

**2018 STAAR Alternate 2
Score Distributions and
Statistics by Content Area
and Grade**

Glossary

This glossary provides definitions for the statistical terms that appear in the tables and graphs in this section ("2018 STAAR Alternate 2 Score Distributions and Statistics by Content Area and Grade") of Appendix B. Definitions of statistical terms and concepts in the other sections are given in chapter 3 or chapter 4.

Descriptive Statistics

Mean. The mean is a measure of central tendency. It is the average score for the assessment. It is computed by summing the scores of all students and dividing it by the total number of students (N).

Median. The median is another measure of central tendency. It is the score at the middle of the frequency distribution for the assessment. It is computed by finding the score at which there is the same number of scores above as there is below.

Mode. The mode is another measure of central tendency. It is the most frequently obtained score for the assessment. It is determined by computing the frequency distribution and finding the score point with the highest frequency (n-count).

Range. The range is a measure of statistical dispersion (variability or spread). It is the difference between the lowest and highest scores obtained by students on the assessment. It is computed by subtracting the lowest score from the highest score.

Interquartile Range. The interquartile range is another measure of statistical dispersion (variability or spread). It is the difference between the 1st and 3rd quartiles (or 25th and 75th percentiles) of the score distribution for the assessment. It is computed by subtracting the score at the 1st quartile (the point that splits the lowest 25% of the scores) from the score at the 3rd quartile (the point that splits the highest 25% of the scores).

Standard Deviation (SD). The standard deviation is another measure of statistical dispersion (variability or spread). It is an indicator of the degree of score variation around the mean. It is computed using the following formula.

$$SD = \sqrt{\frac{\sum_{i=1}^N (X_i - \bar{X})^2}{N-1}}$$

where X_i is the score for student i , \bar{X} is the mean score and N is the total number of students who took the assessment.

Variance. The variance is another measure of statistical dispersion (variability or spread) around the mean. It is computed as the square of the standard deviation (SD).

Skewness. The skewness is an indicator of the shape of the score distribution. It measures the extent to which the score distribution "leans" to one side of the mean. A positive skewness indicates that the score distribution leans below the mean. A negative skewness indicates that the score distribution leans above the mean. A skewness of zero indicates that the score distribution is symmetric around the mean. It is computed using the following formula.

$$Skewness = \frac{N}{(N-1)(N-2)} \sum_{i=1}^N \left(\frac{X_i - \bar{X}}{S_X} \right)^3$$

where X_i is the score for student i , \bar{X} is the mean score, S_X is the standard deviation (SD) and N is the total number of students who took the assessment.

Kurtosis. The kurtosis is another indicator of the shape of the score distribution. It measures the "peakedness" of the score distribution. A positive kurtosis is referred to as *leptokurtic*, meaning that the distribution has a more acute peak around the mean and fatter tails. A negative kurtosis is called *platykurtic*, meaning the distribution has a lower, wider peak around the mean and thinner tails. It is computed using the following formula.

$$Kurtosis = \frac{N(N+1)}{(N-1)(N-2)(N-3)} \sum_{i=1}^N \left(\frac{X_i - \bar{X}}{S_X} \right)^4 - \frac{3(N-1)^2}{(N-2)(N-3)}$$

where X_i is the score for student i , \bar{X} is the mean score, S_X is the standard deviation (SD) and N is the total number of students who took the assessment.

Frequency Distributions

Frequency (FREQ). This is the number of students who obtained the particular score point on the assessment.

Cumulative Frequency (CUM FREQ). This is the number of students who obtained a score that is less than or equal to the particular score point on the assessment.

Percentage (PCT). This is the percentage of students who obtained the particular score point on the assessment. It is computed as: $PCT = FREQ \div N \times 100$.

Cumulative Percentage (CUM PCT). This is the percentage of students who obtained a score that is less than or equal to the particular score point on the assessment. It is computed as: $CUM PCT = CUM FREQ \div N \times 100$.

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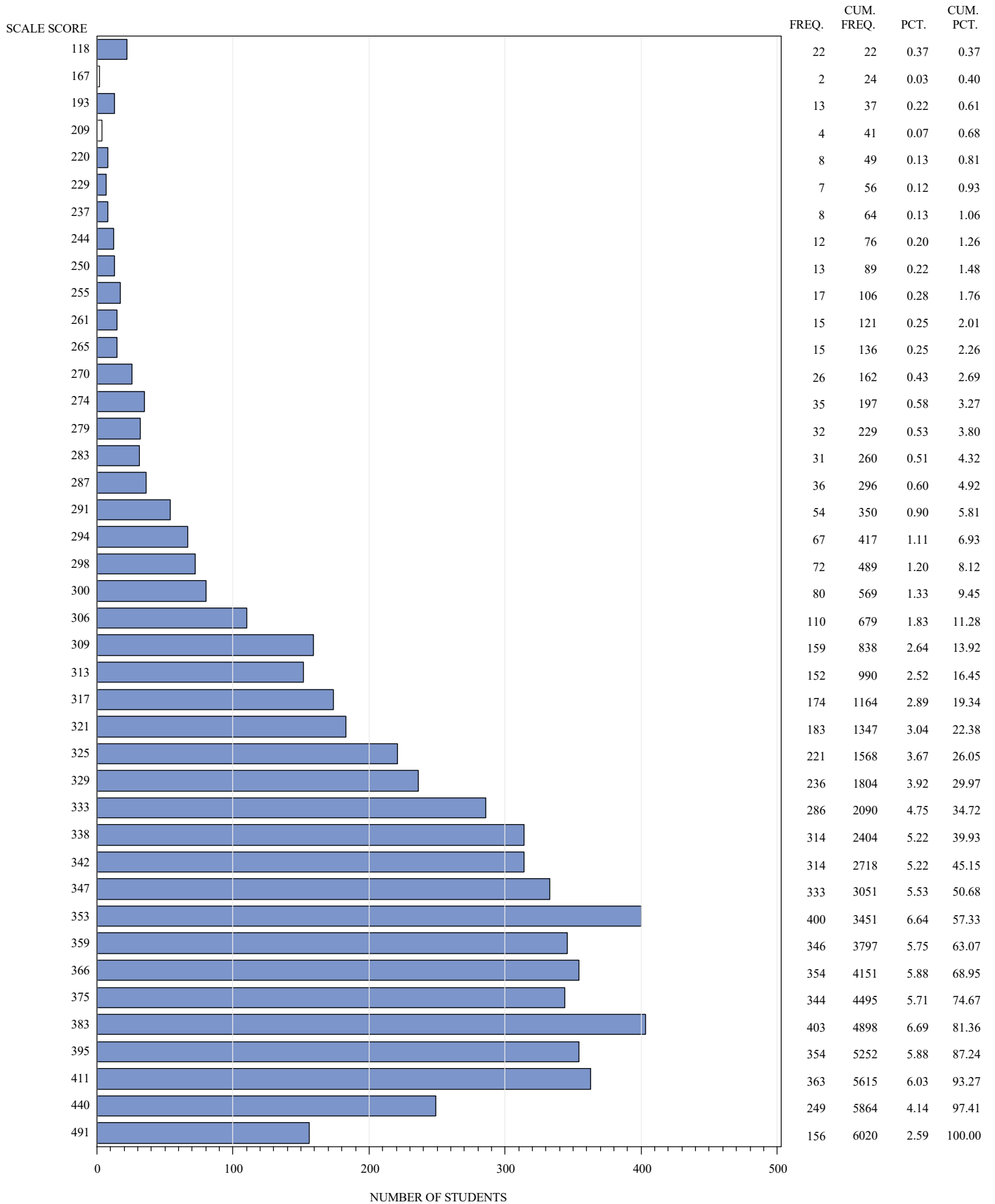
**Table B.6.1. 2018 STAAR Alternate 2 Grades 3–8 Assessments
Scale Score Descriptive Statistics**

Subject	N	Mean	Median	Mode	Range	Interquartile Range	SD	Variance	Skewness	Kurtosis
Grade 3 Mathematics	6,020	353.32	347	383	373	58	47.47	2253.12	0.03	2.85
Grade 4 Mathematics	6,056	362.60	362	387	366	51	43.48	1890.75	-0.10	3.50
Grade 5 Mathematics	6,160	364.90	360	406	374	63	52.86	2793.78	0.32	0.76
Grade 6 Mathematics	5,677	364.83	364	383	403	66	57.31	3284.97	0.00	1.98
Grade 7 Mathematics	5,294	361.79	360	368	401	51	47.74	2278.71	-0.02	3.27
Grade 8 Mathematics	5,087	358.65	354	413	398	56	53.05	2813.81	0.03	2.33
Grade 3 Reading	6,019	342.09	340	352	383	45	40.57	1645.76	-0.54	4.48
Grade 4 Reading	6,060	352.58	350	377	392	52	47.70	2275.12	-0.17	3.12
Grade 5 Reading	6,162	351.90	348	363	407	49	45.72	2089.94	0.31	2.62
Grade 6 Reading	5,678	349.30	347	354	397	48	45.38	2059.03	-0.10	3.06
Grade 7 Reading	5,298	354.65	350	371	386	60	53.81	2895.47	0.14	1.51
Grade 8 Reading	5,089	354.09	350	365	378	52	45.07	2031.44	-0.06	3.05
Grade 4 Writing	6,054	337.71	335	341	406	50	44.12	1946.20	-0.19	4.20
Grade 7 Writing	5,296	343.13	338	367	394	46	43.81	1919.61	-0.09	4.42
Grade 5 Science	6,164	366.20	367	387	389	48	46.81	2191.09	0.12	1.92
Grade 8 Science	5,087	364.78	360	382	350	39	43.67	1906.66	-0.09	3.08
Grade 8 Social Studies	5,081	355.72	350	386	370	58	46.74	2184.68	-0.04	2.97

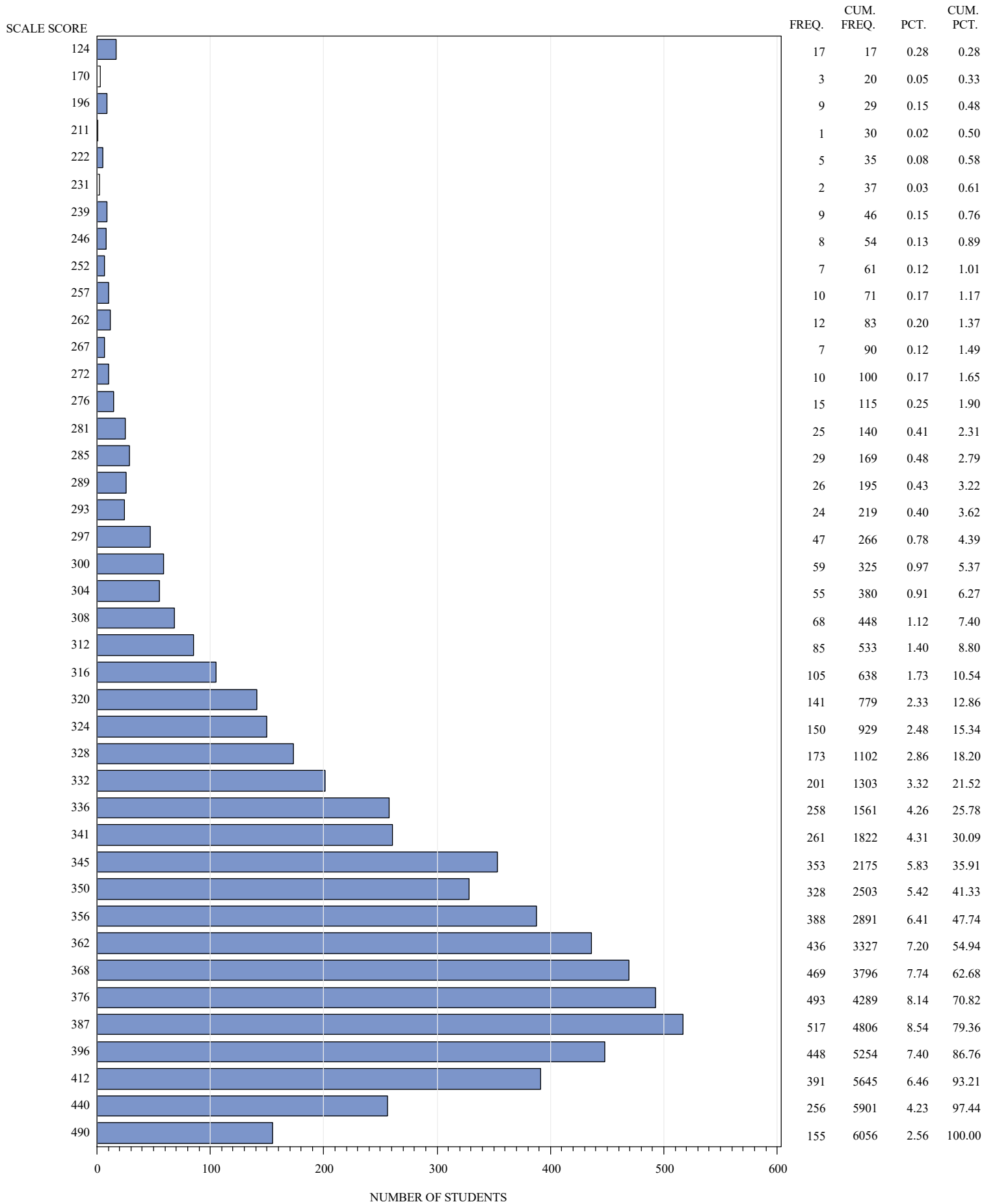
**Table B.6.2. 2018 STAAR Alternate 2 EOC Assessments
Scale Score Descriptive Statistics**

Subject	N	Mean	Median	Mode	Range	Interquartile Range	SD	Variance	Skewness	Kurtosis
Algebra I	4,884	347.64	346	340	408	43	48.00	2304.25	-0.26	5.17
English I	4,868	352.57	353	359	412	48	45.83	2100.72	0.00	4.19
English II	4,556	359.35	359	374	412	51	47.92	2296.42	-0.33	4.46
Biology	4,861	360.22	358	383	341	47	43.68	1908.36	-0.06	2.80
U.S. History	4,274	349.43	344	351	376	46	43.80	1918.69	-0.04	4.12

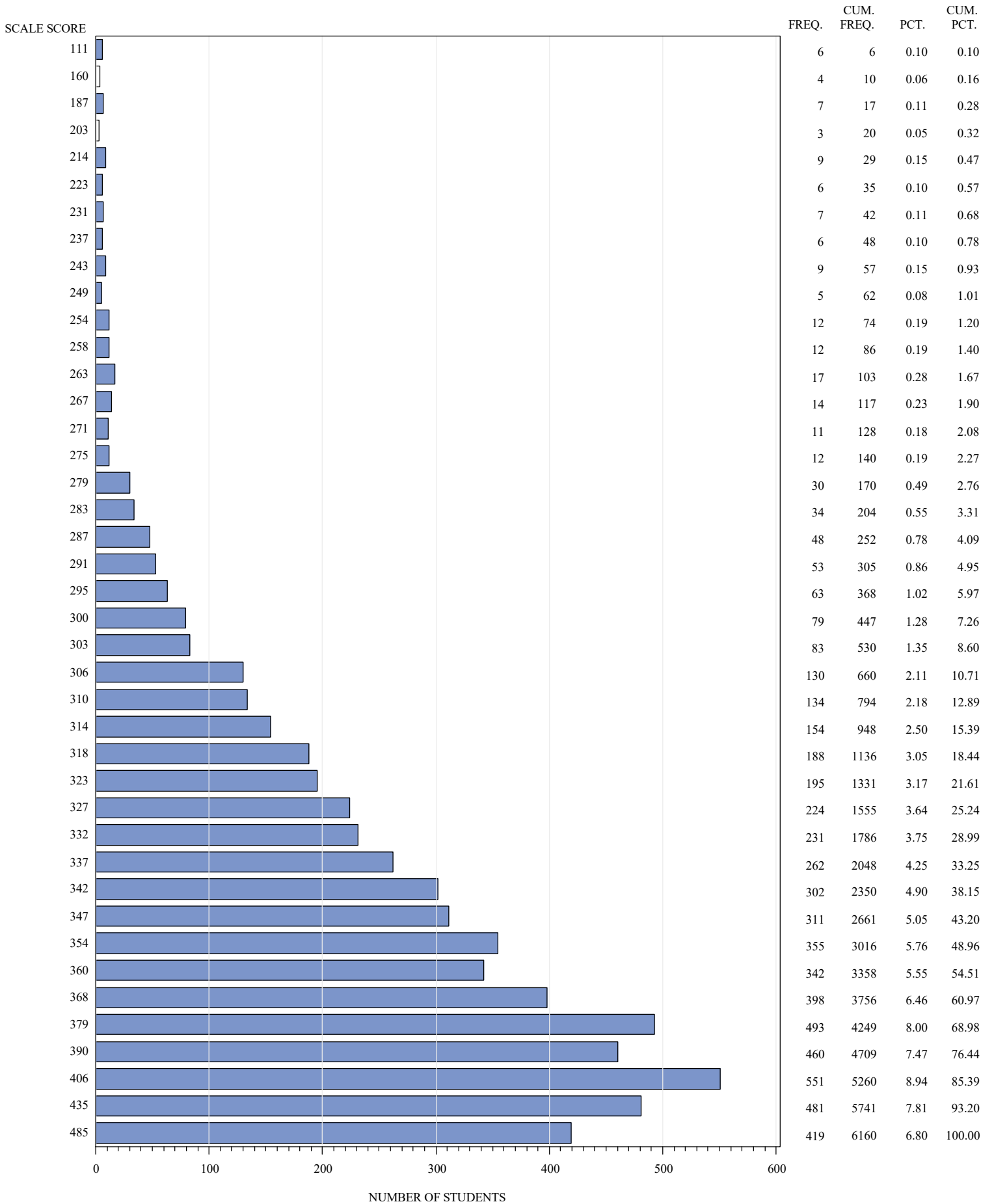
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Frequency Distribution of Scale Scores
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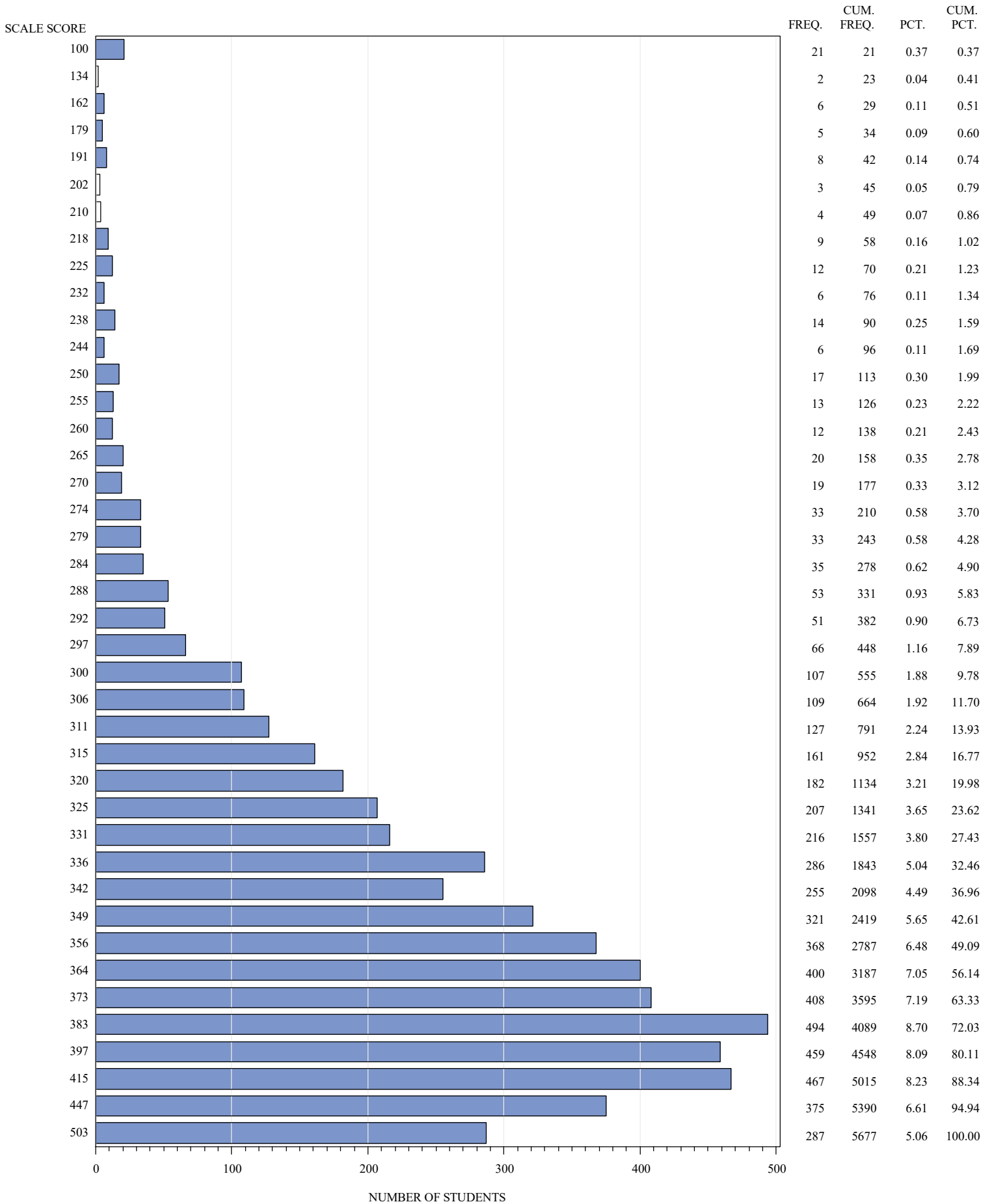
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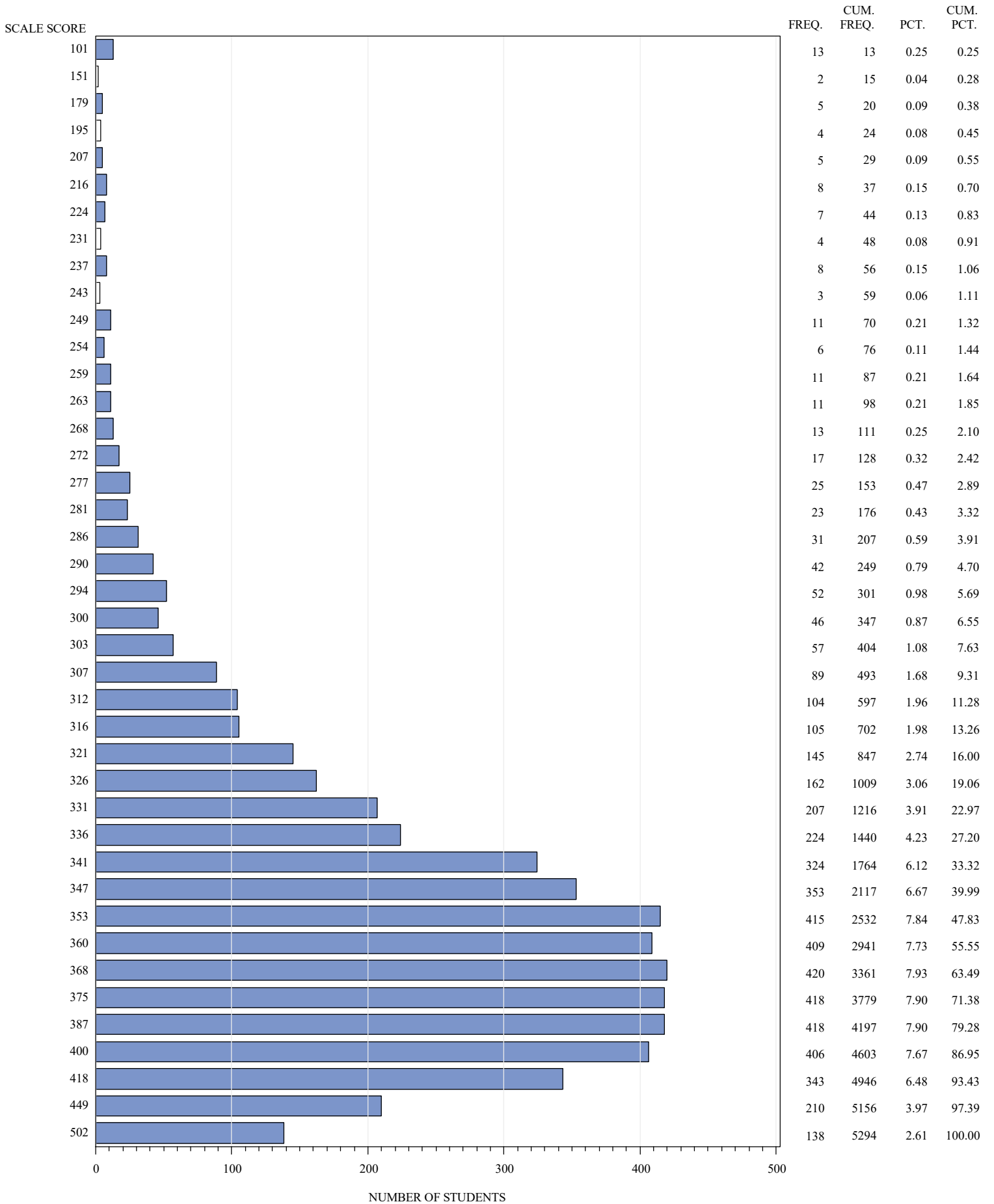
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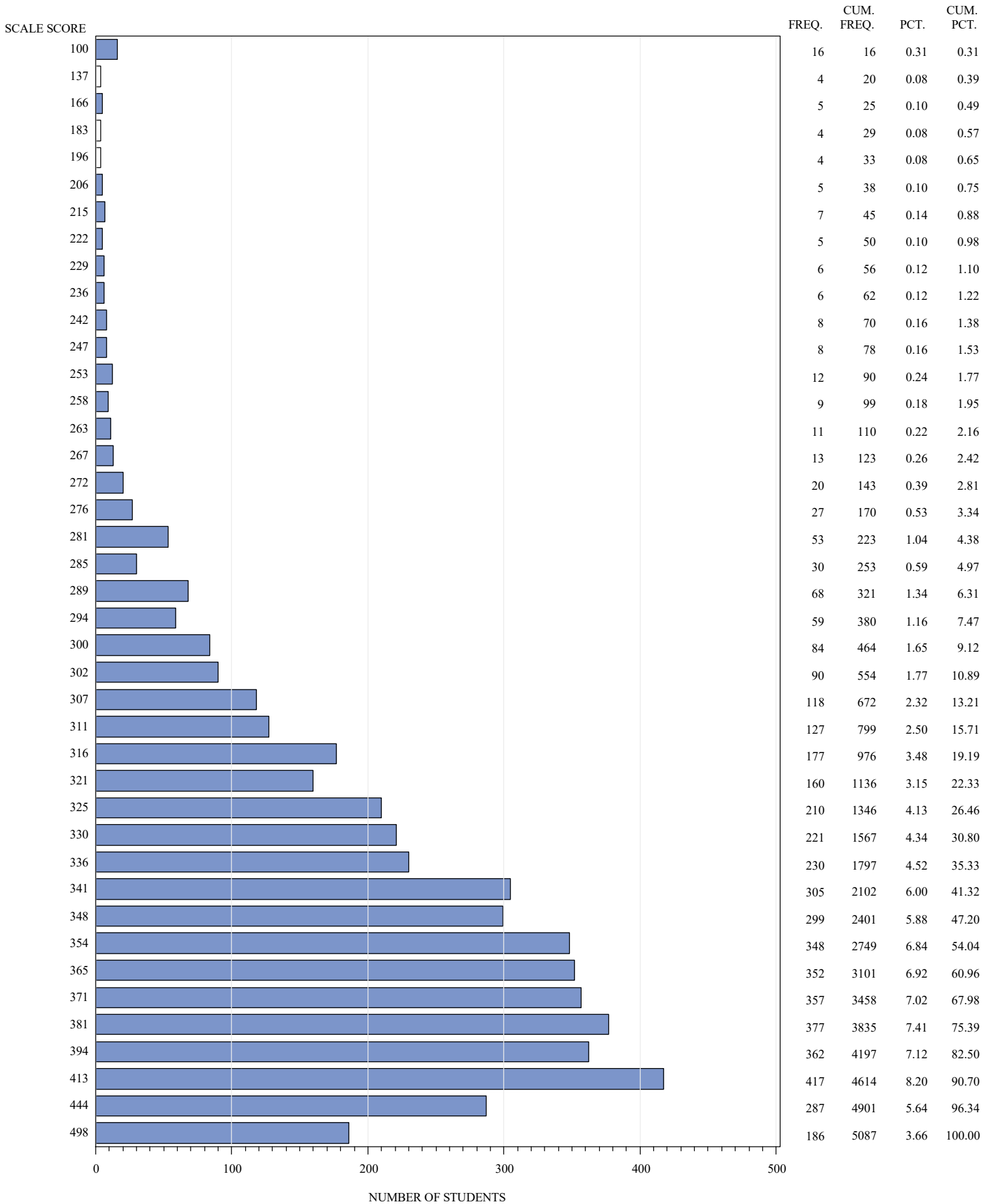
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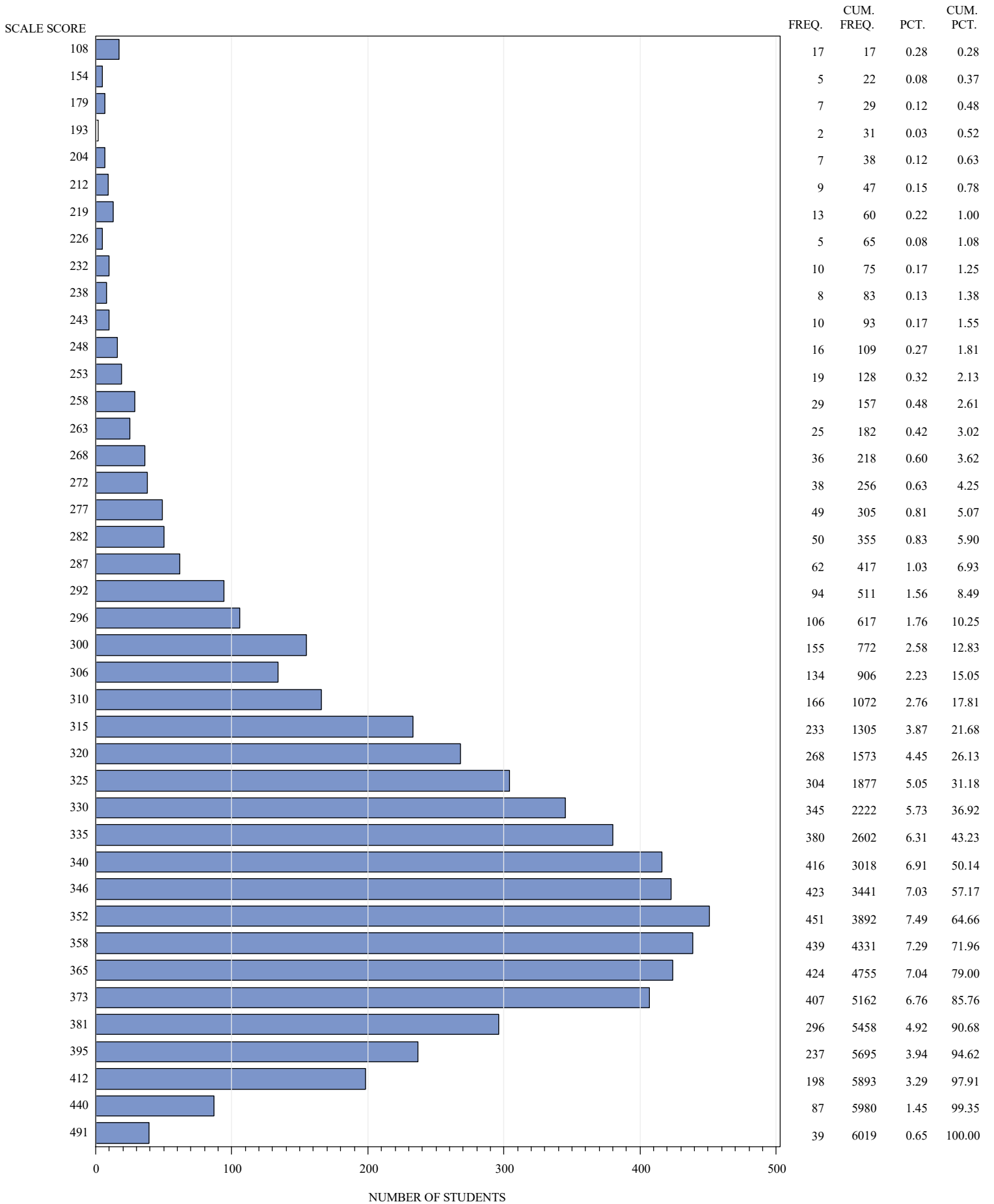
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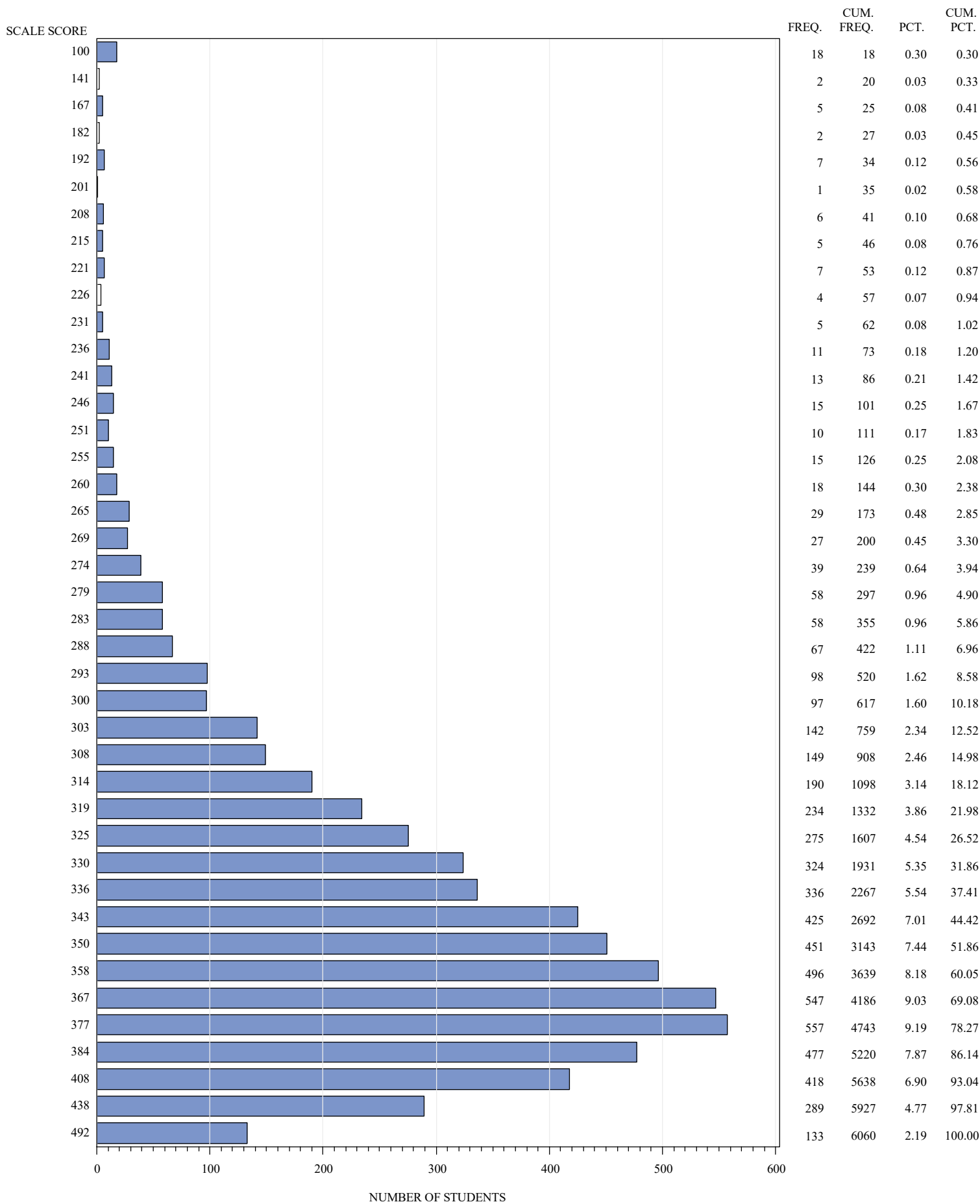
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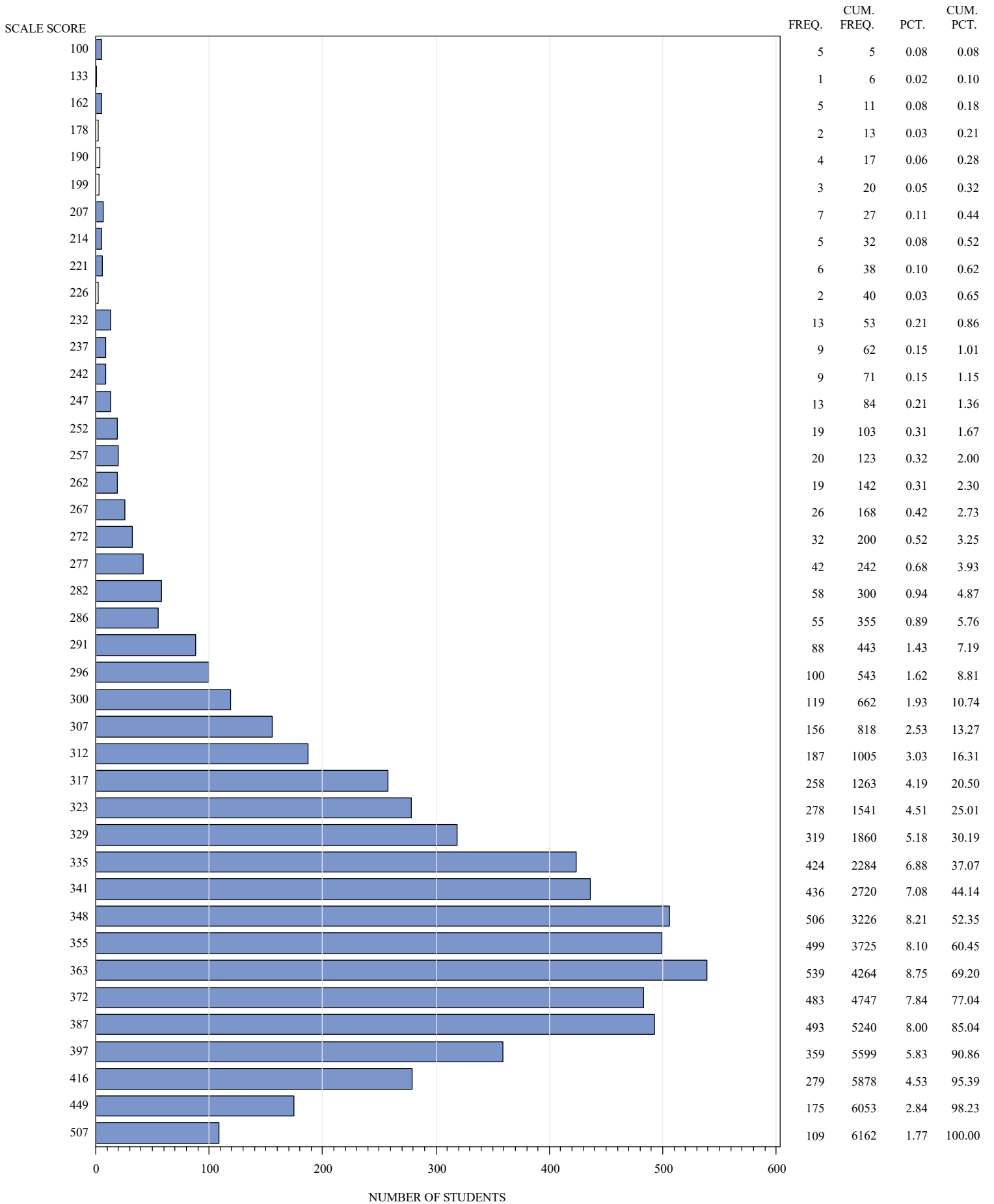
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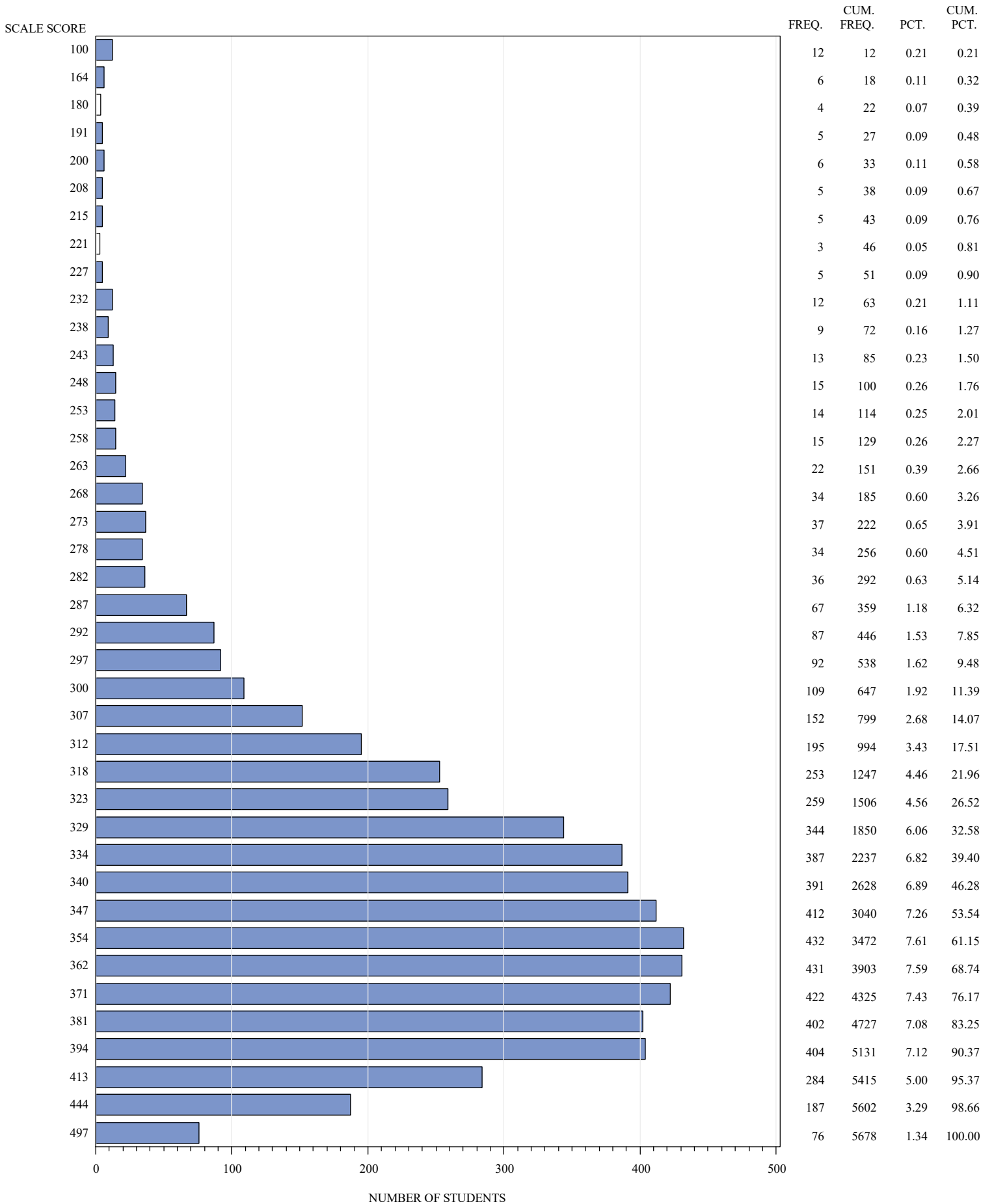
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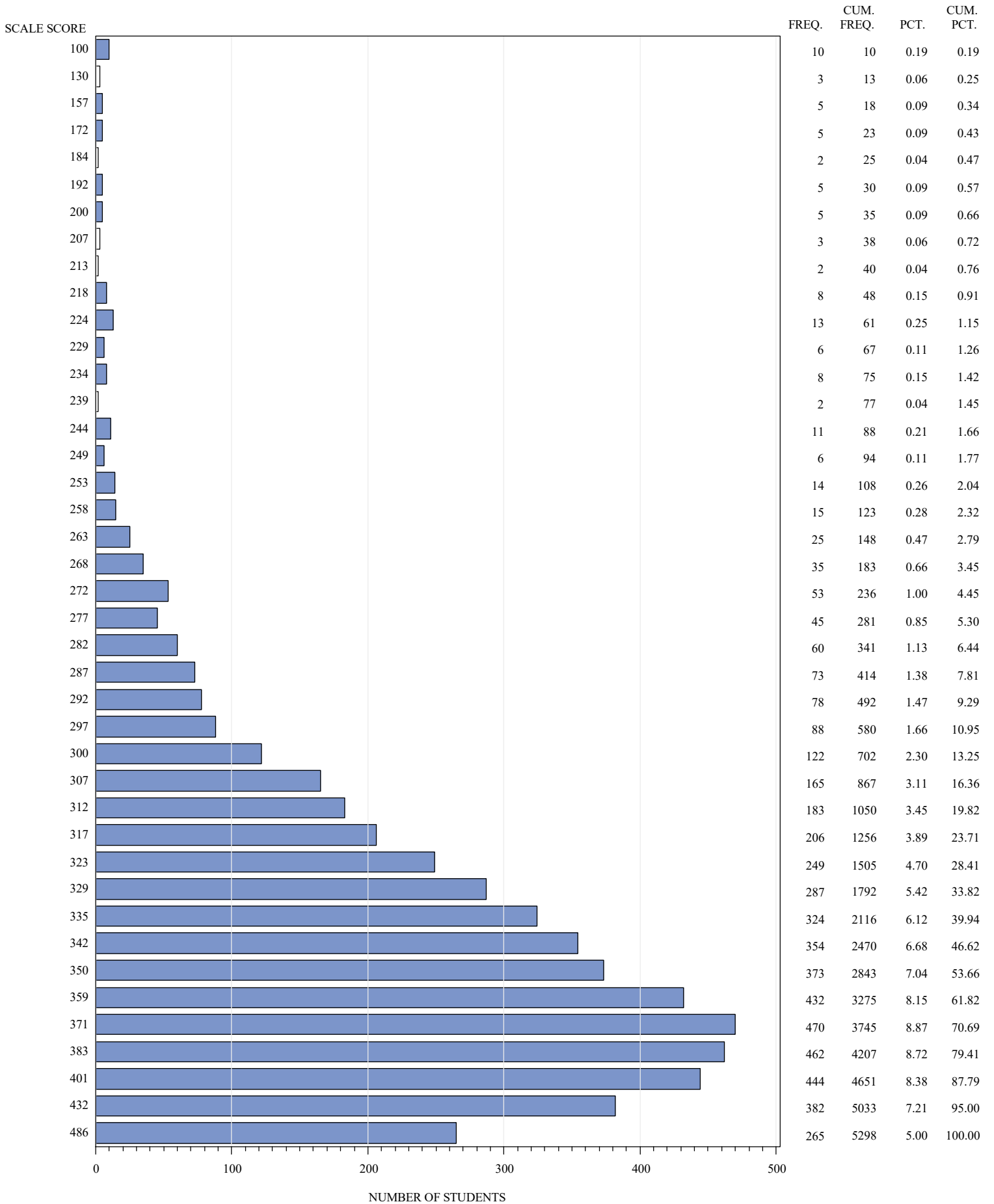
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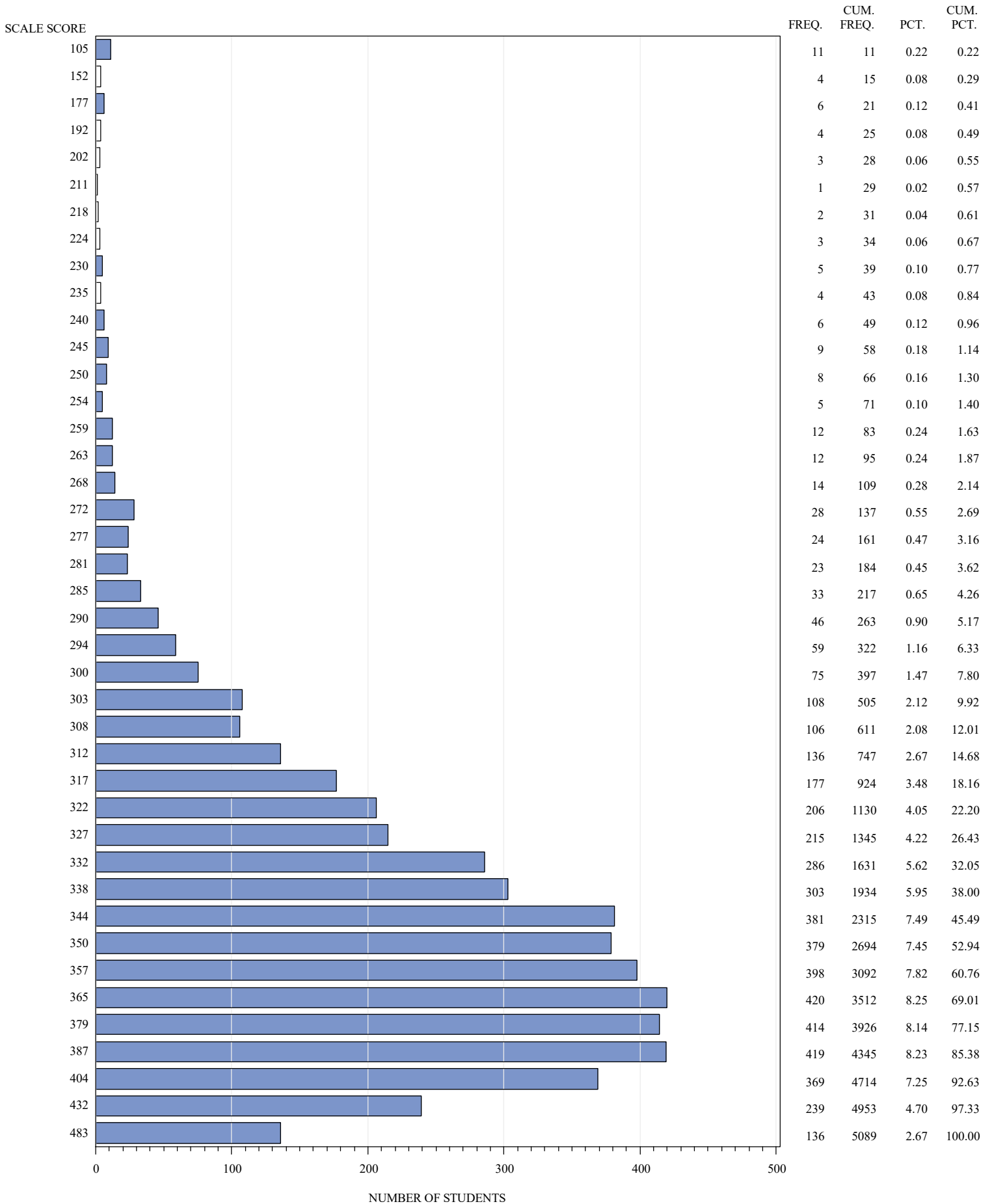
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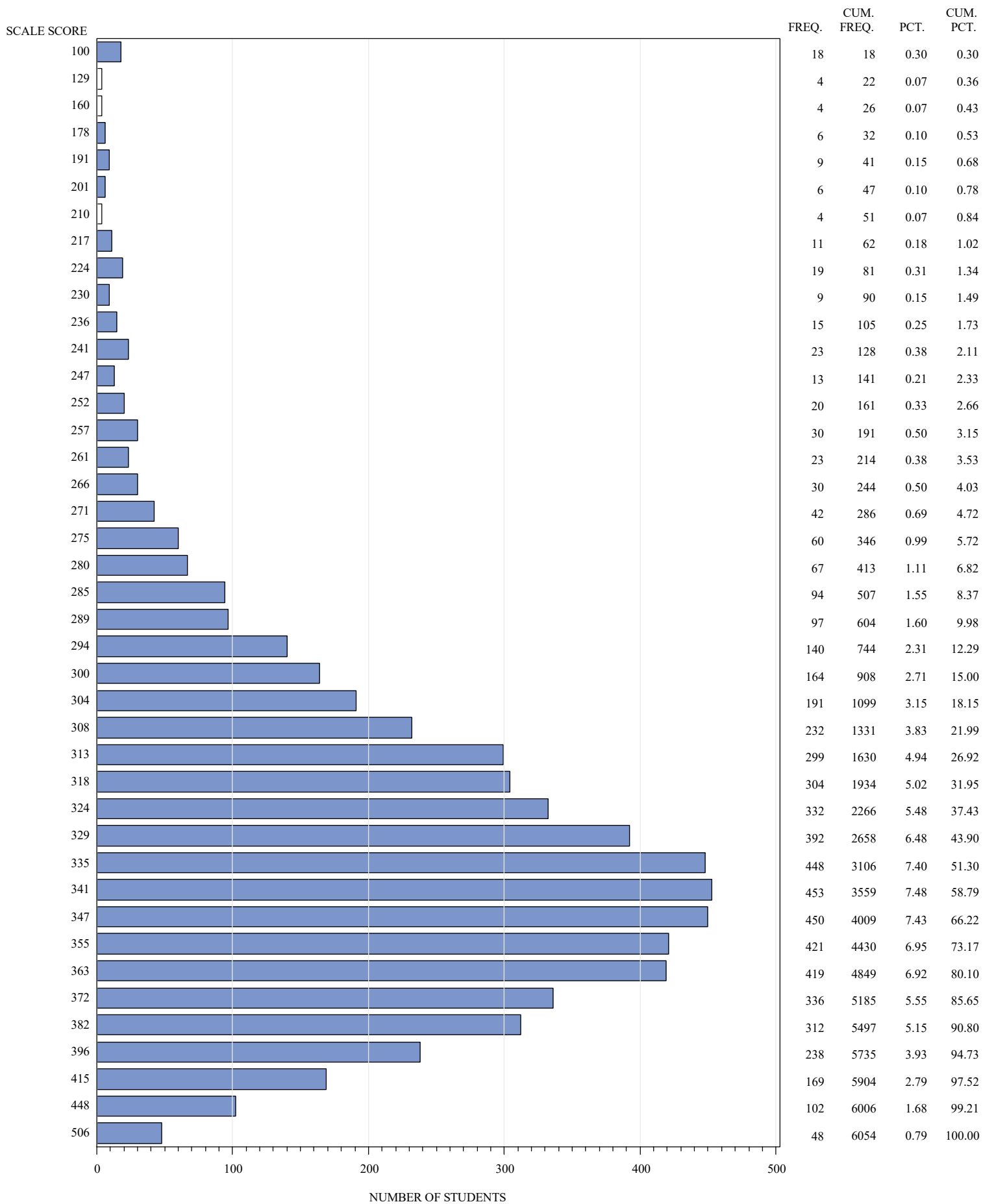
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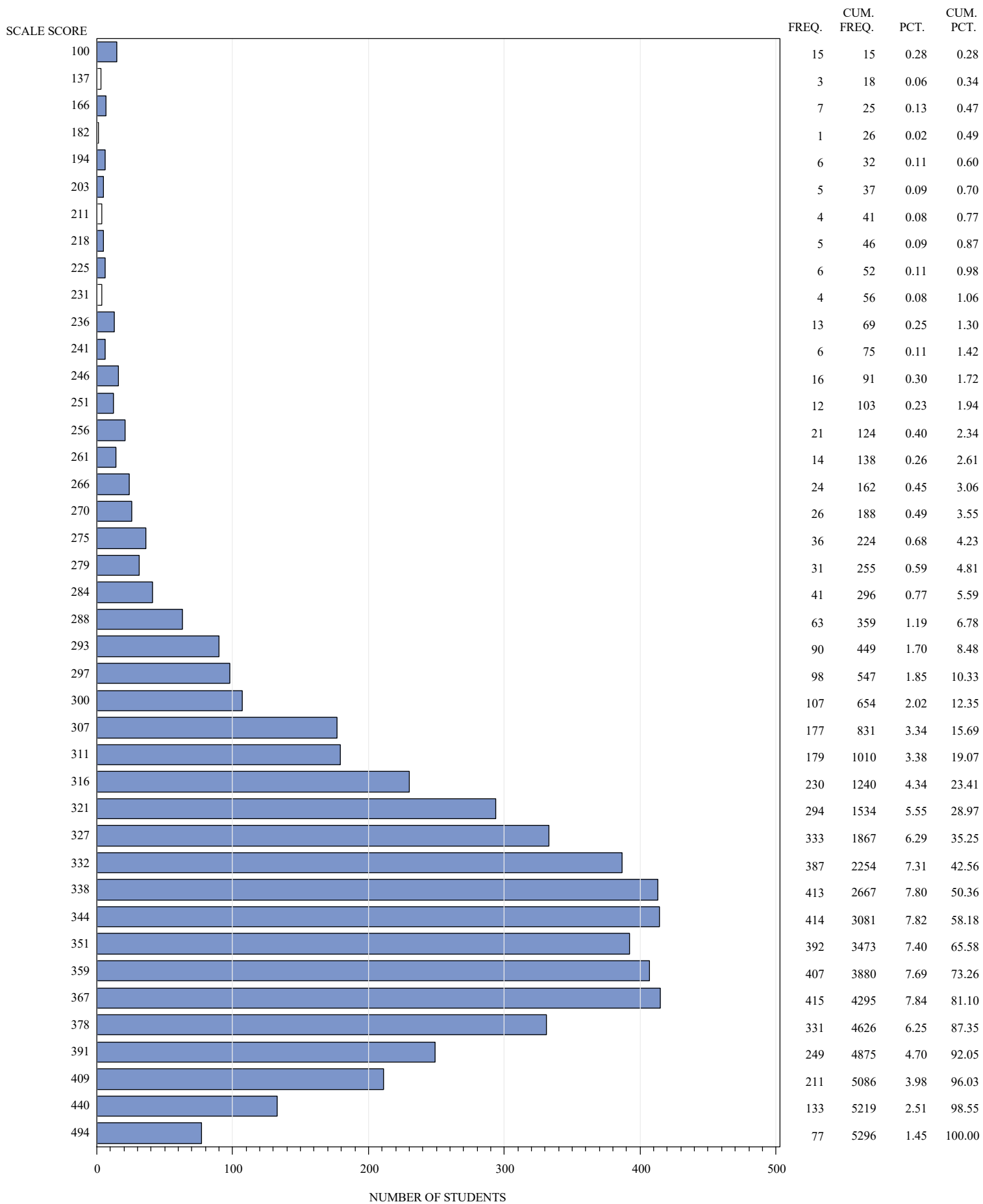
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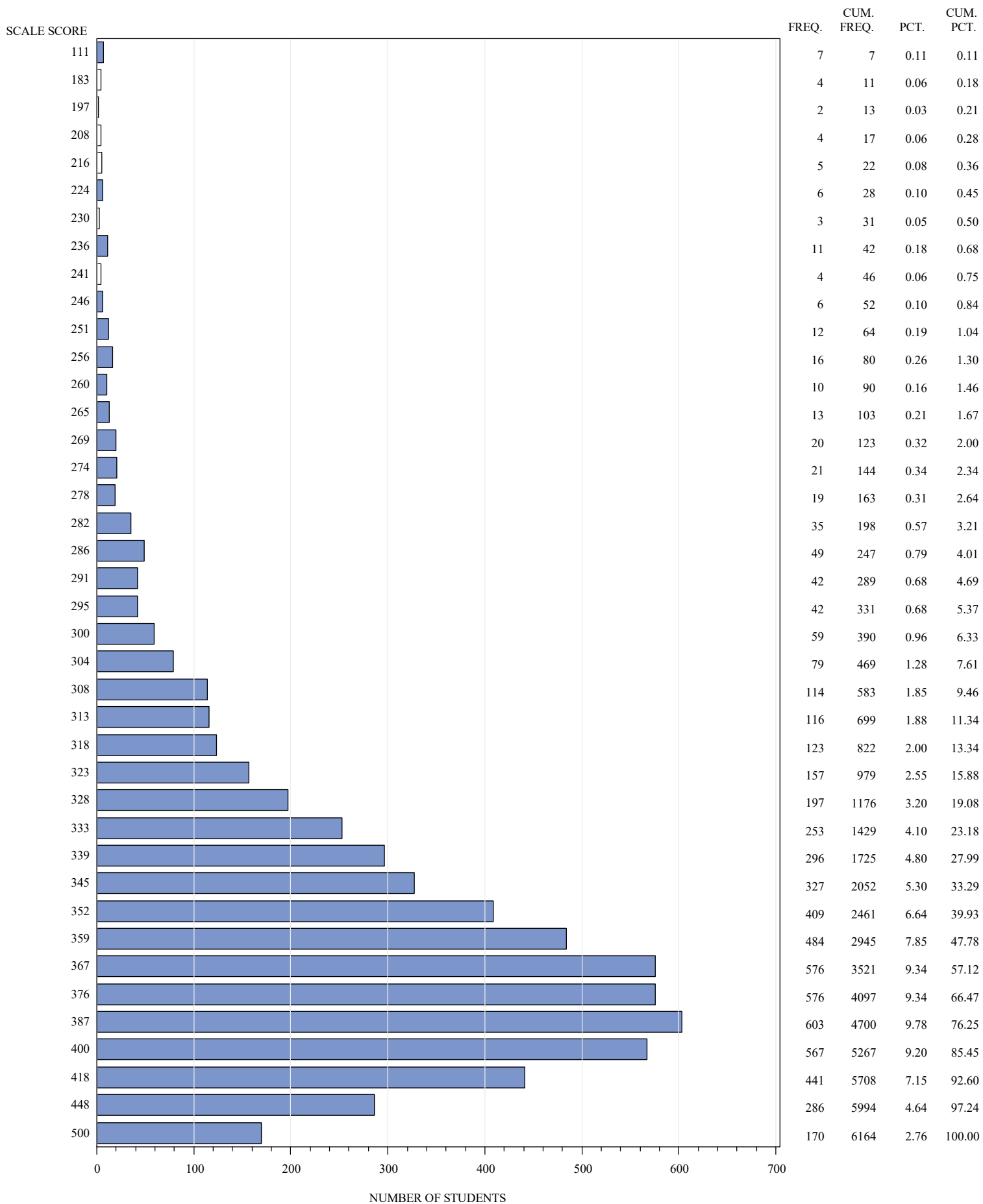
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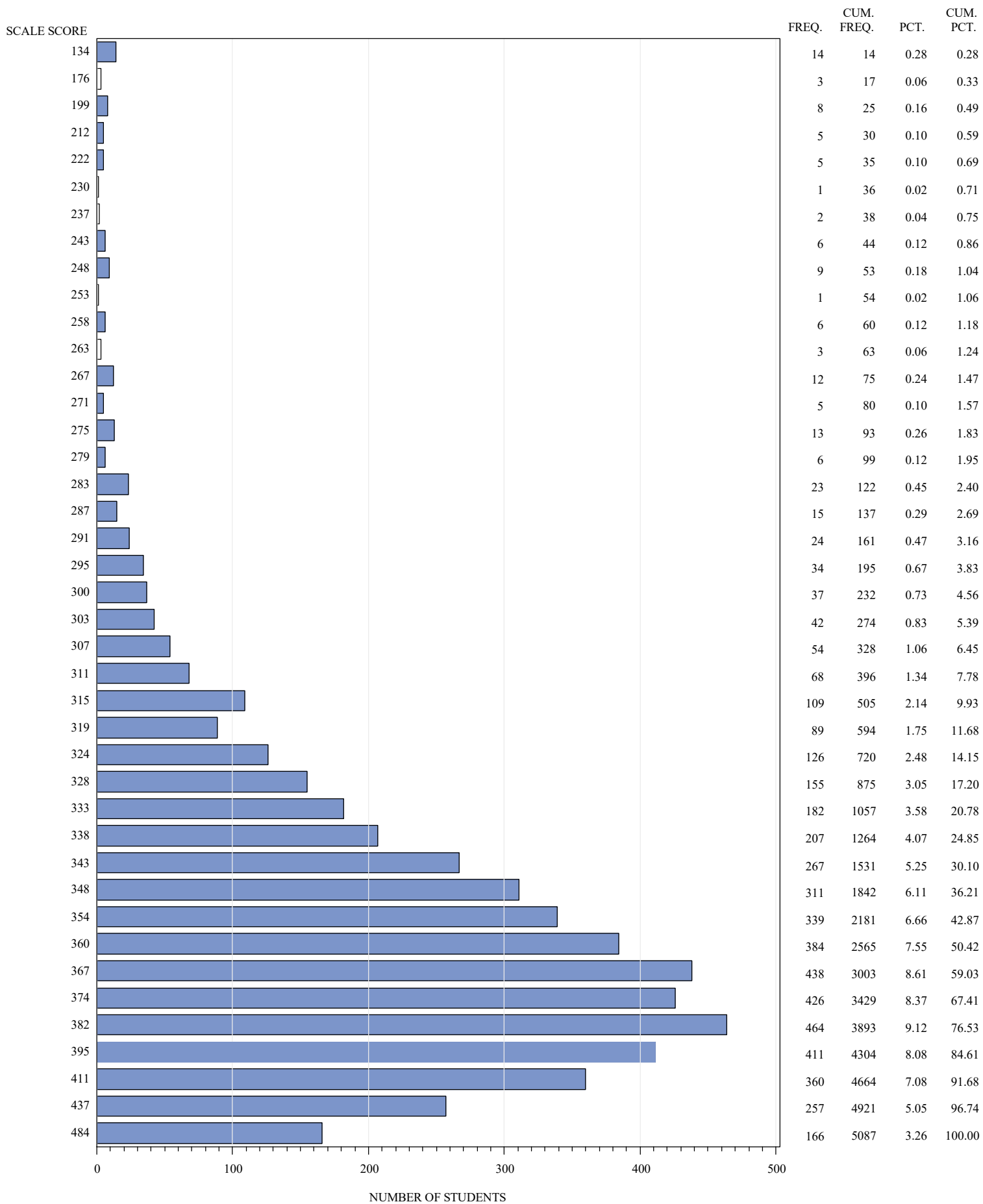
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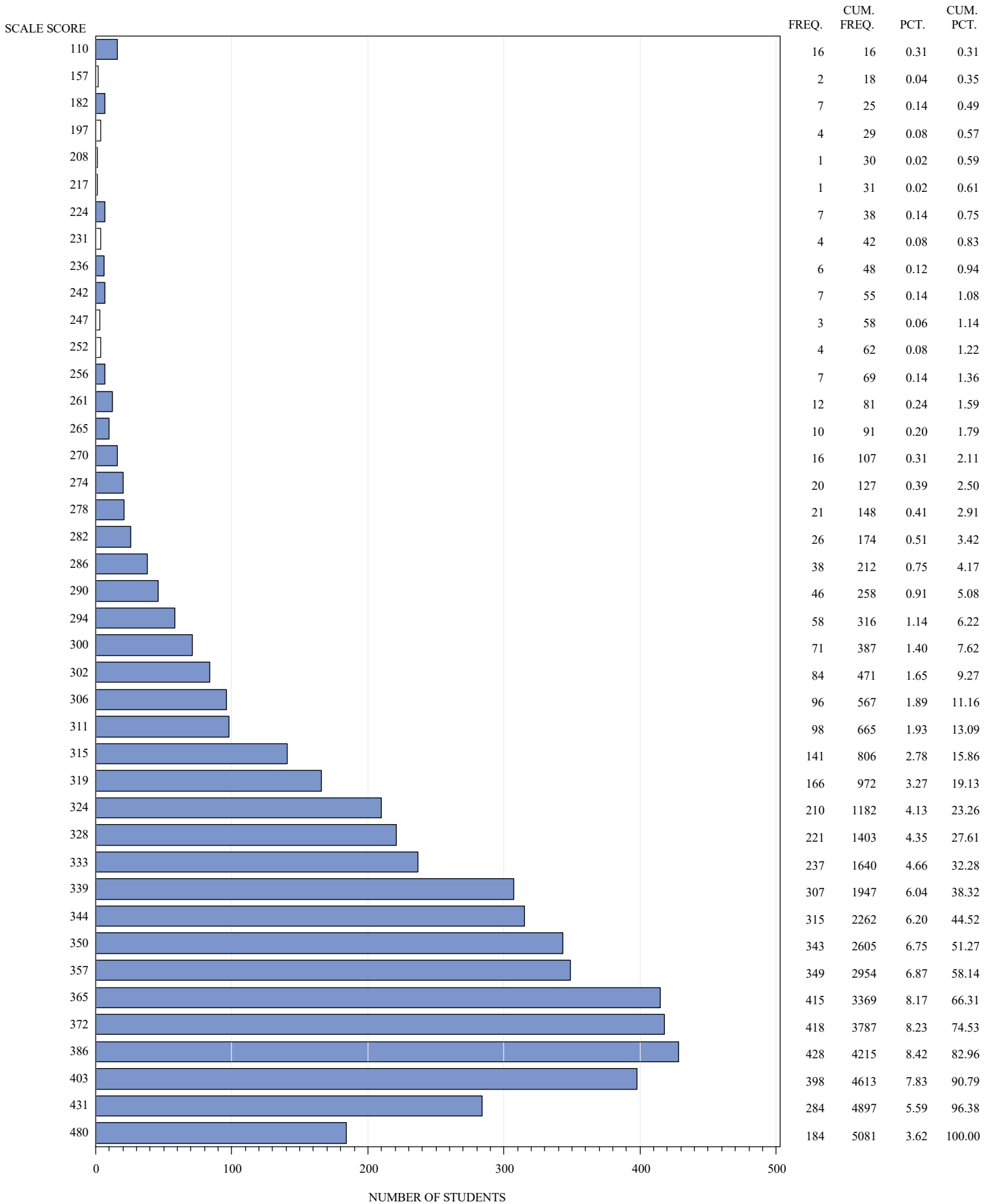
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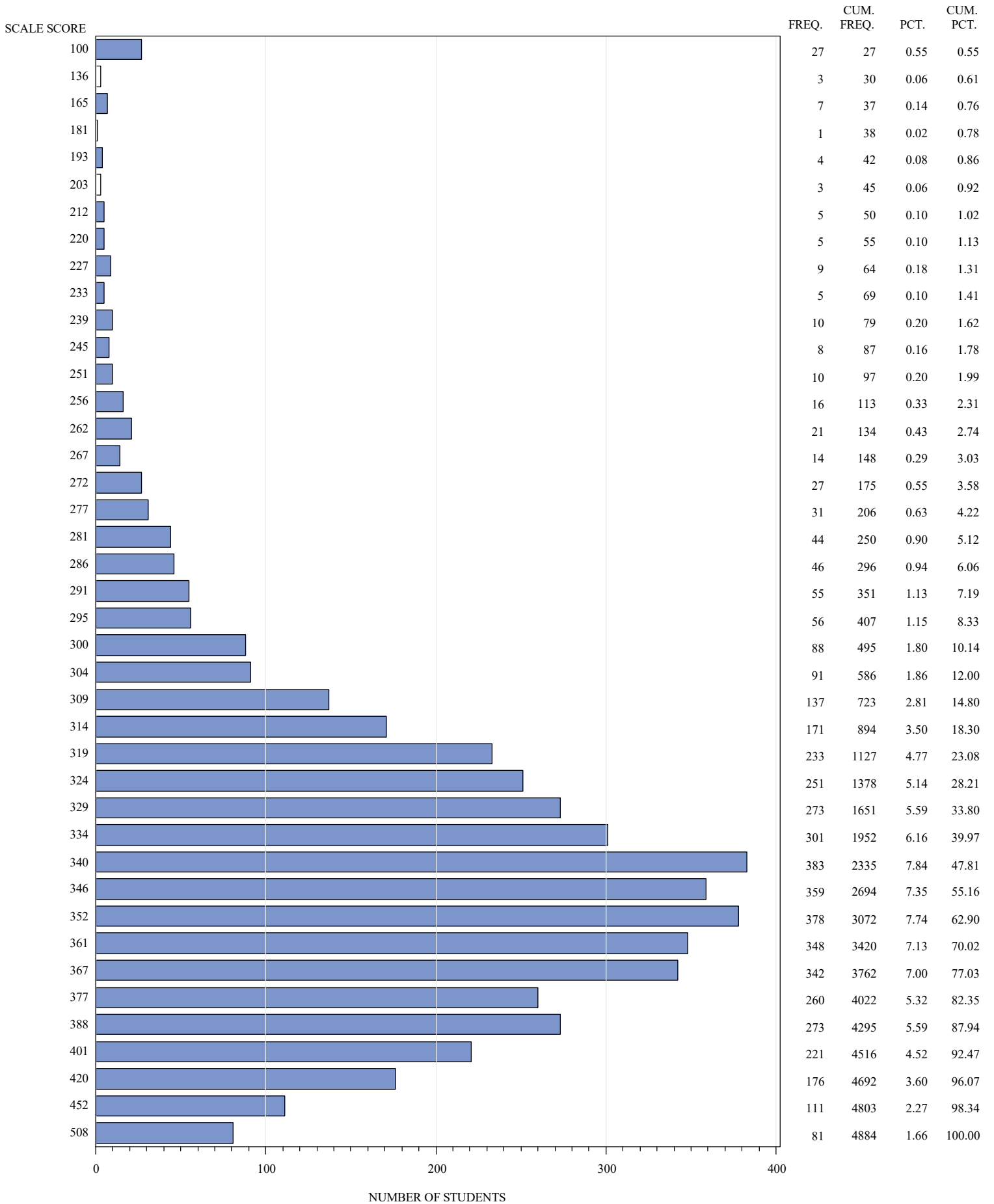
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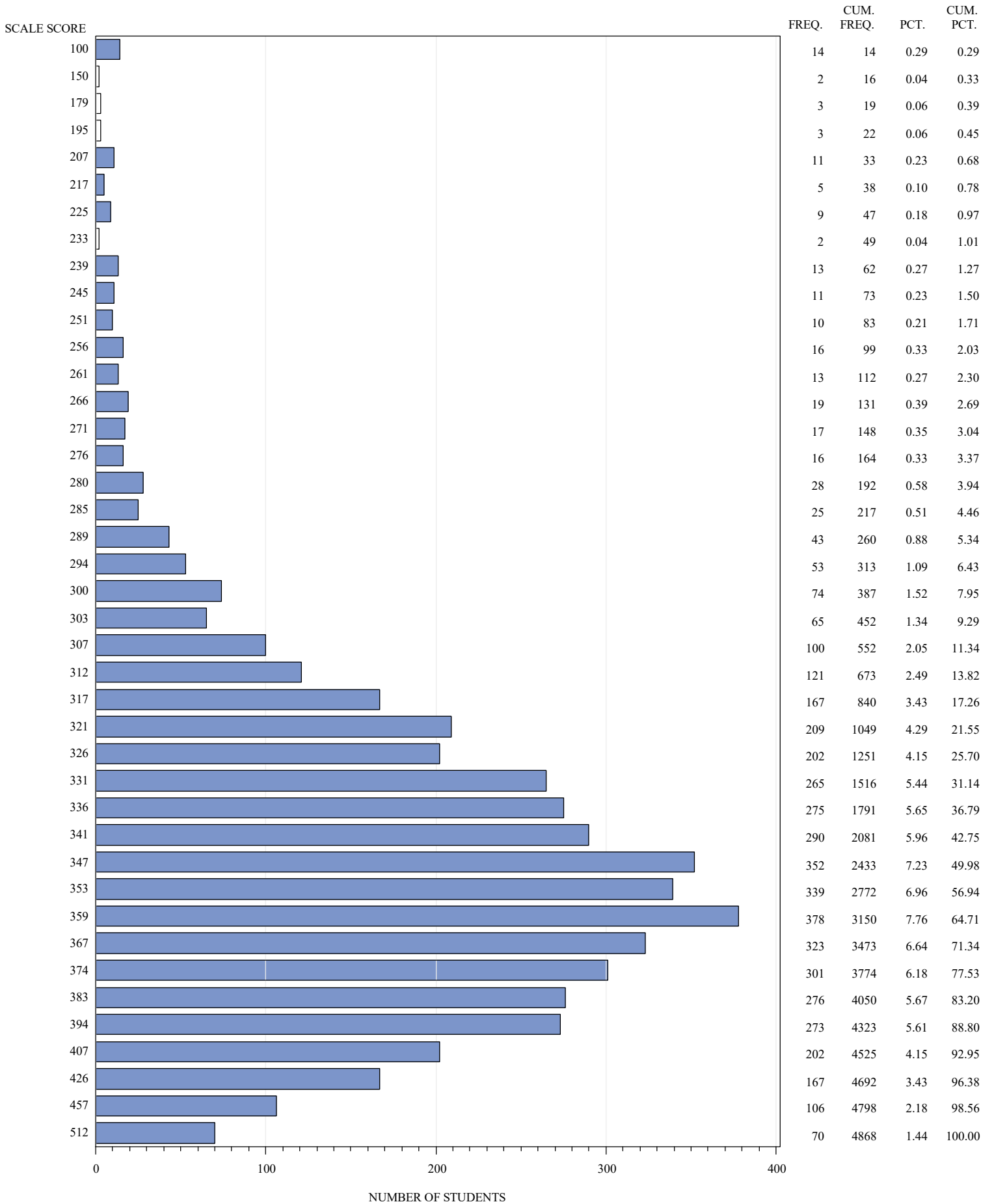
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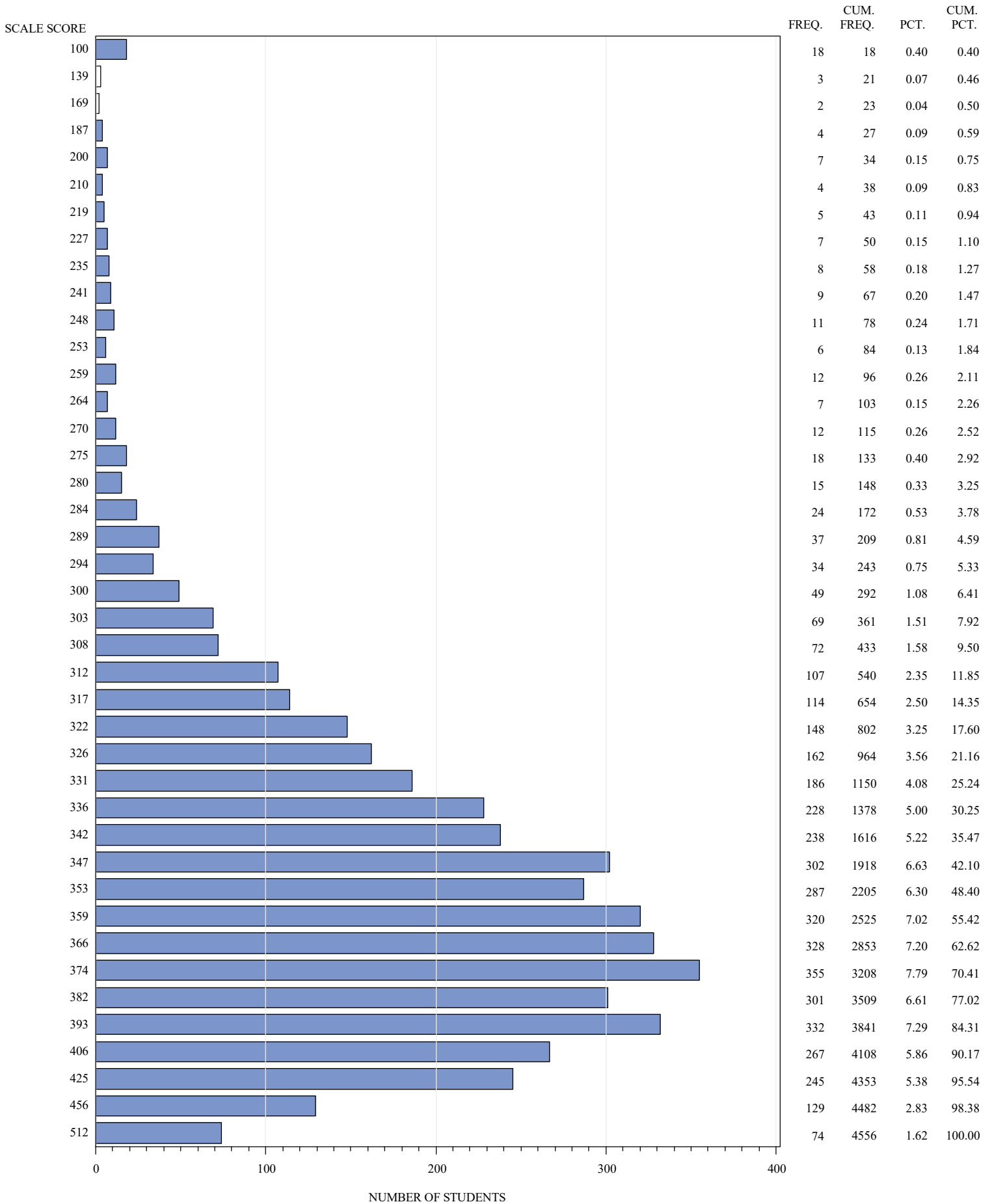
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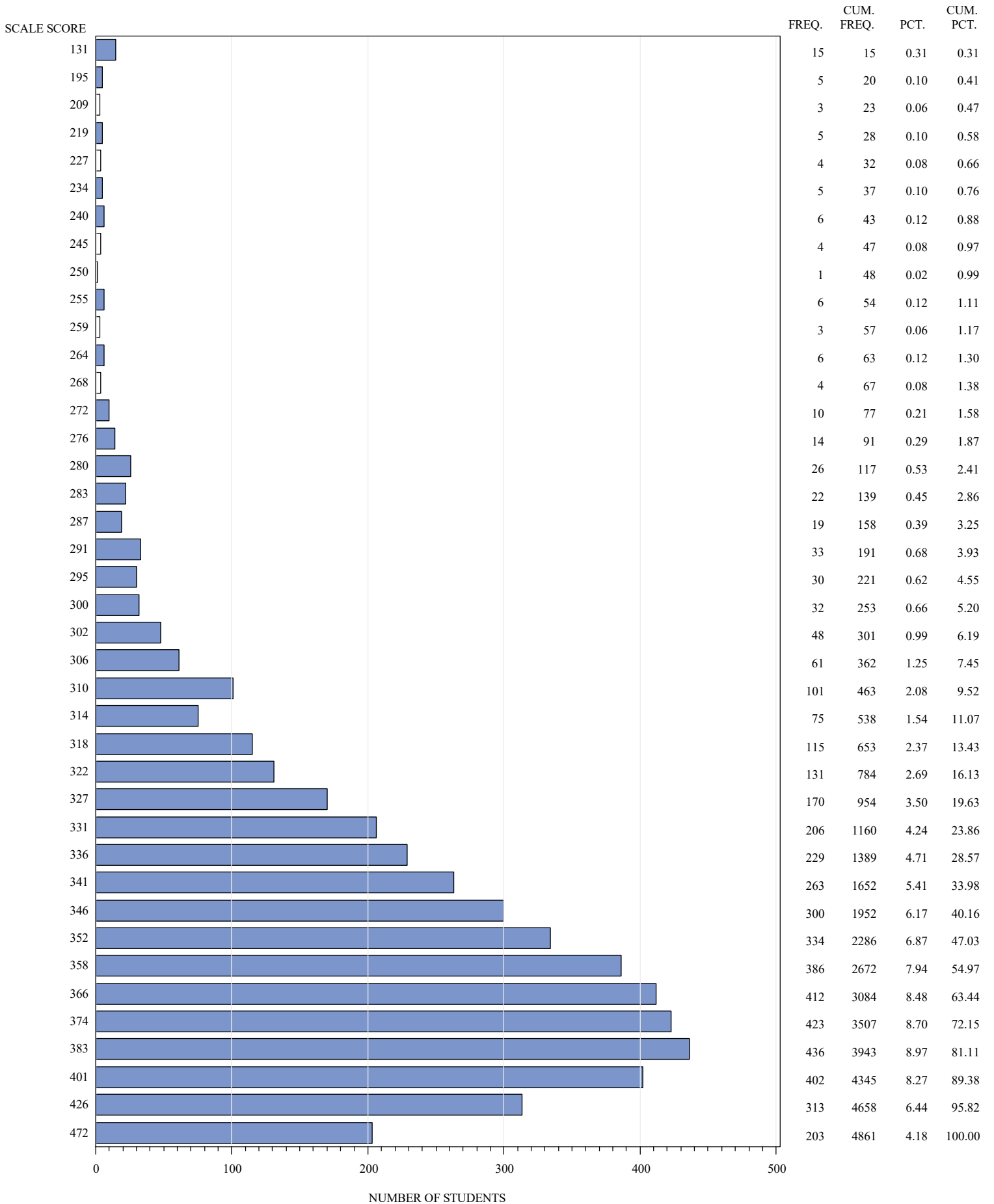
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Frequency Distribution of Scale Scores
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**Figure C.6.22 2018 STAAR Alternate 2 EOC U.S. History
Frequency Distribution of Scale Scores
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