



METODOLOGIJA NAUČNOG ISTRAŽIVANJA

OPISNA STATISTIKA NUMERIČKIH VARIJABLI

Predrag Teovanović



UNIVERZITET U BEOGRADU
FAKULTET ZA SPECIJALNU EDUKACIJU I REHABILITACIJU
MASTER AKADEMSKE STUDIJE



KATEGORIČKI PODACI (PODSETNIK)



Tabela (baza) podataka

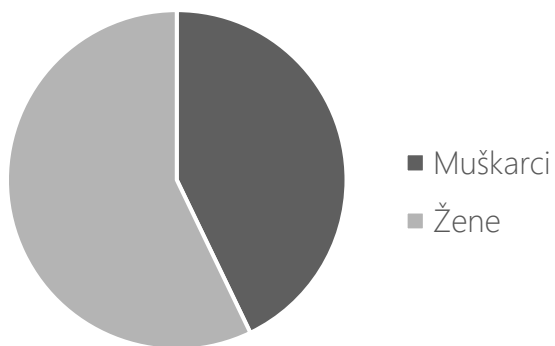
Ispitanik	Pol
Adam	muški
Biljana	ženski
Dušan	muški
Georgina	ženski
Vedran	muški
Dona	ženski
Azra	ženski
Branko	muški
Višnja	ženski
Goran	muški
Edi	muški
Đurđa	ženski
Ema	ženski
Zina	ženski



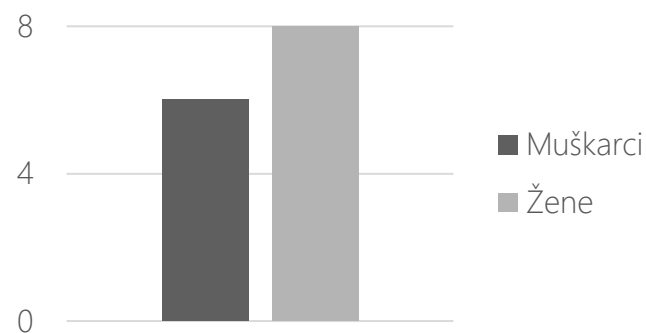
SUMIRANJE KATEGORIČKIH PODATAKA

Prebrojavanje (tabela frekvenci, procenata)

Pol	f	%	Šansa
Muški	6	42.8	2:3
Ženski	8	57.2	3:2
Ukupno	14	100	/



Pitasti dijagram
(eng. pie chart)



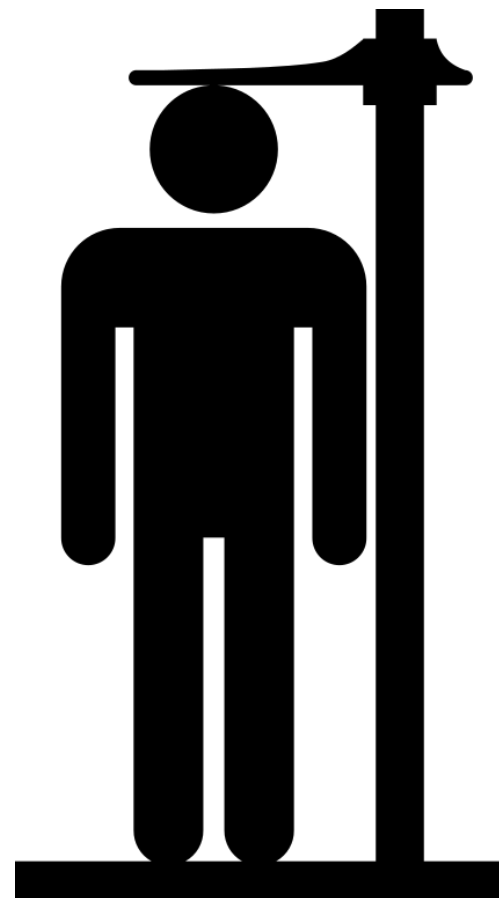
Stubičasti dijagram
(eng. bar chart)



NUMERIČKI PODACI

Sirovi podaci (baza podataka)

Ispitanik	Visina
Adam	157
Branko	166
Vedran	155
Dušan	157
Goran	162
Đorđe	155
Edi	163
Žarko	163
Zdravko	157
Ivan	156
Azra	160
Biljana	165
Višnja	160
Georgina	158
Dona	152
Đurđa	158
Ema	150
Žanka	164
Zina	167
Ines	156

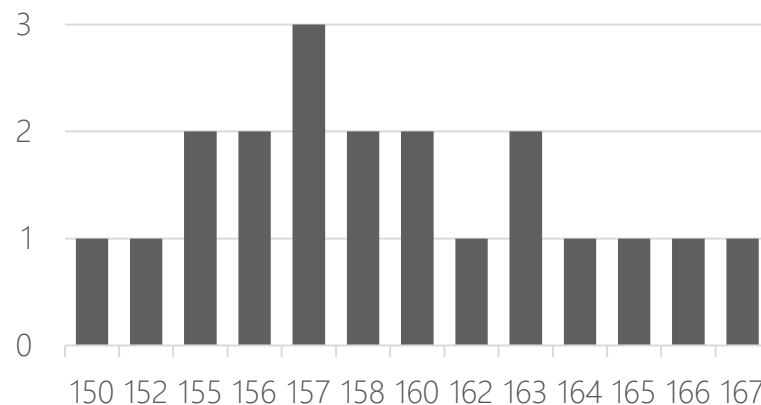
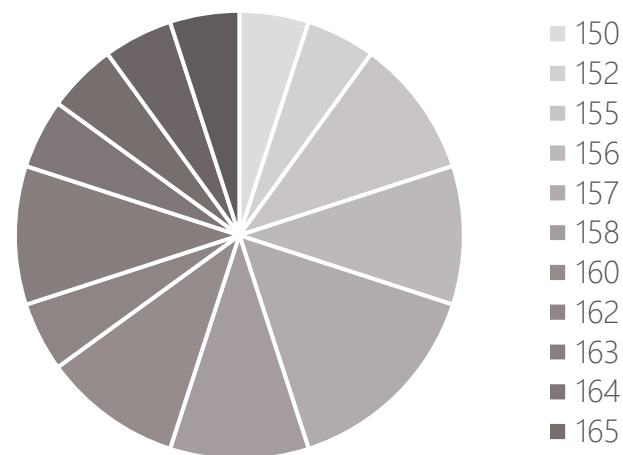




PREBROJAVANJE NUMERIČKIH PODATAKA

Prebrojavanje (tabeli frekvenci i procenata)

Visina	Frekvenca	Procentat
150	1	5.0
152	1	5.0
155	2	10.0
156	2	10.0
157	3	15.0
158	2	10.0
160	2	10.0
162	1	5.0
163	2	10.0
164	1	5.0
165	1	5.0
166	1	5.0
167	1	5.0





MERE CENTRALNE TENDENCIJE



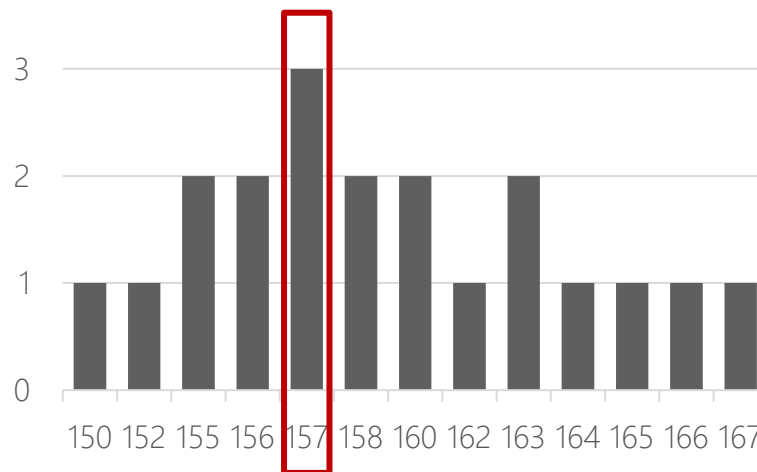
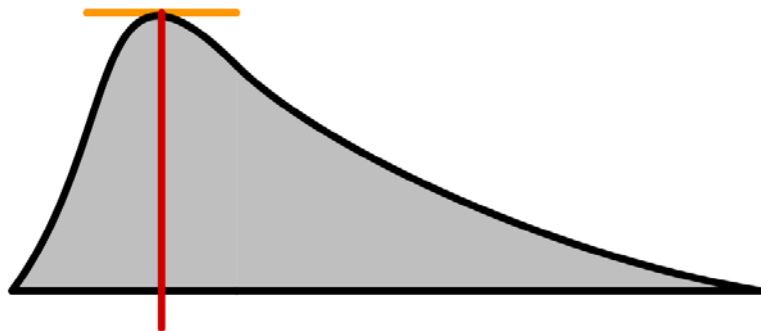
MOD (DOMINANTNA VREDNOST)

NOMINALNI
NIVO

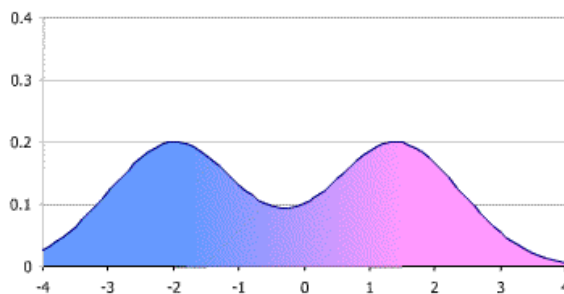
Strani termin: Mode (eng.)

Skraćenice: Mo, D

Određenje: Vrednost koja se najčešće javlja



mod = 157



Moguće su i bimodalne raspodele (sa dva moda)!



MEDIJANA (CENTRALNA VREDNOST)

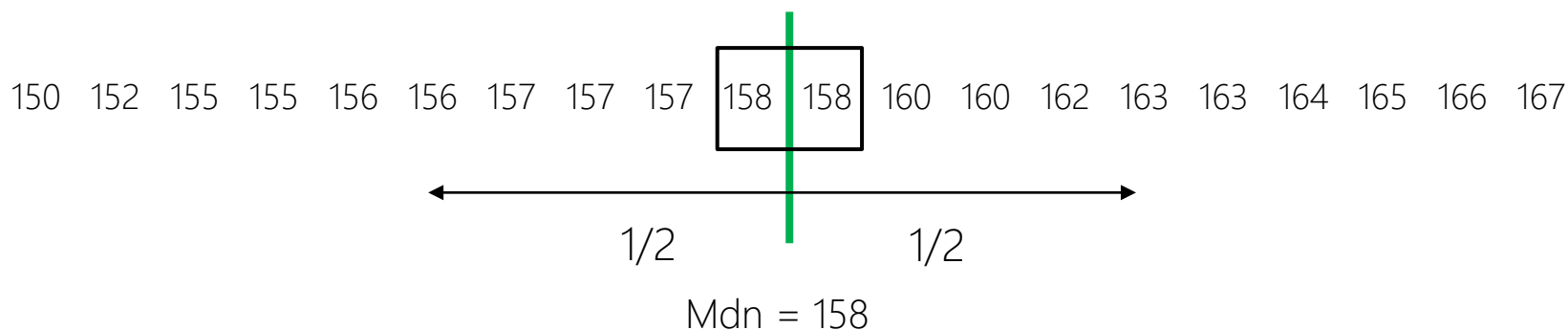
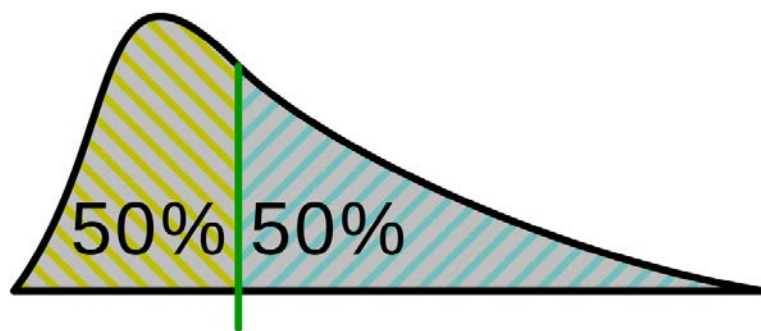
ORDINALNI
NIVO

Strani termin: Median (eng.)

Skraćenice: Mdn, C

Određenje: Vrednost koja razdvaja niz na gornju i donju polovinu

Formula: Pozicija u uređenom nizu: $Mdn_{POZICIJA} = (N+1) / 2$





ARITMETIČKA SREDINA (PROSEK)

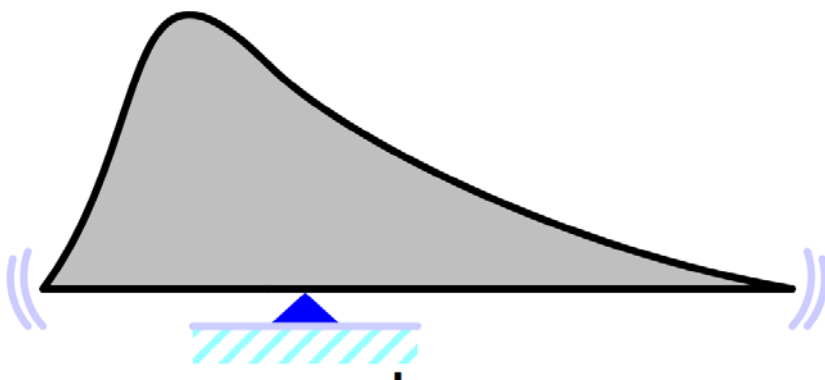
INTERVALNI
NIVO

Strani termini: Arithmetic Mean, Average (eng.)

Skraćenice: M, AS, $\bar{X}$, μ

Određenje: Zbir svih mera podeljen sa ukupnim brojem mera

Formula: $M = (X_1 + X_2 + X_3 + \dots + X_N) / N = \Sigma X / N$



X
157
166
155
157
162
155
163
163
157
156
160
165
160
158
152
158
150
164
167
156

$$\Sigma X = 3181$$

$$M = \Sigma X / N$$

$$M = 3181 / 20$$

$$M = 159.05$$



ZAJEDNIČKI PROSEK

$$M_1 = 155$$

$$n_1 = 10$$

$$M_2 = 170$$

$$n_2 = 20$$

$$M_{\text{tot}} = ?$$

~~$$M_{\text{tot}} = (155 + 170) / 2 = 162.5$$~~

$$M_{\text{tot}} = \frac{n_1 \cdot M_1 + n_2 \cdot M_2 + \dots n_k \cdot M_k}{n_1 + n_2 + \dots n_k}$$

$$M_{\text{tot}} = \frac{10 \cdot 155 + 20 \cdot 170}{10 + 20} = \frac{1550 + 3400}{30} = \frac{4950}{30} = 165$$



POSTRÍŽENÍ PROSEK



~~150~~ 152 155 155 156 156 157 157 157 158 158 160 160 162 163 163 164 165 166 ~~167~~

$$M = \Sigma X / N$$

$$M = 2864 / 18$$

$$M = 159.11$$



MERE VARIJABILNOSTI





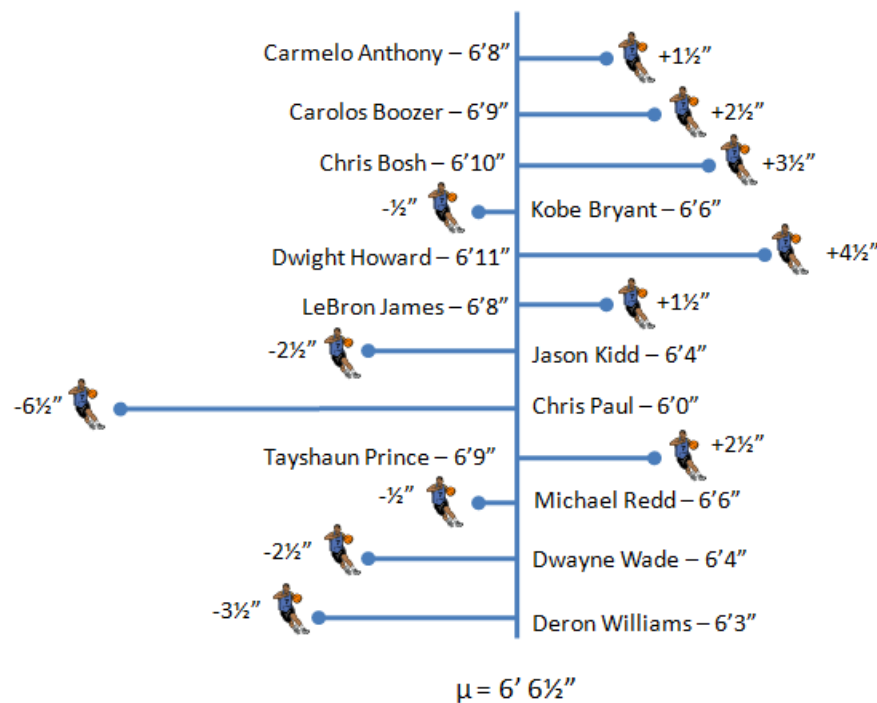
DEVIJACIJA (ODSTUPANJE, GREŠKA)

Strani termini: Deviance, Error (eng.)

Skraćenice: x , d , e

Određenje: Pojedinačno odstupanje od proseka

Formula: $x_i = X_i - M$





VARIJANSA (PROSEČNO KVADRATNO ODSTUPANJE)

	X	x (X-M)	x	x ²
	5	-15	15	225
	10	-10	10	100
	15	-5	5	25
	20	0	0	0
	25	+5	5	25
	30	+10	10	100
	35	+15	15	225
Σ	140	0	60	700
Σ/N	20	0	8.57	100

aritmetička
sredina

prosečno
odstupanje

prosečno
apsolutno
odstupanje

varijansa



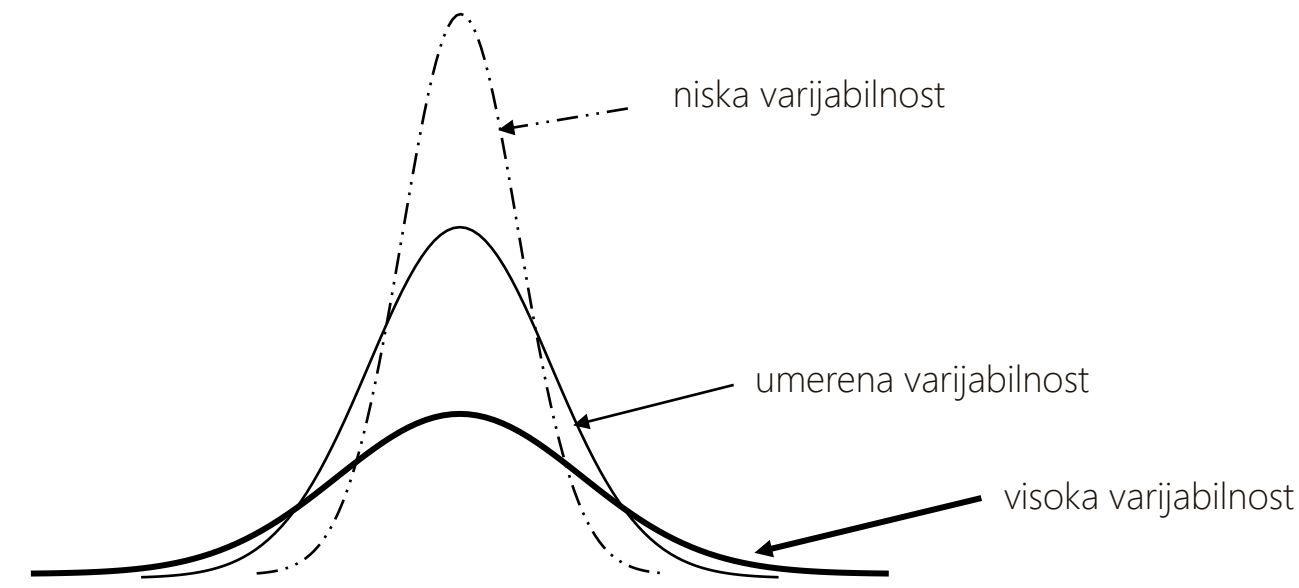
VARIJANSA

Strani termini: Variance (eng.)

Skraćenice: var, SD^2

Određenje: Prosečno kvadratno odstupanje

Formula: $\text{var} = (d_1^2 + d_2^2 + \dots + d_N^2) / N = \Sigma d^2 / N$





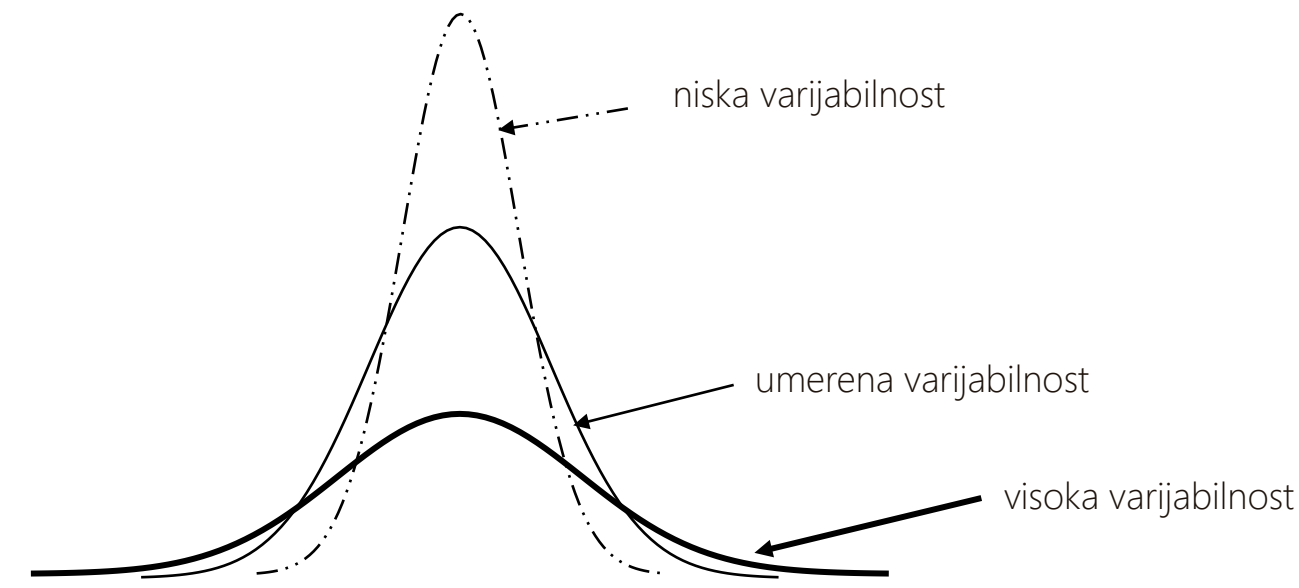
STANDARDNA DEVIJACIJA

Strani termini: Standard Deviation (eng.)

Skraćenice: SD, σ

Određenje: Koren prosečnog kvadratnog odstupanja

Formula: $SD = \sqrt{\text{var}}$





OSTALE MERE VARIJABILNOSTI

Raspon (R)

Strani termini: Range (eng.)

Određenje: Razlika između najviše i najniže vrednosti

Formula: $R = \max - \min$

Koeficijent varijabilnosti (CV)

Strani termini: Coefficient of variation, Relative standard deviation (eng.)

Određenje: Procentni odnos standardne devijacije i proseka

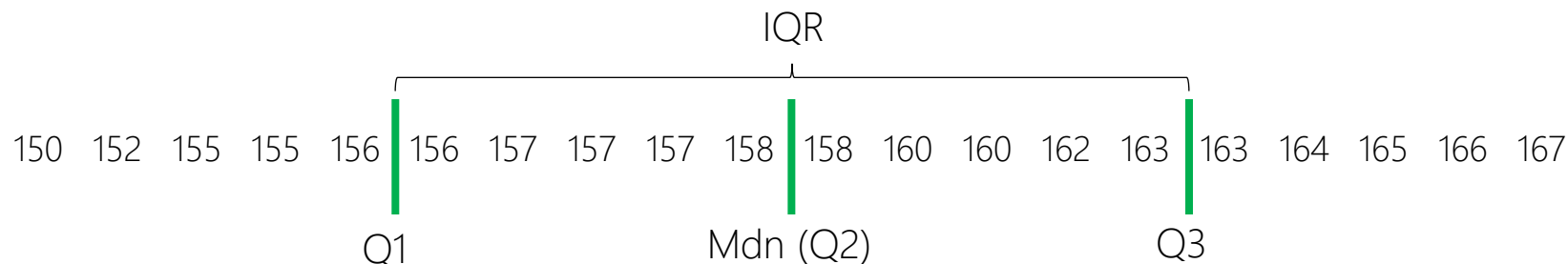
Formula: $V = 100 * SD / M$

Interkvartilni raspon (IQR)

Strani termini: Interquartile range, Midsread, Middle fifty (eng.)

Određenje: Razlika između gornjeg i donjeg kvartila

Formula: $IQR = Q_3 - Q_1$





OSTALE MERE VARIJABILNOSTI

Medijansko absolutno odstupanje (MAD)

Strani termin: Median Absolute Deviation (eng.)

Određenje: Medijana apsolutnih odstupanja od medijane

Formula: $MAD = \text{Mdn } |X_i - \text{Mdn}_X|$

	X	x (X-Mdn)	x
Mdn = 20	5	-15	15
	10	-10	10
	15	-5	5
	20	0	0
	25	+5	5
	30	+10	10
	35	+15	15

0 5 5 10 10 15 15

MAD = 10



IZVEŠTAVANJE

TEKSTUALNO Prosečan uzrast ispitanika bio je $M = 21.23$ ($SD = 1.21$).

TABELARNO

Varijabla	N	min	max	M	SD
Uzrast	14	18	24	21.23	1.21
Ocena	13	1	5	3.90	0.70
IQ	13	76	138	103.85	15.20

NAPOMENE

Tabele treba da imaju samo horizontalne linije.
Vrednosti proseka i standardnih devijacija se zaokružuju na dve decimale!

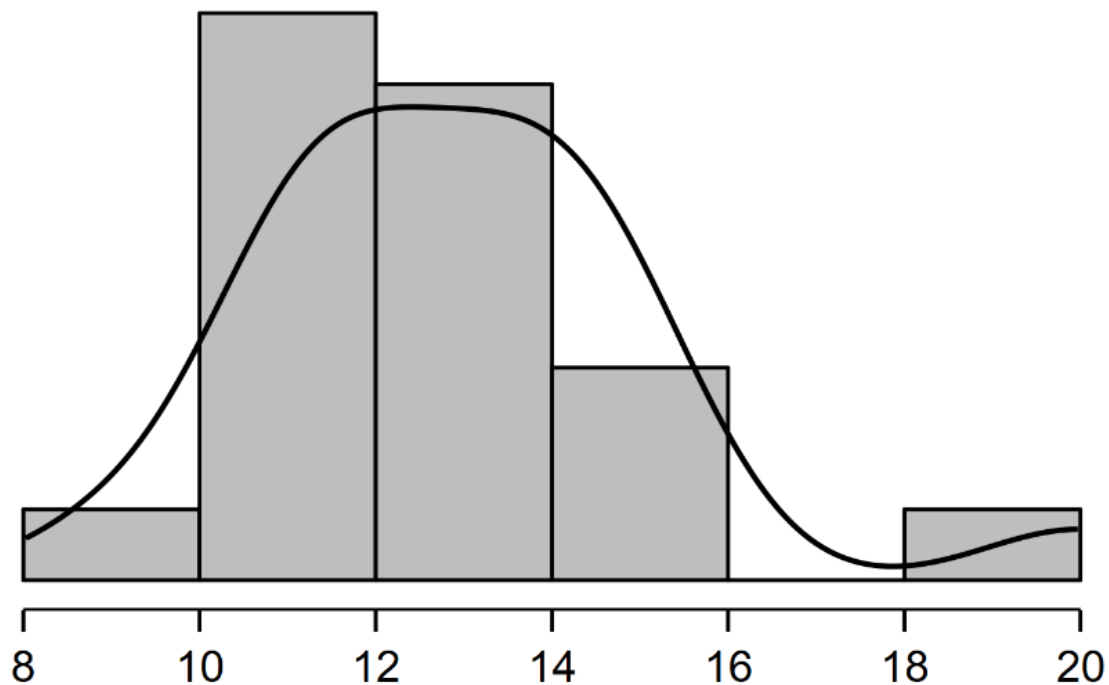
- Uz prosek (M) se navodi standardna devijacija (SD)
- Uz medijanu (Mdn) se navodi interkvartalni raspon (IQR)
- Uz postrizeni prosek (M_{trimmed}) se navodi medijansko apsolutno odstupanje (MAD)

Retko kad se grafički izveštava o pojedinačnim numeričkim varijablama.
Postoje različite forme grafičkog prikaza raspodele numeričkih podataka.



HISTOGRAM (POLIGON STUBACA)

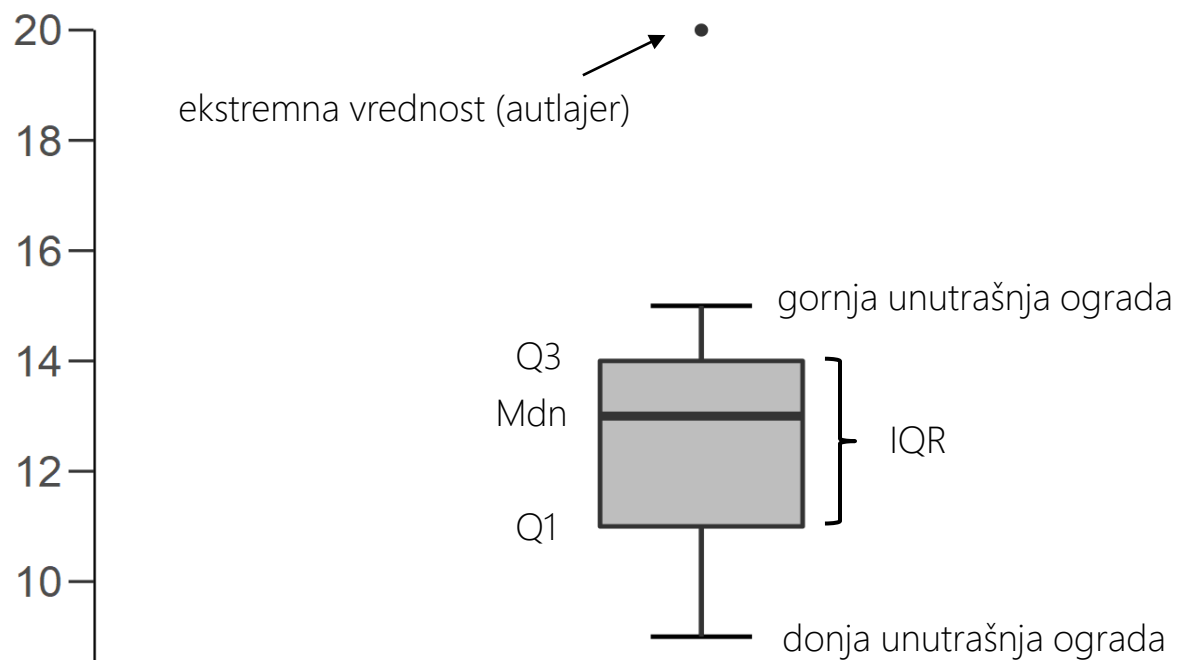
X
11
14
12
9
13
11
15
13
12
11
14
15
20
14
13
11
12
14
15
11





KUTIJASTI DIJAGRAM (ENG.BOXPLOT)

X
11
14
12
9
13
11
15
13
12
11
14
15
20
14
13
11
12
14
15
11





UPUTSTVA



OPIS NUMERIČKE VARIJABLE

Analyze → Descriptive Statistics → Descriptives

Visible: 10 of 10 Variables

	pol	smer	i5	i6	vreme	ocena	var	var	var	var	var	var
1	1					8						
2	2		1	5		10						
3	2		3	3	20	10						
4	2		3	5	20	10						
5	2		4	4	20	8						
6	2		4	5	60	9						
7	2		5	3	20	6						
8	2		4	3	3	5	24	8				
9	2		5	4	4	5	80	10				
10	2		5	1	1	3	180	10				
11	2		5	4	4	5	40	9				
12	2		5	5	1	5	50	10				
13	2		5	2	4	5	80	10				
14	2		5	4	4	2	90	10				
15	2		5	5	5	5	15	10				
16	1		5	3	3	5	20	10				
17	2		5	3	3	5	30	8				
18	2		5	5	5	5	15	10				
19	1		5	4	2	5	40	10				
20	2		5	5	3	5	100	10				
21	2		5	3	1	5	60	10				
22	2		5	3	3	5	100	10				
23	2		5	3	3	4	30	9				
			5	1	1	5	60	8				



OPIS NUMERIČKE VARIJABLE

Prebaciti željenu/e varijable u polje **Variable(s)**.

The screenshot displays the SPSS software interface. The main window shows a data table with 23 rows and 17 columns. The columns are labeled: pol, smer, i1, i2, i3, i4, i5, i6, vreme, ocena, and five empty columns labeled 'var'. The 'Descriptives' dialog box is open, showing a list of variables on the left and a 'Variable(s):' list on the right. The variables 'vreme' and 'ocena' are selected in the 'Variable(s):' list. The 'Save standardized values as variables' checkbox is checked. The 'Options...' and 'Bootstrap...' buttons are visible on the right side of the dialog box. The 'Data View' tab is selected at the bottom.

	pol	smer	i1	i2	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var
1	1	1	4	4	5	1	1	5	.	8						
2	2	5	5	5	5	.	3	3	20	10						
3	2	5	5	5	4	3	3	5	20	10						
4	2	5	2	4	4	2	4	4	20	8						
5	2	5														
6	2	5														
7	2	5														
8	2	.														
9	2	5														
10	2	5														
11	2	2														
12	2	2														
13	2	2														
14	2	2														
15	1	2														
16	2	2														
17	2	2														
18	1	2														
19	2	3														
20	2	3														
21	2	3														
22	2	3														
23	2	2	5	5	5	1	1	5	60	8						



OPIS NUMERIČKE VARIJABLE

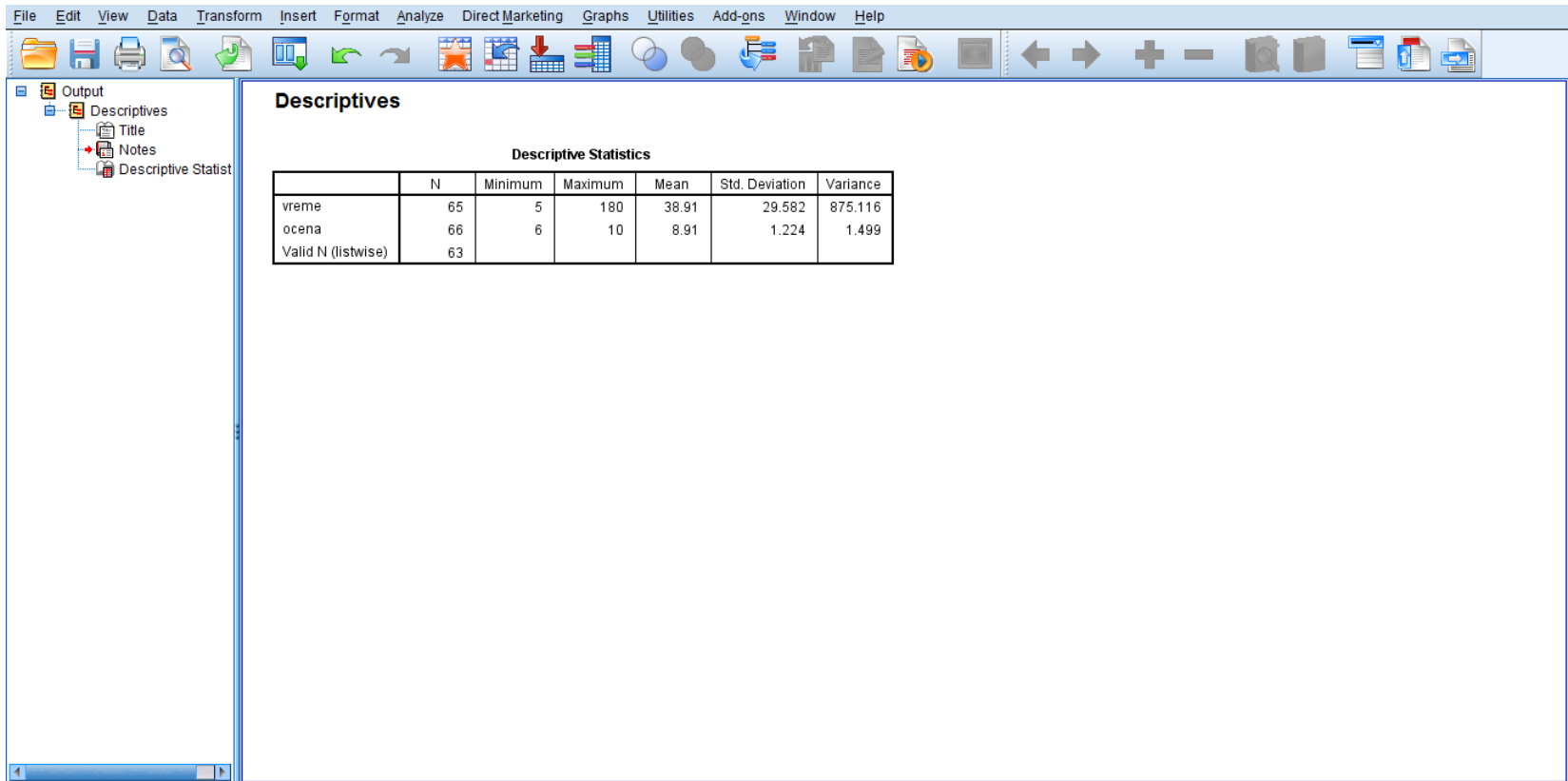
U podmeniju **Options** odabrati **Mean**, **Std.deviation**, **Variance**, **Minumum**, **Maximum**.

The screenshot displays the SPSS software interface. The main window shows a data table with 23 rows and 17 columns. The columns are labeled: pol, smer, i1, i2, i3, i4, i5, i6, vreme, ocena, and five columns labeled 'var'. The data table is in 'Data View' mode. Overlaid on the data table is the 'Descriptives: Options' dialog box. This dialog box has several sections: 'Mean' (with 'Mean' checked and 'Sum' unchecked), 'Dispersion' (with 'Std. deviation', 'Variance', 'Minimum', and 'Maximum' all checked, and 'Range' and 'S.E. mean' unchecked), 'Distribution' (with 'Kurtosis' and 'Skewness' both unchecked), and 'Display Order' (with 'Variable list' selected, and 'Alphabetic', 'Ascending means', and 'Descending means' unselected). At the bottom of the dialog box, there are buttons for 'Continue', 'Cancel', and 'Help'. Below the dialog box, there are buttons for 'OK', 'Paste', 'Reset', 'Cancel', and 'Help'. The status bar at the bottom of the window shows 'Data View' and 'Variable View' tabs.

	pol	smer	i1	i2	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var
1	1	1	4	4	5	1	1	5		8						
2	2	5	5	5	5				20	10						
3	2	5	5	5	4				20	10						
4	2	5														
5	2	5														
6	2	5														
7	2	5														
8	2															
9	2	5														
10	2	5														
11	2	2														
12	2	2														
13	2	2														
14	2	2														
15	1	2														
16	2	2														
17	2	2														
18	1	2														
19	2	3														
20	2	3														
21	2	3														
22	2	3														
23	2	2	5	5	5	1	1	5	60	8						



OPIS NUMERIČKE VARIJABLE



The screenshot shows the SPSS Descriptives output window. The left sidebar contains a tree view with 'Output' expanded, showing 'Descriptives', 'Title', 'Notes', and 'Descriptive Statist'. The main area is titled 'Descriptives' and contains a table of descriptive statistics.

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
vreme	65	5	180	38.91	29.582	875.116
ocena	66	6	10	8.91	1.224	1.499
Valid N (listwise)	63					



DETALJNIJI OPIS NUMERIČKE VARIJABLE

Analyze → Descriptive Statistics → Explore

Visible: 10 of 10 Variables

	pol	smer	i6	vreme	ocena	var	var	var	var	var	var	var
1	1	1	1	5	8							
2	2	5	3	3	20	10						
3	2	5	3	5	20	10						
4	2	5	4	4	20	8						
5	2	5	4	5	60	9						
6	2	5	3	5	20	6						
7	2	5	3	3	5	24	8					
8	2	5	4	4	5	80	10					
9	2	5	1	1	3	180	10					
10	2	5	4	4	5	40	9					
11	2	2	5	1	5	50	10					
12	2	2	2	4	5	80	10					
13	2	2	4	4	2	90	10					
14	2	2	5	5	5	15	10					
15	1	2	3	3	5	20	10					
16	2	2	3	3	5	30	8					
17	2	2	5	5	5	15	10					
18	1	2	4	2	5	40	10					
19	2	3	5	3	5	100	10					
20	2	3	3	1	5	60	10					
21	2	3	3	3	5	100	10					
22	2	3	3	3	4	30	9					
23	2	2	1	1	5	60	8					
24	2	5	5	5	3	5	4	4	50	10		
25	2	5	5	5	5	3	3	5	20	9		
26	2	2	3	3	5	2	2	5	6			
27	2	3	3	2	5	1	1	4	18	10		
28	2	5	5	5	5	2	2	2	60	10		

Data View Variable View



DETALJNIJI OPIS NUMERIČKE VARIJABLE

Prebaciti željenu/e varijable u polje **Dependent List**.

The screenshot shows the SPSS software interface. The main window displays a data table with 28 rows and 18 columns. The columns are labeled: pol, smer, i1, i2, i3, i4, i5, i6, vreme, ocena, and seven empty columns labeled 'var'. The 'Explore' dialog box is open, showing the 'Dependent List' field with 'Planirano uloženo vr...' and 'Očekivana ocena [o...]' selected. The 'Factor List' field is empty. The 'Display' section has 'Both' selected. The 'Data View' tab is active at the bottom.

	pol	smer	i1	i2	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var	var
1	1	1	4	4	5	1	1	5	-	8							
2	2	5	5	5	5		3	3	20	10							
3	2	5	5	5	4	3	3	5	20	10							
4	2	5	3	4	4	3	4	4	20	8							
5	2	5	5	5	5	4	4	5	60	9							
6	2	5	3	3	5												
7	2	5	4	4	4												
8	2		5	5	5												
9	2	5	5	5	5												
10	2	5	5	5	5												
11	2	2	5	5	5												
12	2	2	5	5	5												
13	2	2	4	4	5												
14	2	2	5	5	5												
15	1	2	5	5	5												
16	2	2	4	5	5												
17	2	2	5	5	5												
18	1	2	5	5	5												
19	2	3	5	5	5												
20	2	3	5	5	5												
21	2	3	5	5	5	3	3	5	100	10							
22	2	3	5	5	5	3	3	4	30	9							
23	2	2	5	5	5	1	1	5	60	8							
24	2	5	5	5	3	5	4	4	50	10							
25	2	5	5	5	5	3	3	5	20	9							
26	2	2	3	3	5	2	2	5		6							
27	2	3	3	2	5	1	1	4	18	10							
28	2	2	5	5	5	3	3	5	50	10							



DETALJNIJI OPIS NUMERIČKE VARIJABLE

Descriptives

			Statistic	Std. Error
Planirano uloženo vreme	Mean		38.91	3.669
	95% Confidence Interval for Mean	Lower Bound	31.58	
		Upper Bound	46.24	
	5% Trimmed Mean		35.85	
	Median		30.00	
	Variance		875.116	
	Std. Deviation		29.582	
	Minimum		5	
	Maximum		180	
	Range		175	
	Interquartile Range		30	
	Skewness		2.270	.297
	Kurtosis		7.304	.586



HISTOGRAM

Analyze → Descriptive Statistics → Frequencies

Visible: 10 of 10 Variables

	pol	smer	i6	vreme	ocena	var	var	var	var	var	var	var	var
1	1	1	1	5	8								
2	2	5	3	3	20	10							
3	2	5	3	5	20	10							
4	2	5	4	4	20	8							
5	2	5	4	5	60	9							
6	2	5	3	5	20	6							
7	2	5	3	3	5	24	8						
8	2		4	4	5	80	10						
9	2	5	1	1	3	180	10						
10	2	5	4	4	5	40	9						
11	2	2	5	1	5	50	10						
12	2	2	2	4	5	80	10						
13	2	2	4	4	2	90	10						
14	2	2	5	5	5	15	10						
15	1	2	3	3	5	20	10						
16	2	2	3	3	5	30	8						
17	2	2	5	5	5	15	10						
18	1	2	4	2	5	40	10						
19	2	3	5	3	5	100	10						
20	2	3	3	1	5	60	10						
21	2	3	3	3	5	100	10						
22	2	3	3	3	4	30	9						
23	2	2	1	1	5	60	8						
24	2	5	5	5	3	5	4	50	10				
25	2	5	5	5	5	3	3	5	20	9			
26	2	2	3	3	5	2	2	5		6			
27	2	3	3	2	5	1	1	4	18	10			
28	2	5	5	5	5	5	5	5	5	5			

Data View Variable View



HISTOGRAM

Prebaciti željenu/e varijable u polje **Variable(s)**.

The screenshot shows the SPSS Data Editor window with a data table containing 28 rows and 18 columns. The columns are labeled: pol, smer, i1, i2, i3, i4, i5, i6, vreme, ocena, and seven empty columns labeled 'var'. The data table is as follows:

	pol	smer	i1	i2	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var	var
1	1	1	4	4	5	1	1	5	-	8							
2	2	5	5	5	5	-	3	3	20	10							
3	2	5	5	5	4	3	3	5	20	10							
4	2	5	3	4	4	3	4	4	20	8							
5	2	5	5	5	5	4	4	5	60	9							
6	2	5	3	3	5	3	3	5	20	6							
7	2	5	4	4	4	-	-	-	-	-							
8	2	-	5	5	5	-	-	-	-	-							
9	2	5	5	5	5	-	-	-	-	-							
10	2	5	5	5	5	-	-	-	-	-							
11	2	2	5	5	5	-	-	-	-	-							
12	2	2	5	5	5	-	-	-	-	-							
13	2	2	4	4	5	-	-	-	-	-							
14	2	2	5	5	5	-	-	-	-	-							
15	1	2	5	5	5	-	-	-	-	-							
16	2	2	4	5	5	-	-	-	-	-							
17	2	2	5	5	5	-	-	-	-	-							
18	1	2	5	5	5	-	-	-	-	-							
19	2	3	5	5	5	-	-	-	-	-							
20	2	3	5	5	5	3	1	5	60	10							
21	2	3	5	5	5	3	3	5	100	10							
22	2	3	5	5	5	3	3	4	30	9							
23	2	2	5	5	5	1	1	5	60	8							
24	2	5	5	5	3	5	4	4	50	10							
25	2	5	5	5	5	3	3	5	20	9							
26	2	2	3	3	5	2	2	5	-	6							
27	2	3	3	2	5	1	1	4	18	10							
28	2	5	5	5	5	2	2	2	50	10							

The 'Frequencies' dialog box is open, showing the list of variables on the left and the 'Variable(s):' field on the right. The variable 'Planirano uloženo vr...' is selected in the 'Variable(s):' field. The 'Display frequency tables' checkbox is checked. The dialog box also includes buttons for 'Statistics...', 'Charts...', 'Format...', 'Style...', 'Bootstrap...', 'OK', 'Paste', 'Reset', 'Cancel', and 'Help'.



HISTOGRAM

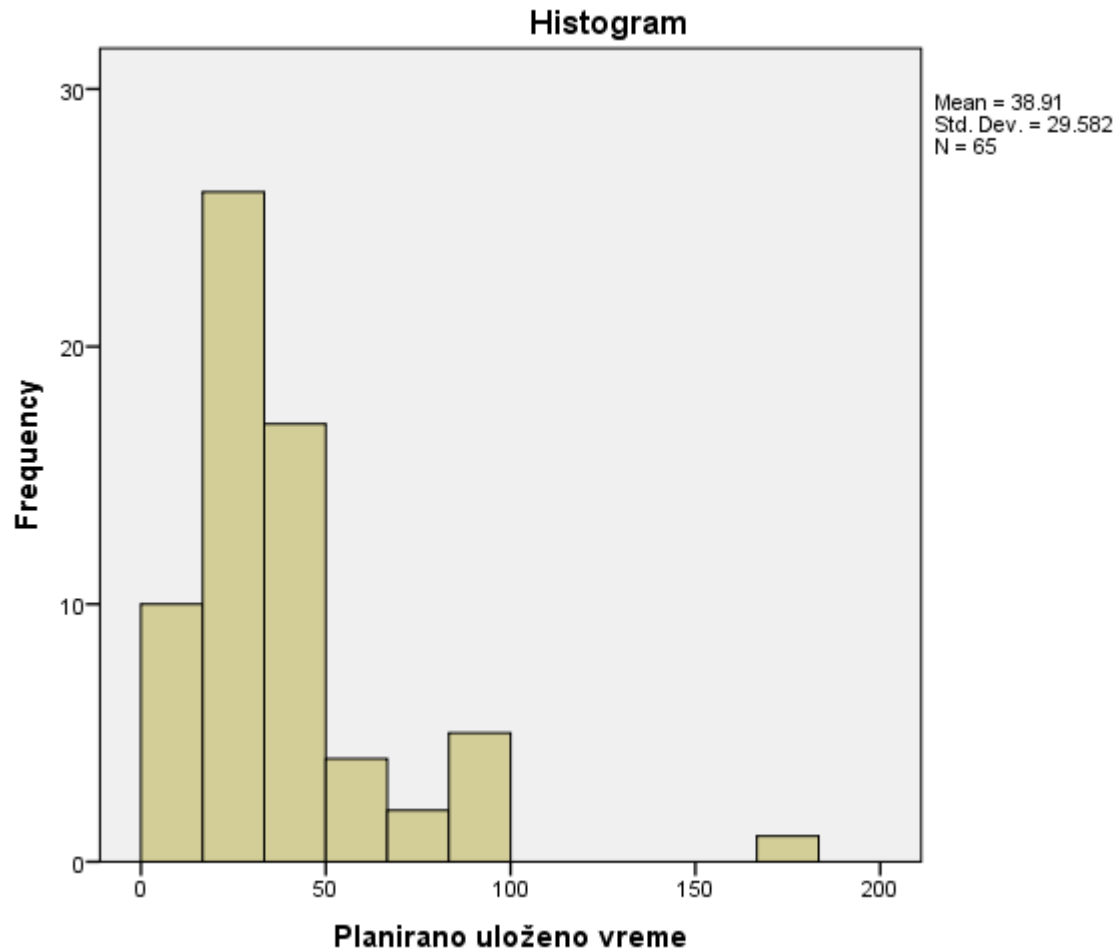
U podmeniju **Charts** odabrati **Histograms**. Pokrenuti analizu.

The screenshot displays the SPSS software interface. The main window shows a data table with 28 rows and 18 columns. The columns are labeled: pol, smer, i1, i2, i3, i4, i5, i6, vreme, ocena, and seven empty columns labeled 'var'. The data table is visible in 'Data View' mode. Overlaid on the data table is the 'Frequencies: Charts' dialog box. In this dialog, the 'Chart Type' section has 'Histograms' selected. The 'Chart Values' section has 'Frequencies' selected. The 'Display frequencies' checkbox is checked. The 'Continue' button is highlighted.

	pol	smer	i1	i2	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var	var
1	1	1	4	4	5	1	1	5	.	8							
2	2	5	5	5	5	.	3	3	20	10							
3	2	5	5	5	4	3	3	5	20	10							
4	2	5	3	4	4	3	4	4	20	8							
5	2	5	5	5	5	4	4	5	60	9							
6	2	5	3	3	5	3	3	5	20	6							
7	2	5	4	4	4												
8	2	.	5	5	5												
9	2	5	5	5	5												
10	2	5	5	5	5												
11	2	2	5	5	5												
12	2	2	5	5	5												
13	2	2	4	4	5												
14	2	2	5	5	5												
15	1	2	5	5	5												
16	2	2	4	5	5												
17	2	2	5	5	5												
18	1	2	5	5	5												
19	2	3	5	5	5												
20	2	3	5	5	5	3	1	5	60	10							
21	2	3	5	5	5	3	3	5	100	10							
22	2	3	5	5	5	3	3	4	30	9							
23	2	2	5	5	5	1	1	5	60	8							
24	2	5	5	5	3	5	4	4	50	10							
25	2	5	5	5	5	3	3	5	20	9							
26	2	2	3	3	5	2	2	5	.	6							
27	2	3	3	2	5	1	1	4	18	10							
28	2	5	5	5	5	3	3	5	20	10							

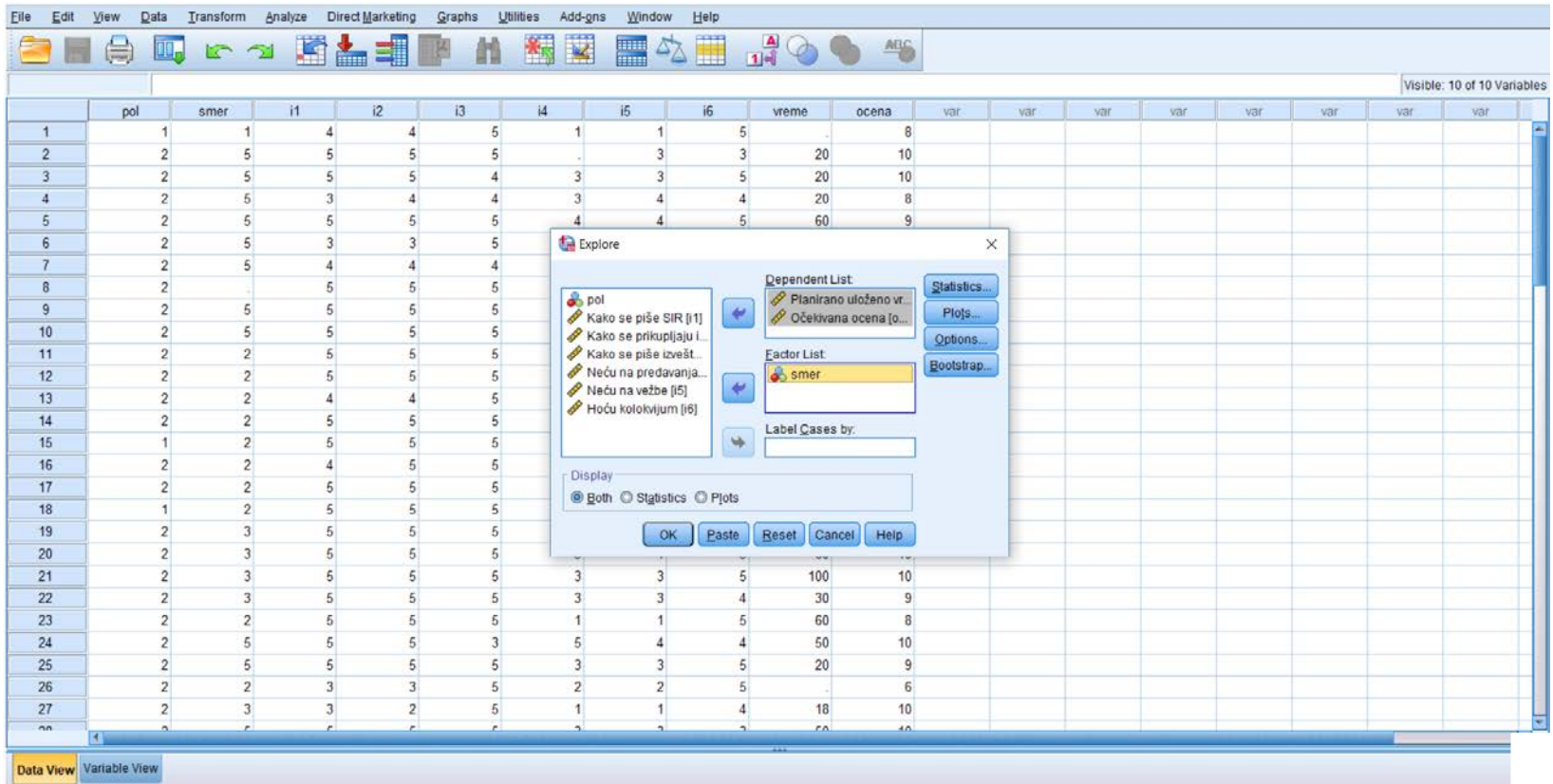


HISTOGRAM





Npr. u [Explore](#) meniju se u polje [Factor List](#) može prebaciti neka od kategoričkih varijabli. U tom slučaju će detaljne numeričke analize biti sprovedene po kategorijama te varijable.





OPIS NUMERIČKE VARIJABLE PO GRUPAMA

Drugi način je putem korišćenja Split File opcije.

Data → Split File

The screenshot shows the SPSS Data menu with the 'Split File' option highlighted. The menu items are as follows:

- Define Variable Properties...
- Set Measurement Level for Unknown...
- Create Value Labels from Data
- Copy Data Properties...
- New Custom Attribute...
- Define date and time...
- Define Date from Data...
- Define Multiple Response Sets...
- Validation
- Identify Duplicate Cases...
- Identify Unusual Cases...
- Compare Datasets...
- Sort Cases...
- Sort Variables...
- Transpose...
- Adjust String Widths Across Files
- Merge Files
- Cartesian Product
- Restructure...
- Rake Weights...
- Propensity Score Matching...
- Case Control Matching...
- Aggregate...
- Orthogonal Design
- Split into Files
- Copy Dataset
- Split File...
- Select Cases...
- Weight Cases...
- Simulate Active Dataset

The data view shows a table with 10 columns: i3, i4, i5, i6, vreme, ocena, var, var, var, var, var, var, var, var. The first 10 rows of data are visible.

	i3	i4	i5	i6	vreme	ocena	var	var	var	var	var	var	var
1	5	1	1	5	.	8							
2	5	.	3	3	20	10							
3	4	3	3	5	20	10							
4	4	3	4	4	20	8							
5	5	4	4	5	60	9							
6	5	3	3	5	20	6							
7	4	3	3	5	24	8							
8	5	4	4	5	80	10							
9	5	1	1	3	180	10							
10	5	4	4	5	40	9							
11	5	5	1	5	50	10							
12	5	2	4	5	80	10							
13	5	4	4	2	90	10							
14	5	5	5	5	15	10							
15	5	3	3	5	20	10							
16	5	3	3	5	30	8							
17	5	5	5	5	15	10							
18	5	4	2	5	40	10							
19	5	5	3	5	100	10							
20	5	3	1	5	60	10							
21	5	3	3	5	100	10							
22	5	3	3	4	30	9							
23	5	1	1	5	60	8							
24	3	5	4	4	50	10							
25	5	3	3	5	20	9							
26	5	2	2	5	.	6							
27	5	1	1	4	18	10							



OPIS NUMERIČKE VARIJABLE PO GRUPAMA

Treba najpre odabrati [Organize output by groups](#) opciju...

...i potom prebaciti odgovarajuću kategoričku varijablu u polje [Groups Based on:](#)

The screenshot displays the SPSS user interface. The background shows a data table with columns labeled 'pol', 'smer', 'i1', 'i2', 'i3', 'i4', 'i5', 'i6', 'vreme', 'ocena', and several 'var' columns. The 'Split File' dialog box is open in the foreground. It contains a list of variables on the left, including 'pol', 'Kako se piše SIR (i1)', 'Kako se pripisuje i...', 'Kako se piše izvešt...', 'Neću na predavanja...', 'Neću na vežbe (i5)', 'Hoću kolokvijum (i6)', 'Planirano uloženo vr...', and 'Očekivana ocena (o...)'. On the right, under 'Groups Based on:', the variable 'smer' is selected. The 'Organize output by groups' radio button is selected. At the bottom, the 'Current Status' is 'Analysis by groups is off.' Buttons for 'OK', 'Paste', 'Reset', 'Cancel', and 'Help' are at the bottom of the dialog.

Napomene:

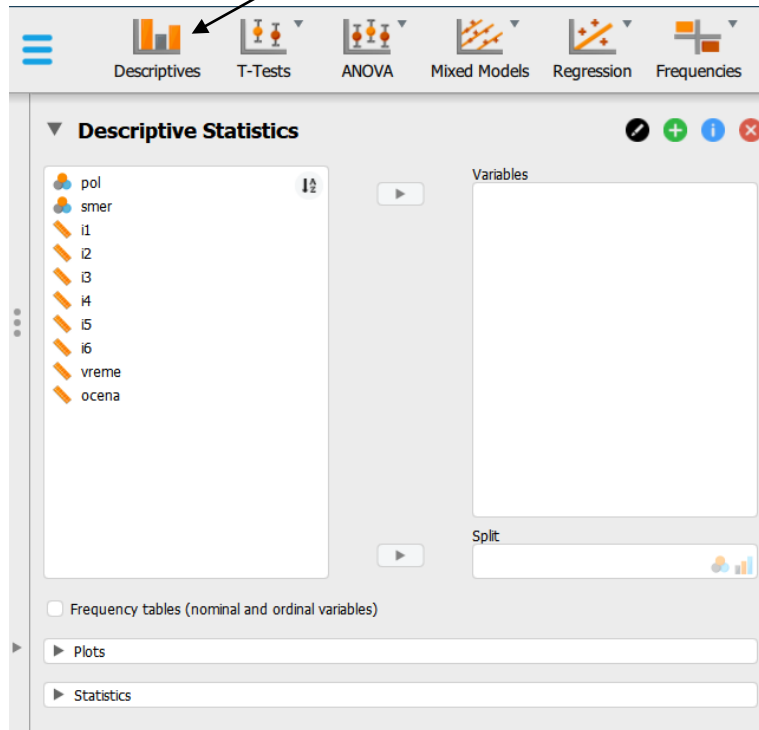
Nakon što kliknemo OK, sve dalje analize koje pokrenemo biće sprovedeno posebno po grupama!

Kada više ne želimo da nam fajl bude podeljen, potrebno je da se ponovo vratimo u [Data](#) → [Split File](#) i da odaberemo [Analyze all cases, do not create groups](#) opciju!



OPIS NUMERIČKE VARIJABLE

Kliknuti na ikonicu **Descriptives** u toolbaru





OPIS NUMERIČKE VARIJABLE

Prebaciti željenu/e varijablu/e u polje **Variables**.

The screenshot shows the SPSS software interface. The top menu bar includes icons for Descriptives, T-Tests, ANOVA, Mixed Models, Regression, Frequencies, and Factor. The main window is titled 'Descriptive Statistics' and contains a list of variables on the left: 'pol', 'smer', 'i1', 'i2', 'i3', 'i4', 'i5', and 'i6'. The 'Variables' box on the right contains 'vreme' and 'ocena'. Below the variables list, there is a checkbox for 'Frequency tables (nominal and ordinal variables)' which is currently unchecked. At the bottom, there are expandable sections for 'Plots' and 'Statistics'. The right side of the interface shows the 'Results' window, which displays a table of descriptive statistics for the selected variables.

Descriptive Statistics

	vreme	ocena
Valid	65	66
Missing	3	2
Mean	38.91	8.91
Std. Deviation	29.58	1.22
Minimum	5.00	6.00
Maximum	180.00	10.00

Osnovne
deskriptivne mere



OPIS NUMERIČKE VARIJABLE

U podmeniju **Statistics** mogu se odabrati dodatni statistici.

The screenshot shows the SPSS Descriptive Statistics dialog box on the left and the Results window on the right. The dialog box has a toolbar with icons for Descriptives, T-Tests, ANOVA, Mixed Models, Regression, Frequencies, and Factor. The 'Descriptive Statistics' section is active, showing a list of variables on the left (pol, smer, i1, i2, i3, i4, i5, i6) and a 'Variables' box on the right containing 'vreme' and 'ocena'. Below the variables, there are checkboxes for 'Frequency tables (nominal and ordinal variables)', 'Plots', and 'Statistics'. The 'Statistics' section is expanded, showing options for Percentile Values (Quartiles, Cut points for: 4, Percentiles), Central Tendency (Mean, Median, Mode, Sum), Dispersion (S. E. mean, Std. deviation, MAD, MAD Robust, IQR, Variance, Range, Minimum, Maximum), and Distribution (Skewness, Kurtosis, Shapiro-Wilk test). The 'Results' window on the right displays the 'Descriptive Statistics' table.

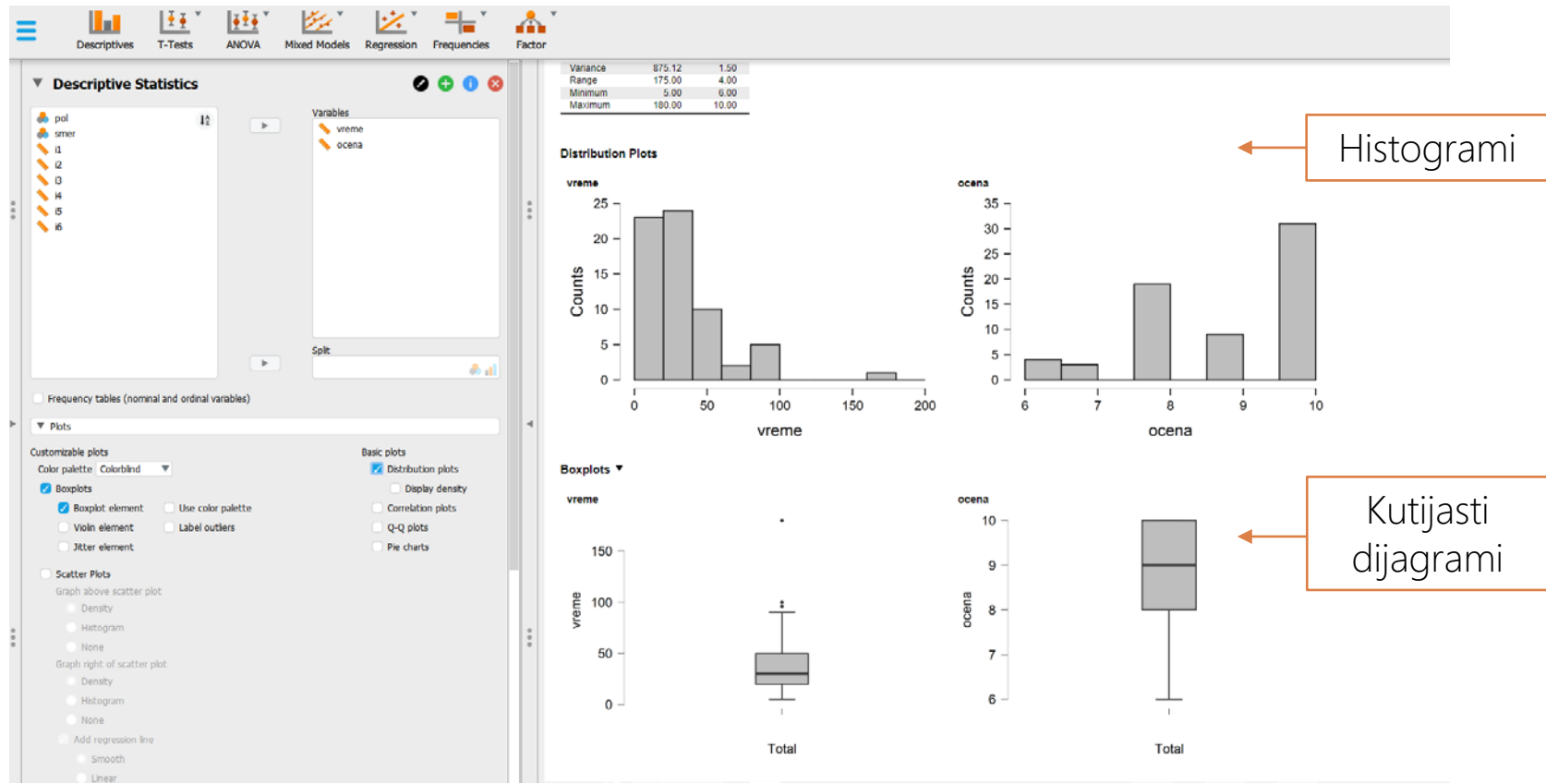
	vreme	ocena
Valid	65	66
Missing	3	2
Mean	38.91	8.91
Median	30.00	9.00
Mode	20.00	10.00
Std. Deviation	29.58	1.22
MAD	10.00	1.00
MAD Robust	14.83	1.48
IQR	30.00	2.00
Variance	875.12	1.50
Range	175.00	4.00
Minimum	5.00	6.00
Maximum	180.00	10.00

Dodatne
deskriptivne mere



OPIS NUMERIČKE VARIJABLE

U podmeniju **Plots** mogu se odabrati različiti grafički prikazi uključujući kutijasti dijagram (**Boxplot**) i histogram (**Distribution plot**).





OPIS NUMERIČKE VARIJABLE PO GRUPAMA

Prebacivanjem kategoričke varijable u polje **Split** zadajemo komandu za izvođenje posebnih analiza po grupama (kategorijama varijable).

