COMET Spring 2014 Statistical Exploration by High School

This report is an exploration of data from the College of Micronesia-FSM spring 2014 entrance COMET with a focus on individual high school and section statistics. 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.

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 (statistical mean) for each of the four subsections of the COMET: essay, vocabulary, reading, 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 or a section marked as "unk" for unknown. Candidates with no high school affiliation listed are gathered under "other." The High schools that did not provide section lists are listed by their overall high school average.

HS	Essay	HS	Vocab	HS	Read	HS	Math
Yap Catholic	44.67	Yap Catholic	44.17	SDA-Y	29.80	Other	39.00
Xavier	42.66	SDA-Y	42.00	Xavier	27.95	Yap Catholic	35.33
OLMCHS	42.48	Xavier	41.63	Yap Catholic	27.67	NMHS a1	30.54
SDA-P	41.68	CCA-P	41.59	CCA-P	26.82	SDA-Y	29.20
SDA-Y	41.4	NMHS a1	41.54	OLMCHS	24.83	Xavier	28.49
CCA-P	41.29	NMHS a2	37.50	SDA-P	24.70	CCA-P	26.82
Chuuk HS a	39.00	OLMCHS	35.07	Chuuk HS a	23.00	NMHS a2	26.71
NMHS a1	38.50	SDA-P	32.51	NMHS a1	21.83	OLMCHS	26.45
NMHS a2	37.13	Chuuk HS a	30.09	NMHS a2	19.50	Berea	25.00
Other	37.00	NMHS b	28.56	SDA-C	19.20	NMHS unk	24.50
SDA-C	33.60	NMHS unk	28.50	Saramen	18.68	SDA-P	24.24
Saramen	33.56	YHS	27.13	YHS	18.67	OHWA	23.15
NMHS v1	31.97	SDA-C	26.80	Berea	17.55	MHS	22.86
MHS	30.84	Other	25.00	COMFSM-P	17.51	NMHS b	21.89
OHWA	30.55	OHWA	24.55	NMHS unk	17.50	KHS	21.56
NMHS b	30.44	Saramen	24.12	PICS	17.38	PICS	21.53
KHS	29.90	COMFSM-P	23.64	OHWA	17.30	NMHS v2	21.24
OIHS	29.62	COMFSM-Y	23.46	KHS	17.03	SDA-C	20.80
Chuuk HS b	29.45	NMHS v1	22.97	MHS	16.38	Saramen	20.38
NMHS v2	29.05	PICS	22.82	OIHS	16.08	COMFSM-P	20.28
Berea	28.73	OIHS	22.10	NMHS b	15.85	NMHS v1	20.23
NMHS unk	28.50	Berea	21.64	COMFSM-Y	15.69	Chuuk HS a	18.43
COMFSM-Y	28.31	KHS	21.55	Chuuk HS b	15.50	COMFSM-K	18.19

HS	Essay	HS	Vocab	HS	Read	HS	Math
COMFSM-P	28.14	NMHS v2	21.19	COMFSM-K	15.05	NICHS	18.13
PICS	28.05	MHS	20.98	NMHS v2	14.71	YHS	17.81
YHS	27.16	Chuuk HS b	20.55	NMHS v1	14.53	Pentecostal	17.53
NICHS	24.97	Mizpah	20.33	NICHS	14.24	COMFSM-Y	17.23
COMFSM-C	23.80	COMFSM-K	19.10	Mizpah	13.78	OIHS	15.94
Mortlock	21.85	NICHS	19.00	COMFSM-C	13.05	SNHS-Tonoas	15.24
SNHS-Fefan	21.36	COMFSM-C	18.89	SNHS-Fefan	12.25	Moch	14.62
COMFSM-K	20.76	Moch	18.71	Pentecostal	11.88	COMFSM-C	13.68
Mizpah	20.22	Pentecostal	18.35	SNHS-Tonoas	11.82	Chuuk HS b	13.45
CCA-Ebeye	18.08	SNHS-Tonoas	18.12	Nukuno	11.36	Mizpah	13.00
Moch	17.32	Mortlock	17.92	Chuuk HS c+	11.30	Mortlock	12.81
Pentecostal	16.94	SNHS-Fefan	17.39	Moch	11.09	Nukuno	12.18
SNHS-Tonoas	12.88	Chuuk HS c+	16.41	Other	11.00	Chuuk HS c+	11.38
Chuuk HS c+	12.30	CCA-Ebeye	15.08	CCA-Ebeye	10.17	SNHS-Fefan	10.39
Nukuno	9.64	Nukuno	13.27	Mortlock	9.62	CCA-Ebeye	10.25
Faichuuk	1.81	Faichuuk	11.06	Faichuuk	8.063	Faichuuk	8.063

Note that Chuuk High School "c+" refers to all students not in sections "A" nor "B". In some schools the letter "b" refers to a business oriented section, in other schools "b" is a second academic section. COMFSM sections refer to candidates who took the COMET at the cited COM-FSM campus. The average on reading and mathematics for Faichuuk was coincidentally identical at 8.0625. On the mathematics section a score of eight is a random number of questions answered correctly.

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 graders are added, producing a score out of 50. 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 including selected sections.

High School	2007	2008	2009	2010	2012	2013	2014
Berea	15.7	26.73	23.33	34	27.21	25.63	28.73
CCA-P	42	39.25	45.3	40.31	46.82	37.25	41.29
CCA-Ebeye							18.08
CHS	9.97	17.04	15.32	13.61	18.41	22.44	16.8
Chuuk HS a					36.82	37.96	39
Chuuk HS b							29.45
Chuuk HS c+							12.3
SDA-C	20.8	28.38	32.19	30.6	25.62	30.7	33.6
Faichuuk	4.95	6.18	5.57	2.35	4.87	4.84	1.81

| High School	2007	2008	2009	2010	2012	2013	2014
KHS	26.91	25.99		28.72	33.39	30.24	29.9
MHS	26.36	24.59	20.62	26.4	29.86	30.6	30.84
Mizpah	21.05	20.1	22.91	6.5	18.56	27.89	20.22
Moch					20.95	21.82	17.32
Mortlock		9.77		9.38	12	11.25	21.85
NICHS	19.58	13.98					24.97
NMHS	27.75	22.58	25.07	25.15	30.51	31.74	33.3
NMHS a1	36.74	30.95			36.22	38.92	38.5
NMHS a2		22.43			32.48	32.46	37.13
NMHS b	23.74	20.2		26.8	29.18	28.4	30.44
NMHS v1	19	18.85				29.76	31.97
NMHS v2	20.91	18.81				28.22	29.05
Nukuno	12.91			11.89	30.56		9.64
OHWA	23.33	16.17	26	30.54	34.17	30.7	30.55
OIHS	21.3	18.87	18.15	20.09	21.41		29.62
OLMCHS		33.56	27.33	38.43	35.17	42.59	42.48
PICS	25.16	28.73	27.44	28.02	32.95	31.68	28.05
Pentecostal	14.69	18.67	17.42	24.17	27.86	21.04	16.94
SDA-P	37.22	41	38.63	35.66	43.24	39.32	41.68
Saramen	28.69	37	22.7	36	32.89	36.63	33.56
SNHS-Fefan		9.18	8.61	9.83	13.32	15.76	21.36
SNHS-Tonoas			10.18		7.52	12.87	12.88
Xavier	40.27	43.63	44.65	44.66	43.24	43.98	42.66
Yap Catholic							44.67
SDA-Y	40.44	30	28.2	24.2	42.2	33.14	41.4
YHS	23.86	28.99	29.33	26.86	30.06	34.13	27.16
Overall	22.03	24.35	23.21	24.16	27.54	27.6	27.06

Essay median rank order

For smaller sample sizes, extreme values affect the mean more than the median. The median is more resistant to extreme values than the mean, a single student score has less effect on the median than the mean. In general, the rank order by median should be more stable than the rank order by mean.
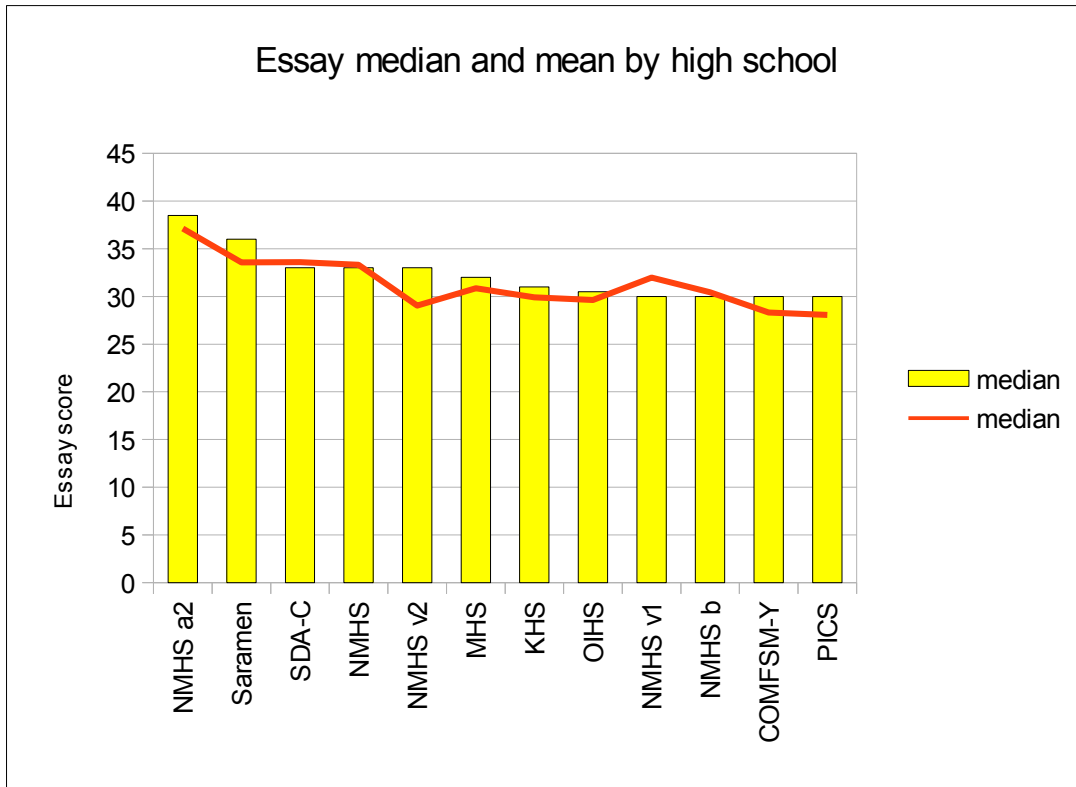
The first chart includes schools/sections with a median score above 40. An essay scoring 50, the maximum possible, would have grammar and word order nearly perfect, widely and correctly used vocabulary, extremely good organization, strong cohesion with smooth transitions both in and between paragraphs, a full and complete answer to the task set, inclusive of all parts of the task.

An essay scoring 40 would have some errors of grammar or word order but communication not impaired, occasionally uses inappropriate terms or relies on circumlocution but

expression of ideas not impaired, material fairly well organized with links that could occasionally be clearer, exhibits occasional lack of consistency in choice of cohesive structures and vocabulary but overall ease of communication not impaired, a relevant and adequate answer to the task set.

Essay median and mean by high school
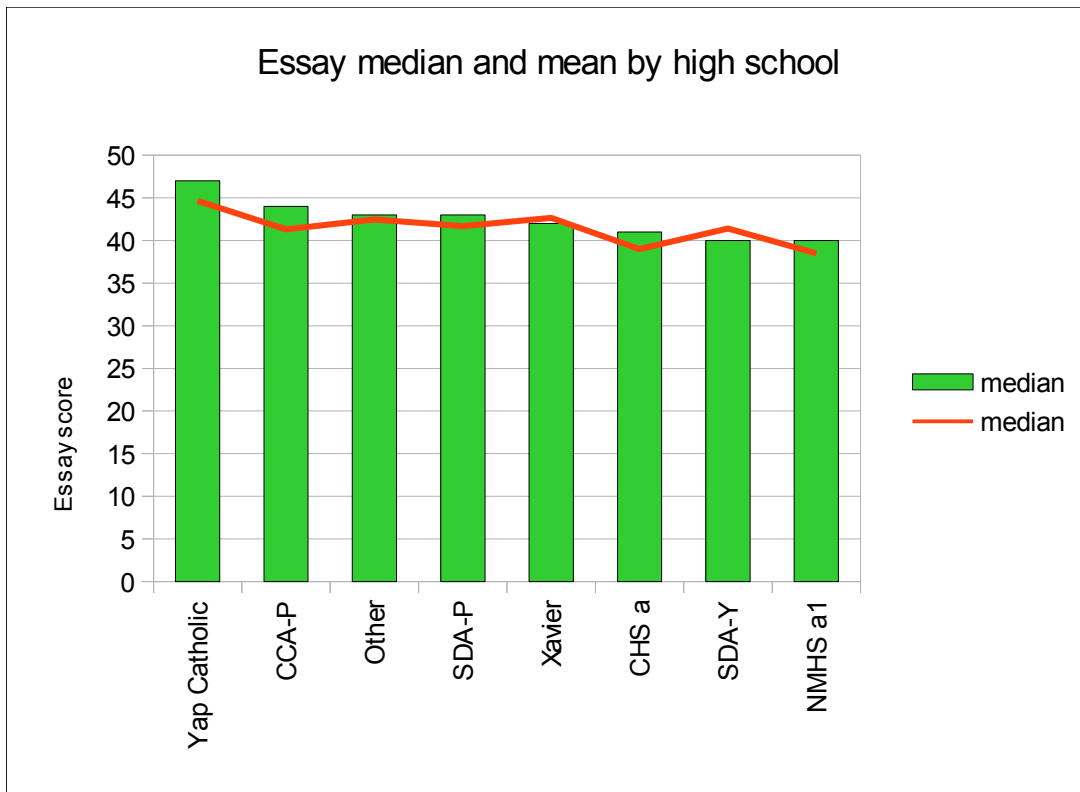
The second chart includes schools/sections with a median score between 30 and 39. An essay with a score of 30 would have fairly frequent errors of grammar or word order with occasional re-reading necessary for full comprehension, indications of vocabulary limitations hindering the expression of ideas, expression of ideas that may be limited because of inadequate vocabulary, some lack of organization, cohesive structures noticeably inappropriate to the general style, and an answer that addresses the task set with a few gaps or redundant information.

Essay median and mean by high school

The third chart includes schools/sections with a median score between 20 and 29. An essay with a score of 20 would have frequent errors of grammar or word order, limited vocabulary and frequent errors that clearly hinder expression of ideas, little or no attempt at connectivity, though reader can deduce some organization, cohesive structures or vocabulary items sometimes not only inappropriate but also misused, an answer of limited relevance to the task set, possibly major gaps in treatment of topic and/or pointless repetition.

Essay median and mean by high school
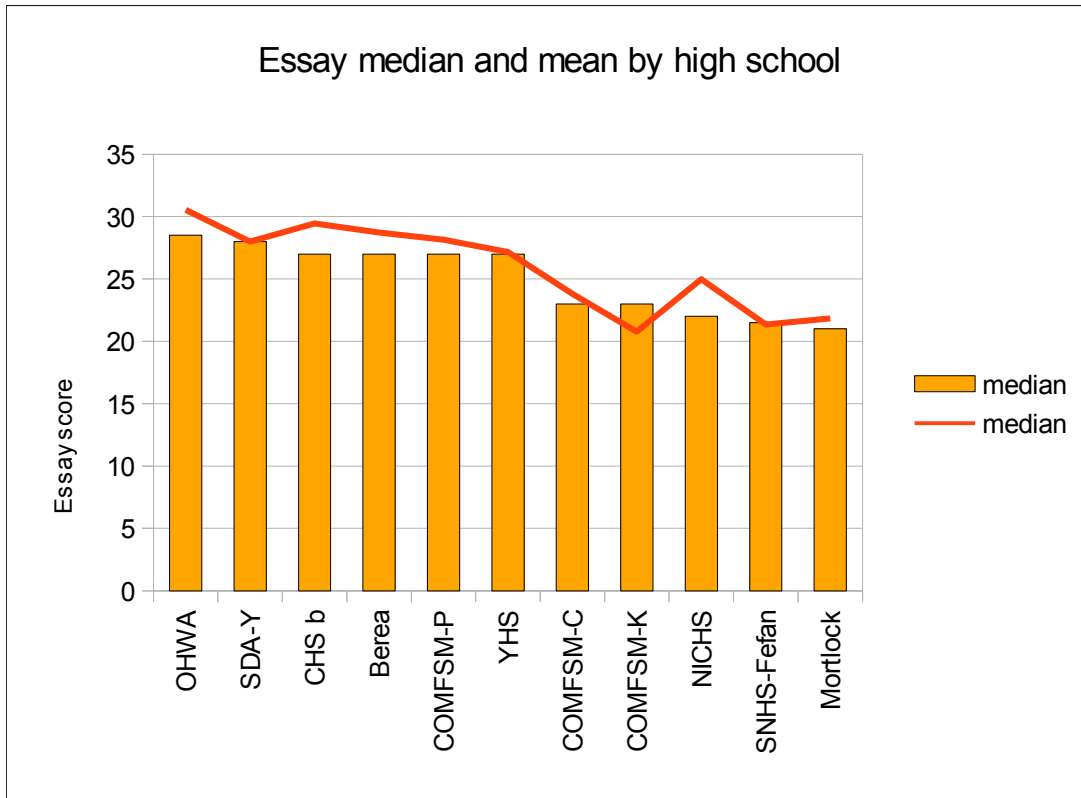
The fourth chart includes schools/sections with a median score between 0 and 20. An essay with a score of ten exhibits very frequent errors of grammar or word order, the reader often has to rely on their own interpretation, vocabulary so limited and so frequently misused that reader must often rely on own interpretation, while individual ideas may be clear deducing a connection between them is difficult, communication often impaired by completely inappropriate or misused cohesive structures or vocabulary items and the answer bears little relation to the task set.

An essay with a score of zero has errors of grammar or word order so severe as to make comprehension virtually impossible, extreme vocabulary limitations, a lack of organization so severe that communication is seriously impaired, an absence of cohesive structures rendering communication almost impossible, content that provides no evidence of the assigned task.
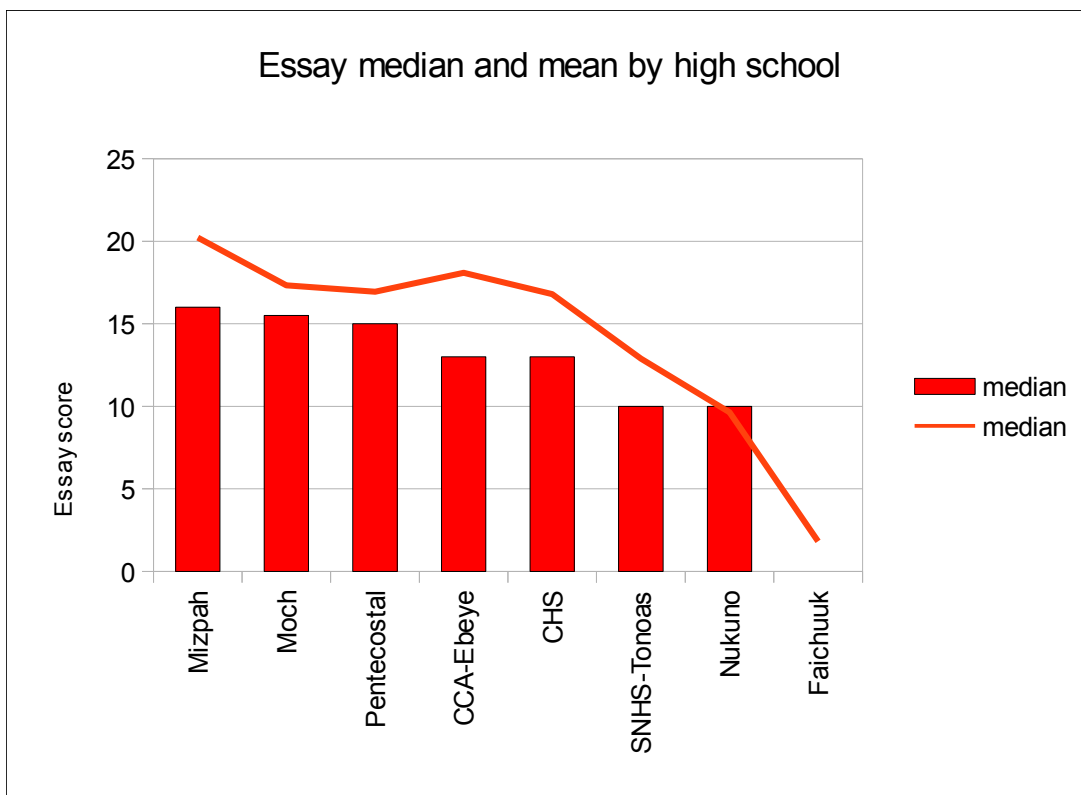
Faichuuk looks odd because their median score is a zero. Faichuuk is ranked last in all four subsections of the COMET.

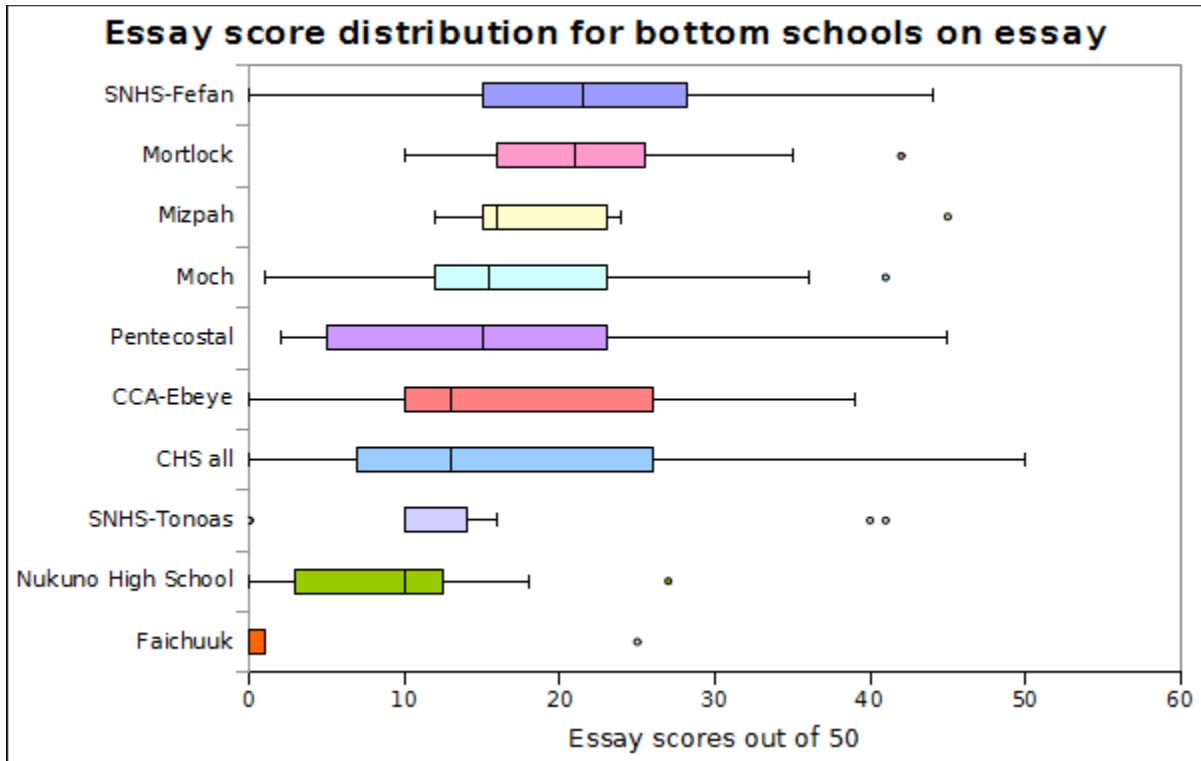## Distribution for selected schools on the essay section

The next box plot ranks the top twelve high school sections as ranked by median. Box plots provide a detailed, 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. The box plot provides a glance at the distribution of scores, the box plot does not provide information on the underlying sample size nor whether the differences seen are significant.
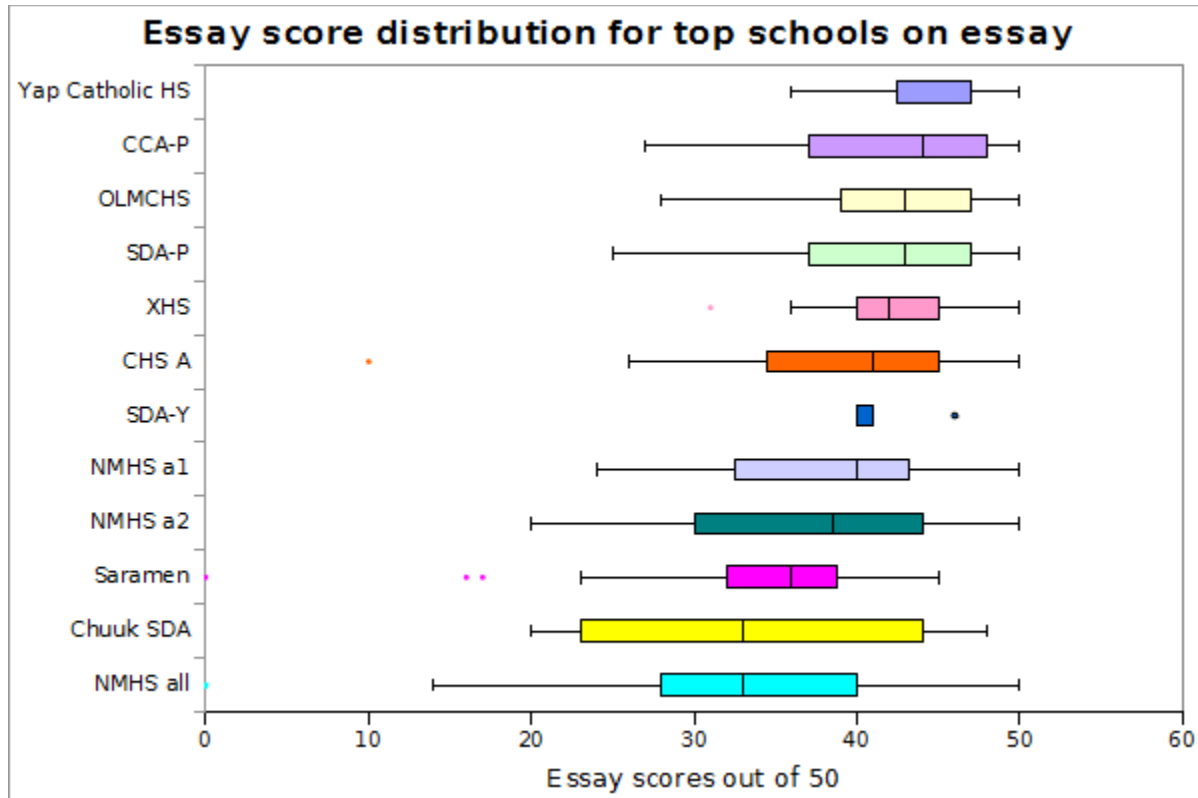
Outliers, seen as isolated circles on a box plot, are segregated from the box and whisker if a data value is beyond 1.5 times the interquartile range (first minus third quartile). Extreme outliers, denoted by an open circle, are data values beyond 3 times the interquartile range. The outliers are calculated from the data values at the first and third quartiles.

On a median basis Yap Catholic High School was first rank (a median essay score of 47), Calvary Christian Academy – Pohnpei second (44), and Our Lady of Mercy Catholic High School in a third place tie with Seventh Day Adventist school – Pohnpei (43). The order in the chart above reflects ties being broken by the mean score. Xavier was fifth (42) with Chuuk High School A section sixth (41).

At the other end of the score spectrum, all but one of the high schools with the lowest median score on the essay subsection are located in Chuuk state.

Essay score distribution for bottom schools on essay

Essay scores out of 50

As a non-multiple choice section, the essay provides some insight into the candidate's capabilities on an open ended question.

## Distribution for selected schools on the mathematics section

A box plot of the top school s on the mathematics subsection provides some insight into the spread of students seen on this 40 point instrument.
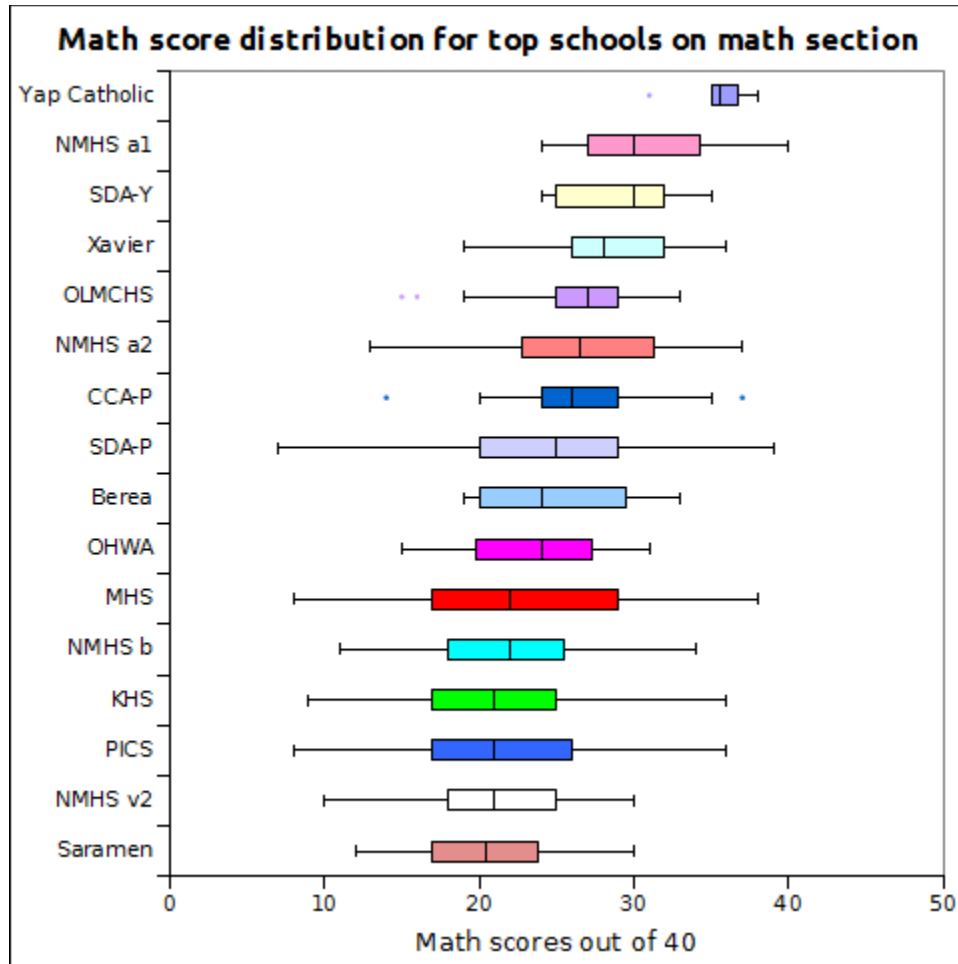
Yap Catholic High School (n = 6) with a median score of 35.5 had the highest median score. Nanpei Memorial High School section a1 (n = 24) had a median of 30, a tie in the median with Seventh Day Adventist high school in Yap (n = 5). The order is based on a difference in the means. NMHS had a mean of 30.5 and SDA-Y had a mean of 29.2. Of note is that four NMHS sections were in the top sixteen schools, including their V2 vocational section, the public high schools PICS and Madolehnihmw High School rank by median in the top sixteen as well.

Essay to Math Score Correlation

There is a relationship between the essay score and the math score for the 1659 candidates.
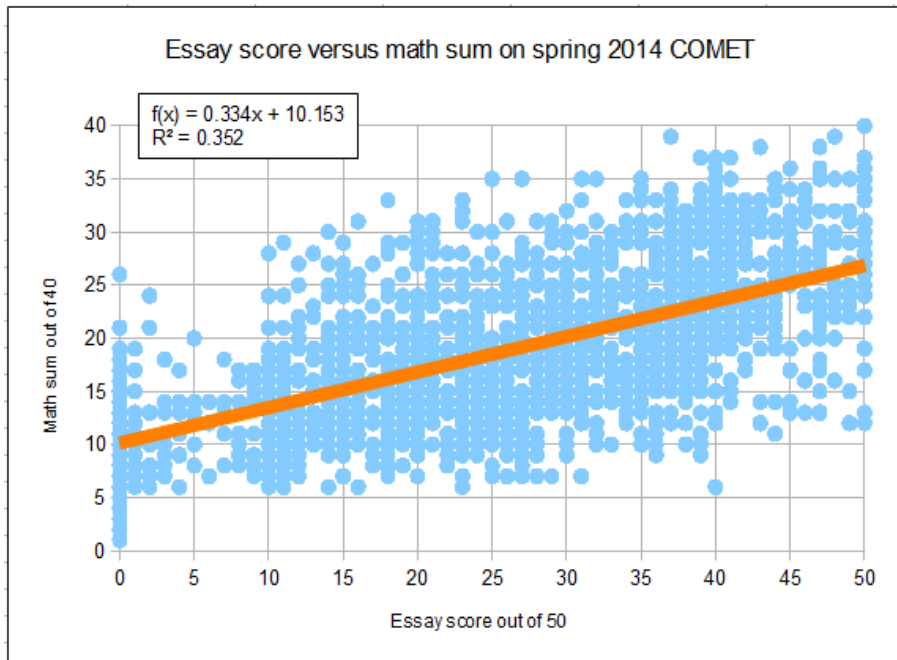
The correlation is r = 0.59 and the relationship is significant (p << 0.001). That the slope is less than the slope required to pass through (50,40) suggests that mathematics skills are, relative to the measurement done by the COMET, weaker than the essay writing skills.

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
Essay	42.05
Vocabulary	38.85
Reading	26.25
Mathematics average sum	32.85

The total number of Upward Bound students is 20 in three high schools. Break-outs of Upward Bound score averages by high school lose statistical significance due to small sample sizes.

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Author and contact information

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