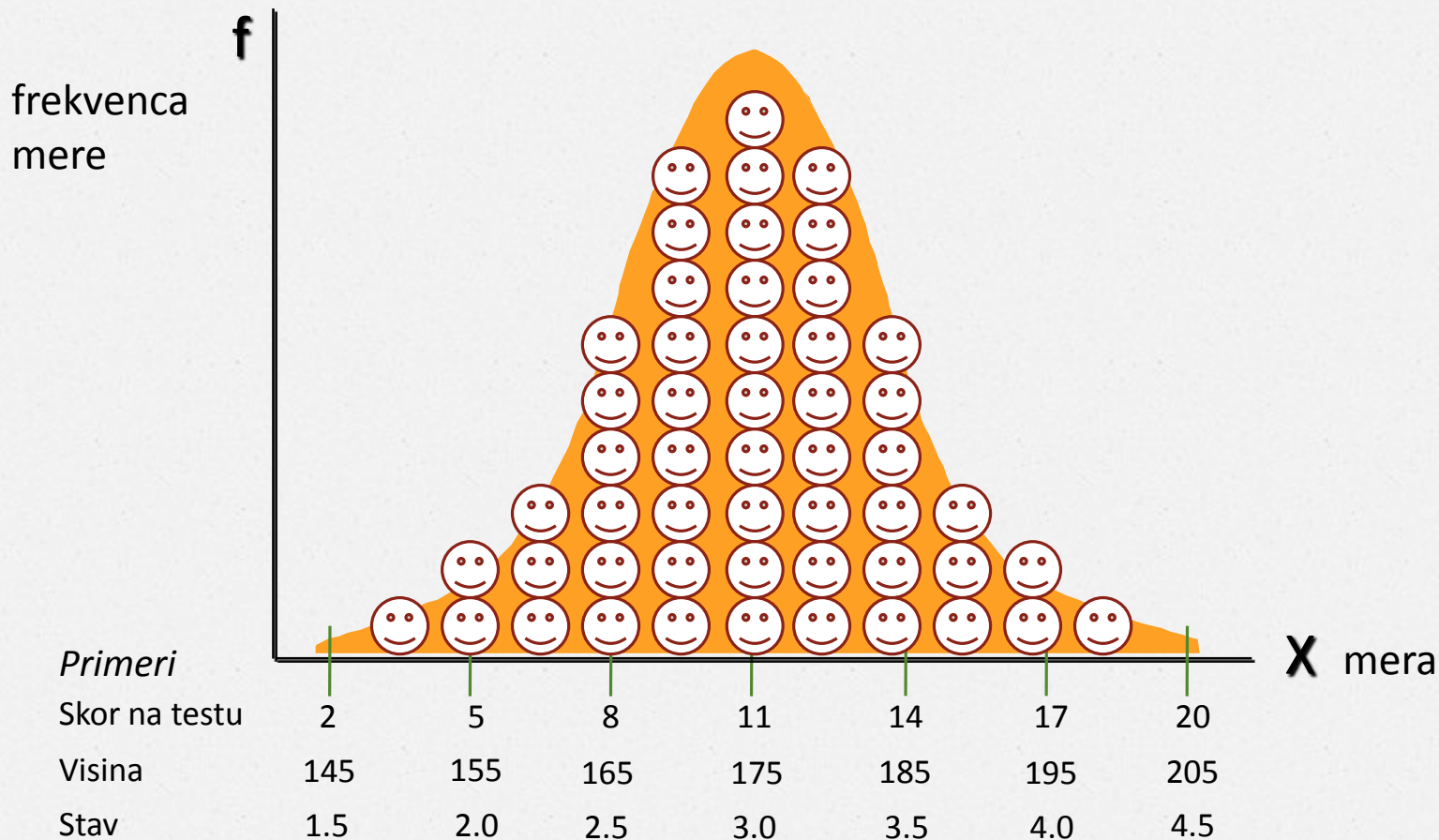


Metodologija naučnog istraživanja
sa osnovama statistike

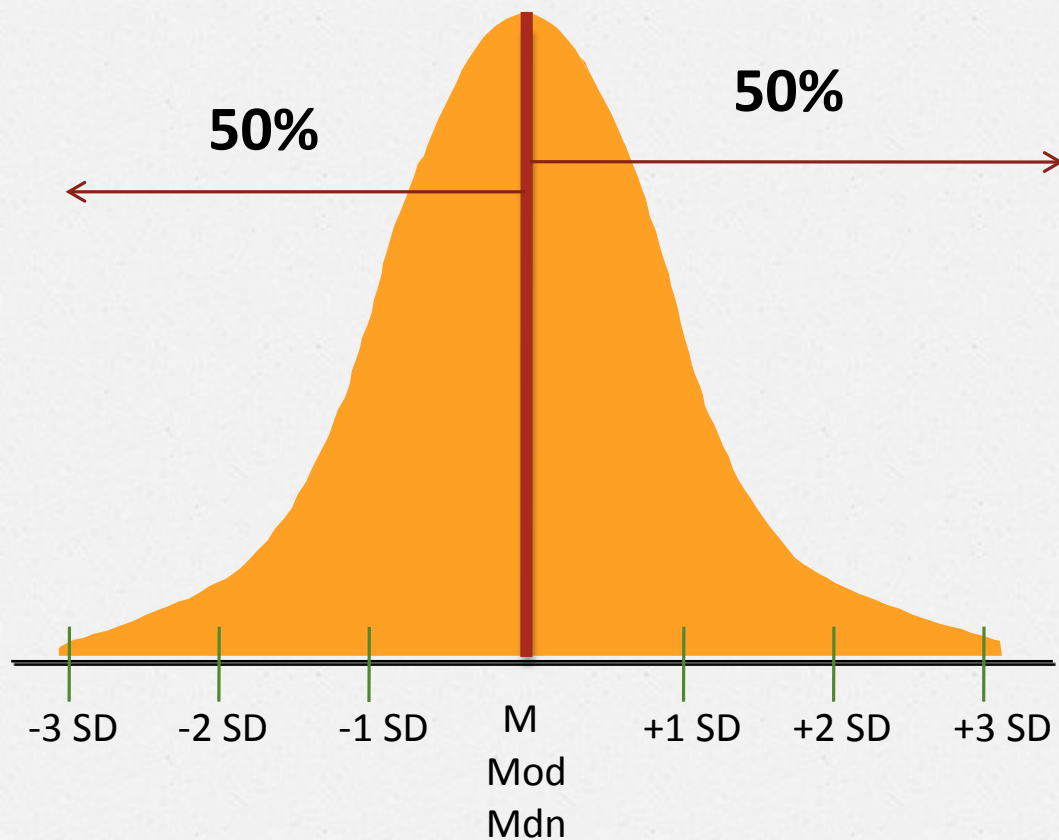
Vežbe XIX

**Normalna raspodela
i standardna skala**

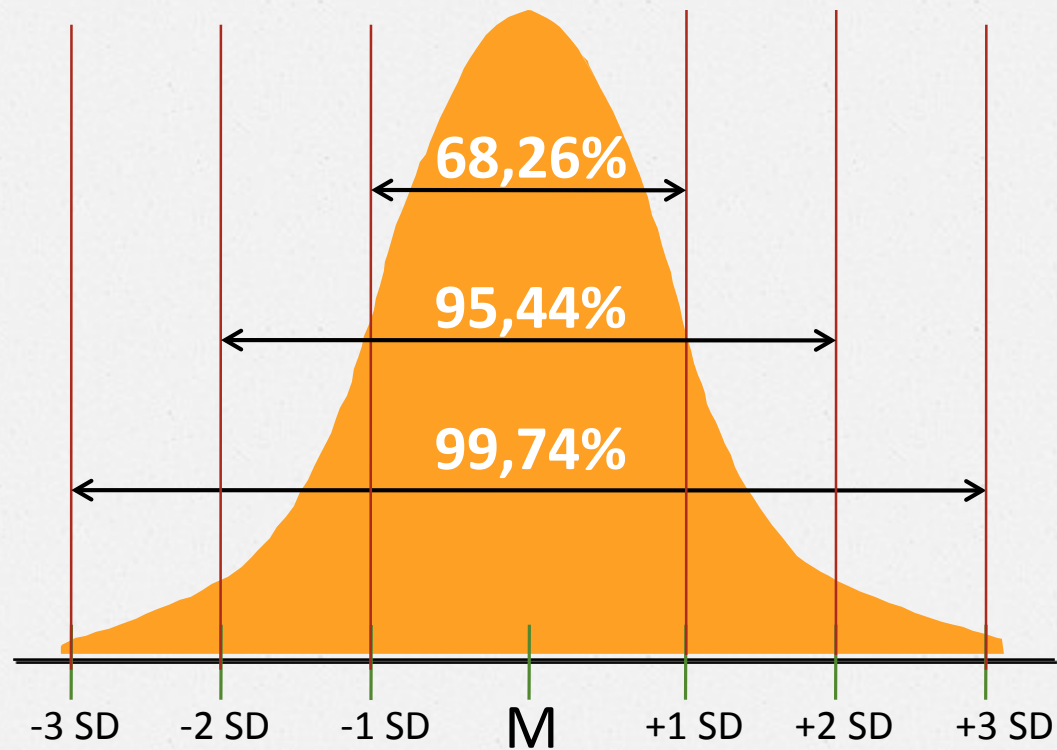
Normalna raspodela učestalosti mera



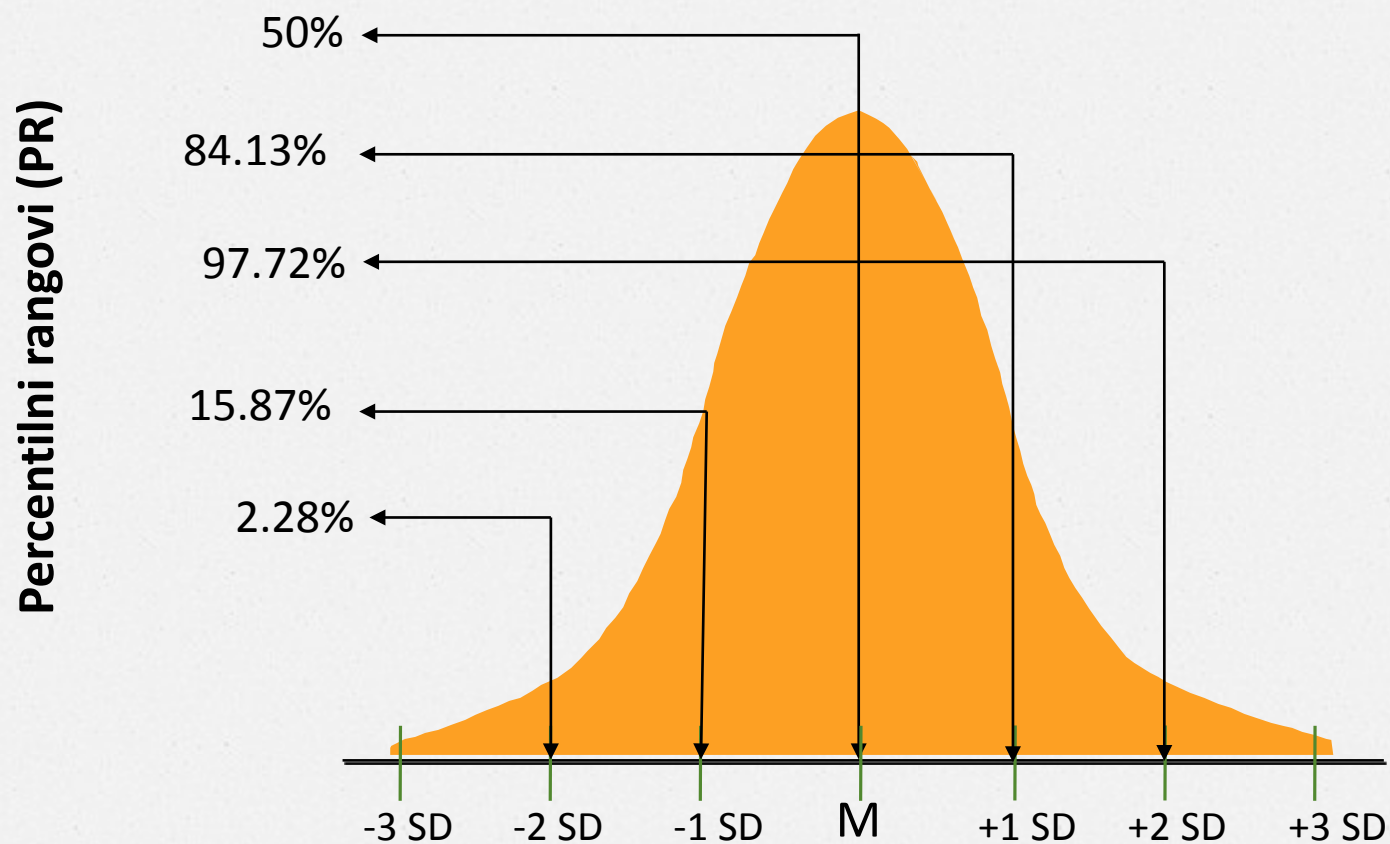
Normalna raspodela



Površina pod normalnom krivom

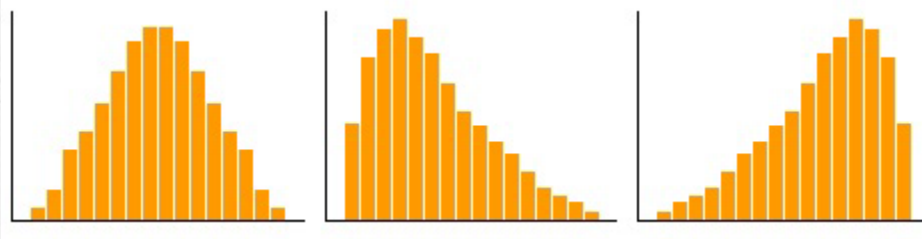


Percentilni rangovi



Odstupanja od normalne raspodele

Horizontalna odstupanja (asimetrija, zakrivljenost)

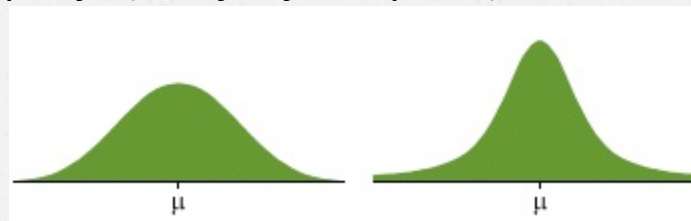


Normalna
raspodela

Pozitivno
asimetrična

Negativno
asimetrična

Vertikalna odstupanja (devijacije raspona)



Platokurtična

Leptokurtična

Prikaz (normalne) raspodele u SPSS-u

- 1 Analyze → Descriptive Statistics → Frequencies → Chart → Histograms
- 2 označiti opciju „Show normal curve on histogram“

The screenshot shows the SPSS Statistics Data Editor interface. The 'Analyze' menu is open, and the path 'Descriptive Statistics' → 'Frequencies' → 'Charts' is followed. The 'Frequencies: Charts' dialog box is open, showing the 'Chart Type' section with 'Histograms' selected and the checkbox 'Show normal curve on histogram' checked. A red '1' is placed next to the 'Frequencies' menu item, and a red '2' is placed next to the 'Show normal curve on histogram' checkbox. The background shows a list of variables in the 'Variable View' tab, including 'redbr', 'pol', 'starost', 'god.stud', 'faks', 'mesto', 'poticanje', 'razlog.posete', 'boravak', 'kultura', 'odmor', 'rad', 'obrz.rod', 'radni.status', 'klasa', 'zaj.simp', 'iskustvo', 'blizak', 'stav1', 'stav2', 'stav3', 'stav4', 'stav5', 'stav6', and 'stav7'.

| Name | Type |
|-----------------|---------|
| 1 redbr | Numeric |
| 2 pol | Numeric |
| 3 starost | Numeric |
| 4 god.stud | Numeric |
| 5 faks | Numeric |
| 6 mesto | Numeric |
| 7 poticanje | Numeric |
| 8 razlog.posete | Numeric |
| 9 boravak | Numeric |
| 10 kultura | Numeric |
| 11 odmor | Numeric |
| 12 rad | Numeric |
| 13 obrz.rod | Numeric |
| 14 radni.status | Numeric |
| 15 klasa | Numeric |
| 16 zaj.simp | Numeric |
| 17 iskustvo | Numeric |
| 18 blizak | Numeric |
| 19 stav1 | Numeric |
| 20 stav2 | Numeric |
| 21 stav3 | Numeric |
| 22 stav4 | Numeric |
| 23 stav5 | Numeric |
| 24 stav6 | Numeric |
| 25 stav7 | Numeric |

Da li ste viši ili teži?



Standardni skorovi

$$z = \frac{X - M}{SD}$$

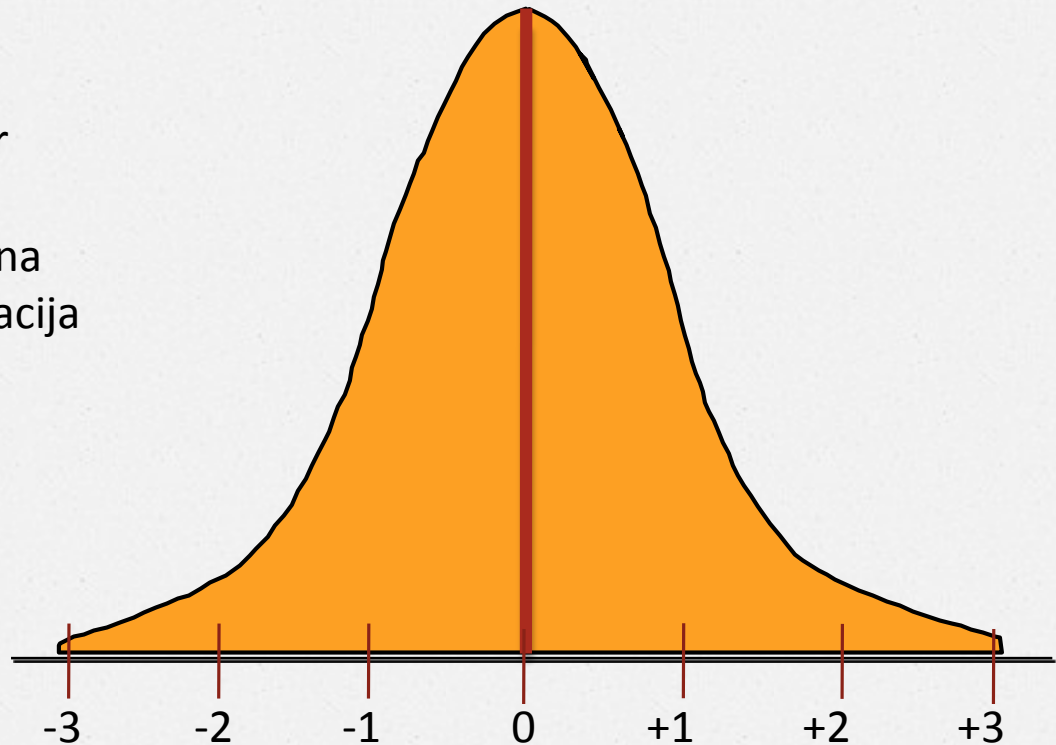
z - standardni, z skor

X - sirovi skor

M - aritmetička sredina

SD - standardna devijacija

z - skorovi



Percentilni rangovi na osnovu z-skorova

| Z | 0.00 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0 | 0.0000 | 0.0040 | 0.0080 | 0.0120 | 0.0160 | 0.0199 | 0.0239 | 0.0279 | 0.0319 | 0.0359 |
| 0.1 | .0398 | .0438 | .0478 | .0517 | .0557 | .0596 | .0636 | .0675 | .0714 | .0753 |
| 0.2 | .0793 | .0832 | .0871 | .0910 | .0948 | .0987 | .1026 | .1064 | .1103 | .1141 |
| 0.3 | .1179 | .1217 | .1255 | .1293 | .1331 | .1368 | .1406 | .1443 | .1480 | .1517 |
| 0.4 | .1554 | .1591 | .1628 | .1664 | .1700 | .1736 | .1772 | .1808 | .1844 | .1879 |
| 0.5 | .1915 | .1950 | .1985 | .2019 | .2054 | .2088 | .2123 | .2157 | .2190 | .2224 |
| 0.6 | .2257 | .2291 | .2324 | .2357 | .2389 | .2422 | .2422 | .2486 | .2517 | .2549 |
| 0.7 | .2580 | .2611 | .2642 | .2673 | .2704 | .2734 | .2794 | .2764 | .2823 | .2852 |
| 0.8 | .2881 | .2910 | .2939 | .2967 | .2995 | .3023 | .3051 | .3078 | .3106 | .3133 |
| 0.9 | .3159 | .3186 | .3212 | .3238 | .3264 | .3289 | .3315 | .3340 | .3365 | .3389 |
| 1.0 | .3413 | .3438 | .3461 | .3485 | .3508 | .3531 | .3554 | .3577 | .3599 | .3621 |
| 1.1 | .3643 | .3665 | .3685 | .3708 | .3729 | .3749 | .3770 | .3790 | .3810 | .3830 |
| 1.2 | .3849 | .3869 | .3888 | .3907 | .3925 | .3944 | .3962 | .3980 | .3997 | .4015 |
| 1.3 | .4032 | .4049 | .4066 | .4082 | .4099 | .4115 | .4131 | .4147 | .4162 | .4177 |
| 1.4 | .4192 | .4207 | .4222 | .4236 | .4251 | .4265 | .4279 | .4292 | .4306 | .4319 |
| 1.5 | .4332 | .4345 | .4357 | .4370 | .4382 | .4394 | .4406 | .4418 | .4429 | .4441 |
| 1.6 | .4452 | .4463 | .4474 | .4484 | .4495 | .4505 | .4515 | .4525 | .4533 | .4545 |
| 1.7 | .4554 | .4564 | .4573 | .4582 | .4591 | .4599 | .4608 | .4616 | .4625 | .4633 |
| 1.8 | .4641 | .4649 | .4656 | .4664 | .4671 | .4678 | .4686 | .4693 | .4699 | .4706 |

$$z = 1.47$$

$$PR = 50 + 42.92$$

$$= 92.92\%$$

$$z = -1.47$$

$$PR = 50 - 42.92$$

$$= 7.08\%$$

$$z = 0.25$$

$$PR = 50 + 9.87$$

$$= 59.87\%$$

Standardni skorovi u SPSS-u

- 1 Analyze → Descriptive Statistics → Descriptives
- 2 označiti opciju „Save standardized values as variables“

The screenshot shows the SPSS Statistics Data Editor interface. The menu path is: Analyze → Descriptive Statistics → Descriptives. The Descriptives dialog box is open, showing the variable 'NFC' selected in the 'Variable(s):' list. The checkbox 'Save standardized values as variables' is checked. A red '2' is placed next to this checkbox. The background shows a list of variables in the Variable View, including 'hinsight', 'outcome', 'sce_sum', 'base_rate', 'NORM_IRAC', 'EKOL_IRAC', 'fac1_6var', 'fac2_6var', 'anc_rez', 'bif_rez', 'ovr_rez', 'hnd_rez', 'out_rez', 'sce_rez', 'brb_rez', 'fac1_rez7', 'fac2_rez7', 'fac1_rez6', 'fac2_rez6', 'triple_tot', 'recnik_tot', 'alf_tot', 'al4_tot', 'let_tot', and 'mre_tot'.

| Name | Type |
|---------------|---------|
| 19 hinsight | Numeric |
| 20 outcome | Numeric |
| 21 sce_sum | Numeric |
| 22 base_rate | Numeric |
| 23 NORM_IRAC | Numeric |
| 24 EKOL_IRAC | Numeric |
| 25 fac1_6var | Numeric |
| 26 fac2_6var | Numeric |
| 27 anc_rez | Numeric |
| 28 bif_rez | Numeric |
| 29 ovr_rez | Numeric |
| 30 hnd_rez | Numeric |
| 31 out_rez | Numeric |
| 32 sce_rez | Numeric |
| 33 brb_rez | Numeric |
| 34 fac1_rez7 | Numeric |
| 35 fac2_rez7 | Numeric |
| 36 fac1_rez6 | Numeric |
| 37 fac2_rez6 | Numeric |
| 38 triple_tot | Numeric |
| 39 recnik_tot | Numeric |
| 40 alf_tot | Numeric |
| 41 al4_tot | Numeric |
| 42 let_tot | Numeric |
| 43 mre_tot | Numeric |

Percentilni rangovi u SPSS-u

- 1 Transform → Rank Cases → Rank Types
- 2 isključiti opciju „Rank“
- 3 uključiti opciju „Fractional rank as %“

The screenshot shows the IBM SPSS Statistics Data Editor interface. The 'Transform' menu is open, and 'Rank Cases...' is selected. The 'Rank Cases: Types' dialog box is open, showing the following options:

- Rank (marked with a red '2')
- Fractional rank as % (marked with a red '3')
- Savage score
- Sum of case weights
- Fractional rank
- Ntiles: 4
- Proportion estimates
- Normal scores

The 'Proportion Estimation Formula' section is visible, with radio buttons for Blom, Tukey, Rankit, and Van der Waerden. The 'Rankit' option is selected. The 'Continue' button is highlighted.

| Name | Values | Missing | Columns | Align | Measure | Role |
|-------------|---------|---------|---------|-------------------|---------|-------|
| anchoring | None | None | 10 | Right | Scale | Input |
| belief | None | None | 10 | Right | Scale | Input |
| overconf | None | N | | | | |
| hinsight | None | N | | | | |
| outcome | None | N | | | | |
| sce_sum | None | N | | | | |
| base_rate | None | N | | | | |
| NORM_IRAC | None | N | | | | |
| EKOL_IRAC | None | N | | | | |
| fac1_6var | None | N | | | | |
| fac2_6var | None | N | | | | |
| anc_rez | None | N | | | | |
| bif_rez | None | N | | | | |
| ovr_rez | None | N | | | | |
| hnd_rez | Numeric | 11 | 5 | | | |
| out_rez | Numeric | 11 | 5 | | | |
| sce_rez | Numeric | 11 | 5 | | | |
| brb_rez | Numeric | 11 | 5 | | | |
| fac1_rez7 | Numeric | 11 | 5 | | | |
| fac2_rez7 | Numeric | 11 | 5 | | | |
| fac1_rez6 | Numeric | 11 | 5 | | | |
| fac2_rez6 | Numeric | 11 | 5 | | | |
| triplet_tot | Numeric | 8 | 2 | TRIPLETS_Uku... | Scale | Input |
| rechnik_tot | Numeric | 8 | 2 | rechnik_Ukupan... | Scale | Input |
| alf_tot | Numeric | 8 | 2 | ALE7_UkupanP... | Scale | Input |