

# Red mud sticks and stains

The biases of the Index of Socio-Educational Advantage

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**NAPLAN and the My School website: issues and ways forward**

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# Outline

- My School Version 1 - presentation of schools' NAPLAN data
- Index of Socio-Educational Advantage (ICSEA) Version 1
- High stakes
- The ecological fallacy
- Systematic bias against government schools
- Changes to ICSEA version 2 – bias mitigated
- Red mud sticks & stains
- Selectivity - it's the selecting **from** that matters
- Judging school performance by change over time
- Campbell's law

## My School website

A central element of the My School website is the comparison between 'statistically similar' schools regarding their NAPLAN results.

On each school's web page is a chart setting out the school's average NAPLAN results in each year level and each domain. Immediately below are the average scores for 'statistically similar schools' (SIM) and for all Australian schools (ALL). There is a bar above each of the SIM and ALL scores that indicates by its colour whether the particular school is 'substantially above' (green), 'above' (pale green), 'close to' (white), 'below' (pink), and 'substantially below' (red) 'statistically similar' schools and all schools respectively. In addition, a page is linked to each school's main page that lists up to 60 'statistically similar' schools and provides similar data and colour coding.

Thus, a scan of the dominant colours can quickly indicate to the viewer whether or not the school with which they are concerned is substantially above or substantially below 'statistically similar' schools, or somewhere between.

# Some examples

| 2009   |   | 2008       |            |            |            |            |            |                       |            |            |            |
|--------|---|------------|------------|------------|------------|------------|------------|-----------------------|------------|------------|------------|
|        |   | Reading    |            | Writing    |            | Spelling   |            | Grammar & Punctuation |            | Numeracy   |            |
| Year 3 | ▶ | 510        |            | 494        |            | 502        |            | 515                   |            | 477        |            |
|        |   | SIM<br>486 | ALL<br>411 | SIM<br>459 | ALL<br>414 | SIM<br>461 | ALL<br>405 | SIM<br>487            | ALL<br>420 | SIM<br>456 | ALL<br>394 |
| Year 5 | ▶ | 584        |            | 552        |            | 562        |            | 594                   |            | 590        |            |
|        |   | SIM<br>555 | ALL<br>494 | SIM<br>528 | ALL<br>485 | SIM<br>533 | ALL<br>487 | SIM<br>560            | ALL<br>500 | SIM<br>547 | ALL<br>487 |
| Year 7 | ▶ | 618        |            | 613        |            | 619        |            | 647                   |            | 631        |            |
|        |   | SIM<br>601 | ALL<br>541 | SIM<br>581 | ALL<br>532 | SIM<br>581 | ALL<br>540 | SIM<br>600            | ALL<br>539 | SIM<br>609 | ALL<br>544 |
| Year 9 | ▶ | 657        |            | 668        |            | 652        |            | 663                   |            | 662        |            |
|        |   | SIM<br>644 | ALL<br>580 | SIM<br>636 | ALL<br>569 | SIM<br>631 | ALL<br>576 | SIM<br>643            | ALL<br>574 | SIM<br>667 | ALL<br>589 |

Combined primary & secondary, high ICSEA score, generally 'substantially above' national average, 'above' similar schools

| 2009   |   | 2008       |            |            |            |            |            |                       |            |            |            |
|--------|---|------------|------------|------------|------------|------------|------------|-----------------------|------------|------------|------------|
|        |   | Reading    |            | Writing    |            | Spelling   |            | Grammar & Punctuation |            | Numeracy   |            |
| Year 3 |   |            |            |            |            |            |            |                       |            |            |            |
|        |   |            |            |            |            |            |            |                       |            |            |            |
| Year 5 |   |            |            |            |            |            |            |                       |            |            |            |
|        |   |            |            |            |            |            |            |                       |            |            |            |
| Year 7 | ▶ | 573        |            | 550        |            | 566        |            | 564                   |            | 558        |            |
|        |   | SIM<br>579 | ALL<br>541 | SIM<br>567 | ALL<br>532 | SIM<br>567 | ALL<br>540 | SIM<br>580            | ALL<br>539 | SIM<br>584 | ALL<br>544 |
| Year 9 | ▶ | 608        |            | 573        |            | 579        |            | 595                   |            | 603        |            |
|        |   | SIM<br>621 | ALL<br>580 | SIM<br>613 | ALL<br>569 | SIM<br>612 | ALL<br>576 | SIM<br>619            | ALL<br>574 | SIM<br>637 | ALL<br>589 |

Secondary, high ICSEA score, generally 'above' national average, 'below' similar schools

| 2009   |   | 2008       |            |            |            |            |            |                       |            |            |            |
|--------|---|------------|------------|------------|------------|------------|------------|-----------------------|------------|------------|------------|
|        |   | Reading    |            | Writing    |            | Spelling   |            | Grammar & Punctuation |            | Numeracy   |            |
| Year 3 | ▶ | 349        |            | 365        |            | 370        |            | 344                   |            | 323        |            |
|        |   | SIM<br>384 | ALL<br>411 | SIM<br>393 | ALL<br>414 | SIM<br>383 | ALL<br>405 | SIM<br>386            | ALL<br>420 | SIM<br>371 | ALL<br>394 |
| Year 5 | ▶ | 421        |            | 437        |            | 463        |            | 432                   |            | 454        |            |
|        |   | SIM<br>469 | ALL<br>494 | SIM<br>463 | ALL<br>485 | SIM<br>467 | ALL<br>487 | SIM<br>471            | ALL<br>500 | SIM<br>464 | ALL<br>487 |
| Year 7 |   |            |            |            |            |            |            |                       |            |            |            |
|        |   |            |            |            |            |            |            |                       |            |            |            |

Primary, low ICSEA score, generally 'substantially below' national average, 'below' similar schools

| 2009   |   | 2008       |            |            |            |            |            |                       |            |            |            |
|--------|---|------------|------------|------------|------------|------------|------------|-----------------------|------------|------------|------------|
|        |   | Reading    |            | Writing    |            | Spelling   |            | Grammar & Punctuation |            | Numeracy   |            |
| Year 3 | ▶ | 357        |            | 374        |            | 367        |            | 332                   |            | 332        |            |
|        |   | SIM<br>393 | ALL<br>411 | SIM<br>401 | ALL<br>414 | SIM<br>390 | ALL<br>405 | SIM<br>396            | ALL<br>420 | SIM<br>378 | ALL<br>394 |
| Year 5 | ▶ | 471        |            | 496        |            | 518        |            | 491                   |            | 485        |            |
|        |   | SIM<br>477 | ALL<br>494 | SIM<br>471 | ALL<br>485 | SIM<br>473 | ALL<br>487 | SIM<br>480            | ALL<br>500 | SIM<br>471 | ALL<br>487 |
| Year 7 |   |            |            |            |            |            |            |                       |            |            |            |
|        |   |            |            |            |            |            |            |                       |            |            |            |

Primary, low ICSEA score, Year 3 generally 'substantially below' national average, 'below' similar schools; Year 5 generally 'close to' national average and 'above' similar schools

# High stakes

It's the **red** that matters, not the **green** ...

... if some ***walk with their feet*** that's exactly what the system is designed to do; that is to make sure that school communities are being responsive to the legitimate high expectations of parents and kids ... (Kevin Rudd PM 2008)

Transparency is critical. To improve schools that are ***failing*** their students we need information. And we want parents to drive change ... (Julia Gillard 2009) *(Emphasis added)*

# Index of Socio-Educational Advantage (ICSEA) V. 1

Schools are classified as 'statistically similar' if they have a similar ICSEA score.

ICSEA V.1 – main component is an index based on 14 variables, covering various income, occupation, education level, etc for **all** individuals/households in ABS Census collection districts (CD). A CD has around 225 households – a couple of city blocks. There are around 40,000 CDs Australia-wide.

An index score is calculated for each CD, and the value for a school is derived from the weighted average of the scores of the CDs of students' home addresses.

***.... think about neighbourhoods you know ....***

## Area based measures of SES & the **ecological fallacy**

*Ecological fallacy: Drawing inappropriate inferences about individuals from group data.*

- ICSEA V. 1 goes:
  - from group (the 225 households in a CD)
  - through individuals (students & their home addresses)
  - to group (school SES).
- May be OK if different schools attended by students in given CDs were random.
- But we all know that is not the case – from neighbourhoods and schools we know.
- Evidence of systematic bias in ICSEA?

## **Any systematic bias can only be investigated indirectly:**

- Census data is only available for students by type of school attended (and level), not actual schools.

# Method

- ABS Census data (as used for ICESA V. 1) for all relevant CDs (around 40,000)
  - Data for school students in all relevant CDs on:
    - Type of school attended (primary, secondary; government, Catholic, Other non-government)
- AND*
- Family income (based on thirds of all Australian secondary school students: LOW, MEDIUM and HIGH)
- OR*
- Home internet connection

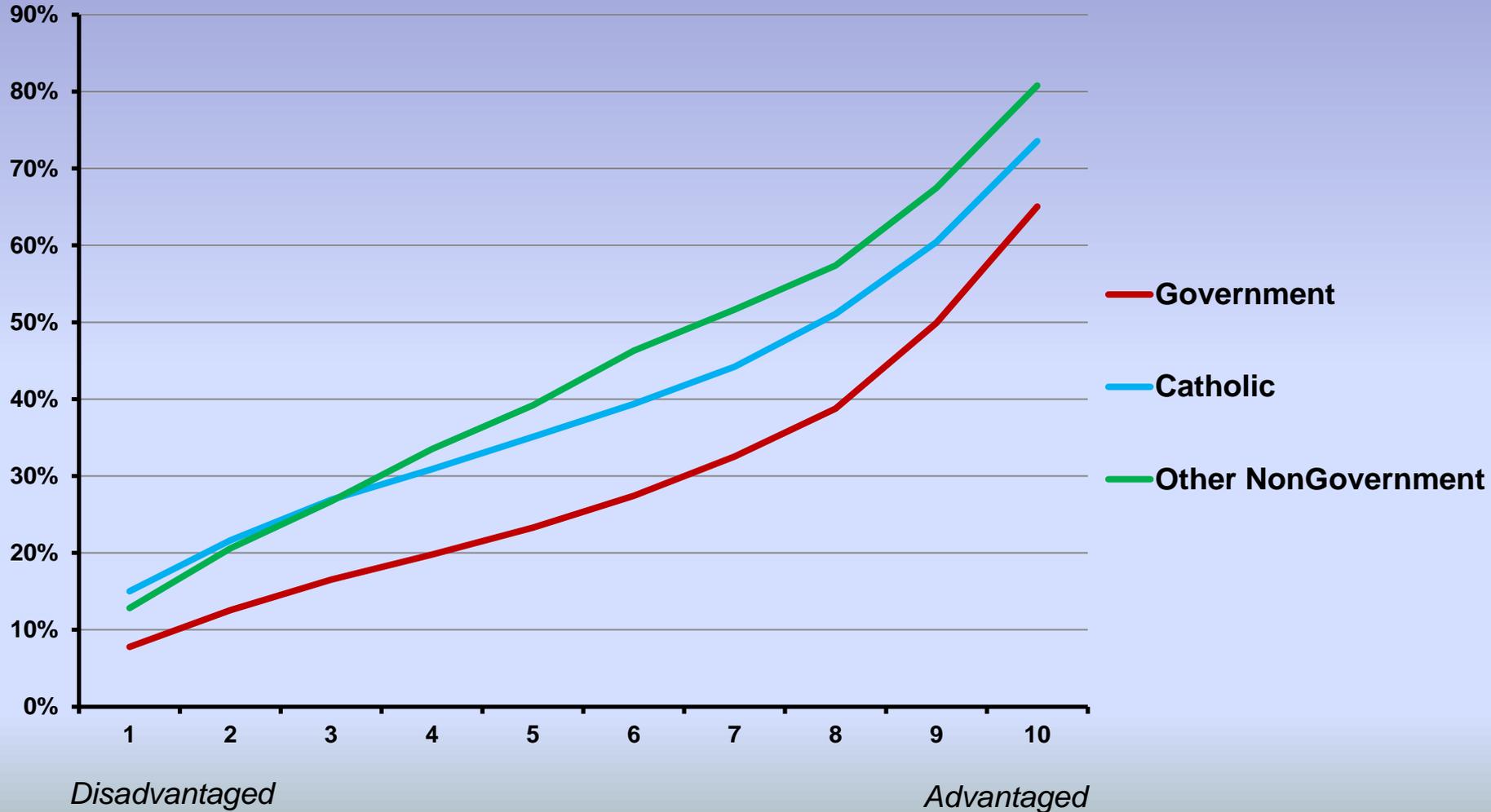
## Method (continued)

- ABS Socioeconomic Index for Areas (SEIFA) Index of Education and Occupation (IEO) applied to CDs
- CDs ordered according to SEIFA IEO score
- CDs then classified by deciles (about 4,000 CDs in each decile) from most disadvantaged to most advantaged.

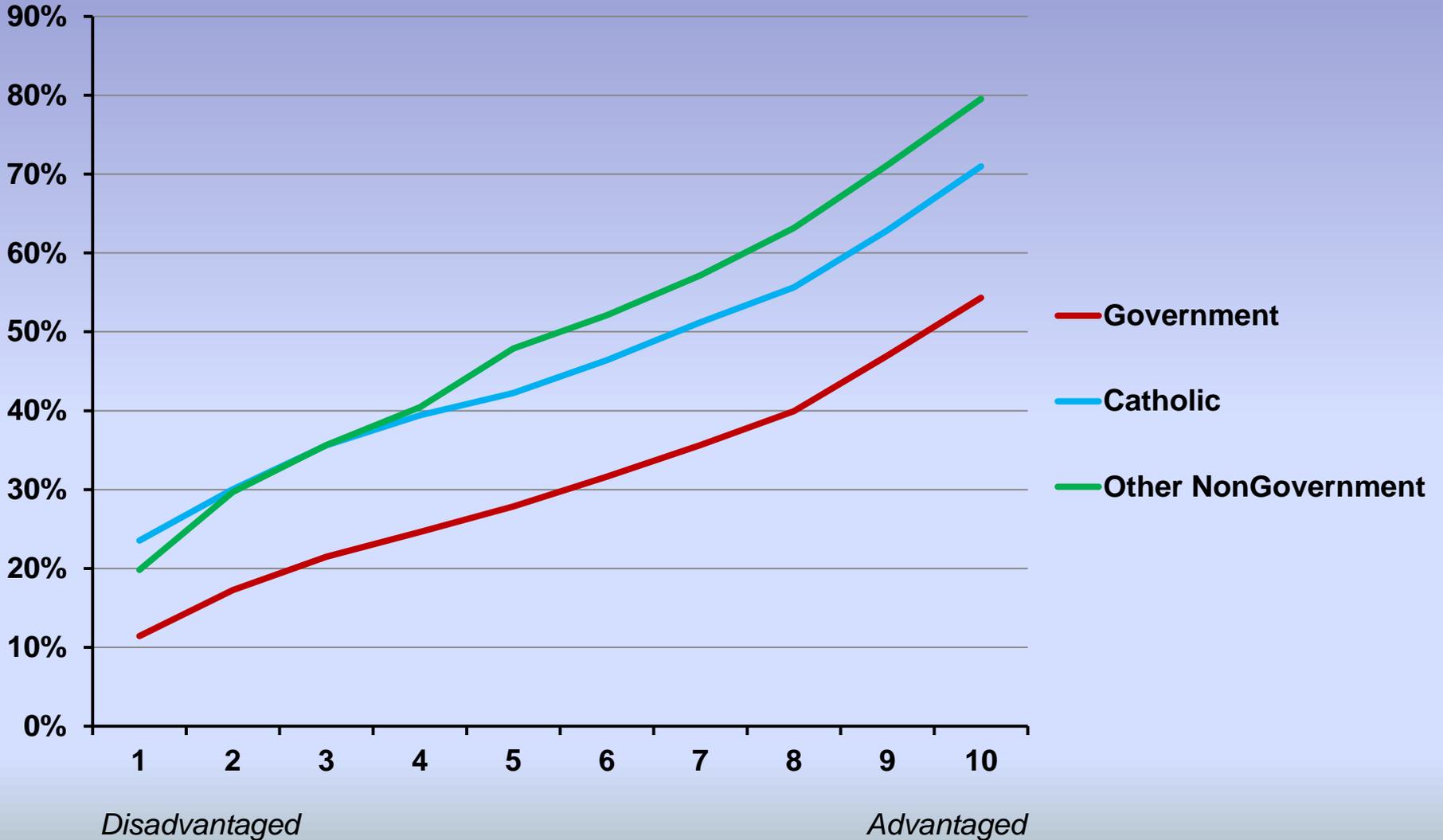
## Findings on family income:

1. In even the most disadvantaged CD there are some HIGH income families, and the children in those families are more likely to attend Catholic or other nongovernment schools than their neighbours in LOW income families.
2. In even the most advantaged CD there are some LOW income families, and the children in those families are more likely to attend government schools than their neighbours in HIGH income families.

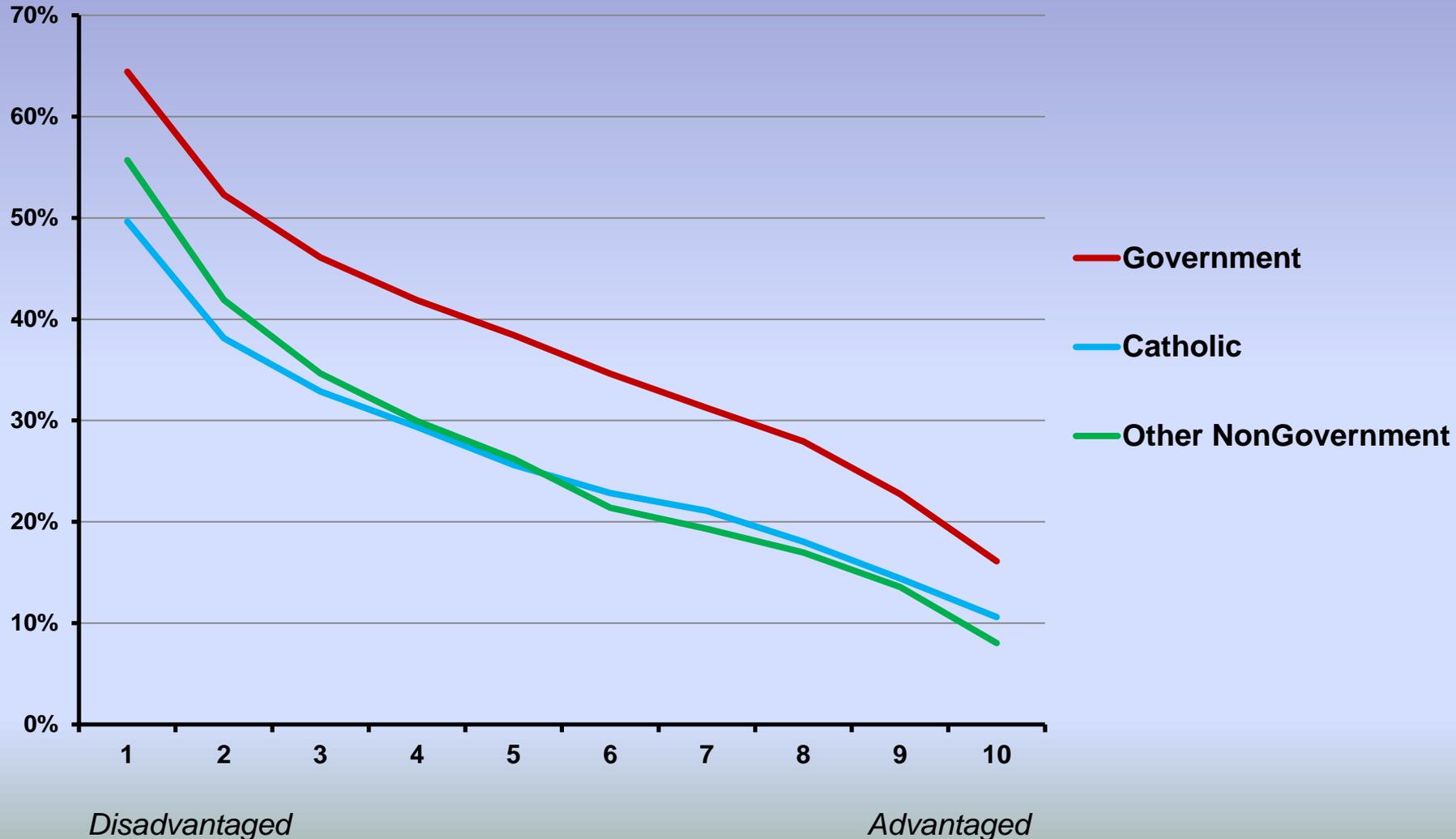
# Percentage of all government, Catholic and other nongovernment primary students living in each decile of disadvantage who have HIGH family incomes



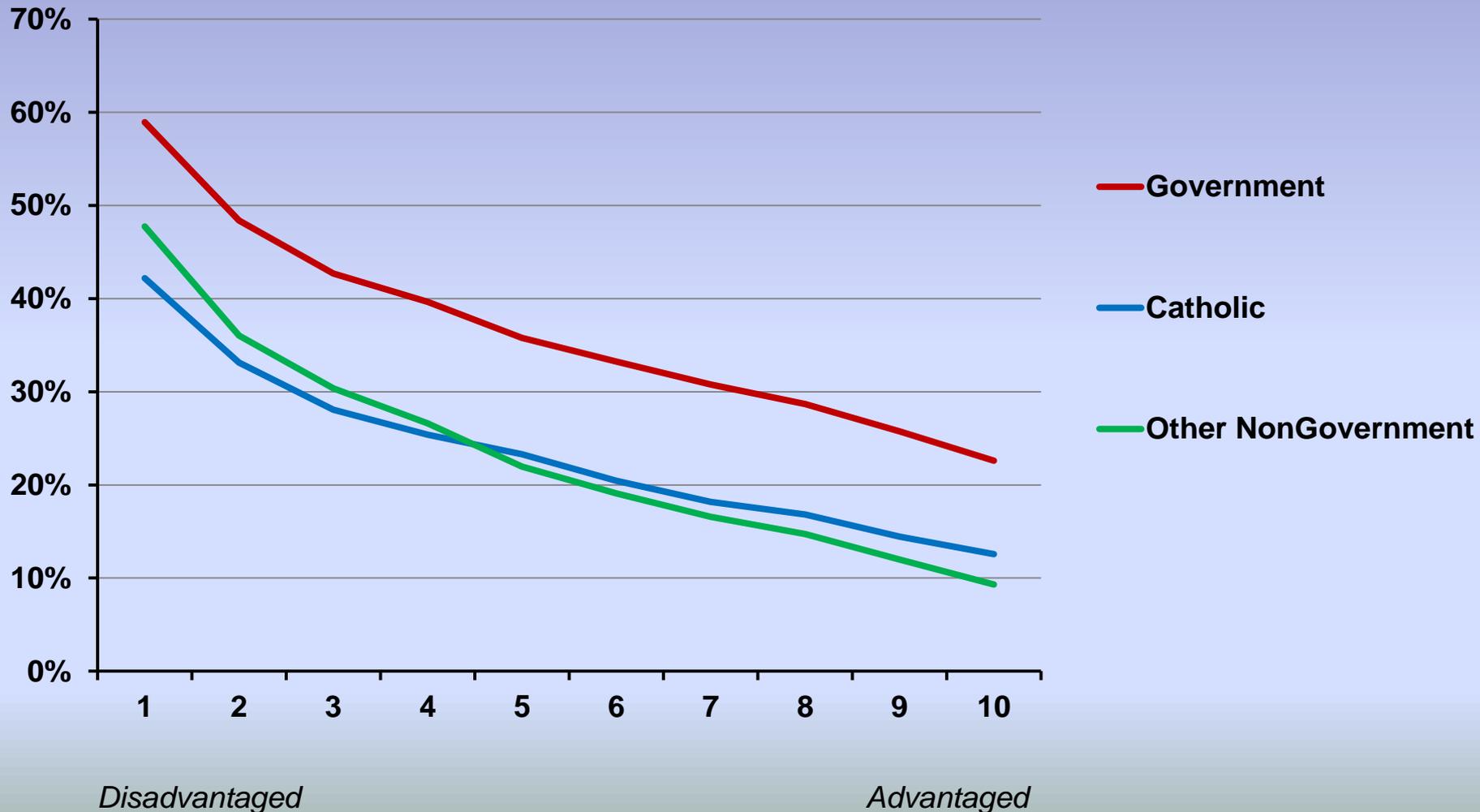
# Percentage of all government, Catholic and other nongovernment secondary students living in each decile of disadvantage who have HIGH family incomes



# Percentage of all government, Catholic and other nongovernment primary students living in each decile of disadvantage who have LOW family incomes



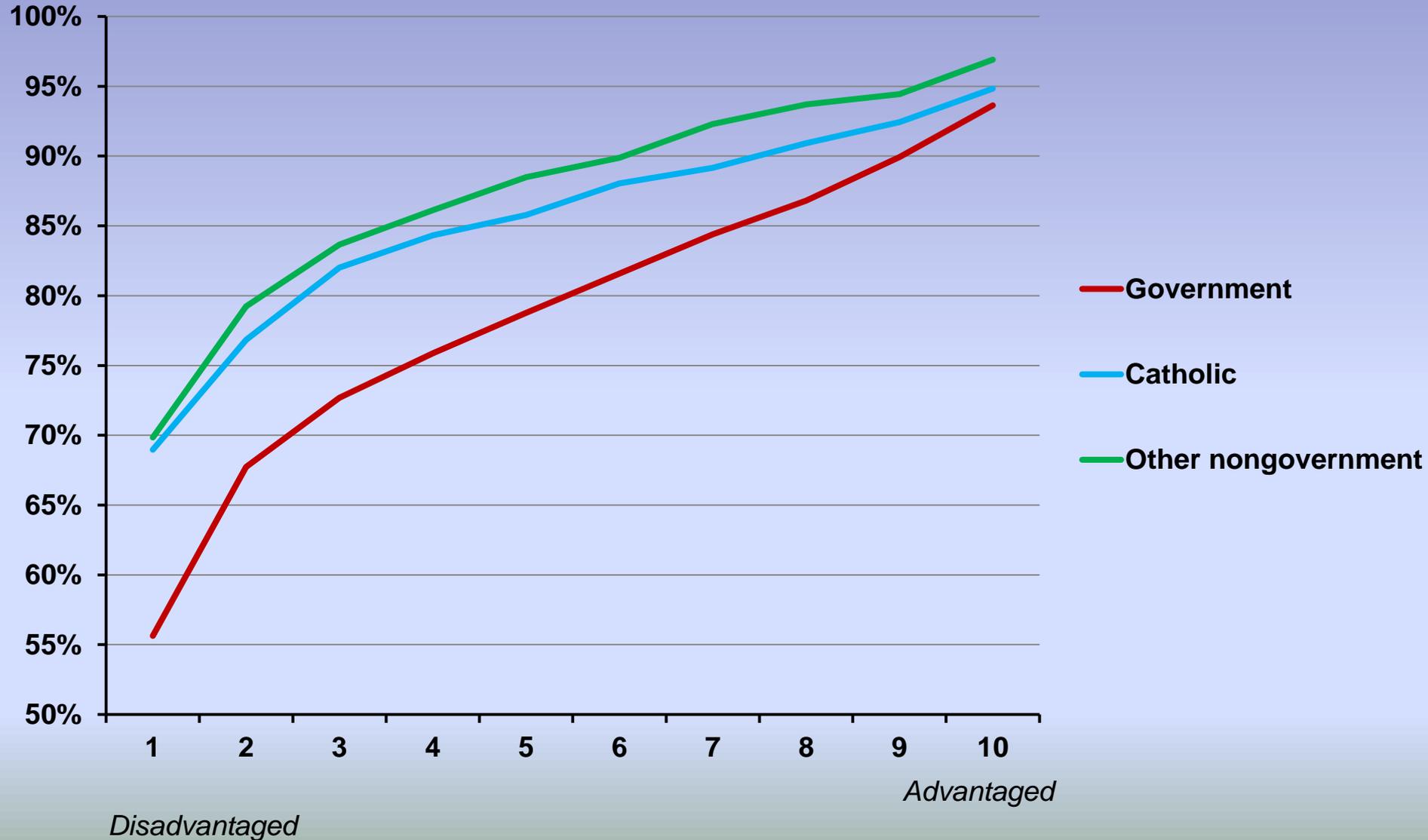
# Percentage of all government, Catholic and other nongovernment secondary students living in each decile of disadvantage who have LOW family incomes



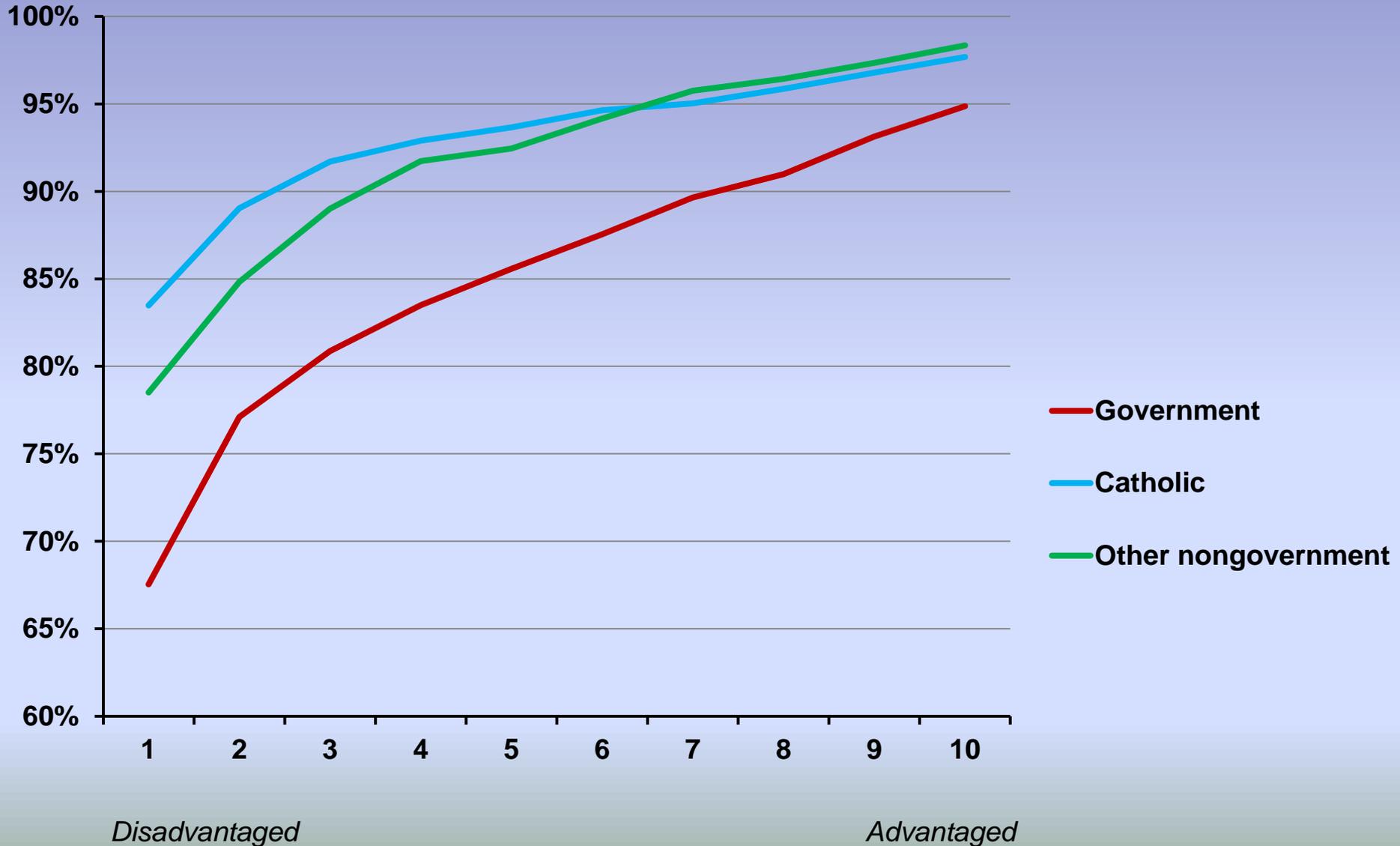
## **Findings on home internet connection:**

In CDs from the most disadvantaged to the most advantaged, students attending government schools (primary or secondary) are less likely to have a home internet connection than their neighbours attending Catholic or other nongovernment schools.

# Percentage of all government, Catholic and other nongovernment primary students living in each decile of disadvantage who have HOME INTERNET CONNECTION



# Percentage of all government, Catholic and other nongovernment secondary students living in each decile of disadvantage\* who have HOME INTERNET CONNECTION

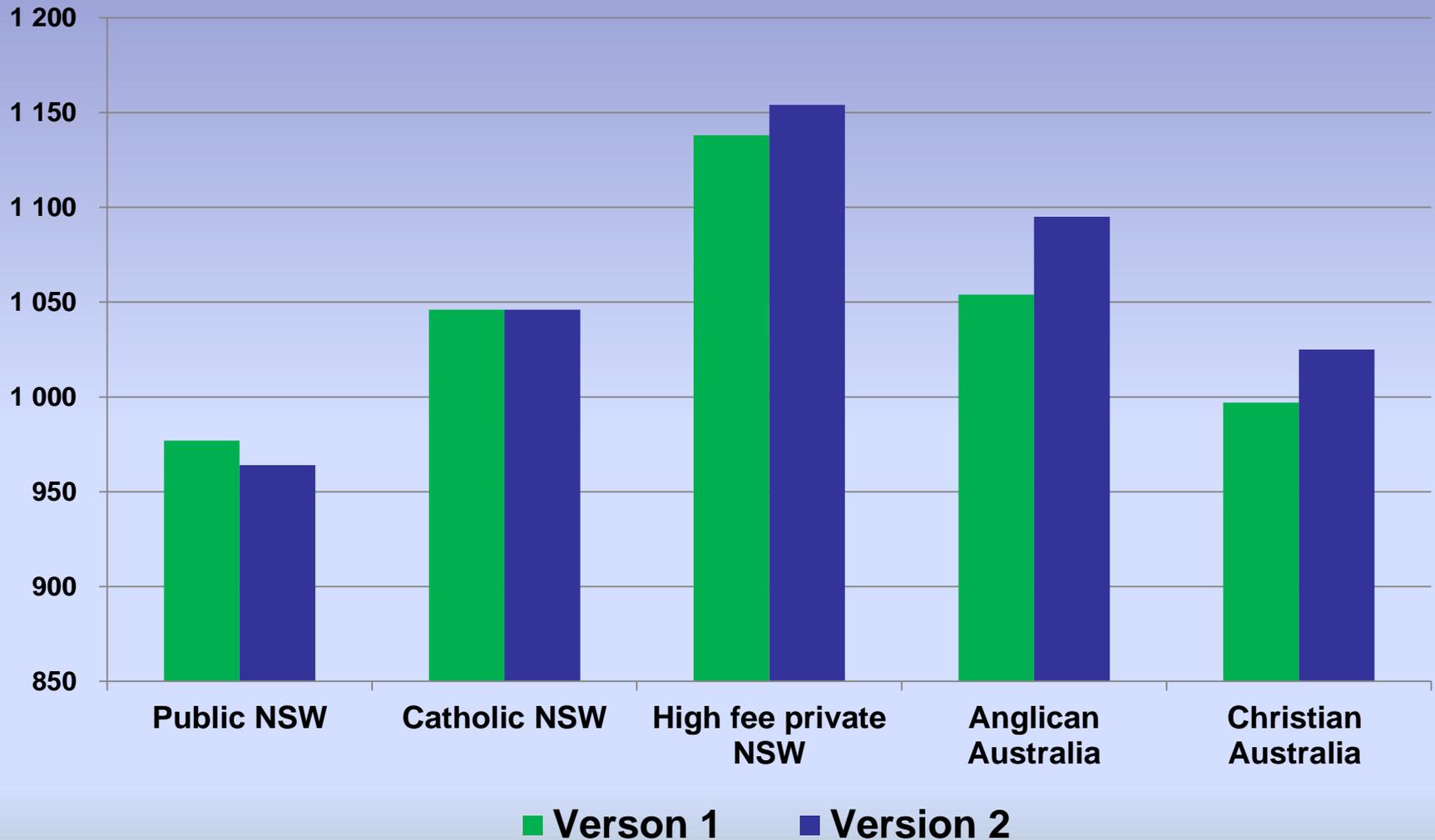


# ICSEA V.2

- Yet to be released
- Seeks to provide 'like school' comparisons of 'socio-educational advantage without ecological fallacy' (McGaw, NatStats, September 2010)
- Based on direct student-level information, not CDs
- Preliminary comparisons between schools' scores on ICSEA V.1 and V.2 are as expected from previous analysis:
  - public school ICSEA scores have generally gone down
  - private sector ICSEA scores have generally gone up.

Thus with ICSEA V.1 the cross-sector 'like schools' of public schools were generally higher socio-economic status private schools, and the cross-sector 'like schools' of private schools were generally lower socio-economic status public schools. **Overall this makes private schools appear to be performing better relative to public schools than in fact they are.**

# Average scores, ICSEA V1 & V2, schools with secondary enrolments, NSW and Australia



Source: preliminary analysis by Chris Bonner involving over 400 schools

# **Red mud sticks and stains**

- **What is planned to restore the reputations of schools so maligned by ICSEA Version 1?**
- **But those who move out of the red in Version 2 are not the only ones maligned ....**

# Dynamics of selectivity

Allowing and encouraging selectivity/choice/exclusion sets in train a vicious circle of increasing social segregation and the residualisation of the comprehensive and inclusive.

The realities of our schooling structures are complex and the politics are difficult.

It is ***relationships*** that matter:

- between the public and the private
- between the selective/specialist & the comprehensive
- between the high fee and low fee.

# Dynamics of selectivity

Low SES students generally achieve less in low SES schools than they do in higher SES schools – social segregation in schooling exacerbates differences in educational outcomes.

Being a ‘positional good’ is inherent to schooling (in a way that it is not to health).

Those already in or aspiring to high SES schools have a vested interest in increasing social segregation (though this may be countered to some extent by their commitment to broader social justice and quality education for all). They tend to be the articulate and politically powerful.

- That formally selective schools should be ‘dark green’ should surprise nobody - their ‘substantially above’ scores may in no way reflect any quality of the school itself (only its ability to select)

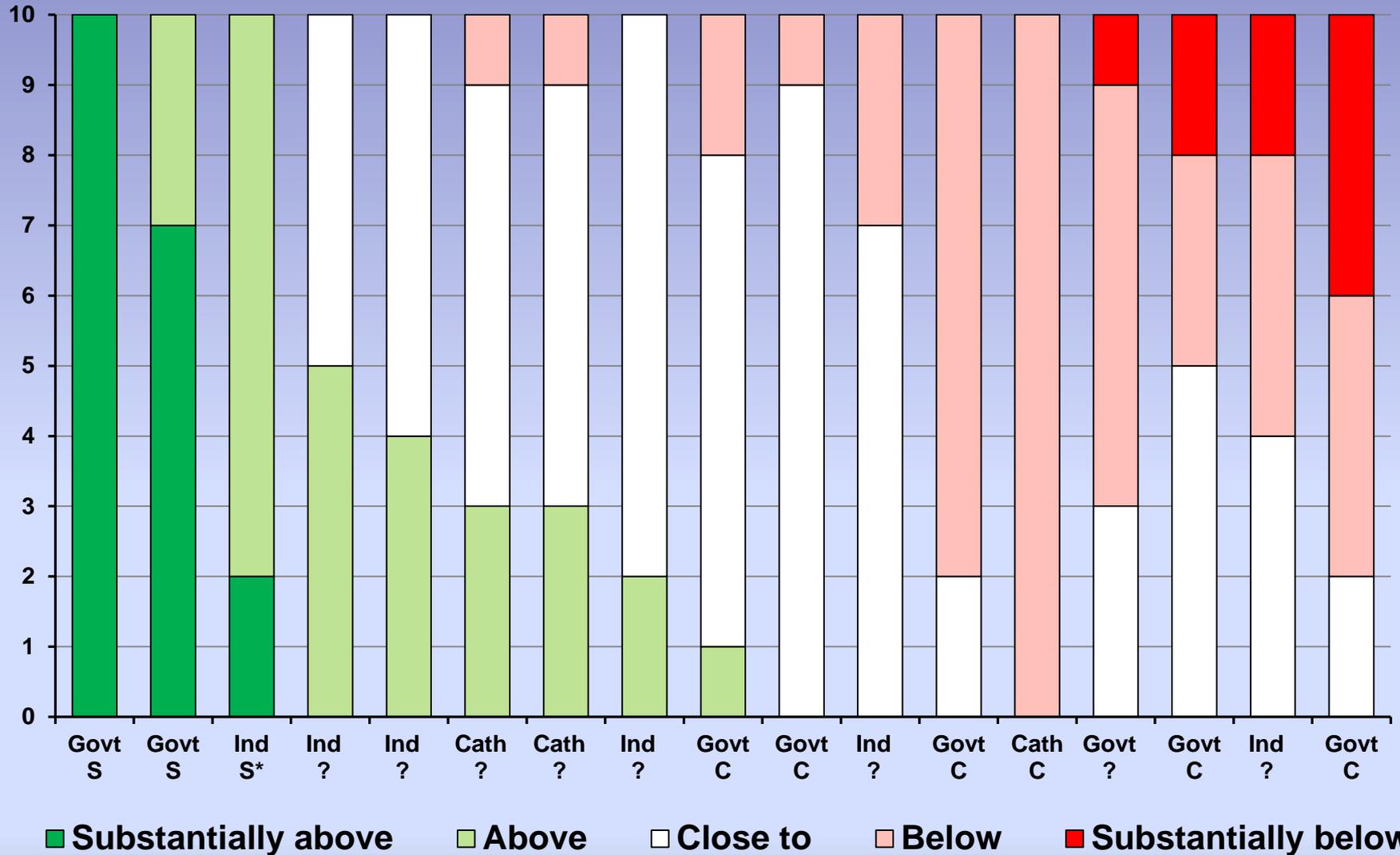
(Some selective schools do not state that they are selective on their My School webpage ...)

- But it is the schools to which the selected students would have otherwise gone that really matter. They may well be stained with red and pink simply because the very brightest students who would otherwise have attended them are enrolled in selective schools.
- While often it is low SES schools that are most affected, it can happen to high SES schools.

## ***AN EXAMPLE:***

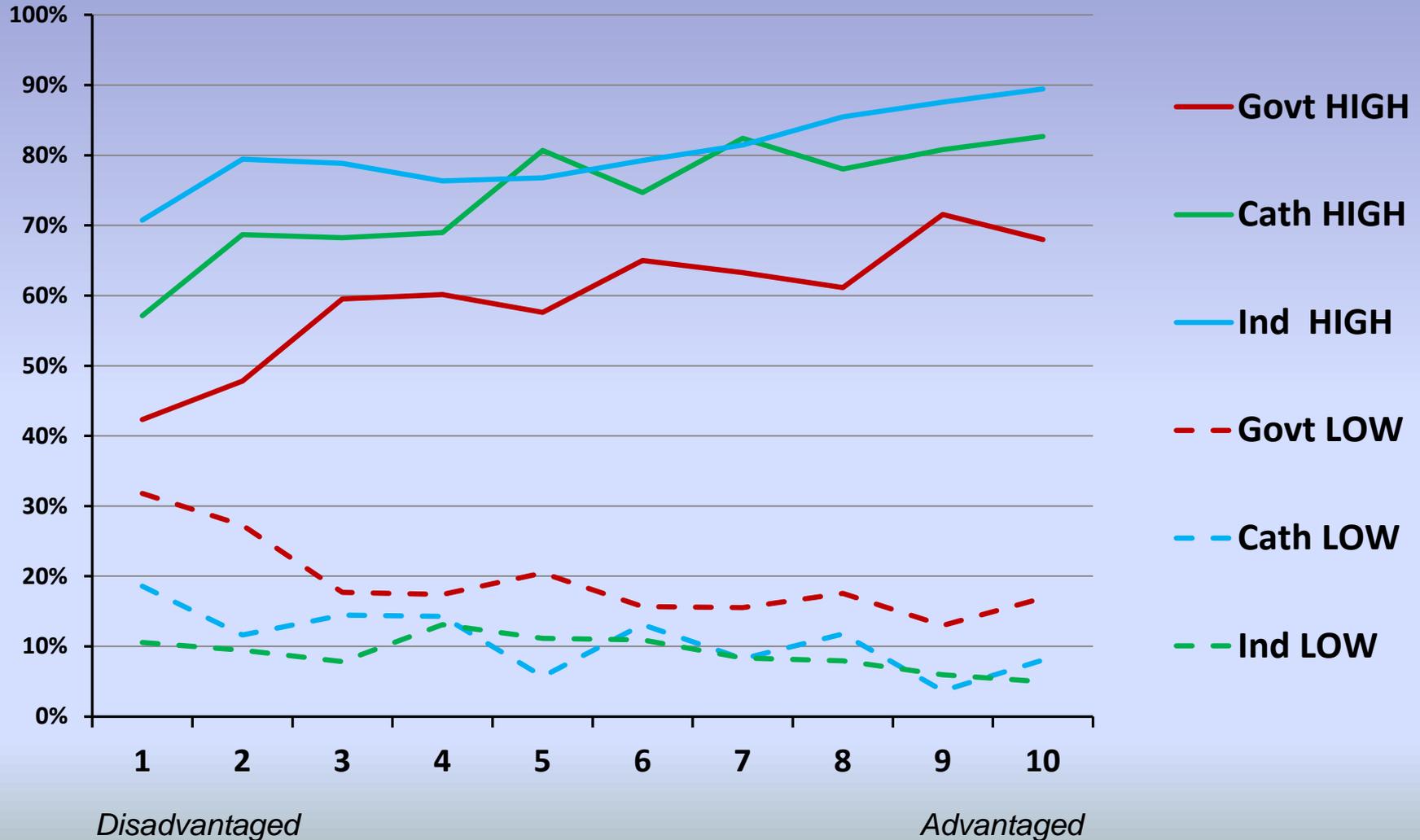
- 17 major secondary schools (all with high ICSEA scores) in the SLAs of Hornsby South & Kur-ring-gai (combined)
- Classified by school type (sector & selectivity) & by the number of NAPLAN scores in each domain at years 7 & 9 that are 'substantially above', 'above', 'close to', 'below' and 'substantially below' 'statistically similar' schools.
- The selective schools have much dark green (unsurprising).
- Is the red and much of the pink in the mostly comprehensive schools simply a consequence of loss of very bright students to the selective government and private schools?
- (In these SLAs there are similar patterns of family income by school sector noted earlier.)

# Major secondary schools in the SLAs of Hornsby South & Kur-ring-gai



**S** : selective      **S\*** : partial selectivity      **C** : comprehensive      **?** : unknown or indirect selectivity

# Percentage of all government, Catholic and other nongovernment secondary students living in each decile of CD disadvantage\* in the SLAs of Hornsby South & Kur-ring-gai (combined) who have HIGH & LOW family incomes



\* The SLAs of Hornsby and Kur-ring-gai are very advantaged overall.

# Campbell's law

The more any quantitative indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor.

(D. T. Campbell, *Assessing the Impact of Planned Social Change*, 1976, p. 49)

# *Thank you.*

**Note:** The national analysis of Census data in this presentation was previously presented in Barbara Preston, 'Does the Index of Community Socio-Educational Advantage have Systematic Bias?', AEU, AGPPA & ASPA National Symposium, *Advice for Ministers and ACARA on NAPLAN, the use of student data, My School and league tables*, Friday 23 July 2010, Aerial Function Centre, University of Technology, Broadway, Sydney.

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