

```
GET /FILE 'VIRVE.SYS'.
304 cases, each consisting of
    43 variables (including system variables).
    43 variables will be used in this session.
```

```
-----
set more off.
set length 50.
```

```
SELECT IF (T8=1).
FREQUENCIES /VARIABLES T61 TO T62 /STATISTICS ALL.
```

```
-----
T61          TOO SUNNIKS MIND MOTLEMA
```

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
TAIESTI NOUS	1	68	39.1	41.0	41.0
POHILISELT NOUS	2	65	37.4	39.2	80.1
UKSKOIK	3	19	10.9	11.4	91.6
POHILISELT EI OLE NO	4	7	4.0	4.2	95.8
ULDSE EI OLE NOUS	5	7	4.0	4.2	100.0
	.	8	4.6	MISSING	
		-----	-----	-----	
	TOTAL	174	100.0	100.0	

Mean	1.916	Std Err	.080	Median	2.000
Mode	1.000	Std Dev	1.035	Variance	1.072
Kurtosis	1.540	S E Kurt	.375	Skewness	1.332
S E Skew	.188	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	318.000		

```
Valid Cases    166      Missing Cases    8
```

```
-----
T62          TOO VASTAKS MINU KVALIFIKATSIOONILE
```

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
TAIESTI NOUS	1	78	44.8	46.7	46.7
POHILISELT NOUS	2	66	37.9	39.5	86.2
UKSKOIK	3	15	8.6	9.0	95.2
POHILISELT EI OLE NO	4	4	2.3	2.4	97.6
ULDSE EI OLE NOUS	5	4	2.3	2.4	100.0
	.	7	4.0	MISSING	
		-----	-----	-----	
	TOTAL	174	100.0	100.0	

Mean	1.743	Std Err	.070	Median	2.000
Mode	1.000	Std Dev	.898	Variance	.807
Kurtosis	2.854	S E Kurt	.374	Skewness	1.542
S E Skew	.188	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	291.000		

```
Valid Cases    167      Missing Cases    7
```

```
-----
CROSSTABS /TABLES T9 BY T61/OPTIONS 3 4 5 /STATISTICS 1.
```

Crosstabulation: T9 TEIE VANUS  
By T61 TOO SUNNIKS MIND MOTLEMA

		Count :													
		Row Pct	:TAIESTI	:POHILISE:UKSKOIK	:POHILISE:ULDSE	EI:									
T61_>		Col Pct	:NOUS	:LT NOUS	:	:LT EI OL:	OLE NOU:	Row							
		Tot Pct	:	1 :	2 :	3 :	4 :	5 :	Total						
T9															
20-30	A	STAT	1	:	16	:	11	:	4	:	1	:	1	:	33
			:	48.5	:	33.3	:	12.1	:	3.0	:	3.0	:	19.9	
			:	23.5	:	16.9	:	21.1	:	14.3	:	14.3	:		
			:	9.6	:	6.6	:	2.4	:	.6	:	.6	:		
31-40	A	STAT	2	:	15	:	22	:	7	:	3	:		:	47
			:	31.9	:	46.8	:	14.9	:	6.4	:		:	28.3	
			:	22.1	:	33.8	:	36.8	:	42.9	:		:		
			:	9.0	:	13.3	:	4.2	:	1.8	:		:		
41-50	A	STAT	3	:	14	:	11	:	3	:		:	2	:	30
			:	46.7	:	36.7	:	10.0	:		:	6.7	:	18.1	
			:	20.6	:	16.9	:	15.8	:		:	28.6	:		
			:	8.4	:	6.6	:	1.8	:		:	1.2	:		
51-60	A	STAT	4	:	22	:	19	:	5	:	3	:	4	:	53
			:	41.5	:	35.8	:	9.4	:	5.7	:	7.5	:	31.9	
			:	32.4	:	29.2	:	26.3	:	42.9	:	57.1	:		
			:	13.3	:	11.4	:	3.0	:	1.8	:	2.4	:		
61...			5	:	1	:	2	:		:		:		:	3
			:	33.3	:	66.7	:		:		:		:	1.8	
			:	1.5	:	3.1	:		:		:		:		
			:	.6	:	1.2	:		:		:		:		
Column			68		65		19		7		7		166		
Total			41.0		39.2		11.4		4.2		4.2		100.0		
Chi-Square	D.F.	Significance				Min E.F.		Cells with E.F.< 5							
-----	----	-----				-----		-----							
10.85686	16	.8182				.127		15 OF 25 ( 60.0%)							

Number of Missing Observations = 8

T-TEST /GROUPS T9(1,3) /VARIABLES T61 TO T65.

Independent samples of T9 TEIE VANUS  
Group 1: T9 EQ 1 Group 2: T9 EQ 3  
t-test for: T61 TOO SUNNIKS MIND MOTLEMA

		Number	Mean	Standard	Standard	
		of Cases		Deviation	Error	
Group 1		33	1.7879	.992	.173	
Group 2		30	1.8333	1.085	.198	
		: Pooled Variance Estimate		: Separate Variance Estimate		
F	2-Tail	: t	Degrees of	2-Tail	: t	Degrees of
Value	Prob.	: Value	Freedom	Prob.	: Value	Freedom
		:		:		

1.20 .619 : -.17 61 .863 : -.17 58.96 .863  
t-test for: T62 TOO VASTAKS MINU KVALIFIKATSIOONILE

	Number of Cases	Mean	Standard Deviation	Standard Error
Group 1	33	1.6667	.777	.135
Group 2	32	1.6875	.780	.138

F	2-Tail	: Pooled Variance Estimate		: Separate Variance Estimate	
Value	Prob.	t	Degrees of Freedom	t	Degrees of Freedom
1.01	.981	-.11	63	.914	62.92

-----  
t-test for: T63 TOO NOUAKS KOIKIDE MINU TEADMISTE KASUTA

	Number of Cases	Mean	Standard Deviation	Standard Error
Group 1	33	1.3333	.479	.083
Group 2	30	1.7667	1.006	.184

F	2-Tail	: Pooled Variance Estimate		: Separate Variance Estimate	
Value	Prob.	t	Degrees of Freedom	t	Degrees of Freedom
4.42	.000	-2.21	61	.031	40.60

-----  
Independent samples of T9 TEIE VANUS

Group 1: T9 EQ 1 Group 2: T9 EQ 3

t-test for: T64 MA ISE SAAKSIN PLANEERIDA OMA TOOD

	Number of Cases	Mean	Standard Deviation	Standard Error
Group 1	33	1.7273	.839	.146
Group 2	29	1.6897	.967	.180

F	2-Tail	: Pooled Variance Estimate		: Separate Variance Estimate	
Value	Prob.	t	Degrees of Freedom	t	Degrees of Freedom
1.33	.436	.16	60	.870	55.90

t-test for: T65 TOO OLEKS VAHELDUSRIKAS

	Number of Cases	Mean	Standard Deviation	Standard Error
Group 1	33	1.6364	1.055	.184
Group 2	31	1.5161	.570	.102

F	2-Tail	: Pooled Variance Estimate		: Separate Variance Estimate	
Value	Prob.	t	Degrees of Freedom	t	Degrees of Freedom

Value	Prob.	:	Value	Freedom	Prob.	:	Value	Freedom	Prob.
3.43	.001	:	.56	62	.576	:	.57	49.83	.570

-----  
CORRELATIONS /VARIABLES T61 TO T65 /OPTIONS 3 5.  
-----

Correlations:	T61	T62	T63	T64	T65
T61	1.0000 ( 161) P= .	.2277 ( 161) P= .004	.2557 ( 161) P= .001	.2939 ( 161) P= .000	.2406 ( 161) P= .002
T62	.2277 ( 161) P= .004	1.0000 ( 161) P= .	.1951 ( 161) P= .013	.2346 ( 161) P= .003	.1323 ( 161) P= .094
T63	.2557 ( 161) P= .001	.1951 ( 161) P= .013	1.0000 ( 161) P= .	.3737 ( 161) P= .000	.2740 ( 161) P= .000
T64	.2939 ( 161) P= .000	.2346 ( 161) P= .003	.3737 ( 161) P= .000	1.0000 ( 161) P= .	.3957 ( 161) P= .000
T65	.2406 ( 161) P= .002	.1323 ( 161) P= .094	.2740 ( 161) P= .000	.3957 ( 161) P= .000	1.0000 ( 161) P= .

" . " is printed if a coefficient cannot be computed  
-----

REGRESSION /VARIABLES T11 T61 /DEPENDENT T11 /METHOD ENTER.  
-----

\* \* \* \* M U L T I P L E R E G R E S S I O N \* \* \* \*  
Listwise Deletion of Missing Data  
Equation Number 1 Dependent Variable.. T11 KELLENA TE TOOTATE  
Beginning Block Number 1. Method: Enter

Variable(s) Entered on Step Number  
1.. T61 TOO SUNNIKS MIND MOTLEMA

Multiple R .01127  
R Square .00013  
Adjusted R Square -.00597  
Standard Error 1.05492  
Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	.02317	.02317
Residual	164	182.50695	1.11285

F = .02082 Signif F = .8854

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
T61	.01145	.07933	.01127	.144	.8854
(Constant)	2.12265	.17263		12.296	.0000

End Block Number 1 All requested variables entered.

PLOT

/FORMAT REGRESSION/PLOT T11 WITH T61.

PLOT requires 15080 BYTES of workspace for execution.

\*\*\*\*\* P L O T \*\*\*\*\*

Data Information

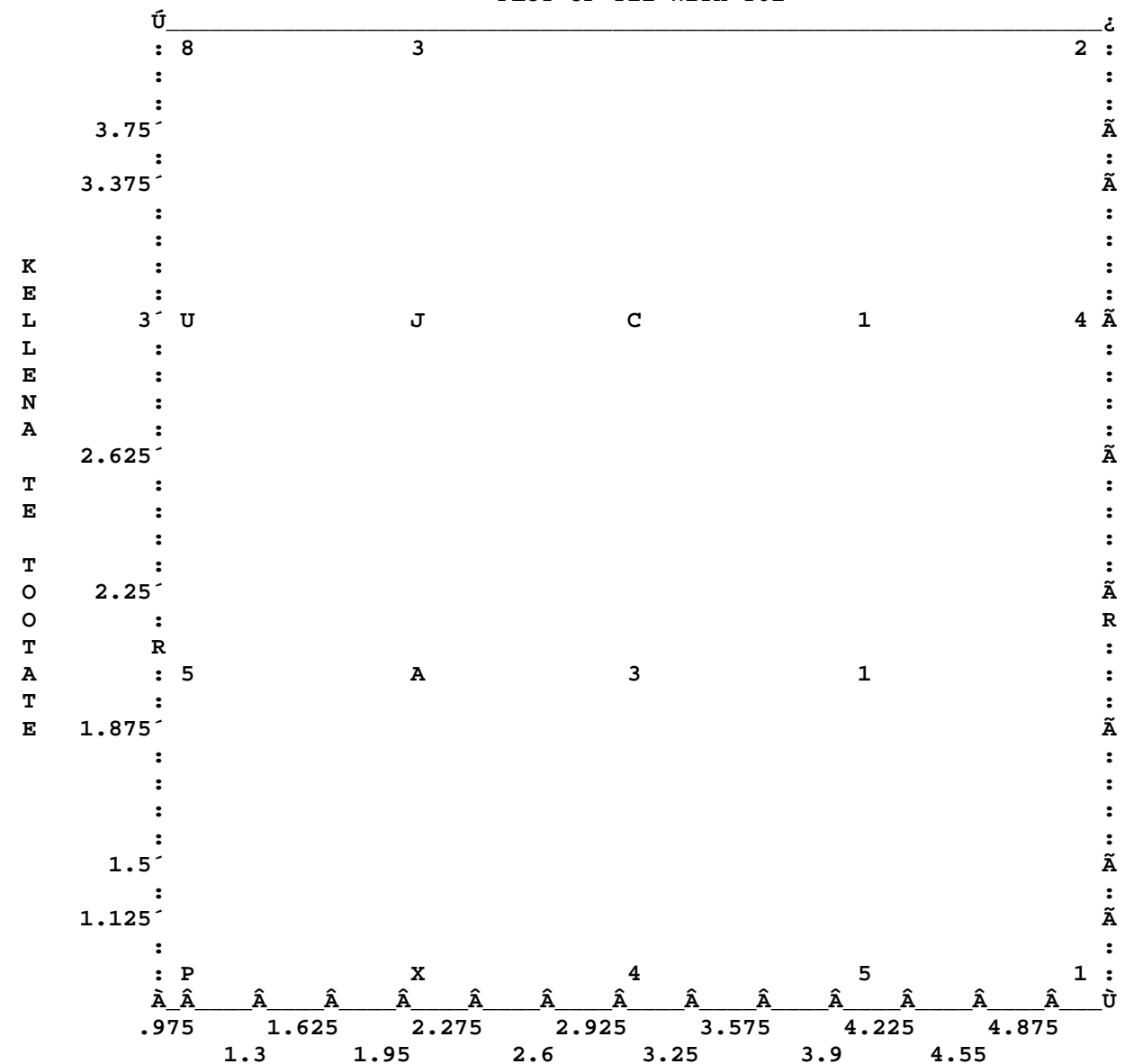
174 unweighted cases accepted.

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PLOT OF T11 WITH T61



TOO SUNNIKS MIND MOTLEMA

166 cases plotted. Regression statistics of T11 on T61:

Correlation .01127 R Squared .00013 S.E. of Est 1.05492 Sig. .8854  
Intercept(S.E.) 2.12265( .17263) Slope(S.E.) .01145( .07933)

-----  
FACTOR /VARIABLES T71 TO T713 /EXTRACTION /ROTATION VARIMAX  
/PLOT ROTATION (1,2).  
-----

- - - - F A C T O R A N A L Y S I S - - - -  
Analysis Number 1 Listwise deletion of cases with missing values  
Extraction 1 for Analysis 1, Principal-Components Analysis (PC)

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
T71	1.00000	*	1	3.89279	29.9	29.9
T72	1.00000	*	2	1.88725	14.5	44.5
T73	1.00000	*	3	1.14532	8.8	53.3
T74	1.00000	*	4	.96185	7.4	60.7
T75	1.00000	*	5	.87076	6.7	67.4
T76	1.00000	*	6	.82008	6.3	73.7
T77	1.00000	*	7	.74421	5.7	79.4
T78	1.00000	*	8	.67289	5.2	84.6
T79	1.00000	*	9	.62584	4.8	89.4
T710	1.00000	*	10	.52111	4.0	93.4
T711	1.00000	*	11	.34395	2.6	96.0
T712	1.00000	*	12	.28340	2.2	98.2
T713	1.00000	*	13	.23055	1.8	100.0

Factor Matrix:

FACTOR 1	FACTOR 2	FACTOR 3
..		
..		
T71	.61158	-.24949
..		
T72	.64310	-.38575
..		
T73	.70521	-.47149
..		
T74	.59034	-.29612
..		
T75	.63622	-.52699
T76	.45459	.53465
T77	.52011	.44810
T78	.54381	.22145
T79	.55971	.46512
T710	.41402	.31190
T711	.53056	.25472
T712	.48314	.00519
T713	.28648	.41748

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
		*				
T71	.47860	*	1	3.89279	29.9	29.9
T72	.57118	*	2	1.88725	14.5	44.5
T73	.71968	*	3	1.14532	8.8	53.3
T74	.45294	*				

T75	.68293	*
T76	.53840	*
T77	.79772	*
T78	.47890	*
T79	.55857	*
T710	.51796	*
T711	.57729	*
T712	.27981	*
T713	.27137	*

-----  
 - - - - F A C T O R   A N A L Y S I S   - - - -  
 Varimax   Rotation 1,   Extraction 1,   Analysis 1 - Kaiser Normalization.

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3
T71	.63073	.28345	.02088
T72	.74010	.14458	.05022
T73	.83982	.06636	.09994
T74	.63181	.01747	.23118
T75	.82402	-.01643	.06041
T76	-.00706	.65751	.32563
T77	.11430	.88409	.05506
T78	.27399	.62695	.10375
T79	.10146	.40326	.62101
T710	.08076	.02406	.71474
T711	.20650	.05861	.72884
T712	.34803	.07840	.39057
T713	-.06877	.28295	.43196

Horizontal Factor	Factor 1	Vertical Factor	Factor 2	Symbol	Variable	Coordinates
:				1	T71	.631 .283
:	7			2	T72	.740 .145
:				3	T73	.840 .066
6				4	T74	.632 .017
:		8		5	T75	.824 -.016
:				6	T76	-.007 .658
:	9			7	T77	.114 .884
13 :			1	8	T78	.274 .627
:				9	T79	.101 .403
:			2	10	T710	.081 .024
10	1112		4 3	11	T711	.206 .059
				12	T712	.348 .078
				13	T713	-.069 .283
			5			
:						
:						
:						
:						
:						
:						
:						
:						
:						
:						
:						

-----





```

set length 25.
DISCRIMINANT GROUPS FIRMA(1,3) /VARIABLES T61 TO T66/method wilks
/STATISTICS 5 10 13 14 15 16 1 7 11 12.

```

-----  
DISCRIMINANT ANALYSIS -----

```

On groups defined by FIRMA      Firma
    174 (unweighted) cases were processed.
    13 of these were excluded from the analysis.
        0 had missing or out-of-range group codes.
        13 had at least one missing discriminating variable.
    161 (unweighted) cases will be used in the analysis.

```

Number of Cases by Group

FIRMA	Number of Cases		Label
	Unweighted	Weighted	
1	47	47.0	Norma
2	20	20.0	Polumeer
3	94	94.0	Kreenholmi Manufaktu
Total	161	161.0	

-----  
Group Means

FIRMA	T61	T62	T63	T64
1	1.78723	1.57447	1.57447	1.55319
2	1.65000	1.50000	1.55000	1.50000
3	2.06383	1.91489	1.70213	2.13830
Total	1.93168	1.76398	1.64596	1.88820

FIRMA	T65	T66
1	1.44681	1.46809
2	1.55000	1.55000
3	1.85106	2.01064
Total	1.69565	1.79503

-----  
DISCRIMINANT ANALYSIS -----

```

On groups defined by FIRMA      Firma

```

```

Analysis number      1

```

Stepwise variable selection

```

Selection rule:  Minimize Wilks' Lambda
Maximum number of steps..... 12
Minimum Tolerance Level..... .00100
Minimum F to enter..... 1.0000
Maximum F to remove..... 1.0000

```

Canonical Discriminant Functions

```

Maximum number of functions..... 2
Minimum cumulative percent of variance... 100.00
Maximum significance of Wilks' Lambda.... 1.0000

```

```

Prior probability for each group is .33333

```

----- Variables not in the analysis after step 0 -----

Variable	Tolerance	Minimum Tolerance	F to enter	Wilks' Lambda
T61	1.0000000	1.0000000	1.9555	.97584
T62	1.0000000	1.0000000	3.2794	.96014
T63	1.0000000	1.0000000	.47423	.99403
T64	1.0000000	1.0000000	7.7827	.91032
T65	1.0000000	1.0000000	3.1078	.96215
T66	1.0000000	1.0000000	5.8268	.93131

At step 1, T64 was included in the analysis.

		Degrees of Freedom	Signif.	Between Groups
Wilks' Lambda	.91032	1 2	158.0	
Equivalent F	7.78273	2	158.0	.0006

----- Variables in the analysis after step 1 -----

Variable	Tolerance	F to remove	Wilks' Lambda
T64	1.0000000	7.7827	

----- Variables not in the analysis after step 1 -----

Variable	Tolerance	Minimum Tolerance	F to enter	Wilks' Lambda
T61	.9305818	.9305818	.47512	.90484
T62	.9649856	.9649856	1.5630	.89255
T63	.8641737	.8641737	.12306	.90889
T65	.8689599	.8689599	.69190	.90237
T66	.9256490	.9256490	2.7217	.87981

F statistics and significances between pairs of groups after step 1  
Each F statistic has 1 and 158.0 degrees of freedom.

Group	Group	1	2
	Norma		Polumeer
2	Polumeer	.43609E-01	
		.8349	
3	Kreenhol	11.785	7.3814
	mi Manufaktu	.0008	.0073

At step 2, T66 was included in the analysis.

		Degrees of Freedom	Signif.	Between Groups
Wilks' Lambda	.87981	2 2	158.0	
Equivalent F	5.19009	4	314.0	.0005

----- Variables in the analysis after step 2 -----

Variable	Tolerance	F to remove	Wilks' Lambda
T64	.9256490	4.5945	.93131
T66	.9256490	2.7217	.91032

----- Variables not in the analysis after step 2 -----

Minimum				
Variable	Tolerance	Tolerance	F to enter	Wilks' Lambda
T61	.9268062	.8728674	.36387	.87573
T62	.9576361	.9025207	1.2080	.86640
T63	.8529116	.8232883	.28212	.87664
T65	.8300559	.8300559	.25975	.87689

F statistics and significances between pairs of groups after step 2  
Each F statistic has 2 and 157.0 degrees of freedom.

Group		Group 1	Group 2
		Norma	Polumeer
2	Polumeer	.98657E-01	
		.9061	
3	Kreenhol	8.5702	4.4676
	mi Manufaktu	.0003	.0130

At step 3, T62 was included in the analysis.

	Wilks' Lambda	Degrees of Freedom	Signif.	Between Groups
	.86640	3 2	158.0	
Equivalent F	3.86566	6	312.0	.0010

----- Variables in the analysis after step 3 -----

Variable	Tolerance	F to remove	Wilks' Lambda
T62	.9576361	1.2080	.87981
T64	.9025207	3.6348	.90677
T66	.9185991	2.3544	.89255

----- Variables not in the analysis after step 3 -----

Minimum				
Variable	Tolerance	Tolerance	F to enter	Wilks' Lambda
T61	.9036634	.8606358	.20215	.86414
T63	.8412118	.8129445	.42621	.86166
T65	.8298430	.8202578	.24534	.86366

F statistics and significances between pairs of groups after step 3  
Each F statistic has 3 and 156.0 degrees of freedom.

Group		Group 1	Group 2
		Norma	Polumeer
2	Polumeer	.97798E-01	
		.9611	
3	Kreenhol	6.2514	3.5146
	mi Manufaktu	.0005	.0167

F level or tolerance or VIN insufficient for further computation.

# Summary Table

Step	Action	Vars	Wilks'			
	Entered	Removed	In	Lambda	Sig.	Label
1	T64		1	.91032	.0006	MA ISE SAAKSIN PLANEERIDA OMA TOOD
2	T66		2	.87981	.0005	KUI MA ISE SAAKSIN VASTU VOTTA OTSUS
3	T62		3	.86640	.0010	TOO VASTAKS MINU KVALIFIKATSIOONILE

## Classification Function Coefficients (Fisher's Linear Discriminant Functions)

FIRMA	=	1	2	3
		Norma	Polumeer	Kreenhol mi Manufaktu
T62		1.594061	1.498066	1.864317
T64		1.125243	1.050206	1.602826
T66		1.108657	1.231228	1.541373
(constant)		-4.041172	-3.964018	-6.146829

## Canonical Discriminant Functions

Fcn	Eigenvalue	Pct of Variance	Cum Pct	Canonical Corr	After Fcns	Wilks' Lambda	Chisquare	DF	Sig
1*	.1521	98.80	98.80	.3633	:	0	22.516	6	.0010
2*	.0018	1.20	100.00	.0429	:	1	.289	2	.8655

\* marks the 2 canonical discriminant functions remaining in the analysis.

## Standardized Canonical Discriminant Function Coefficients

	FUNC 1	FUNC 2
T62	.34133	.54469
T64	.60943	.40752
T66	.48040	-.88238

## Structure Matrix:

Pooled-within-groups correlations between discriminating variables  
and canonical discriminant functions  
(Variables ordered by size of correlation within function)

	FUNC 1	FUNC 2
T64	.80430*	.26884
T62	.51951*	.50315
T65	.39296*	-.05314
T63	.38471*	.07160
T61	.29292*	.10262
T66	.69215	-.69855*

## Unstandardized Canonical Discriminant Function Coefficients

	FUNC 1	FUNC 2
T62	.3825197	.6104126
T64	.6387744	.4271377
T66	.5038384	-.9254346
(constant)	-2.785294	-.2220896

Group	FUNC 1	FUNC 2
1	-.45121	.04380
2	-.47240	-.10019
3	.32612	-.00058

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Box's M	Approximate F	Degrees of freedom	Significance
53.415	4.2577	12, 14836.9	.0000

Symbol	Group	Label
1	1	Norma
2	2	Polumeer
3	3	Kreenholmi Manufaktu
*		Group Centroids



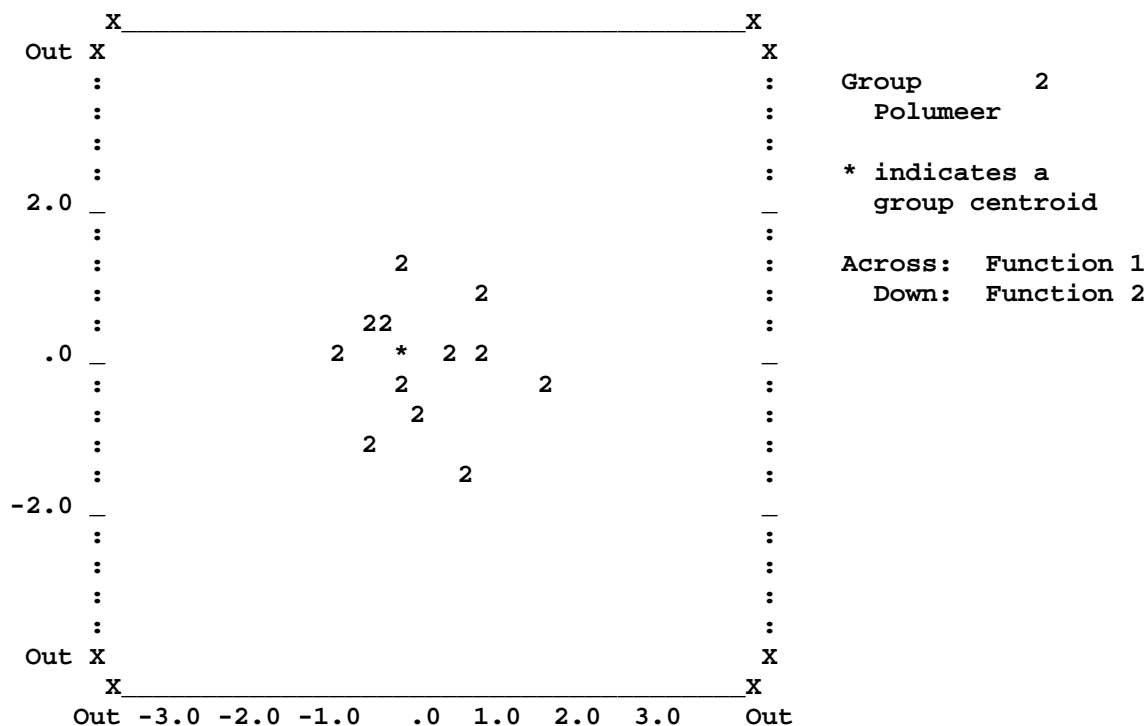
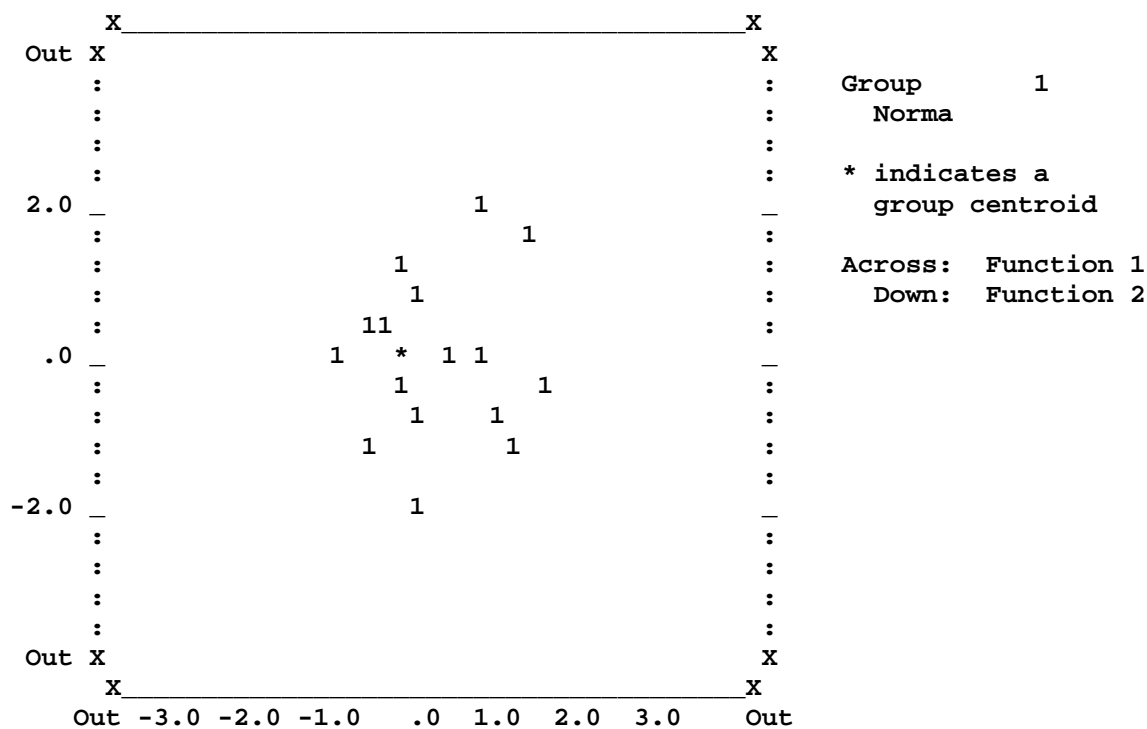


```

      :
      :
Out X      3      X
      X-----X
      Out -3.0 -2.0 -1.0 .0 1.0 2.0 3.0 Out

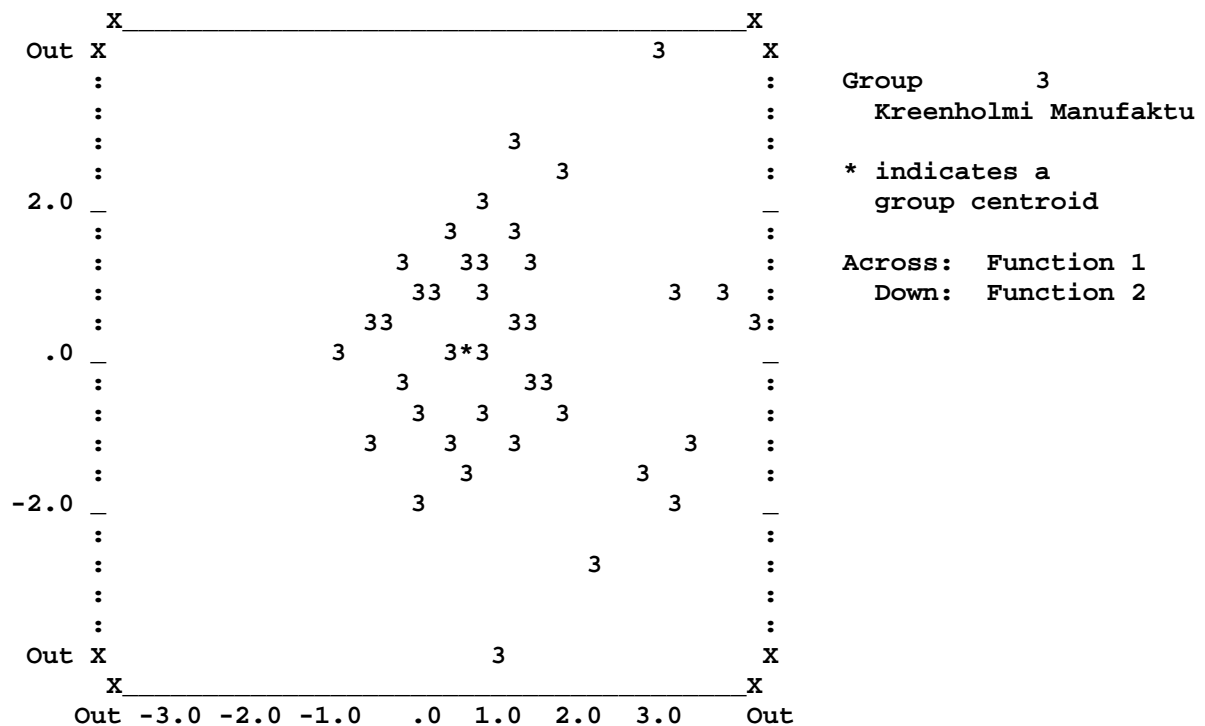
```

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# Classification Results -

Actual Group		No. of Cases	Predicted Group Membership		
			1	2	3
-----		-----	-----	-----	-----
Group 1	50	20	19	11	
Norma		40.0%	38.0%	22.0%	
Group 2	20	5	10	5	
Polumeer		25.0%	50.0%	25.0%	
Group 3	94	20	24	50	
Kreenholmi Manufaktu		21.3%	25.5%	53.2%	

Percent of "grouped" cases correctly classified: 48.78%

GET /FILE 'b:vohand2.sys'.

CLUSTER all /PRINT DISTANCE /PRINT SCHEDULE /PLOT DENDROGRAM.

\* \* \* \* \* H I E R A R C H I C A L C L U S T E R A N A L Y S I S \* \* \* \* \*

9 unweighted cases accepted.

169 cases rejected because of missing value.

Squared Euclidean measure used.

Case	1	2	3	4
2	1005.0000			
3	1377.0000	3326.0000		
4	353.0000	1232.0000	1542.0000	
5	1012.0000	1641.0000	2483.0000	635.0000
6	442.0000	759.0000	2191.0000	353.0000
7	701.0000	2476.0000	808.0000	1284.0000
8	521.0000	464.0000	2518.0000	716.0000
9	1208.0000	461.0000	3963.0000	1011.0000

Case	5	6	7	8
6	446.0000			
7	1765.0000	1373.0000		
8	975.0000	343.0000	1600.0000	
9	1474.0000	906.0000	3159.0000	581.0000

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Agglomeration Schedule using Average Linkage (Between Groups)

Stage	Clusters	Combined		Stage	Cluster 1st Appears	Next
	Cluster 1	Cluster 2	Coefficient	Cluster 1	Cluster 2	Stage
1	6	8	343.000000	0	0	4
2	1	4	353.000000	0	0	4
3	2	9	461.000000	0	0	7
4	1	6	508.000000	2	1	5
5	1	5	767.000000	4	0	7
6	3	7	808.000000	0	0	8
7	1	2	1028.099976	5	3	8
8	1	3	2125.571533	7	6	0

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Dendrogram using Average Linkage (Between Groups)

C A S E	0	5	10	15	20	25
Label	Seq					
6						
8		$\tilde{U}$	$\tilde{A}$			
1		$\tilde{U}$	$\tilde{A}$			
4		$\tilde{U}$	:	$\tilde{A}$		
5			$\tilde{U}$	:		
2			$\tilde{U}$	:		
9		$\tilde{U}$			:	
3					$\tilde{U}$	
7			$\tilde{U}$			

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