



# TUTORIAL PARA CÁLCULO DOS COEFICIENTES DE VALIDADE E CONFIABILIDADE

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Atividade prática

**Agosto 2018**

# AVALIAÇÃO DA CONFIABILIDADE



- Reports
- Descriptive Statistics
- Tables
- Compare Means
- General Linear Model
- Generalized Linear Models
- Mixed Models
- Correlate
- Regression
- Loglinear
- Neural Networks
- Classify
- Dimension Reduction
- Scale**
- Nonparametric Tests
- Forecasting
- Survival
- Multiple Response
- Missing Value Analysis...
- Multiple Imputation
- Complex Samples
- Quality Control
- ROC Curve...



1: Nome Liliane

Visible: 8 of 8 Variables

	Nome	Idade	ra	Peso	IMC	Tempo_min_teste 1	Tempo_min_teste 2	var	var	var	var	var	v
1	Liliane		1,64	61,1	22,72	13,43	13,15						
2	Maria Cí		1,58	85,1	34,09	9,37	8,00						
3	Aparecid		1,51	83,5	36,62	6,01	9,01						
4	Ana Caro		1,59	53,3	21,08	10,10	10,21						
5	Fabiana		1,67	63,7	22,84	11,21	11,29						
6	Hugo Alv		1,80	63,7	19,66	12,33	11,47						
7	Dayane M		1,61	58,0	22,38	10,29	9,24						
8	Vanessa		1,67	70,0	25,10	13,20	12,36						
9	Giane Sa		1,69	76,0	26,61	13,00	11,20						
10	Thiago					10,20	10,56						
11	Marcelo					11,20	11,41						
12	Tania Hi					8,09	9,48						
13	Claudia					12,30	12,47						
14	Bruno Be					13,43	13,48						
15	Gabriela		1,71	79,1	27,05	11,28	13,02						
16	Beatriz		1,58	51,5	20,63	14,41	13,10						
17	Betina F		1,63	82,0	30,86	7,29	6,43						
18	Leticia		1,72	75,0	25,35	6,11	6,36						
19	Luiz Fel		1,86	83,0	23,99	14,46	15,00						
20	Renato d	20	1,72	72,5	24,51	13,16	12,29						
21	Renata L	20	1,56	59,2	24,33	12,47	12,36						
22	Nayara d	24	1,62	51,5	19,62	15,00	15,00						

Data View Variable View

Reliability Analysis...

PASW Statistics Processor is ready



1: Nome

Liliane

Visible: 8 of 8 Variables

	Nome	Idade	sexo	Altura	Peso	IMC	Tempo_min_teste 1	Tempo_min_teste 2	var	var	var	var	var	v
1	Liliane	46	1	1,64	61,1	22,72	13,43	13,15						
2	Maria Cí	69	1	1,58	85,1	34,09	9,37	8,00						
3	Aparecid	74	1											
4	Ana Caro	20	1											
5	Fabiana	26	1											
6	Hugo Alv	27	2											
7	Dayane M	39	1											
8	Vanessa	45	1											
9	Giane Sa	42	1											
10	Thiago	21	2											
11	Marcelo	45	2											
12	Tania Hi	58	1											
13	Claudia	25	1											
14	Bruno Be	36	2											
15	Gabriela	20	1											
16	Beatriz	20	1											
17	Betina F	22	1											
18	Leticia	27	1	1,72	75,0	25,35	6,11	6,36						
19	Luiz Fel	23	2	1,86	83,0	23,99	14,46	15,00						
20	Renato d	20	2	1,72	72,5	24,51	13,16	12,29						
21	Renata L	20	1	1,56	59,2	24,33	12,47	12,36						
22	Nayara d	24	1	1,62	51,5	19,62	15,00	15,00						

Reliability Analysis

Items:

- Idade
- sexo
- Altura
- Peso
- IMC

Tempo\_min\_teste1

Tempo\_min\_teste2

Model: Alpha

Scale label:

OK Paste Reset Cancel Help

Statistics...

Data View Variable View



1: Nome

Liliane

Visible: 8 of 8 Variables

	Nome	Idade	sexo	Altura	Peso	IMC	Tempo_min_teste 1	Tempo_min_teste 2	var	var	var	var	var	v
1	Liliane	46	1	1,72	72,5	24,51	13,15	12,29						
2	Maria Ci	69	1	1,56	59,2	24,33	12,47	12,36						
3	Aparecid	74	1	1,62	51,5	19,62	15,00	15,00						
4	Ana Caro	20	1											
5	Fabiana	26	1											
6	Hugo Alv	27	2											
7	Dayane M	39	1											
8	Vanessa	45	1											
9	Giane Sa	42	1											
10	Thiago	21	2											
11	Marcelo	45	2											
12	Tania Hi	58	1											
13	Claudia	25	1											
14	Bruno Be	36	2											
15	Gabriela	20	1											
16	Beatriz	20	1											
17	Betina F	22	1											
18	Leticia	27	1											
19	Luiz Fel	23	2											
20	Renato d	20	2	1,72	72,5	24,51	13,16	12,29						
21	Renata L	20	1	1,56	59,2	24,33	12,47	12,36						
22	Nayara d	24	1	1,62	51,5	19,62	15,00	15,00						

Reliability Analysis: Statistics

Descriptives for

Item

Scale

Scale if item deleted

Inter-Item

Correlations

Covariances

Summaries

Means

Variances

Covariances

Correlations

ANOVA Table

None

F test

Friedman chi-square

Cochran chi-square

Hotelling's T-square

Intraclass correlation coefficient

Tukey's test of additivity

Model: Two-Way Mixed

Type: Consistency

Confidence interval: 95 %

Test value: 0

Continue Cancel Help



Output

- Log
- Reliability
  - Title
  - Notes
  - Active Dataset
  - Scale: ALL VARIABLE
  - Title
  - Case Processing Summary
  - Reliability Statistics
  - Intraclass Correlation Coefficient

## Reliability

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

### Scale: ALL VARIABLES

#### Case Processing Summary

		N	%
Cases	Valid	41	100,0
	Excluded <sup>a</sup>	0	,0
	Total	41	100,0

a. Listwise deletion based on all variables in the procedure.

#### Reliability Statistics

Cronbach's Alpha	N of Items
,917	2

#### Intraclass Correlation Coefficient

	Intraclass Correlation <sup>a</sup>	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	,847 <sup>b</sup>	,730	,915	12,037	40	40	,000
Average Measures	,917 <sup>c</sup>	,844	,956	12,037	40	40	,000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.



Output

- Log
- Reliability
  - Title
  - Notes
  - Active Dataset
  - Scale: ALL VARIABLE
  - Title
  - Case Processing Summary
  - Reliability Statistics
  - Intraclass Correlation Coefficient

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

### Scale: ALL VARIABLES

#### Case Processing Summary

		N	%
Cases	Valid	41	100,0
	Excluded <sup>a</sup>	0	,0
	Total	41	100,0

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#### Reliability Statistics

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Average Measures	,917 <sup>c</sup>	,844	,956	12,037	40	40	,000

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.
- b. The estimator is the same, whether the interaction effect is present or not.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Teste realizado por um avaliador

Teste realizado por mais que um avaliador

# AVALIAÇÃO DA VALIDADE: CONCORRENTE



	Voluntários	GRUPO	VO2pico	VO2_PAH_EAA	var	var	var	var	var	var	var	var	var	var	var	var
1	Leandro Alves So...	IC	14,80	31,00												
2	Rogério Santos ...	IC	18,50	32,00												
3	Adenise Raspante	IC	25,60	29,00												
4	Jardel Marques N...	IC	27,50	24,00												
5	Rosilene Zandra	IC	24,90	32,00												
6	Gilberto Teles	IC	29,76	27,00												
7	Sílvio	IC	19,86	30,00												
8	Ana Paula	IC	16,22	21,00												
9	Alexandre Augus...	IC	13,70	18,00												
10	Manoel de Souza...	IC	20,40	27,00												
11	Valério Paulo do...	IC	26,70	24,00												
12	Jorge Antonio da ...	IC	23,22	20,00												
13	Pedro Aparecido	IC	37,63	31,00												
14	Ednalva	IC	21,03	7,00												
15	Jefferson	IC	19,93	18,00												
16	Everaldo	IC	26,54	32,00												
17	Ronaldo	IC	18,21	25,00												
18	Wilson Pereira R...	IC	21,52	16,00												
19	Maria Demétrio	IC	23,79	17,00												
20	Edmundo	IC	29,97	32,00												
21	Laércio	IC	18,23	34,00												
22	Elismar Pereira ...	IC	15,10	25,00												

**Split File** [X]

- Voluntários
- VO2pico
- VO2\_PAH\_EAA

Analyze all cases, do not create groups  
 Compare groups  
 Organize output by groups

Groups Based on:

GRUPO

Sort the file by grouping variables  
 File is already sorted

Current Status: Analysis by groups is off.

OK Paste Reset Cancel Help



Output

- Log
- Reliability
  - Title
  - Notes
  - Active Dataset
  - Scale: ALL VARIABLE
  - Title
  - Case Process
  - Reliability Statistics
  - Intraclass Correlation

Excluded <sup>a</sup>	1	1,6
Total	63	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

GRUPO	Cronbach's Alpha	N
IC	,710	
CTR	,671	

GRUPO		Model:
IC	Single Measures	
	Average Measures	
CTR	Single Measures	,51
	Average Measures	,6

**Reliability Analysis: Statistics**

Descriptives for

- Item
- Scale
- Scale if item deleted

Inter-Item

- Correlations
- Covariances

Summaries

- Means
- Variances
- Covariances
- Correlations

ANOVA Table

- None
- F test
- Friedman chi-square
- Cochran chi-square

Hotelling's T-square

Tukey's test of additivity

Intraclass correlation coefficient

Model: **Two-Way Mixed** Type: **Absolute Agreement**

Confidence interval: **95** % Test value: **0**

Continue Cancel Help

Two-way mixed effects model where people effects are random and measures effects are fixed.

- Type A intraclass correlation coefficients using an absolute agreement definition.
- The estimator is the same, whether the interaction effect is present or not.
- This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Statistics...

,001

,001



- Output
  - Log
  - Reliability
    - Title
    - Notes
    - Active Dataset
    - Scale: ALL VARIABLE
      - Title
      - Case Process
      - Reliability Sta
      - Intraclass Co

```
GET
  FILE='C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA\Aula2_Validade.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
SORT CASES BY GRUPO.
SPLIT FILE LAYERED BY GRUPO.
RELIABILITY
  /VARIABLES=VO2pico VO2_PAH_EAA
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /ICC=MODEL(MIXED) TYPE(ABSOLUTE) CIN=95 TESTVAL=0.
```

➔ Reliability

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

**Scale: ALL VARIABLES**

Case Processing Summary

GRUPO			N	%
IC	Cases	Valid	62	98,4
		Excluded <sup>a</sup>	1	1,6
		Total	63	100,0
CTR	Cases	Valid	37	97,4
		Excluded <sup>a</sup>	1	2,6
		Total	38	100,0

a. Listwise deletion based on all variables in the procedure.



[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

### Scale: ALL VARIABLES

#### Case Processing Summary

GRUPO			N	%
IC	Cases	Valid	62	98,4
		Excluded <sup>a</sup>	1	1,6
		Total	63	100,0
CTR	Cases	Valid	37	97,4
		Excluded <sup>a</sup>	1	2,6
		Total	38	100,0

a. Listwise deletion based on all variables in the procedure.

#### Reliability Statistics

GRUPO	Cronbach's Alpha	N of Items
IC	,710	2
CTR	,671	2

#### Intraclass Correlation Coefficient

GRUPO		Intraclass Correlation <sup>a</sup>	95% Confidence Interval		F Test with True Value 0			
			Lower Bound	Upper Bound	Value	df1	df2	Sig
IC	Single Measures	,525 <sup>b</sup>	,312	,686	3,446	61	61	,000
	Average Measures	,688 <sup>c</sup>	,475	,814	3,446	61	61	,000
CTR	Single Measures	,508 <sup>b</sup>	,224	,713	3,041	36	36	,001



Output

- Log
- Reliability
  - Title
  - Notes
  - Active Dataset
  - Scale: ALL VARIABLE
  - Title
  - Case Process
  - Reliability Statistics
  - Intraclass Correlation Coefficient

		Excluded <sup>a</sup>	1	1,6
		Total	63	100,0
CTR	Cases	Valid	37	97,4
		Excluded <sup>a</sup>	1	2,6
		Total	38	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

GRUPO	Cronbach's Alpha	N of Items
IC	,710	2
CTR	,671	2

**Intraclass Correlation Coefficient**

GRUPO		Intraclass Correlation <sup>a</sup>	95% Confidence Interval		F Test with True Value 0			
			Lower Bound	Upper Bound	Value	df1	df2	Sig
IC	Single Measures	,525 <sup>b</sup>	,312	,686	3,446	61	61	,000
	Average Measures	,688 <sup>c</sup>	,475	,814	3,446	61	61	,000
CTR	Single Measures	,508 <sup>b</sup>	,224	,713	3,041	36	36	,001
	Average Measures	,674 <sup>c</sup>	,367	,832	3,041	36	36	,001

CTR – grupo controle

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. Type A intraclass correlation coefficients using an absolute agreement definition.
- b. The estimator is the same, whether the interaction effect is present or not.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

# KAPPA



Output

- Log
- Reliability
  - Title
  - Notes
  - Active Dataset
  - Scale: ALL VARIABLE
  - Title
  - Case Process
  - Reliability Statistics
  - Intraclass Correlation

CTR Cases

CTR	Cases
-----	-------

a. Listwise deletion procedure.

Reliability

GRUPO	Cronbach's Alpha
IC	
CTR	

GRUPO	
IC	Single Measure
	Average
CTR	Single Measure
	Average

Two-way mixed-effects

- a. Type A intraclass correlation coefficients using an absolute agreement definition.
- b. The estimator is the same, whether the interaction effect is present or not.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Reports

- Descriptive Statistics
  - Frequencies...
  - Descriptives...
  - Explore...
  - Crosstabs...**
  - Ratio...
  - P-P Plots...
  - Q-Q Plots...
- Tables
- Compare Means
- General Linear Model
- Generalized Linear Models
- Mixed Models
- Correlate
- Regression
- Loglinear
- Neural Networks
- Classify
- Dimension Reduction
- Scale
- Nonparametric Tests
- Forecasting
- Survival
- Multiple Response
- Missing Value Analysis...
- Multiple Imputation
- Complex Samples
- Quality Control
- ROC Curve...

**Correlation Coefficient**

	Confidence Interval		F Test with True Value 0			
	Bound	Upper Bound	Value	df1	df2	Sig
	,312	,686	3,446	61	61	,000
	,475	,814	3,446	61	61	,000
	,224	,713	3,041	36	36	,001
	,367	,832	3,041	36	36	,001

random and measures effects are fixed.

**Dell Update**

3 atualizações estão prontas para serem instaladas

[Detalhes](#)

Instalar agora    Lembrar-me mais tarde



1: Cobaia 1,00 Visible: 3 of 3 Variables

	Cobaia	Patologista1	Patologista2	var	var	var	var	var	var	var	var	var	var	var	var	var
1	1,00	presente	presente													
2	2,00	presente	presente													
3	3,00	presente	ausente													
4	4,00	presente	presente													
5	5,00	presente	presente													
6	6,00	presente	presente													
7	7,00	ausente	ausente													
8	8,00	presente	ausente													
9	9,00	presente	presente													
10	10,00	presente	presente													
11	11,00	presente	ausente													
12	12,00	presente	presente													
13	13,00	presente	presente													
14	14,00	ausente	ausente													
15	15,00	ausente	ausente													
16	16,00	presente	ausente													
17	17,00	ausente	ausente													
18	18,00	presente	ausente													
19	19,00	presente	presente													
20	20,00	ausente	ausente													
21																
22																
23																

**Crosstabs** [X]

Cobaia

Row(s): Patologista1

Exact...

Statistics...

Cells...

Format...

Bootstrap...

Column(s): Patologista2

Layer 1 of 1

Previous Next

Display clustered bar charts

Suppress tables

OK Paste Reset Cancel Help

**Dell Update**

3 atualizações estão prontas para serem instaladas

[Detalhes](#)

Instalar agora
Lembrar-me mais tarde





1: Cobaia 1,00 Visible: 3 of 3 Variables

	Cobaia	Patologista1	Patologista2	var	var	var	var	var	var	var	var	var	var	var	var	var
1	1,00	presente	presente													
2	2,00	presente	presente													
3	3,00	presente	ausente													
4	4,00	presente	presente													
5	5,00	presente	presente													
6	6,00	presente	presente													
7	7,00	ausente	ausente													
8	8,00	presente	ausente													
9	9,00	presente	presente													
10	10,00	presente	presente													
11	11,00	presente	ausente													
12	12,00	presente	presente													
13	13,00	presente	presente													
14	14,00	ausente	ausente													
15	15,00	ausente	ausente													
16	16,00	presente	ausente													
17	17,00	ausente	ausente													
18	18,00	presente	ausente													
19	19,00	presente	presente													
20	20,00	ausente	ausente													
21																
22																
23																

Crosstabs

Crosstabs: Statistics

Chi-square  Correlations

**Nominal**

Contingency coefficient  Gamma

Phi and Cramer's V  Somers' d

Lambda  Kendall's tau-b

Uncertainty coefficient  Kendall's tau-c

**Nominal by Interval**

Eta  Kappa

Risk

McNemar

Cochran's and Mantel-Haenszel statistics

Test common odds ratio equals: 1

Buttons: Exact... Statistics... Cells... Format... Bootstrap... Continue Cancel Help

**Dell Update**

3 atualizações estão prontas para serem instaladas

[Detalhes](#)

Instalar agora Lembrar-me mais tarde

Output

- Log
- Crosstabs
  - Title
  - Notes
  - Active Dataset
  - Case Processing
  - Patologista1 \* Patologista2
  - Symmetric Measure

```
GET
  FILE='C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA\Aula2_Concordância_Kappa.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
CROSSTABS
  /TABLES=Patologista1 BY Patologista2
  /FORMAT=AVALUE TABLES
  /STATISTICS=KAPPA
  /CELLS=COUNT
  /COUNT ROUND CELL.
```

➔ **Crosstabs**

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Patologista1 * Patologista2	20	100,0%	0	,0%	20	100,0%

**Patologista1 \* Patologista2 Crosstabulation**

Count

		Patologista2		Total
		ausente	presente	
Patologista1	ausente	5	0	5
	presente	5	10	15



Output

- Log
- Crosstabs
  - Title
  - Notes
  - Active Dataset
  - Case Processing
  - Patologista1 \* Patologista2
  - Symmetric Measures

### Crosstabs

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

#### Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Patologista1 * Patologista2	20	100,0%	0	,0%	20	100,0%

#### Patologista1 \* Patologista2 Crosstabulation

Count

		Patologista2		Total
		ausente	presente	
Patologista1	ausente	5	0	5
	presente	5	10	15
Total		10	10	20

#### Symmetric Measures

		Value	Asymp. Std. Error <sup>a</sup>	Approx. T <sup>b</sup>	Approx. Sig.
Measure of Agreement	Kappa	,500	,168	2,582	,010
N of Valid Cases		20			

- a. Not assuming the null hypothesis.
- b. Using the asymptotic standard error assuming the null hypothesis.

# BLAND ALTMAN

Toolbar icons: Folder, Save, Print, Refresh, Compute Variable, Count Values, Recode, Rank, Date Wizard, Create Time Series, Replace Missing, Random Number, Run Pending Transforms.

1: Identificação 1 Visible: 5 of 5 Variables

Identificação	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1	1																						
2	2																						
3	3																						
4	4																						
5	5																						
6	6																						
7	7																						
8	8																						
9	9																						
10	10																						
11	11																						
12	12																						
13	13	25	Mulher	352	433																		
14	14	36	Homem	500	600																		
15	15	20	Mulher	528	566																		
16	16	20	Mulher	456	526																		
17	17	22	Mulher	368	418																		
18	18	27	Mulher	358	380																		
19	19	23	Homem	322	460																		
20	20	20	Homem	394	476																		
21	21	20	Mulher	360	394																		
22	22	24	Mulher	400	444																		

1







1: Identificação	1	Identificação	Idade	Sexo
51	51	51	47	Homem
52	52	52	70	Mulher
53	53	53	82	Homem
54	54	54	67	Mulher
55	55	55	66	Mulher
56	56	56	57	Mulher
57	57	57	72	Homem
58	58	58	64	Mulher
59	59	59	76	Mulher
60	60	60	54	Mulher
61	61	61	89	Homem
62	62	62	58	Homem
63				
64				
65				
66				
67				
68				
69				
70				
71				
72				

Compute Variable

Target Variable: MÉDIA VARIÁVEIS = Numeric Expression: (Argolas\_teste1 + Argolas\_teste2) / 2

Type & Label...

Identificação numer...  
Idade [Idade]  
Sexo [Sexo]  
Argolas\_teste1  
Argolas\_teste2  
VIÉS

Function group: All, Arithmetic, CDF & Noncentral CDF

if... (optional case selection condition)

OK Paste Reset Cancel Help

PASW Statistics 18

Variable name contains an illegal character.

OK





Output  
Log

```
GET  
FILE='C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA\Aula2_Bland_Altman.sav'.  
DATASET NAME DataSet1 WINDOW=FRONT.  
COMPUTE VIÉS=Argolas_teste1 - Argolas_teste2.  
EXECUTE.  
COMPUTE MÉDIA_VARIÁVEIS=(Ar  
EXECUTE.
```

Explore

Dependent List: VIÉS

Factor List:

Label Cases by:

Display:  Both  Statistics  Plots

OK Paste Reset Cancel Help



Output  
Log

```
GET  
FILE='C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA\Aula2_Bland_Altman.sav'.  
DATASET NAME DataSet1 WINDOW=FRONT.  
COMPUTE VIÉS=Argolas_testel - Argolas_teste2.  
EXECUTE.  
COMPUTE MÉDIA_VARIÁVEIS=(Ar  
EXECUTE.
```

Explore: Plots

Boxplots

- Factor levels together
- Dependents together
- None

Descriptive

- Stem-and-leaf
- Histogram

Normality plots with tests

Spread vs Level with Levene Test

- None
- Power estimation
- Transformed Power: Natural log
- Untransformed

Continue Cancel Help

Statistics...  
Plots...  
Options...  
Bootstrap...



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended No
      - Boxplot

```

GET
  FILE='C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA\Aula2_Bland_Altman.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
COMPUTE VIÉS=Argolas_testel - Argolas_teste2.
EXECUTE.
COMPUTE MÉDIA_VARIÁVEIS=(Argolas_testel + Argolas_teste2) / 2.
EXECUTE.
EXAMINE VARIABLES=VIÉS
  /PLOT BOXPLOT STEMLEAF HISTOGRAM NPLOT
  /COMPARE GROUPS
  /STATISTICS NONE
  /CINTERVAL 95
  /MISSING LISTWISE
  /NOTOTAL.

```

➔ Explore

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
VIÉS	62	100,0%	0	,0%	62	100,0%

Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>	Shapiro-Wilk
--	---------------------------------	--------------



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended No
      - Boxplot

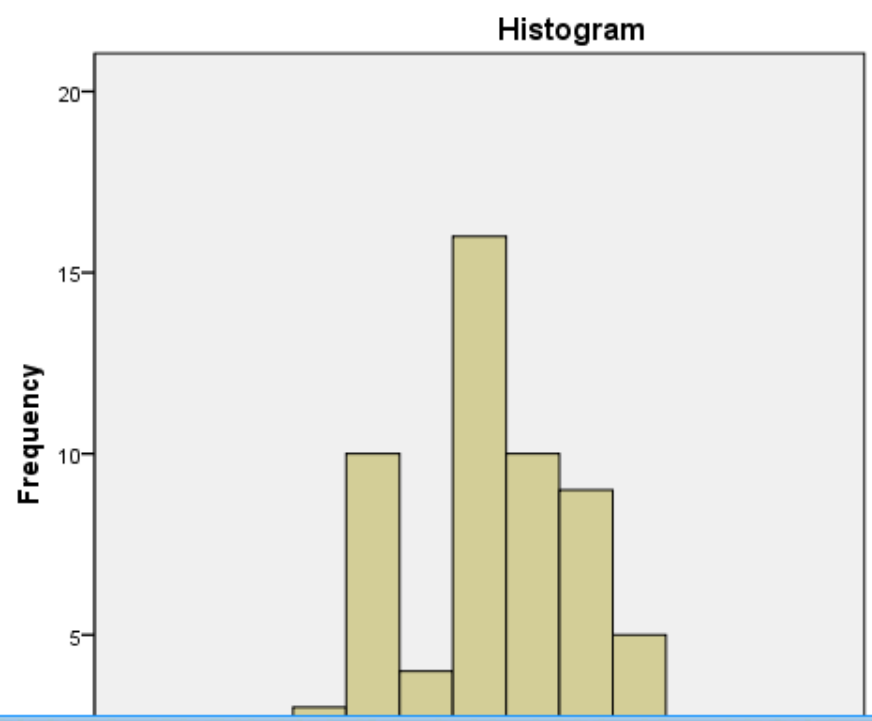
**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VIÉS	,087	62	,200*	,981	62	,453

p > 0,05 = distribuição normal

a. Lilliefors Significance Correction  
\*. This is a lower bound of the true significance.

### VIÉS

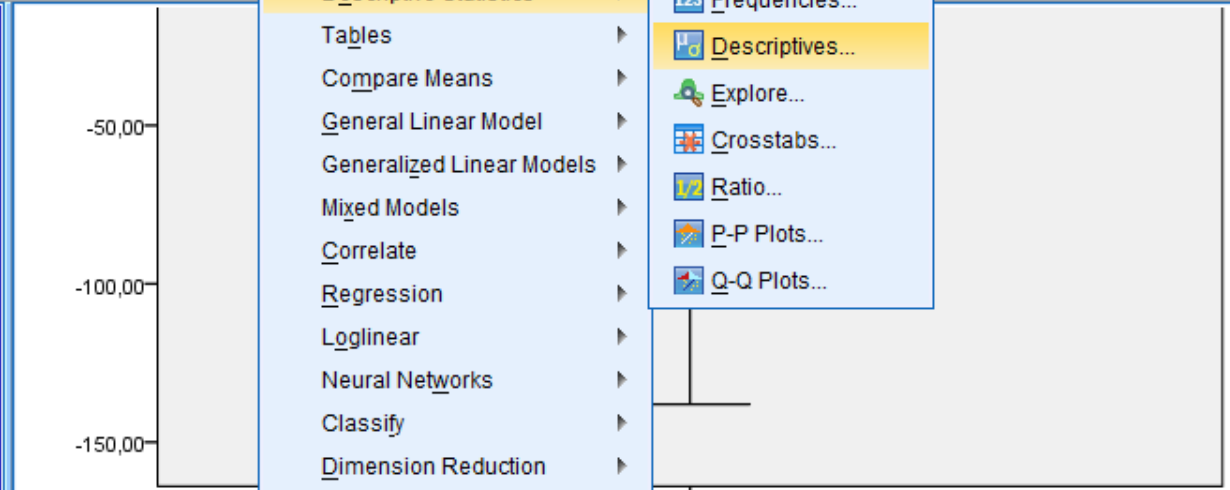


Mean = -41,45  
Std. Dev. = 37,287  
N = 62



Output

- Log
- Explore
  - Title
  - Notes
  - Active Dataset
  - Case Processing
  - Tests of Normality
  - VIÉS
    - Title
    - Histogram
    - Stem-and-Le
    - Normal Q-Q P
    - Detrended No
    - Boxplot
- Log
- Descriptives
  - Title
  - Notes
  - Active Dataset
  - Descriptive Statist



- Reports
- Descriptive Statistics
  - 123 Frequencies...
  - Descriptives...
  - Explore...
  - Crosstabs...
  - Ratio...
  - P-P Plots...
  - Q-Q Plots...
- Tables
- Compare Means
- General Linear Model
- Generalized Linear Models
- Mixed Models
- Correlate
- Regression
- Loglinear
- Neural Networks
- Classify
- Dimension Reduction
- Scale
- Nonparametric Tests
- Forecasting
- Survival
- Multiple Response
- Missing Value Analysis...
- Multiple Imputation
- Complex Samples
- Quality Control
- ROC Curve...

DESCRIPTIVES  
/STATISTIC  
Descriptive

[DataSet1] C ARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇAD

	N	Minimum	Maximum	Mean	Std. Deviation
VIÉS	62	-138,00	62,00	-41,4516	37,28652
Valid N (listwise)	62				



Visible: 7 of 7 Variables

	Identificação	Idade	Sexo	Argolas_teste1	Argolas_teste2	VIÉS	MÉDIA_VARIÁVEIS	var	var	var	var	var	var	var
51	51	47	Homem	334	384	-50,00	359,00							
52	52	70	Mulher	342	406	-64,00	374,00							
53	53	82	Homem	246										
54	54	67	Mulher	420										
55	55	66	Mulher	304										
56	56	57	Mulher	410										
57	57	72	Homem	398										
58	58	64	Mulher	364										
59	59	76	Mulher	238										
60	60	54	Mulher	346										
61	61	89	Homem	284										
62	62	58	Homem	380										
63														
64														
65														
66														
67														
68														
69														
70														
71														
72														

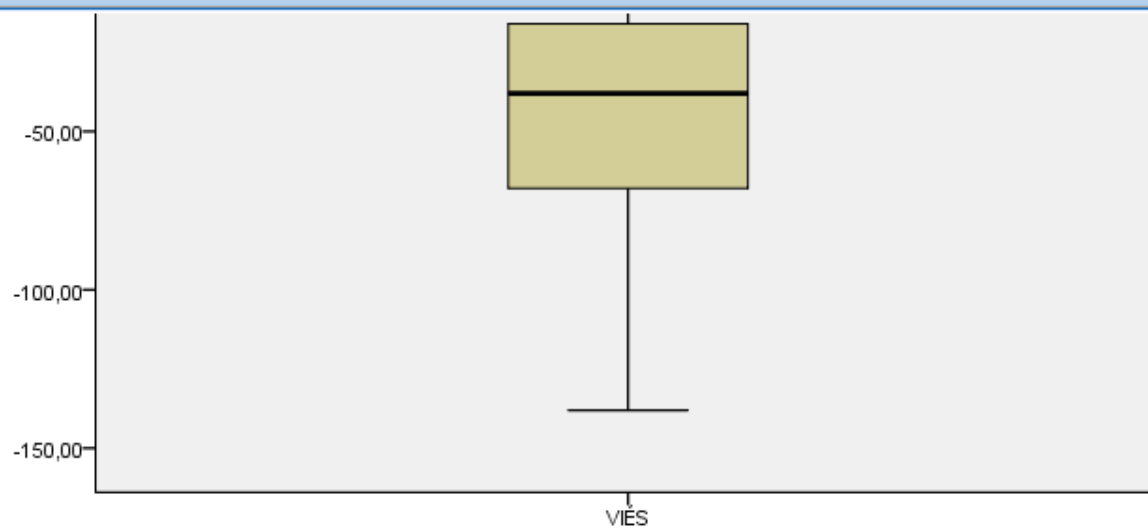
**Descriptives**

Variable(s):  
VIÉS

Save standardized values as variables



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended No
      - Boxplot
  - Log
  - Descriptives
    - Title
    - Notes
    - Active Dataset
    - Descriptive Statist



```
DESCRIPTIVES VARIABLES=VIÉS
  /STATISTICS=MEAN STDDEV MIN MAX.
```

## ➔ Descriptives

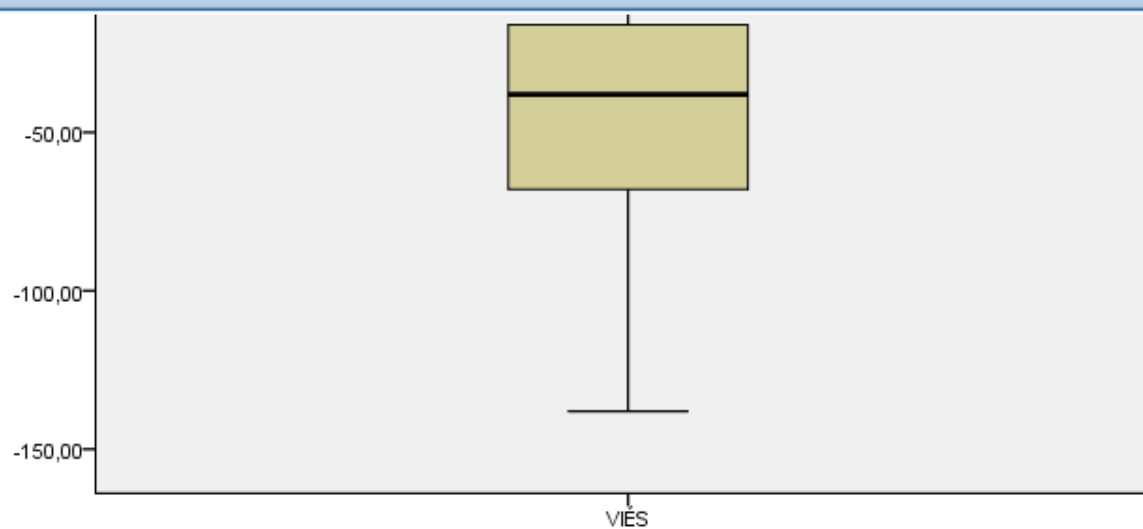
[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
VIÉS	62	-138,00	62,00	-41,4516	37,28652
Valid N (listwise)	62				



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended No
      - Boxplot
  - Log
  - Descriptives
    - Title
    - Notes
    - Active Dataset
    - Descriptive Statist



```
DESCRIPTIVES VARIABLES=VIÉS
  /STATISTICS=MEAN STDDEV MIN MAX.
```

### ➔ Descriptives

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇADA

**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
VIÉS	62	-138,00	62,00	-41,4516	37,28652
Valid N (listwise)	62				

Cálculo do limite superior de normalidade  
 $LSC = d + (1,96 \times DP)$

Cálculo do limite inferior de normalidade  
 $LSC = d - (1,96 \times DP)$



Chart Builder...  
Graphboard Template Chooser...  
Legacy Dialogs

	Identificação	Idade	Sexo	Argolas_teste 1	Argolas_teste 2	VIES	MEDIA	var	var	var	var	var	var
51	51	47	Homem	334	384	-50,00							
52	52	70	Mulher	342	406	-64,00							
53	53	82	Homem	246	264	-18,00							
54	54	67	Mulher	420	484	-64,00							
55	55	66	Mulher	304	320	-16,00							
56	56	57	Mulher	410	414	-4,00							
57	57	72	Homem	398	410	-12,00							
58	58	64	Mulher	364	408	-44,00							
59	59	76	Mulher	238	262	-24,00							
60	60	54	Mulher	346	346	,0							
61	61	89	Homem	284	332	-48,00	308,00						
62	62	58	Homem	380	402	-22,00	391,00						
63													
64													
65													
66													
67													
68													
69													
70													
71													
72													

- Bar...
- 3-D Bar...
- Line...
- Area...
- Pie...
- High-Low...
- Boxplot...
- Error Bar...
- Population Pyramid...
- Scatter/Dot...**
- Histogram...



Visible: 7 of 7 Variables

	Identificação	Idade	Sexo	Argolas_teste 1	Argolas_teste 2	VIÉS	MÉDIA_VARIÁVEIS	var	var	var	var	var	var	var
51	51	47	Homem	334	384	-50,00	359,00							
52	52	70	Mulher	342	406	-64,00	374,00							
53	53	82	Homem	246	264	-18,00	255,00							
54	54	67	Mulher	420	484	-64,00	452,00							
55	55	66	Mulher	304	320	-16,00	312,00							
56	56	57	Mulher	410	414									
57	57	72	Homem	398	410									
58	58	64	Mulher	364	408									
59	59	76	Mulher	238	262									
60	60	54	Mulher	346	346									
61	61	89	Homem	284	332									
62	62	58	Homem	380	402									
63														
64														
65														
66														
67														
68														
69														
70														
71														
72														

Scatter/Dot

Simple Scatter Matrix Scatter Simple Dot

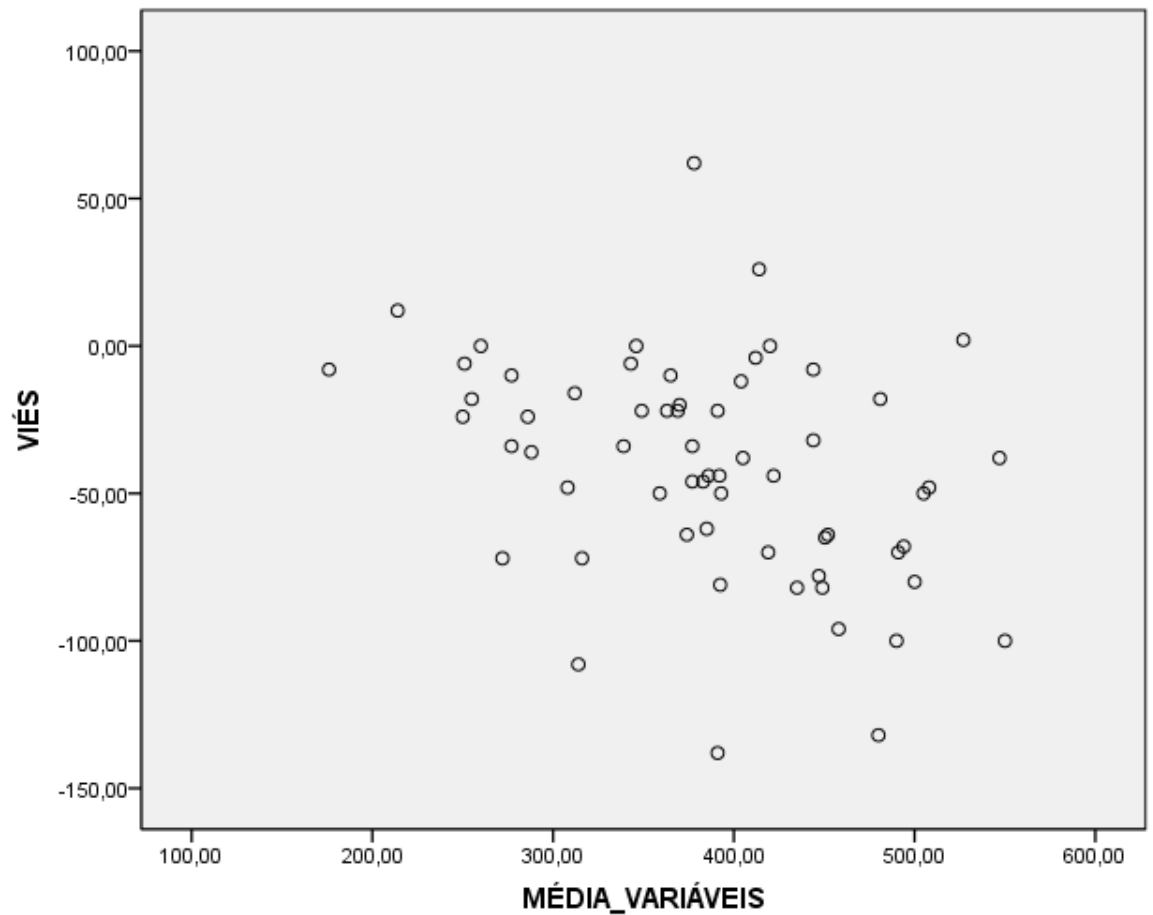
Overlay Scatter 3-D Scatter

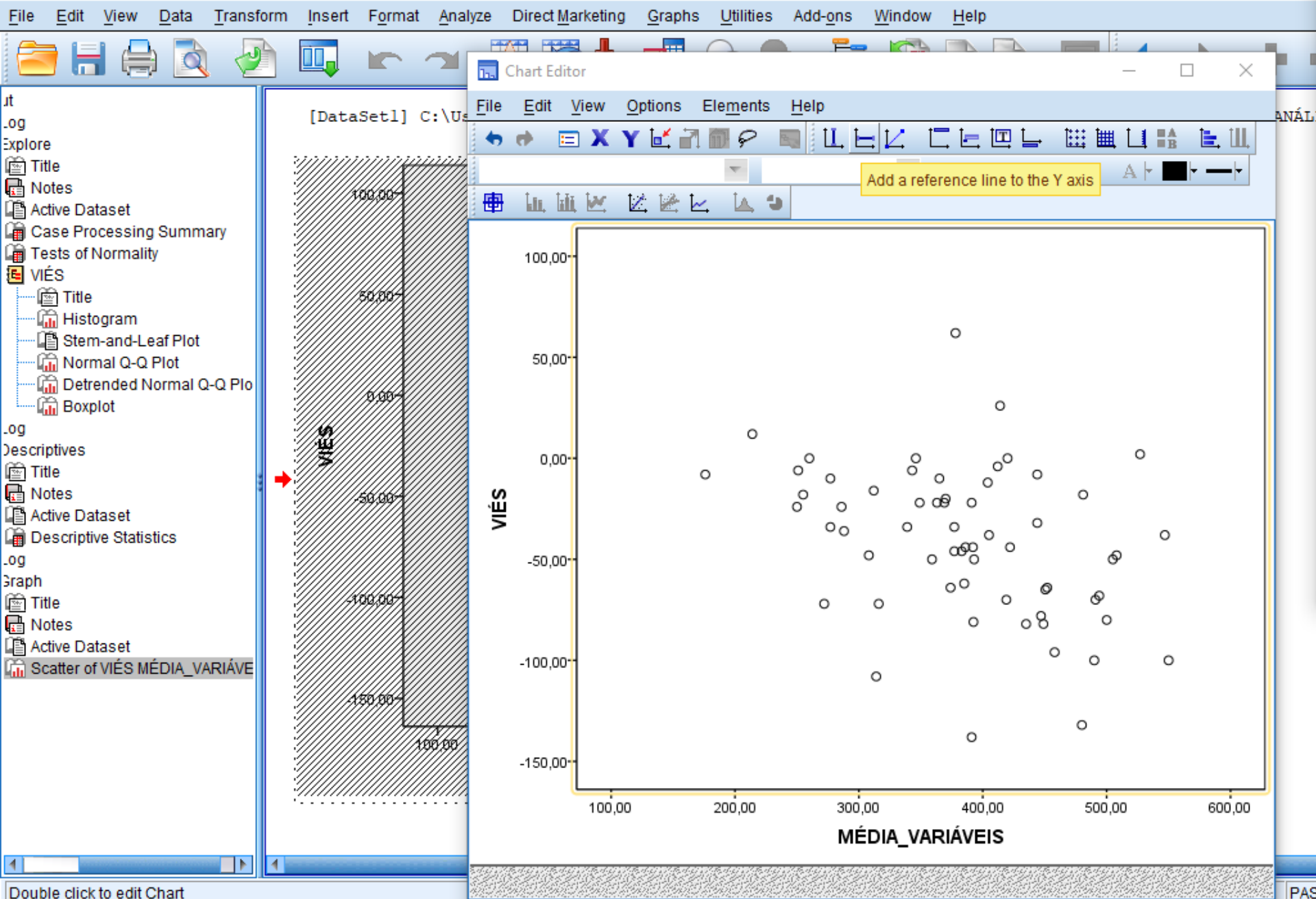
Define Cancel Help



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended No
      - Boxplot
  - Log
  - Descriptives
    - Title
    - Notes
    - Active Dataset
    - Descriptive Statist
  - Log
  - Graph
    - Title
    - Notes
    - Active Dataset
    - Scatter of VIÉS MÉ

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇAD





Properties

Chart Size Fill & Border Variables

Preview

Color

Fill (255, 255, 255)

Border (0, 0, 0)

Pattern

Border Style

Weight 1 Style End Caps Butted

Apply Close Help

Double click to edit Chart

Colar Novo Slide Layout Redefinir Seção

Área de Transfer... Slides

Fonte

33

34

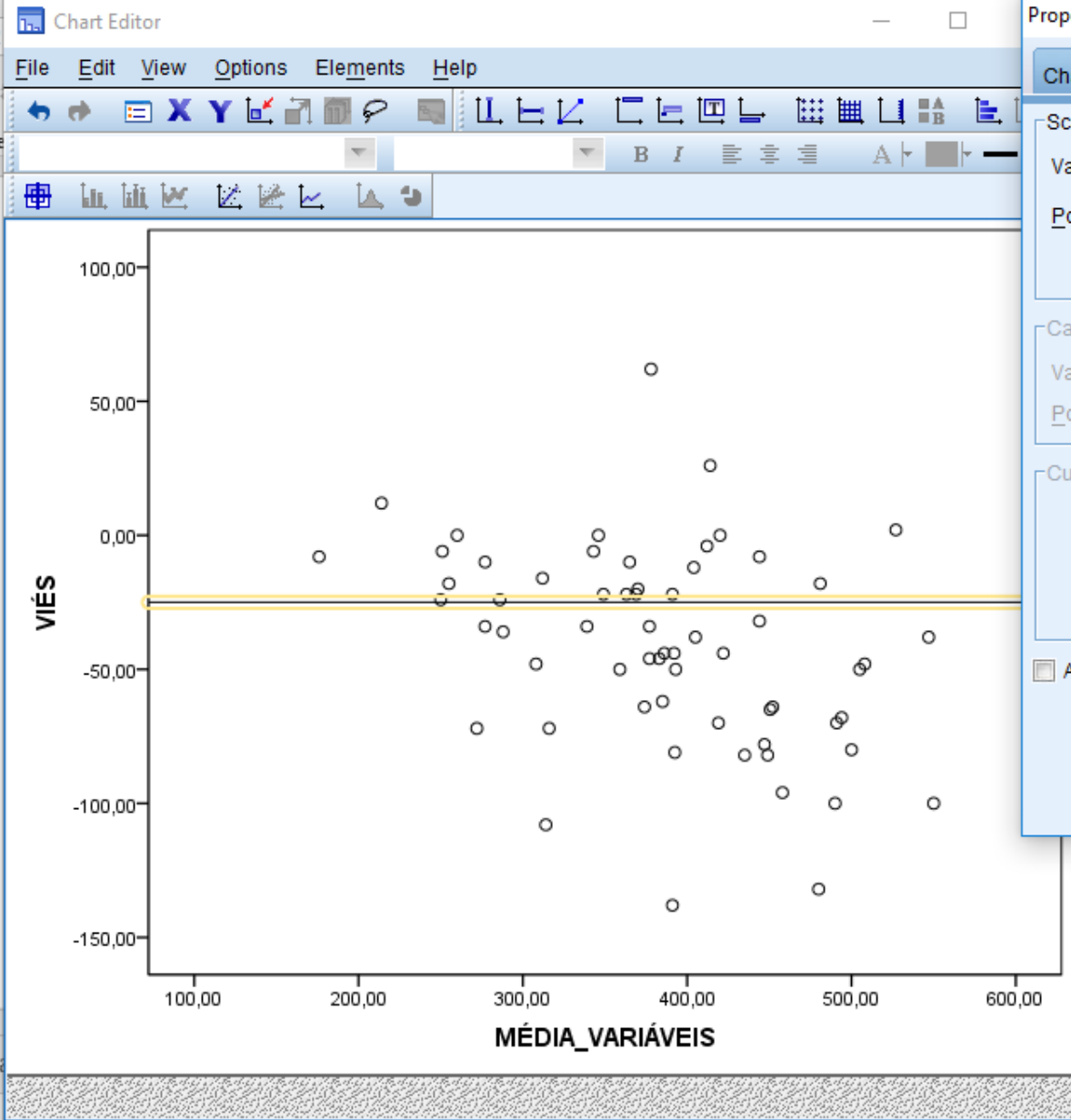
35

36

37

38

CLT QUADRADO DE ASSOCIAÇÃO



Properties

Chart Size Lines Reference Line Variables

Scale Axis

Variable: VIÉS

Position: -41,45

Set to:

Category Axis

Variable:

Position:

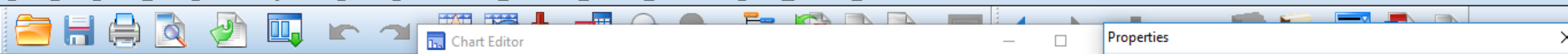
Custom Equation

$y =$

Valid Operators: +, -, \*, /, (, ), and \*\*

Attach label to line

Apply Cancel Help



Explore

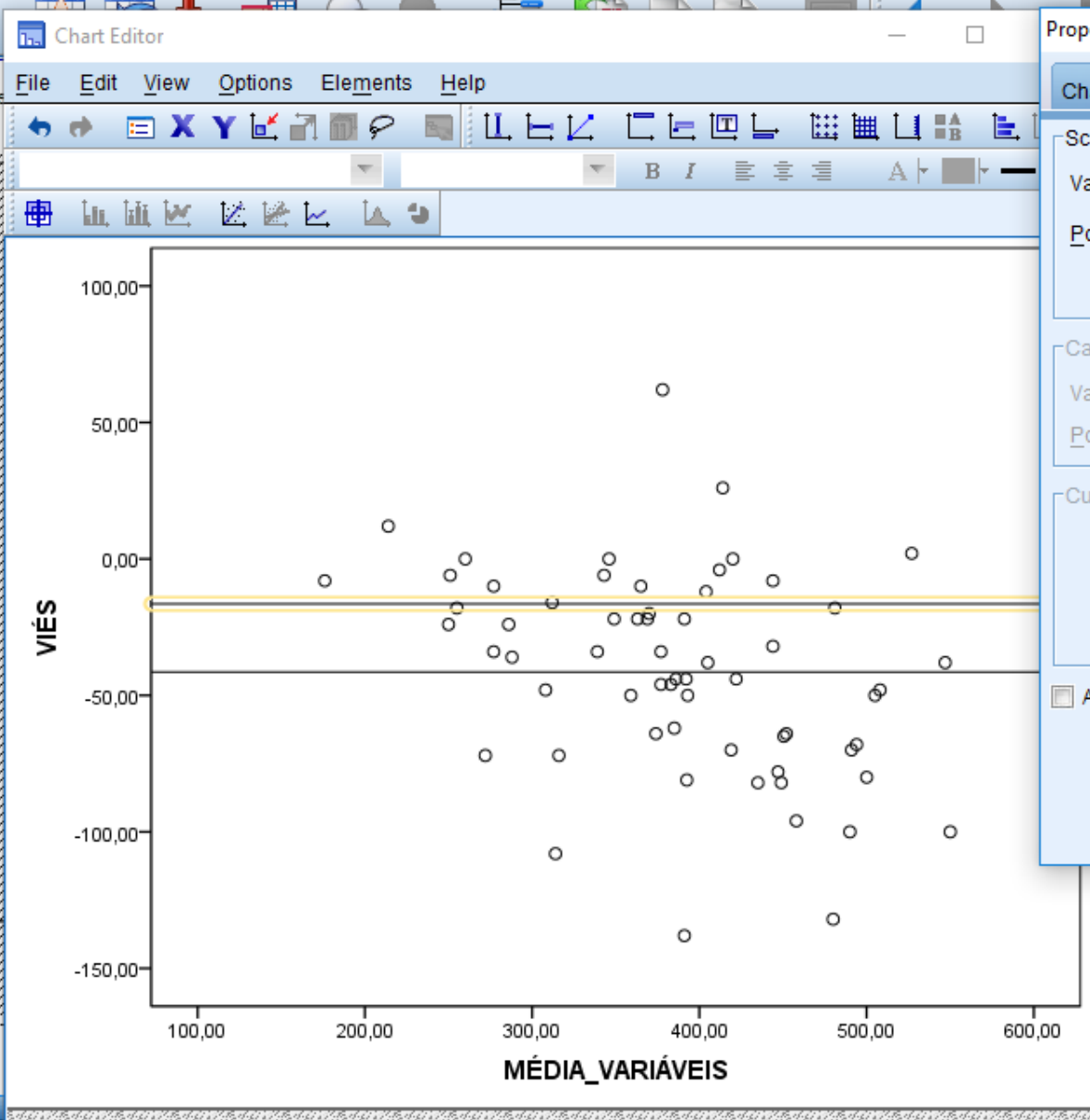
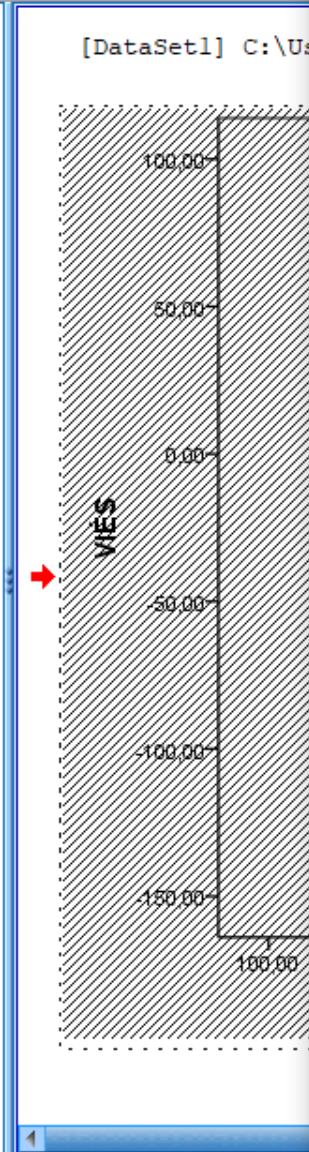
- Title
- Notes
- Active Dataset
- Case Processing Summary
- Tests of Normality
- VIÉS
  - Title
  - Histogram
  - Stem-and-Leaf Plot
  - Normal Q-Q Plot
  - Detrended Normal Q-Q Plot
  - Boxplot

Descriptives

- Title
- Notes
- Active Dataset
- Descriptive Statistics

Graph

- Title
- Notes
- Active Dataset
- Scatter of VIÉS MÉDIA\_VARIÁVEIS



Properties

Chart Size | Lines | **Reference Line** | Variables

Scale Axis

Variable: VIÉS

Position:

Set to:

Category Axis

Variable:

Position:

Custom Equation

y =

Valid Operators: +, -, \*, /, (, ), and \*\*

Attach label to line



Explore

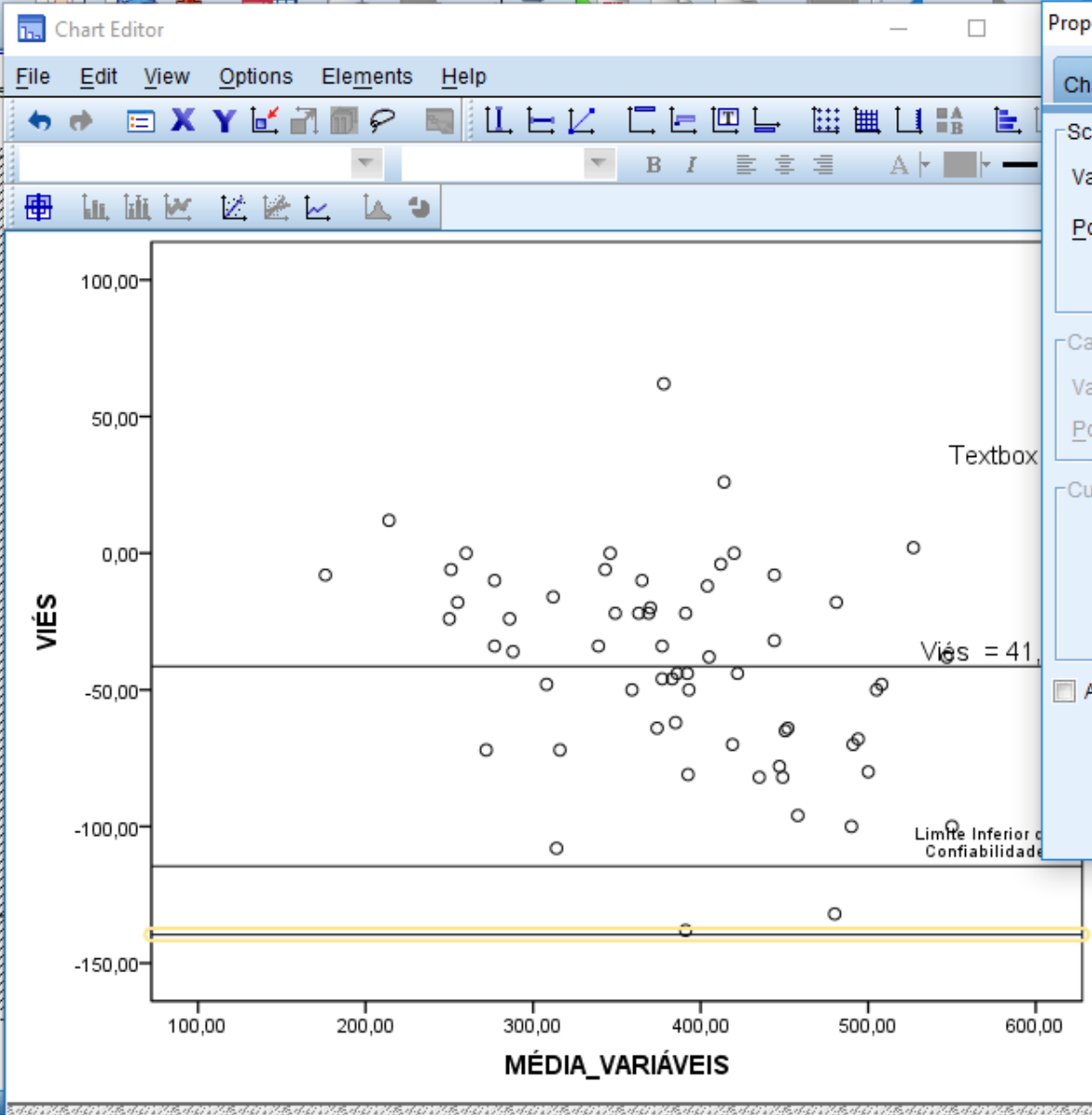
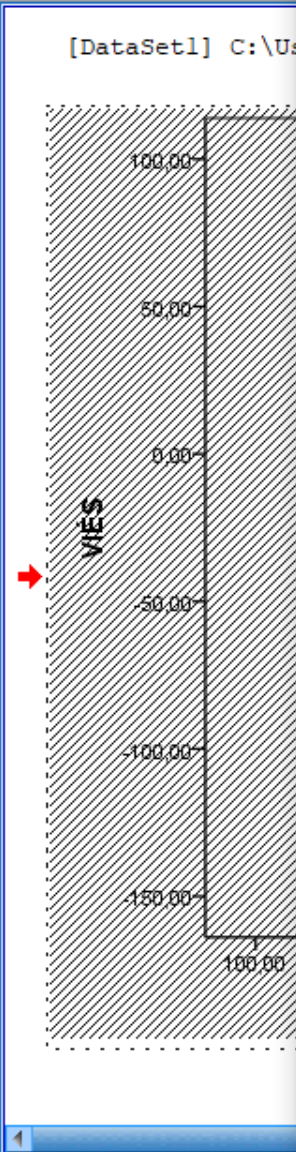
- Title
- Notes
- Active Dataset
- Case Processing Summary
- Tests of Normality
- VIÉS
  - Title
  - Histogram
  - Stem-and-Leaf Plot
  - Normal Q-Q Plot
  - Detrended Normal Q-Q Plot
  - Boxplot

Descriptives

- Title
- Notes
- Active Dataset
- Descriptive Statistics

Graph

- Title
- Notes
- Active Dataset
- Scatter of VIÉS MÉDIA\_VARIÁVEIS



Properties

Chart Size Lines Reference Line Variables

Scale Axis

Variable: VIÉS

Position: 31,64

Set to: [dropdown]

Category Axis

Variable:

Position: [dropdown]

Custom Equation

$y =$  [text box]

Valid Operators: +, -, \*, /, (, ), and \*\*

Attach label to line

Apply Cancel Help

Colar Novo Slide Redefinir Seção

Calibri (Corpo) 12

N I S abc

Slides

Fonte

35 36 37 38 39 40

Área de Transfer... Slides

Q1: QUADRADO DE ASSOCIAÇÃO

Aplicar a linha do limite

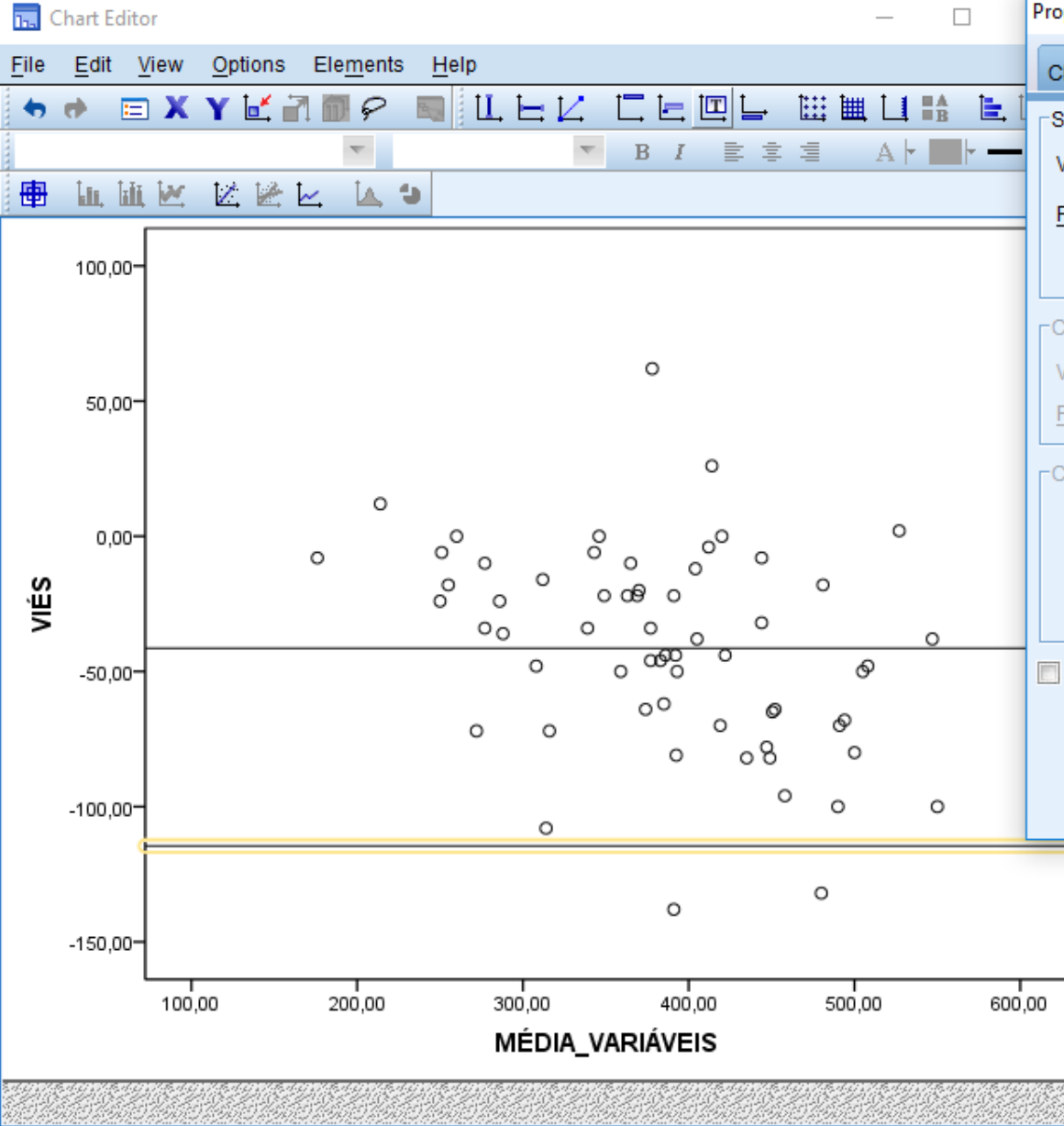


Chart Editor

File Edit View Options Elements Help

Properties

Chart Size Lines Reference Line Variables

Scale Axis

Variable: VIÉS

Position:

Set to:

Category Axis

Variable:

Position:

Custom Equation

y =

Valid Operators: +, -, \*, /, (, ), and \*\*

Attach label to line

Apply Close Help



Colar Novo Slide Layout Redefinir Seção

Calibri (Corpo) 12

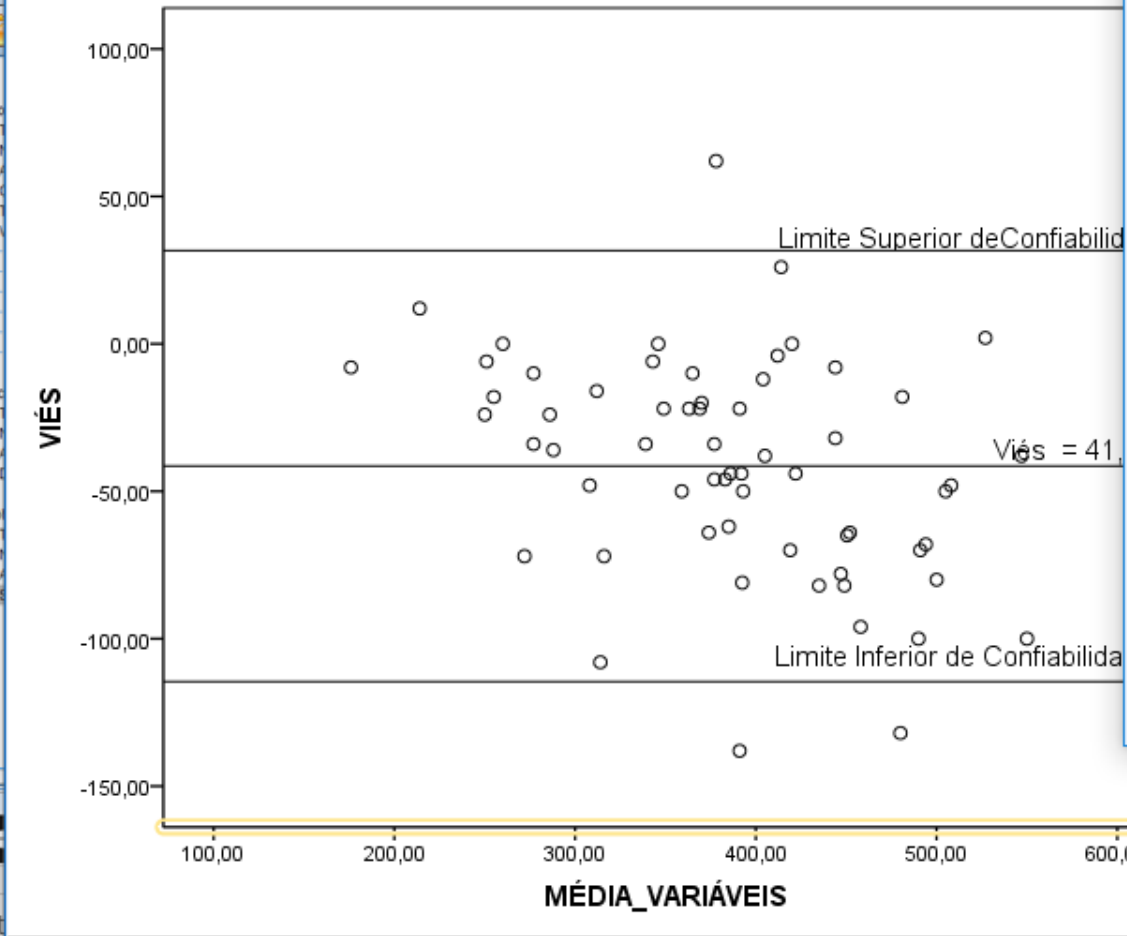
N I S abc

Área de Transfer... Slides

Chart Editor

File Edit View Options Elements Help

Chart Editor toolbar icons



Properties

Labels & Ticks Number Format Variables

Chart Size Scale Lines

Range

	Auto	Custom	Data
Minimum	<input checked="" type="checkbox"/>	100	176
Maximum	<input checked="" type="checkbox"/>	600	550
Major Increment	<input checked="" type="checkbox"/>	100	
Origin	<input checked="" type="checkbox"/>	0	

Display line at origin

Type

Linear

Logarithmic

Base: 10  Safe

Power

Exponent: 0,5  Safe

Lower margin (%): 5 Upper margin (%): 5

Apply Close Help

35

36

37

38

39

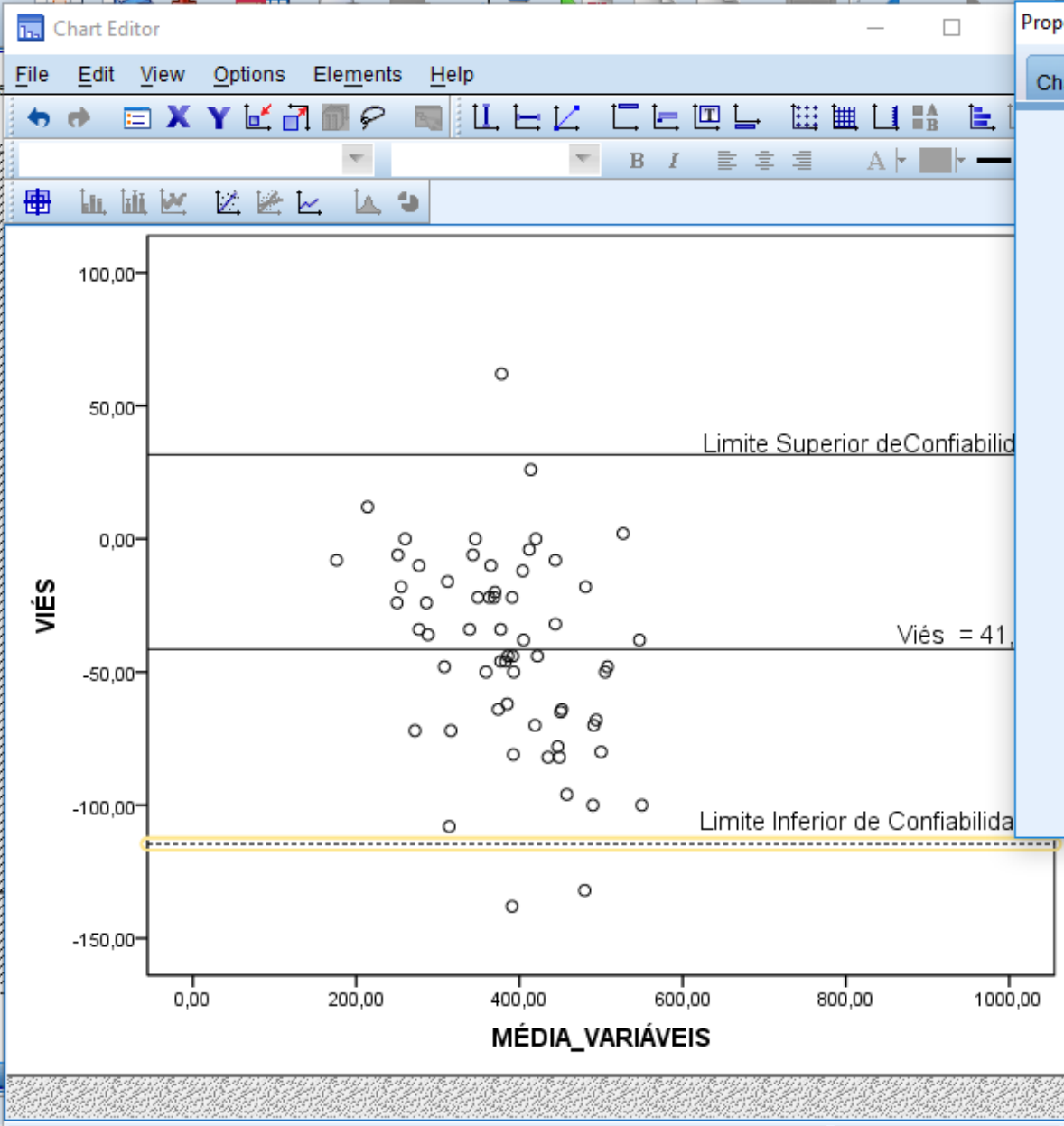
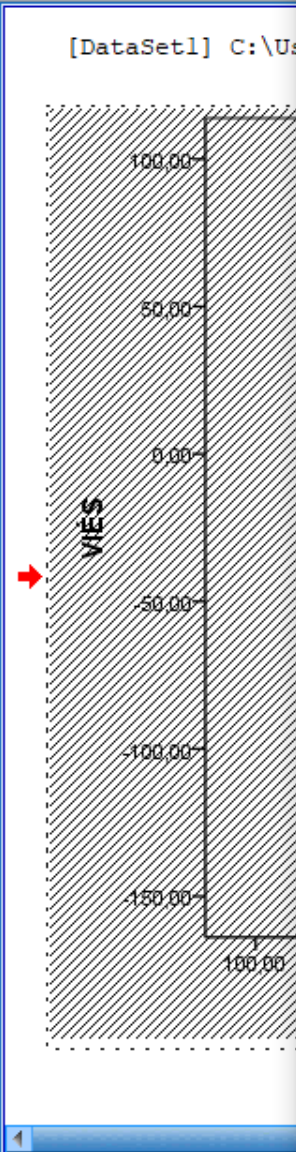
40

OLÁ QUADRADO DE ASSOCIAÇÃO

Aplicar a linha do limit



- Explore
  - Title
  - Notes
  - Active Dataset
  - Case Processing Summary
  - Tests of Normality
  - VIÉS
    - Title
    - Histogram
    - Stem-and-Leaf Plot
    - Normal Q-Q Plot
    - Detrended Normal Q-Q Plot
    - Boxplot
- Descriptives
  - Title
  - Notes
  - Active Dataset
  - Descriptive Statistics
- Graph
  - Title
  - Notes
  - Active Dataset
  - Scatter of VIÉS MÉDIA\_VARIÁVEIS



Properties

Chart Size | **Lines** | Reference Line | Variables

Preview: -----

Lines

Weight: 1,0 | Style: [Dashed Line] | End Caps: Butted

Color: [Color Picker] | Line (0, 0, 0)

Edit | Reset

Apply | Close | Help

Colar Novo Slide Layout Redefinir Seção

Calibri (Corpo) 12

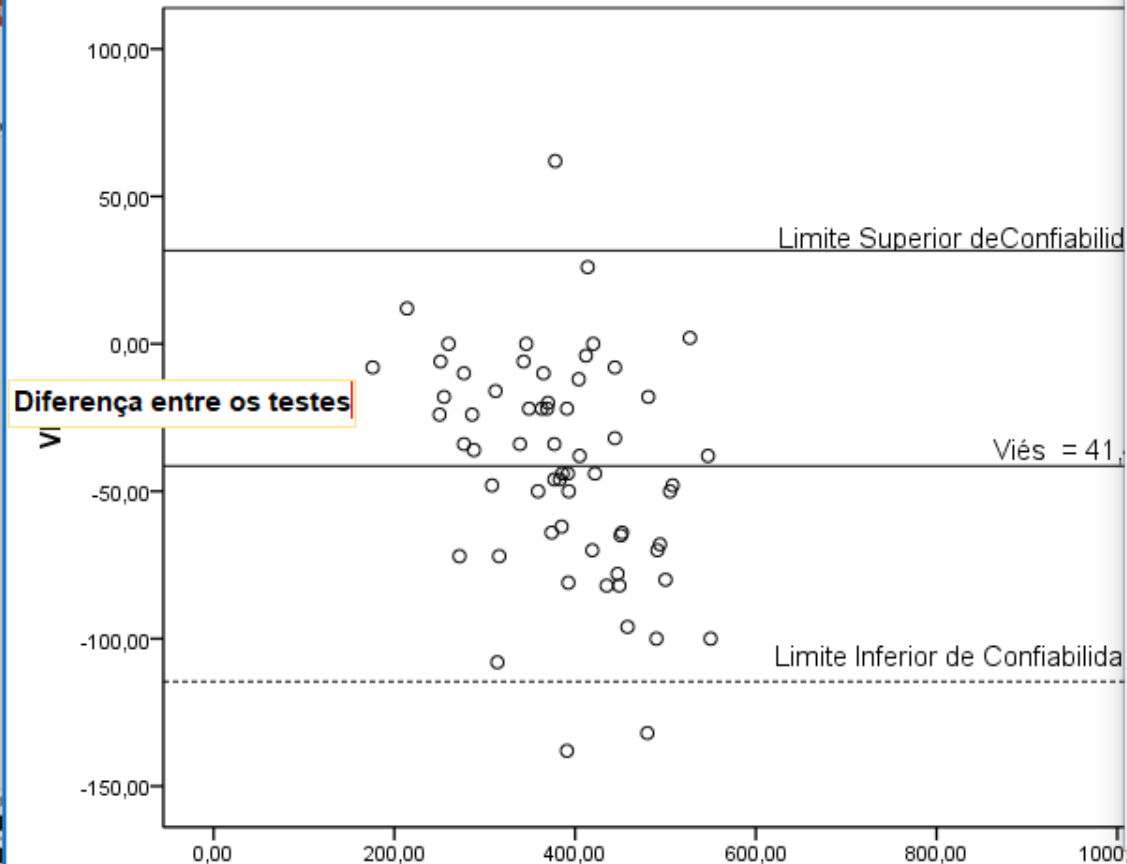
N I S abc

Área de Transfer... Slides

Chart Editor

File Edit View Options Elements Help

Fontes



Diferença entre os testes

Properties

Scale Labels & Ticks Variables

Chart Size Text Layout **Text Style**

Preview in Preferred Size

AaBbCc 123

Font

Family: SansSerif Style: Bold

Size: Automatic Preferred Size: 11 Minimum Size: 7

Color

Text Color (0, 0, 0)

Edit Reset

(0, 0, 0)

Apply Close Help

37

38

39

40

41

42

OLÁ QUADRADO DE ASSOCIAÇÃO

Aumentar a escala do

1 : Identificação 1

Visible: 7 of 7 Variables

	Identificação	Idade			RIÁVEIS	var	var	var	var	var	var	var
1	1	4			444,00							
2	2	6			260,00							
3	3	7			214,00							
4	4	2			378,00							
5	5	2		406	-46,00	383,00						
6	6	2		368	-108,00	314,00						
7	7	3		546	-132,00	480,00						
8	8	4		526	2,00	527,00						
9	9	4		506	-96,00	458,00						
10	10	2		486	-78,00	447,00						
11	11	4		401	26,00	414,00						
12	12	5		308	-72,00	272,00						
13	13	2		433	-81,00	392,50						
14	14	3		600	-100,00	550,00						
15	15	2		566	-38,00	547,00						
16	16	2		526	-70,00	491,00						
17	17	2		418	-50,00	393,00						
18	18	2		380	-22,00	369,00						
19	19	4		460	-138,00	391,00						
20	20	20	homem	354	476	-82,00	435,00					
21	21	20	Mulher	360	394	-34,00	377,00					
22	22	24	Mulher	400	444	-44,00	422,00					

- Reports
- Descriptive Statistics
- Tables
- Compare Means**
  - Means...
  - One-Sample T Test...**
  - Independent-Samples T Test...
  - Paired-Samples T Test...
  - One-Way ANOVA...
- General Linear Model
- Generalized Linear Models
- Mixed Models
- Correlate
- Regression
- Loglinear
- Neural Networks
- Classify
- Dimension Reduction
- Scale
- Nonparametric Tests
- Forecasting
- Survival
- Multiple Response
- Missing Value Analysis...
- Multiple Imputation
- Complex Samples
- Quality Control
- ROC Curve...



1: Identificação 1 Visible: 7 of 7 Variables

	Identificação	Idade	Sexo	Argolas_teste 1	Argolas_teste 2	VIÉS	MÉDIA_VARIÁVEIS	var	var	var	var	var	var	var
1	1	46	Mulher	428	460	-32,00	444,00							
2	2	69	Mulher	260	260	,0	260,00							
3	3	74	Mulher	220	208	12,00	214,00							
4	4	20	Mulher	409										
5	5	26	Mulher	360										
6	6	27	Homem	260										
7	7	39	Mulher	414										
8	8	45	Mulher	528										
9	9	42	Mulher	410										
10	10	21	Homem	408										
11	11	45	Homem	427										
12	12	58	Mulher	236										
13	13	25	Mulher	352										
14	14	36	Homem	500										
15	15	20	Mulher	528										
16	16	20	Mulher	456	526	-70,00	491,00							
17	17	22	Mulher	368	418	-50,00	393,00							
18	18	27	Mulher	358	380	-22,00	369,00							
19	19	23	Homem	322	460	-138,00	391,00							
20	20	20	Homem	394	476	-82,00	435,00							
21	21	20	Mulher	360	394	-34,00	377,00							
22	22	24	Mulher	400	444	-44,00	422,00							

One-Sample T Test

Test Variable(s): VIÉS

Test Value: 0

OK Paste Reset Cancel Help

Options... Bootstrap...

Data View Variable View



- Output
  - Log
  - Explore
    - Title
    - Notes
    - Active Dataset
    - Case Processing
    - Tests of Normality
    - VIÉS
      - Title
      - Histogram
      - Stem-and-Le
      - Normal Q-Q P
      - Detrended N
      - Boxplot
  - Log
  - Descriptives
    - Title
    - Notes
    - Active Dataset
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  - Graph
    - Title
    - Notes
    - Active Dataset
    - Scatter of VIÉS MÉ
  - Log
  - T-Test
    - Title
    - Notes
    - Active Dataset
    - One-Sample Stati
    - One-Sample Test



Média entre os testes

```
T-TEST
  /TESTVAL=0
  /MISSING=ANALYSIS
  /VARIABLES=VIÉS
  /CRITERIA=CI (.95) .
```

➔ T-Test

[DataSet1] C:\Users\lucya\Desktop\BERNARDO\PROFISSIONAL\PÓS-GRADUAÇÃO\DINTER\AULAS\MÉTODOS DE ANÁLISE QUANTITATIVA II - ESTATÍSTICA AVANÇAD

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
VIÉS	62	-41,4516	37,28652	4,73539

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
VIÉS	-8,754	61	,000	-41,45161	-50,9206	-31,9826

# O que se olha no gráfico

- Tem tendência? Os pontos não estão dispersos de maneira que dá para traçar uma reta
- Os pontos estão entre os dois limites (superior e inferior)? Maior proporção dos pontos entre os limites superiores e inferiores
- O viés está perto de 0? Fazer o teste T de uma amostra

# OBRIGADO PELA ATENÇÃO !



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