Characterization of the urban areas

According to

- **the concept of WP7**
- **the decisions taken in the**

1) extraordinary project meeting in Munich, November 8th of 2006

“Let´s take the “classification system of urbanisation zones” as a basis in DIAMONT and check if it´s appropriate to reveal feasible test regions.”

2) coordination meeting (WP7, 8, 9) in Innsbruck, November 29th 2006:
“For our project meeting in Grenoble Bosch & Partner will provide a typology of the applicable urban areas.”

Description of 113 urban areas
based on the proposed identification indicators
as input for the selection of the test regions

Characterization of the urban areas

Identification indicators:

- Land take for settlement and infrastructure
- Change of employment-to-population ratio
- Migration balance
- Population density
- Change of resident population in the core city
- Location quotient of branches of an urban economy

Additional evaluation indicators:

Efficiency of land use	double counting
Educational attainment of labour force	tested, but results too strongly dominated by national peculiarities
Change of age dependency index	o.k., could be considered
	until now no data

Characterization of the urban areas

Land take for settlement and infrastructure

Process: Change of the area used for settlement and infrastructure in relation to the change in all Alpine municipalities of respective NUTS2-region

The higher the value, the higher the dynamics.

Thesis: Dynamic development is often linked with space consumption.

Problem: Also stagnating or losing urban areas try to avoid further decline by providing space available for infrastructure development.
No process data for CH and SI.

Change of employment-to-population ratio

Process: proportion of working-age population (15-64) that is employed

The higher the value, the higher the dynamics.

Thesis: It can expected that a dynamically developing urban area tries to use its employment resources.

Problem: Economic growth is not always linked with high employment.

Characterization of the urban areas

Migration balance

Status quo: Saldo of persons immigrating and emigrating to an urban area during one year

The higher the value, the higher the dynamics.

Thesis: Dynamically developing urban areas attract people.

Problem: The immigration of old people does not contribute to economic development in the same way as the immigration of working age people.

Population density

Status quo: Resident population / artificial surfaces

The higher the value, the higher the dynamics.

Thesis: High population density foster social interactions and information flows.

Problem: The interpretation of the indicator is strongly disputed.

Characterization of the urban areas

Change of resident population in the core city

Process: as defined

The higher the value, the higher the dynamics.

Thesis: In the long run, urban areas can only develop dynamically if their core cities do so.

Location quotient of branches of an urban economy

Status quo: Comparing the ratio of jobs of selected NACE-branches in a municipality to the ratio in all Alpine municipalities

Selected branches of the following sectors: trade, transport, communication, banking and insurances, business related services, social services

The higher the value, the higher the dynamics.

Thesis: A high presence of urban branches contributes to the establishment of urban structures.

Problem: At the moment data availability not guaranteed. Possibly selection of branches has to be more limited.

Characterization of the urban areas

Efficiency of land use

Originally proposed as evaluation indicator

Process: change of resident population + change of employees in relation to the change of artificial surfaces

The higher the value, the higher the dynamics.

Thesis: Under the condition of space scarcity high dynamics of urban development require for high efficiency of land use.

No process data for CH and SI.

Change of age dependency Index

Originally proposed as evaluation indicator

Process: Change of the relation of resident population aged 0-15 and 65+ to the working age population (15-64)

The higher the value, the lower the dynamics.

Thesis: A high proportion of “dependent” population can obstruct a dynamic development.

Idea: could be also tested as status quo indicator

Characterization of the urban areas

Procedure

Selection of indicators to be calculated

Calculation of the indicators for the urban areas

Transformation of values in 10 classes:
Standard deviation
Quantiles

Presentation of results in maps

Multivariate and cluster analysis
for identifying urban areas with similar characteristics

Not possible yet:

Calculation of the indicator "Location quotient of branches of an urban economy"

Transformation of values along a more differentiated scale (e.g. 1 – 100)

Analyses of the correlation of the indicators

Characterization of the urban areas

Results – some anticipations

- Only a few number of indicators are disposable for characterizing the urban areas.
- For some indicators data for single countries miss. So a multivariate analysis is partly not possible.
- First rough overview shows that indicators are not correlated in the expected form.
- Urban areas with similarities can be identified.
- Further experiments with the characterization of the urban areas should be carried out.

Characterization of the urban areas

Steps

Calculation of the indicators for the urban areas:

Aggregation of municipality values to urban area values (e.g. total population, total number of employees)

Calculation of indicators for urban areas

It is not (yet) intended to analyse differences between the municipalities within the urban area. This can be the focus of a further, e.g. of analysing the different developments between the core city, the inner and outer periurban area.

Characterization of the urban areas

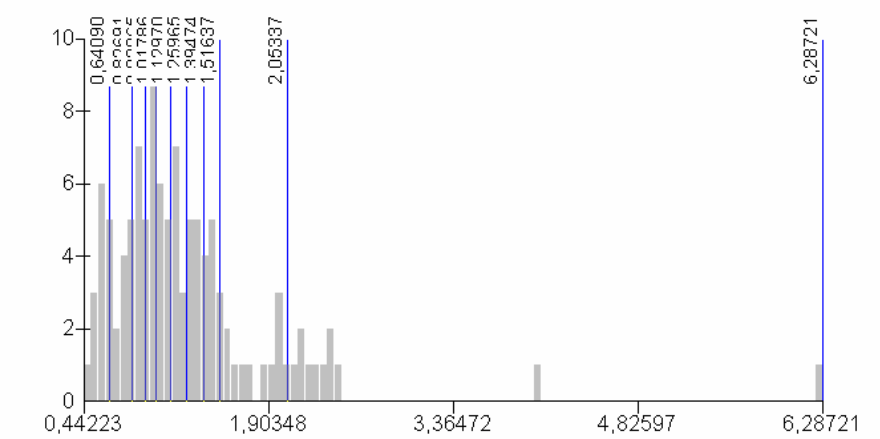
Steps

Transformation of values in 10 classes

Quantile (10)

Legend

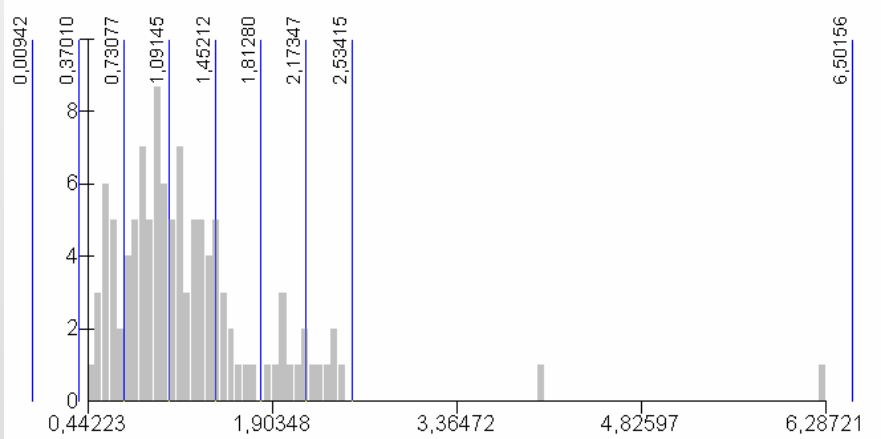
	2,05338 - 6,28721		1,01787 - 1,12970
	1,51638 - 2,05337		0,93066 - 1,01786
	1,39475 - 1,51637		0,82692 - 0,93065
	1,25966 - 1,39474		0,64091 - 0,82691
	1,12971 - 1,25965		0,44223 - 0,64090



Standard Deviation

Legend

	2,53416 - 6,50156		0,73078 - 1,09145
	2,17348 - 2,53415		0,37011 - 0,73077
	1,81281 - 2,17347		0,00943 - 0,37010
	1,45213 - 1,81280		-0,35124 - 0,00942
	1,09146 - 1,45212		<-0,35124

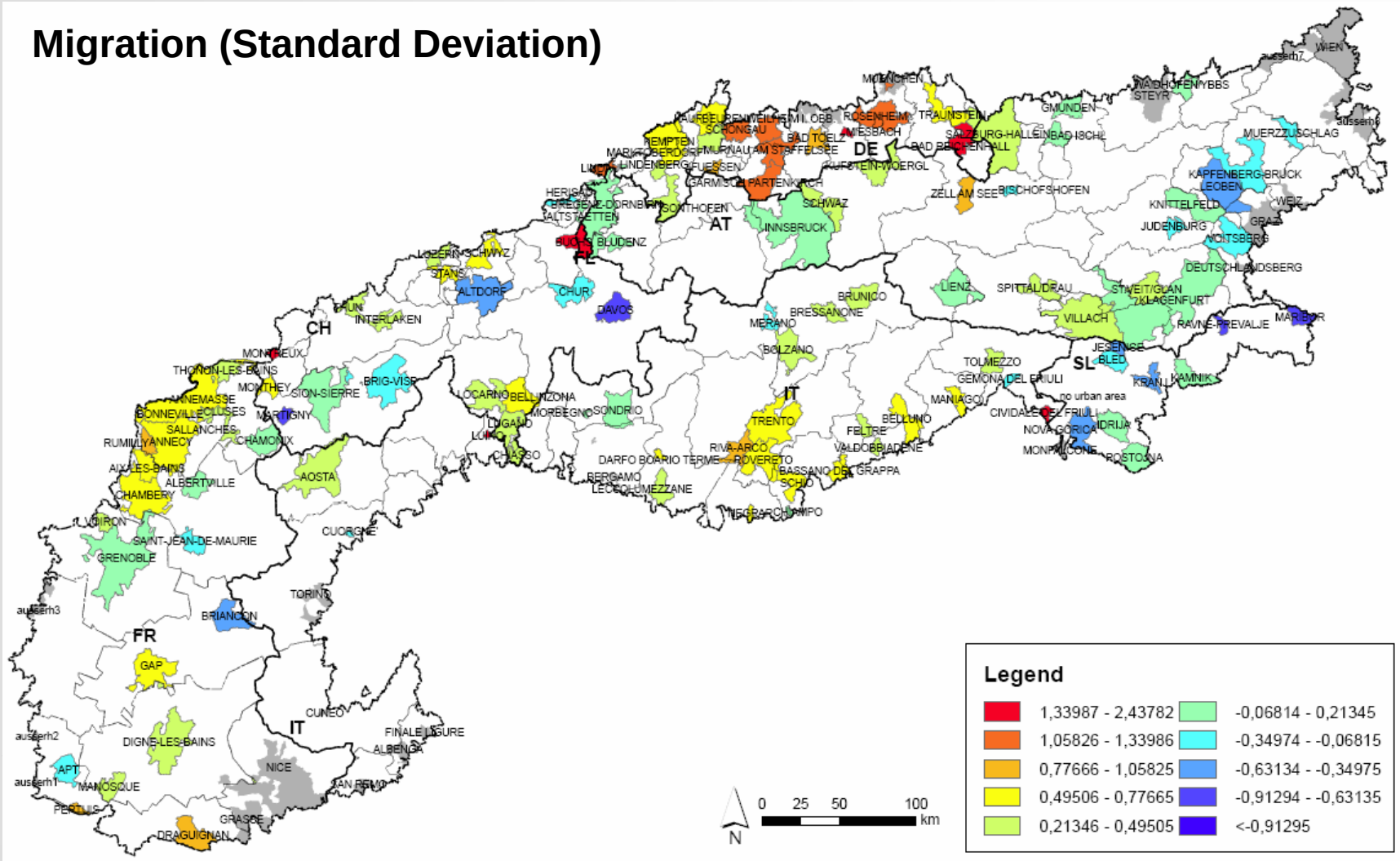


Characterization of the urban areas

Steps

Presentation of results in maps

Migration (Standard Deviation)



Characterization of the urban areas

Multivariate and cluster analysis for identifying urban areas with similar characteristics

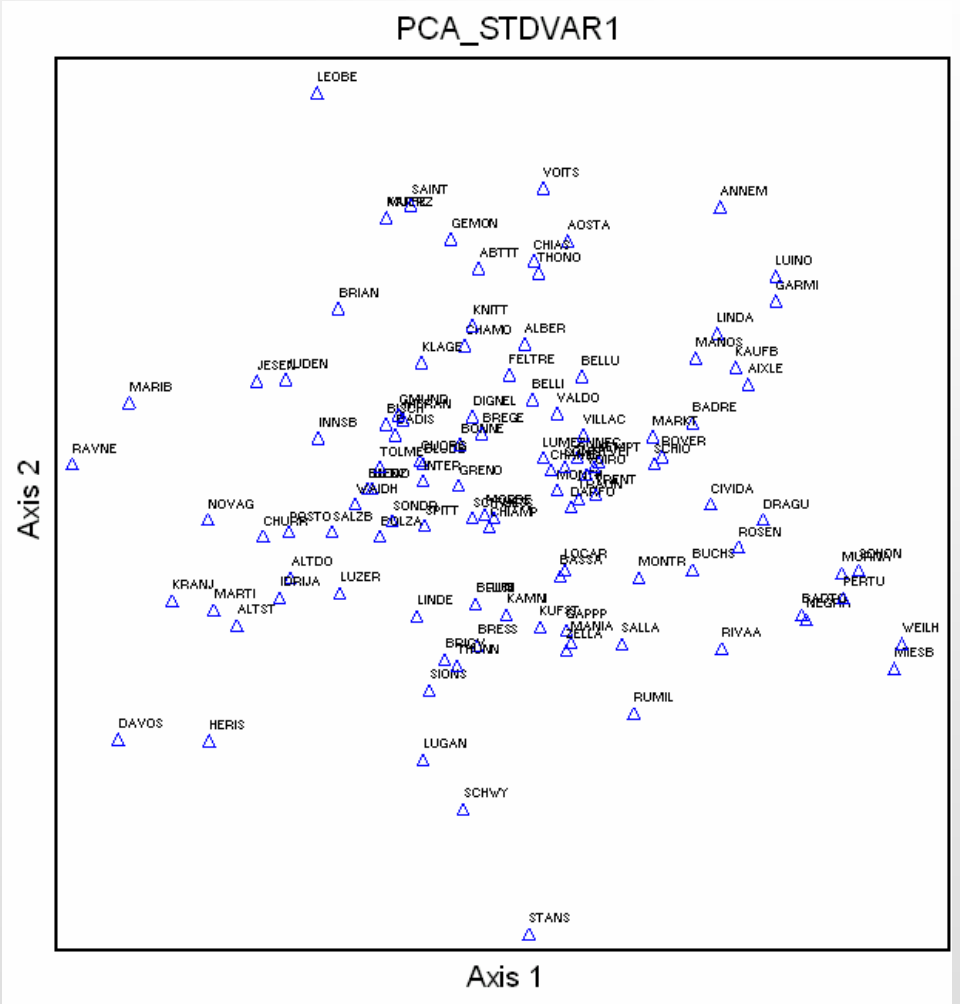
PCA

Version 1:

Data sets complete for all the urban areas with core cities within the Alps

“Employment to Population Ratio“ as status quo indicator

“Land Take for settlement and infrastructure” excluded due to data gaps in CH and SI

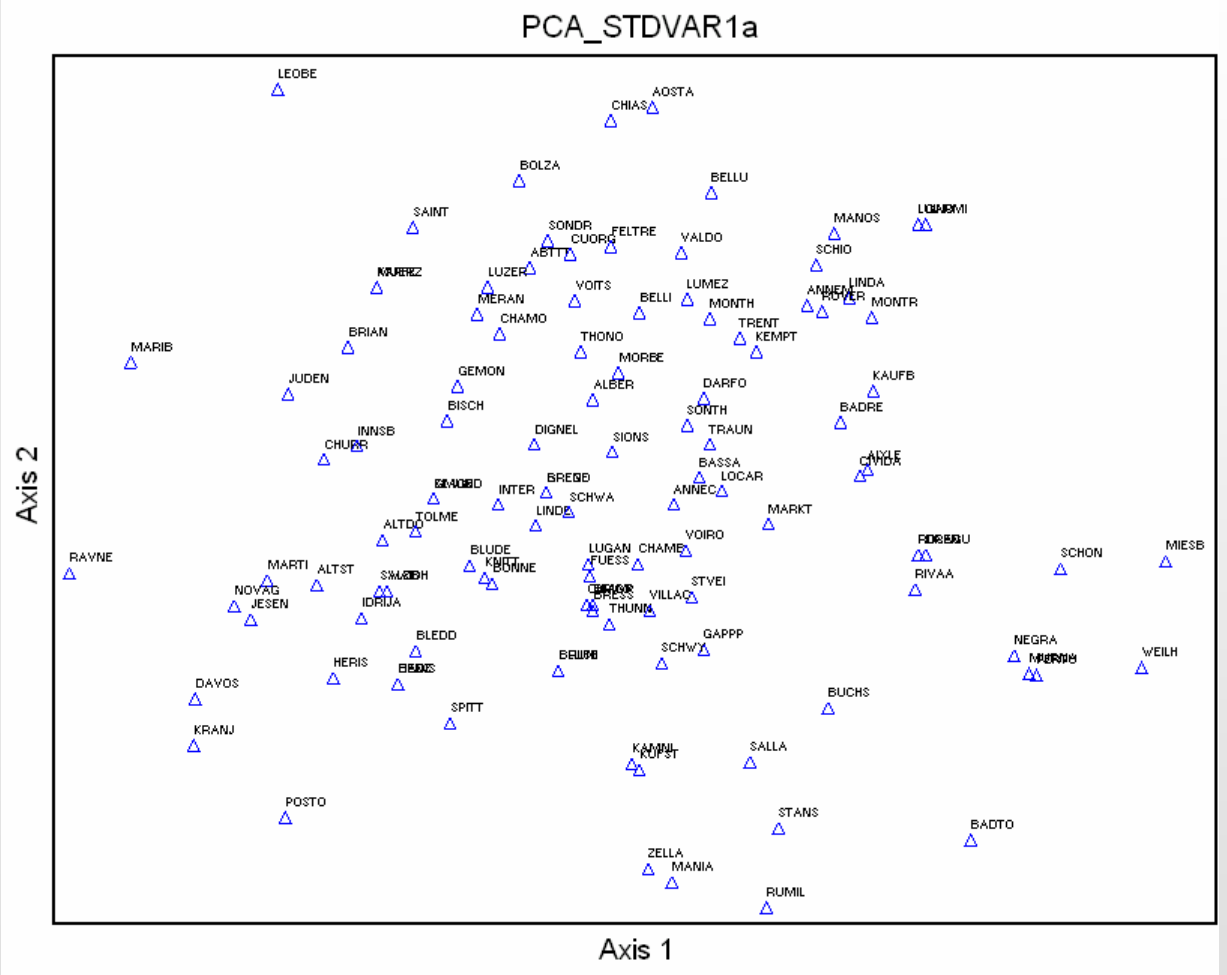


Characterization of the urban areas

PCA

Version 1a:

like version 1, but "Population density" excluded due to interpretation problems

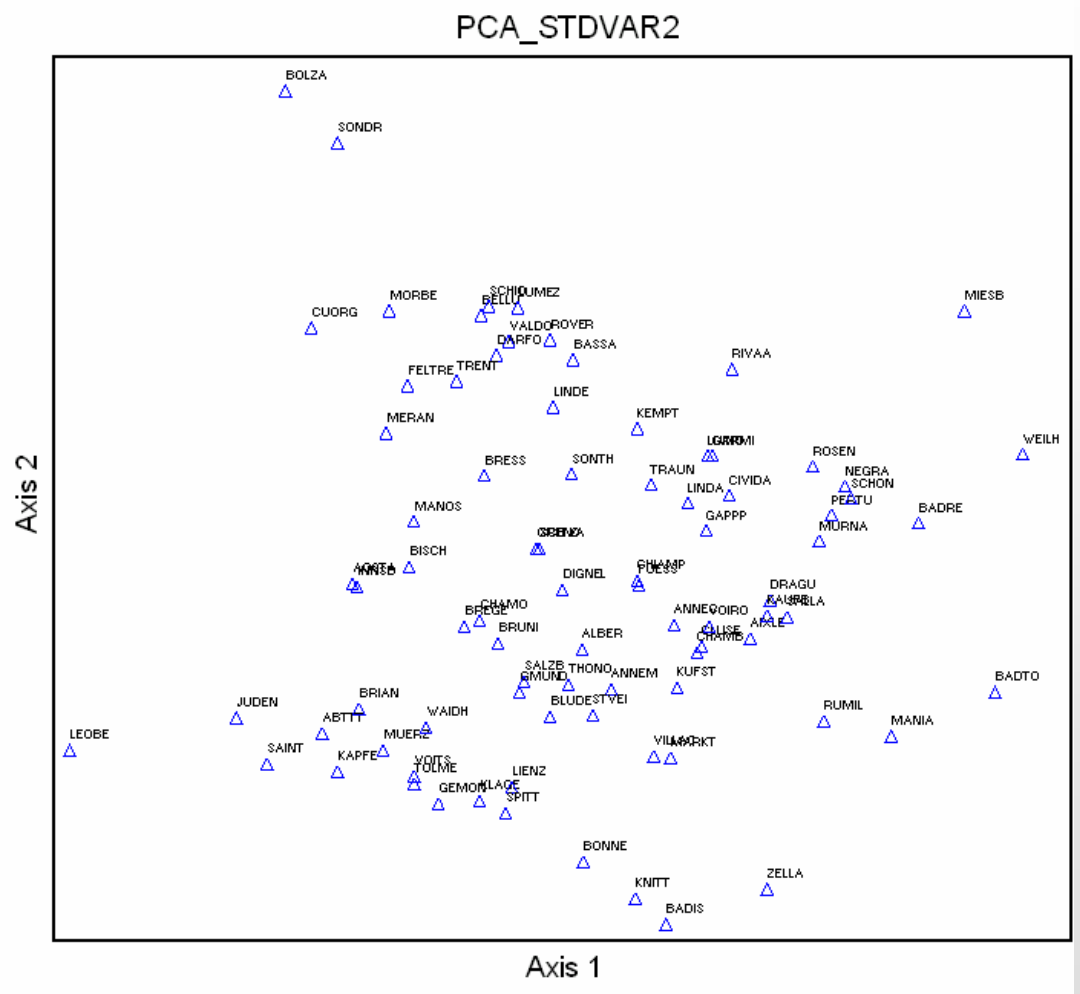


Characterization of the urban areas

PCA

Version 2:

Analysis limited on countries for which data are available for all the indicators (exclusion of CH and SI)

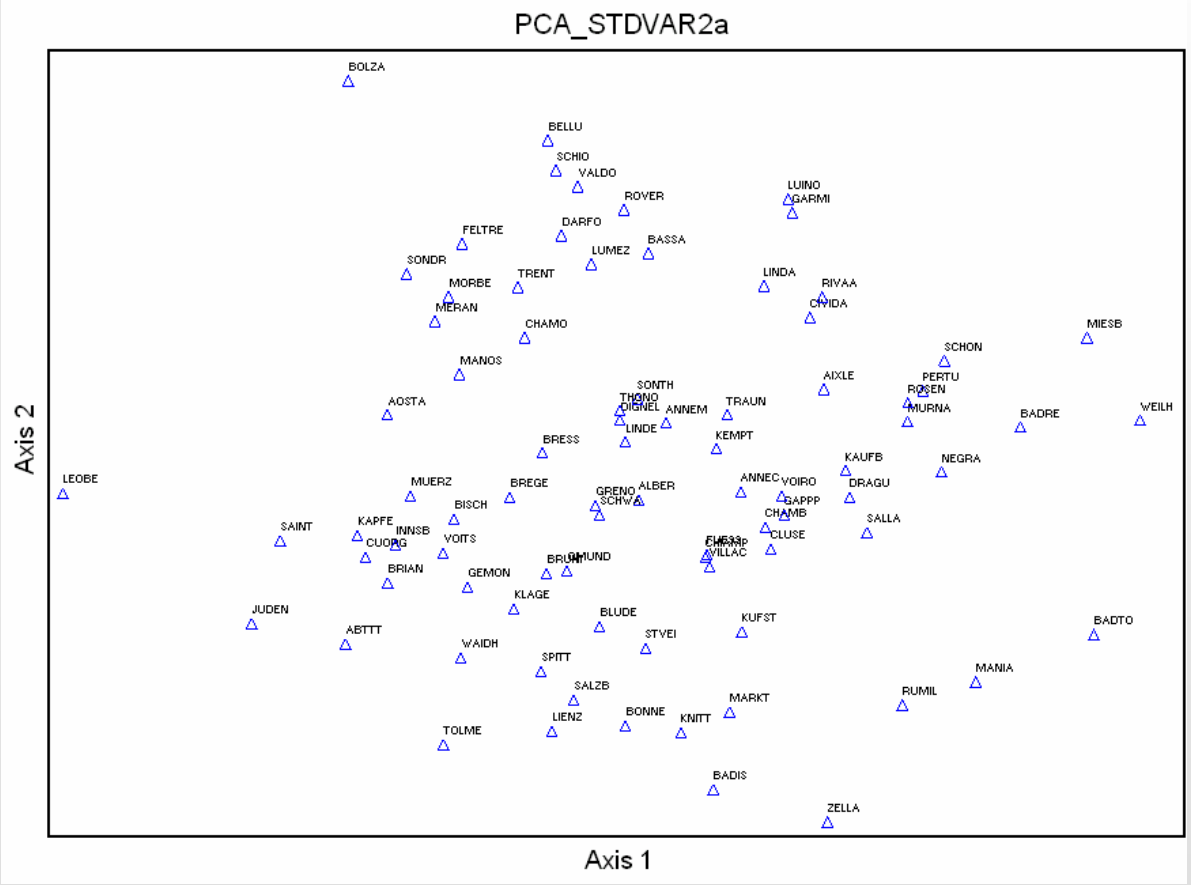


Characterization of the urban areas

PCA

Version 2a:

like version 2, but "Population density" excluded due to interpretation problems



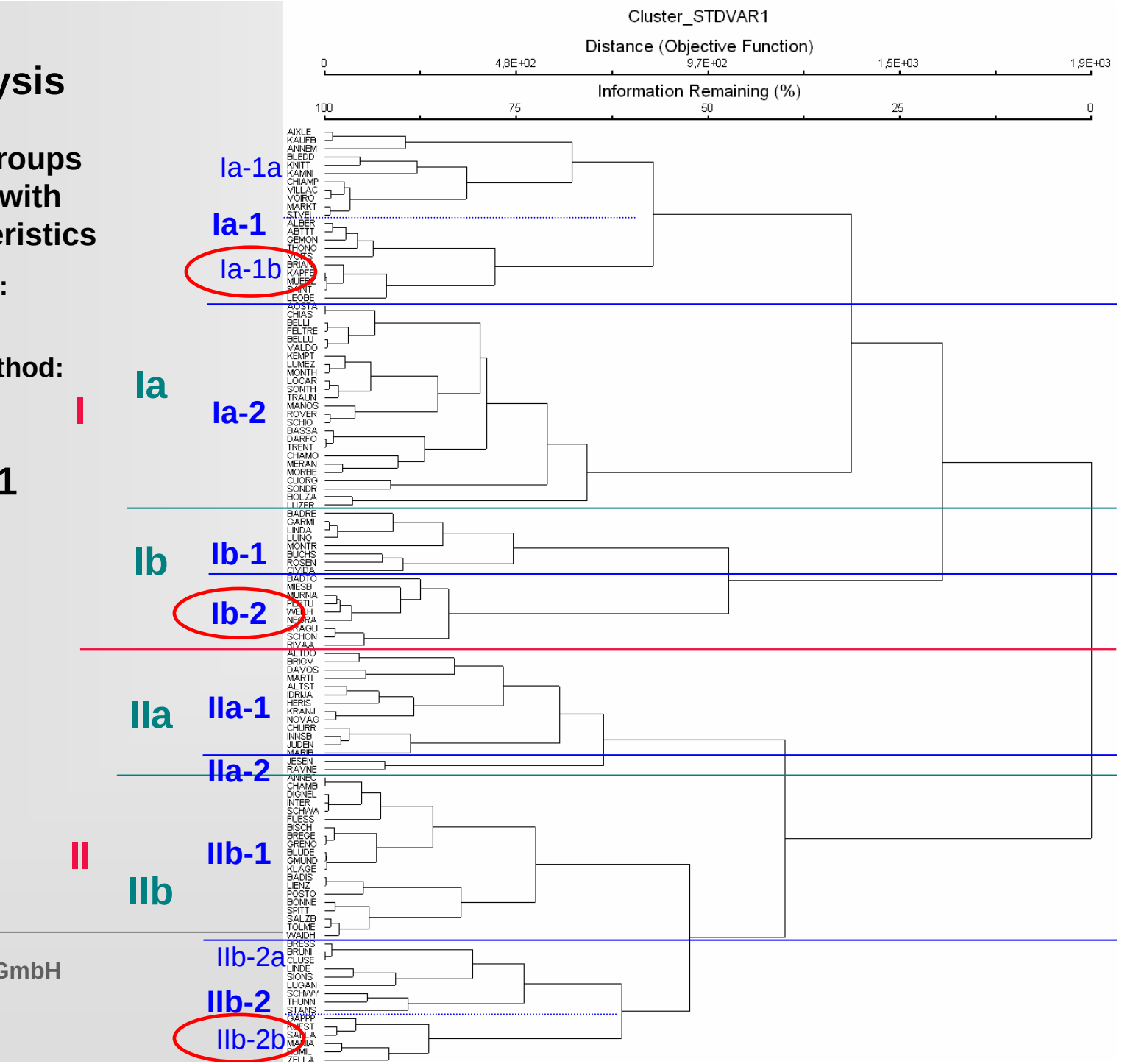
Cluster analysis

Searching for groups of urban areas with similar characteristics

Distance measure: Euclidean

Group linkage method: Ward's method

like Version 1



Ia-1b: the most stagnating or losing urban areas

Mainly urban areas in France and Austria

Land	Code	UrbanArea	Core Population change	Migration Balance	Age dependency	Employment-Population-Ratio	Population Density	Land take	Efficiency of landuse
FR	Ia-1	ALBERTVILLE	6	6	6	7	6	6	6
FR	Ia-1	APT	7	7	7	7	6	1	9
IT	Ia-1	GEMONA DEL FRIULI	7	7	5	7	7	6	6
FR	Ia-1	THONON-LES-BAINS	7	5	6	6	7	7	10
AT	Ia-1	VOITSBERG	7	7	6	9	7	5	7
FR	Ia-1	BRIANCON	7	8	6	5	6	5	6
AT	Ia-1	KAPFENBERG-BRUCK	8	7	6	5	7	5	6
AT	Ia-1	MUERZZUSCHLAG	8	7	6	5	7	6	6
FR	Ia-1	SAINT-JEAN-DE-MAURIE	8	7	7	5	7	3	7
AT	Ia-1	LEOBEN	10	8	7	5	7	4	6

Cluster analysis

IIb-2b: the most dynamically developing urban areas

Urban areas in all France, Austria and Italy

Land	Code	UrbanArea	Core Population change	Migration Balance	Age dependency	Employment-Population-Ratio	Population Density	Land take	Efficiency of landuse
FR	IIb-2	GAP	3	4	6	4	5	5	4
AT	IIb-2	KUFSTEIN-WOERGL	2	5	5	4	6	5	3
FR	IIb-2	SALLANCHES	1	5	6	5	6	6	3
IT	IIb-2	MANIAGO	2	4	3	5	6	7	3
FR	IIb-2	RUMILLY	1	3	4	4	6	4	3
AT	IIb-2	ZELL AM SEE	2	3	4	2	7	1	4

Cluster analysis

Ib-2: urban areas with population growth but unfavourable structures concerning age dependency index and employment-to-population ratio

Most of them in Germany

Land	Code	UrbanArea	Core Population change	Migration Balance	Age dependency	Employment-Population-Ratio	Population Density	Land take	Efficiency of landuse
DE	Ib-2	BAD TOELZ	1	3	4	9	6	6	4
DE	Ib-2	MIESBACH	2	1	8	8	4	4	6
DE	Ib-2	MURNAU AM	2	2	6	8	6	6	2
FR	Ib-2	PERTUIS	1	3	7	8	6	6	3
DE	Ib-2	WEILHEIM I. OBB.	1	2	7	9	5	5	5
IT	Ib-2	NEGRAR	1	4	7	9	5	5	3
FR	Ib-2	DRAGUIGNAN	3	3	7	7	6	3	6
DE	Ib-2	SCHONGAU	2	2	8	7	6	4	5
IT	Ib-2	RIVA-ARCO	2	3	8	5	5	6	3

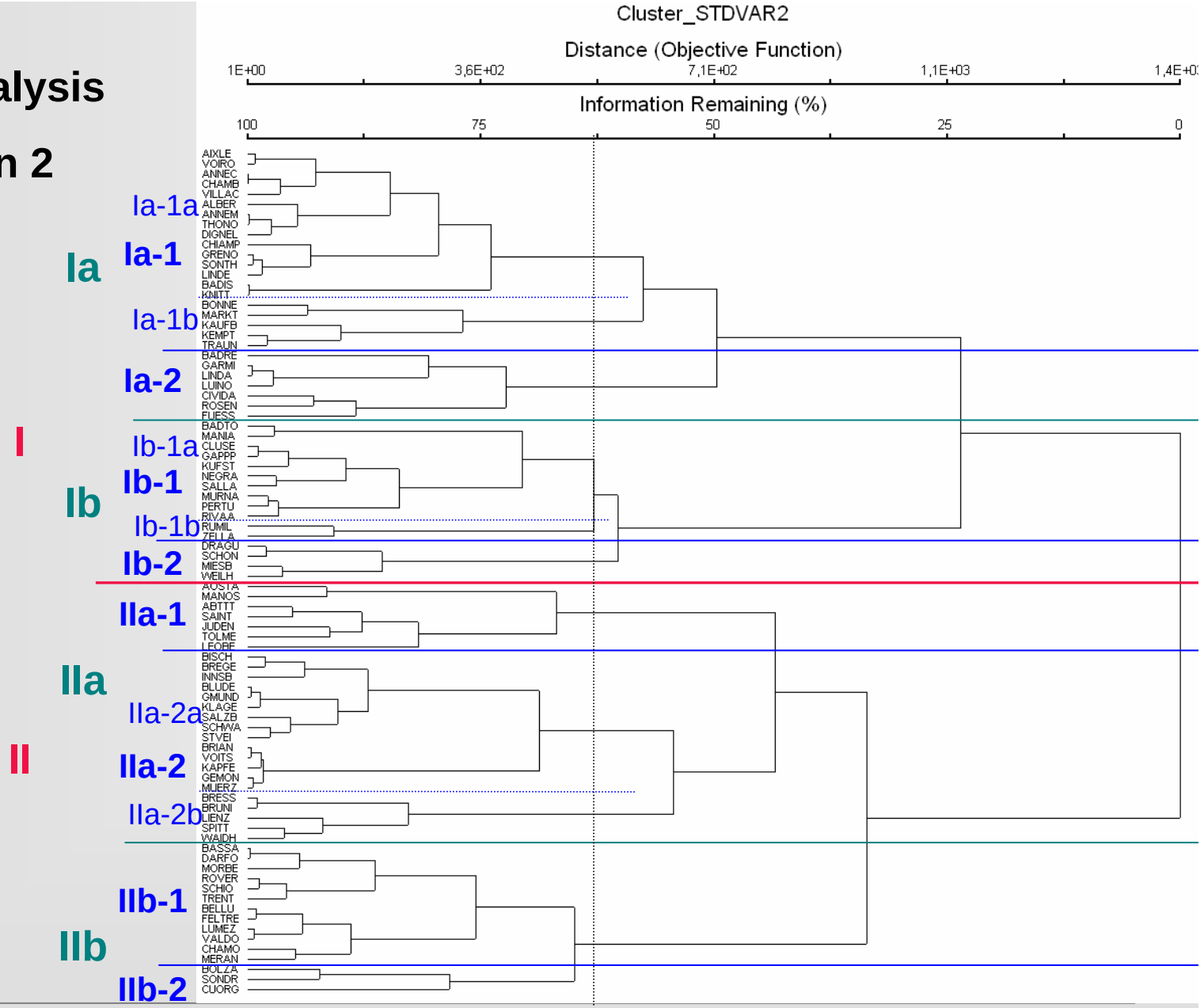
Cluster analysis

IIb-1: The only group where all countries are represented

Land	Code	UrbanArea	Core Population change	Migration Balance	Age dependency	Employment-Population-Ratio	Population Density	Land take	Efficiency of landuse
FR	IIb-1	ANNECY	5	4	6	5	6	5	4
FR	IIb-1	CHAMBERY	5	4	5	5	6	6	4
FR	IIb-1	DIGNE-LES-BAINS	6	5	6	4	6	7	4
CH	IIb-1	INTERLAKEN	6	5	5	4	5	-	-
AT	IIb-1	SCHWAZ	5	5	6	4	5	5	3
DE	IIb-1	FUESSEN	6	3	4	4	5	6	4
AT	IIb-1	BISCHOFSHOFEN	6	7	6	5	5	6	5
AT	IIb-1	BREGENZ-DORNBIRN	5	6	6	5	6	6	3
FR	IIb-1	GRENOBLE	5	6	6	5	5	6	5
AT	IIb-1	BLUDENZ	5	6	5	4	6	5	4
AT	IIb-1	GMUNDEN	6	6	5	4	6	6	5
AT	IIb-1	KLAGENFURT	6	6	5	4	7	5	4
AT	IIb-1	BAD ISCHL	5	6	3	4	7	5	7
AT	IIb-1	LIENZ	5	6	3	4	6	6	2
SI	IIb-1	POSTOJNA	5	6	1	3	6	-	-
FR	IIb-1	BONNEVILLE	5	5	5	3	7	2	5
AT	IIb-1	SPITTAL/DRAU	4	5	4	2	7	5	2
AT	IIb-1	SALZBURG-HALLEIN	6	5	4	2	5	4	4
IT	IIb-1	TOLMEZZO	6	5	5	2	6	1	9
AT	IIb-1	WAIDHOFEN/YBBS	5	6	5	2	6	4	5

Cluster analysis

like Version 2



Characterization of the urban areas

Multivariate and cluster analysis - summarizing results

PCA:

The data set seems not strictly organized in groups.
Nevertheless, some urban areas are more clotted than others.

Defining a typology of the urban areas seems difficult.
The different characteristics of the urban areas reflect more a gradient than a distinctive grouping.

Cluster analysis:

A cluster analysis can give impulses for sorting the urban areas in groups with certain similarities.

But in many groups not all the countries are represented.