

**STAAR Alternate 2  
2016 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 ("STAAR Alternate 2 2016 Score Distributions and Statistics by Content Area and Grade") of Appendix C. Definition 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 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 that 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.

$$\text{Skewness} = \frac{N}{(N-1)(N-2)} \sum_{i=1}^N \left( \frac{x_i - \bar{x}}{s_x} \right)^3$$

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 that 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.

$$\text{Kurtosis} = \frac{N(N+1)}{(N-1)(N-2)(N-3)} \sum_{i=1}^N \left( \frac{x_i - \bar{x}}{s_x} \right)^4 - \frac{3(N-1)^2}{(N-2)(N-3)}$$

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 that took the assessment.

## Frequency Distributions

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

**Cumulative Frequency (CUM FREQ).** This is the number of students that 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 that obtained the particular score point on the assessment. It is computed as:  $\text{PCT} = \text{FREQ} \div N \times 100$ .

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

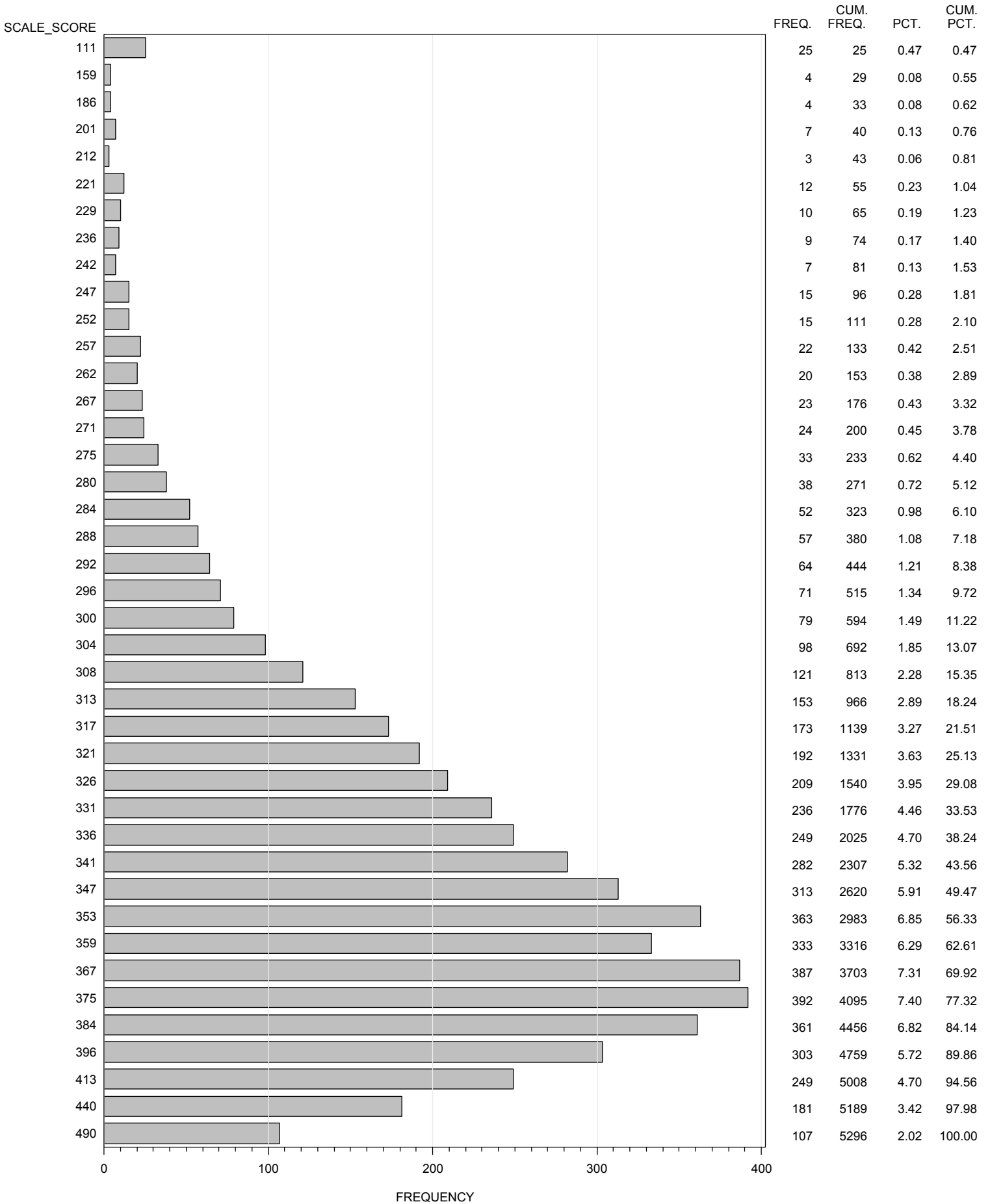
## Scale Score Descriptive Statistics for 2016 STAAR Alternate 2 3–8 Assessments

Subject	N	Mean	Median	Mode	Interquartile		SD	Variance	Skewness	Kurtosis
					Range	Range				
GRADE 3 MATHEMATICS	5296	350.57	353	375	379	54	47.78	2282.95	-0.3167	3.4082
GRADE 4 MATHEMATICS	5218	357.11	355	377	376	55	47.69	2274.45	-0.2545	3.2769
GRADE 5 MATHEMATICS	5008	354.94	354	369	373	53	47.72	2277.66	-0.0134	2.3900
GRADE 6 MATHEMATICS	4833	353.78	353	353	407	52	49.23	2423.71	-0.1697	3.8055
GRADE 7 MATHEMATICS	4474	352.55	352	352	398	46	47.13	2221.20	-0.1377	3.6340
GRADE 8 MATHEMATICS	4338	341.36	342	365	390	51	50.88	2588.95	-0.1797	3.5234
GRADE 3 READING	5300	340.22	339	369	375	56	47.91	2294.92	-0.3181	3.6743
GRADE 4 READING	5216	345.74	346	362	383	51	47.63	2268.96	-0.3941	3.5750
GRADE 5 READING	5010	342.35	339	354	395	42	44.54	1984.25	-0.2116	3.8679
GRADE 6 READING	4831	342.74	338	361	382	56	48.73	2375.10	-0.1453	2.9106
GRADE 7 READING	4470	340.89	338	352	385	46	46.29	2142.45	-0.2189	3.2986
GRADE 8 READING	4354	341.58	336	343	374	52	48.34	2336.78	-0.2985	3.9009
GRADE 4 WRITING	5215	336.81	336	348	403	49	47.05	2214.03	-0.3802	4.9414
GRADE 7 WRITING	4477	334.95	331	343	381	50	45.66	2085.15	-0.2868	4.0698
GRADE 5 SCIENCE	5009	363.04	361	377	396	51	46.72	2182.71	-0.3046	3.6255
GRADE 8 SCIENCE	4357	362.57	359	365	354	48	48.67	2369.13	-0.2243	3.0315
GRADE 8 SOCIAL STUDIES	4359	348.74	347	362	375	48	48.17	2320.75	-0.3052	3.6926

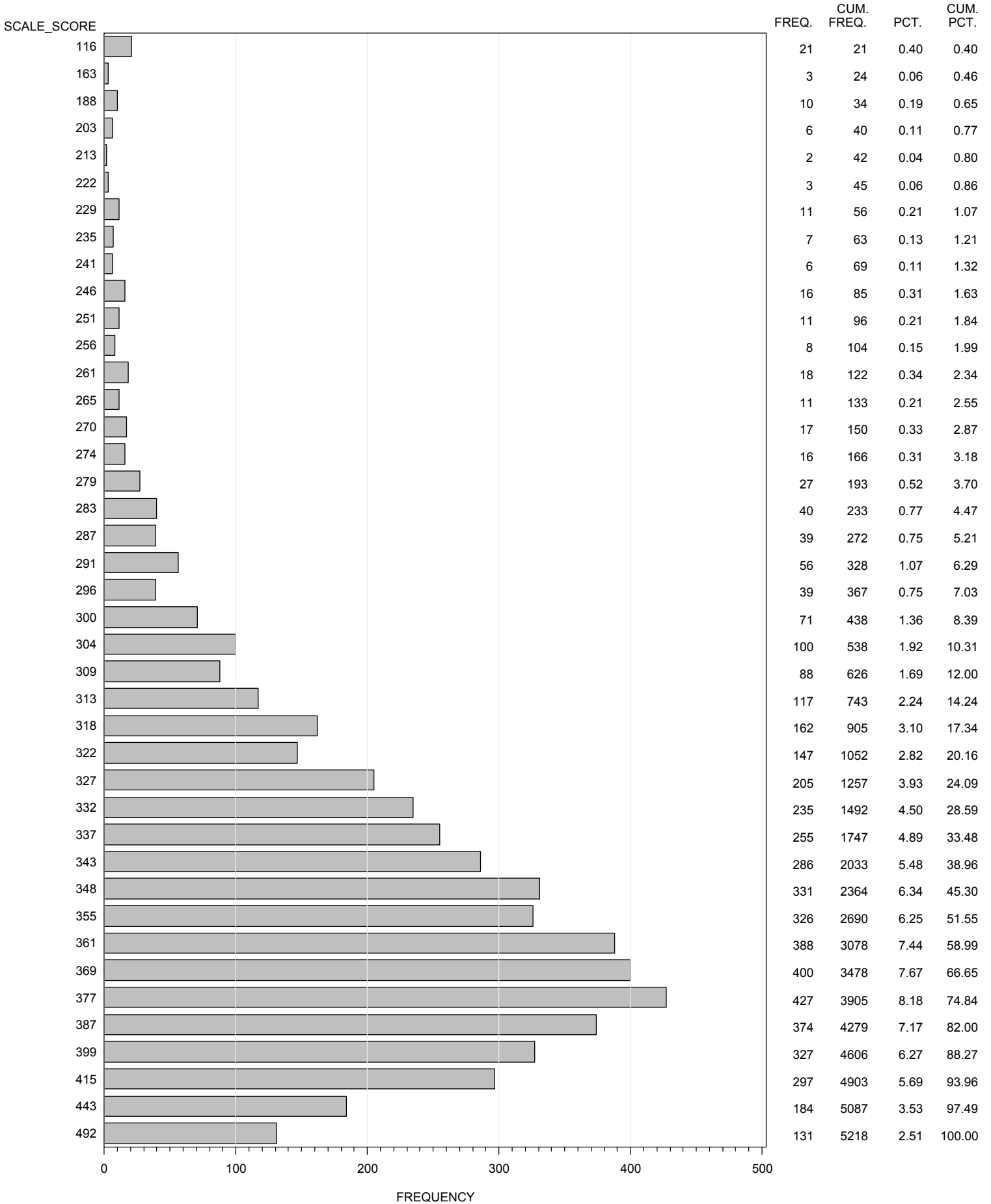
### Scale Score Descriptive Statistics for 2016 STAAR Alternate 2 EOC Assessments

Subject	N	Mean	Median	Mode	Interquartile		SD	Variance	Skewness	Kurtosis
					Range	Range				
ALGEBRA I	4311	341.38	344	350	392	50	49.79	2479.15	-0.3062	3.8704
ENGLISH I	4261	345.51	345	351	392	49	49.51	2451.71	-0.2476	3.6347
ENGLISH II	3636	348.90	345	366	405	51	47.41	2247.62	-0.4981	5.0148
BIOLOGY	4097	358.68	356	383	342	54	49.92	2491.88	-0.2825	2.4168
U.S. HISTORY	3516	342.22	338	368	366	51	46.92	2201.80	-0.4148	3.8437

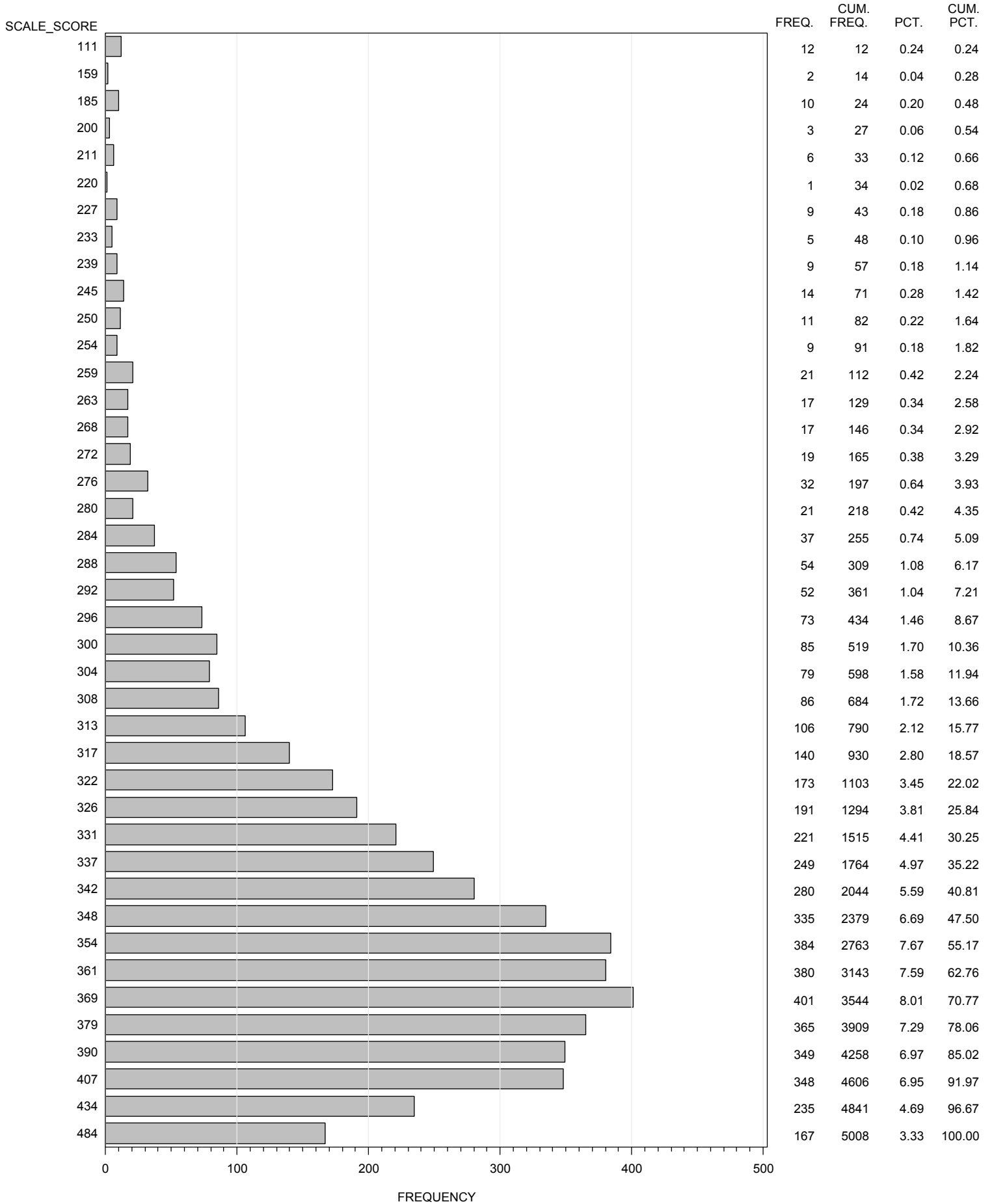
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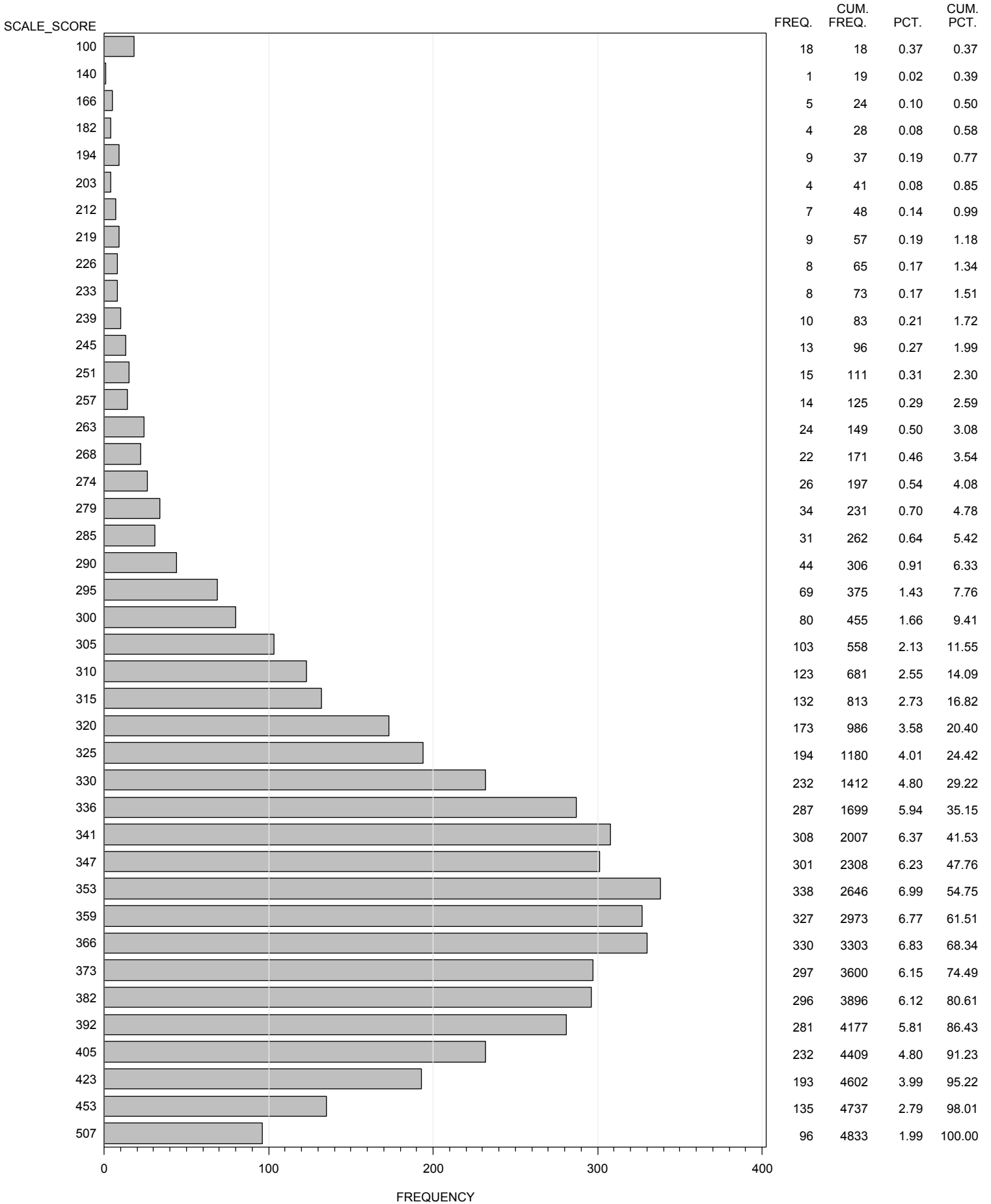


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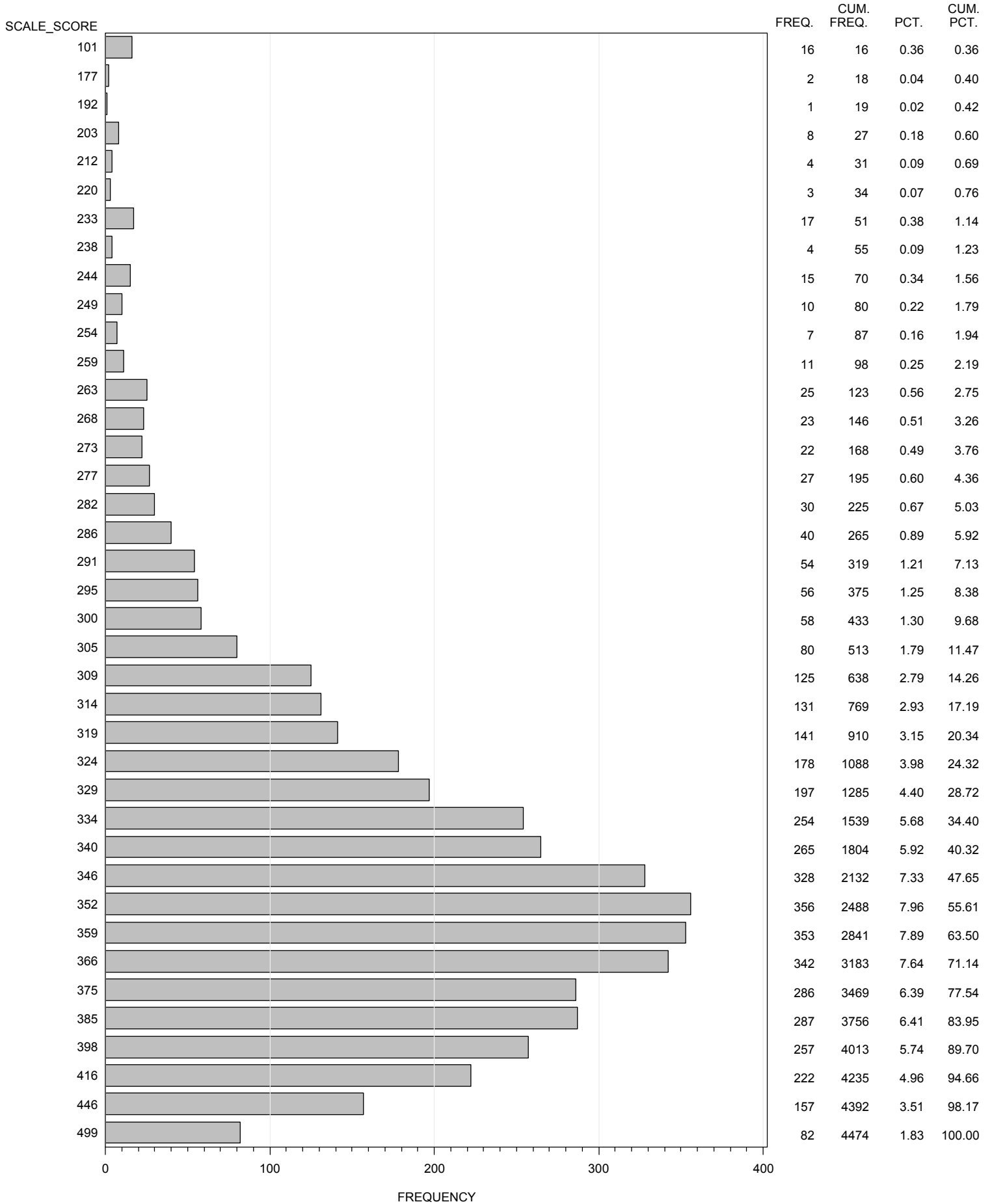




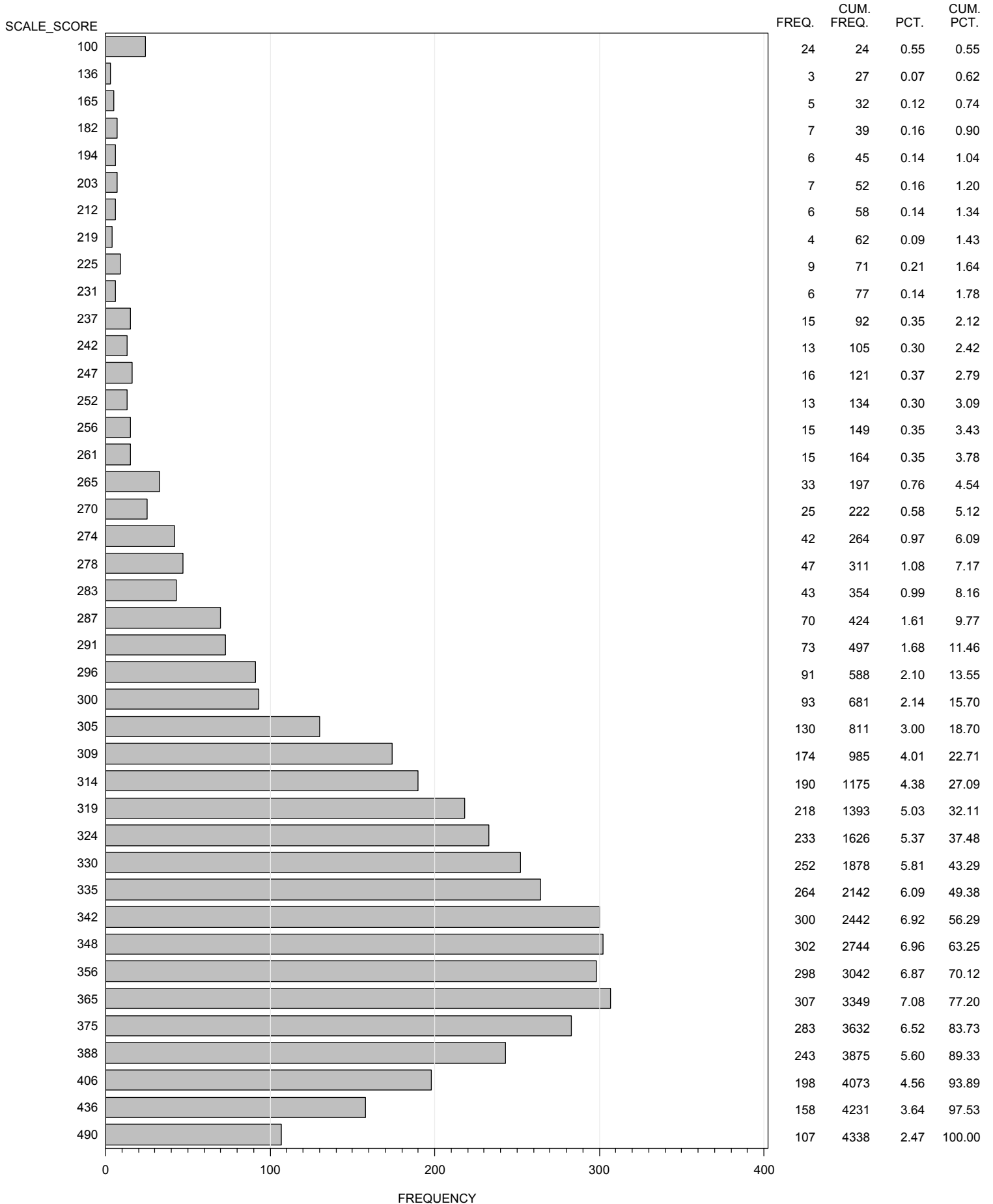
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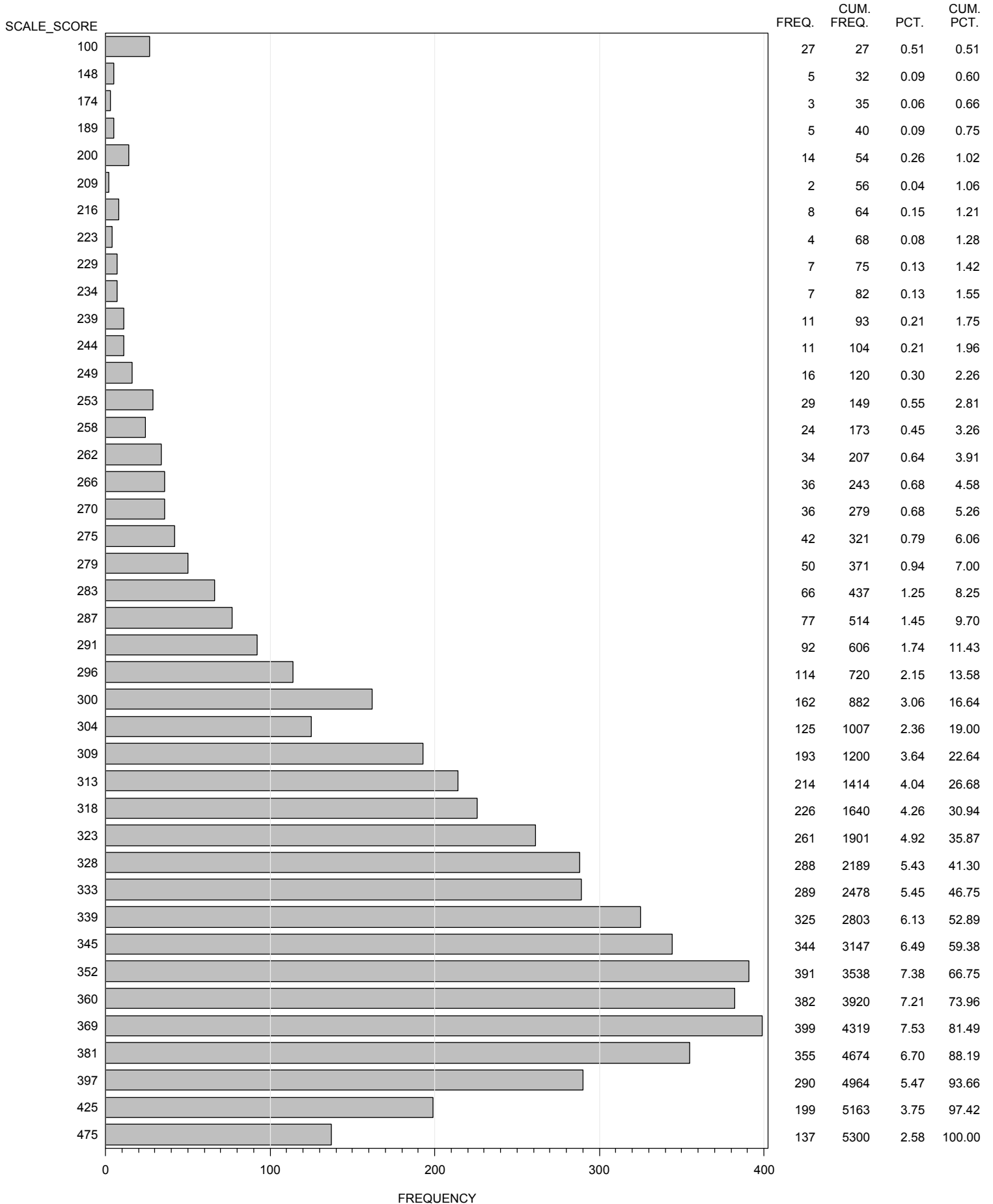
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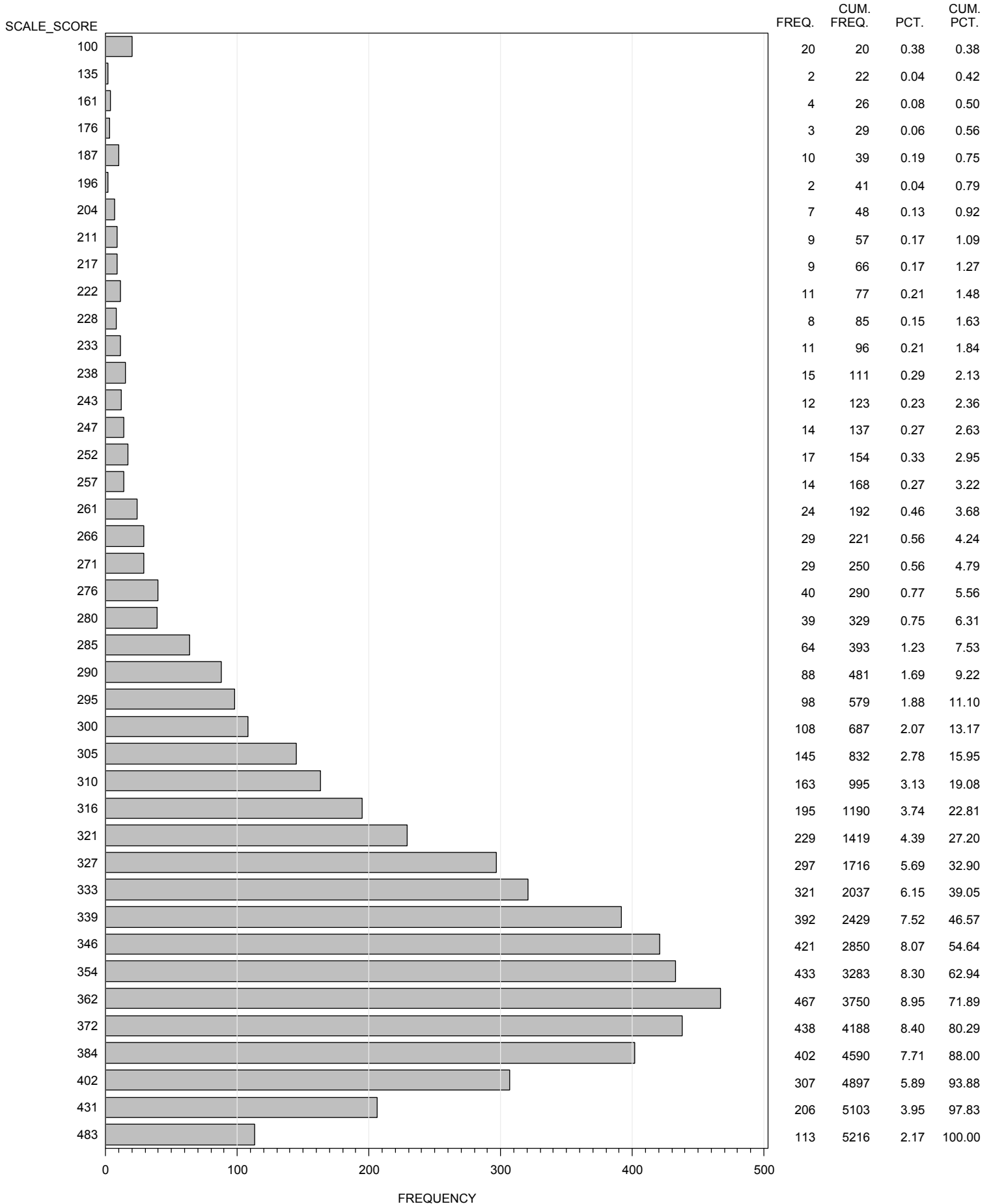
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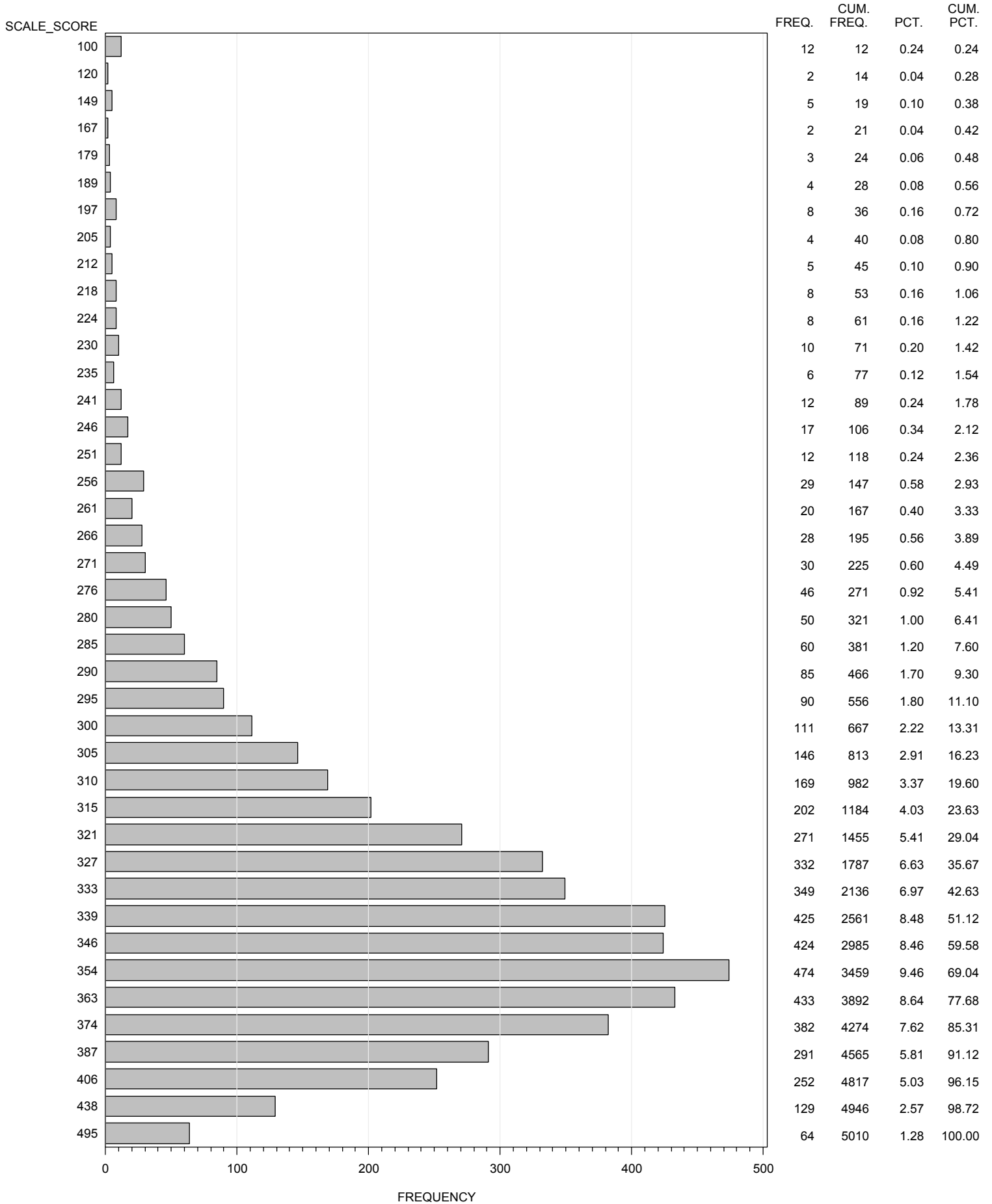
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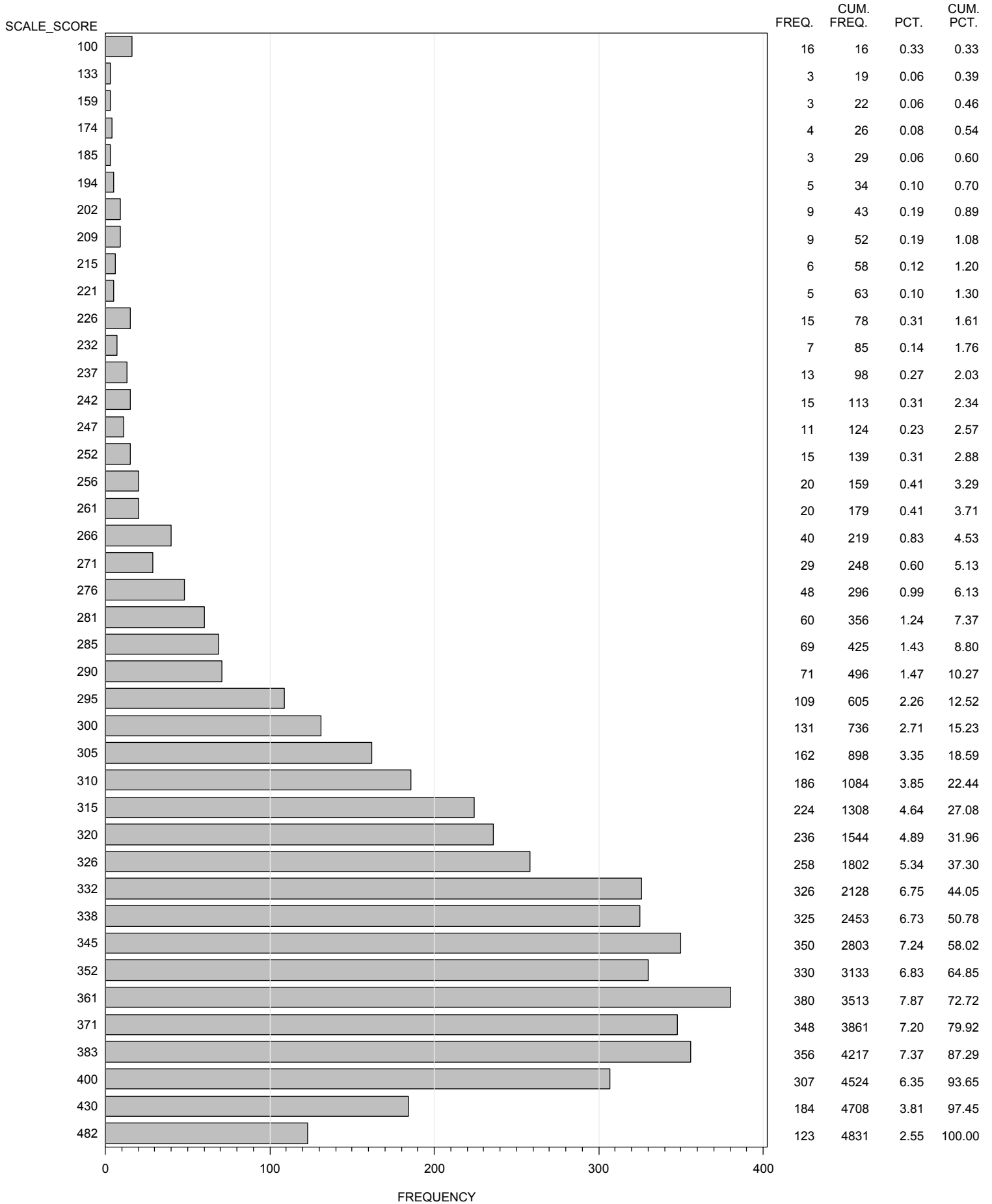
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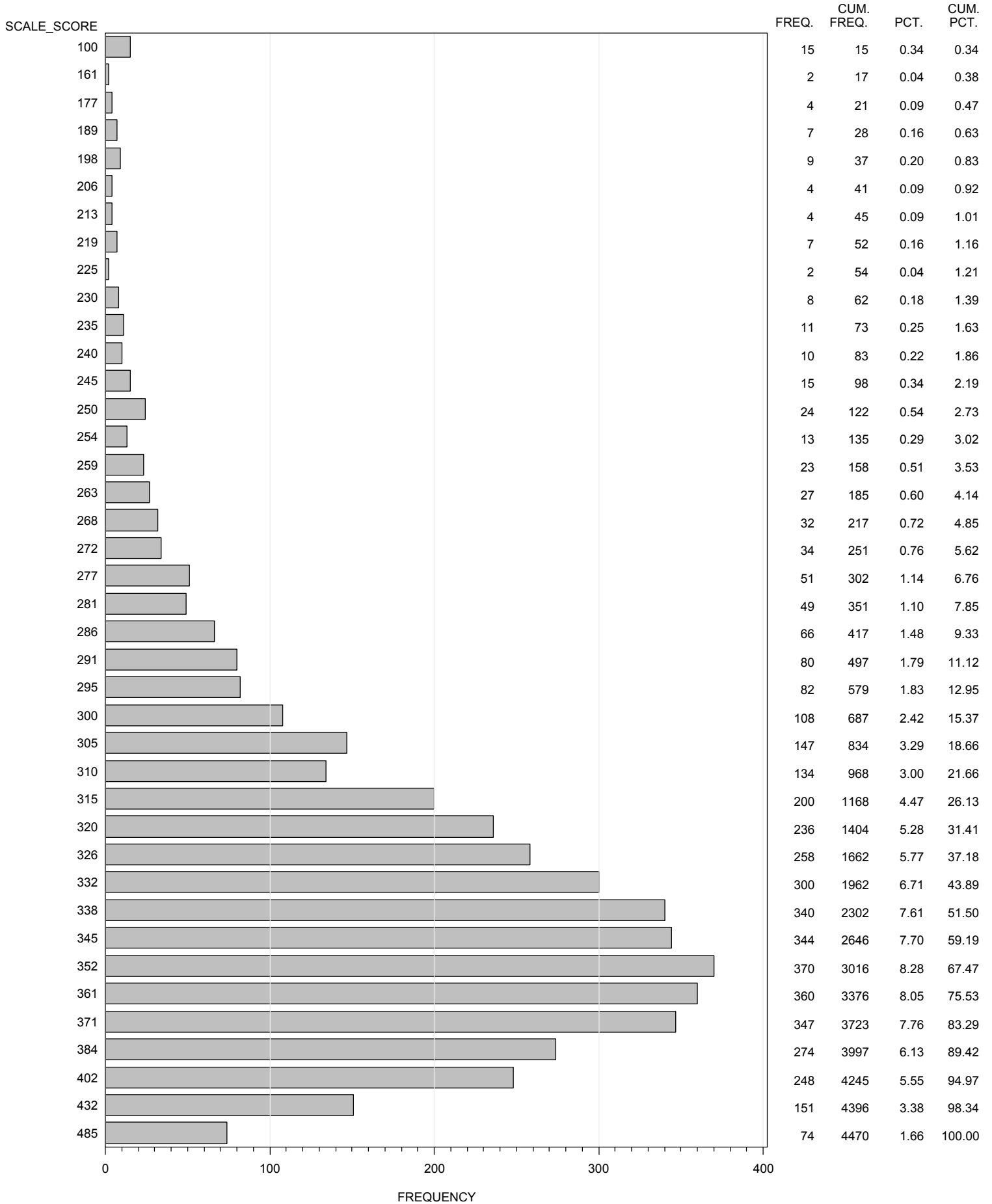
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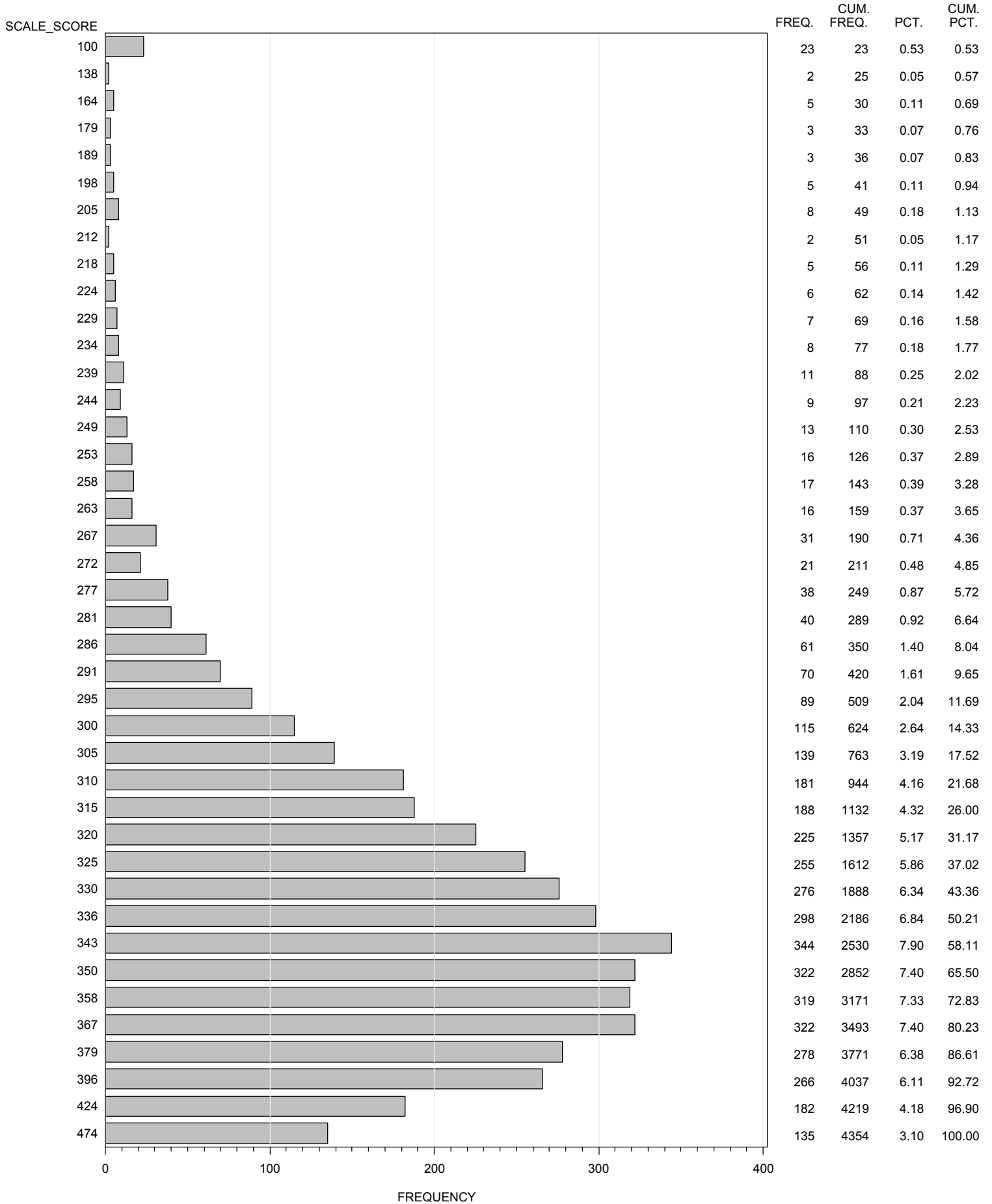


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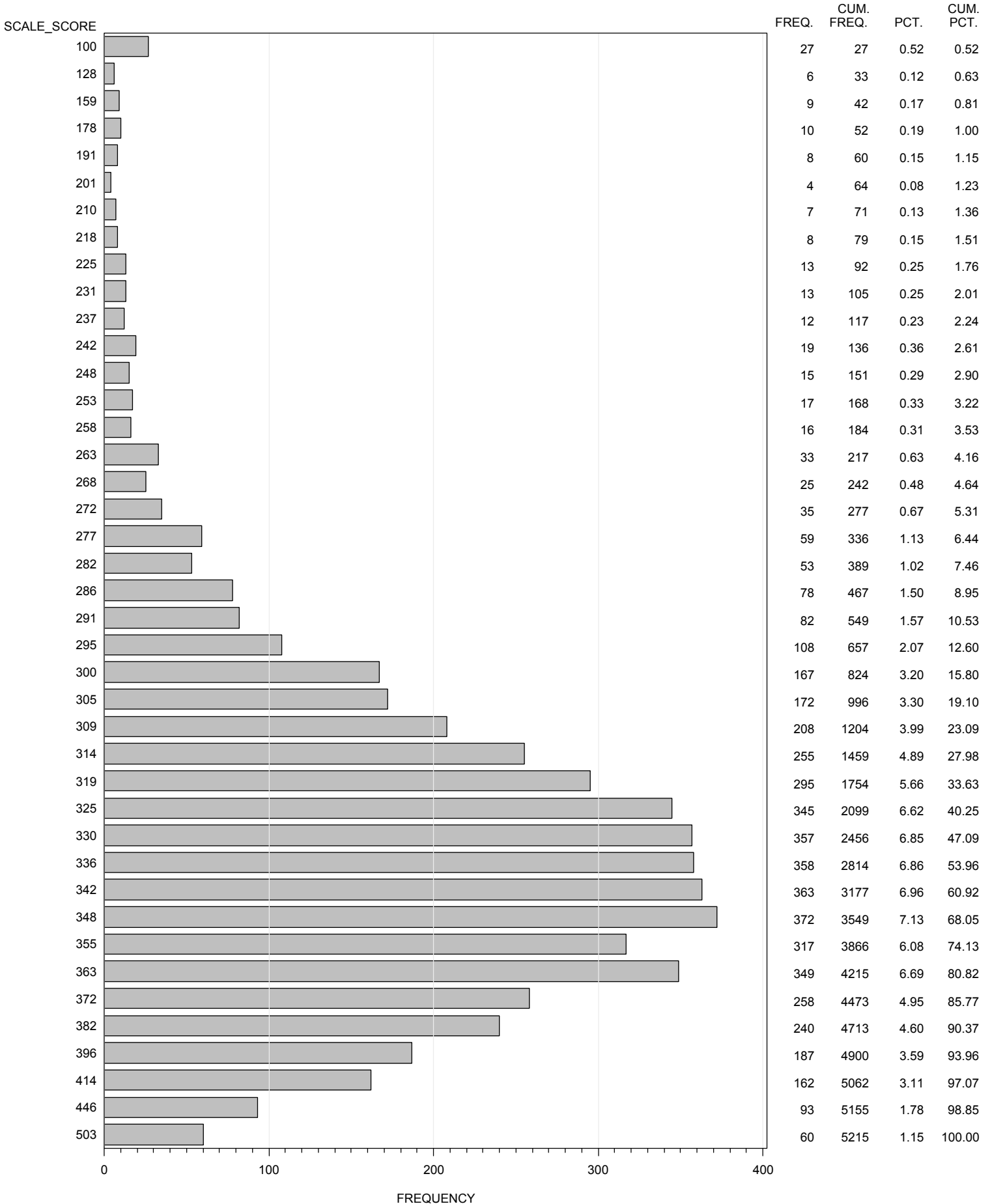




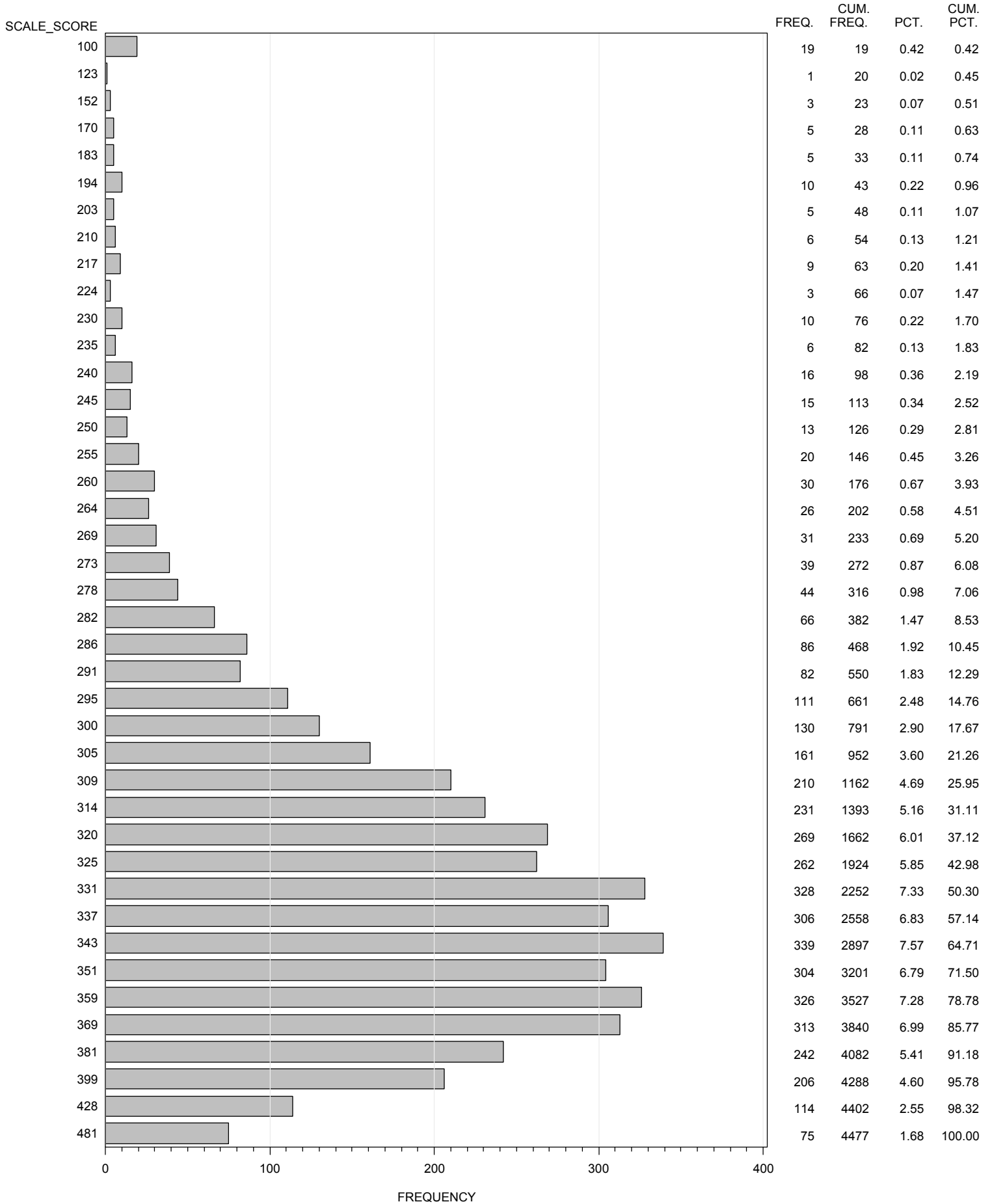
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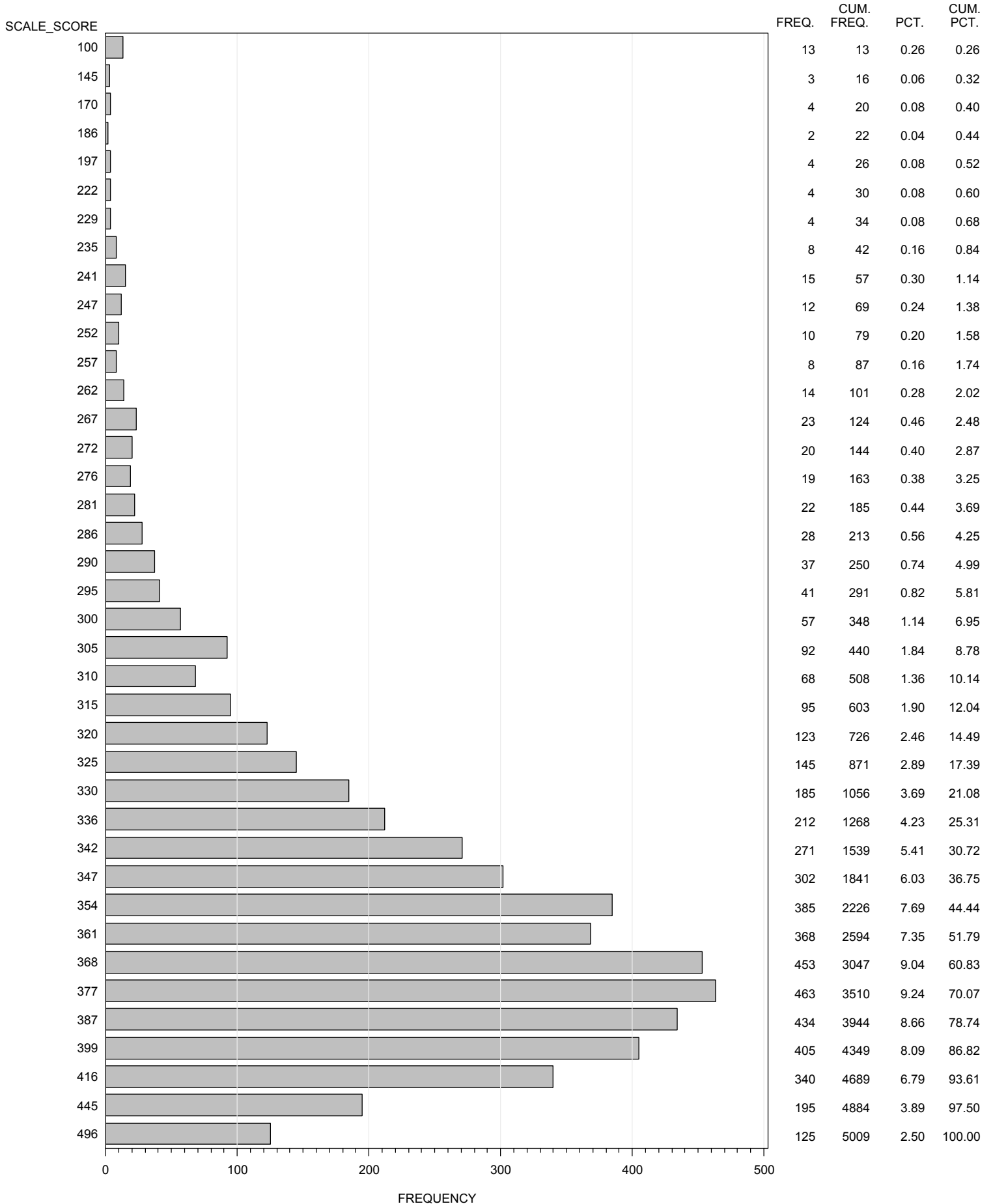
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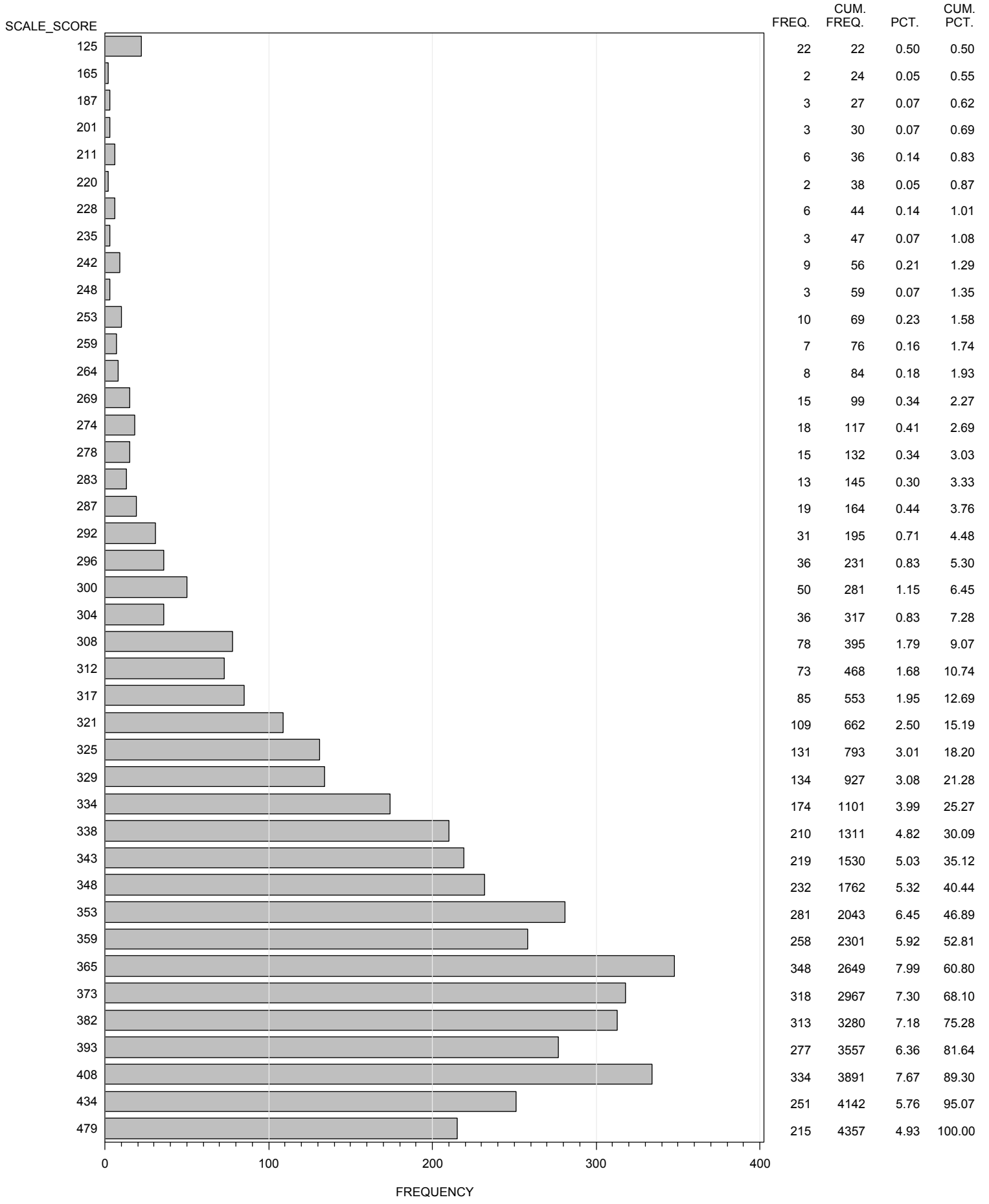
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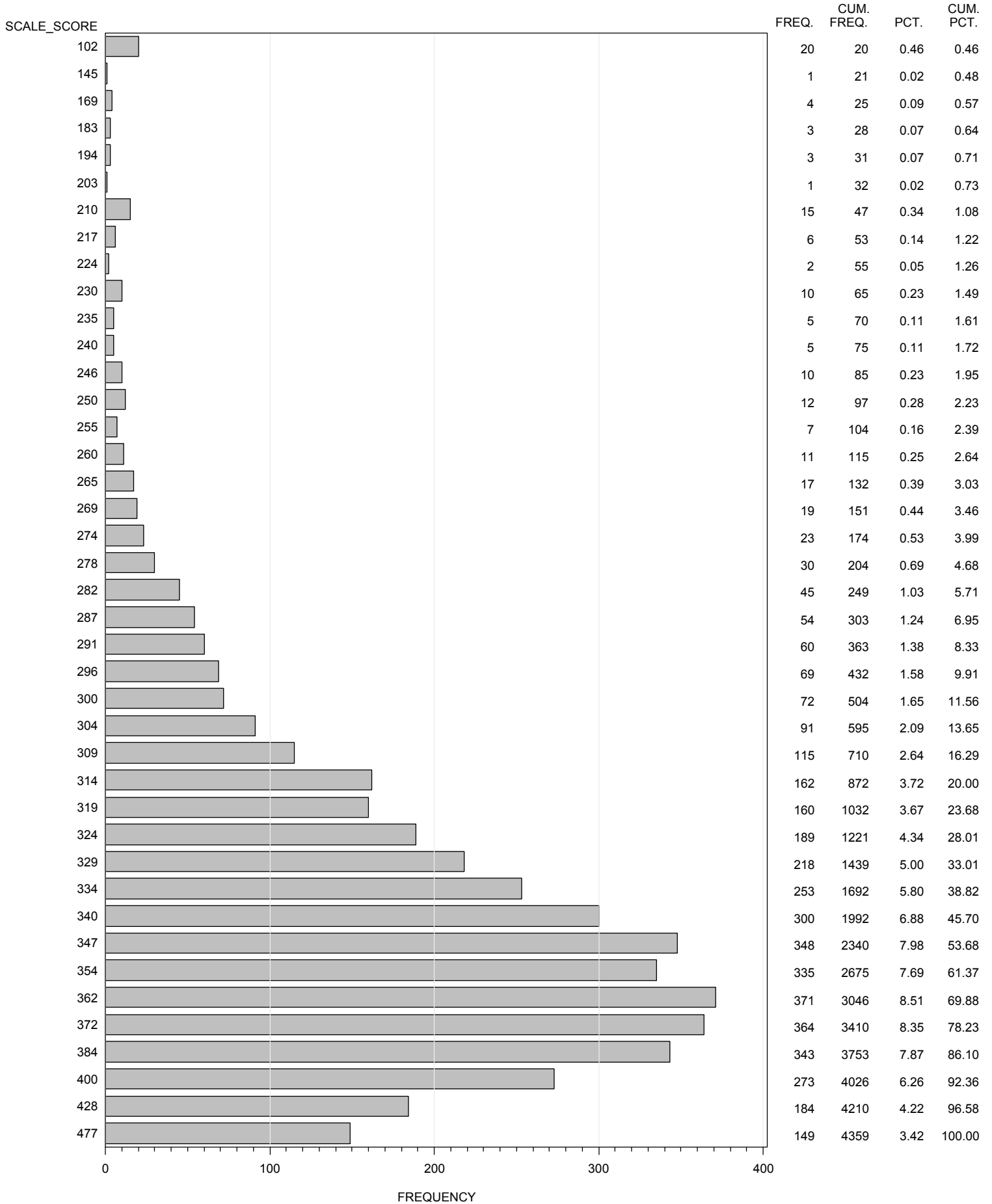
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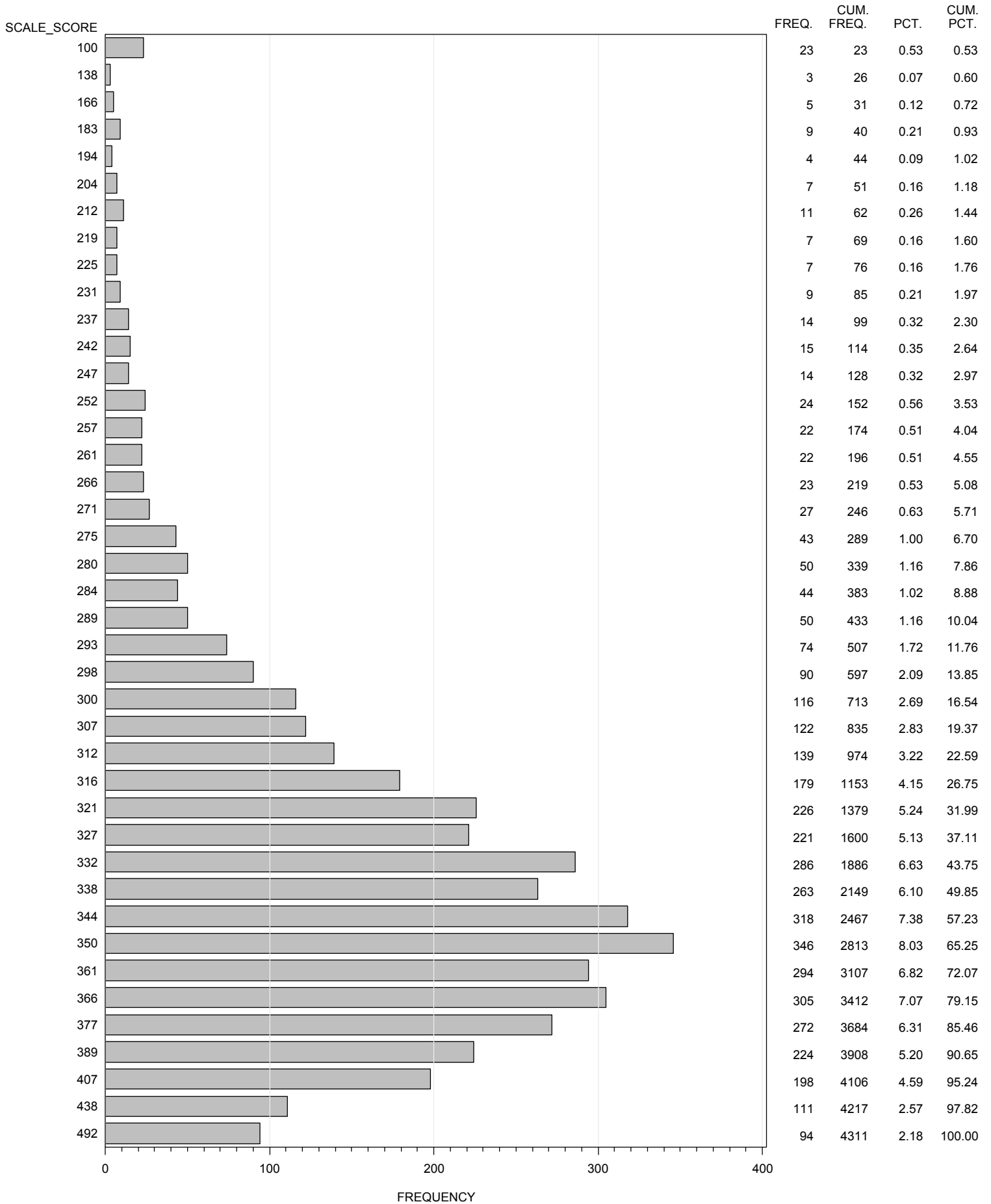
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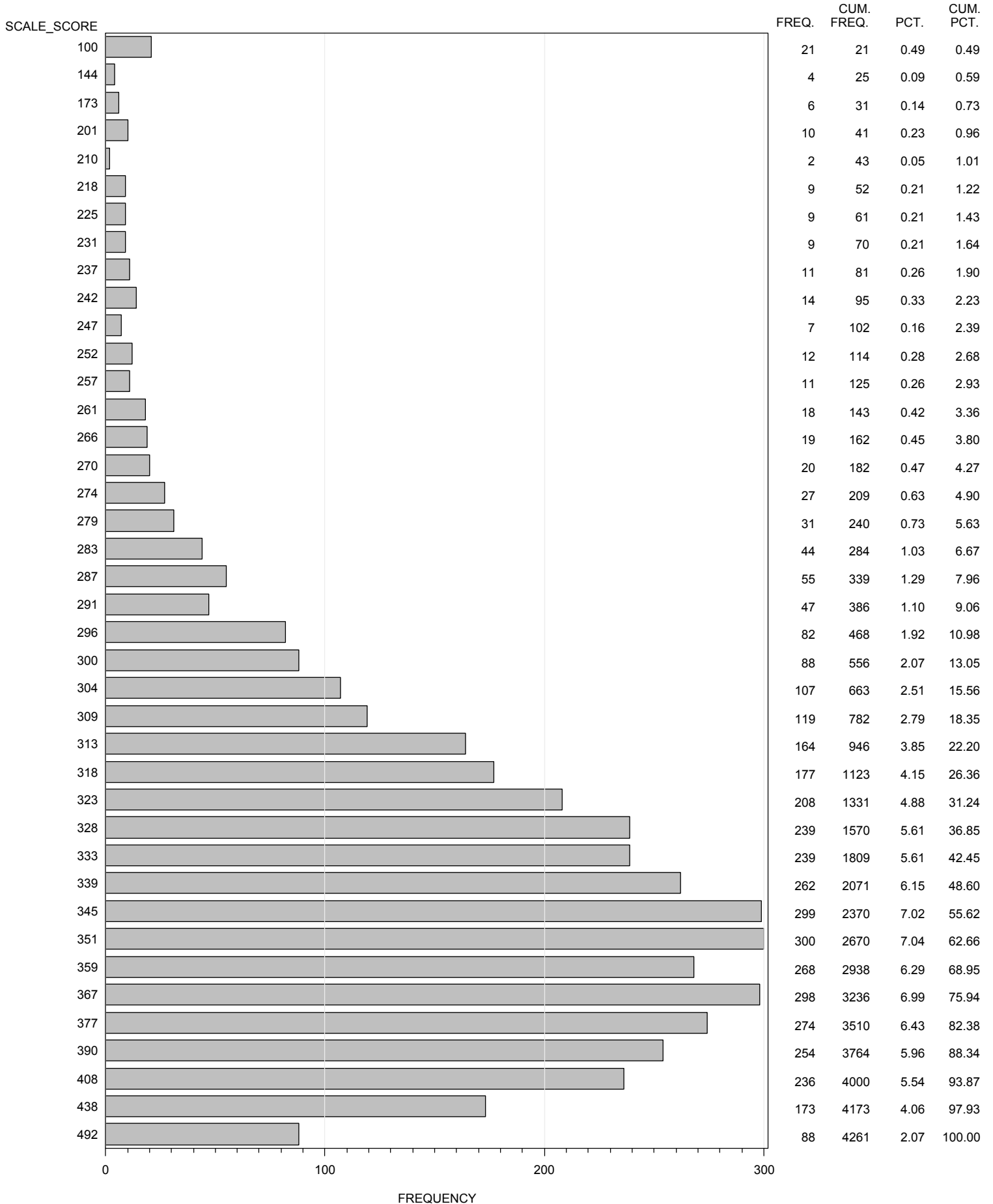
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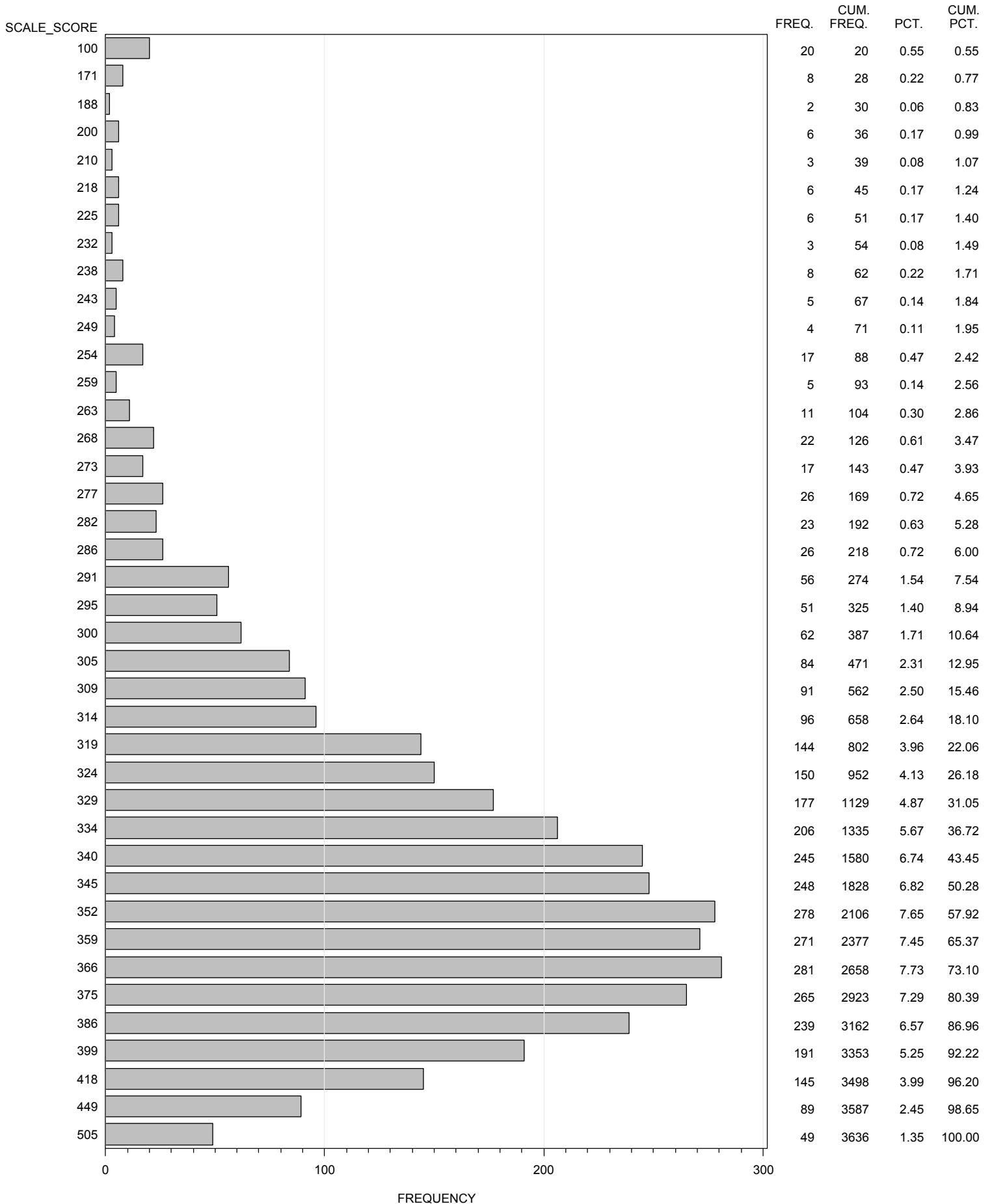


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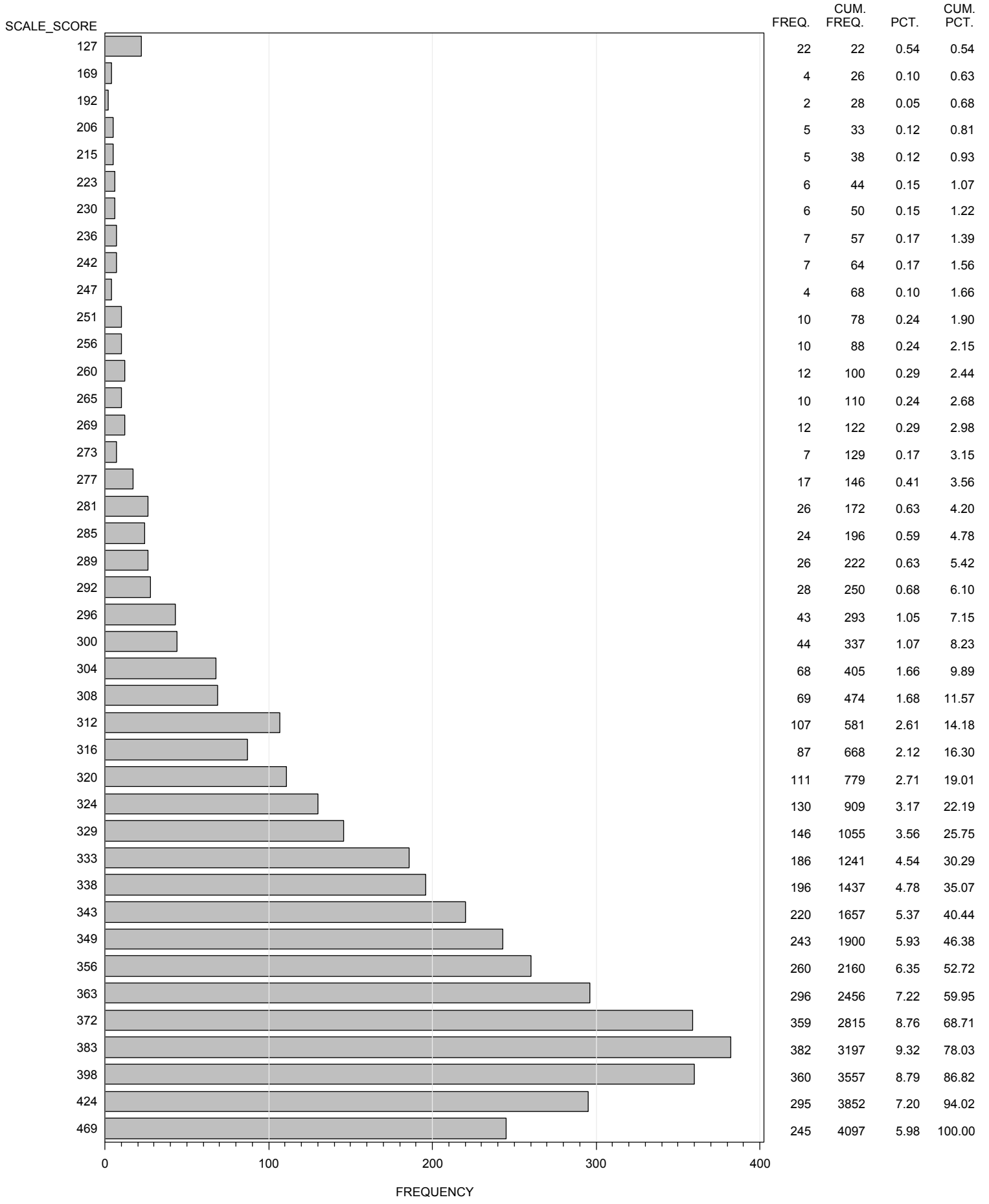




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