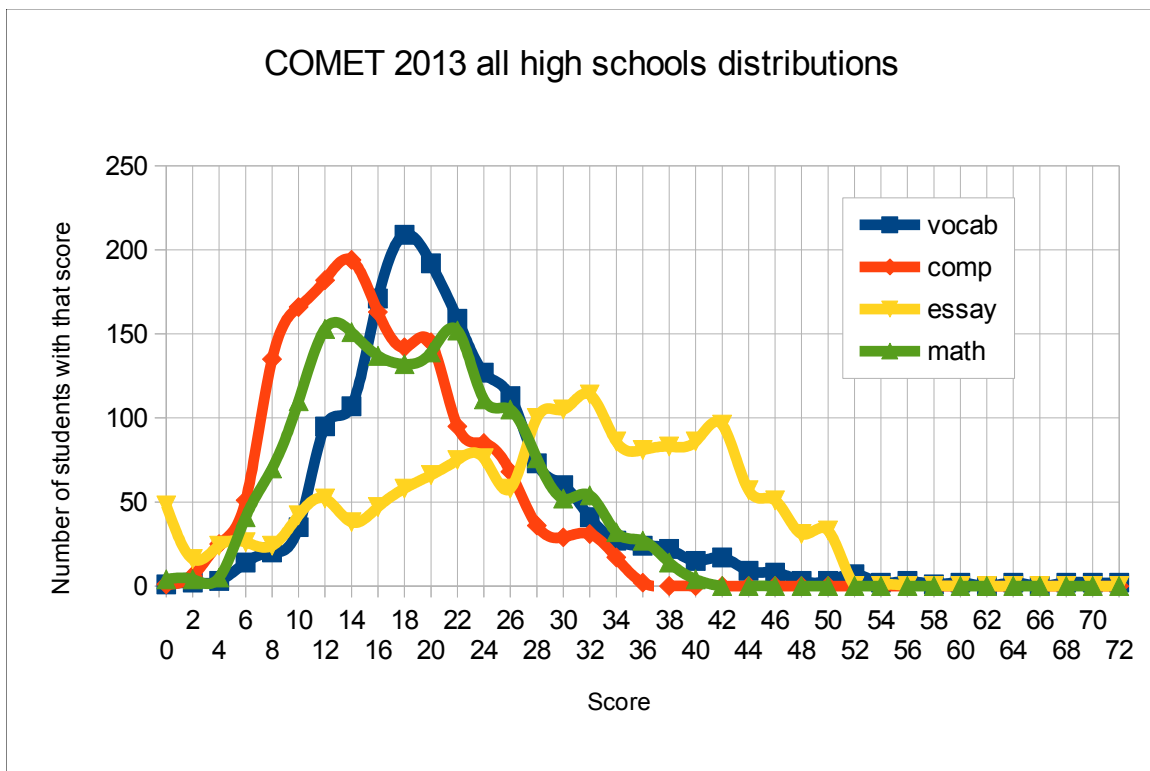


## COMET 2013 Statistical Exploration by High School strata

*Disclaimer: All of the recommendations and opinions expressed in this document are solely those of the author and do not in any way reflect the position of the College of Micronesia-FSM.*

This report is an exploration of data from the College of Micronesia-FSM spring 2013 entrance COMET with a focus on individual high school and section results. In this report the word "sections" refers to high school sections. The word subsection will be used to refer to the different sections of the COMET entrance instrument.

The overall distribution of the scores on the English subsections had been very stable. In statistics the word "distribution" means the shape of the data plot when plotted as frequencies of occurrence. The following chart is the distribution of scores on the three English subsections for the 1576 students (or candidates) who sat the COMET.



In the past the peak for the vocabulary section was lower than the peak for the comprehension section which in turn is lower than the peak for the essay. This order, vocabulary-comprehension-essay had been stable up until spring 2013.

Spring 2013 new instruments were used for vocabulary and comprehension subsections. The subsections had been based on the Gates AR, the new subsections are based on Nelson-Denny. The order had been explained by noting that comprehension usually exceeds vocabulary for second language speakers. Students working in a second language (L2) tend to do better at comprehension than vocabulary. This author is familiar with this effect. I often know what a sentence means in the Kosraean language without being able to decode

and define every single word.

This spring, however, the new vocabulary and comprehension instruments reversed that logic and vocabulary outperformed comprehension. This suggests that the new instruments are measuring in a statistically different manner than past instruments. This is not to imply that there is something wrong with the new instruments, just the observation that they behaved differently than the previous instruments and that year-on-year comparisons of performance are not directly possible.

The college uses score cut-offs for admission, with alternate admission cut-offs to take into account a student possibly not doing well on a single subsection. These alternate criteria were base on the comprehension subsection. In the past the comprehension subsection distributed more normally than the vocabulary subsection. A normal distribution is considered one indicator of a good instrument. This year the vocabulary subsection was more normal and less skewed. The high amount of skew in the comprehension subsection suggest that the subsection did not perform well from a statistical standpoint. The skew also means that small shifts in cut-offs near the peak can have disproportionate impacts on the numbers admitted.

In the past, the high amount of skew in the vocabulary section led to that section not being used in the alternate criteria. This author would not recommend dropping the use of the comprehension subsection for main and alternate criteria, but would recommend adding in vocabulary and building a new set of criteria which includes all four subsections. Alternate criteria should allow the "dropping" of the lowest subsection where the other three subsections are sufficiently stronger than the main criteria. This effort should be coupled with recommendations made later in this document.

### Essay year-on-year

The essay subsection is marked by two graders. The rubric produces a maximum of 25 points. The scores for the two grades are added, producing a score out of 50. Scores above a 40 are generally thought of as being sufficient for admission at the college, but do not guarantee placement in a college level writing course. Average performance on the essay subsection for a given high school is fairly stable year-on-year. The following table provides information for high schools on their year-on-year performance included selected sections.

Spring 2007		Spring 2008		Spring 2009		Spring 2010		Spring 2012		Spring 2013	
HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean
Berea	15.7	BEREA	26.73	Berea	23.33	BEREA	34	Berea	27.21	Berea	25.63
CCA	42	CCA PNI	39.25	CCA	45.3	CCA	40.31	CCA	46.82	CCA	37.25
CHS	9.97	CHS	17.04	CHS	15.32	CHS	13.61	Chuuk HS	18.41	CHS	22.44
								CHS a1	36.82	CHS a	37.96
CSDA	20.8	CSDA	28.38	CSDA	32.19	CSDA	30.6	ChkSDA	25.62	CSDA	30.70
Faichuk	4.95	FHS	6.18	Faichuk	5.57	Faichuuk	2.35	Faichuuk	4.87	Faichuuk	4.84
KHS	26.91	KHS	25.99			KHS	28.72	KHS	33.39	KHS	30.24
				KHS non-a	25.24			N/A		N/A	
KHS adv	37.27	KHS a1	40.71	KHS adv	32.71	KHS A	40.05	N/A		N/A	

Spring 2007		Spring 2008		Spring 2009		Spring 2010		Spring 2012		Spring 2013	
HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean	HS essay	mean
KHS a2	38.31	KHS a2	29.23	KHS a2	26.76	KHS B	34.45	N/A		N/A	
Mado HS	26.36	MHS	24.59	MHS	20.62	MHS	26.4	MHS	29.86	MHS	30.60
								MHS a1 (A)	37.89	MHS a	33.95
								MHS a2 (B)	32.11	MHS b	28.57
Mizpah	21.05	MCHS	20.1	Mizpah	22.91	MCHS	6.5	Mizpah	18.56	Mizpah	27.89
								Moch	20.95	Moch	21.82
Mortlocks			9.77			Mortlock	9.38	Mortlock	12.00	Mortlock	11.25
NICHS	19.58	NICHS	13.98								
										NCHS	21.73
NMS	27.75	NMHS	22.58	NMHS	25.07	NMHS	25.15	NMHS	30.51	NMHS	31.74
NMS a	36.74	NMHS a1	30.95					NMHS a1	36.22	NMHS a1	38.92
		NMHS a2	22.43					NMHS a2	32.48	NMHS a2	32.46
NMS b	23.74	NMHS b	20.2			NMHS B	26.8	NMHS b	29.18	NMHS b	28.40
NMS v1	19	NMHS h	18.85							NMHS v1	29.76
NMS v2	20.91	NMHS v	18.81							NMHS v2	28.22
Nukuno	12.91					Nukuno	11.89	Nukuno	30.56		
Ohwa	23.33	OCHS	16.17	Ohwa	26	OHWA	30.54	OHWA	34.17	Ohwa	30.70
OIHS	21.3	OIHS	18.87	OIHS	18.15	OIHS	20.09	OIHS	21.41		
		OLMVTs	33.56	OLMS	27.33	OLMCHS	38.43	OLMCHS	35.17	OLMCHS	42.59
PICS	25.16	PICS	28.73	PICS	27.44	PICS	28.02	PICS	32.95	PICS	31.68
PICS a1	34.48					PICS a1	36.72	PICS a1	40.94	PICS a1	42.53
						PICS a2	34.69	PICS a2	36.71	PICS a2	36.66
PLHA	14.69	PLHA	18.67	PLHA	17.42	PLHA	24.17	Pentecostal	27.86	PLHA	21.04
PSDA	37.22	SDA PNI	41	PSDA	38.63	PSDA	35.66	PSDA	43.24	PSDA	39.32
Saramen	28.69	SARAM	37	Saramen	22.7	SCA	36	Saramen	32.89	SCA	36.63
SNHS	14.05	SNHS	8.02								
		SNHS-F	9.18	SNHSF	8.61	SNHSF	9.83	SNHS-Fefan	13.32	SNHSF	15.76
				SNHST	10.18			SNHS-Tonoas	7.52	SNHST	12.87
Weipat			5.59							Weipat	10.42
Weno	14.81	WHS	17.65	Weno	14.57	WHS	20.87	WenoHS	23.67		
Xavier	40.27	XHS	43.63	Xavier	44.65	XAVIER	44.66	Xavier	43.24	XHS	43.98
YSDA	40.44	Yap SDA	30	YSDA	28.2	YSDA	24.2	YapSDA	42.20	YSDA	33.14
YHS	23.86	YHS	28.99	YHS	29.33	YHS	26.86	YapHS	30.06	YHS	34.13
Overall	22.03	Overall	24.35	Overall	23.21	Overall	24.16	Overall	27.54	Overall	27.60

The above table also doubles as a partial key to the high school abbreviations used in this document.

While the high schools tend to attempt to measure their performance based on the number of students admitted to the different programs at the college, this is not a useful way to measure the performance of the high schools. The college makes admission decisions based

on a variety of factors that do not necessarily reflect the capabilities of the candidates. If the high schools choose to use the COMET at all, then high schools should track their average performance by section and look for improvements in those measures.

### High schools and sections in descending rank order on the four subsections

The following table lists the high schools in descending rank order of the average for each of the four subsections of the COMET: essay, vocabulary, comprehension, and mathematics. Section codes are those chosen by the high school. For high schools that provided section lists, there were in some instances students who were not listed. Those students are gathered together in a single letter-less section. High schools that did not provide section lists are listed by their overall high school average.

HS	Essay	HS	Vocab	HS	Comp	HS	Math
XHS	43.98	SDAY	40.57	XHS	28.73	NMHS a1	33.19
OLMCHS	42.59	XHS	40.10	CCA	28.25	NMHS a2	30.88
PICS a1	42.53	CCA	39.75	SDAY	25.64	PICS a1	29.37
PSDA	39.32	PSDA	33.59	PSDA	24.55	XHS	29.28
NMHS a1	38.92	PICS a1	29.70	OLMCHS	24.27	MHS a	28.05
CHS a	37.96	OLMCHS	29.18	PICS a1	23.37	CCA	27.50
CCA	37.25	PICS b1	27.43	NMHS a1	20.81	Berea	26.37
PICS a2	36.66	YHS	26.10	CSDA	20.70	SDAY	25.57
SCA	36.63	YSC	25.79	PICS b1	20.43	PICS a2	25.53
PICS b1	36.22	SCA	25.69	SCA	20.06	OLMCHS	25.36
PICS a4	35.97	NMHS a1	25.50	PICS a2	19.78	NMHS b	24.72
MHS ag	35.50	PICS v2	25.00	MHS a	19.48	NMHS v2	24.26
YHS	34.13	Berea	24.74	YHS	19.29	MHS ag	23.17
MHS a	33.86	PICS a2	24.59	PICS a3	19.10	MHS b	22.90
SDAY	33.14	MHS a	24.29	MHS ag	18.17	PSDA	22.59
MHS d	33.00	NMHS a2	22.58	PICS a4	17.86	PICS b1	22.26
MHS ti	32.70	MHS ti	22.40	NMHS a2	17.85	PICS a3	22.20
NMHS a2	32.46	PICS a4	22.11	MHS ti	17.20	PLHA	21.78
MHS u	32.00	CSDA	22.00	PICS u	17.20	PICS a4	21.49
PICS b4	31.64	NMHS b	22.00	KHS	16.95	PICS u	21.10
YSC	31.00	PICS u	22.00	Berea	16.89	Ohwa	20.83
CHS b	30.81	MHS ag	21.83	CHS a	16.71	KHS	20.79
PICS b2	30.71	CHS a	21.63	Mizpah	16.67	MHS ti	20.50
CSDA	30.70	PSC	21.61	Ohwa	16.65	SCA	20.31
Ohwa	30.70	KHS	21.40	NMHS v2	16.39	MHS d	20.00
PICS v1	30.33	PICS a3	21.30	YSC	16.37	NMHS v1	19.95
MHS au	30.25	MHS u	21.25	NMHS b	16.28	MHS ha	19.88
KHS	30.24	PICS	21.23	PSC	16.25	MHS c	19.50
NMHS v1	29.76	MHS b	21.19	MHS b	16.05	PSC	19.25
MHS b	28.57	NMHS v2	21.17	PICS b2	15.13	YHS	19.10

HS	Essay	HS	Vocab	HS	Comp	HS	Math
CSC	28.56	MHS c	20.67	PICS	15.12	MHS au	19.08
NMHS b	28.40	MHS au	19.75	MHS au	14.83	PICS	18.69
PICS a3	28.30	NMHS v1	19.67	MHS c	14.67	PICS v2	18.63
NMHS v2	28.22	PICS b2	19.58	MHS ha	14.38	Moch	18.23
Mizpah	27.89	Ohwa	19.48	PLHA	14.35	PICS v3	18.00
MHS c	27.56	PLHA	19.43	NMHS v1	14.29	PICS v1	17.93
MHS ha	27.50	Mortlock	18.67	PICS a5	14.29	PICS b2	17.58
PICS a5	27.29	PICS b3	18.67	Moch	13.91	PICS b3	17.13
PICS	27.27	PICS a5	18.43	PICS v1	13.87	YSC	17.05
PSC	27.02	PICS v1	18.40	PICS b4	13.14	PICS a5	16.04
PICS b3	26.27	Moch	17.86	MHS d	13.00	MHS u	16.00
Berea	25.63	PICS v3	17.64	MHS u	13.00	CHS a	15.58
PICS v2	25.25	CSC	17.36	PICS v2	13.00	PICS b4	14.71
PICS v3	24.36	Mizpah	17.33	CSC	12.00	CSDA	14.70
PICS u	24.30	SNHST	17.17	PICS v3	11.36	CSC	14.28
Moch	21.82	MHS d	17.00	CHS	11.14	Mortlock	13.83
NCHS	21.73	Weipat	16.73	PICS b3	10.93	CHS	12.52
PLHA	21.04	CHS b	16.70	CHS b	10.93	CHS b	11.89
CHS	19.59	PICS b4	16.29	Mortlock	10.83	SNHST	11.77
SNHSF	15.76	Faichuuk	16.26	SNHST	10.83	Mizpah	11.22
SNHST	12.87	MHS ha	16.25	Faichuuk	9.68	NCHS	10.50
Mortlock	11.25	CHS	16.06	NCHS	9.55	Weipat	10.00
Weipat	10.42	NCHS	15.55	Weipat	9.19	SNHSF	9.36
Faichuuk	4.84	SNHSF	14.36	SNHSF	8.86	Faichuuk	8.68

At PICS the "a" sections are academic, the "b" sections are business, and the "v" sections are vocational. At MHS the a and b sections are academic sections. MHS c has, in the past, been their business section. MHS also has sections for trades and industry (ti), auto mechanics (au), agriculture (ag), and home arts (ha).

The rank order of the schools provides the basis for suggesting that the college can and should move beyond examining only the COMET. Students from the top sections in the nation, whether a private school student such as a Xavier student or a public school student such as a PICS A1 student, have been prepared to succeed in college. These students have the necessary study skills and foundational knowledge. A one day, single event, high stakes instrument, will not accurately measure the probability of success for these students. Conversely, a one day, single event instrument may admit a student to a program whose academic record in high school suggests little chance of successful completion of the program. A mix of the COMET, academic record, and high school program (section) can and should be intelligently used to admit students to programs.

Used alone the COMET can never as accurately produce a "list" of "able-to-benefit" students as the processes that the secondary schools have used over a period of four years to select students into sections. The higher the academic capability of the student, the

greater the risk of programmatic under-placement by the COMET: if a student is degree program capable, then the COMET can only under-place that student.

Of note in the preceding table is the strong performance of the public high schools on Pohnpei in the mathematics sections of the COMET. By rank order the top three sections are Pohnpei public school sections, and two more appear in the top ten.

The author worked with Madolehnihmw high school instructors this past year. The students at MHS tackled algebra and trigonometry, having already completed algebra I and algebra II. Although MHS did extremely well on the math subsection, this author suspects that their scores might have been depressed in part because the students had moved well beyond the material on the COMET. The COMET does not want to become the vehicle to which the schools teach down to. Again, not valuing the course work that students complete in their high school including their grades in those courses, leads to misplaced students.

The placement of students from schools and sections that included algebra II in and higher levels of mathematics suggest that the mathematics subsection does not accurately place these academically more prepared students.

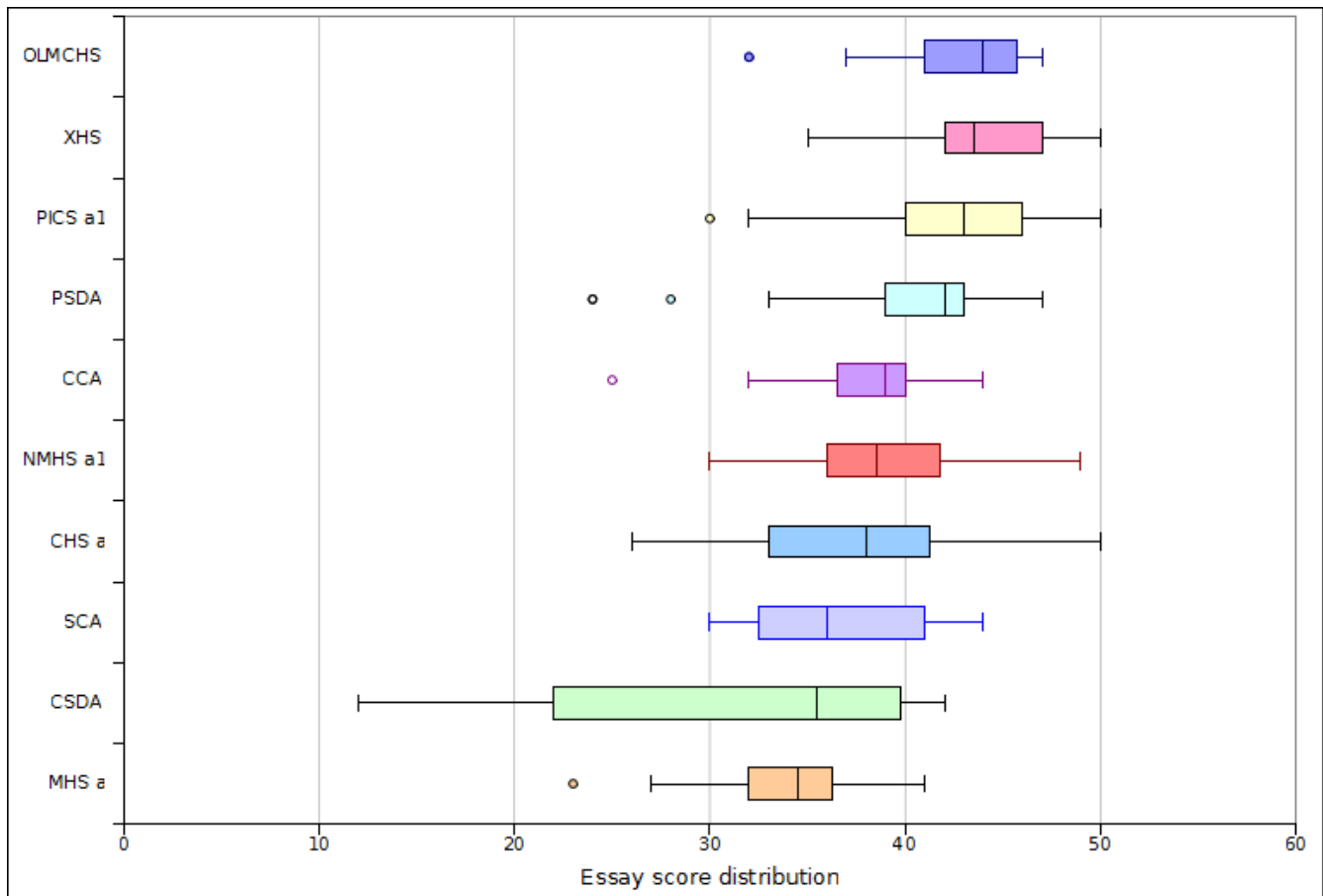
High School Section	MS 095	MS 096	MS 099	MS 100	MS 101
MHS a	1	3	7	5	5
PICS a1		4	7	8	11
PSDA	7	3	5	4	3
XHS		2	10	16	12

The mathematics subsection was designed to assist in sorting out weaker students with less preparation. Transcripts should be used for placing academically prepared students coming from programs with up to four years of high school mathematics.

### Essay median rank order

For smaller sample sizes extreme values affect the mean more than the median. The following box plot ranks the top ten high school sections as ranked by median. Box plots provide a graphical view of the score distribution. The lower whisker is usually the minimum value in the data set. The lower end of the box is the first quartile, the median is the line in the box, and the upper end of the box is the third quartile. The upper whisker extends to the maximum in the set.

Outliers, seen as isolated circles on a box plot, are segregated from the box and whisker if a data value is beyond 1.5 times the interquartile range (first minus third quartile). Extreme outliers, denoted by an open circle, are data values beyond 3 times the interquartile range. The outliers are calculated from the data values at the first and third quartiles.



On a median basis Our Lady of Mercy Catholic High School was first rank (44), with Xavier at second (43.5) and PICS section A1 ranked third (43). The differences in these three medians is not statistically significant. Pohnpei SDA at fourth rank (42) is the last of the four schools with a median score above 40 on the essay. A 42 or above on the essay is one of the alternate admission cut-offs for the college. Students with a 42 or higher are permitted a slightly lower comprehension and mathematics score.

### Upward Bound

Upward Bound is a TRIO program operated by the college. The following table provides the average performance for the Upward Bound seniors on the four subsections of the COMET.

Subsection	Pohnpei UB	Yap UB
Essay	40.82	36.60
Vocabulary	27.22	30.83
Comprehension	22.91	22.38
Mathematics average sum	29.35	26.33

The following table indicates where in the rank table the above scores would place the Upward Bound students among the high school sections list earlier in the document.

Subsection	Pohnpei UB	Yap UB
Essay	4	10
Vocabulary	8	3
Comprehension	6	6
Mathematics average sum	4	8

The position in rank order provides suggestions on areas that the Upward Bound students are likely to be able to improve vis-a-vis their peer groups. Pohnpei Upward Bound have room to improve vocabulary and comprehension while Yap Upward Bound might benefit from an increased focus on writing and mathematics skills.

### Recommendations

- The Recruitment, Admissions, and Retention committee should consider taking into account the candidate's high school, high school class, the GPA, courses successfully completed, in combination with the COMET scores. The college could accomplish this by requiring complete transcripts from each applicant.
- The college should continue to work with the Pohnpei Department of Education, the leadership at the Pohnpei high schools, and the mathematics instructors at those high schools to better transition students from the high schools to the college. This effort should include the annual production analyses such as this one which looks at performance by high school section. In addition, this effort should be expanded to other states utilizing the presence of the college in each state to make contacts and hold information sharing meetings.
- Retain the comprehension subsection for main and alternate criteria, but add in the vocabulary subsection, building new sets of criteria which includes all four subsections. Alternate criteria might allow the "dropping" of the lowest subsection where the other three subsections are sufficiently stronger than the main criteria.
- As the COMET tends to drive curricular choices in the FSM, sections covering the natural and social sciences should be considered for addition to the COMET.
- When and where possible, statistical analysis of the COMET including section analysis should precede admissions decisions.

### Acknowledgements

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not broken out above, please send the author a list of the names of the students/candidates and the author can generate the aggregate statistics for those students/candidates.