

**STAAR Alternate 2  
2015 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 2015 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:  $\text{CUM PCT} = \text{CUM FREQ} \div N \times 100$ .

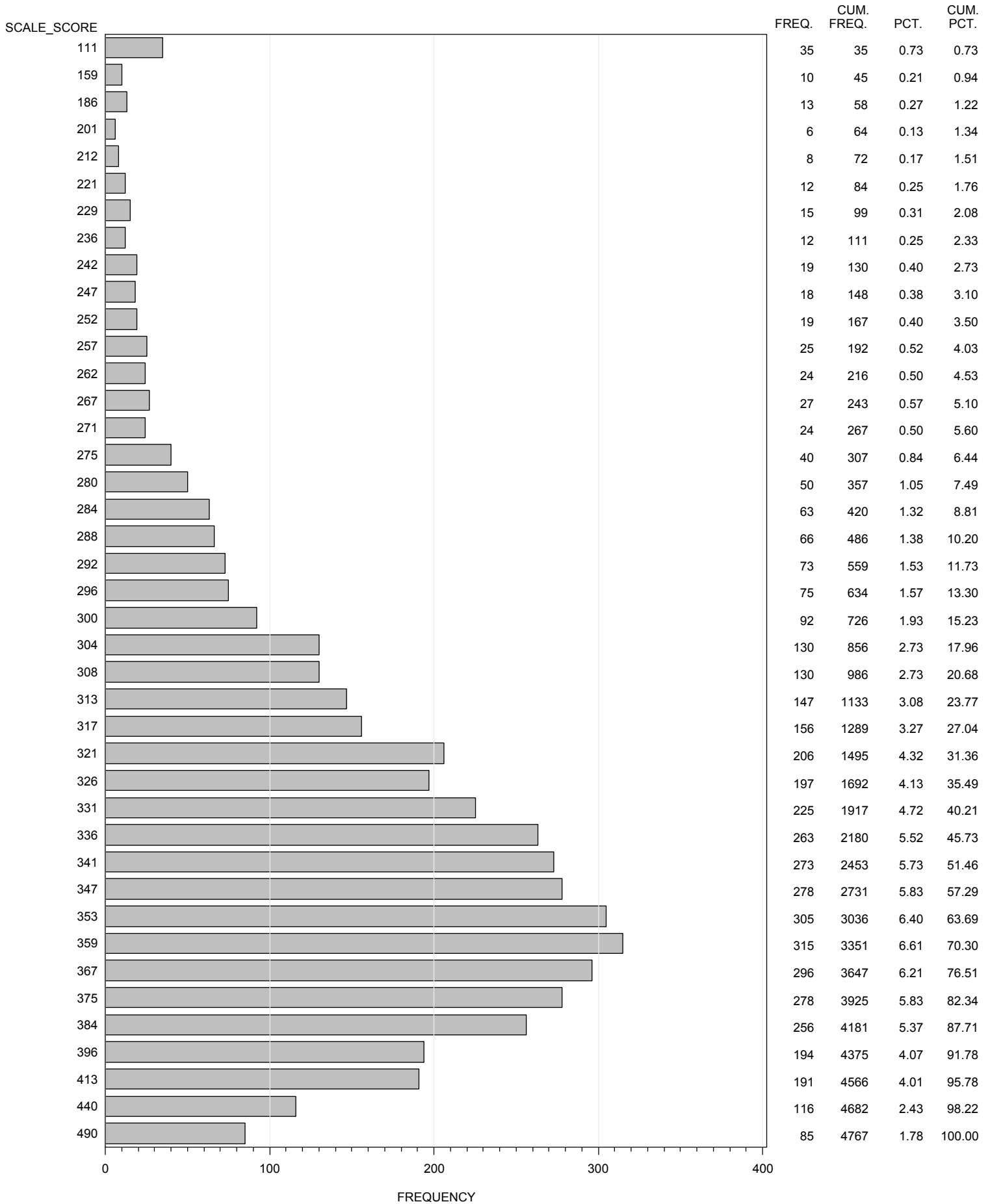
### Scale Score Descriptive Statistics for 2015 STAAR Alternate 2 3–8 Assessments

Subject	N	Mean	Median	Mode	Range	Interquartile		SD	Variance	Skewness	Kurtosis
						Q1	Q3				
GRADE 3 MATHEMATICS	4767	342.16	341	359	379	50	50.15	2514.56	-0.5118	3.7145	
GRADE 4 MATHEMATICS	4600	346.50	348	355	376	59	50.09	2508.82	-0.3155	3.0621	
GRADE 5 MATHEMATICS	4620	343.10	342	379	373	52	50.15	2515.08	-0.3064	2.8640	
GRADE 6 MATHEMATICS	4304	343.25	341	359	407	46	49.93	2493.38	-0.3721	3.6358	
GRADE 7 MATHEMATICS	4084	340.20	340	340	398	47	49.94	2494.22	-0.9328	5.0925	
GRADE 8 MATHEMATICS	4037	330.37	330	342	390	51	49.55	2455.17	-0.5430	3.6673	
GRADE 3 READING	4769	332.34	333	360	375	51	49.99	2498.91	-0.4608	3.4910	
GRADE 4 READING	4596	334.82	339	372	383	52	49.89	2489.18	-0.4448	2.9846	
GRADE 5 READING	4618	331.50	333	339	395	49	49.17	2417.36	-0.4294	3.9104	
GRADE 6 READING	4305	331.17	332	345	382	56	49.68	2467.62	-0.5390	3.2152	
GRADE 7 READING	4081	329.88	332	345	385	42	49.02	2402.74	-0.8208	4.2962	
GRADE 8 READING	4039	333.49	336	343	374	48	49.76	2475.58	-0.4921	3.4746	
GRADE 4 WRITING	4596	325.56	330	336	403	43	49.07	2408.09	-0.7450	4.4275	
GRADE 7 WRITING	4078	323.99	325	351	381	46	48.77	2378.61	-0.9897	4.6084	
GRADE 5 SCIENCE	4623	352.61	354	368	396	52	49.96	2496.26	-0.5142	3.5627	
GRADE 8 SCIENCE	4037	354.11	353	365	354	53	49.94	2493.55	-0.2321	2.5221	
GRADE 8 SOCIAL STUDIES	4038	340.62	340	347	375	58	49.97	2496.85	-0.5571	3.6757	

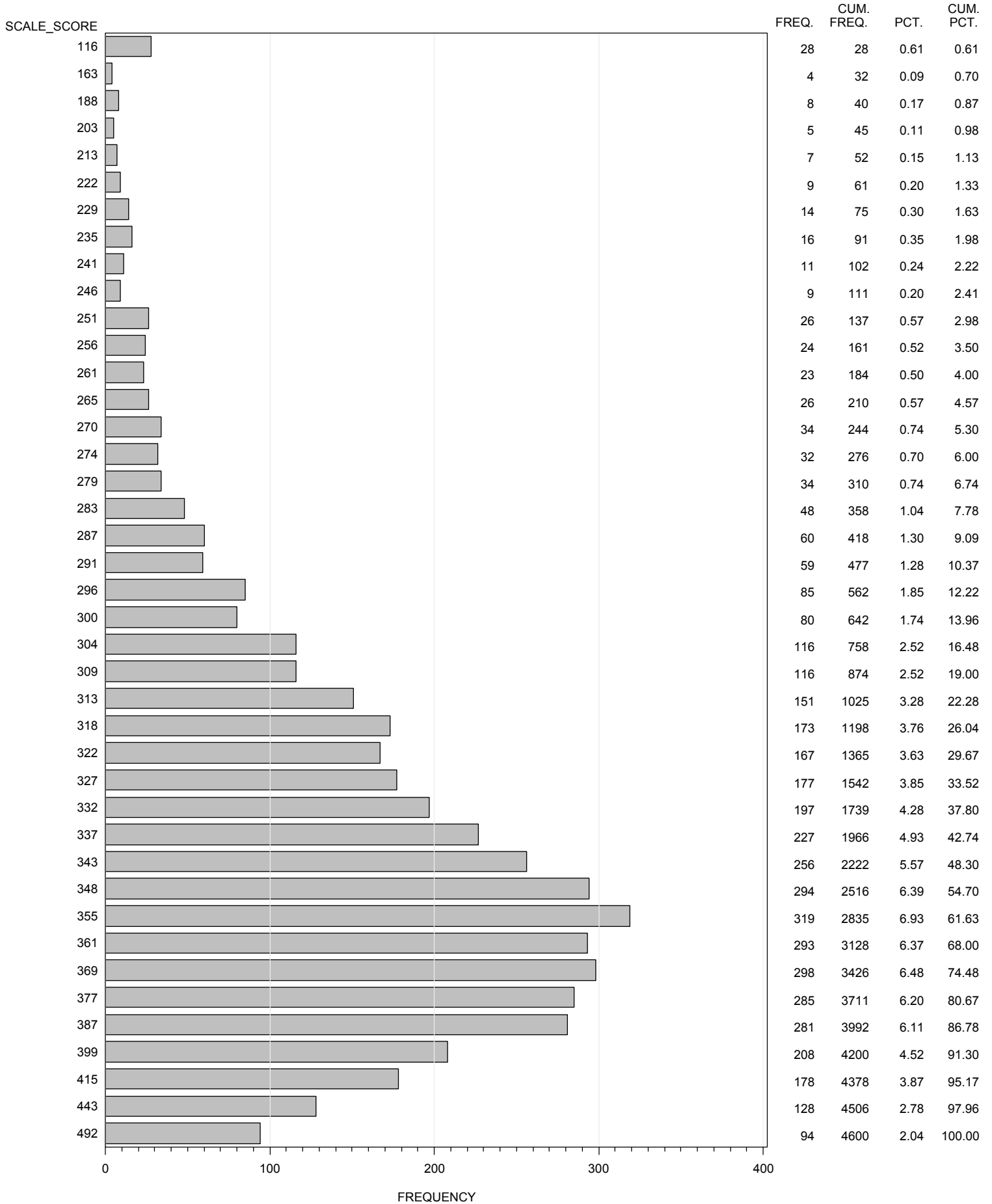
### Scale Score Descriptive Statistics for 2015 STAAR Alternate 2 EOC Assessments

Subject	N	Mean	Median	Mode	Range	Interquartile		SD	Variance	Skewness	Kurtosis
						Q1	Q3				
ALGEBRA I	3584	332.25	335	354	397	45	49.39	2438.90	-0.8111	4.7094	
ENGLISH I	3575	338.70	339	345	392	54	49.48	2448.31	-0.3969	3.9115	
ENGLISH II	3329	337.93	340	359	405	52	49.44	2444.57	-0.8718	4.4934	
BIOLOGY	3454	351.45	349	383	342	63	49.81	2480.73	-0.2602	2.0267	
U.S. HISTORY	3009	338.21	338	359	366	55	49.66	2465.66	-0.5619	3.7947	

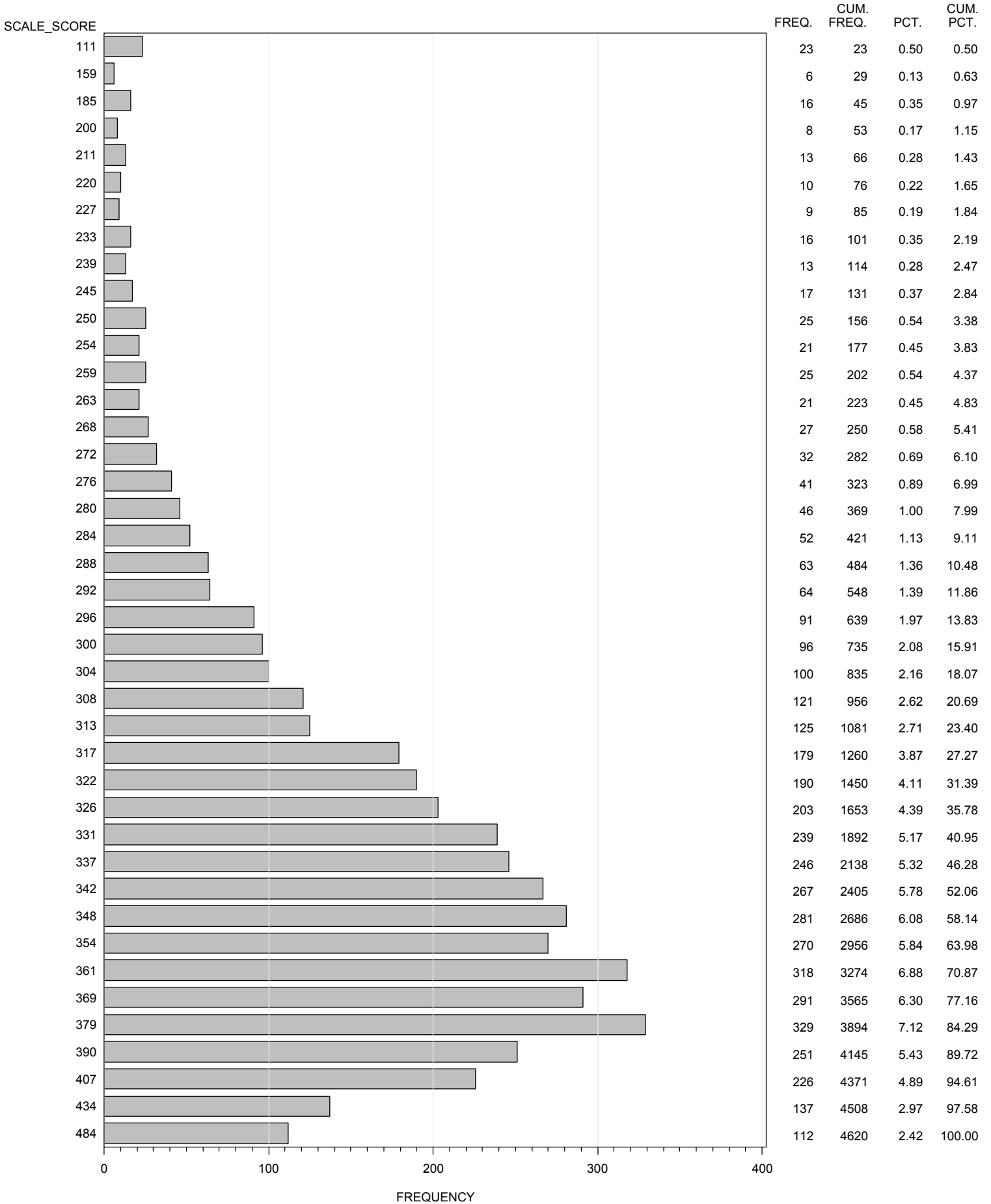
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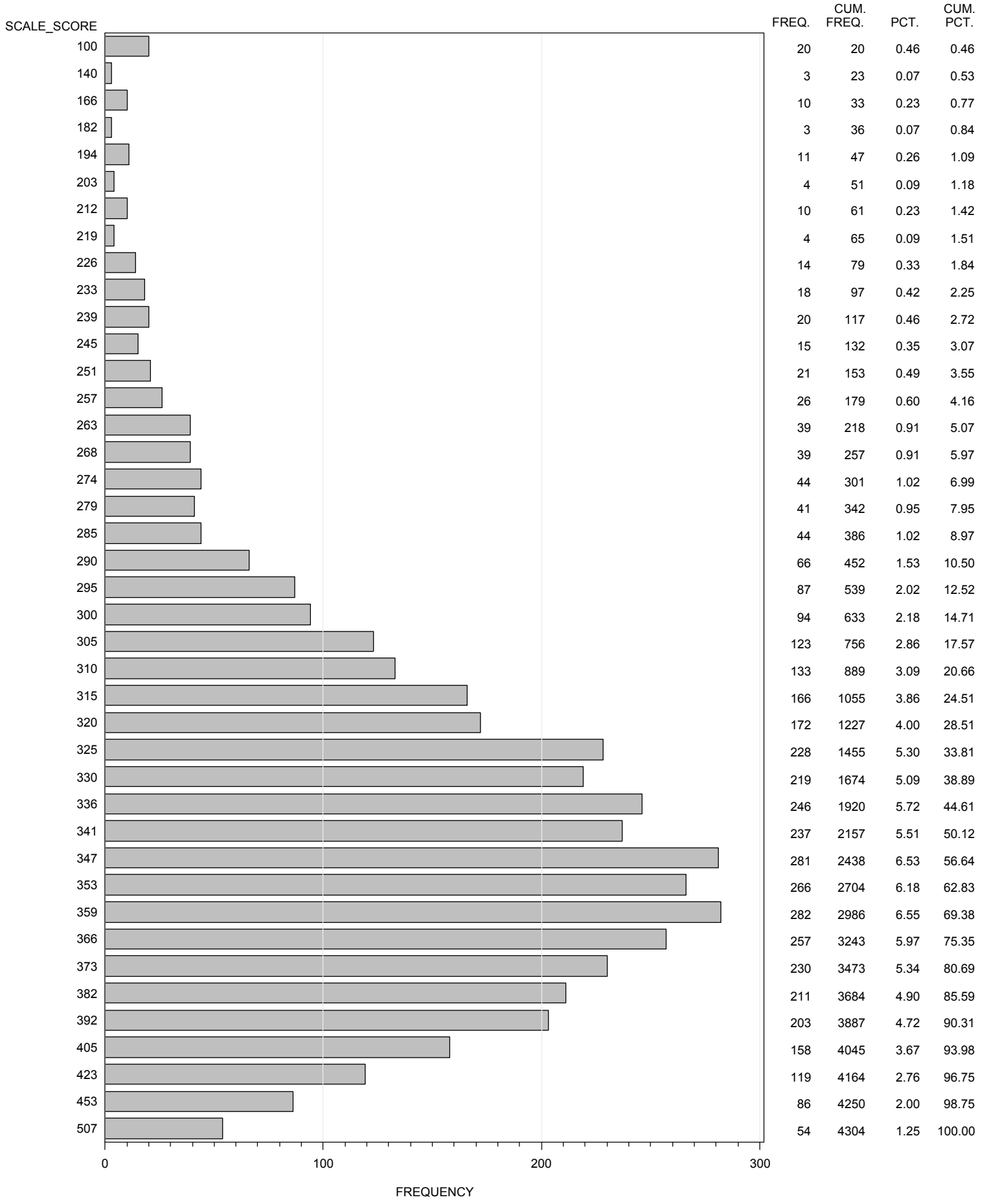


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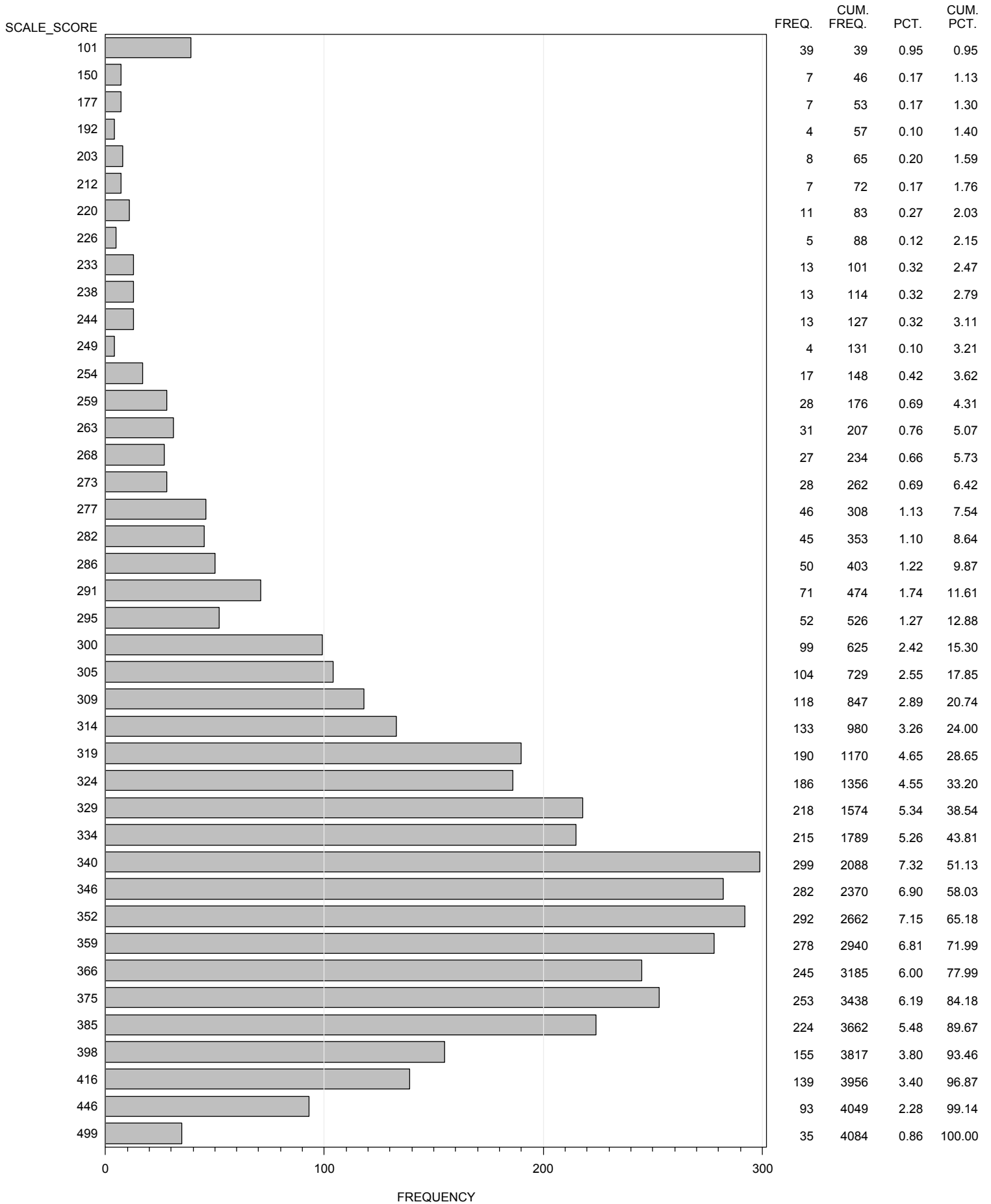




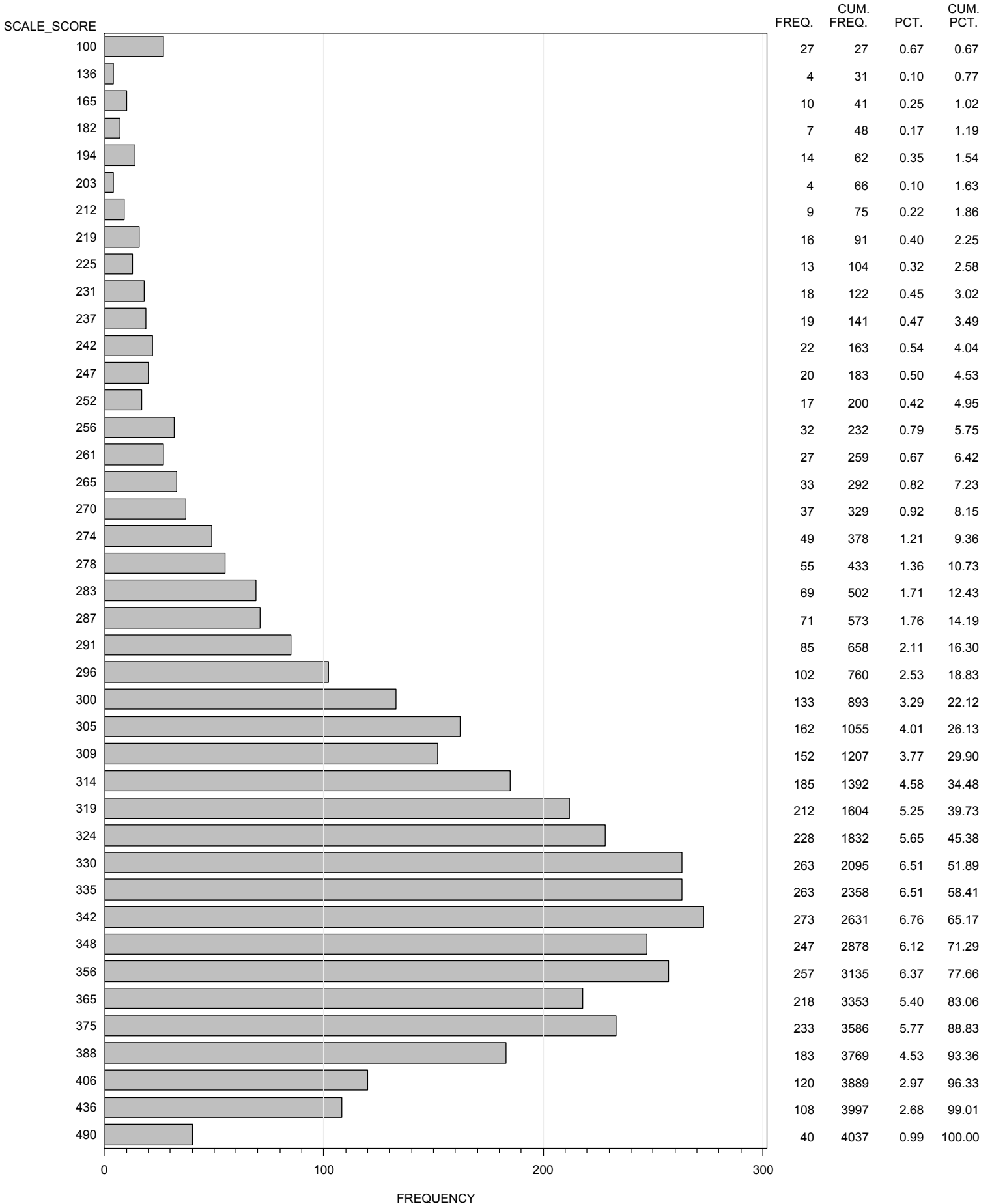
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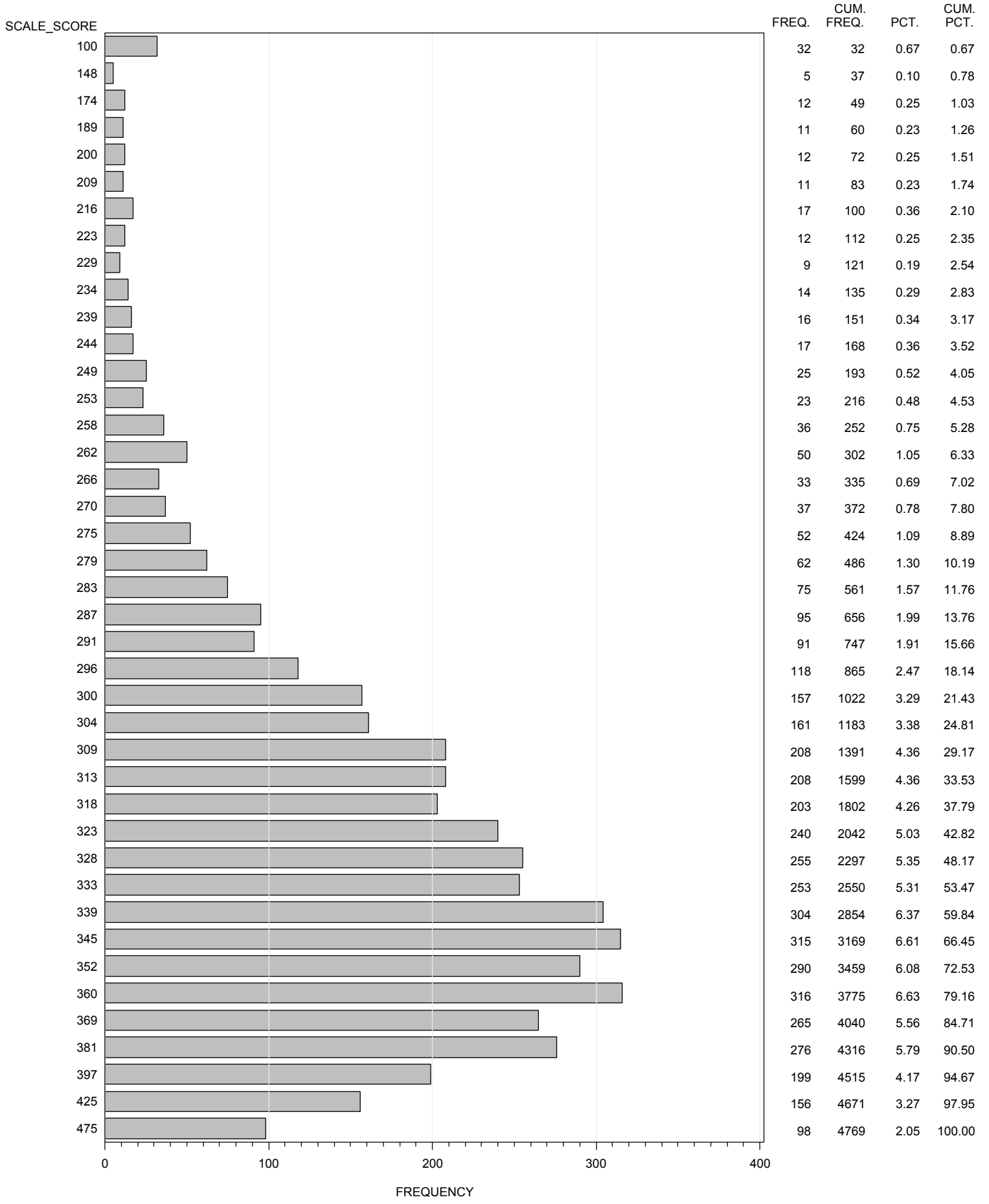
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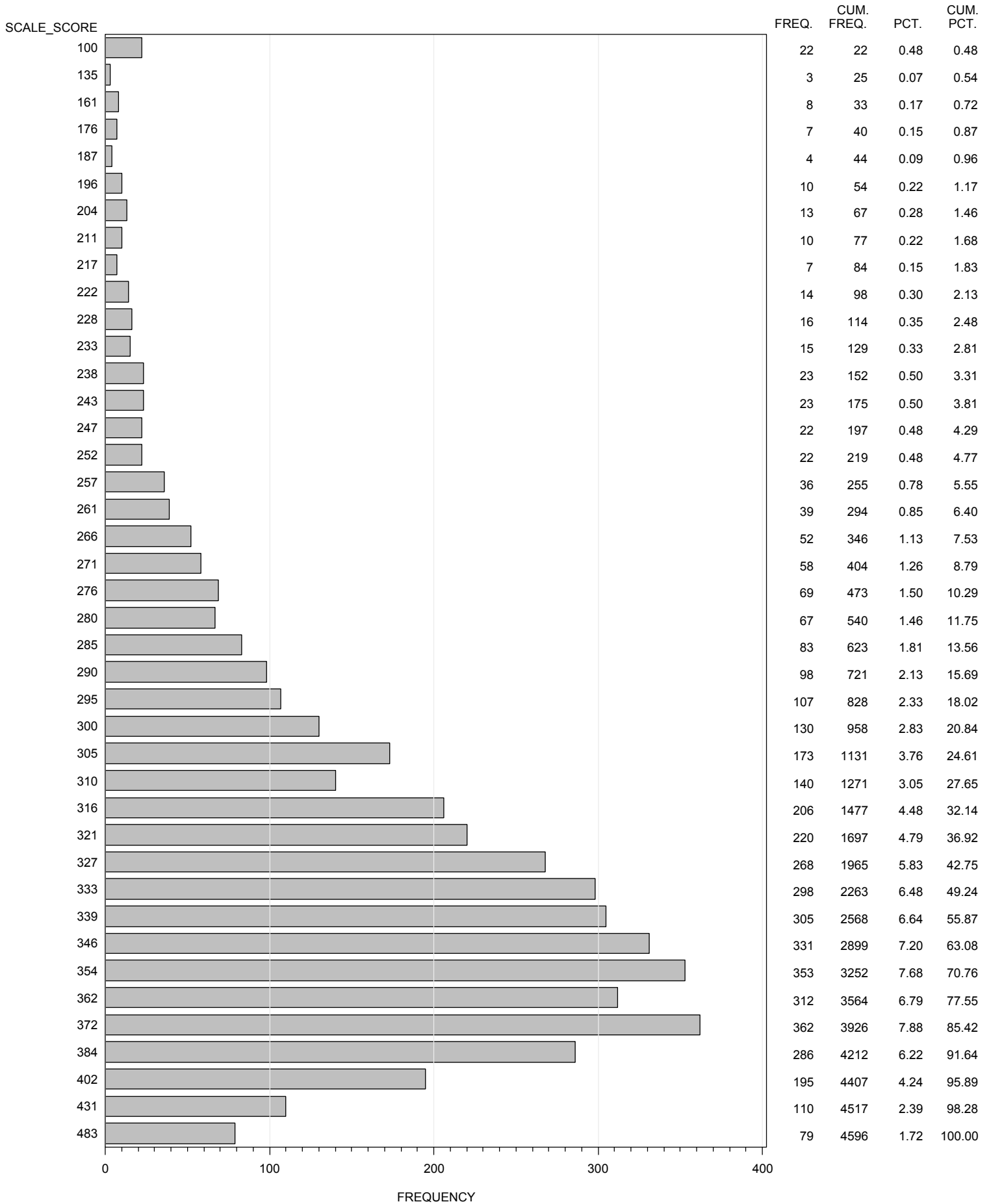
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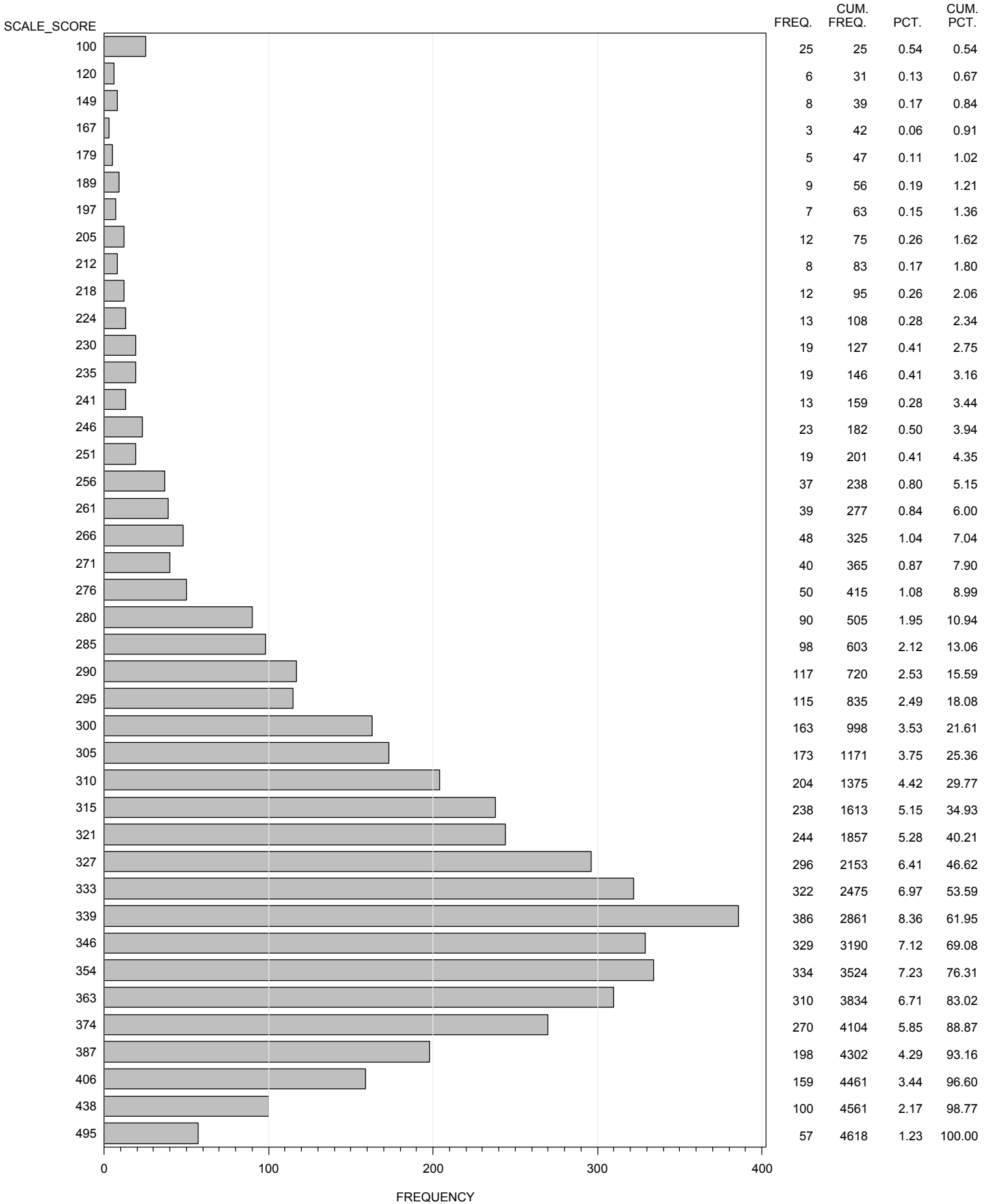
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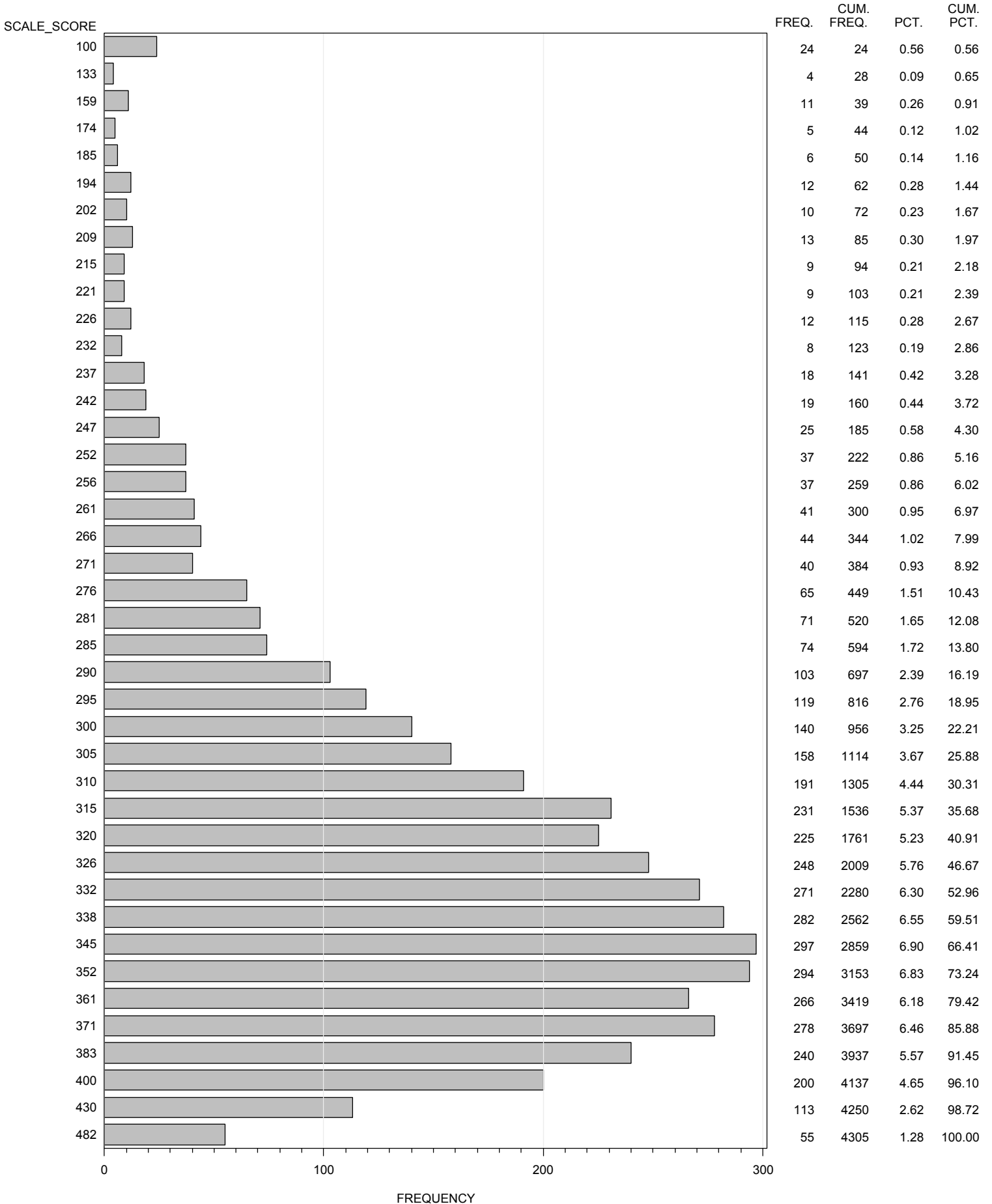
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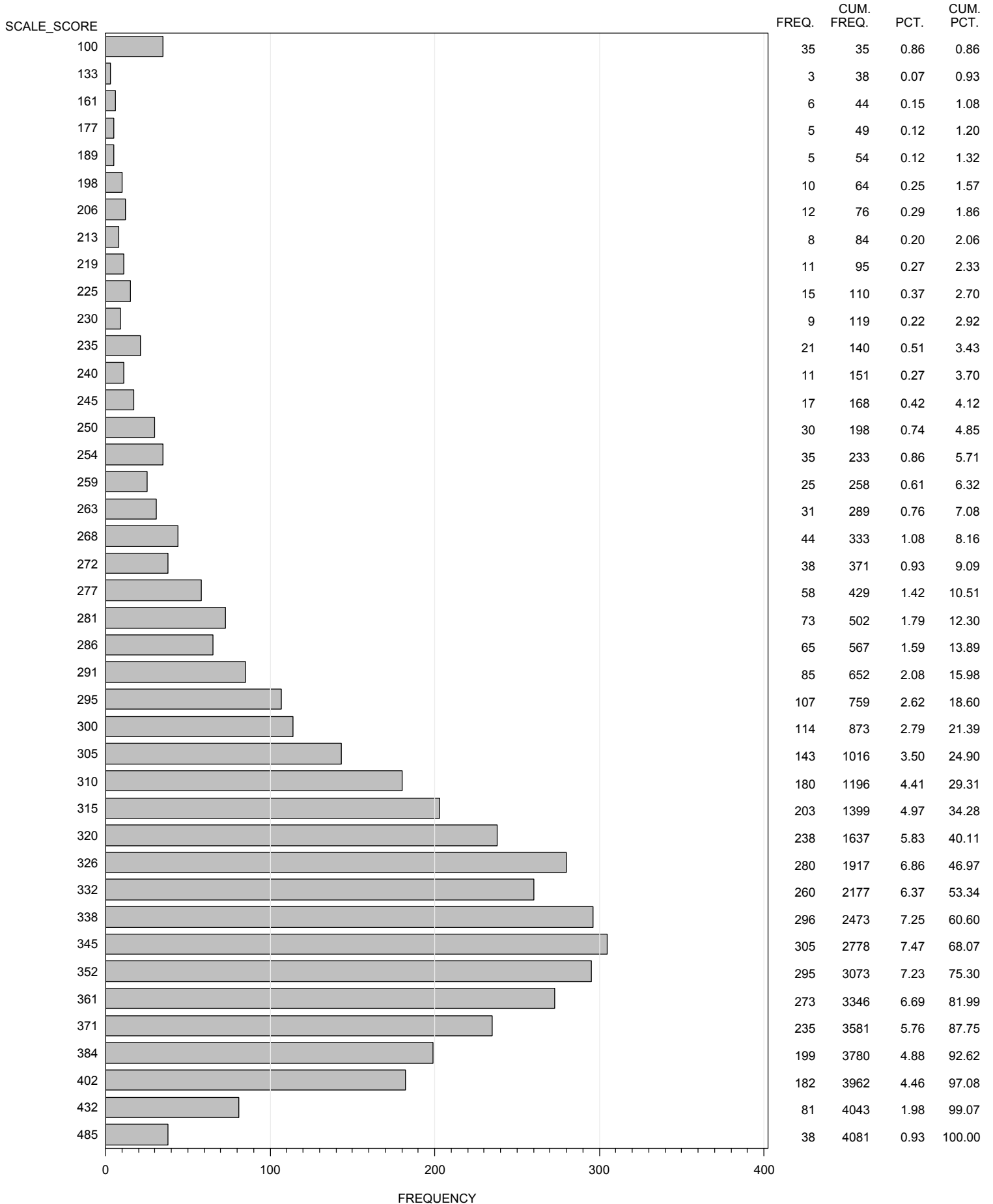
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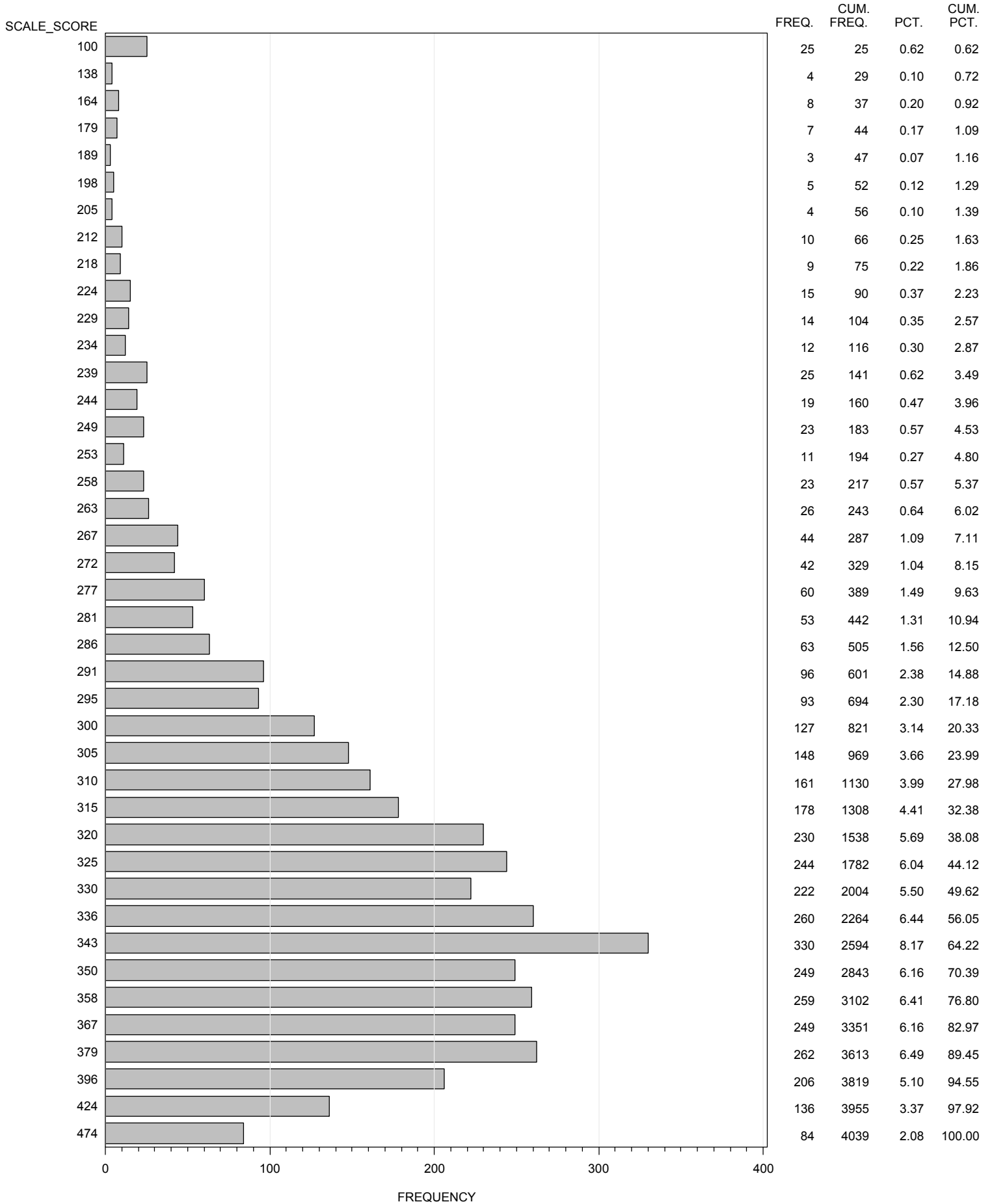


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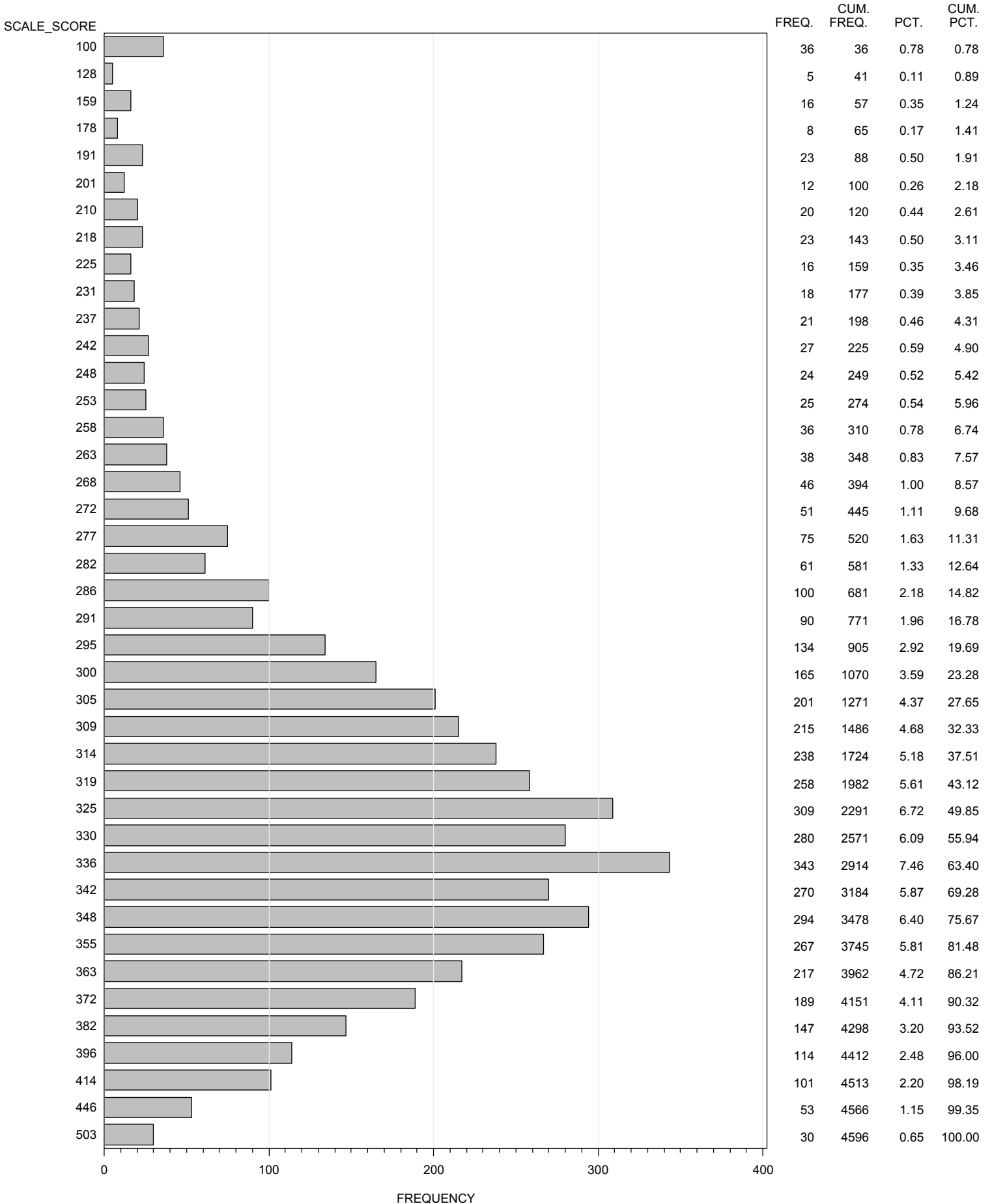




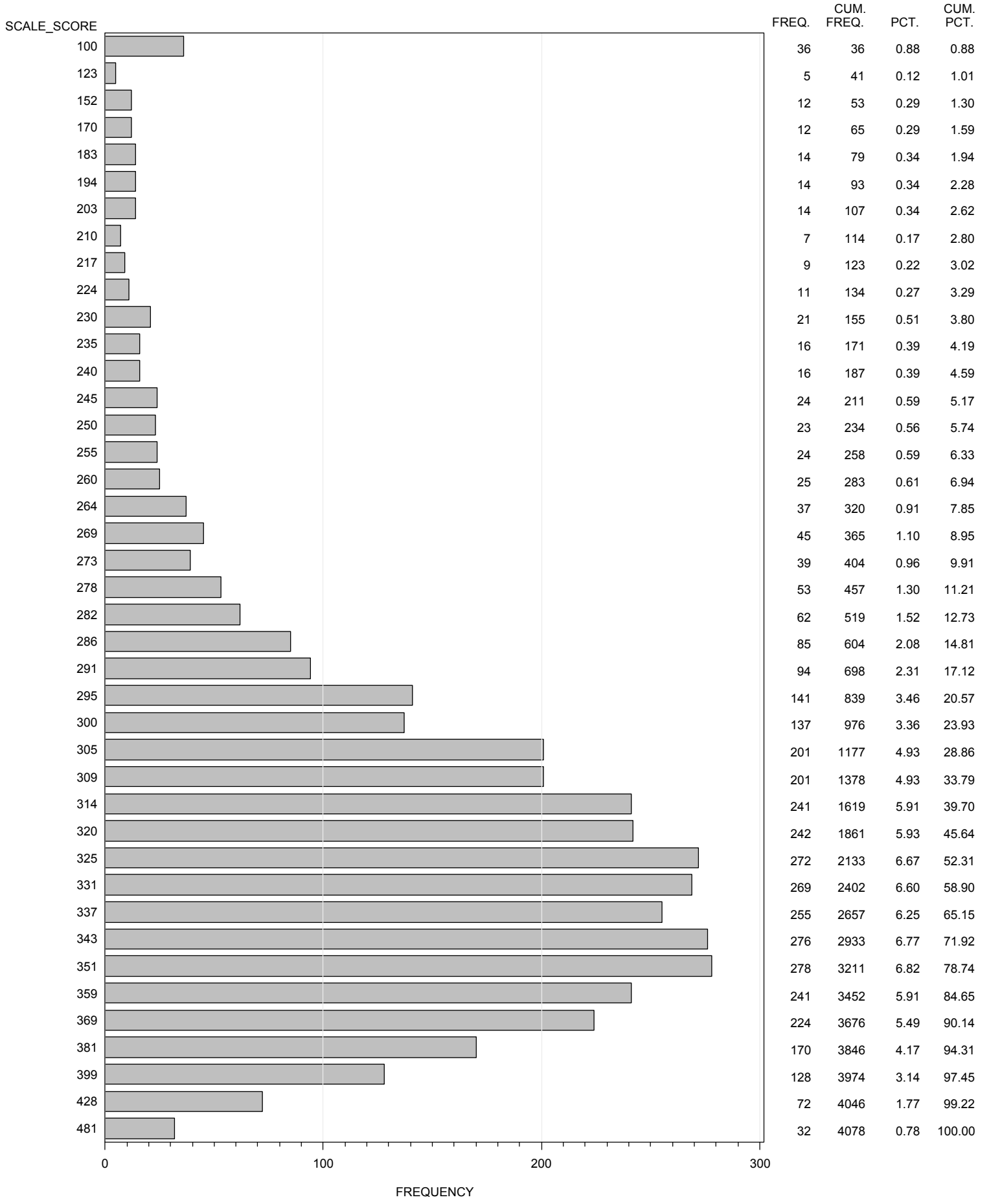
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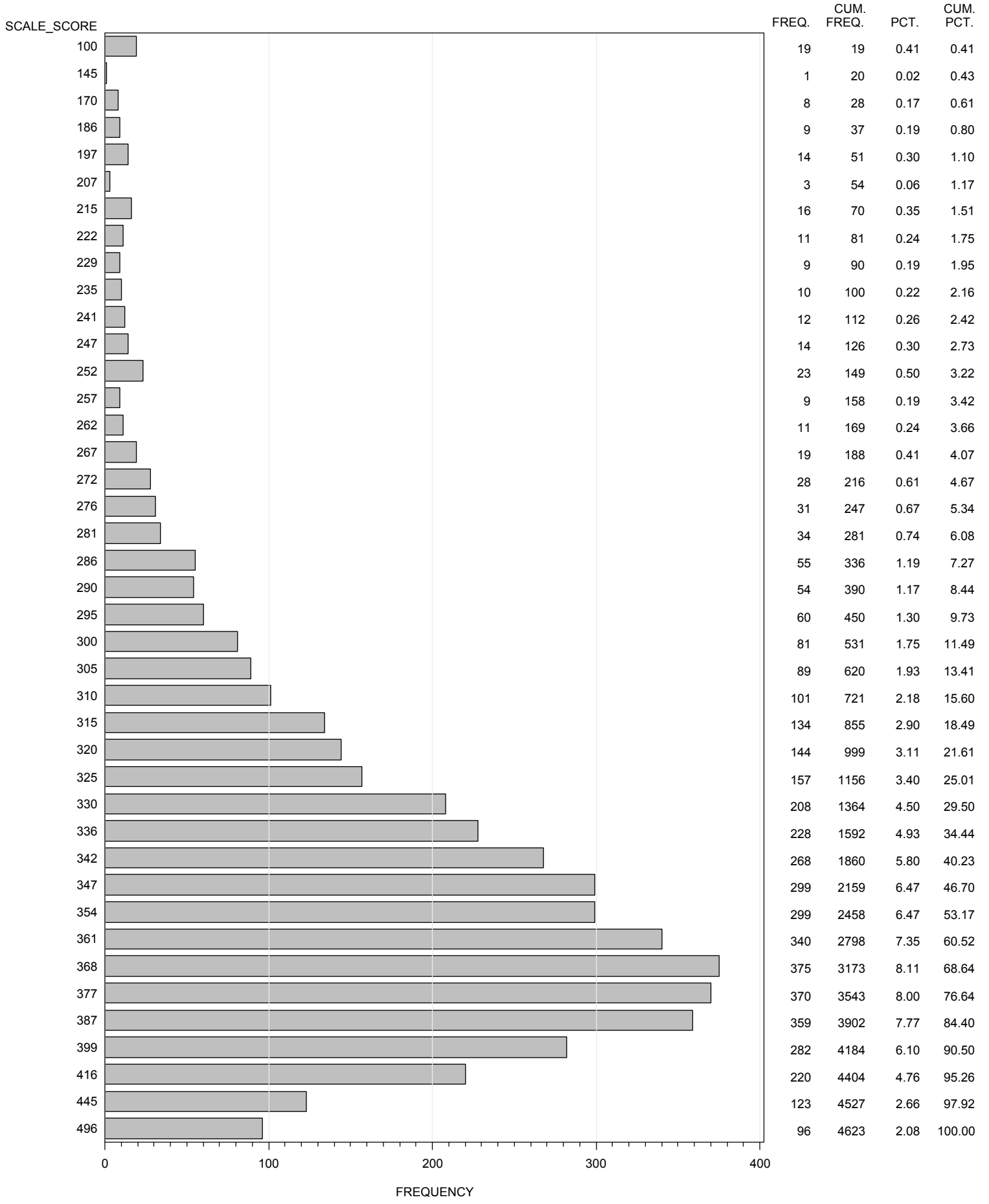
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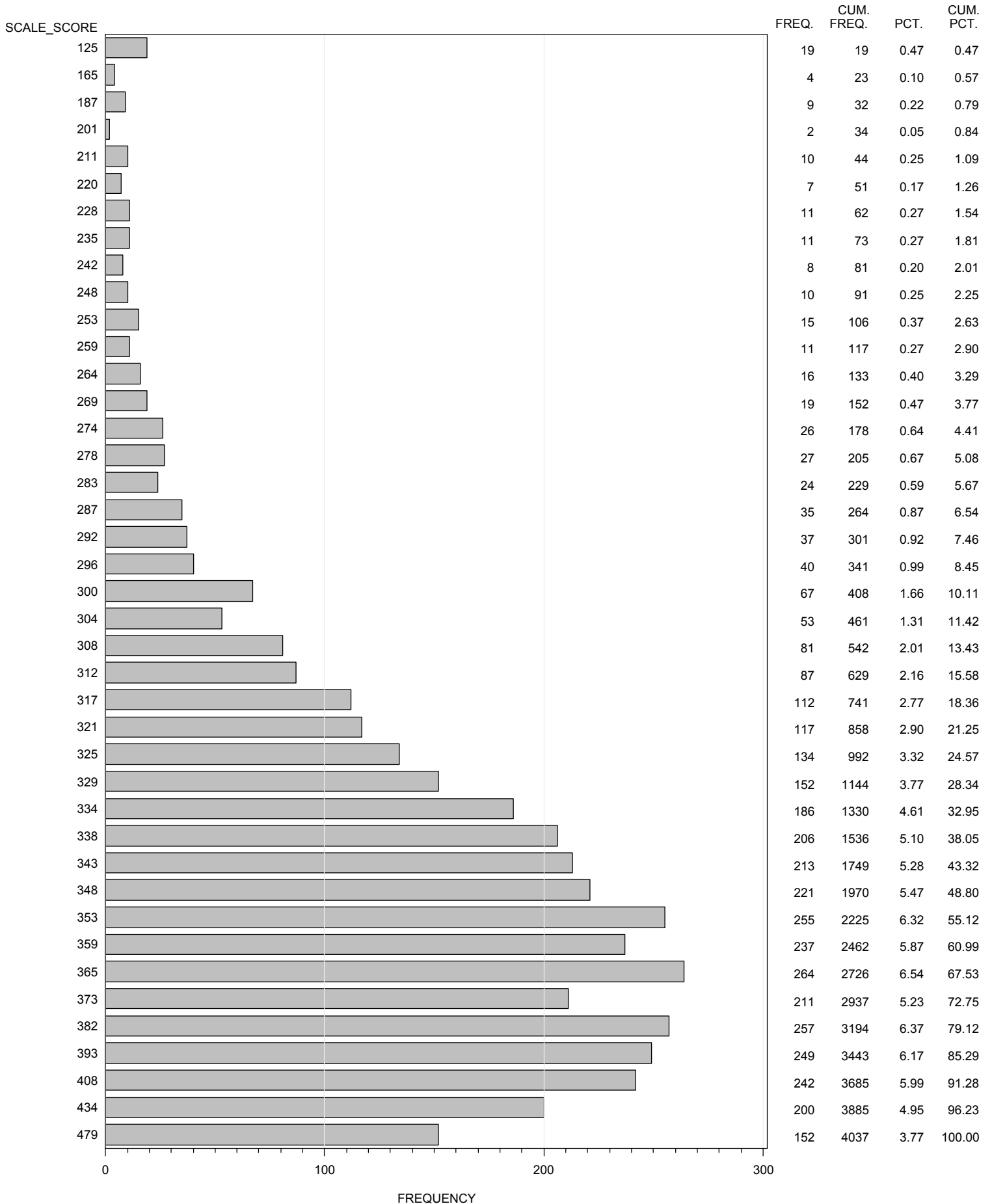
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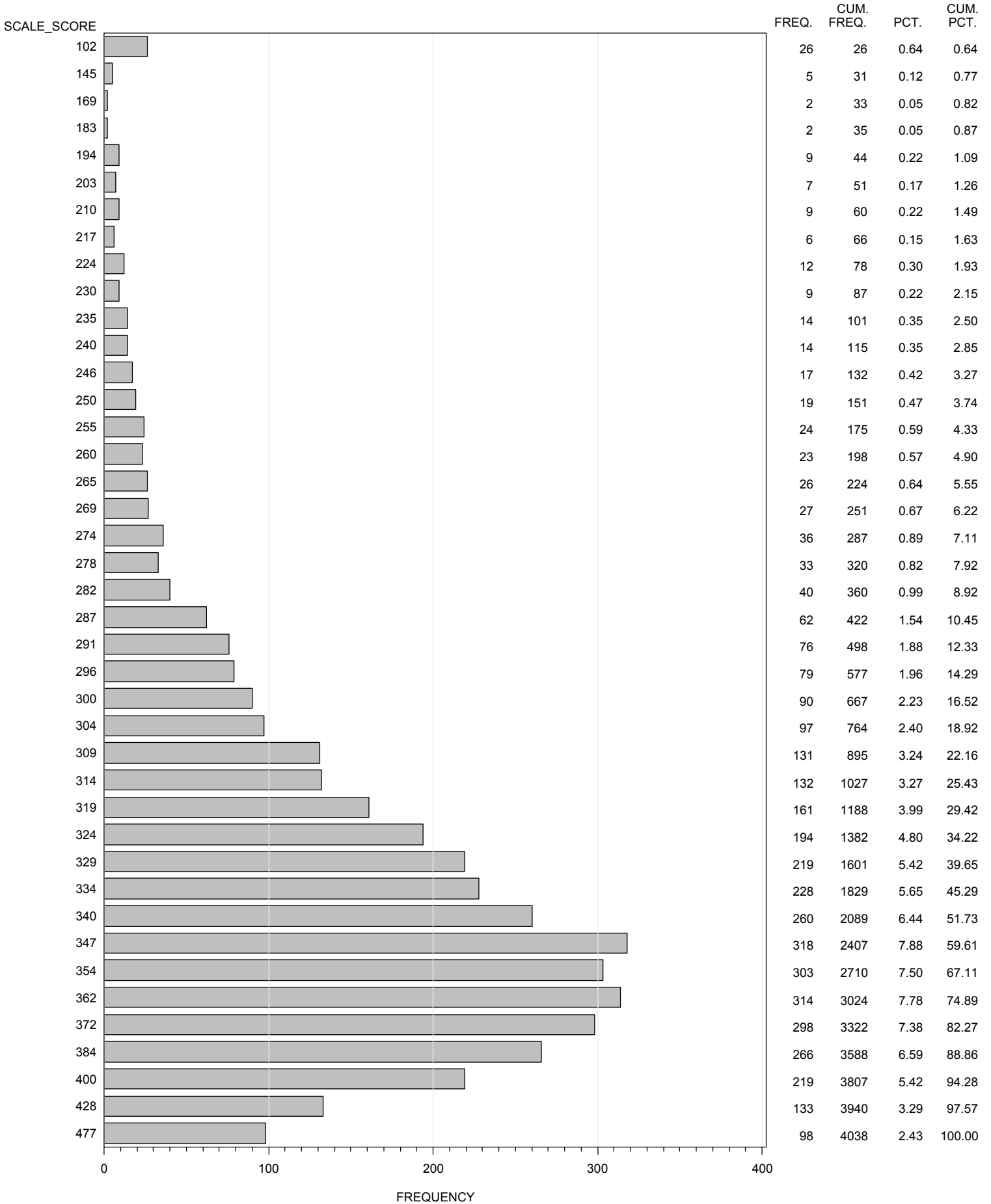
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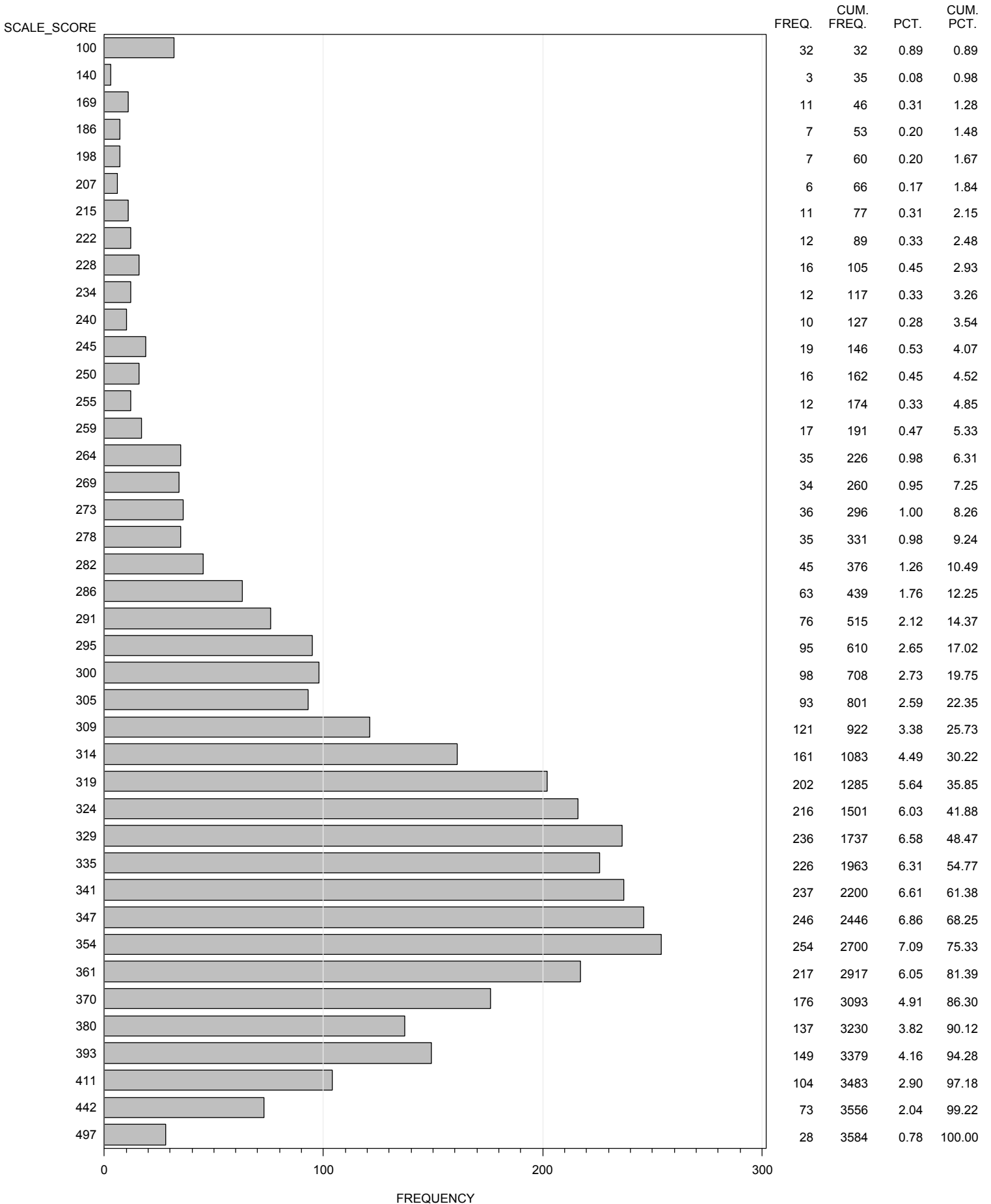
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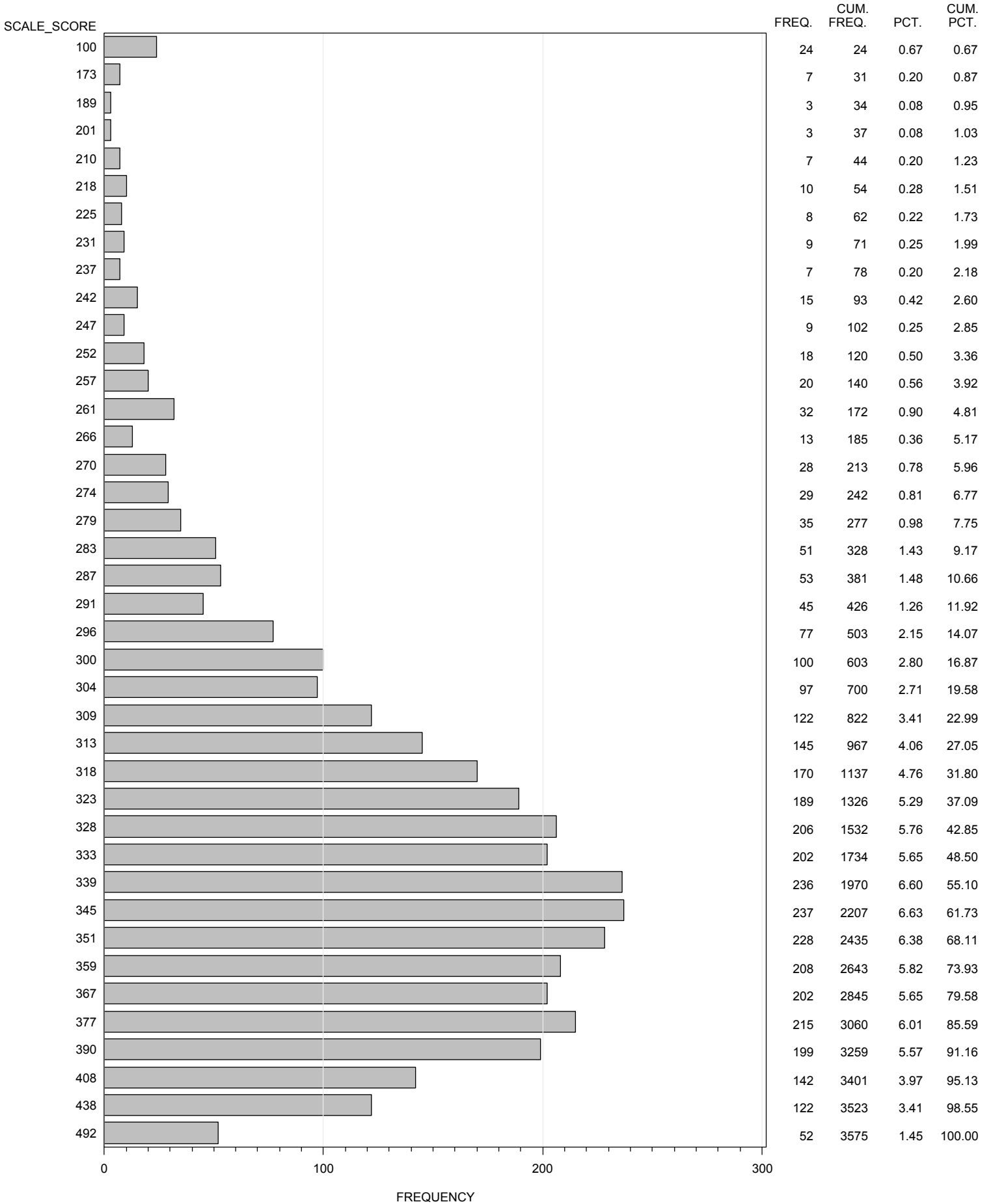
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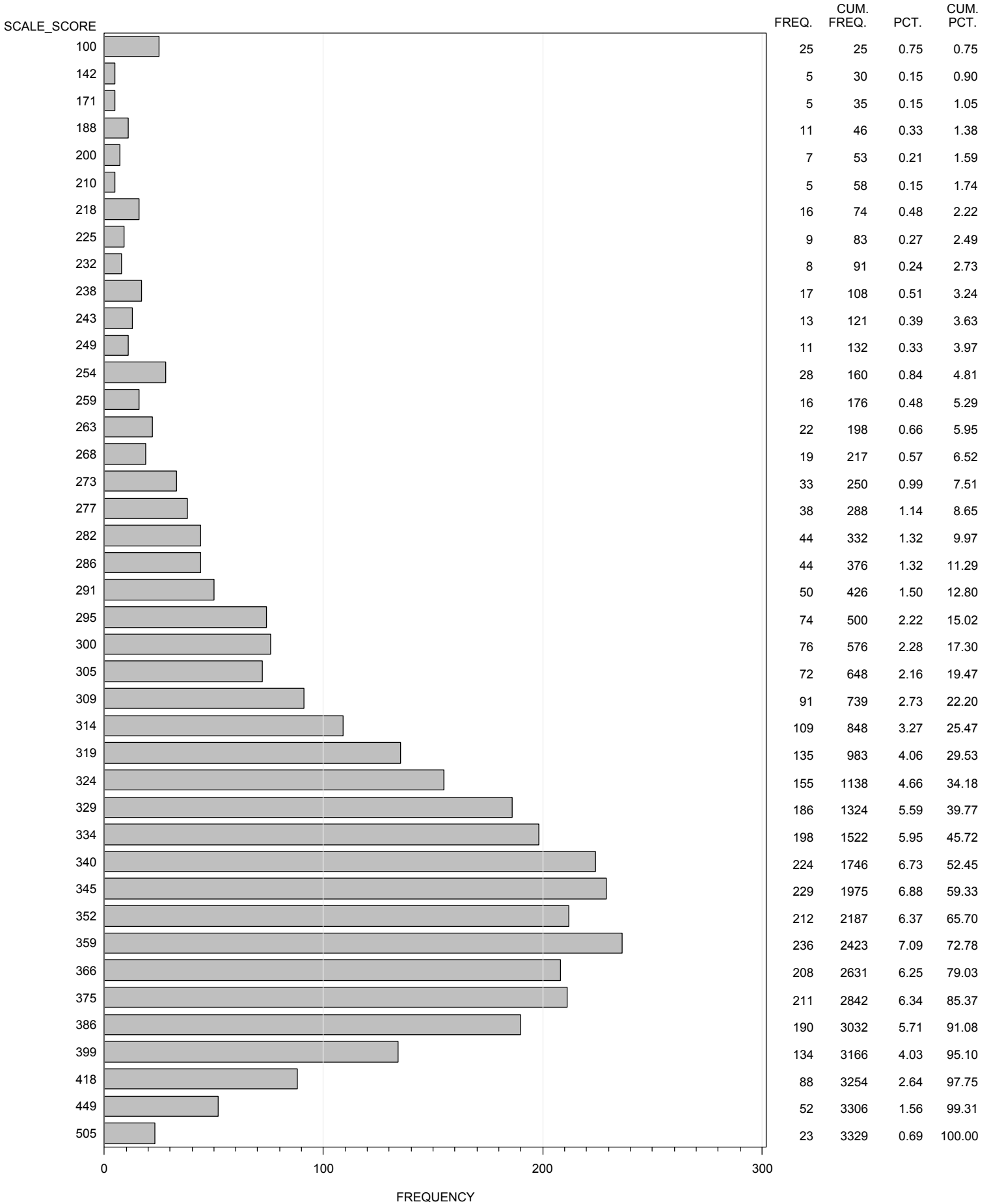


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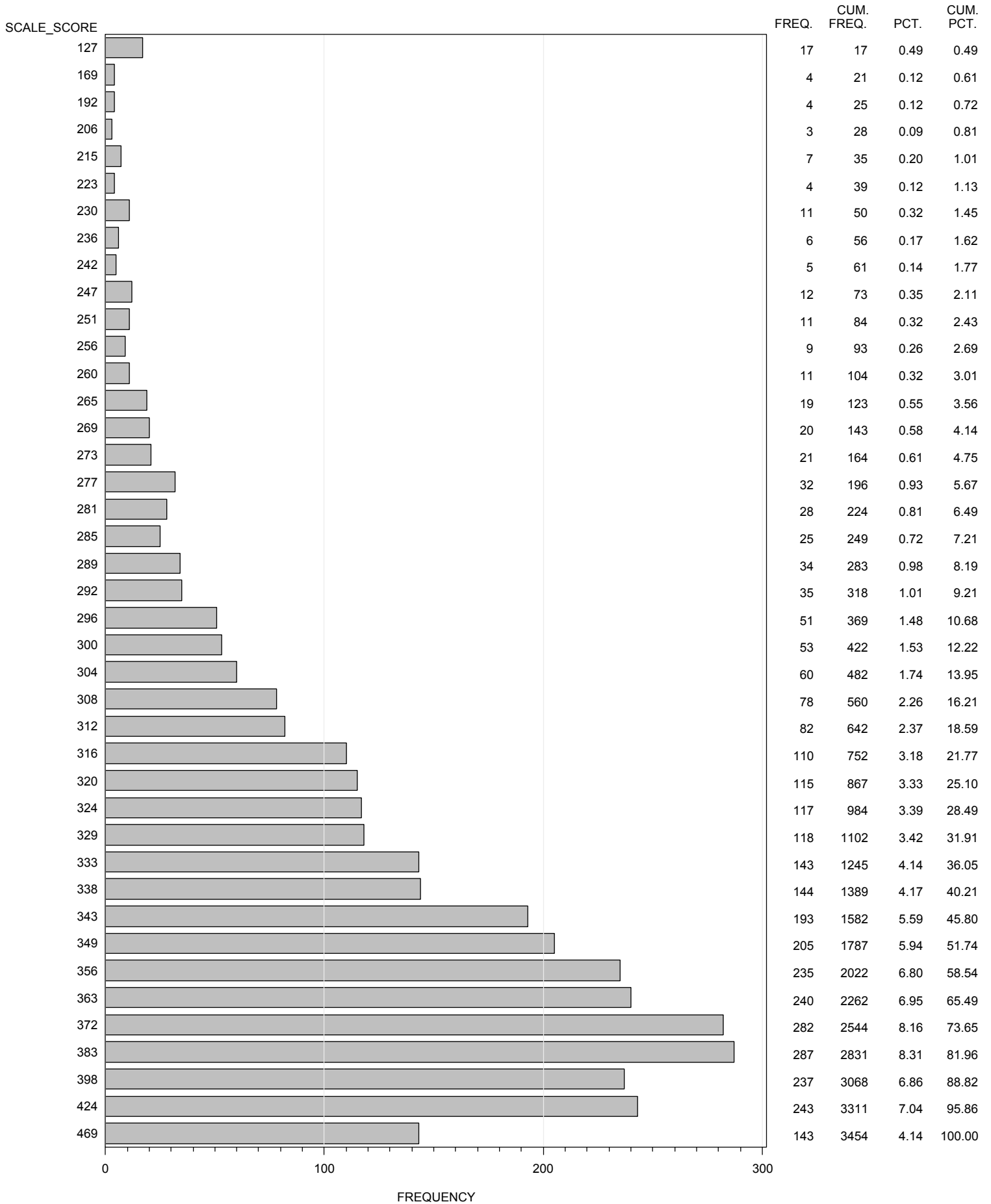




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