# 2021 TELPAS Alternate Score Distributions and Statistics by Content Area

# Glossary

This glossary provides definitions for the statistical terms that appear in the tables in Appendix E ("2021 TELPAS Alternate Statistical Tables"). Definitions of statistical terms and concepts in the other sections are given in Chapter 3 or Chapter 7.

#### **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 the sum 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 are the same number of scores above as there are 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.

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.

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:  $PCT = FREQ \div N \times 100$ .

**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: CUM PCT = CUM FREQ  $\div$  N × 100.

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|                            |       |        |        |      |       | Interquartile |       |          |          |          |
|----------------------------|-------|--------|--------|------|-------|---------------|-------|----------|----------|----------|
| Subject                    | Ν     | Mean   | Median | Mode | Range | Range         | SD    | Variance | Skewness | Kurtosis |
| TELPAS Alternate Listening | 7,992 | 786.39 | 790    | 938  | 329   | 95            | 75.09 | 5638.66  | -0.17    | -0.07    |
| TELPAS Alternate Speaking  | 7,992 | 783.05 | 788    | 600  | 352   | 131           | 93.47 | 8737.36  | -0.14    | -0.61    |
| TELPAS Alternate Reading   | 7,992 | 764.93 | 768    | 601  | 347   | 114           | 84.45 | 7132.42  | -0.13    | -0.44    |
| TELPAS Alternate Writing   | 7,992 | 746.51 | 750    | 612  | 343   | 107           | 80.12 | 6419.99  | 0.04     | -0.48    |

Table E.5.1. 2021 TELPAS Alternate Scale Score Descriptive Statistics

#### Figure E.5.1 2021 TELPAS Alternate Listening Frequency Distribution of Scale Scores All Students



## Figure E.5.2 2021 TELPAS Alternate Speaking Frequency Distribution of Scale Scores All Students

| SCALE SCORE |                          | FREQ. | CUM.<br>FREQ. | PCT. | CUM.<br>PCT. |
|-------------|--------------------------|-------|---------------|------|--------------|
| 600         |                          | 551   | 551           | 6.89 | 6.89         |
| 627         |                          | 97    | 648           | 1.21 | 8.11         |
| 645         |                          | 105   | 753           | 1.31 | 9.42         |
| 657         |                          | 104   | 857           | 1.30 | 10.72        |
| 666         |                          | 139   | 996           | 1.74 | 12.46        |
| 675         |                          | 110   | 1106          | 1.38 | 13.84        |
| 682         |                          | 132   | 1238          | 1.65 | 15.49        |
| 690         |                          | 127   | 1365          | 1.59 | 17.08        |
| 697         |                          | 168   | 1533          | 2.10 | 19.18        |
| 704         |                          | 147   | 1680          | 1.84 | 21.02        |
| 711         |                          | 288   | 1968          | 3.60 | 24.62        |
| 718         |                          | 170   | 2138          | 2.13 | 26.75        |
| 725         |                          | 166   | 2304          | 2.08 | 28.83        |
| 732         |                          | 180   | 2484          | 2.25 | 31.08        |
| 738         |                          | 152   | 2636          | 1.90 | 32.98        |
| 744         |                          | 154   | 2790          | 1.93 | 34.91        |
| 750         |                          | 147   | 2937          | 1.84 | 36.75        |
| 756         |                          | 140   | 3077          | 1.75 | 38.50        |
| 761         |                          | 154   | 3231          | 1.93 | 40.43        |
| 766         |                          | 148   | 3379          | 1.85 | 42.28        |
| 772         |                          | 226   | 3605          | 2.83 | 45.11        |
| 777         |                          | 169   | 3774          | 2.11 | 47.22        |
| 783         |                          | 169   | 3943          | 2.11 | 49.34        |
| 788         |                          | 202   | 4145          | 2.53 | 51.86        |
| 794         |                          | 193   | 4338          | 2.41 | 54.28        |
| 800         |                          | 210   | 4548          | 2.63 | 56.91        |
| 806         |                          | 203   | 4751          | 2.54 | 59.45        |
| 813         |                          | 195   | 4946          | 2.44 | 61.89        |
| 819         |                          | 219   | 5165          | 2.74 | 64.63        |
| 827         |                          | 224   | 5389          | 2.80 | 67.43        |
| 834         |                          | 288   | 5677          | 3.60 | 71.03        |
| 840         |                          | 199   | 5876          | 2.49 | 73.52        |
| 856         |                          | 201   | 6077          | 2.52 | 76.04        |
| 850         |                          | 197   | 6274          | 2.46 | 78.50        |
| 872         |                          | 195   | 6469          | 2.44 | 80.94        |
| 881         |                          | 101   | 6822          | 2.20 | 05.21        |
| 892         |                          | 222   | 7055          | 2.10 | 85.57        |
| 905         |                          | 232   | 7033          | 2.70 | 00.28        |
| 924         |                          | 215   | 7503          | 2.07 | 90.94        |
| 952         |                          | 489   | 7992          | 612  | 100.00       |
|             |                          | 207   | 1792          | 0.12 | 100.00       |
|             | 0 100 200 300 400 500 60 | J     |               |      |              |

## Figure E.5.3 2021 TELPAS Alternate Reading Frequency Distribution of Scale Scores All Students

| SCALE SCORE           | FREQ. | CUM.<br>FREQ. | PCT. | CUM.<br>PCT. |
|-----------------------|-------|---------------|------|--------------|
| 601                   | 593   | 593           | 7.42 | 7.42         |
| 630                   | 172   | 765           | 2.15 | 9.57         |
| 648                   | 163   | 928           | 2.04 | 11.61        |
| 660                   | 142   | 1070          | 1.78 | 13.39        |
| 670                   | 148   | 1218          | 1.85 | 15.24        |
| 679                   | 169   | 1387          | 2.11 | 17.35        |
| 687                   | 169   | 1556          | 2.11 | 19.47        |
| 696                   | 169   | 1725          | 2.11 | 21.58        |
| 704                   | 172   | 1897          | 2.15 | 23.74        |
| 712                   | 198   | 2095          | 2.48 | 26.21        |
| 720                   | 379   | 2474          | 4.74 | 30.96        |
| 728                   | 244   | 2718          | 3.05 | 34.01        |
| 736                   | 257   | 2975          | 3.22 | 37.22        |
| 743                   | 244   | 3219          | 3.05 | 40.28        |
| 750                   | 208   | 3427          | 2.60 | 42.88        |
| 756                   | 204   | 3631          | 2.55 | 45.43        |
| 762                   | 201   | 3832          | 2.52 | 47.95        |
| 768                   | 206   | 4038          | 2.58 | 50.53        |
| 773                   | 181   | 4219          | 2.26 | 52.79        |
| 779                   | 169   | 4388          | 2.11 | 54.90        |
| 784                   | 234   | 4622          | 2.93 | 57.83        |
| 789                   | 181   | 4803          | 2.26 | 60.10        |
| 795                   | 192   | 4995          | 2.40 | 62.50        |
| 800                   | 206   | 5201          | 2.58 | 65.08        |
| 805                   | 200   | 5401          | 2.50 | 67.58        |
| 810                   | 210   | 5611          | 2.63 | 70.21        |
| 816                   | 194   | 5805          | 2.43 | 72.64        |
| 821                   | 168   | 5973          | 2.10 | 74.74        |
| 826                   | 172   | 6145          | 2.15 | 76.89        |
| 832                   | 150   | 6295          | 1.88 | 78.77        |
| 837                   | 208   | 6503          | 2.60 | 81.37        |
| 843                   | 148   | 6651          | 1.85 | 83.22        |
| 849                   | 162   | 6813          | 2.03 | 85.25        |
| 855                   | 163   | 6976          | 2.04 | 87.29        |
| 862                   | 168   | 7144          | 2.10 | 89.39        |
| 870                   | 160   | 7304          | 2.00 | 91.39        |
| 878                   | 129   | 7433          | 1.61 | 93.01        |
| 888                   | 114   | 7547          | 1.43 | 94.43        |
| 901                   | 127   | 7674          | 1.59 | 96.02        |
| 919                   | 93    | 7767          | 1.16 | 97.18        |
| 948                   | 225   | 7992          | 2.82 | 100.00       |
| 0 100 200 300 400 500 | 600   |               |      |              |

## Figure E.5.4 2021 TELPAS Alternate Writing Frequency Distribution of Scale Scores All Students

| CALE SCORE |  | FREQ. | CUM.<br>FREQ. | PCT.  | CUM.<br>PCT. |
|------------|--|-------|---------------|-------|--------------|
| 612        |  | 964   | 964           | 12.06 | 12.06        |
| 640        |  | 233   | 1197          | 2.92  | 14.98        |
| 660        |  | 250   | 1447          | 3.13  | 18.11        |
| 674        |  | 223   | 1670          | 2.79  | 20.90        |
| 684        |  | 233   | 1903          | 2.92  | 23.81        |
| 693        |  | 209   | 2112          | 2.62  | 26.43        |
| 701        |  | 219   | 2331          | 2.74  | 29.17        |
| 708        |  | 202   | 2533          | 2.53  | 31.69        |
| 715        |  | 174   | 2707          | 2.18  | 33.87        |
| 722        |  | 220   | 2927          | 2.75  | 36.62        |
| 728        |  | 339   | 3266          | 4.24  | 40.87        |
| 734        |  | 241   | 3507          | 3.02  | 43.88        |
| 739        |  | 244   | 3751          | 3.05  | 46.93        |
| 745        |  | 219   | 3970          | 2.74  | 49.67        |
| 750        |  | 227   | 4197          | 2.84  | 52.52        |
| 755        |  | 188   | 4385          | 2.35  | 54.87        |
| 760        |  | 207   | 4592          | 2.59  | 57.46        |
| 766        |  | 199   | 4791          | 2.49  | 59.95        |
| 771        |  | 199   | 4990          | 2.49  | 62.44        |
| 776        |  | 180   | 5170          | 2.25  | 64.69        |
| 782        |  | 260   | 5430          | 3.25  | 67.94        |
| 788        |  | 204   | 5634          | 2.55  | 70.50        |
| 794        |  | 200   | 5834          | 2.50  | 73.00        |
| 800        |  | 194   | 6028          | 2.43  | 75.43        |
| 806        |  | 190   | 6218          | 2.38  | 77.80        |
| 813        |  | 195   | 6413          | 2.44  | 80.24        |
| 819        |  | 167   | 6580          | 2.09  | 82.33        |
| 820        |  | 144   | 6724          | 1.80  | 84.13        |
| 832        |  | 158   | 6882          | 1.98  | 86.11        |
| 037        |  | 136   | 7018          | 1.70  | 87.81        |
| 853        |  | 197   | 7215          | 2.46  | 90.28        |
| 860        |  | 131   | 7346          | 1.64  | 91.92        |
| 867        |  | 108   | 7562          | 1.35  | 93.27        |
| 875        |  | 84    | 7503          | 1.50  | 94.03        |
| 882        |  | 70    | 7047          | 0.88  | 95.00        |
| 891        |  | 57    | 7774          | 0.88  | 90.50        |
| 900        |  | 51    | 7825          | 0.71  | 97.27        |
| 911        |  | /15   | 7870          | 0.04  | 97.91        |
| 929        |  | 28    | 7898          | 0.30  | 98.47        |
| 955        |  | 94    | 7992          | 1 18  | 100.00       |
|            |  |       | 1772          | 1.10  | 100.00       |
|            | u 100 200 300 400 500 600 700 800 900 10 | 00    |               |       |              |