

NPAR TESTS

```
/FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_sli  
/STATISTICS DESCRIPTIVES  
/MISSING LISTWISE.
```

## NPar Tests

### Notes

Output Created		06-Jul-2015 10:00:36
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for all tests are based on cases with no missing data for any variables used.
Syntax		NPAR TESTS /FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar /STATISTICS DESCRIPTIVES /MISSING LISTWISE.
Resources	Processor Time	00 00:00:00.015
	Elapsed Time	00 00:00:00.008
	Number of Cases	46260
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
angle	32	2.9725	1.38797	1.10	7.22
circle_area	32	3.5047	2.83231	.98	15.21
vertical_bar	32	3.3159	3.06403	.85	16.39
horizontal_curve	32	3.7900	2.81816	1.46	17.74
horizontal_direction	32	4.6672	3.61480	1.32	17.20
horizontal_slider	32	3.0788	1.58846	.96	6.90
vertical_curve	32	4.3259	2.48764	2.25	12.77
square_area	32	5.3016	3.77467	.90	16.55
texture	32	10.1253	13.33839	3.74	79.05
vertical_direction	32	3.7284	3.40508	.96	17.97
vertical_slider	32	2.7894	1.79210	1.30	9.40
horizontal_bar	32	2.9222	1.94137	.67	10.41

### Friedman Test

#### Ranks

	Mean Rank
angle	4.84
circle_area	5.28
vertical_bar	4.66
horizontal_curve	6.83
horizontal_direction	8.66
horizontal_slider	4.95
vertical_curve	8.23
square_area	9.00
texture	11.34
vertical_direction	6.05
vertical_slider	4.09
horizontal_bar	4.06

#### Test Statistics<sup>a</sup>

N	32
Chi-Square	146.332
df	11
Asymp. Sig.	.000

a. Friedman Test

NPAR TESTS

```

/WILCOXON=angle angle angle angle angle angle angle angle angle angle angle angle WITH circle_area
(PAIREd)
/STATISTICS DESCRIPTIVES
/MISSING ANALYSIS.

```

## NPar Tests

### Notes

Output Created		06-Jul-2015 10:01:35
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /WILCOXON=angle angle angle angle angle angle angle angle angle angle angle WITH circle_area vertical_bar horizontal_curve horizontal_slider horizontal_direction vertical_curve square_area texture vertical_direction horizontal_bar vertical_slider (PAIREd) /STATISTICS DESCRIPTIVES /MISSING ANALYSIS.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.022
	Number of Cases	46260
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

### Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
angle	32	2.9725	1.38797	1.10	7.22
circle_area	32	3.5047	2.83231	.98	15.21
vertical_bar	32	3.3159	3.06403	.85	16.39
horizontal_curve	32	3.7900	2.81816	1.46	17.74
horizontal_slider	32	3.0788	1.58846	.96	6.90
horizontal_direction	32	4.6672	3.61480	1.32	17.20
vertical_curve	32	4.3259	2.48764	2.25	12.77
square_area	32	5.3016	3.77467	.90	16.55
texture	32	10.1253	13.33839	3.74	79.05
vertical_direction	32	3.7284	3.40508	.96	17.97
horizontal_bar	32	2.9222	1.94137	.67	10.41
vertical_slider	32	2.7894	1.79210	1.30	9.40

### Wilcoxon Signed Ranks Test

### Ranks

		N	Mean Rank	Sum of Ranks
circle_area - angle	Negative Ranks	14 <sup>a</sup>	15.79	221.00
	Positive Ranks	18 <sup>b</sup>	17.06	307.00
	Ties	0 <sup>c</sup>		
	Total	32		
vertical_bar - angle	Negative Ranks	17 <sup>d</sup>	16.26	276.50
	Positive Ranks	15 <sup>e</sup>	16.77	251.50
	Ties	0 <sup>f</sup>		
	Total	32		
horizontal_curve - angle	Negative Ranks	9 <sup>g</sup>	13.11	118.00
	Positive Ranks	23 <sup>h</sup>	17.83	410.00
	Ties	0 <sup>i</sup>		
	Total	32		
horizontal_slider - angle	Negative Ranks	18 <sup>j</sup>	14.89	268.00
	Positive Ranks	14 <sup>k</sup>	18.57	260.00
	Ties	0 <sup>l</sup>		
	Total	32		
horizontal_direction - angle	Negative Ranks	5 <sup>m</sup>	13.60	68.00
	Positive Ranks	27 <sup>n</sup>	17.04	460.00
	Ties	0 <sup>o</sup>		
	Total	32		
vertical_curve - angle	Negative Ranks	7 <sup>p</sup>	8.14	57.00
	Positive Ranks	25 <sup>q</sup>	18.84	471.00
	Ties	0 <sup>r</sup>		
	Total	32		
square_area - angle	Negative Ranks	6 <sup>s</sup>	7.67	46.00
	Positive Ranks	26 <sup>t</sup>	18.54	482.00
	Ties	0 <sup>u</sup>		
	Total	32		
texture - angle	Negative Ranks	1 <sup>v</sup>	3.00	3.00
	Positive Ranks	31 <sup>w</sup>	16.94	525.00
	Ties	0 <sup>x</sup>		
	Total	32		

### Ranks

		N	Mean Rank	Sum of Ranks
vertical_direction - angle	Negative Ranks	11 <sup>y</sup>	15.18	167.00
	Positive Ranks	21 <sup>z</sup>	17.19	361.00
	Ties	0 <sup>aa</sup>		
	Total	32		
horizontal_bar - angle	Negative Ranks	17 <sup>ab</sup>	18.03	306.50
	Positive Ranks	15 <sup>ac</sup>	14.77	221.50
	Ties	0 <sup>ad</sup>		
	Total	32		
vertical_slider - angle	Negative Ranks	18 <sup>ae</sup>	18.58	334.50
	Positive Ranks	14 <sup>af</sup>	13.82	193.50
	Ties	0 <sup>ag</sup>		
	Total	32		

a. circle\_area < angle  
 b. circle\_area > angle  
 c. circle\_area = angle  
 d. vertical\_bar < angle  
 e. vertical\_bar > angle  
 f. vertical\_bar = angle  
 g. horizontal\_curve < angle  
 h. horizontal\_curve > angle  
 i. horizontal\_curve = angle  
 j. horizontal\_slider < angle  
 k. horizontal\_slider > angle  
 l. horizontal\_slider = angle  
 m. horizontal\_direction < angle  
 n. horizontal\_direction > angle  
 o. horizontal\_direction = angle  
 p. vertical\_curve < angle  
 q. vertical\_curve > angle  
 r. vertical\_curve = angle  
 s. square\_area < angle  
 t. square\_area > angle  
 u. square\_area = angle  
 v. texture < angle  
 w. texture > angle  
 x. texture = angle  
 y. vertical\_direction < angle  
 z. vertical\_direction > angle  
 aa. vertical\_direction = angle  
 ab. horizontal\_bar < angle  
 ac. horizontal\_bar > angle  
 ad. horizontal\_bar = angle  
 ae. vertical\_slider < angle  
 af. vertical\_slider > angle  
 ag. vertical\_slider = angle

**Test Statistics<sup>c</sup>**

	circle_area - angle	vertical_bar - angle	horizontal_ curve - angle	horizontal_ slider - angle	horizontal_ direction - angle
Z	-.804 <sup>a</sup>	-.234 <sup>b</sup>	-2.730 <sup>a</sup>	-.075 <sup>b</sup>	-3.665 <sup>a</sup>
Asymp. Sig. (2-tailed)	.421	.815	.006	.940	.000

**Test Statistics<sup>c</sup>**

	vertical_curve - angle	square_area - angle	texture - angle	vertical_ direction - angle
Z	-3.871 <sup>a</sup>	-4.076 <sup>a</sup>	-4.881 <sup>a</sup>	-1.814 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000	.000	.000	.070

**Test Statistics<sup>c</sup>**

	horizontal_bar - angle	vertical_slider - angle
Z	-.795 <sup>b</sup>	-1.318 <sup>b</sup>
Asymp. Sig. (2-tailed)	.427	.187

- a. Based on negative ranks.
- b. Based on positive ranks.
- c. Wilcoxon Signed Ranks Test

**NPAR TESTS**

```

/WILCOXON=circle_area circle_area circle_area circle_area circle_area circle_area circle_area
vertical_direction vertical_slider horizontal_bar (PAIRED)
/MISSING ANALYSIS.

```

**NPar Tests**

## Notes

Output Created		06-Jul-2015 10:05:21
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /WILCOXON=circle_area circle_area circle_area circle_area circle_area circle_area circle_area circle_area circle_area circle_area WITH vertical_bar horizontal_curve horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.012
	Number of Cases	49152
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

## Wilcoxon Signed Ranks Test



### Ranks

		N	Mean Rank	Sum of Ranks
vertical_bar - circle_area	Negative Ranks	15 <sup>a</sup>	19.80	297.00
	Positive Ranks	17 <sup>b</sup>	13.59	231.00
	Ties	0 <sup>c</sup>		
	Total	32		
horizontal_curve - circle_area	Negative Ranks	12 <sup>d</sup>	16.71	200.50
	Positive Ranks	20 <sup>e</sup>	16.38	327.50
	Ties	0 <sup>f</sup>		
	Total	32		
horizontal_direction - circle_area	Negative Ranks	7 <sup>g</sup>	17.21	120.50
	Positive Ranks	25 <sup>h</sup>	16.30	407.50
	Ties	0 <sup>i</sup>		
	Total	32		
horizontal_slider - circle_area	Negative Ranks	19 <sup>j</sup>	15.89	302.00
	Positive Ranks	13 <sup>k</sup>	17.38	226.00
	Ties	0 <sup>l</sup>		
	Total	32		
vertical_curve - circle_area	Negative Ranks	8 <sup>m</sup>	15.25	122.00
	Positive Ranks	24 <sup>n</sup>	16.92	406.00
	Ties	0 <sup>o</sup>		
	Total	32		
square_area - circle_area	Negative Ranks	4 <sup>p</sup>	8.13	32.50
	Positive Ranks	28 <sup>q</sup>	17.70	495.50
	Ties	0 <sup>r</sup>		
	Total	32		
texture - circle_area	Negative Ranks	1 <sup>s</sup>	4.00	4.00
	Positive Ranks	31 <sup>t</sup>	16.90	524.00
	Ties	0 <sup>u</sup>		
	Total	32		
vertical_direction - circle_area	Negative Ranks	15 <sup>v</sup>	14.87	223.00
	Positive Ranks	17 <sup>w</sup>	17.94	305.00
	Ties	0 <sup>x</sup>		
	Total	32		

### Ranks

		N	Mean Rank	Sum of Ranks
vertical_slider - circle_area	Negative Ranks	20 <sup>y</sup>	17.80	356.00
	Positive Ranks	12 <sup>z</sup>	14.33	172.00
	Ties	0 <sup>aa</sup>		
	Total	32		
horizontal_bar - circle_area	Negative Ranks	18 <sup>ab</sup>	18.97	341.50
	Positive Ranks	14 <sup>ac</sup>	13.32	186.50
	Ties	0 <sup>ad</sup>		
	Total	32		

- a. vertical\_bar < circle\_area
- b. vertical\_bar > circle\_area
- c. vertical\_bar = circle\_area
- d. horizontal\_curve < circle\_area
- e. horizontal\_curve > circle\_area
- f. horizontal\_curve = circle\_area
- g. horizontal\_direction < circle\_area
- h. horizontal\_direction > circle\_area
- i. horizontal\_direction = circle\_area
- j. horizontal\_slider < circle\_area
- k. horizontal\_slider > circle\_area
- l. horizontal\_slider = circle\_area
- m. vertical\_curve < circle\_area
- n. vertical\_curve > circle\_area
- o. vertical\_curve = circle\_area
- p. square\_area < circle\_area
- q. square\_area > circle\_area
- r. square\_area = circle\_area
- s. texture < circle\_area
- t. texture > circle\_area
- u. texture = circle\_area
- v. vertical\_direction < circle\_area
- w. vertical\_direction > circle\_area
- x. vertical\_direction = circle\_area
- y. vertical\_slider < circle\_area
- z. vertical\_slider > circle\_area
- aa. vertical\_slider = circle\_area
- ab. horizontal\_bar < circle\_area
- ac. horizontal\_bar > circle\_area
- ad. horizontal\_bar = circle\_area

### Test Statistics<sup>c</sup>

	vertical_bar - circle_area	horizontal_curve - circle_area	horizontal_direction - circle_area	horizontal_slider - circle_area	vertical_curve - circle_area
Z	-.617 <sup>a</sup>	-1.187 <sup>b</sup>	-2.684 <sup>b</sup>	-.711 <sup>a</sup>	-2.655 <sup>b</sup>
Asymp. Sig. (2-tailed)	.537	.235	.007	.477	.008

### Test Statistics<sup>c</sup>

	square_area - circle_area	texture - circle_area	vertical_ direction - circle_area	vertical_slider - circle_area	horizontal_bar - circle_area
Z	-4.329 <sup>b</sup>	-4.862 <sup>b</sup>	-.767 <sup>b</sup>	-1.720 <sup>a</sup>	-1.449 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000	.000	.443	.085	.147

- a. Based on positive ranks.  
b. Based on negative ranks.  
c. Wilcoxon Signed Ranks Test

### NPAR TESTS

```
/WILCOXON=horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve
vertical_slider horizontal_bar (PAIRED)
/MISSING ANALYSIS.
```

## NPar Tests

### Notes

Output Created	06-Jul-2015 10:06:49	
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /WILCOXON=horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve WITH horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar (PAIRED) /MISSING ANALYSIS.	
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.007
	Number of Cases Allowed <sup>a</sup>	56173

- a. Based on availability of workspace memory.

[DataSet0]

## Wilcoxon Signed Ranks Test

Test Statistics<sup>c</sup>

	horizontal_ direction - horizontal_ curve	horizontal_ slider - horizontal_ curve	vertical_curve - horizontal_ curve	square_area - horizontal_ curve	texture - horizontal_ curve
Z	-2.413 <sup>a</sup>	-1.950 <sup>b</sup>	-2.207 <sup>a</sup>	-2.842 <sup>a</sup>	-4.376 <sup>a</sup>
Asymp. Sig. (2-tailed)	.016	.051	.027	.004	.000

Test Statistics<sup>c</sup>

	vertical_ direction - horizontal_ curve	vertical_slider - horizontal_ curve	horizontal_bar - horizontal_ curve
Z	-1.412 <sup>b</sup>	-2.487 <sup>b</sup>	-2.412 <sup>b</sup>
Asymp. Sig. (2-tailed)	.158	.013	.016

- a. Based on negative ranks.
- b. Based on positive ranks.
- c. Wilcoxon Signed Ranks Test

### NPAR TESTS

```
/WILCOXON=horizontal_direction horizontal_direction horizontal_direction horizontal_direction  
vertical_slider (PAIRED)  
/MISSING ANALYSIS.
```

## NPar Tests

## Notes

Output Created		06-Jul-2015 10:08:01
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /WILCOXON=horizontal_direction horizontal_direction horizontal_direction horizontal_direction horizontal_direction horizontal_direction horizontal_direction WITH horizontal_slider vertical_curve square_area texture vertical_direction horizontal_bar vertical_slider (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.008
	Number of Cases	60494
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

## Wilcoxon Signed Ranks Test

### Ranks

		N	Mean Rank	Sum of Ranks
horizontal_slider - horizontal_direction	Negative Ranks	27 <sup>a</sup>	16.78	453.00
	Positive Ranks	5 <sup>b</sup>	15.00	75.00
	Ties	0 <sup>c</sup>		
	Total	32		
vertical_curve - horizontal_direction	Negative Ranks	18 <sup>d</sup>	18.03	324.50
	Positive Ranks	14 <sup>e</sup>	14.54	203.50
	Ties	0 <sup>f</sup>		
	Total	32		
square_area - horizontal_direction	Negative Ranks	13 <sup>g</sup>	16.92	220.00
	Positive Ranks	19 <sup>h</sup>	16.21	308.00
	Ties	0 <sup>i</sup>		
	Total	32		
texture - horizontal_direction	Negative Ranks	3 <sup>j</sup>	19.33	58.00
	Positive Ranks	29 <sup>k</sup>	16.21	470.00
	Ties	0 <sup>l</sup>		
	Total	32		
vertical_direction - horizontal_direction	Negative Ranks	26 <sup>m</sup>	17.77	462.00
	Positive Ranks	6 <sup>n</sup>	11.00	66.00
	Ties	0 <sup>o</sup>		
	Total	32		
horizontal_bar - horizontal_direction	Negative Ranks	30 <sup>p</sup>	16.47	494.00
	Positive Ranks	2 <sup>q</sup>	17.00	34.00
	Ties	0 <sup>r</sup>		
	Total	32		
vertical_slider - horizontal_direction	Negative Ranks	27 <sup>s</sup>	17.67	477.00
	Positive Ranks	5 <sup>t</sup>	10.20	51.00
	Ties	0 <sup>u</sup>		
	Total	32		

- a. horizontal\_slider < horizontal\_direction
- b. horizontal\_slider > horizontal\_direction
- c. horizontal\_slider = horizontal\_direction
- d. vertical\_curve < horizontal\_direction
- e. vertical\_curve > horizontal\_direction
- f. vertical\_curve = horizontal\_direction
- g. square\_area < horizontal\_direction
- h. square\_area > horizontal\_direction
- i. square\_area = horizontal\_direction
- j. texture < horizontal\_direction
- k. texture > horizontal\_direction
- l. texture = horizontal\_direction
- m. vertical\_direction < horizontal\_direction

n. vertical\_direction > horizontal\_direction  
o. vertical\_direction = horizontal\_direction  
p. horizontal\_bar < horizontal\_direction  
q. horizontal\_bar > horizontal\_direction  
r. horizontal\_bar = horizontal\_direction  
s. vertical\_slider < horizontal\_direction  
t. vertical\_slider > horizontal\_direction  
u. vertical\_slider = horizontal\_direction

#### Test Statistics<sup>c</sup>

	horizontal_slider - horizontal_direction	vertical_curve - horizontal_direction	square_area - horizontal_direction	texture - horizontal_direction	vertical_direction - horizontal_direction
Z	-3.534 <sup>a</sup>	-1.131 <sup>a</sup>	-.823 <sup>b</sup>	-3.852 <sup>b</sup>	-3.702 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000	.258	.411	.000	.000

#### Test Statistics<sup>c</sup>

	horizontal_bar - horizontal_direction	vertical_slider - horizontal_direction
Z	-4.301 <sup>a</sup>	-3.983 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000	.000

a. Based on positive ranks.  
b. Based on negative ranks.  
c. Wilcoxon Signed Ranks Test

#### NPAR TESTS

```
/WILCOXON=horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_
/MISSING ANALYSIS.
```

## NPar Tests

## Notes

Output Created		06-Jul-2015 10:10:04
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /WILCOXON=horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_slider WITH square_area vertical_curve texture vertical_direction vertical_slider horizontal_bar (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00 00:00:00.000
	Elapsed Time	00 00:00:00.005
	Number of Cases	65536
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

## Wilcoxon Signed Ranks Test



### Ranks

		N	Mean Rank	Sum of Ranks
square_area - horizontal_slider	Negative Ranks	5 <sup>a</sup>	9.90	49.50
	Positive Ranks	27 <sup>b</sup>	17.72	478.50
	Ties	0 <sup>c</sup>		
	Total	32		
vertical_curve - horizontal_slider	Negative Ranks	7 <sup>d</sup>	11.79	82.50
	Positive Ranks	25 <sup>e</sup>	17.82	445.50
	Ties	0 <sup>f</sup>		
	Total	32		
texture - horizontal_slider	Negative Ranks	0 <sup>g</sup>	.00	.00
	Positive Ranks	32 <sup>h</sup>	16.50	528.00
	Ties	0 <sup>i</sup>		
	Total	32		
vertical_direction - horizontal_slider	Negative Ranks	11 <sup>j</sup>	16.45	181.00
	Positive Ranks	21 <sup>k</sup>	16.52	347.00
	Ties	0 <sup>l</sup>		
	Total	32		
vertical_slider - horizontal_slider	Negative Ranks	20 <sup>m</sup>	17.80	356.00
	Positive Ranks	12 <sup>n</sup>	14.33	172.00
	Ties	0 <sup>o</sup>		
	Total	32		
horizontal_bar - horizontal_slider	Negative Ranks	20 <sup>p</sup>	16.08	321.50
	Positive Ranks	12 <sup>q</sup>	17.21	206.50
	Ties	0 <sup>r</sup>		
	Total	32		

- a. square\_area < horizontal\_slider
- b. square\_area > horizontal\_slider
- c. square\_area = horizontal\_slider
- d. vertical\_curve < horizontal\_slider
- e. vertical\_curve > horizontal\_slider
- f. vertical\_curve = horizontal\_slider
- g. texture < horizontal\_slider
- h. texture > horizontal\_slider
- i. texture = horizontal\_slider
- j. vertical\_direction < horizontal\_slider
- k. vertical\_direction > horizontal\_slider
- l. vertical\_direction = horizontal\_slider
- m. vertical\_slider < horizontal\_slider
- n. vertical\_slider > horizontal\_slider
- o. vertical\_slider = horizontal\_slider
- p. horizontal\_bar < horizontal\_slider
- q. horizontal\_bar > horizontal\_slider
- r. horizontal\_bar = horizontal\_slider

### Test Statistics<sup>c</sup>

	square_area - horizontal_ slider	vertical_curve - horizontal_ slider	texture - horizontal_ slider	vertical_ direction - horizontal_ slider
Z	-4.011 <sup>a</sup>	-3.394 <sup>a</sup>	-4.937 <sup>a</sup>	-1.552 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000	.001	.000	.121

### Test Statistics<sup>c</sup>

	vertical_slider - horizontal_ slider	horizontal_bar - horizontal_ slider
Z	-1.720 <sup>b</sup>	-1.075 <sup>b</sup>
Asymp. Sig. (2-tailed)	.085	.282

- a. Based on negative ranks.
- b. Based on positive ranks.
- c. Wilcoxon Signed Ranks Test

### NPAR TESTS

```
/WILCOXON=vertical_curve vertical_curve vertical_curve vertical_curve vertical_curve WITH squ
/MISSING ANALYSIS.
```

## NPar Tests

## Notes

Output Created		06-Jul-2015 10:11:04
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax		NPAR TESTS /WILCOXON=vertical_curve vertical_curve vertical_curve vertical_curve vertical_curve WITH square_area texture vertical_direction vertical_slider horizontal_bar (PAIRED) /MISSING ANALYSIS.
Resources	Processor Time	00 00:00:00.016
	Elapsed Time	00 00:00:00.006
	Number of Cases	71493
	Allowed <sup>a</sup>	

a. Based on availability of workspace memory.

[DataSet0]

## Wilcoxon Signed Ranks Test

### Ranks

		N	Mean Rank	Sum of Ranks
square_area - vertical_curve	Negative Ranks	14 <sup>a</sup>	12.79	179.00
	Positive Ranks	18 <sup>b</sup>	19.39	349.00
	Ties	0 <sup>c</sup>		
	Total	32		
texture - vertical_curve	Negative Ranks	3 <sup>d</sup>	14.33	43.00
	Positive Ranks	29 <sup>e</sup>	16.72	485.00
	Ties	0 <sup>f</sup>		
	Total	32		
vertical_direction - vertical_curve	Negative Ranks	22 <sup>g</sup>	17.23	379.00
	Positive Ranks	9 <sup>h</sup>	13.00	117.00
	Ties	1 <sup>i</sup>		
	Total	32		
vertical_slider - vertical_curve	Negative Ranks	29 <sup>j</sup>	17.45	506.00
	Positive Ranks	3 <sup>k</sup>	7.33	22.00
	Ties	0 <sup>l</sup>		
	Total	32		
horizontal_bar - vertical_curve	Negative Ranks	29 <sup>m</sup>	17.55	509.00
	Positive Ranks	3 <sup>n</sup>	6.33	19.00
	Ties	0 <sup>o</sup>		
	Total	32		

- a. square\_area < vertical\_curve
- b. square\_area > vertical\_curve
- c. square\_area = vertical\_curve
- d. texture < vertical\_curve
- e. texture > vertical\_curve
- f. texture = vertical\_curve
- g. vertical\_direction < vertical\_curve
- h. vertical\_direction > vertical\_curve
- i. vertical\_direction = vertical\_curve
- j. vertical\_slider < vertical\_curve
- k. vertical\_slider > vertical\_curve
- l. vertical\_slider = vertical\_curve
- m. horizontal\_bar < vertical\_curve
- n. horizontal\_bar > vertical\_curve
- o. horizontal\_bar = vertical\_curve

### Test Statistics<sup>c</sup>

	square_area - vertical_curve	texture - vertical_curve	vertical_ direction - vertical_curve	vertical_slider - vertical_curve	horizontal_bar - vertical_curve
Z	-1.589 <sup>a</sup>	-4.133 <sup>a</sup>	-2.567 <sup>b</sup>	-4.526 <sup>b</sup>	-4.581 <sup>b</sup>
Asymp. Sig. (2-tailed)	.112	.000	.010	.000	.000

a. Based on negative ranks.

b. Based on positive ranks.

c. Wilcoxon Signed Ranks Test

### NPAR TESTS

```

/WILCOXON=square_area square_area square_area square_area texture texture vertical_direction
vertical_direction (PAIRED)
/MISSING ANALYSIS.

```

## NPar Tests

### Notes

Output Created	06-Jul-2015 10:13:01	
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	32
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each test are based on all cases with valid data for the variable(s) used in that test.
Syntax	NPAR TESTS /WILCOXON=square_area square_area square_area square_area texture texture vertical_direction vertical_direction texture WITH texture vertical_direction vertical_slider horizontal_bar vertical_slider horizontal_bar vertical_slider horizontal_bar vertical_direction (PAIRED) /MISSING ANALYSIS.	
Resources	Processor Time	00 00:00:00.015
	Elapsed Time	00 00:00:00.014
	Number of Cases Allowed <sup>a</sup>	78643

a. Based on availability of workspace memory.

[DataSet0]

## **Wilcoxon Signed Ranks Test**

### Ranks

		N	Mean Rank	Sum of Ranks
texture - square_area	Negative Ranks	7 <sup>a</sup>	12.71	89.00
	Positive Ranks	25 <sup>b</sup>	17.56	439.00
	Ties	0 <sup>c</sup>		
	Total	32		
vertical_direction - square_area	Negative Ranks	25 <sup>d</sup>	16.88	422.00
	Positive Ranks	7 <sup>e</sup>	15.14	106.00
	Ties	0 <sup>f</sup>		
	Total	32		
vertical_slider - square_area	Negative Ranks	27 <sup>g</sup>	17.81	481.00
	Positive Ranks	5 <sup>h</sup>	9.40	47.00
	Ties	0 <sup>i</sup>		
	Total	32		
horizontal_bar - square_area	Negative Ranks	29 <sup>j</sup>	16.55	480.00
	Positive Ranks	3 <sup>k</sup>	16.00	48.00
	Ties	0 <sup>l</sup>		
	Total	32		
vertical_slider - texture	Negative Ranks	32 <sup>m</sup>	16.50	528.00
	Positive Ranks	0 <sup>n</sup>	.00	.00
	Ties	0 <sup>o</sup>		
	Total	32		
horizontal_bar - texture	Negative Ranks	31 <sup>p</sup>	17.00	527.00
	Positive Ranks	1 <sup>q</sup>	1.00	1.00
	Ties	0 <sup>r</sup>		
	Total	32		
vertical_slider - vertical_direction	Negative Ranks	24 <sup>s</sup>	17.46	419.00
	Positive Ranks	8 <sup>t</sup>	13.63	109.00
	Ties	0 <sup>u</sup>		
	Total	32		
horizontal_bar - vertical_direction	Negative Ranks	22 <sup>v</sup>	18.30	402.50
	Positive Ranks	10 <sup>w</sup>	12.55	125.50
	Ties	0 <sup>x</sup>		
	Total	32		
vertical_direction - texture	Negative Ranks	30 <sup>y</sup>	16.13	484.00
	Positive Ranks	2 <sup>z</sup>	22.00	44.00
	Ties	0 <sup>aa</sup>		
	Total	32		

- a. texture < square\_area
- b. texture > square\_area
- c. texture = square\_area
- d. vertical\_direction < square\_area
- e. vertical\_direction > square\_area
- f. vertical\_direction = square\_area
- g. vertical\_slider < square\_area
- h. vertical\_slider > square\_area
- i. vertical\_slider = square\_area
- j. horizontal\_bar < square\_area
- k. horizontal\_bar > square\_area
- l. horizontal\_bar = square\_area
- m. vertical\_slider < texture
- n. vertical\_slider > texture
- o. vertical\_slider = texture
- p. horizontal\_bar < texture
- q. horizontal\_bar > texture
- r. horizontal\_bar = texture
- s. vertical\_slider < vertical\_direction
- t. vertical\_slider > vertical\_direction
- u. vertical\_slider = vertical\_direction
- v. horizontal\_bar < vertical\_direction
- w. horizontal\_bar > vertical\_direction
- x. horizontal\_bar = vertical\_direction
- y. vertical\_direction < texture
- z. vertical\_direction > texture
- aa. vertical\_direction = texture

**Test Statistics<sup>c</sup>**

	texture - square_area	vertical_ direction - square_area	vertical_slider - square_area	horizontal_bar - square_area	vertical_slider - texture
Z	-3.272 <sup>a</sup>	-2.954 <sup>b</sup>	-4.058 <sup>b</sup>	-4.039 <sup>b</sup>	-4.937 <sup>b</sup>
Asymp. Sig. (2-tailed)	.001	.003	.000	.000	.000

**Test Statistics<sup>c</sup>**

	horizontal_bar - texture	vertical_slider - vertical_ direction	horizontal_bar - vertical_ direction	vertical_ direction - texture
Z	-4.918 <sup>b</sup>	-2.898 <sup>b</sup>	-2.590 <sup>b</sup>	-4.114 <sup>b</sup>
Asymp. Sig. (2-tailed)	.000	.004	.010	.000

- a. Based on negative ranks.
- b. Based on positive ranks.
- c. Wilcoxon Signed Ranks Test