

# The silent revolution

The new opportunities for labour  
market analysis offered by Public  
Sector Information

Torino, 14 December 2016

# The silent revolution

In the last 35 years the Public Sector has gone through a deep change in **the way information is gathered, transferred and stored**

From 1970's to 2000 the **traditional administrative processes**, mostly based on physical supports (paperwork), have been **partly «electronified»** and data have been, often indirectly, stored in servers



From 2000 onwards the same processes have been **totally «digitalized»**: information is transferred and gathered through the Web and data are directly stored in servers

The main difference between the two periods is that **information is entered by users** (companies and individuals) **with no other physical or human interaction**

**The medium is transforming the message**: the most recent developments are transforming traditional «electronified» processes in brand new «digital processes»

# Big Data

Digitalization of archives and administrative processes has made available information that in the previous paradigm used to be forgotten

The massive nature of the available information has led to define it as **Big Data**



Big Data in the Public Sector (PSI - Public Sector Information) are mainly **structured data** (while data from the social network are **unstructured**): the design of the acquisition process hugely influences the available information

Beyond the streamlining of public services, digital PSI is offering new opportunities to researchers and analysts: **administrative data can be used for statistical purposes**



Digital PSI is **TIMELY, VERY DETAILED, UNIVERSAL** and **CHEAP** but must be treated before using it for analysis and research, it has to be transformed from an administrative source into a statistical source

# PSI and Labour Market Analysis

Labour Market Analysis is one of the research areas most affected by digital PSI. **The new sources are complementing (and in some cases substituting) the traditional sample sources (e.g. Labour Force Survey)**

The main sources of labour market related PSI are:



- All forms of dependent and independent work (through mandatory contributions)
- Benefits, allowances and compensations
- Pensions



Work-related injuries



Independent work



- Public Employment Services and Employment Active Policies
- **Dependent work (through mandatory communications on individual labour contracts)**



- Education and professional training
- Vocational guidance



# The mandatory communications on individual contracts

The so called «**comunicazioni obbligatorie sui rapporti di lavoro**» (**CO**), mandatory communications on individual labour contracts, are becoming one of the most used sources in labour market analysis



COs must be sent (to regions, Ministry of Labour, INPS, INAIL) by **every employer** (companies and individuals) for every **activation, transformation or ending of an individual labour contract** (permanent, fixed term, agency work, apprenticeship, etc.)



From an economic point of view **COs can be considered a good proxy of dependent labour demand**

The COs collect information on **three dimensions**:

- **the employer**
- **the employee**
- **the labour relationship**

# COs' main metadata

## EMPLOYEE INFORMATION:

- Universal personal ID (codice fiscale)
- Date of birth
- Sex
- Citizenship
- Domicile/residence
- Education



## EMPLOYER INFORMATION:

- Universal company/agency ID
- Location
- Sector (NACE)
- Collective labour agreement



## CONTRACT/LABOUR RELATIONSHIP INFORMATION:

- Type of contract/work (permanent, fixed-term, etc.)
- Hiring/firing date
- Working time (part-time/full-time)
- Occupation (ISCO)



DATA  
LINKAGE

LOCALISATION  
AND MOBILITY

STANDARD  
CLASSIFICATIONS



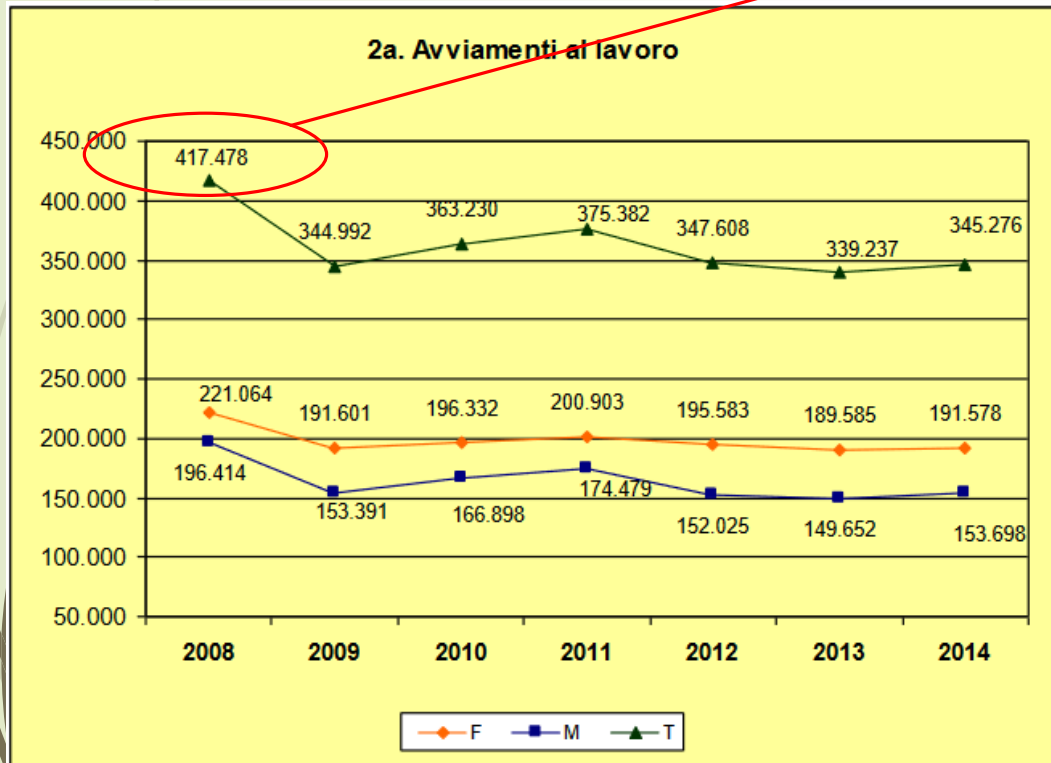
WHAT CAN WE  
DO WITH THIS  
INFORMATION?



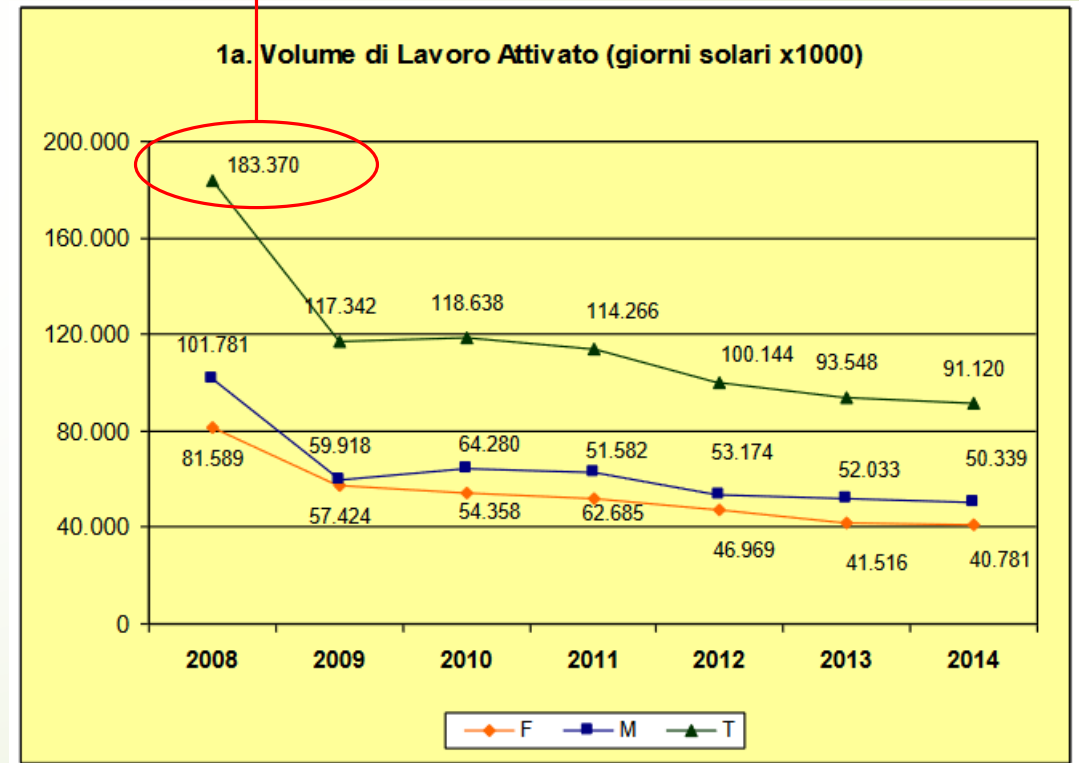
# Cycle analysis/1

The number of contracts is **normalized** taking into account the **type of contract** (permanent/fixed term, full/part-time, etc.) and its **expected duration...**

Individual labour contracts on a yearly basis, Province of Turin, 2008-2014

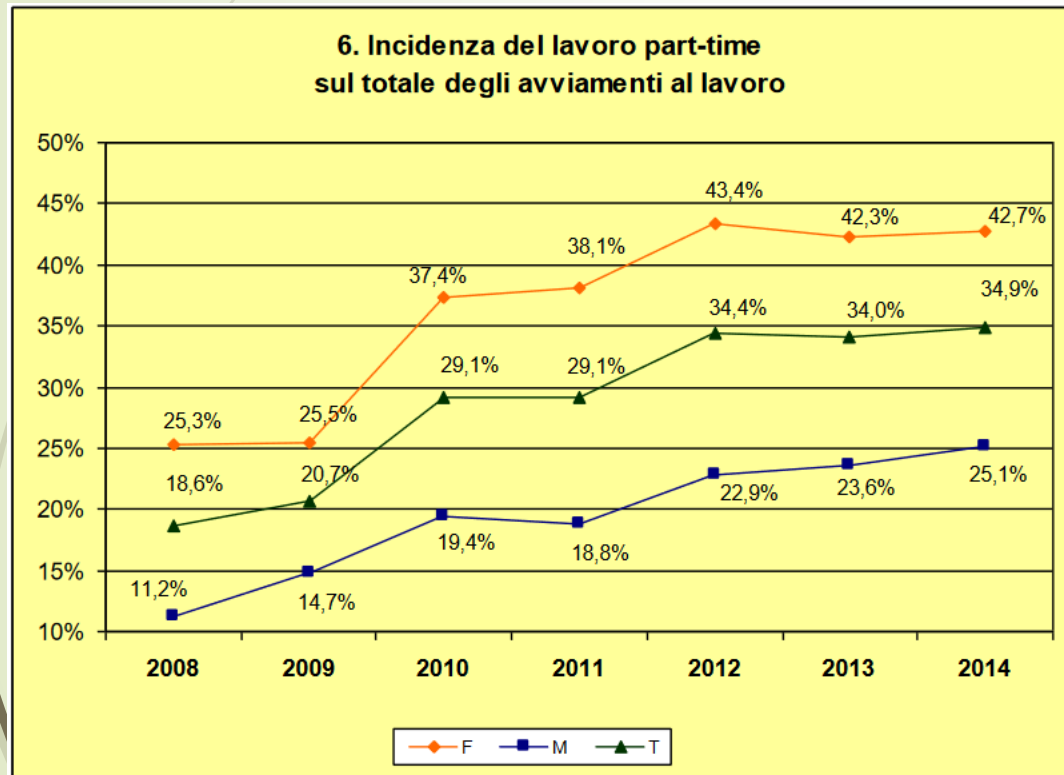


Number of solar days activated by individual labour contracts on a yearly basis, Province of Turin, 2008-2014

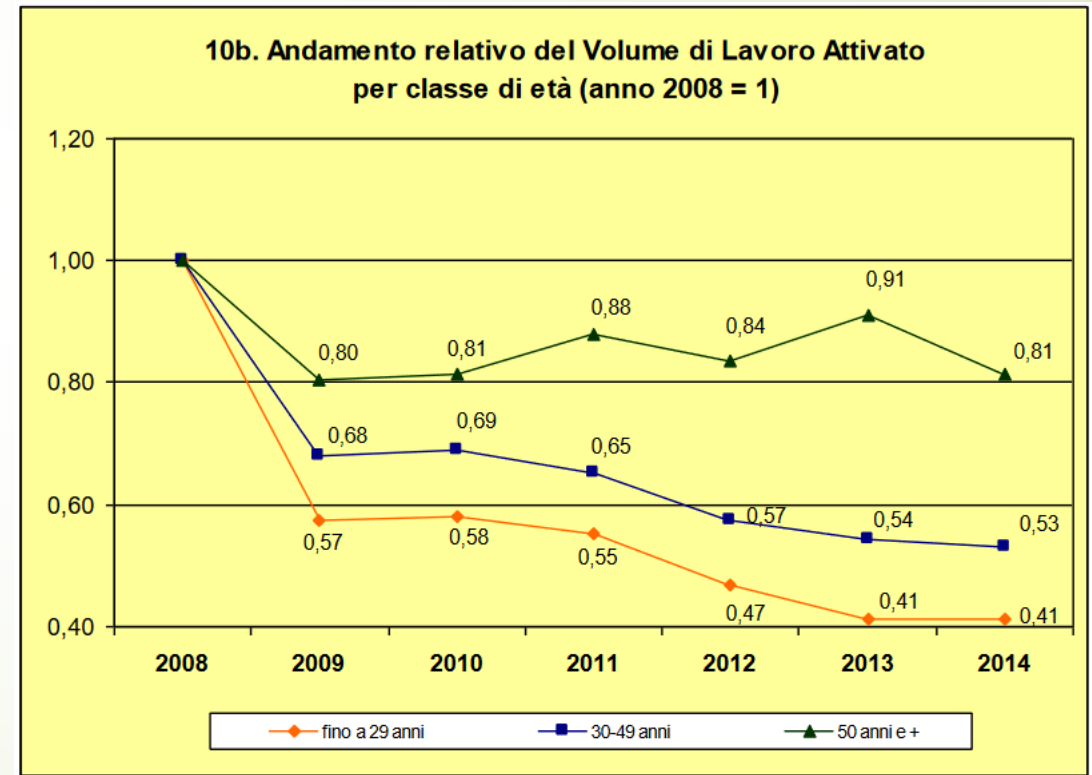


# Cycle analysis/2

Share of part-time labour contracts on a yearly basis, Province of Turin, 2008-2014



Number of solar days activated by labour contracts on a yearly basis by age group (2008=1), Province of Turin, 2008-2014

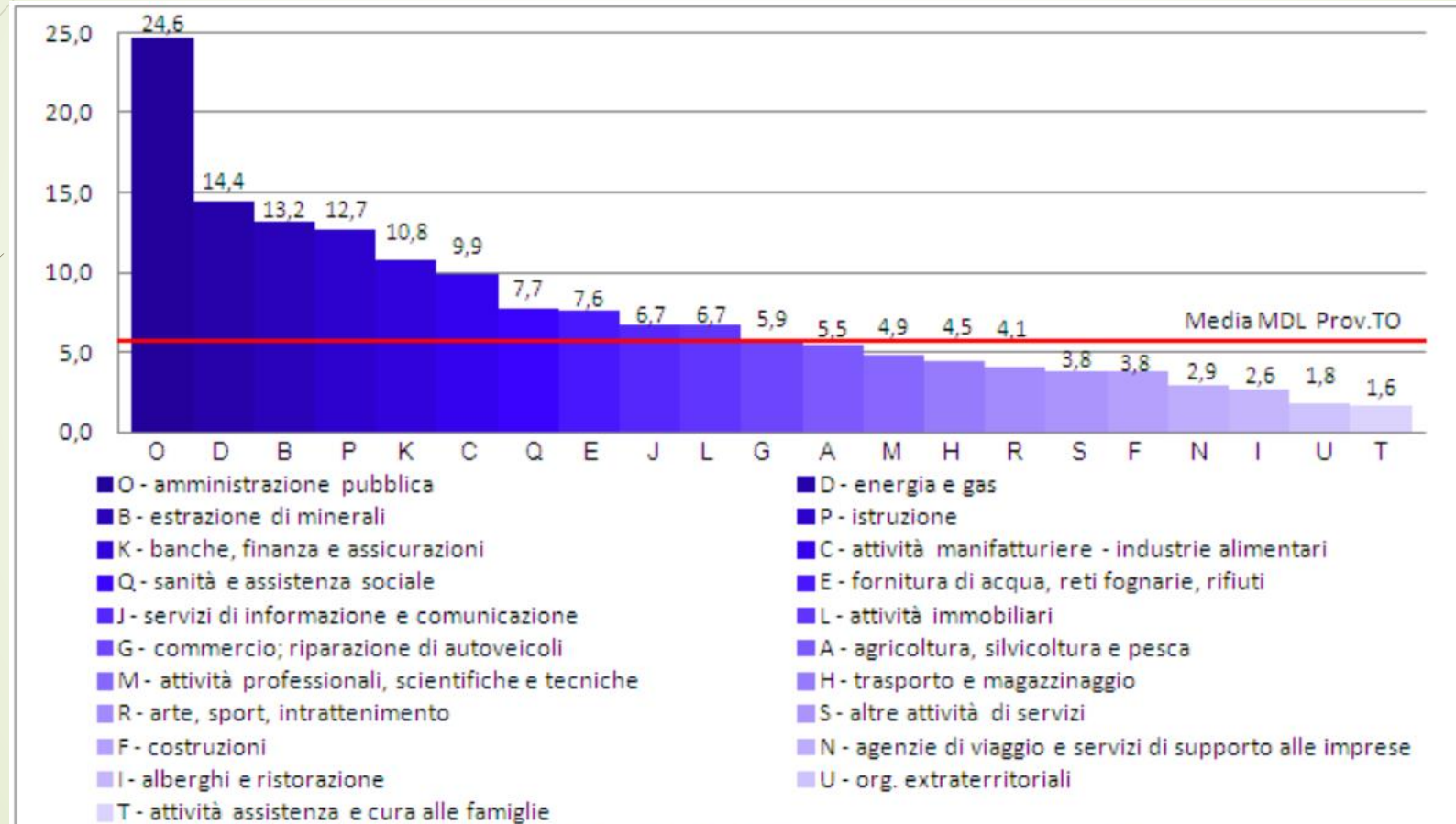


Elaborazione a cura dell'OPML su dati SILP – Sistema Informativo Lavoro del Piemonte.



# Structural analysis/1

Average duration of permanent labour contracts by sector, Province of Turin, 2013



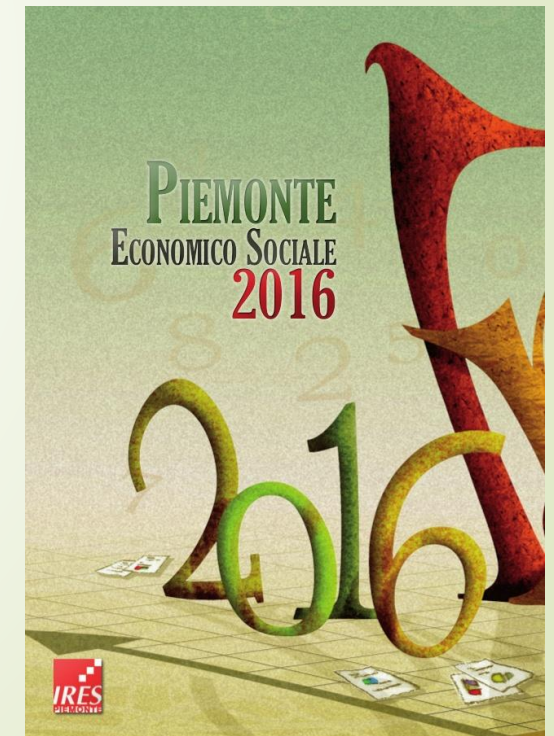
Elaborazione a cura dell'OPML su dati SILP – Sistema Informativo Lavoro del Piemonte.

# Structural analysis/2

	Descrizione gruppo professionale	Indice 2015 (2008=100)	Posti FTE 2008	Posti FTE 2011	Posti FTE 2015	%	%	%
<b>REAL GROWTH</b>	<b>AUMENTO REALE</b>		825	762	1.142	1,1%	1,2%	2,1%
	Ingegneri, architetti e professioni assimilate	138,5	825	762	1.142	1,1%	1,2%	2,1%
<b>RELATIVE GROWTH</b>	<b>CRESCITA RELATIVA</b>		33.915	28.668	30.968	44,2%	44,7%	57,3%
	Specialisti della formazione e della ricerca	92,3	19.656	17.255	18.152	25,6%	26,9%	33,6%
	Professioni tecniche in campo scientifico, ingegneristico e della produzione	92,0	9.956	7.755	9.157	13,0%	12,1%	16,9%
	Specialisti nelle scienze della vita	90,5	642	442	582	0,8%	0,7%	1,1%
	Imprenditori e responsabili di piccole aziende	88,1	522	711	459	0,7%	1,1%	0,9%
<b>STABILITY</b>	Specialisti in scienze matematiche, informatiche, chimiche, fisiche e naturali	83,4	3.139	2.506	2.617	4,1%	3,9%	4,8%
	<b>TENUTA</b>		7.290	7.165	5.457	9,5%	11,2%	10,1%
<b>RELATIVE DECREASE</b>	Specialisti in scienze umane, sociali, artistiche e gestionali	74,9	7.290	7.165	5.457	9,5%	11,2%	10,1%
	<b>CALO</b>		13.794	11.198	8.021	18,0%	17,5%	14,8%
	Professioni tecniche nei servizi pubblici e alle persone	65,3	4.964	5.626	3.244	6,5%	8,8%	6,0%
<b>REAL DECREASE</b>	Professioni tecniche nelle scienze della salute e della vita	54,6	6.719	3.935	3.670	8,8%	6,1%	6,8%
	Imprenditori, amministratori e direttori di grandi aziende	52,4	2.110	1.637	1.106	2,8%	2,6%	2,0%
	<b>FORTE CALO</b>		20.879	16.372	8.447	27,2%	25,5%	15,6%
	Specialisti della salute	46,5	1.057	356	492	1,4%	0,6%	0,9%
	Professioni tecniche in organizzazione, amministrazione, finanza e commercio	40,6	19.155	15.500	7.783	25,0%	24,2%	14,4%
	Dirigenti ed equiparati	25,9	668	516	173	0,9%	0,8%	0,3%
	<b>TOTALE</b>		76.703	64.165	54.035	100%	100%	100%

Fonte: dati SILP, elaborazione ORML Regione Piemonte e IRES Piemonte

Number of FTE activated by labour contracts on a yearly basis by occupation (highly skilled), Piedmont Region, 2008-2015



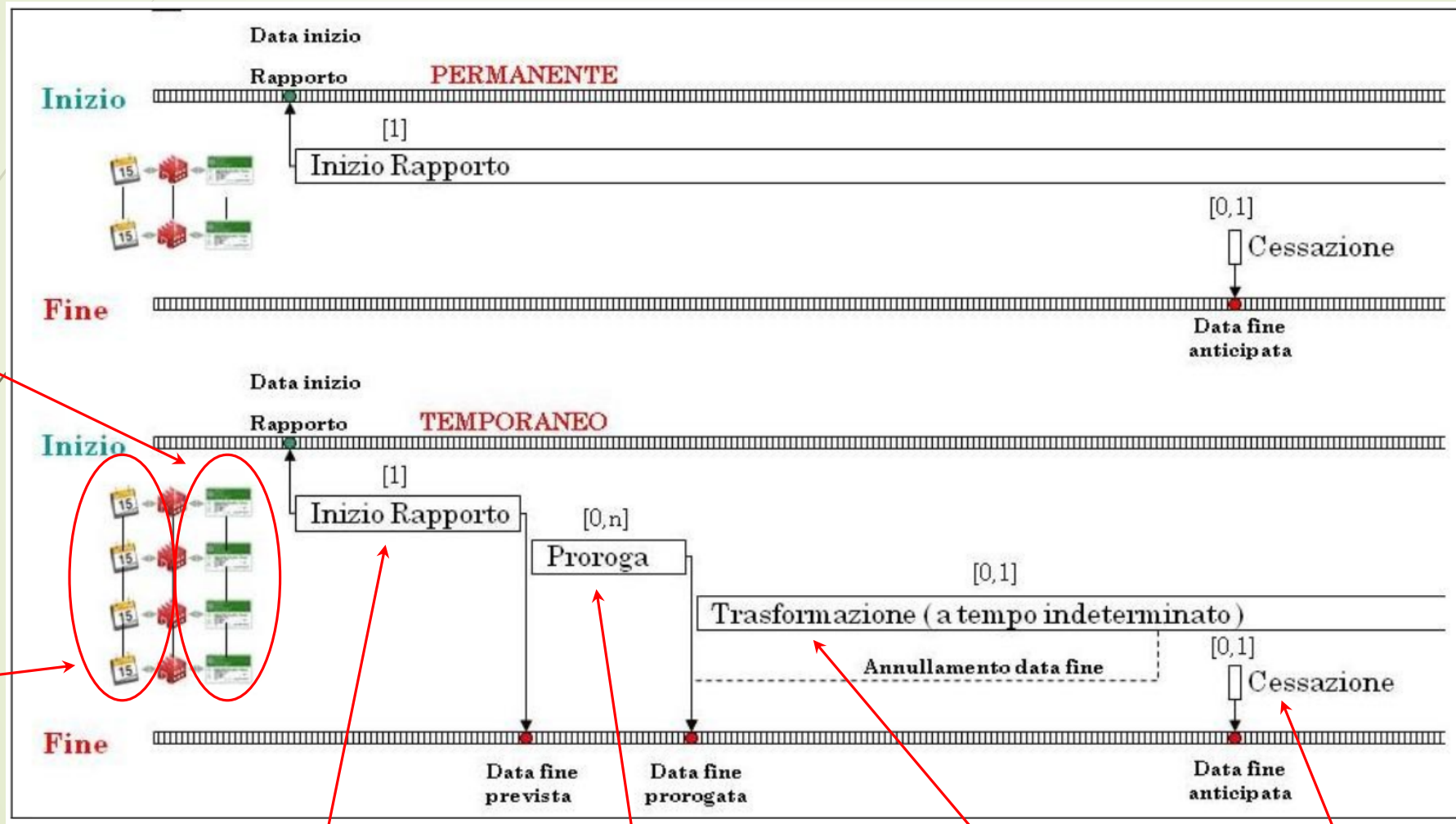
# Labour mobility

38% of the people who live in Chieri get a job in Chieri, but 26% go to Turin...

## Labour mobility in the Province of Turin, 2010

		...SONO STATE ASSUNTE A...																
BACINO DI CPI	CHIERI	CHIVASSO	CIRIE'	CUORGNE'	IVREA	MONCALIERI	ORBASSANO	PINEROLO	RIVOLI	SETTIMO	SUSA	TORINO	VENARIA	FUORI PROV.	TOTALE	ANNO		
CHIERI	37,8%	0,6%	1,2%	0,3%	2,0%	9,8%	1,8%	0,6%	2,3%	2,0%	1,9%	25,7%	0,7%	13,6%	100,0%			
CHIVASSO	1,0%	33,3%	1,8%	0,9%	7,6%	1,7%	0,9%	0,3%	1,7%	15,7%	0,9%	23,2%	0,8%	10,2%	100,0%			
CIRIE'	0,4%	0,6%	52,7%	1,9%	2,3%	1,1%	1,2%	0,4%	2,4%	5,5%	1,2%	23,5%	2,1%	4,8%	100,0%			
CUORGNE'	0,2%	2,1%	5,9%	46,0%	20,9%	0,7%	0,4%	0,4%	0,8%	4,6%	0,4%	12,5%	0,5%	4,7%	100,0%			
IVREA	0,2%	2,5%	1,0%	5,0%	66,3%	0,6%	0,3%	0,3%	0,9%	2,3%	0,6%	10,4%	0,4%	9,1%	100,0%			
MONCALIERI	3,3%	0,4%	0,7%	0,1%	1,3%	37,5%	3,5%	2,1%	3,9%	1,8%	2,4%	31,2%	1,0%	10,8%	100,0%			
ORBASSANO	0,6%	0,5%	1,3%	0,2%	0,9%	6,7%	31,4%	4,4%	8,8%	1,6%	4,7%	30,4%	1,8%	6,8%	100,0%			
PINEROLO	0,3%	0,1%	0,5%	0,1%	1,0%	5,2%	4,2%	54,9%	2,3%	1,4%	2,4%	15,5%	0,5%	11,4%	100,0%			
RIVOLI	0,6%	0,5%	1,6%	0,2%	2,2%	4,2%	5,0%	0,6%	32,7%	2,4%	3,8%	36,0%	4,3%	5,8%	100,0%			
SETTIMO	0,8%	3,9%	6,0%	0,8%	4,2%	1,7%	1,2%	0,3%	2,7%	32,4%	1,2%	36,5%	1,9%	6,5%	100,0%			
SUSA	0,4%	0,3%	0,6%	0,4%	1,1%	1,9%	3,7%	0,9%	10,8%	1,6%	53,6%	16,7%	2,8%	5,2%	100,0%			
TORINO	1,1%	0,9%	2,1%	0,3%	2,2%	4,9%	2,7%	0,8%	5,6%	4,2%	1,9%	63,5%	2,1%	7,6%	100,0%			
VENARIA	0,6%	0,9%	7,0%	0,3%	1,0%	2,2%	2,8%	0,7%	12,2%	3,9%	3,3%	37,9%	21,5%	5,5%	100,0%			
Totale	2,2%	2,0%	4,5%	1,7%	5,9%	6,8%	3,9%	3,6%	6,6%	5,2%	3,8%	43,4%	2,5%	7,9%	100,0%			
CHIERI	42,8%	0,6%	0,8%	0,1%	2,5%	10,4%	1,1%	0,3%	1,9%	1,8%	1,3%	23,2%	0,6%	12,6%	100,0%			
CHIVASSO	1,1%	36,2%	1,9%	0,7%	7,0%	1,2%	0,4%	0,3%	1,1%	16,0%	0,6%	23,6%	0,7%	9,3%	100,0%			
CIRIE'	0,3%	0,4%	57,3%	1,8%	2,2%	0,8%	1,1%	0,4%	2,1%	5,5%	0,7%	22,1%	1,6%	3,7%	100,0%			
CUORGNE'	0,1%	1,4%	3,9%	46,2%	26,0%	0,6%	0,3%	0,2%	0,7%	4,5%	0,3%	11,4%	0,4%	3,9%	100,0%			
IVREA	0,2%	1,9%	0,8%	4,3%	71,7%	0,4%	0,2%	0,2%	0,6%	2,0%	0,3%	9,8%	0,3%	7,2%	100,0%			
MONCALIERI	3,4%	0,2%	0,4%	0,1%	1,4%	42,9%	2,6%	1,8%	3,9%	1,6%	2,2%	30,5%	0,6%	8,4%	100,0%			
ORBASSANO	0,4%	0,5%	0,7%	0,1%	0,8%	7,1%	34,9%	4,5%	10,2%	1,4%	4,0%	28,8%	1,4%	5,1%	100,0%			
PINEROLO	0,1%	0,0%	0,2%	0,1%	1,2%	4,9%	4,1%	58,4%	2,1%	1,3%	2,2%	15,2%	0,4%	9,7%	100,0%			
RIVOLI	0,3%	0,2%	0,8%	0,1%	1,6%	3,4%	4,4%	0,5%	40,1%	1,6%	2,9%	35,7%	3,8%	4,5%	100,0%			
SETTIMO	0,8%	3,6%	4,7%	0,6%	3,9%	1,2%	0,6%	0,2%	2,2%	34,9%	1,0%	38,8%	1,5%	6,1%	100,0%			
SUSA	0,3%	0,2%	0,4%	0,4%	0,7%	1,7%	3,3%	0,7%	12,1%	1,4%	56,5%	15,5%	2,3%	4,6%	100,0%			
TORINO	0,9%	0,4%	1,3%	0,2%	1,8%	4,1%	2,0%	0,6%	5,4%	3,4%	1,5%	70,7%	1,6%	5,8%	100,0%			
VENARIA	0,4%	0,5%	7,3%	0,2%	1,1%	1,7%	2,9%	0,6%	13,3%	3,2%	2,7%	36,5%	24,5%	5,4%	100,0%			
Totale	2,2%	1,7%	4,2%	1,6%	6,2%	7,0%	3,4%	3,7%	7,2%	4,9%	3,5%	45,8%	2,2%	6,3%	100,0%			
CHIERI	31,9%	0,6%	1,7%	0,6%	1,4%	9,0%	2,1%	0,8%	2,6%	2,3%	2,5%	28,6%	0,9%	14,9%	100,0%			
CHIVASSO	0,9%	30,0%	1,6%	1,1%	8,2%	2,3%	1,4%	0,3%	2,3%	15,4%	1,3%	22,9%	0,9%	11,2%	100,0%			
CIRIE'	0,5%	0,9%	47,3%	2,1%	2,5%	1,4%	1,4%	0,3%	2,8%	5,5%	1,7%	25,1%	2,6%	6,0%	100,0%			
CUORGNE'	0,3%	2,8%	8,1%	45,7%	15,5%	0,8%	0,6%	0,5%	0,9%	4,6%	0,4%	13,6%	0,7%	5,5%	100,0%			
IVREA	0,3%	3,3%	1,2%	6,0%	59,4%	0,8%	0,5%	0,4%	1,4%	2,6%	1,0%	11,3%	0,5%	11,5%	100,0%			
MONCALIERI	3,2%	0,6%	1,0%	0,1%	1,2%	30,5%	4,5%	2,6%	4,0%	2,2%	2,6%	32,1%	1,5%	13,8%	100,0%			
ORBASSANO	0,7%	0,5%	2,0%	0,2%	1,0%	6,4%	27,7%	4,2%	7,2%	1,7%	5,4%	32,1%	2,2%	8,7%	100,0%			
PINEROLO	0,5%	0,3%	0,9%	0,1%	0,8%	5,6%	4,4%	50,5%	2,5%	1,6%	2,7%	15,8%	0,6%	13,6%	100,0%			
RIVOLI	1,1%	0,9%	2,6%	0,3%	3,0%	5,3%	5,9%	0,9%	22,7%	3,5%	5,1%	36,4%	5,0%	7,5%	100,0%			
SETTIMO	0,7%	4,4%	7,6%	1,2%	4,6%	2,3%	2,0%	0,5%	3,3%	29,1%	1,4%	33,5%	2,3%	7,1%	100,0%			
SUSA	0,5%	0,4%	0,9%	0,3%	1,6%	2,1%	4,1%	1,2%	9,4%	1,9%	50,3%	18,1%	3,4%	5,9%	100,0%			
TORINO	1,2%	1,4%	2,9%	0,4%	2,6%	5,7%	3,5%	1,1%	5,7%	5,1%	2,4%	55,9%	2,6%	9,6%	100,0%			
VENARIA	0,8%	1,4%	6,7%	0,4%	1,0%	2,9%	2,9%	0,9%	11,0%	4,9%	4,0%	39,7%	17,8%	5,7%	100,0%			
Totale	2,1%	2,3%	4,9%	1,9%	5,5%	6,7%	4,3%	3,5%	5,9%	5,6%	4,1%	40,8%	2,8%	9,6%	100,0%			

# Career paths



ACTIVATION

EXTENSION

TRANSFORMATION

ENDING

IDs

EVENTS

# Targeting and profiling

**Employability** is defined as the probability of finding a job in the 12 months following enrolment in the Job Centres...

COs and Job Centre data were linked to **profile some macro-targets** of the ESF Programme of labour active policies...

The profiling took into account the **employment status prior to enrolment** in the Job Centres and age and sex. For each profile was calculated the **level of employability**...

**Profiling of Job Centres' users by level of employability, Province of Turin, European Social Fund Programme 2007-2013**

Macro target	Condizione pre-iscrizione	Caratteristiche demografiche	Occupabilità media	Dimensione del flusso annuale
1	mai lavorato negli ultimi due anni	Over 45	6%	1.300
2.1	mai lavorato negli ultimi due anni	Donne under 45	15%	3.800
2.2		Uomini under 45	20%	2.000
3	lavorato negli ultimi due anni ma non negli ultimi sei mesi	Tutti	24%	1.900
4.1	lavorato negli ultimi sei mesi	Over 45	37%	1.700
4.2		Under 45	43%	6.800
<b>Totale</b>			<b>29%</b>	<b>17.500</b>

Number of Job Centres' users corresponding to the target profiles...

# Follow-up and evaluation

## Follow-up of Job Centres' users, Province of Turin, 2014

Tab. 1 - DEFINIZIONE DEL GRUPPO DI ANALISI	Utente CPI	NON utente CPI
Cessati tra il 16-10-2011 e il 15-10-2012 (esclusi i cessati per pensionamento o decesso)	94.783	96.770
Cessati il cui ultimo rapporto sia durato almeno 6 mesi...	53.888	59.473
...e che siano rimasti disoccupati almeno 1 mese	39.590	37.359
Esclusione dei lavoratori disabili e dei mobiliferi	<b>23.534</b>	<b>35.323</b>

Elaborazione a cura dell'OPML su banca dati SILP

The follow-up compared the career paths of Job Centres' users and non-users (with similar observable characteristics)...

Tab. 3 - FOLLOW-UP A 12 MESI	Utente CPI	NON utente CPI
<b>Totale</b>	<b>23.534</b>	<b>35.323</b>
Lavoratori avviati (per i quali si è registrato almeno un avviamento)	12.567	14.229
Incidenza sul totale	<b>53,4%</b>	40,3%
VoLA (Volume di Lavoro Attivato in giorni solari)	5.278.909	7.788.938
VoLA per lavoratore avviato	<b>420</b>	<b>547</b>
Lavoratori con un avviamento di almeno 6 mesi di durata	6.525	9.509
Incidenza sui lavoratori avviati	51,9%	<b>66,8%</b>
Lavoratori avviati a tempo indeterminato subordinato	1.460	2.473
Incidenza sui lavoratori avviati	11,6%	<b>17,4%</b>

Elaborazione a cura dell'OPML su banca dati SILP

Job Centres' users have a greater chance to get a job, but generally shorter than non-users because they are more frequently hired as agency workers...

A red arrow pointing right is located in the top left corner. On the left side of the page, there are several thin, dark, curved lines that resemble stylized grass or reeds, extending from the bottom left towards the center.

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