

Andmeanalüüs ökoloogias, esimese loengu SAS-näited

PROGRAMM:

```
data lutikad;
  input pikkus laius sugu $;
  cards;
    10 7 m
    12 8 m
    12 9 m
    13 6 m
    10 6 m
    14 7 m
    13 8 f
    11 9 f
    14 5 f
    16 10 f
    14 9 f
    14 8 f
  ;
run;
```

```
* OPTIONITEGA SÄTIME TULEMUSTE LEHEKÜLJE SUURUST,
PILTIDE JAOKS PEAKS LEHEKÜLJE KÕRGUS OLEMA UMBES 35.
MUIDU EI MAHU ÄRA, PS - PAGE SIZE, LS - LINE SIZE (LAIUS);
```

```
options ps=35 ls=80;
```

```
* TEEME PILTE PROC CHARTIGA;
* ANALÜÜS 1 - SAGEDUSJAOTUSED E. HISTOGRAMMID;
```

```
proc chart;
  vbar pikkus;
run;
proc chart;
  hbar pikkus;
run;
proc chart;
  vbar pikkus/ midpoints=10 to 16 by 1;
run;
```

```
* TEKSTILISTE TULEMUSTE TARVIS PANEME LEHEKÜLJE SUUREMAKS TAGASI;
options ps=50;
```

```
*ANALÜÜS 2 - KESKMISED JA MUUD STATISTIKUD;
```

```
proc means;
```

```
proc means;
  var pikkus laius;
run;
```

```
proc means mean var std stderr cv clm maxdec=3;
```

```
        var pikkus laius;
run;
```

```
* ANALÜÜS 3 - VEEL STATISTIKUID JA NORMAALSUSE TEST;
```

```
proc univariate;
    var pikkus;
run;
```

```
proc univariate normal;
    var pikkus;
run;
```

```
*ANALÜÜS 4 - KESKMISED SUGUDE KAUPA;
```

```
proc sort; by sugu;
```

```
proc means;
    var pikkus;
    by sugu;
```

```
* ANALÜÜS 5 - KESKMISTEST OMAETTE DATA TEGEMINE;
```

```
proc means;
    var pikkus;
    output out=keskm mean=keskpikk;
    by sugu;
run;
```

```
proc print;
run;
```

```
* ANALÜÜS 6 - PROTSENDILE USALDUSPIIRIDE LEIDMINE;
```

```
data parasiit;
    input para $ fr;
    cards;
    on 70
    ei 430
    ;
proc freq;
    tables para/ binomial;
    weight fr;
run;
```


The UNIVARIATE Procedure
 Variable: pikkus

Moments

N	12	Sum Weights	12
Mean	12.75	Sum Observations	153
Std Deviation	1.81533869	Variance	3.29545455
Skewness	-0.1025742	Kurtosis	-0.4677987
Uncorrected SS	1987	Corrected SS	36.25
Coeff Variation	14.2379505	Std Error Mean	0.52404314

Basic Statistical Measures

Location		Variability	
Mean	12.75000	Std Deviation	1.81534
Median	13.00000	Variance	3.29545
Mode	14.00000	Range	6.00000
		Interquartile Range	2.50000

Tests for Location: Mu0=0

Test	-Statistic-	-----p Value-----
Student's t	t 24.33006	Pr > t <.0001
Sign	M 6	Pr >= M 0.0005
Signed Rank	S 39	Pr >= S 0.0005

Quantiles (Definition 5)

Quantile	Estimate
100% Max	16.0
99%	16.0
95%	16.0
90%	14.0
75% Q3	14.0
50% Median	13.0
25% Q1	11.5
10%	10.0
5%	10.0
1%	10.0
0% Min	10.0

normali puhul lisaks:

Tests for Normality

Test	---Statistic---	-----p Value-----
Shapiro-Wilk	W 0.934759	Pr < W 0.4333
Kolmogorov-Smirnov	D 0.171122	Pr > D >0.1500
Cramer-von Mises	W-Sq 0.060614	Pr > W-Sq >0.2500
Anderson-Darling	A-Sq 0.38175	Pr > A-Sq >0.2500

ANALÜÜS 4 - KESKMISED SUGUDE KAUPA

The SAS System 60
12:42 Tuesday, February 12, 2002

----- sugu=f -----

The MEANS Procedure

Analysis Variable : pikkus

N	Mean	Std Dev	Minimum	Maximum
6	13.666667	1.6329932	11.000000	16.000000

----- sugu=m -----

Analysis Variable : pikkus

N	Mean	Std Dev	Minimum	Maximum
6	11.833333	1.6020820	10.000000	14.000000

ANALÜÜS 5 - UUE DATA TEGEMINE KESKMISTEST

uue data väljatrükk

The SAS System 62
12:42 Tuesday, February 12, 2002

Obs	sugu	_TYPE_	_FREQ_	keskpikk
1	f	0	6	13.6667
2	m	0	6	11.8333

ANALÜÜS 6 - USALDUSPIIRID KAHEVÄÄRTUSELISE JAOTUSE PUHUL

12:42 Tuesday, February 12, 2002

The FREQ Procedure

para	Frequency	Percent	Cumulative Frequency	Cumulative Percent
ei	430	86.00	430	86.00
on	70	14.00	500	100.00

Binomial Proportion

for para = ei

Proportion	0.8600
ASE	0.0155
95% Lower Conf Limit	0.8296
95% Upper Conf Limit	0.8904

Exact Conf Limits

95% Lower Conf Limit	0.8265
95% Upper Conf Limit	0.8892

Test of H0: Proportion = 0.5

ASE under H0	0.0224
Z	16.0997
One-sided Pr > Z	<.0001
Two-sided Pr > Z	<.0001

Sample Size = 500