

Explaining Ethnic Disparities in Bachelor's Qualifications: Participation, Retention and Completion in NZ

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Disclaimer

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Preview

- We combine 8 admin datasets for a population cohort born 1990 - 1994
- Māori and Pasifika have lower bachelor's degree participation, retention and completion rates than Europeans, while Asians have higher rates
- Controlling for observables narrows Māori-European participation gap; completely eliminates Pasifika-European gap
- For both Māori and Pasifika gaps:
 - School performance is the largest contributor
 - Lower socioeconomic status and parental education also matter, but to a much lesser extent
- Our model doesn't explain much of the higher participation, retention and completion rates of Asians relative to Europeans

Background

- This research was part of the ProdCom inquiry in 2016
- Boosting the achievement of Māori and Pasifika is one of the government's higher education priorities
- Māori and Pasifika have similar levels of participation in tertiary education as Europeans, but much lower rates of enrolment in bachelor's degrees
- The source/s of ethnic disparities could help inform policy responses.

Research questions

- How does bachelor's degree participation, retention and completion among young people differ by ethnicity?
- How much of the ethnic gaps can be explained by differences in characteristics, such as prior school achievement, socioeconomic status, parental education, characteristics of the school attended etc.

Existing research

- 3 factors stand out as being important in explaining participation, retention and completion:
 - Socio-economic status
 - Prior academic performance
 - Parents' level of education
- NZ research examples:
 - Maani (2005): Christchurch Study – higher parental income and education levels increase the likelihood of university enrolment
 - Strathdee & Engler (2012): for those who gained University Entrance, prior school achievement is a strong predictor of enrolment in higher education

Our contributions

- Newly linked admin data allows:
 - Inclusion of majority of covariates suggested by the literature
 - More refined measure of socioeconomic status (NZ Deprivation Index)
 - Population-level analysis
- Fairlie decompositions
 - To quantify the separate contributions of differences in observable characteristics between ethnic groups to differences in participation, retention and completion

Overview of NZ qualifications system

School:

- NCEA (National Certificate of Educational Achievement)
- 3 levels: Level 1 aged 15/16; Level 2 aged 16/17; Level 3 aged 17/18
- Each level: Not attained, 'Achieved', 'Merit', 'Excellence'

Post-school education:

- Bachelor's degrees: typically 3 years full time and can be completed at university, polytechnics or wānanga

Data: Statistics NZ's IDI

- Individual-level data from StatsNZ's Integrated Data Infrastructure (IDI)
- Several linked datasets used
 - MoE school (enrolments, qualifications, standards, interventions)
 - MoE tertiary (enrolments, courses, completions)
 - Overseas spells
 - Address spells
 - IR tax
 - DIA birth records
 - Enduring relationships (parent/child links)
 - Census

Population of interest

- 4 population cohorts: Born between July 1990 and June 1994
- Each cohort has around 47,400 individuals
- Enrolled at NZ high school during their 15th and 16th years
- Lived in NZ for at least 300 days during in each of their 15th and 16th years
- Lived in NZ for at least 200 days in one of the two years from their 18th to 20th birthdays
- IB/Cambridge schools excluded

Outcome variable definitions

- **Participation:** Enrolling in a bachelor's degree before the age of 20
- **Retention:** For those who participated, enrolling in a 2nd year of bachelor's study
- **Completion:** For those who participated in a 3-year degree, completing a bachelor's degree within 5 years of first enrolling

Explanatory variables

Individual characteristics:

Gender

No. of times switched schools

Migrant

Socio-economic status:

NZ deprivation index

Other:

Distance to nearest provider

Parents' highest qualification

School characteristics:

Single sex school

State/state-integrated/private

School achievement:

NCEA L1 endorsement

School engagement:

School notifications

Retention/Completion:

Broad field of study

Full-time/part time study status

Type of provider

Prior activity

Earning status

1st year course pass rate

Method

- **Probit regressions**

$$Y_i^* = X_i' \beta + u_i$$

where X_i is a vector of individual, family and school characteristics

- **Fairlie decompositions**

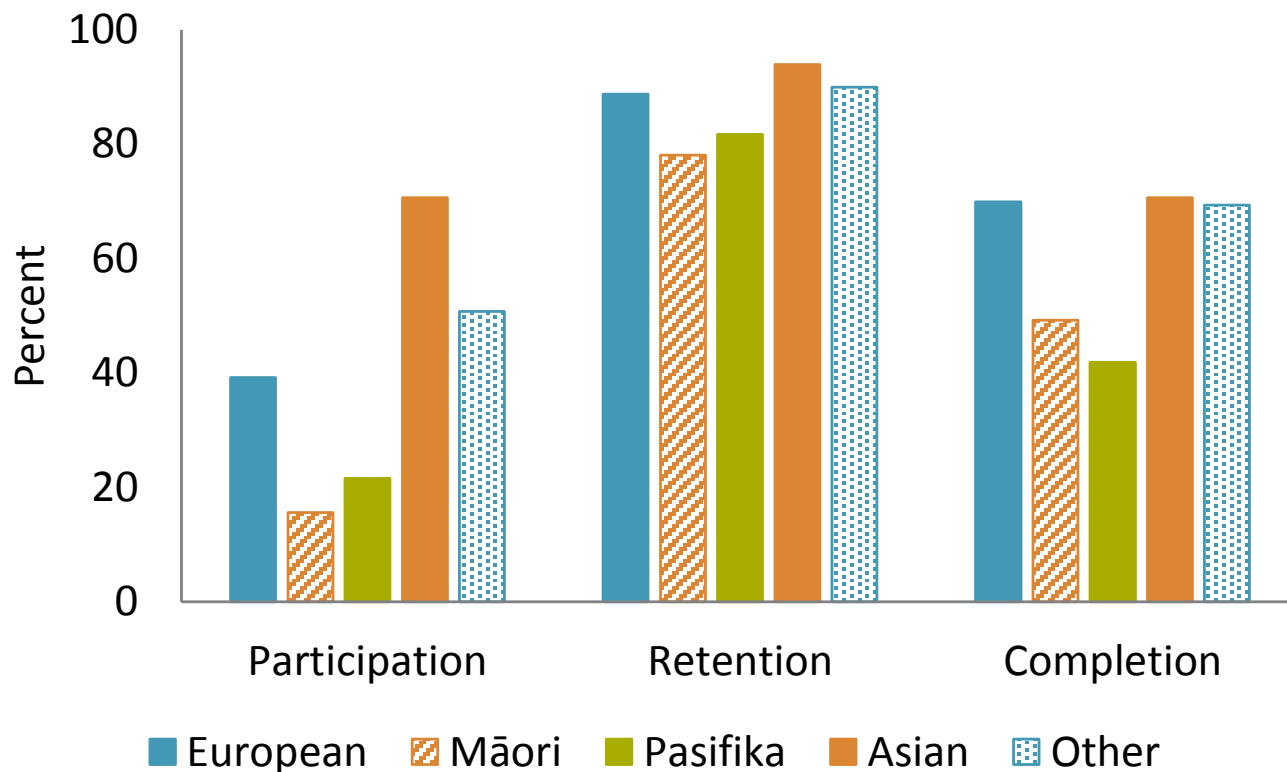
$$\overline{P_i^E} - \overline{P_i^M} = \underbrace{\left[\sum_{i=1}^{N^E} \frac{F(X_i^E \widehat{\beta}^E)}{N^E} - \sum_{i=1}^{N^M} \frac{F(X_i^M \widehat{\beta}^E)}{N^M} \right]}_{\text{Portion of gap that's explained by differences in the distribution of measured variables, X}} + \underbrace{\left[\sum_{i=1}^{N^M} \frac{F(X_i^M \widehat{\beta}^E)}{N^M} - \sum_{i=1}^{N^M} \frac{F(X_i^M \widehat{\beta}^M)}{N^M} \right]}_{\text{Unexplained portion of gap}}$$

Gap between
Māori and
European
participation

Portion of gap that's
explained by
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Unexplained portion
of gap

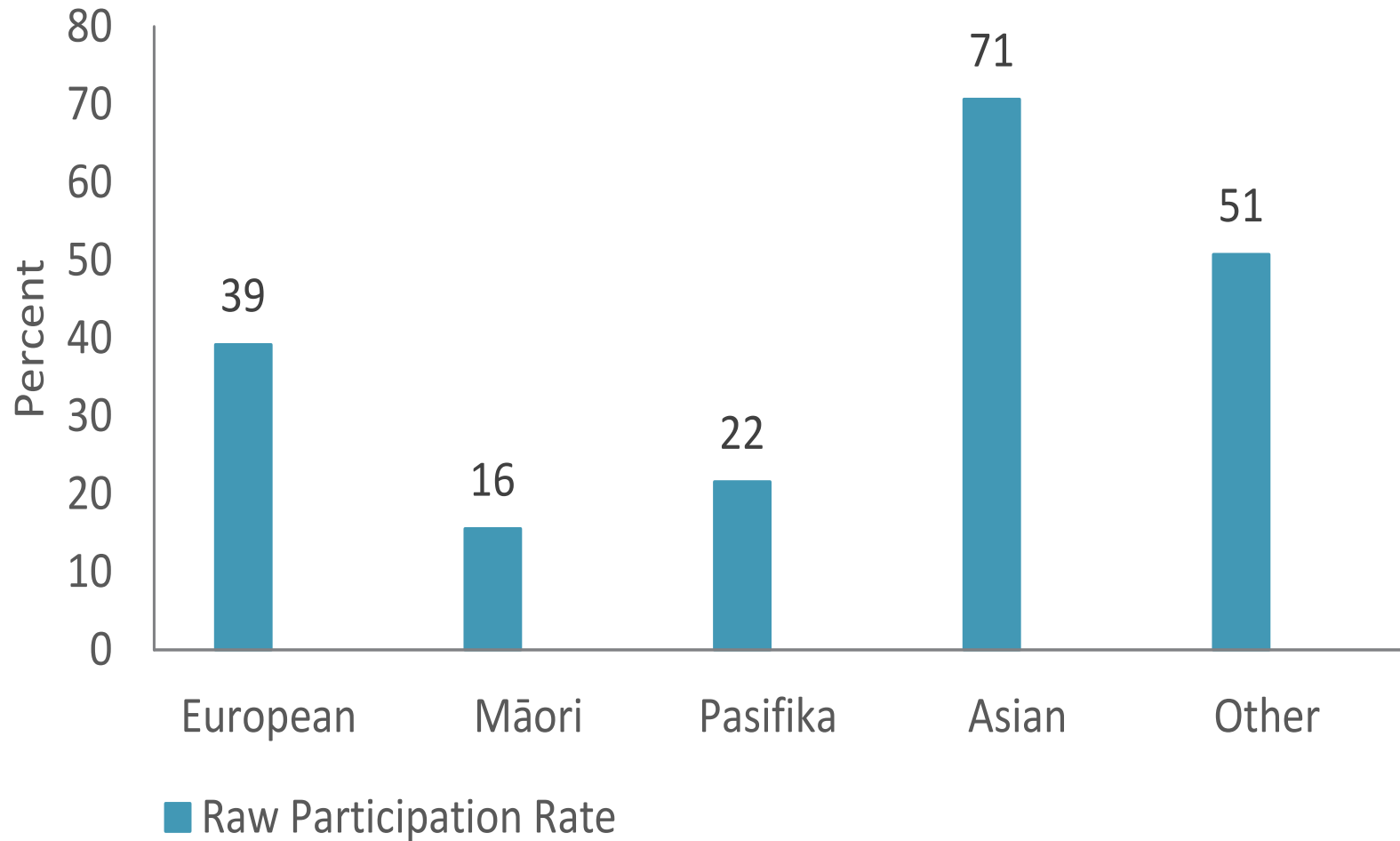
Descriptives: Outcomes by ethnicity



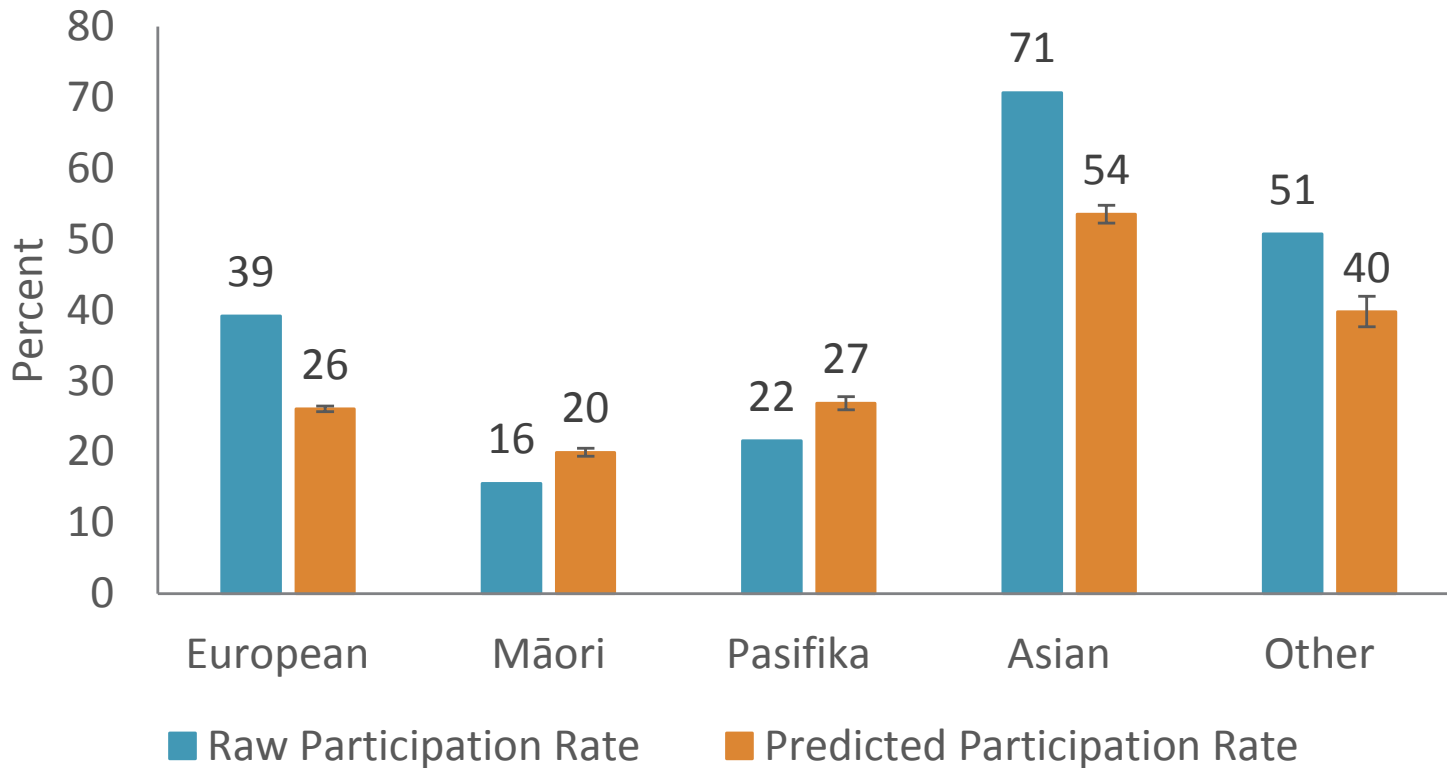
Compared with Europeans, participation, retention and completion rates are:

- Lower for Māori and Pasifika
- Higher for Asians

Results: Participation in bachelor's degree by ethnicity



Results: Participation in bachelor's degree by ethnicity



After controlling for all factors:

- Māori still have lower participation rates than Europeans, but majority of gap is closed
- Pasifika have higher participation rates than Europeans (but not statistically significant)

Key results – marginal effects

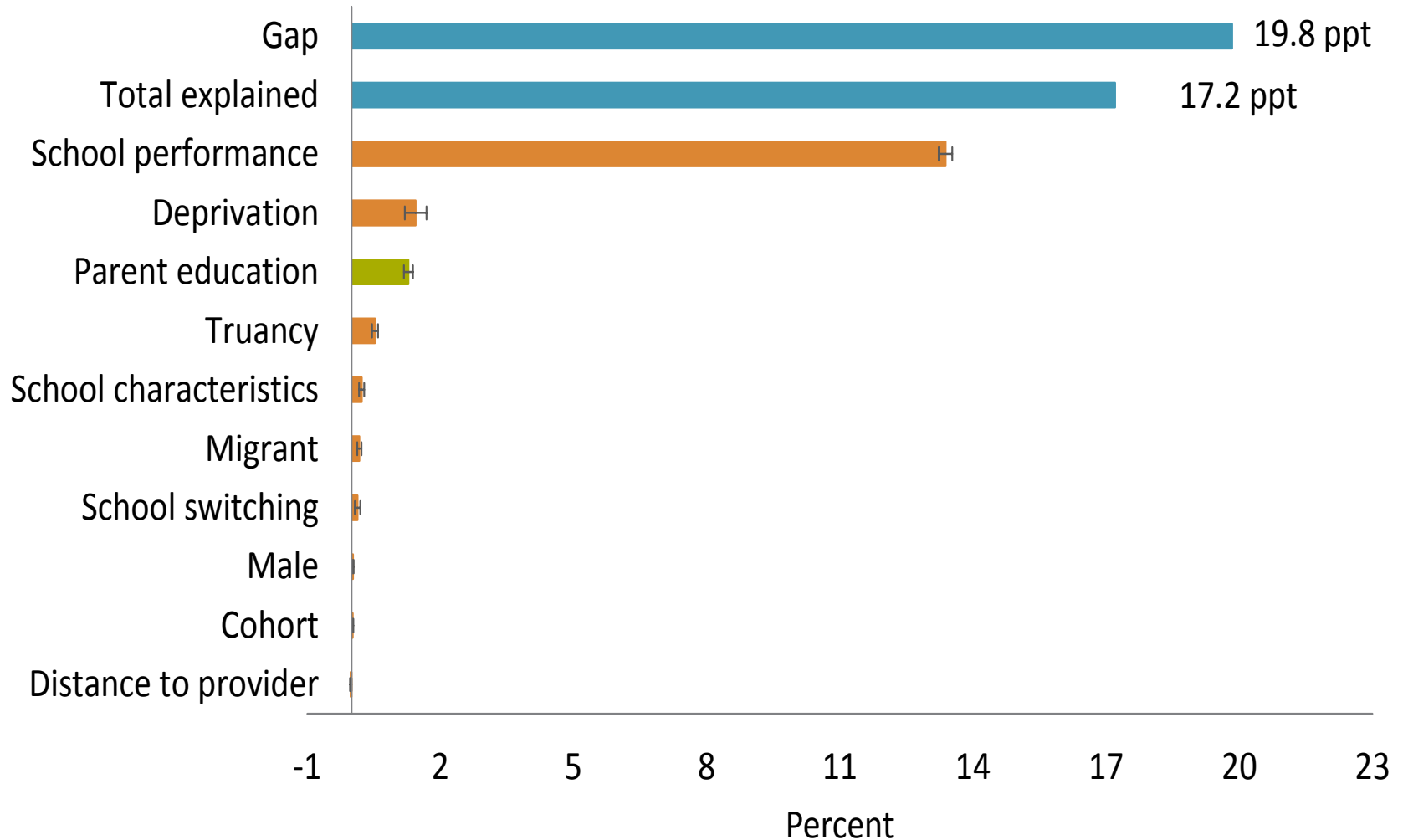
School achievement

NCEA Level 1	European	Māori	Pasifika	Asian
Achieved	0.129***	0.068***	0.125***	0.367***
Merit	0.657***	0.496***	0.590***	0.821***
Excellence	0.875***	0.729***	0.830***	0.883***

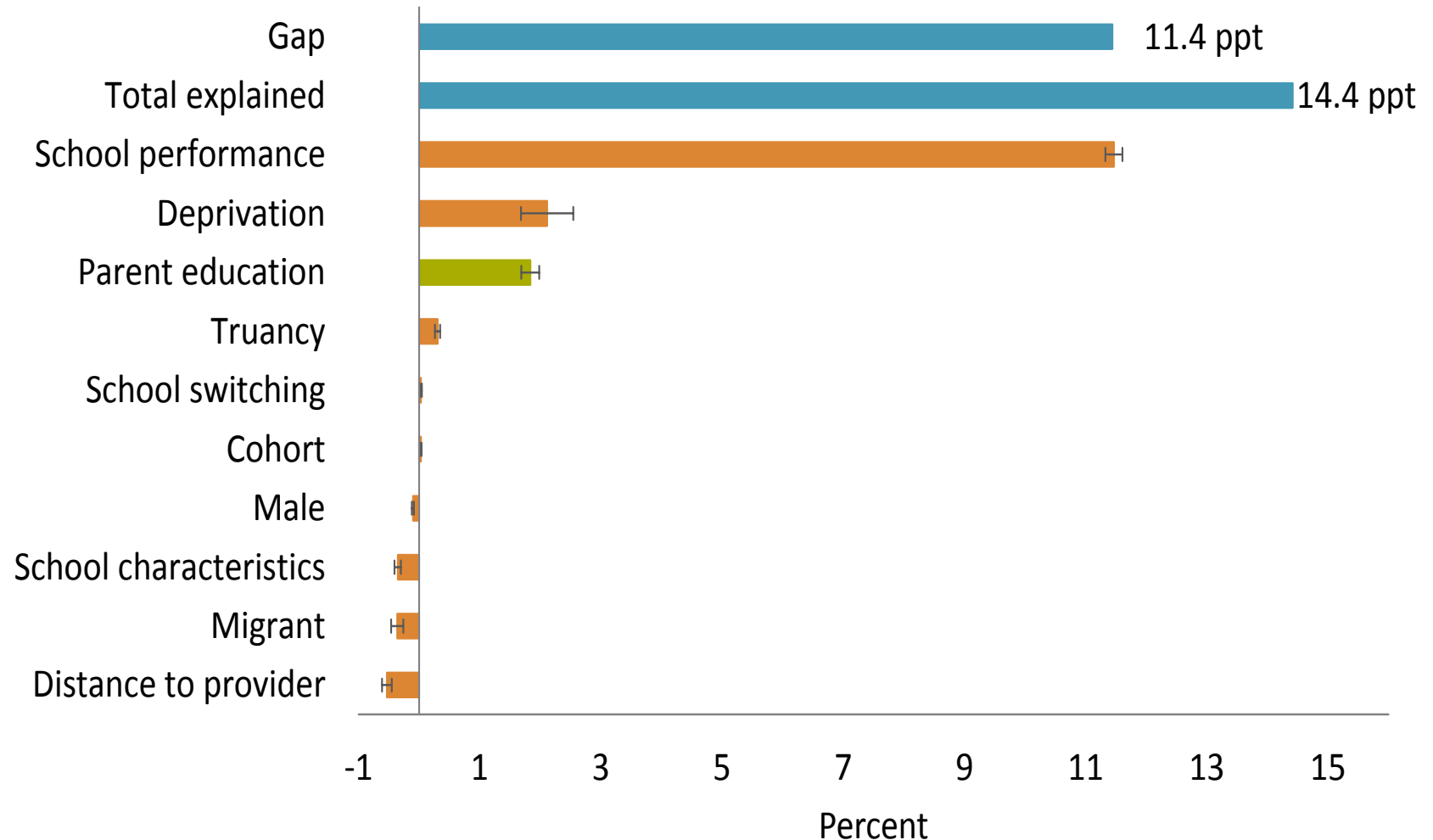
Socioeconomic status: Less likely in living in a more deprived meshblock (ranging from 1% to 5% points for Maori)

Parental education: Four/five fold increase from school qualification to postgraduate qualification (relative to no qual)

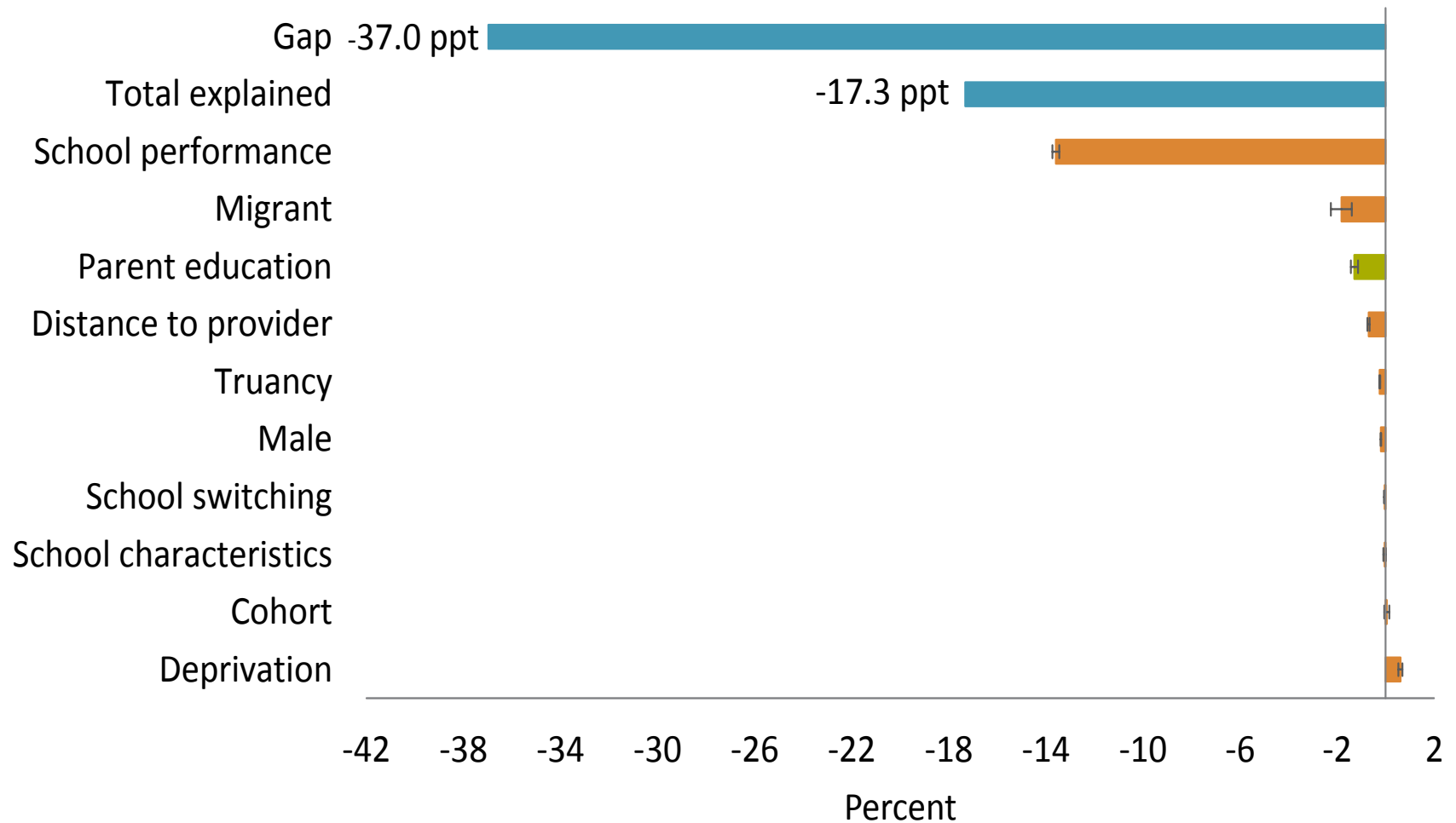
Fairlie decomposition: Participation – Māori vs. European



Fairlie decomposition: Participation – Pasifika vs. European



Fairlie decomposition: Participation – Asian vs. European



Robustness tests/ Extensions

- School fixed effects
- Measurement of school performance – removal of back crediting
- Multiple ethnic identities: sole Māori and sole Pasifika vs. sole European
- Interactions:
 - Socioeconomic status with school performance
 - Socioeconomic status with parental education

Summary

- Using IDI, we combine 8 admin datasets to follow a population cohort born between 1990 and 1994
- Māori and Pasifika have lower bachelor's degree participation, retention and completion rates than Europeans, while Asians have higher rates
- Controlling for observables narrows Māori-European participation gap and completely eliminates Pasifika-European gap
- For both Māori and Pasifika gaps:
 - School performance is by far the largest contributor
 - Lower socioeconomic status and parental education also matter, but to a much lesser extent
- Our model doesn't explain much of the higher participation, retention and completion rates of Asians relative to Europeans