

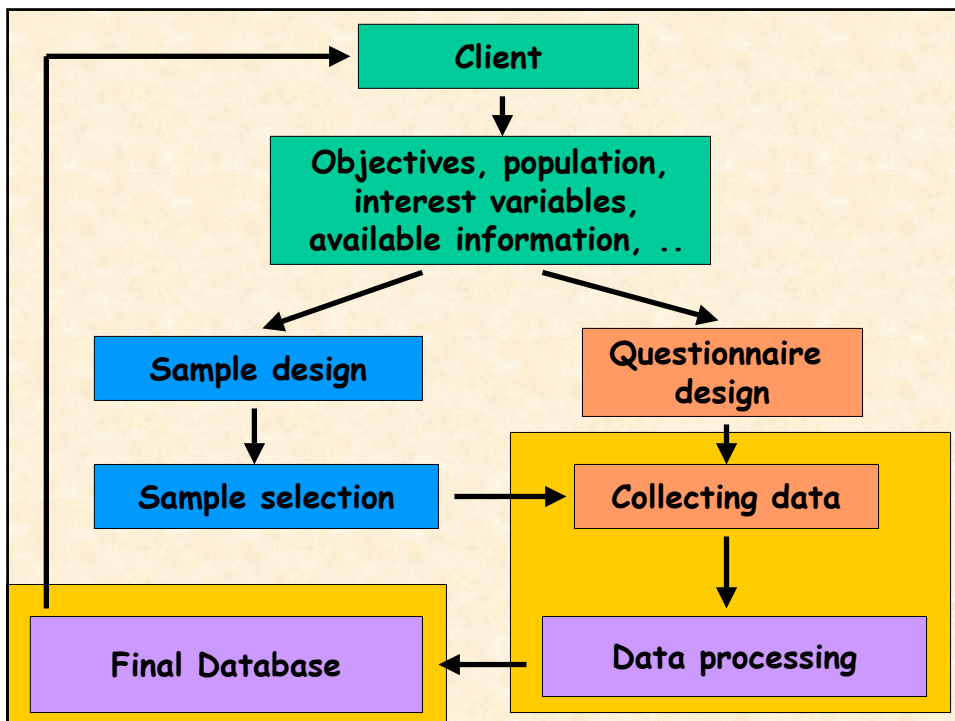


INSTITUTO NACIONAL DE ESTATÍSTICA
PORTUGAL

Application of Symbolic Data Analysis to Official Statistical Data

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Workshop on Applications of Symbolic Data Analysis
Lisbon, 26th January, 2004



Applications of SDA

- Exploitation of final databases
- Quality Control Process in Statistical Production

Time Use Survey

Case Study 1

DATA

- **Observed Data**

Portuguese Time Use Survey 1999

7021 adults and 34 variables (+ weight)

- **Processing data**

BLAISE → ASCII → ACCESS → SODAS

- **Symbolic Objects**

- Sex, Age, daytype (2*5*2=20 SO)

VARIABLES

- socio-demographic:

- region
- sex
- age group
- marital status
- education level

- activity:

- occupation
- economic activity
- professional status
- number of hours worked group

- type of day (weekend; workday)

Variables of perception of time

- **hurried** - Do you feel like you are in a hurry?
 - yes, no
- **hurried_often** - How often do you feel in a hurry?
 - every day, often or sometimes
- **hurried_5years** - Compared to 5 years ago?
 - more hurried, no change, less hurried
- **hurried_3years** - Compared to 3 years ago?
 - more hurried, no change, less hurried
- **hurried_1year** - Compared to last year?
 - more hurried, no change, less hurried

Variables of perception of time

- **reduce** - do you intend to reduce your rhythm of life next year?
 - yes, no
- **work_time** - Work - Time to accomplish all the tasks?
 - everyday, often; sometimes; rarely; never
- **private_life_time** - Time to accomplish all the tasks?
 - everyday, often; sometimes; rarely; never
- **weekend_time** - Time to accomplish everything that you wanted?
 - everyday, often; sometimes; rarely; never
- **available** - Available time without knowing what to do with it?
 - everyday, often; sometimes; rarely; never

Example of rule design

Hurried_Often is applicable if **Hurried** in {"Yes"}

Hurried_5years is applicable if **Hurried** in {"Yes"}

Hurried_3years is applicable if **Hurried** in {"Yes"}

Hurried_1years is applicable if **Hurried** in {"Yes"}

Reduce is applicable

if **Hurried** in {"Yes"}

Work_Time is applicable

if **Hurried** in {"Yes"}

Private_Life_Time is applicable

if **Hurried** in {"Yes"}

Weekend_Time is applicable

if **Hurried** in {"Yes"}

Available_time is applicable

if **Hurried** in {"Yes"}

Hurried

--- Available_time
--- Weekend_Time
--- Private_Life_Time
--- Work_Time
--- Reduce
--- Hurried_1years
--- Hurried_3years
--- Hurried_5years
--- Hurried Often

Variables of duration of activities

- sleep
- eat
- personal_hig
- profissional_act
- study
- prep_food
- clothes_care
- purchases
- children cares
- social life
- sports
- games
- read
- television_video

SOE - Perception of time

SOEditor - OS3B.FIL - OS3B.SDS - [Table]

	Hurried	Hurried_Often	Hurried_Years
F 65 more Day	No (0.79), Yes (0.21)	Sometimes (0.36), Everyday (0.27), Frequently (0.37)	The same (0.39), More hurri (0.27), Less hurri (0.33), Don't know (0.01)
M 35_54 Day	No (0.41), Yes (0.59)	Sometimes (0.29), Everyday (0.44), Frequently (0.27)	The same (0.42), More hurri (0.49), Less hurri (0.09)
F 35_54 Day	No (0.28), Yes (0.72)	Sometimes (0.22), Everyday (0.50), Frequently (0.27)	The same (0.35), More hurri (0.57), Less hurri (0.08)
F 25_34 Day	No (0.26), Yes (0.74)	Sometimes (0.26), Everyday (0.38), Frequently (0.36)	The same (0.19), More hurri (0.70), Less hurri (0.11)
M 65 more Day	No (0.82), Yes (0.18)	Sometimes (0.34), Everyday (0.40), Frequently (0.26)	The same (0.45), More hurri (0.29), Less hurri (0.22), Don't know (0.04)
F 55_64 Day	No (0.48), Yes (0.52)	Sometimes (0.30), Everyday (0.39), Frequently (0.31)	The same (0.42), More hurri (0.43), Less hurri (0.15)
M 25_34 Day	No (0.32), Yes (0.68)	Sometimes (0.30), Everyday (0.34), Frequently (0.36)	The same (0.23), More hurri (0.69), Less hurri (0.08)
M 55_64 Day	No (0.53), Yes (0.47)	Sometimes (0.29), Everyday (0.34), Frequently (0.37)	The same (0.36), More hurri (0.38), Less hurri (0.26)
F 15_24 Day	No (0.38), Yes (0.62)	Sometimes (0.33), Everyday (0.36), Frequently (0.31)	The same (0.09), More hurri (0.85), Less hurri (0.06)
M 15_24 Day	No (0.52), Yes (0.48)	Sometimes (0.44), Everyday (0.26), Frequently (0.30)	The same (0.17), More hurri (0.79), Less hurri (0.05)

Ready LOCKED NUM 1:25

SOE - Perception of time

SOEditor - OS3B - OS3B.SDS - [Table]

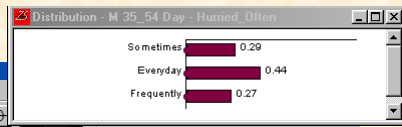
	Hurried_3years	Hurried_1years
F 65 more Day	The same (0.57), More hurri (0.19), Less hurri (0.23), Don't know (0.01)	The same (0.67), More hurri (0.17), Less hurri (0.15), Don't know (0.01)
M 35_54 Day	The same (0.53), More hurri (0.40), Less hurri (0.07)	The same (0.60), More hurri (0.33), Less hurri (0.06)
F 35_54 Day	The same (0.47), More hurri (0.44), Less hurri (0.09)	The same (0.63), More hurri (0.33), Less hurri (0.04)
F 25_34 Day	The same (0.39), More hurri (0.55), Less hurri (0.06)	The same (0.55), More hurri (0.40), Less hurri (0.05)
M 65 more Day	The same (0.65), More hurri (0.14), Less hurri (0.17), Don't know (0.04)	The same (0.69), More hurri (0.16), Less hurri (0.11), Don't know (0.04)
F 55_64 Day	The same (0.58), More hurri (0.31), Less hurri (0.12)	The same (0.68), More hurri (0.26), Less hurri (0.06)
M 25_34 Day	The same (0.37), More hurri (0.57), Less hurri (0.06)	The same (0.52), More hurri (0.43), Less hurri (0.05)
M 55_64 Day	The same (0.53), More hurri (0.29), Less hurri (0.18)	The same (0.63), More hurri (0.30), Less hurri (0.07)
F 15_24 Day	The same (0.15), More hurri (0.72), Less hurri (0.11)	The same (0.42), More hurri (0.45), Less hurri (0.12)
M 15_24 Day	The same (0.22), More hurri (0.73), Less hurri (0.04)	The same (0.50), More hurri (0.49), Less hurri (0.01)

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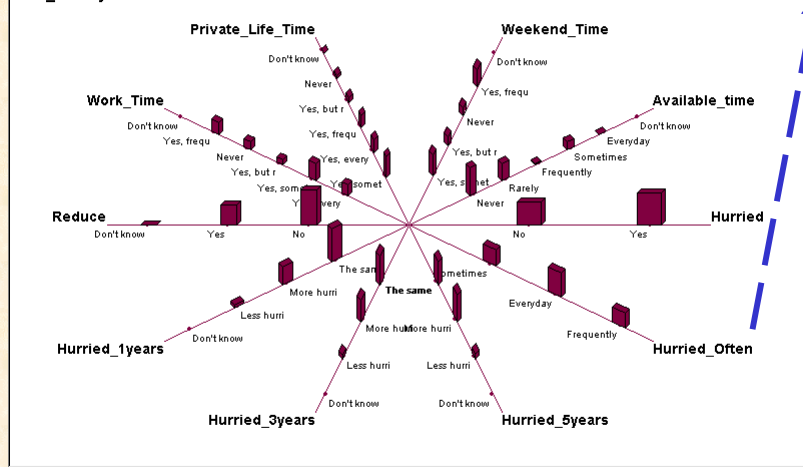
SOE - Editor

SOEditor - OS3B - OS3B.SDS - [Zoom Star - M 35_54 Day]

File Edit View Selection Graphic Window Help



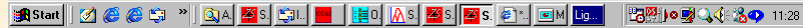
M 35_54 Day



Ready

LOCKED

NUM

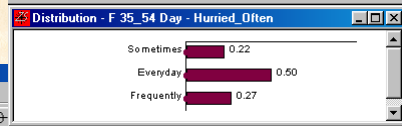


11:28

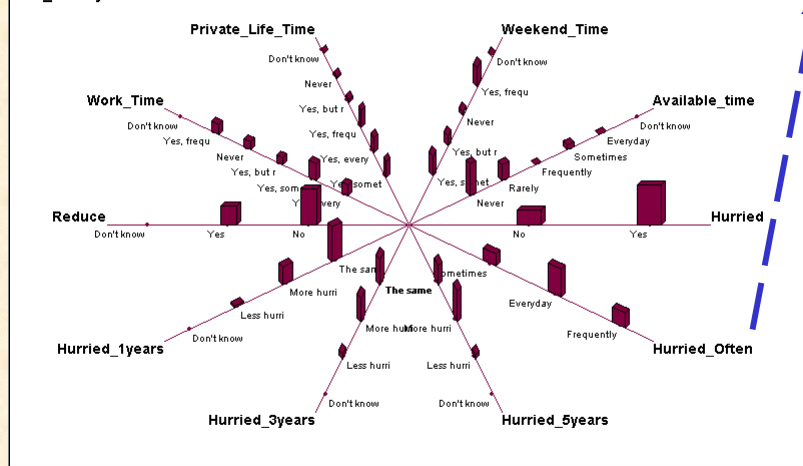
SOE - Editor

SOEditor - OS3B - OS3B.SDS - [Zoom Star - F 35_54 Day]

File Edit View Selection Graphic Window Help



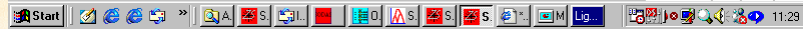
F 35_54 Day



Ready

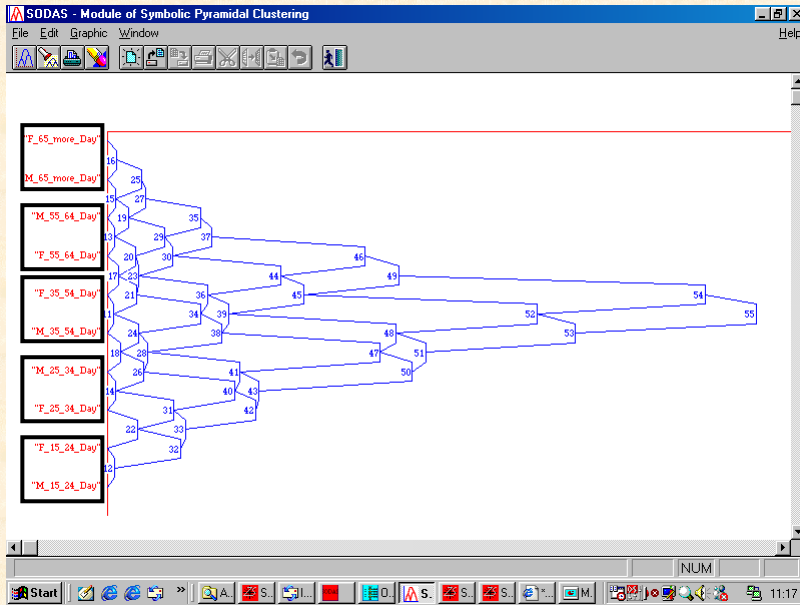
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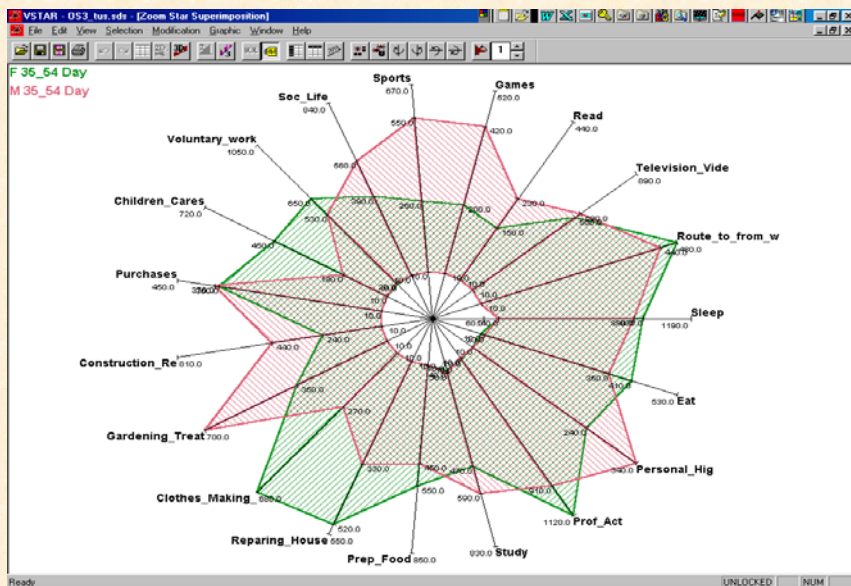


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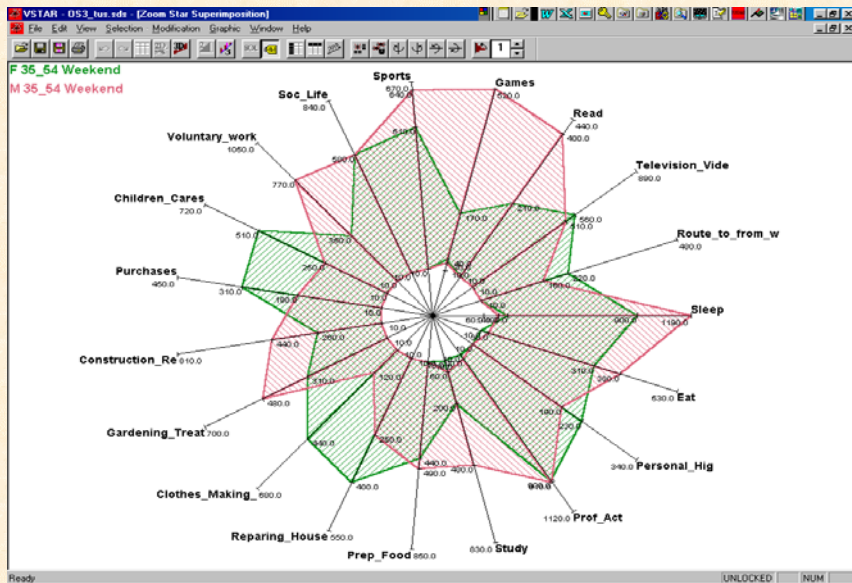
PYR - Pyramid - hurried



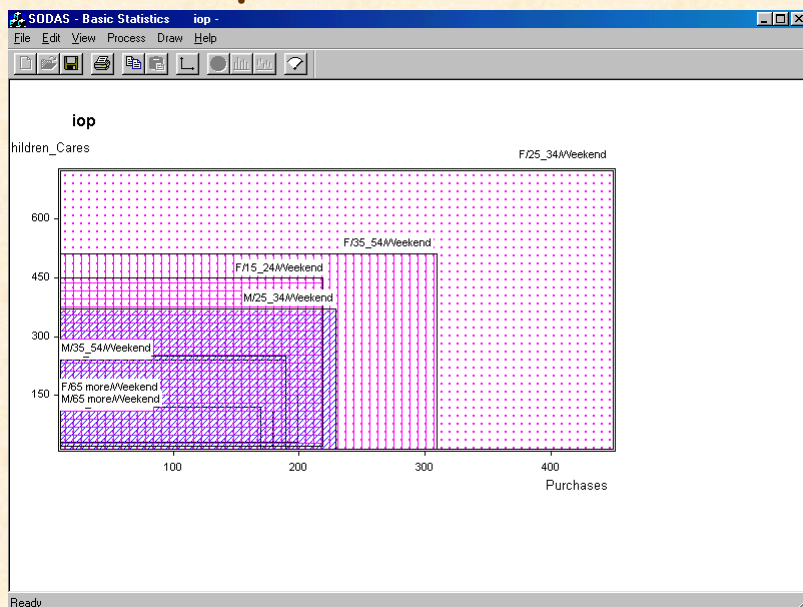
VIEW - Activities



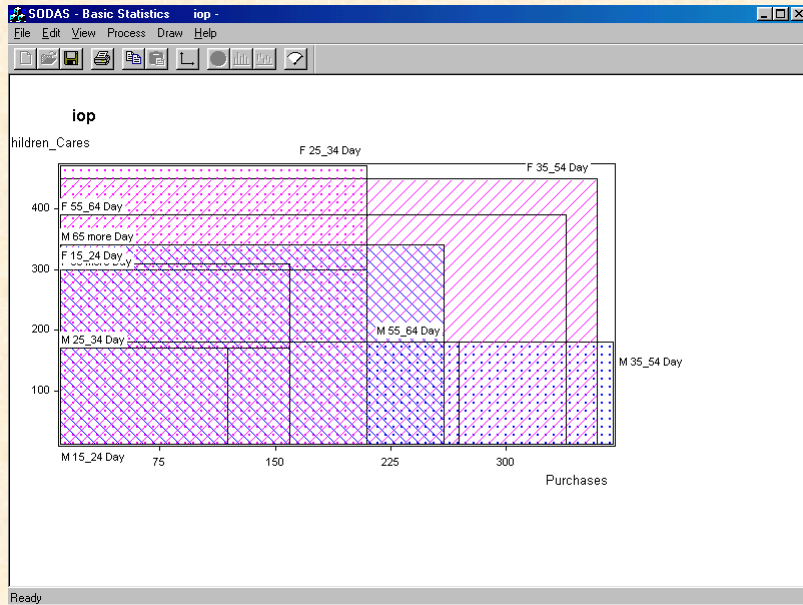
VIEW - Activities



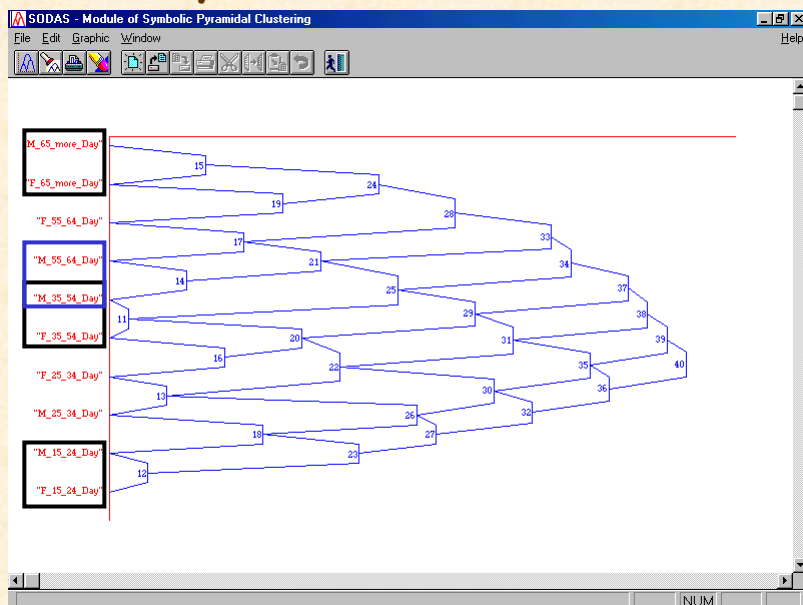
STAT - Biplot - Activities weekend



STAT - Biplot - Activities workday



PYR - Pyramid - activities workday



Advantages of SDA

- confidentiality of data
- dealing with complex questionnaires
- data analyses using confidence intervals (sampling errors)
- join of independent data files

The Labour Force Survey *using confidence intervals*

Case Study 2

DATA

- 2nd quarter 1998 from LFS
- 22660 workers

Did you do any work for pay or profit during the reference week (one hour or more) ? (including family workers)

- processing data:

BLAISE → ASCII → ACCESS → SODAS

VARIABLES

- **Socio-demographic**

- age group (ordinal)
- sex (nominal)
- marital status (nominal)
- education level (ordinal)

- **Activity**

- economic activity (nominal)
- profession (nominal)
- searching employment (Boolean)
- full / part time (Boolean)
- type of enterprise (nominal)
- social security (Boolean)
- over qualifications (Boolean)
- normal number of hours (Boolean)

VARIABLES (cont.)

- **Activity (cont.)**

- previous experience (Boolean)
- change duration (Boolean)
- studying or training (Boolean)
- professional status (nominal)

- **Weight**

SO

- sex / age group
- $2 \times 6 = 12$

Analysis with confidence intervals

$[a_{ij}, b_{ij}]$ - confidence interval

For each modality (variable) j and SO_i :

$$a_{ij} = p_{ij} - 1.96 \cdot \sqrt{p_{ij} \cdot (1 - p_{ij}) / n_i}$$

$$b_{ij} = p_{ij} + 1.96 \cdot \sqrt{p_{ij} \cdot (1 - p_{ij}) / n_i}$$

n_i - number of the individuals in SO_i

p_{ij} - proportion of individuals with the variable j in SO_i

VARIABLES

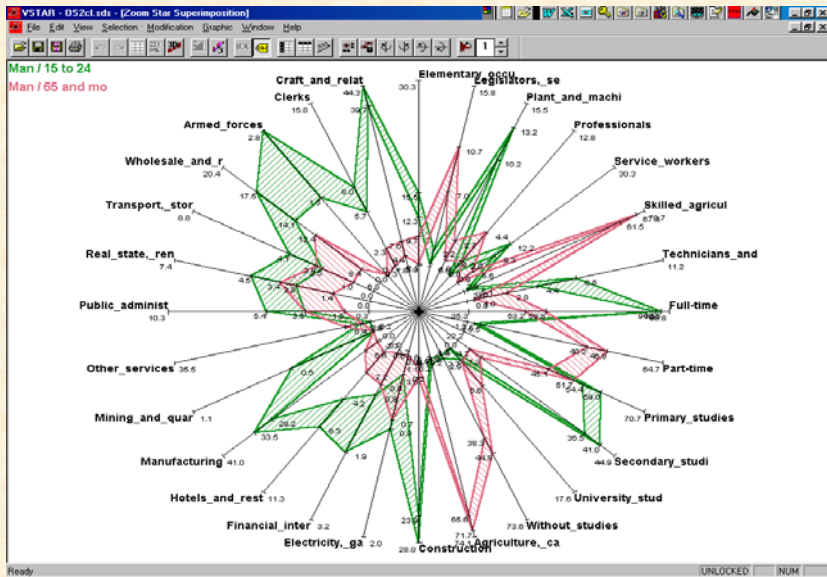
- marital status (4)
- education level (4)
- economic activity (12)
- profession (10)
- full / part time (2)
- professional status (5)

TOTAL: 37 var

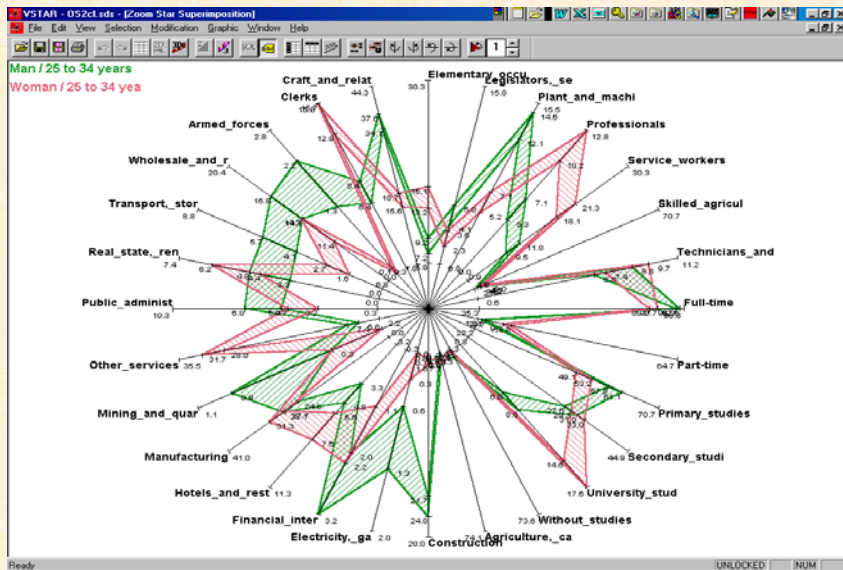
VIEW

SOEditor - OS2B - OS2 SDS - [Table]						
File Edit View Selection Graphic Window Help						
	Full-time	Part-time	Primary_studies_or_less	Secondary_studies_-_and_profes	University_studies	Without_
Man / 15 to 24 years old	[94.50 : 96.50]	[3.50 : 5.50]	[54.40 : 59.00]	[36.50 : 41.00]	[1.40 : 2.70]	[1.80 :
Man / 25 to 34 years old	[96.30 : 97.60]	[2.40 : 3.70]	[57.50 : 61.10]	[27.60 : 31.00]	[6.80 : 8.80]	[2.90 :
Man / 35 to 44 years old	[97.90 : 98.80]	[1.20 : 2.10]	[60.70 : 64.20]	[23.90 : 27.00]	[6.70 : 8.60]	[3.70 :
Man / 45 to 54 years old	[96.60 : 97.90]	[2.10 : 3.40]	[67.10 : 70.70]	[16.50 : 19.50]	[6.80 : 8.90]	[4.30 :
Man / 55 to 64 years old	[87.20 : 90.10]	[9.90 : 12.80]	[63.30 : 67.70]	[7.10 : 9.70]	[4.40 : 6.50]	[18.80 :
Man / 65 and more years old	[53.20 : 59.80]	[40.20 : 46.80]	[45.10 : 51.70]	[4.20 : 7.30]	[2.90 : 5.60]	[38.30 :
Woman / 15 to 24 years old	[89.10 : 92.30]	[7.70 : 10.90]	[46.40 : 51.90]	[39.50 : 44.90]	[5.50 : 8.30]	[1.00 :
Woman / 25 to 34 years old	[88.20 : 90.70]	[9.30 : 11.80]	[49.10 : 53.20]	[29.30 : 33.00]	[14.60 : 17.60]	[1.10 :
Woman / 35 to 44 years old	[87.40 : 89.90]	[10.10 : 12.60]	[56.90 : 60.80]	[22.10 : 25.40]	[12.10 : 14.80]	[3.10 :
Woman / 45 to 54 years old	[80.00 : 83.40]	[16.60 : 20.00]	[61.60 : 65.80]	[12.10 : 15.10]	[9.00 : 11.70]	[10.90 :
Woman / 55 to 64 years old	[61.60 : 67.00]	[33.00 : 38.40]	[43.60 : 49.10]	[2.90 : 5.10]	[4.60 : 7.20]	[41.00 :
Woman / 65 and more years old	[35.30 : 43.30]	[56.70 : 64.70]	[22.20 : 29.30]	[0.80 : 3.00]	[1.30 : 3.80]	[66.10 :

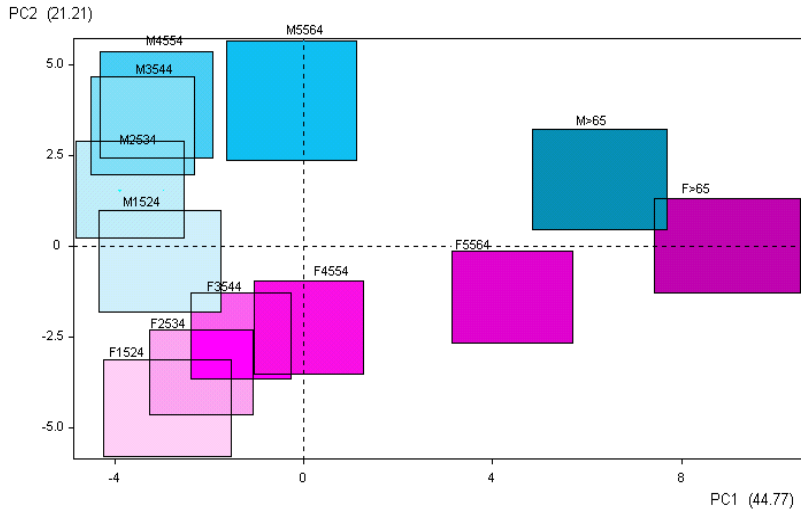
VIEW



VIEW



PCM



DIV

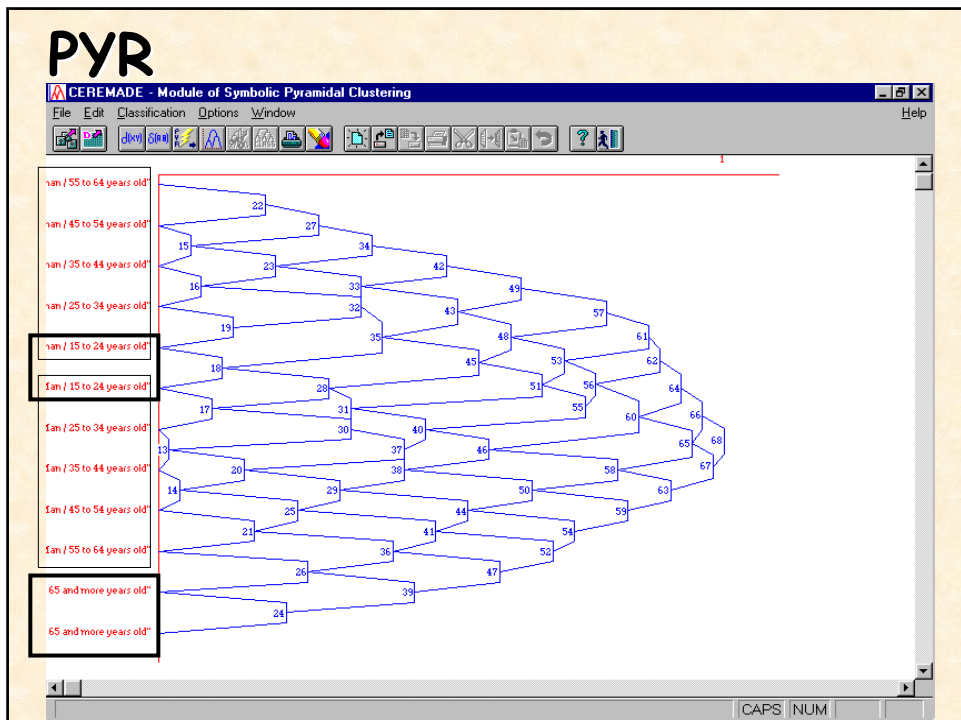
```

Xoxim303 Ist - WordPad
Fichier Edition Affichage Insertion Format 2
PARTITION IN 2 CLUSTERS :
-----:
Cluster 1 (n=9) :
"Man / 15 to 24 years old" "Man / 25 to 34 years old" "Man / 35 to 44 years old"
"Man / 45 to 54 years old" "Man / 55 to 64 years old" "Woman / 15 to 24 years old"
"Woman / 25 to 34 years old" "Woman / 35 to 44 years old" "Woman / 45 to 54 years old"
Cluster 2 (n=3) :
"Man / 65 and more years old" "Woman / 55 to 64 years old" "Woman / 65 and more years old"
PARTITION IN 3 CLUSTERS :
-----:
Cluster 1 (n=2) :
"Man / 15 to 24 years old" "Woman / 15 to 24 years old"
Cluster 2 (n=3) :
"Man / 65 and more years old" "Woman / 55 to 64 years old" "Woman / 65 and more years old"
Cluster 3 (n=7) :
"Man / 25 to 34 years old" "Man / 35 to 44 years old" "Man / 45 to 54 years old"
"Man / 55 to 64 years old" "Woman / 25 to 34 years old" "Woman / 35 to 44 years old"
"Woman / 45 to 54 years old"
Pour de l'aide, appuyez sur F1
  
```

Xoxim303.lst - WordPad
 Fichier Edition Affichage Insertion Format 2
 PARTITION IN 4 CLUSTERS :
 Cluster 1 (n=2) :
 "Man / 15 to 24 years old" "Woman / 15 to 24 years old"
 Cluster 2 (n=3) :
 "Man / 65 and more years old" "Woman / 55 to 64 years old" "Woman / 65 and more years old"
 Cluster 3 (n=4) :
 "Man / 25 to 34 years old" "Man / 35 to 44 years old" "Man / 45 to 54 years old"
 "Man / 55 to 64 years old"
 Cluster 4 (n=3) :
 "Woman / 25 to 34 years old" "Woman / 35 to 44 years old" "Woman / 45 to 54 years old"

 +---- Classe 1 (Ng=2)
 !
 !----2- [Married <= 46.200001]
 !
 ! ! +---- Classe 3 (Ng=4)
 ! ! !
 ! !----3- [Other_services <= 19.075000]
 ! !
 ! +---- Classe 4 (Nd=3)
 !
 !----1- [Part-time <= 27.000000]
 !
 +---- Classe 2 (Nd=3)

Pour de l'aide, appuyez sur F1



FDA

Xoys2e02.lst - WordPad

Fichier Edition Affichage Insertion Format 2

Classification table:

Test\Classes	1	2	3
"Man / 15 to 24 year	1	0	0
"Man / 25 to 34 year	0	1	0
"Man / 35 to 44 year	0	1	0
"Man / 45 to 54 year	0	1	0
"Man / 55 to 64 year	0	1	0
"Man / 65 and more y	0	0	1
"Woman / 15 to 24 ye	1	0	0
"Woman / 25 to 34 ye	0	1	0
"Woman / 35 to 44 ye	0	1	0
"Woman / 45 to 54 ye	0	1	0
"Woman / 55 to 64 ye	0	1	0
"Woman / 65 and more	0	0	1

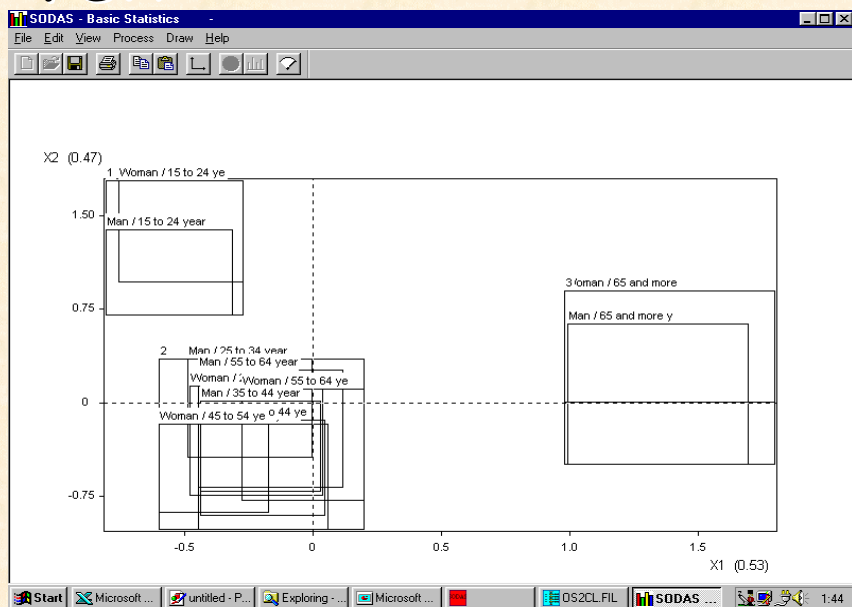
Classification Summary :

Class\Class	1	2	3
1	2	0	0
2	0	8	0
3	0	0	2

Classification Ratio : 100.0%

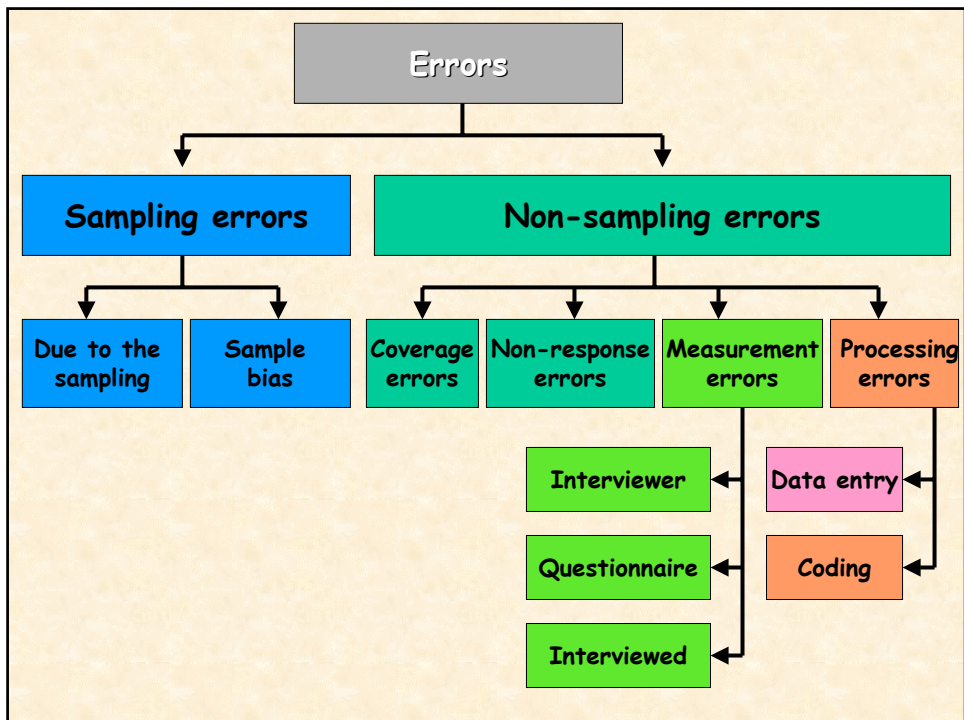
Pour de l'aide, appuyez sur F1

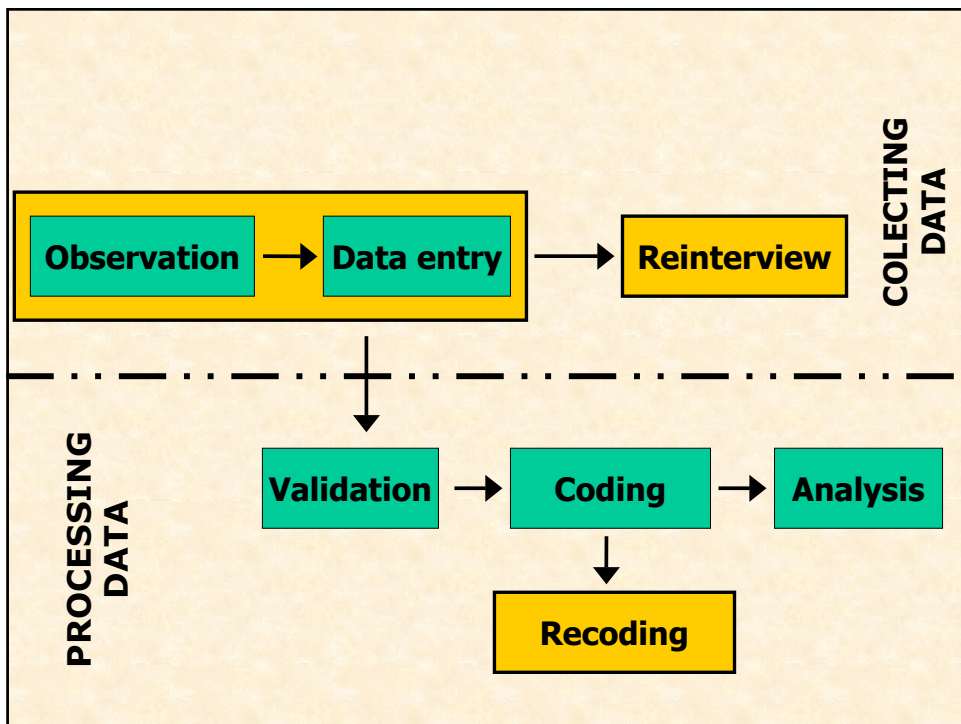
FDA



The Quality Control in Statistical Production

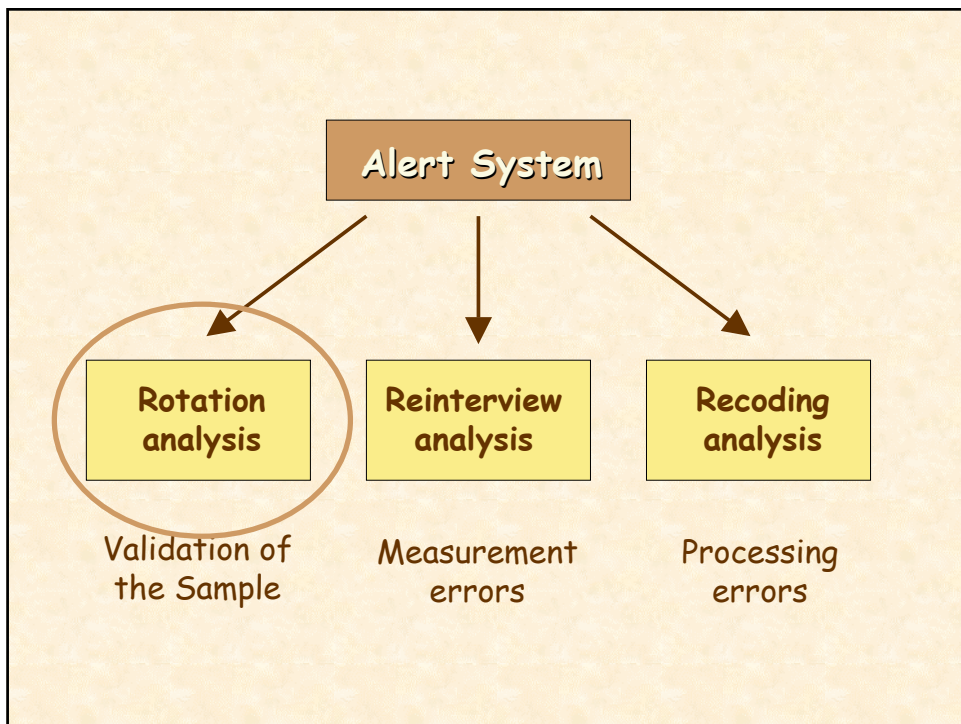
Case Study 3





Quality Control

- in a **quantitative** and **univariate** form at micro-data level, using some indicators already presented in several bibliography (consistency index)
- in a **qualitative** form, using **multivariate** techniques on the aggregation of the registers, according to convenient *criteria* for each of the different analysis to be done. It is a control system based on symbolic data analysis using SODAS software



Quality control for non-sampling errors

- validation of the sample in panels with rotation
- measurement errors - reinterview analysis
- processing errors - recoding analysis

DATA

- **Observed Data**

All employed persons from the Portuguese LFS
1st and 2nd quarters of 2000 - region of
"Lisboa e Vale do Tejo" (8669 records)

- **Processing data**

BLAISE → ASCII → ACCESS → SODAS

- **Symbolic Objects**

on rotation of the sample ($6 \times 2 = 12$ SO)

DATA

Sampling frame

Master Sample - list of housing units

(dwellings)

sampling unit - dwelling

observation unit - individual

VARIABLES

-socio-demographic:

- sex
- age group
- marital status
- education level

-activity variables:

- occupation
- economic activity
- professional status
- part/full time
- number of hours worked group

-sampling weight

Rotation Analysis

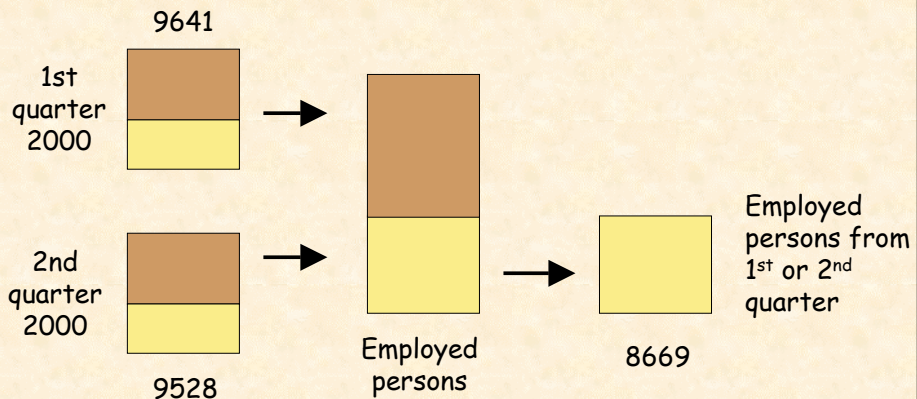
1	2	3	4	5	6
1/1	1/2	1/3	1/4	1/5	1/6

1st Quarter

	2	3	4	5	6	7
	2/2	2/3	2/4	2/5	2/6	2/7

2nd Quarter

Rotation Analysis



Access Table

	key	rot	sex	age_group	marital_status	economic_activity
▶	1510203011	1 / 2	Male	55 <= age <= 64	Married	Wholesale and retail trade, repairs
	1510204112	1 / 6	Male	35 <= age <= 44	Single	Construction
	1511203211	1 / 1	Male	35 <= age <= 44	Married	Manufacturing
	1511203511	1 / 2	Male	35 <= age <= 44	Married	Manufacturing
	1511203512	1 / 2	Female	25 <= age <= 34	Married	Other Services
	1511203711	1 / 2	Male	45 <= age <= 54	Married	Manufacturing
	1511203712	1 / 2	Female	45 <= age <= 54	Married	Manufacturing
	1511203713	1 / 2	Male	15 <= age <= 24	Single	Manufacturing
	1511203714	1 / 2	Female	15 <= age <= 24	Single	Manufacturing
	1511203811	1 / 2	Female	15 <= age <= 24	Single	Manufacturing
	1511203911	1 / 6	Male	35 <= age <= 44	Married	Manufacturing
	1511203912	1 / 6	Female	35 <= age <= 44	Married	Manufacturing
	1511204111	1 / 3	Female	35 <= age <= 44	Divorced or Separated	Other Services
	1511204411	1 / 4	Male	45 <= age <= 54	Married	Manufacturing
	1511204412	1 / 4	Female	45 <= age <= 54	Married	Manufacturing
	1511204413	1 / 4	Male	15 <= age <= 24	Single	Wholesale and retail trade, repairs
	1511204511	1 / 4	Male	55 <= age <= 64	Married	Manufacturing
	1511204611	1 / 5	Female	45 <= age <= 54	Divorced or Separated	Other Services
	1511204711	1 / 5	Female	35 <= age <= 44	Married	Other Services

key

SO

Var.

Symbolic table

SOEditor - AAA.FIL - ROTTOT.SDS - [Table]		
File Edit View Selection Graphic Window Help		
1		
	sex	age_group
2 / 6	Female (0.45), Male (0.55)	45 <= age <= 54 (0.22), 35 <= age <= 44 (0.28), 55 <= age <= 64 (0.08), age >= 65 (0.02), 25 <= age <= 3
2 / 5	Female (0.46), Male (0.54)	45 <= age <= 54 (0.22), 35 <= age <= 44 (0.25), 55 <= age <= 64 (0.14), age >= 65 (0.03), 25 <= age <= 3
2 / 3	Female (0.47), Male (0.53)	45 <= age <= 54 (0.25), 35 <= age <= 44 (0.22), 55 <= age <= 64 (0.12), age >= 65 (0.02), 25 <= age <= 3
2 / 4	Female (0.45), Male (0.55)	45 <= age <= 54 (0.22), 35 <= age <= 44 (0.22), 55 <= age <= 64 (0.14), age >= 65 (0.04), 25 <= age <= 3
2 / 7	Female (0.47), Male (0.53)	45 <= age <= 54 (0.23), 35 <= age <= 44 (0.24), 55 <= age <= 64 (0.12), age >= 65 (0.04), 25 <= age <= 3
1 / 1	Female (0.45), Male (0.55)	45 <= age <= 54 (0.22), 35 <= age <= 44 (0.26), 55 <= age <= 64 (0.13), age >= 65 (0.03), 25 <= age <= 3
2 / 2	Female (0.47), Male (0.53)	45 <= age <= 54 (0.23), 35 <= age <= 44 (0.24), 55 <= age <= 64 (0.13), age >= 65 (0.03), 25 <= age <= 3
1 / 5	Female (0.46), Male (0.54)	45 <= age <= 54 (0.21), 35 <= age <= 44 (0.25), 55 <= age <= 64 (0.14), age >= 65 (0.02), 25 <= age <= 3
1 / 2	Female (0.47), Male (0.53)	45 <= age <= 54 (0.23), 35 <= age <= 44 (0.24), 55 <= age <= 64 (0.13), age >= 65 (0.03), 25 <= age <= 3
1 / 3	Female (0.47), Male (0.53)	45 <= age <= 54 (0.25), 35 <= age <= 44 (0.21), 55 <= age <= 64 (0.12), age >= 65 (0.02), 25 <= age <= 3
1 / 6	Female (0.44), Male (0.56)	45 <= age <= 54 (0.21), 35 <= age <= 44 (0.28), 55 <= age <= 64 (0.08), age >= 65 (0.02), 25 <= age <= 3
1 / 4	Female (0.45), Male (0.55)	45 <= age <= 54 (0.23), 35 <= age <= 44 (0.21), 55 <= age <= 64 (0.13), age >= 65 (0.03), 25 <= age <= 3

2 / 7 =

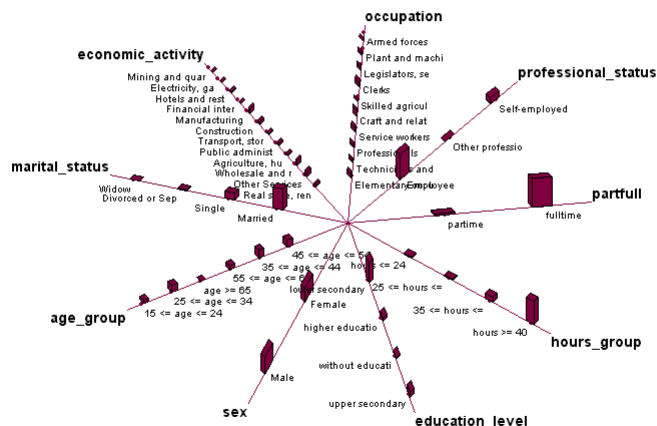
```
sex = Female [0.47], Male [0.53]
And age_group = 45 <= age <= 54 [0.23], 35 <= age <= 44 [0.24], 55 <= age <= 64 [0.12], age >= 65 [0.04] 25 <= age <= 3
And marital_status = Married [0.69], Single [0.22], Divorced or Sep [0.05], Widow [0.03]
And economic_activity = Real state, ren [0.07], Other Services [0.21], Wholesale and r [0.17], Agriculture hu [0.06],
And occupation = Elementary occu [0.16], Technicians and [0.10], Professionals [0.08], Service workers [0.15], Craft
And professional_status = Employee [0.79], Other professio [0.02], Self-employed [0.19]
And partfull = parttime [0.11], fulltime [0.89]
And hours_group = hours <= 24 [0.08], 25 <= hours <= [0.04], 35 <= hours <= [0.18], hours >= 40 [0.70]
And education_level = lower secondary [0.66], higher educatio [0.13], without educati [0.06], upper secondary [0.15]
And rot_cl = 1
```

SOL

Symbolic
Object
Language

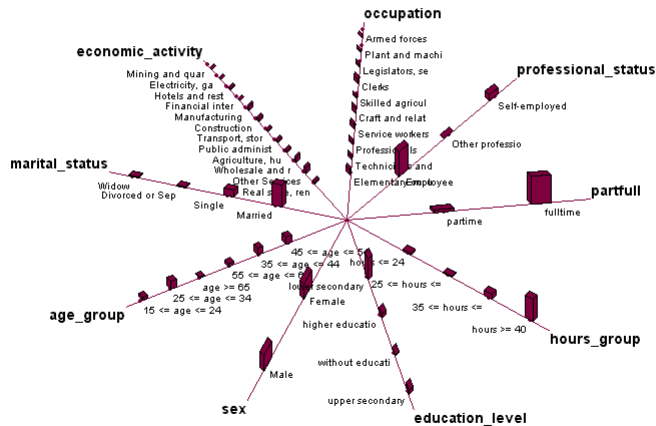
Editor - Rotation 1/1

1 / 1

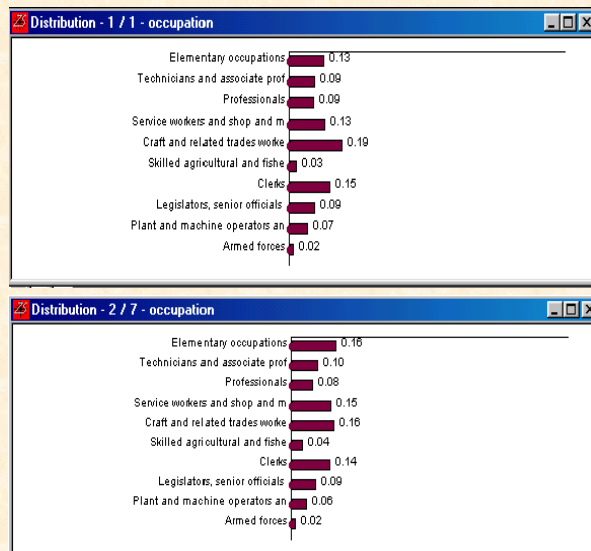


Editor - Rotation 2/7

2/7



Editor - Occupation 1/1 and 2/7



The diagram illustrates a network of nodes and their connections. The nodes are labeled as follows:

- 1_L_6
- 2_L_6
- 1_L_3
- 2_L_3
- 1_L_2
- 2_L_2
- 1_L_1
- 1_L_5
- 2_L_5
- 2_L_4
- 1_L_4
- 2_L_7

The connections are represented by blue lines. The nodes are arranged in a hierarchical structure, with '1_L_1' and '2_L_7' highlighted in blue boxes. A red circle highlights node '45'.

	education_level	rot_cl
2 / 6	lower secondary (0.66), higher education (0.14), without education (0.05), upper secondary (0.15)	6
2 / 5	lower secondary (0.66), higher education (0.12), without education (0.05), upper secondary (0.17)	5
2 / 3	lower secondary (0.63), higher education (0.15), without education (0.06), upper secondary (0.16)	3
2 / 4	lower secondary (0.67), higher education (0.11), without education (0.06), upper secondary (0.15)	4
2 / 7	lower secondary (0.66), higher education (0.13), without education (0.06), upper secondary (0.15)	1
1 / 1	lower secondary (0.64), higher education (0.12), without education (0.06), upper secondary (0.18)	1
2 / 2	lower secondary (0.62), higher education (0.15), without education (0.06), upper secondary (0.17)	2
1 / 5	lower secondary (0.66), higher education (0.12), without education (0.06), upper secondary (0.16)	5
1 / 2	lower secondary (0.61), higher education (0.15), without education (0.06), upper secondary (0.18)	2
1 / 3	lower secondary (0.62), higher education (0.15), without education (0.06), upper secondary (0.17)	3
1 / 6	lower secondary (0.66), higher education (0.14), without education (0.05), upper secondary (0.15)	6
1 / 4	lower secondary (0.68), higher education (0.11), without education (0.06), upper secondary (0.15)	4

Class var

Factorial Discriminant Analysis

Ziqem04.lst - WordPad

Fichier Edition Affichage Insertion Format 2

Classification table:

Test\Classes	1	2	3	4	5	6
"2 / 6"	0	0	0	0	0	1
"2 / 5"	0	0	0	0	1	0
"2 / 3"	0	0	1	0	0	0
"2 / 4"	0	0	0	1	0	0
"2 / 7"	1	0	0	0	0	0
"1 / 1"	1	0	0	0	0	0
"2 / 2"	0	1	0	0	0	0
"1 / 5"	0	0	0	0	1	0
"1 / 2"	0	1	0	0	0	0
"1 / 3"	0	0	1	0	0	0
"1 / 6"	0	0	0	0	0	1
"1 / 4"	0	0	0	1	0	0

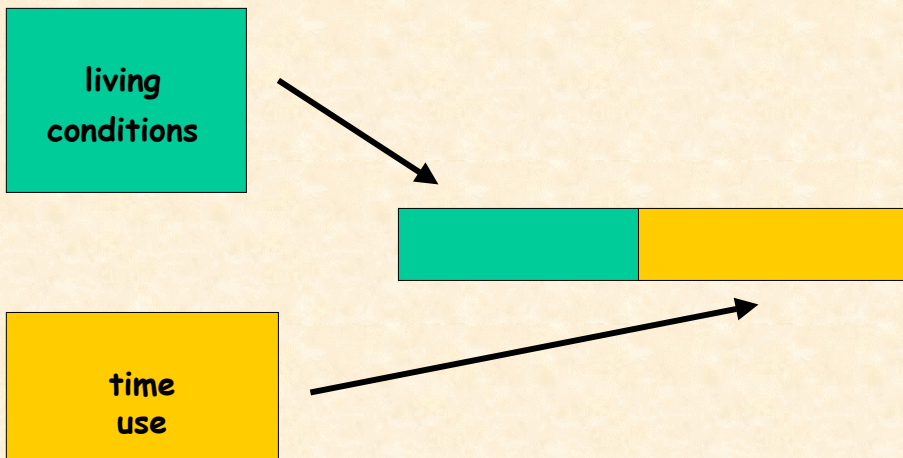
Classification Summary :

Class\Class	1	2	3	4	5	6
1	2	0	0	0	0	0
2	0	2	0	0	0	0
3	0	0	2	0	0	0
4	0	0	0	2	0	0
5	0	0	0	0	2	0
6	0	0	0	0	0	2

Classification Ratio : 100.0%

Pour de l'aide, appuyez sur F1

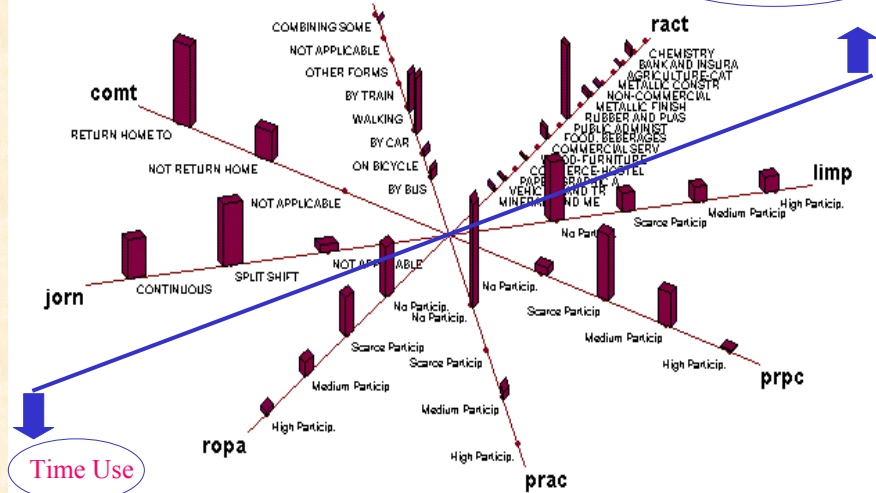
Joining of independent surveys



Joining of independent surveys

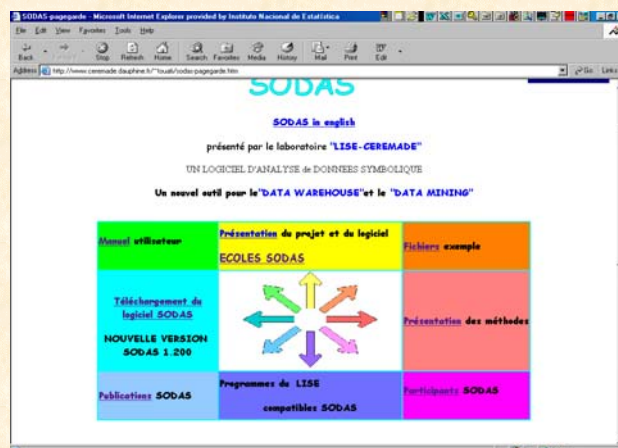
Woman Married 35-59 years Employed University
tras

Living Conditions



SODAS I Download Software

<http://www.ceremade.dauphine.fr/~touati/sodas-pagegarde.htm>





Analysis System for Symbolic Official data



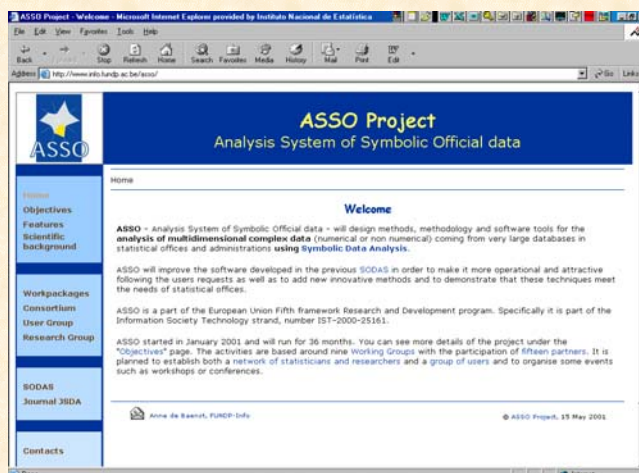
Manager:	FUNDP (B)
Statistical Institutes:	INE (P), STATFI (FI), EUSTAT (E)
Universities:	DAUPHINE (F), DIB (I), DMS (I), FUNDPMa (B), FEP (P), UOA (GR), RWTH (D), UFPE (Br)
Research Centers:	INRIA (F)
Industries:	CISIA (F)
Other Institutions:	TES (L)

Dissemination

<http://www.assoproject.be>



For more
information
about
ASSO,
consult the
official
website of
the project

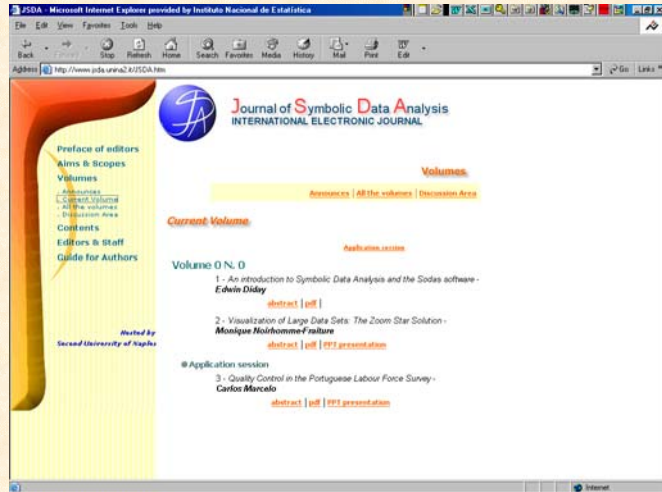


Dissemination

One source of information related with Symbolic Data Analysis is the Journal of Symbolic Data Analysis, an international electronic journal where research articles and data applications can be found



<http://www.jsda.unina2.it>



SODAS software is a useful tool for:

- Manipulating
- Joining
- Visualizing
- Comparing
- Analyzing
- Explaining

COMPLEX

official statistical data EASIER !!!

References

- Analysis of Symbolic Data: Exploratory Methods for Extracting Statistical Information from Complex Data - BOCK, H.H.; DIDAY, E.; Springer, 2000
- SODAS Reference Manual
- **Download SODAS I and several information:**
www.ceremade.dauphine.fr/~touati/sodas-pagegarde.htm
- **ASSO site**
www.assoproject.be
- **Journal of Symbolic Data Analysis**
www.jsda.unina2.it