

Your temporary usage period for IBM SPSS Statistics will expire in 10 days.

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GET

FILE='C:\Users\Bahador\Desktop\Analysis\EXTremum\Extremum\_Accuracy.sav.

DATASET NAME DataSet1 WINDOW=FRONT.

GLM Bar\_Num\_Num\_CarBar\_Num\_Num\_MovieBar\_Num\_Num\_CarBar\_Num\_Num\_MovieBar\_Ord\_Num\_Car

Bar\_Ord\_Num\_MovieLine\_Num\_Num\_CarLine\_Num\_Num\_MovieLine\_Num\_Num\_CarLine\_Num\_Num\_Movie

Line\_Ord\_Num\_CarLine\_Ord\_Num\_MoviePie\_Num\_Num\_CarPie\_Num\_Num\_MoviePie\_Num\_Num\_Car

Pie\_Num\_Num\_MoviePie\_Ord\_Num\_CarPie\_Ord\_Num\_MovieScatter\_Num\_Num\_CarScatter\_Num\_Num\_Movie

Scatter\_Num\_Num\_CarScatter\_Num\_Num\_MovieScatter\_Ord\_Num\_CarScatter\_Ord\_Num\_Movie

Table\_Num\_Num\_CarTable\_Num\_Num\_MovieTable\_Num\_Num\_CarTable\_Num\_Num\_MovieTable\_Ord\_Num\_Car

Table\_Ord\_Num\_Movie

/WSFACTOR=Visualization5 PolynomialDataAttributeType3 Polynomial Datasets  
2 Polynomial

/METHOD=SSTYPE(3)

/EMMEANS=TABLES(OVERALL)

/EMMEANS=TABLES(Visualization) COMPARE ADJ(BONFERRONI)

/EMMEANS=TABLES(DataAttributeType) COMPARE ADJ(BONFERRONI)

/EMMEANS=TABLES(Visualization\*DataAttributeType)

/PRINT=DESCRIPTIVE ETASQ OPOWER HOMOGENEITY

/CRITERIA=ALPHA(.05)

/WSDESIGN=VisualizationDataAttributeTypeDatasets Visualization\*DataAttributeType

Visualization\*Datasets DataAttributeType\*Datasets Visualization\*DataAttributeType\*Datasets.

## General Linear Model

## Notes

Output Created		07-SEP-2016 10:07:58
Comments		
Input	Data	C: \Users\Bahador\Desktop\A nalysis\EXtremum\Extrem um_Accuracy.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	18
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.

## Notes

### Syntax

GLM Bar\_Nom\_Num\_Car  
 Bar\_Nom\_Num\_Movie  
 Bar\_Num\_Num\_Car  
 Bar\_Num\_Num\_Movie  
 Bar\_Ord\_Num\_Car  
 Bar\_Ord\_Num\_Movie  
 Line\_Nom\_Num\_Car  
 Line\_Nom\_Num\_Movie  
 Line\_Num\_Num\_Car  
 Line\_Num\_Num\_Movie  
 Line\_Ord\_Num\_Car  
 Line\_Ord\_Num\_Movie  
 Pie\_Nom\_Num\_Car  
 Pie\_Nom\_Num\_Movie  
 Pie\_Num\_Num\_Car  
 Pie\_Num\_Num\_Movie  
 Pie\_Ord\_Num\_Car  
 Pie\_Ord\_Num\_Movie  
 Scatter\_Nom\_Num\_Car  
 Scatter\_Nom\_Num\_Movie  
 Scatter\_Num\_Num\_Car  
 Scatter\_Num\_Num\_Movie  
 Scatter\_Ord\_Num\_Car  
 Scatter\_Ord\_Num\_Movie  
 Table\_Nom\_Num\_Car  
 Table\_Nom\_Num\_Movie  
 Table\_Num\_Num\_Car  
 Table\_Num\_Num\_Movie  
 Table\_Ord\_Num\_Car  
 Table\_Ord\_Num\_Movie

/WSFACTOR=Visualizatio  
 n 5 Polynomial  
 DataAttributeType 3  
 Polynomial Datasets 2  
 Polynomial  
 /METHOD=SSTYPE(3)  
 /EMMEANS=TABLES  
 (OVERALL)  
 /EMMEANS=TABLES  
 (Visualization) COMPARE  
 ADJ(BONFERRONI)  
 /EMMEANS=TABLES  
 (DataAttributeType)  
 COMPARE ADJ  
 (BONFERRONI)  
 /EMMEANS=TABLES  
 (Visualization\*DataAttribut  
 eType)  
 /PRINT=DESCRIPTIVE  
 ETASQ OPOWER  
 HOMOGENEITY  
 /CRITERIA=ALPHA(.05)

/WSDESIGN=Visualizatio  
 n DataAttributeType  
 Datasets  
 Visualization\*DataAttribute  
 Type  
 Visualization\*Datasets  
 DataAttributeType\*Dataset

## Notes

Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.03

[DataSet1] C:\Users\Bahador\Desktop\Analysis\EXtremum\Extremum\_Accuracy.sav

## Warnings

The HOMOGENEITY specification in the PRINT subcommand will be ignored because there are no between-subjects factors.

## Within-Subjects Factors

Measure: MEASURE\_1

Visualization	DataAttributeType	Datasets	Dependent Variable
1	1	1	Bar_Nom_Nu m_Car
		2	Bar_Nom_Nu m_Movie
	2	1	Bar_Num_Nu m_Car
		2	Bar_Num_Nu m_Movie
	3	1	Bar_Ord_Nu m_Car
		2	Bar_Ord_Nu m_Movie
2	1	1	Line_Nom_Nu m_Car
		2	Line_Nom_Nu m_Movie
	2	1	Line_Num_Nu m_Car
		2	Line_Num_Nu m_Movie
	3	1	Line_Ord_Nu m_Car
		2	Line_Ord_Nu m_Movie
3	1	1	Pie_Nom_Nu m_Car
		2	Pie_Nom_Nu m_Movie

## Within-Subjects Factors

Measure: MEASURE\_1

Visualization	DataAttributeType	Datasets	Dependent Variable
	2	1	Pie_Num_Nu m_Car
		2	Pie_Num_Nu m_Movie
	3	1	Pie_Ord_Num _Car
		2	Pie_Ord_Num _Movie
4	1	1	Scatter_Nom_ Num_Car
		2	Scatter_Nom_ Num_Movie
	2	1	Scatter_Num_ Num_Car
		2	Scatter_Num_ Num_Movie
	3	1	Scatter_Ord_ Num_Car
		2	Scatter_Ord_ Num_Movie
5	1	1	Table_Nom_ Num_Car
		2	Table_Nom_ Num_Movie
	2	1	Table_Num_ Num_Car
		2	Table_Num_ Num_Movie
	3	1	Table_Ord_N um_Car
		2	Table_Ord_N um_Movie

### Descriptive Statistics

	Mean	Std. Deviation	N
Bar_Nom_Num_Car	100.0000	.00000	18
Bar_Nom_Num_Movie	72.2222	46.08886	18
Bar_Num_Num_Car	100.0000	.00000	18
Bar_Num_Num_Movie	100.0000	.00000	18
Bar_Ord_Num_Car	94.4444	23.57023	18
Bar_Ord_Num_Movie	100.0000	.00000	18
Line_Nom_Num_Car	100.0000	.00000	18
Line_Nom_Num_Movie	100.0000	.00000	18
Line_Num_Num_Car	72.2222	46.08886	18
Line_Num_Num_Movie	83.3333	38.34825	18
Line_Ord_Num_Car	100.0000	.00000	18
Line_Ord_Num_Movie	100.0000	.00000	18
Pie_Nom_Num_Car	94.4444	23.57023	18
Pie_Nom_Num_Movie	95.0000	21.21320	18
Pie_Num_Num_Car	88.8889	32.33808	18
Pie_Num_Num_Movie	88.8889	32.33808	18
Pie_Ord_Num_Car	94.4444	23.57023	18
Pie_Ord_Num_Movie	100.0000	.00000	18
Scatter_Nom_Num_Car	94.4444	23.57023	18
Scatter_Nom_Num_Movie	100.0000	.00000	18
Scatter_Num_Num_Car	88.8889	32.33808	18
Scatter_Num_Num_Movie	94.4444	23.57023	18
Scatter_Ord_Num_Car	94.4444	23.57023	18
Scatter_Ord_Num_Movie	94.4444	23.57023	18
Table_Nom_Num_Car	100.0000	.00000	18
Table_Nom_Num_Movie	100.0000	.00000	18
Table_Num_Num_Car	83.3333	38.34825	18
Table_Num_Num_Movie	77.7778	42.77926	18
Table_Ord_Num_Car	100.0000	.00000	18
Table_Ord_Num_Movie	100.0000	.00000	18

### Multivariate Tests<sup>a</sup>

Effect		Value	F	Hypothesis df	Error df
Visualization	Pillai's Trace	.041	.152 <sup>b</sup>	4.000	14.000
	Wilks' Lambda	.959	.152 <sup>b</sup>	4.000	14.000
	Hotelling's Trace	.043	.152 <sup>b</sup>	4.000	14.000
	Roy's Largest Root	.043	.152 <sup>b</sup>	4.000	14.000
DataAttributeType	Pillai's Trace	.503	8.100 <sup>b</sup>	2.000	16.000
	Wilks' Lambda	.497	8.100 <sup>b</sup>	2.000	16.000
	Hotelling's Trace	1.013	8.100 <sup>b</sup>	2.000	16.000
	Roy's Largest Root	1.013	8.100 <sup>b</sup>	2.000	16.000
Datasets	Pillai's Trace	.000	.000 <sup>b</sup>	1.000	17.000
	Wilks' Lambda	1.000	.000 <sup>b</sup>	1.000	17.000
	Hotelling's Trace	.000	.000 <sup>b</sup>	1.000	17.000
	Roy's Largest Root	.000	.000 <sup>b</sup>	1.000	17.000
Visualization * DataAttributeType	Pillai's Trace	.606	2.417 <sup>b</sup>	7.000	11.000
	Wilks' Lambda	.394	2.417 <sup>b</sup>	7.000	11.000
	Hotelling's Trace	1.538	2.417 <sup>b</sup>	7.000	11.000
	Roy's Largest Root	1.538	2.417 <sup>b</sup>	7.000	11.000
Visualization * Datasets	Pillai's Trace	.249	1.160 <sup>b</sup>	4.000	14.000
	Wilks' Lambda	.751	1.160 <sup>b</sup>	4.000	14.000
	Hotelling's Trace	.332	1.160 <sup>b</sup>	4.000	14.000
	Roy's Largest Root	.332	1.160 <sup>b</sup>	4.000	14.000
DataAttributeType * Datasets	Pillai's Trace	.199	1.982 <sup>b</sup>	2.000	16.000
	Wilks' Lambda	.801	1.982 <sup>b</sup>	2.000	16.000
	Hotelling's Trace	.248	1.982 <sup>b</sup>	2.000	16.000
	Roy's Largest Root	.248	1.982 <sup>b</sup>	2.000	16.000
Visualization * DataAttributeType * Datasets	Pillai's Trace	.313	.714 <sup>b</sup>	7.000	11.000
	Wilks' Lambda	.687	.714 <sup>b</sup>	7.000	11.000
	Hotelling's Trace	.455	.714 <sup>b</sup>	7.000	11.000
	Roy's Largest Root	.455	.714 <sup>b</sup>	7.000	11.000

### Multivariate Tests<sup>a</sup>

Effect		Sig.	Partial Eta Squared	Noncent. Parameter
Visualization	Pillai's Trace	.959	.041	.606
	Wilks' Lambda	.959	.041	.606
	Hotelling's Trace	.959	.041	.606
	Roy's Largest Root	.959	.041	.606
DataAttributeType	Pillai's Trace	.004	.503	16.201
	Wilks' Lambda	.004	.503	16.201
	Hotelling's Trace	.004	.503	16.201
	Roy's Largest Root	.004	.503	16.201
Datasets	Pillai's Trace	.984	.000	.000
	Wilks' Lambda	.984	.000	.000
	Hotelling's Trace	.984	.000	.000
	Roy's Largest Root	.984	.000	.000
Visualization * DataAttributeType	Pillai's Trace	.092	.606	16.916
	Wilks' Lambda	.092	.606	16.916
	Hotelling's Trace	.092	.606	16.916
	Roy's Largest Root	.092	.606	16.916
Visualization * Datasets	Pillai's Trace	.370	.249	4.641
	Wilks' Lambda	.370	.249	4.641
	Hotelling's Trace	.370	.249	4.641
	Roy's Largest Root	.370	.249	4.641
DataAttributeType * Datasets	Pillai's Trace	.170	.199	3.963
	Wilks' Lambda	.170	.199	3.963
	Hotelling's Trace	.170	.199	3.963
	Roy's Largest Root	.170	.199	3.963
Visualization * DataAttributeType * Datasets	Pillai's Trace	.663	.313	5.001
	Wilks' Lambda	.663	.313	5.001
	Hotelling's Trace	.663	.313	5.001
	Roy's Largest Root	.663	.313	5.001



## Multivariate Tests<sup>a</sup>

Effect		Observed Power <sup>c</sup>
Visualization	Pillai's Trace	.073
	Wilks' Lambda	.073
	Hotelling's Trace	.073
	Roy's Largest Root	.073
DataAttributeType	Pillai's Trace	.915
	Wilks' Lambda	.915
	Hotelling's Trace	.915
	Roy's Largest Root	.915
Datasets	Pillai's Trace	.050
	Wilks' Lambda	.050
	Hotelling's Trace	.050
	Roy's Largest Root	.050
Visualization * DataAttributeType	Pillai's Trace	.596
	Wilks' Lambda	.596
	Hotelling's Trace	.596
	Roy's Largest Root	.596
Visualization * Datasets	Pillai's Trace	.273
	Wilks' Lambda	.273
	Hotelling's Trace	.273
	Roy's Largest Root	.273
DataAttributeType * Datasets	Pillai's Trace	.349
	Wilks' Lambda	.349
	Hotelling's Trace	.349
	Roy's Largest Root	.349
Visualization * DataAttributeType * Datasets	Pillai's Trace	.190
	Wilks' Lambda	.190
	Hotelling's Trace	.190
	Roy's Largest Root	.190

a. Design: Intercept

Within Subjects Design: Visualization + DataAttributeType + Datasets + Visualization \* DataAttributeType + Visualization \* Datasets + DataAttributeType \* Datasets + Visualization \* DataAttributeType \* Datasets

b. Exact statistic

c.

c. Computed using alpha = .05

### Mauchly's Test of Sphericity<sup>a</sup>

Measure: MEASURE\_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>b</sup> Greenhouse-Geisser
Visualization	.707	5.340	9	.805	.830
DataAttributeType	.587	8.528	2	.014	.708
Datasets	1.000	.000	0	.	1.000
Visualization * DataAttributeType	.000	.	35	.	.521
Visualization * Datasets	.451	12.271	9	.201	.689
DataAttributeType * Datasets	.881	2.028	2	.363	.894
Visualization * DataAttributeType * Datasets	.000	.	35	.	.434

### Mauchly's Test of Sphericity<sup>a</sup>

Measure: MEASURE\_1

Within Subjects Effect	Epsilon <sup>b</sup>	
	Huynh-Feldt	Lower-bound
Visualization	1.000	.250
DataAttributeType	.753	.500
Datasets	1.000	1.000
Visualization * DataAttributeType	.711	.125
Visualization * Datasets	.835	.250
DataAttributeType * Datasets	.992	.500
Visualization * DataAttributeType * Datasets	.559	.125

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept

Within Subjects Design: Visualization + DataAttributeType + Datasets + Visualization \* DataAttributeType + Visualization \* Datasets + DataAttributeType \* Datasets + Visualization \* DataAttributeType \* Datasets

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

### Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Type III Sum of Squares	df	Mean Square	F
Visualization	Sphericity Assumed	256.296	4	64.074	.127
	Greenhouse-Geisser	256.296	3.322	77.157	.127
	Huynh-Feldt	256.296	4.000	64.074	.127
	Lower-bound	256.296	1.000	256.296	.127
Error(Visualization)	Sphericity Assumed	34290.370	68	504.270	
	Greenhouse-Geisser	34290.370	56.470	607.236	
	Huynh-Feldt	34290.370	68.000	504.270	
	Lower-bound	34290.370	17.000	2017.081	
DataAttributeType	Sphericity Assumed	9963.333	2	4981.667	9.387
	Greenhouse-Geisser	9963.333	1.415	7039.883	9.387
	Huynh-Feldt	9963.333	1.506	6614.561	9.387
	Lower-bound	9963.333	1.000	9963.333	9.387
Error(DataAttributeType)	Sphericity Assumed	18043.333	34	530.686	
	Greenhouse-Geisser	18043.333	24.060	749.944	
	Huynh-Feldt	18043.333	25.607	704.635	
	Lower-bound	18043.333	17.000	1061.373	
Datasets	Sphericity Assumed	.185	1	.185	.000
	Greenhouse-Geisser	.185	1.000	.185	.000
	Huynh-Feldt	.185	1.000	.185	.000
	Lower-bound	.185	1.000	.185	.000
Error(Datasets)	Sphericity Assumed	7936.481	17	466.852	
	Greenhouse-Geisser	7936.481	17.000	466.852	
	Huynh-Feldt	7936.481	17.000	466.852	
	Lower-bound	7936.481	17.000	466.852	
Visualization * DataAttributeType	Sphericity Assumed	16723.704	8	2090.463	4.183
	Greenhouse-Geisser	16723.704	4.167	4013.232	4.183

## Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Sig.	Partial Eta Squared	Noncent. Parameter
Visualization	Sphericity Assumed	.972	.007	.508
	Greenhouse-Geisser	.955	.007	.422
	Huynh-Feldt	.972	.007	.508
	Lower-bound	.726	.007	.127
Error(Visualization)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
DataAttributeType	Sphericity Assumed	.001	.356	18.774
	Greenhouse-Geisser	.002	.356	13.285
	Huynh-Feldt	.002	.356	14.140
	Lower-bound	.007	.356	9.387
Error(DataAttributeType)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Datasets	Sphericity Assumed	.984	.000	.000
	Greenhouse-Geisser	.984	.000	.000
	Huynh-Feldt	.984	.000	.000
	Lower-bound	.984	.000	.000
Error(Datasets)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Visualization * DataAttributeType	Sphericity Assumed	.000	.197	33.462
	Greenhouse-Geisser	.004	.197	17.430

## Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Observed Power <sup>a</sup>
Visualization	Sphericity Assumed	.075
	Greenhouse-Geisser	.073
	Huynh-Feldt	.075
	Lower-bound	.063
Error(Visualization)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
DataAttributeType	Sphericity Assumed	.968
	Greenhouse-Geisser	.911
	Huynh-Feldt	.924
	Lower-bound	.823
Error(DataAttributeType)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
Datasets	Sphericity Assumed	.050
	Greenhouse-Geisser	.050
	Huynh-Feldt	.050
	Lower-bound	.050
Error(Datasets)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
Visualization * DataAttributeType	Sphericity Assumed	.992
	Greenhouse-Geisser	.913

## Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Type III Sum of Squares	df	Mean Square	F
	Huynh-Feldt	16723.704	5.689	2939.559	4.183
	Lower-bound	16723.704	1.000	16723.704	4.183
Error (Visualization*DataAttribute Type)	Sphericity Assumed	67969.630	136	499.777	
	Greenhouse-Geisser	67969.630	70.841	959.462	
	Huynh-Feldt	67969.630	96.716	702.774	
	Lower-bound	67969.630	17.000	3998.214	
Visualization * Datasets	Sphericity Assumed	2426.667	4	606.667	1.146
	Greenhouse-Geisser	2426.667	2.754	881.102	1.146
	Huynh-Feldt	2426.667	3.340	726.653	1.146
	Lower-bound	2426.667	1.000	2426.667	1.146
Error (Visualization*Datasets)	Sphericity Assumed	35986.667	68	529.216	
	Greenhouse-Geisser	35986.667	46.820	768.615	
	Huynh-Feldt	35986.667	56.772	633.883	
	Lower-bound	35986.667	17.000	2116.863	
DataAttributeType * Datasets	Sphericity Assumed	1289.259	2	644.630	1.503
	Greenhouse-Geisser	1289.259	1.787	721.374	1.503
	Huynh-Feldt	1289.259	1.983	650.088	1.503
	Lower-bound	1289.259	1.000	1289.259	1.503
Error (DataAttributeType*Dataset s)	Sphericity Assumed	14584.074	34	428.943	
	Greenhouse-Geisser	14584.074	30.383	480.010	
	Huynh-Feldt	14584.074	33.715	432.576	
	Lower-bound	14584.074	17.000	857.887	
Visualization * DataAttributeType * Datasets	Sphericity Assumed	5731.111	8	716.389	1.070
	Greenhouse-Geisser	5731.111	3.473	1650.384	1.070
	Huynh-Feldt	5731.111	4.473	1281.298	1.070
	Lower-bound	5731.111	1.000	5731.111	1.070
Error (Visualization*DataAttribute Type*Datasets)	Sphericity Assumed	91095.556	136	669.820	
	Greenhouse-Geisser	91095.556	59.034	1543.101	
	Huynh-Feldt	91095.556	76.039	1198.007	
	Lower-bound	91095.556	17.000	5358.562	

## Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Sig.	Partial Eta Squared	Noncent. Parameter
	Huynh-Feldt	.001	.197	23.797
	Lower-bound	.057	.197	4.183
Error (Visualization*DataAttribute Type)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Visualization * Datasets	Sphericity Assumed	.342	.063	4.585
	Greenhouse-Geisser	.338	.063	3.157
	Huynh-Feldt	.341	.063	3.828
	Lower-bound	.299	.063	1.146
Error (Visualization*Datasets)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
DataAttributeType * Datasets	Sphericity Assumed	.237	.081	3.006
	Greenhouse-Geisser	.239	.081	2.686
	Huynh-Feldt	.237	.081	2.980
	Lower-bound	.237	.081	1.503
Error (DataAttributeType*Dataset s)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			
Visualization * DataAttributeType * Datasets	Sphericity Assumed	.388	.059	8.556
	Greenhouse-Geisser	.375	.059	3.714
	Huynh-Feldt	.381	.059	4.784
	Lower-bound	.316	.059	1.070
Error (Visualization*DataAttribute Type*Datasets)	Sphericity Assumed			
	Greenhouse-Geisser			
	Huynh-Feldt			
	Lower-bound			

## Tests of Within-Subjects Effects

Measure: MEASURE\_1

Source		Observed Power <sup>a</sup>
	Huynh-Feldt	.966
	Lower-bound	.488
Error (Visualization*DataAttribute Type)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
Visualization * Datasets	Sphericity Assumed	.342
	Greenhouse-Geisser	.277
	Huynh-Feldt	.308
	Lower-bound	.173
Error (Visualization*Datasets)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
DataAttributeType * Datasets	Sphericity Assumed	.298
	Greenhouse-Geisser	.281
	Huynh-Feldt	.296
	Lower-bound	.212
Error (DataAttributeType*Dataset s)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	
Visualization * DataAttributeType * Datasets	Sphericity Assumed	.482
	Greenhouse-Geisser	.295
	Huynh-Feldt	.341
	Lower-bound	.164
Error (Visualization*DataAttribute Type*Datasets)	Sphericity Assumed	
	Greenhouse-Geisser	
	Huynh-Feldt	
	Lower-bound	

a. Computed using alpha = .05



## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Type III Sum of Squares	df
Visualization	Linear			.000	1
	Quadratic			21.429	1
	Cubic			231.481	1
	Order 4			3.386	1
Error(Visualization)	Linear			9333.333	17
	Quadratic			9792.857	17
	Cubic			6268.519	17
	Order 4			8895.661	17
DataAttributeType		Linear		422.500	1
		Quadratic		9540.833	1
Error(DataAttributeType)		Linear		3582.500	17
		Quadratic		14460.833	17
Datasets			Linear	.185	1
Error(Datasets)			Linear	7936.481	17
Visualization * DataAttributeType	Linear	Linear		1125.000	1
		Quadratic		3375.000	1
	Quadratic	Linear		514.286	1
		Quadratic		576.190	1
	Cubic	Linear		55.556	1
		Quadratic		9796.296	1
	Order 4	Linear		356.270	1
		Quadratic		925.106	1
Error (Visualization*DataAttribute Type)	Linear	Linear		3625.000	17
		Quadratic		10541.667	17
	Quadratic	Linear		4242.857	17
		Quadratic		7438.095	17
	Cubic	Linear		3944.444	17
		Quadratic		14203.704	17
	Order 4	Linear		6656.587	17
		Quadratic		17317.275	17
Visualization * Datasets	Linear		Linear	333.333	1
	Quadratic		Linear	1735.714	1
	Cubic		Linear	83.333	1
	Order 4		Linear	274.286	1

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Mean Square	F
Visualization	Linear			.000	.000
	Quadratic			21.429	.037
	Cubic			231.481	.628
	Order 4			3.386	.006
Error(Visualization)	Linear			549.020	
	Quadratic			576.050	
	Cubic			368.736	
	Order 4			523.274	
DataAttributeType		Linear		422.500	2.005
		Quadratic		9540.833	11.216
Error(DataAttributeType)		Linear		210.735	
		Quadratic		850.637	
Datasets			Linear	.185	.000
Error(Datasets)			Linear	466.852	
Visualization * DataAttributeType	Linear	Linear		1125.000	5.276
		Quadratic		3375.000	5.443
	Quadratic	Linear		514.286	2.061
		Quadratic		576.190	1.317
	Cubic	Linear		55.556	.239
		Quadratic		9796.296	11.725
	Order 4	Linear		356.270	.910
		Quadratic		925.106	.908
Error (Visualization*DataAttribute Type)	Linear	Linear		213.235	
		Quadratic		620.098	
	Quadratic	Linear		249.580	
		Quadratic		437.535	
	Cubic	Linear		232.026	
		Quadratic		835.512	
	Order 4	Linear		391.564	
		Quadratic		1018.663	
Visualization * Datasets	Linear		Linear	333.333	.680
	Quadratic		Linear	1735.714	2.200
	Cubic		Linear	83.333	.200
	Order 4		Linear	274.286	.651

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Sig.	Partial Eta Squared
Visualization	Linear			1.000	.000
	Quadratic			.849	.002
	Cubic			.439	.036
	Order 4			.937	.000
Error(Visualization)	Linear				
	Quadratic				
	Cubic				
	Order 4				
DataAttributeType		Linear		.175	.105
		Quadratic		.004	.398
Error(DataAttributeType)		Linear			
		Quadratic			
Datasets			Linear	.984	.000
Error(Datasets)			Linear		
Visualization * DataAttributeType	Linear	Linear		.035	.237
		Quadratic		.032	.243
	Quadratic	Linear		.169	.108
		Quadratic		.267	.072
	Cubic	Linear		.631	.014
		Quadratic		.003	.408
	Order 4	Linear		.354	.051
		Quadratic		.354	.051
Error (Visualization*DataAttribute Type)	Linear	Linear			
		Quadratic			
	Quadratic	Linear			
		Quadratic			
	Cubic	Linear			
		Quadratic			
	Order 4	Linear			
		Quadratic			
Visualization * Datasets	Linear		Linear	.421	.038
	Quadratic		Linear	.156	.115
	Cubic		Linear	.660	.012
	Order 4		Linear	.431	.037

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Noncent. Parameter
Visualization	Linear			.000
	Quadratic			.037
	Cubic			.628
	Order 4			.006
Error(Visualization)	Linear			
	Quadratic			
	Cubic			
	Order 4			
DataAttributeType		Linear		2.005
		Quadratic		11.216
Error(DataAttributeType)		Linear		
		Quadratic		
Datasets			Linear	.000
Error(Datasets)			Linear	
Visualization * DataAttributeType	Linear	Linear		5.276
		Quadratic		5.443
	Quadratic	Linear		2.061
		Quadratic		1.317
	Cubic	Linear		.239
		Quadratic		11.725
	Order 4	Linear		.910
		Quadratic		.908
Error (Visualization*DataAttribute Type)	Linear	Linear		
		Quadratic		
	Quadratic	Linear		
		Quadratic		
	Cubic	Linear		
		Quadratic		
	Order 4	Linear		
		Quadratic		
Visualization * Datasets	Linear		Linear	.680
	Quadratic		Linear	2.200
	Cubic		Linear	.200
	Order 4		Linear	.651

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Observed Power <sup>a</sup>
Visualization	Linear			.050
	Quadratic			.054
	Cubic			.116
	Order 4			.051
Error(Visualization)	Linear			
	Quadratic			
	Cubic			
	Order 4			
DataAttributeType		Linear		.267
		Quadratic		.884
Error(DataAttributeType)		Linear		
		Quadratic		
Datasets			Linear	.050
Error(Datasets)			Linear	
Visualization * DataAttributeType	Linear	Linear		.582
		Quadratic		.595
	Quadratic	Linear		.273
		Quadratic		.192
	Cubic	Linear		.075
		Quadratic		.897
	Order 4	Linear		.147
		Quadratic		.147
Error (Visualization*DataAttribute Type)	Linear	Linear		
		Quadratic		
	Quadratic	Linear		
		Quadratic		
	Cubic	Linear		
		Quadratic		
	Order 4	Linear		
		Quadratic		
Visualization * Datasets	Linear		Linear	.122
	Quadratic		Linear	.288
	Cubic		Linear	.071
	Order 4		Linear	.119

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Type III Sum of Squares	df
Error (Visualization*Datasets)	Linear		Linear	8333.333	17
	Quadratic		Linear	13411.905	17
	Cubic		Linear	7083.333	17
	Order 4		Linear	7158.095	17
DataAttributeType * Datasets		Linear	Linear	966.944	1
		Quadratic	Linear	322.315	1
Error (DataAttributeType*Dataset s)		Linear	Linear	4838.056	17
		Quadratic	Linear	9746.019	17
Visualization * DataAttributeType * Datasets	Linear	Linear	Linear	2347.222	1
		Quadratic	Linear	1041.667	1
	Quadratic	Linear	Linear	1244.444	1
		Quadratic	Linear	4.762	1
	Cubic	Linear	Linear	222.222	1
		Quadratic	Linear	2.910E-11	1
	Order 4	Linear	Linear	470.556	1
		Quadratic	Linear	400.238	1
Error (Visualization*DataAttribute Type*Datasets)	Linear	Linear	Linear	8402.778	17
		Quadratic	Linear	19541.667	17
	Quadratic	Linear	Linear	9084.127	17
		Quadratic	Linear	14247.619	17
	Cubic	Linear	Linear	2777.778	17
		Quadratic	Linear	12333.333	17
	Order 4	Linear	Linear	4170.873	17
		Quadratic	Linear	20537.381	17

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Mean Square	F
Error (Visualization*Datasets)	Linear		Linear	490.196	
	Quadratic		Linear	788.936	
	Cubic		Linear	416.667	
	Order 4		Linear	421.064	
DataAttributeType * Datasets		Linear	Linear	966.944	3.398
		Quadratic	Linear	322.315	.562
Error (DataAttributeType*Dataset s)		Linear	Linear	284.592	
		Quadratic	Linear	573.295	
Visualization * DataAttributeType * Datasets	Linear	Linear	Linear	2347.222	4.749
		Quadratic	Linear	1041.667	.906
	Quadratic	Linear	Linear	1244.444	2.329
		Quadratic	Linear	4.762	.006
	Cubic	Linear	Linear	222.222	1.360
		Quadratic	Linear	2.910E-11	.000
	Order 4	Linear	Linear	470.556	1.918
		Quadratic	Linear	400.238	.331
Error (Visualization*DataAttribute Type*Datasets)	Linear	Linear	Linear	494.281	
		Quadratic	Linear	1149.510	
	Quadratic	Linear	Linear	534.360	
		Quadratic	Linear	838.095	
	Cubic	Linear	Linear	163.399	
		Quadratic	Linear	725.490	
	Order 4	Linear	Linear	245.345	
		Quadratic	Linear	1208.081	

### Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Sig.	Partial Eta Squared
Error (Visualization*Datasets)	Linear		Linear		
	Quadratic		Linear		
	Cubic		Linear		
	Order 4		Linear		
DataAttributeType * Datasets		Linear	Linear	.083	.167
		Quadratic	Linear	.464	.032
Error (DataAttributeType*Dataset s)		Linear	Linear		
		Quadratic	Linear		
Visualization * DataAttributeType * Datasets	Linear	Linear	Linear	.044	.218
		Quadratic	Linear	.354	.051
	Quadratic	Linear	Linear	.145	.120
		Quadratic	Linear	.941	.000
	Cubic	Linear	Linear	.260	.074
		Quadratic	Linear	1.000	.000
	Order 4	Linear	Linear	.184	.101
		Quadratic	Linear	.572	.019
Error (Visualization*DataAttribute Type*Datasets)	Linear	Linear	Linear		
		Quadratic	Linear		
	Quadratic	Linear	Linear		
		Quadratic	Linear		
	Cubic	Linear	Linear		
		Quadratic	Linear		
	Order 4	Linear	Linear		
		Quadratic	Linear		



## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Noncent. Parameter
Error (Visualization*Datasets)	Linear		Linear	
	Quadratic		Linear	
	Cubic		Linear	
	Order 4		Linear	
DataAttributeType * Datasets		Linear	Linear	3.398
		Quadratic	Linear	.562
Error (DataAttributeType*Dataset s)		Linear	Linear	
		Quadratic	Linear	
Visualization * DataAttributeType * Datasets	Linear	Linear	Linear	4.749
		Quadratic	Linear	.906
	Quadratic	Linear	Linear	2.329
		Quadratic	Linear	.006
	Cubic	Linear	Linear	1.360
		Quadratic	Linear	.000
	Order 4	Linear	Linear	1.918
		Quadratic	Linear	.331
Error (Visualization*DataAttribute Type*Datasets)	Linear	Linear	Linear	
		Quadratic	Linear	
	Quadratic	Linear	Linear	
		Quadratic	Linear	
	Cubic	Linear	Linear	
		Quadratic	Linear	
	Order 4	Linear	Linear	
		Quadratic	Linear	

## Tests of Within-Subjects Contrasts

Measure: MEASURE\_1

Source	Visualization	DataAttributeType	Datasets	Observed Power <sup>a</sup>
Error (Visualization*Datasets)	Linear		Linear	
	Quadratic		Linear	
	Cubic		Linear	
	Order 4		Linear	
DataAttributeType * Datasets		Linear	Linear	.413
		Quadratic	Linear	.109
Error (DataAttributeType*Dataset s)		Linear	Linear	
		Quadratic	Linear	
Visualization * DataAttributeType * Datasets	Linear	Linear	Linear	.538
		Quadratic	Linear	.146
	Quadratic	Linear	Linear	.302
		Quadratic	Linear	.051
	Cubic	Linear	Linear	.196
		Quadratic	Linear	.050
	Order 4	Linear	Linear	.258
		Quadratic	Linear	.084
Error (Visualization*DataAttribute Type*Datasets)	Linear	Linear	Linear	
		Quadratic	Linear	
	Quadratic	Linear	Linear	
		Quadratic	Linear	
	Cubic	Linear	Linear	
		Quadratic	Linear	
	Order 4	Linear	Linear	
		Quadratic	Linear	

a. Computed using alpha = .05

### Tests of Between-Subjects Effects

Measure: MEASURE\_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	4743281.667	1	4743281.667	7663.785	.000	.998
Error	10521.667	17	618.922			

### Tests of Between-Subjects Effects

Measure: MEASURE\_1

Transformed Variable: Average

Source	Noncent. Parameter	Observed Power <sup>a</sup>
Intercept	7663.785	1.000
Error		

a. Computed using alpha = .05

## Estimated Marginal Means

### 1. Grand Mean

Measure: MEASURE\_1

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
93.722	1.071	91.463	95.981

## 2. Visualization

### Estimates

Measure: MEASURE\_1

Visualization	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	94.444	2.334	89.521	99.368
2	92.593	2.009	88.355	96.830
3	93.611	2.366	88.620	98.602
4	94.444	2.334	89.521	99.368
5	93.519	1.971	89.361	97.676

## Pairwise Comparisons

Measure: MEASURE\_1

(I) Visualization	(J) Visualization	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence a...
					Lower Bound
1	2	1.852	2.657	1.000	-6.711
	3	.833	3.901	1.000	-11.738
	4	-7.105E-15	3.013	1.000	-9.709
	5	.926	3.152	1.000	-9.231
2	1	-1.852	2.657	1.000	-10.414
	3	-1.019	3.428	1.000	-12.064
	4	-1.852	2.657	1.000	-10.414
	5	-.926	2.849	1.000	-10.108
3	1	-.833	3.901	1.000	-13.405
	2	1.019	3.428	1.000	-10.027
	4	-.833	2.853	1.000	-10.026
	5	.093	2.984	1.000	-9.523
4	1	7.105E-15	3.013	1.000	-9.709
	2	1.852	2.657	1.000	-6.711
	3	.833	2.853	1.000	-8.359
	5	.926	2.849	1.000	-8.256
5	1	-.926	3.152	1.000	-11.083
	2	.926	2.849	1.000	-8.256
	3	-.093	2.984	1.000	-9.709
	4	-.926	2.849	1.000	-10.108

## Pairwise Comparisons

Measure: MEASURE\_1

		95% Confidence Interval for <sup>a</sup> ...
(I) Visualization	(J) Visualization	Upper Bound
1	2	10.414
	3	13.405
	4	9.709
	5	11.083
2	1	6.711
	3	10.027
	4	6.711
	5	8.256
3	1	11.738
	2	12.064
	4	8.359
	5	9.709
4	1	9.709
	2	10.414
	3	10.026
	5	10.108
5	1	9.231
	2	10.108
	3	9.523
	4	8.256

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

### Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	.041	.152 <sup>a</sup>	4.000	14.000	.959	.041
Wilks' lambda	.959	.152 <sup>a</sup>	4.000	14.000	.959	.041
Hotelling's trace	.043	.152 <sup>a</sup>	4.000	14.000	.959	.041
Roy's largest root	.043	.152 <sup>a</sup>	4.000	14.000	.959	.041

### Multivariate Tests

	Noncent. Parameter	Observed Power <sup>b</sup>
Pillai's trace	.606	.073
Wilks' lambda	.606	.073
Hotelling's trace	.606	.073
Roy's largest root	.606	.073

Each F tests the multivariate effect of Visualization. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

b. Computed using alpha = .05

## 3. DataAttributeType

### Estimates

Measure: MEASURE\_1

DataAttributeType	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	95.611	1.440	92.574	98.649
2	87.778	2.499	82.505	93.050
3	97.778	1.008	95.650	99.905

### Pairwise Comparisons

Measure: MEASURE\_1

(I) DataAttributeType	(J) DataAttributeType	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence b...
					Lower Bound
1	2	7.833	2.969	.052	-.048
	3	-2.167	1.530	.525	-6.229
2	1	-7.833	2.969	.052	-15.715
	3	-10.000 <sup>*</sup>	2.557	.003	-16.788
3	1	2.167	1.530	.525	-1.896
	2	10.000 <sup>*</sup>	2.557	.003	3.212

### Pairwise Comparisons

Measure: MEASURE\_1

(I) DataAttributeType	(J) DataAttributeType	95% Confidence Interval for b...
		Upper Bound
1	2	15.715
	3	1.896
2	1	.048
	3	-3.212
3	1	6.229
	2	16.788

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

### Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	.503	8.100 <sup>a</sup>	2.000	16.000	.004	.503
Wilks' lambda	.497	8.100 <sup>a</sup>	2.000	16.000	.004	.503
Hotelling's trace	1.013	8.100 <sup>a</sup>	2.000	16.000	.004	.503
Roy's largest root	1.013	8.100 <sup>a</sup>	2.000	16.000	.004	.503

### Multivariate Tests

	Noncent. Parameter	Observed Power <sup>b</sup>
Pillai's trace	16.201	.915
Wilks' lambda	16.201	.915
Hotelling's trace	16.201	.915
Roy's largest root	16.201	.915

Each F tests the multivariate effect of DataAttributeType. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

b. Computed using alpha = .05



#### 4. Visualization \* DataAttributeType

Measure: MEASURE\_1

Visualization	DataAttributeType	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	86.111	5.432	74.651	97.571
	2	100.000	.000	100.000	100.000
	3	97.222	2.778	91.362	103.083
2	1	100.000	.000	100.000	100.000
	2	77.778	6.026	65.064	90.491
	3	100.000	.000	100.000	100.000
3	1	94.722	3.626	87.072	102.373
	2	88.889	6.462	75.255	102.523
	3	97.222	2.778	91.362	103.083
4	1	97.222	2.778	91.362	103.083
	2	91.667	4.519	82.132	101.202
	3	94.444	3.811	86.404	102.485
5	1	100.000	.000	100.000	100.000
	2	80.556	5.912	68.083	93.028
	3	100.000	.000	100.000	100.000

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