

SYMBOLIC CHARACTERISATION OF INTERNET USERS IN THE BASQUE COUNTRY

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Introduction

Introduction to Symbolic Analysis

- The theory of Symbolic Objects is being developed within a european project:
 - 1st stage (1996-99): **SODAS** Project “*Symbolic Official Data Analysis System*”.
Esprit Project n° 202821

SODAS software 1.040
 - 2nd stage (2001-03): ASSO Project “Analysis System of Symbolic Official Data”
. IST-2000-25161

Definition

- Symbolic Objects are aggregated data concerning groups of individuals.
- Each group is defined by variables of the form:
 - Single valued (e.g., weight = {75});
 - Multi-valued (e.g., country = {Sp, UK, Fr}) ;
 - Interval-valued (e.g., age={[16:24]});
 - Probability/frequency distribution (sex={female(0.54), male(0.46)}).

} SO_i

From classical to symbolic

CLASSICAL DATA MATRIX

Individual N.	Maker $\tilde{Y}_1$	Type $\tilde{Y}_2$	Price $\tilde{Y}_3$	Country $\tilde{Y}_4$	
1	CITR	LIM	22	F	X'_1
2	CITR	STW	17	F	X'_2
3	PEUG	STW	20	F	X'_3
4	PEUG	LIM	15	F	X'_4
5	REN	LIM	20	F	X'_5
6	AUDI	LIM	21	G	X'_6
7	MER	LIM	20	G	X'_7
8	C	LIM	25	G	X'_8
9	MER	COU	23	G	X'_9
10	C	LIM	24	G	X'_{10}
11	BMW	LIM	30	G	X'_{11}
12	BMW	LIM	16	I	X'_{12}
13	BMW	LIM	12	I	X'_{13}
14	FIAT	LIM	14	I	X'_{14}
n = 15	FIAT	LIM	20	I	X'_{15}
	FIAT				
	ALFA				

Individuals grouped in N=3 classes (French, German and Italian car).

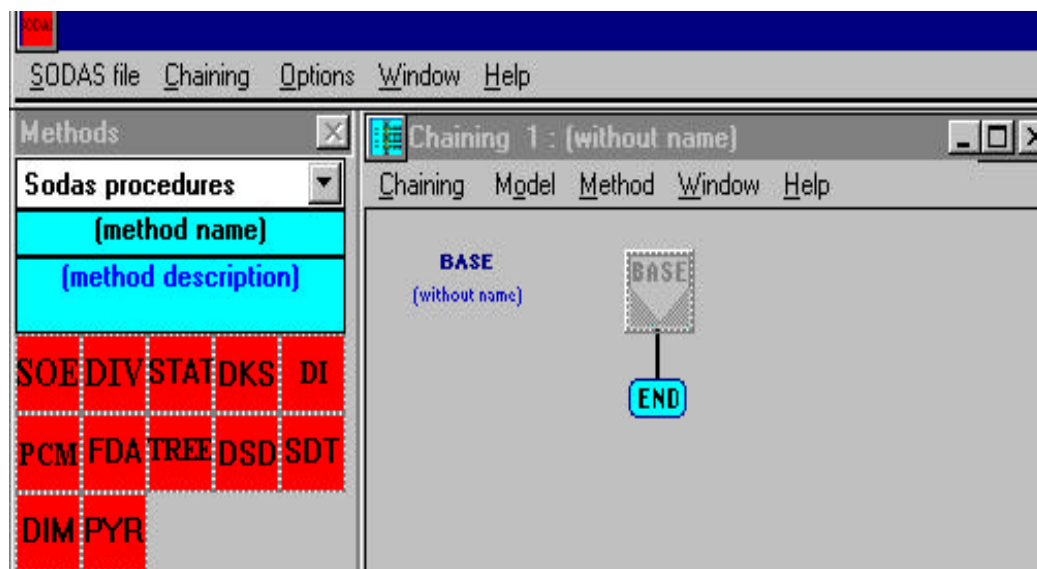
Then, from classical variables
we obtain 4 symbolic variables:

$\tilde{Y}_1 \quad \tilde{Y}_2 \quad \tilde{Y}_3 \quad \tilde{Y}_4$

SYMBOLIC DATA MATRIX

	Maker Y_1	Type Y_2	Price Y_3	Country Y_4
C_1	{CITR, PEUG, REN}	{LIM, STW}	[15:22]	F
C_2	{AUDI, MERC, BMW}	{LIM, COU}	[20:30]	G
C_3	{FIAT, ALFA}	{LIM}	[12:20]	I

SODAS Workbench



ESIF 2000-IV and 2001-IV

- Information Society Surveys for Individual and Families (ESIF), 2000-IV and 2001-IV.
- Use of new Information and Communication Technologies.
- Digital Gap?

Profile of internet users

Figure 1. Descriptive representation of {Internet Users} in 2001-IV

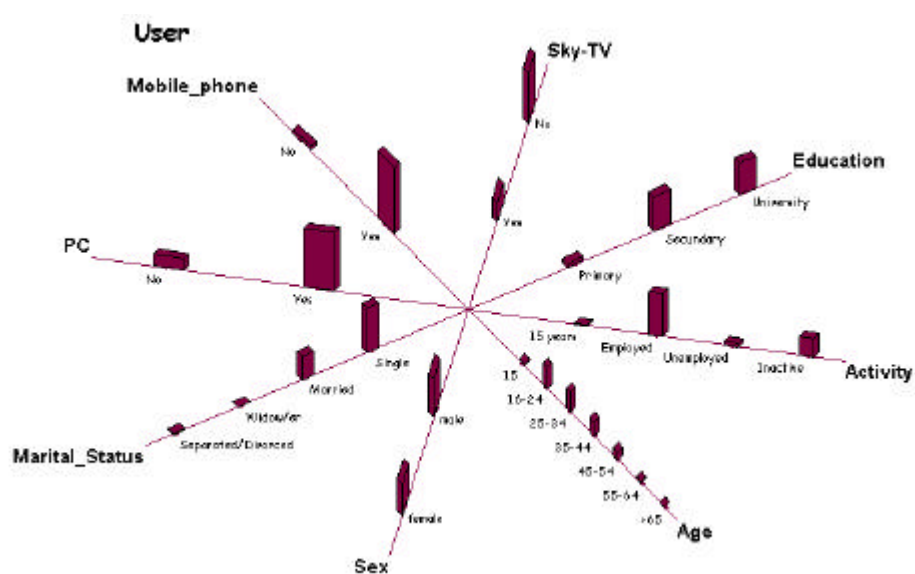
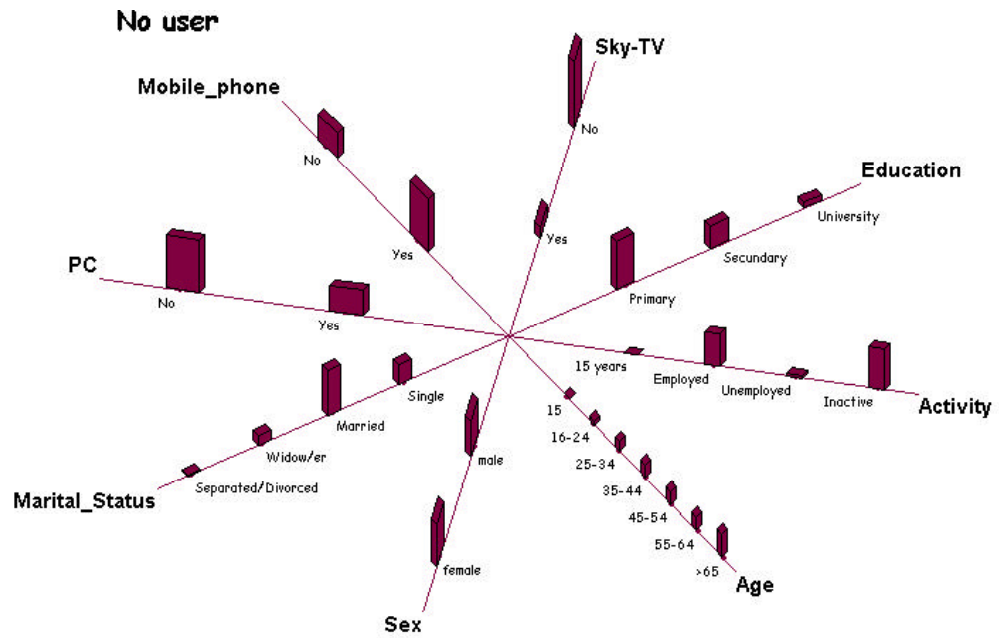
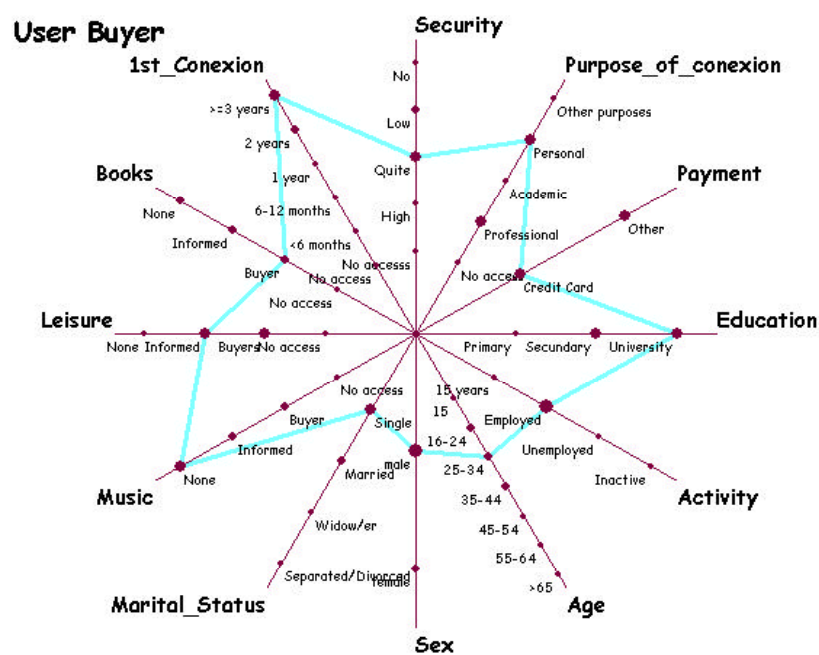


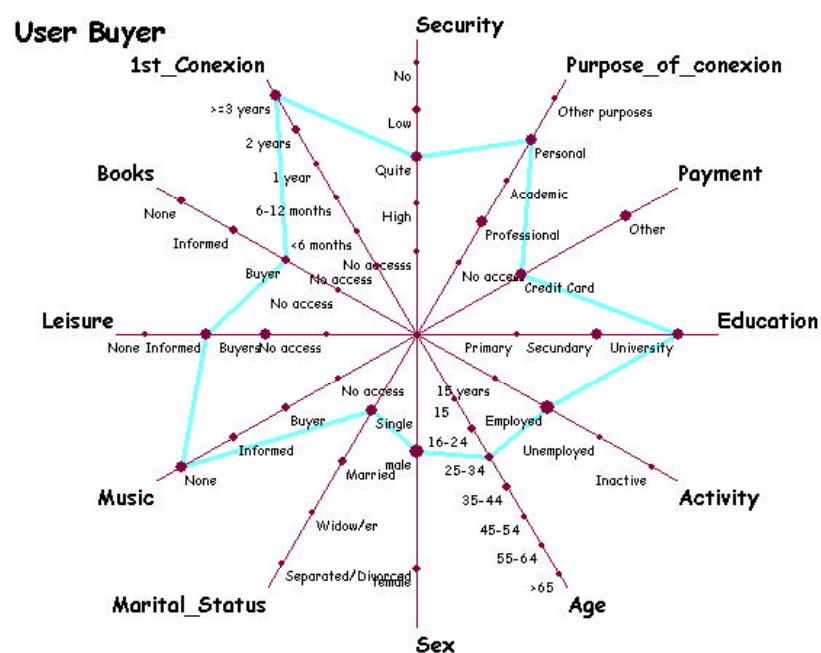
Figure 2. Descriptive representation of {No Internet Users} in 2001-IV



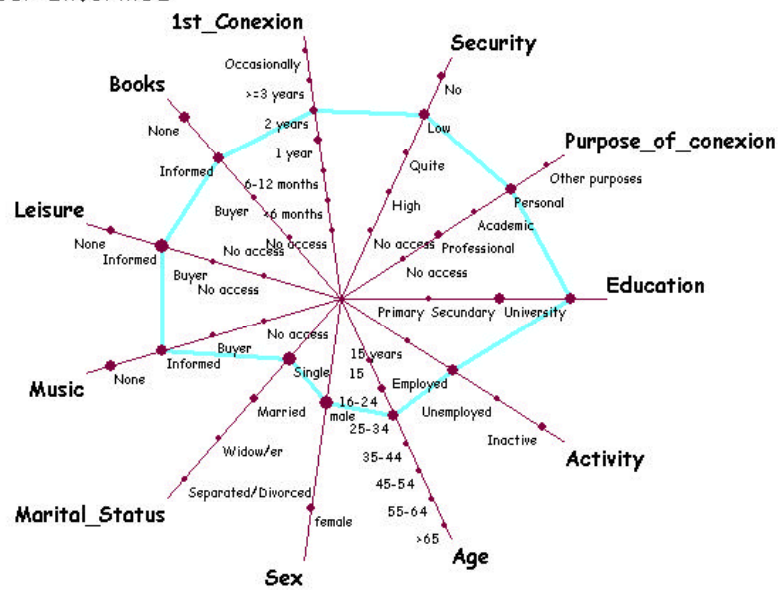
Profile of e-buyers

Figure 3. {User, Buyer} ESI 2000-IV and 2001-IV

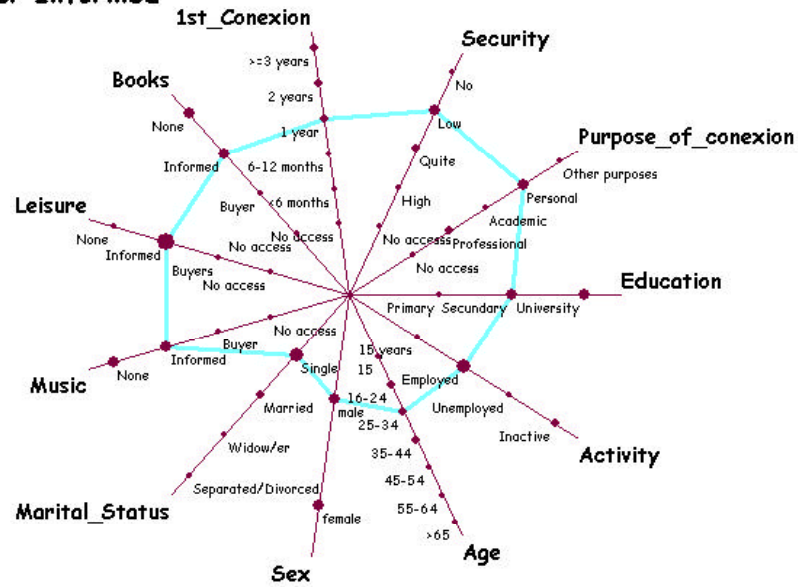




User Informed



User Informed



Conclusions

- Symbolic representation: useful approach for exploiting data from large surveys
- Easy to visually identify group characteristics within and between different surveys.

References

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Analysis of Symbolic Data. Springer-Verlag. ISBN 3-540-66619-2 (1999).

[2] SODAS Reference Manual

[3] More information:

Download: www.cisia.com

Asso Project: www.assoproject.be

[www.ceremade.dauphine.fr/~ touati/sodas-papegarde.htm](http://www.ceremade.dauphine.fr/~touati/sodas-papegarde.htm)