Understanding Rome's Demographic Trends: Urban Heterogeneity in the Context of Italy's Population Decline

E. Bellotti, M. Cipriani**, C. Reynaud***

**** La Sapienza University of Rome (Italy) – emma.bellotti@uniroma1.it***
***** Roma Tre University (Italy) - cecilia.reynaud@uniroma3.it, marta.cipriani@uniroma3.it***

Topic and theoretical focus

Italy is currently undergoing a structural demographic decline. Over the last decade, the resident population has begun to fall, driven by a persistently negative natural balance — caused mainly by very low fertility — and by a migratory balance that no longer compensates for the natural deficit. After more than a century of continuous growth, the country is now experiencing population decrease, rapid ageing, and a shrinking labour force. Yet this national trend is marked by a diversity of local trajectories (Haase et al., 2014; Wolff & Wiechmann, 2017). Large cities, and Rome in particular, follow a different demographic path. While the country as a whole is shrinking, the capital has maintained relative stability — and in some years even modest growth — sustained mainly by migration inflows (Lelo et al., 2024). This divergence between national and metropolitan dynamics raises important questions about the role of big cities as demographic buffers within contexts of overall decline (Buonomo et al., 2023). According to the *urban life cycle* perspective and subsequent studies on *urban shrinkage* and *re-urbanisation* (Haase et al., 2014; Kabisch & Haase, 2011; Wolff & Wiechmann, 2017), demographic stagnation may represent a mature phase in the evolution of large metropolitan systems rather than a symptom of decline. In this view, population stability coexists with internal restructuring and growing spatial inequalities. Southern European cities, and Rome among them (Ciommi et al., 2018; Salvati & Carlucci, 2016), exemplify these hybrid trajectories, combining low fertility, ageing, and selective migration.

In Italy, while the country as a whole is experiencing population loss, large cities continue to attract residents through internal and international migration, which partly compensates for the negative natural balance and contributes to a more diversified population structure. Within this framework, the population of Rome has reached a phase of relative stability after decades of growth. Yet, this stability conceals marked internal heterogeneity, as demographic patterns vary considerably across the city's administrative subdivisions. Comparative analyses of Italian metropolitan areas confirm that such compensatory dynamics are not unique to Rome but characterise other large cities as well, such as Milan, Naples and Bologna (Buonomo et al., 2023). More broadly, studies on Southern European cities have shown that demographic resilience often coexists with complex internal transformations, reflecting non-linear urban trajectories (Ciommi et al., 2018; Benassi & Salvati, 2020).

Within this framework, the paper analyses the recent demographic trend of Rome in relation to the broader population decline observed in Italy. After a long period of expansion, the capital has begun to lose population, although more gradually than the country as a whole, and still retains distinctive features in age structure and migration. The study aims to assess how and to what extent the demographic patterns of Rome converge with or diverge from those of other major Italian metropolitan areas over a long period (1971–2021). It also explores the internal variability of demographic change across the city's administrative subdivisions for a recent period through a Parallel Factor Analysis (PARAFAC), a trilinear decomposition that synthesises a three-way data structure — variables, spatial units and time — into a series of independent trajectories. The analysis identifies the areas that are losing or gaining population and the differential contribution of natural, migratory and structural components. The paper provides an integrated demographic

interpretation of Rome as a laboratory for understanding how large urban systems respond to population decline in a shrinking national context, linking the Italian case to the broader international debate on mature and resilient metropolitan areas.

Data source and methods

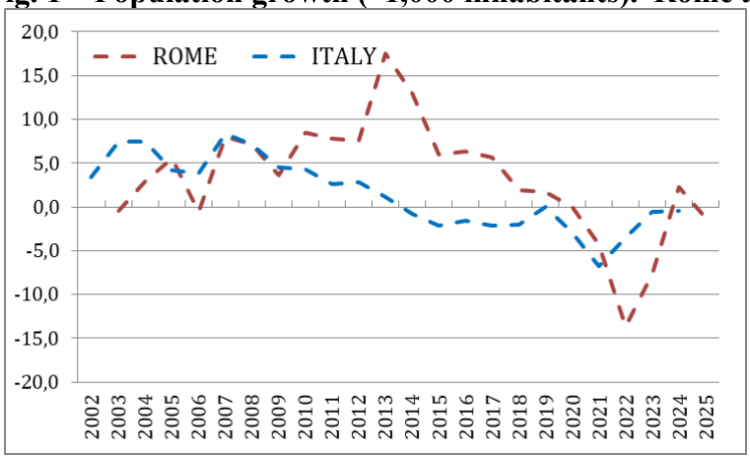
The analysis combines census and register data covering different time spans and spatial scales. Long-term demographic trends are examined using population census data for the period 1971–2021, comparing Rome with Italy as a whole and with other major Italian cities.
A more detailed analysis focuses on annual population register data for the years 2007–2024, disaggregated by the city's 15 administrative subdivisions, allowing for the investigation of intra-urban differences in demographic dynamics.
The study considers both population change and population structure. First, population growth and its components — natural balance and net migration — are analysed to highlight similarities and divergences between Rome, the national trend, and other metropolitan areas.
For the 15 administrative subdivisions, separate growth rates are calculated for the natural balance of Italian and foreign residents, and for internal and international migration, also by citizenship.
Second, the analysis includes key structural indicators measured on 1 January of each year**:** ageing index**,** old-age/child ratio**,** share of women of reproductive age, and share of foreign residents, both overall and by main citizenship groups.
The study first conducts a descriptive analysis of the selected demographic indicators to outline recent trends and territorial differences in Rome's population. This preliminary step examines the evolution of population growth and its components, as well as the main structural indicators, in order to highlight the magnitude and direction of change across the city's administrative subdivisions. Subsequently, a Parallel Factor Analysis (PARAFAC) is applied to a three-way matrix (indicators × administrative subdivisions × years) to synthesise the multidimensional information into a limited number of trajectories (Giordani et al., 2020). This trilinear decomposition allows the identification of common demographic patterns across space and time, distinguishing areas that share similar dynamics of growth or decline and providing a compact representation of the city's internal heterogeneity.

Expected findings

Preliminary evidence points to a recent demographic decline in both Italy and Rome, although with different intensity. After two decades of moderate growth, the capital has begun to lose population, mirroring the national downturn but with more irregular evolution over time. The comparison of annual population growth rates shows a similar overall trend, yet with more pronounced fluctuations in Rome, partly reflecting short-term migratory movements and local shocks (Fig. 1). Rome also differs from the national trend because of its continuing attractiveness, linked both to labour market opportunities and to its demographic structure, which remains capable of attracting foreign population. When compared with other major Italian cities, Rome also exhibits a distinct trajectory. Migration remains the main factor mitigating population loss, confirming the city's partial demographic resilience within a context of general decline.
At the sub-municipal scale, demographic dynamics are highly uneven. Some administrative subdivisions still register positive growth, mainly sustained by migration and a younger population structure, while others are affected by population loss and pronounced ageing. Demographic dynamics across the city's administrative subdivisions – Municipi - follow different demographic trends, suggesting that the hypotheses formulated within the urban life cycle framework may apply only to specific parts of the city — the historical core, which correspondes with the First Municipio.

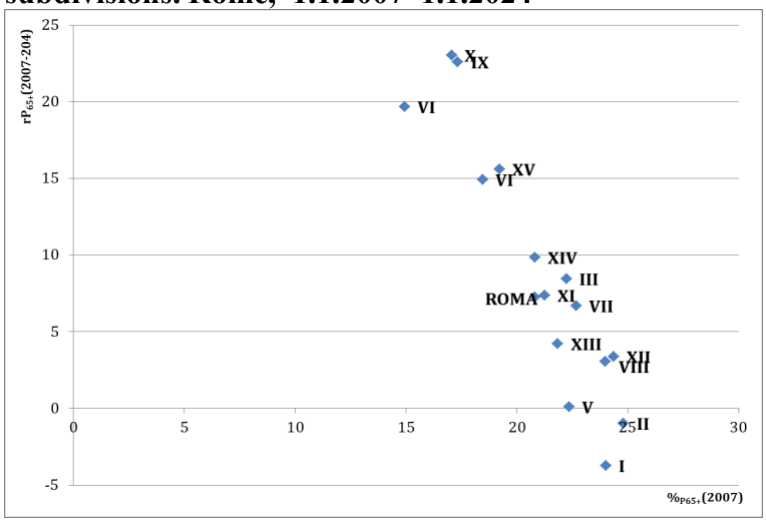
Some areas still experience population growth, mainly sustained by migration and a younger age structure, while others are characterised by population loss and advanced ageing. The ageing index by administrative subdivisions (2007–2024) reveal substantial disparities in both initial levels and rates of increase, with the highest values concentrated in the central and most consolidated zones. Unlike what has been observed at the national level — where an inverse relationship emerges between the level and the growth rate of the elderly population, both over time and across territorial areas (Golini et al., 2003) — this pattern appears far less evident among Rome's administrative subdivisions. These results are expected to be reflected in the PARAFAC trajectories, highlighting the coexistence of persistent, declining and transitional demographic patterns within the same urban system.

Fig. 1 – Population growth (*1,000 inhabitants). Rome and Italy, 2002-2024



Source: our elaboration on Istat data

Fig. 2 – Population aged 65 and over: percentage and growth rate by administrative subdivisions. Rome, 1.1.2007–1.1.2024



Source: our elaboration on Istat data

Discussion and conclusion

Analysing Rome's demographic evolution is crucial to understanding the role of large cities within Europe's demographic dynamics. The case of the Italian capital illustrates how metropolitan areas may follow the general pattern of population decline while preserving specific features that distinguish them from both the national trend and other major cities. Census data suggest an overall increase in the long term, but annual figures reveal that Rome has stopped growing and has recently

begun to lose population. Despite its continued attractiveness, especially through migration inflows, the city no longer experiences demographic expansion. Rome shares several trends with the national level, such as population ageing and the growing presence of foreign residents, but important differences remain.

The results confirm that Rome is far from being a homogeneous city. Demographic patterns vary sharply across its administrative subdivisions, revealing distinct trajectories of growth, stagnation and decline. These internal differences highlight how theoretical frameworks developed to explain the evolution of entire urban systems can, in fact, apply only to specific parts of a city. Given its vast territorial extension, Rome inevitably conceals a high degree of heterogeneity, which should be acknowledged in demographic, economic and social analyses as well as in policy design.

Finally, the application of a three-way methodology — the Parallel Factor Analysis — offers an innovative contribution to the study of demographic dynamics. By integrating multiple dimensions of change over time and across space, this approach provides new insights into the complexity of urban population processes and opens promising directions for future research on large and internally diverse metropolitan systems.

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