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Secondary school characteristics, HE participation and outcomes: the link

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Motivation

- Education a key driver of social mobility, yet large socio-economic gaps remain in HE participation and degree outcomes
- Much work to "widen" participation focuses on those sitting A-levels; but previous work suggests earlier attainment is important
- Key questions of interest:
  - When is the most productive period to intervene to improve HE participation amongst those from disadvantaged backgrounds?
  - What role can and do schools play in shaping HE participation decisions and subsequent performance? Can think of two routes:
    - Indirect: via attainment
    - Direct: e.g. via careers advice, application assistance, non-cognitive skills, etc

Plan for today

- Document differences in HE participation and outcomes on basis of characteristics of secondary school attended
  - Report considers school type, school value-added, school performance, whether school has a sixth form and % of pupils eligible for FSM (https://www.gov.uk/government/publications/secondary-school-characteristics-and-university-participation)
  - Today will just focus on differences by school performance (as measured by % of pupils in school achieving 5 GCSEs at grades A*-C)
- Explore the extent to which these differences can be explained by:
  - Selection into schools (background characteristics and KS2 results)
  - Differential performance at Key Stage 4
  - Differential performance at Key Stage 5
  - For degree outcomes: university attended and subject studied

Methodology

- Use simple probit regression models and report marginal effects
  - Cluster standard errors at school level when looking at HE participation; university level when looking at HE outcomes
- Not claiming to identify causal effects, and appreciate attainment may be endogenous (trying to address this in ongoing work)
- Instead regard differences made by successive groups of characteristics as indicative of how early gaps emerge
- And hence where policies aiming to "widen" participation might be most usefully targeted (and on what)

Data

- Linked NPD-ILR-HESA data
- National Pupil Database (NPD)
  - Census of pupils taking GCSEs in England: 2001-02 to 2007-08 here
  - Key Stage test results at ages 11, 16 and 18 for those who sat them
  - Key Stage 4 school identifiers (from which we derive region) for all pupils
  - Plus limited background characteristics for state school pupils
    - e.g. gender, ethnicity, FSM eligibility, local area characteristics based on home postcode
- NISVQ and ILR data
  - Census of those taking qualifications in FE colleges; but only limited info
- Higher Education Statistics Agency (HESA) data
  - Census of students attending UK universities: 2004-05 to 2011-12 here
  - Includes information on institution attended, qualification and subject studied, and qualification outcomes, e.g. completion and degree class

Data

- Linked NPD-ILR-HESA data
- Relatively little information on linkage process publically available
- Broecke and Hamed (2008) report two linking algorithms used:
  - NPD and ILR/NISVQ information linked using UPN/PMR
  - NPD-ILR linked to HESA using probabilistic matching on the basis of name, gender, date of birth and postcode
- Should be high quality – but we don't really know
- Particular problem linking non-state school pupils to 2004-05 HESA
  - Broecke and Hamed (2008) report that 19% of English-domiciled 18 year olds in HE did not have a linked school record (most not in state schools)
  - Suggests need for care when using NPD-ILR-HESA data for trend analysis

Data

→ Linked NPD-ILR-HESA data enables us to:

- Follow the population of secondary school pupils in England from age 11 through to potential HE participation at age 18 or 19
- Follow the population of UK university participants who went to school in England from HE entry to degree completion

→ Compared to HESA data alone it gives us:

- Richer information about earlier measures of attainment, enabling us to investigate the "critical periods" for potential intervention

Rich measures of prior attainment

- Age 11 (Key Stage 2):
  - Quintile groups of attainment in maths, English and Science
  - Only observe for private secondary pupils in state primaries (around 60%)
- Age 16 (Key Stage 4):
  - Grades in English and Maths
  - No. of GCSEs in ebacc and other subjects at particular grades
  - Summary measures of attainment in other qualifications
  - Quintile groups of total points score
- Age 18 (Key Stage 5):
  - No. of A-levels in facilitating and other subjects at particular grades
  - Summary measures of attainment in other qualifications
  - Quintile groups of total points score

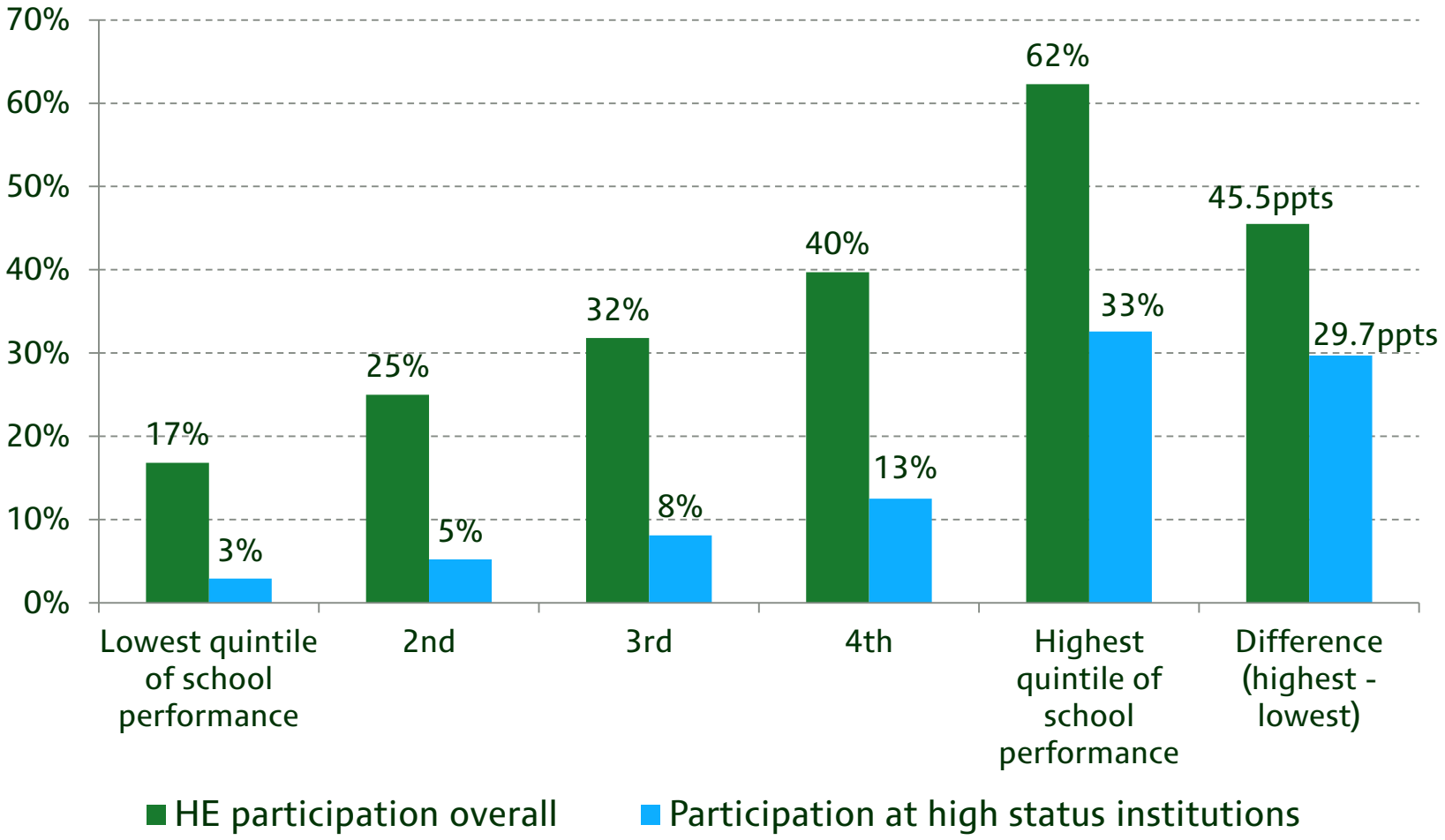
HE participation

Outcomes: HE participation

- Participation at any UK university for the first time at age 18 or 19
- Participation at a "high status" institution, where high status is:
  - Russell Group institutions (20 in total pre-2012)
  - Plus any UK university with a 2001 average RAE score higher than the lowest amongst the Russell Group (an extra 21 institutions)

- Focus on cohorts first eligible to participate 2004-05 to 2010-11
  - 34.7% participated for the first time at age 18 or 19
  - 12.0% attended a high status institution (34.7% of participants)

HE participation at age 18/19, by school performance



Source: authors' calculations based on linked schools and universities administrative data for the cohorts first eligible to start university between 2004-05 and 2010-11 (who sat their GCSEs between 2001-02 and 2007-08 respectively)

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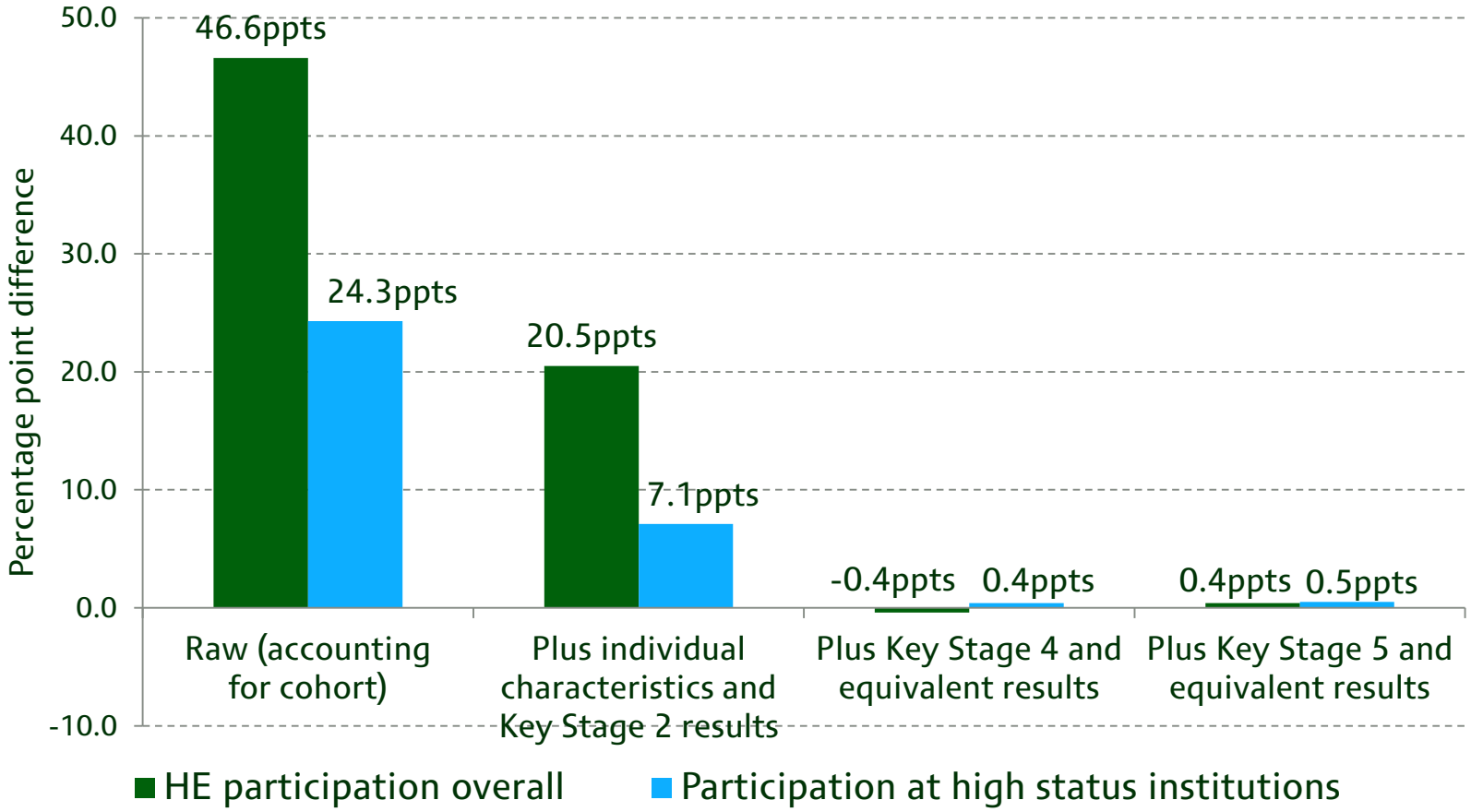
What explains differences in HE participation between pupils attending highest and lowest performing schools?



Source: authors' calculations based on linked schools and universities administrative data for the cohorts first eligible to start university between 2004-05 and 2010-11 (who sat their GCSEs between 2001-02 and 2007-08 respectively)

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Summary

- Large gaps in HE participation on the basis of school characteristics
  - Partly explained by pupils with different characteristics (and different propensities to go to university) attending different schools
  - Almost no difference (less than 0.5 ppts) once we additionally account for a rich set of measures of attainment at Key Stage 4
    - Addition of Key Stage 5 controls adds little to this picture
- Suggests that, to the extent that schools affect their pupils' chances of going to university, it comes mainly via increasing KS4 attainment
- Further suggests that secondary school is a potentially vital period for interventions to "widen" participation in HE

Drop-out, degree completion and degree class

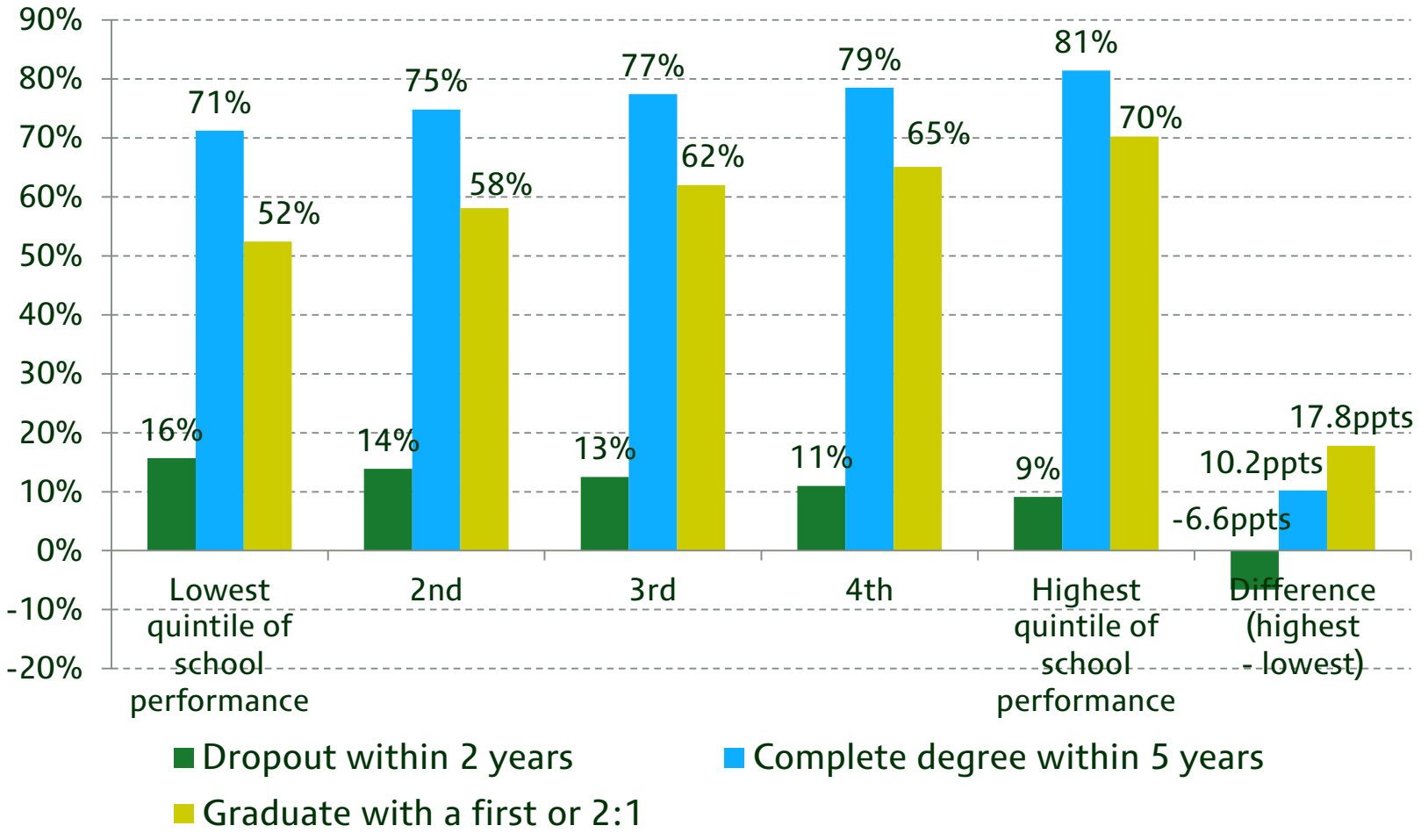
Outcomes: drop-out

- Drop-out in first or second year:
  - Defined only for those who went to university at age 18 or 19
  - Focus on those who leave the sector completely; anyone who transfers to another university is included in the zeroes
- Need to be able to observe three years of data to define measure
  - Means focus on those first eligible to go 2004-05 to 2008-09
- 11.5% drop-out on our measure
- Slightly lower (9.7%) if we focus on full-time first degree entrants

Outcomes: degree completion and degree class

- For both outcomes, focus on those completing within 5 years
  - Means need to be able to observe 5 years of data to define measure
  - Hence focus on those first eligible to go in 2004-05 to 2006-07
- Degree completion:
  - Defined for those who went to university at age 18 or 19 to study full-time for a first degree in a non-medical subject
  - 78.2% complete their degree within 5 years on our definition
- Graduate with a 1st or a 2:1:
  - Sample as above but additionally restricted to those who complete their degree within 5 years
  - 64.6% of degree completers graduate with a 1st or a 2:1 on our definition

HE outcomes, by quintile of school performance



Source: authors' calculations based on linked NPD-HESA data for the cohorts first eligible to start university between 2004-05 and 2008-09 for drop-out, and between 2004-05 and 2006-07 for degree completion and degree class

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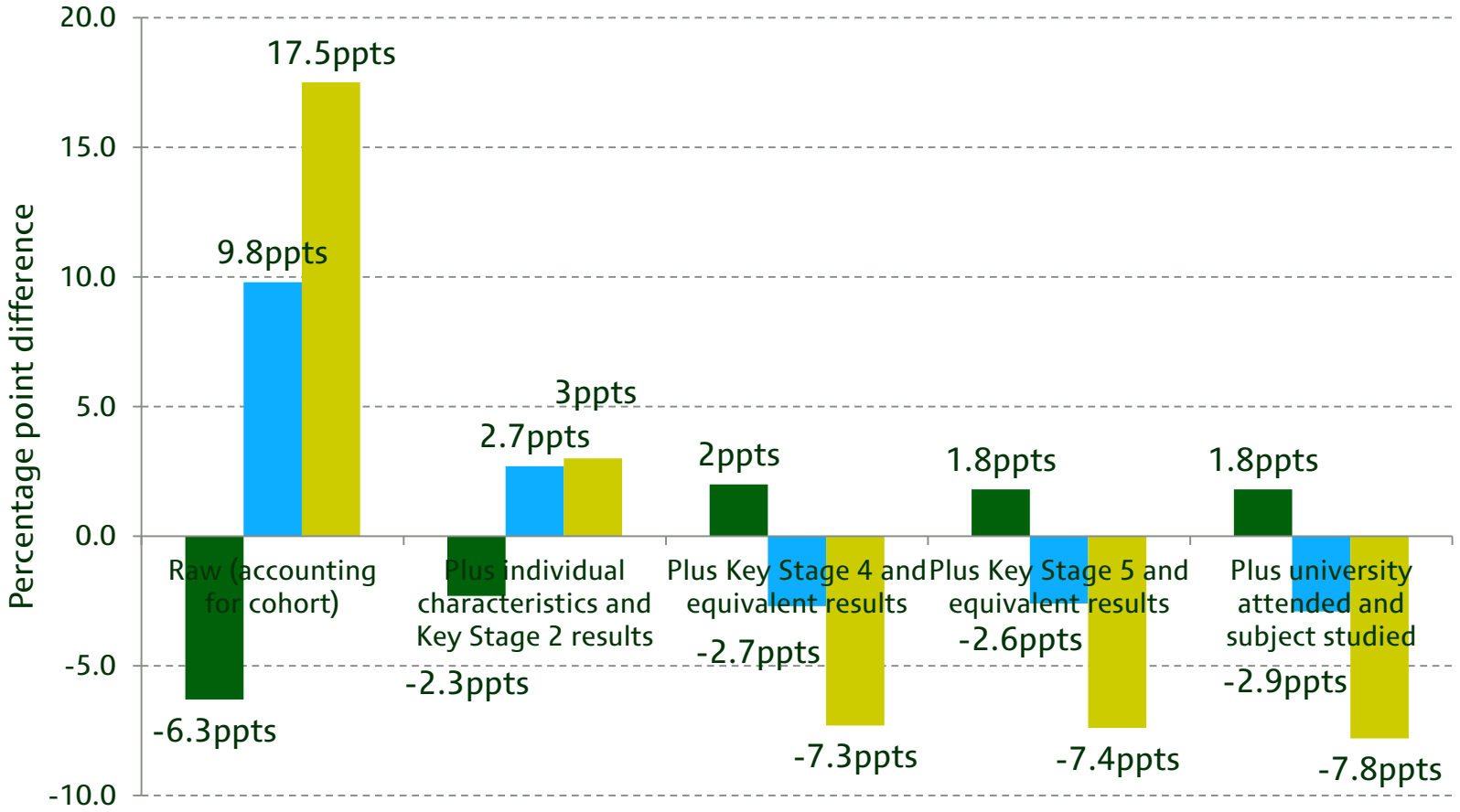

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Summary

- Differences in HE outcomes smaller, on average, than participation (but amongst selected sample)
- Selection into schools partially explains these gaps
- But relationships reverse once we account for attainment at KS4
  - Pupils from high-performing schools *more* likely to drop out, *less* likely to complete degree and *less* likely to get first or 2:1 than pupils with similar characteristics and attainment from low-performing schools
- Cannot be certain what drives it, but suggests that pupils from low performing schools with the same attainment as those from high performing schools have, on average, higher "potential"
  - May be something universities want to account for in making entry offers