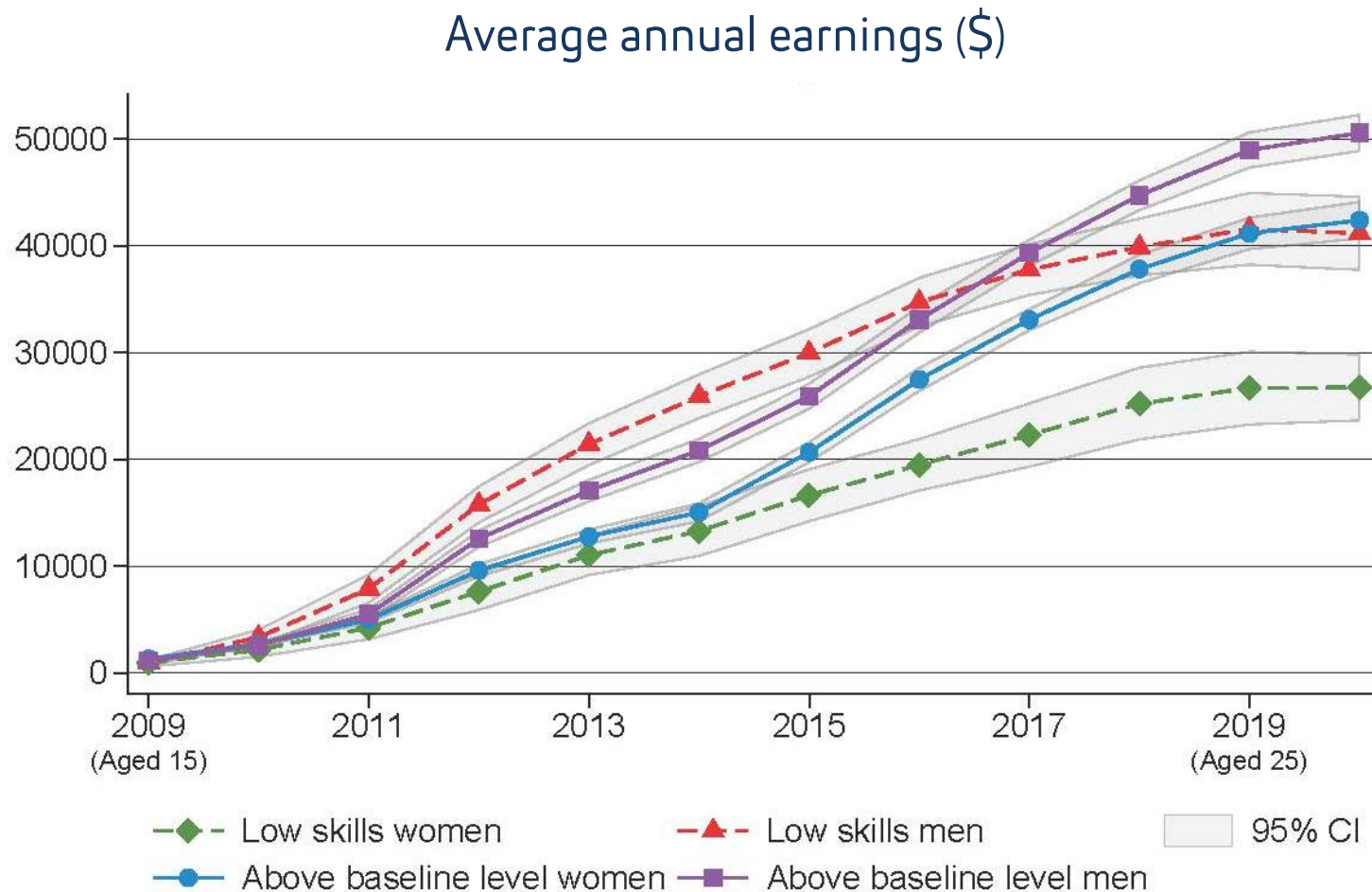Results: Labour market

Employment over time

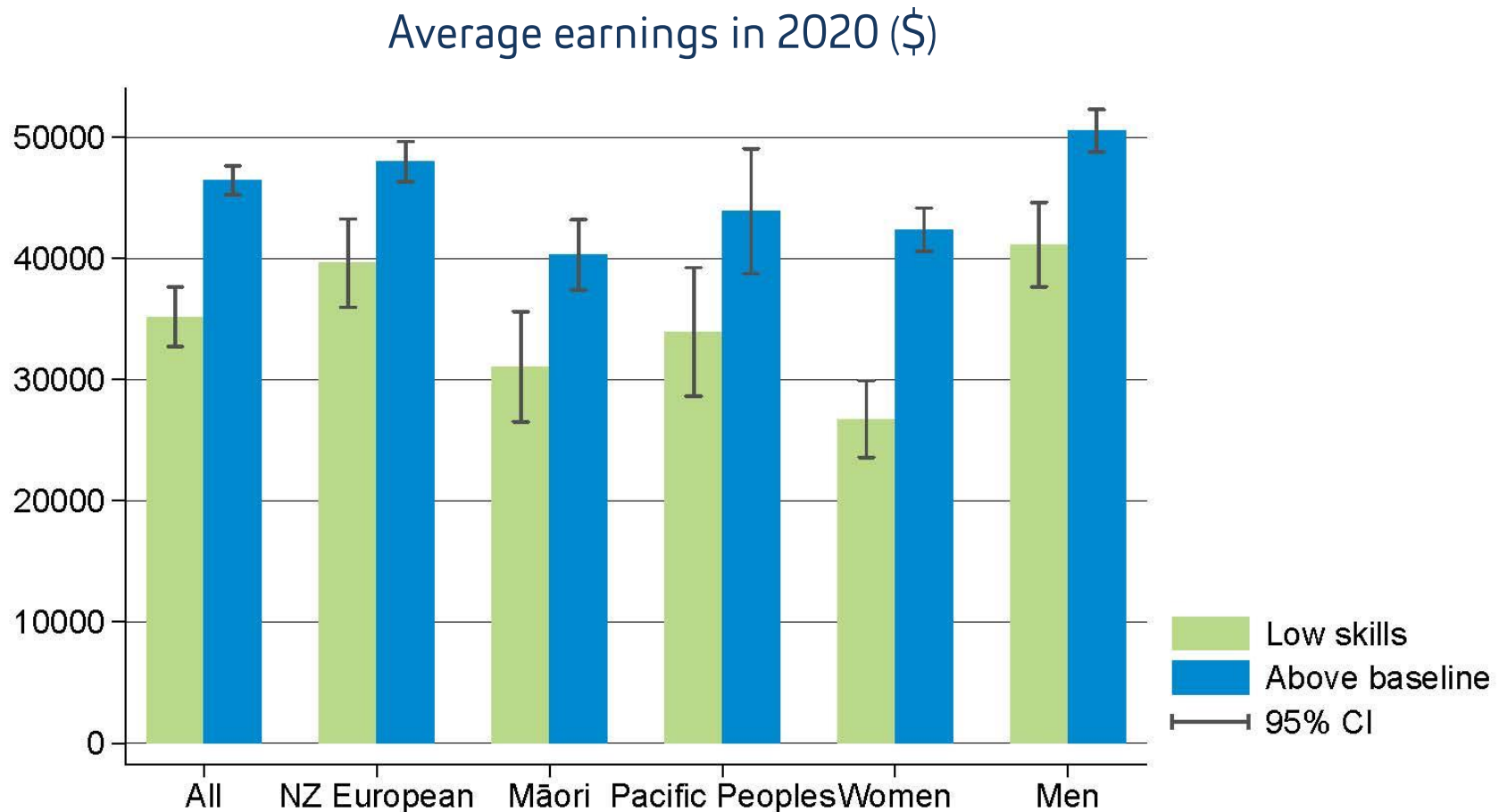## Women with low skills are less likely to be employed

Share employed

Legend:
- Low skills women (green dashed, diamond)
- Low skills men (red dashed, triangle)
- Above baseline level women (blue, circle)
- Above baseline level men (purple, square)
- 95% CI

Earnings over time

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

Average annual earnings ($)

Earnings by characteristics

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

Average earnings in 2020 ($)
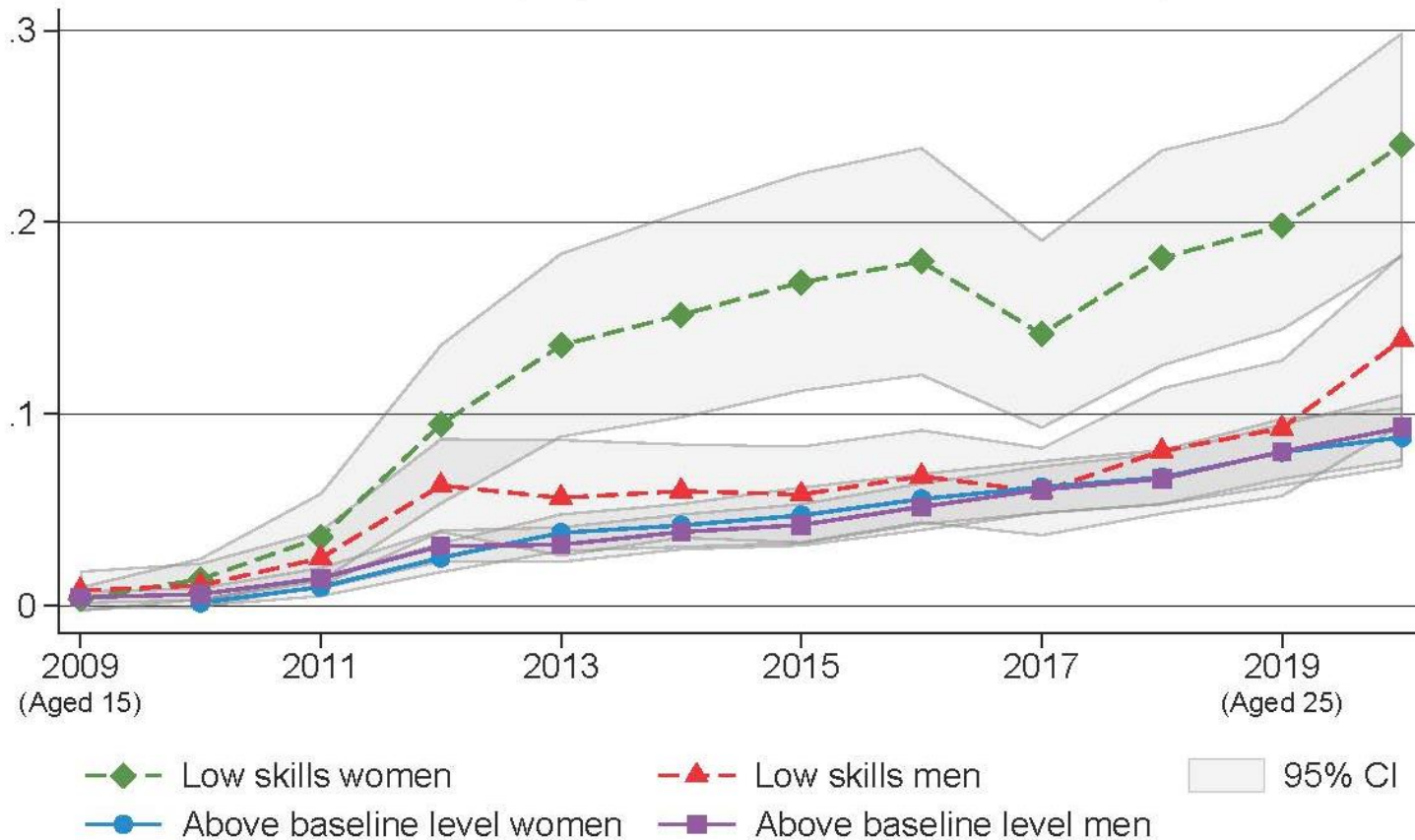
Results: NEET and family formation

NEET status over time

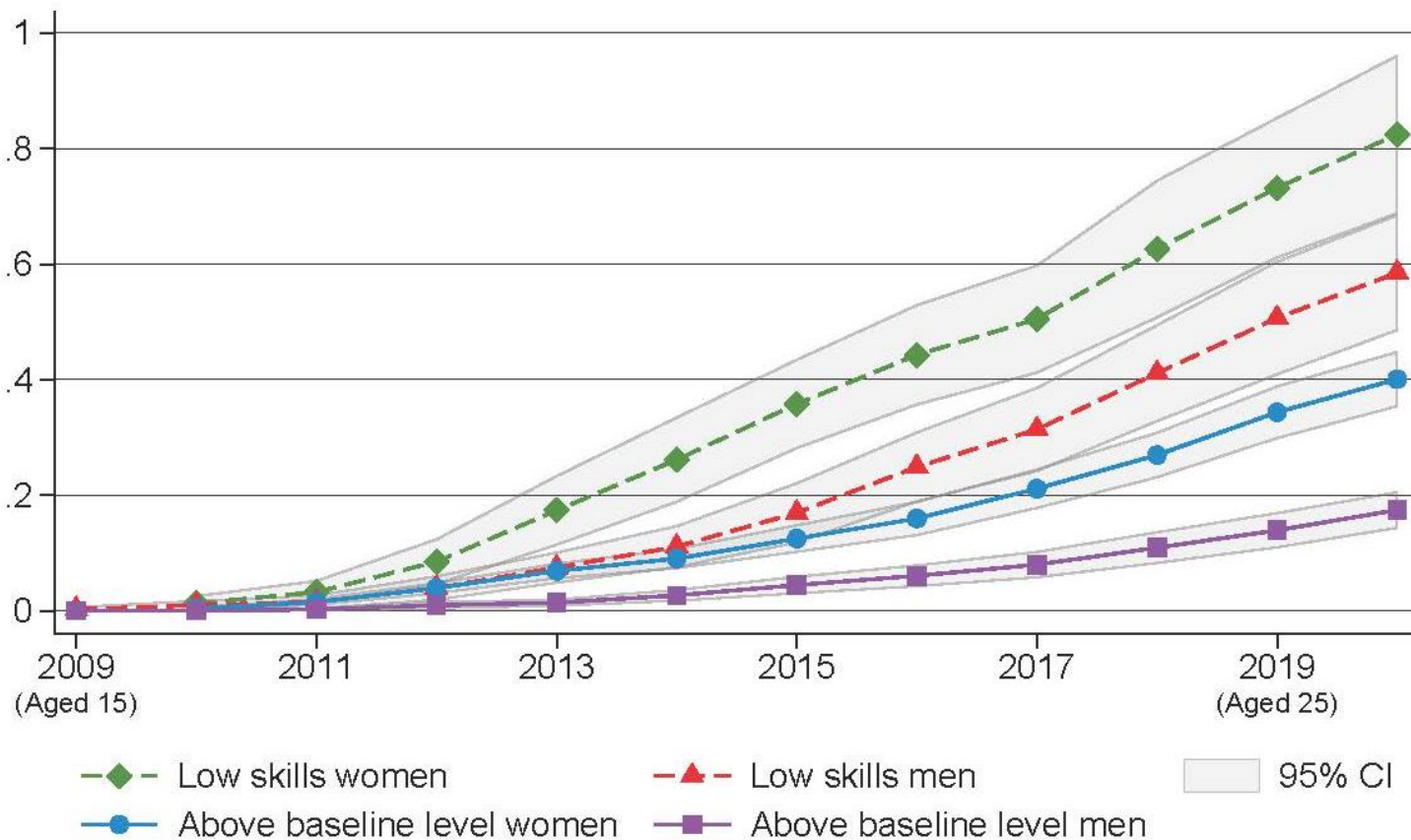Women with low skills have high NEET rates

Share not in employment, education or training

Number of children

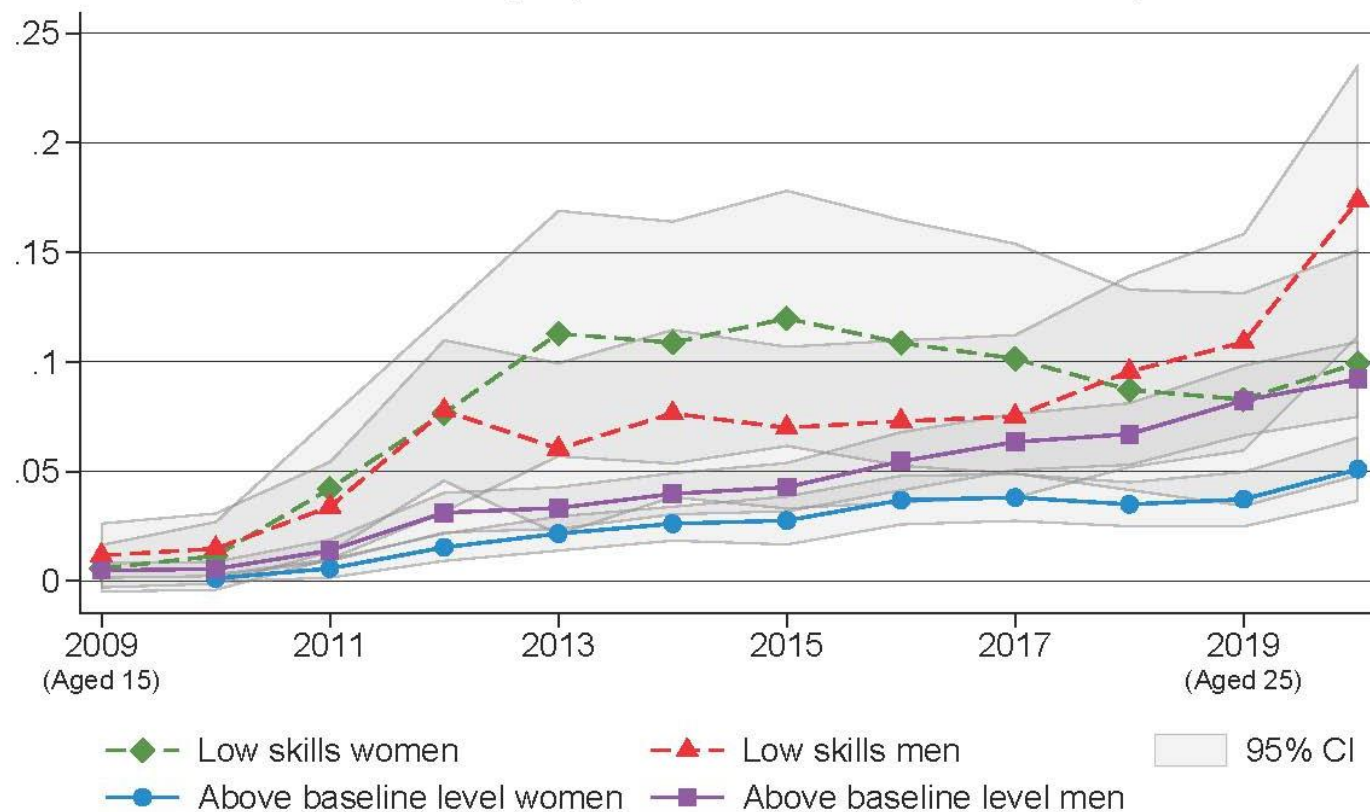Women with low skills have more children than other groups

NEET status over time

Higher NEET rates among low–skilled women linked to childbearing

Share not in employment, education or training excluding those with children
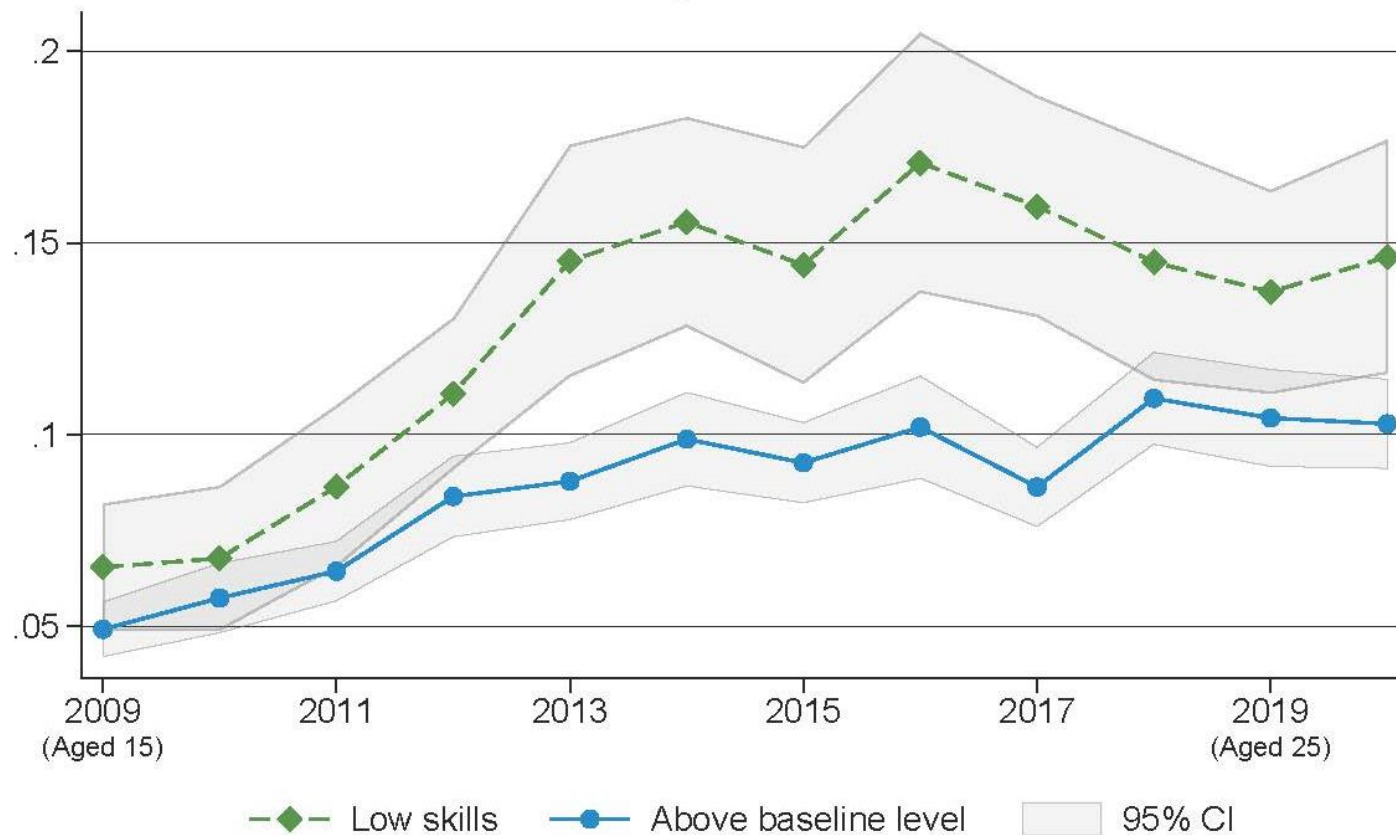
Results: Health

Hospitalisation rates

Those with low skills have higher rates of hospital admissions
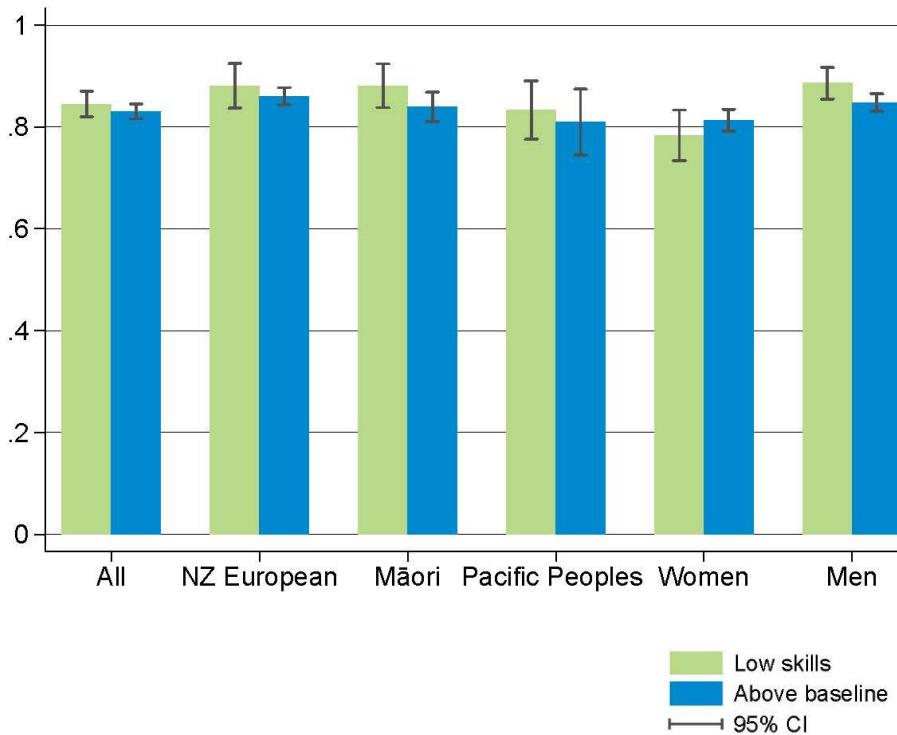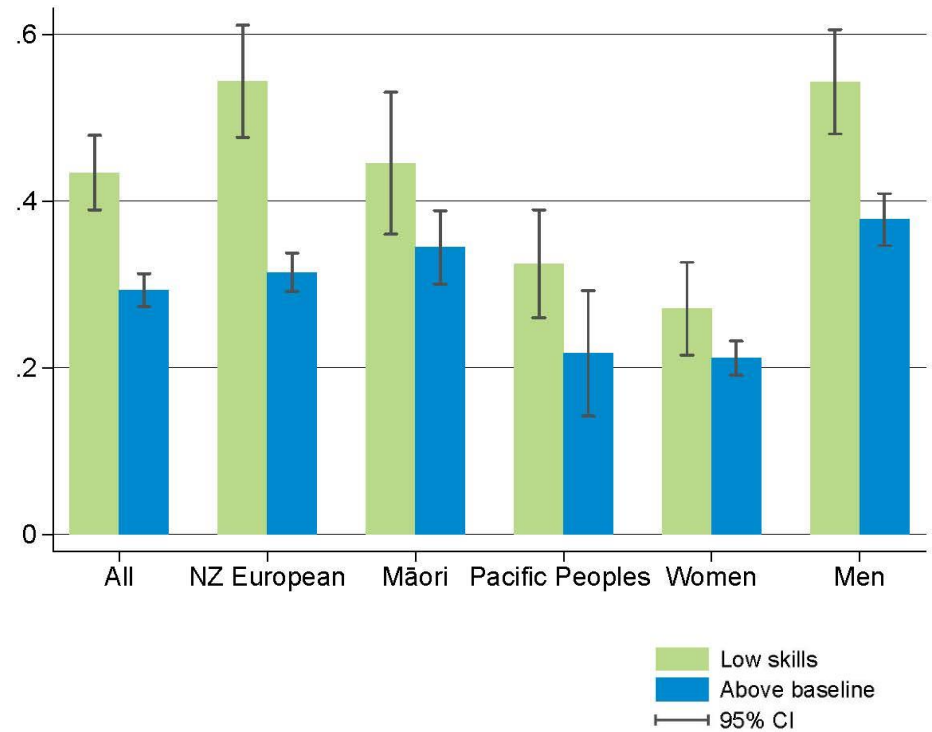
Share with hospital admissions

Injury rates

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

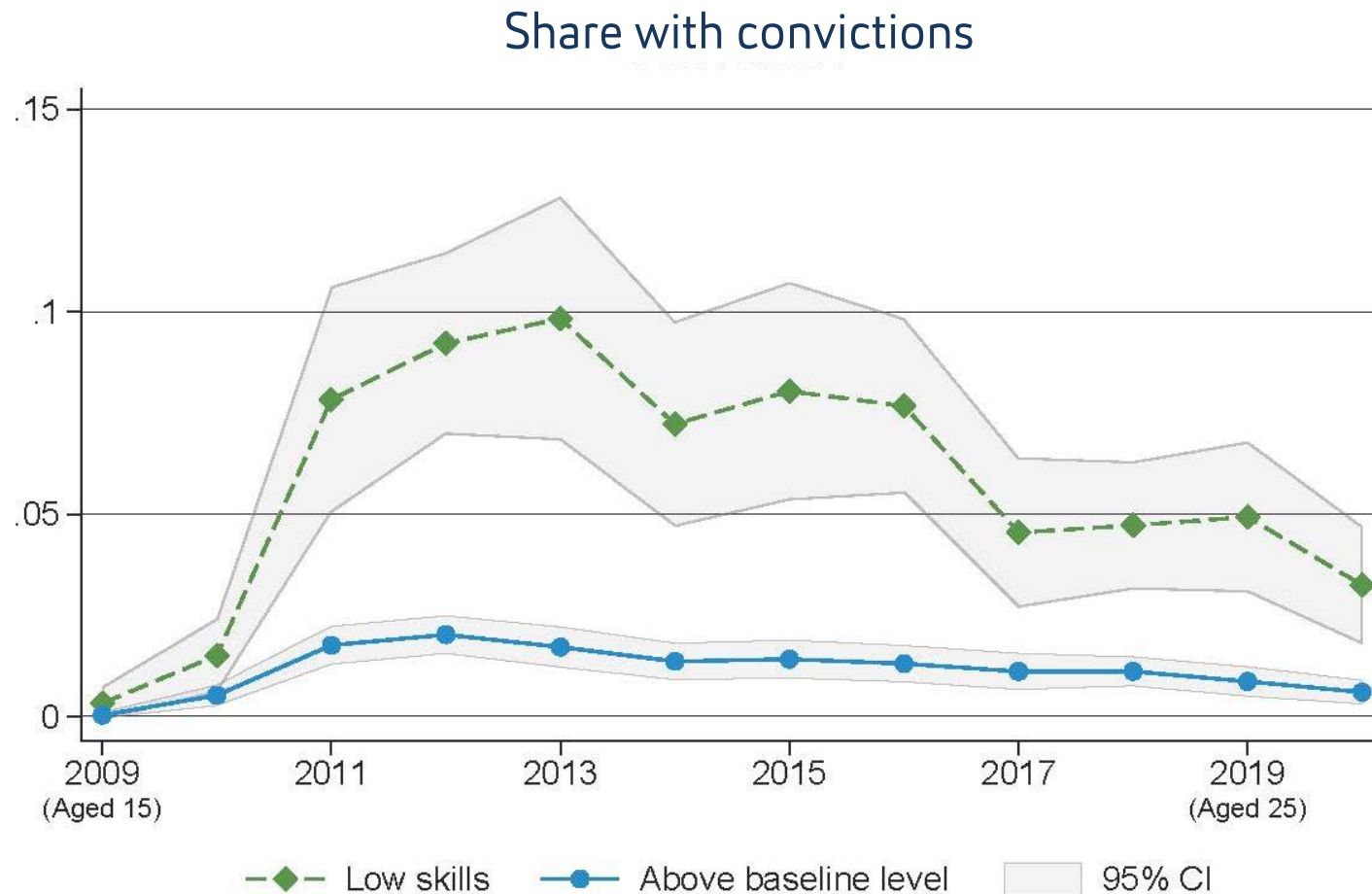Share with any injury

Share with work-related injury

Results: Crime

Convictions over time

Those with low skills are more likely to have convictions
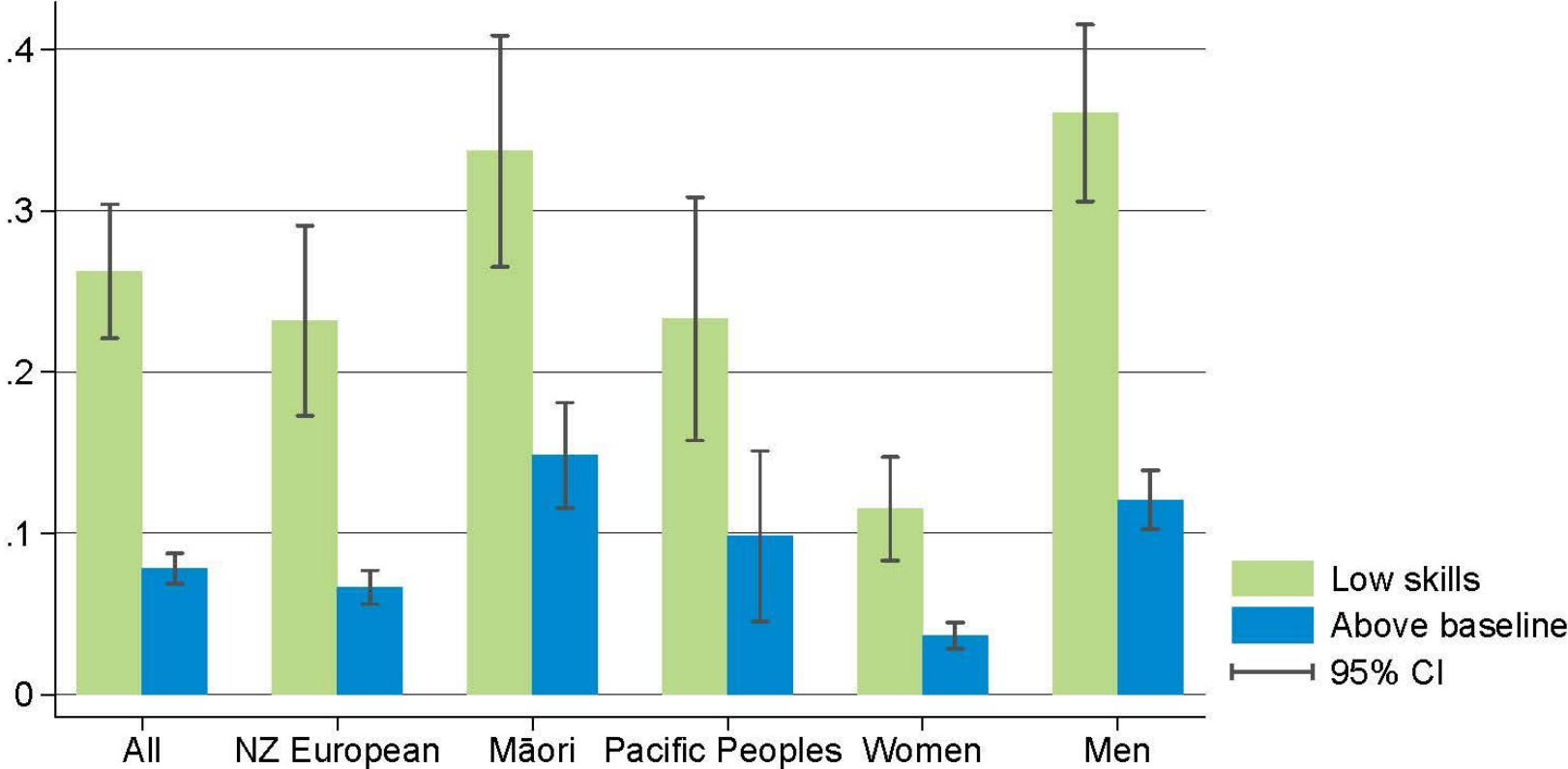

Share with convictions

Convictions by characteristics

Low–skilled men and Māori have high conviction rates

Share with convictions

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 ahve similar average earnings to NZ Europeasns in the low-skills group

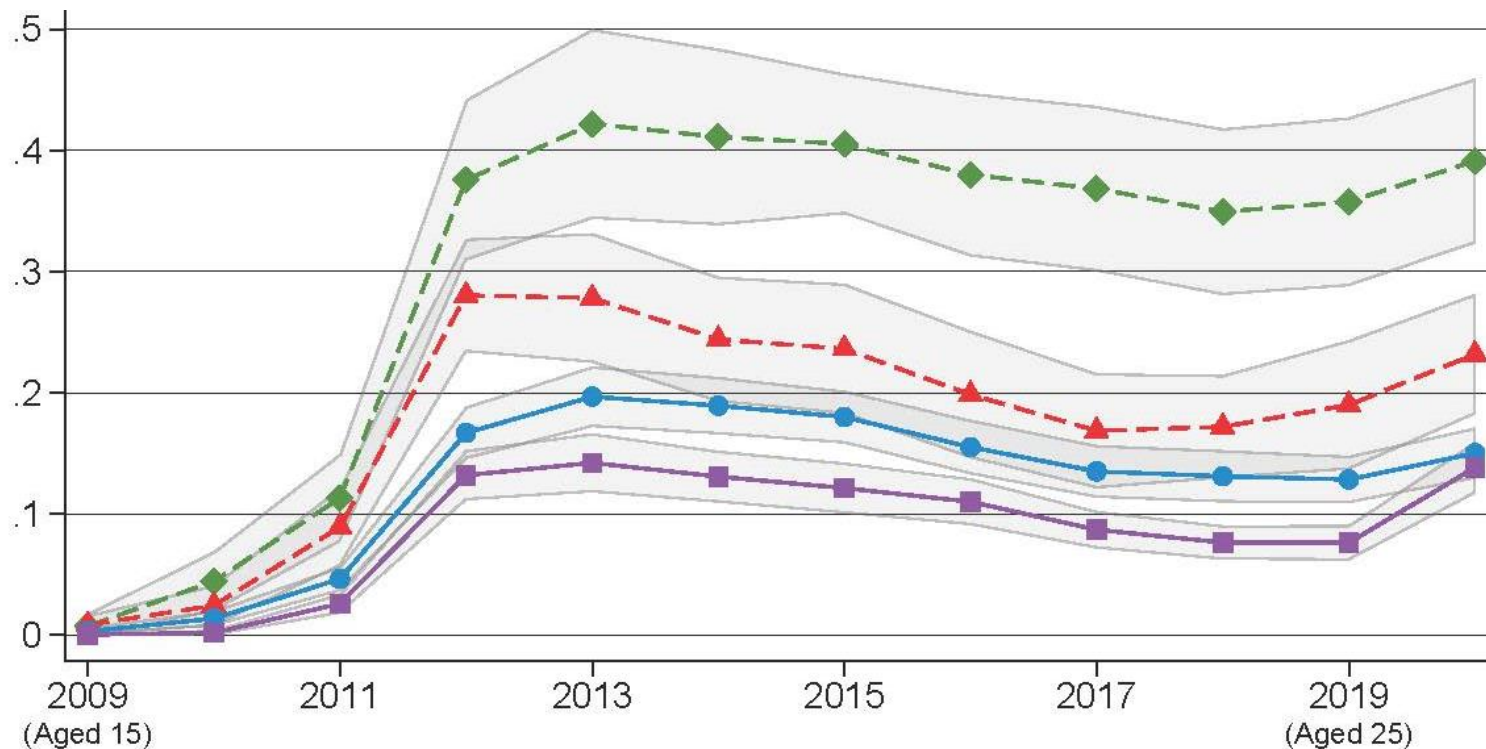# THANK YOU

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EXTRAS

Benefit receipt

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

Benefit payments

Women with low skills receive higher average benefit payments