

Creating Standardized Scores in SPSS Using Dropdown Menus

In this document I explain how to use SPSS to create standardized scores using dropdown menus. See the document “Creating Standardized Scores in SPSS Using Syntax” for instructions on using SPSS syntax.

The data for this example are from the study described in the article “Self-efficacy beliefs in college statistics courses ¹.” In this study, the authors collected data on Statistics Self-Efficacy, among other things. The variable used for this example is the Value subscale from the Survey of Attitudes toward Statistics. This subscale assesses the degree to which respondents think statistics is valuable. The data are in the SPSS dataset “SATS Value.sav.” There are no missing data.

Creating z- and T - Scores

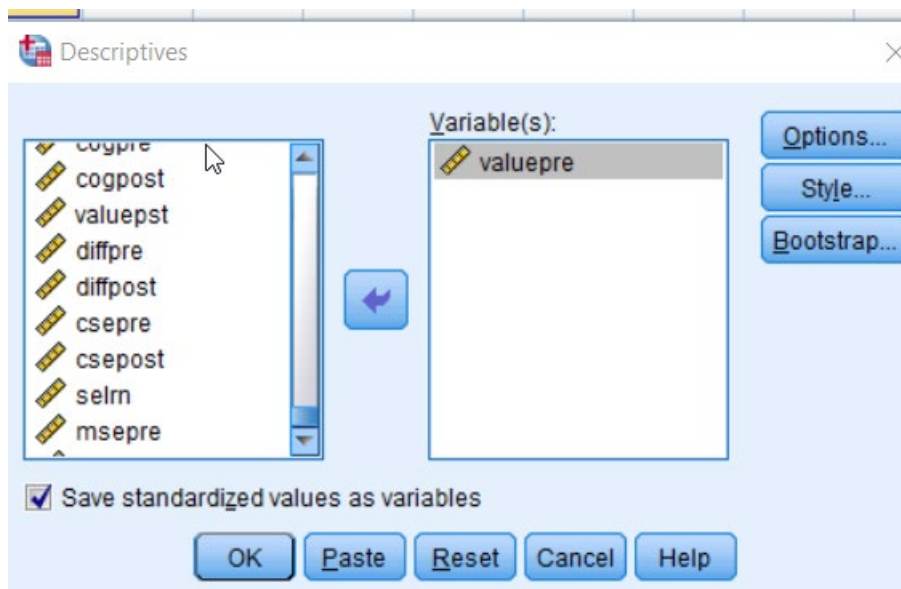
Z-scores

Recall that computation of most standardized scores, such as *T*-scores and scores on the SAT or IQ metrics, begins by converting the raw scores into z-scores.

So, the first step in creating such standardized scores is to create z-scores. In SPSS, this is done through the **DESCRIPTIVES** function.

Choose **DESCRIPTIVES**, then choose the variable for which you want z-scores.

Click on the box next to “**save standardized values as variables.**” The variable in z-score form will now be included at the end of your dataset. By default, SPSS will name these as “Z” plus the original name of the variable.



¹ Finney, S.J., & Schraw (2003). *Contemporary Educational Psychology*, 28, 161–186

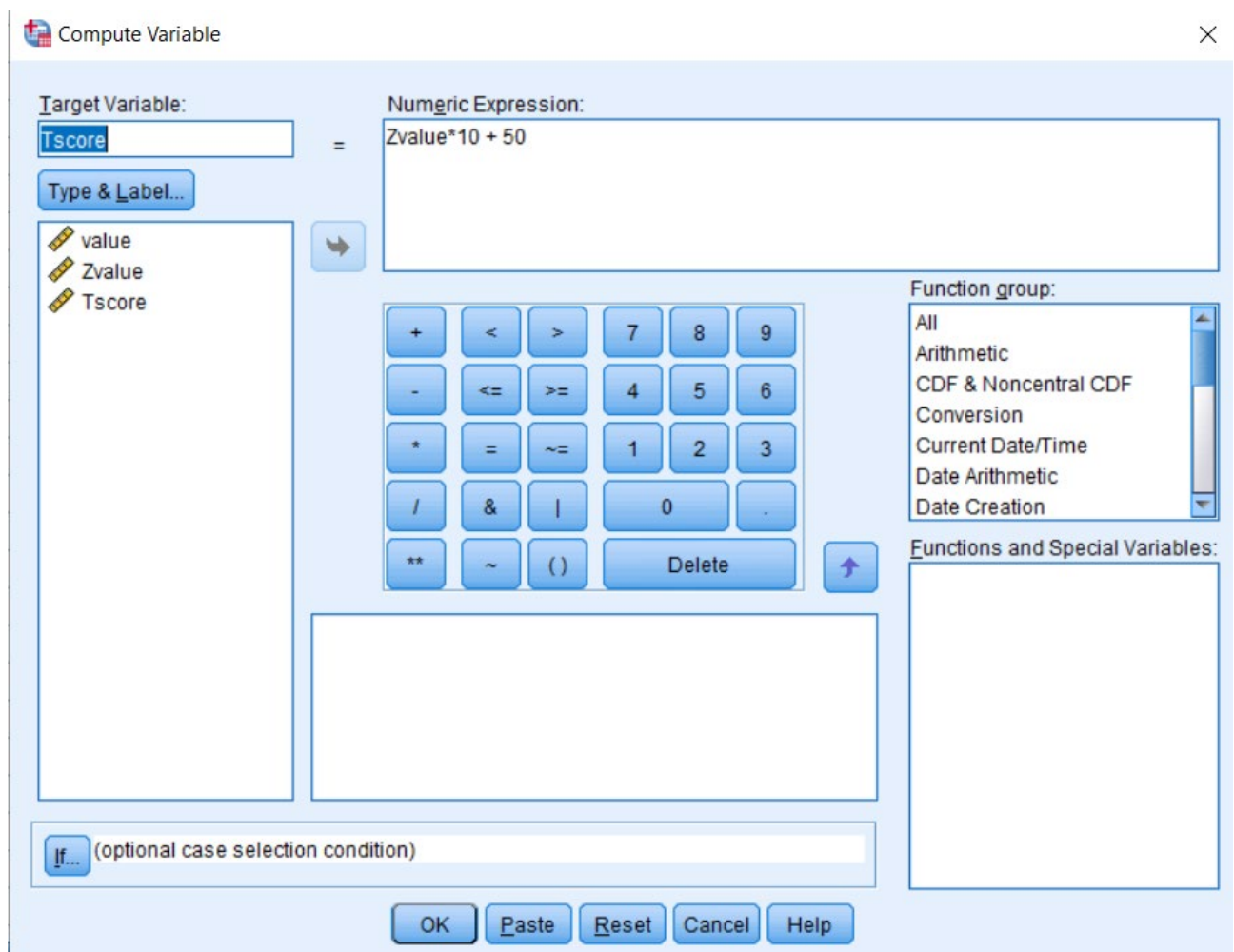
T-scores

The z-scores can be used to create *T*-scores or standardized scores in other metrics.

Recall that *T*-scores have a mean of 50 and a standard deviation of 10. So, to create *T*-scores, each z-score must be multiplied by 10, and 50 must be added to each product ($T = (z * 10) + 50$).

This can be done using the **COMPUTE** statement in the **TRANSFORM** menu. To do this:

1. Type the new name (Tscore) in the box labeled “**target variable**,” then type in the commands to create the new variable in the box labeled “**numeric expression**.” Then click “**OK**.”

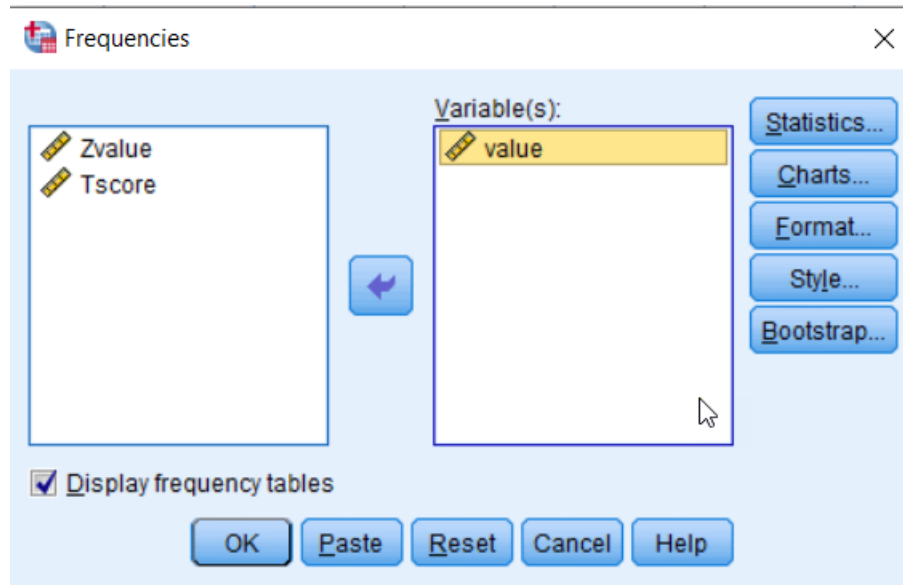


2. The new score (Tscore) will be saved at the end of your data file.

Creating Stanine Scores

Recall that stanines are scores that range from 1 to 9. The percentages of scores within stanines 1- 9 are: 4, 7, 12, 17, 20, 17, 12, 7, 4. This means that stanines of 1 - 9 correspond to the raw scores that have the cumulative percentages of 4, 11, 23, 40, 60, 77, 89, 96. To find the scores that correspond to these cumulative percentages, use the **FREQUENCIES** command in SPSS.

Choose the variable (value, in this example) and check the box at the left-hand corner that says “**Display frequency tables.**” Then click “**OK.**”



You should get the table below. With a small number of respondents such as in this example, there will not be an exact match for each of the cumulative percentages needed (4, 11, 23, 40, 60, 77, 89, 96). I have indicated the closest matches with red arrows in the table below.

		value				
		Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	15.00	1	1.0	1.0	1.0	
	21.00	1	1.0	1.0	1.9	
	23.00	1	1.0	1.0	2.9	
	28.00	2	1.9	1.9	4.9	←
	33.00	6	5.8	5.8	10.7	←
	35.00	2	1.9	1.9	12.6	
	36.00	4	3.9	3.9	16.5	
	37.00	3	2.9	2.9	19.4	
	38.00	2	1.9	1.9	21.4	←
	39.00	5	4.9	4.9	26.2	
	40.00	4	3.9	3.9	30.1	
	41.00	5	4.9	4.9	35.0	
	42.00	8	7.8	7.8	42.7	←
	43.00	6	5.8	5.8	48.5	
	44.00	4	3.9	3.9	52.4	
	45.00	9	8.7	8.7	61.2	←
	46.00	6	5.8	5.8	67.0	
	47.00	2	1.9	1.9	68.9	
	48.00	4	3.9	3.9	72.8	
	49.00	3	2.9	2.9	75.7	←
	50.00	5	4.9	4.9	80.6	
	51.00	2	1.9	1.9	82.5	
	52.00	5	4.9	4.9	87.4	←
	53.00	4	3.9	3.9	91.3	
	54.00	2	1.9	1.9	93.2	
	55.00	2	1.9	1.9	95.1	
	59.00	1	1.0	1.0	96.1	←
	60.00	1	1.0	1.0	97.1	
	61.00	3	2.9	2.9	100.0	

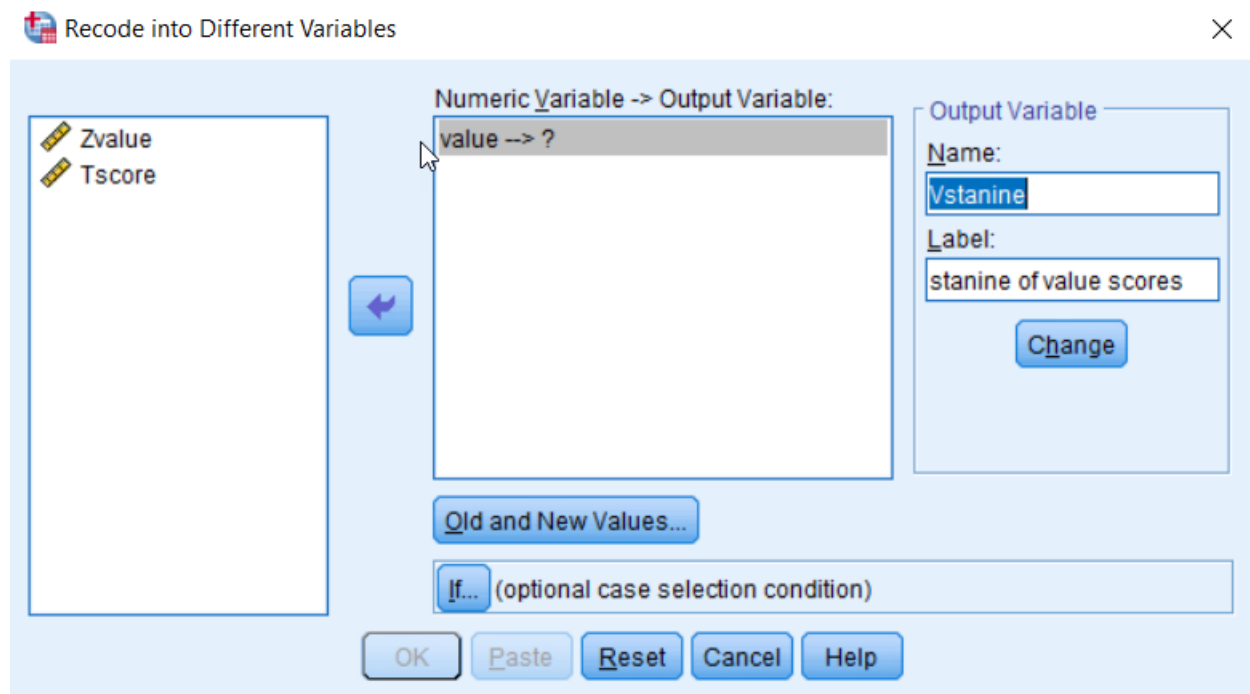
The scores that most closely match the cumulative percentages of 4, 11, 23, 40, 60, 77, 89, 96 are 28, 33, 38, 42, 45, 49, 52, and 59.

The stanines are therefore:

- Lowest score through 28 = 1
- 29 - 33 = 2
- 34 - 38 = 3
- 39 - 42 = 4
- 43 - 45 = 5
- 46 - 49 = 6
- 50 - 52 = 7
- 53 - 59 = 8
- 60 through highest score = 9

To obtain these stanines, use the function **RECODE INTO DIFFERENT VARIABLE** from the **TRANSFORM** menu. This function will create a new variable from the values of the original variable.

To use this function, choose the name of the variable you want to recode and click the right arrow to put it in the box labeled “**Input Variable -> Output Variable**.” Then, under “**Output Variable**” in the box labeled “**Name:**” type the name of the new variable you want to create. Then click on the button labeled “**Change**” to put in the new name.



Then click on the button labeled “**Old and New Values**” to create the values for the new variable.

SPSS Recode into Different Variables: Old and New Values

Old Value

☒ Value:

☐ System-missing

☐ System- or user-missing

☐ Range:

through

☒ Range, LOWEST through value:

28

☐ Range, value through HIGHEST:

☐ All other values

New Value

☒ Value: 1

☐ System-missing

☐ Copy old value(s)

Old --> New:

Add

Change

Remove

☐ Output variables are strings Width: 8

☒ Convert numeric strings to numbers ('5' -> 5)

Continue Cancel Help

For the lowest stanine, we want to recode all values lower 28 into values of 1. Click on the button labeled “**Range, LOWEST through value**” and type in 28 for the value. Under “**New Value**” at the top type in 1.

Then click on the button labeled “**Add**” to enter this.

Recode into Different Variables: Old and New Values

Old Value

☒ Value:

☐ System-missing

☐ System- or user-missing

☒ Range:

through

☒ Range, LOWEST through value:

☐ Range, value through HIGHEST:

☒ All other values

New Value

☒ Value:

☐ System-missing

☐ Copy old value(s)

Old --> New:

Lowest thru 28 --> 1

Add

Change

Remove

☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'-->5)

Continue Cancel Help

For a stanine of 2 recode all values between 29 – 33 into a stanine score of 2.

Recode into Different Variables: Old and New Values

Old Value

☐ Value:

☐ System-missing

☐ System- or user-missing

☒ Range:

29

through

33

☐ Range, LOWEST through value:

☐ Range, value through HIGHEST:

☒ All other values

New Value

☒ Value: 2

☐ System-missing

☐ Copy old value(s)

Old --> New:

Lowest thru 28 --> 1

Add

Change

Remove

☐ Output variables are strings Width: 8

☐ Convert numeric strings to numbers ('5'-->5)

Continue Cancel Help

Don't forget to click on the "Add" button to put this into the window.

Continue through this process to create all nine stanines.

When you have completed all nine, click on the “**Continue**” button.

Then click on the “**OK**” button in the next window.

The new variable (Vstanine) will be added at the end of your dataset.

Obtaining Percentile Points

Percentile points that correspond to any percentile rank can be obtained from SPSS using the **FREQUENCIES** command.

To obtain these, click on **Statistics** and then **Percentiles**. Then type in the percentile ranks for which the corresponding percentile points (scores) are needed. Be sure to click on **add** after typing in each percentile rank. The percentile ranks should show in the window, as shown in the screenshot below.

Frequency: Statistics

Percentile Values

- ☐ **Quartiles**
- ☐ **Cut points for:** 10 equal groups
- ☒ **Percentile(s):** 10.0, 20.0, 30.0

Central Tendency

- ☐ **Mean**
- ☐ **Median**
- ☐ **Mode**
- ☐ **Sum**

☒ **Values are group midpoints**

Dispersion

- ☐ **Std. deviation**
- ☐ **Variance**
- ☐ **Range**
- ☐ **Minimum**
- ☐ **Maximum**
- ☐ **S.E. mean**

Characterize Posterior Dis...

- ☐ **Skewness**
- ☐ **Kurtosis**

Continue **Cancel** **Help**

When you have added all the percentile ranks you need, click on **continue**, then **OK**.

The output below shows the percentile points corresponding to the ten deciles (percentile ranks of 10, 20, 30, etc.).

Statistics

value

N	Valid	103
	Missing	0
Percentiles	10	33.0000
	20	37.8000
	30	40.2000
	40	42.0000
	50	44.0000
	60	45.0000
	70	48.0000
	80	50.2000
	90	53.0000