

## Socio-spatial inequalities and urban transformation. The case of Rome districts



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### ABSTRACT

Over the past thirty years, public policy in Rome has failed to effectively address a rising level of socio-economic inequality. Indicators such as level of education or number of household members appear to be geographically concentrated and sensitive to the distance from the city centre. The hypothesis that socio-spatial inequalities strongly influence economic performance and foster political instability has been subject to numerous empirical investigations. Nevertheless, studies of specific urban contexts are not common. The absence of empirical applications at this scale is probably due to the fact that variables used for analysing the economic and social performance of regions are difficult to quantify or inapplicable at the micro level. The purpose of this paper is to examine the spatial distribution of socioeconomic inequalities in the municipal territory of Rome and to explore the conditions that account for them. We will analyse the spatial distribution of urban quality indicators and socio-economic profiles with data from different sources, aggregated at the neighbourhood level.

### 1. Introduction

Socio-economic inequalities in complex urban environments – typically large cities – have increasingly become a central issue in research, urban development programmes and policymaking. The subject is complex and multifaceted, therefore difficult to frame. When addressing spatial inequalities and urban deprivations, partially overlapping concepts such as quality of life, living quality, liveability, are often used as synonyms [1–3]. The lack of a comprehensive framework has stimulated a multitude of sectorial approaches. While economists use quantitative multi-dimensional measures combining income, life expectancy, level of education, such as the Human Development Index [4,5], or the Gender Inequality Index [6], anthropologists and sociologists prefer dimensions defined by the inhabitants, which include not only material resources, but also access to collective resources, the presence of legal and social entitlements, the perception of quality and happiness [7,8]. Recently, geographic disparities at regional and local levels have been addressed by frameworks such as the Multi-dimensional Poverty Index [9], which combines education, health and standard living conditions in one index, computed from household survey data.

Cartographic visualisation of inequalities in urban areas is as well receiving increasing attention [9–11]. Spatial analysis of these

phenomena enables deeper insights upon uneven living conditions and the processes that generate inequalities [12]. Such analysis can be a valuable support to policy makers and civic organisations operating in these fields. In this context, Geographic Information Systems (GIS) represent a valid tool in addressing complex, multi-dimensional problems at various scales. GIS provide spatial and statistical methods where multiple variables pertaining to the quality of life and socio-economic inequalities may be examined and visualized individually or as a composite of several indicators. Variables can be mapped across urban regions and over time; they can be overlaid and weighted to explore spatial relationships. Nevertheless, studies of specific urban contexts are not common, since at a local level the variables required to analyse social and economic performance of areas are difficult to gather, or entirely absent.

The hypothesis that socio-economic inequalities might affect economic performance and foster political instability is not new to empirical analyses [13–25]. Where common assets and relationships lack, the population misses out on opportunities for casual encounters, civic participation, and interpersonal interactions that are frequent in central neighbourhoods [26]. Theoretical thinking by urban planners on the subjects of “urban welfare” and “the right to the city” shows that there is an opportunity both to take advantage of common assets of the territory and to participate in decisions about changes, only if urban

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governance is able to operate in multifaceted social and political environments [27–32].

The goal of this paper is to study the spatial distribution of socio-economic inequalities in the municipality of Rome working with data aggregated at the neighbourhood level. We believe that small-scale approach to urban inequalities represent a valuable starting point to further study their impact on urban quality and on opportunities for local development. Given the large dimension and the spatial diversity of the study area, the application of GIS techniques for analysis and visualisation may likely reveal significant differences in the distribution of inequalities and the associated socioeconomic and demographic characteristics of population groups.

We will therefore analyse the urban, demographic, social and economic characteristics of Roman neighbourhoods, using data about the one hundred and fifty-five urban areas into which the city is divided. For that reason, an original dataset, combining data from different sources, has been collected [33].

This paper is organized as follows: in the second section, the characteristics of the urban development of Rome in the last decades are delineated; in the third section, the most important criteria affecting spatial inequalities and polarization among the districts of Rome will be described. The fourth section consists of a multicriteria analysis of the most representative variables describing the spatial inequalities and the consequent mapping an overall inequality map. Finally, the fifth part contains some concluding remarks and directions for further study.

## 2. A tale of (at least) two cities

In the past fifteen to twenty years, local public policies in Rome have not managed to effectively deal with growing levels of socio-economic inequality that show a strong territorial undertone, beyond that of social groups. Various indicators of human development such as demographic, social and economic, appear geographically concentrated and sensitive to the variations in distance from the centre of the city.

The 1990s began with a crisis of public administration, public investment and public spending, traditional engines of growth of the city. To contrast the negative trend, from 1993 to 2008 the left wing administrations stimulated a process of structural change relying upon the knowledge-based economy (KBE) oriented toward new technologies, mass tourism, finance, advanced services, audio-visual sector, culture and research, labelled as “Modello Roma” or “Roman model” [34,35]. The roman KBE can be legible in economic terms as a prevailing post-Fordist feature [36–42] characterising the most advanced World economies [43,44]; politically, it was rooted in the social movements of the 1970s, which were able to produce in the following two decades cultural and political changes involving different economic and social actors [45].

Over the last thirty years the Roman model has triggered important achievements towards social innovation and democratic processes, such as the dialogue with the social movements, the participatory budget, the recognition of political rights to migrants and the decentralization of power from the city council to the municipalities. The economic response was positive in terms of GDP growth, per capita income, tourist inflows, and international openness, until the advent of the global economic crisis [46,47]. The neo-liberal features of such a model failed to establish long-lasting internationalization strategies [48], and most importantly, they failed to effectively address the polarization between central districts and peripheries, the inequalities and biases that characterise various sectors of the economy [49]. A new poor stratum has emerged, due to increased costs of living and booming of the housing prices, while acute forms of social exclusion have affected low income and unskilled slices of population, wheeling the increase of socio-spatial inequalities [50]. Notwithstanding the presence of

resources, large parts of society did not enjoy the benefits of growth because of the lack of opportunities, knowledge, appropriate institutions.

The imbalances arising among centre and periphery are readable for many socio-economic indicators that relate to welfare and quality of life. In the Lazio region, whose performance levels are heavily skewed by the data relating to Rome, the Gini index of income inequality is close to the less developed regions of the south of Italy [51]. This feature further validates the hypothesis that the beneficiaries of Roman Model were mainly the middle and upper social strata living in central wealthy neighbourhoods, while the suburbs benefitted very little from it [50]. In addition, long-lasting effects of the economic crisis have further deteriorated the economic context in recent years [52]. Inequality is however an international phenomenon: for example, in London the benefits of growth have not seemed “to be trickling down to day-to-day residents in a way amenable to improved well-being” [53].

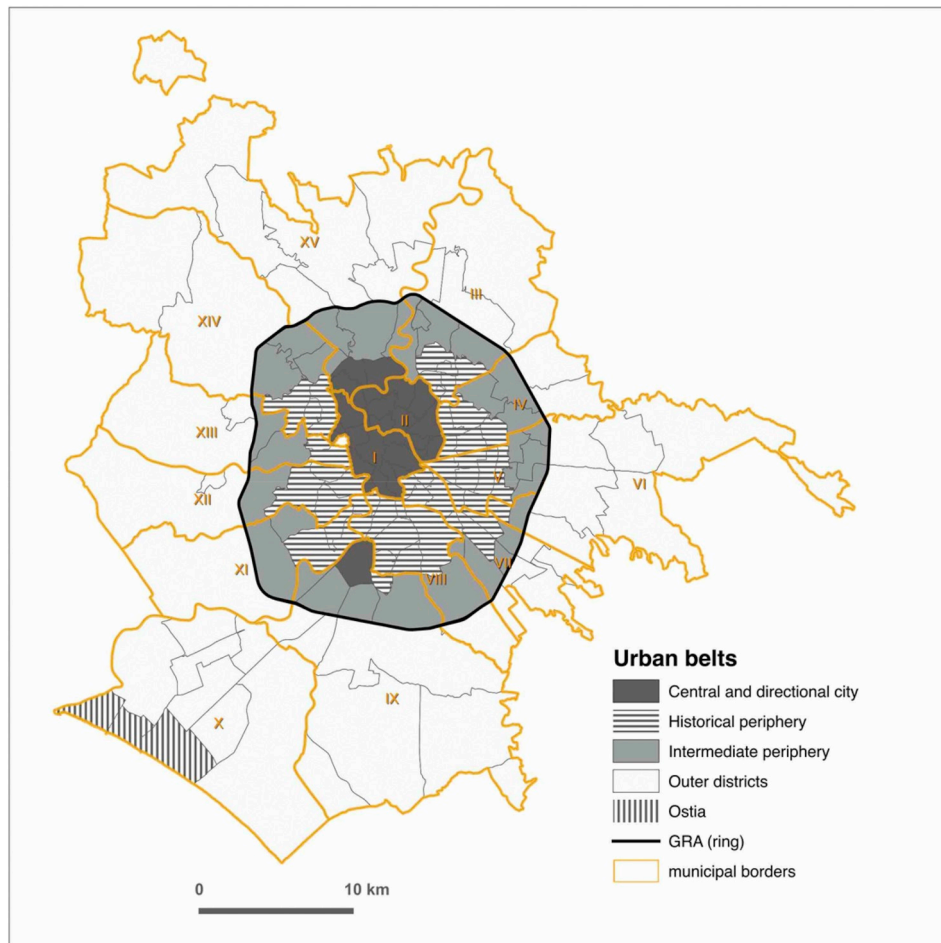
The centre-periphery divide in Rome is further accentuated by the uninterrupted process of building expansion that has pushed the extremities of the city up to and beyond the municipal boundary, generating new low-density settlements that often take on the character of sprawl and rely exclusively on private transportation [54–58]. This new urban development was driven by the dynamics of land rent and by the housing bubble, without reflecting real population growth, which remains stable at around 2.8 million inhabitants since the 1980s [59], and – a typical characteristic of Rome – without following the guidelines of the urban plan [60,61].

In Italian cities – Rome included –, vitality and diversity are intimately linked: empirical analyses showed that “active districts” have dense concentrations of office workers, urban amenities at walking distance, small streets, and historical buildings. In recent years centrally-located housing have become increasingly expensive, and are often targeted to a growing tourist market, or dedicated to luxury rentals, so that the city centre has undergone a generalized process of gentrification [62]. In contrast, the weakest social groups – young couples, temporary workers, immigrants, separated and divorced individuals – move where affordable homes are located: in the outermost neighbourhoods beyond the GRA (Ring Road). These neighbourhoods are physically isolated, often surrounded by agricultural land or by “junkspace”, and far from public services, institutional structures, and workplaces, with the exception of large shopping centres, which have arisen near or beyond the GRA in recent years [63].

These dynamics have marked the end of the suburb’s “red belt” where the former Communist Party was hegemonic [64]. Since the 2000s, the centre-left parties and candidates are prevailing in elections in central areas and in the historical periphery, while the centre-right, and recently the new populist Five Star Movement (M5S), are receiving great support in the suburbs [65]. Actually, the municipalities into which Rome is divided, endowed with few powers, do not seem able to address the complexity of the problems facing the city using effective forms of territorial cooperation and of polycentrism [57,66]. As a consequence, a wave of protests and ethnic conflicts occurred in 2014, in some outer districts overwhelmed with social problems, few basic services and a poor quality of urban life, when groups of Italian citizens – often led by right-wing politicians and neo-fascist movements, who reinforced the decision to engage in rioting – undertook violent actions against immigrants, refugees and asylum seekers [67].

## 3. Social, economic and demographic criteria affecting spatial inequalities

Urban quality is determined by the physical structure, the local labour and market dynamics, urban planning and practices but also by the attractiveness of the urban *milieu*, the identity and sense of



**Fig. 1.** Urban belts of Rome.  
Source: authors' elaboration.

belonging, the capacity to produce “socialized” human capital, skills and knowledge [68]. In this section, without pretending to be exhaustive, we analyse a restricted number of indicators, which we believe effectively illustrate spatial inequalities in the study area. We look both at the existing gaps between centre and periphery, and at the processes that likely contributed to accentuating these gaps.

Fig. 1 illustrates an arbitrary subdivision of Rome's municipal territory in homogeneous urban belts. Central and directional city is the historic centre (1st Municipality), its adjacent northern well-off districts (2nd Municipality and Fleming and Ponte Milvio of the 15th) and the Southern directional district EUR. Historical periphery is the high-density mid-central districts built until the 1970s as well as planned or informal medium-density suburbs built from the 1930s to the 1970s (*borgate*). Intermediate periphery is the medium-density districts built from mid-70s to mid-90s inside the GRA (Ring Road). Outer districts are low-density sprawled districts built since the 1990s outside the GRA. Ostia is the coastal area, built from the 1930s on the seaside, comparable to an urban centre with its own functions and services.

Table 1 reassumes average values of the principal quality indicators by urban belt. The core-periphery distribution of inequalities is evidenced by large differences amongst values and their tendency to deteriorate with increasing distance from the city centre.

While shifting from the coarse level of subdivision in belts to the district level, it is possible to observe, beyond the general core-

periphery dynamics, diversified spatial behaviors embedded in recent demographic and political events.

*Population dynamics.* Although the population density decreases with the increasing distance from the city centre, reflecting the strongly mono-centric structure of the urban system, population in the city centre is shrinking whereas in the suburbs it continues to grow (Fig. 2a–b). The expulsion of part of the population from the consolidated city, in addition to having a social impact, has significant implications for the city's spatial and functional organization. Indeed, the incessant urban sprawl aggravates the functioning of an already complex and jagged urban mechanism and endangers the survival of agricultural activities still existing in the Rome's green belt. *Real estate dynamics* well illustrate the centre-periphery divide. In analogy with population dynamics, average housing prices decrease with the increasing distance from the city centre, but the percentage of variation between 2003 and 2010 (during the final stage of the housing bubble and before the reduction in house prices due to the economic crisis) shows a general trend towards rising prices in sparsely built-up peripheral areas, especially in the southern quadrant (Fig. 2c–d). These dynamics reflect the growing demand for “new affordable” housing.

Since living in the city centre is expensive, large families tend to locate in the extreme periphery beyond the GRA. The analysis of *households composition* evidenced that the share of families with one component is higher in neighbourhoods located in the city centre and in

**Table 1**  
Selected quality indicators in Rome, by urban belts.  
Source: own elaboration on dataset in Appendix.

Urban belt	Population density (per hectare)	Real estate selling prices (€ per m <sup>2</sup> )	Jobs density (workers per resident aged 15–65)	Graduates (% pop. aged 20+)	Unem-employment rate (% workforce)	Cultural services (% pop.)	Density of squares (per hectare)
Central and directional city (1)	74.7	5611	2.20	41.5	6.6	.66	109.1
Historical periphery (2)	96.5	3458	.54	23.6	8.8	.10	40.6
Intermediate periphery (3)	29.8	3171	.71	20.8	9.8	.05	9.1
Outer districts (4)	6.9	2694	.40	14.6	10.5	.03	1.3
Ostia (5)	38.9	2951	.32	15.4	11.3	.09	25.5
<b>Total Rome</b>	<b>22.4</b>	<b>3524</b>	<b>.74</b>	<b>23.3</b>	<b>9.2</b>	<b>.15</b>	<b>11.1</b>
Gap (1) – (4)	67.8	2917	1.81	26.9	–4.0	.63	107.8

Note: subdivision in urban belts for descriptive purposes only, as described in the text.

historical peripheries. Conversely, the share of families with four or more components is higher in recently urbanised peripheral neighbourhoods (Fig. 3a–b). Cities function as magnetic fields of dense and highly multifaceted local labour markets that ramify through local residential areas exerting attraction on surrounding neighbourhoods. In this context we look at the *level of education*, which we consider a crucial factor in creating social and economic opportunities for individuals. This is the most unevenly distributed indicator in the study area. The share of residents having a university degree is much higher in the city centre and in the well-off neighbourhoods of the northern historical periphery (Fig. 3c). Instead, the share of residents with primary school certificate or no educational qualifications shows an inverted picture if compared to the previous one (Fig. 3d), supporting the idea that, in Rome, the distance from the city centre is, above all, a social distance.

The urban production system is rooted in the local labour market dynamics of the city. We analyse the *jobs density* (workers per residents aged 15–65 years) because the presence of jobs depends on a variety of elements, processes and effects that reflect the capacity of the urban *milieu* to attract people and to produce knowledge (Fig. 4a). Jobs density is obviously high in many non-residential districts with urban infrastructures, institutions and parks, as well as in the highly attractive historical centre, the well-off northern areas, and in the EUR directional district. We also look at the *unemployment*, as it prevents individuals from the possibility of generating income, but also from being part of a community, realizing oneself, and feeling included. For these reasons the geographies of unemployment are symptomatic of territorial disadvantage. The spatial distribution of the unemployment rate (Fig. 4b) identify once again the GRA as a real physical and social barrier. Unemployment rates are high especially in the eastern sector, an area in which socio-economic problems are persistent. The ability of the cities to attract knowledge-intensive activities and creative individuals in their choice of residential location strongly relates to the presence of *urban amenities* [69]. We analyse the *cultural offer* by calculating the incidence of cinemas, theatres and libraries in the neighbourhoods (Fig. 4c). We also look at the *density of public squares*, because they represent a potential engine for the creation of social capital and relational goods by offering to people opportunities to socialize and exchange ideas and information (Fig. 4d). Both spatial distributions follow the mono-centric structure of the city, with a few exceptions as regards the cultural offer. It is interesting to notice how the number of public squares is reduced to zero in the suburbs outside the GRA, areas that are currently experiencing a strong urbanization pressure.

Table 2 illustrates the differences amongst the best and the worst performances at the neighbourhood level for each indicator.

#### 4. Synthetizing spatial inequalities: a multi criteria analysis

Based upon the stylised facts about the physical and socio-economic characteristics of the Rome delineated above, in this section we combine quality indicators into one synthetic indicator by applying a weighted sum model (WSM) [70]. WSM is one of the simplest multi-criteria decision analysis (MCDA) methods. In our context, the MCDA problem is articulated on  $m$  spatial units (neighbourhoods) and  $n$  criteria (quality indicators). We assume that all the criteria are benefit criteria, that is, the higher the values are, the better it is. We suppose that  $w_j$  denotes the relative weight of importance of the criterion  $C_j$  and  $s_{ij}$  is the performance value of the spatial unit  $S_i$  when it is evaluated in terms of criterion  $C_j$ . Then, the total (i.e. when all the criteria are considered simultaneously) importance of the spatial unit  $S_i$ , denoted as  $S_i^{WSM}$ , is defined as follows:

$$S_i^{WSM} = \sum_{j=1}^n w_j s_{ij}, \text{ for } i = 1, 2, 3, \dots, m. \quad (1)$$



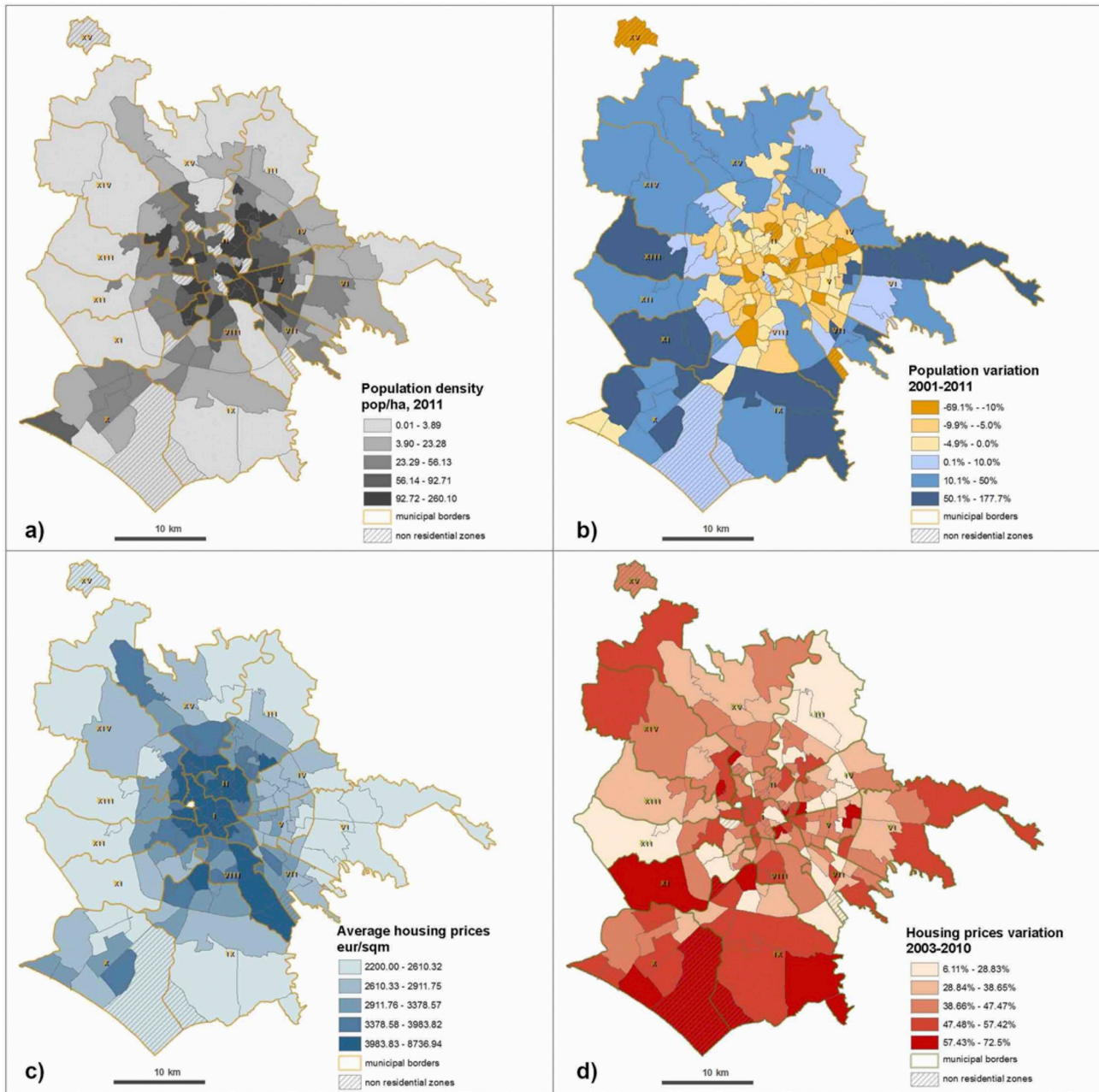


Fig. 2. Population distribution and urban quality: (a) population density (inhabitants/hectare), (b) population change (% variation), (c) average housing prices (Eur/sqm), (d) housing prices change (% variation).

Sources: Census data 2001; 2011 – ISTAT; Osservatorio Mercato Immobiliare – Agenzie delle Entrate 2010.

The weights of importance for each criteria are obtained through an analytic hierarchy process (AHP) [71], which performs pair wise comparisons among the variables allowing as well to evaluate the consistency of judgements. The procedure of rating each spatial unit according to the evaluation criteria consists of the following steps:

- developing a pair wise comparison matrix for each criterion;
- normalizing the resulting matrix;
- averaging the values in each row to get the corresponding rating;
- calculating and checking the consistency ratio;

- calculating the weighted average rating (performance value) for each spatial unit;
- mapping the performance value in order to observe the spatial distribution of inequalities across the municipal territory.

We consider five criteria: 1) urban quality; 2) jobs density; 3) education; 4) cultural services; 5) social relations. The selected corresponding indicators are in Table 3.

Pair wise comparisons are the first step in the AHP procedure. For each pair of criteria we assign values from 1 (equal importance) to 9

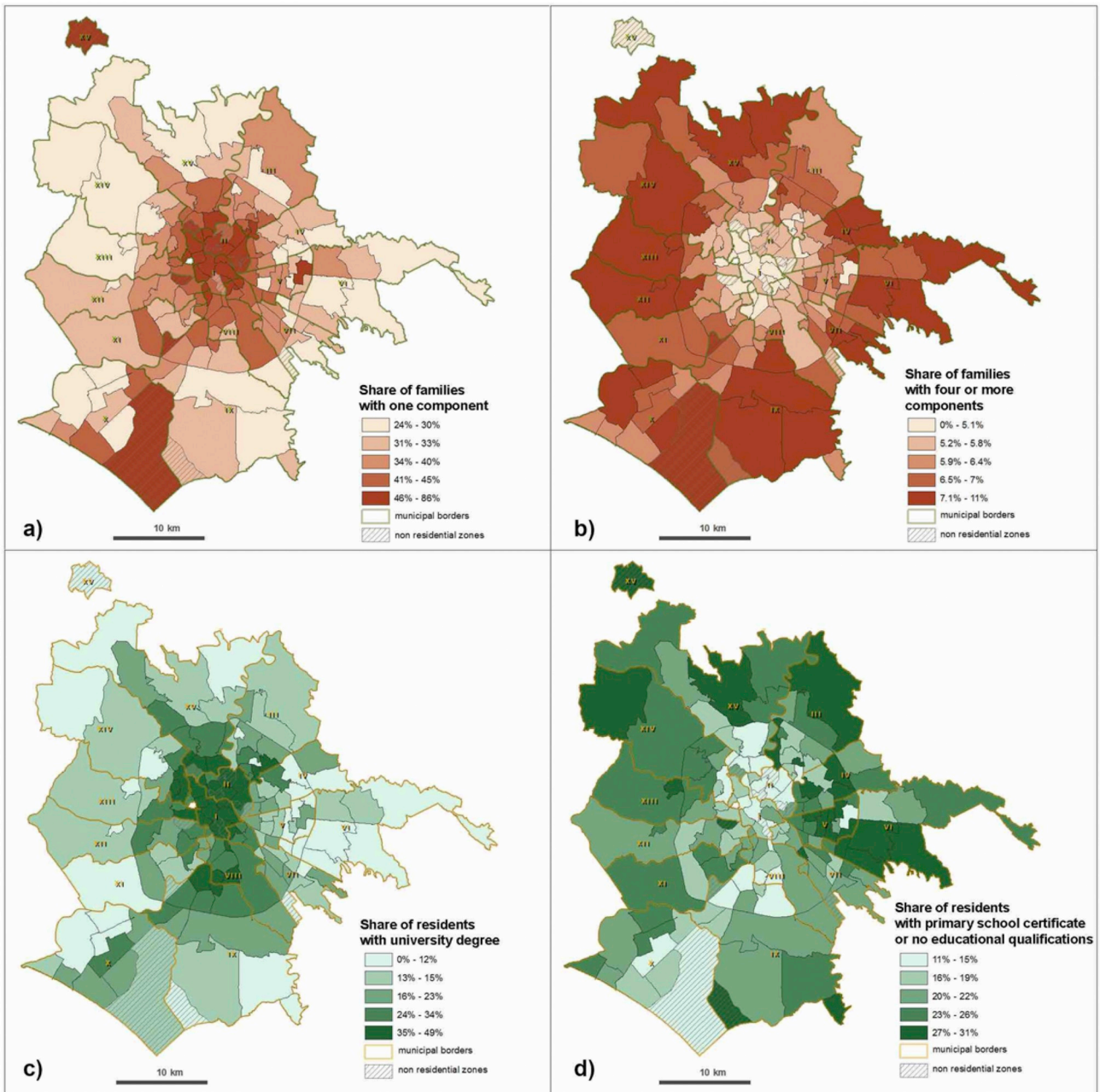


Fig. 3. Socio-economic profiles in 2011: (a) share of households with one component (%), (b) share of households with four or more components (%), (c) graduates (% of residents aged 20 and above), (d) residents with primary school certificate or no educational qualifications (% of residents aged 6 and above). Source: Census data 2011 - ISTAT.

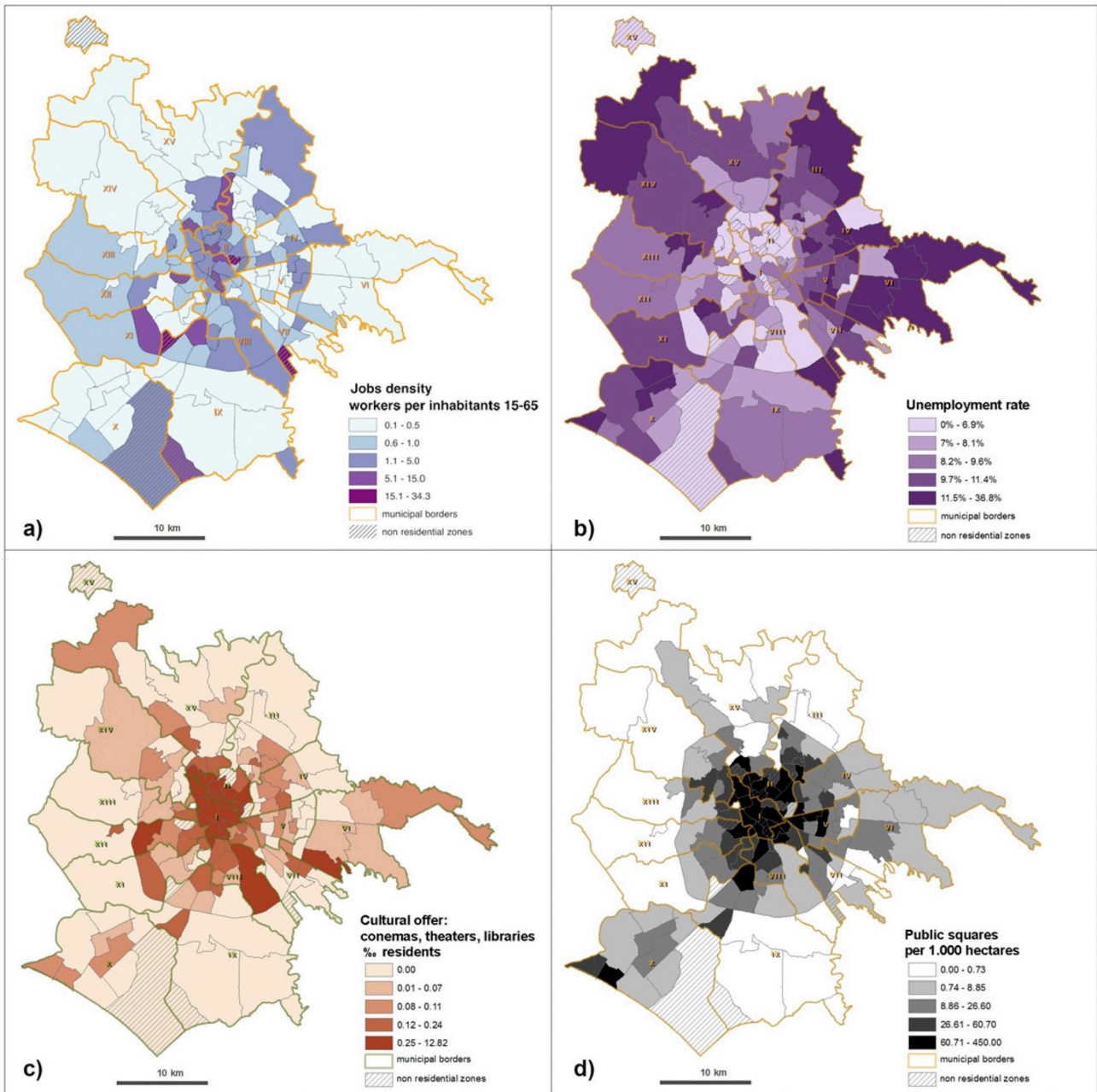
(extremely divergent), where a higher number means the chosen criteria is considered more important than the criteria being compared with. Reciprocal values of comparison amongst criteria are obtained by calculating inverse values of the initial rating. Table 4 shows a comparison matrix of order 5. Weights are obtained by comparing criterion in the row to criteria in the columns.

Further on we generate a normalized pair wise matrix by dividing each element by its column total, as follows:

$$X_{ij} = \frac{C_{ij}}{\sum_{i=1}^n C_{ij}} \tag{2}$$

Then, we generate a vector of weights by dividing the sum of each row of the normalized matrix by the number of criteria (n), as follows:

$$W_{ij} = \frac{\sum_{j=1}^n X_{ij}}{n} \tag{3}$$



**Fig. 4.** Work and attractiveness: (a) jobs density in 2011 (workers *per* residents aged 15–65 years), (b) unemployment rate in 2011 (% of unemployed in the total resident labor force), (c) cultural offer in 2010 (cinemas, theatres and libraries *per* 1000 inhabitants), (d) density of public squares in 2010 (public squares *per* 1000 ha).

Sources: Census data 2011 – ISTAT; Provinciattiva.

Final weights are reported in [Table 5](#). Urban quality (27%) is approximated by real estate selling prices. Through this criterion we consider the willingness to pay for locations encompassing accessibility, access to public services, quality of settlements and buildings, presence of cultural heritage [72]. Jobs density (18%) refer to presence of workers and working places in each district, reflecting the capacity of the urban *milieu* to attract people and economic activities and to produce knowledge [73,74]. The level of education (35%), considered a crucial factor in creating social and

economic opportunities for individuals, is measured by the number of graduates over the number of inhabitants ageing more than 20 years [75,76]. Cultural services (10%) and social relations (10%) are respectively approximated by the number of theatres cinemas, libraries per 1000 inhabitants and the density of squares per hectare [77].

Performance values for each spatial unit are finally calculated by applying the weighted sum formula (Equation (1)). The mapping result is shown in [Fig. 5](#).



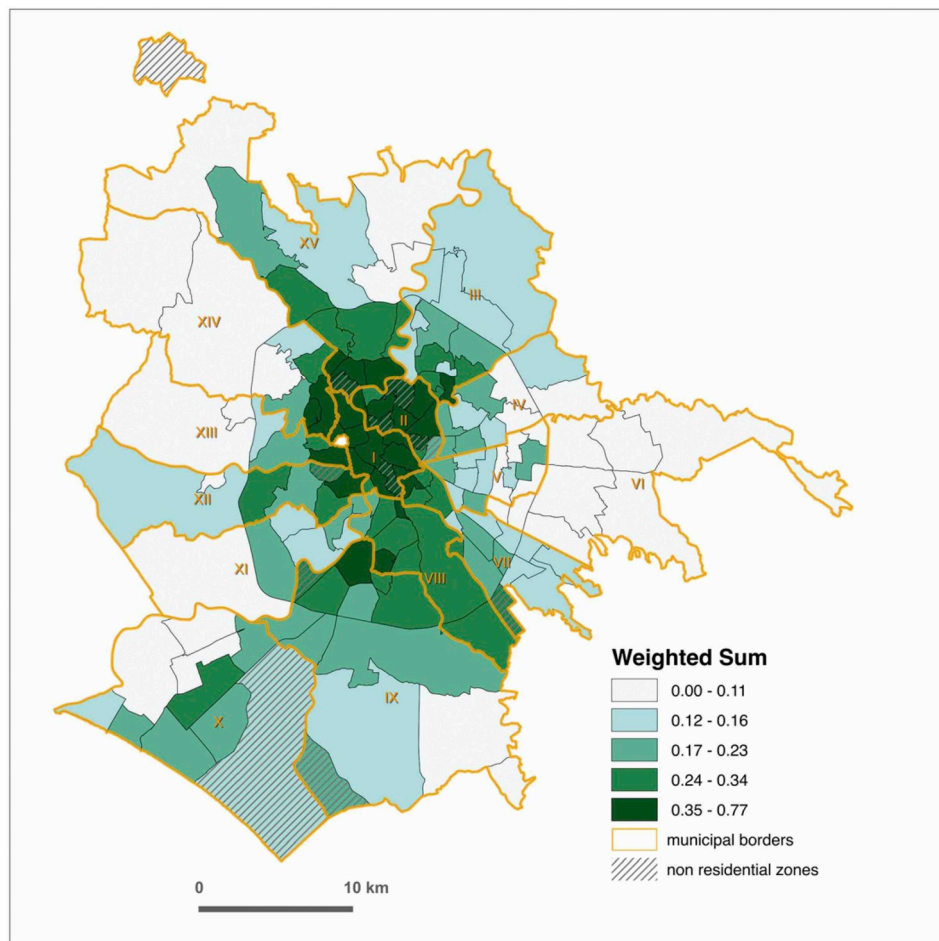


Fig. 5. Quality performance of Rome neighbourhoods.  
Source: authors' elaboration.

As expected, the highest performance levels are those of dense and intensively built neighbourhoods, situated in the 1st Municipality: Centro Storico (0.73); Trastevere (0.56); XX Settembre and Prati (0.52); Celio (0.48); Aventino and Della Vittoria (0.47), and in the 2nd Municipality: Parioli and Salario (0.56); Trieste (0.47); Flaminio (0.46). These central areas offer highly diversified economic activities and services, as well as artistic, spiritual and cultural amenities, and better transportation choices, if compared to the rest of the city.

Good performance levels can be found in a number of "less central" residential districts: Medaglie d'Oro (0.41); Navigatori (0.38); Montesacro and Pigneto (0.37); Appio and Aurelio Sud (0.36); Gianicolense and Tre Fontane (0.35), and along two axes extending well beyond the consolidated city: the first one in the 15th Municipality, along Via Cassia in north-western direction, from Ponte Milvio (Farnesina and Acquatraversa 0.45, Tor di Quinto 0.43) up to Olgiata gated community; the second one in the 9th and 10th Municipalities, along Via Cristoforo Colombo in south-western direction, from EUR directional district (0.53) down to Ostia. Inhabitants in these neighbourhoods are usually elderly, wealthy and highly educated.

In contrast, neighbourhoods in the densely inhabited eastern region, notably in the 4th and 6th Municipalities, show strikingly low performance levels. These are partly industrial areas, characterized by massive presence of public housing and traditionally inhabited by working class, although in the last decades middle class turn-out is growing. The lowest WS values are in Borghesiana, Torre Angela, San Vittorino and Tor Cervara (0.07); Giardinetti-Tor Vergata and Settecamini (0.09), notably poor and socially problematic neighbourhoods.

Low performance levels are also to be found in some scarcely

inhabited districts in the north-west (Santa Maria di Galeria 0.08) and in the south-west, along Via del Mare. Despite the proximity to the connection axis between Rome and the Sea and to the Leonardo Da Vinci Airport, and unlike the neighbourhoods that gravitate along the above-mentioned axis of Via Cristoforo Colombo, the neighbourhoods of Acilia Nord, Ponte Galeria and Porta Medaglia (0.09), for different reasons, seem unable to take advantage of their privileged accessibility position.

## 5. Conclusions

For the past twenty-five years or so, the socio-economic model that has characterized Rome has contained, aside from important elements of social innovation, additional elements of disadvantage, tension and inequality highlighted especially by the growing rift between the different districts of the city. From an economic point of view, the Roman model has mainly been characterized by economic growth principally driven by the advanced services sector and by the cultural industry. Economic growth slowed during the crisis years, but Rome still ranks second only to Milan in terms of wealth produced in Italy.

The empirical results show that the urban quality of urban areas, reflecting income and wealth of the inhabitants, is significantly correlated with the centrality of its location, accessibility to a wide range of municipal functions and services, and absence of elements of social and labour unease. This has obvious implications at the level of local public policy: inequality and polarization, not effectively countered by conscious administrative action, result in territorial segmentation between areas with different levels of urban quality. On one hand, the benefits of



**Table 2**  
Selected quality indicators in Rome, by districts.

Indicators	Top 5 districts			Bottom 5 districts		
	District	Rank	Value	District	Rank	Value
Population density (per hectare)	Marconi	XI	260.0	Decima	IX	1.4
	Gordiani	V	241.2	Pantano di Grano	XII	1.1
	Eroi	I	241.1	Prima Porta	XV	1.0
	Don Bosco	VII	232.2	Porta Medaglia	IX	1.0
	Saccopastore	III	219.9	S. Maria di Galeria	XIV	.8
Real estate selling prices (€ per m <sup>2</sup> )	Centro Storico	I	8737	Boccea	XIII	2395
	Trastevere	I	7021	Porta Medaglia	IX	2339
	Parioli	II	6807	Torre Angela	VI	2333
	XX Settembre	I	6355	Acqua Vergine	VI	2327
	Salario	II	6351	S. Vittorino	VI	2264
Jobs density (workers per resident aged 15–65)	XX Settembre	I	9.4	S. Vittorino	VI	.18
	Eur	IX	7.6	S. Cornelia	XV	.18
	Magliana	XI	5.5	Acilia Nord	X	.16
	Aeroporto Urbe	III	5.3	Castelluccia	XIV	.15
	Centro Storico	I	4.6	S. Maria di Galeria	XIV	.13
Graduates (% pop. aged 20+)	Parioli	II	49.2	Torre Angela	VI	9.4
	Salario	II	48.6	S. Vittorino	VI	9.3
	Acquatraversa	XV	48.5	S. Maria di Galeria	XIV	8.6
	Eur	IX	47.8	Borghesiana	VI	7.9
	Celio	I	45.8	Tor Cervara	IV	6.0
Unemployment rate (% workforce)	Parioli	II	5.0	Torre Angela	VI	13.0
	Pineto	XIV	5.0	S. Basilio	IV	13.4
	Centro Storico	I	5.2	Tor Fiscale	VII	14.0
	Tor di Quinto	XV	5.4	Tufello	III	14.4
	Navigatori	VIII	5.5	Tor Cervara	IV	17.0
Cultural services (%o pop.)	Centro Storico	I	2.46			
	Trastevere	I	2.03			
	Testaccio	I	1.36	50 districts with no services		
	XX Settembre	I	1.25			
	Celio	I	1.19			
Density of squares (per hectare)	Centro Storico	I	451.6			
	S. Lorenzo	II	210.5			
	Trastevere	I	210.0	15 districts with no squares		
	Aventino	I	160.2			
	Tuscolano Nord	VII	160.1			

Notes: Sub-Municipalities in Roman numbers; only districts with more than 1500 inhabitants are shown.

growth are not shared equally, and on the other hand, economic development opportunities are not fully exploited.

The most striking aspect of studying Rome, however, is the coexistence of at least “two cities”: one able to seize opportunities arising from the knowledge economy and one excluded from this development, where school enrolment rates and health indicators resemble more closely those of Italy's southernmost extremes than those that we would expect in the capital of Italy. A city divided, not just by physical capital, but also in terms of social capital as evidenced by the number of public squares, a city divided in terms of the age of its residents as shown by the average age in different neighbourhoods, and finally, divided from a demographic point of view, as shown by the large number of families. A city, in short, characterized by acute forms of social exclusion and polarization between one district and another, trapped in a sort of multi-speed development. In addition to the existing traditional divide between the city centre and the periphery, are other trends such as that of the historically problematic eastern quadrant, of new productive settlements, and of complex realities such as Ostia.

These results suggest several important policy implications, in particular for the identification of local policies capable of reducing existing polarizations. Some of the trends highlighted depend on long-term urban planning choices (or, in the case of Rome, the lack of choices), on which an overall, far-reaching vision that aims to stop land

**Table 3**  
Selection of criteria.

Criteria	Indicator
Urban quality	Real estate selling prices (€/sqm)
Jobs density	Workers (% pop. 15–65)
Education	Graduates (% pop. 20+)
Cultural services	Theatres, cinemas, libraries (%o pop.)
Social relations	Density of squares (by hectares)

**Table 4**  
Pair wise comparison matrix.

		Urban quality	Employment	Education	Cultural services	Social relations
		C1	C2	C3	C4	C5
Urban quality	C1	1.00	5.00	1.00	1.00	1.00
Jobs density	C2	0.20	1.00	0.50	3.00	3.00
Education	C3	1.00	2.00	1.00	5.00	5.00
Cultural services	C4	1.00	0.33	0.20	1.00	1.00
Social relations	C5	1.00	0.33	0.20	1.00	1.00

**Table 5**  
Vector of weights generated from the pair wise comparisons in Table 4.  
Source: own elaboration on dataset in Appendix.

Criteria	Priority vector (normalized inputs)
Urban quality	C1 0.27
Jobs density	C2 0.18
Education	C3 0.35
Cultural services	C4 0.10
Social relations	C5 0.10
<b>Total</b>	<b>1.00</b>

consumption and promote environmental sustainability and resilience in the face of shock and stress could have some bearing. In terms of other polarizations, it would be necessary to act quickly, by way of investing today in order to see medium to long-term benefits, starting with infrastructure, and focusing in particular on rail transportation, for which adequate financing can be found, concentrating resources on a few incisive projects of overriding importance. But the administrative action should, above all, focus primarily on “social investments” to counter the numerous and widespread inequalities that affect the well-being, health, homes, schooling, training and employment of the population through targeted and specific projects to be implemented – in collaboration with local associations – in neighbourhoods that bear the brunt of the decline in opportunities due to low educational levels, leaving school early, poor participation in the labour market, the difficulties in securing employment, high unemployment, and inadequate preventive health care.

Starting points for continued and deeper work are numerous, in many different directions. First, taking into account spatial autocorrelation in inferential analysis, assessing the existence of spatial dependence and possibly including it in an econometric model. Second, a better specification of “quality of life”, which is only partially captured by real estate values, with the addition of other variables that relate to it, and that represent subjective well-being and opportunities to gain a sense of “feeling good” (capabilities *à la* Sen). Third, studying the impact of inequality and the divide between the city centre and the suburbs on opportunities for local development, identifying variables that can adequately represent the economic performance of areas, taking into account the heterogeneous distribution of productive activities in the various districts that are the subject of analysis.

## Appendix

Table 6  
Dataset

Variables	Measure-ment unit	Source*	Year	Mean	Standard deviation
Activity rate	% pop. 15 +	CENS	2011	53.9	7.0
Age group under 15 years	% pop.	CIVIL	2013	13.9	3.7
Age group 15–30 years	% pop.	CIVIL	2013	14.1	2.4
Age group 30–45 years	% pop.	CIVIL	2013	22.8	3.8
Age group 45–60 years	% pop.	CIVIL	2013	23.2	2.0
Age group 60–75 years	% pop.	CIVIL	2013	15.9	3.4
Age group over 75 years	% pop.	CIVIL	2013	10.2	4.1
Cultural offer (theatres, cinemas, libraries)	‰ pop.	SERVICES	2010	.16	.95
Employment rate	% pop. 15 +	CENS	2011	49.0	6.6
Families with one member	% families	CENS	2011	38.0	9.3
Families with two members	% families	CENS	2011	25.3	3.4
Families with three members	% families	CENS	2011	18.8	3.6
Families with at least four members	% families	CENS	2011	18.0	5.4
Family average size	Pop./families	CENS	2011	2.2	.2
Graduates	% pop. 20 +	CENS	2011	23.0	11.4
High school certificated individuals	% pop. 6 +	CENS	2011	35.7	3.8
Housewives	% pop. 15 +	CENS	2011	10.4	2.4
Jobs density	Workers/Pop. 15-65	CENS	2011	2.0	4.6
Junior high school certificated individuals	% pop. 6 +	CENS	2011	24.1	6.5
Population change	%	CIVIL	2001/13	13.0	40.4
Primary school certificated indiv. or less	% pop. 6 +	CENS	2011	20.2	5.0
Real estate selling prices	€/m <sup>2</sup>	CROMA	2010	3516	1196
Real estate selling prices change	%	CROMA	2003/10	42.5	12.2
Retirees	% pop. 15 +	CENS	2011	21.0	5.6
Squares availability	No./pop.	SERVICES	2010	1.4	5.1
Squares density	No./hectares	SERVICES	2010	37.1	56.8
Students	% pop. 15 +	CENS	2011	7.7	1.5
Unemployment rate	% workforce	CENS	2011	9.1	3.5

## \*Sources:

CIVIL = Roma Capitale civil registry, <https://www.comune.roma.it/web/it/roma-statistica-popolazione.page>, modified in order to delete nominal residences of immigrants and homeless people at associations and charities in some districts.

CENS = ISTAT general census, <http://dati-censimento popolazione.istat.it>.

CROMA = elaboration of Roma Tre University on data by Italian Agency of Revenue.

SERVICES = survey on public spaces and local services by Provincia di Roma (2010).

## Appendix A. Supplementary data

Supplementary data to this article can be found online at [doi:10.1016/j.seps.2019.03.002](https://doi.org/10.1016/j.seps.2019.03.002).

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