



UEMS-CESMA Exam survey 2014

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European Board of Plastic,
Reconstructive & Aesthetic Surgery

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Content

- Results of survey of current practice
- Discussion on MCQ exam pass mark setting using data from EBOPRAS examinations

The survey

- Sent to all Boards represented at CESMA
- 28 replies received
- 10 Boards did not reply

Gynaecology

Nephrology

Neuroradiology

Nuclear Medicine

Oro-Maxillo- Facial Surgery

Paediatric Cardiology

Paediatrics

Radiology

Respiratory Medicine

Transplant Surgery

Responses received from 28 Sections

| | |
|-------------------------------|--------------------------------------|
| Anaesthesiology | ORL-HNS |
| Angiology/Vascular Medicine | Orthopaedics and Trauma |
| Cardiology | Paediatric & Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Surgery |
| Emergency Medicine | Paediatric Urology |
| Gastroenterology & Hepatology | Pathology |
| Hand Surgery | Physical and Rehabilitation Medicine |
| Infectious Diseases | Plastic Surgery |
| Intensive Care Medicine | Rheumatology |
| Medical Biopathology | Surgery |
| Neurology | Thoracic Suregry |
| Neurosurgery | Urological Surgery |
| Occupational Medicine | Vascular Surgery |
| Ophthalmic Surgery | Internal Medicine |

Sections **(not)** holding summative exams

| | |
|-------------------------------|--------------------------------------|
| Anaesthesiology | ORL-HNS |
| Angiology/Vascular Medicine | Orthopaedics and Trauma |
| Cardiology | Paediatric & Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Surgery |
| Emergency Medicine | Paediatric Urology |
| Gastroenterology & Hepatology | Pathology |
| Hand Surgery | Physical and Rehabilitation Medicine |
| Infectious Diseases | Plastic Surgery |
| Intensive Care Medicine | Rheumatology |
| Medical Biopathology | Surgery |
| Neurology | Thoracic Surgery |
| Neurosurgery | Urological Surgery |
| Occupational Medicine | Vascular Surgery |
| Ophthalmic Surgery | Internal Medicine |

26 European Board Exams

| | |
|--------------------------------|--|
| Anaesthesia and Intensive Care | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | Ophthalmology |
| Cardiovascular Imaging | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
| Electrophysiology | Pathology |
| Emergency Medicine | Pediatric surgery |
| ENT-ORL | Physical and Rehabilitation Medicine |
| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | Urology |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

20 Admit non-UEMS candidates

6 Do not

| | |
|--------------------------------|--|
| Anaesthesia and Intensive Care | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | Ophthalmology |
| Cardiovascular Imaging | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
| Electrophysiology | Pathology |
| Emergency Medicine | Pediatric surgery |
| ENT-ORL | Physical and Rehabilitation Medicine |
| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | Urology |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

24 Include an MCQ

2 Do not

| | |
|--------------------------------|--|
| Anaesthesia and Intensive Care | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | Ophthalmology |
| Cardiovascular Imaging | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
| Electrophysiology | Pathology |
| Emergency Medicine | Pediatric surgery |
| ENT-ORL | Physical and Rehabilitation Medicine |
| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | Urology |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

16 Are held at a single venue

10 Use multiple simultaneous venues

| | |
|--------------------------------|--|
| Anaesthesia and Intensive Care | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | Ophthalmology |
| Cardiovascular Imaging | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
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| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | Urology |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

19 exams are in English only

5 use multiple languages

| | |
|--------------------------------|--|
| Anaesthesia and Intensive Care | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | Ophthalmology |
| Cardiovascular Imaging | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
| Electrophysiology | Pathology |
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| ENT-ORL | Physical and Rehabilitation Medicine |
| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | Urology |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

19 exams are in English only

6 provide no translation help

| | |
|--------------------------------|--|
| | Neurology |
| Angiology/Vascular Medicine | Neurosurgery |
| Cardiology KBA | |
| | Orthopaedics |
| CMR Exam | Paediatric and Neonatal Intensive Care |
| Dermatology and Venereology | Paediatric Urology |
| | Pathology |
| Emergency Medicine | Pediatric surgery |
| ENT-ORL | Physical and Rehabilitation Medicine |
| Gastroenterology | Plastic Surgery |
| General Surgery | Thoracic Surgery (EBTS) |
| Hand Surgery | |
| Intensive & Acute Cardiac Care | Vascular Surgery (FEBVS) |

Exam size and language (MCQ)

| | # of exams | Candidates per exam |
|--------------------|------------|---------------------|
| English only | 19 | 10 - 110 |
| Multiple languages | 5 | 300 - 2100 |

Why?

Larger specialties have more experts to draw on?

More candidates reduce overall costs of translation etc.?

Native language encourages candidates to apply?

Exam size and computer use

| | # of exams | Candidates per exam |
|------------------------|------------|---------------------|
| Paper – hand marked | 7 | 10 - 40 |
| Paper – scanner marked | 8 | 25 - 600 |
| Computer based | 10 | 10 - 2100 |

Paper vs Computer

First Computer based EBOPRAS exam
Survey of all 28 resit candidates



| | | | Expressed preference | |
|-------|------------|---------|----------------------|-------|
| | Candidates | Respond | Computer | Paper |
| Total | 28 | 15 | 15 | 0 |

Were these all candidates who passed second time around?

Paper vs Computer

First Computer based EBOPRAS exam
Survey of all 28 resit candidates



| | | | Expressed preference | |
|-------|------------|---------|----------------------|-------|
| | Candidates | Respond | Computer | Paper |
| Total | 28 | 15 | 15 | 0 |
| Pass | 10 | 8 | 8 | 0 |
| Fail | 18 | 7 | 7 | 0 |

Advantages of computer

- Multimedia questions possible
- Flexibility in number of questions
- No risk of errors copying answers onto sheet
- Time remaining constantly displayed
- Results available quickly
- **Candidates prefer it**

Computer systems used

| | |
|--------------------|-----------|
| | 10 |
| Pearson Vue | 4 |
| Orzone | 3 |
| Prometric | 1 |
| QuestionMark | 1 |
| Proprietary system | 1 |

Analysis of paper-based exams

| | |
|---------------------------|----|
| | 15 |
| No software used | 4 |
| Speedwell | 2 |
| “Austrian software” | 1 |
| University of Heidelberg | 1 |
| “Contracted statistician” | 1 |
| No answer | 6 |

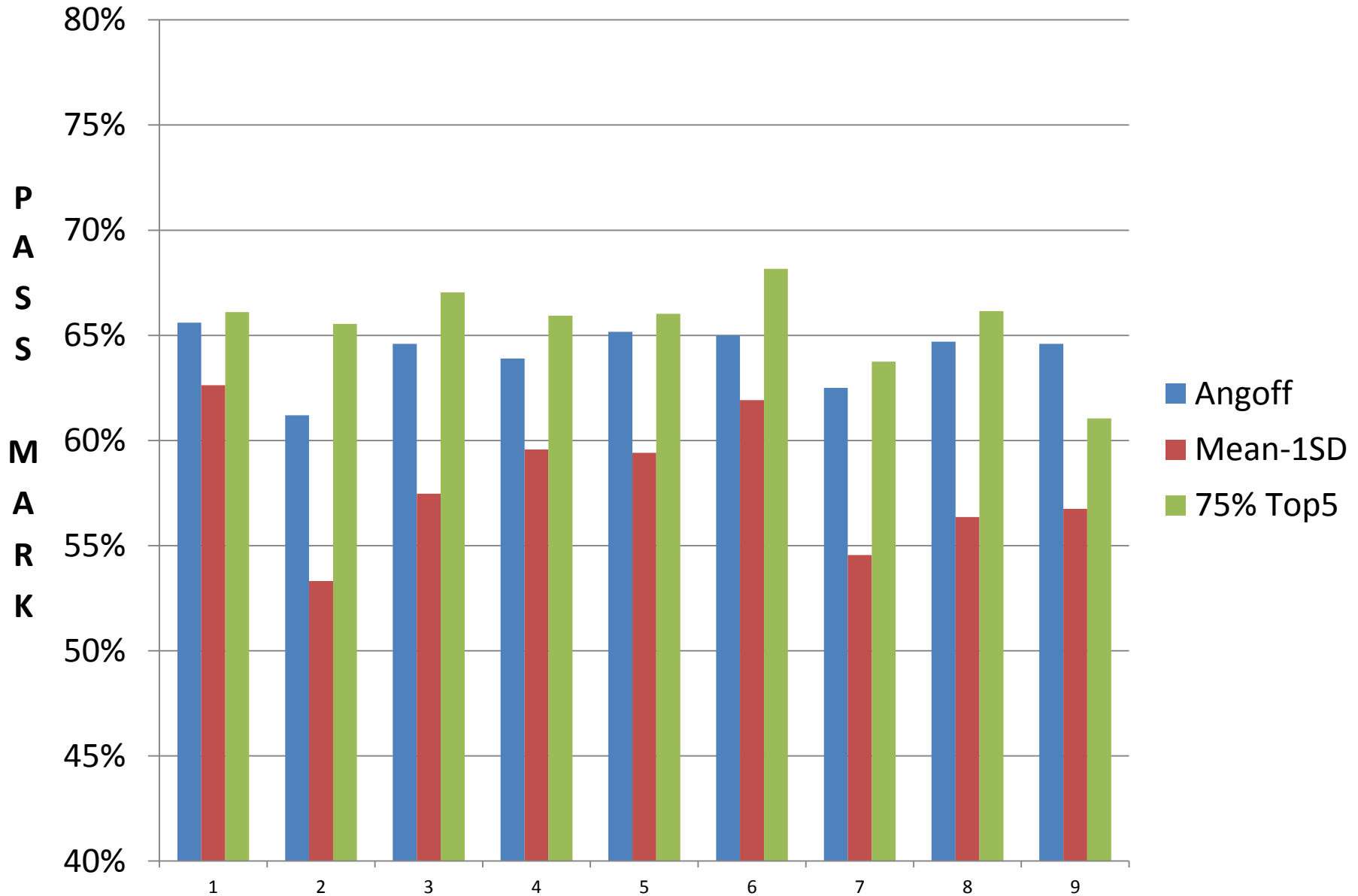
Setting the pass mark

| Method used | (24) |
|--------------------------|------|
| Angoff/modified | 7 |
| Fixed (typically 60%) | 7 |
| Mean – 1 SD | 4 |
| 75% of best 5 candidates | 2 |
| Examiner vote | 1 |
| | |
| Not clearly specified | 3 |

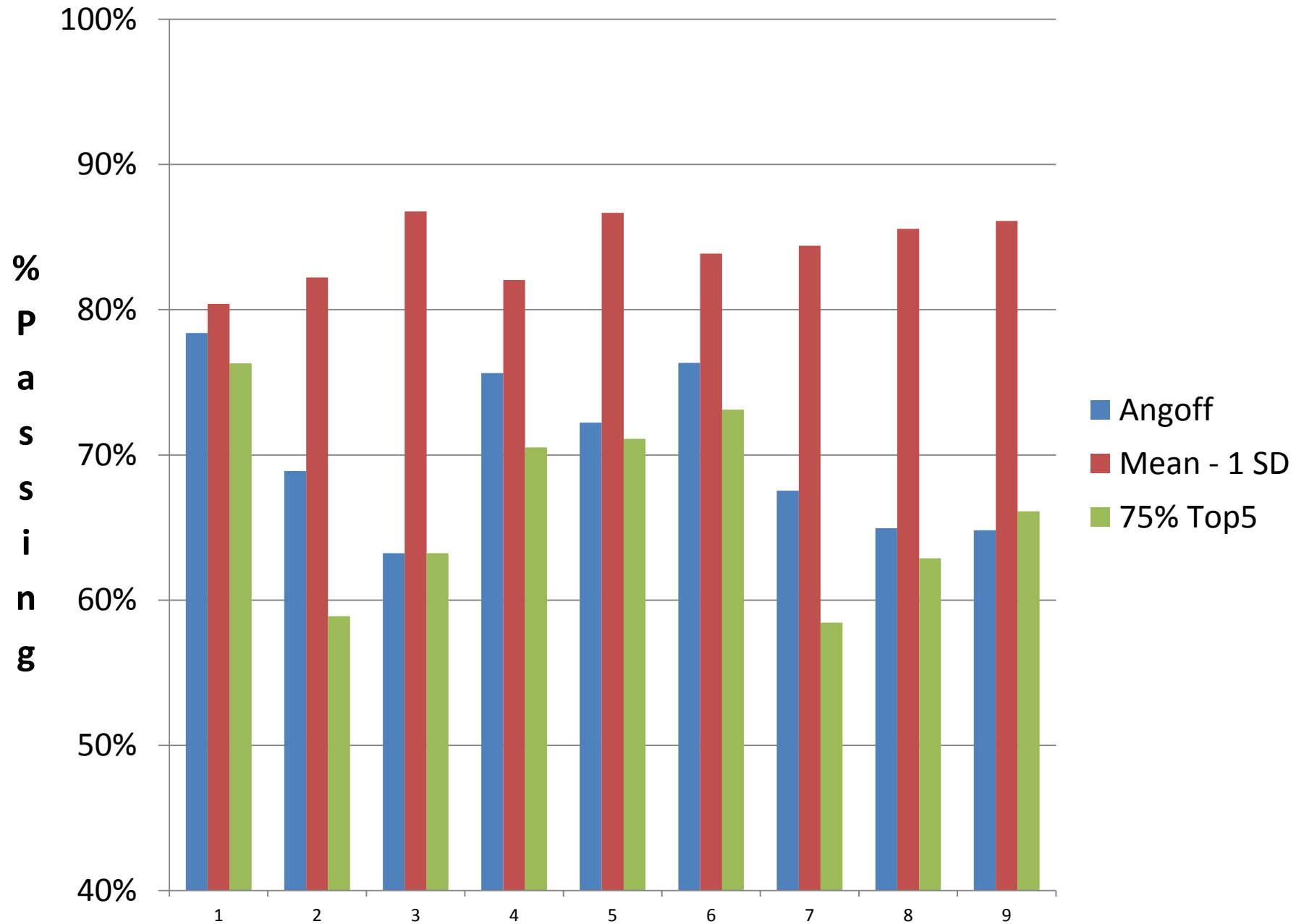
Does the method affect the result?

- Analysis of last 9 EBOPRAS MCQ exams
- 68 – 108 candidates per exam

Different methods to calculate EBOPRAS pass mark



Effect on % of EBOPRAS candidates passing



Is examinee standard consistent from exam to exam?

- Analysis of 13 EBOPRAS MCQ exams
- Many questions used > once
- Compared performance of the different candidate groups on those identical questions at different exams

Is examinee standard consistent from exam to exam?

| Exams (in order of candidates' ability) | Number of question Comparisons | Difference in Candidates % score |
|---|--------------------------------|----------------------------------|
| 1 | 303 | -2.14 |
| 2 | 287 | -0.89 |
| 3 | 250 | -0.79 |
| 4 | 277 | -0.64 |
| 5 | 280 | -0.26 |
| 6 | 196 | -0.17 |
| 7 | 257 | 0.16 |
| 8 | 231 | 0.33 |
| 9 | 231 | 0.56 |
| 10 | 181 | 0.89 |
| 11 | 281 | 1.04 |
| 12 | 169 | 1.18 |
| 13 | 277 | 1.75 |

Range is 3.89%

Enough to have major effect on pass rates

Is this a drift over time?

Is examinee standard consistent from exam to exam?

| Exams (in order of candidates' ability) | Number of question Comparisons | Difference in Candidates % score |
|---|--------------------------------|----------------------------------|
| 1 | 303 | -2.14 |
| 2 | 287 | -0.89 |
| 3 | 250 | -0.79 |
| 4 | 277 | -0.64 |
| 5 | 280 | -0.26 |
| 6 | 196 | -0.17 |
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| 9 | 231 | 0.56 |
| 10 | 181 | 0.89 |
| 11 | 281 | 1.04 |
| 12 | 169 | 1.18 |
| 13 | 277 | 1.75 |

| Exams in time order | Difference in Candidates % score |
|---------------------|----------------------------------|
| 1 | -0.17 |
| 2 | 1.18 |
| 3 | 0.89 |
| 4 | 0.33 |
| 5 | 0.56 |
| 6 | -2.14 |
| 7 | 1.04 |
| 8 | 1.75 |
| 9 | -0.26 |
| 10 | -0.89 |
| 11 | -0.79 |
| 12 | 0.16 |
| 13 | -0.64 |

Average ability of candidate groups varies

Many possible changes may affect this:

- Trainees admitted

- Non-UEMS candidates admitted

- Exam becoming compulsory for trainees

- Job market pressures

- Movement around EU countries

Is (Mean – 1SD) fair for a competence exam?

The Top 5 also creates problems

2 Boards using this have 80 & 350 candidates

Why top 5?

Is top 5% fairer?

A few very good candidates can skew the outcome

Is (75% of Top 5 marks) a fair pass mark?



Norm-reference method to set pass marks

- Standard-setting **norm-reference method** determines the pass mark to be equal to average test score minus one standard deviation (indicated by educationalists)
- Comparison to Angoff method
 - George S., Haque M.S., Oyebode F. (2006). Standard setting: comparison of two methods. BMC Med. Educ. 6, 46-51
- Angoff method: objective
Norm-reference method: arbitrary

How should we set pass mark?

Comparison with previous results if

questions have been used often enough

definition of competence is constant over time

Expert definition of minimum level of competence
using (modified) Angoff procedure

Summary 1

- Most (20/26) admit non-UEMS candidates
- Almost all (24/26) have an MCQ component
- Most (19/26) MCQ exams are in English only
- Most (16/26) are at a single venue
- Most (15/25) are paper-based
- Larger exams tend to
 - Use multiple languages
 - Offer multiple sites
 - Be computer-based
- Candidates prefer computer-based exams

Summary 2

- Many computer systems in use
 - To deliver exam
 - To analyse results
- Pass marks are set by many methods, which produce markedly different outcomes
- Candidate groups vary in their overall ability
- Use criterion based setting of pass marks, such as Angoff procedure

Future possibilities

- Extend the survey to greater depth/width?
- Can Boards collaborate more?
- CESMA to make recommendations on aspects of MCQ exams?
 - Pass mark setting
 - Computer use
 - Languages

Thank you for your attention

- Faleminderit shumë (Albanian) Shterakravetsun (Armenian) Eskerrik asko (Basque)
- Mnogo blagodarya (Bulgarian) Dzãkujã (Cassubian) Moltes gràcies (Catalan) Merastawhy (Cornish)
- À ringraziavvi (Corsican) Hvala lijepa (Croatian) Děkuji (Czech) Mange tak (Danish) Dank u wel (Dutch)
- Thank you (English) Ic sæcge eow þancas (English, old) Dankon al vi (Esperanto) Aitäh (Estonian)
- Paljon kiitoksia (Finnish) Merci beaucoup (French) Tanke wol (Frisian) Graciis (Friulian) Grazas (Galician)
- Mèrczi (Gallo) Merci (Gascon) Besten dank (German) Merci villmahl (German: Zurich Switzerland)
- Ευχαριστώ (Greek) Toda raba (Hebrew) Nagyön köszönöm (Hungarian) Takk fyrir (Icelandic)
- Gratias (Interlingua) Qujanaq (Inuttut) Go raibh mile maith agaibh (Irish Gaelic) Gratias tibi ago (Latin)
- Liels paldies (Latvian) Mouchou gratzia (Lingua Franca) Labai achiu (Lithuanian) Merci (Luxembourgish)
- Grazzi hafna (Maltese) Gura mie mooar ayd (Manx) Merçi (Monegasque) Gràzzie (Napulitano)
- Dziękuję (Polish) Obrigado (Portuguese) Mercé plan (Provençal) Nais tuke (Romani: gypsy)
- Oven saste (Romani) Mulțumesc (Romanian) Grazia fitgun (Romantsch) Спасибо (Russian)
- Giitus eanat (Saami Lappish) Moran taing (Scottish Gaelic) Grazzii (Sicilian) Dakujem vám (Slovak)
- Hvala lepa (Slovenian) Dz'akujo so (Sorbian) Muchas gracias (Spanish) Dankeschee (Swabian)
- Tackar så mycket (Swedish) Çok tesekkür ederim (Turkish) Moltes gracies (Valencian)
- Merci (Walloon) Diolch yn fawr iawn (Welsh) A dank aych (Yiddish)



Norm-reference method to set pass marks

- Pass rate with Angoff method is significantly higher (100 percent in paper) than the pass rate with the Norm-reference method (85 percent in paper)
(note: this was a 50 single-best answer item test with only 78 participants)
- Different standard setting methods result in different outcomes → **clear definitions should be made in order to assure credibility, acceptability and defensibility of the chosen method**