

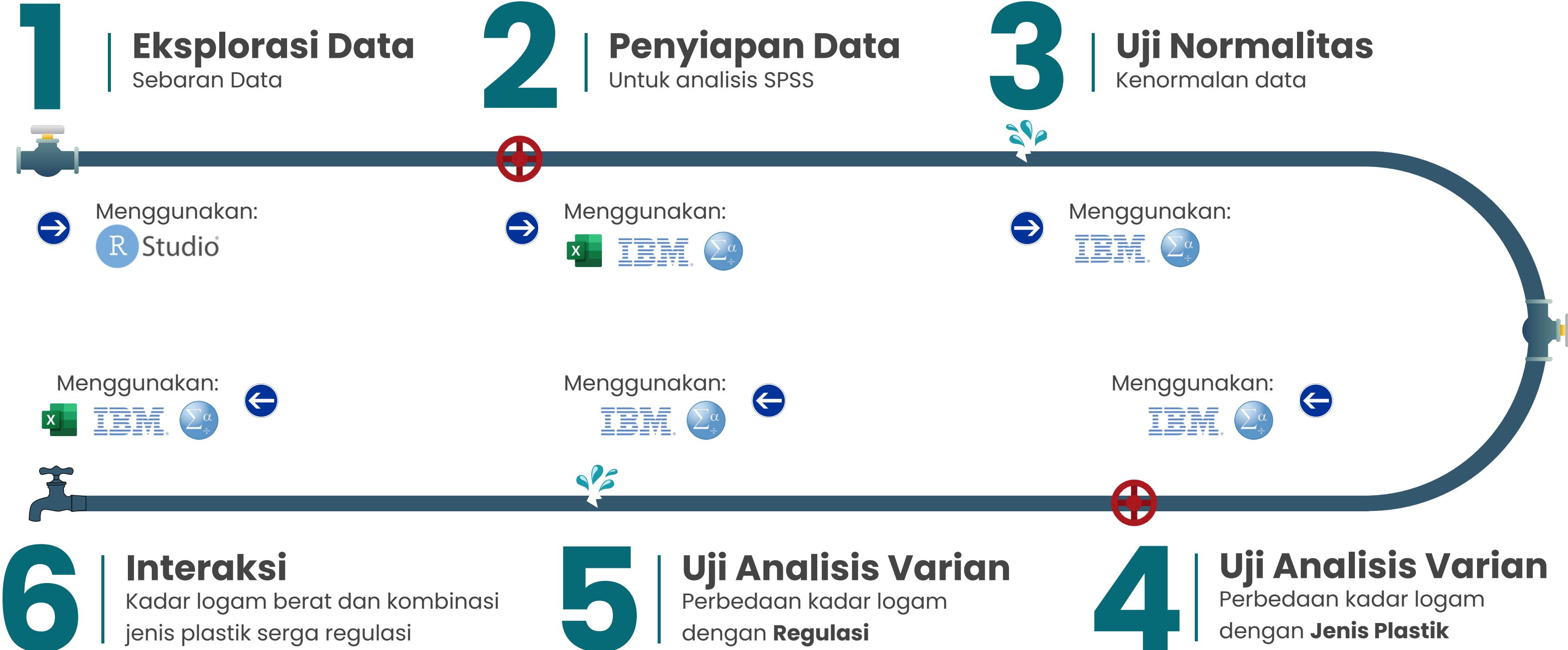
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio



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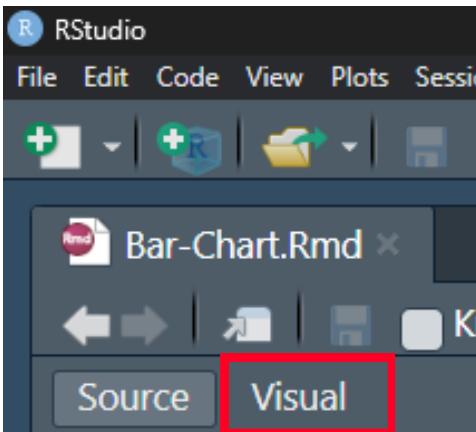
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

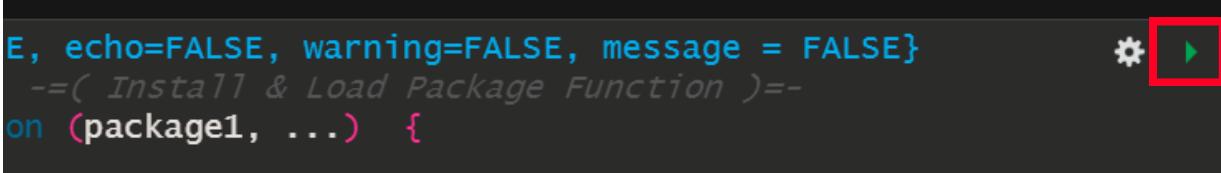
- 1 Download [Bar-Chart.rmd](#)

- 2 Buka file dengan aplikasi Rstudio 

- 3 Pada ujung atas kiri, klik **Visual**

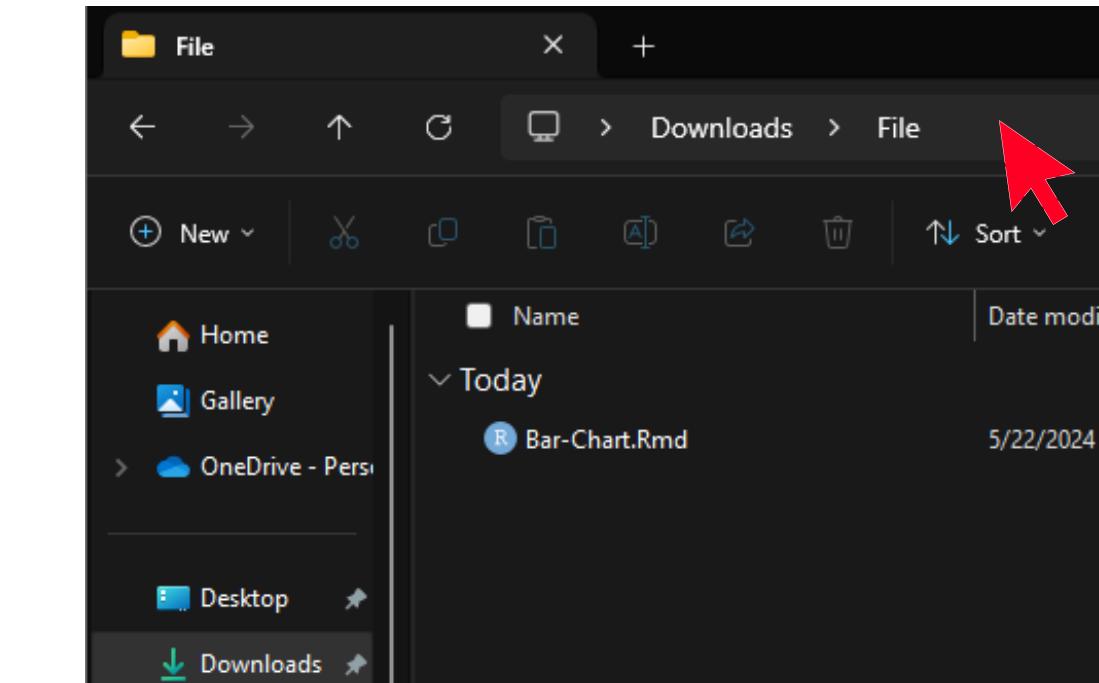
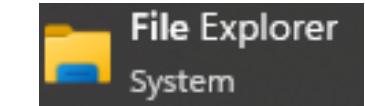


- 3 Klik tombol Segitiga Hijau Pada kotak kode pertama



```
E, echo=FALSE, warning=FALSE, message = FALSE}
  -( Install & Load Package Function )-
on (package1, ...) {
```

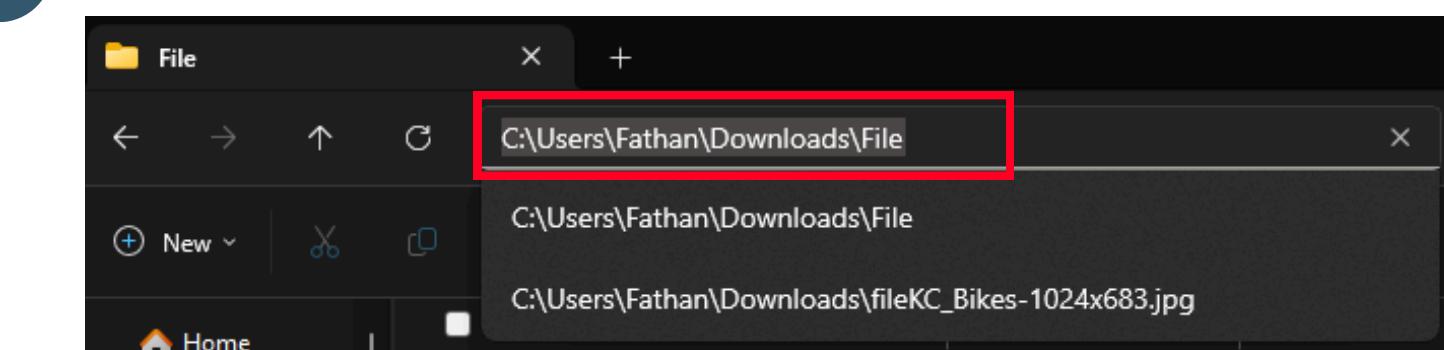
- 4 Buka tempat anda menyimpan file [Bar-Chart.rmd](#) pada **File Explorer**



Pada kasus saya, saya menyimpannya di:
Downloads > File

Lalu klik yang ditandai kurSOR merah

- 5 Copy dengan key: **Ctrl + C**



- 6 Buka kembali Rstudio 

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 7 Di bagian kiri bawah, pada **Console** ketik **path()** dan **Enter**

```
install_load("ggplot2", "dplyr", "rio")
export.chart <- ""

[1] "C:/Users/Fathan/Downloads/File"
```

Lalu Copy (Ctrl + C) outputnya

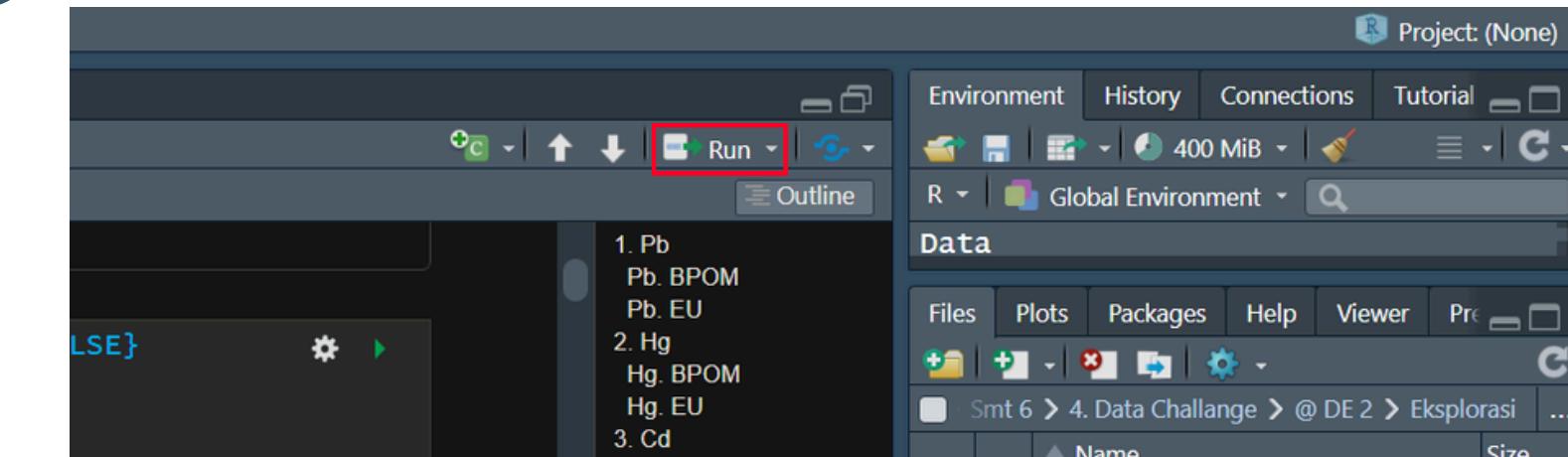
- 8 Pada kotak kode pertama bagian bawah, Block atau Select tanda kutipnya

```
path <- function(x) {
  install_load("ggplot2", "dplyr", "rio")
  export.chart <- [REDACTED]
```

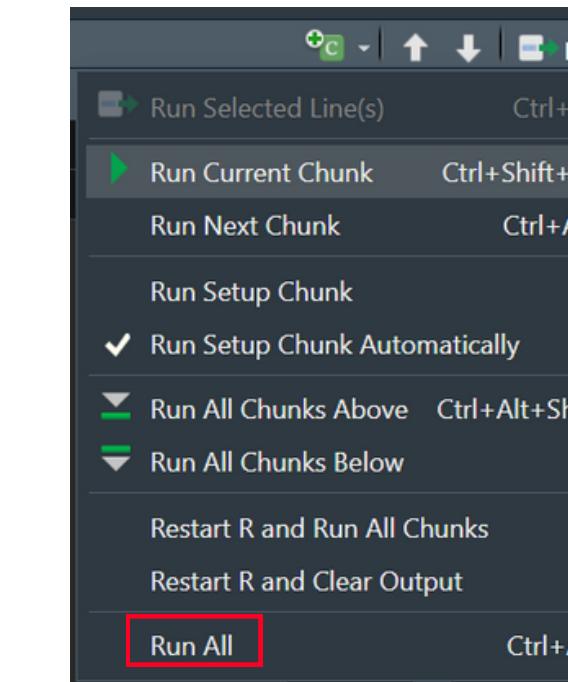
Lalu paste (Ctrl + V)

```
install_load("ggplot2", "dplyr", "rio")
export.chart <- 'C:/Users/Fathan/Downloads/File'
```

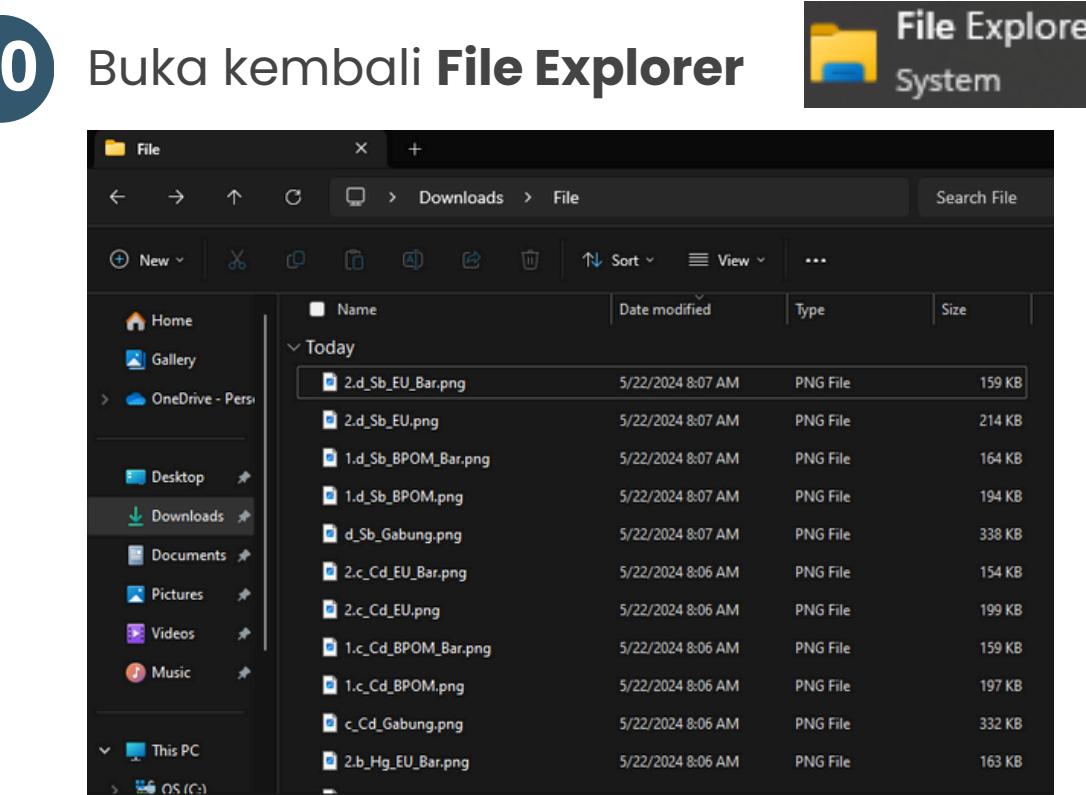
- 9 Dekat ujung kanan, klik **Run**



Lalu Klik **Run All**



- 10 Buka kembali **File Explorer**



Selamat! Semua Chart anda sudah terbuat

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

1 Siapkan data di excel, buat seperti ini:

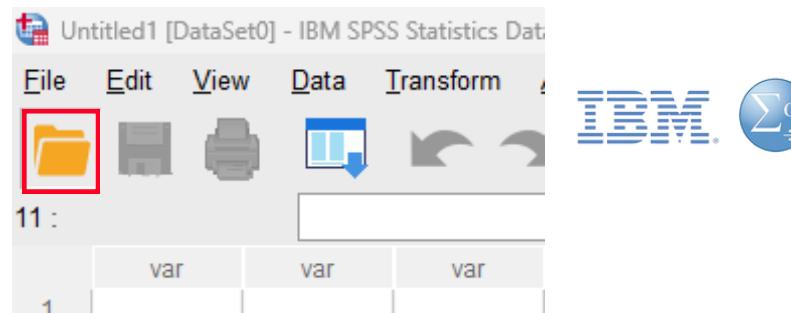


G10	Cd 111 (ng)	Hg 202 (ng)	Pb 208 (ng)	Sb 121 (ng)
1 Kode	Cd 111 (ng)	Hg 202 (ng)	Pb 208 (ng)	Sb 121 (ng)
2 EU_R_A	1,65	553,66	662,82	5120,79
3 EU_R_A	2,00	581,70	580,31	4774,54
4 EU_R_A	1,39	475,16	500,44	4223,31
5 EU_R_A	2,04	469,94	530,97	4745,34
6 EU_R_A	2,13	381,61	469,06	5366,24
7 EU_R_A	3,30	350,48	503,47	6021,76
8 EU_R_B	4,16	46,41	22,24	81,95
9 EU_R_B	5,05	46,09	26,93	81,85
10 EU_R_B	5,54	29,18	95,02	81,84

Kita beri nama file "Data.xlsx".

Pastikan Kolom kode diubah menjadi seperti ini

2 Buka SPSS, Klik Icon Folder



4

THE
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Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

2 | Penyiapan Data

Untuk analisis SPSS



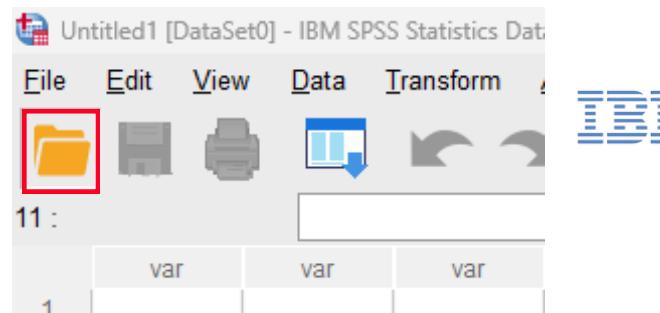
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1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

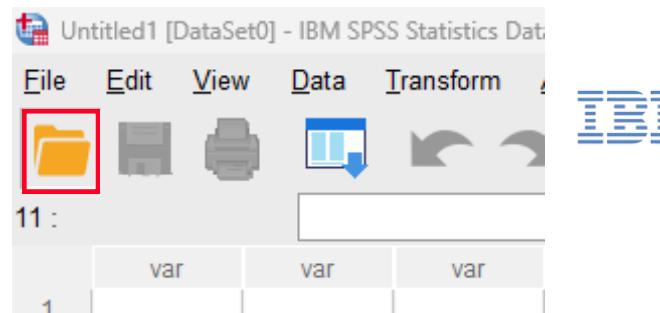
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

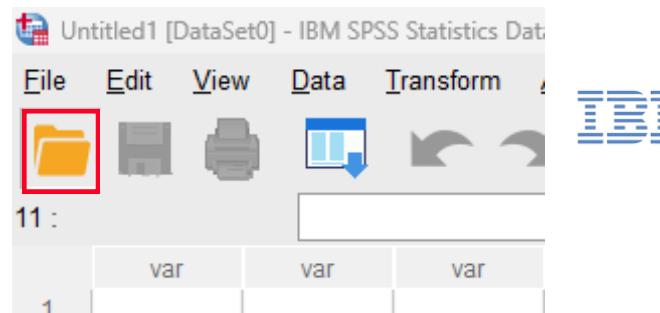
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

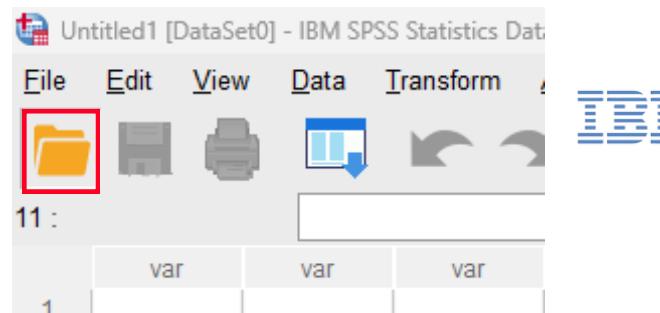
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

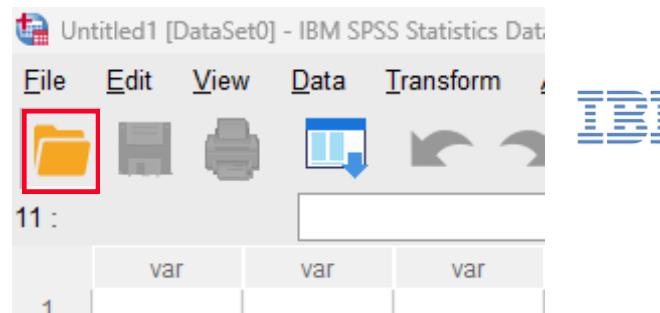
THE
BOYS

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1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

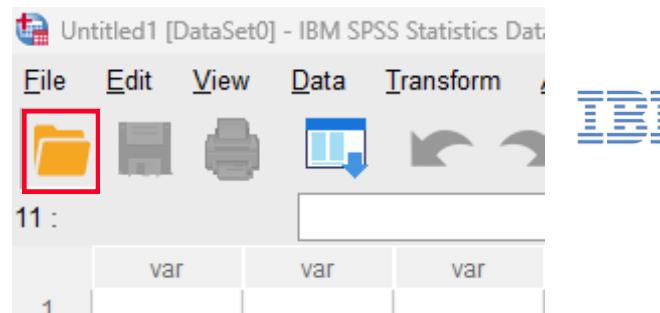
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



4

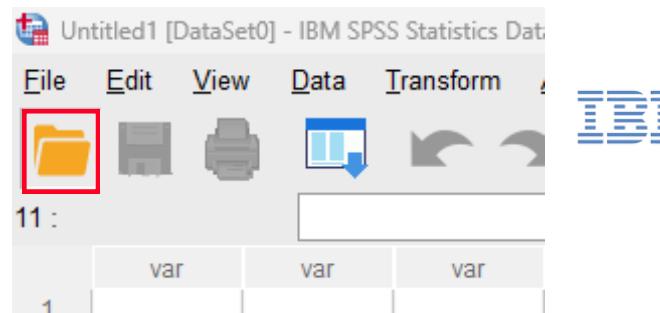
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

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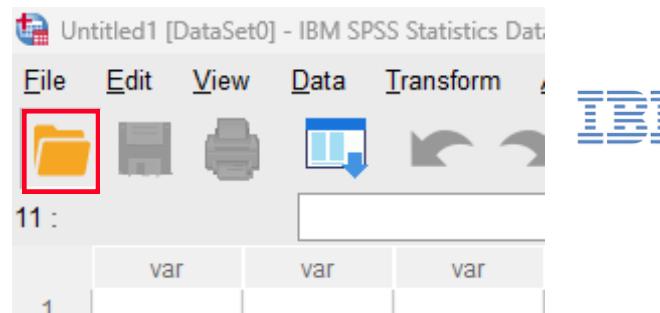
THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



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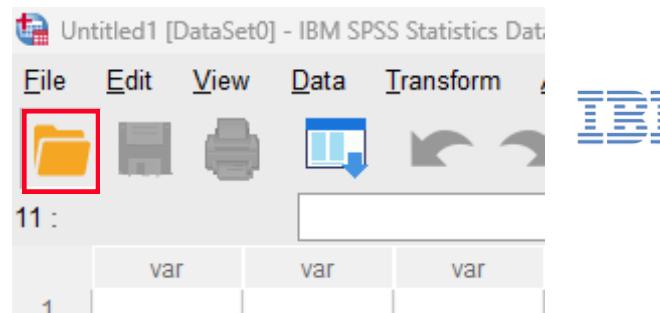
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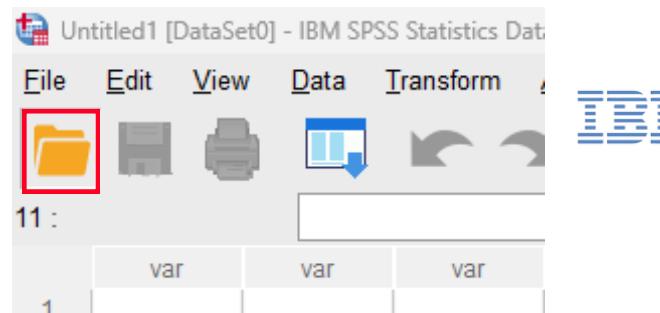
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Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

1 Siapkan data di excel, buat seperti ini:



2 Buka SPSS, Klik Icon Folder



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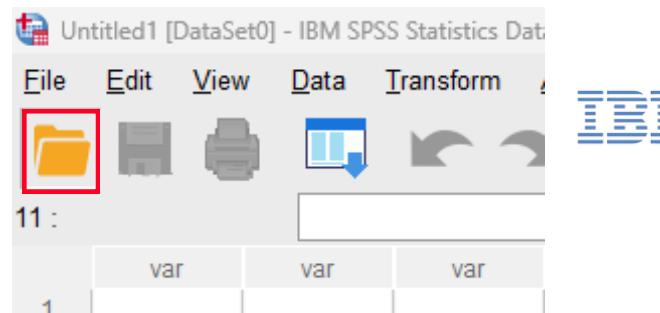
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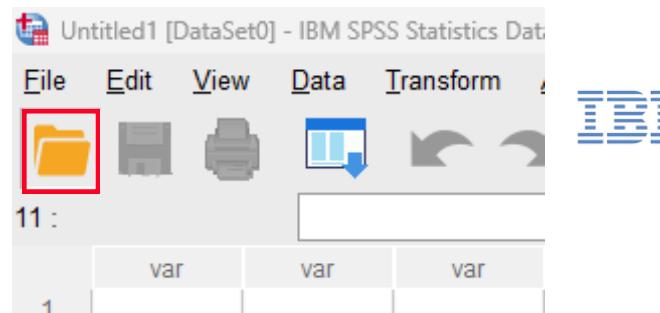
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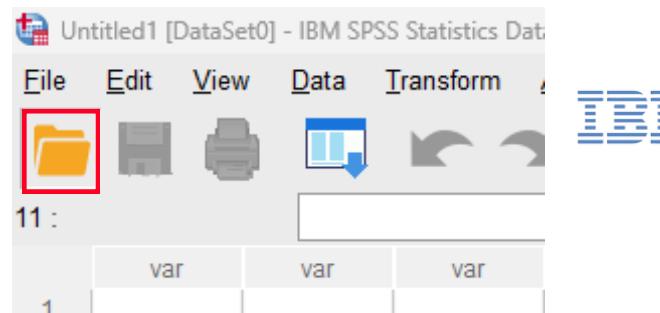
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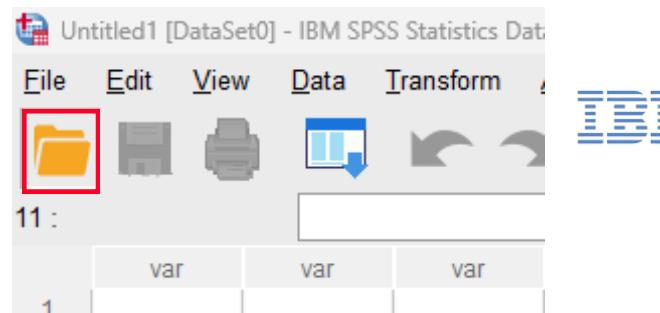
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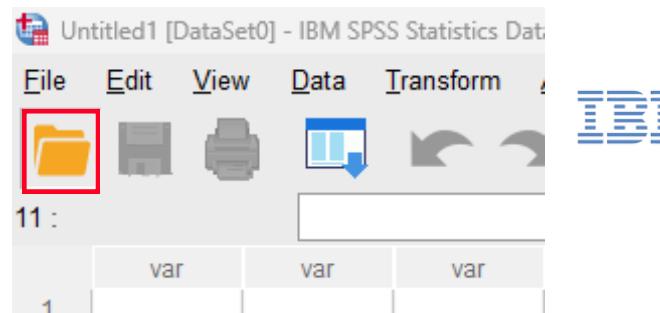
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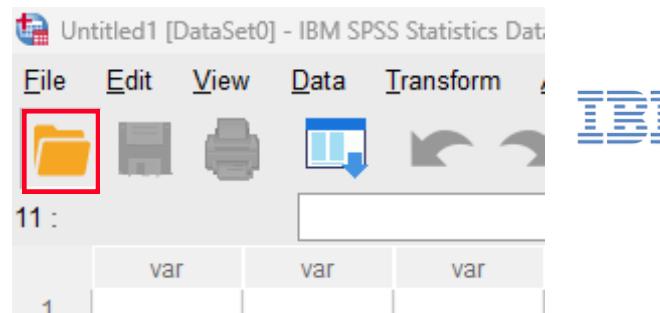
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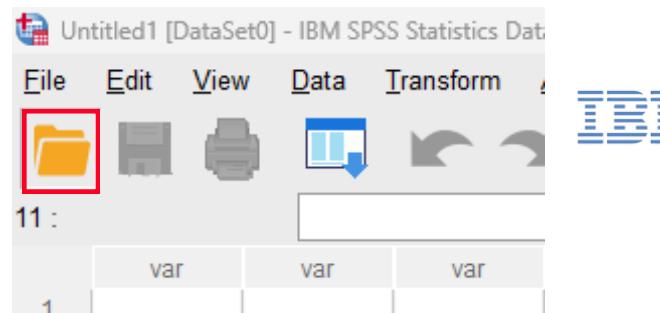
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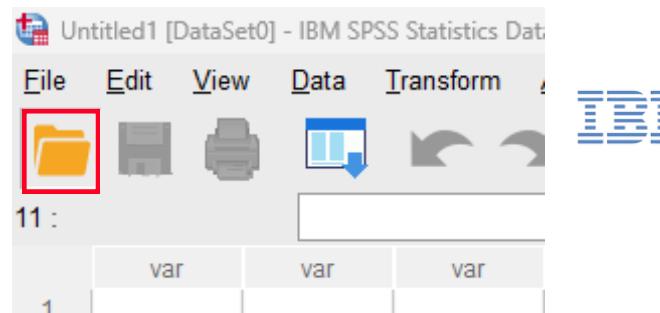
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2 Buka SPSS, Klik Icon Folder



4

THE
BOYS

Kelompok 8 | P2 | Angga Fathan R • M Dylan Pahlevi • M Fawaz Zidan • Jonathan Hizkia

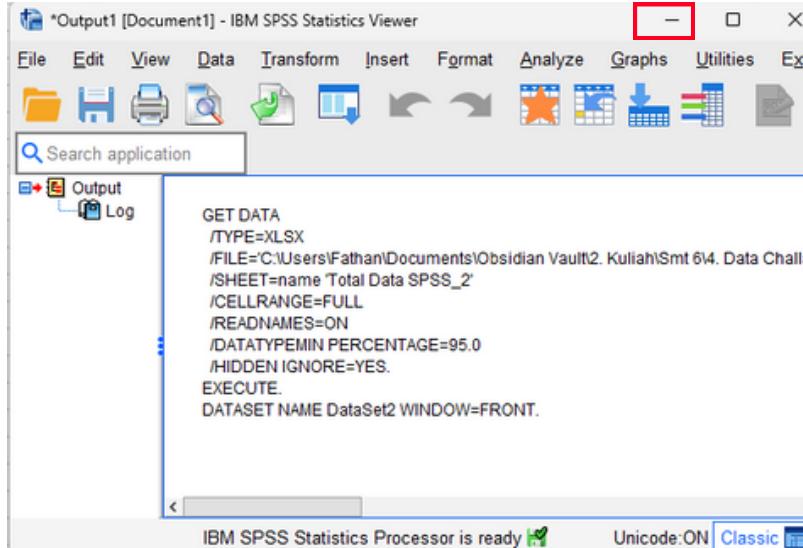
1 Siapkan data di excel, buat seperti ini:



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

6 Minimize log



Data Berhasil di input

	Kode	Cd111ngL	Hg202ngL	Pb208ngL	Sb121ngL
1	EU_R_A	1.64934482919	553.659420799	662.824664557	5120.79076243
2	EU_R_A	1.99545590988	581.697130170	580.306821896	4774.53603571
3	EU_R_A	1.39366362284	475.160146578	500.439985557	4223.30903839
4	EU_R_A	2.03647316224	469.939555985	530.968518118	4745.34484691
5	EU_R_A	2.12686662594	381.611814293	469.063565823	5366.23554158
6	EU_R_A	3.30255527008	350.481650846	503.471957514	6021.75993228

7 Pada bawah kiri, Klik Variable View

45	BPOM_R_B	13.2403122587	37.398!
46	BPOM_R_B	14.9517824736	31.029!

5

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2 Penyiapan Data

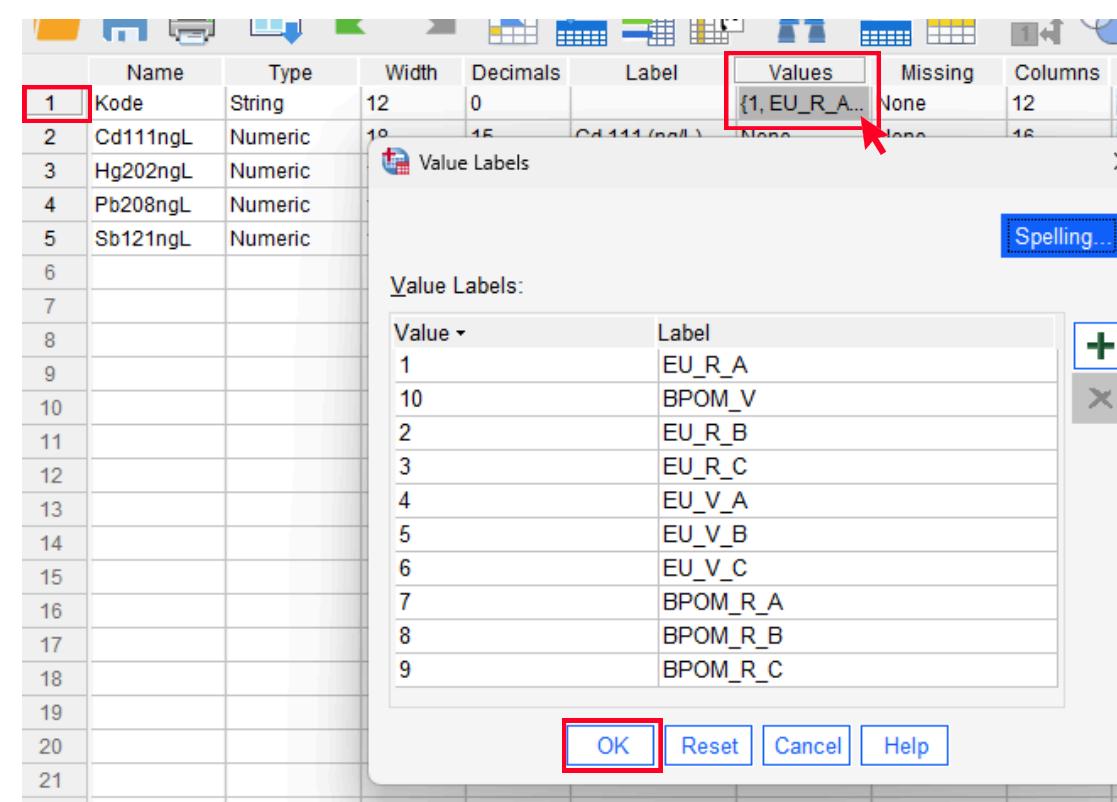
Untuk analisis SPSS



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8 Di kolom **Values**, klik titik 3. Lalu masukkan **Value & Label** seperti berikut



Klik OK

9 Di kolom **Decimals**, Ubah nilainya menjadi 2

	Name	Type	Width	Decimals	Label
1	Kode	String	12	0	
2	Cd111ngL	Numeric	18	2	Cd 111 (ng/L)
3	Hg202ngL	Numeric	18	2	Hg 202 (ng/L)
4	Pb208ngL	Numeric	18	2	Pb 208 (ng/L)
5	Sb121ngL	Numeric	19	2	Sb 121 (ng/L)

10 Kembali ke **Data View**

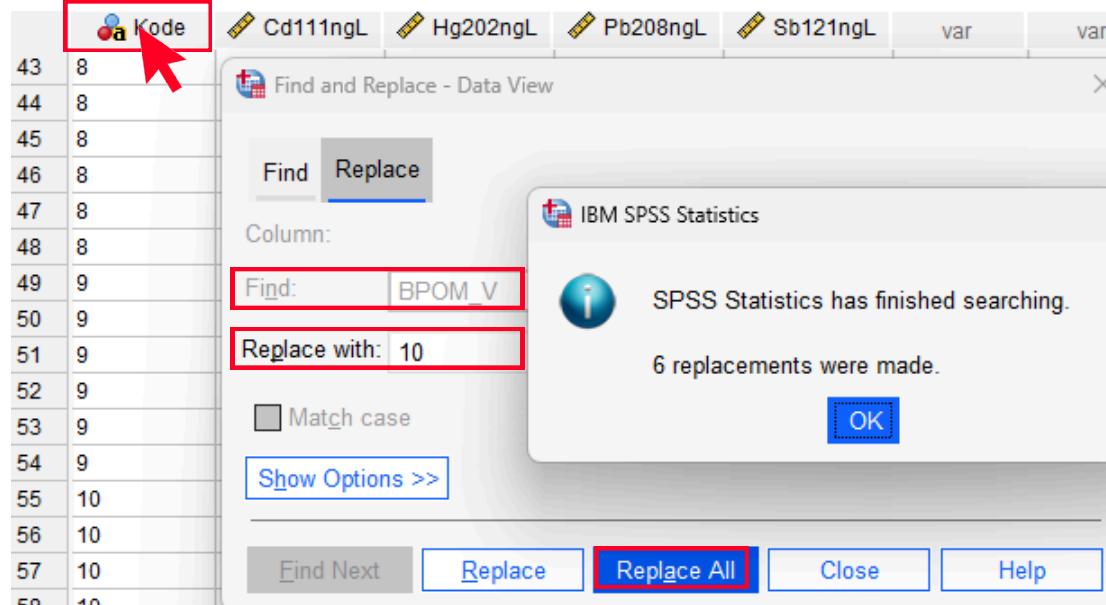
45	BPOM_R_B	13.24	37.
46	BPOM_R_B	14.95	31.

Overview Data View Variable View

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 12 Klik Kolom pertama → **Ctrl + H**,
Lalu **Find** setiap kode, **Replace** dengan
angka **sesuai label**, Klik **Replace All**



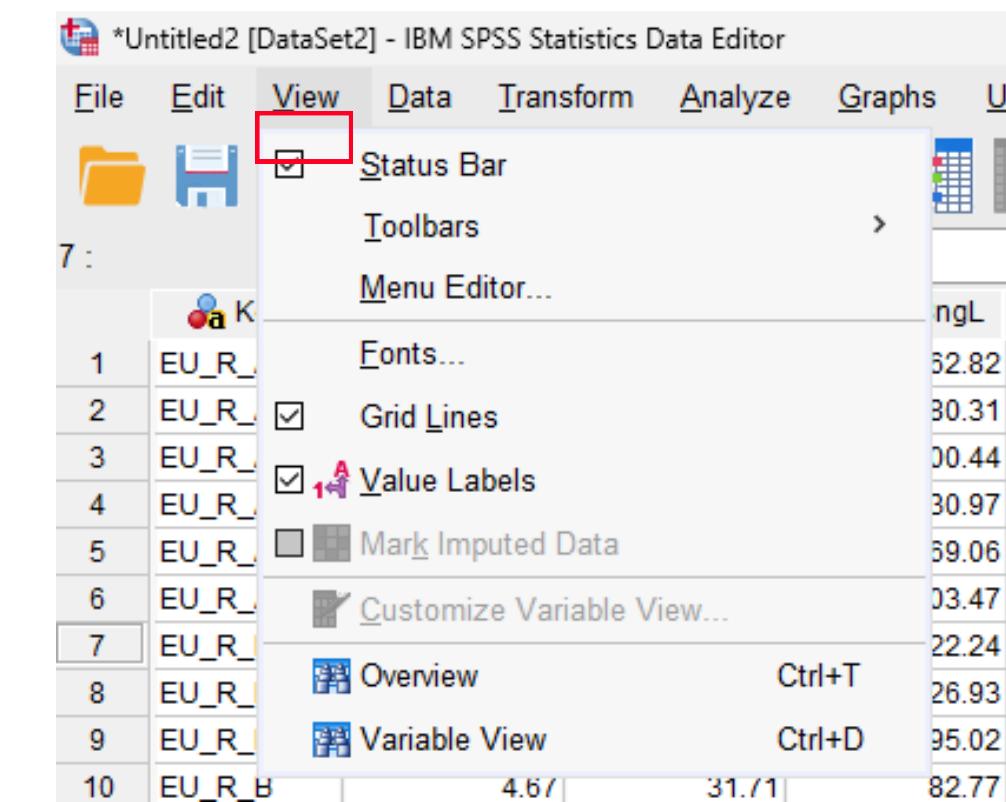
Label yang dimaksud

Value	Label
1	EU_R_A
10	BPOM_V
2	EU_R_B
3	EU_R_C
4	EU_V_A
5	EU_V_B
6	EU_V_C
7	BPOM_R_A
8	BPOM_R_B
9	BPOM_R_C

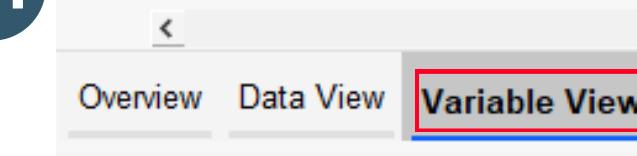
Kolom kode berhasil diubah

	Kode	Cd111ngL	Hg202ngL	Pb208ngL	Sb121ngL
1	1	1.65	553.66	662.82	5120.79
2	1	2.00	581.70	580.31	4774.54
3	1	1.39	475.16	500.44	4223.31
4	1	2.04	469.94	530.97	4745.34
5	1	2.13	381.61	469.06	5366.24
6	1	3.30	350.48	503.47	6021.76
7	2	4.16	46.41	22.24	81.95

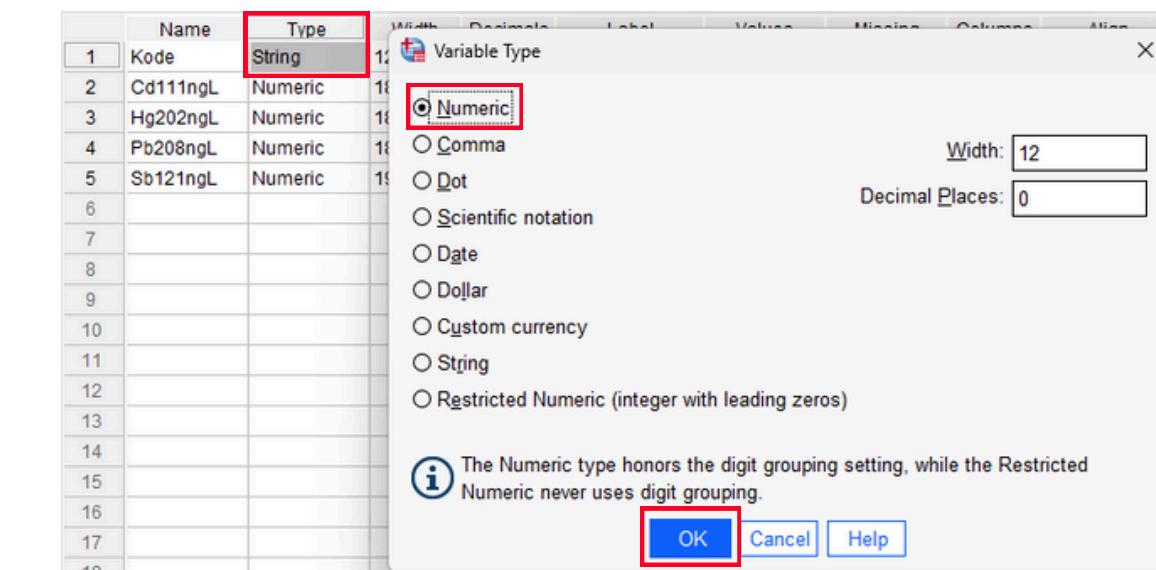
- 13 Untuk memastikan.. Klik **View**
pilih **Value Labels** untuk
melihat labelnya.



- 14 Kembali ke **Variable View**



- 15 Di kolom **Type**, Ubah String
Menjadi **Numeric**. Lalu klik **OK**



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

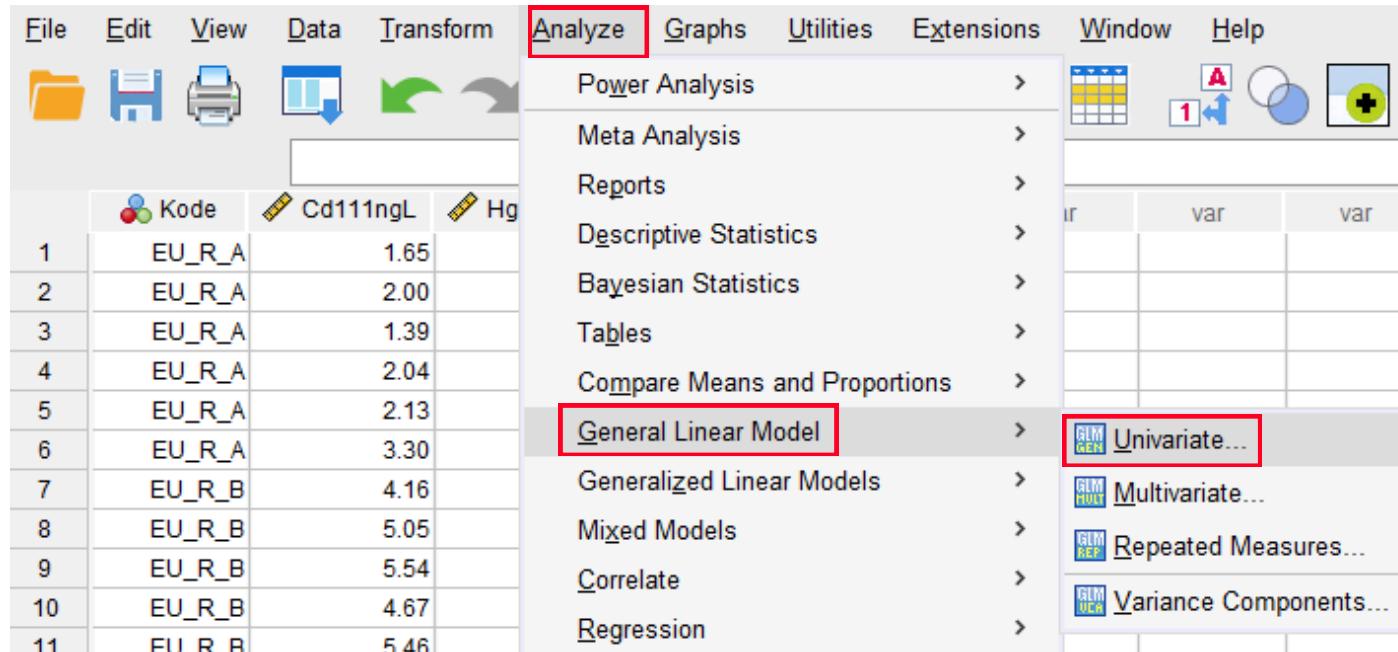
3 | Uji Normalitas Kenormalan data



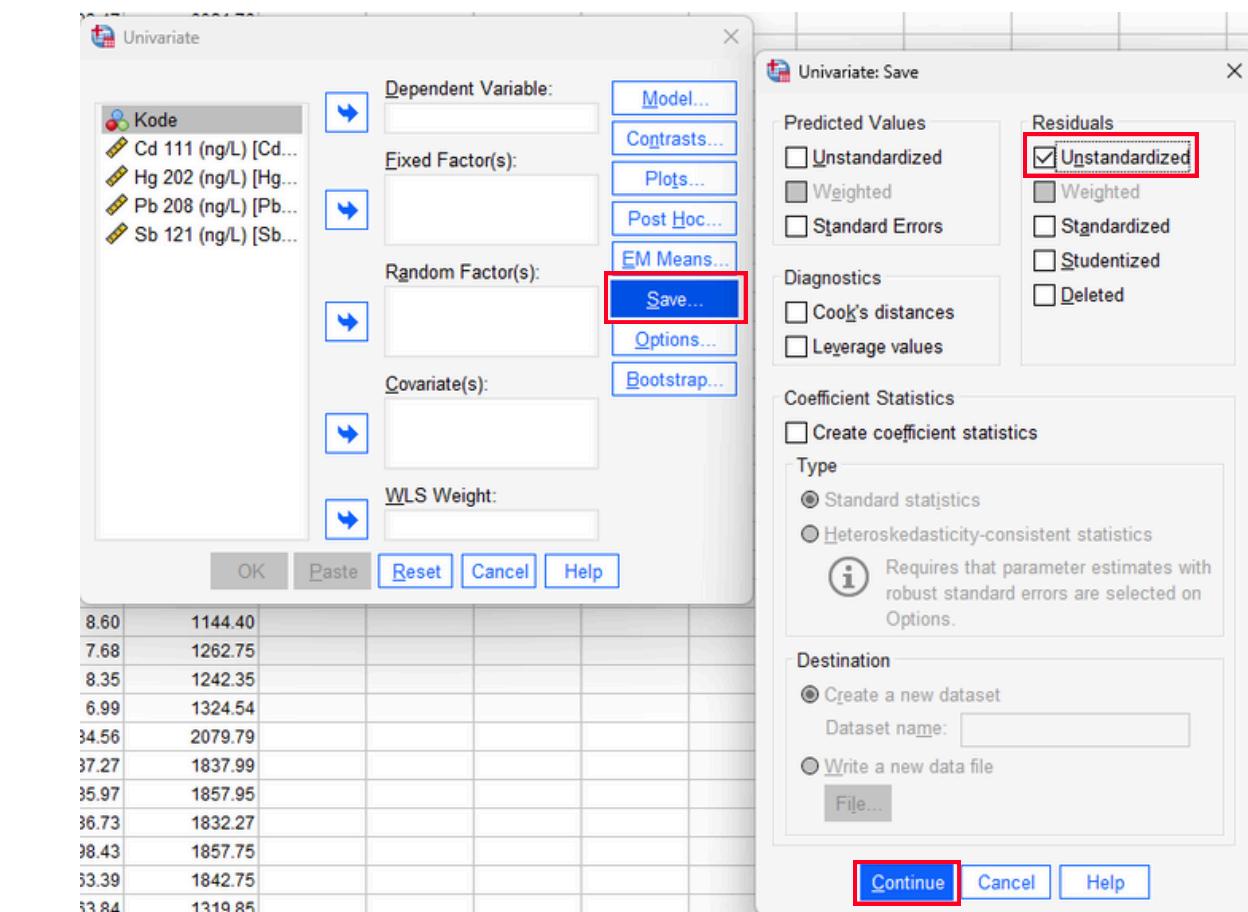
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- 1 Klik Analyze → General Linear Model → Univariate



- 2 Klik Save → Ceklis Unstandardized → Continue

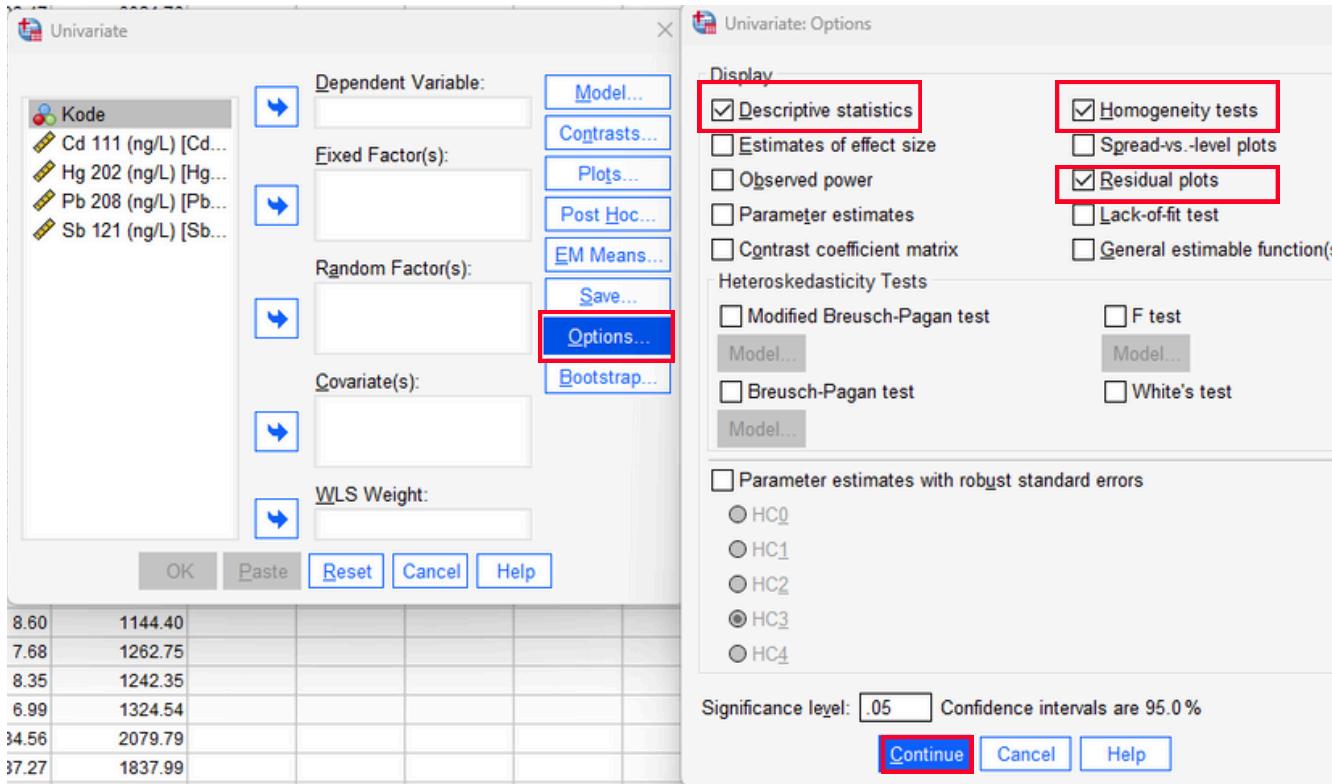


TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 3 Klik Options → Ceklis:
• Descriptive statistics,
• Homogeneity test,
• Residual plots

→ Continue



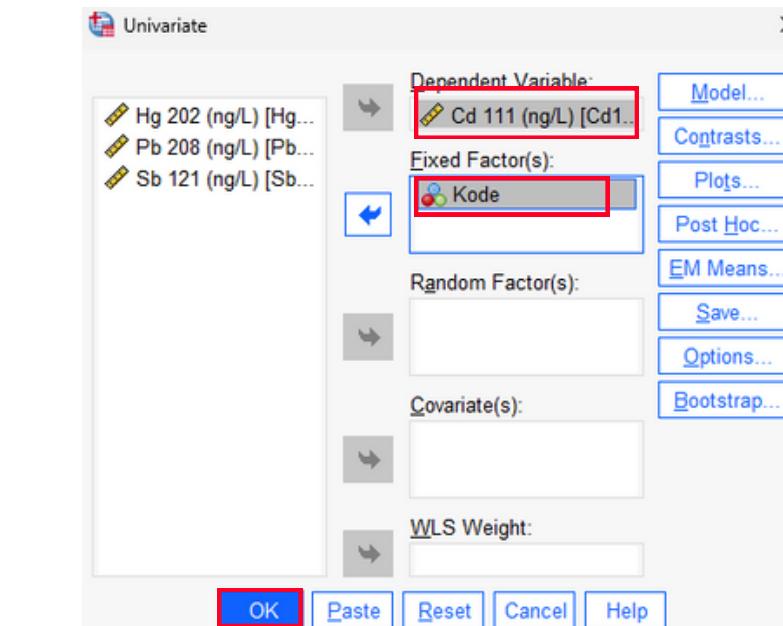
3 | Uji Normalitas Kenormalan data



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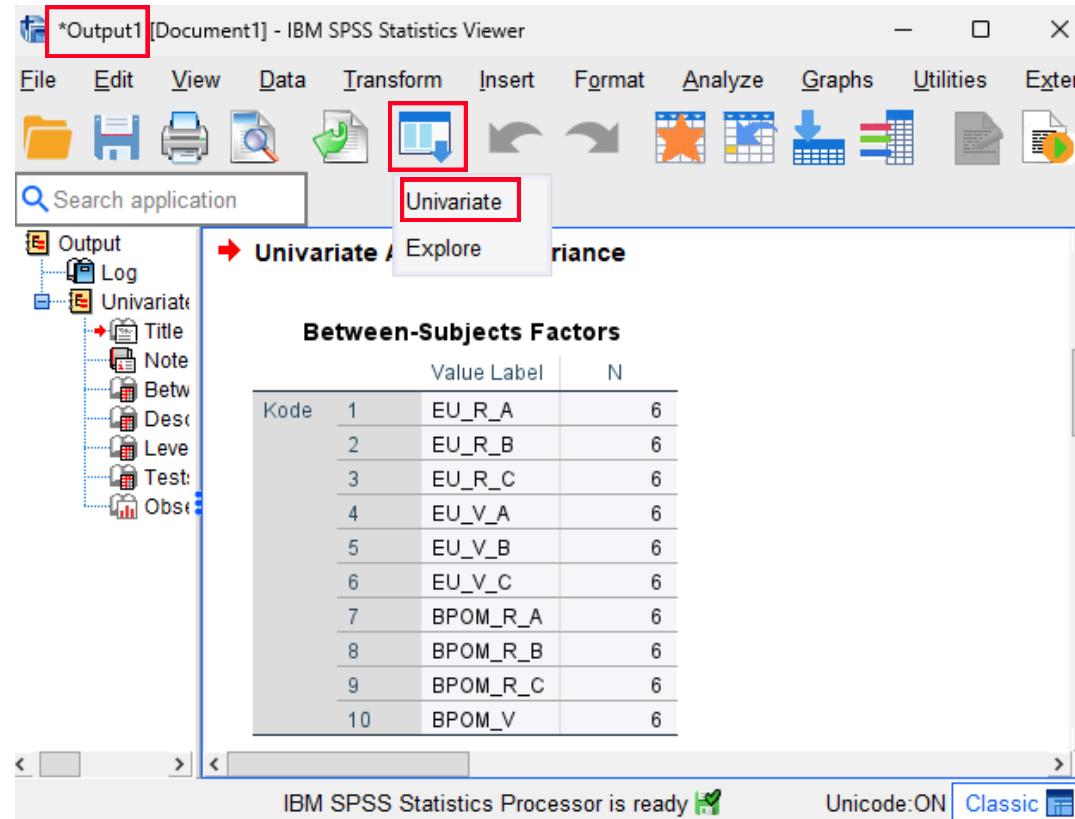
- 4 Untuk kenormalan Cd
Pilih **Dependent Variable:** Cd
Dan pilih **Fixed Factor(s): Kode**. Klik **OK**



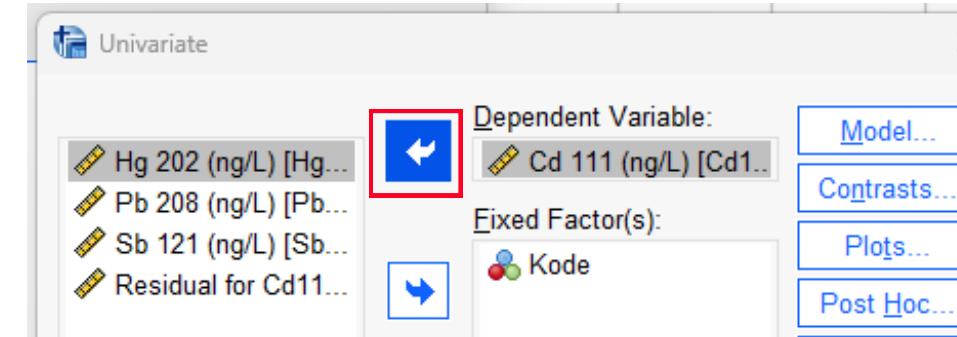
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 5 Untuk kenormalan Logam lainnya Pada **output**, Klik **kotak biru** → pilih **Univariate**



- 6 Keluarkan Cd



9

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3 | Uji Normalitas

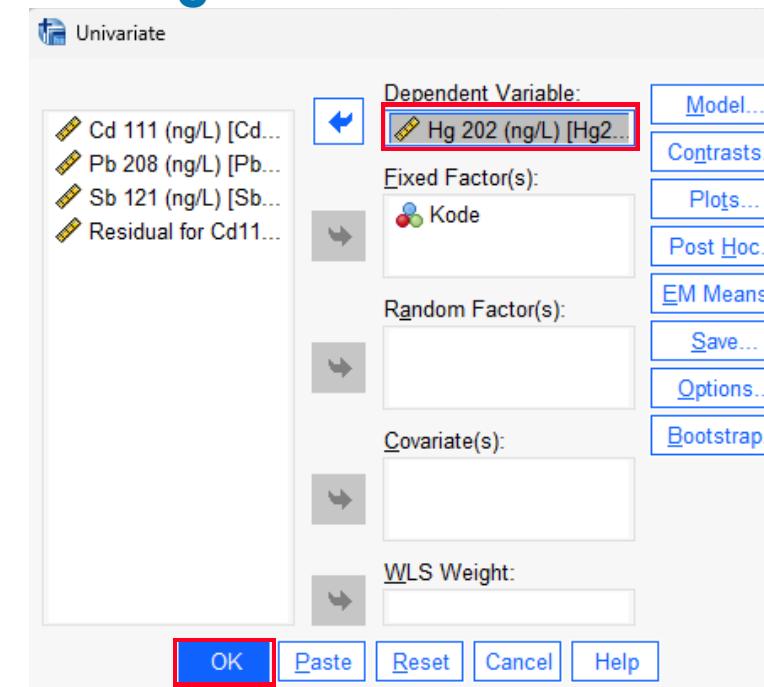
Kenormalan data



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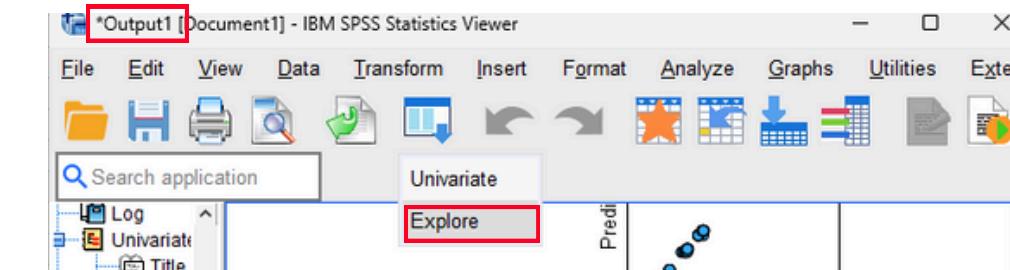
pojok
STATISTIK

- 7 Pilih **Hg** → Klik **OK**

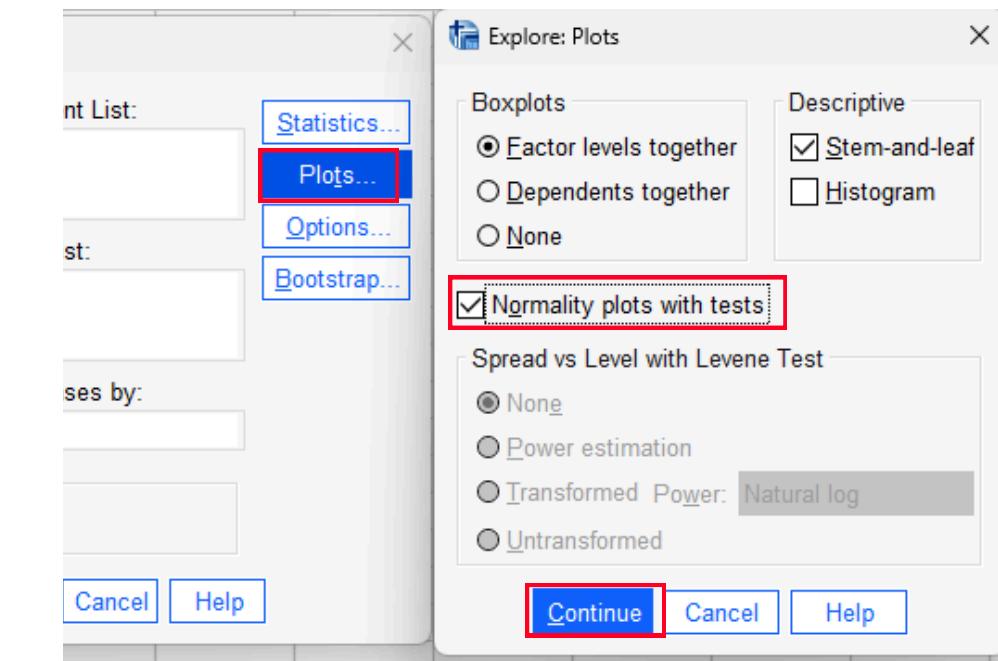


- 8 Ulangi langkah sebelumnya sampai Sb

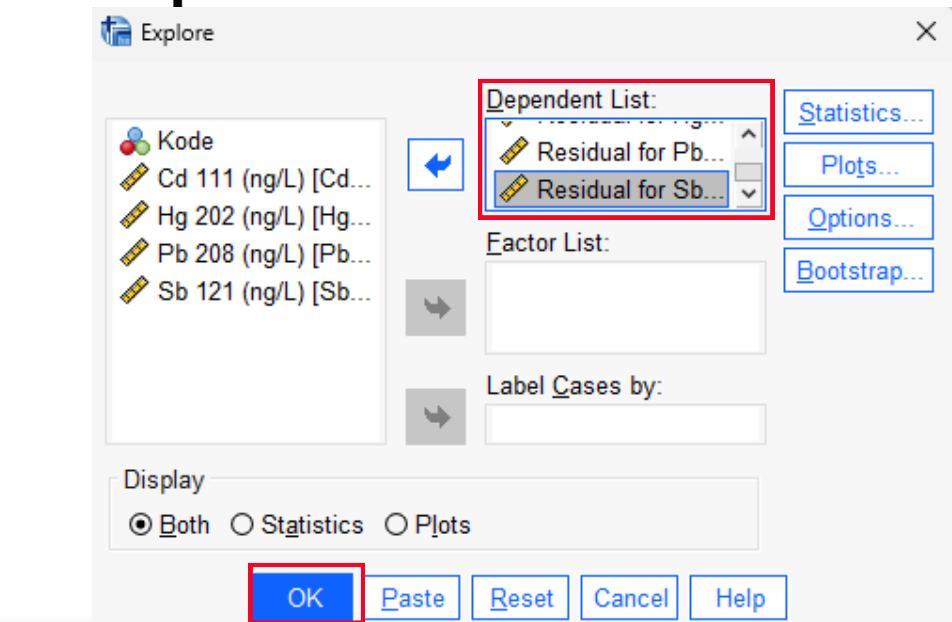
- 9 Pada output, Klik **kotak biru** → pilih **Explore**



- 10 Klik Plots → Ceklis Normality plots with tests → Continue



- 11 Masukkan **Semua Residual Ke Dependent List** → OK



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 12 Hasil kenormalan sudah jadi →
Klik kanan → Copy

The screenshot shows the SPSS Statistics Viewer interface. The 'Output' tab is selected. In the center, there is a table titled 'Tests of Normality' with two sections: 'Kolmogorov-Smirnov' and 'Shapiro-Wilk'. The 'Sig.' column for all entries is highlighted with a red box. A context menu is open over the table, with the 'Copy' option highlighted and a red arrow pointing to it.

- 13 Paste di excel → Atur sesuai keinginan

The screenshot shows an Excel spreadsheet with a table titled 'Tests of Normality'. The table has columns labeled A through G. Row 2 is labeled 'Berdasarkan Uji Teoritis'. The data rows correspond to the SPSS output, with the 'Sig.' column values aligned with the red boxes in the SPSS screenshot.

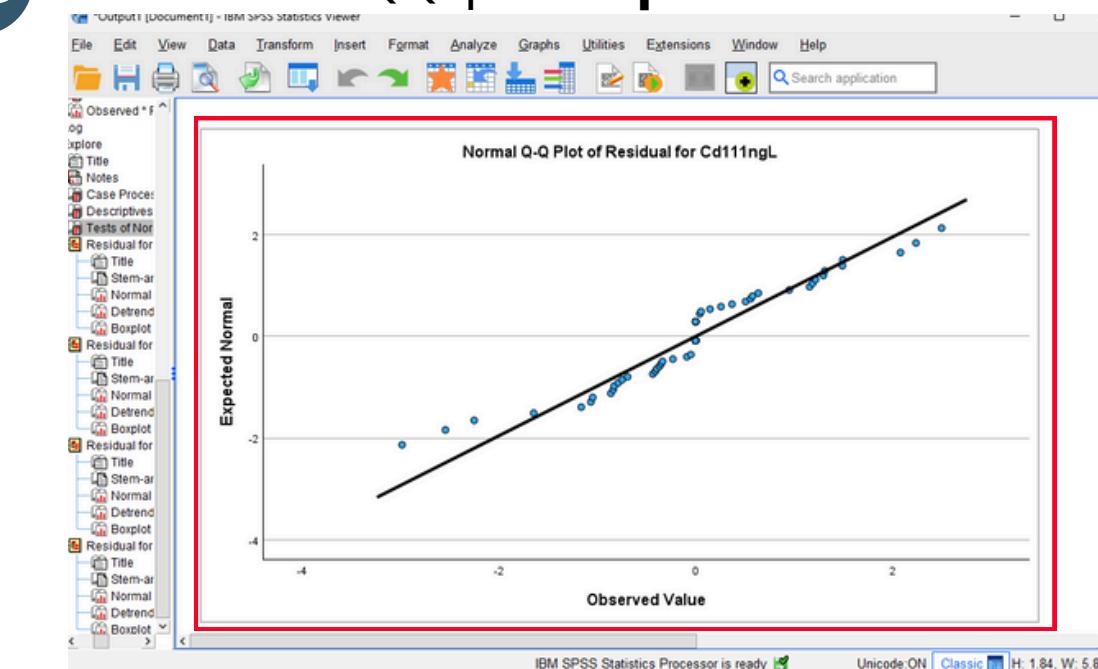
	A	B	C	D	E	F	G
1							
2	Berdasarkan Uji Teoritis						
3	Tests of Normality						
4	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
5	Statistic	df	Sig.	Statistic	df	Sig.	
6	Residual for Cd111ngL	0,178	60	0,000	0,937	60	0,004
7	Residual for Hg202ngL	0,242	60	0,000	0,745	60	0,000
8	Residual for Pb208ngL	0,228	60	0,000	0,871	60	0,000
9	Residual for Sb121ngL	0,308	60	0,000	0,538	60	0,000
10	a. Lilliefors Significance Correction						

- 12 Beri keterangan

The screenshot shows a Microsoft Word document with a section titled 'Keterangan'. It contains text explaining that for n > 50, the Kolmogorov-Smirnov test is used. It lists four residuals with their significance levels: Cd111 (0.178), Hg202 (0.242), Pb208 (0.228), and Sb121 (0.308), all of which are less than 0.05, indicating non-normality.

Jumlah sampel $n > 50$ sehingga menggunakan kolmogorov-smirnov
cd111 nilai signifikansinya $< 0,05$ sehingga tidak normal
hg202 nilai signifikansinya $< 0,05$ sehingga tidak normal
pb208 nilai signifikansinya $< 0,05$ sehingga tidak normal
sb121 nilai signifikansinya $< 0,05$ sehingga tidak normal

- 13 Screenshot QQ-plot → paste di Excel



QQ-plot dikatakan **normal** apabila titi-titiknya tersebar **mengikuti garis lurus 45 derajat**

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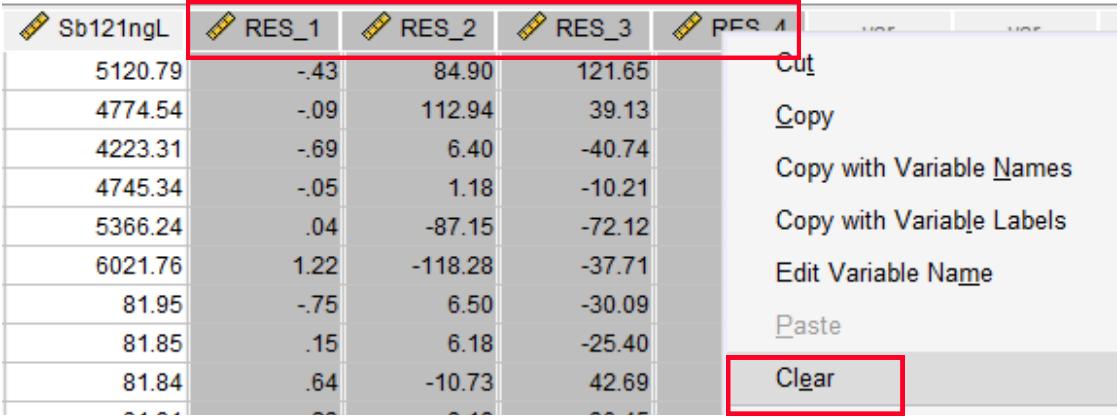
- 14 Save Output sebagai...

The screenshot shows the 'Save Output As' dialog box. The 'File name' field contains 'Normalitas semua sampel.sbv'. The 'Save as type' dropdown is set to 'Viewer Files (*.spv)'. There are several other files listed in the 'Look in' folder. The 'Save' button is highlighted with a red box.

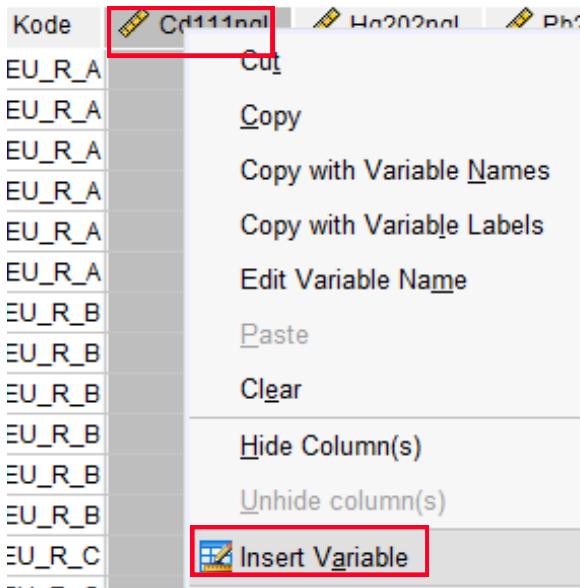
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

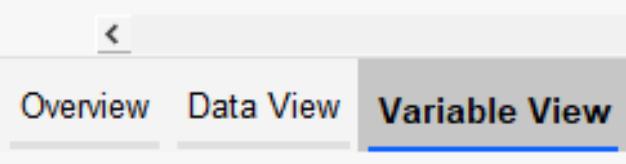
1 Pilih kolom **RES** → Klik kanan → **Clear**



2 Klik kanan kolom **Cd** → **Insert Variable**



Klik **Variable View**



11

THE
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4 Uji Analisis Varian

Perbedaan kadar logam
dengan Jenis Plastik



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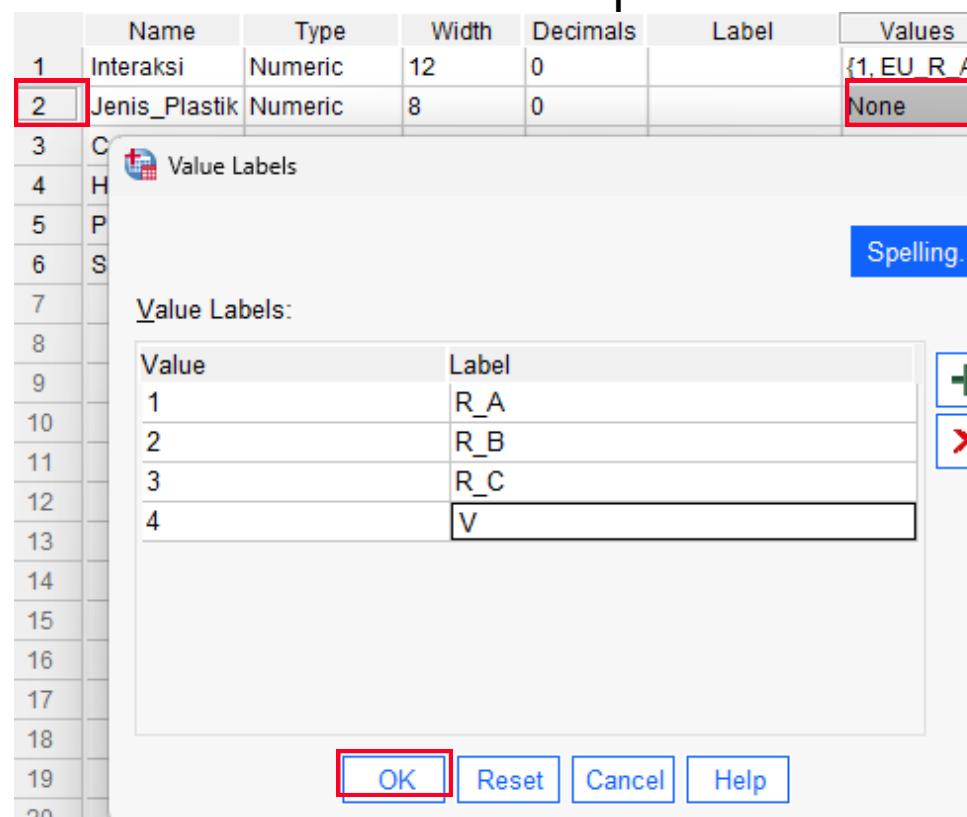
pojok
STATISTIK

3

- Ubah **Kode** Menjadi **Interaksi**.
- Variable 2** diberi nama **Jenis_Plastik**
- Ubah **Decimals** ke **0**.
- Ubah **Measure** Jadi **Nominal**

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Interaksi	Numeric	12	0		{1, EU_R_A...}	None	10	Right	Nominal
2	Jenis_Plastik	Numeric	8	0		None	None	8	Right	Nominal
3	Cd111ngL	Numeric	18	2	Cd 111 (ng/L)	None	None	12	Right	Scale
4	Hg202ngL	Numeric	18	2	Hg 202 (ng/L)	None	None	12	Right	Scale
5	Pb208ngL	Numeric	18	2	Pb 208 (ng/L)	None	None	12	Right	Scale
6	Sb121ngL	Numeric	19	2	Sb 121 (ng/L)	None	None	12	Right	Scale

4 Baris 2 Kolom **Values**, Klik titik 3
→ Beri **Value & Label** seperti ini



Klik **OK**

5 Kembali ke **Data View**

45	BPOM_R_B	13.24	37.
46	BPOM_R_B	14.95	31.

Overview Data View Variable View

11

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

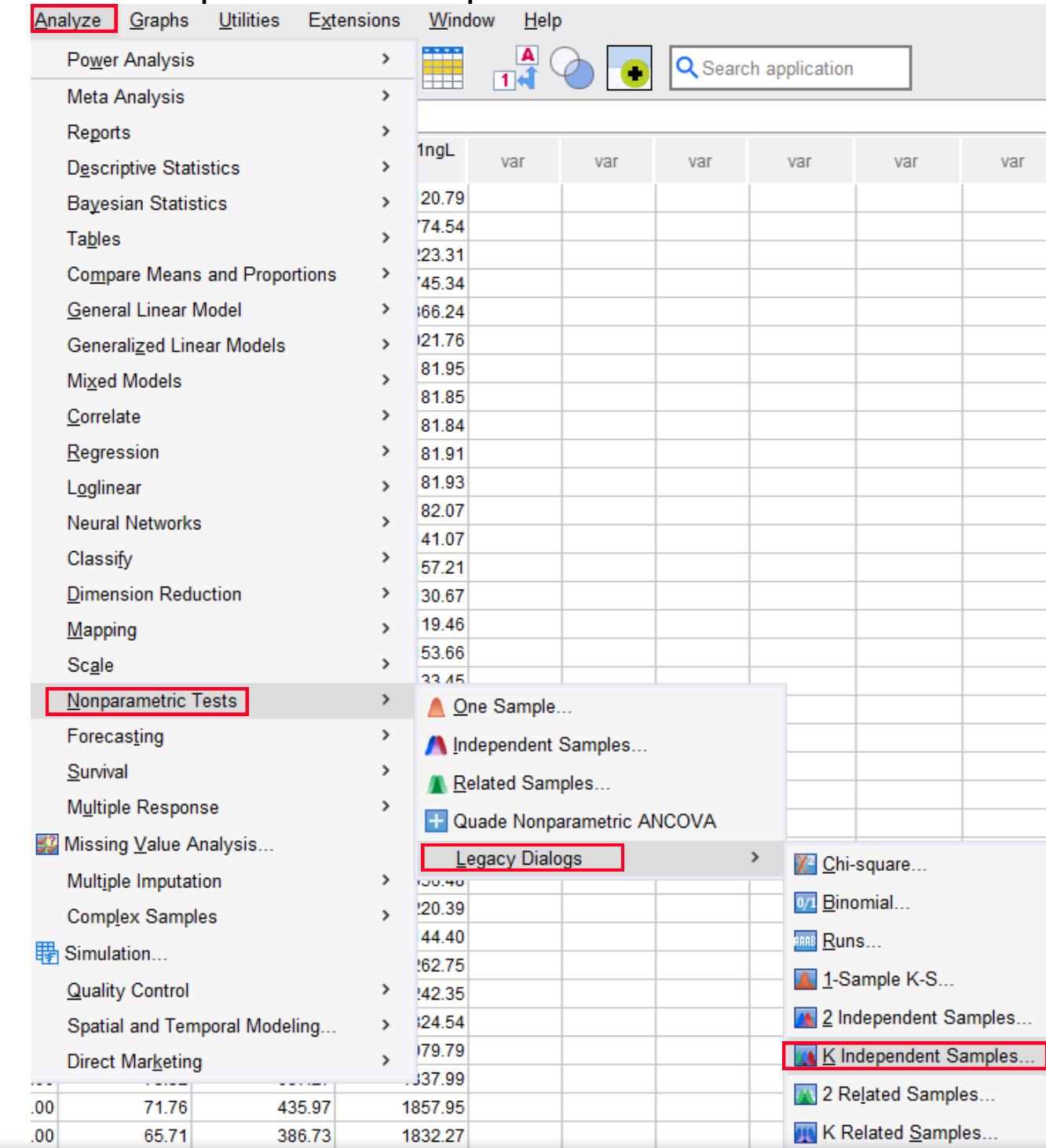
6 Pada kolom 2

Setiap **R_A** Diberi nilai **1**,
R_B = **2**, **R_C** = **3**, dan **V = 4**

	Interaksi	Jenis_Plastik		Interaksi	Jenis_Plastik		Interaksi	Jenis_Plastik	
EU_R_A	1	BPOM_R_A	1	EU_R_C	3				
EU_R_A	1	BPOM_R_A	1	EU_R_C	3				
EU_R_A	1	BPOM_R_B	2	EU_V_A	4				
EU_R_A	1	BPOM_R_B	2	EU_V_A	4				
EU_R_A	1	BPOM_R_B	2	EU_V_A	4				
EU_R_A	1	BPOM_R_B	2	EU_V_A	4				
EU_R_B	2	BPOM_R_B	2	EU_V_A	4				
EU_R_B	2	BPOM_R_B	2	EU_V_A	4				
EU_R_B	2	BPOM_R_B	2	EU_V_A	4				
EU_R_B	2	BPOM_R_C	3	EU_V_B	4				
EU_R_B	2	BPOM_R_C	3	EU_V_B	4				

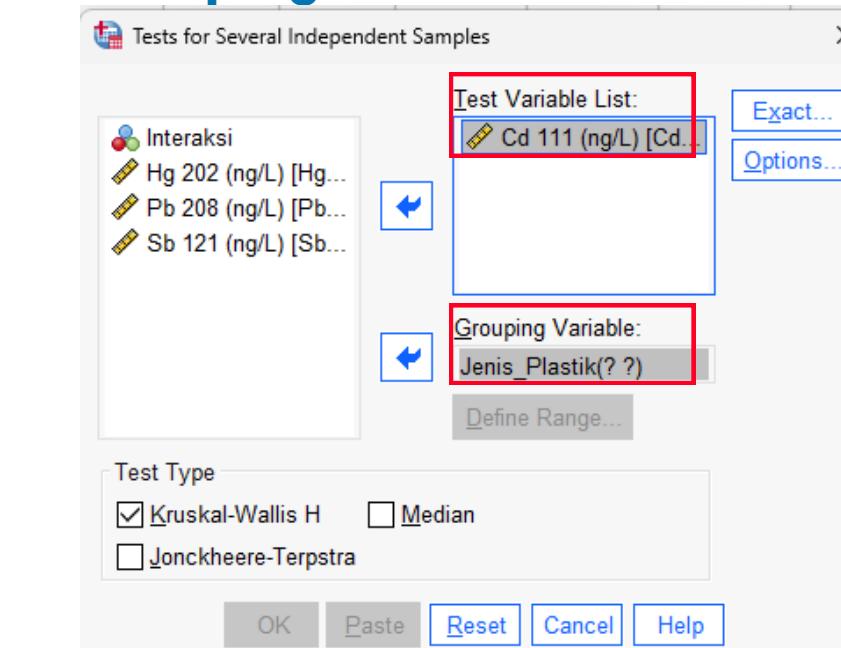
7

Klik Analyze → Nonparametric Test
→ Legacy Dialogs
→ K independent Samples



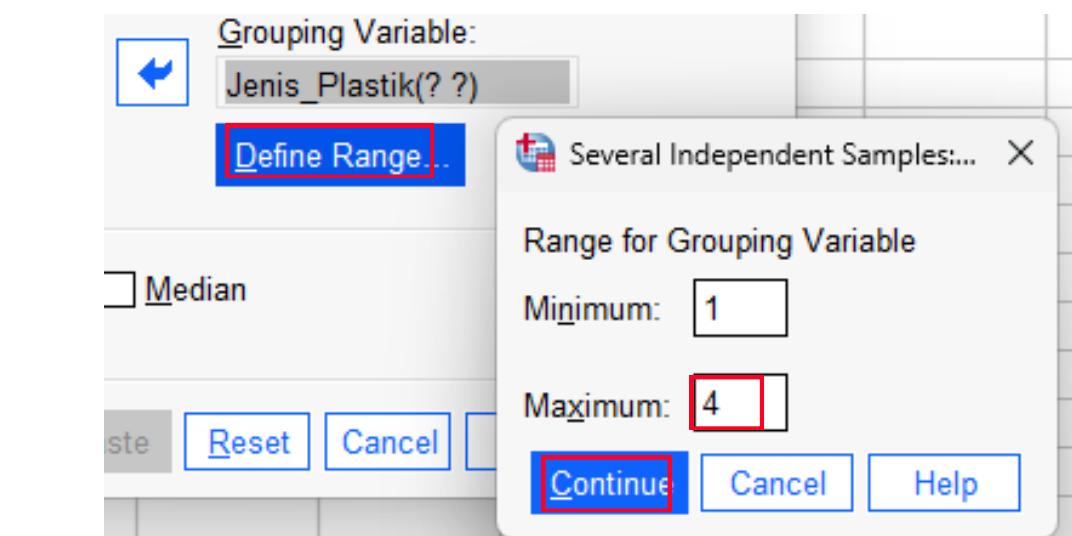
8

Masukkan **Cd** ke **test Variable List**
Masukkan **Jenis_plastik** Ke **Grouping Variable**



9

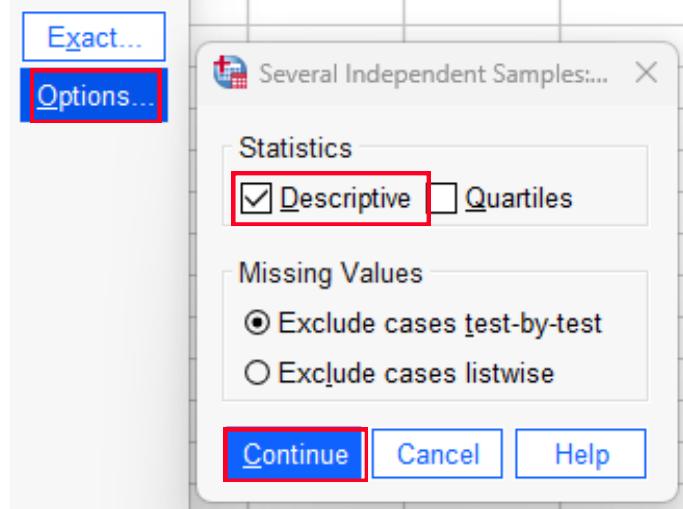
Define Range → 1 sampai 4
→ Continue



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

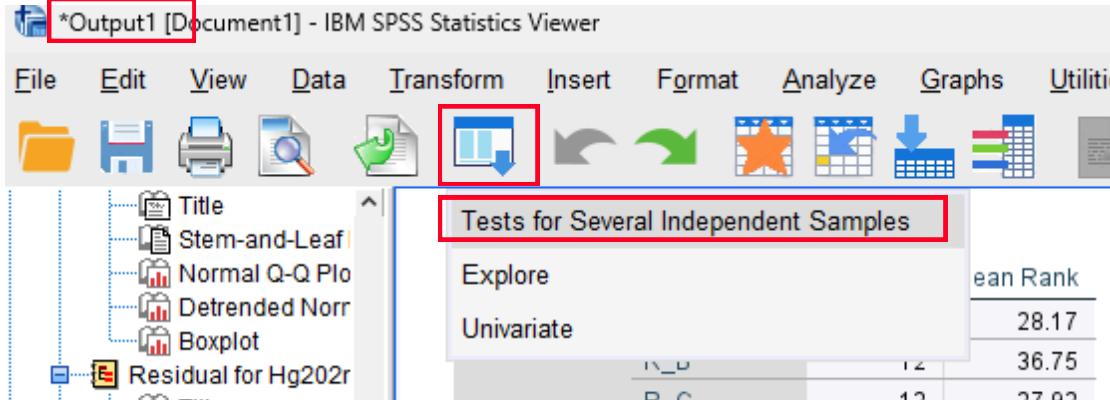
- 10 Options → Ceklis **Descriptive**
→ Continue



Klik **OK**

OK

- 11 Pada **Output**, Klik kotak biru → Pilih Test...



13

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4 Uji Analisis Varian

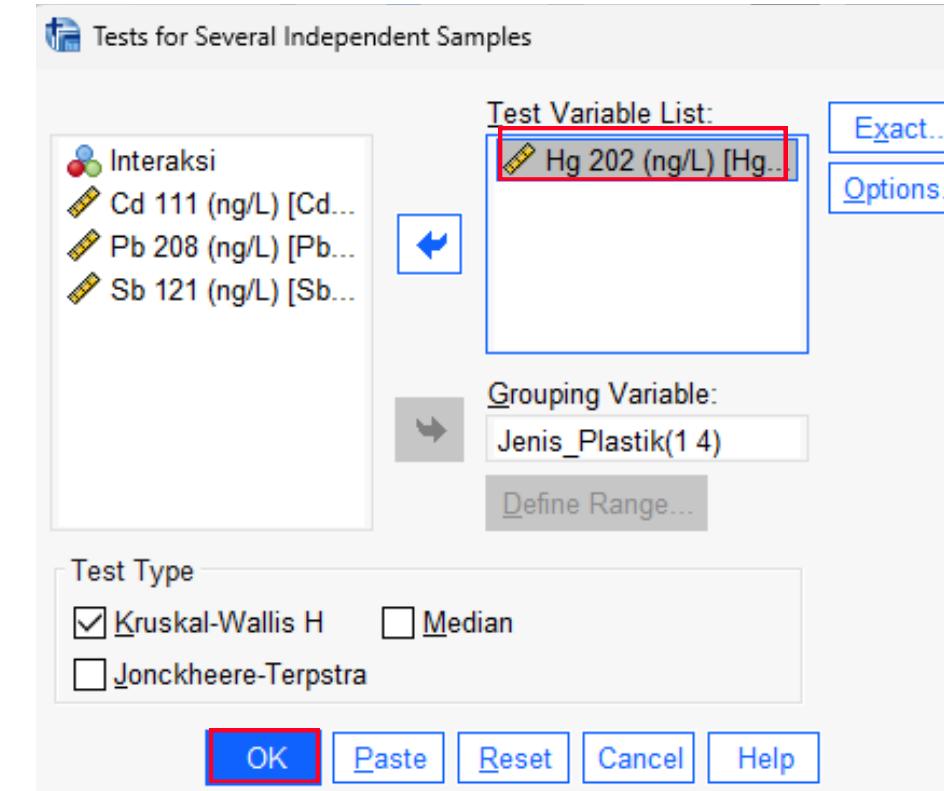
Perbedaan kadar logam
dengan Jenis Plastik



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- 12 Keluarkan Cd, Masukkan Hg
→ Continue



- 13 Ulangi langkah sebelumnya sampai Sb

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 14 Copy 3 Tabel ini → Paste di Excel → Atur.
Lakukan untuk Semua logam

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Sb 121 (ng/L)	60	1255.0296	1475.88727	81.84	6000
Jenis_Plastik	60	2.80	1.176	1	4

Kruskal-Wallis Test

Ranks

Jenis_Plastik	N	Mean Rank	
Sb 121 (ng/L)	R_A	12	48.33
	R_B	12	10.50
	R_C	12	32.83
	V	24	30.42
	Total	60	

Test Statistics^{a,b}

Sb 121 (ng/L)	
Kruskal-Wallis H	28.465
df	3
Asymp. Sig.	<.001

a. Kruskal Wallis Test
b. Grouping Variable:
Jenis_Plastik



- 15 Beri keterangan

Pertanyaan 1: Ada tidaknya pengaruh jenis plastik terhadap kadar logam berat

Kadar logam cd pada 4 jenis plastik (R_A, R_B, R_C, V)

Npar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
Cd 111(ng/L)	60	8,9114	7,75914	1,39	29,05
Jenisplastik	60	2,80	1,176	1	4

Kruskal-Wallis Test

Ranks

Jenisplastik	N	Mean Rank	
Cd 111(ng/L)	R_A	12	28,17
	R_B	12	36,75
	R_C	12	27,92
	V	24	29,83
	Total	60	

Test Statistics^{a,b}

Cd 111(ng/L)	
Kruskal-Wallis H	2,105
df	3
Asymp. Sig.	0,551

p > 0,05 sehingga tidak ada perbedaan kadar logam cd111 yang signifikan di antara 4 jenis plastik

Terima H0, keempat jenis plastik tidak berbeda nyata

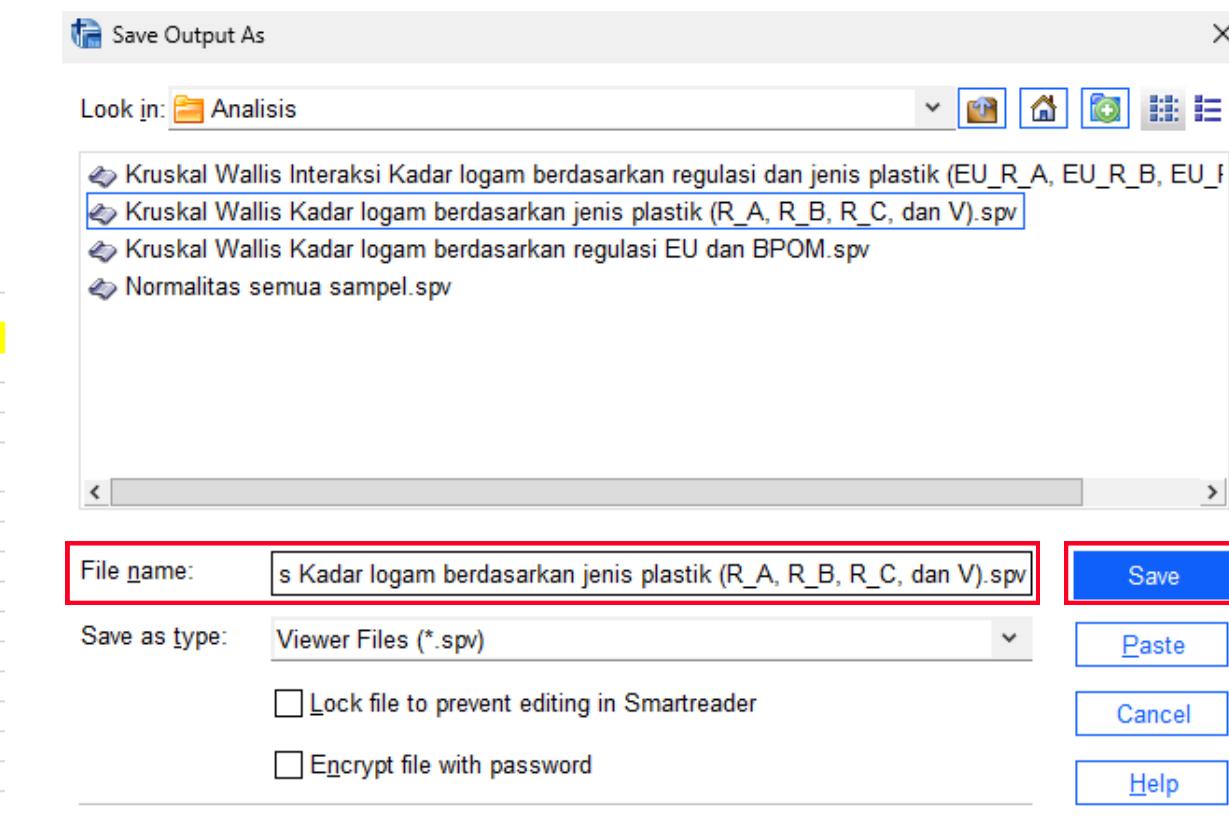
a. Kruskal Wallis Test
b. Grouping Variable: Jenisplastik



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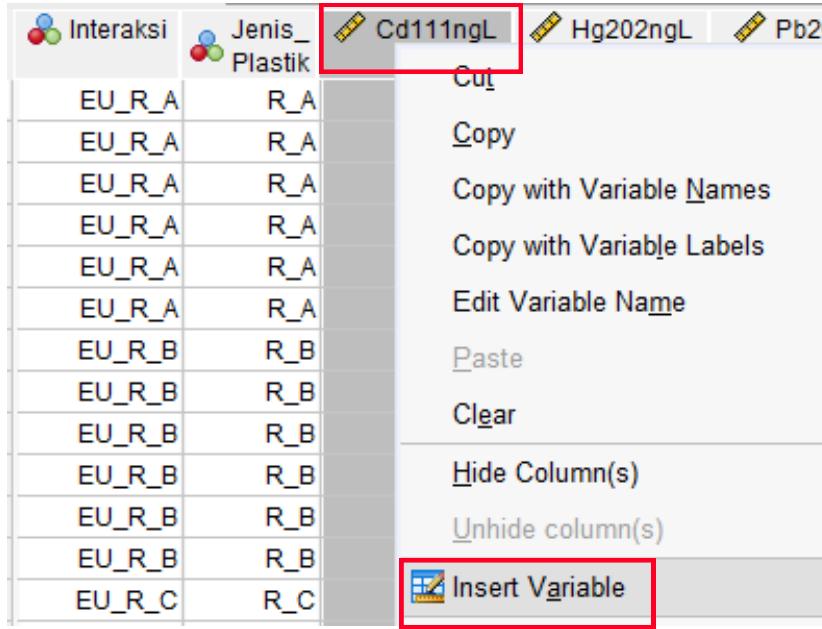
- 16 Save Output Sebagai..



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

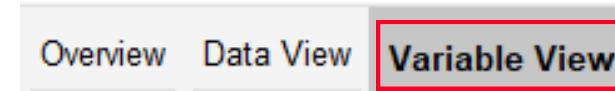
- 1 Tambah variable di samping kiri Cd



- 2 Beri Nilai 1 untuk EU dan 2 Untuk BPOM

EU_V_C	V	1.00
EU_V_C	V	1.00
BPOM_R_A	R_A	2.00

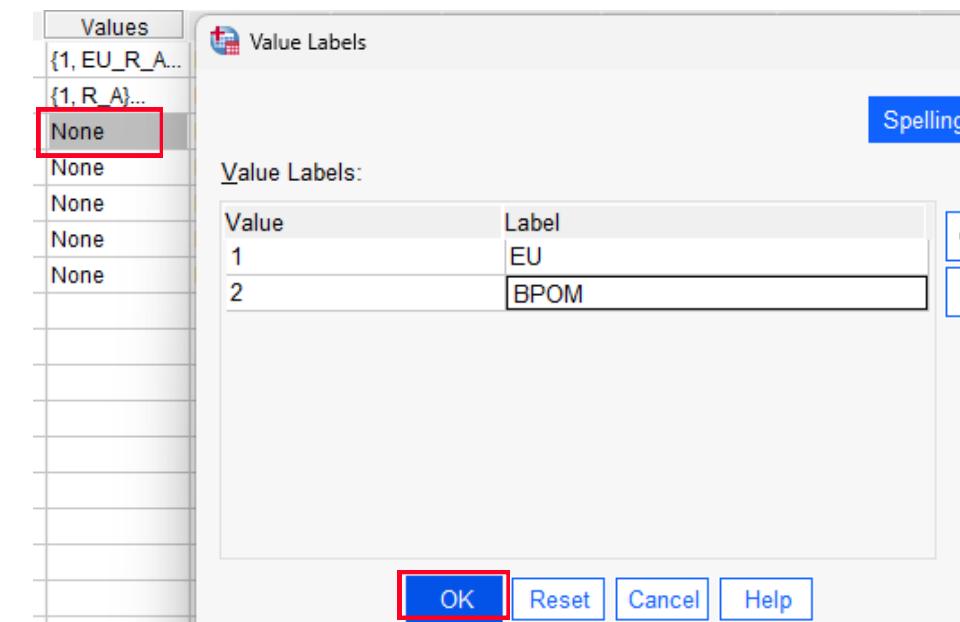
Ke Variable View



- 3 Beri nama Regulasi → Decimals 0 → Measure Nominal

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Interaksi	Numeric	12	0		{1, EU_R_A...}	None	10	Right	Nominal
2	Jenis_Plastik	Numeric	8	0		{1, R_A}...	None	8	Right	Nominal
3	Regulasi	Numeric	8	0		None	None	8	Right	Nominal
4	Cd111ngL	Numeric	18	2	Cd 111 (ng/L)	None	None	12	Right	Scale

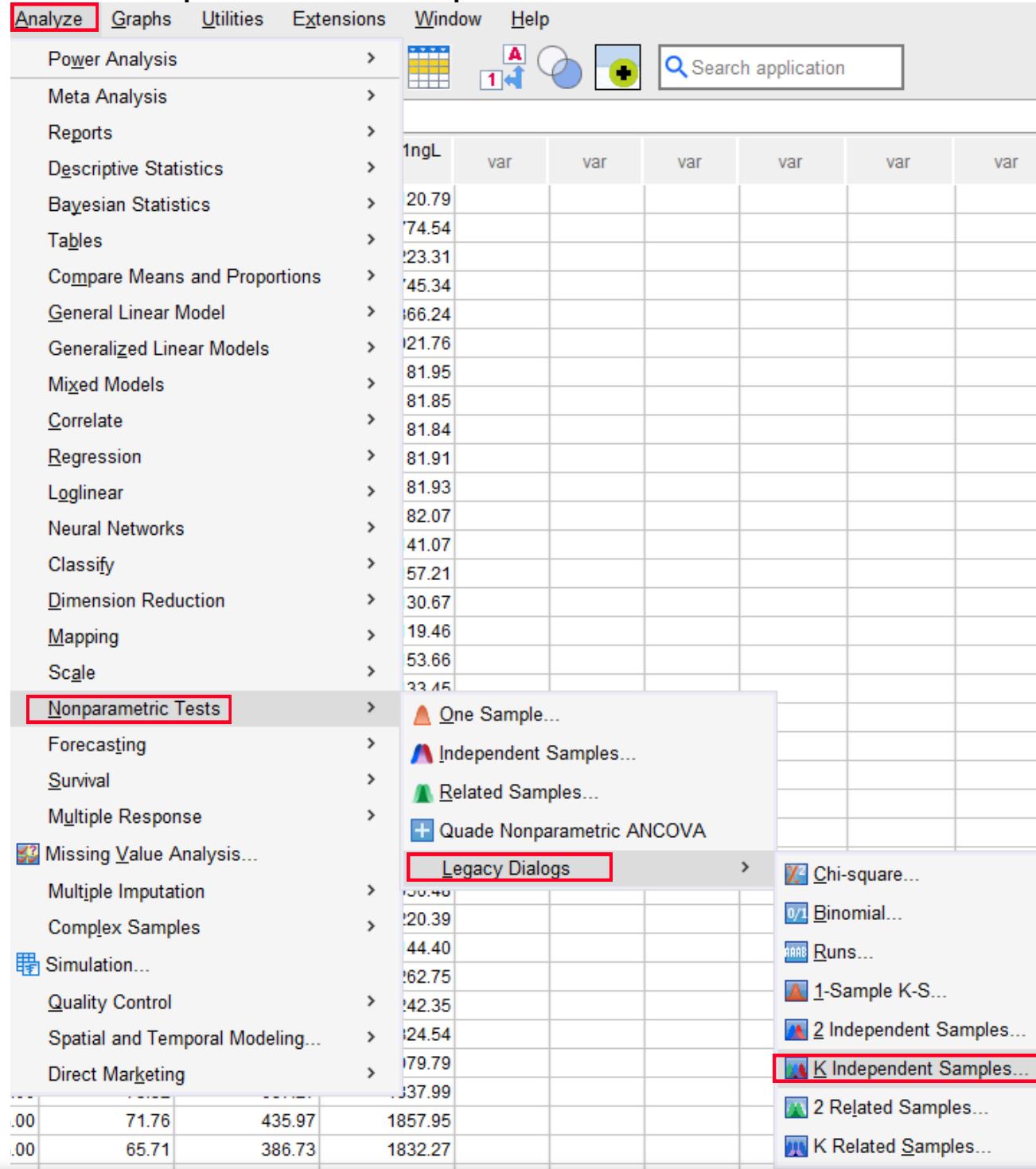
- 4 Beri Value seperti berikut



TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 5 Klik Analyze → Nonparametric Test
→ Legacy Dialogs
→ K independent Samples



5 | Uji Analisis Varian

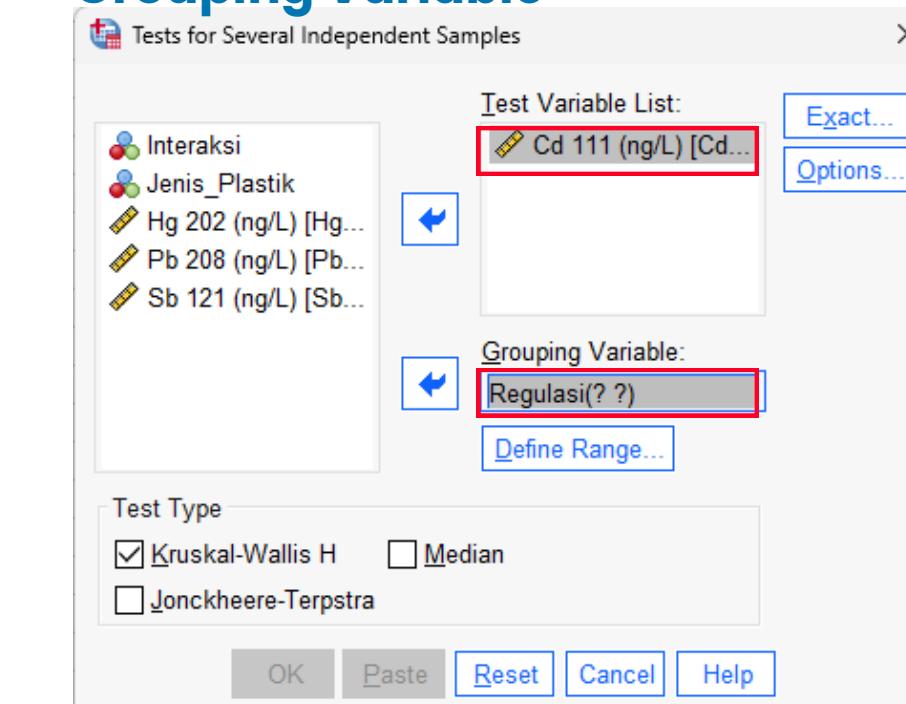
Perbedaan kadar logam
dengan Regulasi



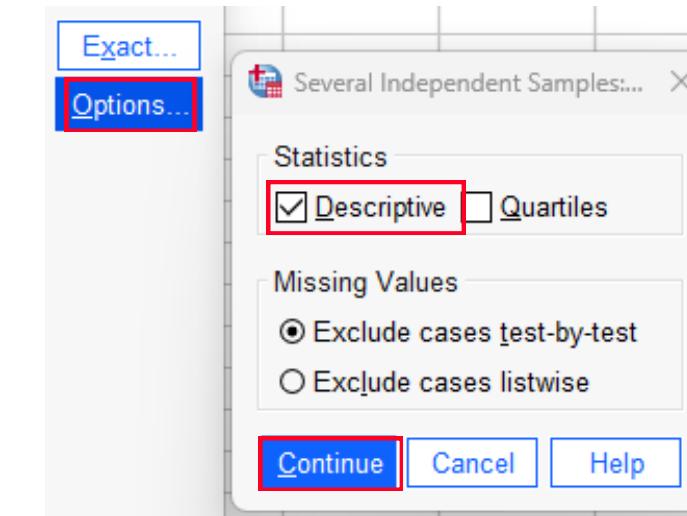
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- 6 Masukkan Cd ke **test Variable List**
Masukkan **Regulasi** Ke **Grouping Variable**

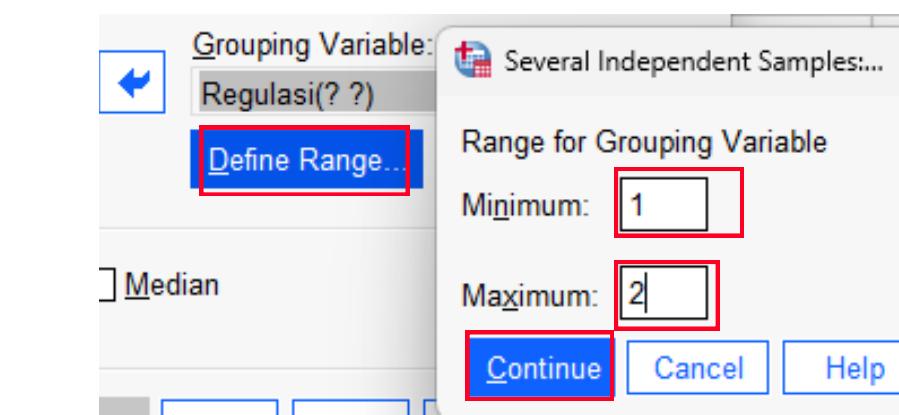


- 8 Options → Ceklis **Descriptive**
→ Continue



Klik OK OK

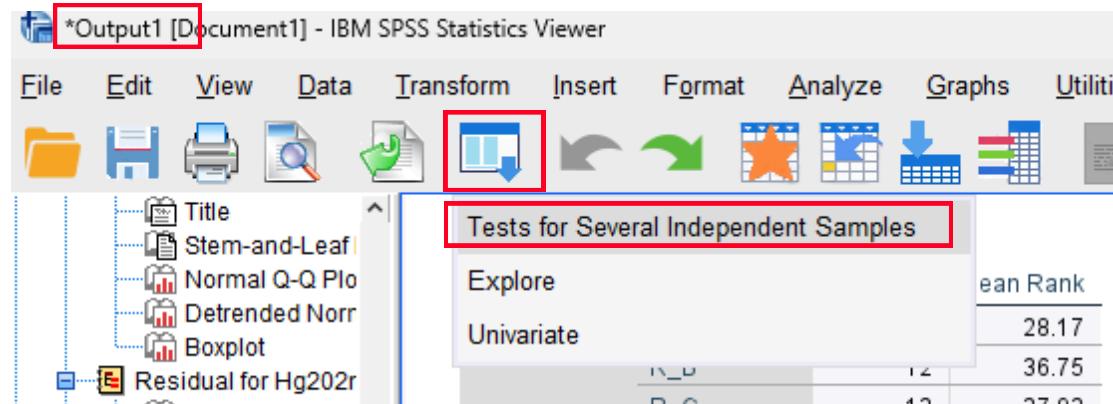
- 7 Define Range → 1 sampai 2
→ Continue



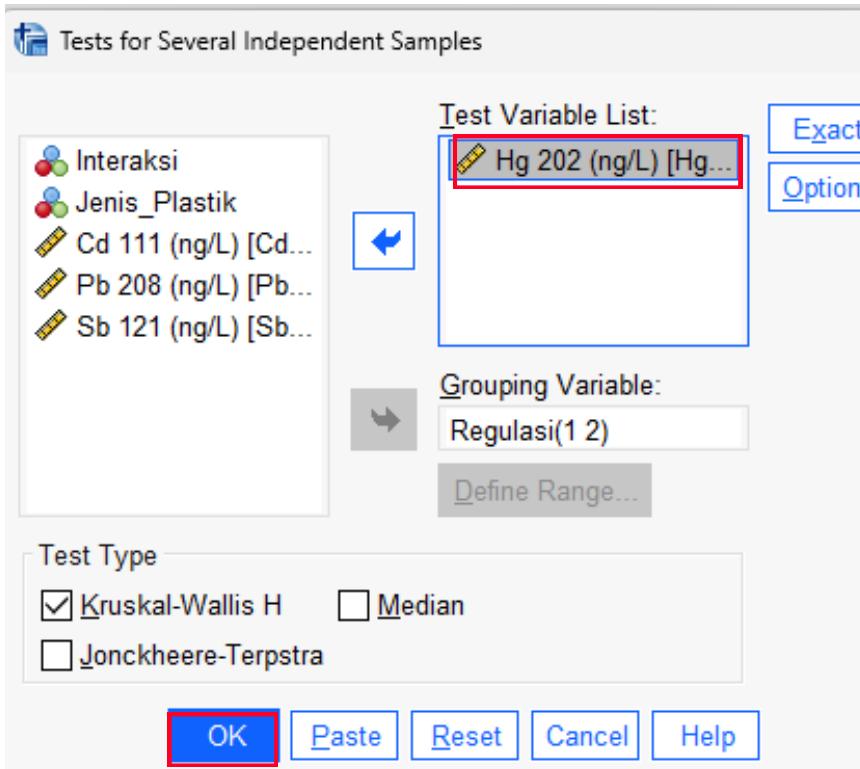
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

9 Pada Output, Klik kotak biru → Pilih Test...



10 Keluarkan Cd, Masukkan Hg
→ Continue



11 Copy 3 Tabel ini → Paste di Excel → Atur.
Lakukan untuk Semua logam

	N	Mean	Std. Deviation	Minimum	Maximum
Sb 121 (ng/L)	60	1255.0296	1475.88727	81.84	6021.
Regulasi	60	1.40	.494	1	2

	Regulasi	N	Mean Rank
Sb 121 (ng/L)	EU	36	30.44
	BPOM	24	30.58
	Total	60	

	Kruskal-Wallis H	df	Asymp. Sig.
Sb 121 (ng/L)	.001	1	.6

12 Beri keterangan

Pertanyaan 2: Ada tidaknya pengaruh regulasi terhadap kadar logam berat																							
Kadar logam Cd berdasarkan regulasi EU dan BPOM																							
Npar Tests																							
Descriptive Statistics																							
<table border="1"><thead><tr><th></th><th>N</th><th>Mean</th><th>Std. Deviation</th><th>Minimum</th><th>Maximum</th></tr></thead><tbody><tr><td>Cd 111(ng/L)</td><td>60</td><td>8.9114</td><td>7.75914</td><td>1.39</td><td>29.05</td></tr><tr><td>Regulasi</td><td>60</td><td>1.40</td><td>0.494</td><td>1</td><td>2</td></tr></tbody></table>							N	Mean	Std. Deviation	Minimum	Maximum	Cd 111(ng/L)	60	8.9114	7.75914	1.39	29.05	Regulasi	60	1.40	0.494	1	2
	N	Mean	Std. Deviation	Minimum	Maximum																		
Cd 111(ng/L)	60	8.9114	7.75914	1.39	29.05																		
Regulasi	60	1.40	0.494	1	2																		
Kruskal-Wallis Test																							
Ranks																							
<table border="1"><thead><tr><th></th><th>Regulasi</th><th>N</th><th>Mean Rank</th></tr></thead><tbody><tr><td>Cd 111(ng/L)</td><td>EU</td><td>36</td><td>18,50</td></tr><tr><td></td><td>BPOM</td><td>24</td><td>48,50</td></tr><tr><td></td><td>Total</td><td>60</td><td></td></tr></tbody></table>							Regulasi	N	Mean Rank	Cd 111(ng/L)	EU	36	18,50		BPOM	24	48,50		Total	60			
	Regulasi	N	Mean Rank																				
Cd 111(ng/L)	EU	36	18,50																				
	BPOM	24	48,50																				
	Total	60																					
Test Statistics^{a,b}																							
<table border="1"><thead><tr><th></th><th>Cd 111(ng/L)</th></tr></thead><tbody><tr><td>Kruskal-Wallis H</td><td>43,668</td></tr><tr><td>df</td><td>1</td></tr><tr><td>Asymp. Sig.</td><td>0,000</td></tr></tbody></table>							Cd 111(ng/L)	Kruskal-Wallis H	43,668	df	1	Asymp. Sig.	0,000										
	Cd 111(ng/L)																						
Kruskal-Wallis H	43,668																						
df	1																						
Asymp. Sig.	0,000																						
<p>p < 0,05 sehingga ada perbedaan kadar logam Cd yang signifikan di antara regulasi EU dan BPOM</p>																							
<p>Tolak H0, minimal ada satu regulasi yang berbeda</p>																							

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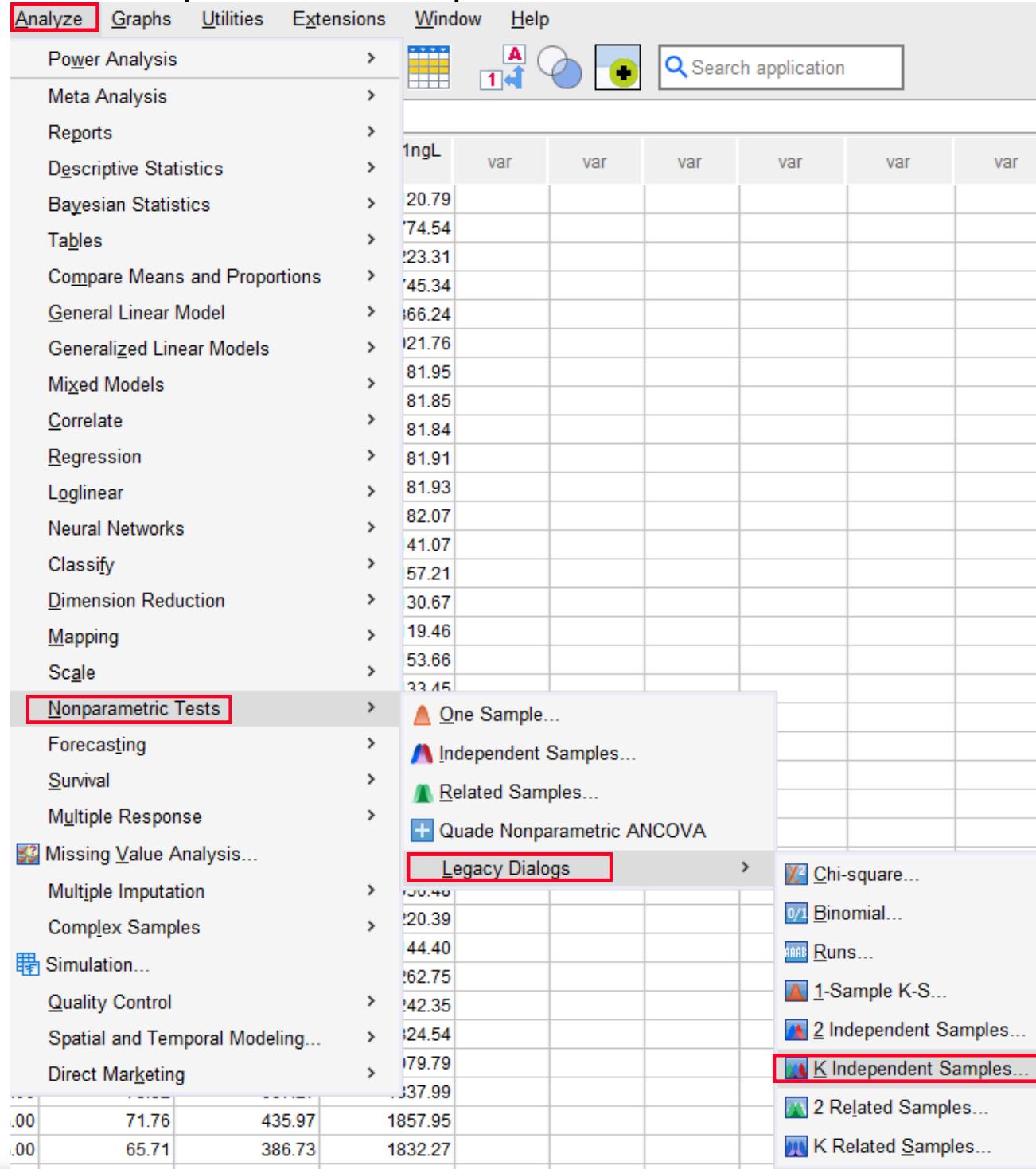


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TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

- 1 Klik Analyze → Nonparametric Test
→ Legacy Dialogs
→ K independent Samples



6 | Interaksi

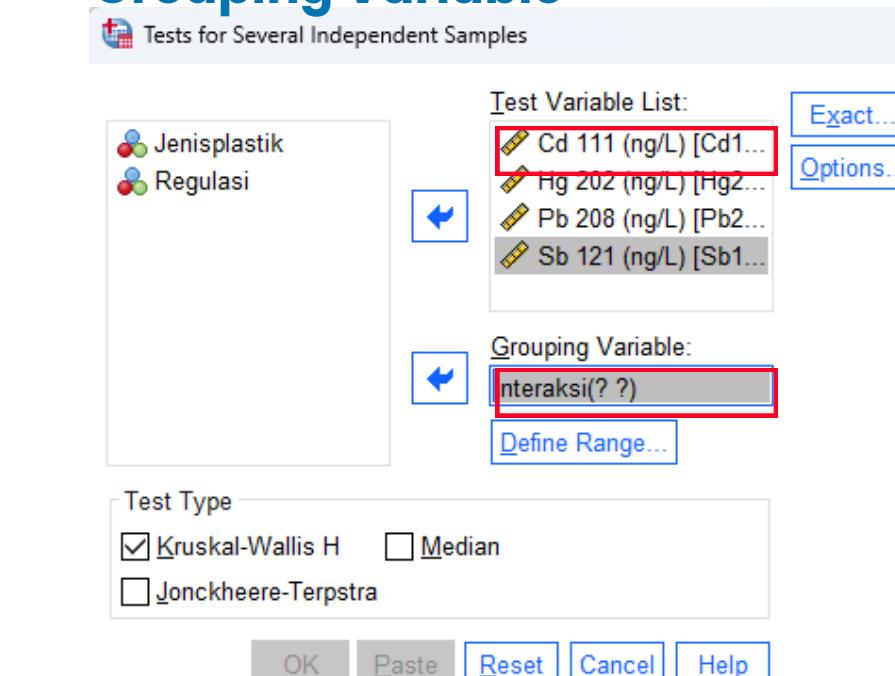
Kadar logam berat dan kombinasi jenis plastik serga regulasi



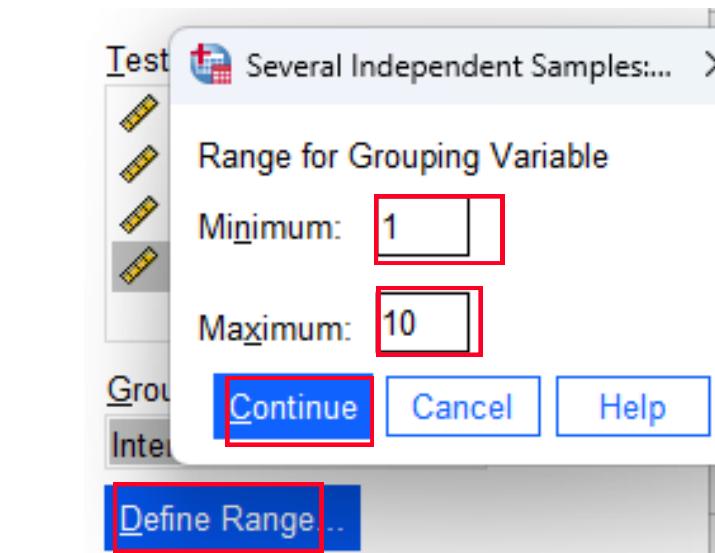
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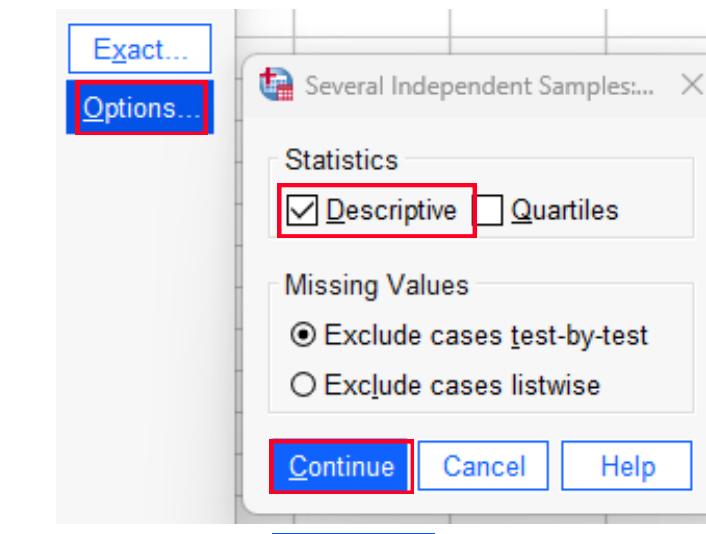
- 2 Masukkan Cd ke **test Variable List**
Masukkan Regulasi Ke **Grouping Variable**



- 3 Define Range → 1 sampai 2
→ Continue



- 4 Options → Ceklis **Descriptive**
→ Continue

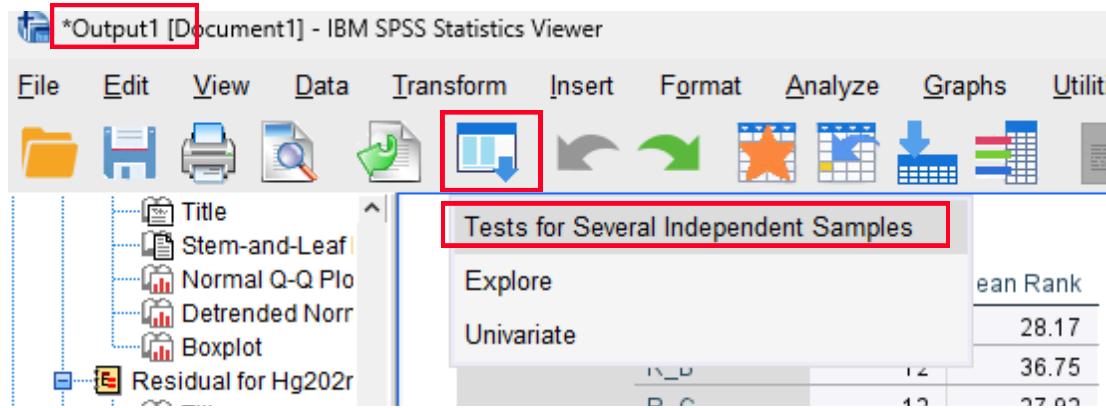


Klik OK OK

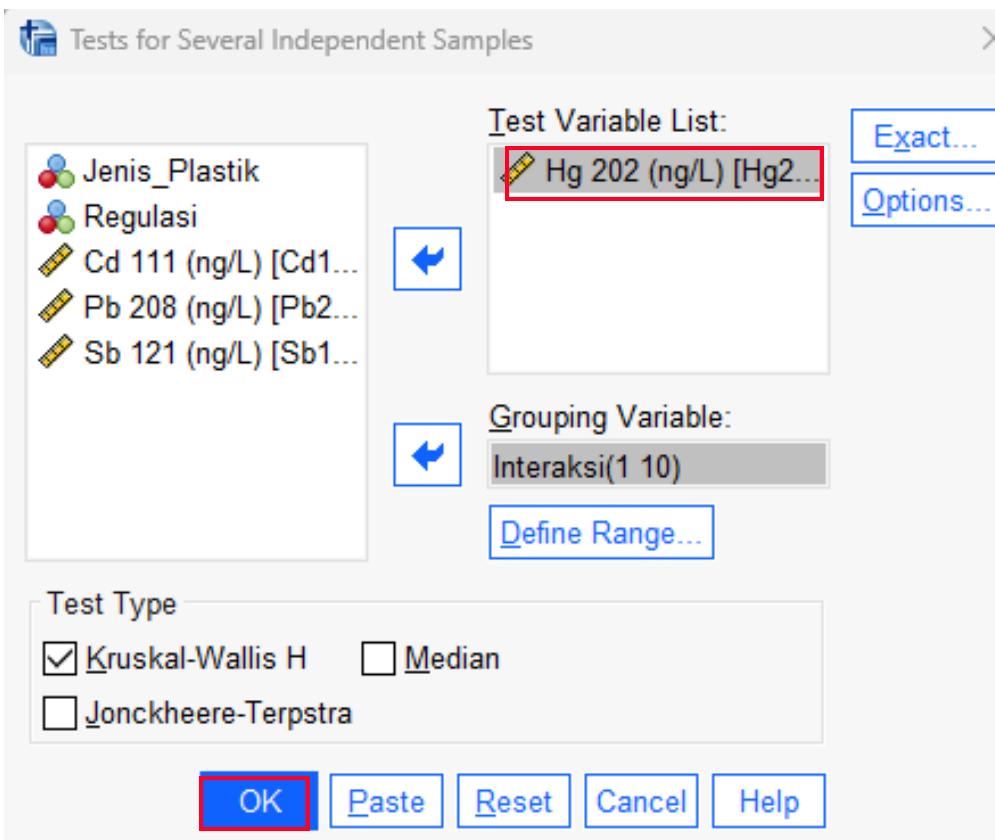
TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

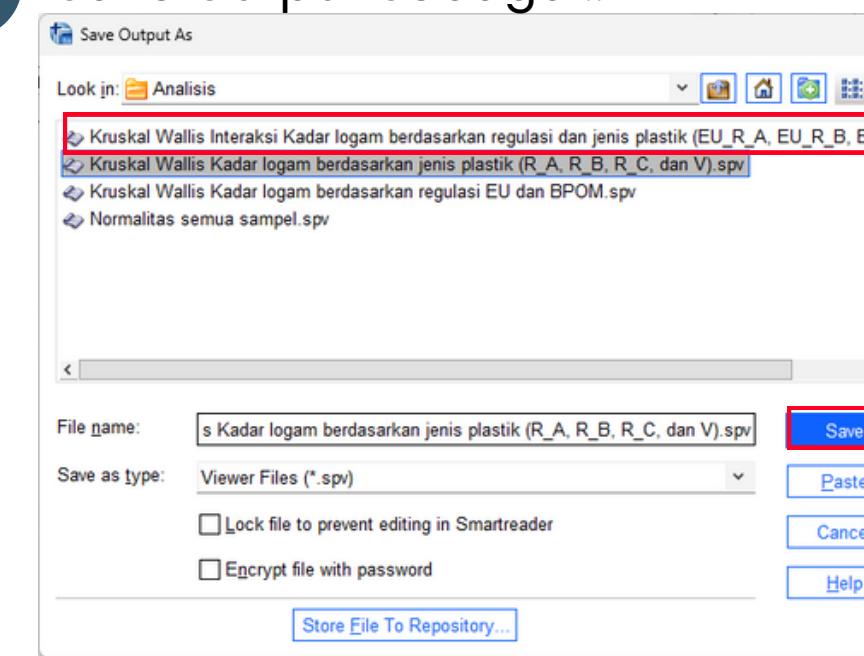
- 5 Pada Output, Klik kotak biru → Pilih Test...



- 6 Keluarkan Cd, Masukkan Hg
→ Continue



- 7 Save Output Sebagai..



- 8

- Copy 3 Tabel ini → Paste di Excel → Atur.
Lakukan untuk Semua logam

	N	Mean	Std. Deviation	Minimum	Maximum
Cd 111 (ng/L)	60	8.9114	7.75914	1.39	29.00
Interaksi	60	5.50	2.897	1	

Kruskal-Wallis Test		
	Interaksi	Mean Rank
Cd 111 (ng/L)	EU_R_A	6
	EU_R_B	28.17
	EU_R_C	14.50
	EU_V_A	14.50
	EU_V_B	32.83
	EU_V_C	14.50
	BPOM_R_A	49.83
	BPOM_R_B	45.33
	BPOM_R_C	41.33
	BPOM_V	57.50
Total		60

Test Statistics ^{a,b}	
	Cd 111 (ng/L)
Kruskal-Wallis H	56.506

TUTORIAL ANALISIS

Dengan SPSS, Excel, dan Rstudio

6

Interaksi

Kadar logam berat dan kombinasi jenis plastik serga regulasi



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9

Beri keterangan



Pertanyaan 3: Interaksi jenis plastik & regulasi terhadap kadar logam berat				
Interaksi kadar logam cd jenis plastik dan regulasi (EU_R_A, EU_R_B, EU_R_C, EU_V_A, EU_V_B, EU_V_C, BPOM)				
Npar Tests		Descriptive Statistics		
	N	Mean	Std. Deviation	Minimum
Cd 111 (ng/L)	60	8,9114	7,75914	1,39
Interaksi	60	5,50	2,897	1
				29,05

Kruskal-Wallis Test				
Ranks				
Interaksi	N	Mean Rank		
Cd 111 (ng/L)	EU_R_A	6,50		
	EU_R_B	28,17		
	EU_R_C	14,50		
	EU_V_A	14,50		
	EU_V_B	32,83		
	EU_V_C	14,50		
	BPOM_R_A	49,83		
	BPOM_R_B	45,33		
	BPOM_R_C	41,33		
	BPOM_V	57,50		
Total	60			

Kadar cd111 paling tinggi adalah BPOM_V
Kadar cd111 paling rendah adalah EU_R_A

	EU	BPOM
R_A	6,50	49,83
R_B	28,17	45,33
R_C	14,50	41,33
V_A	14,50	
V_B	32,83	
V_C	14,50	
V		57,50

Test Statistics ^{a,b}	
Cd 111 (ng/L)	
Kruskal-Wallis H	56,506
df	9
Asymp. Sig.	0,000

p < 0,05 sehingga ada perbedaan kadar logam cd111 yang signifikan pada interaksi antara jenis plastik dan regulasi

Tolak H0, minimal ada satu interaksi jenis plastik dan regulasi yang berbeda

a. Kruskal Wallis Test
b. Grouping Variable: Interaksi

10

Dari tabel ini, buat tabel baru seperti berikut

Kruskal-Wallis Test

Ranks

Interaksi	N	Mean Rank	
Cd 111 (ng/L)	EU_R_A	6,50	
	EU_R_B	28,17	
	EU_R_C	14,50	
	EU_V_A	14,50	
	EU_V_B	32,83	
	EU_V_C	14,50	
	BPOM_R_A	49,83	
	BPOM_R_B	45,33	
	BPOM_R_C	41,33	
	BPOM_V	57,50	
Total	60		

	EU	BPOM
R_A	6,50	49,83
R_B	28,17	45,33
R_C	14,50	41,33
V_A	14,50	
V_B	32,83	
V_C	14,50	
V		57,50

11

Select / block tabel → Insert
→ Recommended Chart → OK

