

**2021 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 ("2021 STAAR Alternate 2 Score Distributions and Statistics by Content Area and Grade") of Appendix C. Definitions of statistical terms and concepts in the other sections are given in [chapter 3](#) or [chapter 5](#).

### 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 1<sup>st</sup> and 3<sup>rd</sup> quartiles (or 25<sup>th</sup> and 75<sup>th</sup> percentiles) of the score distribution for the assessment. It is computed by subtracting the score at the 1<sup>st</sup> quartile (the point that splits the lowest 25% of the scores) from the score at the 3<sup>rd</sup> 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 C.6.1. 2021 STAAR Alternate 2 Grades 3–8 Assessments  
Scale Score Descriptive Statistics**

<b>Subject</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Range</b>	<b>Interquartile Range</b>	<b>SD</b>	<b>Variance</b>	<b>Skewness</b>	<b>Kurtosis</b>
Grade 3 Mathematics	4961	347.71	346	363	380	42	44.11	1945.89	-0.5583	4.9736
Grade 4 Mathematics	5040	354.70	350	378	360	48	47.61	2266.39	-0.2323	3.2783
Grade 5 Mathematics	5138	356.54	356	379	375	50	47.92	2296.34	-0.0025	2.9656
Grade 6 Mathematics	4923	360.91	360	368	406	58	52.22	2727.24	0.0159	3.1103
Grade 7 Mathematics	4581	366.98	362	375	406	48	48.36	2338.33	0.2085	3.0662
Grade 8 Mathematics	4507	358.29	356	356	409	48	48.69	2371.19	0.0233	4.0210
Grade 3 Reading	4962	332.78	331	342	379	45	44.76	2003.46	-0.6380	4.9176
Grade 4 Reading	5043	339.37	344	350	390	50	46.07	2122.08	-0.3675	3.5005
Grade 5 Reading	5131	343.26	344	344	410	48	43.78	1917.06	-0.3088	4.1996
Grade 6 Reading	4921	345.75	342	357	392	57	48.57	2359.32	-0.0137	2.5018
Grade 7 Reading	4585	354.48	356	380	383	55	52.01	2705.36	0.0493	1.7145
Grade 8 Reading	4511	352.39	353	353	382	50	42.67	1820.83	-0.2328	4.4464
Grade 4 Writing	5031	330.52	327	346	394	46	48.63	2364.90	-0.2197	4.2828
Grade 7 Writing	4575	349.62	345	371	387	50	48.72	2373.63	0.2397	2.5433
Grade 5 Science	5130	360.79	357	387	387	53	45.89	2105.57	-0.3066	3.8570
Grade 8 Science	4492	367.64	368	391	351	52	46.52	2164.43	-0.2494	2.0135
Grade 8 Social Studies	4503	358.72	356	365	377	57	47.22	2230.00	-0.0447	2.7467

**Table C.6.2. 2021 STAAR Alternate 2 EOC Assessments  
Scale Score Descriptive Statistics**

<b>Subject</b>	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Range</b>	<b>Interquartile Range</b>	<b>SD</b>	<b>Variance</b>	<b>Skewness</b>	<b>Kurtosis</b>
Algebra I	4514	344.83	347	354	397	46	44.85	2011.13	-0.5362	5.7141
English I	4499	352.45	349	355	407	47	45.35	2056.52	-0.4772	6.4168
English II	4089	356.10	352	366	404	57	49.01	2401.97	-0.7005	5.6172
Biology	4424	365.83	366	374	349	52	45.64	2083.46	-0.4247	4.2962
U.S. History	3869	354.66	349	368	374	44	47.18	2226.21	-0.2451	4.2056

Figure C.6.1 2021 STAAR Alternate 2 Grade 3 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

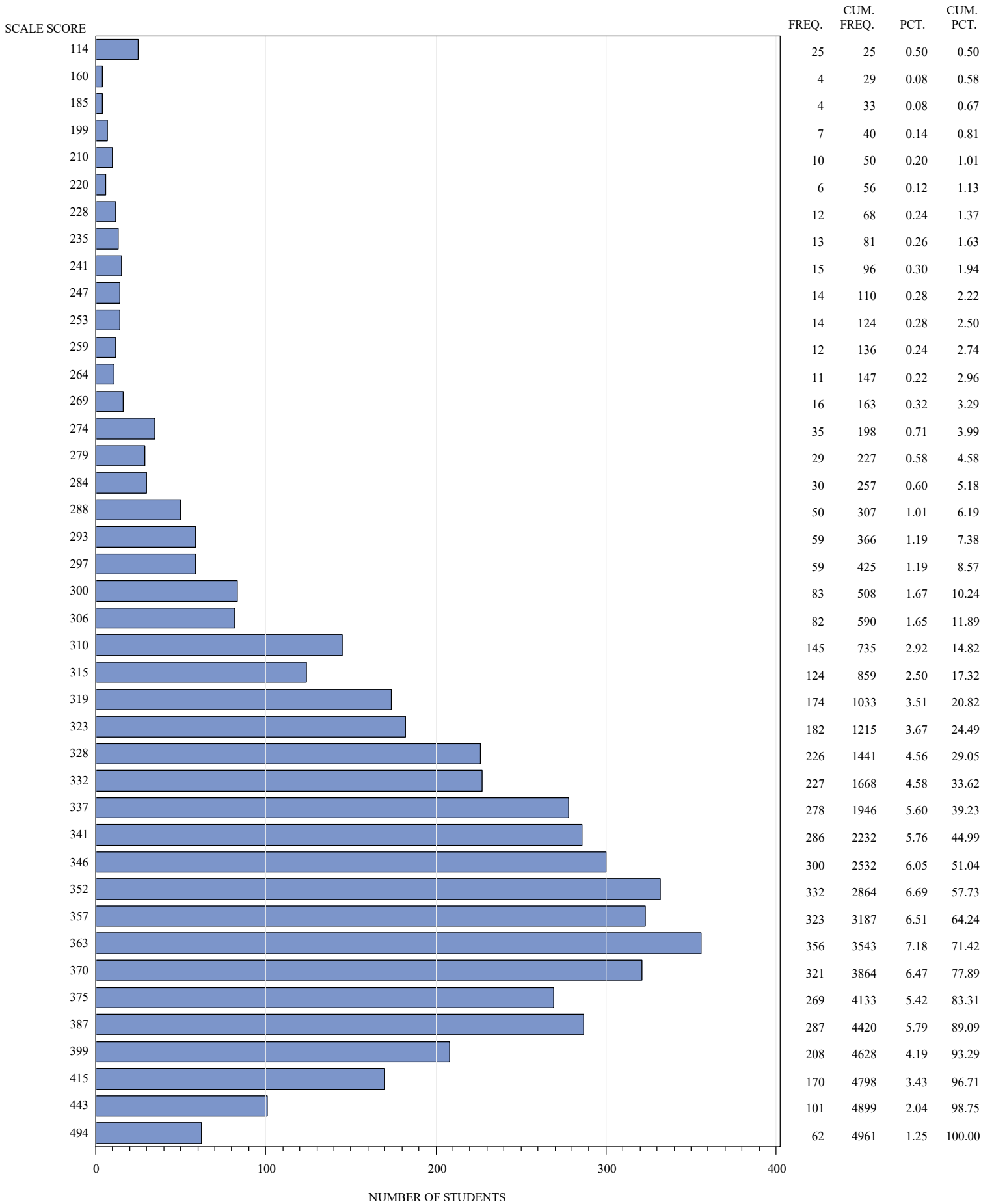




Figure C.6.2 2021 STAAR Alternate 2 Grade 4 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

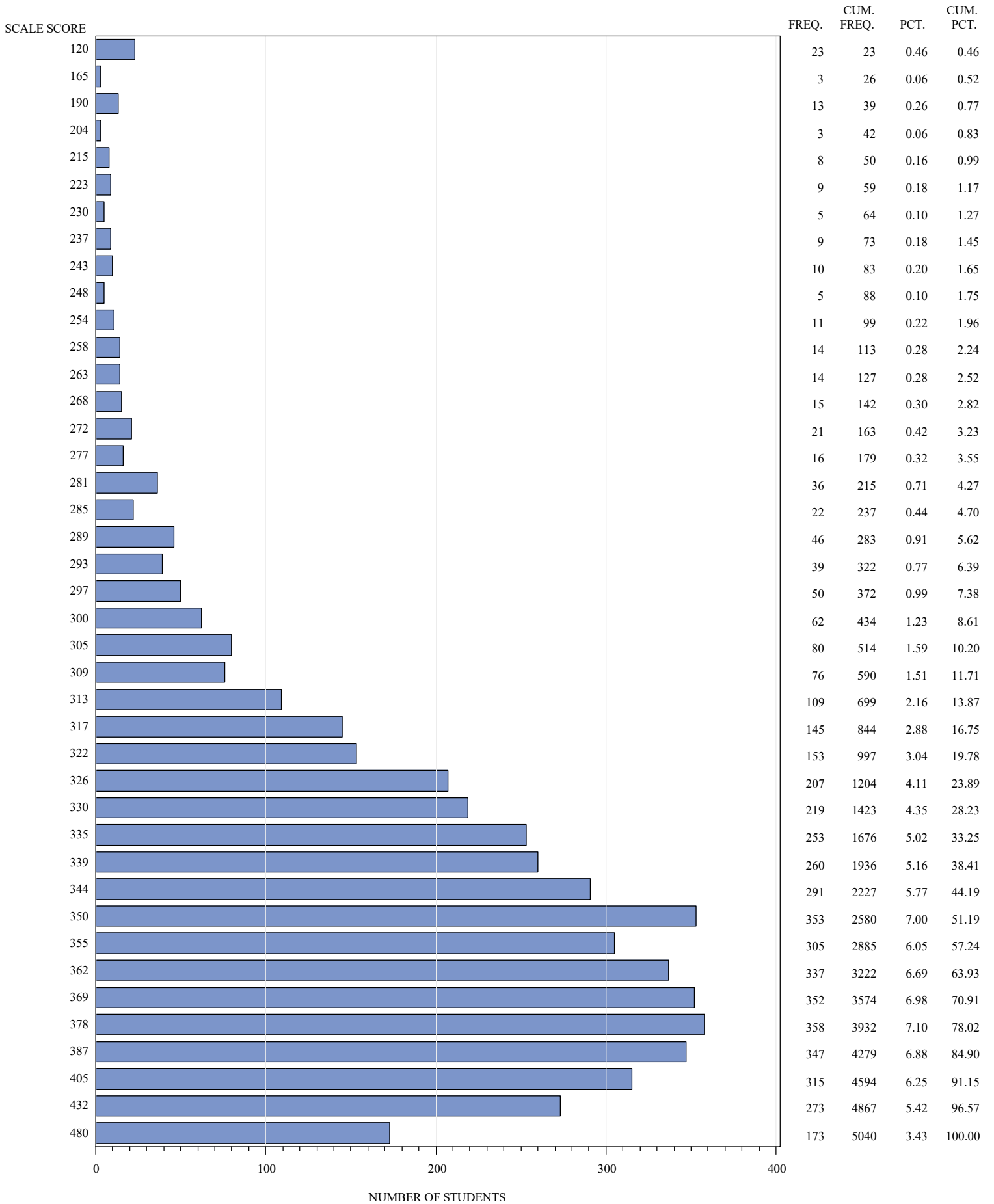


Figure C.6.3 2021 STAAR Alternate 2 Grade 5 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

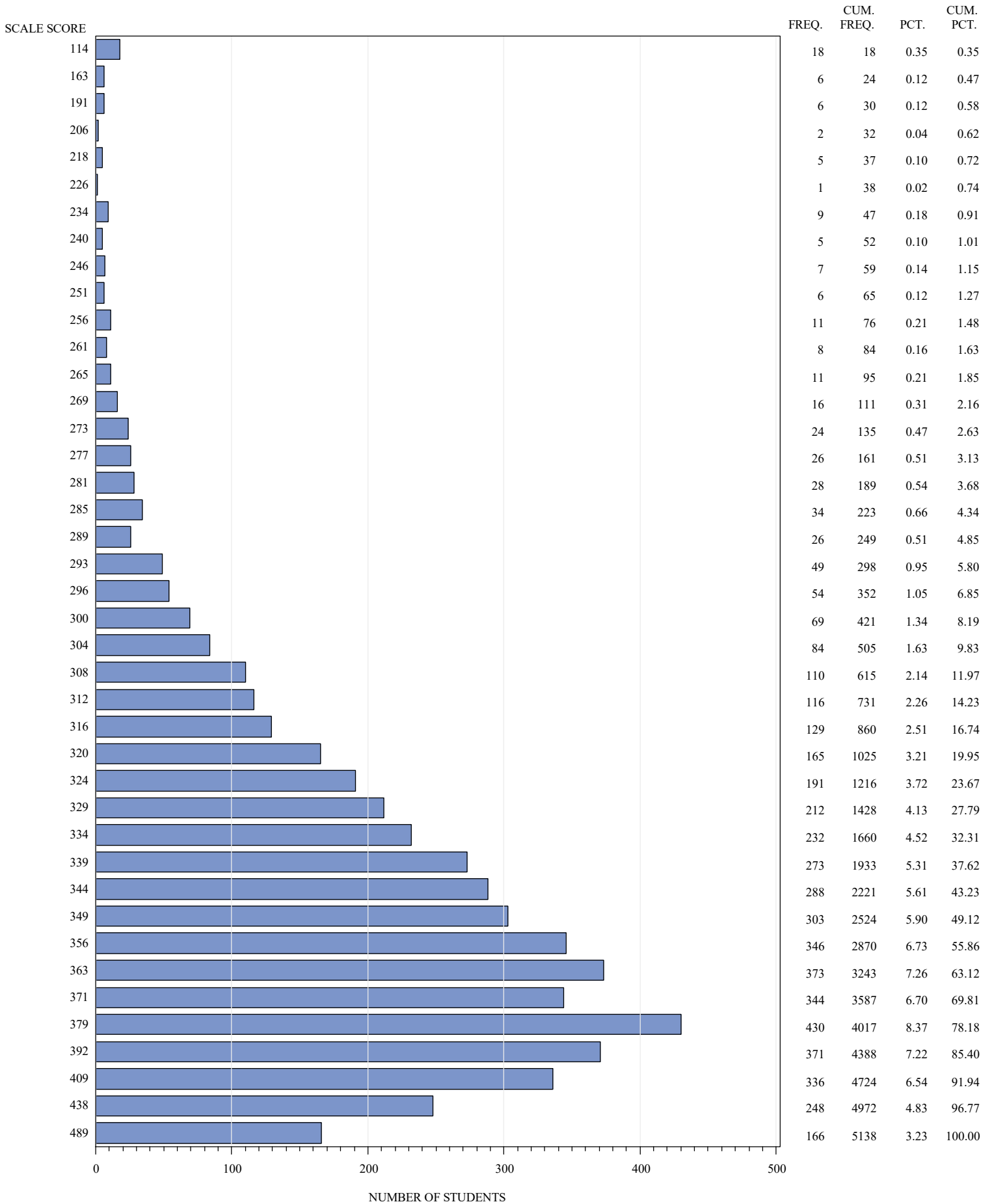


Figure C.6.4 2021 STAAR Alternate 2 Grade 6 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

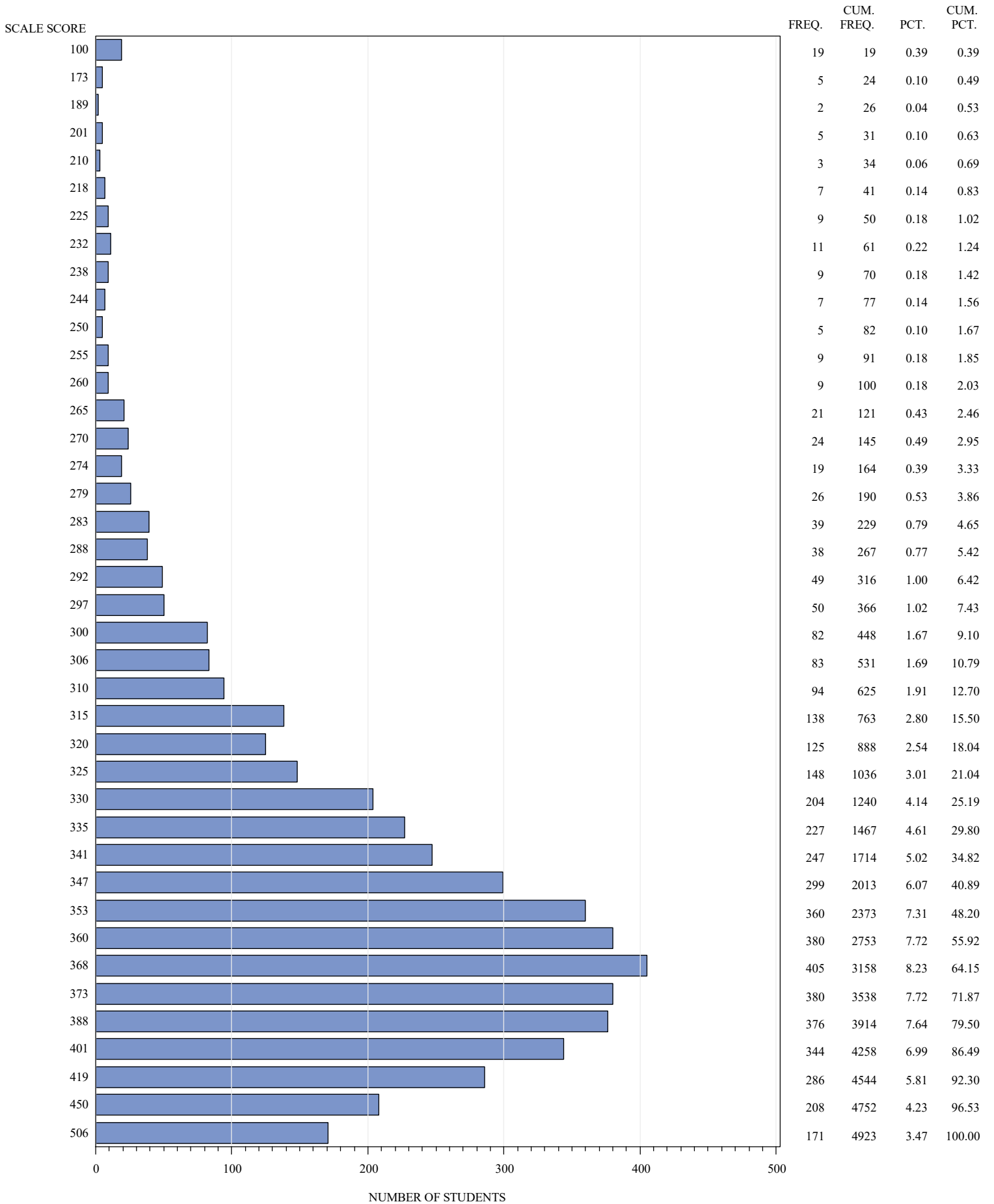


Figure C.6.5 2021 STAAR Alternate 2 Grade 7 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

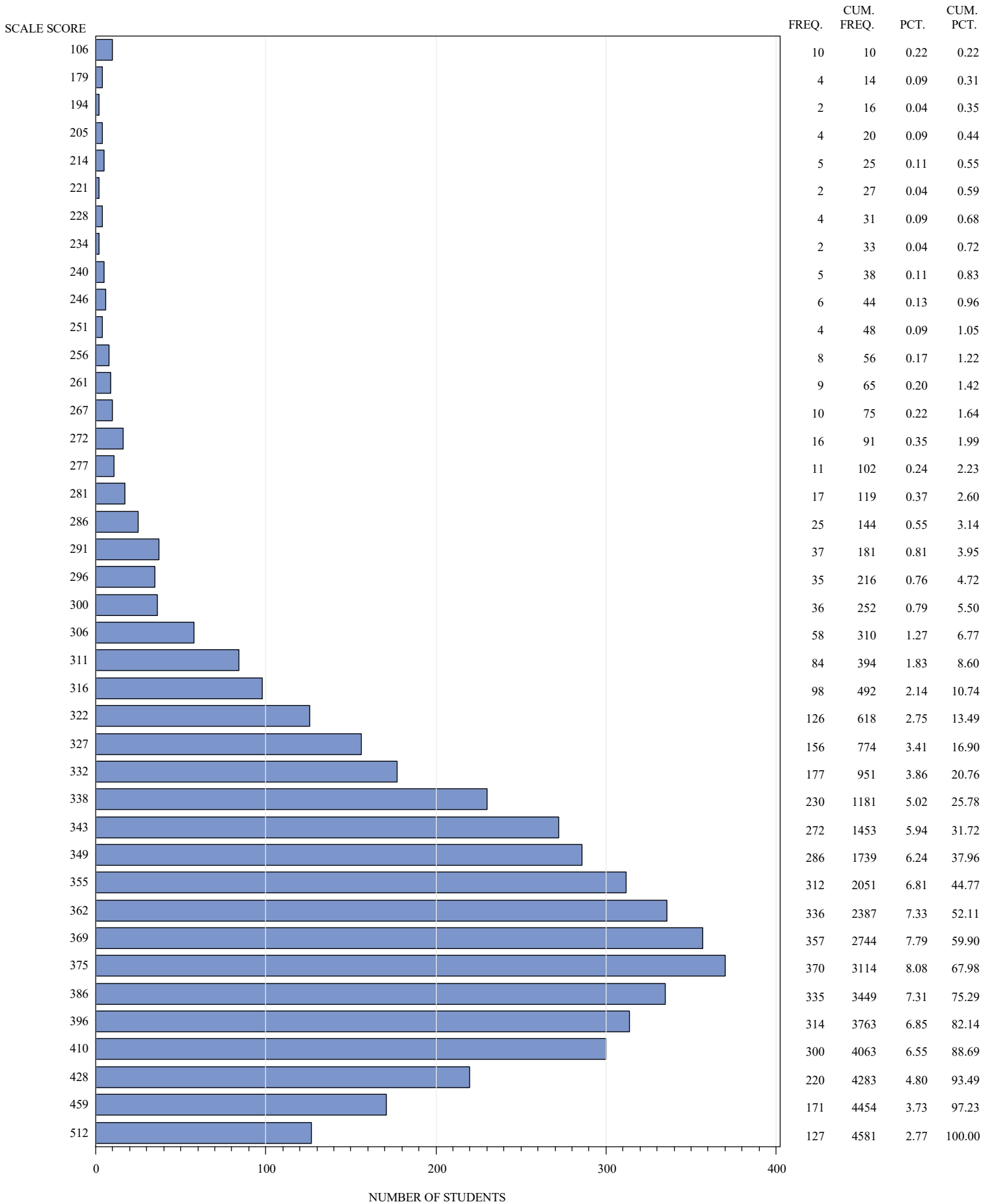


Figure C.6.6 2021 STAAR Alternate 2 Grade 8 Mathematics  
 Frequency Distribution of Scale Scores  
 All Students

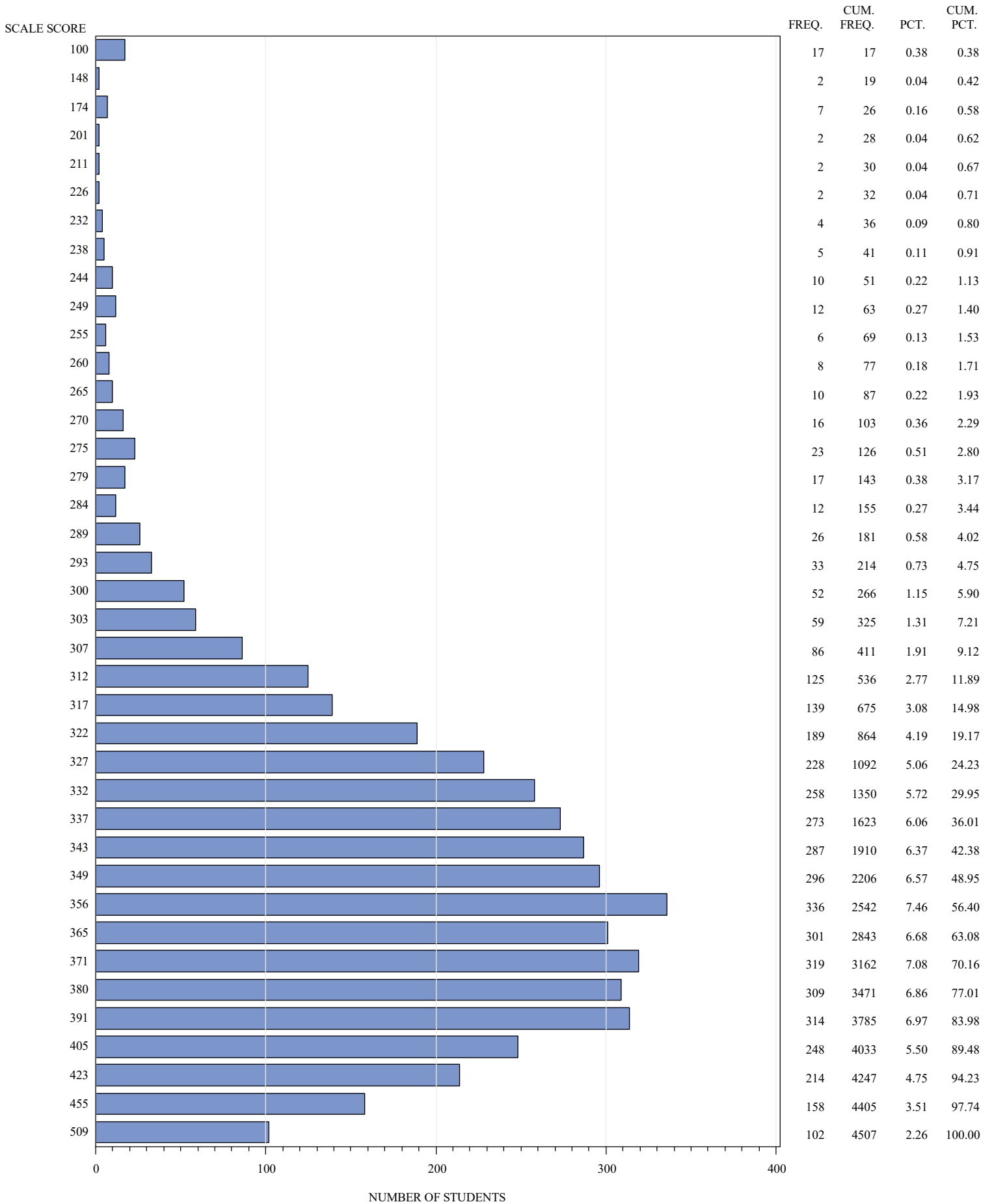


Figure C.6.7 2021 STAAR Alternate 2 Grade 3 Reading  
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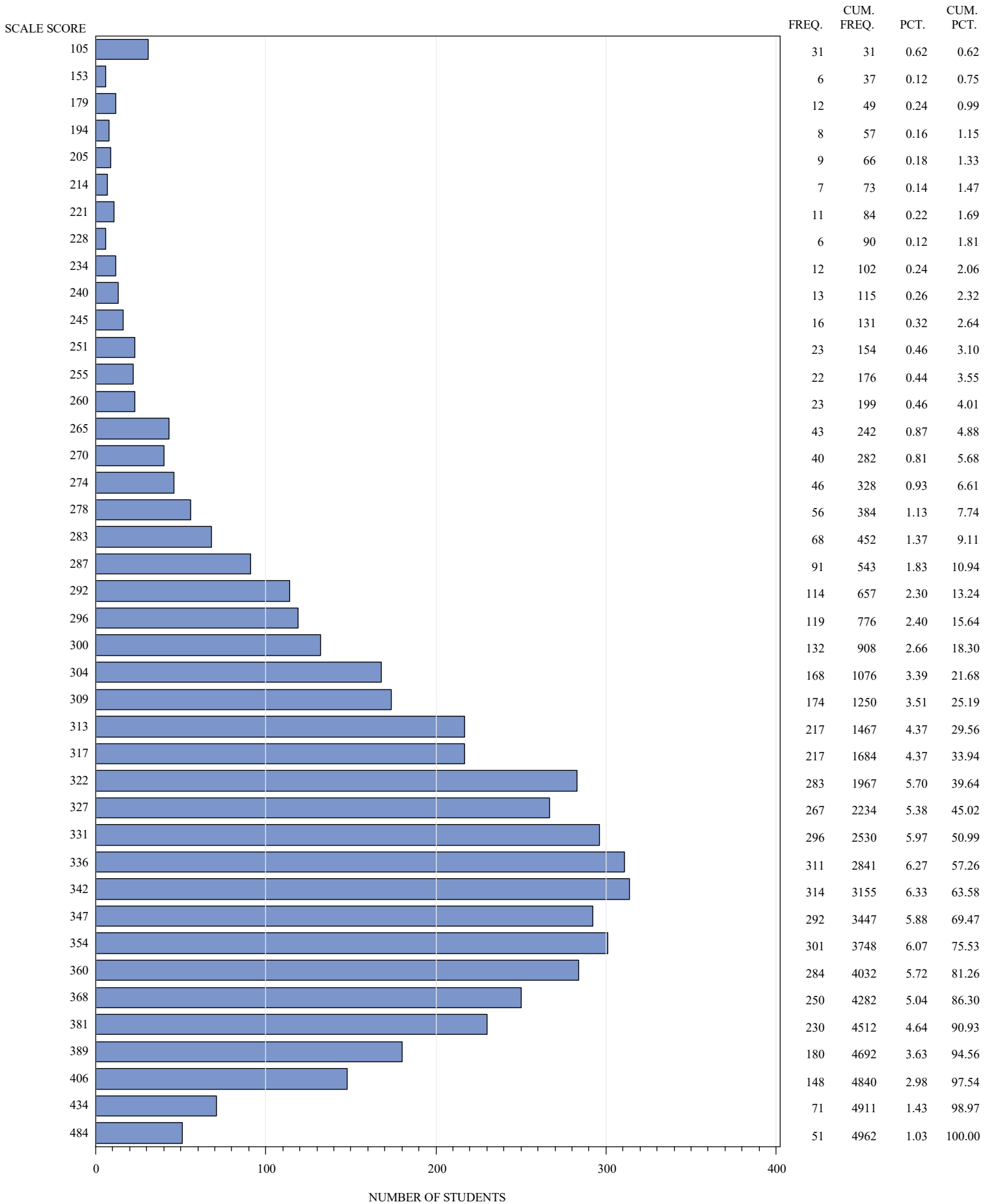


Figure C.6.8 2021 STAAR Alternate 2 Grade 4 Reading  
 Frequency Distribution of Scale Scores  
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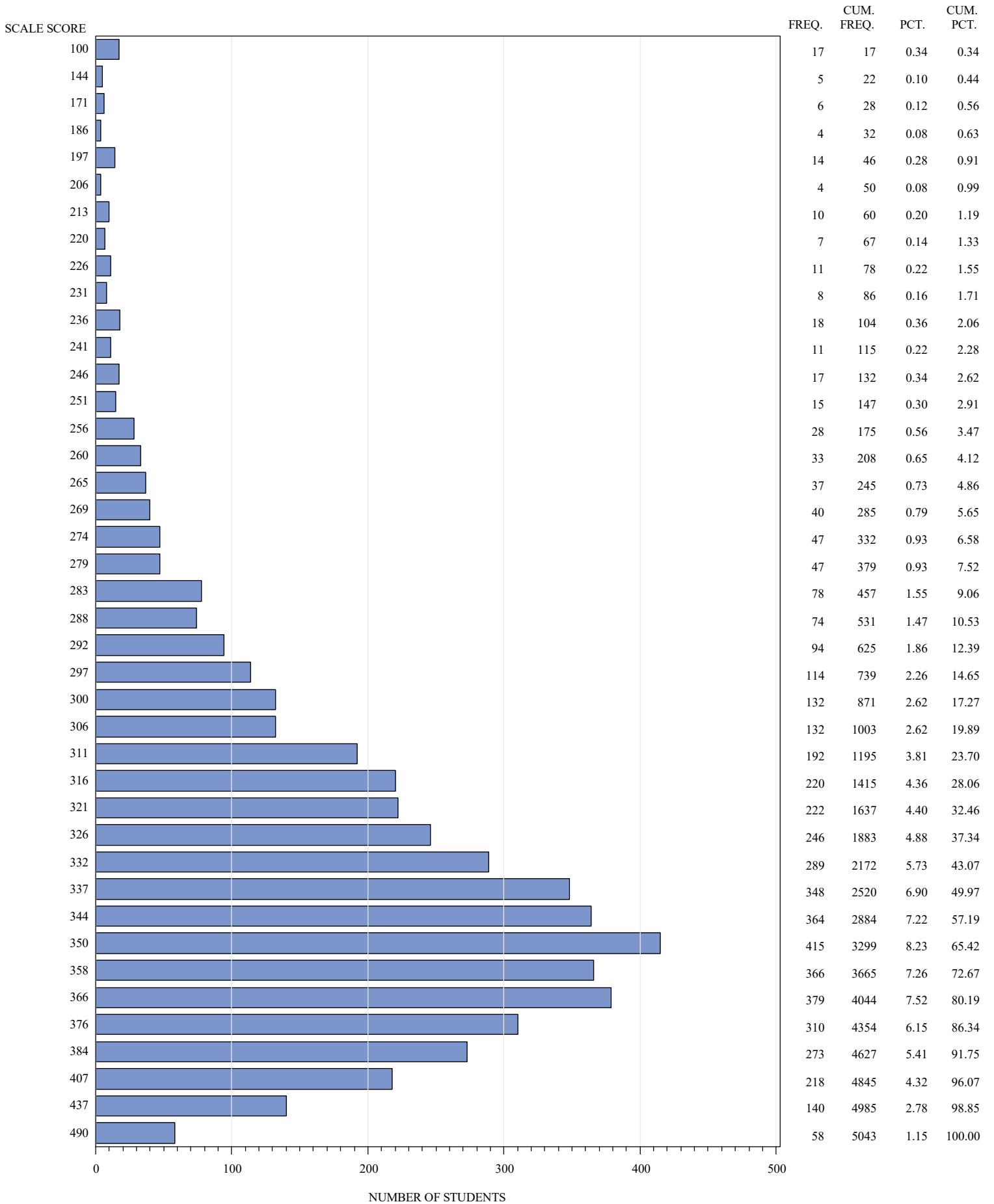


Figure C.6.9 2021 STAAR Alternate 2 Grade 5 Reading  
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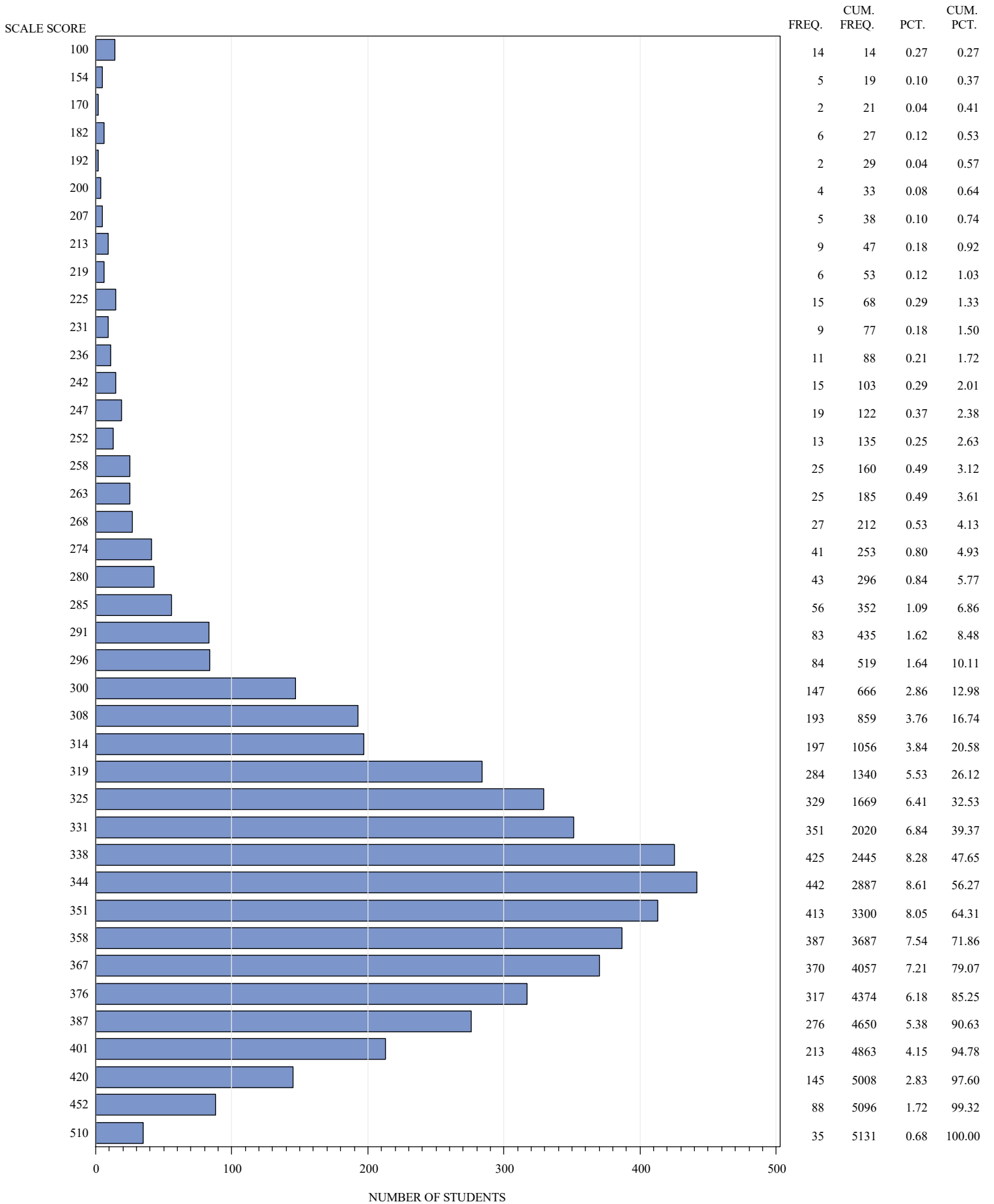




Figure C.6.10 2021 STAAR Alternate 2 Grade 6 Reading  
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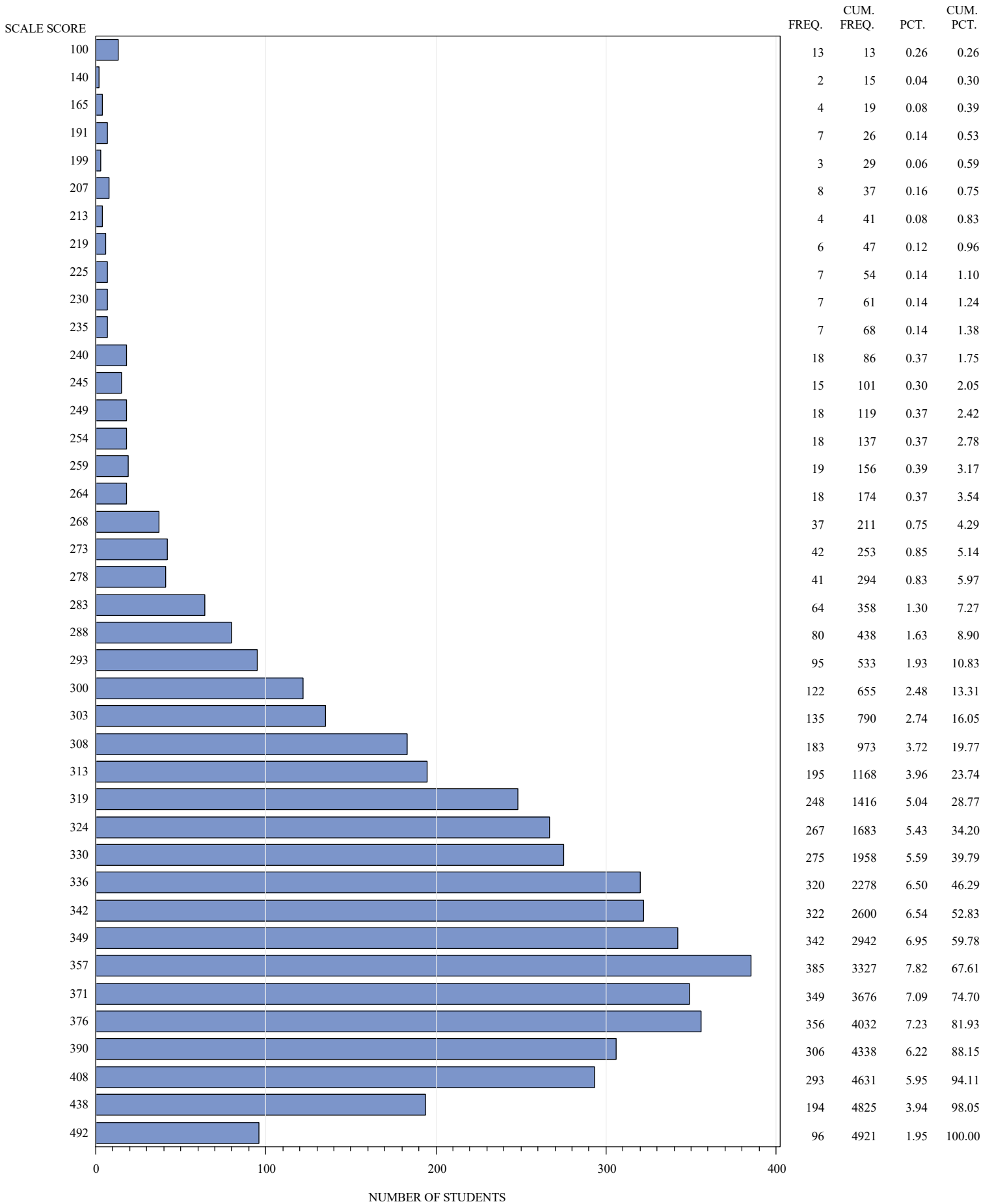


Figure C.6.11 2021 STAAR Alternate 2 Grade 7 Reading  
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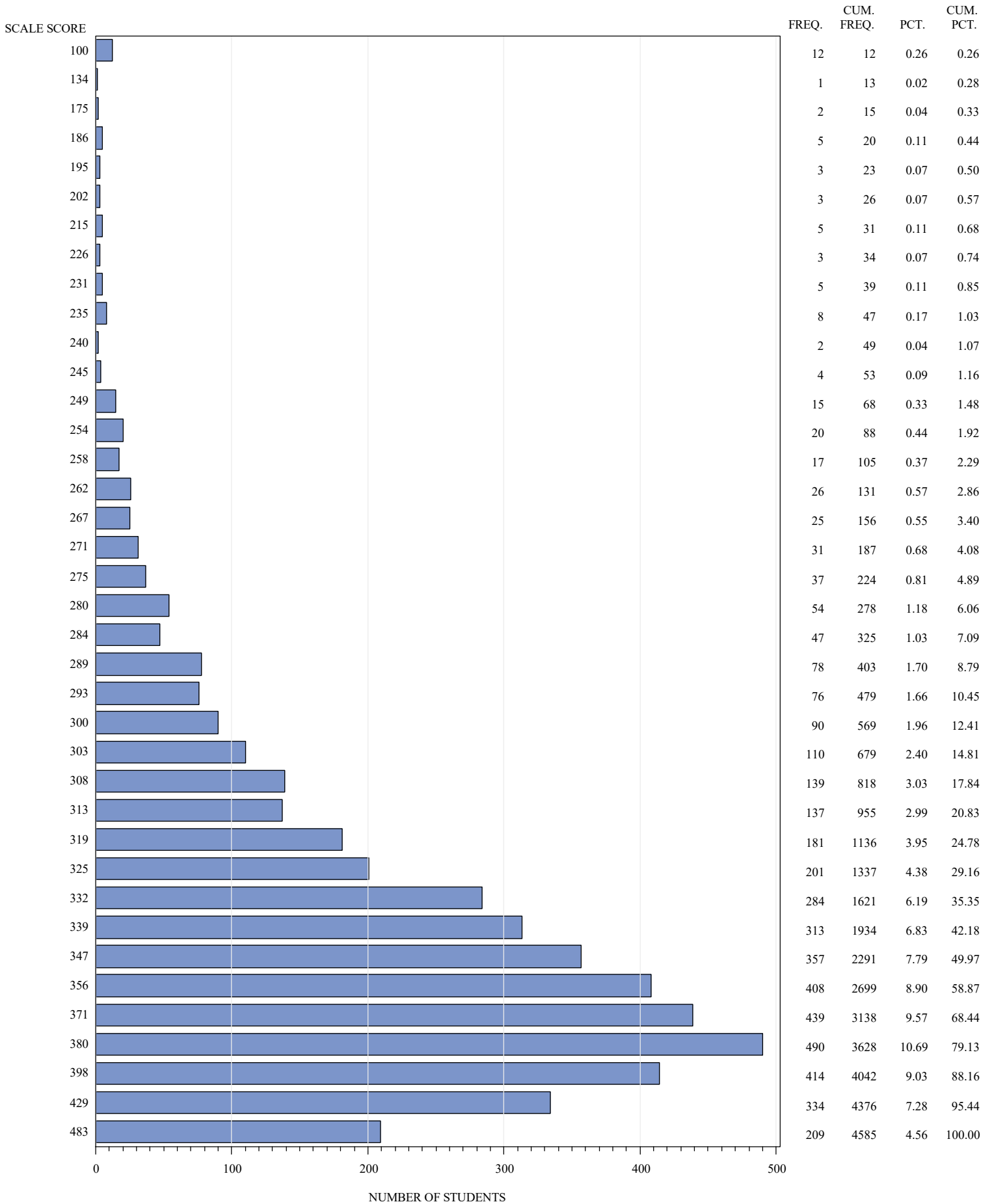


Figure C.6.12 2021 STAAR Alternate 2 Grade 8 Reading  
 Frequency Distribution of Scale Scores  
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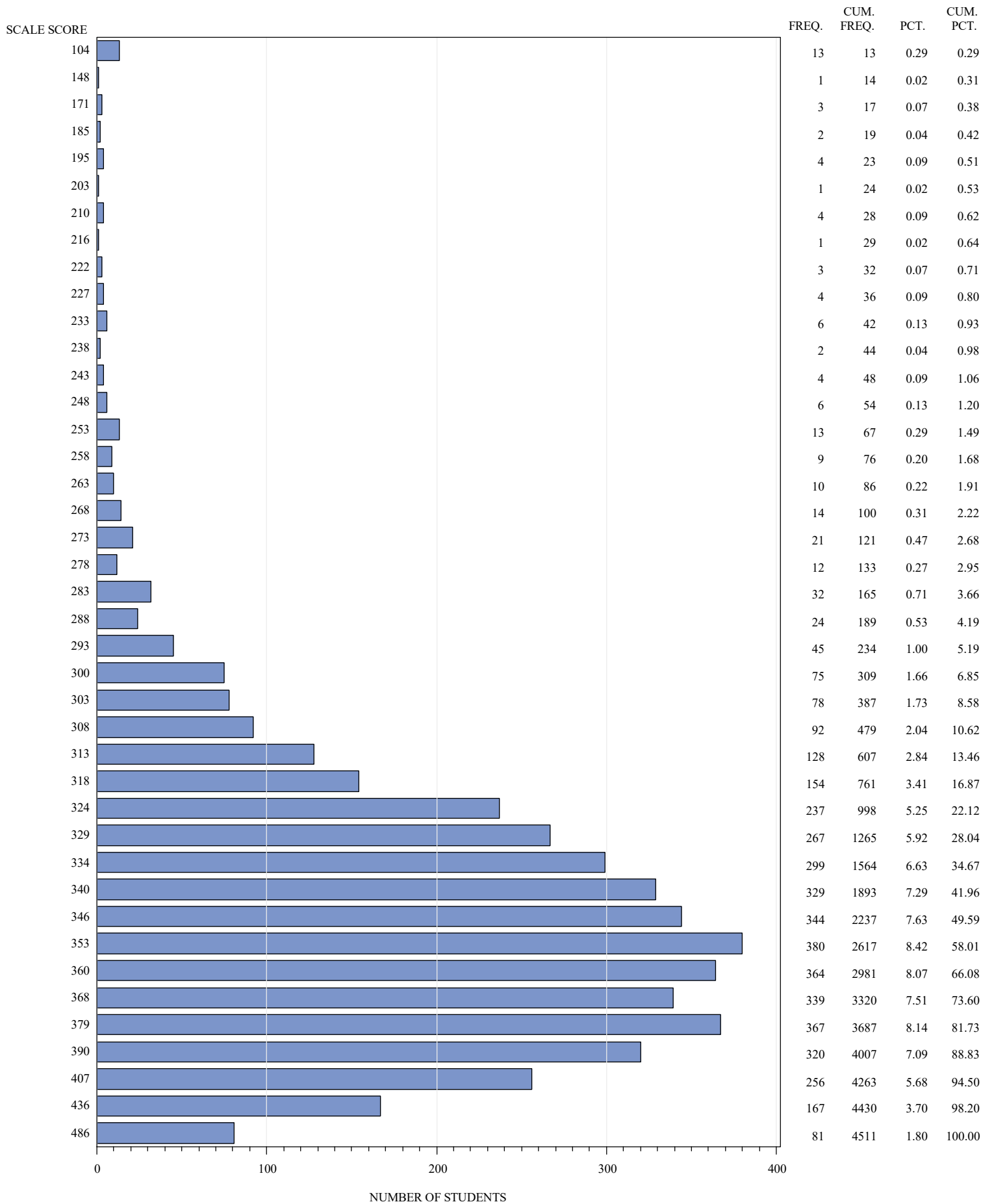


Figure C.6.13 2021 STAAR Alternate 2 Grade 4 Writing  
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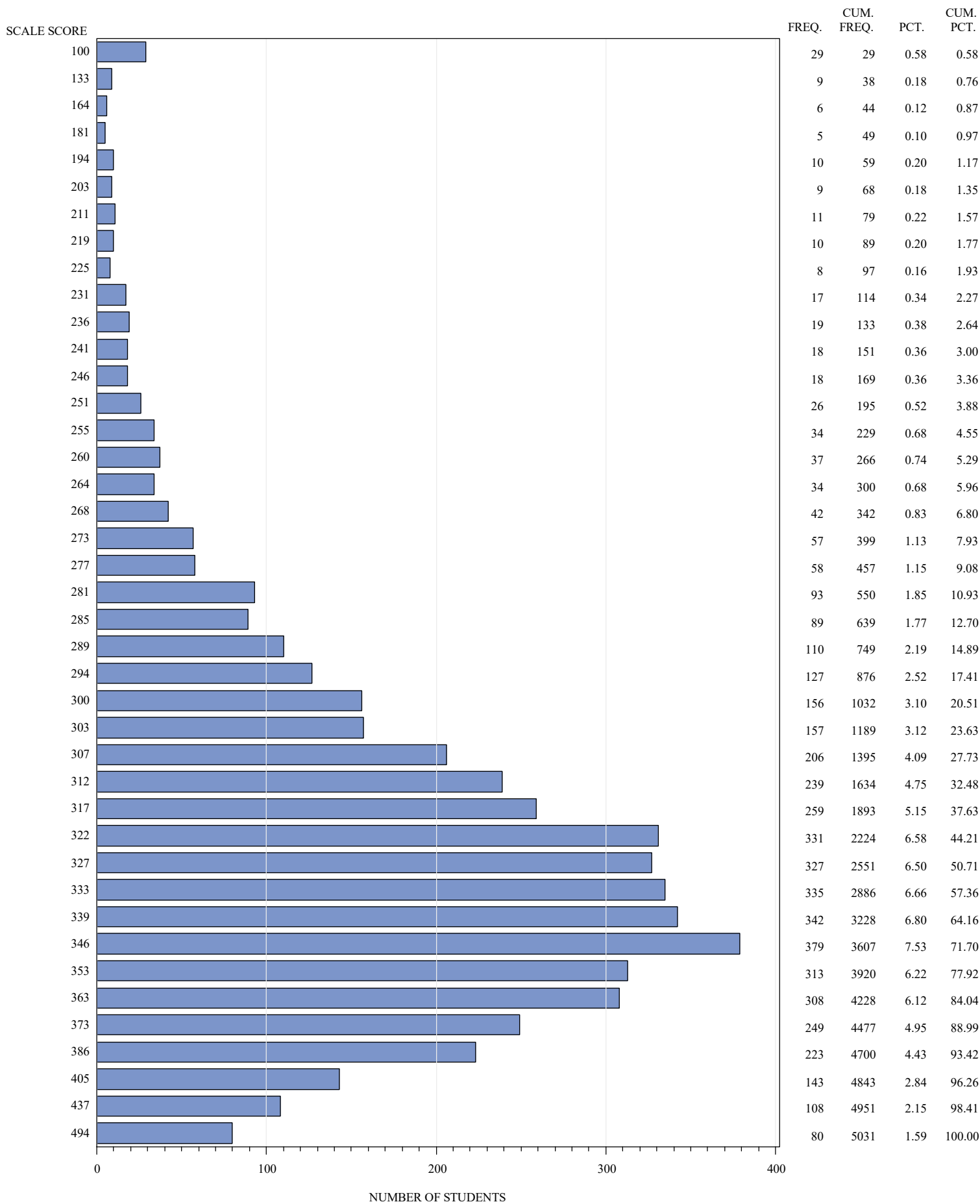


Figure C.6.14 2021 STAAR Alternate 2 Grade 7 Writing  
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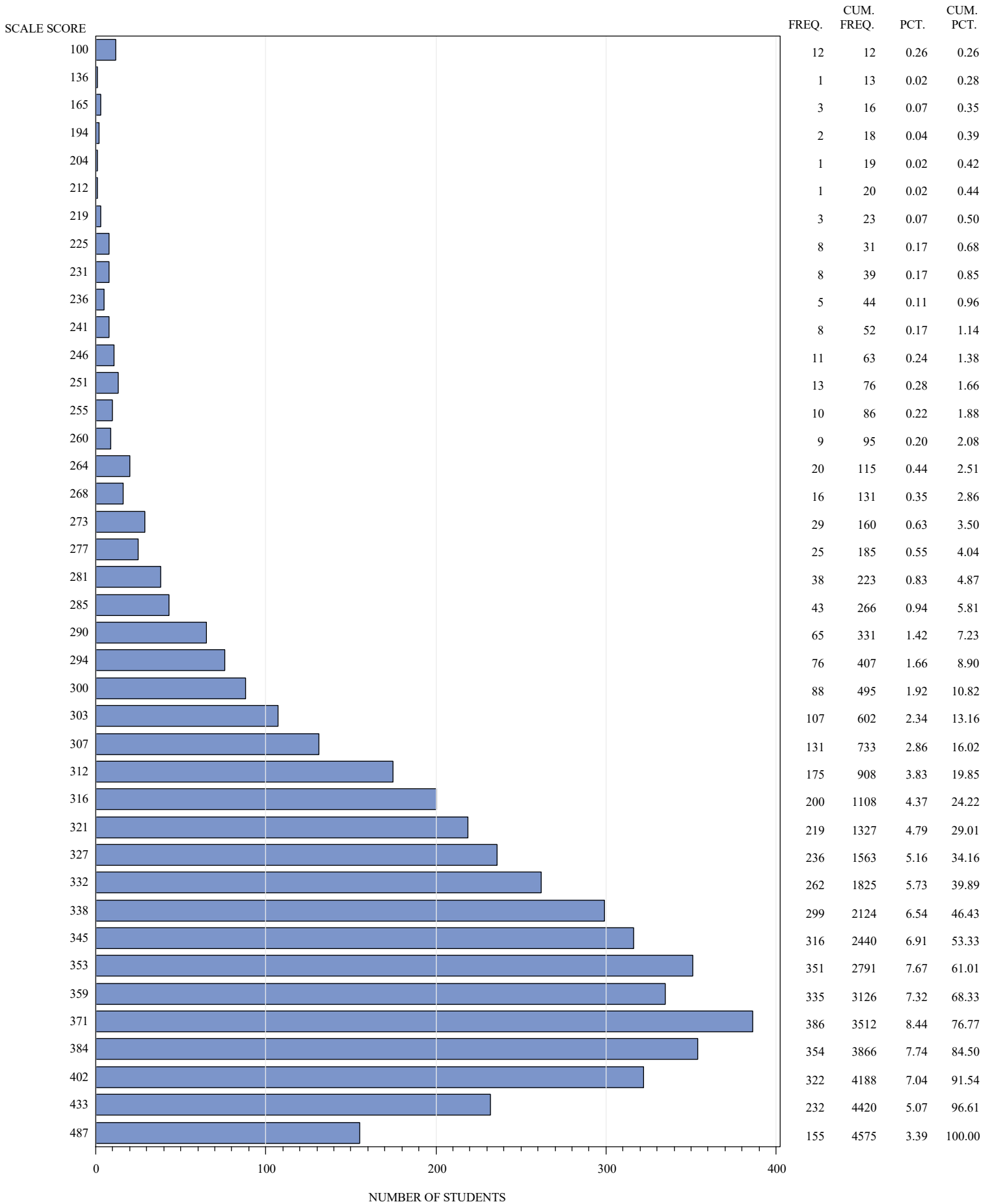


Figure C.6.15 2021 STAAR Alternate 2 Grade 5 Science  
 Frequency Distribution of Scale Scores  
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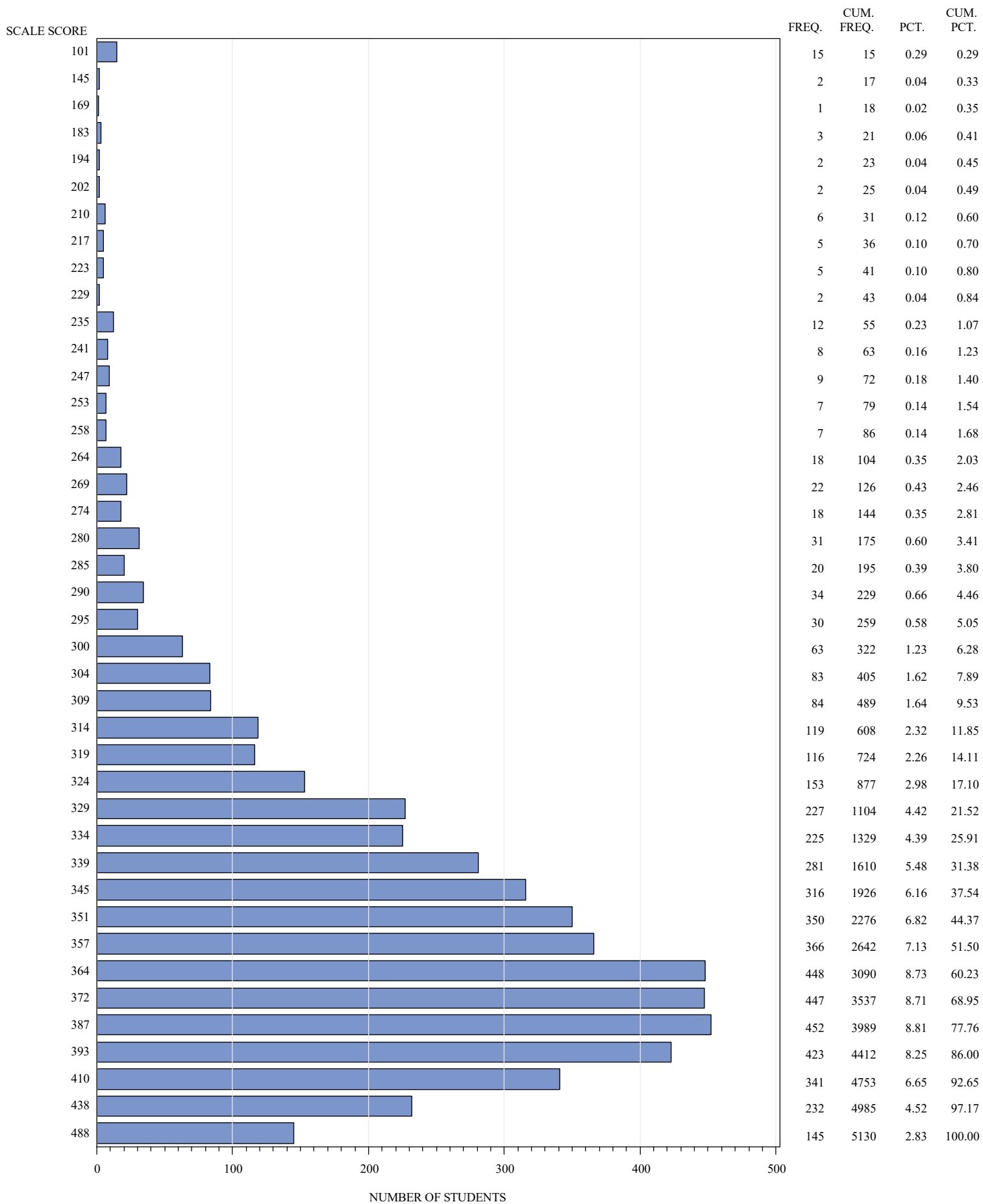


Figure C.6.16 2021 STAAR Alternate 2 Grade 8 Science  
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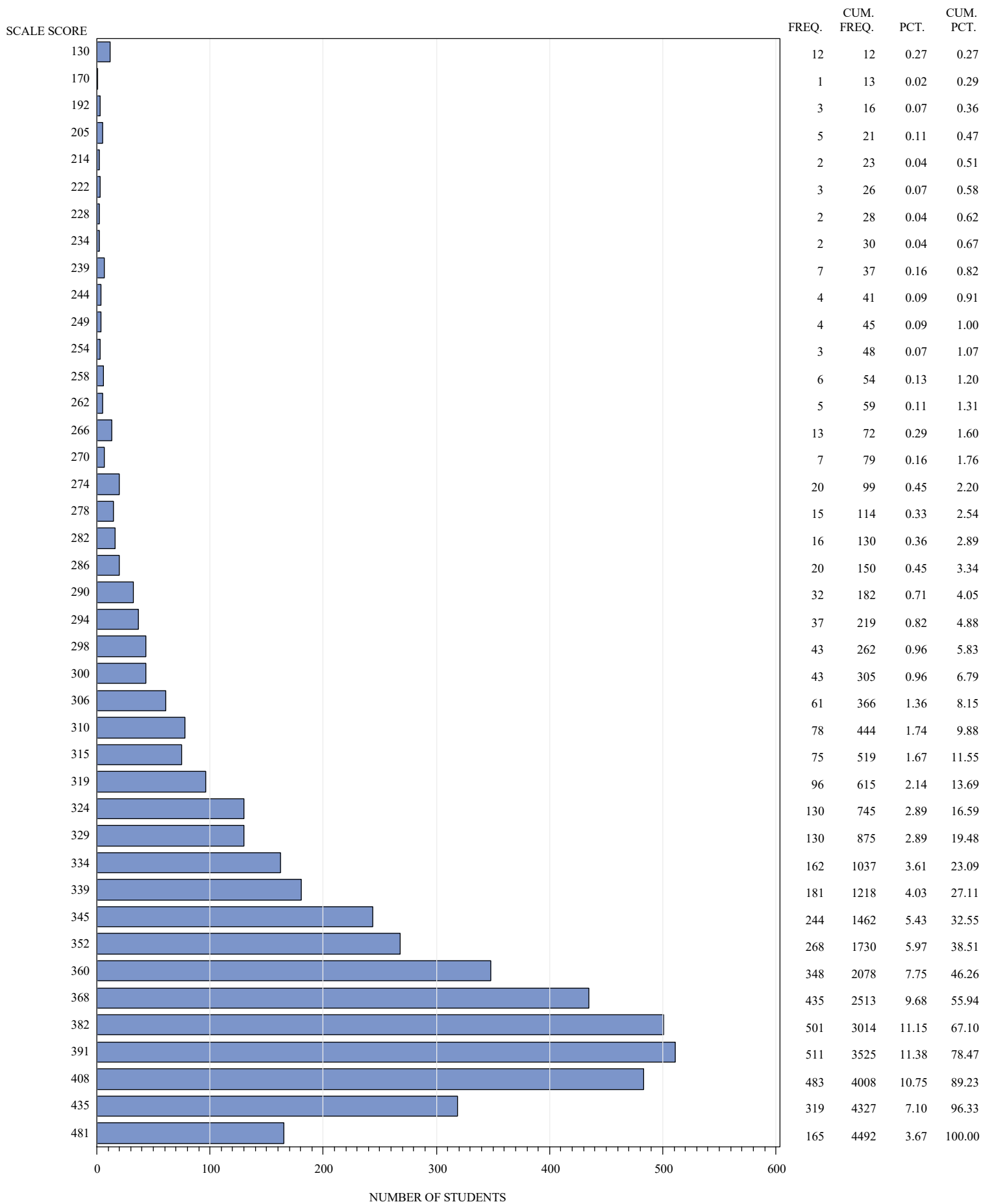


Figure C.6.17 2021 STAAR Alternate 2 Grade 8 Social Studies  
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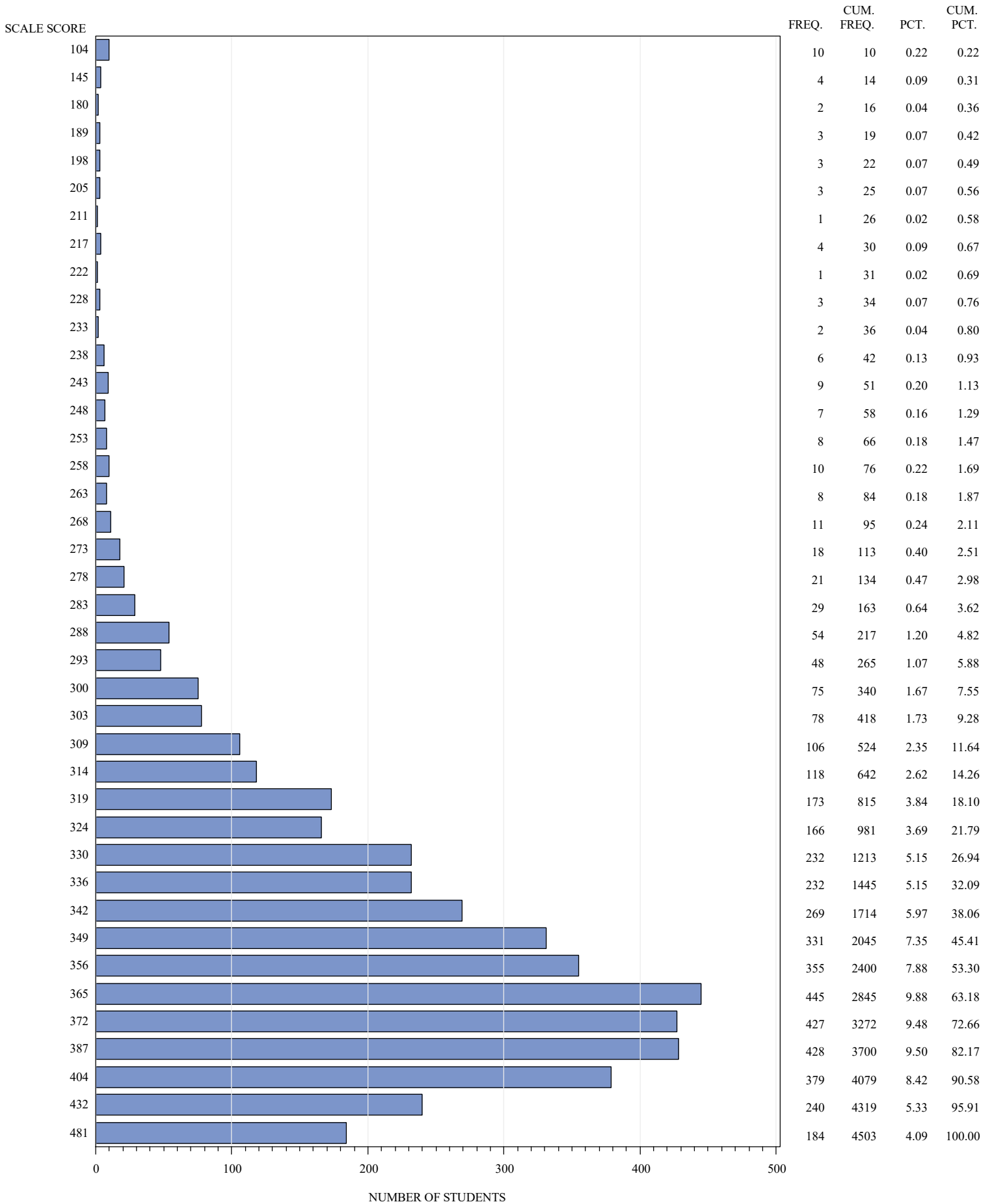




Figure C.6.18 2021 STAAR Alternate 2 EOC Algebra I  
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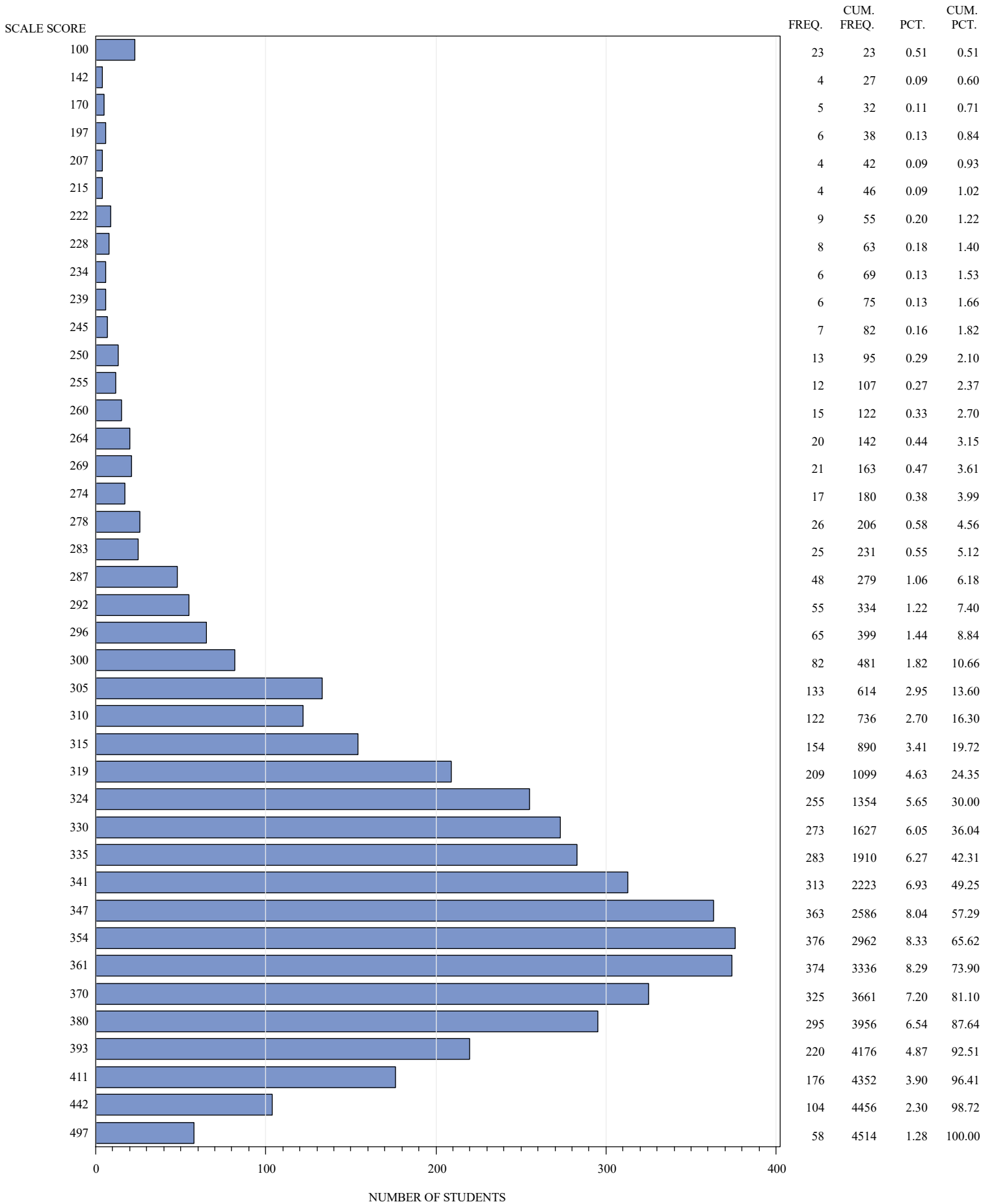


Figure C.6.19 2021 STAAR Alternate 2 EOC English I  
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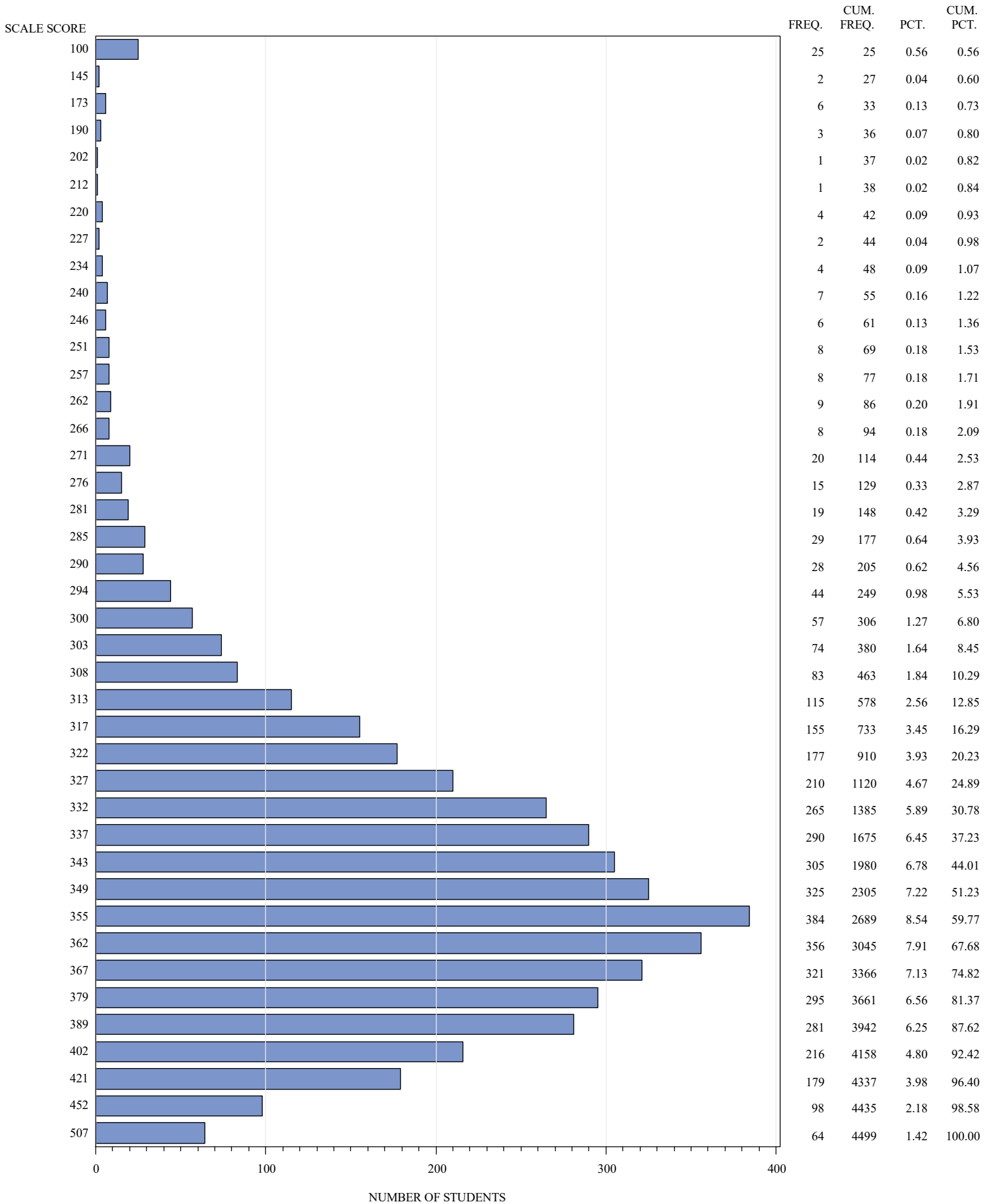


Figure C.6.20 2021 STAAR Alternate 2 EOC English II  
 Frequency Distribution of Scale Scores  
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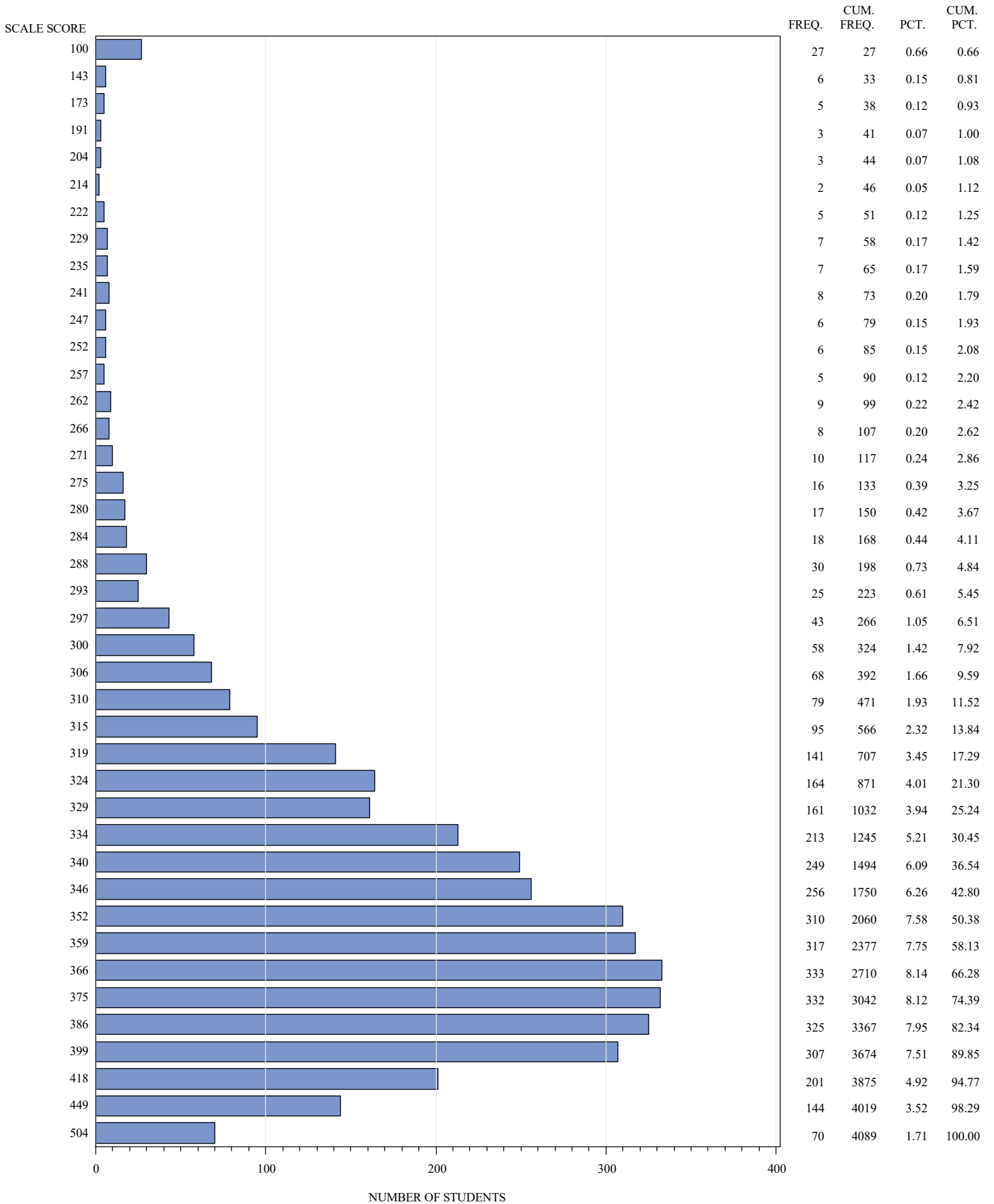


Figure C.6.21 2021 STAAR Alternate 2 EOC Biology  
 Frequency Distribution of Scale Scores  
 All Students

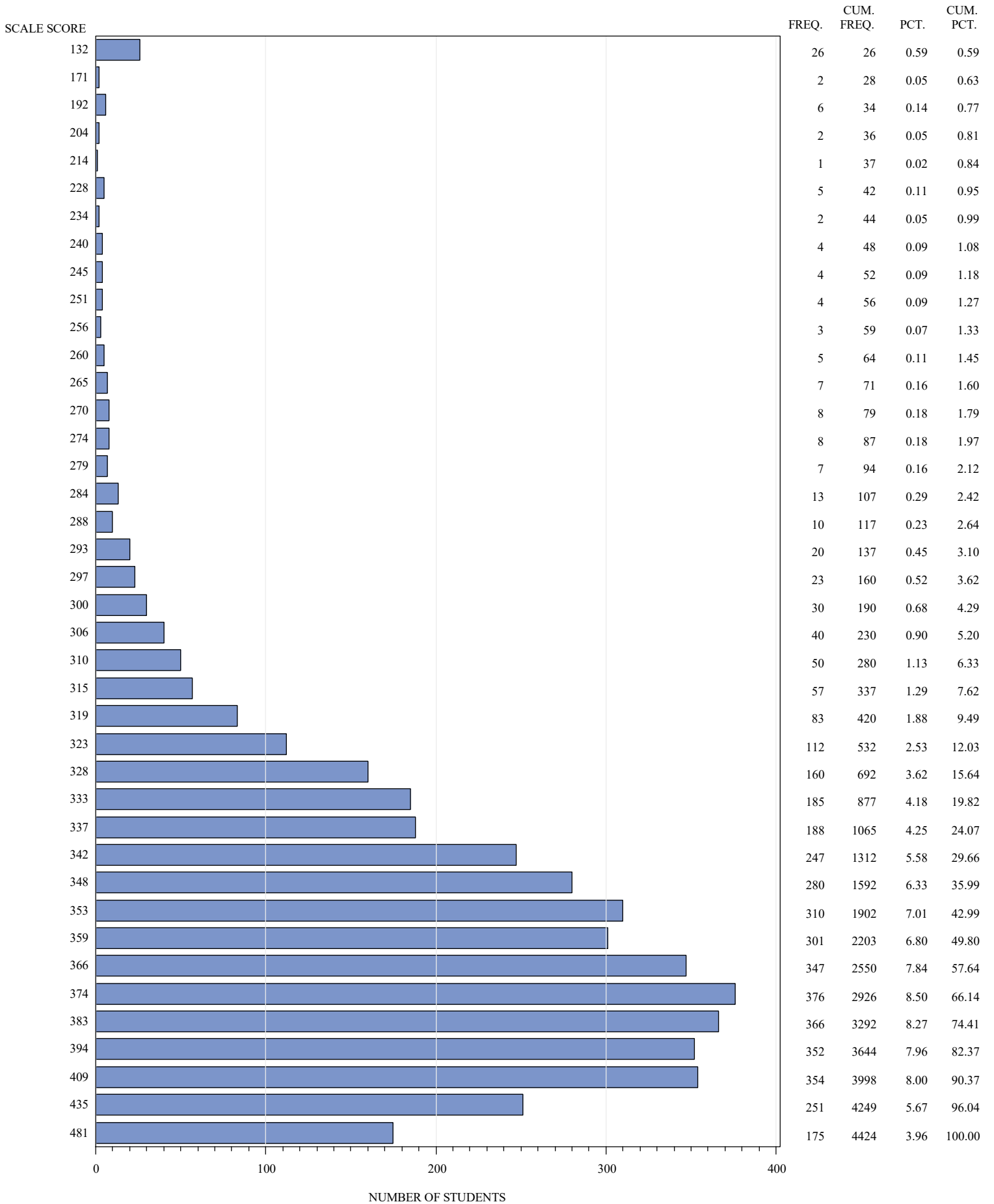


Figure C.6.22 2021 STAAR Alternate 2 EOC U.S. History  
 Frequency Distribution of Scale Scores  
 All Students

