# Realities versus data noise:

## Comparing ANA across years, and to Grade 12 results and levels of poverty

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# Introduction

- Current presentation focuses on two complex Annual National Assessments (ANA) issues:
  - The various pathways open to ANA going forward, and existing policy parameters.
  - Outcome of some work undertaken towards 'District-wide ANA reports', using 2012 and 2013 ANA data. *An official report to be made public in the coming months.*



# Brief history of ANA

- 2001, 2004, 2007: Sample-based testing within Systemic Evaluation, grades 3, 6 then 3.
- 2008: Foundations for Learning policy (Notice 306 of 2008) in many ways lays the basis for ANA.
- 2009-2010: Universal ANA testing begun on an experimental basis.



# Brief history of ANA (contd.)

- 2011 onwards: A very public ANA, with a sample-based verification element, established.
  - Mathematics and language ('home language' in grades 1 to 3, thereafter language of learning, being English for around 90%).
  - 2012: English (and Afrikaans) split into 'home language' and 'first additional language' papers. (In English, around 75% are FAL.)
  - Grade 9 begun 2012. Grades 7-8 begun in 2014 (fully in 2015).



# ANA plans and challenges

- National Development Plan...
  - Controls over the testing procedure. Principles broadly supported, but details debatable.

**'Externally administer and mark the ANA for at least one primary school grade to ensure that there is a reliable, system-wide measure of quality for all primary schools. This will serve as a snapshot of the health of the system and help authorities to develop targeted interventions.'** (p. 311)

  - ANA reports to parents.

**'The ANA results should be made accessible to parents and the community in a way that makes the data easy to interpret.'** (p. 311)

  - Brief reference (p. 304) to financial incentives attached to ANA. This is possible, but research also highlights certain pitfalls.

# ANA plans and challenges (contd.)

- Emphasis in 'Action Plan to 2019'...
  - This is a complex, risky area. Expert opinion needed, e.g. advice already obtained from World Bank evaluator being used.
  - Measurement of systemic progress must be separated from universal testing. Different tests needed.
  - Sample-based monitoring of systemic progress needs must have external QA (Umalusi?).

# ANA plans and challenges (contd.)

- Emphasis in 'Action Plan to 2019' (contd.)...
  - Firmer policy, especially for universal ANA, should exist.
  - Production of standard reports drawing from large quantity of data collected nationally. ('Annual ANA district report' referred to in DBE annual performance plan [APP]).
  - More analysis of feedback from schools, parents, on utility of ANA.



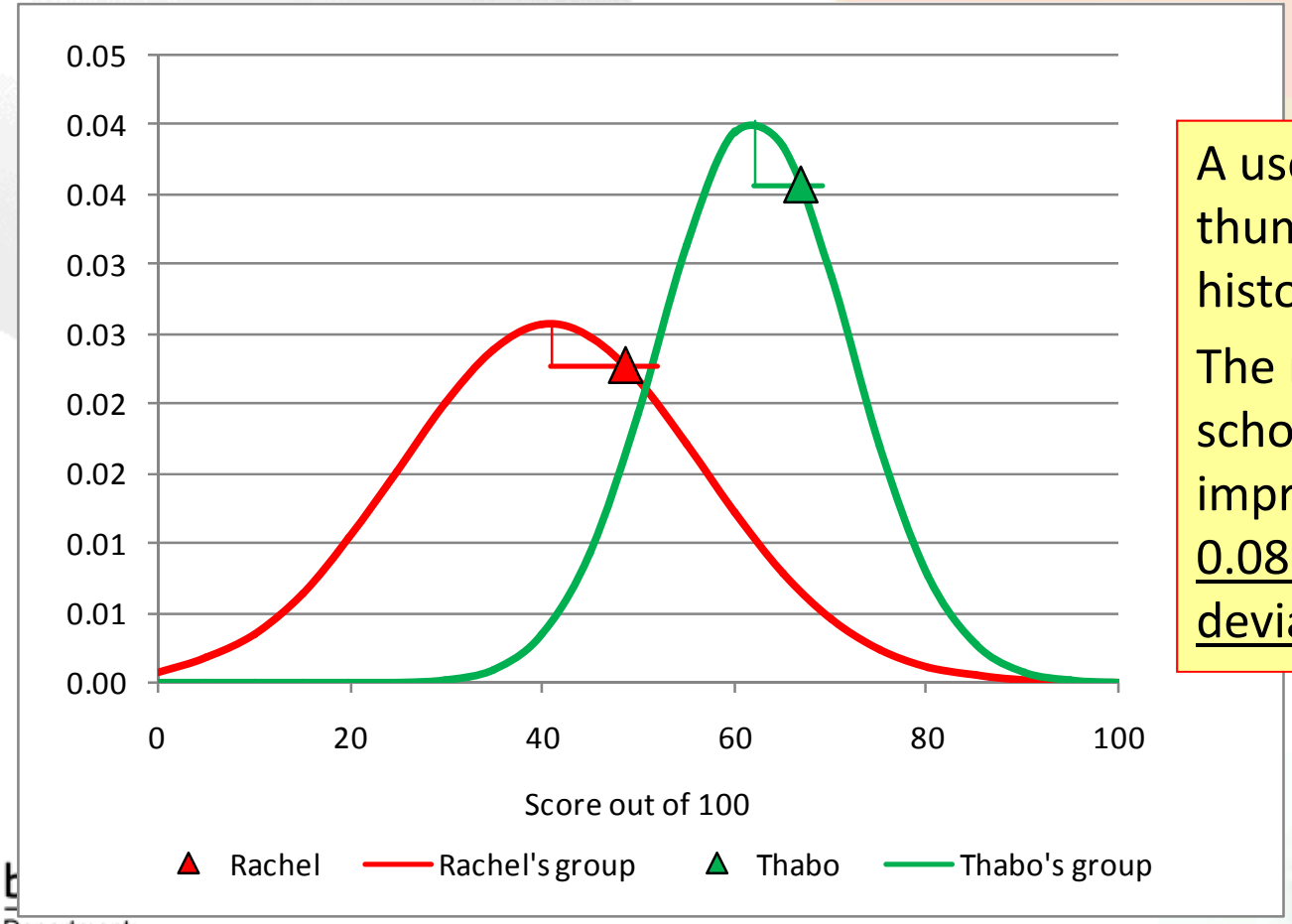
# A few data challenges

- Combination of (a) tight timeframes, (b) little new ANA-specific staffing, (c) non-accreditation of individual learners makes it very difficult to have a complete national dataset.
- Currently, universal (97%) and verification (3%) data streams run separately, requiring merging at a later point.
- Problems such as duplicate learner IDs, or learners with more than one result per test, exist to a limited degree.

# Talking about standard deviations

Rachel got 49%
Thabo got 67%

Yet they are similar learners, because both achieved 0.7 of a standard deviation above the mean (average).




A useful rule of thumb, based on history:

The most any schooling system can improve in a year is 0.08 of a standard deviation.

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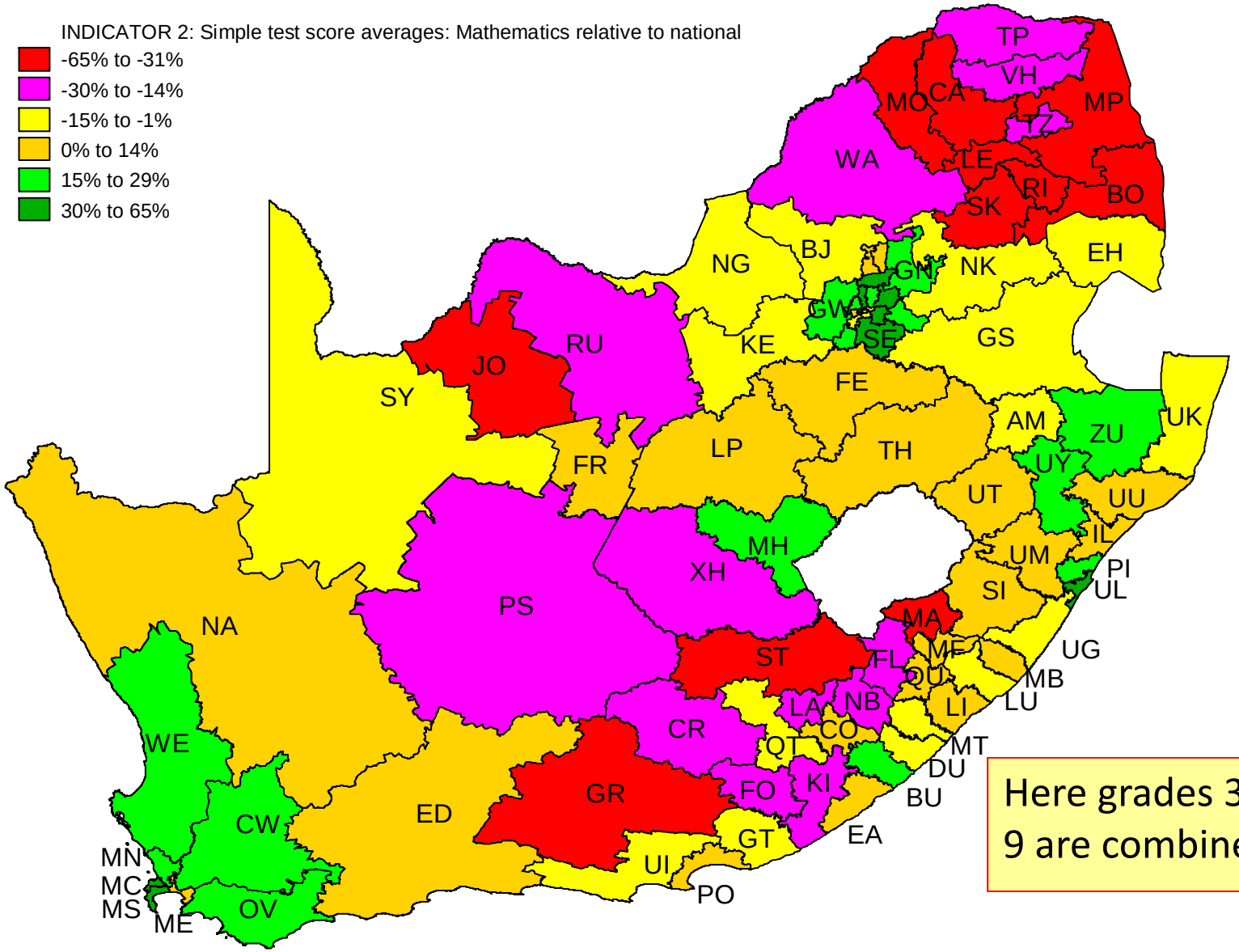
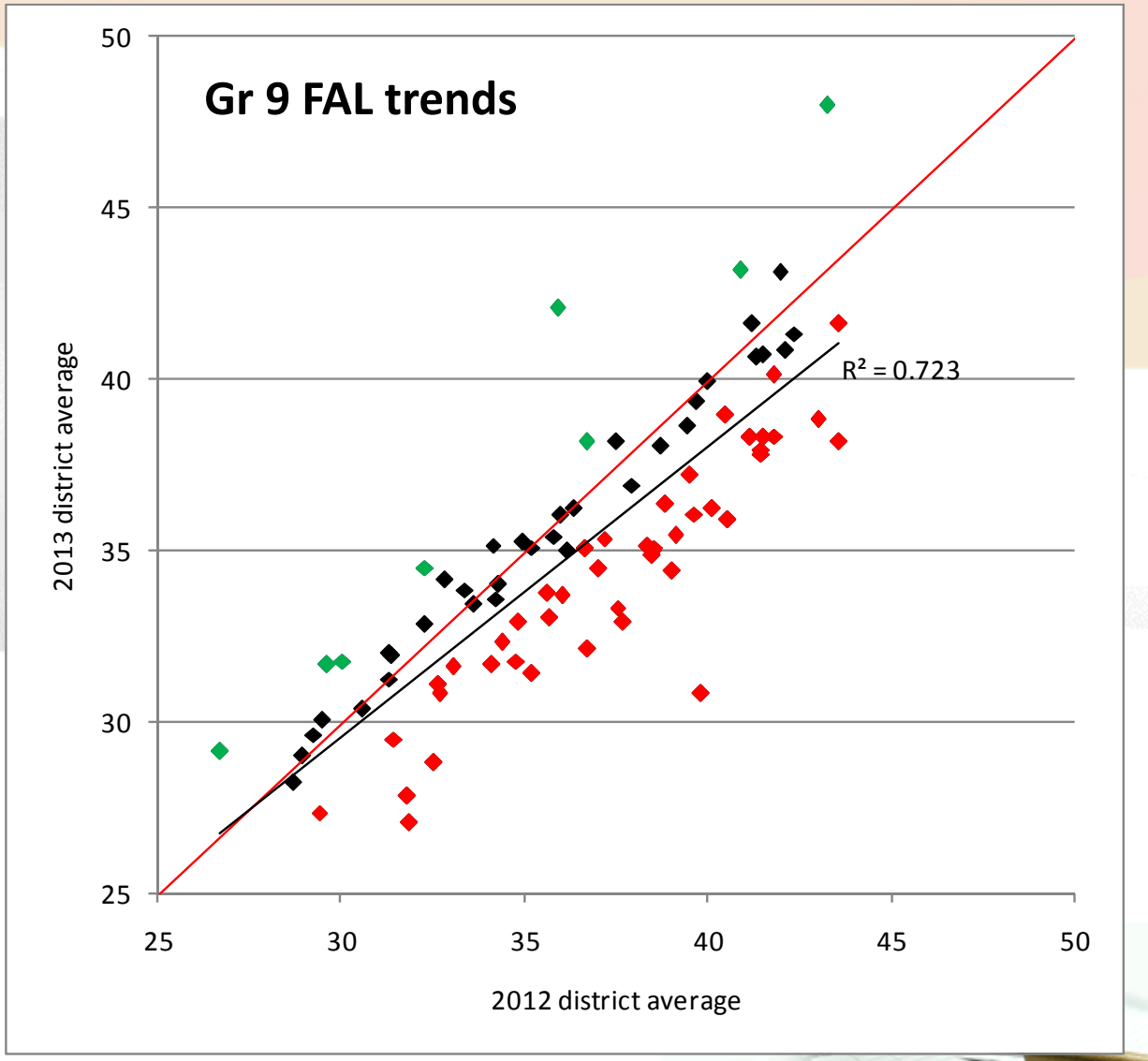
# Talking about standard deviations (contd.)




Here grades 3, 6 and 9 are combined.

# Talking about standard deviations (contd.)

Changes between one year and the next at the district level exceeding 8% of a standard deviation are unlikely to be true.

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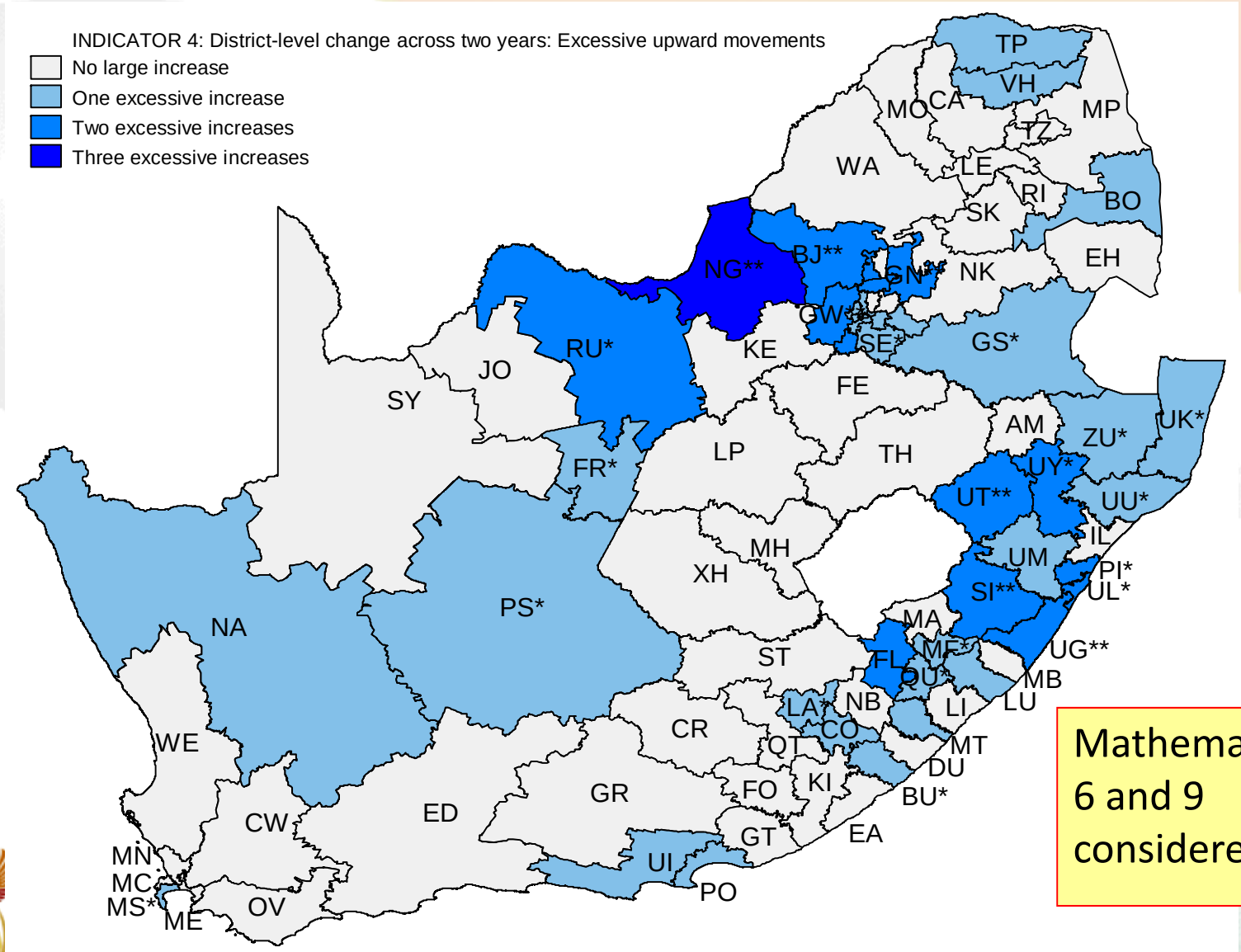
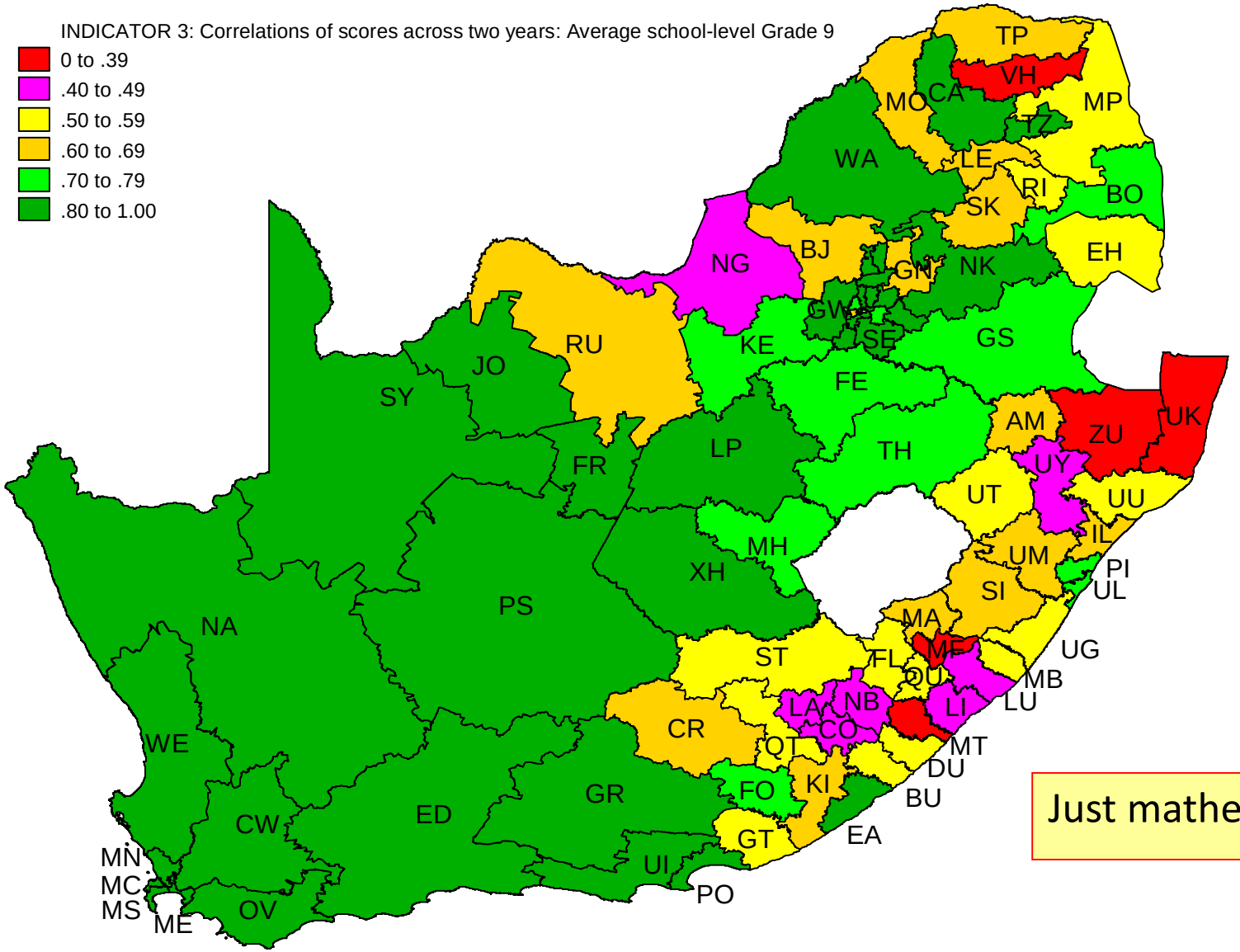
# Talking about standard deviations (contd.)




Mathematics in 3, 6 and 9 considered.

# Correlations, a quality check




Just mathematics.

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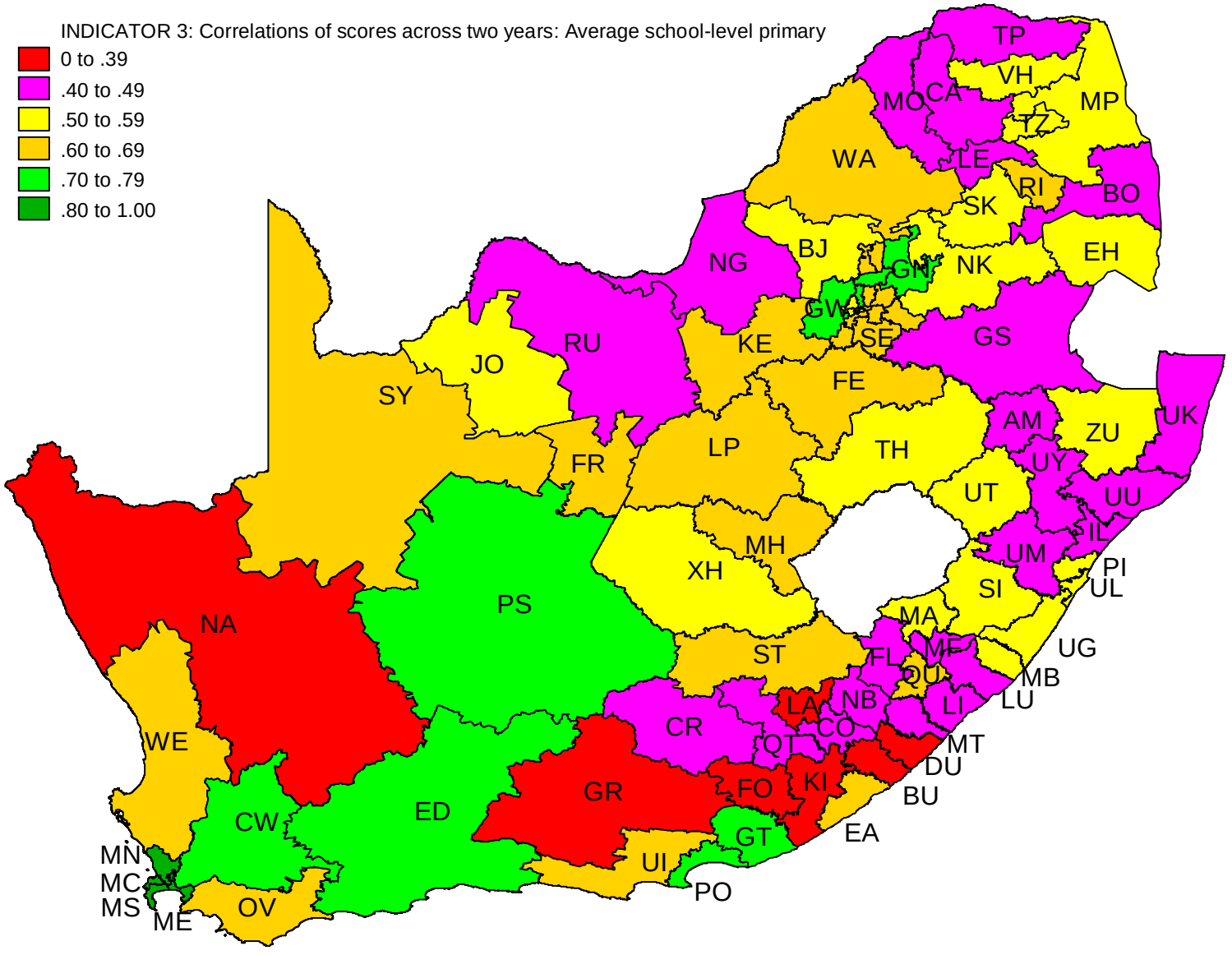
# Correlations, a quality check (contd.)

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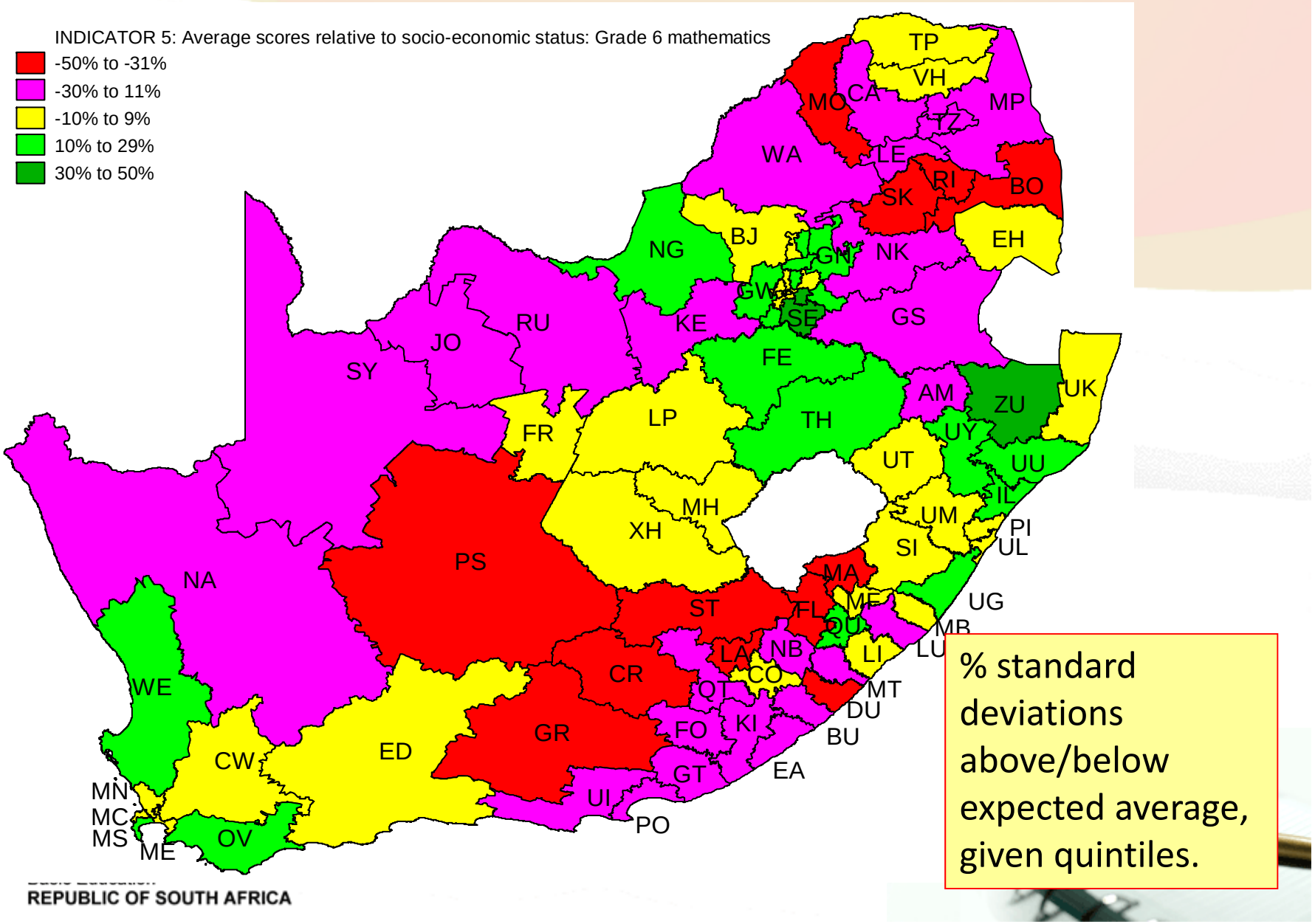
# ANA against socio-economic status




% standard deviations above/below expected average, given quintiles.

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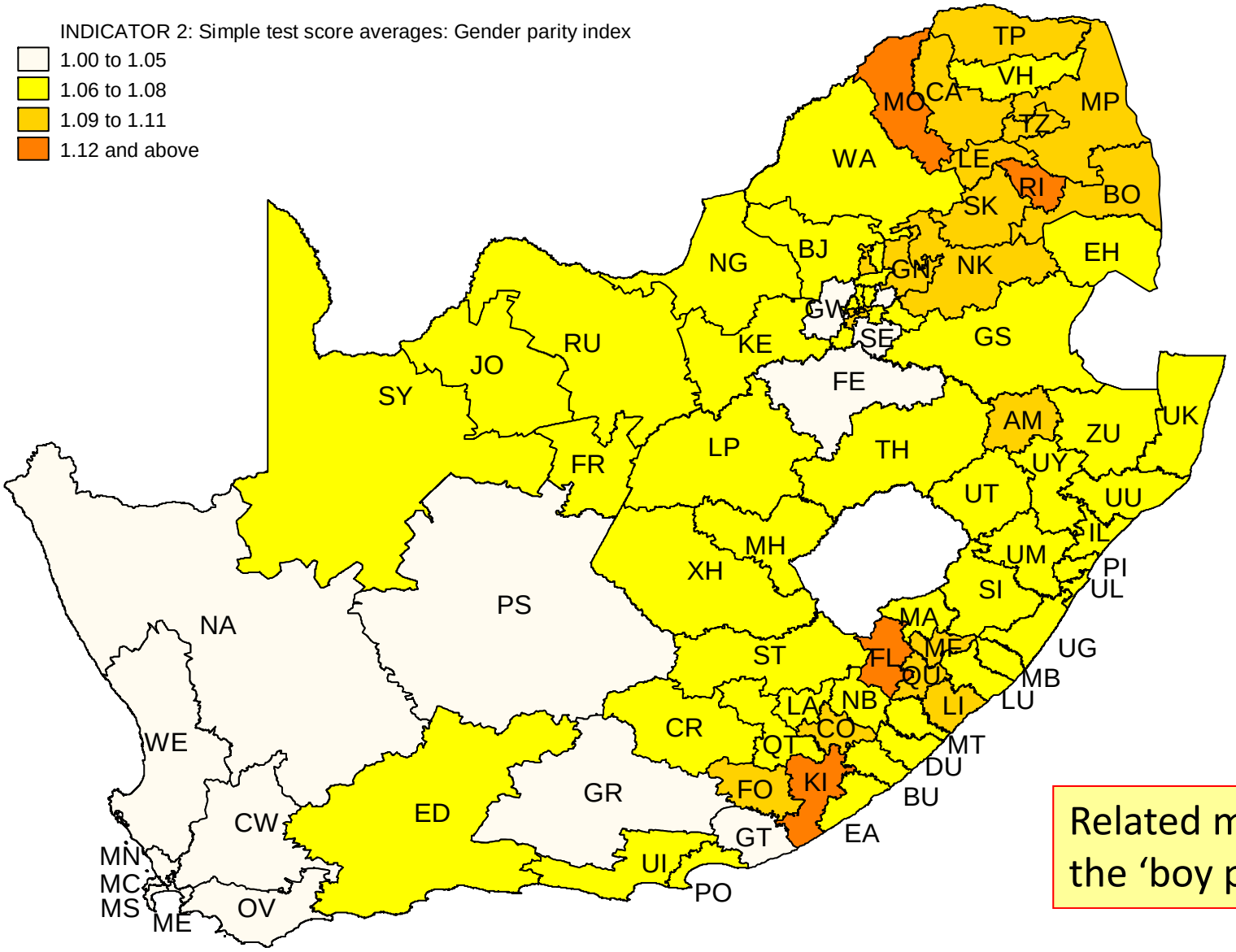
# ANA against socio-economic status (contd.)




Related matter of the ‘boy problem’.

# ANA against Matric

- Grade 9 mathematics, despite good year-on-year consistency, correlates poorly with other grades.

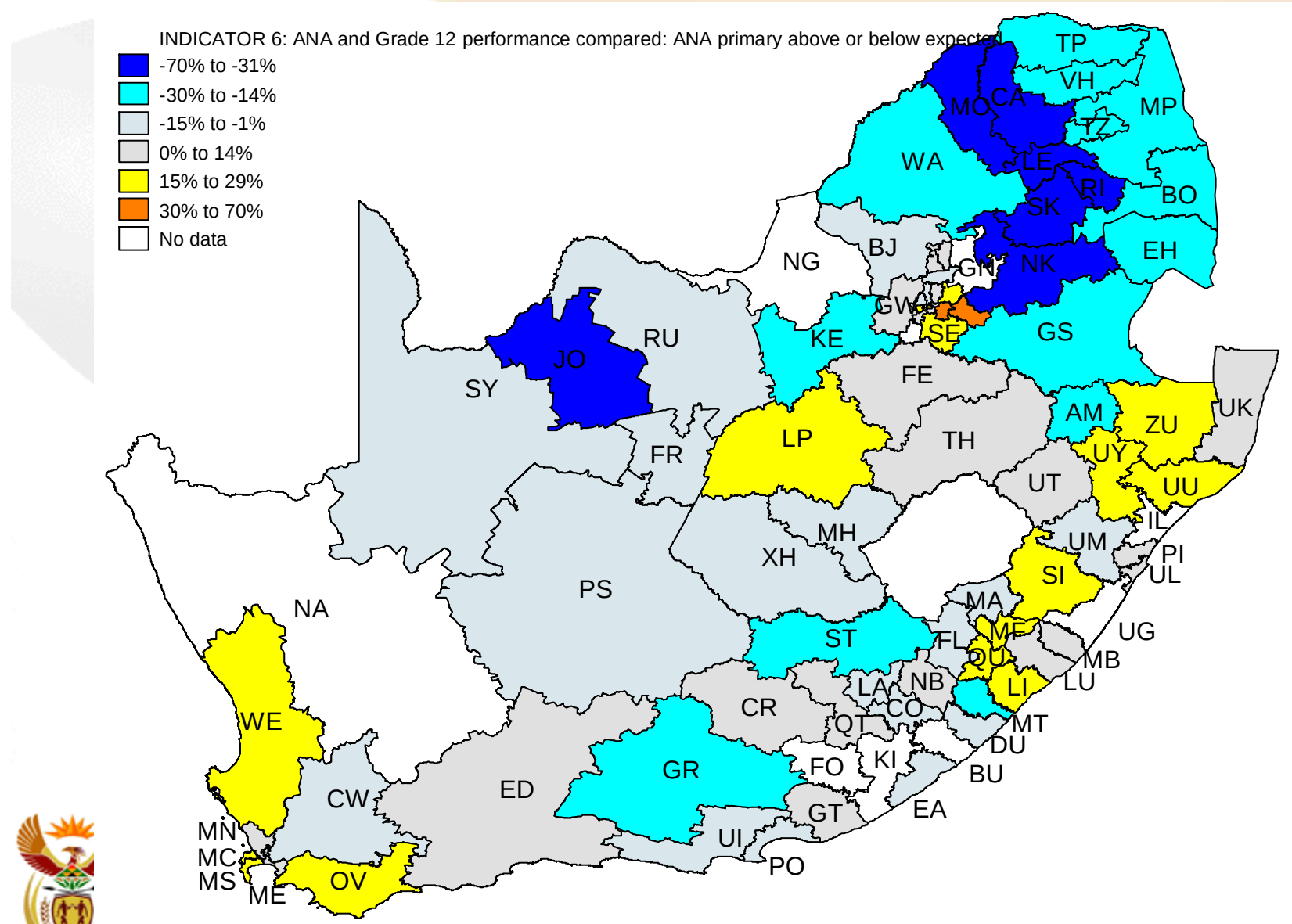
***Table 6: Correlations at the district level for mathematics***

| | ANA 3 and 6 | ANA 9 | Gr 12 overall pass | Gr 12 mathematics I | Gr 12 mathematics II |
|---|---|---|---|---|---|
| ANA 3 and 6 | 1.00 | | | | |
| ANA 9 | 0.45 | 1.00 | | | |
| Gr 12 overall pass | 0.69 | 0.06 | 1.00 | | |
| Gr 12 mathematics I | 0.59 | 0.34 | 0.62 | 1.00 | |
| Gr 12 mathematics II | 0.62 | 0.32 | 0.59 | 0.97 | 1.00 |

*Note: The measure 'Gr 12 mathematics I' is high-level mathematics passes (70% or above) in Grade 12 in 2013, divided by all examination candidates. 'Gr 12 mathematics II' divides the same numerator by the number of 15-year olds in public ordinary schools in the district in 2008.*



# ANA against Matric (contd.)

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# Conclusion

- Stakeholders, researchers need to understand huge institutional change brought about in individual schools and within the national debates by ANA. Some is good, but there are risks.
- We desperately need to develop capacity in the area of psychometric testing, and related topics, inside and outside government!