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An application of integrated statistical registers to produce new and systemic indicators on small territorial units

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Goals and tools

- **Portraying territorial socio-economic and demographic characteristics at a fine grain level,** by means of indicators defined and computed on **Statistical Registers**

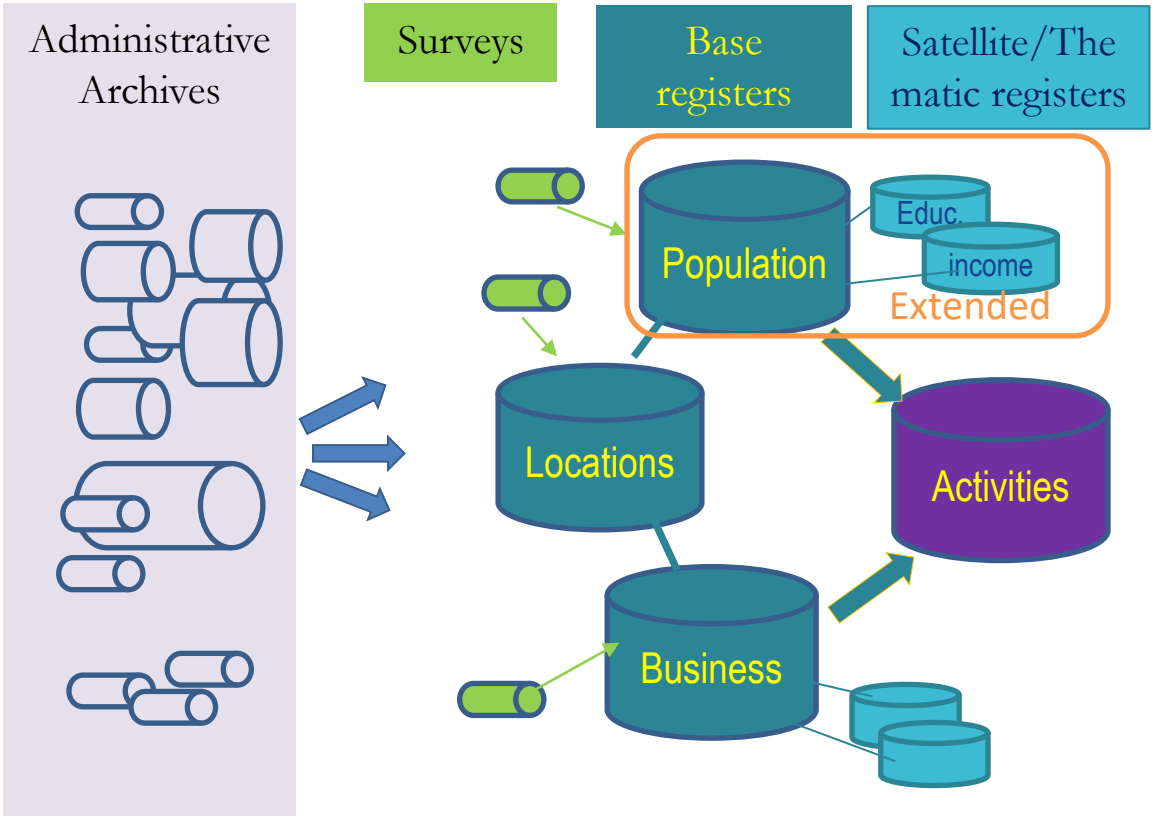
- **Representation of spatial variability and change over time** (focus on Major Urban centres), identifying patterns and analysing changes

- **Identification of Homogeneous Areas,** starting from the minimum level of aggregation of Census sections (→ Validation of an aggregation methodology)

The Integrated system of Statistical Registers (SIR)

- **What:** Census-level databases that can be combined
- **How:** integration among sources, imputation, error correction
- **Why:** Reduction of **costs**, increase in **quality** and in **granularity**

Towards *à la carte* statistics?



Difficulties and limitations

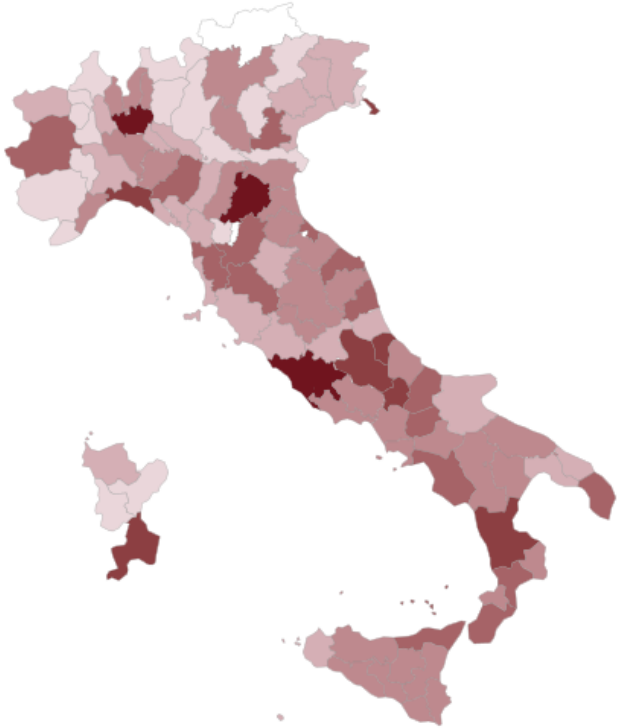
- **Availability of information:** resistance from depositary public administrations; nature, intrinsic quality, exhaustiveness and timeliness of data
- **Statistical treatment:** reallocation and upskilling of human resources; need for a robust ex ante design
- **Regulatory issues:** preservation of information (over time and in a secure environment); protection of confidentiality
- **Output:** dependence on administrative data (definitions, veracity, coverage: exhaustive in observed/emerged sub-populations, not the target one), imputation algorithms (variability); possibility to offer external access

Omnipotence is yet to come

New territorial indicators: education in employment (2021)

Some examples

NUTS 3 (107 units)



NUTS 4 (7904 units)

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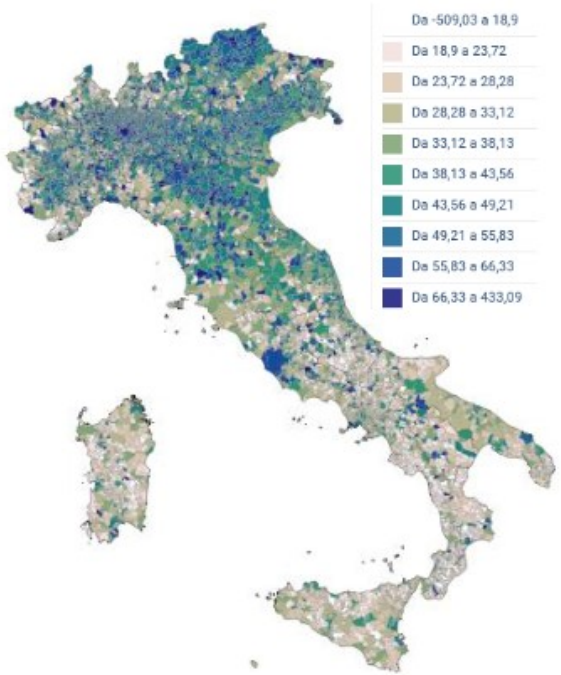
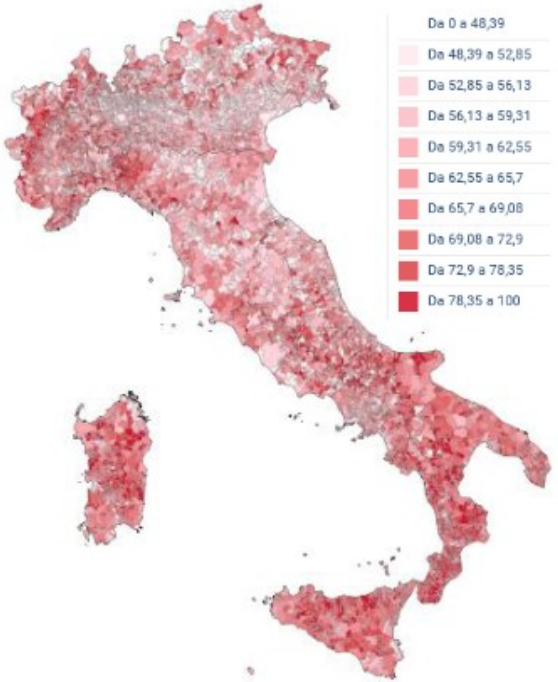
New territorial indicators: productivity and business structure in 2020

Some examples

Value added per person employed



incidence of micro-enterprises



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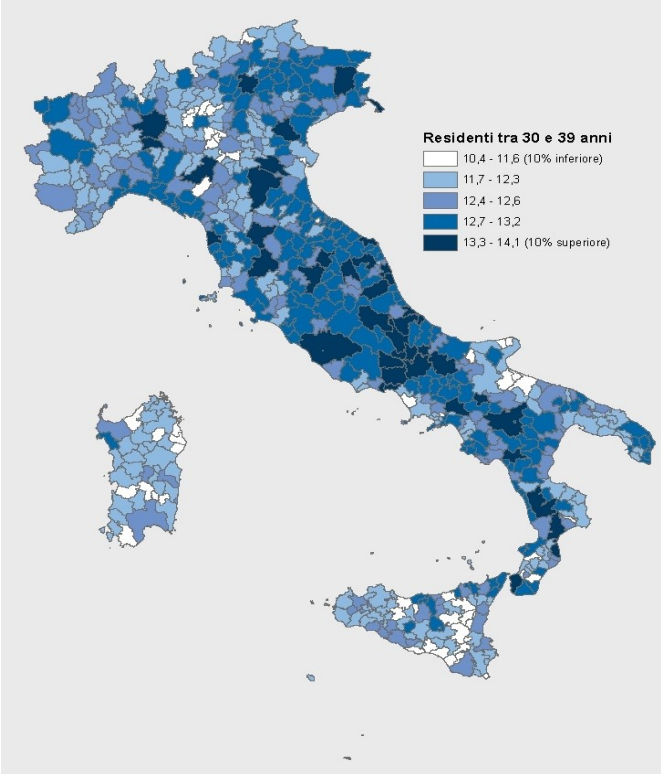
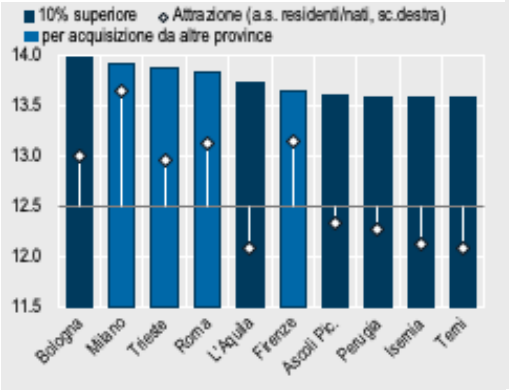
Analysis: tertiary education and mobility

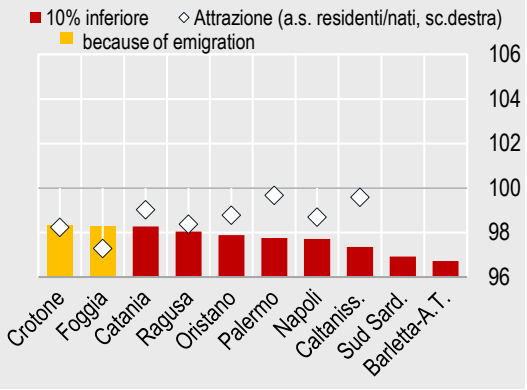
Some examples

The education of residents in local labour systems: average years of study per person (age class: 30-39 years)



Top and bottom ranking provinces (NUTS3) by educational attainment of 30 to 39 y.o. population and attractiveness: years of study of residents and of people born there (2017)





Where people are born determines their educational attainment, but drainage and attraction amplify differences

Examples of limitations for this purpose

- Optimal territorial dimensions (people are born in hospitals)
- EDU attainment of foreign born population (concentrated in the North)
- Registry residence (often changes depend on convenience only)

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https://doi.org/10.1481/Istat.RapportoTerritorio.2020

Batteries of indicators at the municipality level

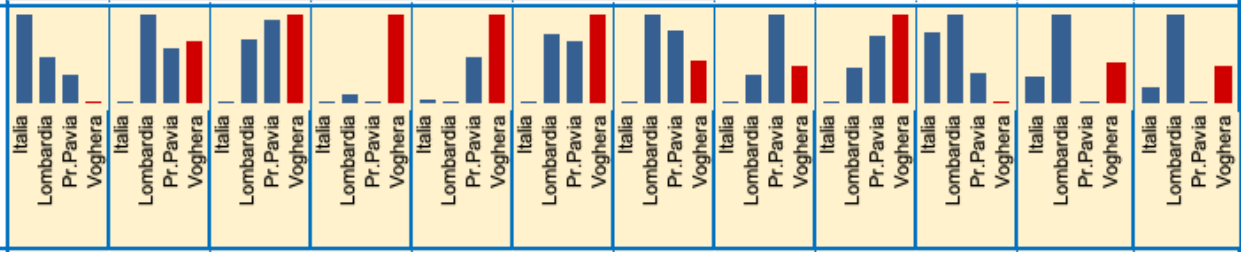
Some examples

INDICATORI		RESIDENTI	DIMENSIONE FAMILIGLIE (N° persone)	REDDITO PRO CAPITE (€ 000)	PERSONE CON REDDITI (%)	SCOLARITÀ RESIDENTI (ANNI)	ETÀ MEDIA RESIDENTI (ANNI)	INCIDENZA STRANIERI (%)	RESIDENTI OCCUPATI (%)	LAVORATORI AUTONOMI (%)	PENSIONATI (%)	STUDENTI (%)	DENSITÀ IMPRESE (x 1000 RES.)	ATT. INTENSE IN CONOSCENZA (% UL)
distribuzione per l'insieme dei comuni														
	Italia	60,770,801	2.4	13,671 €	66%	9.3	45.4	7.3%	41.0%	5.6%	20.9%	13.4%	76.7 per mille	11.4%
Regione	Lombardia	10,064,071	2.3	17,239 €	70%	9.4	45.3	11.5%	43.9%	5.9%	23.6%	13.7%	86.8 per mille	12.8%
Provincia	Pavia	549,711	2.2	15,862 €	71%	9.4	46.9	11.0%	43.3%	6.4%	26.1%	12.6%	72.5 per mille	11.1%
Scelta Comune	Voghera	39,535	2.1	16,134 €	71%	9.8	48.4	12.7%	42.4%	6.0%	27.8%	12.0%	78.9 per mille	11.9%

LEGENDA

Posizionamento rispetto all'insieme dei comuni italiani

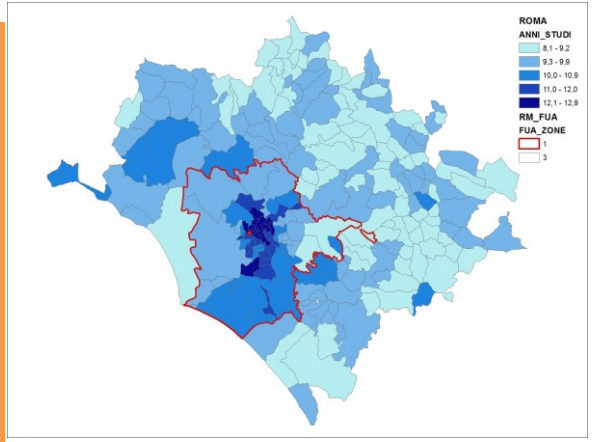
Performance di Voghera rispetto a la provincia/C.M. di Pavia, la regione Lombardia e l'Italia.



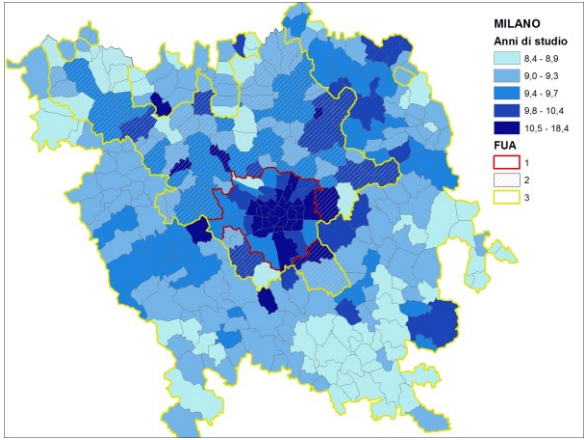
The education of residents in Rome, Milan and Naples Functional Urban Areas

Drilling in municipalities

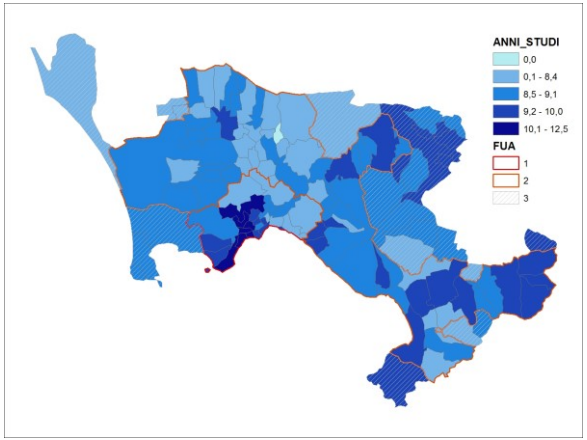
Rome



Milan



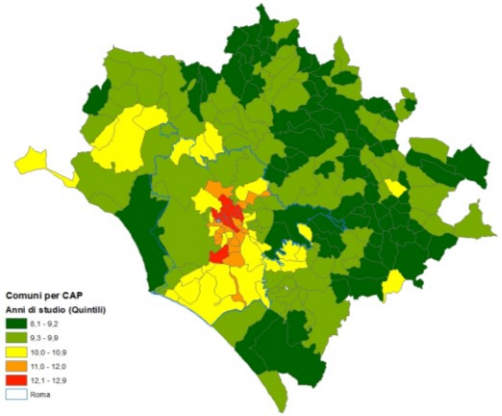
Naples



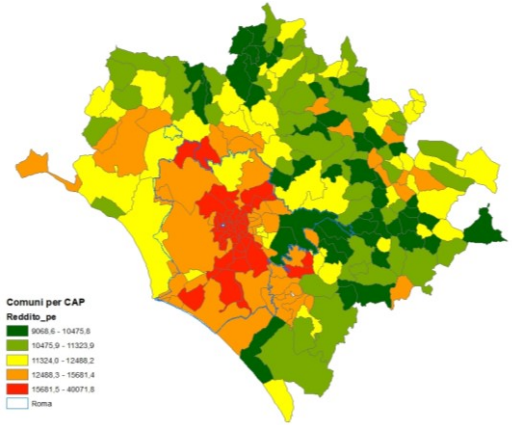
Univariate distributions within Rome's *FUA*

Multiple dimensions

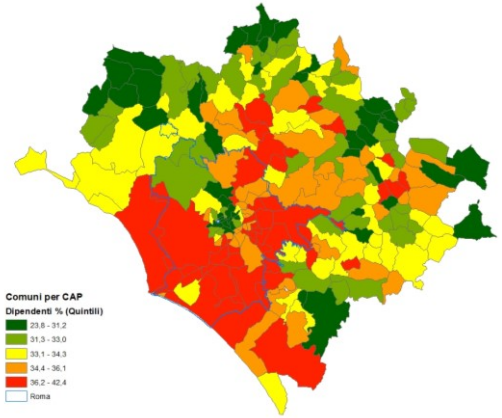
Education (years)



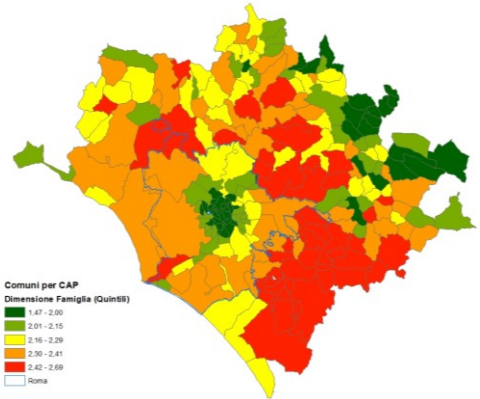
Income (eur)



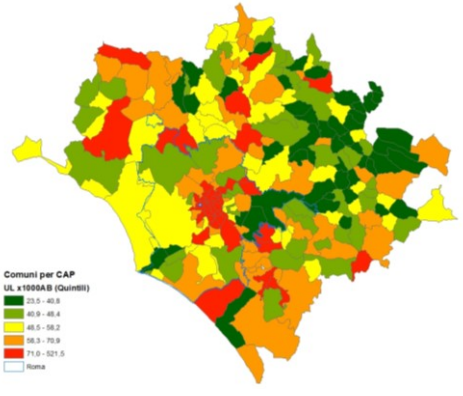
Employees (% residents)



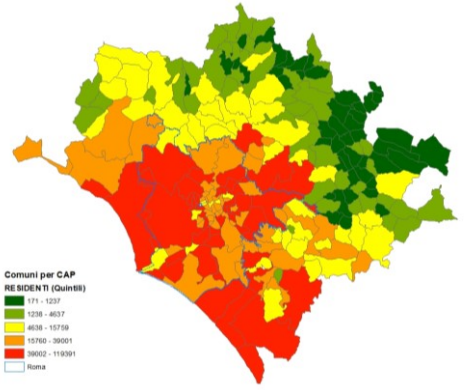
Household size



Density of Local units

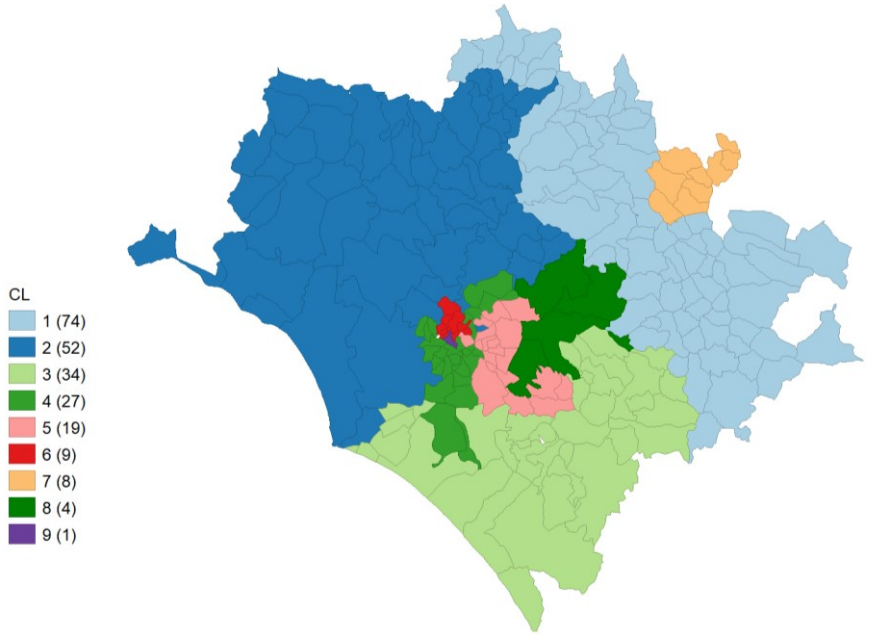


Population



Multivariate distribution within Rome's *FUA*

Condensing information



Cluster centers:

	RESIDENTI	DIMENSIONE	Reddito_pc	Alfabetizzazione	ETA	Stranieri	Dipendenti	Autonomi	Pensionati	UL_1000AB
	migliaia	Individui	Euro	Anni	Anni	%	%	%	%	
C1	2.562	2,19	10.995	9,07	47,22	9,13	32,83	5,14	23,46	45,22
C2	16.248	2,28	12.075	9,59	44,43	13,84	33,32	5,83	18,02	56,36
C3	27.011	2,42	12.253	9,53	43,04	10,83	35,11	5,12	16,72	54,80
C4	40.115	2,01	20.728	11,49	47,63	11,23	34,56	7,36	21,95	84,56
C5	37.611	2,20	14.466	10,14	45,78	11,95	36,15	5,58	19,66	63,52
C6	18.551	1,92	32.898	12,58	48,34	13,37	28,82	11,29	20,86	288,10
C7	292	1,71	11.716	9,10	52,70	9,48	28,68	5,34	32,80	36,41
C8	94.225	2,44	11.037	9,23	41,82	15,24	36,04	4,54	14,80	50,89
C9	28.167	1,47	27.675	12,20	42,96	46,52	23,75	8,19	11,87	191,00

The total within-cluster sum of squares:	1847,46
The between-cluster sum of squares:	2824,66
The ratio of between to total sum of squares:	0,60

Business units in Rome and the “Pigneto” area in 2019 (2011=100)

Change over time

Sezioni di Attività (ATECO 2007)		Roma	Pigneto
B	ESTRAZIONE DI MINERALI DA CAVE E MINIERE	82,1	
C	ATTIVITÀ MANIFATTURIERE	87,2	80,5
D	FORNITURA DI ENERGIA ELETTRICA, GAS, VAPORE E ARIA CONDIZIONATA	126,5	
E	FORNITURA DI ACQUA; RETI FOGNARIE, ATTIVITÀ DI GESTIONE DEI RIFIUTI E RISANAMENTO	103,5	300,0
F	COSTRUZIONI	91,9	96,3
G	COMMERCIO ALL'INGROSSO E AL DETTAGLIO; RIPARAZIONE DI AUTOVEICOLI E MOTOCICLI	96,9	103,5
H	TRASPORTO E MAGAZZINAGGIO	99,7	110,6
I	ATTIVITÀ DEI SERVIZI DI ALLOGGIO E DI RISTORAZIONE	129,5	144,8
J	SERVIZI DI INFORMAZIONE E COMUNICAZIONE	106,4	114,8
K	ATTIVITÀ FINANZIARIE E ASSICURATIVE	100,0	94,5
L	ATTIVITA' IMMOBILIARI	109,0	91,7
M	ATTIVITÀ PROFESSIONALI, SCIENTIFICHE E TECNICHE	111,9	136,0
N	NOLEGGIO, AGENZIE DI VIAGGIO, SERVIZI DI SUPPORTO ALLE IMPRESE	121,0	204,5
P	ISTRUZIONE	139,7	150,0
Q	SANITA' E ASSISTENZA SOCIALE	120,8	119,3
R	ATTIVITÀ ARTISTICHE, SPORTIVE, DI INTRATTENIMENTO E DIVERTIMENTO	111,9	151,4
S	ALTRE ATTIVITÀ DI SERVIZI	112,1	119,4
TOTALE		107,2	118,1

Thank you

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