



# R for Labour Market Policies

Inter-university research centre  
on public services

**Gloria Ronzoni**  
**Gaithersburg, Maryland**  
July, 23 2010

University of Milano - Bicocca  
Viale dell'Innovazione 10  
Building U9, 2nd floor  
20126 Milan, Italy

Tel: (+39) 02 6448 2180  
Fax: (+39) 02 70056 9114  
e-mail: [crisp@crisp-org.it](mailto:crisp@crisp-org.it)  
web: [www.crisp-org.it](http://www.crisp-org.it)

# Crisp - centre of reaserch



The on-going collaboration and mutual exchange between several centres of study was rendered official in 1997 by the creation of a centre of study proposing high-profile research on public services.



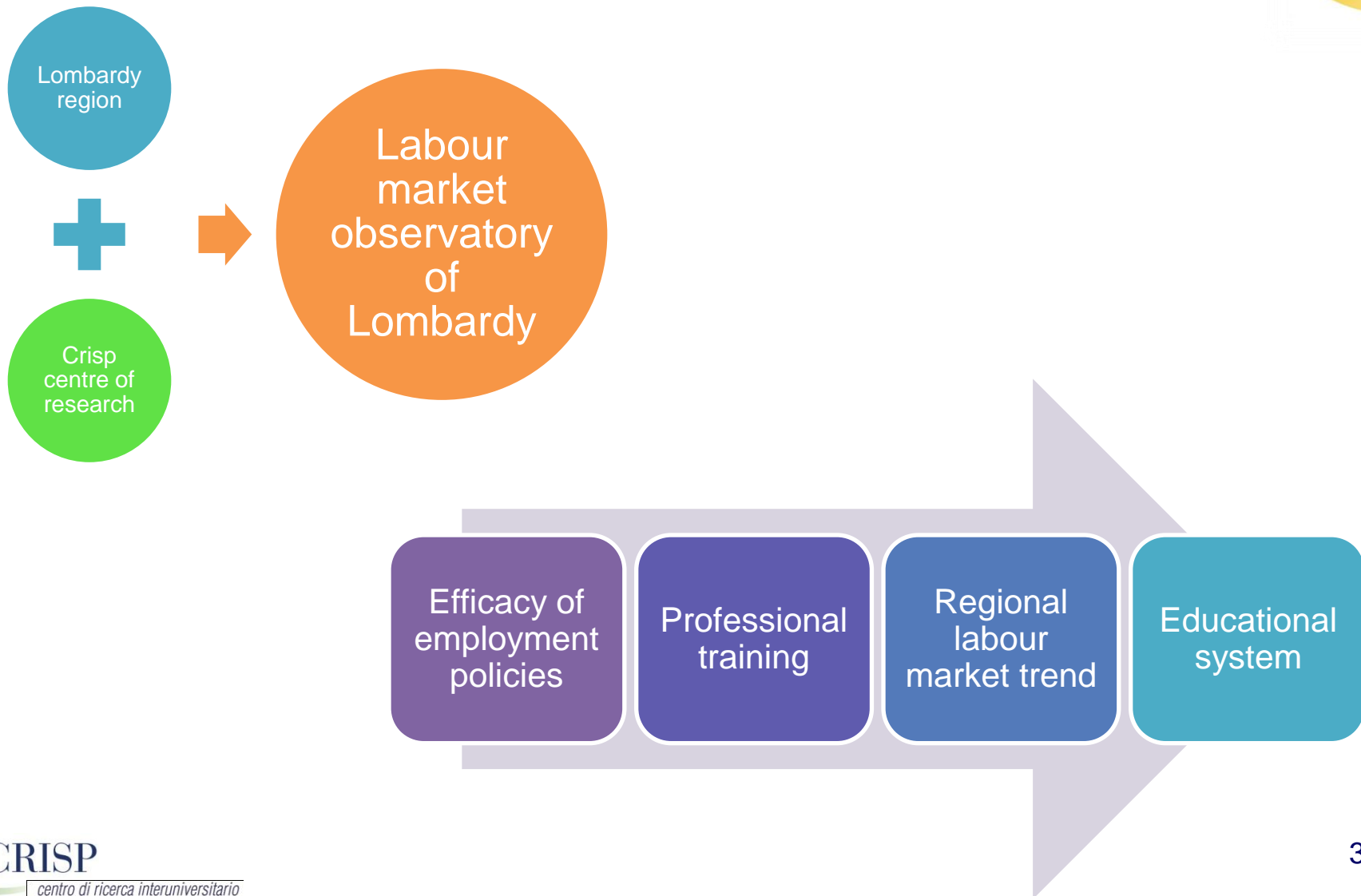
## Crisp's main areas of concern:

1. public service development and demand analysis;
2. analysis of economic system dynamics;
3. unbiased methodologies for quality estimation of services;
4. technology innovation

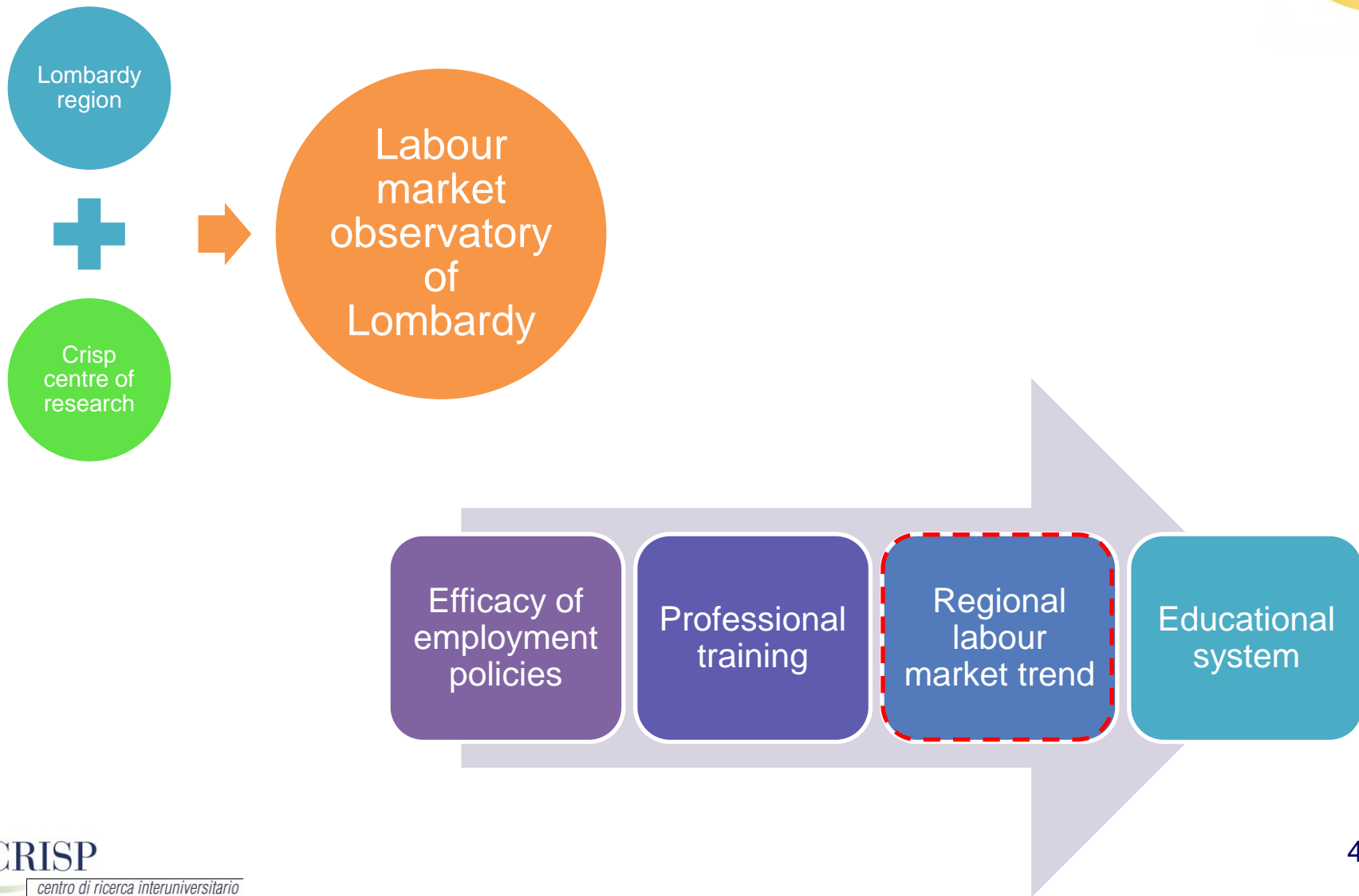
## CRISP "Public Services":

- Training and the Labour Market
- Public Health
- Environment and the Quality of Life
- Education and Learning
- Public Utilites

# Labour Market Observatory of Lombardy



# Labour Market Observatory of Lombardy





**Classify Lombardy workers careers  
by professional experiences succession and  
the associated type of contract.**

**Amount of data:**

- 3 million of workers
- 6-year monitoring period
- 9 million of working experiences
- Personal, social and economic information available  
(official national data)



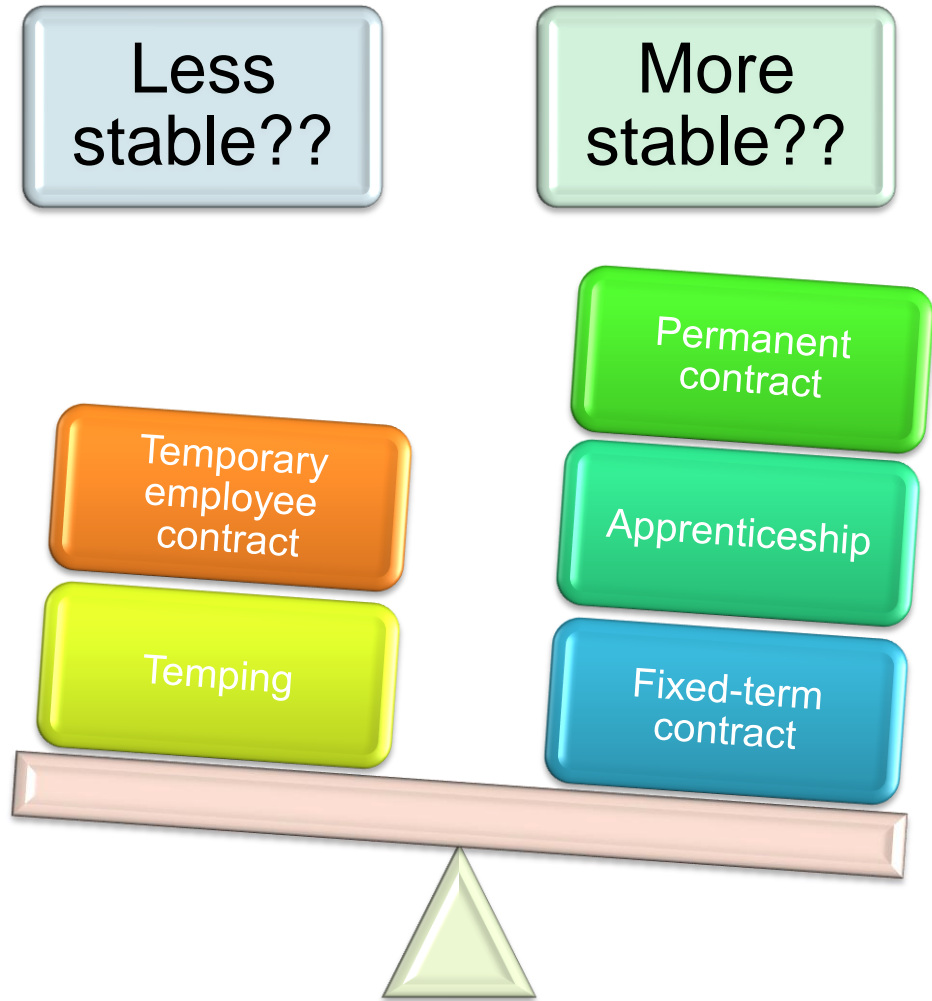
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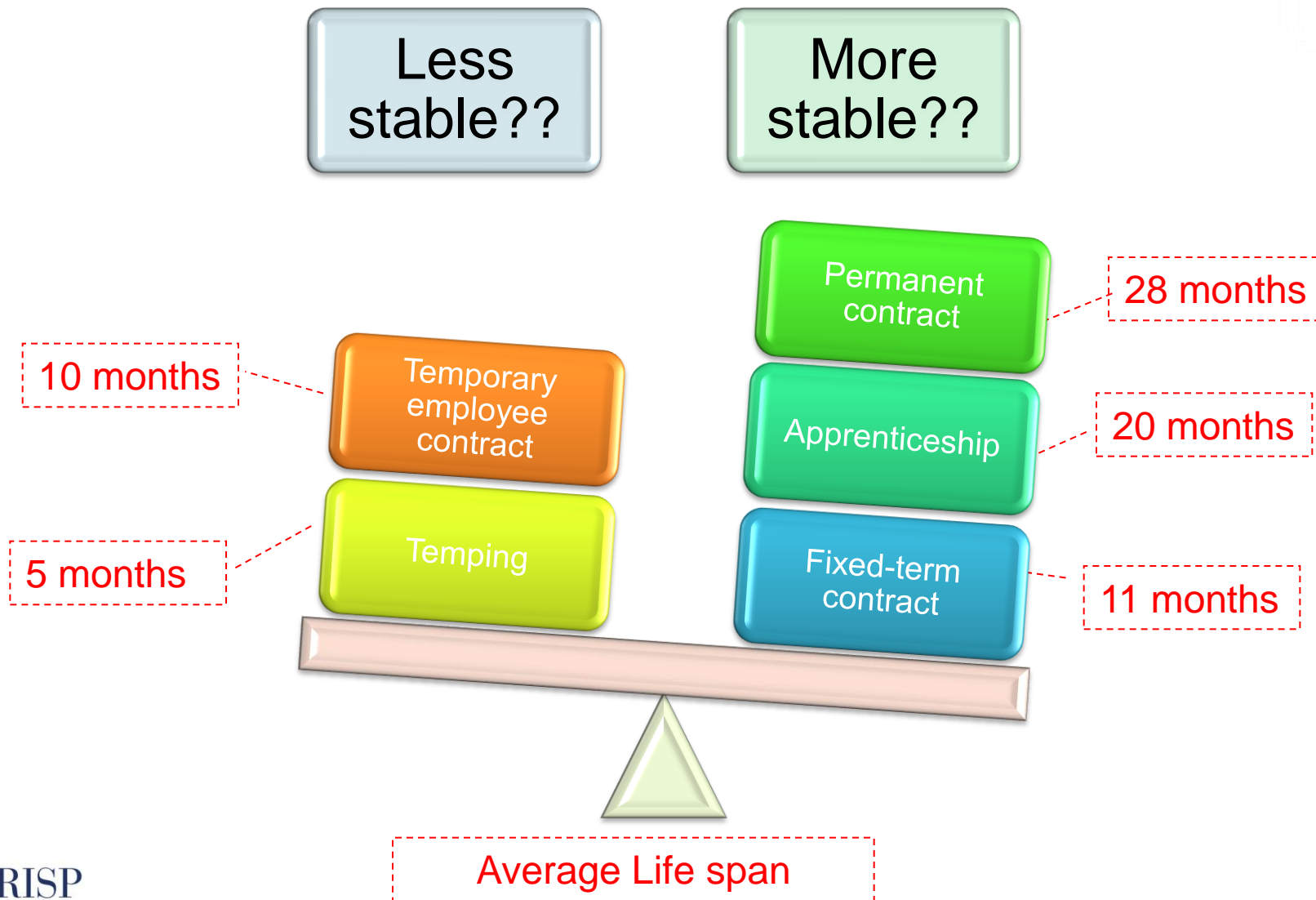
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# Methodology part I



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Multidimensional scaling

Less stable??

More stable??

Score: 2.68

10 months

Temporary employee contract

Permanent contract

Score: 10.5

28 months

Apprenticeship

20 months

Score: 6.79

Score: 0.5

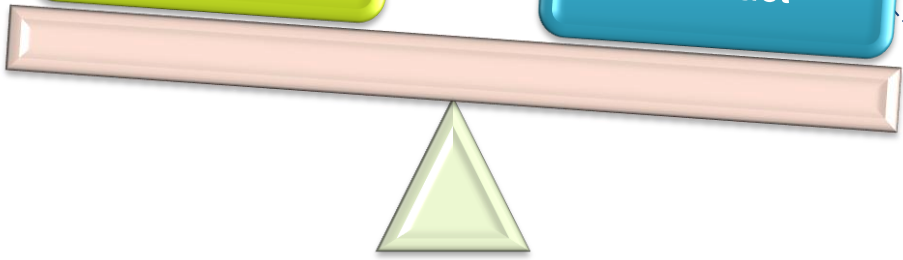
5 months

Temping

Fixed-term contract

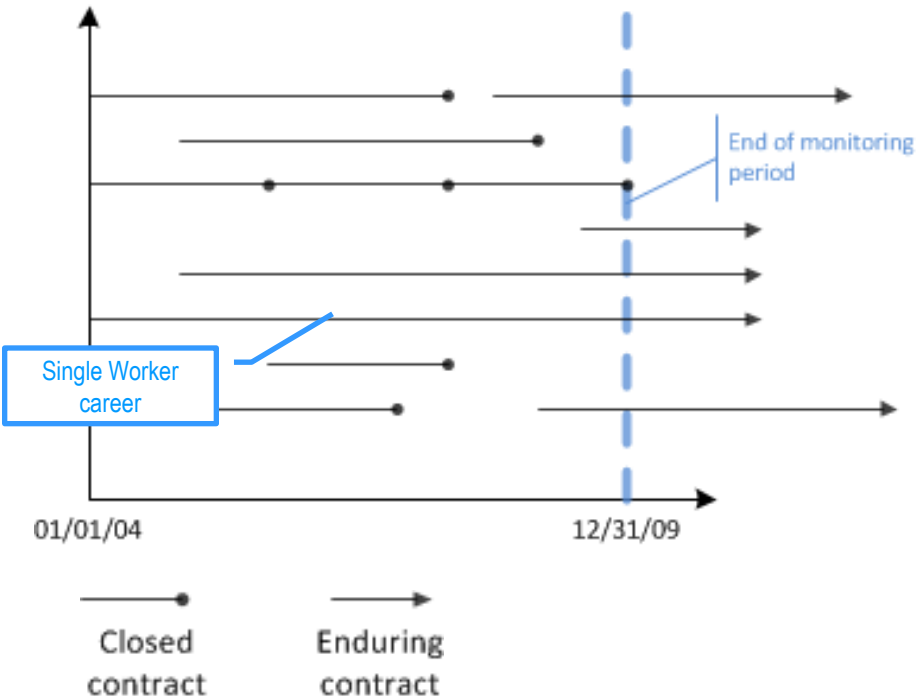
11 months

Score: 2.95



Average Life span

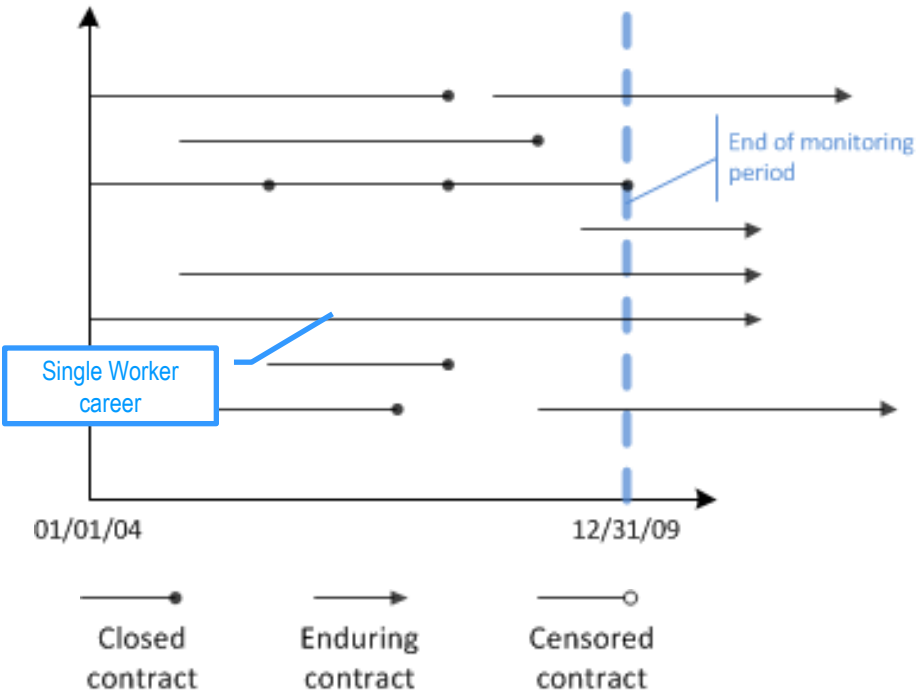
# Data features



## Selection criteria:

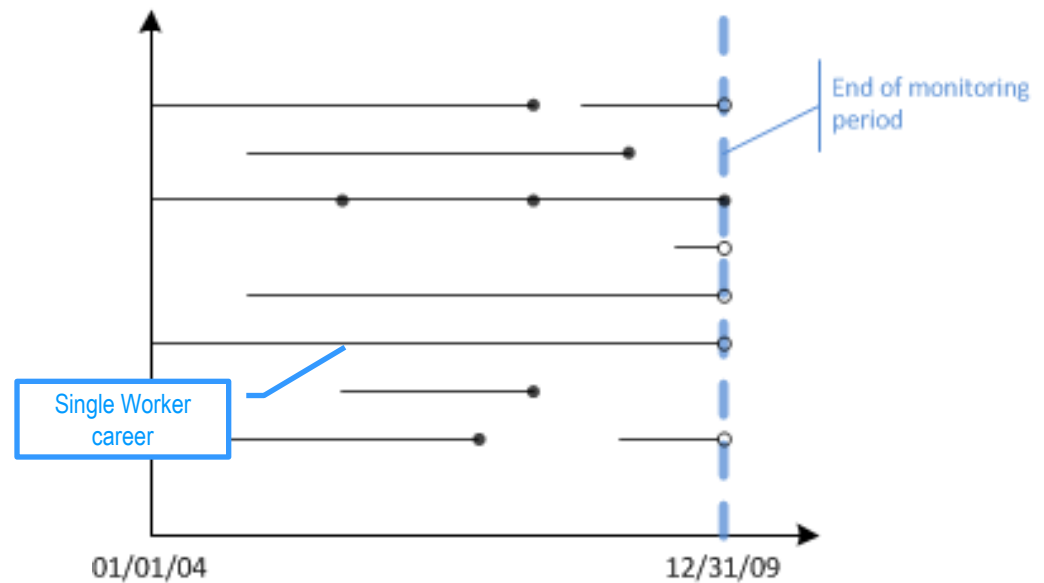
- At least 3 month of work
- Contracts opened after 01/01/04
- Censoring of contracts that enduring after 12/31/09

# Data features



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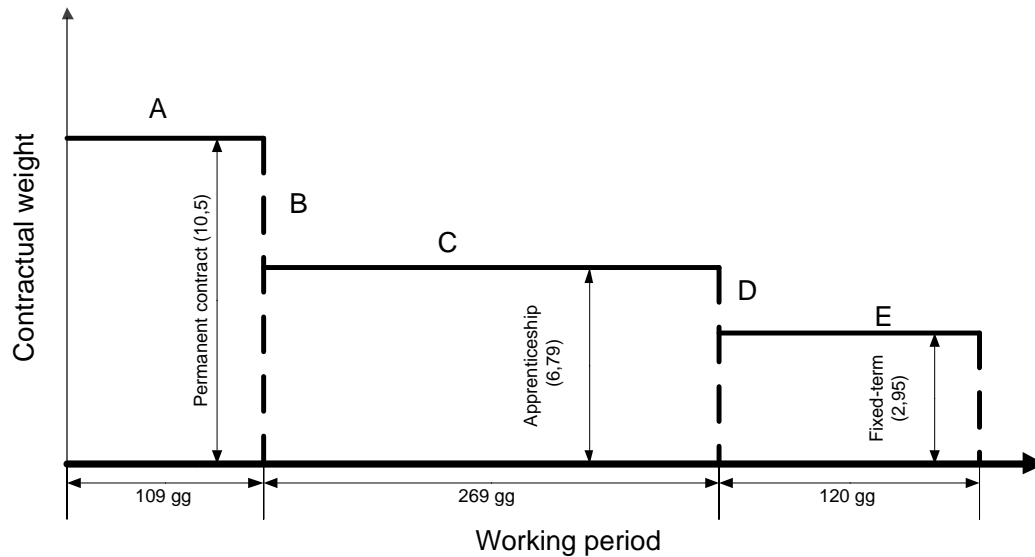
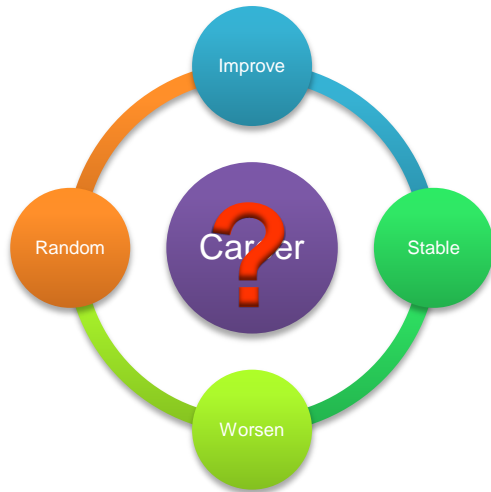
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# Methodology part II



# Methodology part II



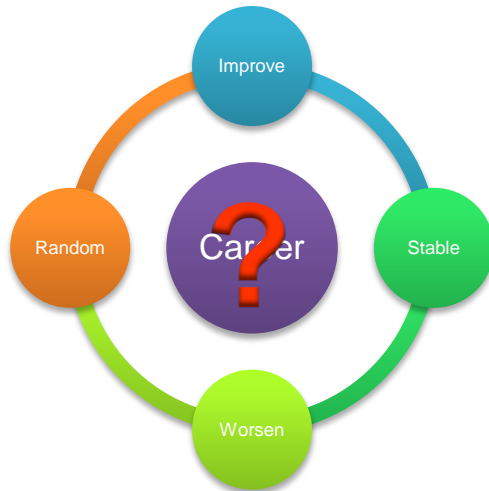
Index of stability

$$\mu = \frac{\left(\frac{BC}{A} + \frac{DE}{C}\right)}{A + C + E}$$

$$x = \frac{\min |c.w._i - c.w._j| \forall ij}{\text{monitoring period}}$$

c.w = contractual weight

# Methodology part II



Cluster criterion	Cluster
$\mu \in [-x, x]$ and %period > 70	Stable
$\mu \in [-x, x]$ and %period $\leq$ 70	Random
$\mu < -x$	Worsen
$\mu > x$	Improve

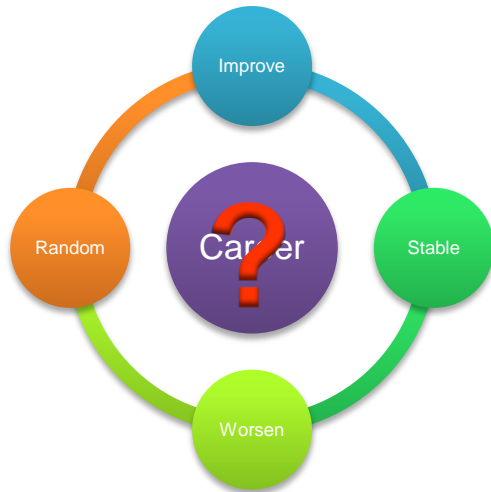
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# Methodology part II



Improve

Contract with lower weight ->  
Contract with higher weight

Stable

Contract with more then 70% of working time

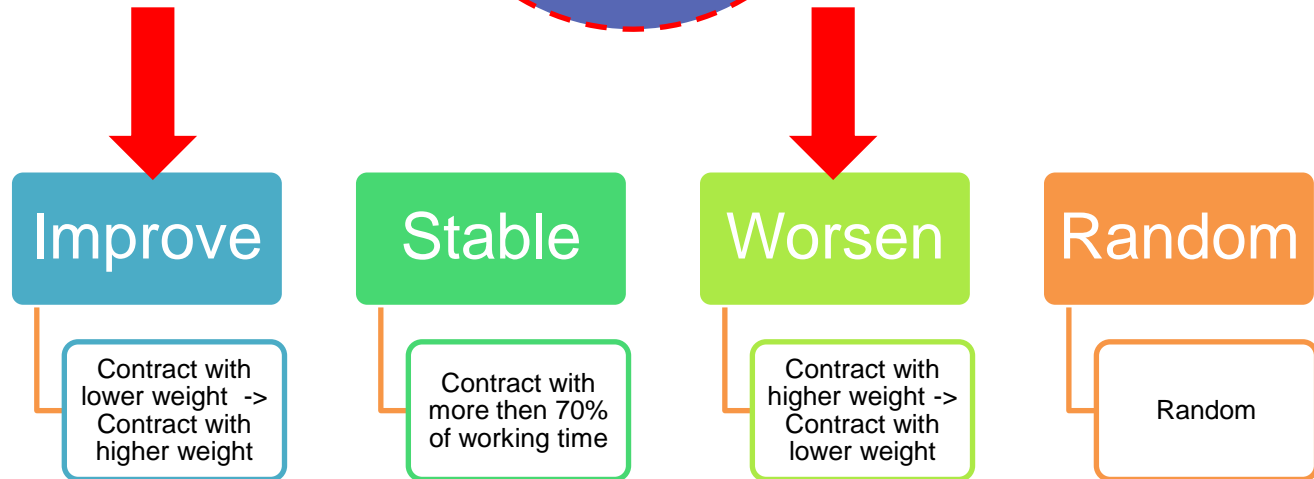
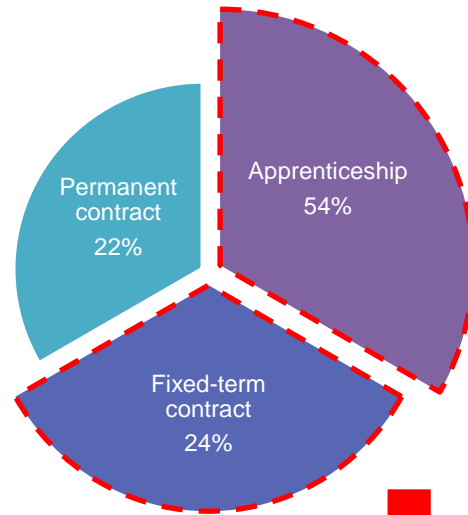
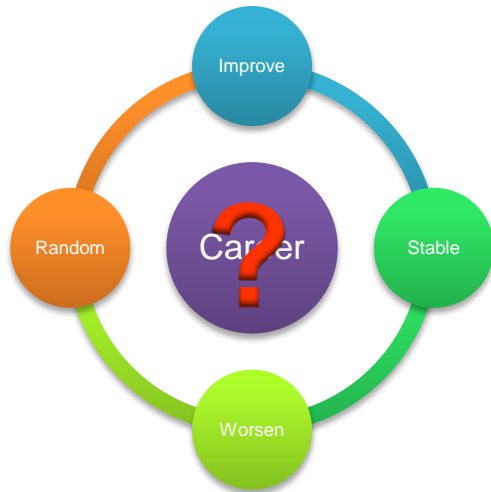
Worsen

Contract with higher weight ->  
Contract with lower weight

Random

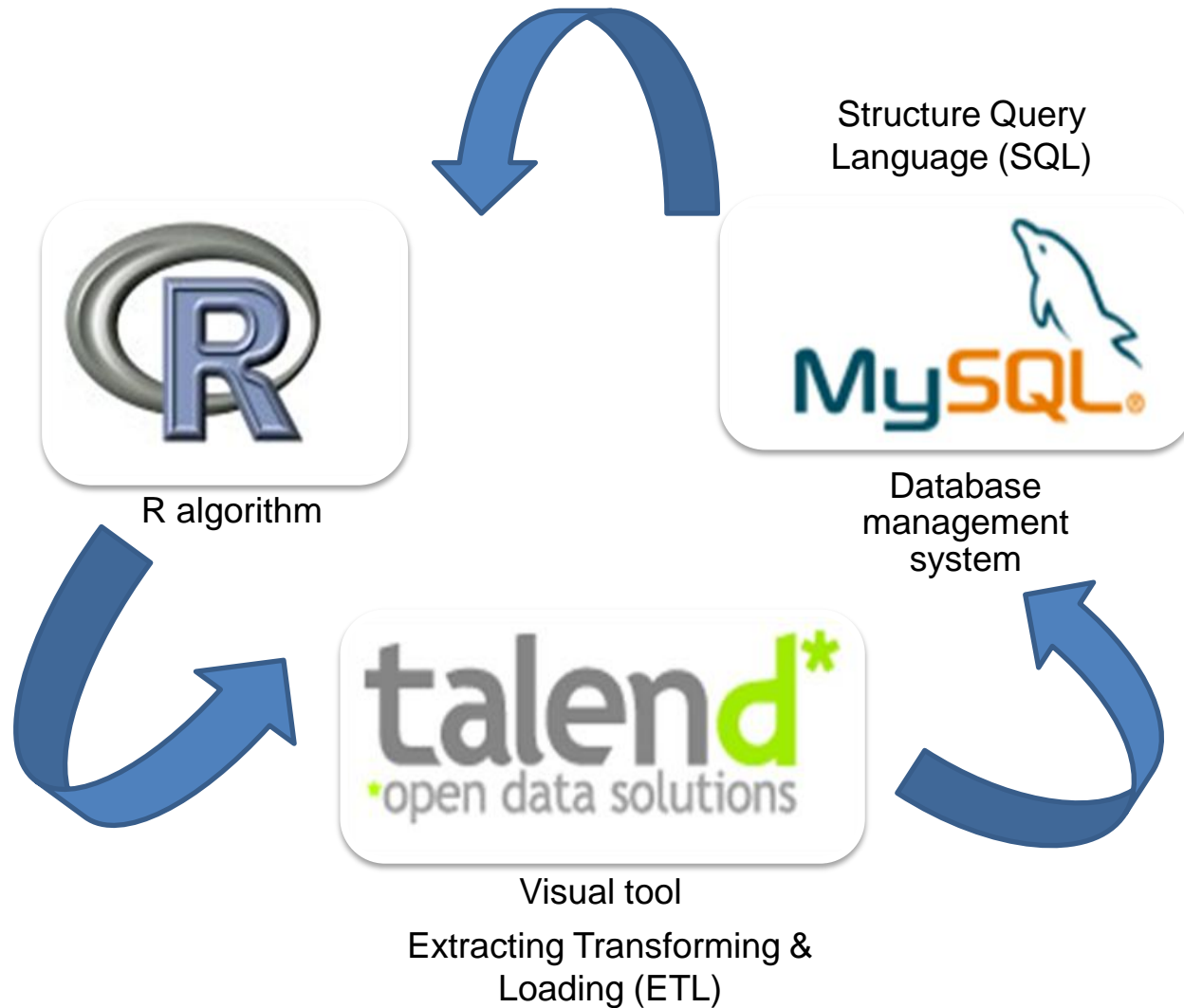
Random

# Methodology part II

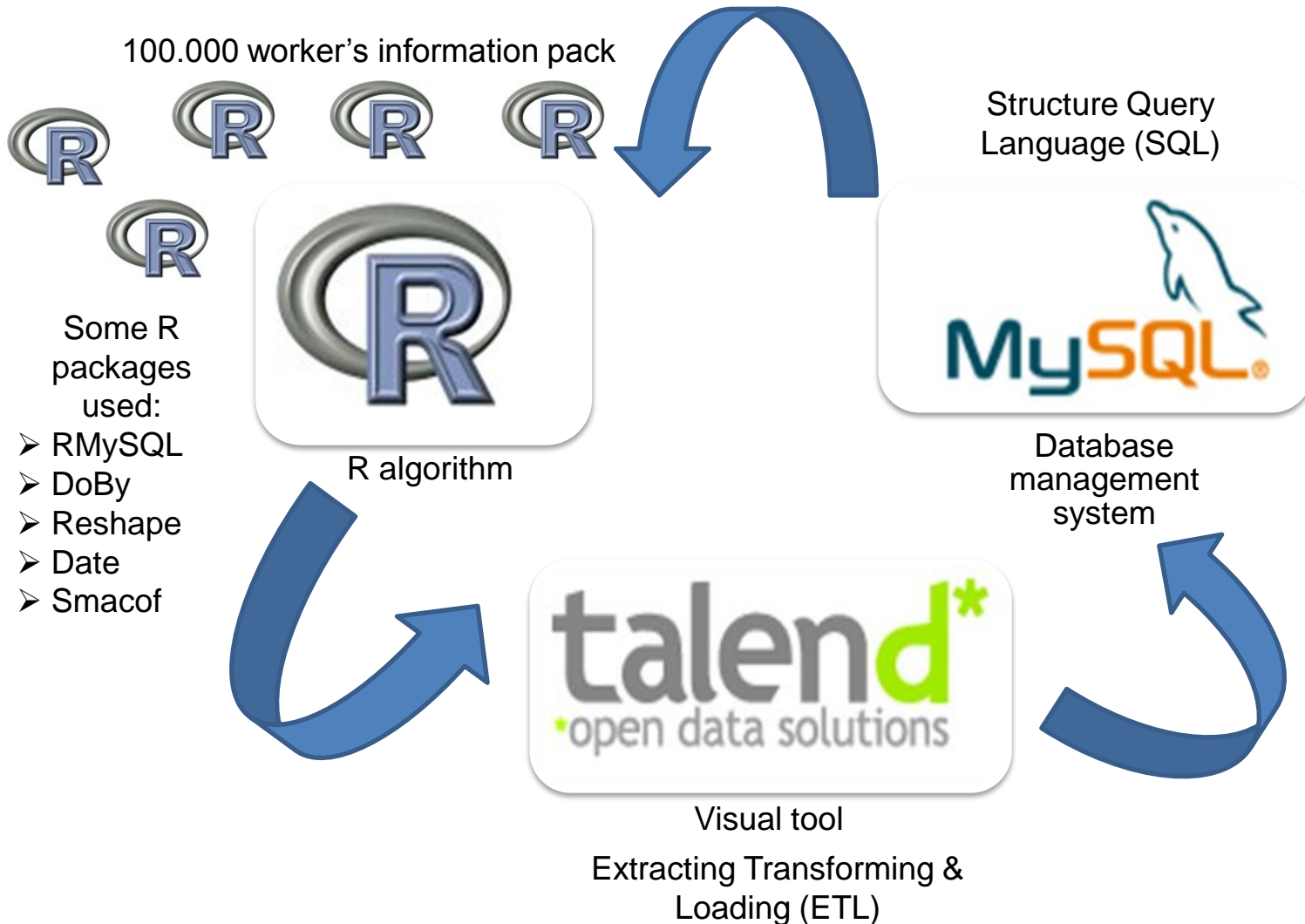




# R integration



# R integration



# Results



<i>Cluster</i>	<i>Frequency</i>	<i>Percentage</i>
Stable	1.829.811	66%
Improve	596.251	21%
Worsen	342.832	12%
Random	11.539	0%
<b><i>Total</i></b>	<b><i>2.780.433</i></b>	<b><i>100%</i></b>

# Results

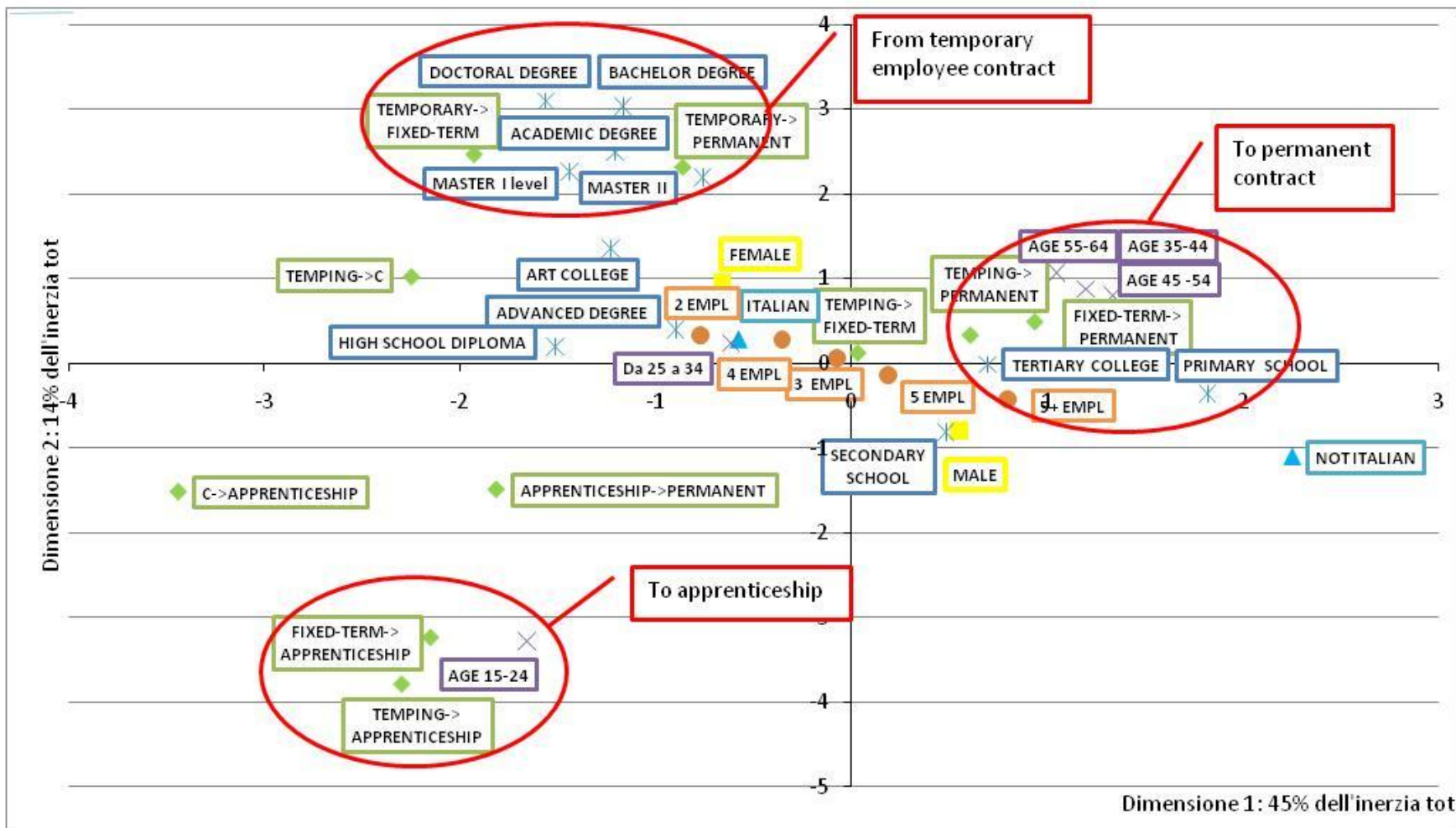


<i>Condition of stable</i>	<i>Frequency</i>	<i>Percentage</i>
Permanent	1.177.511	64%
Fixed-term	373.990	20%
Apprenticeship	143.519	8%
Temporary employee	86.590	5%
Temping	48.201	3%
<b>Total</b>	<b>1.829.811</b>	<b>100%</b>

<i>Condition of Improve</i>	<i>Frequency</i>	<i>Percent.</i>
Fixed-term -> Permanent	296.576	50%
Apprentices.-> Permanent	72.416	12%
Temping-> Fixed-term	69.648	12%
Temping-> Permanent	63.737	11%
Fixed-term -> Apprentice.	33.124	6%
Temporary em-> Permanent	21.339	4%
Temporary em-> Fixed-term	16.791	3%
Temping-> Apprenticeship	13.894	2%
Temping-> Temporary em.	4.553	1%
Temporary em-> Apprentice	4.173	1%
<b>Total</b>	<b>596251</b>	<b>100%</b>

<i>Condition of Worsen</i>	<i>Frequency</i>	<i>Percentage</i>
Permanent -> Fixed-term	185.644	54%
Fixed-term -> Temping	31.443	9%
Apprenticeship -> Fixed-term	30.192	9%
Permanent -> Temping	24.163	7%
Permanent -> Temporary employee	23.129	7%
Permanent -> Apprenticeship	18.455	5%
Fixed-term-> Temporary employee	15.763	5%
Apprenticeship -> Temping	6.897	2%
Apprenticesh. -> temporary employee	4.018	1%
Temporary employee -> Temping	3.128	1%
<b>Total</b>	<b>342.832</b>	<b>100%</b>

# Results (Correspondence Analysis)



# Further information

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**Web:** [www.crisp-org.it](http://www.crisp-org.it)

**E-mail:** [gloria.ronzoni@crisp-org.it](mailto:gloria.ronzoni@crisp-org.it)

**Tel:** (+39) 02 6448 2174

**Fax:** (+39) 02 70056 9114