



EEGC - How Results Are Determined

Rob Wright

Chair of EEGC Standard Setting

UEMS Cardiology Section

Conflicts of Interest:

Rob Wright : None

Exam Validity

- Are we testing the right thing?
- Are we testing it the right way?
- Are our processes robust?

Exam Validity

- Are we testing the right thing?
- Are we testing it the right way?
- Are our processes robust?

- Is a candidate who passes the exam able to apply knowledge in such a way as to indicate that they are a competent practitioner?

Exam Process

- Selection of Questions – February
- Proof reading
- Standard Setting meeting – March 23,24th
- Final Review – May 10th
- Candidates took the test – June 14th
- Analysis of test results
- Agreeing a pass mark
- Distribution of exam results

Standard Setting Meeting

- Schiphol, **March 23,24**
- 10 members
 - 2 UK, 2 Ireland ,3 Netherlands, 1 Portugal, 1 Greece, 1 Malta, 1 Spain, 2 Sweden, 1 Switzerland. (1 trainee)
- Scored each item difficulty in advance
- Discussed each item
- Rescored each item difficulty at meeting
- This data used to derive the boundaries for the acceptable pass mark

Standard Setting Meeting

- Reviewed 150 questions
- Accepted 120 questions

- 30 questions were:
 - Rejected
 - Returned to Question Writing Group
 - Deferred to 2018

Thinking About Performance

- In a Pass-Fail exam it is the performance of the exam and the candidate around the cut score that is paramount
- Think of the 'just passing' candidate

Importance of the 'Just Passing' Candidate

- The mean and SD of each estimate of difficulty for all questions can be used to derive an acceptable range for the pass mark
- This requires a Standard Setting Group with a range of opinion who score the difficulty of each question before and after a group discussion
- A 'trimmed' mean + 2SD is used to derive the acceptable range for the pass mark

In addition the group considers - Are we happy with the questions?

- Is the answer key correct?
- Question valid?
- Question consistent and accurate?
- Any change in medical knowledge?
- Any change in guidelines?
- Can we simplify the text?
- Are there any country specific issues?

Standard Setting Meeting

ID	RW	CL	EMcF	RvdB	MJA		RW	CL	EMcF	RvdB	MJA
115	70	40	50	70	75		70	50	55	70	80
116	75	70	70	70	70		75	70	70	70	70
117	60	40	40	50	55		55	50	50	50	55
118	55	60	65	60	65		55	60	65	60	65
119	45	50	50	70	60		50	50	50	60	60
120	35	40	50	35	60		35	40	45	35	60
Mean	58.5	64.9	58.7	63.1	59.7		56.3	61.9	57.0	60.8	58.4
SD	15.1	12.9	13.9	13.1	11.9		13.8	12.7	12.9	13.7	12.6

Standard Setting Meeting

- Accepted 24 questions in each category
-
- Section 1 Valvular/Myocardial Disease
- Section 2 Ischaemic Heart Disease
- Section 3 Arrhythmia
- Section 4 Non-invasive and GUCH
- Section 5 General

Exam Composition

- Question Type
 - Text only 70%
 - ECG image 12%
 - Other image 8%
 - Video 10%

Exam Delivery – 2017 (2016)

- 360 (293) candidates (383 registered)
 - 45 (29) Greece
 - 7 (9) Ireland
 - 1 (4) Malta
 - 67 (68) Netherlands
 - 16 (9) Portugal
 - 63 (53) Spain
 - 132 (121) UK

Raw Data Issues

- None
- No problem with video or image display
- Some ID and other issues at reported at Pearson Vue Centres

ESC KBA 2017

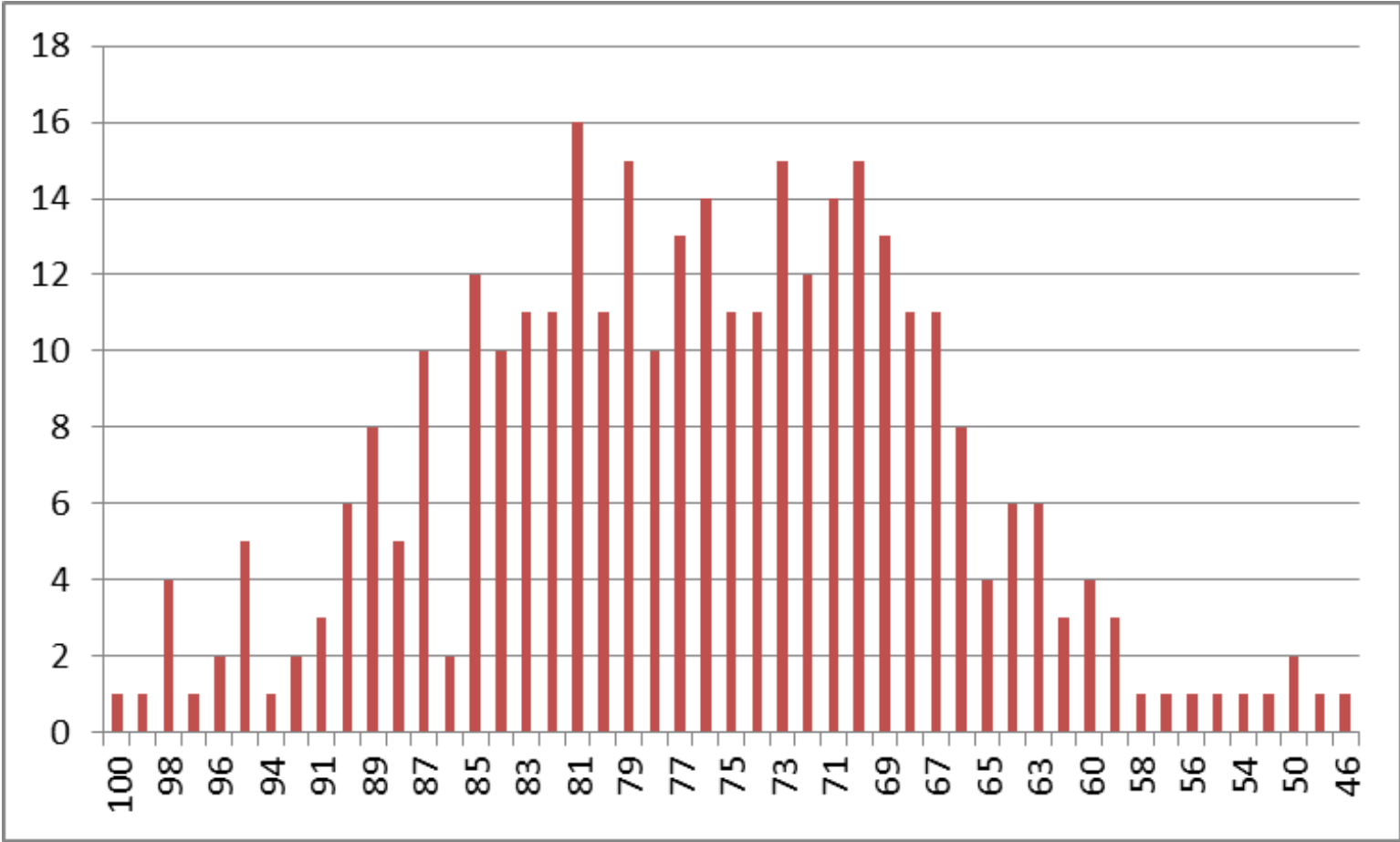
Statistical Analysis (Uni Koeln)



- 360 (293) candidates
- 120 (120) questions
- Raw Score
- 2017 Mean (SD) 63.4% (8.3) range 38-83%
- 2016 Mean (SD) 64.6% (9.1) range 33-90%

- Approximately normal distribution
- Cronbach Alpha 0.787 (0.818)

All Candidates Score Distribution



Review of Item Performance

- Question Difficulty

- Percentage of candidates who answered this item correctly

- Item-Total Score Correlation

- Correlation between correct/incorrect for this item against score for the whole test

2017 Item Difficulty < 30%

Item	Difficulty (%)	
N=13		

2017 Item Difficulty > 90%

Item	Difficulty (%)	
N = 16		

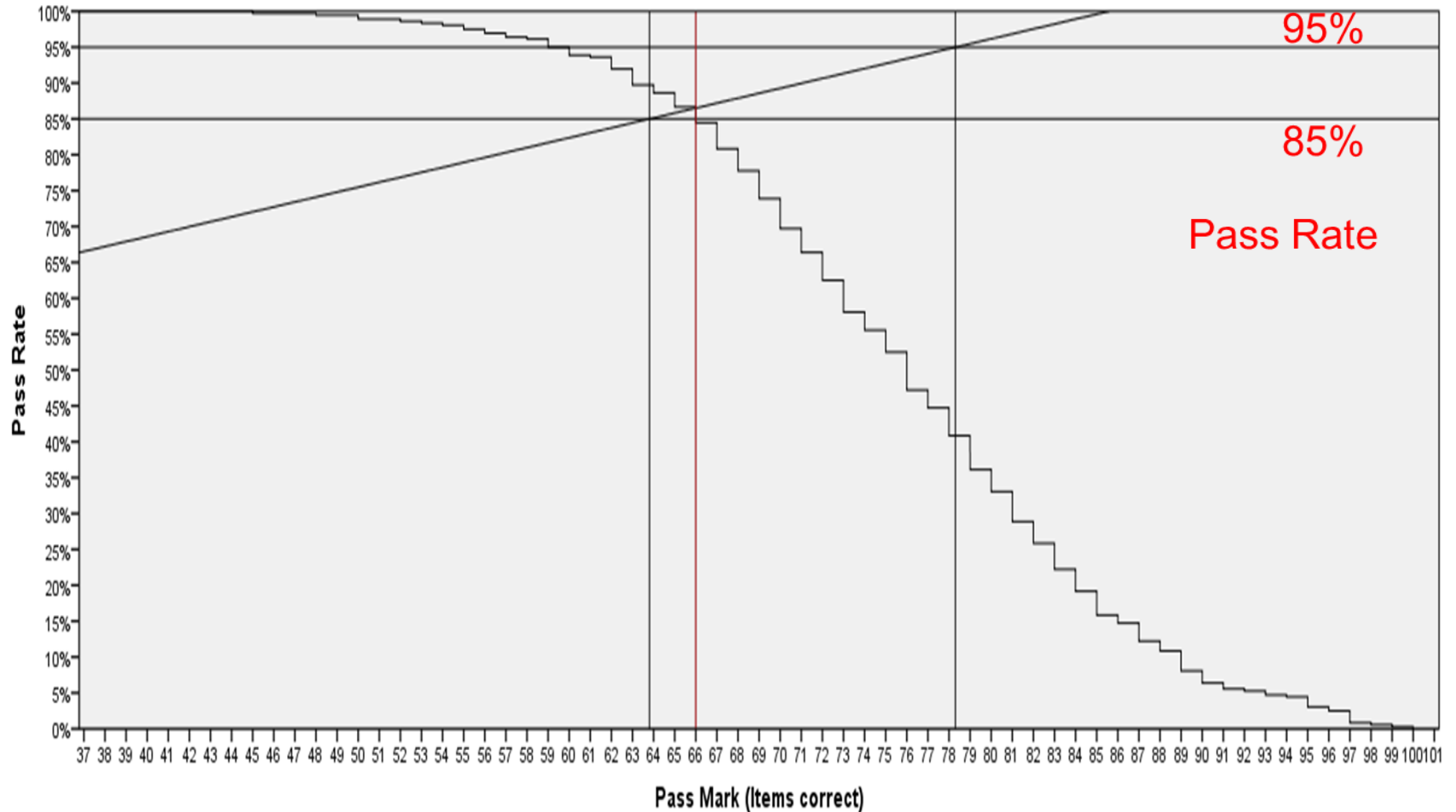
-ve Item-Total Correlation 2017

-ve Correlation n=5	Corr	Difficulty
4965	-0.044	0.45
5530	-0.043	0.39
5674	-0.066	0.17
6696	-0.120	0.84
10859	-0.051	0.07

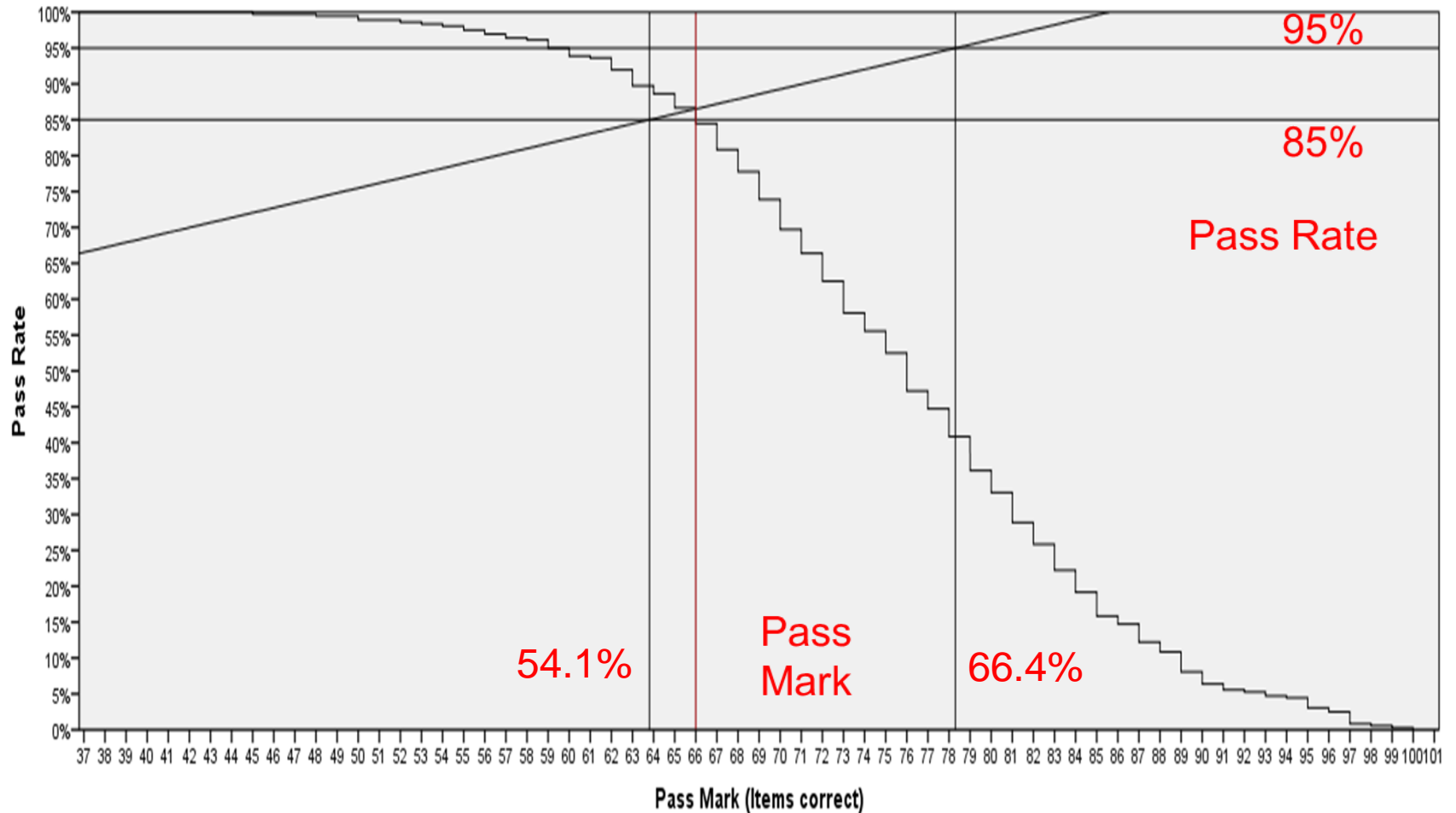
Web Conference Review June 28th

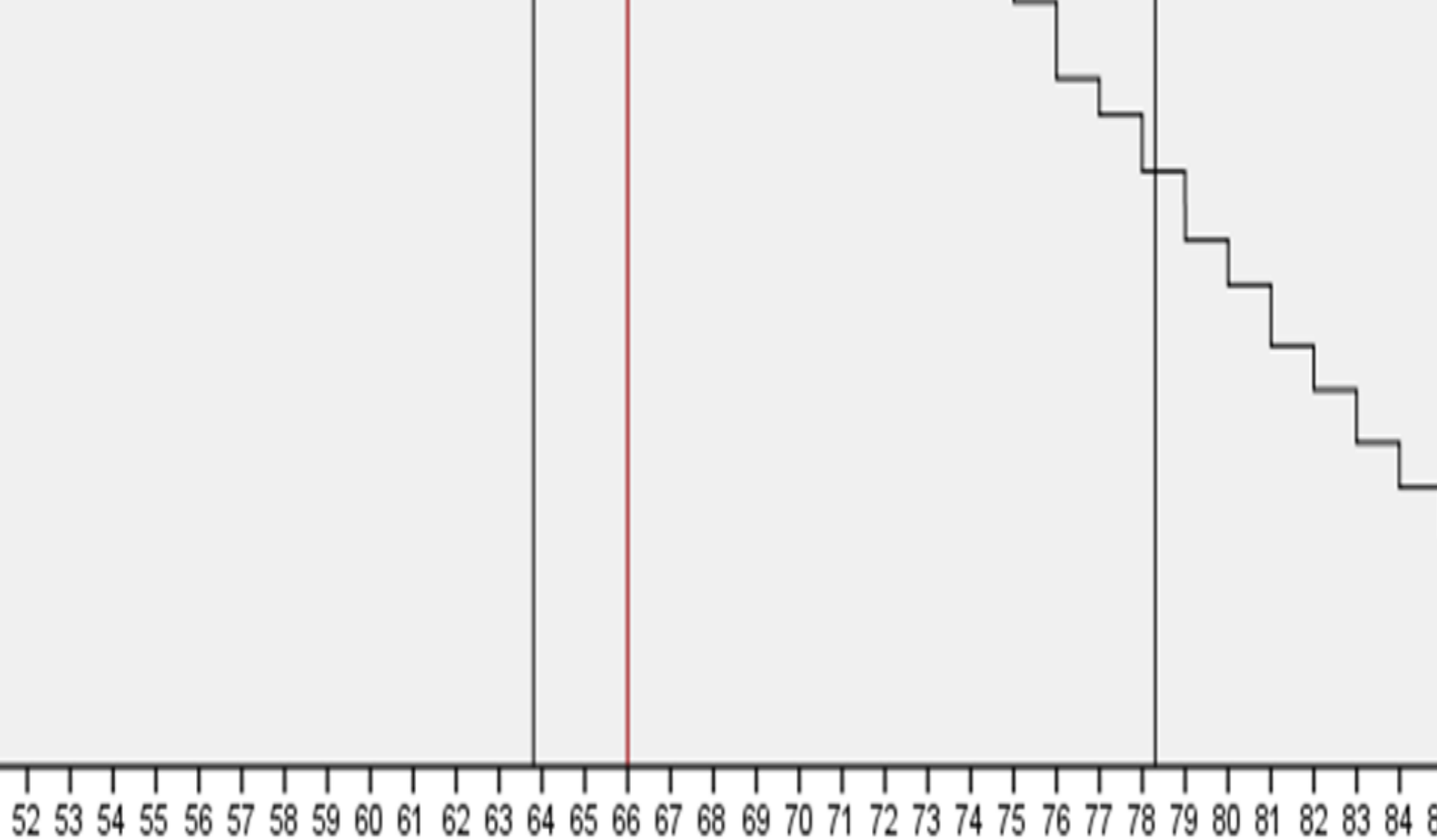
- 5 SSG members, C Carrera, S Thibault
- Reviewed all items with difficulty < 30%
- Reviewed all items with negative correlation
- Answer key correct for all
- Recommend to withdraw items 5674, 10859
- Suggest do not reuse items 5674, 10859
- Review 9 items with question writers to try and improve performance

Setting The Pass Mark 2017



Setting The Pass Mark 2017

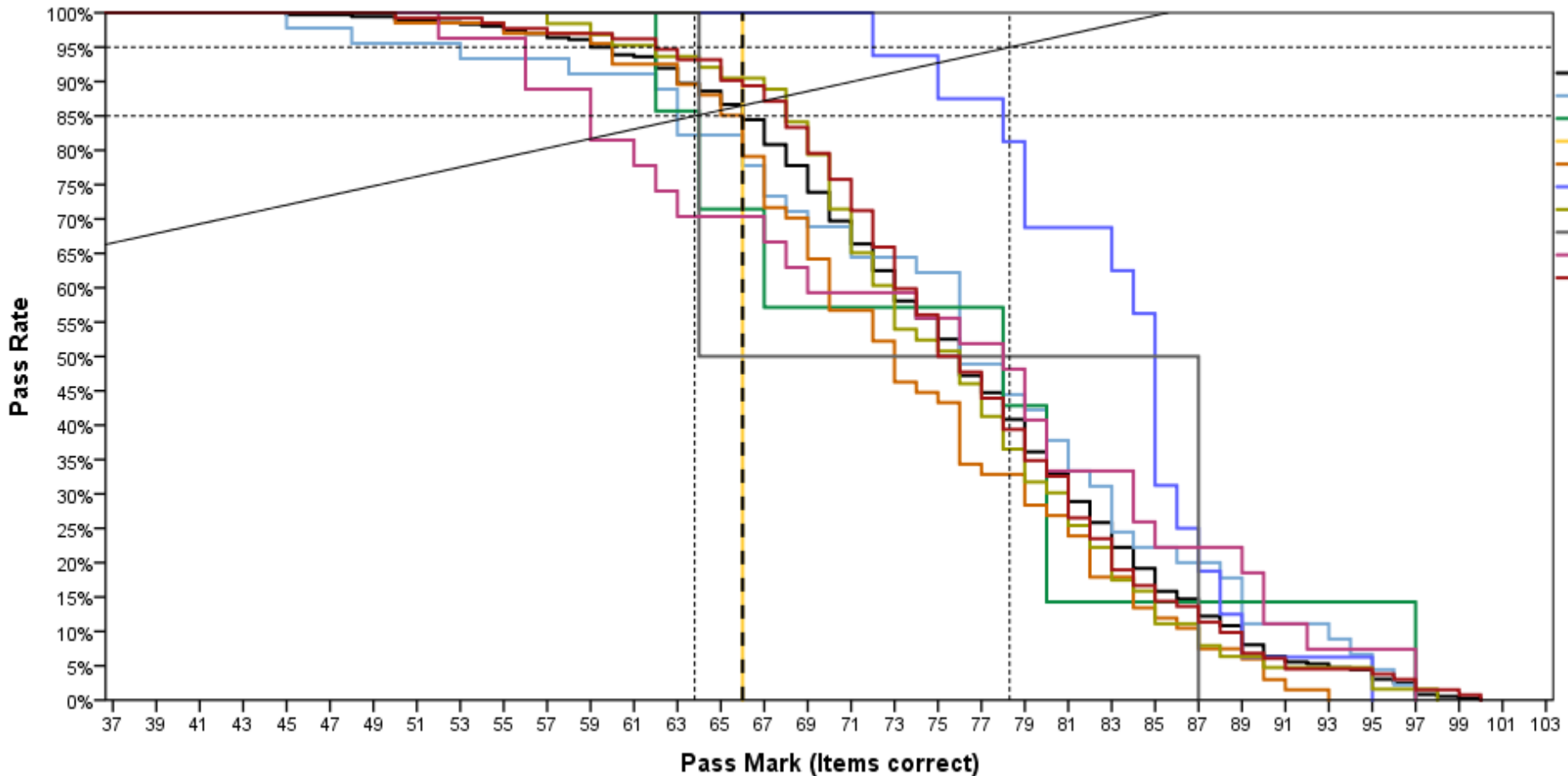




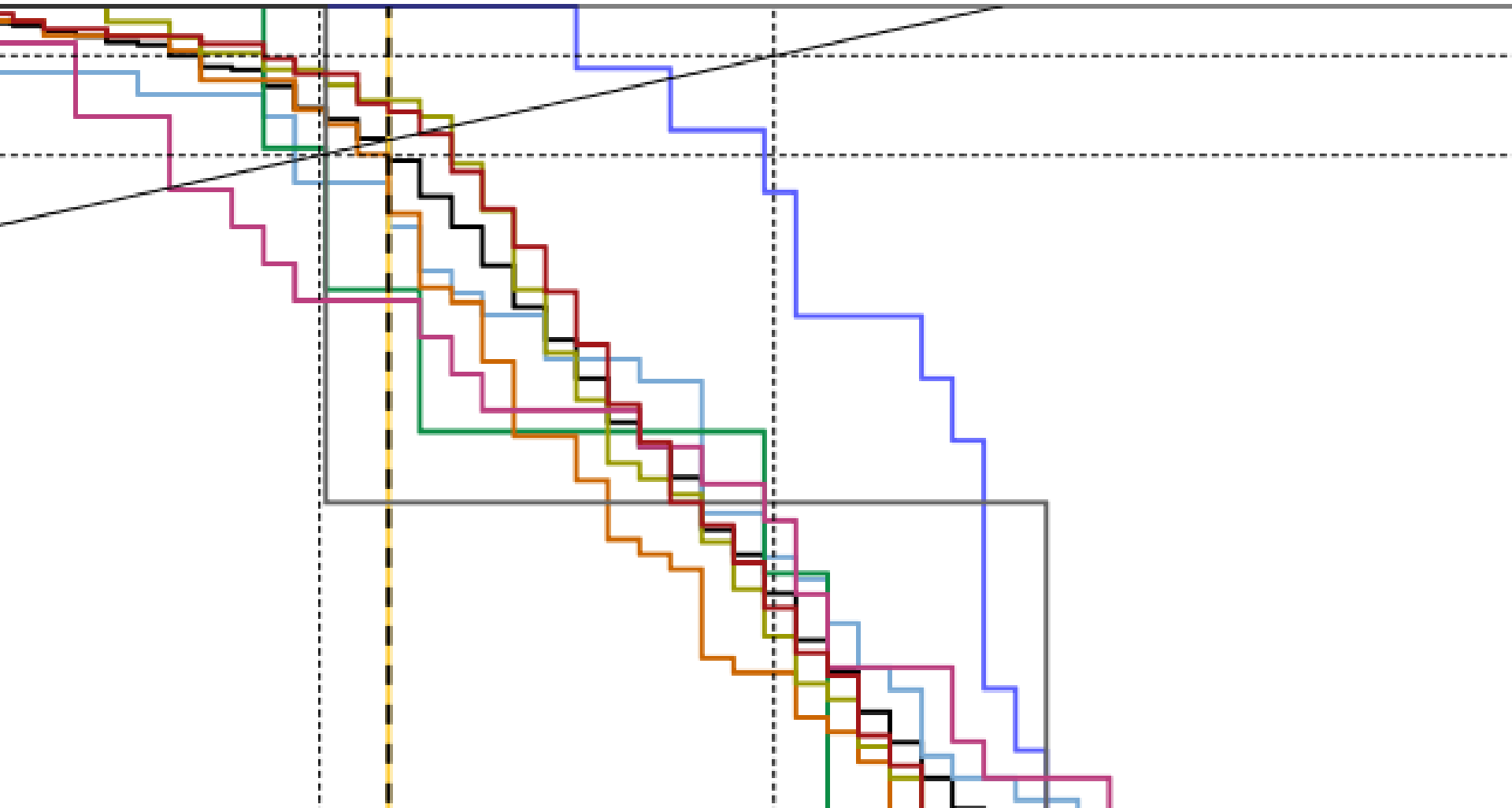
Pass Mark (Items correct)

- What Pass Mark to use?
- Suggest 66/118 Items correct

2017 Results by National Society

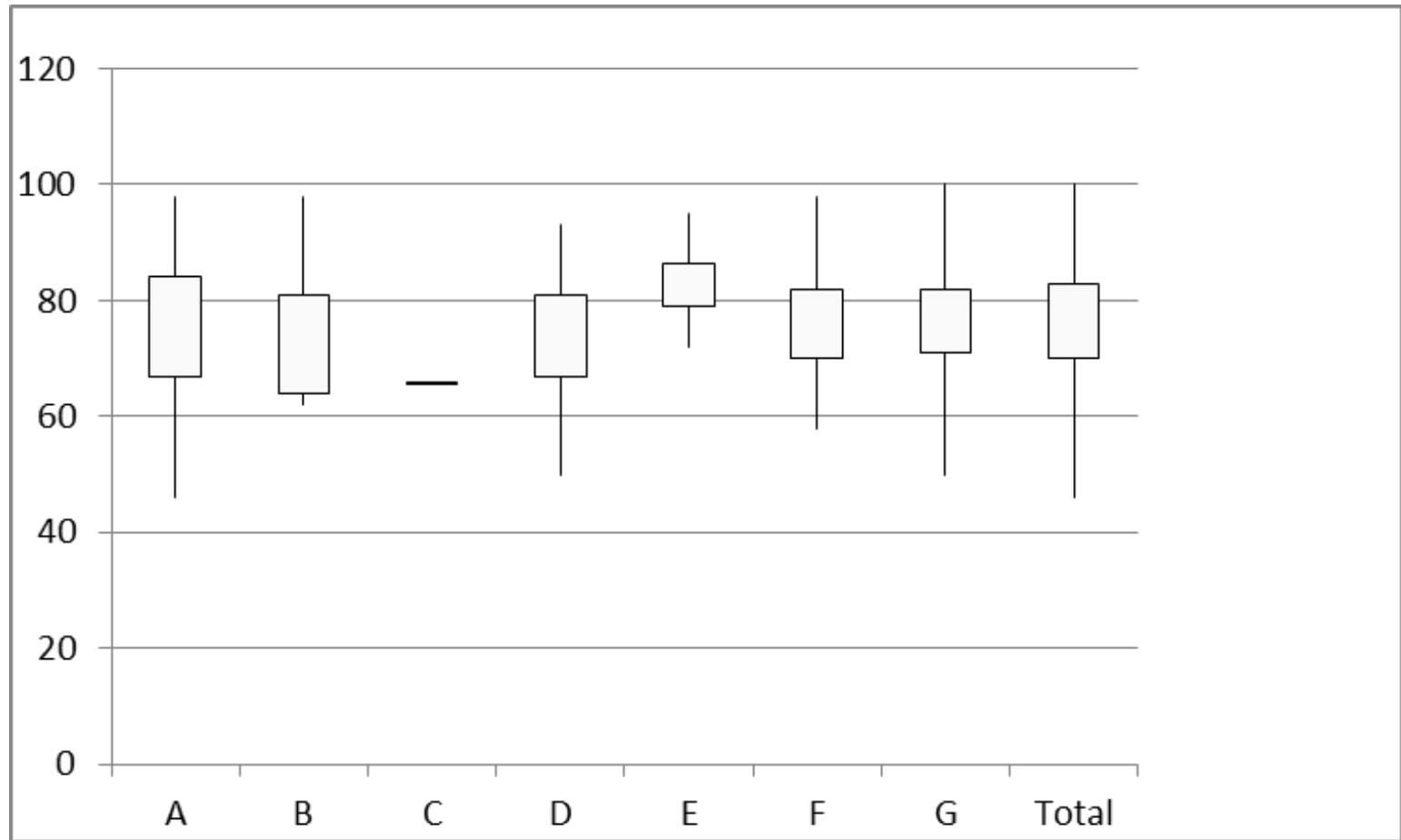


2017 Results by National Society



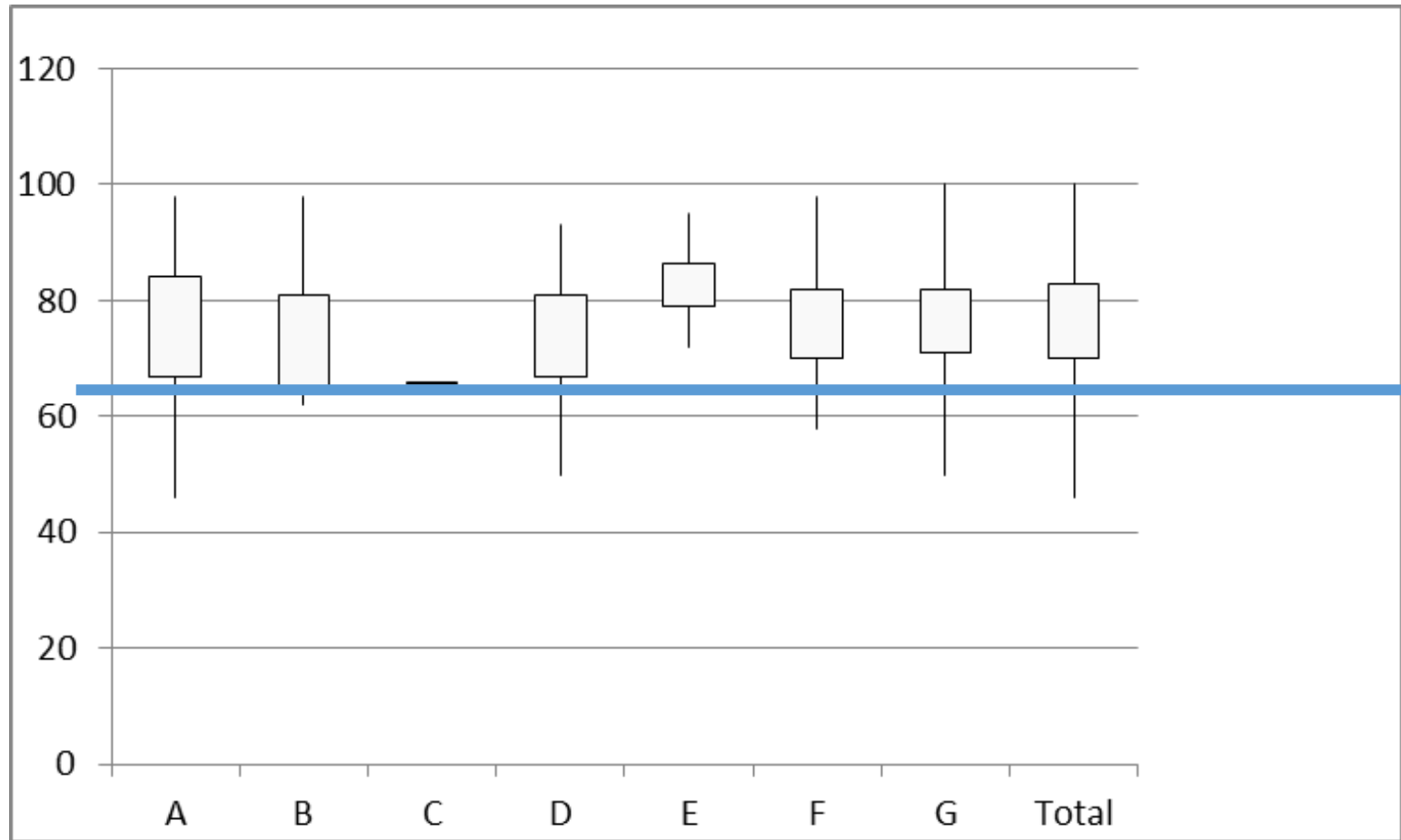
2017 Scores by National Society

Minimum, Maximum and IQ range



2017 Scores by National Society

Minimum, Maximum and IQ range



Recommendation to Board

- Pass Mark for EEGC 2017 = 66/118 items
- Thus:
- Pass Mark = 55.9%
- Pass Rate = 86.7% (all candidates)
- Cronbach Alpha = 0.787

EEGC Interpretation

- The validity of results is influenced by
 - Candidates perception of the exam
 - National Society and Trainer perception
 - Input from all stakeholders
 - National Societies
 - Trainers
 - Trainees
 - Familiarity with exam format

EEGC 2017

Conclusions

- The arrangements for exam delivery with Pearson Vue appear improved
- Video delivery problem free 2016, 2017
- Wide involvement needed from national societies in exam construction and standard setting to enhance validity
- Trainee representation is important

EEGC 2017

Results by Society

- Individual societies receive their own candidates data
- Two items were excluded – 5674, 10859
- The Pass Mark was 66/118 items correct
- Analysis of scores by question category can be made

EEGC 2018

- Thursday 14th June 2018
- Participation in question writing meetings at ESC Congress in Barcelona and at Heart House in January 2018
- Increased representation in Question Selection and at Standard Setting