



THE NATIONAL BENCHMARK TESTS PROJECT
a national service to Higher Education

Why did HESA commission the NBTP?

1. Demonstrable inefficiencies in Higher Education itself (low throughput etc.)
 - **Difficulties in identifying students' educational needs**
 - Lack of appropriate curriculum flexibility at entry to meet these needs
2. Concerns about how to interpret the new NSC

In summary

- The NBTP is about higher education getting its own act in order – it is not about pointing fingers at the school system
- It sets out to do this by providing information about the competence of entering students in terms of 3 core domains of knowledge / skills
- it is important to note that higher education's 'take' on what these core sets are, and at what level they should be mastered, will in all probability differ somewhat from those deemed most salient by the school-leaving system.

What do the NBTs aim to do?

- Provide additional information about performance in core, underlying areas (additional to NSC information)
- The core (domain) areas are:
 - Academic literacy } one 3-hr test
 - Quantitative literacy } one 3-hr test
 - Mathematics } one 3-hr test

AL, QL and Maths

- **AL:** *Students' capacity to engage successfully with the demands of academic study in the medium of instruction.*
- **QL:** *Students' ability to manage situations or solve problems of a quantitative nature in real contexts relevant to higher education.*
- **Maths:** *Students' manifest ability related to mathematical concepts formally part of the NSC Mathematics curriculum.*

100%

Proficient

Performance in domain areas suggests that academic performance will not be adversely affected.

If admitted, students should be placed on regular programmes of study.

Intermediate

Challenges in domain areas identified such that it is predicted that academic progress will be affected.

If admitted, students' educational needs should be met in a way deemed appropriate by the institution (eg extended or augmented programmes, special skills provision).

Basic

0%

Serious learning challenges identified: it is predicted that students will not cope with degree level study without extensive & long-term support, perhaps best provided through bridging programmes or FET. Institutions registering students performing at this level would need to provide such support.

How are the benchmark (cut-off points) derived?

- The process is fundamentally different to the examination paper design procedures, and the norm referenced standardising and resulting processes of the NSC
- All items need to have been through rigorous review (fairness, content etc) and be statistically robust
- All items need to have been piloted
- The benchmark setting process is NOT about whether students can pass an item or not - the process is based on a set of probability assessments made by first year lecturers, with the core questions being:

“if a student can’t pass this item / do this, will s/he experience academic difficulties – and if so, how severe?”

NBT information

INDIVIDUAL LEVEL

- Benchmark level (Basic, Intermediate, Proficient)
- Description of what this means for each domain (ie what does being in the 'Basic' category mean a student knows and can do in Mathematics)
- Clear recommendations about the type and extent of support needed

GROUP LEVEL


- At the level of a faculty, or qualification, or institution
- Give clear indication of the needs and strengths of entering cohorts, either before entry, or at registration: useful for placement into existing courses, and/or with course design or modification.

Some features of the design of the tests

- The project has involved over 300 academics from across the sector
- Each item has been subjected to at least one round of reviews for (i) content (ii) fairness and bias (iii) accuracy (iv) statistical integrity
- The data integrity is quality assured by Assessment Systems Corporation, Michigan
- Up to date technologies have been developed and harnessed to assist with design and delivery
- The testing approach relies on item banking. Future questions remain about the incorporation of a writing component, and translation, and about the appropriateness of the benchmarks for diploma and certificate study (an interim solution might be simply to set slightly lower benchmarks in some domains, as is essentially the case with the NSC).

AT WHAT STAGE IS THE PROJECT?

	Research phase		
Planning	Test development (trials, simulations)	Development, trialling etc. in real context	Implementation
2005	2006 - 2008	Feb 2009	May 2009 →



**DATA
BASED ON
FEB 2009 PILOTS**

PARTICIPATING INSTITUTIONS

	UKZN	MANGOSUTHU	STELLENBOSCH	RHODES	UCT	UWC	WITS	TOTAL
COMMERCE		189	1124	282	1014	83	1103	3795
EDUCATION							217	217
ENGINEERING	219	301			913		1309	2742
HEALTH SCIENCES				78			457	535
HUMANITIES	219			500			653	1372
LAW						78	300	378
SCIENCE	568	134		211	656	283	651	2503
TOTAL	1006	624	1124	1071	2583	444	4690	11542

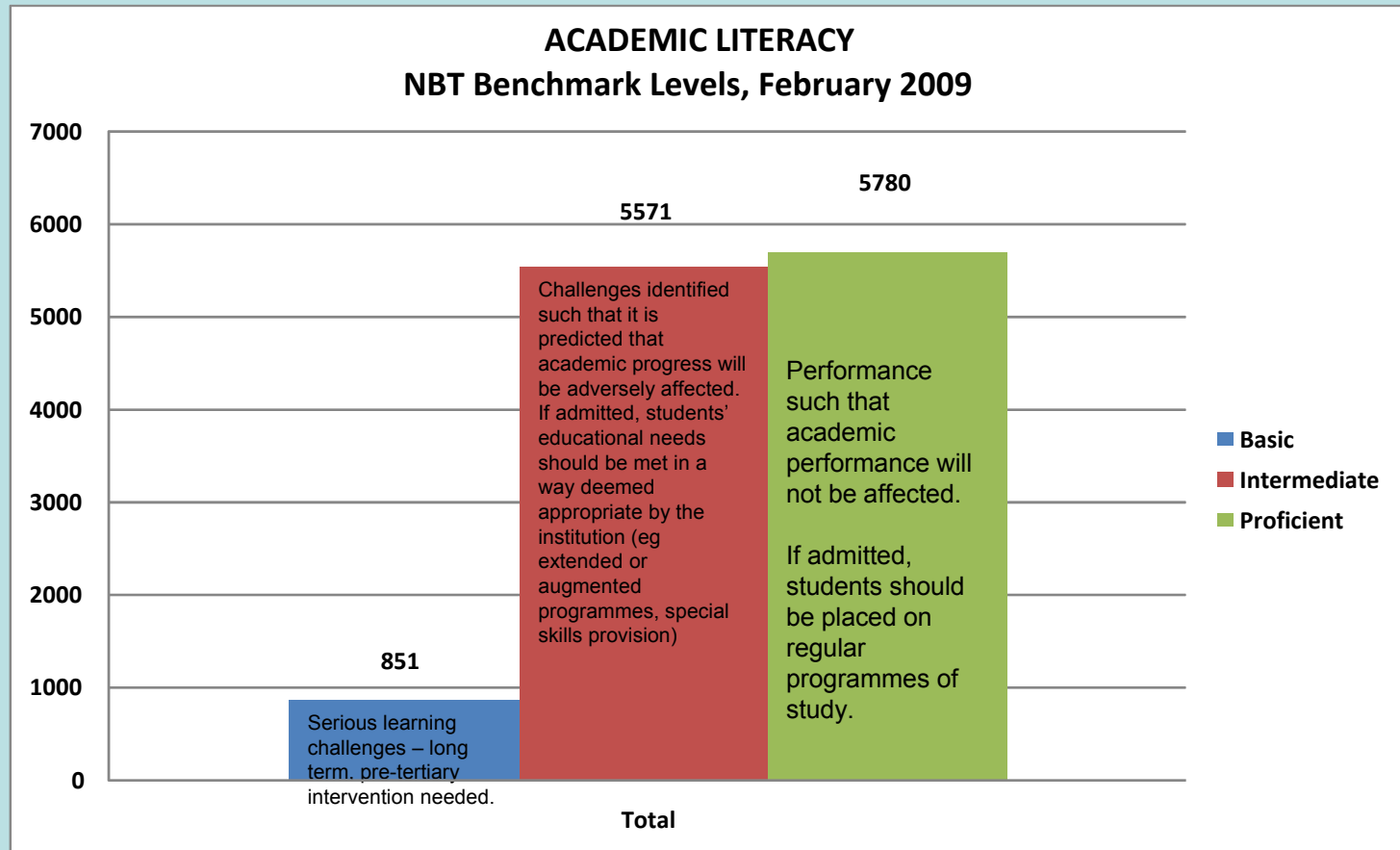
Major demographic variables in the pilot sample

Demographic Variable		Number of candidates in pilot sample[1]	% in higher education undergraduate degree study – 2007
'Race'	Black	6,161 (50.5%)	52%
	Coloured	967 (7.9%)	7%
	Indian	1,680 (13.8%)	10%
	White	3,261 (26.7%)	31%
Gender	Female	6,537 (53.6%)	55%
	Male	5,628 (46.1%)	45%
Home Language	English	5,163 (42.3%)	Not available
	Afrikaans	994 (8.1%)	
	African Languages: isiZulu (2,322), isiXhosa (1,066), Sepedi (572), Setswana (533), Sesotho (471), TshiVenda (279), XiTsonga (232), Siswati (169), IsiNdebele (59)	5,703 (≈ 49%)	
School background	Still under analysis		

[1] A very small number of respondents in each variable category did not respond or submitted illegible responses.

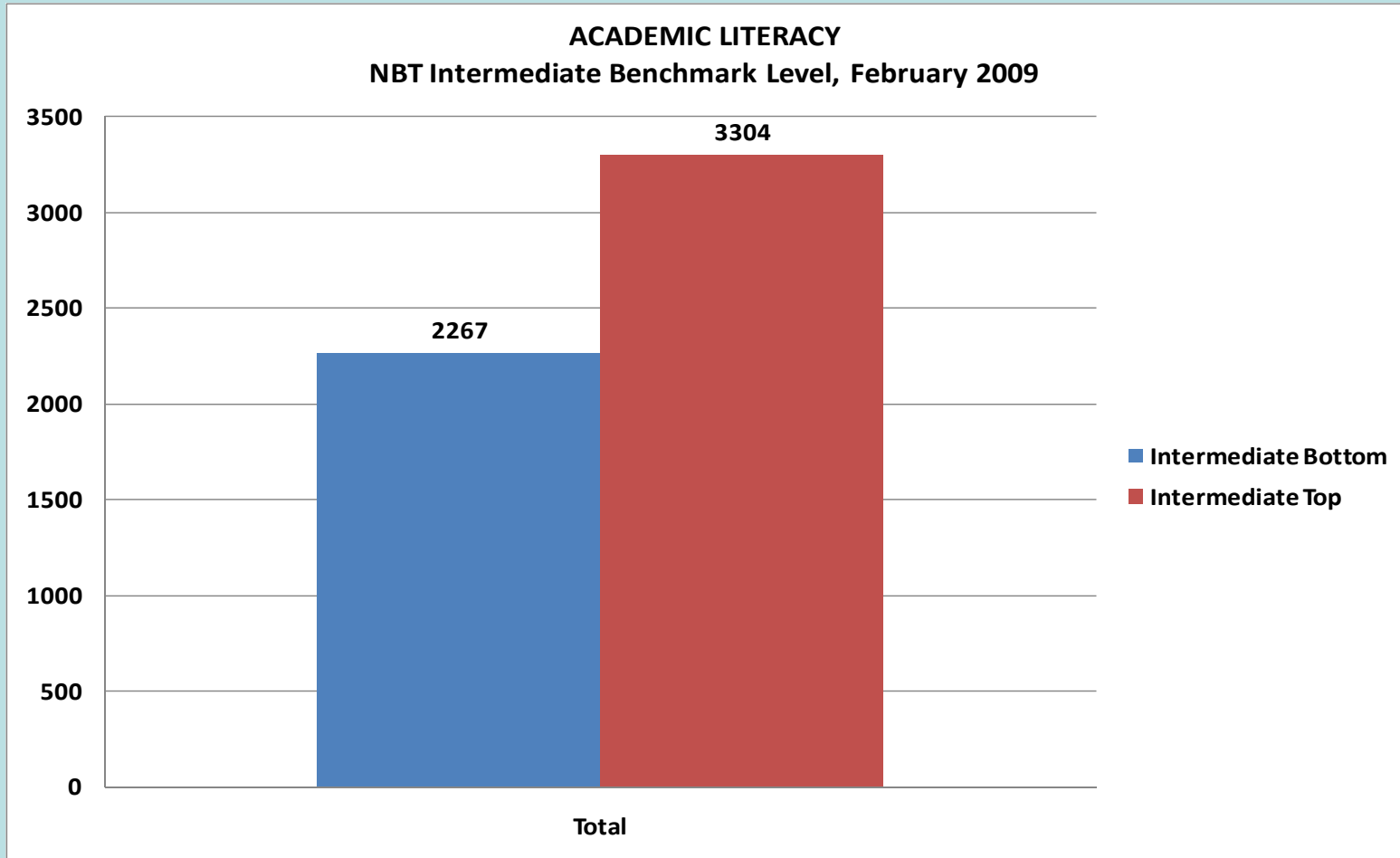
ACADEMIC LITERACY (overall)

N = 12,202

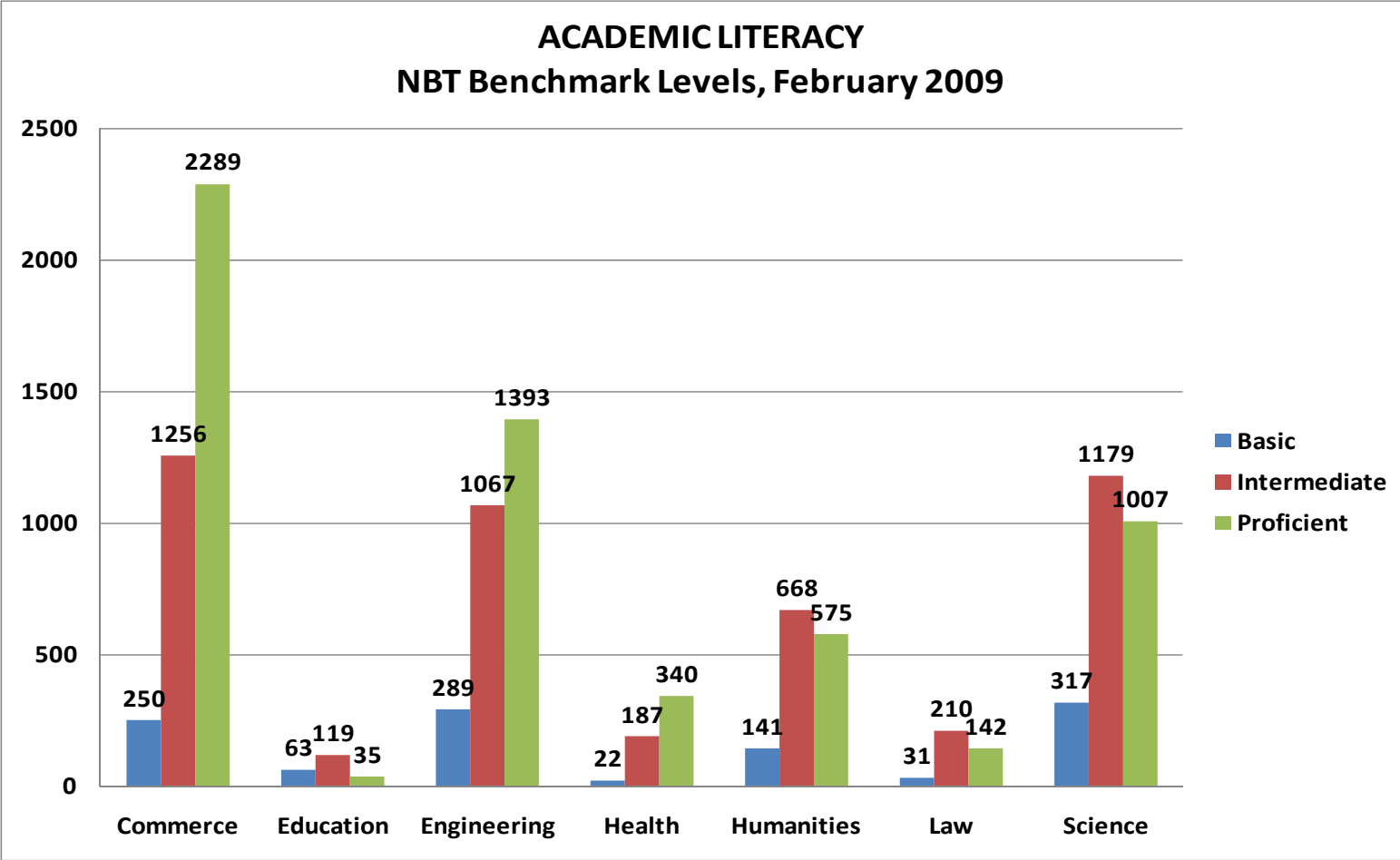


Participating institutions: Mangosuthu, Rhodes, Stellenbosch, UCT, UKZN, UWC, Wits.

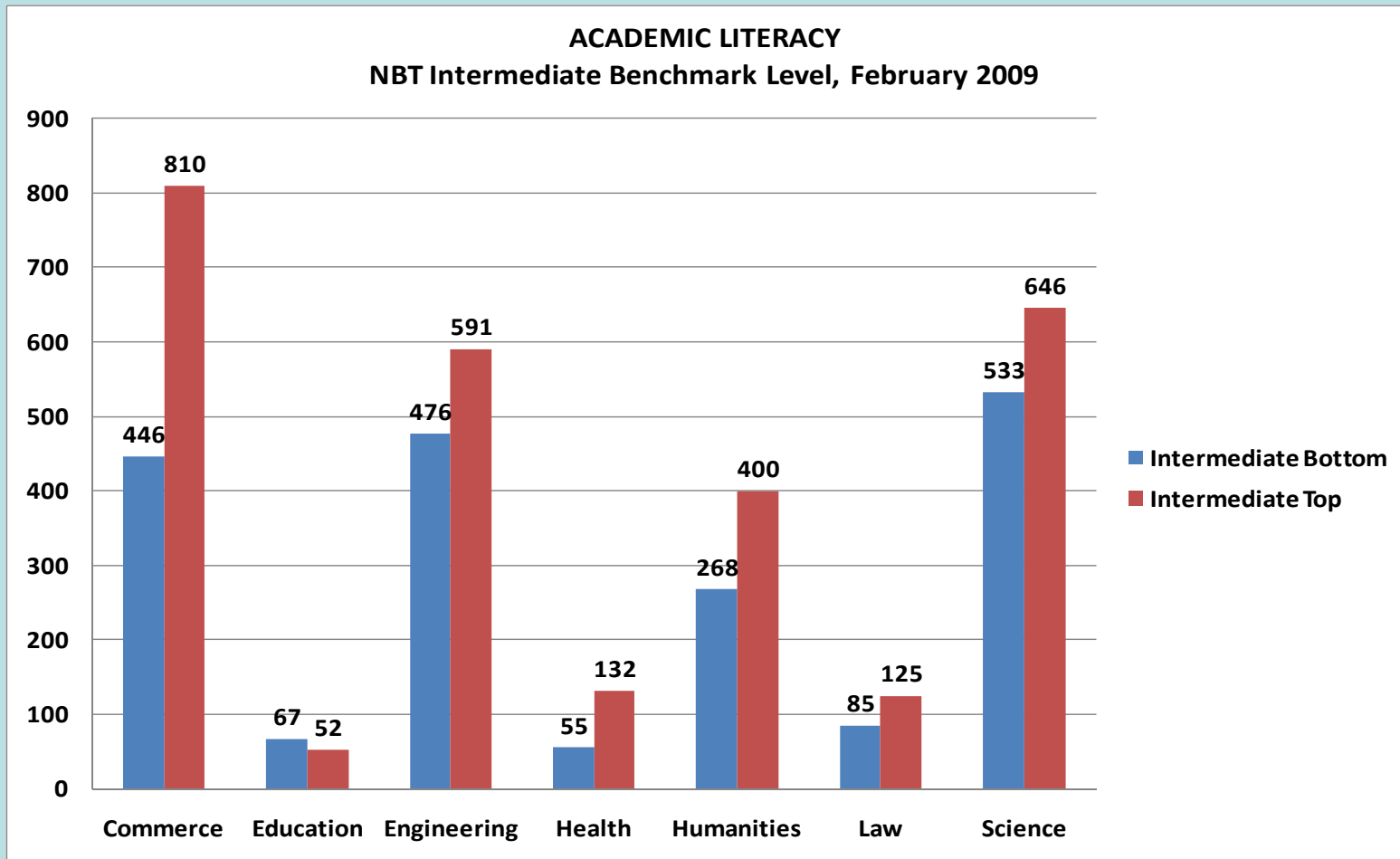
Academic Literacy (overall) [Top and Bottom Intermediate] N = 12,202



ACADEMIC LITERACY by Faculty

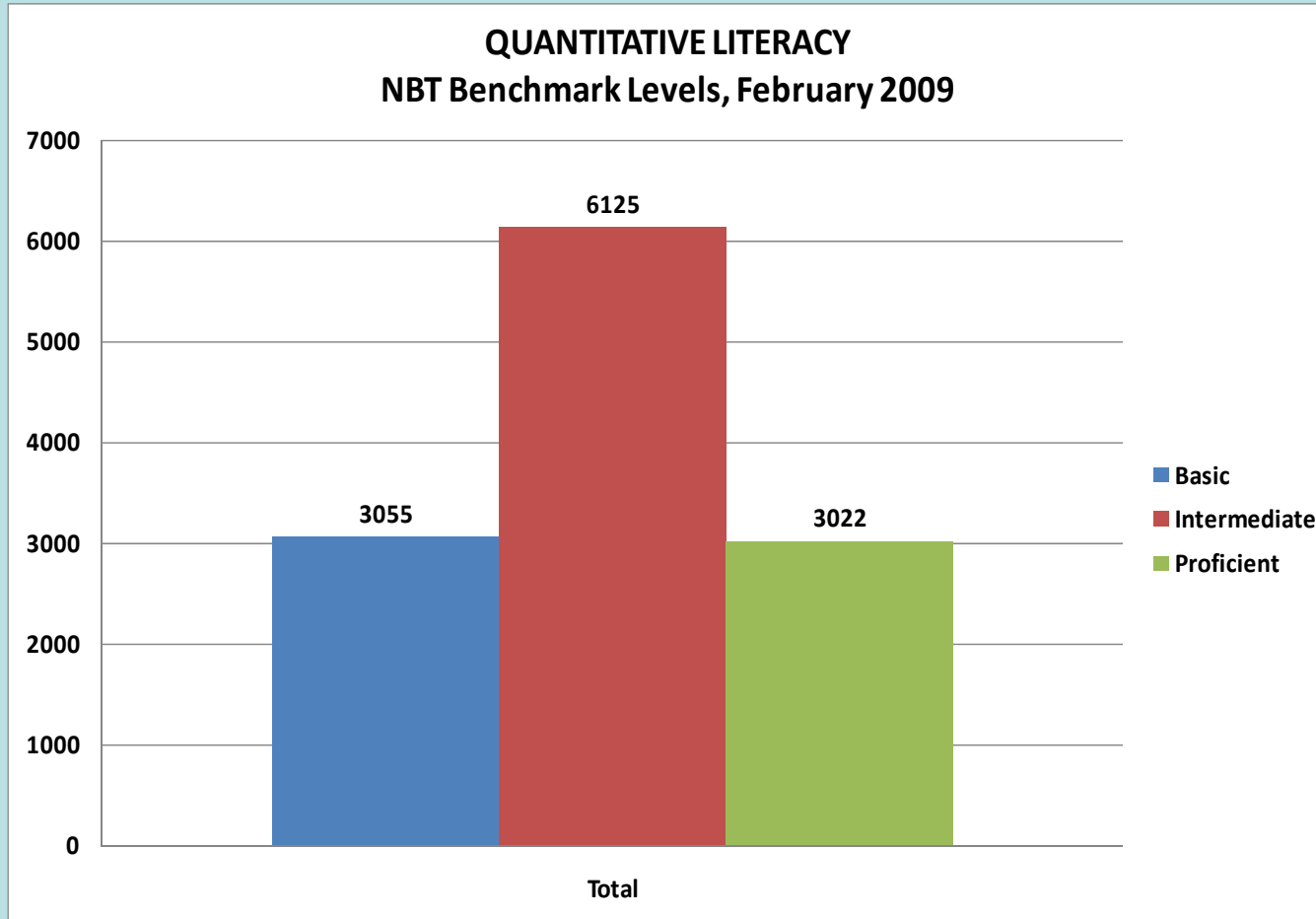


Academic Literacy by Faculty [Top and Bottom Intermediate]

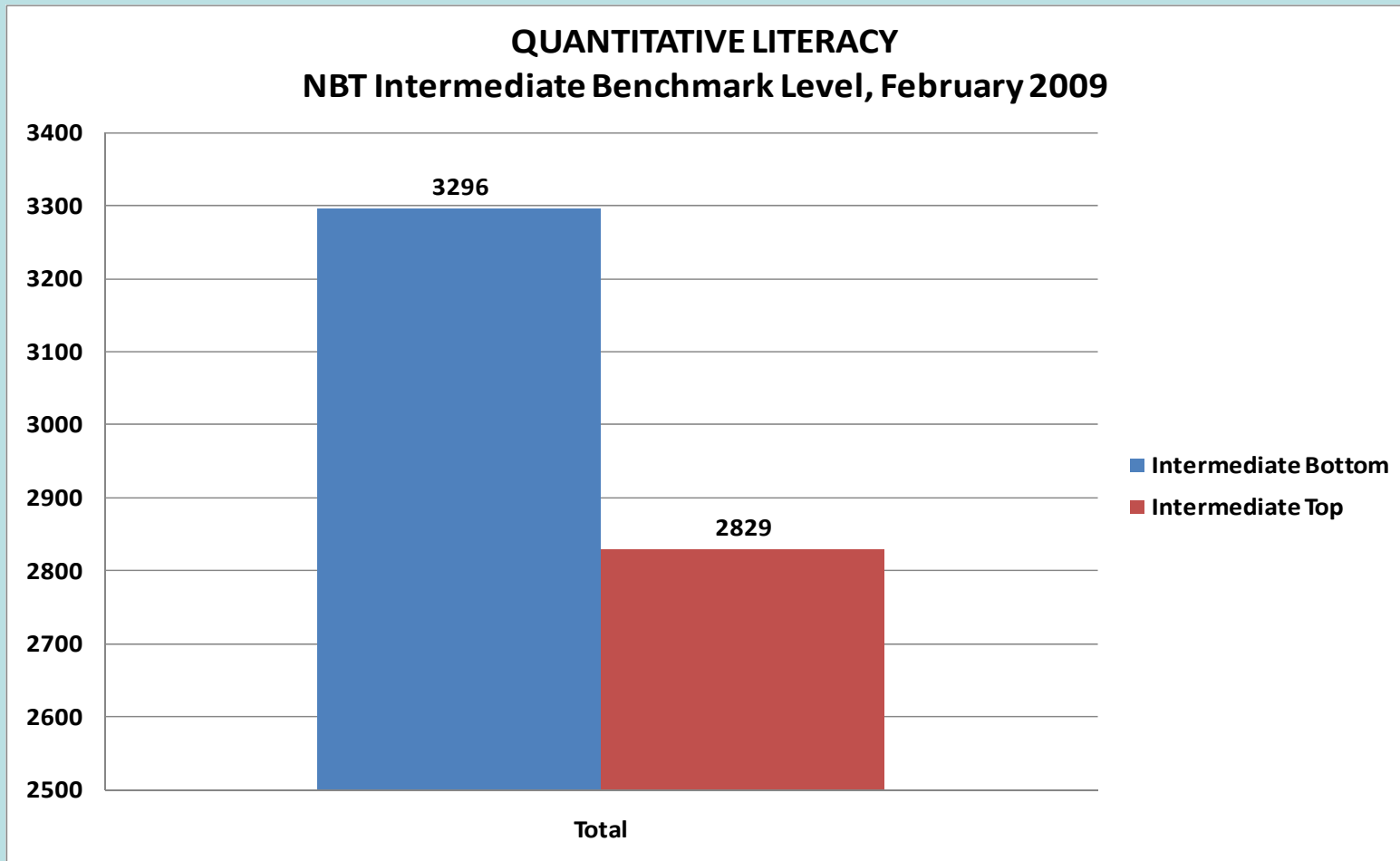


Quantitative Literacy

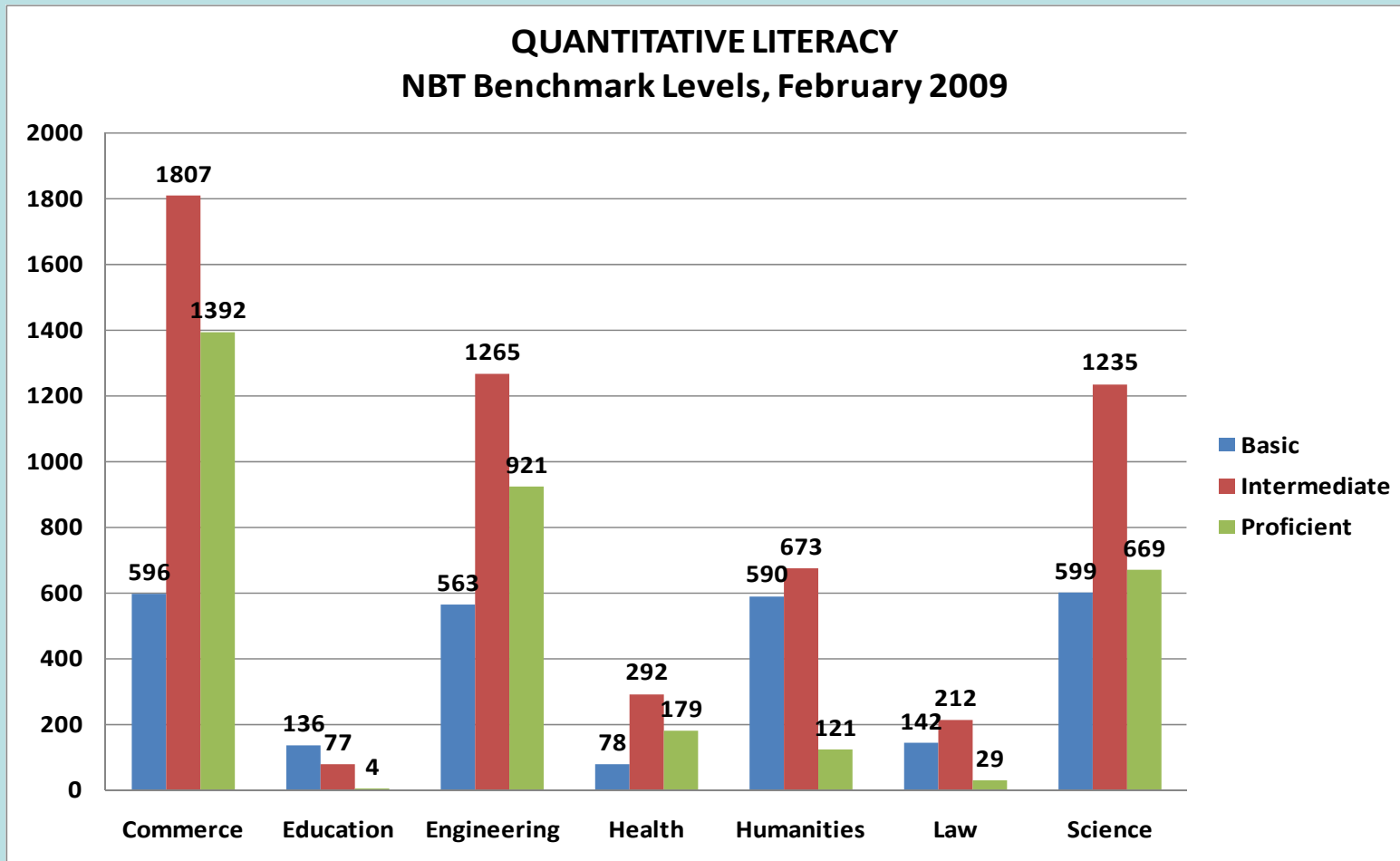
N = 12,202



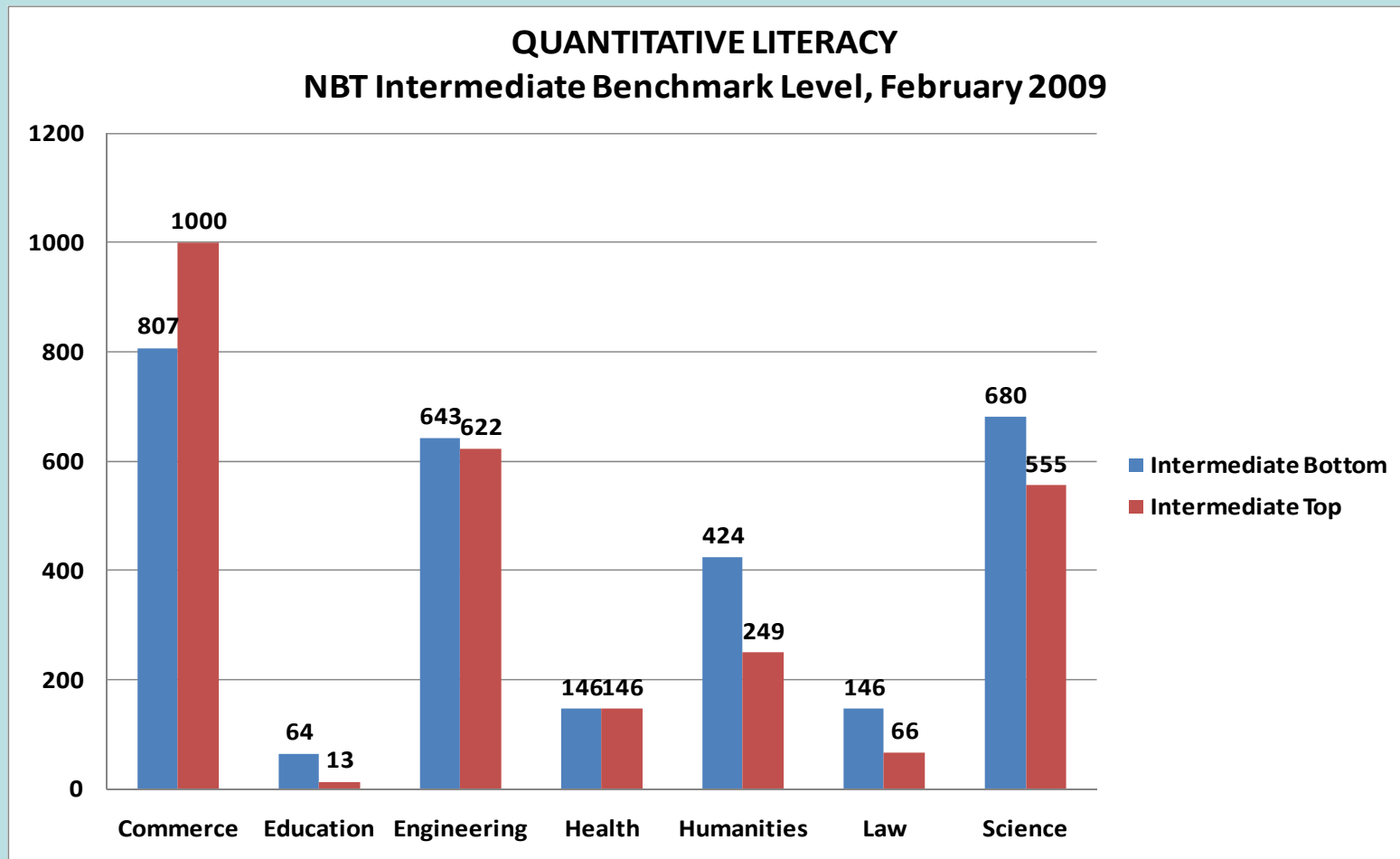
Quantitative Literacy by Faculty [Intermediate 'Top' and 'Bottom']



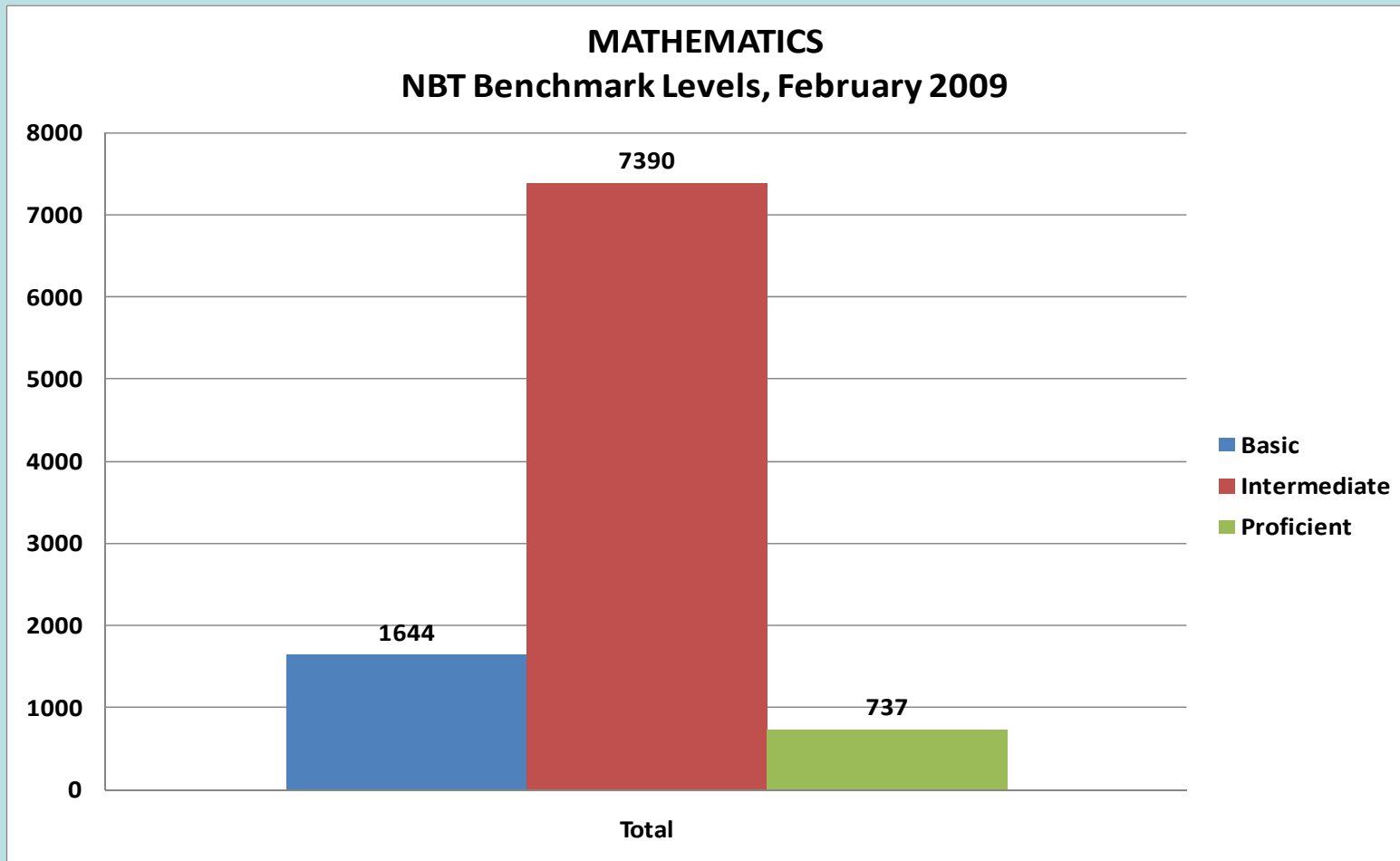
Quantitative Literacy by Faculty



Quantitative Literacy by Faculty

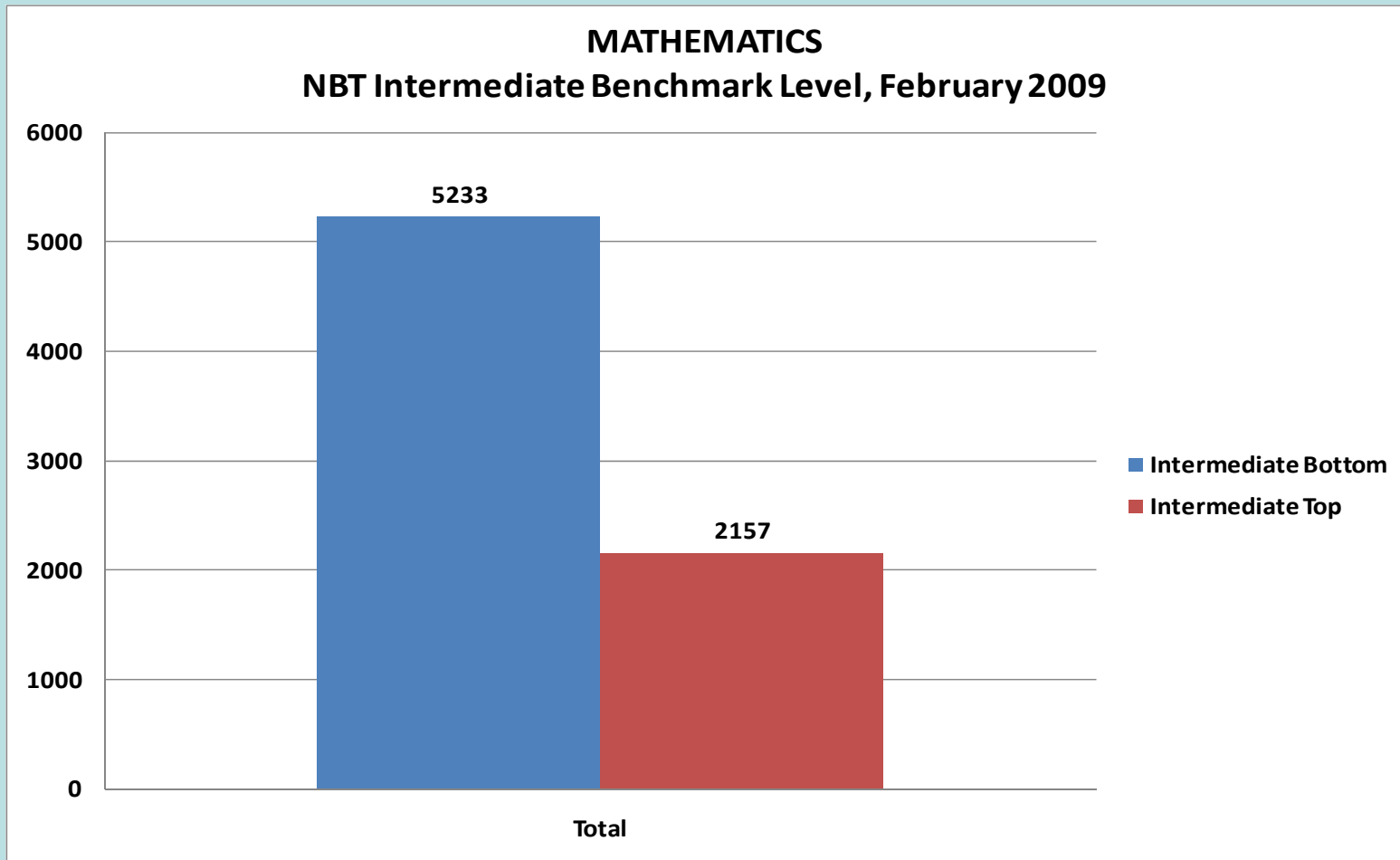


Mathematics (overall)

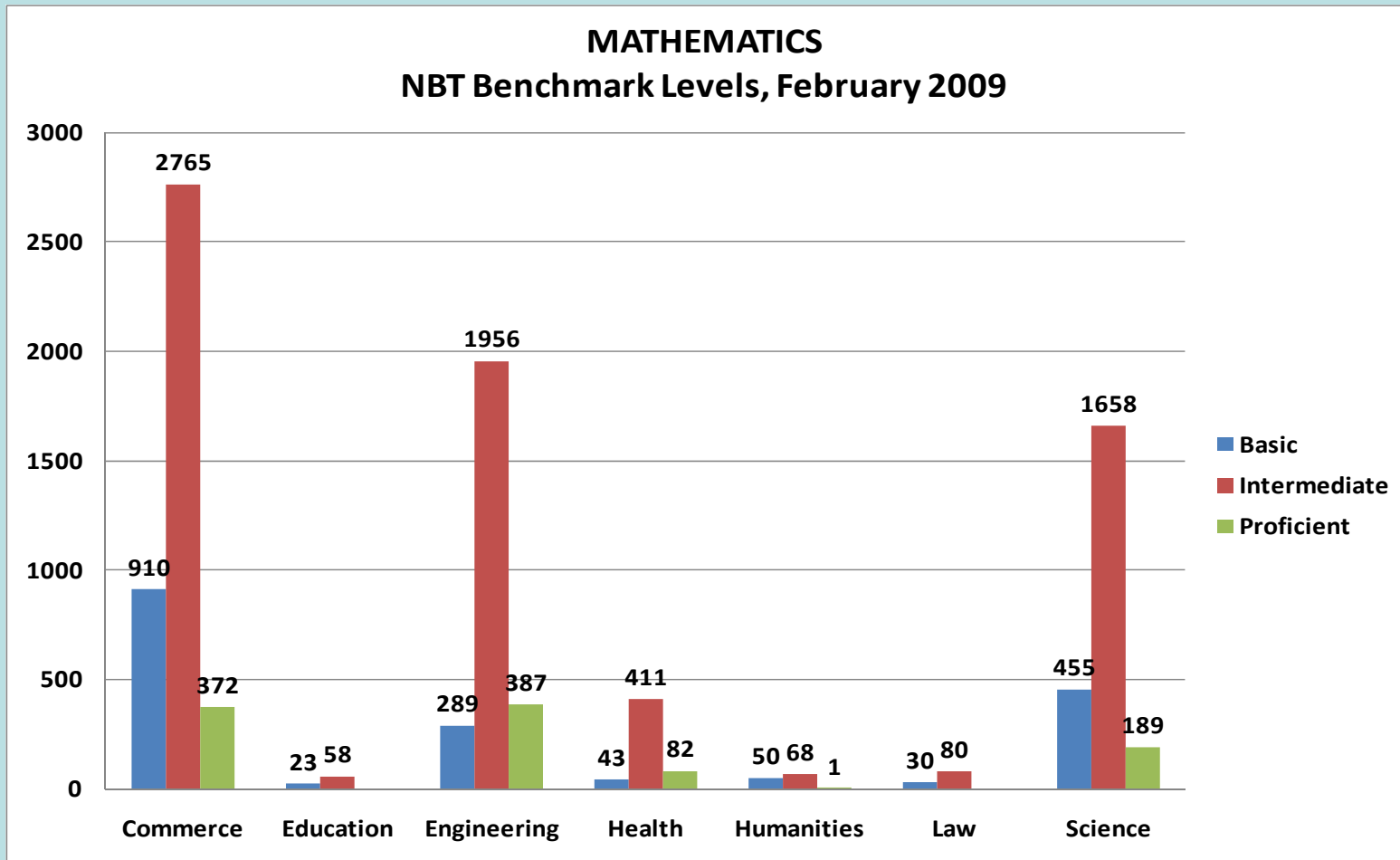


Mathematics overall

[Intermediate 'Top' and 'Bottom']

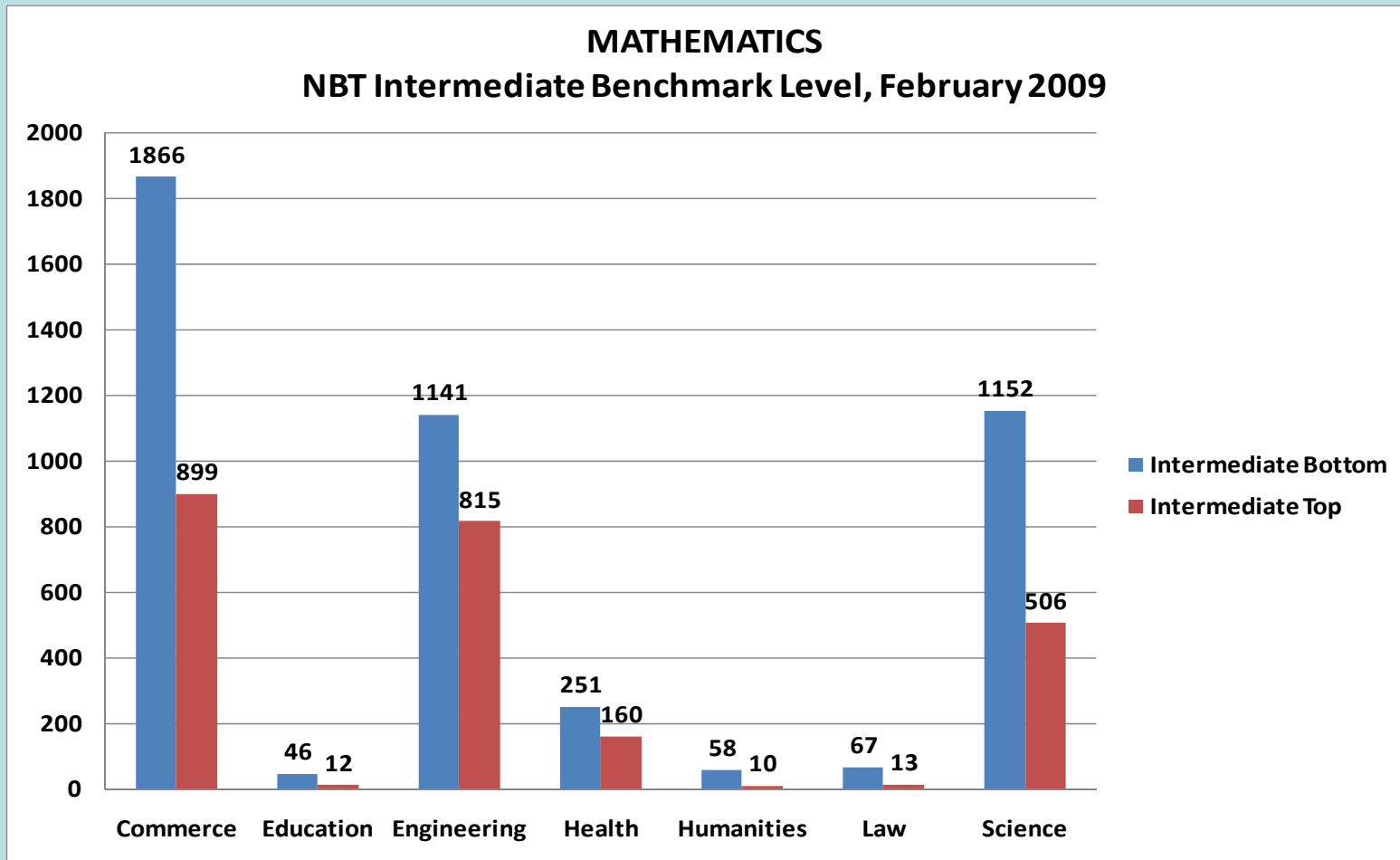


Mathematics by Faculty



Mathematics by Faculty

[Intermediate 'Top' and 'Bottom']



The Mathematics standards for the benchmark cut-scores are set against:

(1) the core Mathematics curriculum for Papers 1 & 2,

and

(2) what the higher education sector – represented by mainstream academics currently teaching Mathematics at the first year level – believes students need to know and be able to do to cope with first year study in Mathematics.

Some interpretations of the results

- The NSC examination is set at too low a level, possibly approaching that of Standard Grade in previous years. The problems of the new subject defaulting to this level are obvious, and support the value of a system such as the NBTP to act as a watchdog on standards against agreed curricula.
- The NBTP test in Mathematics is unrealistically difficult. If this is so, institutions should exercise caution in interpreting the results, and should perhaps view the 'Top Intermediate' as being more or less Proficient. Even if this is done, however, it adds very few students to the Proficient band.
- The new Curriculum Statement for the subject Mathematics is not being taught in its entirety at schools: here again the problem is obvious as it is not widely known which components are or are not being covered.

