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IN MEMORY OF MARCELLO NATALE

On 24 October 2024, Prof. Marcello Natale, former Full Professor of Demography at the University of Rome "La Sapienza" and previously a senior executive at the National Institute of Statistics (ISTAT), passed away, leaving behind his loved ones. We would like to remember him in this brief biographical note, highlighting the important role he played as a public statistician, university professor, and member, secretary general, and vice-president of the Italian Society of Economic, Demographic and Statistical Studies (SIEDS - *Società Italiana di Economia Demografia e Statistica*)[1].

Born in Rome on 22 May 1931, he graduated from the University of Rome 'La Sapienza' first in Mathematical Sciences in 1954 and then in Statistical and Actuarial Sciences in 1957, accepting Prof. Corrado Gini's invitation to work as an assistant lecturer at the Chair of Statistics in the Faculty of Statistical Sciences.

In 1958, after passing the competitive examination for a management position at Istat, he resumed his university activities as a volunteer assistant at the Chair of Demography in the same Faculty, a chair held at the time by Prof. Nora Federici. In 1969, he was appointed lecturer in Biometrics and the following year in Population Theory and Demographic Models. Since 1970, his main teaching assignments have been Demography at the Faculty of Political Science and Investigative Demography at the Faculty of Statistical Science at the University of Rome "La Sapienza".

In the 1970s, he held various positions, including manager/director of the ISTAT Population Studies Office/Service, as well as an expert in demographic and social studies at the Institute. In his role as manager, he was intensely involved in organising and promoting demographic-social research, establishing an irreplaceable link with study groups at universities and other institutions.

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[1] Part of these brief notes are taken from the speech dedicated to the memory of the Professor given by Salvatore Strozza at the 61st Scientific Meeting of SIEDS (Rome, Aula Magna of the National Institute of Statistics, 28 May 2025). Emanuele Baldacci, Giancarlo Blangiardo and Cristina Freguja also participated in the commemorative event, making significant contributions in remembering the scientific and human personality of Prof. Marcello Natale.

He remained deeply attached to ISTAT, which he left in 1981: on several occasions, he was subsequently involved by the Institute as an expert in many study committees and in the management bodies of the Institute's activities involving university professors. Among these, he participated in the work of the group of consultants responsible for conducting general censuses and subsequently managing the delicate transition to the launch of permanent censuses.

He held numerous institutional positions, too many to mention here. We would just like to mention, among the most important, Prof. Natale's election as a member of the National Committee for Economic, Sociological and Statistical Sciences for the period 1976-1981, and his membership of the Committee for population issues (chaired by Maria Eletta Martini), set up within the Council of Ministers. Marcello Natale was one of the main advocates of the need to establish the Institute for Population Research (IRP), a body of the National Research Council that later merged into the Institute for Population and Social Policy Research (IRPPS).

For several years, he carried out the role of coordinator of the PhD programme in Demography with passion and extraordinary commitment. First, as coordinator of the PhD plan in consortium with the Universities of Padua and Florence (from the 4th to the 6th cycle), immediately after the years of Antonio Santini's directorship, and then as coordinator of the Rome PhD programme in Demography (from the 15th to the 21st cycle).

As a teacher, Marcello Natale has always been very attentive to the education of young people. During his long teaching and research career, he has had numerous collaborators, recent graduates, doctoral students, PhD students, and researchers whom he involved in his research projects. We remember with great wonder and admiration his ability to simultaneously and attentively supervise dozens of thesis students, receiving 30-40 of them on a single Saturday morning in his office at the Political Science Department of the University of Rome "La Sapienza".

He had strong ties with SIEDS and was deeply committed to promoting the Italian Journal of Economic, Demographic and Statistical Studies (*Rivista Italiana di Economia Demografia e Statistica*), in which many of his articles were published. From the late 1980s to the early 1990s, he served as Secretary General of the Society and subsequently held the position of Vice-President on several occasions until 2007.

As he liked to write succinctly in his short biographical notes, '... he made contributions mainly in the area of demographic sources, population estimation methods, and migration dynamics analysis'.

In his long and tireless research career, he dealt with various topics such as health and morbidity, mortality, nuptiality, differential fertility, mobility, and migration. However, his commitment to the study of immigration and the foreign presence in Italy has been extraordinary, providing valuable contributions that have helped to improve an information framework that appeared deficient and incomplete in the 1980s and

1990s. His contribution to the analysis of this phenomenon was significant, including through the scientific coordination of various multidisciplinary national research projects, starting with the first national survey on "The foreign presence in Italy" (*La presenza straniera in Italia*), in which he replaced Prof. Nora Federici as principal investigator and project leader. As a member of the ISTAT Council, he concluded his long career as a scholar and public statistician by conceiving, promoting and contributing to the organisation of the December 2005 conference on "The foreign presence in Italy: assessment and analysis", the proceedings of which were published by the Institute in 2008. The passion and rigour he brought to his research made him a beacon for his many students, many of whom now hold important positions in universities, at ISTAT, and in international organisations.

Let us conclude these brief notes with a personal memory. It is difficult to forget the long and pleasant days spent working at Professor Natale's home in Rome or in that of L'Aquila, where the Professor had a house to which he loved to retreat, especially during the summer months. The memory of those moments of discussion with everyone present while enjoying the meal lovingly prepared by Mrs Margherita, the Professor's affectionate and ever-present wife, remains indelible. On those occasions, the team spirit, closeness, and friendship that Marcello Natale was able to generate among his collaborators, colleagues, and students was created and matured.

We will miss Professor Natale greatly, as we believe he will be missed not only by his close relatives, grandchildren, and family, but also by his colleagues and numerous students. This issue of the Italian Journal of Economic, Demographic and Statistical Studies, which brings together contributions on migration issues, some of which are by his students and colleagues, is dedicated to his memory as a sign of profound gratitude.

Oliviero Casacchia e Salvatore Strozza
Rome, December 2025

IN RICORDO DI MARCELLO NATALE

Il 24 ottobre 2024 è venuto a mancare all'affetto dei suoi cari il Prof. Marcello Natale, già professore ordinario di Demografia dell'Università di Roma "La Sapienza" e dirigente dell'ISTAT. Si desidera ricordarlo in questa breve nota biografica sottolineando l'importante ruolo che ha svolto come statistico pubblico, come docente universitario e come socio, segretario generale e vice-Presidente della Società Italiana di Economia, Demografia e Statistica (SIEDS)[1].

Nato a Roma il 22 maggio 1931, si laurea all'Università di Roma, prima in Scienze Matematiche, nel 1954, successivamente in Scienze Statistiche ed Attuariali, nel 1957, anno in cui coglie l'invito del Prof. Corrado Gini a svolgere attività di Assistente incaricato presso la Cattedra di Statistica della Facoltà di Scienze Statistiche.

Nel 1958, superato il concorso nella carriera direttiva dell'Istat, riprende l'attività universitaria in qualità di assistente volontario presso la Cattedra di Demografia della medesima Facoltà, cattedra all'epoca tenuta dalla Prof.ssa Nora Federici. Nel 1969 ottiene l'incarico di Biometria e l'anno successivo quello di Teoria della popolazione e modelli demografici. Dal 1970 i suoi principali insegnamenti sono stati Demografia, presso la Facoltà di Scienze Politiche, e Demografia Investigativa, presso la Facoltà di Scienze Statistiche dell'Università di Roma "La Sapienza".

Negli anni Settanta assume vari incarichi in qualità di dirigente/direttore dell'Ufficio/Servizio Studi sulla popolazione dell'ISTAT, nonché esperto dell'Istituto per l'area demo-sociale. Nella sua qualità di Dirigente svolge una intensa attività di organizzazione e promozione della ricerca demografico-sociale, costituendo un insostituibile punto di collegamento con i gruppi di studio universitari e di altri Enti.

All'Istat, dal quale si dimette nel 1981, rimane sempre profondamente legato: a più riprese verrà successivamente coinvolto dall'Istituto in qualità di esperto in molte Commissioni di Studio e negli organi di gestione delle attività dell'Istituto che vedono

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[1] Parte di queste brevi pagine sono tratte dal discorso dedicato al ricordo del Professore tenuto da Salvatore Strozza in occasione della LXI Riunione scientifica della SIEDS (Roma, aula Magna dell'Istituto Nazionale di Statistica, 28 maggio 2025). A quell'evento di commemorazione hanno partecipato anche Emanuele Baldacci, Giancarlo Blangiardo e Cristina Freguja che hanno fornito contributi significativi nel ricordare la personalità scientifica e umana del Prof. Marcello Natale.

la partecipazione di alcuni professori universitari. Nell'ambito di questo impegno verrà coinvolto nel gruppo di consulenti che si occupa della conduzione dei censimenti generali e che successivamente gestisce la delicata fase di passaggio verso l'avvio dei censimenti permanenti.

Ha ricoperto numerosi incarichi istituzionali, impossibile richiamarli tutti in questa sede. Vorremo soltanto ricordare, tra i principali, l'elezione del Prof. Natale a membro del Comitato Nazionale per le Scienze Economiche, Sociologiche e Statistiche per il periodo 1976-1981, la sua appartenenza al Comitato per i problemi della popolazione (presieduto dall'on. Maria Eletta Martini), istituito in seno al Consiglio dei Ministri. Marcello Natale sarà uno tra i principali sostenitori della necessità di fondare l'Istituto di Ricerche sulla Popolazione (IRP), organismo del Consiglio Nazionale delle Ricerche successivamente confluito nell'Istituto di Ricerche sulla Popolazione e le Politiche Sociali (IRPPS).

Per diversi anni ha svolto con passione e abnegazione il ruolo di coordinatore del dottorato di ricerca in Demografia. Prima come coordinatore del Dottorato consorziato con le Università di Padova e di Firenze (dal IV al VI ciclo), subito dopo gli anni della direzione di Antonio Santini, e poi come coordinatore del Dottorato romano in Demografia (dal XV al XXI ciclo).

Come docente Marcello Natale è sempre stato attento alla formazione dei più giovani. Nella sua lunga attività didattica si è circondato di numerosi collaboratori, neo laureati, dottorandi, dottori di ricerca e ricercatori. Ricordiamo con stupore e ammirazione la sua capacità di seguire contemporaneamente e attentamente alcune decine di tesisti, come di riceverne 30-40 nella stessa mattina il sabato nella sua stanza a Scienze Politiche.

Forte è stato il suo legame con la SIEDS e l'impegno profuso nella promozione della Rivista Italiana di Economia Demografia e Statistica, sulla quale compaiono numerosi suoi contributi. Dalla fine degli anni Ottanta ai primi anni Novanta ricopre il ruolo di Segretario generale della Società e successivamente ne è stato a più riprese Vice-presidente fino al 2007.

Come gli piaceva scrivere sinteticamente nelle sue brevi note biografiche, "… ha fornito contributi prevalentemente nell'area delle fonti demografiche, dei metodi di stima della popolazione e dell'analisi della dinamica migratoria".

Nella sua lunga, e senza sosta, attività di ricerca, si è occupato di diverse tematiche quali previsioni di popolazione, salute e morbosità, mortalità, nuzialità, fecondità differenziale, mobilità e migrazioni. Straordinario è stato però il suo impegno nello studio dell'immigrazione e della presenza straniera in Italia, fornendo contributi preziosi che hanno consentito di favorire il miglioramento di un quadro informativo che appariva negli anni Ottanta e Novanta del secolo scorso carente e lacunoso. Significativo è stato il suo apporto nell'analisi del fenomeno, anche attraverso il coordinamento scientifico di diverse ricerche nazionali a carattere multidisciplinare, a partire dalla prima indagine nazionale su "La presenza straniera in Italia",

in cui è subentrato come responsabile alla Prof.ssa Nora Federici. Da membro del Consiglio dell'ISTAT, conclude la sua lunga carriera di studioso e statistico pubblico ideando, promuovendo e contribuendo a realizzare il Convegno del dicembre 2005 su "La presenza straniera in Italia: l'accertamento e l'analisi", i cui atti sono stati pubblicati dall'Istituto nel 2008. La passione e il rigore che ha messo nell'attività di ricerca lo hanno reso un faro per i suoi tanti allievi che oggi ricoprono in molti casi ruoli importanti nell'università, all'ISTAT, in organismi internazionali.

Lasciateci chiudere con un ricordo personale. È difficile dimenticare le lunghe e piacevoli giornate di lavoro nell'abitazione romana del Professor Natale o in quella dell'Aquila, dove il Professore amava ritirarsi soprattutto nei mesi estivi. Resta indelebile il ricordo di quei momenti di discussione con tutti i presenti mentre si consumava il pasto preparato amorevolmente dalla signora Margherita, la moglie affettuosa e sempre presente del Professore. In quelle occasioni veniva creandosi e maturando lo spirito di gruppo, la vicinanza e l'amicizia che Marcello Natale era capace di generare tra i suoi collaboratori, colleghi e allievi.

Il Professor Natale ci mancherà molto, come crediamo mancherà, non solo ai parenti stretti, ai nipoti e agli altri familiari, ma anche ai suoi colleghi e ai suoi numerosi allievi. Questo numero della Rivista Italiana di Economia Demografia e Statistica, che raccoglie contributi su tematiche migratorie alcuni dei quali dovuti a suoi allievi e colleghi, è dedicato alla sua memoria come segno di profonda gratitudine.

Oliviero Casacchia e Salvatore Strozza
Roma, dicembre 2025

MIGRATION AND POPULATION CHANGE PATTERNS: A COMPARISON BETWEEN ITALIAN AND SPANISH REGIONS

Guillermo Orfao, Maria Carella, Alberto del Rey, Argyro Gripsiou

Abstract. This paper presents a comparative regional analysis on the role played by migration in recent population change in Italy and Spain. Annual data have been used on Italian regions and Spanish autonomous communities (NUTS-2 level) on all factors driving population growth for the period 2008-2021. The methodology includes the estimation of three indices: the Population Turnover Rate (PTR), Migration Share of Turnover (MST) and Birth Share of Turnover (BST). The analysis reveals marked differences between Spain and Italy: while international migration has driven most population turnover across all regions in Spain, especially after 2013, in Italy population turnover is mostly driven by both components and in particular by the BST due to the contribution of births from the foreign population in the northern regions and the lower incidence of migration in the southern regions.

1. Introduction

Traditional demographic research has predominantly emphasised the paradigm of "slow demography" in which population change is perceived as gradual, mainly driven by natural components—namely fertility and mortality—and therefore somewhat predictable. However, recent studies have reasserted the dual nature of demographic processes by highlighting the significance of "fast demography," which pertains to the effects of migration (Billari, 2022). Indeed, the spatial mobility of populations calls into question the assumption that demographic dynamic is inertial and exogenous showing that migration can exert a substantial and rapid influence on population change, according to its magnitude across time and space.

In this regard, Italy and Spain represent two emblematic cases in Southern Europe where migration has become a crucial factor over time in shaping population growth and in counterbalancing or compensating for the low fertility levels of native women (Giannantoni and Strozza, 2015; del Rey and Cebrián, 2010). Indeed, in the last decades these two countries have experienced a fast population ageing process and a sharp decline in birth and fertility rates that rank them among the lowest fertility levels worldwide (Lozano *et al.*, 2024). Italy and Spain are also characterized by significant territorial imbalances in demographic dynamics and its components. Recent studies have shown that in both countries natural decrease (more deaths than

births) is the main driver of population decline while net migration (especially international) is the only factor contributing to population growth (Marbán-Martínez *et al.,* 2025; Buonomo *et al*., 2024). It should be noted, however, that these common trends are spatially differentiated and exhibit heterogenous geographic patterns that mostly depend on the traditional North-South divide in Italy and on the differences between internal and coastal areas in Spain

Building on these premises, the principal aim of this study is to analyse the role played by the components of the demographic dynamic on recent population change in Italy and Spain for the period from 2008 to 2021. More specifically we seek to examine the contribution of migration to the population change at regional level observing the patterns produced by internal and international movements.

Our contribution to existing literature on this topic consists of:

(i) deepening the understanding of how natural and migratory components of the population change have shaped the demographic dynamics of regions in Italy and Spain using the Population Turnover Rate (PTR) (Billari, 2022);

(ii) verifying whether the contribution of these components have exhibited national and chronological similarities or differences over the last years;

(iii) adopting a diachronic and transnational approach in assessing and comparing the contribution of migration to the population change across regions.

2. Background

Historically, the demographic dynamics of countries have been primarily shaped by changes in mortality and fertility, with migration playing a secondary role. However, over the past half-century, developed countries have undergone a profound transformation in the relative importance of the components of demographic change. Various studies have highlighted the key role played by migration in population change (Preston and Wang, 2007; del Rey and Cebrián-Villar, 2010; Ediev *et al*., 2014). In the specific case of Southern European countries, demographic dynamics in recent decades have been characterized by very low levels of mortality and fertility, which has placed migration at the forefront of population change in these countries (del Rey and Ortega, 2010).

Migration directly alters the size of the population, but it also affects the evolution of births due to the unequal—and generally higher—fertility of the immigrant population compared to the native population (Carella *et al*., 2021; García-Gómez *et al*., 2023; García-Gómez and del Rey, 2023). Several studies have shown that the higher fertility of immigrant women contributes to a significant increase in the number of births in destination countries (Roig-Vila and Castro-Martín, 2007;). Thus, the impact of migration on population change over time is determined both by the size of the immigrant population and by its reproductive behaviour.

Nevertheless, the arrival of immigrants has considerably differed across Spanish and Italian regions (del Rey and Ortega, 2010; Casacchia *et al*., 2022). In this sense, findings of previous research on the decomposition of the population growth rate have shown an asymmetric evolution of demographic processes at territorial level across Spanish regions (Del Rey and Ortega, 2010) and municipalities (Marbán Martínez *et al*., 2025). While certain regions have experienced significant population growth and managed to limit the decline in birth rates thanks to immigration, others, by contrast, have witnessed a sharp decrease in both population and births due to the limited reception of international migrants (Orfao *et al*., 2025). Consequently, while some regions currently face the depopulation of rural areas as their main challenge, others are dealing with strong population growth and concentration. In the Italian case, recent studies on demographic dynamics concerning the municipalities have shown that the population change is spatially differentiated across growing and shrinking cities (Buonomo *et al*., 2024). In the first ones the population growth is mostly produced by positive net migration, especially international. It seems that the traditional North–South demographic divide is evolving into a more nuanced pattern of leading (growing) and lagging (declining) urban and sub-urban areas.

Based on these postulates we defined the following research questions:

RQ1: How fast has been demography over the last years? How have Population Turnover Rate (PTR), Births' Share of Turnover (BST) and Migration Share of Turnover (MST) evolved at regional level in Italy and Spain? (temporal variability)

RQ2: Can we observe population change patterns between the two countries and across their regions? (spatial variability)

3. Data and Methods

This study gathers administrative data from the Population Register of the resident population, provided by the Italian National Institute of Statistics (ISTAT), and the Residential Variation Statistics (EVR) of the Municipal Register and the Natural Movement of the Population (MNP), both compiled by the Spanish National Institute of Statistics (INE). These databases allow us to obtain harmonised and homogeneous annual data at the regional level using Italian regions and Spanish autonomous communities as the territorial units of reference (NUTS-2 level) on all factors driving population growth for the period 2008-2021. Accordingly, the core variables used in this paper include total population, births, deaths, and both internal and international migration.

Migration data comprise annual flows of immigration and emigration at the NUTS2 level, enabling the examination of population mobility dynamics in both countries over time. Moreover, internal and international movements have been distinguished in order to identify different patterns at the regional level. The temporal framework is divided into three periods: 2008-2013, 2014-2019, and 2020-2021.

These periods allow for a detailed breakdown of the contribution of each component to overall population growth during the Great Recession, the subsequent recovery period, and the recent COVID-19 pandemic.

To measure population change between *t* and *t-1* for each Spanish and Italian region *j*, we estimate the Population Turnover Rate (PTR) and Migration Share of Turnover (MST) indicators proposed by Billari (2022). The PTR can be calculated as follows:

$$PTR_{j\,(t-1,t)} = b_{j\,(t-1,t)} + d_{j\,(t-1,t)} + i_{j\,(t-1,t)} + e_{j\,(t-1,t)}$$

where

$$b_{j\,(t-1,t)} = \frac{B_{j\,(t-1,t)}}{t \times P_{j\,(t-1,t)}} \; ; \; d_{jk(t-1,t)} = \frac{D_{j\,(t-1,t)}}{t \times P_{j\,(t-1,t)}} \; ; \; i_{j\,(t-1,t)} = \frac{I_{j\,(t-1,t)}}{t \times P_{j\,(t-1,t)}} \; ;$$

$$e_{j\,(t-1,t)} = \frac{E_{j\,(t-1,t)}}{t \times P_{j\,(t-1,t)}}$$

being $B_{j(t-1,t)}$ the total number of births, $D_{j(t-1,t)}$ the deaths, $I_{j(t-1,t)}$ the entries and $E_{j(t-1,t)}$ the exits, between periods *t-1* and *t*. Once the PTR has been calculated, we analyse the specific contribution of migration to the total population change by calculating the MST:

$$MST_{j\,(t-1,t)} = \frac{i_{j\,(t-1,t)} + e_{j\,(t-1,t)}}{PTR_{j\,(t-1,t)}} = \frac{I_{j\,(t-1,t)} + E_{j\,(t-1,t)}}{B_{j\,(t-1,t)} + D_{j\,(t-1,t)} + I_{j\,(t-1,t)} + E_{j\,(t-1,t)}}$$

A further contribution of this paper is the development of a new indicator, the Birth's Share of Turnover (BST), which captures the contributing role of births to population change. This indicator can be defined as:

$$BST_{j\,(t-1,t)} = \frac{b_{j\,(t-1,t)}}{PTR_{j\,(t-1,t)}} = \frac{B_{jk(t-1,t)}}{B_{j\,(t-1,t)} + D_{j\,(t-1,t)} + I_{j(t-1,t)} + E_{j(t-1,t)}}$$

4. Results

Figures 1 and 2 show a similar trend in the reduction of the PTR in both Italy and Spain. In Spain, a moderate decline in the PTR is observed between 2008 and 2021, averaging approximately 6 points, though regional variation ranges from 3 to 12 points. Interestingly, the highest PTR values are recorded in those regions that have

experienced population growth, whereas the lowest values are found in regions facing population decline. This pattern suggests that regions experiencing population growth are undergoing continuous demographic changes, potentially driven by migration dynamics. Similarly, Italy exhibits a more consistent and marked decrease in the PTR over the same period, with an average reduction of 8 points. These trends indicate a general slowdown in population growth across both countries during the years analysed.

Figure 1 – *SPAIN: Population change decomposition across regions: a) Population turnover rate (PTR); b) Migration share of turnover (MST) and c) Births' share of turnover (BST).*
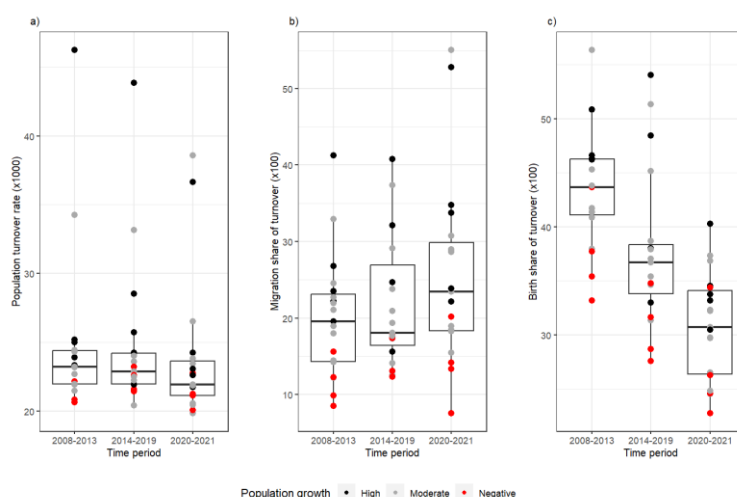
Figure notes. The regions were categorized according to their population growth rate over the period 2008-2021: Negative: Regions with a negative population growth rate, grouped together regardless of their values. Moderate: Regions with a positive growth rate that fall within the third quartile of the distribution. High: Regions with a positive growth rate that belong to the fourth (top) quartile of the distribution.

By delving deeper into recent regional migration trends, two contrasting patterns emerge in Spain and Italy. Spain exhibits a growing migration trend in the majority of regions, although this increase is almost negligible in regions suffering population decline during the period 2008-2021. By contrast, Italy shows a decrease in the MST across most regions, reflecting a declining contribution of migration to overall population growth. Notably, the share of turnover attributable to migration is higher in Spain than in Italy, indicating a stronger (although asymmetric) attraction of migration flows across Spanish regions.

Figure 2 – *ITALY: Population change decomposition across regions: a) Population turnover rate (PTR); b) Migration share of turnover (MST) and c) Births' share of turnover (BST).*
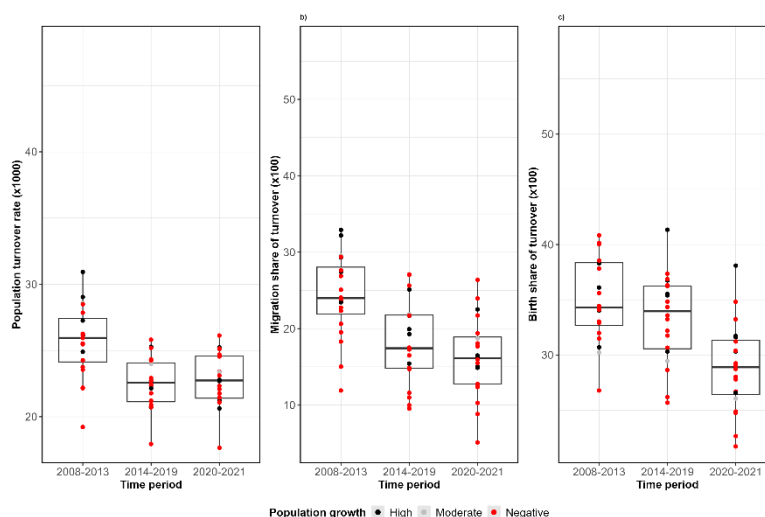
Figure notes. Idem as above

When analysing the contribution of births through the BST indicator, we find a similar pattern in both countries, with births playing a weaker role in explaining recent population changes. Nevertheless, regional differences are evident. For instance, in both countries, the BST is higher in regions that experienced population growth during the period 2009-2021 compared to those that recorded population decline. Interestingly, the BST is higher in Italy than in Spain, likely due to the greater contribution of the MST to population growth in Spain.

In Italy, both the MST and BST components influenced the PTR, however, in most cases, the BST (or more broadly, the natural component including deaths) was predominant. This is because foreigners contributed more significantly to demographic changes through births in the northern regions, whereas in the southern regions, where the MST had a lower weight, the natural component played a more substantial role. Specifically, the BST was higher in central regions (such as Lazio) and in northern regions (including Lombardy and Veneto), which notably attracted a considerable higher share of foreign population. Additionally, elevated BST values were observed in Trentino and in southern regions (like Apulia, Sicily, Campania, and Sardinia), where migration's contribution to the PTR was comparatively lower.

In Spain, the BST displays a common trend across all regions, reflecting a decline in the contribution of births to population growth. When examining specific regions,

the BST's contribution is greatest in the Community of Madrid and Catalonia, which attract the largest share of migrants entering Spain. By contrast, the highest relative contribution of the BST to overall population change is observed in Andalusia and Extremadura. This elevated contribution, compared to other regions, can be attributed to the lower influence of the MST, as these regions are characterised by relatively low levels of both internal and international migration.

After analysing the overall population changes in Spain and Italy during the period 2009-2021, we further explore the spatial and temporal trends of both the Population Turnover Rate (PTR) and Migration Share of Turnover (MST) at the NUTS-2 level across three subperiods: the financial economic crisis, the post-crisis recovery, and the COVID-19 pandemic.

Figure 3 illustrates the changes in PTR across Italian and Spanish NUTS-2 regions during the Great Recession (2008-2013), post-crisis recovery (2014-2019), and the COVID-19 pandemic (2020-2021). In Italy, the northern and southern regions were respectively the most affected by incoming and outgoing migration flows, which corresponds to these regions exhibiting the highest PTR values nationwide. Moreover, territorial disparities in population change patterns have remained consistent throughout the analysed periods, although the overall trend in PTR has evolved over time. Specifically, PTR has declined since the economic crisis years, driven by reductions in both MST and BST components, reflecting decreases in migration flows as well as total births.

By contrast, Figure 3 reveals substantial disparities across Spanish regions in the PTR, alongside significant changes over time. The Community of Madrid, the Mediterranean and coastal regions recorded the greatest population change alongside with some inland regions. However, these regions were characterised by two opposite population change patterns: (i) the inland regions (Castilla y León, Castilla-La Mancha, and Aragón) experienced a negative migration balance (mainly internal), with Madrid as main destination, which also contributed to a greater population change (PTR), and (ii) the Mediterranean coastal areas (Catalonia, the Valencian Community, Murcia, and the Balearic Islands) and Madrid registered a significant positive migration balance (both internally and internationally), which contributed to a higher PTR. The pattern has remained largely consistent over time, except for the most recent period (2020-2021) affected by the COVID-19 crisis, which generally reduced mobility both internationally and between regions. Notably, this period saw an inverse migration flow, with individuals relocating from Madrid and Catalonia to the inland regions (Castilla y León, Castilla-La Mancha, and Aragón).

Figure 3 – *PTR in Italy and Spain across regions, 2008-2013, 2014-2019 and 2020-2021.*
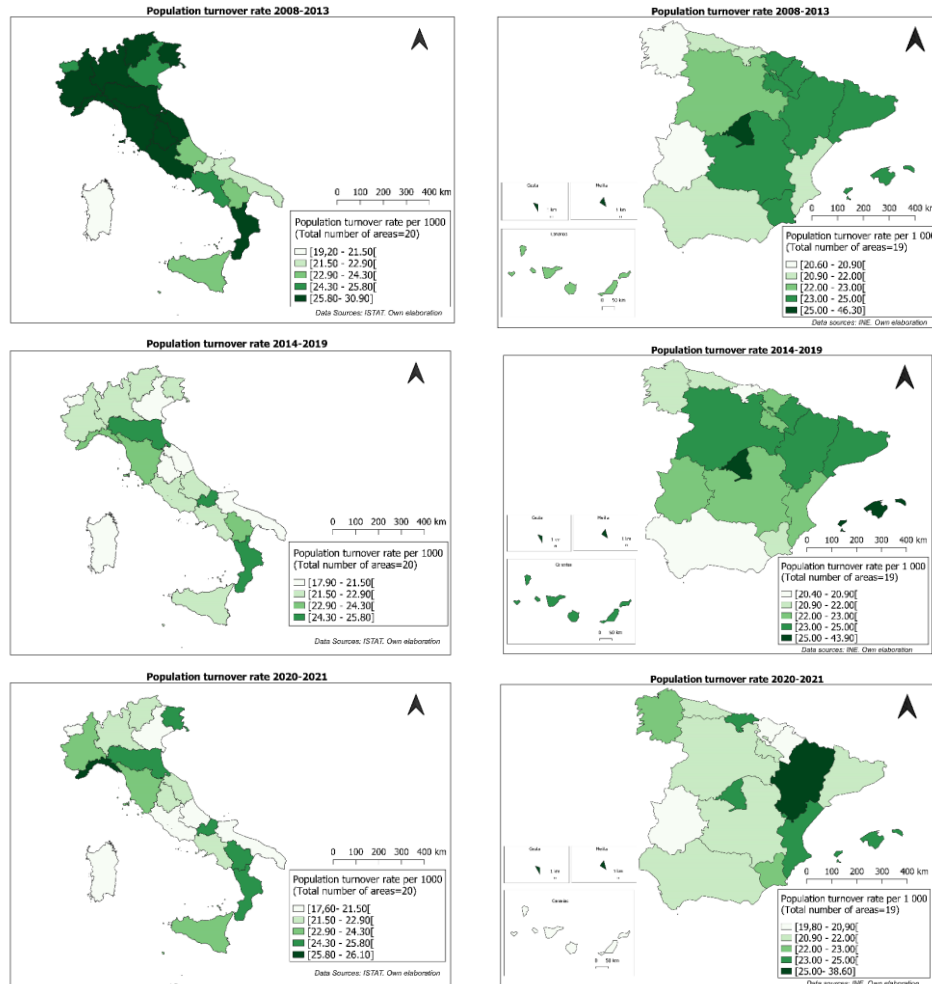
Finally, Figure 4 captures the changes in the MST across both Italian and Spanish NUTS-2 regions during the Great Recession (2008-2013), post-crisis recovery (2014-2015) and COVID-19 pandemic (2020-2021) periods. In Italy, the patterns and trends observed in the MST closely mirror those of the PTR. The MST reflects the combined effect of incoming and outgoing flows resulting from both internal and international migration: northern and central regions attract migrants from abroad and from other regions while southern regions experience population losses

primarily due to internal outflows. For instance, in regions such as Calabria and Molise, the MST is influenced by both arrivals and departures.

Figure 4 − *MST in Italy and Spain across regions, 2008-2013, 2014-2019 and 2020-2021.*
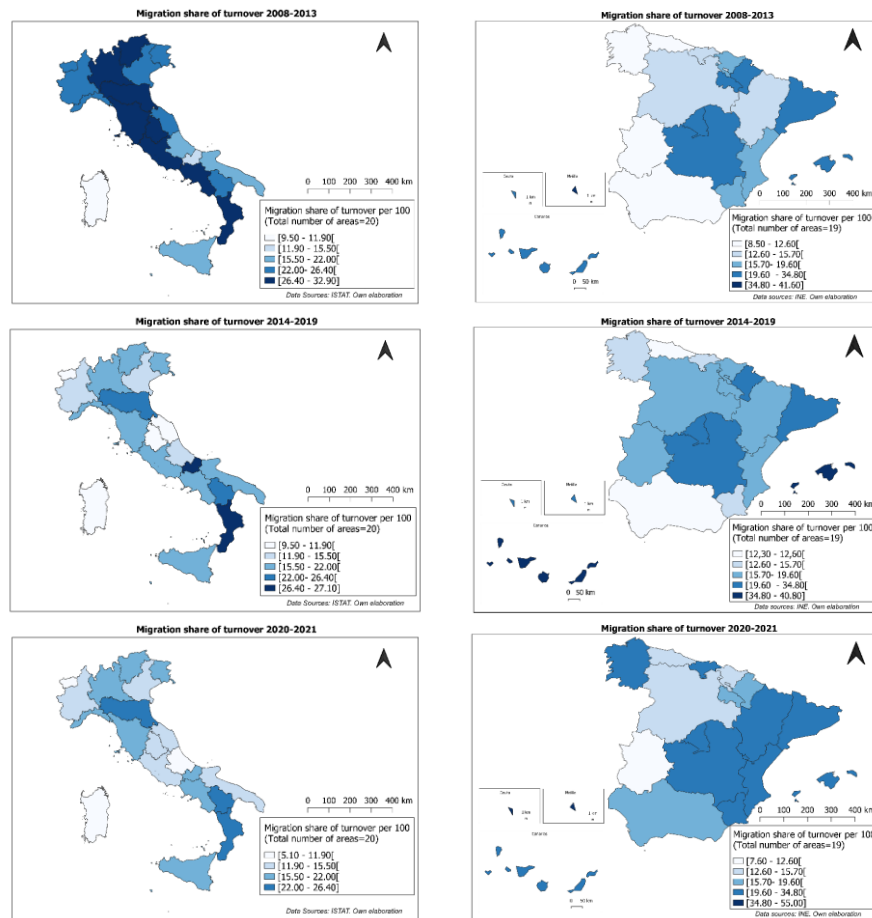
In Spain, the pattern is again very similar to that of the PTR, i.e., the MST trends are driven by both the internal and international migratory balances (specifically, the combination of internal migration flows towards Madrid from inland regions, coupled with the arrival of foreign migrants to Madrid, Catalonia and the coastal areas). Notably, these trends also reverse over time depending on the period considered. The highest mobility rates are recorded in Madrid and certain bordering inland areas of Spain, and the Mediterranean regions (Catalonia, the Valencian

Community, Murcia, and the Balearic Islands). The inland regions, primarily those neighbouring Madrid (Extremadura, Castilla y León, and Castilla-La Mancha), are the ones with the largest population drops due to internal migration. Furthermore, following the financial crisis, internal emigration to Madrid increased markedly, while immigrant arrivals from abroad concentrated predominantly in Madrid, Catalonia, the Mediterranean coast, and the islands. The primary destinations attracting foreign individuals include Madrid (internal and international), Catalonia (mainly due to international migration), the Mediterranean coast (Valencian Community and Murcia, due to international migration), and the Balearic and Canary Islands (international migration).

Related to the evolution over time, mobility patterns shifted somewhat during the most recent period, 2020-2021. In this regard, alongside the Mediterranean areas and Madrid and its surroundings, Aragón (with Zaragoza as the epicenter) and the coastal communities of Cantabria and Galicia gained prominence. This shift is largely attributed to return migration from other regions during the COVID-19 lockdown. However, distinct patterns emerge, such as in the region of Galicia. In recent years, Galicia has benefited from its large diaspora of people of Galician origin living abroad, for example, in Cuba and Venezuela. This case is somewhat unusual, as Galicia was historically a major area of emigration during the mid- to late 20th century. Consequently, a positive international migration balance has been observed in certain years due to return migration and the arrival of second- and third-generation descendants of earlier emigrants primarily from Latin America. This trend has been particularly evident during periods of favourable economic conditions in Spain, notably since 2015, following the recovery from the Great Recession. Moreover, at the same time, this region does not exhibit a significant negative internal balance, likely because fewer Spanish nationals emigrate from this region to Madrid compared to other inland regions such as Extremadura and Castilla y León.

5. Conclusion

To conclude, we highlight the following main findings of temporal and spatial regional variability in population change patterns in Italy and Spain. Regarding the temporal evolution of the PTR, MST and BST indicators (RQ1), the results indicate a general decline in overall population change in both Italy and Spain, albeit with different underlying dynamics. In Italy, the decrease in the PTR is primarily driven by a falling trend in migration flows combined with a contraction in the number of births. Conversely, in Spain, while the PTR also shows a slight reduction, this is mainly attributable to a consistent decline in the number of births across all regions, despite a modest increase in migration flows. This decline in births and fertility rates, which has contributed to lower PTR and BST values, has been driven by persistently high youth unemployment, delayed access to stable jobs, growing labour market

instability, and changing career aspirations among young women. Notably, Spain experienced negative international migration balances between 2008 and 2013, followed by a positive shift in subsequent years, further influencing the observed trends. In terms of spatial variability and regional patterns of population change (RQ2), two distinct geographic patterns were observed in both countries, related to the different levels of the PTR and MST. In Italy, the traditional North-Center versus South divide emerges, reflecting persistent socio-economic disparities and internal heterogeneity within macro-regions. In Spain, the contrast appears between inland regions and the more dynamic areas of Madrid and the Mediterranean coast. These findings confirm not only the enduring regional disparities in Italy but also the clear inland-coastal differentiation in Spain, particularly the divergence between Madrid and surrounding inland regions versus coastal areas, underscoring the importance of regional contexts in shaping demographic dynamics. These regional disparities appear to stem from unequal economic conditions across territories, including the concentration of employment opportunities and access to services.

Acknowledgements

References

BILLARI F.C. 2022. Demography: Fast and slow. *Population and Development Review*, Vol. 48, No. 1, pp. 9-30.

BUONOMO A., BENASSI F., GALLO G., SALVATI L., STROZZA S. 2024. In-between centers and suburbs? Increasing differentials in recent demographic dynamics of Italian metropolitan cities. *Genus,* Vol.80, No.1.

CARELLA M.,DELREY POVEDA A., ZANASI F. 2021. Post-Migration Fertility in Southern Europe: Romanian and Moroccan women in Italy and Spain,*Migration Letters*, Vol. 18, No. 6, pp. 745-760.

CASACCHIA O., REYNAUD C., STROZZA S., TUCCI E. 2022. Internal migration patterns of foreign citizens in Italy, *International Migration*, Vol. 60, pp. 183-197.

DEL REY A., CEBRIÁN M. 2010. Population Replacement and Migration in Two Spanish Regions during the Twentieth century, *Population-English Edition*, Vol. 65, No. 3, pp. 481-498.

DEL REY A., ORTEGA J.A. 2010. The Impact of Migration on Birth Replacement-The Spanish Case. In SALZMANN T., EDMONSTON B. and RAYMER J. (Eds.) *Demographic Aspects of Migration*, Wiesbaden, VS Verlag für Sozialwissenschaften, pp. 97-121.

EDIEV D., COLEMAN D., SCHERBOV S. 2014. New measures of population reproduction for an era of high migration, *Population Space and Place*, Vol. 20, pp. 622-645.

GARCÍA-GÓMEZ J., DEL REY A., STANEK M. 2023. Fertility of immigrants and their descendants in Spain: intergenerational convergence to the native population's behaviour?, *Migration Studies*, Vol. 11, No. 4, pp. 669-693.

GARCÍA-GÓMEZ J., DEL REY A. 2023. La fecundidad completa de las inmigrantes latinoamericanas y sus descendientes en España, *América Latina Hoy*, Vol. 93, pp. 1-35.

GIANNANTONI P., STROZZA S. 2015. Foreigners' contribution to the evolution of fertility in Italy: Are-examination on the decade 2001–2011, *Rivista Italiana di Economia, Demografia e Statistica*, Vol. 69, No. 2, pp. 129-140.

LOZANO M., ESTEVE A., BOERTIEN D., MOGI R., CUI Q. 2024. Lowest Low Fertility in Spain: Insights from the 2018 Spanish Fertility Survey, *Demographic Research*, Vol. 51, No. 19, pp. 625-636.

MARBÁN-MARTÍNEZ L., RECAÑO J., REYNAUD C. 2025. Explorando los componentes del crecimiento demográfico reciente de los municipios del sur de Europa: España e Italia en perspectiva comparada, *Boletín de la Asociación de Geógrafos Españoles*, Vol. 103, pp. 1-35.

ORFAO G., GARCÍA-GÓMEZ J., DEL REY A., PARRADO E. 2025. Has Immigration Contributed to Population Growth in Spain? A Regional Comparative Analysis. In: POLLICE A., MARIANI P. (Eds.) *Methodological and Applied Statistics and Demography* IV. SIS 2024. Italian Statistical Society Series on Advances in Statistics, Springer, Cham, pp. 342-348.

PRESTON S., WANG H. 2007. Intrinsic Growth Rates and Net Reproduction Rates in the Presence of Migration, *Population and Development Review*, Vol. 33, pp. 657-666.

ROIG-VILA M., CASTRO-MARTÍN T. 2007. Childbearing patterns of foreign women in a new immigration country: the case of Spain, *Population-E,* Vol. 62, pp. 351-380.

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FROM MUNICIPAL CENTRES TO ULTRA-REMOTE ZONES: FOREIGN SETTLEMENT PATTERNS ACROSS ITALY'S INNER AREAS

Massimo Mucciardi

Abstract. This paper explores the settlement patterns of foreign populations within Italy's Inner Areas, as defined by the National Strategy for Inner Areas (SNAI). These areas characterised by increasing remoteness from essential services such as healthcare, education, and transport face structural challenges of demographic ageing, depopulation, and economic marginality. Using municipal data from the years 2003, 2013 and 2023, the analysis measures the foreign incidence (foreigners per 1,000 inhabitants) in the six SNAI municipal categories. Results show a generalised increase in foreign presence, particularly in municipalities classified as service centres, while remote and ultra-remote areas exhibit lower but growing trends. A Local Moran's I spatial cluster analysis reveals that high-incidence clusters are concentrated in the North and Centre, whereas low-incidence clusters dominate in the South and Islands, highlighting persistent territorial disparities. The study confirms that foreign settlement patterns are closely linked to SNAI spatial hierarchies and service accessibility.

1. Introduction

Since World War II, Italy has faced profound demographic changes, notably depopulation and population ageing (Reynaud and Miccoli, 2023). These dynamics have disproportionately affected rural and mountainous territories, now formally classified as Inner Areas (Barca *et al*., 2014; ISTAT, 2022). Italy faces significant demographic challenges, especially in peripheral and less densely populated regions identified by the National Strategy for Inner Areas (SNAI), characterised by their distance from essential services such as education, healthcare, and transportation. This remoteness often correlates with depopulation, an ageing population, and pronounced territorial disparities compared to more central and urbanized parts of the country (Kërçuku, 2022; Fiasconaro *et al*., 2024). Rather than framing these areas solely as spaces of loss, recent attention has shifted to their potential transformation through the presence of foreign populations. However, the phenomenon of foreign settlement in Italy's Inner Areas (IA) presents a complex interplay with these existing demographic and socio-economic trends. In theoretical terms, foreign settlement in IA can be interpreted as the result of a combination of mechanisms. These include labour demand in agriculture, construction, and personal care services; the relative

affordability of housing in depopulated municipalities; demographic niches created by ageing and out-migration of natives; and targeted local or national policies aimed at revitalising marginal territories. Prior studies (Carlucci and Lucatelli, 2013; Oppio, 2021) confirm that these structural and institutional factors jointly influence the attractiveness of IA for foreign residents. The phenomenon of foreign settlement in such disadvantaged territories is gaining strategic relevance, particularly within the framework of the SNAI, aimed at countering demographic and socio-economic marginalization. Depopulation in Italy, intensified from the 1970s, is tied to declining fertility rates and persistent emigration from rural areas (Reynaud and Miccoli, 2018). Spatial analyses confirm that higher altitudes, geographical isolation, and reduced service accessibility are strong predictors of municipal population decline (Benassi *et al*., 2020). Northern municipalities have experienced milder depopulation trends compared to the South and island regions. The South alone contains 67.4% of Italy's Inner Area municipalities (ISTAT, 2022). In this fragile context, foreign populations have begun to play an increasingly relevant role in some municipalities. In many cases, foreign residents have helped to maintain minimum demographic thresholds in schools, supported the agricultural labour force, and contributed to the survival of small services and local markets (Reynaud and Miccoli, 2023). Their presence may also facilitate a redefinition of local identity, particularly in rural areas where authenticity and inclusion can coexist (Carlucci and Lucatelli, 2023; Oppio, 2021). However, this presence remains uneven across the national territory. By examining the extent of foreign presence and focusing mainly on territorial disparities within SNAI areas, this article aims to explore precisely this settlement phenomenon. Unlike much of the existing literature on Italy's IA, which focuses primarily on processes of depopulation, ageing, and marginalisation, this paper adopts a different analytical perspective. Specifically focusing on the geography of foreign presence within the SNAI framework, the main objective is to explore how the presence of foreign citizens has changed over the last 20 years in different types of municipalities – from central service centres to the most marginal and peripheral areas of our country. Geographical Information Systems (GIS) are used to map the distribution of the incidence of foreigners at the scale of IA. Spatial statistical techniques are also used to identify spatial concentrations of foreign population settlement.

The paper is structured as follows: In the next section we will address more formally the definition of SNAI; in the third section we will specifically address the settlement of foreigners in SNAI. Some concluding remarks will conclude the article.

2. The Inner Areas: definition and territorial statistics

Before presenting the data on foreign presence in Italy over the past 20 years, it is important to provide some definitions and territorial statistics on IA, which will serve as a foundation for the subsequent analysis. The concept of IA was formally introduced in Italy through the National Strategy for IA (Barca *et al.*, 2014; ISTAT, 2022), which aims to identify and support those territories characterized by persistent conditions of marginality and remoteness from essential services. These services include education, healthcare, and mobility (ISTAT, 2022 and 2024). According to the SNAI framework for the 2021–2027 programming cycle, Italian municipalities are classified into six distinct types based on average road travel time (a.r.t.t.) to the nearest service provision centre (a municipality or group of municipalities providing all three key services): A: Municipality (single service centre); B: Municipality (multi service centre); C: Belt (a.r.t.t.< 27.7 minutes); D: Intermediate (27.7 ≤ a.r.t.t.< 40.9 minutes); E: Remote (40.9 ≤ a.r.t.t.< 66.9 minutes);F: Ultra-remote (a.r.t.t.≥ 66.9 minutes). Municipalities classified as Intermediate (D), Remote (E), and Ultra-remote (F) are designated as "IA" within the SNAI typology. In 2023, these categories collectively included 3,818 municipalities, representing approximately 48.4% of all Italian municipalities[1]. From a demographic perspective, the 2023 population distribution shows that IA are home to 13.29 million individuals (22.5% of the national total). In terms of surface area, however, they account for 58.7% of the national territory, underscoring the demographic imbalance between spatial extension and population distribution. This reflects a marked contrast in population density: while non-IA host an average of 366.5 inhabitants per km², IA report a much lower density of 75.0 inhabitants per km². Elevation also contributes to the territorial distinction of these areas: average altitudes increase significantly across the classification gradient, from 135 meters in central service municipalities (Type A) to 736 meters in ultra-remote municipalities (Type F).

From a functional perspective, the three categories that define IA (Types D–F) face particularly strong barriers to immigrant settlement. Intermediate municipalities often combine medium accessibility with limited economic opportunities. Remote municipalities tend to suffer from poor infrastructure and reduced public transport connections. Ultra-remote municipalities, located at the farthest distance from service centres, face structural disadvantages: ageing populations, declining labour markets, and scarce educational and health services. These conditions reduce their capacity to attract and retain foreign residents, despite the availability of low-cost housing.

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[1] Our analysis is based on ISTAT data considering 7,887 municipalities in the year 2023 compared to the total of 7,900 municipalities. The 13 municipalities were excluded to ensure consistency in geography during the analysis period (2003-2023) and the next spatial statistical analysis.

3. The Settlement of Foreigners in the SNAI Areas

Over the past two decades, the distribution of foreign residents across Italian municipalities has undergone substantial transformation. While the overall foreign incidence (FI) presence has increased nationally, the degree of this change vary considerably depending on the SNAI classification of the municipalities (Table 1). Using the indicator of foreign incidence (number of foreigners per 1,000 inhabitants), we observe that the highest values are consistently found in municipalities classified as service provision centres. In particular, Type A municipalities (single service centres) showed a sharp increase from 32.4 in 2003 to 113.3 in 2023, an absolute rise of over 80.8, reflecting their strong attraction for foreign settlement (see colomn "Diff. 2003 -2023" in Table 1). Similarly, Type B municipalities (multi-municipality centres) experienced an increase from 19.2 to 74.4, with an increase of of 55.2 foreigners.

Table 1 - *Foreigner incidence (FI) by SNAI classification – Years 2003, 2013 and 2023.*

Classification of Municipalities	FI_2003	FI_2013	FI_2023	Diff. 2023-2003
A - Municipality (single)	32.44	94.71	113.27	80.83
B - Municipality (multi)	19.22	64.39	74.41	55.19
C - Belt	24.74	72.57	78.16	53.42
D - Intermediate	21.95	65.15	71.62	49.67
E - Remote	15.91	49.08	56.61	40.70
F - Ultra remote	10.39	33.52	40.51	30.12
Total	25.95	76.50	87.17	61.23

Source: Our elaboration on municipal Istat data.

Moving outward from the core, Belt municipalities (Type C) saw foreign incidence increase from 24.7 in 2003 to 78.2 in 2023 (+53.4), while Intermediate areas (Type D) rose from 22.0 to 71.6 (+49.6). Remote municipalities (Type E) grew from 15.9 to 56.6 (+40.7), and Ultra-remote ones (Type F)—representing the most marginal areas—saw a more modest increase from 10.4 to 40.5 (+30.1). These data reveal a clear territorial gradient in the growth of foreign presence: the closer a municipality is to essential services, the higher its capacity to attract and retain foreign populations. Such a pattern suggests that accessibility continues to play a pivotal role in shaping migration geographies[2]. Despite significant improvements in peripheral areas, territorial gaps persist with the 2023 incidence in ultra-remote municipalities less than half that of central ones. When we aggregate municipalities

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[2] However, caution is required in interpreting these increases, as without flow data it is not possible to distinguish between new arrivals, demographic turnover, or local policy effects.

into IA vs. Non-IA, the difference remains stark. In 2003, the incidence in Non-IA was 28.1, compared to only 19.1 in IA. By 2023, these figures had grown to 93.7 and 64.9, respectively, preserving a substantial gap of nearly 29 foreigners per 1,000 inhabitants. This differentiated expansion could reflect multiple factors that underlie settlement decisions: job opportunities, housing availability, mobility, local infrastructure, and municipal inclusion policies. The analysis of foreign population incidence at the geographical macro-area level over a 20-year period reveals a marked territorial divide that has persisted despite generalised growth (Table 2). As of 2023, foreign presence per 1,000 inhabitants reaches its highest values in the North-West (110.63), North-East (109.57), and Center (108.05). These values contrast sharply with those in the South (45.33) and Isles (37.68), which remain significantly below the national average of 87.15.

Looking at growth over time, the North-West records the most significant increase (+75.42), followed closely by the Center (+74.99) and the North-East (+71.04). These results confirm the long-standing attractiveness of central and northern regions for foreign settlement, likely driven by stronger labour demand, better institutional support, and denser service networks. A more detailed analysis reveals that this growth is particularly concentrated in municipalities classified as Municipality (single) and Type B Municipality (multi), where accessibility and infrastructure are most developed. Municipalities classified as Belt, Intermediate, Remote, and Ultra-remote also show improvements, but to a lesser extent— especially in the Centre and North-East, where foreigner incidence appears to be gradually diffusing along the SNAI territorial gradient. In contrast, the South and the Isles continue to lag behind. Despite experiencing growth in foreign incidence over the 20-year period, their absolute levels remain low. From 2003 to 2023, the South increased from 8.62 to 45.33 per 1,000 (+36.71), and the Isles from 9.01 to 37.68 (+28.67). While these results confirm an upward trend, they remain significantly below the national average and far lower than the levels observed in the North and Centre. This growth, although positive, is insufficient to compensate for the deep-rooted demographic decline that characterises these territories. Foreign presence, in these cases, does not appear to generate a demographic counterbalance capable of offsetting population ageing and structural outmigration. The data suggest that these areas are not only less attractive to foregner popolutions, but also face considerable difficulties in retaining foreign residents over time. Indeed, when disaggregated by the six SNAI municipal classifications, it becomes clear that Ultra-remote, Remote, and Intermediate municipalities in the South and Islands show consistently low levels of foreign incidence.

Table 2 - *Foreigner incidence (FI) by SNAI classification and Geographical area – Years 2003, 2013 and 2023.*

Geographical Area	Classification of Municipalities	FI_2003	FI_2013	FI_2023	Diff. 2023-2003
North-West	A - Municipality (single)	46.11	130.17	149.45	103.34
	B - Municipality (multi)	26.02	89.78	98.16	72.15
	C - Belt	28.75	86.74	91.89	63.14
	D - Intermediate	36.91	97.73	94.92	58.02
	E - Remote	30.73	77.45	74.57	43.84
	F - Ultra remote	14.48	42.82	41.16	26.68
	Total	35.22	101.57	110.67	75.45
North-East	A - Municipality (single)	41.29	123.41	139.23	97.94
	B - Municipality (multi)	34.97	92.63	94.83	59.86
	C - Belt	37.71	95.95	94.22	56.51
	D - Intermediate	38.03	92.76	99.11	61.08
	E - Remote	32.79	74.43	80.83	48.04
	F - Ultra remote	21.83	51.22	65.27	43.44
	Total	38.53	103.5	109.59	71.06
Centre	A - Municipality (single)	36.32	101.12	121.80	85.48
	B - Municipality (multi)	23.77	67.76	80.34	56.57
	C - Belt	29.73	87.09	94.76	65.03
	D - Intermediate	31.53	96.19	100.11	68.59
	E - Remote	30.25	89.53	93.97	63.72
	F - Ultra remote	31.14	82.45	81.41	50.27
	Total	33.07	94.77	108.05	74.99
South	A - Municipality (single)	9.30	35.33	52.68	43.38
	B - Municipality (multi)	7.84	34.41	46.59	38.75
	C - Belt	8.33	31.17	41.41	33.08
	D - Intermediate	8.68	34.34	44.50	35.83
	E - Remote	8.57	34.60	44.72	36.15
	F - Ultra remote	6.47	30.80	38.68	32.20
	Total	8.62	33.33	45.36	36.74
Islands	A - Municipality (single)	13.57	35.50	47.64	34.07
	B - Municipality (multi)	4.92	19.43	30.15	25.22
	C - Belt	7.68	23.15	29.82	22.14
	D - Intermediate	7.56	28.43	38.29	30.73
	E - Remote	5.60	23.86	32.54	26.94
	F - Ultra remote	4.14	14.50	18.89	14.75
	Total	9.01	28.05	37.68	28.67

Source: Our elaboration on municipal Istat data.

Even where growth has occurred, the absolute values remain modest, and the capacity to integrate and retain foreign populations appears constrained. Given these spatially uneven dynamics, it becomes essential to move beyond descriptive statistics and examine whether the growth in foreign population incidence follows spatially structured patterns. To this end, the study applies a Local Indicators of Spatial Association (LISA) approach—specifically the Local Moran's I statistic—to test for the presence of significant territorial clusters (Anselin, 1995). This method

enables the identification of growth trajectories of foreign incidence by differentiating between isolated municipalities and those that belong to statistically coherent spatial clusters of high or low incidence intensity. Before turning to the spatial clustering analysis, it is useful to provide a descriptive overview of the territorial distribution of change in foreign population incidence across Italian municipalities. Figure 1 (left) presents the absolute variation in the number of foreign residents per 1,000 inhabitants between 2003 and 2023, offering a first-level reading of the geography of foreign settlement. The spatial distribution clearly indicates that the most significant increases are concentrated in Northern and Central Italy, particularly along the Po Valley, in Tuscany, and in parts of Umbria, Marche, and Emilia-Romagna. These areas exhibit dark red and orange shades, indicating an increase of more than 100 foreigners per 1,000 residents in several cases. Conversely, Southern regions and the Islands, including vast portions of Calabria, Basilicata, Sardinia, and Sicily, are largely characterised by lighter shades, signifying modest increases or even stagnation in foreign presence. A limited number of municipalities, just 3.6% of the total, primarily in rural areas of the Centre-North—display negative values (shades of blue), indicating a decline in foreign incidence over the 20-year period. However, these are rare and geographically scattered. To test whether these patterns exhibit statistically significant spatial clustering, a Local Moran's I analysis was conducted using an inverse distance spatial weight matrix, where neighbouring municipalities are defined by geographical proximity, with closer municipalities receiving stronger influence and the effect decreasing as distance increases. The analysis was structured at the municipal level, dividing municipalities into five groups:

- HH (High–High): Municipalities with high foreign incidence surrounded by municipalities with similarly high values;
- LL (Low–Low): Municipalities with low incidence surrounded by similarly low values;
- HL (High–Low): Municipalities with high foreign incidence surrounded by low-incidence neighbours;
- LH (Low–High): Municipalities with low incidence surrounded by high-incidence neighbours;
- NS (Not Significant): Municipalities with no statistically significant local spatial autocorrelation.

According to the results obtained[3] (Table 3 and Figure 1/right), out of 7,878 Italian municipalities: 1,465 (18.6%) belong to HH clusters, highlighting consolidated areas of high foreign presence. 2,036 (25.8%) fall within LL clusters, reflecting wide zones with uniformly low incidence. 272 (3.5%) and 390 (4.9%) are outlier municipalities

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[3] Data processed with ARCGIS 10.8 (See for more details ESRI, 2020).

(HL and LH, respectively), suggesting spatial discontinuities. Almost 47% (3,715 municipalities) show no significant local clustering, indicating a more random distribution or transitional contexts (see at the Italy row profile at the bottom of the Table 3).

Figure 1 – *(Left)* Territorial distribution of the variation in foreign population incidence (2003–2023); (Right) Spatial clusters of change in foreign incidence detected through Local Moran's I.*
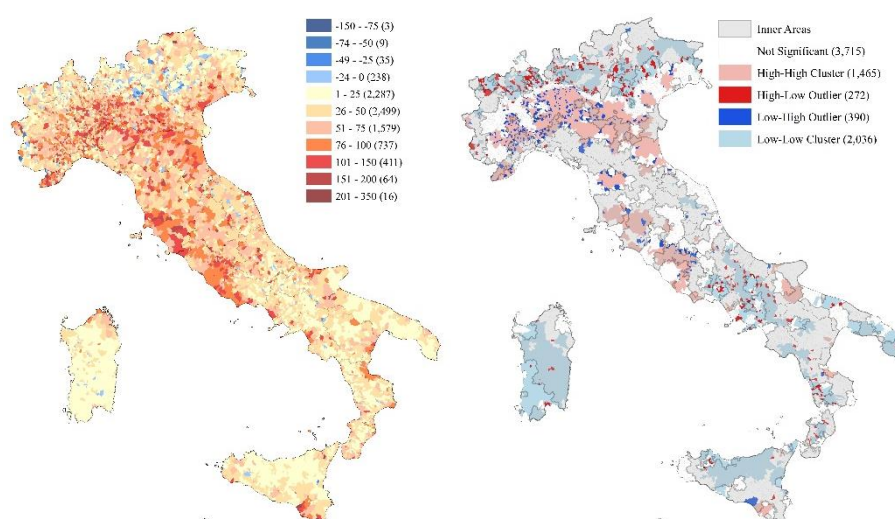
*Foreign residents per 1,000 inhabitants (value classes).

The spatial visualization of the clusters confirms these findings (Figure 1/right). Municipalities marked in pink (HH) show concentrated high foreign incidence, primarily located in Northern and Central Italy—especially in productive districts and urban fringes. Conversely, municipalities marked in light blue (LL) dominate the South and the Islands, underlining the persistent exclusion of these territories from foreign settlement dynamics. Red (HL) and blue (LH) identify spatial outliers, often located at the interface between areas of differing dynamics, such as peri-urban belts or administrative borders. These patterns confirm that foreign migration in Italy is not territorially neutral. While foreign presence has expanded overall, it has done so unevenly, reinforcing certain territorial divides. The spatial concentration of high-incidence areas in the North and low-incidence areas in the South likely reflects broader socio-economic and infrastructural disparities. A more detailed analysis of Table 3 highlights pronounced territorial disparities in the distribution and concentration of foreign presence between geographical areas. In the North-West,

HH clusters dominate among Type A (50.0%), Type B (39.3%), and Belt (34.0%) municipalities. Even Intermediate (26.9%) and Remote (13.0%) municipalities register relevant shares of HH. Clustering indicates that foreign demographic growth extends beyond core urban centres, diffusing along functional corridors.

Table 3 - *Percentage distribution of municipalities by spatial clustering type and SNAI classification, disaggregated by geographical area.*

Geo. area	SNAI classification	HH (%)	HL (%)	LH (%)	LL (%)	NS (%)	Total (%)
North-West	A - Municipality	50.0	10.4	0.0	0.0	39.6	100
	B - Municipality	39.3	7.1	0.0	7.1	46.4	100
	C - Belt	34.0	2.6	11.8	12.8	38.8	100
	D - Intermediate	26.9	7.1	8.4	19.3	38.2	100
	E - Remote	13.0	5.6	6.5	35.7	39.2	100
	F - Ultra remote	0.0	7.7	0.0	49.2	43.1	100
	Total	29.8	4.1	9.9	17.3	38.9	100
North-East	A - Municipality	37.0	15.2	0.0	2.2	45.7	100
	B - Municipality	22.2	11.1	0.0	22.2	44.4	100
	C - Belt	28.9	1.8	3.6	17.5	48.2	100
	D - Intermediate	19.9	3.3	2.2	31.0	43.5	100
	E - Remote	3.4	6.3	1.7	30.8	57.8	100
	F - Ultra remote	0.0	0.0	1.5	22.7	75.8	100
	Total	21.6	3.3	2.7	22.2	50.1	100
Centre	A - Municipality	18.4	2.6	0.0	0.0	78.9	100
	B - Municipality	0.0	0.0	0.0	0.0	100.0	100
	C - Belt	23.4	1.3	4.6	7.1	63.7	100
	D - Intermediate	26.0	0.3	5.0	8.8	59.9	100
	E - Remote	26.3	0.0	5.3	1.1	67.4	100
	F - Ultra remote	5.9	0.0	0.0	0.0	94.1	100
	Total	24.2	0.7	4.6	6.0	64.5	100
South	A - Municipality	3.1	9.4	0.0	28.1	59.4	100
	B - Municipality	8.3	0.0	0.0	0.0	91.7	100
	C - Belt	1.7	5.4	0.3	43.6	49.0	100
	D - Intermediate	3.9	5.1	0.8	34.1	56.1	100
	E - Remote	0.6	3.3	0.4	30.1	65.6	100
	F - Ultra remote	0.0	4.2	0.0	32.9	62.9	100
	Total	2.0	4.7	0.4	35.8	57.2	100
Islands	A - Municipality	5.6	5.6	0.0	44.4	44.4	100
	B - Municipality	0.0	0.0	0.0	50.0	50.0	100
	C - Belt	1.2	1.2	0.0	71.8	25.9	100
	D - Intermediate	1.4	1.4	0.0	68.0	29.3	100
	E - Remote	0.4	1.5	0.8	64.4	33.0	100
	F - Ultra remote	0.0	2.4	0.0	78.0	19.5	100
	Total	0.9	1.6	0.3	68.0	29.2	100
Italy	*Total*	*18.6*	*3.5*	*4.9*	*25.8*	*47.2*	*100*

Source: Our elaboration on municipal Istat data.

However, Ultra-remote municipalities are excluded (0.0% HH; 49.2% LL), highlighting spatial thresholds beyond which migration does not penetrate. The North-East presents a more fragmented structure. HH clusters are frequent in Type A (37.0%) and Belt (28.9%) municipalities, but their incidence drops sharply in more

marginal areas—only 3.4% in Remote and 0.0% in Ultra-remote municipalities. LL clustering increases correspondingly with remoteness, with over 30% of Type D, E, and F municipalities in this region falling into the LL category. These findings suggest a strong association between accessibility and foreign incidence, with IA largely bypassed by foreign settlement. In the Centre, HH clustering is moderate across all typologies, peaking at around 26% in Intermediate and Remote municipalities. Notably, these figures represent some of the highest HH shares among IA nationally, indicating that foreign presence in Central Italy has begun to diffuse more evenly, even into less accessible territories. However, this trend is tempered by the high prevalence of NS classifications—reaching 100% in Type B and 94.1% in Ultra-remote municipalities—suggesting that settlement patterns remain statistically fragmented or transitional. The South and Islands exhibit a marked prevalence of Low–Low (LL) clustering, which reflects a spatially widespread low incidence of foreign population growth. HH clusters remain marginal—accounting for only 2.0% of municipalities in the South and 0.9% in the Islands—and are virtually absent in more peripheral areas. Conversely, LL clusters dominate across SNAI typologies in these regions: more than 30% of all municipalities in the South fall into this category, reaching 43.6% in Belt areas and over 68% in Type C and D municipalities of the Islands. This pattern suggests not necessarily a process of demographic erosion, but rather a stable and diffuse condition of low foreign incidence, where the presence of immigrants has not expanded substantially nor has it clustered territorially in significant ways. The NS category, which signals the absence of statistically significant spatial clustering, remains highly prevalent in the South (57.2%) and the Islands (29.2%). In Southern and Insular regions this non-clustered incidence often coexists with widespread LL clusters, indicating a diffuse and persistent condition of low foreign incidence. This spatial configuration reinforces the interpretation of demographic stagnation, particularly in the most marginal IA.

4. Final remarks

This paper has examined the territorial dynamics of foreign population settlement in Italy over the last two decades, with a specific focus on the classification of municipalities defined by the SNAI framework. While the overall incidence of foreign residents has increased significantly across the country, the analysis confirms that such growth has not occurred evenly. The North and Centre particularly in service-rich municipalities (Types A and B) have consolidated as key destinations for the foreign population, forming statistically significant High–High clusters that reflect spatial cohesion and demographic reinforcement. In contrast, the South and

the Islands remain characterised by Low–Low clusters and widespread absence of spatial clustering, particularly in Intermediate, Remote, and Ultra-remote areas. These results point to a persistent mismatch between territorial need and foregner contribution: areas most vulnerable to depopulation and demographic ageing continue to attract fewer foreign populations. The present analysis underscores the importance of adopting a territorial scale of interpretation, in which migration is not treated as a uniform process, but rather as a phenomenon shaped by accessibility, service availability. In this respect, the SNAI classification proves particularly useful in revealing these structural disparities, showing how foreign presence tends to concentrate in already functional areas.

From a policy perspective, this also suggests that interventions should focus on improving infrastructure and transport accessibility, strengthening labour market integration in agriculture and local services, and promoting inclusive strategies in education and welfare. Such measures could help align foreign settlement with the demographic needs of the most fragile IA. While this analysis provides insights into the spatial dynamics of foreign settlement, future research should move beyond aggregate measures and examine specific communities, shaped by differentiated labour markets and networks (Conti et al., 2022). On the other hand future research should go beyond the descriptive level to incorporate explanatory models. It should also incorporate explanatory models, analysing foreign incidence as a function of distance from service centres and other socio-economic predictors. This would allow a more robust understanding of territorial drivers and provide a stronger basis for social policy design.

References

ANSELIN L. 1995. Local Indicators of Spatial Association—LISA, *Geographical Analysis*, Vol. 27, No. 2, pp. 93–115.
BARCA F., CASAVOLA P., LUCATELLI S. 2014. Strategia Nazionale per le aree interne. Definizioni, obiettivi e strumenti di governance, *Materiali UVAL*, London, UK,Vol. 31.

BENASSI F., MICCOLI S., REYNAUD C., NACCARATO A., SALVATI L. 2020. Unravelling a demographic 'Mosaic': Spatial patterns and contextual factors of depopulation in Italian municipalities, 1981–2011, *Ecological Indicators*, Vol. 115.

CARLUCCI C., LUCATELLI S. 2013. Aree interne: un potenziale per la crescita economica del Paese, *Agriregionieuropa*, Vol. 9, No. 34, September.

CONTI C., MUCCIARDI M., SIMONE M. 2023. Exploring the Settlement Models of the Main Foreign Communities Residing in Italy (2003–2021), *Social Sciences*, Vol. 12,No. 9, pp. 1–16.

ESRI. 2020. *How Spatial Autocorrelation (Moran's I) works*. ArcMap 10.8 Documentation, Redlands (CA): Environmental Systems Research Institute.

FIASCONARO S., TRIVENTI M., FEDELI E. 2024. Le aree interne: un'analisi delle disuguaglianze territoriali in Italia, *Rassegna Italiana di Sociologia*, Vol. 65, No. 3, pp. 543–578.

ISTAT. 2022. *The geography of Inner Areas in 2020. Territories between potential and weaknesses*, Rome: Italian National Institute of Statistics. Retrieved from: https://www.istat.it/

ISTAT. 2024. *La demografia delle aree interne: dinamiche recenti e prospettive future*. Rome: Italian National Institute of Statistics. Retrieved from: https://www.istat.it/

KËRÇUKU A. 2022. Depopulation and abandonment. A thematic map of shrinking territories. In Italian National Network of Young Researchers for Inner Areas Committee (Eds) *Inner Areas in Italy: A Test Bed for Analysing, Managing and Designing Marginal Territories*, The ListLab, pp. 25–37

OPPIO A. 2021. Migrants and Italian Inner Areas for an anti-fragility strategy, *Valori e Valutazioni*, Vol. 28.

REYNAUD C., MICCOLI S. 2018. Depopulation and demographic ageing in Italy: a spatial perspective, *Vienna Yearbook of Population Research*, Vol. 16, pp. 71–98.

REYNAUD C., MICCOLI S. 2023. Demographic sustainability in Italian territories: The link between depopulation and population ageing, *Vienna Yearbook of Population Research,* Vol. 21, pp. 339–360.

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A SPATIAL ANALYSIS OF THE INFLUENCE OF THE FOREIGN POPULATION ON AGEING IN ITALY

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Abstract. Italy is experiencing an intense demographic aging process, mostly driven by a declining fertility and increasing longevity. The presence of the foreign population is often mentioned as a potential counterbalancing factor, but its actual impact on the age structure remains a matter of debate. This paper aims to explore whether, how and to what extent the effect of the foreign population on demographic aging varies over a territory. Unlike previous studies focusing on national-level effects, this analysis looks at municipal variations over time, offering a more detailed understanding of how foreign presence influences local aging processes. The analysis is based on municipal-level data provided by Istat and covers the period 2002–2022. The dependent variable is the proportion of the elderly population (65+) in relation to the total resident population. The analysis is conducted using Ordinary Least Squares (OLS) and Geographically Weighted Regression (GWR) models to investigate the factors influencing demographic ageing across Italian municipalities. The main explanatory variables include the proportion of foreign citizens (hereafter referred to as foreigners) in the population, the median age of the foreign population, and demographic behaviours such as the Crude Birth Rate of foreign women and the Internal Migration Rate of foreign citizens. The models also control for other demographic factors, including life expectancy for women and men, the Crude Birth Rate of Italian women, and the Internal Migration Rate of Italian citizens. The analysis shows that the impact of the foreign population on demographic ageing varies significantly across municipalities and over time, highlighting spatial and temporal heterogeneity in these effects.

1. Introduction

Population ageing represents one of the most significant demographic shifts currently affecting Europe, wide-ranging implications for welfare systems, labour markets, and social cohesion (Bloom and McKinnon, 2014). Italy has experienced a significant rise in its population's median age over the past few decades, becoming one of the world's oldest countries. However, this demographic shift has not been uniform across the country: patterns of ageing vary significantly at the local level, reflecting differences in fertility, mortality, and the dynamics of both internal and international migration (García-Pereiro, 2018; Backman and Karlsson, 2024).

While the role of declining fertility and increasing life expectancy in driving population ageing has been widely studied, the contribution of international migration, particularly the presence of foreign residents in shaping local ageing

patterns has received comparatively less attention. We have investigated the spatial dimension of ageing in Italy, focusing on the impact of foreign residents on local age structures in the years 2002 and 2022. Using annual demographic data from the Italian National Institute of Statistics (Istat) and spatial regression models, we have assessed whether, and to what extent, the presence of foreign residents has mitigated population ageing in Italian municipalities. Specifically, we have explored both general trends and spatial heterogeneity of this relationship using Ordinary Least Squares (OLS) and Geographically Weighted Regression (GWR) models. These insights are crucial for informing spatially sensitive demographic and migration policies.

2. Literature

In recent decades, demographic literature has increasingly focused on the role of international migration in shaping the evolution of population dynamics, particularly in relation to ageing processes and changes in age structure. In contexts marked by negative natural growth, such as Italy, immigration has gradually acquired a rebalancing function, contributing not only to overall population growth but also to slowing the pace of ageing (Gesano and Strozza, 2011).

The demographic impact of the foreign component manifests itself through the size and age composition of migratory flows, so-called direct effect (Di Giulio *et al.*, 2012). It is widely recognised that international migrants commonly arrive in their destination countries at a relatively young age and join age groups that are frequently undersized in contexts of advanced population ageing (Backman and Karlsson, 2024). Consequently, they contribute -at least in the short to medium term - to a partial reshaping of the demographic structure (Collantes *et al.*, 2014). Nevertheless, the effectiveness of this rebalancing effect is limited by several factors. First, the total volume of migration flows remains modest when compared to the size of the resident population, reducing their long-term impact on the age structure (Fihel *et al.*, 2018). Second, once settled in the host country, migrant populations themselves undergo ageing processes, like the native population (Bermingham, 2001).

In addition to structural effects, the foreign component of the population influences local demographic dynamics through its demographic behaviour. As demonstrated in existing literature, the fertility of foreign women is particularly relevant in contexts with very low fertility (Bagavos, 2022; Paterno, 2011). Births to foreign mothers account for a significant percentage of the total, contributing to mitigating the birth rate deficit (Gesano and Strozza, 2019). Immigrant women, who mainly arrive at childbearing age, show higher fertility rates than their native counterparts, at least in the early stages of migration process (Sobotka, 2008; Gabrielli *et al.*, 2007). However, more recent studies have reported a progressive

convergence in reproductive behaviour between native and immigrant women, due to cultural, economic and structural factors, resulting in a reduced compensatory effect attributable to foreign fertility (García-Pereiro and Paterno, 2024). Moreover, internal migration patterns of foreign populations further shape the demographic structure of territories. These movements contribute to the spatial redistribution of the population, counteracting ageing in some areas and intensifying demographic pressure in others (Casacchia *et al.*, 2022).

Then the effectiveness of migration in mitigating ageing is not uniform across the country, but varies significantly depending on the geographical distribution of foreigners (Busetta *et al.*, 2025). The innovation exhibited by cities has been demonstrated to exert influence on their attractiveness, thus resulting in a concentration of young foreigners in areas characterised by greater socio-economic opportunities (Kanbur and Rapoport, 2005; Fratesi and Riggi, 2007).

Italy exhibits distinct territorial polarisation, characterised by a higher concentration of foreign populations in the northern regions, which are recognised for their economic and employment opportunities, and a significantly lower presence in the southern and island regions (Benassi and Naccarato, 2018; Strozza *et al.*, 2016). This territorial heterogeneity suggests that their contribution to containing ageing should not be investigated exclusively at the national level, but rather through an analysis that considers the sub-national scale (Pratschke and Benassi, 2024).

In this context, incorporating the spatial information provides the basis of a methodologically sound approach for exploring the relationship between migration dynamics and demographic transformations.

According to these theoretical premises, this study aims to investigate two specific research questions:

RQ1: How do the demographic structure (age and sex) and behaviours (birth rates and internal mobility) of foreigners influence the percentage of the over-65 population at the municipal level?

RQ2: How have these relationships evolved over time?

3. Data and methodology

The study is based on demographic data, which comprises the age structure of all 7,896 Italian municipalities, as provided by the Italian National Institute of Statistics (Istat) through the DemoIstat database, covering the period 2002–2022.

It should be noted that the Istat data only include only the registered resident population. Therefore, individuals with residence permits who are not registered, as well as visa overstayers, are excluded. As these groups tend to be younger than long-

term residents, their absence may result in a slight overestimation of population ageing.

The dependent variable is the percentage of the population aged 65 and over (%65+), which is used as a measure of demographic ageing at the local level. To analyse the possible contribution of the structure and demographic dynamics of the foreign population in mitigating this phenomenon, the following independent variables of interest are included: percentage of foreign population in total (%FP); median age of the foreign population (MAFP); crude birth rate of foreign women (CBRF); and internal migration rate of the foreign population (IMRF). In addition, several control variables are introduced to account for structural ageing factors independent of foreign presence. Those are: crude birth rate of Italian women (CBRI); internal migration rate of the Italian population (IMRI); and life expectancy at birth for men (LEM) and women (LEW).

As shown in Table 1, Italian municipalities underwent significant demographic changes between 2002 and 2022. The proportion of foreign nationals has increased significantly during this period, with their mean age rising from 31 to 38, suggesting that foreign residents have been staying longer in the same municipalities. Internal migration decreased, particularly among foreigners, thereby reversing the positive migration balance observed in 2002. Concurrently, birth rates declined for both Italians and foreigners, with the latter experiencing a more pronounced decline. Most strikingly, the proportion of older adults tripled, confirming ageing as a widespread structural trend. Although life expectancy continued to improve, its slower pace has exacerbated the challenges associated with population ageing.

Table 1 - *Demographic indicators of Italian municipalities for the years 2002 and 2022.*

	2002			2022		
Variable	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
IMRI	0.98	16.16	0.00	0.37	11.38	0.00
IMRF	68.25	320.33	22.33	-0.89	107.21	0.00
%FP	2.24	2.04	1.72	6.72	4.34	5.95
MAFP	30.97	8.55	31.00	38.07	6.35	37.00
CBRI	36.56	13.58	36.36	31.64	15.60	31.33
CBRF	54.76	85.22	23.74	30.90	44.07	24.20
%65+	8.85	2.89	8.36	26.14	5.36	25.57
LEW	83.03	0.79	83.10	84.75	0.80	84.80

Data show an increase in population ageing, an ageing foreign population that has become more established in the country, and a decline in internal mobility and birth rates. All of these factors highlight the need for new territorial and social strategies to address the challenges posed by an ageing population.

The analysis aims to determine whether and to what extent the characteristics of the foreign population influence the proportion of people over 65 across different Italian municipalities. To this end, a two-stage methodological approach is adopted. First, ordinary least squares (OLS) regression models are estimated for two reference years - 2002 and 2022 - to assess the average impact of the explanatory variables on demographic ageing. This approach assumes that the relationships between variables remained constant throughout the national territory, thus enabling general trends and variations over time to be identified. In the second phase, Geographically Weighted Regression (GWR) is applied to capture the spatial heterogeneity of the estimated coefficients.

This reinforces the usefulness of GWR in identifying differentiated territorial configurations, which are fundamental to the development of targeted, place-based policies. Therefore, to evaluate the models' performance and explanatory capacity, the results of OLS and GWR are compared using the coefficient determination index (R^2) and the adjusted Akaike information criterion (AICc) for each of the analysed years. The spatial autocorrelation of the residuals is also calculated using Moran's index to verify the model's ability to capture the spatial structure of the phenomenon. Specifically, we assessed whether GWR can reduce residual spatial autocorrelation more effectively than OLS, thereby demonstrating superior representation of local variations.

4. Results

The analysis of the results is divided into two main stages. First, the OLS models for the two analysed years (2002 and 2022) are examined in general terms. Second, the spatial dynamics revealed by Geographically Weighted Regression (GWR) are explored. Table 2 shows the standardised coefficients obtained from OLS models for the years 2002 and 2022.

Table 2 - *Estimated coefficients and significance levels from OLS models for 2002 and 2022.*

Variable	2002	Sig.	2022	Sig.
MAFP	-0.0305	**	0.2659	***
LEW	-0.2127	***	0.1236	***
LEM	0.1997	***	-0.2332	***
CBRI	-0.2247	***	-0.1581	***
CBRF	-0.0859	***	-0.0572	***
%FP	-0.0035	ns	-0.0485	***
IMRI	-0.1008	***	0.0571	***
IMRF	0.0946	***	-0.0336	**

Note: *** p < 0.001, ** p < 0.01, * p < 0.05; ns = not significant.

The dependent variable in both models is the percentage of the population aged 65 and over out of the total resident population, used as a measure of demographic ageing. This provides an effective, albeit concise, overview of how the factors influencing population ageing have evolved. Some elements emerge with particular clarity.

Firstly, the median age of the foreign population (MAFP) has increased over time. While it had a negative and moderate effect in 2002, it became positive and increasingly significant in 2022, reflecting the ageing process of the foreign population. The birth rate of Italian women (CBRI) has remained consistent over time, with a negative and highly significant coefficient in both years. This confirms that higher birth rates are associated with a smaller proportion of the elderly population. However, the intensity of the effect slightly decreased in 2022, in line with the general decline in fertility.

The foreign birth rate (CBRF) also has a negative effect and is decreasing over time, suggesting progressive convergence of reproductive behaviours of foreign and Italian women. This decline may also be partially explained by structural changes in female migration flows, with an increasing number of women arriving in Italy beyond childbearing age, often from Eastern European countries (García-Pereiro and Paterno, 2024).

Changes in internal migration flows are also interesting. In 2002, the internal mobility of foreigners (IMRF) had a positive effect, which is consistent with the presence of families that had already settled down. However, in 2022, the coefficient reversed and became negative, indicating a higher proportion of young people in these flows. Similarly, the internal mobility of Italians (IMRI) has undergone a reversal over time, shifting from a strongly negative value in 2002 to a positive one in 2022. This reflects a change in the age composition of internal migration flows, with older age groups becoming increasingly involved, in contrast to the initial prevalence of younger individuals.

Finally, the percentage of foreigners in the total population (FP%) had no significant effect on ageing in 2002, when foreign presence was still marginal. However, in 2022, the effect became negative, indicating that a higher foreign presence is associated with a lower proportion of older people. Nevertheless, the intensity of this effect has decreased over time, suggesting that the demographic composition of the foreign population is increasingly similar to that of the Italian population.

Overall, the results of the OLS model show that the role of the foreign population and migration flows in demographic ageing has evolved from simple, well-defined dynamics to more complex and less distinct effects. The OLS models demonstrate aggregate trends, but explain only a small proportion of the variance (adjusted R^2 between 10% and 15%), which suggests that there is significant variability at a local

level that the global approach fails to fully capture. This highlights the need for an analysis that considers territorial differences, such as that offered by GWR.

Applying Geographically Weighted Regression (GWR) overcomes the limitations of Ordinary Least Squares (OLS) by providing a more detailed and territorially differentiated analysis of the factors influencing population ageing. Figures 1 and 2 show local GWR coefficients for 2002 and 2022, respectively: a) median age of the foreign population; b) internal migration rate of foreigners; c) crude birth rate of foreign women. Figure 2 also includes d) the share of foreigners, which was not significant in 2002.

These maps highlight the presence of spatial variability and reinforce the importance of adopting a geographically explicit perspective.

Figure 1 *Spatial distribution of GWR coefficients (2002).*
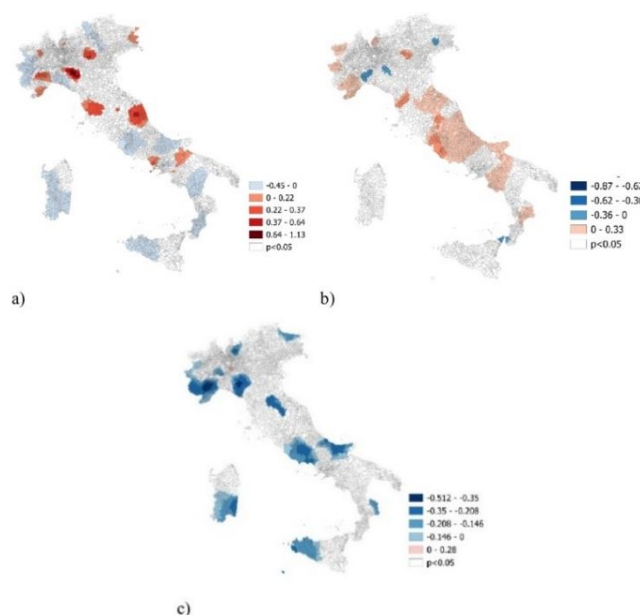
Note: Maps show local effects of: a) the median age of the foreign population; b) the internal migration rate of foreigners; c) the crude birth rate of foreign women.

One important result concerns the internal mobility of foreign citizens (IMRF). In 2002, the local coefficient associated with this variable was positive in some areas of central and northern Italy, indicating that foreign citizens also moved towards municipalities with elderly populations. This suggests that, at that early stage, mobility was not exclusively driven by youthful demographic trends, but could also have been influenced by work-related factors, family networks, or other attractive features of a given area. By 2022, however, this effect had significantly decreased or disappeared in many areas, often becoming statistically

insignificant. This trend reflects greater stabilisation of foreign settlements and less age-selective mobility.

Figure 2 *Spatial distribution of GWR coefficients (2022).*
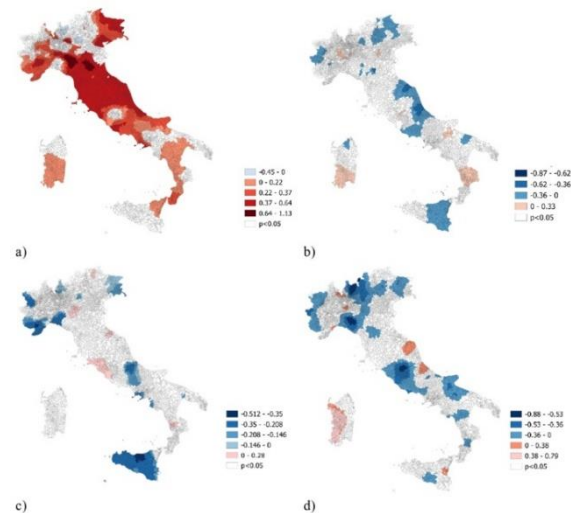
Note: Maps show local effects of: a) the median age of the foreign population; b) the internal migration rate of foreigners; c) the crude birth rate of foreign women; and d) the share of foreigners.

Overall, the results demonstrate that the effects of explanatory variables are not consistent across space but vary significantly depending on local contexts.

The percentage of the foreign population in the total (%FP) showed significant changes over time. While its effect was negligible in 2002, by 2022 it was negatively associated with ageing in many areas of the North and Centre. This suggests that a higher share of the foreign population is associated with a lower percentage of residents aged 65 and over. However, in some areas of the South and the Islands, positive effects have emerged, indicating either the ageing of the resident foreign population or the recent arrival of younger groups.

In 2002, the birth rate of foreign women (CBRF) had a slightly rejuvenating effect, concentrated in certain areas of the Centre and North of the country. By 2022, however, positive effects on ageing had emerged in several areas, indicating a decline in fertility and increasing convergence towards Italian reproductive patterns.

The median age of the foreign population (MAFP) exhibited a weak and uneven effect in 2002, but by 2022, a clear positive correlation had emerged in many areas of the North, Centre, and South. This indicates a growing involvement of the foreign population in ageing processes, which is consistent with greater settlement stability and a change in its demographic composition.

Compared to the OLS, the GWR significantly improves performance, explaining over 50% of the variability in ageing (compared to 10-15% for the OLS) and demonstrating lower AICc values, which indicates better predictive ability. GWR also reduces spatial autocorrelation in the residuals more effectively than the OLS, picking up local differences that the OLS cannot detect.

5. Conclusions

The analysis provides a detailed and dynamic overview of the demographic factors influencing Italy's ageing population at a municipal level. It highlights the important and changing role of foreign populations in different areas over time.

In response to research question (RQ1), the analysis reveals that the demographic dynamics of the foreign population have a differential impact on the growth of the over-65 population at municipal level. Heterogeneous spatial effects are highlighted: in the central and northern regions, the higher fertility of foreign women and youth migration flows contributes to slowing down the ageing process. In contrast, in southern regions and inland areas the demographic impact of foreigners is often limited or even associated with more pronounced ageing.

In response to RQ2, the temporal evolution shows strong and persistent spatial differentiation, with some areas maintaining a 'rejuvenating' effect of the foreign population, while others gradually converge towards ageing dynamics, even among foreigners. Geographically weighted regression (GWR) has enabled these spatial and temporal transformations to be captured, which are not detectable by global models such as OLS. This confirms that the role of the foreign population in demographic ageing is complex and evolving.

The integrated OLS-GWR approach provides a more nuanced understanding of Italian demographic dynamics, emphasising the importance of geographically differentiated policies to effectively address population ageing challenges. In this context, immigration emerges as a potentially significant factor in demographic rebalancing. The analyses conducted enabled a more detailed interpretation of the results by explicitly accounting for spatial heterogeneity. They emphasise the importance of adopting methodological tools capable of capturing the territorial variability of demographic phenomena. Consequently, this study can support the development of targeted, differentiated policy interventions at the local level that recognise and address the varying ageing dynamics present across Italian municipalities.

Acknowledgements

References

BACKMAN M., KARLSSON C. 2024. Ageing places: convergence and the role of the foreign population. *Regional Studies*, Vol. 58, No. 5, pp. 922-937.

BAGAVOS C. 2022. On the contribution of foreign-born populations to overall population change in Europe. *Demographic Research*, Vol. 46, pp. 179-216.

BENASSI F., NACCARATO A. 2018. Foreign citizens working in Italy: Does space matter?. *Spatial Demography*, Vol. 6, pp. 1-16.

BERMINGHAM J. R. 2001. Immigration: Not a Solution to Problems of Population Decline and Aging. *Population and Environment*, Vol. 22, No. 4, 355–363.

BLOOM D. E., MCKINNON R. 2014. The design and implementation of pension systems in developing countries: issues and options. *International Handbook on Ageing and Public Policy.*

BUSETTA A., BENASSI F., BATTAGLINI M., CAPACCI G., IMPICCIATORE, R. 2025. Le sorprese positive dai territori. In *Rapporto sulla Popolazione. Verso una demografia positiva* (pp. 167-203). Il Mulino.

CASACCHIA O., REYNAUD C., STROZZA S., TUCCI E. 2022. *Internal migration patterns of foreign citizens in Italy. International Migration,* Vol. 60, No. 5, pp. 183-197.

COLLANTES F., PINILLA V., SÁEZ L. A., SILVESTRE J. 2014. Reducing depopulation in rural Spain: the impact of immigration. *Population, space and place*, Vol. 20, No. 7, pp. 606-621.

DI GIULIO P., REYNAUD C., VERGAGLIA L. 2012. How internal and international migrations have shaped the age structure of the Italian regions, 1955-2008. In Proceedings of *XLVI Scientific Meeting of the Italian Statistical Society* (pp. 20-22).

FIHEL A., JANICKA A., KLOC-NOWAK W. 2018. The direct and indirect impact of international migration on the population ageing process: A formal analysis and its application to Poland. *Demographic Research*, Vol. 38, pp. 1303-1338.

FRATESSI U., RIGGI M. 2007. Does migration reduce regional disparities? The Role of Skill selective Flows. *Review of Urban & Regional Development Studies* Vol. 19, pp. 78–102.

GABRIELLI G., PATERNO A., STROZZA S. 2007. Dynamics, characteristics, and demographic behaviour of immigrants in some south-European countries. In *an international conference on "Migration and Development,"* Moscow, pp. 13-15.

GARCÍA-PEREIRO T. 2018. Aging and pensions in Italy: highlighting regional disparities. *Rivista Italiana di Economia Demografia e Statistica*, Vol. 72, No. 3.

GARCÍA-PEREIRO T., PATERNO A. 2024. Nonnationals' Fertility and the Great Recession in Italy: A Panel Analysis of Quantum and Tempo Responses. *Italian Economic Journal*, pp. 1-35.

GESANO G., STROZZA S. 2011. Foreign migrations and population aging in Italy. *Genus*, Vol. 67, No. 3, pp. 83-104.

GESANO G., STROZZA S. 2019. Fecondità delle italiane e immigrazione straniera in Italia: due leve alternative o complementari per il riequilibrio demografico?. *La Rivista delle Politiche Sociali*, Vol. 4, pp. 119-140.

ISTAT. Demographic Statistics Database. Roma: Istituto Nazionale di Statistica. Available at: https://demo.istat.it.

KANBUR R., RAPOPORT H. 2005. Migration Selectivity and the Evolution of Spatial Inequality, *Journal of Economic Geography,* Vol. 5, pp. 43–57.

PATERNO A. 2011. Is immigration the solution to population aging?. *Genus*, Vol. 67, No. 3, pp. 65-82.

PRATSCHKE J., BENASSI F. 2024. Population change and residential segregation in Italian small areas, 2011–2021: An analysis with new spatial units. *Spatial Demography*, Vol. 12, No. 2, pp. 3.

SOBOTKA T. 2008. Overview Chapter 7: The rising importance of migrants for childbearing in Europe. *Demographic Research*, Vol. 19, pp. 225-248.

STROZZA S., BENASSI F., FERRARA R., GALLO G. 2016. Recent demographic trends in the major Italian urban agglomerations: The role of foreigners. *Spatial Demography*, Vol. 4, No. 1, pp. 39–70.

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HOW THE FOREIGNERS' OCCUPATIONS IN ITALY ARE EVOLVING: AN ANALYSIS ACROSS GENERATIONS AND GENDERS[1]

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Abstract. In 2024, the number of employed persons with foreign citizenship returned to growth, after the previous year's stability, reaching about 2.5 million, 10.5% of total employment. Foreign employment has always been characterised by higher employment rates than the Italian component, but this advantage has gradually decreased over the last ten years, particularly since the pandemic: while in 2014 the employment rate of foreigners aged 15–64 exceeded that of Italians by about 3 percentage points, in 2024 the two rates were almost identical (62.3% vs. 62.2%).

Several studies show that in Italy the advantage of foreign citizens in employment is linked to their ability to intercept a labour demand with characteristics of greater flexibility, lower qualification and lower remuneration. Moreover, migratory networks contribute to feeding the concentration of employment in certain sectors, through replicated schemes of information dissemination, knowledge and support between relatives and co-nationals. For these reasons, the dynamics of the labour market by citizenship is particularly linked to the sectors of economic activity in which foreigners are most employed, to the sectoral skills of the different communities, as well as to the different composition by gender found within them.

This study aims to analyse whether the approximation in employment rates between foreigners and natives between 2014 and 2024 corresponds to a change in the occupational structure of employment, despite the fact that the foreign labour market is still strongly segregated. Using data from the Labour Force Survey conducted by Istat, the analysis will identify changes in foreign presence in specific occupational groups, taking into account gender, country of citizenship and age also through a multidimensional analysis.

1. The labour market of foreign citizens in Italy

In Italy, foreign citizens form a significant and consistent part of society and labour force, playing an increasingly pivotal role in maintaining welfare models.

Compared to the Italian population, they have a higher fertility rate, a younger demographic profile, and are predominantly employed in manual and unskilled occupations, particularly women in care and domestic assistance sectors. This has helped to counter the challenges of an ageing population and mitigate the progressive ageing of the labour force (Strozza, De Santis, 2017).

However, the pandemic also significantly impacted the employment status of foreigners, affecting not only labour market participation levels, but also the types and conditions of employment. While the demand for foreign labour increased overall during the economic crisis (2008–2013), especially for women in family services (De Rosa *et al*., 2017), it was only in 2020, the year of the pandemic, that the employment rate of foreigners fell below that of Italians. Some empirical analyses demonstrate that the pandemic has accelerated the erosion of migrants' relative employment advantage: the worsening of employment opportunities appears to be primarily due to greater difficulties in entering or re-entering the labour market. For women in particular, this has translated into a greater risk of inactivity (Avola *et al.*, 2023). Recent studies reveal a gradual convergence of key labour market indicators between foreigners and Italians, particularly among certain foreign communities, age groups and levels of education (Capuano *et al.,* 2024; Istat, 2025; Ministero del lavoro e delle politiche sociali, 2024).

A long tradition of studies on labour migration offers analyses on the working conditions of foreigners and their segregation. Many studies refer to ethnic penalties or migrant-native gaps in labour markets (Reyneri, Fullin 2011; Cantalini *et al.,* 2023). The employment of foreigners from developing countries seems to be confined to poor-quality jobs, often irregular (Reyneri, 2003).

Therefore, on the one hand, the immigrant labour force has stabilised over time, gradually approaching the characteristics of the Italian labour force. On the other hand, significant inequalities and structural issues remain, such as the tendency to be allocated to so-called '3D' jobs (dirty, dangerous and demanding), as well as irregularity, informality and various forms of exploitation. Despite greater diversification among foreign workers and the growth of their entrepreneurship, many situations of precariousness, under-qualification, poor working conditions and a high risk of accidents remain widespread (Cillo, Perocco, 2024).

A tendency towards occupational segregation still exists, whereby immigrant workers are relegated to low-skilled sectors and occupations characterised by unstable working conditions and poor rights protection (Ambrosini, 2020). Many foreign workers, who are often employed in labour-intensive sectors with little social protection such as agriculture, construction, domestic services and personal care, work in informal or semi-informal contexts where the risk violation of fundamental rights is high (Avola, 2022; Palumbo, 2022). Furthermore, the way in which migrants seek employment can also increase their risk of becoming trapped in the

secondary labour market. The field of research on spatial segregation highlights the link between the role played by migration networks in determining the arrival and integration of migrants and the occupational specialisation (or segregation) of the various foreign communities residing in the country (Benassi, Ferrara, 2013; Conti *et al.,* 2023). While migratory social networks can increase employment opportunities and reduce the difficulty of relocation, they can also have a negative effect on the quality of employment, because they are limited to less skilled sectors (Casacchia *et al.,* 2022).

The complex phenomenon of intersectional discrimination overlaps with these dynamics. The intersectional approach demonstrates that the various axes of oppression (e.g. gender, ethnic origin, social class and migratory status) do not operate independently, but rather interact and reinforce one another, resulting in composite forms of discrimination (Avola *et al.,* cit; Bonini *et al.,* 2022). In the Italian context, for instance, being both female and foreign leads to a stratification of disadvantages in the labour market. Migrant women, for example, are often employed in highly feminised and poorly regulated sectors such as care and domestic work. Their condition as women is compounded by their status as migrants and, sometimes, as irregulars, leaving them particularly vulnerable to exploitation, violence, and the denial of rights (Degani, De Stefani, 2020; Massari, *et al.,* 2024). Although occupational and social segregation has been widely studied, most attention has been given to gender-based disparities. Comparative studies exploring segregation between native and immigrant workers - by origin or settlement area - remain limited (Paterno *et al.,* 2015).

Considering the above, this study critically examines recent trends in employment convergence and the underlying dynamics of the segregation and vulnerability of foreign labour in Italy. By focusing specifically on intersectional discrimination relating to gender, age, and citizenship, the analysis aims to reveal potential signs of labour market integration among foreigners that are obscured by a disadvantaged yet heterogeneous labour market.

2. Data and methods

The data used in this study come from the ISTAT – Labour Force Survey, covering 2024[2] the most recent year available, and 2014. The analysis focuses on the

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[2] The survey provides the official estimates of the main aggregates of the labour market that are disaggregated by socio-demographic and employment characteristics. The survey is continuous and is carried out every week of the year, with results published monthly, quarterly and yearly. Participants are sampled adopting a two-stage sampling method. All household members over the age of fifteen are interviewed.

foreign population: in 2014 the sample included 44,727 foreigners, estimated to represent approximately 4.9 million; in 2024, 36,795 foreign citizens were interviewed, corresponding to an estimated 5.9 million individuals. The main socio-demographic variables (gender, age, geographical area, citizenship, years of residence in Italy and educational attainment) and some variables of the labour market were used; among these, the occupation - which in 2014 was surveyed according to the CP2011 Classification - was linked to the CP2021 in use in 2024.

The study begins with a comparative-descriptive analysis[3] of the main indicators of the foreign labour market, then illustrates some indicators of occupational segregation and, finally, presents a multivariate analysis using binomial and multinomial logistic regression models.

3. Employment gaps between foreign and Italian citizens

In 2024, the resident population in Italy aged 15-89 is made up of 90.6% Italian citizens (of whom 3.1% are naturalised) and 9.4% foreigners. Since work is one of the main drivers of migration, the presence of foreigners in the labour force is higher (10.4%), characterised by employment and unemployment rates traditionally higher than those of Italians. However, in recent years, the advantage of foreigners has shrunk considerably, bringing the employment rate to a similar value to that of Italians, also following the falling female employment rate during the crisis generated by the 2020 health emergency.

An examination of the main socio-demographic characteristics reveals significant differences. Among men, in fact, the advantage of foreigners (75.9%) is still evident, with employment rates about five points higher than those of Italians (70.5%); conversely, among foreign women the share of employed is lower (49.4% against 53.7% of Italians (Figure 1).

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[3] The time comparison takes into account the time series break, held in 2021, following the entry into force of the new European Regulation 2019/1700 establishing a common framework for European statistics on persons and households. The comparison between old and new series, for the overlap period 2018 -2020, shows a very similar pattern of estimates.

Figure 1 - *Employment rate of foreigners and Italians by sex. Years 2014-2024 (percentage values).*
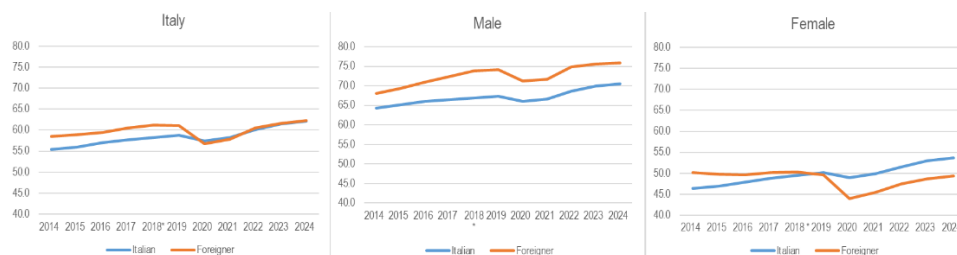
Source: Istat, Labour Force Survey

Furthermore, the employment rates of these two groups are influenced by the differing age distribution of the population between 15 and 64 years of age: 62.1% of the foreign population is under 45 years of age, compared to around 50% of Italians. Among 15-24 year-olds and 55-64 year-olds, foreigners have higher employment rates than Italians, due to their earlier entry into the labour market and greater longevity in older age brackets, particularly among women.

3.1. The gaps between the main foreign communities

Although the foreign presence in Italy is very heterogeneous, the top 10 nationalities account for 66% of the total foreign population. The most numerous communities are Romanian, representing 21.9% of foreign nationals, followed by Albanian (9.0%), Moroccan (8.9%), Chinese (5.0%), Ukrainian (4.8%), Indian (4.8%), Bangladeshi (3.5%), Filipino (3.0%), Moldovan (2.8%), Peruvian (2.5%).

Migratory networks contribute to occupational concentration in certain sectors through mechanisms that replicate the dissemination of information, knowledge, and support among relatives and compatriots. As a result, labour market dynamics vary significantly depending on citizenship, being closely linked to the sectors of economic activity in which communities are mostly employed, to specific sectoral skills and also to their gender gap.

Of the ten largest nationality groups, Filipinos (82.0%), Chinese (72.6%) and Peruvians (72.3%) had the highest overall employment rates in 2024. Within these communities, the employment rates for both genders are similar. There has been a marked improvement in the employment rate for Albanians, which has risen over the last decade for both sexes (from 66.3% to 78.1% for men, and from 34.3% to 44.3% for women). The rate for Romanian men also increased (from 69.7 to 78.3%), while it worsened for Romanian women (from 56.7 to 52.2%). Some communities are characterised by a very large disadvantage for women: Moroccans, Bangladeshis and Indians. Over the last 10 years, this gap has grown, and today, the employment rate

for Moroccan men exceeds that of Maroccan women by almost 50 points, by 60 points for Indians, and by 70 points for Bangladeshis.

The analysis by occupation[4] confirms the segmentation of the foreign labour market. In 2024, 61.1% of foreign employees held unskilled or manual roles (compared to 29% of Italian employees), while 39.7% of Italian employees were in skilled roles (managerial, specialist or technical), compared to 9.2% of foreign employees. Particular concentrations are observed by citizenship and gender. Filipinos (68.8%) and Indians (48%) are mainly employed in unskilled professions, as are Moroccans and Peruvians (35%). Blue-collar workers are common among Albanians (47%), Romanians (above 40%) and Moroccans, and are becoming increasingly prevalent among Ukrainians and Moldavians. In general, more than half of foreign men are employed in blue-collar occupations. Citizenships with a higher proportion of medium-skilled service sector roles include Ukrainians, Moldovans and Peruvians (particularly women employed as caregivers and personal assistants), while clerical and skilled roles in commerce, accommodation and food services are more prevalent among Chinese nationals (55.4%) and Bangladeshis (38.8%). Although the foreign labour market is so strongly segregated, a 10-year comparison shows an increase in the share of foreigners in skilled, white-collar and trade occupations (particularly in the trade, accommodation and food service occupations, +3.8 p.p.), an increase that is also present in the Italian component but to a lesser extent. Over the decade considered, the share of foreign workers in unskilled occupations also decreased (from 35.6% to 29.4%), particularly among women, who recorded a drop of more than 11 percentage points, and in skilled service occupations (from 13.2% to 11.7%).

4. The segregation of the foreign labour market.

Looking at the cumulative distribution of foreign workers by occupational unit (4-digit level of CP2021), in 2024 about half were employed in just 15 occupations, mainly low-skilled and manual roles, with a few belonging to major group 5 (personal care workers, cooks and waiters, sales and service staff, health professionals). Over the past decade, this number increased slightly (11 occupations

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[4] The occupations have been grouped into five macro-categories derived from the first and second levels of the CP2021 Classification of Occupations: 1) skilled occupations, include managers, professionals and technicians, from the first, second and third Major groups of the CP2021; 2) medium-skilled occupations in office and trade, such as clerical and trade workers, from the fourth Major group and the trade, hotel and restaurant occupations from groups 5.1 and 5.2; 3) medium-skilled occupations in personal services include occupations in groups 5.3 to 5.6; 4) blue-collar workers include occupations from the sixth and seventh Major groups; 5) unskilled occupations from the eighth Major group.

in 2014), but the occupational structure remained largely unchanged, with only 4 new occupations added. The pattern differs for Italians: half of Italian workers are employed in 48 occupations, a stable figure over ten years, though the specific jobs changed, reflecting a more dynamic labour market for natives. The situation is relatively better among young foreigners: in 2024 half of the foreign employed between the ages of 15 and 39 work in 20 different occupations, a larger number than that observed for the overall foreign employed population.

By contrast, Italians work in 44 different occupations, a smaller number than that of employed Italians overall. For both groups there has been an advance, but among foreigners this has not corresponded to the addition of skilled occupations while among Italians in ten years many occupations of Major Group 2 (mainly education-related) make an appearance. More critical is the situation for the female component, which experiences a double segregation, of gender and nationality: half of foreign employment is absorbed by just 5 professions (it was only 2 in 2014), compared to 21 for Italian women. An analysis based on nationality reveals considerable heterogeneity with a "pyramidal structure" (Figure 2).

Figure 2 – *Number of occupational units covering 50% of employment, by citizenship.*

Filipinos: 2 occupations *(domestic helpers, cleaners)*

Ukrainians: 3 occupations *(personal care workers, domestic helpers, cleaners)*

Chinese: 5 occupations (tailors, shopkeepers, bartenders, sales clerks and waiters)

Peruvians: 6 occupations *(domestic helpers, personal care workers, skilled in health and social services, cleaners, warehouse workers, and delivery workers)*

Bangladeshis: 8 occupations *(cooks, unskilled food service workers, shopkeepers, street vendors, porters, welders, farm laborers, sales clerks)*

Moldovans: 8 occupations *(personal care workers, domestic helpers, truck drivers, stone masons, cleaners, skilled in health and social services, delivery workers and waiters)*

Indians: 8 occupations *(agricultural laborers, unskilled animal care workers, warehouse workers, porters, personal care workers, unskilled industrial workers, leather tanners and hairdressers)*

Romanians: 11 occupations *(personal care workers, domestic helpers, stone masons, truck drivers, agricultural laborers, warehouse workers, concrete masons, waiters, cleaners, skilled in health and social services and sales clerks)*

Moroccans: 11 occupations *(street vendors, stone masons, personal care workers, agricultural laborers, warehouse workers, cooks, cleaners, domestic helpers, porters, unskilled animal care workers and waiters)*

Albanians: 12 occupations *(stone masons, agricultural laborers, domestic colllaborers, concrete masons, cleaners, waiters, warehouse workers, personal care workers, cooks, laborers, sales clerks and carpenters)*

Source: Istat, Labour force survey

The integration of Albanians, Moroccans and Romanians into the labour market is more widespread and forms the base of the pyramid, while Filipinos are at the top, with more than half employed in just two occupations: domestic and office cleaning services.

A summary measure of segregation used in the literature is Duncan's dissimilarity index[5], which quantifies how evenly individuals are distributed among occupational units. The dissimilarity index in 2024 was 0.51. This means that 51% of foreign (or Italian) workers would need to change occupations in order for the two groups of workers to be evenly distributed across all occupations. The index reveals higher segregation in the South and Island, among women, older workers, and those with medium-high education levels, confirming the low returns to education for foreigners (Istat, 2023) (Figure 3).

Figure 3 – *Duncan's dissimilarity index by sex, age groups, geographical area, educational attainment and citizenship. Years 2014-2024. Percentage values.*
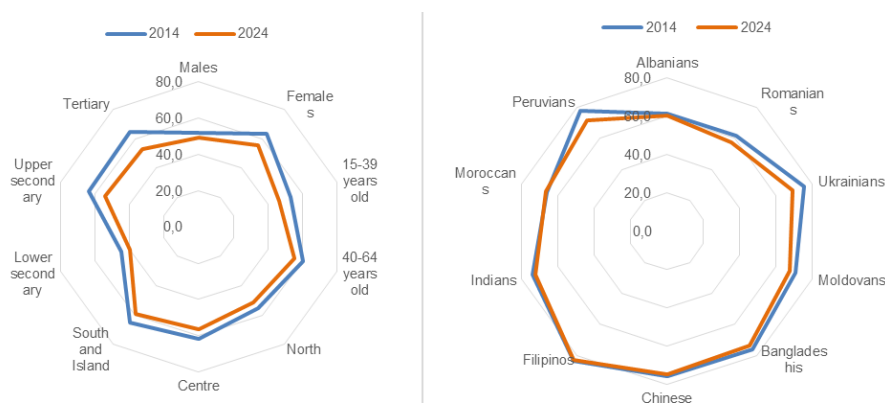
Source: Istat, Labour force survey

Over the past decade, the index improved from 56% in 2014, with notable decreases among young workers, whose segregation decreased from 53% to 46%, and among those with higher education. This represents a promising sign for the integration of new generations. By nationality, the index confirms the highest level of occupational segregation among Filipinos (83.2%, unchanged over 10 years), and slightly lower values for Albanians and Romanians. Notably, all ten most

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[5] $D = (1/2) \times \Sigma |(a_i / A) - (b_i / B)|$: a_i is the number of Italian workers in occupational unit *i;* A is the total number of Italian workers; b_i is the number of foreign workers in occupational unit *i;* B is the total number of foreign workers. is bounded by 0 (no segregation) and 1 (perfect segregation).

represented nationalities in Italy exhibit index values above the average, suggesting that greater presence in the country translates into greater segregation.

5. A comparison across years and among nationalities by means a logistic regression models

The probability for foreigners to be employed in an unskilled occupation was analysed using a simple logistic regression model, which allowed us to calculate odds ratios (ORs) with relative 95% confidence intervals, adjusted for potential confounders (age, gender, geographical area, years of residence in Italy, educational attainment and sector of economic activity). The model was applied to only employed foreigners aged 15-64 for the years 2014 and 2024. Stratifying by citizenship and reference year, there is a lower propensity to be employed in unskilled occupations in 2024 than in 2014, for all citizenships (Figure 4).

Figure 4 – *Being employed in an unskilled occupation. Binomial logistic regression model Years 2014-2024.*
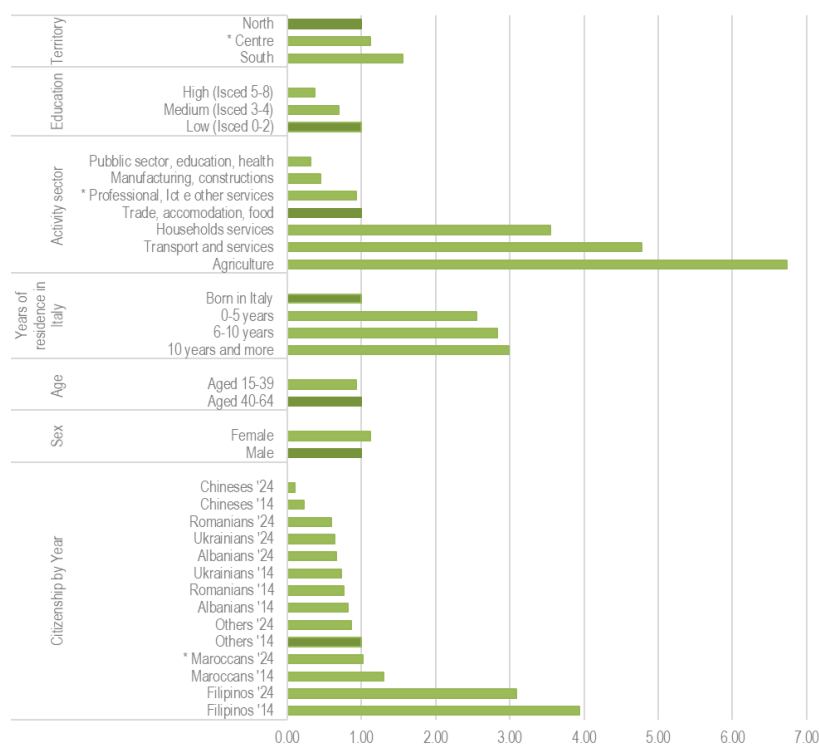
Source: Istat, Labour force survey

Filipinos, while remaining the migratory group with the significantly higher propensity to be in unskilled employment, show an improvement over the 10 years: in 2014 the probability was 4 times higher than "other" nationalities (3.9; IC95% 3.38-4.50), while it drops to 3 times in 2024 (3.0; IC95% 2.57-3.65).

A second multinomial logistic regression model was applied to the population of employed foreigners aged 15-64, limited to 2024, to test the different probability of being employed in one of the macro-categories into which the occupations were grouped. The response variable is the 5-mode recoded occupation, as depicted above; the mode chosen as reference is the "medium-skilled in services" occupation for all citizenships (Figure 5).

Figure 5 – *Being employed in "medium-skilled in services" occupation***:** *Multinomial logistic regression model: Year 2024.*
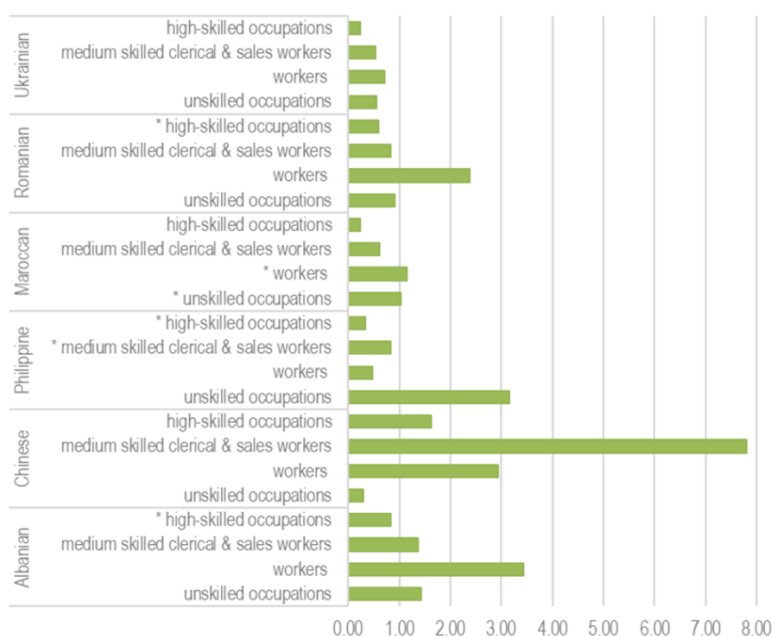
Source: Istat, Labour force survey

Chinese show a propensity for employment in trade and restaurants almost 8 times higher than in services; they are also significantly represented in blue-collar or skilled/entrepreneurial occupations. Romanians and Albanians have a higher propensity in blue-collar occupations, the latter also in unskilled and trade occupations. Filipinos are 3 times more likely to have an unskilled occupation. Ukrainians, instead, are less likely to be employed in all other occupations than in

the medium-skilled service occupation taken as a reference. This is due to the frequent employment of Ukrainian women as caregivers in households.

Conclusions

The foreign labour market in Italy is highly concentrated in specific sectors and occupations, characterised by manual and low-skilled roles. Migration networks perpetuate this concentration of employment: citizenship is closely linked to the occupation and sectoral skills of different communities, as well as the gender disparities within them. It is a 'restricted' labour market: over 50% of foreign workers are employed in just 15 occupations, compared to 48 among Italians.

This figure drops drastically for foreign women, with half employed in only five occupations. However, over 10 years, the occupational structure of foreign workers shows slight signs of improvement, which are more pronounced among women and young people, who gain employment in skilled occupations. This condition does not improve significantly with the length of time spent in Italy.

Compared to 2014, the proportion of people employed in unskilled occupations has decreased for all nationalities except Indians, with the largest decrease being seen among Chinese and Ukrainian workers. The proportion of blue-collar workers increases among Bangladeshis and Ukrainians. The proportion of medium-skilled occupations in services increases among Albanians and Chinese, and decreases among Ukrainians, Moldovans, and Peruvians — nationalities in which they are prevalent, especially female caregivers. Medium-skilled occupations in commerce, hotels and restaurants have increased, especially among Ukrainians.

Bibliography

AVOLA M., IMPICCIATORE R., PANICHELLA N. 2023. Migrazioni e disuguaglianze sociali nel mercato del lavoro italiano, *Sociologia del Lavoro*, No. 166.

BENASSI F., IGLESIAS-PASCUAL R., STROZZA S. 2025. Immigration, Ethnic Residential Segregation or (vs.) Socioeconomic Integration in Urban Areas. *Social Sciences*, MDPI.

BONINI E., MEZZETTI G., ORTENSI L. 2022. Donne migranti tra opportunità e discriminazioni: la necessità di un approccio intersezionale, *XXVII rapporto sulle migrazioni 2021*, Fondazione ISMU, Franco Angeli, Milano.

CANTALINI S., GUETTO R., PANICHELLA N. 2022. The ethnic wage penalty in Western European regions: Is the European integration model confirmed when

differences within countries are considered?, *Demographic Research*, No.23, Vol. 46.

CAPUANO S., MARZILLI E., PONTECORVO M.E., SABBATINI A. 2024. Occupati e disoccupati stranieri nel 2023: la rilevazione delle forze lavoro, *Dossier statistico immigrazione,* Centro Studi e Ricerche IDOS, Roma.

CASACCHIA O., REYNAUD C., STROZZA S., TUCCI E. 2022. Internal migration patterns of foreign citizens in Italy, *International Migration,* Vol. 60.

CONTI C., MUCCIARDI M., SIMONE M. 2023. Exploring the Settlement Models of the Main Foreign Communities Residing in Italy (2003-2021), *Social Sciences,* MDPI.

CILLO R., PEROCCO F. 2024. Il lavoro degli immigrati in Italia. Introduzione al tema monografico", *Economia e Società Regionale,* XLII, n.1, Franco Angeli.

DEGANI P., DE STEFANI, P. 2020. Addressing Migrant Women's Intersecting Vulnerabilities. Refugee Protection, Anti-trafficking and Anti-violence Referral Patterns in Italy, *Peace Human Rights Governance,* Vol. 4.

DE ROSA E., DI PASQUALE E., LIVI BACCI M., MARZILLI E., PINTALDI F., PONTECORVO M. E., TRONCHIN C. 2017. Gli stranieri e il mercato del lavoro, *Rapporto sulla popolazione. Le molte facce della presenza straniera in Italia* (a cura di Strozza S. e De Santis G.), Il Mulino, Bologna.

ISTAT. 2025. *Stranieri e naturalizzati nel mercato del lavoro*, Rapporto Annuale 2025. La situazione del Paese. Roma, Italia.

MASSARI M., CABRAS F., MICELI S. 2024. *Amara Terra. Donne migranti, sfruttamento e forme di resistenza nelle campagne siciliane*. Milano Univ. Press.

MINISTERO DEL LAVORO E DELLE POLITICHE SOCIALI. 2024. *XIV Rapporto Annuale: Gli stranieri nel mercato del lavoro in Italia.*

PALUMBO L. 2022. Sfruttamento lavorativo e vulnerabilità in un'ottica di genere. Le condizioni di vita e di lavoro delle lavoratrici migranti nelle serre del Ragusano, *L'Altro Diritto,* Vol. 6.

PATERNO A, TEDESCO N, GABRIELLI G, SALARIS L. 2014. Immigrants Labour Market Segregation in Italy. A Multilevel Approach, *EPC*, Budapest.

REYNERI E., FULLIN G. 2011. Labour Market Penalties of New Immigrants in New and Old Receiving West European Countries, *International Migration, No.* 49.

STROZZA S., DE SANTIS G. 2017. *Rapporto sulla Popolazione: le molte facce della presenza straniera in Italia*. Bologna, Il Mulino.

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LABOUR MARKET TRAJECTORIES AND GENDER DISPARITIES AMONG IMMIGRANTS AND THEIR DESCENDANTS: A COMPARATIVE ANALYSIS OF ITALY AND SPAIN

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Abstract. In recent decades, Southern European Countries, such as Italy and Spain, became destinations where immigrants have had permanent settlement patterns, including family reunification and formation. As a result, these countries now face the dual challenge of integrating first-generation immigrants and supporting the labour market inclusion of their children. This study examines gender and generational inequalities in labour market outcomes using 2021 EU-LFS data. The analysis focuses on young adults, distinguishing between natives, first-generation immigrants, and the children of immigrants. Particular attention is given to access to high-skilled employment and to gender disparities within and between origin groups. The results reveal both similarities and differences between the Italian and Spanish contexts. In Italy, access to high-skilled careers varies by migrant generation, with significant differences also based on gender, revealing a double disadvantage linked to both migration background and gender. In Spain, children of immigrants do not show major labour market gaps, and gender disparities are less marked, although first-generation immigrant women remain disadvantaged. These findings highlight how national context and gender intersect to shape labour market integration across generations.

1. Introduction

Over the last decades, Europe has experienced significant shifts in immigration flows and Southern European Countries faced new and complex challenges. Among them, Italy and Spain have seen a large rise in the numbers of foreign-born residents, particularly since the late 1990s (Bonifazi and Strozza, 2017). Characterized at the beginning by temporary and often irregular labour migration, these inflows have gradually transitioned into more permanent settlement patterns, including family reunification and formation with new births. These countries are no longer only managing the labour market integration of first-generation immigrants but also facing the emerging challenges and opportunities associated with the insertion of their descendants. While research on immigrant integration across Western Europe is studied form long time, comparatively little attention has been placed on the labour market paths of the children of immigrants in newer receiving countries like Spain and Italy. Although first and second-generation immigrants share common structural barriers, such as ethnic penalty and limited social capital, their labour market

experiences and opportunities can diverge significantly, especially when accounting for age at arrival (Adsera and Chiswick, 2007). In addition to the barriers they face in the labour market, such as limited access to high skilled careers, gender inequality adds another layer of disadvantage. Immigrant women often experience a double burden, facing both gender and ethnic penalty. This article examines labour market gaps between natives and individuals with a migration background in Italy and Spain looking at gender dynamics. We use microdata from the 2021 European Labour Force Survey (EU-LFS). We differentiate between four generational categories: natives, first-generation migrants, descendants and children of migrants. The objective is twofold: to examine whether access to high skilled or, alternatively, low skilled careers differ by migrant generation in the two countries, and to assess the extent to which gender and ethnic background influence this access.

2. Theoretical background

While in Central and Northern European Countries research on the labour market integration of immigrants' descendants is well developed (Crul and Schneider 2009; Heath *et al*, 2008), in countries where the children of immigrants are mostly still in school age, studies on their labour market situation remain limited (Achouche, 2025; Muñoz-Comet and Arcarons, 2021). So far, academic research on the descendants of migrant in Southern European Countries has mainly focused on children and adolescents (Azzolini *et al.*, 2012). Recently, as second-generations are becoming more numerous in adult age groups, their transition to adulthood is increasingly being studied in these two countries (Portes *et al*, 2018; Buonomo *et al*, 2025; Di Bello *et al*, 2025). Focusing on children of immigrants, scholars, examining longer-established migration contexts in Western Europe, have noted that, even in cases of successful integration, significant differences persist according to country of origin and age at arrival (Crul *et al*, 2016).

Early arrival in the destination country is generally associated with better language acquisition, cultural assimilation, and educational continuity, all of which increase the chances of achieving similar native-born counterpart's occupational outcomes (Fajth and Lessard-Phillips, 2022; Gabrielli and Impicciatore, 2021).

Studies have consistently shown that individuals with a migrant background face significant barriers when entering the labour market (Li and Heath, 2020). Labor market integration pathways in Europe vary significantly among different origin groups, with considerable discrepancies across countries (Fellini, 2018). Some scholars following the downward assimilation hypothesis claim that immigrant descendants face more demanding pathways to employment, especially about well-paid jobs (Drouhot and Nee, 2019), while others adhere the upward assimilation hypothesis think the existing gap is steadily declining (Alba and Foner, 2015). Gorodzeisky and Semyonov (2017) confirm the classical assimilation model for men

and women of second-generation, finding no disadvantages in accessing high skill jobs compared to natives; while origin appears to matter more for the first-generation being disadvantaged compared to natives. Other studies in Europe, as Palencia-Esteban (2022), shows that although outcomes improve compared to the first-generation, second-generation individuals still display a marked gender divide, with women more frequently employed in less qualified positions. The comparative work by Lelie, Crul and Schneider (2012) further confirms that the integration context shapes the trajectories of second-generation men and women differently, also depending on their ethnic origin, highlighting how young women continue to face specific barriers in accessing qualified professional pathways.

Southern European Countries such as Italy and Spain are characterised by more accessible labour markets, where formal entry is relatively easier but often restricted to low-skilled and highly segregated sectors (Cantalini *et al*, 2022a). This structural segmentation results in stagnation or limited upward mobility for many immigrants, who remain trapped in precarious jobs with few opportunities for advancement (Cachón Rodríguez, 2022; Bayona-i-Carrasco and Domingo, 2024).

In Italy immigrants are disproportionately concentrated in agricultural labour, construction, and care sector, particularly in elderly and domestic care (Avola, 2022). Generally speaking, they are concentrated in sectors marked by precarious and informal work, often facing challenges related to legal status and bureaucratic barriers (Meardi, 2024). In Spain, a large share of foreign workers is employed in low-skilled sectors, these are primarily agriculture, food service, construction sector, and domestic care (SEPE, 2023).

Italy is characterised by a mosaic of ethnic origin arriving from Eastern Europe, South Asia, and North Africa (Zanfrini and Pasini, 2024); Spain shows a different pattern, with a higher presence of migrants from Latin America and Sub-Saharan Africa (ECP, 2024). Highlighting origins is important, as some ethnic communities, compared to others, experience ethnic penalties, meaning they encounter greater disadvantages in labour market access and advancing career (Midtbøen, 2015).

In both countries, immigrants face not only challenges in accessing more skilled and stable occupations but also significant gender disparities. The gendered nature of employment is also shaped by community background (Martini, 2024). Domestic and care work is highly feminised and often associated with specific nationalities, for instance: in Italy, many women employed in these sectors come from the Philippines and Eastern Europe, while in Spain, Latin American women are predominant (Schroot, 2025). This gender and ethnic segregation in Southern European Countries results in a double penalty for women, leading to greater difficulties in accessing high-skilled career paths (Cantalini *et al*, 2022b).

We hypothesise, following segmented assimilation theory (Portes and Zhou, 1993), that immigrants' descendants born in the destination country have higher

chances of obtaining high skilled jobs compared to first-generation immigrants, with outcomes similar but lower compared to natives. Our second hypothesis is that clear gender differences emerge in access to skilled jobs, gender gaps vary across migrant generations with descendants showing smaller gender disparities than the first-generation. In addition, we further analyse how gender and ethnic origin may mitigate or aggravate the chances of accessing both high skilled and low skilled career pathways.

3. Data and Methods

This study is based on microdata from the 2021 EU-LFS, using the *ad hoc module* on "Working conditions of immigrants and their immediate descendants", which oversampling population with migratory background, enabling accurate comparisons among European Countries. The selected sample includes individuals aged 15 to 35 at the time of the survey. This age range captures the early stages of labour market participation, which are particularly relevant for second-generation, who are still relatively young in Italy and Spain. The analytical sample consists of approximately 38.332 observations for Italy and for Spain. This sample is reduced for the analysis because we considered only individuals that at the time of the survey was employed, obtaining 8.300 observations for Italy and 6.503 for Spain. In descriptive analyses, we used the weighted system provided by EU-LFS to make our results representative of the observed universe. For both countries, individuals were classified into four generational categories, namely: "natives" are those born in the country with two native-born parents; "descendants" include those born in the host country or who arrived before the age of 6, with at least one foreign-born parent; "children of immigrants" are individuals born abroad and arrived between the ages of 6 and 17;"first-generation" are those who migrated at the age of 18 or older.

In both Italy and Spain, the sample is predominantly composed of natives, 80% in Italy and 84% in Spain, followed by descendants (6% in Italy, 5% in Spain), children of immigrants (4% in both countries), and first-generation immigrants (10% in Italy and 7% in Spain). We estimate four multinomial logistic regression models with the current occupational status as the dependent variable, based on ISCO 1 digit: high-skilled (digits 1-3), medium-skilled (digits 4-7; reference category), and low-skilled jobs (digits 8-9), excluding the armed force workers (digit 0).

The models are estimate separately for Spain and Italy. In the first set of models, we consider the interaction of gender and generational categories as target independent variable, controlling for age, educational level, and continent of origin. In the second set of models, only results for the first-generation are shown, we consider the interaction of gender, generational categories, and continent of origin as target independent variable. We use continent of birth as a proxy for ethnic origin. For descendants born in the country under study, we assign the foreign origin of the

parent. The origins considered are Central-South America (10.74% in Italy; 53.08% in Spain), the EU and other more developed countries (34.99% in Italy; 24.97% in Spain), other European countries (21.96% in Italy; 5.60% in Spain), Africa (14.80% in Italy; 11.48% in Spain), and Asia (17.50% in Italy; 4.88% in Spain).

4. Results

In terms of occupational structure, high-skilled workers represent 32.63% of the labour force in Italy and 34.14% in Spain. Medium-skilled jobs account for 56.83% in Italy and 54.05% in Spain, while low-skilled occupations make up 10.54% of the labour force in Italy and 11.81% in Spain. In Figure 1, we show the distribution of labour market skills by migrant generation and gender in Italy and Spain. Among natives in both countries, we observe a quite balanced gender distribution in high-skilled employment, though women have higher percentages than men. In Spain, the percentage of high-skilled workers for descendants are like the one observed for natives, while it decreases drastically for children of immigrants. In Italy, we observe a decreasing trend in high skilled job among young adult by migration generation.

Figure 1 – *Percentages of workers by skill level, generational categories and gender. Italy and Spain.*
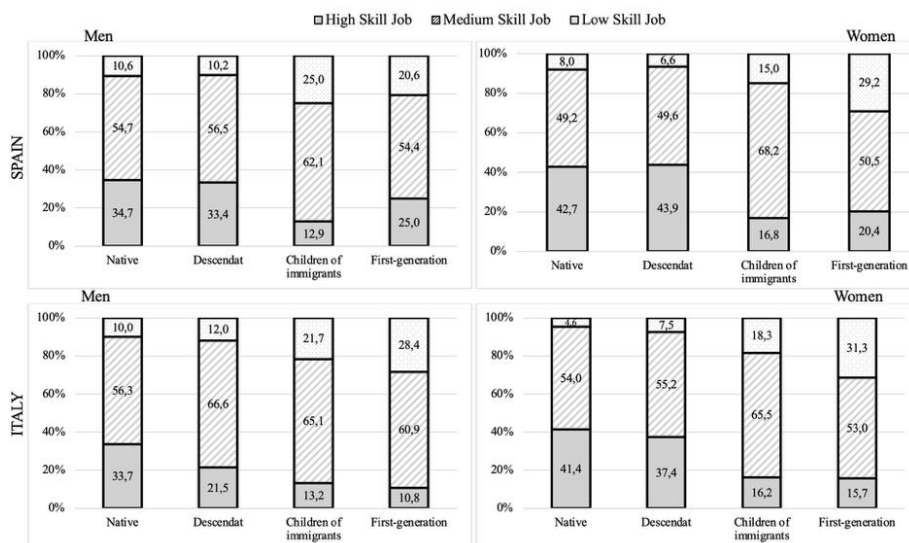
Source: our elaboration on EU-LFS 2021 data

Particularly notable difference appears among first-generation immigrants: in Spain, 25% of men and 20% of women in this group are employed in high-skilled

sectors; in Italy the same percentages are significantly lower (10,8% and 15,7% respectively). When it comes to low-skilled jobs, the pictures are more similar between countries, with few exceptions. Across all generational categories, men tend to be more employed in low-skilled jobs than women, with natives and descendants showing the lowest percentages. However, among first-generation immigrants, women are more likely than men to work in low-skilled sectors.

The picture in Italy and Spain is somehow different from the observed descriptive outcome (Table 1).

Table 1 – *Odd ratios of interaction of generational categories and gender in two multinomial logistic regression model which consider 'medium-skilled job' as the reference category, and high-skilled and low-skilled job as outcomes. Italy and Spain.*

Italy									
Generational categories	Gender	High-skilled job				Low-skilled job			
		Odd r.	p.value	int.95%		Odd r.	p.value	int.95%	
Natives	Men (*ref.*)	1.000				1.000			
	Women	0.651	0.000	0.572	0.742	0.524	0.000	0.424	0.649
Descendants	Men	0.769	0.164	0.530	1.110	0.894	0.603	0.586	1.363
	Women	0.486	0.000	0.324	0.729	0.555	0.075	0.290	1.006
Children of immigrants	Men	0.444	0.003	0.260	0.760	1.300	0.220	0.855	1.977
	Women	0.463	0.008	0.261	0.820	0.884	0.662	0.510	1.533
First-generation	Men	0.269	0.000	0.172	0.421	1.586	0.007	1.136	2.213
	Women	0.289	0.000	0.182	0.456	2.693	0.000	1.914	3.791
Constant term		0.102				0.346			
Spain									
Natives	Men (*ref.*)	1.000				1.000			
	Women	1.049	0.476	0.919	1.198	0.982	0.850	0.810	1.189
Descendants	Men	1.050	0.836	0.659	1.673	0.478	0.016	0.262	0.872
	Women	1.218	0.412	0.760	1.953	0.386	0.025	0.168	0.890
Children of immigrants	Men	0.932	0.838	0.476	1.827	0.744	0.323	0.414	1.338
	Women	0.555	0.082	0.286	1.077	0.752	0.384	0.396	1.428
First-generation	Men	1.053	0.843	0.629	1.764	1.467	0.144	0.877	2.456
	Women	0.594	0.038	0.364	0.971	2.655	0.000	1.649	4.276
Constant term		0.067				0.466			

Notes: for Italy Pseudo R2: 0.207; Number of obs.: 8,300; Number of non-natives 1.660. For Spain Pseudo R2: 0.198; Number of obs.: 6.503; Number of non-natives 1.040. Control variables: age, educational level, continent of origin. Source: our elaboration on EU-LFS 2021 data.

In Italy, native women are significantly less likely than native men to be employed in high-skill jobs (odd ratio equals to 0.651). Men with a migrant

background, especially first-generation, face clear disadvantages. Both children of immigrants and first-generation (men and women) show significantly lower odd ratios of being employed in high-skilled jobs compared to native men. Male descendants do not show significant differences from native men, while female descendants have a significant negative odd ratio (0.486). Overall, we can argue that all generational categories, with one exception, are disadvantaged in accessing high skilled jobs compared to native men.

Regarding low-skill employment, the model reveals that female natives and descendants, almost with a significant p-value, have a negative odd ratio (0.524 and 0.555) with a statistically significant tendency not to be in low-skilled jobs. The opposite occurs for first-generation who are significantly more likely to be in low-skill jobs relative to medium-skill jobs, with a higher gradient for women (2.693) than for men (1.586).

The model for Spain highlights few adding disparities in occupational outcomes by generational categories and gender. In the case of high-skilled jobs, the female first-generation emerges as the only category with a statistically significant disadvantaged position compared to native men (0.594). This result is the same observed in Italy for this category. All other odd ratios, are not statistically significant, suggesting no clear difference in the access to high-skill jobs across these generational categories. In line with the Italian case, first-generation (significantly only for women) are more likely to be in low-skill jobs relative to medium-skill jobs, with a higher gradient for women (2.655) than for men (1.467). Not in line with the Italian case, men and women descendants show negative odds of being employed in low-skill jobs rather than medium-skill ones (0.478 for men and 0.386 for women). This does not occur among natives who do not show statistically different gender disparities

Table 2 presents the results, for the first-generation, of two multinomial logistic regression models in Italy and Spain, considering native men as reference category, with a further interaction of generational categories, gender and continent of origin. In our analysis, we considered all migrant generations (available on request); however, we focus on the most relevant results for first-generation immigrants, as the interaction terms did not reveal substantial effects for descendants and children of immigrants. This suggests that the double ethnic penalty is less pronounced for descendants and children of immigrants compared to the first-generation.

Table 2 – *Odd ratios of first-generation, interaction with gender and continent of origin, with reference category native men, in two multinomial logistic regression models as outcomes high-skilled and low-skilled job, considering 'medium-skilled job' as reference category. Italy and Spain.*

| | | *Italy* | | | | *Spain* | | | |
| | | High Skill job | | Low skill job | | High Skill job | | Low skill job | |
	Native men (*ref.*)	Odd r.	p.value	Odd r.	p.value	Odd r.	p.value	Odd r.	p.value
Men	More devel. Country	0.277	0.001	1.598	0.050	1.232	0.614	1.170	0.738
	Africa	0.433	0.042	3.470	0.000	0.313	0.300	4.095	0.001
	Asia	0.435	0.010	2.539	0.000	0.230	0.198	0.330	0.294
	Central-South America	0.474	0.137	1.351	0.488	0.756	0.314	2.307	0.000
	Other non-EU Europe	0.217	0.000	1.082	0.772	1.639	0.573	2.060	0.549
Women	More devel. Country	0.386	0.003	2.646	0.000	1.418	0.346	3.877	0.000
	Africa	0.060	0.009	3.160	0.001	0.966	0.968	7.181	0.000
	Asia	0.359	0.091	2.484	0.012	0.946	0.944	2.959	0.367
	Central-South America	0.520	0.210	4.336	0.000	0.220	0.000	3.437	0.000
	Other non-EU Europe	0.252	0.000	3.993	0.000	0.630	0.557	2,970	0.210

Notes: For Italy Pseudo R2: 0.2111, Number of obs.: 8,300; Number of non-natives 1.660. For Spain Pseudo R2: 0.2017, Number of obs.: 6.503; Number of non-natives 1.040. Control variables: age, educational level. Source: our elaboration on EU-LFS 2021 data.

In Italy, first-generation migrants, especially women and those from no Western Country face strong ethnic penalties in the labour market. Among men for Africa and Asian disadvantage are pronounced from native men, while men from Other Europe show the lowest odds of accessing high skill work. For first-generation women in Italy, the labour market exclusion is even more marked, with all women showing a high likelihood of being employed in low-skill jobs. African women have extremely low odds of working in high skill occupations (0.060) and high odds of being employed in low skill jobs (3.160).

In Spain, the exclusion from high skill employment is less evident. Among first-generation men, none of the origin for high skill jobs are statistically significant, suggesting a relatively more equitable access, while for low skill job African men have higher penalization (4.095), followed by those from Central-South America (2.307). Among women in Spain, significant ethnic penalties emerge mainly in low skill jobs. African women exhibit the highest likelihood of low skill employment (7.181), followed by women from Central-South America and More Developed Countries. In Spain, while barriers persist, particularly for low skill employment, access to high skill positions appears less restricted by origin, suggesting that may language can help those with Spanish roots facilitating their integration.

5. Conclusions

The results partially confirm the first hypothesis. In Italy, male descendants of immigrants show a likelihood to high-skilled jobs comparable to that of natives, whereas female descendants remain significantly disadvantaged. Also in Spain, differences between natives and descendants appear not significant for both genders, suggesting a more inclusive labour market context. However, caution is needed when interpreting these findings, particularly for Spain, where the limited sample size of descendants and children of immigrants may have reduced the statistical power to detect disparities, rather than indicating actual equality.

Our second hypothesis is only partially confirmed. Among first-generation immigrants, the gender gap is more pronounced, and this pattern holds in both countries. Among descendants, the gap does not disappear everywhere: in Italy, descendant women continue to face a significant disadvantage in accessing skilled jobs, whereas in Spain gender differences are not statistically significant. Overall, gender disparities are greater in the first generation, especially when our analysis simultaneously accounts for ethnic origin and includes both descendants and children of migrants. First-generation women have a significantly higher likelihood of being employed in low-skilled jobs. This disadvantage is particularly marked in Italy and reflects both labour-market segmentation and existing gender inequalities. By contrast, in Spain, higher levels of female emancipation and labour-force participation appear to contribute to a relatively less penalising context for first-generation women.

The limited sample size of the descendants and children of migrant, due to the still relatively small number of young adults in these generations, particularly in the Spanish case, reduces the robustness of the estimates for these subgroups. For this reason, we considered individuals with mixed parentage, the use of cross-sectional data does not allow for the observation of employment trajectories over time. It is therefore not possible to assess whether, and to what extent, skills and experiences acquired during one's career improve access to higher-skilled occupations. The ages range considered (15–35 years) captures only the early stages of working life, without providing information on long-term job stability, mobility, or occupational transitions. Lastly, due to the limited information of the sample, we are unable to identify specific ethnic communities. As a result, we rely on aggregated categories based on continent of origin, which may obscure important heterogeneities within and between migrant generation and gender outcomes. Despite the limitations, this study takes advantage of the 2021 EU-LFS, which for the first time allows for the analysis of descendants' labour market outcomes in Spain and Italy, and offers a new lens through which to interpret the phenomenon.

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References

ACHOUCHE N. 2025. The Labor Market Challenges and Coping Strategies of Highly Skilled Second-Generation Immigrants in Europe: A Scoping Review. *Societies*, Vol. 15, No. 4, pp. 93.

ADSERA A., CHISWICK B.R. 2007. Are there gender and country of origin differences in immigrant labour market outcomes across European destinations? *Journal of Population Economics*, Vol. 20, No. 3, pp. 495–526.

ALARCÓN A., PARELLA S., YIU J. 2013. Educational and Occupational Ambitions among the Spanish 'Second Generation': The Case of Barcelona. *Journal of Ethnic and Migration Studies*, Vol. 40, No. 10, pp. 1614–1636.

ALBA R.D., FONER N. 2015. Strangers no more. Princeton: *Princeton University Press.*

AVOLA M. 2022. Employed but segregated: the exploitation of immigrant work in Mediterranean agriculture. *Journal of Modern Italian Studies*, Vol. 27, No. 5, pp. 749–774.

AZZOLINI D., SCHNELL P., PALMER J.R.B. 2012. Educational Achievement Gaps between Immigrant and Native Students in Two "New" Immigration Countries: Italy and Spain in Comparison. *The Annals of the American Academy of Political and Social Science*, Vol. 643, No. 1, pp. 46–77.

BAYONA-I-CARRASCO J., DOMINGO A. 2024. Descendientes de inmigrantes nacidos en España: ¿hacia una integración segmentada? *Revista Española de Investigaciones Sociológicas*, No. 187, pp. 25–44.

BONIFAZI, C., STROZZA, S. 2017. Le migrazioni internazionali nei paesi meridionali dell'Unione europea: continuità e cambiamenti, prima e dopo la crisi. In FERRAGINA, E. (Ed.), *Rapporto sulle economie del Mediterraneo*, pp. 161-184.

BUONOMO A., GABRIELLI G., GATTI R., STROZZA S. 2025. I figli degli immigrati diventano adulti: le sfide occupazionali delle nuove generazioni in Italia. In COCCIA B., DI SCIULLO L., RICCI A. (Eds.) Orizzonti condivisi. L'Italia dei giovani immigrati e con background migratorio, Roma: Edizioni IDOS, pp. 173–180.

CACHÓN RODRÍGUEZ L. 2022. Los inmigrantes jóvenes en el mercado de trabajo en España: la asimilación segmentada en acción. *Mediterráneo Económico* No. 36, pp. 39–55.

CANTALINI S., GUETTO R., PANICHELLA N. 2022. The ethnic wage penalty in Western European regions: Is the European integration model confirmed when differences within Countries are considered? *Demographic Research*, Vol. 46, No. 23, pp. 681–693.

CANTALINI, S., GUETTO, R., PANICHELLA, N. 2022. Ethnic Wage Penalty and Human Capital Transferability: A Comparative Study of Recent Migrants in 11 European Countries. *International Migration Review*, Vol. 57, No. 1, pp. 328–356.

CRUL M., SCHNEIDER J., KESKİNER E., LELIE F. 2016. The multiplier effect: how the accumulation of cultural and social capital explains steep upward social mobility of children of low-educated immigrants. *Ethnic and Racial Studies*, Vol. 40, No. 2, pp. 321–338.

CRUL M., SCHNEIDER J. 2009. The Second Generation in Europe: Education and the transition to the labour market. *TIES Policy Brief*.

DI BELLO A., DE VITO A., ACITO A. 2025. Are there equal opportunities? A comparative analysis of first employment among young adults with and without migratory background in Italy. *Rivista Italiana di Economia e Demografia*, Vol. 79, pp. 115–126.

DROUHOT L.G., NEE V. 2019. Assimilation and the Second Generation in Europe and America. *American Review of Sociology*, Vol. 45, No. 1, pp. 177–199.

ESTADÍSTICA CONTINUA DE POBLACIÓN (ECP) 2024. Datos provisionales al 1 de abril de 2024. Madrid: Instituto Nacional de Estadística (INE).

FAJTH V., LESSARD-PHILLIPS L. 2022. Multidimensionality in the Integration of First- and Second-Generation Migrants in Europe: A Conceptual and Empirical Investigation. *International Migration Review*, Vol. 57, No. 1, pp. 187–216.

FELLINI I. 2018. Immigrants' labour market outcomes in Italy and Spain: Has the Southern European model disrupted during the crisis? *Migration Studies*, Vol. 6, No. 1, pp. 53-78.

GABRIELLI G., IMPICCIATORE R. 2021. Breaking down the barriers: educational paths, labour market outcomes and wellbeing of children of immigrants. *Journal of Ethnic and Migration Studies*, Vol. 48, No. 10, pp. 2305–2323.

GORODZEISKY A., SEMYONOV M. 2017. Labor force participation, unemployment and occupational attainment among immigrants in West European countries. *PLOS ONE*, Vol. 12, No. 5

HEATH A.F., ROTHON C., KILPI E. 2008. The Second Generation in Western Europe: Education, Unemployment, and Occupational Attainment. *Annual Review of Sociology*, Vol. 34, No. 1, pp. 211–235.

LELIE F., CRUL M., SCHNEIDER J. 2012. *The European second generation compared: Does the integration context matter?* Amsterdam University Press.

LI Y., HEATH A. 2018. Persisting disadvantages: a study of labour market dynamics of ethnic unemployment and earnings in the UK (2009–2015*). Journal of Ethnic and Migration Studies*, Vol. 46, No. 5, pp. 857–878.

MARTINI B. 2024. Examining gender and ethnic segregation in Italy's labour market: Are women and migrants more segregated than men and natives? *Romanian Journal of Regional Science*, Vol. 18, No. 2, pp. 45–60.

MEARDI G. 2024. Chapter 4: Migrant segregation and labour standards. In MEARDI G. (Ed.), *Research Handbook on Migration and Employment*. Cheltenham: Edward Elgar Publishing, pp. 62-75.

MIDTBØEN A. H., 2015. Ethnic penalties in western labour markets: Contributions, Explanations, Critiques. *Nordic Journal of Migration Research*, Vol. 5, No. 4, pp. 185–193.

MUÑOZ-COMET J., ARCARONS A.F. 2021. The occupational attainment and job security of immigrant children in Spain. *Journal of Ethnic and Migration Studies*, Vol. 48, No. 10, pp. 2396–2414.

PALENCIA-ESTEBAN A. 2022. Occupational segregation of female and male immigrants in Europe: Accounting for cross-country differences. *International Labour Review,* Vol. 161, No. 3, pp. 341–373.

PORTES A., ZHOU M. 1993. The New Second Generation: Segmented Assimilation and its Variants. *The ANNALS of the American Academy of Political and Social Science*, Vol. 530, No. 1, pp. 74–96.

PORTES A., APARICIO R., HALLER W. 2018. Hacerse adulto en España: la integración de los hijos de inmigrantes. *Anuario CIDOB de la Inmigración*, pp. 148–181.

SCHROOT T. 2025. Working, Living and Aging with the Elderly: Domestic Care Workers and their Lifelong Learning Practices: the Case of Romanian Women in Italy. *Mondi migranti*, pp. 97–113.

SERVICIO PÚBLICO DE EMPLEO ESTATAL. 2024. Informe del mercado de trabajo de las personas Extranjeras. Datos provisionales 2024 Datos provisionales 2024. Madrid: SEPE

ZANFRINI L., PASINI N. (Eds.) 2025. 30° Rapporto sulle migrazioni 2024. Milano: Fondazione ISMU ETS.

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EMPLOYMENT AND LIFE SATISFACTION AMONG REFUGEES AND ASYLUM SEEKERS IN ITALY: EVIDENCE FROM THE ITRAS SURVEY[1]

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Abstract. Employment plays a crucial role in promoting integration by providing autonomy and stability – factors especially critical for forcibly displaced individuals. It is also positively linked to overall life satisfaction. This study, drawing on data from the first Italian Refugees and Asylum seekers Survey, explores their life satisfaction, examining its relationship with employment outcomes and their structural barriers and socio-economic supports through a mediation model. The analysis reveals that employment outcomes are significantly and positively associated with life satisfaction. In contrast, poor health, low Italian language proficiency, and a lack of local social support networks are negatively associated with well-being, while the presence of a family network in Italy and receiving subsidies are positively related. Moreover, employment outcomes mediate the effects of most barriers and facilitators on life satisfaction. These results provide a contextualization of the Italian territory of refugees and asylum seekers' life satisfaction.

1. Introduction

The last available UNHCR data (UNHCR, 2025) indicate a growing number of asylum applications in Italy in 2024, with an estimated 306,908 refugees and 180,062 asylum seekers – representing an annual increase of 2.9% and 22.6%, respectively – despite the country's stricter migration policies. While initial efforts focused mainly on emergency reception and basic needs, Italy has gradually developed targeted programs aimed at fostering the social and economic integration of refugees and asylum seekers.

A relevant component of the measurement of integration focuses on individuals' subjective well-being, particularly through self-reported life satisfaction (e.g., Colic-Peisker, 2009; Khawaja and Hebbani, 2019; Pollenne, 2024).

Life satisfaction is generally defined as an overall cognitive assessment that individuals make of their own life, taking into account all relevant aspects (Diener

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et al., 1985). It is therefore a measure of evaluative well-being that reflects not only internal dispositions and stable personality traits but also subjective interpretations of life events and changes in external living conditions (Pavot and Diener, 2008). The subjective nature of such assessment is particularly relevant, as it allows individuals to assign different weights to various life domains according to their personal experience.

The literature has identified a number of life domains that contribute to overall satisfaction, including social and family relationships, health status, housing situation, community participation, and employment (Brucker *et al.*, 2017; Jebb *et al.*, 2020, ONS, 2025). Recent studies (Ambrosetti *et al.*, 2021; Pollene, 2024) suggest that for refugees and asylum seekers as well, LS is conceptualized similarly to the general population – as a kind of balance between the different domains considered significant to one's life. However, experiences of forced displacement and marginalization may influence the relative importance assigned to these domains.

Within this general framework, the present contribution aims to explore the relationship between life satisfaction (LS) and employment outcomes (EO) among asylum seekers and refugees in Italy, using a novel survey (the ItRAS survey introduced in the following).

Among the life domains, employment is identified as a key dimension for the subjective well-being of refugees and asylum seekers in host countries in several studies (e.g., Ambrosetti and Paparusso, 2021; Haindorferer *et al.*, 2024), as it is not only a means of achieving economic independence and stability, but also a fundamental channel for social inclusion, identity construction, and public recognition within the host society. Employment, thus, holds multiple meanings: at the individual level, it provides autonomy, routine and a sense of accomplishment; at the societal level, it contributes to the community's social cohesion and strengthens its economic and cultural fabric (Lee *et al.*, 2020; Ager and Strang, 2008).

However, mere participation in the labour market is not sufficient to grant refugees and asylum seekers integration. Access to formal and legally recognized employment is crucial for securing rights, social protection, and prospects for effective long-term settlement and social inclusion.

The literature identifies two main factors shaping attachment to the labor market: on the one hand, systemic barriers that hinder labour market entry, and on the other, socio-economic support mechanisms aimed at facilitating it. These operate across multiple levels: individual, organizational, and institutional. At the individual level, language skills, educational background, and social support networks are essential for accessing the local labour market; yet these personal resources often clash with structural barriers such as discriminatory hiring practices, non-recognition of foreign

qualifications, and exclusion from professional networks. Even when employed, refugees may find themselves confined to precarious and low-skilled jobs, with limited opportunities for upward mobility. Contextual factors – such as labour market policies, welfare systems, and public attitudes toward migrants – also play a critical role in shaping employment opportunities (Ortensi, 2015; Zetter and Ruaudel, 2016).

Building on this evidence, this study aims to test a model linking refugees' life satisfaction to employment outcomes and explores whether employment plays a mediating role in the effects of individual, social, and structural barriers and facilitators to integration.

The structure of the paper is as follows. Section 2 presents the data, outlines the theoretical framework, and describes the methodological approach. Section 3 reports the main findings and provides a discussion of the results. The paper concludes with a summary of key insights and implications in the final section.

2. Data and Methods

This section provides a brief overview of the ItRAS survey, which forms the empirical basis of this study, as well as the theoretical model employed to examine the relationship between employment outcomes and life satisfaction among refugees and asylum seekers in Italy.

2.1. Sample

The ItRAS, the Italian Refugees and Asylum Seeker Survey, is the first statistical survey in Italy covering the population of asylum seekers and refuges; it was conducted within the PRIN2022 project AVRAI -Assessing the Vulnerability of Refugees and Asylum-seekers in Italy- which investigates various aspects of the lives of refugees and asylum seekers in the country.

The survey, which included 1,327 beneficiaries of international protection and those with a pending application for asylum, selected by means of a centre sampling technique (Baio *et al*., 2011), was carried out between March and August 2024 through face-to-face interviews. The interviews took place in 66 Italian cities, spread in the North, Center, South, and the islands, covering urban areas of different sizes, home to (or nearby) territorial commissions responsible for granting asylum. ItRAS includes people of 67 different nationalities.

Despite an intended oversampling of women, the sample is predominantly composed of men (59%), with an average age of about 34 years (SD = 10.35). Most participants have a recognised status of legal protection, as 63% are refugees or

individuals granted other forms of international protection, while 37% are asylum seekers. The average length of stay is 5.29 years (SD = 3.74), given eligibility criteria set the oldest entry year in 2011 and the most recent at 6 months before the interview. Their educational level is generally high (47% have at least a high-school diploma or higher title), and they reside mainly in Northern Italy (39%), followed by Central (33%) and Southern Italy (27%).

2.2. *The theoretical model and its operationalization*

The key variables in this study are two: life satisfaction and employment outcomes. The first is operationalised via an eleven-point Likert scale measuring respondents' self-assessed life satisfaction. The second captures individuals' employment outcomes, classifying them into three distinct categories: (1) unemployed (i.e., not receiving any labour-related income), (2) informally employed (i.e., engaged in work without the protections offered by a formal contract), and (3) formally employed (i.e., working under a formal contract, which may not necessarily cover all working hours). This latter variable is ordinal, reflecting an increasing gradient of labour rights and entitlements.

The two percentage distributions are shown in Figure 1. Overall, asylum seekers and refugees report moderate to high levels of life satisfaction (see Figure 1), while just over half of the respondents declare to be formally employed (51.6%), and one in three declare to be unemployed.

Figure 1 – *Percentage distribution of Life Satisfaction (left) and Employment Outcomes (right).*
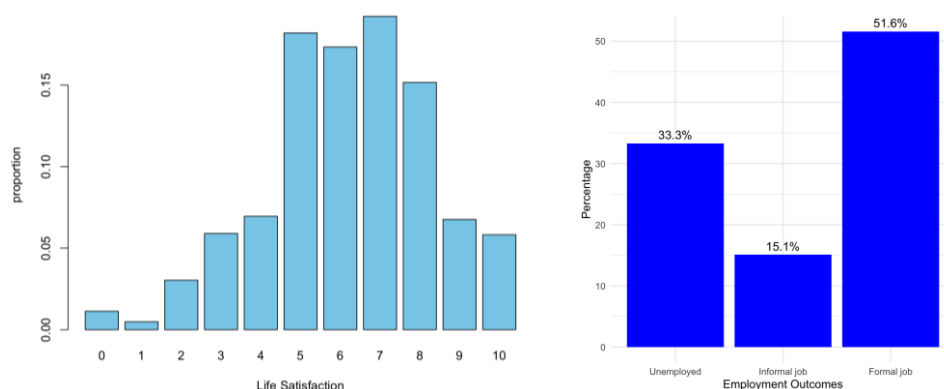
Note: Elaborations on ItRAS data using sampling weights.

Barriers and facilitators to integration play a crucial role in shaping the relationship between LS and EO. In this study, barriers are operationalized through variables capturing poor language proficiency (dummy), and a poor health status (dummy), while facilitators are measured using variables such as receiving economic subsides[2] and access to social support networks (particularly, number of Italian friends, and two dummies for presence of relatives in Italy and having non-Italian friends).

The proposed theoretical model also posits a mediated framework in which EO serves as an intermediary variable linking structural barriers and facilitators to refugees' overall life satisfaction.

Within this framework, employment is intended not only as a meaningful outcome in its own right but also as a critical pathway through which broader migration-related push and pull factors influence subjective well-being (see Figure 2).

Figure 2 - *Theoretical mediation model of the relationship between Employment Outcomes and Life satisfaction.*
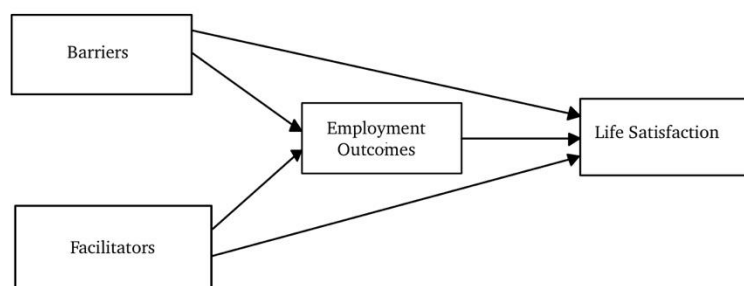
Note: This model also includes two sets of control variables for EO and LS.

Particularly, we aim to test the following three research hypotheses:

RH1: Barriers and facilitators act directly on LS, i.e. barriers lower LS and facilitators foster high levels of LS;

RH2: EO have a direct effect on the LS of refugees and asylum seekers: a (better) entrance into the labor market fosters higher levels of LS;

[2.] For respondents receiving subsidies, the survey inquired about the extent to which their standard of living depended on the received support. Answers were recorded on a 5-point Likert scale ranging from "Very much" to "Not at all." High dependence includes those who selected "Very much" or "Fairly," while low dependence encompasses responses such as "Would be the same," "A little," and "Not at all."

RH3: EO act as a mediator between barriers and facilitators and the LS of refugees and asylum seekers: barriers lower LS also through their negative effect on EO, while Facilitators increase LS through their positive effect on EO.

Figure 3 provides first insights into the main relationship of interest, i.e., the one between EO and LS, showing how individuals with greater employment protection tend to exhibit higher levels of life satisfaction.

Figure 3 – *Box-plots for Life Satisfaction by level of Employment Outcomes.*
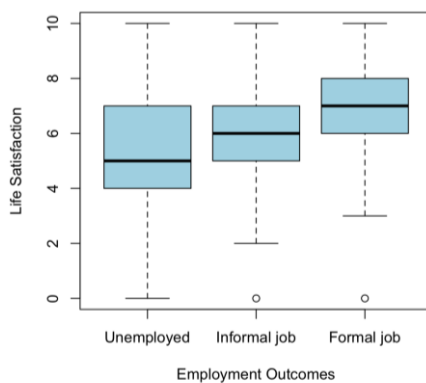
Note: elaborations based in ItRAS using sampling weights.

To test the proposed model, we used a path analysis model in which two regression equations express the mediated relationship between life satisfaction and barriers and facilitators of integration to labour market outcomes. The model includes other control variables both of EO and LS (i.e., age, sex, length of stay in Italy, educational level, nationality grouped by continent of origin, residence grouped in Northern, Central and Southern Italy). Furthermore, for LS we also introduced among controls a variable of relatedness (measuring appreciation for how Italian people work) and a dummy for living alone.

The two equations in the model are:

$$EO = \sum_{j=1}^{2} \alpha_j x_j + \sum_{i=1}^{4} \tau_i m_i + \sum_{k=1}^{6} \gamma_k z_k \tag{1}$$

$$LS = \beta_0 + \beta_1 EO + \sum_{j=1}^{2} \delta_j x_j + \sum_{i=1}^{4} \varphi_i m_i + \sum_{l=1}^{8} \lambda_l n_l \tag{2}$$

in which the set of coefficients $\alpha_j, \tau_i, \gamma_k, \delta_j, \varphi_i, \lambda_l$ as well as β_0, β_1 are the coefficients of the direct effects in the two equations (α_j and δ_j for barriers; τ_i and φ_i

for facilitators; γ_k and λ_l for control variables) and x_j are barriers variables, m_i are facilitator variables, z_k and n_l are the two sets of variables used as controls. The indirect and total effects of the mediation model can be expressed as follows:

$$ind_j = \beta_1 \alpha_j, j = 1,2 \text{ and } ind_i = \beta_1 \tau_i, i = 1, \dots, 4 \tag{3}$$

$$tot_j = ind_j + \delta_j, j = 1,2 \text{ and } tot_i = ind_i + \varphi_i, i=1, \dots, 4 \tag{4}$$

Given the ordinal nature of the response variable in equation (1), a multivariate probit model was estimated, whereas the model in equation (2) is a linear regression model. The analyses were conducted using R version 4.4.2 (R Core Team, 2024) and the *lavaan* package version 0.6-19 (Rosseel, 2012).

3. Results and Discussion

Based on the results presented in Tables 1 and 2, it is possible to outline a nuanced picture of the relationships between barriers and facilitators of employment outcomes and life satisfaction, within a model that also hypothesizes indirect effects mediated by EO.

Among the factors showing a significant influence on both dependent variables (EO and LS), poor knowledge of the Italian language stands out in particular, showing a negative effect both on EO (α = -0.518, p < .001) and on LS (δ = -0.842, p < .001). This suggests that individuals with limited Italian language proficiency perceive greater difficulties in finding a regular job, which in turn translates into lower subjective well-being.

Poor health status also appears to be a critical factor, as it is negatively associated with both outcomes (α = -0.599 for EO and δ = -0.621 for LS), consistent with the hypothesis that poor health conditions constitute a significant barrier to both labour market participation and well-being.

The number of Italian friends is marginally significant in explaining EO (p = 0.062) while it shows a more substantial positive effect on LS (δ = 0.082, p < .001), suggesting that social ties with members of the host society may foster a sense of overall well-being, (e.g., by diminishing the perception of discrimination, Fozdar and Torezani, 2008) even if it does not necessarily translate into direct employment benefits. Similarly, having relatives in Italy does not appear to influence EO but has, as expected, a positive effect on LS (α = 0.482, p = 0.002), likely due to the received social and emotional support (Khawaja and Hebbani, 2019). Having non-Italian friends is not statistically significant for EO nor for LS.

Economic subsidies represent a more complex variable: when it is reported an high economic dependence from them there is a negative effect on EO ($\alpha = -0.359$, $p < .001$), whereas when it is reported a low dependence it emerges a positive association with LS ($\delta = 0.602$, $p = 0.009$), suggesting that economic self-sufficiency – or at least the perception of it – is a powerful predictor of personal satisfaction.

Table 1 – *Estimated direct effects of the model*[3]

	Variables	EO	p-value	LS	p-value
X	Limited Italian	-0.518	0.000	-0.842	0.000
	Poor health	-0.599	0.000	-0.621	0.012
M	Subsidies (ref. no subsidies)				
	low dependence	-0.066	0.683	0.602	0.009
	high dependence	-0.359	0.000	-0.138	0.328
	No. Italian friends	0.026	0.062	0.082	0.000
	Relatives in Italy	-0.012	0.916	0.482	0.002
	Non-Italian friends	0.158	0.185	0.186	0.256
Z and N	Age	0.001	0.776	0.020	0.003
	Woman	-0.281	0.003	-0.046	0.760
	Length of stay in Italy	0.088	0.000	0.033	0.098
	Education (ref. middle school)				
	High	0.227	0.037	0.056	0.743
	Low	-0.131	0.225	-0.064	0.674
	Origin (ref. Africa)				
	Asia	0.200	0.050	0.236	0.100
	Europa	0.131	0.365	0.502	0.043
	South America	0.292	0.166	0.788	0.023
	Residence (ref. Northern Italy)				
	Central Italy	-0.292	0.005	0.280	0.062
	Southern Italy	-0.165	0.155	0.405	0.018
N	Relatedness			0.753	0.000
	Living alone			-0.512	0.001
	EO			0.335	0.000
	Intercept			5.115	0.000

Geographical origin also shows selective effects: compared to refugees from Africa, those from Asia, Europe, and South America present higher LS. A marginally significant effect on EO emerges only for Asian respondents. Residence in Central Italy, compared to the North, is negatively associated with EO but tends to positively influence LS, whereas the South shows positive effects only on LS.

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[3] The model was estimated on a subset made of 928 refugees and asylum seekers due to missing data on the variables included in the analysis.

Among psychological constructs, relatedness (here accounted through a strong appreciation of how Italian people work) is strongly associated with LS ($\lambda = 0.753$, $p < .001$), while living alone has a negative effect ($\lambda = -0.512$, $p = 0.001$), confirming the importance of relational support for perceived well-being.

As predicted by the theoretical model, EO has a direct positive effect on LS ($\beta_1 = 0.335$, $p < .001$), further supporting its mediating role within the model.

The estimates of indirect effects (Table 2) strengthen these interpretations. In particular, poor knowledge of Italian shows a significant indirect negative effect on LS (ind = -0.174, $p < .001$), which adds to the direct effect, resulting in a strongly negative total effect (tot = -1.015, $p < .001$). The same applies to a poor health status, which presents a significant indirect effect (ind = -0.201, $p = 0.002$) in addition to the direct one.

Table 2 – *Estimated indirect and total effects of the mediation model.*

Variable	Indirect effects	p-value	Total effects	p-value
Limited Italian	-0.174	0.000	-1.015	0.000
Poor health	-0.201	0.002	-0.822	0.001
Subsidies (ref. no subsidies)				
low dependence	-0.022	0.683	0.580	0.013
high dependence	-0.12	0.002	-0.259	0.070
No. Italian friends	0.009	0.080	0.091	0.000
Relatives in Italy	-0.004	0.916	0.478	0.002
Non-Italian friends	0.053	0.198	0.239	0.141

Conversely, the number of Italian friends produces a small but significant positive indirect effect, enhancing the total effect on LS. Lastly, the "subsidy" variable plays a multifaceted role: those who report a high dependence on received financial support experience a negative total effect on LS, while those who report a low dependence on subsidies show a significant positive effect.

4. Conclusions

This study aimed to assess the mediating role of employment on the life satisfaction of refugees and asylum seekers living in Italy. As presented in Section 3, the results show that the data supported all three proposed research hypotheses. Specifically, employment outcomes showed a significant and positive direct association with life satisfaction, confirming RH2. RH1 was also supported, barriers – as poor health, low proficiency in the Italian language– were negatively associated with LS. Conversely, certain facilitators—such as having a family network in Italy

or receiving subsidies, even when not significantly affecting the standard of living—were positively associated with length of stay. These findings underscore the pivotal role of both structural barriers and supportive factors in influencing the well-being of refugees and asylum seekers. The analysis further confirmed RH3, indicating that EO mediate the relationship between barriers/facilitators and LS.

Our findings are partially aligned with existing literature. For instance, studies conducted in the United States (Hagstrom *et al*., 2019) also found a strong link between employment and life satisfaction among refugees. However, contrasting evidence from Austria and Germany suggests that the relationship between EO and LS may not be universally positive. In these contexts, employment conditions likely failed to meet refugees' expectations, thus diminishing the beneficial effects of employment on subjective well-being (Haindorfer *et al*., 2024).

Overall, the results suggest that policies aimed at enhancing language skills, strengthening social networks, improving access to healthcare, and promoting economic inclusion may significantly contribute to the well-being of the refugee population. From a policy perspective, this underscores the importance of strengthening access to quality employment opportunities, investing in language acquisition programs, and supporting the development of both local and family-based social networks.

This study is not without limitations. First, the findings may be influenced by the specific characteristics of the Italian labour market and the legislation regulating access to formal employment for refugees and asylum seekers. As such, the results may be context-specific and not generalizable to other national settings. Second, the data do not include information on the quality of employment or job satisfaction among refugees, which likely limits the interpretation of our findings. Third, the cross-sectional nature of the data restricts the possibility of drawing causal inferences. Finally, a relatively high percentage of missing cases was recorded; although missingness appears to be uniformly distributed across sex, age, and nationality, more in-depth analysis would be necessary to rule out potential selection bias in the results presented.

Nevertheless, these findings represent a novel contribution to the Italian context, where, to the best of our knowledge, no other survey has directly addressed asylum seekers and refugees at the national level.

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References

AGER A., STRANG A. 2008. Understanding integration: a conceptual framework, *Journal of Refugee Studies*, Vol. 21, No. 2, pp. 166–191.

AMBROSETTI E., DIETRICH H., KOSYAKOVA Y., PATZINA A. 2021. The Impact of Pre- and Postarrival Mechanisms on Self-rated Health and Life Satisfaction Among Refugees in Germany, *Frontiers in Sociology*, Vol. 6., pp. 1-17.

AMBROSETTI, E., PAPARUSSO, A. 2021. What are the main factors associated with immigrants' subjective well-being in Italy? Evidence from self-reported life satisfaction, *International Migration,* Vol. 59, No. 4, pp. 221–237.

BAIO G., BLANGIARDO G., BLANGIARDO M. 2011. Centre sampling technique in foreign migration surveys: a methodological note, *Journal of Official Statistics*, Vol. 59, No. 3, pp. 451–465.

BRÜCKER H., ROTHER N., SCHUPP, J. 2017. IAB-BAMF-SOEP Befragung von Geflüchteten 2016. Studiendesign, Feldergebnisse sowie Analysen zu schulischer wie beruflicher Qualifikation, Sprachkenntnissen sowie kognitiven Potenzialen.

COLIC-PEISKER V. 2009. Visibility, settlement success and life satisfaction in three refugee communities in Australia, *Ethnicities*, Vol. 9, No. 2, pp. 175-199.

DIENER E., EMMONS R.A., LARSEN R.J., GRIFFIN S. 1985. The Satisfaction With Life Scale, *Journal of Personal Assessment,* Vol. 49, No. 1, pp. 71-75.

FOZDAR F., TOREZANI S. 2008. Discrimination and well-being: Perceptions of refugees in Western Australia, *International Migration Review*, Vol. 42, No. 1, pp. 30–63.

HAINDORFER R., LIEDL B., KITTEL B. 2024. The Integration Resources of Refugees and Life Satisfaction: Evidence from the City of Vienna, *Journal of Immigrant & Refugee Studies*, Vol. 22, No. 2, pp. 239-263.

HAGSTROM P., PEREIRA J., WU S. 2019. The happiness of refugees in the United States: Evidence from Utica, NY, *Journal of Refugee Studies*, Vol. 34, No. 2, pp. 1–20.

JEBB A.T., MORRISON M., TAY L., DIENER E. 2020. Subjective Well-Being Around the World: Trends and Predictors Across the Life Span, *Psychological Science*, Vol. 31, No. 3, pp. 293-305.

KHAWAJA N., HEBBANI A. 2019. Factors impacting life satisfaction of refugees in Australia: A mixed method study, *The Australian Community Psychologist*, Vol. 30, No. 1, pp. 30-50.

LEE E.S., SZKUDLAREK B., NGUYEN D.C., NARDON L. 2020. Unveiling the canvas ceiling: a multidisciplinary literature review of refugee employment and workforce integration, *International Journal of Management Review*, Vol. 22, pp. 193-216.

OECD. 2016. Working Together: Skills and Labour Market Integration of Immigrants and their Children in Sweden, Working Together for Integration, *OECD Publishing*

ONS (OFFICE FOR NATIONAL STATISTICS, UK). 2025. *Personal well-being user guidance. Available at: https://www.ons.gov.uk/peoplepopulationandcommu nity/wellbeing/methodologies/personalwellbeingsurveyuserguide*

ORTENSI, L.E. 2015. The integration of forced migrants into the Italian labor market, *Journal of Immigration and Refugee Studies*, Vol. 13, No. 2, pp. 179-199.

PAVOT W., DIENER E. 2008. The Satisfaction with Life Scale and the emerging construct of life satisfaction, *The Journal of Positive Psychology,* Vol. 3, No. 2, pp. 137-152.

POLLENNE D. 2024. Understandings of Happiness and Life Satisfaction Among Refugees in the UK, *Journal of Refugee Studies,* Vol. 37, No. 1, pp. 51-71.

UNHCR (UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES). 2025. Refugee data summaries. https://www.unhcr.org/refugee-statistics/data-summaries. Accessed on 4th July 2025.

ZETTER R., RUAUDEL H. 2016. Refugees' right to work and access to labor markets-an assessment. *World Bank Global Program on Forced Displacement (GPFD)*

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HOUSING, LIVING CONDITIONS, AND SETTLEMENT PATTERNS OF SELECTED COMMUNITIES OF FOREIGN ORIGIN IN NAPLES. INSIGHTS FROM A MICRO-MACRO APPROACH

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Abstract. We aim to update the knowledge framework on the different settlement geographies and on the housing and living conditions of selected foreign communities living in Naples, the capital of Campania region. To this aim we propose a micro-macro approach that combines micro data, coming from the SCIC (*Sistema cittadino per l'integrazione di comunità*) sample survey carried out in Naples in 2022 on adult immigrants belonging to selected communities of foreign origin according to their country of citizenship at birth (Sri Lanka, Ukraine, Pakistan and Bangladesh, Nigeria and Senegal), and macro data, coming from the permanent census of 2021. In a general framework with significant heterogeneity, results highlight that settlement patterns are generally linked to housing and living conditions with few exceptions. The Pakistanis and the Bangladeshis are more concentrated and segregated in historical centre and have worst housing and living conditions in terms of crowding and availability of accommodation, but not in terms of accommodation's irregularity. Conversely, the Ukrainians have a widespread settlement model with the highest frequency of house for rent without a regular contract, but also the lowest crowding index.

1. Introduction

The foreign presence over the past decades in Naples, the capital city of the Campania region with the highest percentage of foreign residents in Southern Italy, is articulated in terms of origins, demographic and social characteristics, migratory projects, employment, and living arrangement (Buonomo *et al.*, 2025; Strozza and Gabrielli, 2018). Ties within foreign communities, perhaps more than others, are those aspects that influence pathways to inclusion, use of services and opportunities in the destination context, because they are the main channel of communication and access to information. These aspects together with the opportunities provided by the destination context play an important role in determining the housing, living conditions and settlement patterns of immigrants. Campania is among the Italian regions with the highest housing hardship, with a predominance of private property, a narrow and undynamic rental market, and limited available public housing.

Naples is characterized by a high level of intra-urban heterogeneity. The presence of immigrants not only reflects this diversity but also contributes to it by introducing new cultural and social dynamics. (Mazza *et al.*, 2018; Benassi *et al.*, 2020; Benassi and De Falco, 2025). In urban contexts, the most culturally and socio-economically

vulnerable populations -such as immigrants- can fuel processes that are often linked to those of residential segregation, such as extreme poverty and social marginality according to a self-propulsive spiral defined as the vicious circle of segregation (Tammaru *et al.*, 2021). Thus, housing and settlement strategies mark a decisive moment in the process of building the migrant's social identity within the destination context. Scholars' debate concerns residential segregation and housing poverty, the possibility of satisfying basic needs through dignified housing solutions, the role of migrants in destination context and in the labour market, and the structural limits of housing at local scale. Previous analysis on housing and living conditions and settlement patterns have shown how they are the result of different household and individual characteristics, migratory strategies, and integration processes (Dadusc *et al.*, 2021).

Deepening the empirical evidence recently observed from Buonomo *et al.* (2025), we aim to update the knowledge framework on the different residential geographies and on the housing and living conditions of the main communities of foreign origin living in Naples. Two research questions move our analyses: RQ1 - *Do selected communities of foreign origin have different housing, living conditions and settlement patterns in Naples?* RQ2 - *Are there specific settlement intra urban areas associated with specific housing and living conditions?*

This contribution proposes an original micro-macro approach (using both individual and aggregate data) in studying the relationship between space and place with reference to the municipality of Naples and for selected communities of foreign origin. It combines micro data, coming from the SCIC (*Sistema cittadino per l'integrazione di comunità*) sample survey carried out in Naples in 2022 on adult immigrants belonging to selected foreign communities according to their citizenship at birth (Sri Lanka, Ukraine, Pakistan and Bangladesh, Nigeria and Senegal), and macro data, coming from the permanent census of 2021.

Based on the 2021 Census data, § 2 will provide a summary overview of the settlement patterns of selected foreign communities residing in the municipality of Naples and on their level of residential segregation. The § 3 will describe the survey data used and the multivariate analyses to define the territorial clusters of settlement of foreigners in Naples, according to certain characteristics, and to analyse the association of settlement patterns with housing and living conditions. The § 4 will provide an overview of the settlement patterns, living and housing conditions, such as home ownership title, the actual availability of housing, and the housing crowding level. In addition, the existing association of housing and living conditions with settlement patterns will be assessed, considering individual, family, and migration characteristics. Some concluding remarks will be reported in §5.

2. The settlement patterns of selected communities of foreign origin residing in Naples

By using census data of 2021 at sub municipality level (i.e. census tracts and districts or 'quartieri'[1]), this section briefly describes the settlement patterns of the major foreign-origin communities in Naples. Here we focus on six target communities, namely: Sri Lankan, Ukrainian, Pakistani, Bangladeshi, Nigerian and Senegalese. In Figure 1, we report the published results of Buonomo *et al.*, (2025) concerning Dissimilarity index (D), Delta index (DEL), and Location quotient (LQ) of these communities by district of residence in Naples[2].

The highest levels of Dissimilarity index (D), compared to the Italians, are those recorded by Senegalese, Pakistani and Bangladeshi (values above 0.7). Moreover, these three foreign-origin communities also record high levels of Delta index (DEL=0.79). Looking at the Location quotient (LQ) map we can see that the settlement pattern of such foreign-origin communities is polarized in the historic center (LQ >2), and there are many districts where such communities are mostly absent. The Ukrainians show the opposite with low dissimilarity (D=0.23) and low level of concentration (DEL=0.40). The widespread settlement pattern of Ukrainians is tested by the numerous districts in which there is high or low over-representation of this community (LQ). The Sri Lankans, who take intermediate values in the global indices (D and DEL), are over-represented (LQ) in a specific and spatially contiguous area that extends from the historical center to the western coastline districts. A similar settlement pattern is shown among the Nigerians who take intermediate values in the global indices (D and DEL), but with an over-representation (LQ) in nine Eastern districts, some of which are shared with the Senegalese, the other African community here observed.

In the cited publication, Buonomo *et al.* (2025) grouped the 30 Neapolitan districts into five units (or clusters), by using factor analysis and cluster analysis[3]. In

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[1] The 30 districts (or 'quartieri') are not proper administrative units of the municipality of Naples, yet these sub-municipalities represent, to a certain extent, the social history of the municipality and they contribute differently to its economic and social dynamics. Moreover, they guarantee a balanced distribution in terms of resident population.

[2] Dissimilarity (Duncan and Duncan, 1955) and Delta (Hoover, 1941) indexes range from 0 to 1 and refer to evenness and concentration dimension of residential segregation (Massey and Denton, 1988). D is the closer to 1 the greater the dissimilarity (i.e., lack of similarity) between the spatial distribution of one group relative to the other. DEL is the closer to 1 the smaller the physical space occupied by the population in question and therefore the greater the level of areal concentration. Location quotient (LQ) range from 0 to ∞ (Isard, 1960). LQ is greater than 1 the more the (minority) group in question is, in a given territorial unit, over-represented compared to the Italian residents in relation to the same share calculated for the entire context considered (in our case the entire municipality of Naples). Conversely there is under-representation in those territorial units where LQ is less than 1.

[3] Buonomo *et al.* (2025) considered 17 elementary indicators related to the characteristics of foreign residents for the 30 Neapolitan districts, namely: incidence of foreigners among residents, sex and age structure of

this publication, the progressive numbering of the intra urban clusters is ordered from the center towards the outskirts of the city (Figure 2).

Figure 1 – *Dissimilarity index (D), Delta index (DEL), and Location quotient (LQ) of selected communities of foreign origin by district of residence in Naples.*
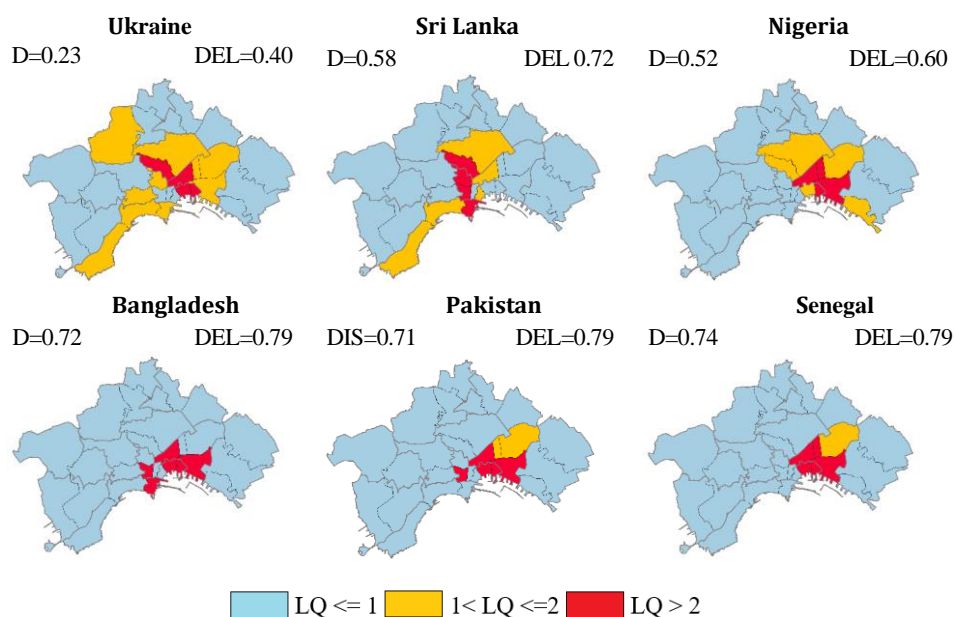
Source: Census data 2021. Buonomo et al., 2025.

The first cluster (called "historical center") covers three districts in the historical center: San Lorenzo, Mercato, and Pendino. It is characterized by the high incidence of the foreigners with numerous Asian citizens, with a male predominance especially at ages 30-54 years and with high employment rate among men. The second cluster (called "central area") consists of six contiguous districts from historical center almost to suburbs: San Ferdinando, Montecalvario, Avvocata, Stella, San Carlo all'Arena, and Piscinola. It is characterized by a strong homogeneity by foreign origin with the predominance of the Sri Lankans, with a significant presence of young adults and with average rates of female employment.

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foreigners, incidence of EU foreigners on total foreign residents, incidence of the six numerically largest foreign communities on total foreign residents, employment rate by gender. By using principal component factor analysis, the authors identified four synthetic factors in linear combination of the 17 elementary indicators observed. After, hierarchical cluster analysis identified five clusters and the relative descriptions, considering the identified four factors. For further details on used methods see Buonomo *et al.* (2025).

Figure 2 – *Intra urban clusters of residence of foreigners.*
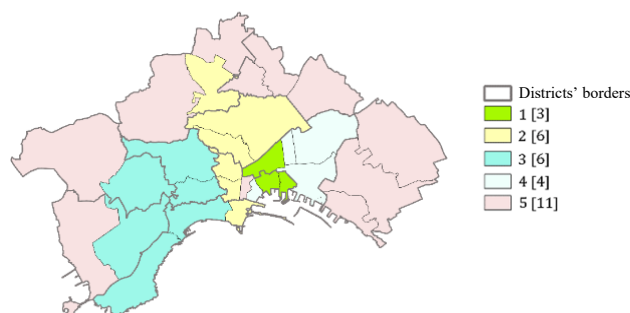
Source: Census data 2021. Buonomo et al., 2025.

The third cluster (called "wealth area") consists of six districts, among which two are coastal, forming a compact area immediately on the west side of the central area: Vomero, Arenella, Chiaia, Posillipo, Fuorigrotta, and Soccavo. It is characterized by a high feminization of the foreign presence and the importance of the older component. The Ukrainians numerically represent the first of foreign origin (a quarter of the area's foreign population). The fourth cluster (titled "industrial and commercial area") consists of four districts in the east side of historical center: Vicaria, Poggioreale, Zona Industriale, and Porto. It is characterized by high female employment rate, a predominance of the Chinese, a strong family presence and a young age structure. The fifth cluster (called "suburban area") brings together eleven districts: San Giovanni a Teduccio, Barra, Ponticelli, San Pietro a Patierno, Secondigliano, Miano, Scampia, Chiaiano, Pianura, Bagnoli and San Giuseppe. It is characterized by extreme heterogeneity in the foreign presence with low employment rates.

3. Sample data and micro-macro methods

The sample survey on "Settlement patterns and integration levels of immigrant citizens in the municipality of Naples" was conducted in early 2022, as part of the SCIC project, by the Dedalus Cooperative, in collaboration with the Department of Political Sciences of the University of Naples Federico II.

By using center sampling techniques (Baio et al., 2011), it involved 600 adult foreign citizens at birth (or individuals of foreign origin), regardless of their residence condition, legal status, or naturalization. 150 Sri Lankans and 150 Ukrainians interviewed represent the first and second largest foreign-origin communities in the municipality, respectively. Two adding groups were also considered: the Nigerians and the Senegalese (sub-Saharan Africa); the Pakistani and the Bangladeshi (Indian subcontinent). An additional 150 interviews were conducted for each group, equally divided between the two nationalities constituting the aggregate. This sample

aggregation strategy suffers the limitation of putting together communities who present elements of heterogeneity among themselves.

The data collected were weighted[4] to make the four groups of observed communities representative in the municipality, equal to 55% of the total foreigners (Buonomo *et al.*, 2025). The survey collected 72 questions, mostly closed or semi-closed, with batteries of items on a Likert scale, to update the existing knowledge on housing and living conditions, settlement strategies, levels of integration achieved, delving into specific topics such as: migration background, labor market, family characteristics, opinions and sense of belonging. The data are cross-sectional and do not allow for longitudinal or panel data analysis. Three aspects of housing and living conditions are considered in the analysis: home ownership title (property house, rented house with regular or irregular contract, living in the workplace, other types of living), actual availability of housing (total or partial), and housing crowding level. Partial availability is defined as when not all the rooms in the house are available to the interviewee and his family. The crowding index is computed as the ratio of the number of inhabitants to the number of available rooms (Avramov, 2005).

After a description of these three housing and living characteristics among the observed communities of foreign origin, two logistic regression models and one linear regression model were estimated. The dependent variables considered are negatively oriented: irregular housing (1 housing without a regular contract and 0 property or rental house with a regular contract), partial availability of housing (1 partial availability and 0 total availability), and crowding index (continuous variable).

Multivariate analysis aim, on the one hand, to observe the significant differences that exist in housing and living conditions among communities of foreign origin and, on the other hand in a completely original way, the association of these housing and living conditions to the five intra urban clusters of Neapolitan districts, described in section 2, and to social and cultural integration, net of some control variables concerning the socio-demographic, occupational, migration, and family characteristics.

Following the ISMU Foundation methods (Blangiardo and Mirabelli, 2018), integration is here considered a multidimensional process. The cultural integration index considers 10 elementary variables and covers the practices, perceptions and mutual relationships of foreigners and of the receiving society. The social integration index considers 14 elementary variables and covers lifestyles, associationism, friendships, attitudes and opinions about gender roles and children. The elementary variables were assigned normalized values in a range between -1 and 1 (where 0 expresses an average situation). The modalities of the individual variables were ordered from low levels to increasingly higher levels of integration and the

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[4] The weighting system used guarantees the representativeness of the interviews within the individual groups and gives value to the overall data (without distinction by group), ensuring that they correspond to the reality constituted by the four groups as a whole.

individual scores relating to the individual variables were obtained by assigning to the different modalities a score equal to the difference between the relative frequency of the previous modalities (lower level of integration) and that of the subsequent modalities (higher level of integration). The average of the scores for the set of variables relating to each dimension of integration allowed us to obtain the values of cultural and social integration respectively for each interviewee. Further computational information on integration indexes is available in Buonomo *et al.* (2025). Other control variables are included in the multivariate analysis to edge against compositional effects and concern gender (men, women), age groups (less than 35 years, 35-44 years, 45 years and more), educational level (lower secondary or less, upper secondary, tertiary), legal status (lived irregular position during the stay - yes, no), years since migration (discrete variable), household (alone, couple with/without children, not-cohabiting couple, other), and occupational status (employed with or without a regular contract, unemployed).

4. Results

Looking at the distribution of each community of foreign origin by settlement clusters (Table 1) and according to Buonomo *et al.* (2025), the Sri Lankans show a high concentration in the central area (81.5%) and in the historical center (11.1%). The Ukrainians present the most widespread settlement pattern with the highest percentage in the wealth area (30.6%). The strong Asian connotation of foreign presence in the historical center sees particularly high percentages of the Pakistani and the Bangladeshi (92.7%), confirming their totally polarized settlement pattern in this cluster. The Nigerians and the Senegalese mostly settle in the historical center (91.7%), but, according to Buonomo *et al.* (2025), this is mostly do because of the Senegalese. All the observed communities of foreign origin, which do not include, for example, the Chinese, the Moroccans or the Romanians, would be located with lower percentages in the suburban area and in the industrial and commercial area.

According to home ownership title (Table 1), almost three-quarters of the considered foreigners are in property or rented house with regular contract (73.5%). In addition, 78.0 percent have total housing availability.

According to what has already been more extensively highlighted in Buonomo *et al.* (2025) and briefly here reported, there are, however, substantial differences in the four foreign-origin groups.

The 87.4 percent of the Sri Lankans live in property house (3.2%) or rented under contract (84.2%), with a rather small share of housing situations characterized by instability and irregularity.

The Ukrainians have a very heterogeneous distribution: the highest percentage of homeowners (9.4%), of those in rented house with an irregular contract (30.7%), or of

those living in the workplace (15.6%); rather small percentage, compared to the other communities, of those in rented house with regular contract (43.6%). The 86.9 percent of the Pakistani and the Bangladeshi live in rented houses, of which a significant proportion live without a regular contract (20.9%). The percentage of those living in other accommodation is significant (9.8%), while only 1.0% live in property houses, and only 2.3% live in the workplace. In addition, more than a third have partial availability of housing (36.6%). Similarly, the Nigerians and the Senegalese mostly live in rented houses (89.1%) but with the second smallest percentage, compared to the other communities, of those who do not have a regular contract (16.7%). Also significant among them is the percentage of those living in other accommodation (7.7%). The sub-Saharan community has the highest percentage of those with total availability of housing (91.3%), while Pakistanis and Bangladeshis have the highest percentage of cases where the housing they live in is only partially at their disposal.

Table 1 – *Settlement clusters, and housing and living conditions by communities of foreign origin. Naples. Column percentages.*

Settlement clusters and housing/living conditions	Sri Lanka	Ukraine	Pakistan and Bangladesh	Nigeria and Senegal	Total
Clusters of settlement					
Historical center	11.1	26.8	92.7	91.7	36.3
Central area	81.5	22.8	1.7	3.9	45.4
Wealth area	2.0	30.6	0.0	0.0	9.1
Industrial/commercial area	0.0	7.6	3.1	3.9	2.9
Suburban area	5.4	12.2	2.5	0.5	6.3
Home ownership title					
Property house	3.2	9.4	1.0	3.2	4.4
Rented house with regular contract	84.2	43.6	66.0	72.4	69.1
Rented house with irregular contract	7.3	30.7	20.9	16.7	16.8
Living in the workplace	4.5	15.6	2.3	0.0	6.6
Other types of living	0.9	0.8	9.8	7.7	3.1
Actual availability of housing					
Total	83.5	72.7	63.4	91.3	78.0
Partial	16.5	27.3	36.6	8.7	22.0
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*

Source: SCIC data 2022. Buonomo et al., 2025.

Table 2 shows an average number of 2.3 rooms in the accommodation; it reduces to 2 rooms if only available rooms are considered. The average crowding index is 1.7 people per room. The Pakistani and the Bangladeshi have on average the lowest number of available rooms (1.6 rooms) and the highest crowding index (2.4 people per room). On the opposite, the Nigerians and the Senegalese have on average the highest number of available rooms (2.1 rooms) and the lowest crowding index (1.5 people per room).

Table 2 – *Average number of total rooms and of available rooms in the accommodation and crowding index by communities of foreign origin. Naples. Average number (standard deviation).*

Communities of foreign origin	Average number of total rooms	Average number of available rooms	Crowding index
Sri Lanka	2.3 (0.9)	2.1 (0.9)	1.7 (1.0)
Ukraine	2.6 (0.8)	2.0 (0.9)	1.5 (0.8)
Pakistan and Bangladesh	2.1 (0.7)	1.6 (0.6)	2.4 (1.9)
Nigeria and Senegal	2.2 (1.0)	2.1 (0.9)	1.5 (0.8)
Total	*2.3 (0.9)*	*2.0 (0.9)*	*1.7 (1.2)*

Source: SCIC data 2022. Buonomo et al., 2025.

Table 3 – *Selected determinants of housing contractual irregularity, partial availability of accommodation, and crowding index of housing. Naples. Logistic and linear models. Coefficients and p-values.*

Determinants	Irregular[a] (ref.: regular) -logistic-		Partial[b] (ref.: total) -logistic-		Crowding index -linear-	
	coeff	p.value	coeff	p.value	coeff	p.value
Communities of foreign origin: ref. Pakistan and Bangladesh						
Sri Lanka	-0.309		-0.590		-0.704	***
Ukraine	1.683	***	-1.194	**	-1.299	***
Nigeria and Senegal	-0.450		-1.929	***	-1.128	***
Settlement cluster: ref. Historical center						
Central area	-0.688	*	-0.187		-0.249	*
Wealth area	-0.141		0.864	*	-0.002	
Industrial/commercial area	0.787		0.960	*	0.220	
Suburban area	-2.184	***	-0.932		-0.455	**
Cultural integration (continue)	-1.192	**	-1.390	***	-0.105	
Social integration (continue)	-0.184		-1.136	**	-1.223	***
Costant	*-0.371*	***	*-1.125*	***	*2.392*	***
(Pseudo) R²	*0.272*		*0.219*		*0.198*	

Notes: (a) home ownership title is irregular in case of rented house with irregular contract, living in the workplace; (b) availability of accommodation is partial if not all the rooms in the house are available to the interviewee and his family; *p-value<0.1, ** p-value<0.05, *** p-value<0.01.
Control variables: gender, age groups, educational level, legal status, years since migration, household, and occupational status.
Source: our elaboration on SCIC data 2022.

As far as the regression models, only the coefficients (and p-values) of the three target aspects are shown in Table 3 for space reasons (communities of foreign origin, settlement clusters, cultural and social integration).

The Pakistani and the Bangladeshi (the referent community) more often than the others have low housing independence and higher crowding level, the Ukrainians have

the highest coefficient concerning housing contractual irregularity (1.683), but also the lowest coefficient of crowding level (-1.299).

According to the descriptive in Table 1, the Nigerians and the Senegalese show the lowest coefficient of partial housing availability (-1.929). Interestingly, the Sri Lankans, who had shown better housing conditions in the descriptive analyses especially in comparison with the referent community (the Pakistani and the Bangladeshi), assume a statistically significant value only in the case of the crowding index (-0.704) once the control variables (among which years since migration) are considered. Moving on the macro areas of settlement, the referent category (historical center) and industrial and commercial area have the highest coefficients concerning housing contractual irregularity, while suburban areas show the opposite (-2-184).

Partial availability of accommodation is observed, probably for different reasons, mostly in industrial and commercial area (0.960) and in wealth area (0.864). While the crowding index assumes the lowest coefficients in suburban area (-0.455). Not surprisingly, increasing cultural and social integration are negatively associated with unfavorable living and housing conditions. However, this is not statistically significant for social integration in the case of contractual irregularity, and for cultural integration in the case of crowding index.

5. Conclusion

The analyses described housing and living conditions and settlement patterns of foreigners in the municipality of Naples to delineate areas of hardship. The main results allowed us to answer the research questions posed at the beginning of the paper and recalled below. RQ1: *Do selected communities of foreign origin have different housing and living conditions and settlement patterns in Naples?* Yes, we observed a heterogeneity among the four groups of observed communities. Cultural and social integrations positively affect housing and living conditions. The micro-macro approach, based on survey and census data, show that the Pakistani and the Bangladeshi are concentrated in historical center (San Lorenzo, Mercato and Pendino) which is densely populated, and foreigners are just under 20% of residents. Considering only three specific aspects, they assume the worst housing and living conditions as well, among the considered foreign-origin communities, mostly in terms of crowding and availability of accommodation. This is undoubtedly the most difficult situation. A similar settlement path is observed among the Nigerians and the Senegalese who mostly settled in the historical center but have good housing and living conditions in terms of crowding and availability of accommodation. Conversely, the widespread presence in Naples of the Ukrainians can be linked to employment and residential opportunities. This settlement pattern is associated on average to the largest percentage of people with property house as well as with housing contractual irregularity, testifying to how living arrangement is a process that takes place over time

through non-linear and highly articulated paths capable of significantly affecting the social vulnerability of immigrants throughout the migration project. Different is the case of the Sri Lankans, who have on average the longest history of inclusion with a rather structured presence predominantly family-based (Guadagno, 2022), with a peculiar settlement pattern located in specific districts of the center (in particular Avvocata and Stella) with good housing conditions, at least in terms of housing contractual regularity and availability. *RQ2: Are there specific settlement intra urban areas associated with specific housing and living conditions?* With few exceptions, the worst housing and living conditions are observed in historical center and industrial area, mostly in terms of crowding and housing contractual irregularity. Conversely, central and suburban areas have the best housing and living conditions. These results align with and further enrich those of previous studies on similar issues conducted in other Italian metropolitan municipalities (Benassi *et al.*, 2022; Rimoldi *et al.*, 2024). Future analysis might consider other living and housing aspects, other foreign-origin communities in the same municipality or might compare settlement patterns of the same communities in different municipalities.

Acknowledgements

References

AVRAMOV D. 2005. *Report on housing exclusion and homelessness*, Strasbourg: Council of Europe Press.
BAIO G., BLANGIARDO G.C., BLANGIARDO M. 2011. Centre sampling technique in foreign migration surveys: a methodological note, *Journal of Official Statistics*, Vol.27, No.3, pp.451–465.
BENASSI F., DE FALCO A. 2025. Residential segregation and accessibility: exploring inequalities in urban resources access among social groups. *Land*, Vol. 14(2), 429.
BENASSI F., IGLESIAS-PASCUAL R., SALVATI L. 2020. Residential segregation and social diversification: Exploring spatial settlement patterns of foreign population in Southern European cities, *Habitat International*, Vol. 1010, 102200.

BENASSI F., CRISCI M., MATTHEWS S.A., RIMOLDI S.M.L. 2022. Migrants' population, residential segregation, and metropolitan spaces-insights from the Italian experience over the last 20 years, *Migration Letters*, Vol. 19, No. 3, pp. 287-301.

BLANGIARDO G.C., MIRABELLI S. 2018. Misurare l'integrazione. In: Perez M. (ed.), "Vita e percorsi di integrazione degli immigrati in Italia", Roma: ISTAT, pp. 361-381.

BUONOMO A., BENASSI F., DE FILIPPO E., STROZZA S. (Eds.). 2025. *Gli immigrati di Napoli e le Napoli degli immigrati*, Milano: FrancoAngeli.

DADUSC D., GRAZIOLI M., MARTÍNEZ M.A. 2021. *Resisting Citizenship*, London: Routledge.

DUNCAN O.D., DUNCAN B. 1955. A methodological analysis of segregation indices, *American Sociological Review*, Vol.20, pp. 210-217.

GUADAGNO E. 2022. Territori in movimento. La comunità srilankese nella spazialità napoletana, *Bollettino della Società Geografica Italiana*, Serie 14, Vol. 5, No. 2, pp. 95–108.

HOOVER E.M. Jr. 1941. Interstate redistribution of population, 1850-1940, *The Journal of Economic History*, Vol.1, No.2, pp.199-205.

ISARD W. 1960. Methods of regional analysis: an introduction to regional science. Cambridge: The MIT Press.

MASSEY D., DENTON N. 1988. The dimensions of residential segregation. *Social Forces*, Vol. 67, No. 2, pp. 281-315.

MAZZA M., GABRIELLI G., STROZZA S. 2018. Residential segregation of foreign immigrants in Naples, *Spatial Demography*, Vol.6, pp.71-87.

RIMOLDI S.M.L, CRISCI M., BENASSI F., RAYMER J. 2024. Intra-urban residential mobility and segregation of foreigners in Rome, *Population, Space and Place*, Vol. 30, No. 6, e2777.

STROZZA S., GABRIELLI G. 2018. Gli stranieri in Campania: dimensioni e caratteristiche di un collettivo in evoluzione. In: Bruno G.C. (Ed.), "Lavoratori stranieri in agricoltura in Campania. Una ricerca sui fenomeni discriminatori", Roma: CNR Edizioni, pp. 9-35.

TAMMARU T., KNAPP D., SILM S., VAN HAM M., WILTOX F. 2021. Spatial underpinnings of social inequalities: A vicious circles of segregation approach, *Social Inclusion*, Vol. 9, No. 2, pp. 65-76.

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FOREIGNERS' FAMILY COMPOSITION IN LOMBARDY: TRENDS AND FUTURE SCENARIOS

Maria Herica La Valle

Abstract. The phenomenon of population ageing, while positive in terms of increased life expectancy, raises concerns across various aspects of political, social, and economic life in modern societies, including Italy. It calls for policy decisions that promote active and healthy ageing on one hand, and welfare measures that support couples' fertility on the other.

In demography, one factor that appears to positively influence fertility levels in host countries, at least in the short term, is immigration. This study analyses the migratory phenomenon in Lombardy through the lens of family composition among households with at least one foreign member, with the aim of assessing whether the immigrant population tends to form stable and cohesive family units. The underlying assumption is that immigration contributes to increasing fertility levels in the host country primarily through the formation of stable family structures.

By integrating data from two sources, i.e., ISTAT data on resident and forecasted population and ORIM survey on foreign people living in Lombardy , the paper investigates historical patterns and proposes a possible future scenario through the use of the *propensity method*. This technique entails estimating the number of families by applying the proportions of individuals, usually broken down by age and gender, who live in various forms of living arrangements.

The results suggest that the migration phenomenon in Lombardy has been evolving, with the family structures of foreigners increasingly aligning with those typical of the Italian population.

Nonetheless, further analysis is required to draw more reliable conclusions about future developments.

1. Introduction

It is well known that, nowadays, one of the most important challenge for several countries in the world, such as Italy, is population ageing, i.e., the increase both in the number and in the percentage of people aged 60 and over compared to the total population. Such phenomenon, that results from two concurring factors – high life expectancy and low fertility – affects several domains of modern societies, such as age-related public health expenditures, health care provision, labour force size and composition, intergenerational exchanges in both economic and social terms, and

pension systems sustainability. This raises questions about policy interventions directed to encourage fertility and promote healthy and active ageing.

Demographic research provides a further reply to the issue by considering migration as a potential contrasting force to the ageing of population. However, studies show that migration does not represent the only solution to ageing (Paterno, 2011), neither it plays a role in the long term (Billari and Dalla Zuanna, 2011; Gesano and Strozza, 2011), because its effects tend to reduce over the years (De Santis, 2011). In the short term, instead, migration is widely supposed to positively impact on total fertility rates, population growth and labour market (Harper, 2016).

Based on the assumption that the strength of the role played by immigration in increasing fertility rate of the host country in the medium term operates through family formation, this work aims to investigate the stable component of immigrated population by analysing its past trend and by illustrating potential future scenarios.

In particular, the analysis focuses on the Italian region Lombardy, where the yearly survey conducted by ORIM (Osservatorio Regionale per l'Integrazione e la Multietnicità) allow researchers to explore foreign population living in the area and its evolution over time in terms of socio-economic characteristics and, for the purpose of this study, in terms of family composition.

2. Theoretical framework on family formation in migration contexts

To examine the impact of immigration on fertility levels in the host country through the lens of foreign family settlement, it is useful to revisit key theoretical approaches on the link between migration and family formation. The literature outlines four main hypotheses (Kulu, 2005; Kulu & González-Ferrer, 2014): *socialisation*, whereby migrants retain fertility norms from their country of origin; *adaptation*, involving gradual adoption of host-country patterns; *selection*, which suggests migrants already share similar fertility preferences with the host population; and *disruption*, referring to a temporary fertility decline due to the stress of moving.

Beyond the migration-fertility nexus, it is crucial to consider other factors influencing not only attitudes toward fertility, in terms of both timing and total number of children, but also those related to couple formation. For example, Impicciatore *et al.* (2020) found that in Italy there is no universal fertility pattern among migrant women, and that different theoretical frameworks can be applied to their fertility behaviour depending on their country of origin.

The literature also highlights the *interrelation of events* hypothesis (Impicciatore *et al.*, 2020; Ortensi, 2015), which posits that high post-migration fertility may arise from the concurrence of multiple life events (Mulder and Wagner, 1993). In this context, the close link between migration, marriage, and childbirth plays a key role

(Milewski, 2007). The important temporal link between migration and union formation was also highlighted by Gabrielli *et al.* (2019), who additionally emphasised gender differences: around the migration event, migrant men show a low likelihood of forming couples, while migrant women are most likely to enter a union. Another factor to be taken into account is migration pattern: women migrating for family reasons tend to have their first child sooner after arrival and exhibit higher post-migration fertility compared to first-time and independent migrants (Ortensi, 2015). Similarly, Mussino and Strozza (2012) showed that the timing of motherhood varies by migration type: women migrating for family reasons tend to have children soon after arrival – supporting the interrelated events hypothesis – while those migrating for work generally delay childbearing as they adapt to the host country.

3. The national and regional contest

According to the 2021 census[1], in Italy, there are more than 2 million and a half families with at least a foreign member, that is the 10% of all families living in the country, with a 38,3% increase compared with the 2011 census. Over this 10 years period, a change in both the size and the structure of families with at least a foreign member in Italy occurred: there was a significant rise in the number of single-member families (73,6%) and a slight increase in the number of those with 4 or more members (25,7%), so that the incidence of single-member families increased, while the incidence of both larger families and those with children reduced. This means that, nowadays, more foreigners live alone than they did in the past.

However, differences by geographic area can be detected: most of the families with at least a foreign member live in the North (63,2%), where very close percentages of single-member families (about 35%) and of those with 4 or more members (about 30%); in the Centre and in the Mezzogiorno area, instead, the highest percentage of families with a foreign member numbers one component only (between 41% and 45%), with larger families being represented for the 25% in the former and slightly more than the 20% in the latter. As for the family structure, the highest share of the type "couple and children" is observed in the North-west and in the North-east, (30% and 31% respectively), while the type "one parent and children" prevails in the North-west and in the South (14% in both areas).

Overall, as stated by ISTAT report, the changes in the dimension and in the structure of families with at least a foreign person reflects the steps of the migration process in the country: on one hand, the increase in the number of families with 4

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[1] Information about families with foreign members in Italy as resulted from 2011 and 2021 population censuses and reported in this work is available online on ISTAT site at: https://www.istat.it/comunicato-stampa/le-famiglie-con-stranieri-nei-censimenti-della-popolazione-anno-2021/

or more people suggests migrants have been settled in the area by creating joined family groups; on the other hand, the raise in the number of families with one person only leads us considering the migration plan as a still in process project.

4. The case study: foreign families in Lombardy

As for the region Lombardy, data presented in the PoliS-Lombardia report (Sara Della Bella, 2022) based on the 2011 census and the 2018-2019 new permanent census, indicate that in 2019, the proportion of households with at least one foreign member consisting of a single person (31.3%) was nearly equal to that of larger households with four or more members (32.4%); also, in all provinces except for Milan, both in 2011 and in 2019, the share of families with at least 4 people exceeded that of single-member households.

However, this study aims to examine the internal composition of households with at least one foreign member in Lombardy. This focus is motivated by the observation that reunited or joined families are more likely to establish long-term residence in the host country or region, and they are more likely than other household types to contribute to the fertility rate of the native population.

To this end, the paper draws on data from the annual survey conducted by the Regional Observatory for integration and Multiethnicity (ORIM), which was established in 2000 by the Region Lombardy with the primary objective of fostering and disseminating comprehensive knowledge regarding the dynamics of migration in Lombardy and the challenges associated with the social inclusion of migrants. Since 2001, the Observatory has systematically collected detailed information on the foreign population living in Lombardy, by applying an inclusive approach that encompasses all categories of migrants, i.e., residents, regular non-residents, and undocumented individuals, regardless of legal status or residency and by conducting at regular intervals, thereby ensuring the continuity and comparability of the data over time (Maiorino and Terzera, 2023).

The survey covers a broad array of dimensions, including socio-demographic characteristics, educational background, social integration, religious affiliation, employment conditions, income levels, health status, and household composition.

In particular, the datasets provide information about people living with respondents thereby allowing researchers to identify and classify family types, such as joint and broken families.

Through this approach, the paper aims to trace the evolution of the composition of foreign families in Lombardy by analysing past trends and projecting potential future developments.

5. Data and method

5.1. Data selection

This study draws on data from two different data sources: ORIM surveys and ISTAT databases.

As for ORIM survey, waves conducted between 2001 and 2019 were employed. Individuals holding only Italian citizenship were excluded from the analysis.

Nine age groups were created using five-year intervals, with broader ranges for the first and last categories[2] (<20, 20-24, 25-29, …, 50-54, 55+).

The following family categories were identified based on respondents' cohabitation status, with all categories disaggregated by sex:
- Lone person.
- Couple without children.
- Lone parent.
- Couple with children.
- Never-married person living with at least one parent.
- Other person[3].

As for ISTAT data, instead, different databases were employed in order to extract:
- Total resident population (including native and foreign people) by sex and age for the period 2002-2024;
- Foreign resident population by sex and age for the same period;
- Population projections 2023-base for the total population by sex and age, selecting the median scenario.

It is important to note that ISTAT projections do not distinguish between native and foreign residents; therefore, the projected figures encompass the entire resident population.

5.2. The method

As in previous studies (Barbiano di Belgiojoso, 2010; Blangiardo *et al.*, 2012), the Propensity method was adopted in this paper to produce family projections. Such

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[2] It is worth noting that, up to the 2018 survey, respondents were aged 14 and over, whereas in subsequent survey waves, only individuals aged 18 and over were included. However, the minimum age varies by survey waves. I created the age category "<20", which includes individuals aged 14–19 in the ORIM waves and those aged 0–19 in the ISTAT data; all were grouped into the first age category. Regarding the last age group, there is no upper age limit defined in the survey; therefore, I have considered individuals aged 55 and over as comprising the final category in both data sources.

[3] According to ISTAT, the category 'Other person' refers to multi-person households, consisting of cohabiting individuals who do not form a single family unit, as well as households composed of two or more distinct family units.

method was used by Statistics New Zealand (2004) to produce New Zealand Family and Household Projections for the period 2001-2021.

In accordance with the New Zealand national family and household projections (2001 base to 2021) (Statistics New Zealand , 2004), the methodology forecasts the future numbers of households and families by applying age- and sex-specific *living arrangement type rates* (LATRs) to demographic projections; essentially, these propensities represent the likelihood of individuals occupying different household roles. The sum of LATRs across all family types, while holding sex and age class constant, is equal to one (Statistics New Zealand , 2004; Barbiano di Belgiojoso, 2010). By multiplying the projected population by these propensity rates, the distribution of individuals across various living arrangement types is obtained, which is then aggregated to produce estimates of future family and household counts (Statistics New Zealand , 2004).

This analysis employed the propensity method, tailored to the structure and limitations of the available data, and implemented through the following procedure:

I. LATRs were calculated using ORIM waves (from 2001 to 2019), broken down by age class and sex.

II. since the population projections provided by ISTAT do not distinguish between the native and foreign populations, I selected the resident individuals, both Italian and foreign, stratifying by sex and by the nine age groups previously defined, up to the year 2024.

III. I then calculated the proportion of the foreign population relative to the total population and computed the average value over the last five years (2020–2024). This average was then applied recursively to the subsequent years, such that each year from 2025 to 2030 corresponded to the average proportion observed over the preceding five years.

IV. I applied this value to the total population projected by ISTAT – 2023-based – in order to estimate the foreign population up to 2030.

V. I then applied to this estimated population the LATRs, calculated as the average over the last five years (2015–2019) of the waves from the ORIM survey used, in order to obtain the population distribution by the different living arrangement types previously described.

It should be noted that applying the same rates to the projected foreign population each year – i.e., assuming that LATRs remain constant over the projection period – implies that any variations in the distribution of individuals by type of living arrangement, as well as in the size and composition of families, are attributed solely to changes in the size and structure of the population (Statistics New Zealand , 2004).

VI. Finally, based on this distribution, the corresponding numbers of families were subsequently derived, according to the following rationale:

- for individuals living alone and for single-parent families, each person was matched to one family; the total number of such households was obtained by summing all males by age group living alone and all females by age group living alone in the former case, and by summing all males and all females by age group living with one or more children in the latter case;
- for couples living with or without children, the total number of families, calculated as discussed above, was divided by two;
- in the case of individuals classified under the "Other" category, the resulting total was divided by the average household size for this group, calculated as the mean of the average household sizes recorded in the ORIM dataset over the 2015-2019 period.

6. Main results

Figure 1 shows the evolution of foreign family types in Lombardy from 2008 to 2019. I did not consider the earlier years because information on parents was not available, making it impossible to calculate the category "Never married person living with at least one parent." The same limitation applies to the years 2015, 2017, and 2018, which also lack this information. In these cases, I calculated the average value for this category over the five preceding years and subtracted it from the "Other" category. As shown in the data, the "Other" category consistently exceeds all other categories for males across the years. The observed reductions in 2015, 2017, and 2018 may be attributed to data adjustments made to estimate the category "Never married person living with at least one parent."

For females, starting from 2012, the "Couple with children" category surpasses the "Other" category and becomes the predominant family type from that point onward. For both sexes, there is an increase in the share of individuals living in multi-person households in 2019. However, this may be attributable to the sampling design of the most recent survey wave, and only subsequent waves will allow us to determine whether this represents an actual upward trend beginning in that year.

A slight increase is observed in the "Never married person living with at least one parent" category for both males and females after 2010.

The LATRs, presented as an average over the 2015–2019 period (Figure 2), reveal more pronounced differences by gender. As for females, consistent with findings from other studies conducted in the Lombardy region (Barbiano di Belgiojoso, 2010), it appears that immigrant women follow the typical family life course pattern. This involves a sequence of stages in which they progressively occupy different roles: daughter living with at least one parent – particularly up to the 20–24 age group – followed by wife within a family unit (typically with

children), peaking around ages 35–39, and finally, a higher likelihood of living alone beginning around ages 50–54.

Figure 1 – *Foreigners' family types in Lombardy, 2008-2019.*
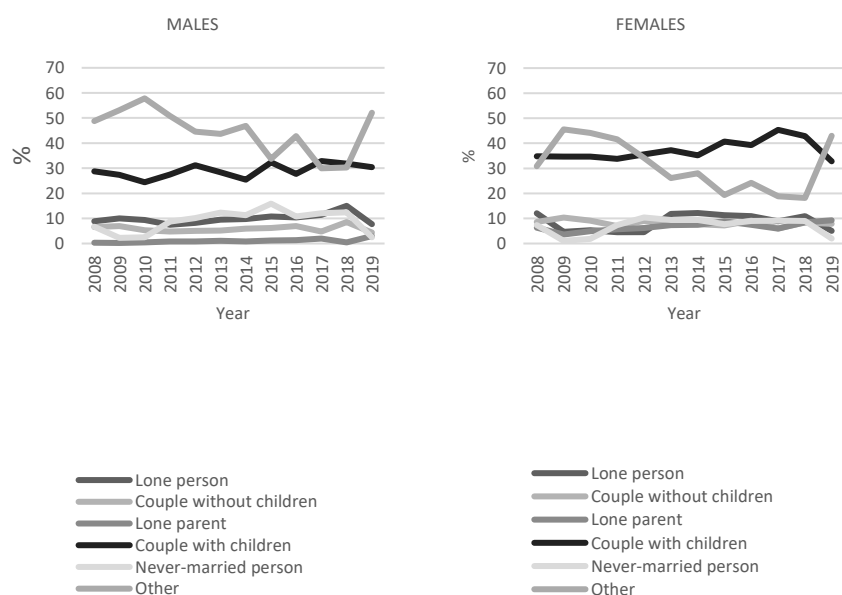
Author's elaboration on ORIM data.

For males, this pattern occurs later. In fact, the peak in the proportion of men living in a couple is observed at a later stage compared to women, specifically in the 45-49 age group. Moreover, the tendency for men to live alone is slightly higher than for women up to ages 40-44. The share of men living in multi-person family arrangements (classified under the "Other" category) is consistently higher than that of women up to the penultimate age group, reaching as high as 60% in the 25-29 age group. This may suggest that these arrangements likely represent early forms of cohabitation at the beginning of the migration process. The subsequent transition to living in a nuclear family (as part of a couple with children) may be partly the result of family reunification processes.

Table 1 presents the different types of foreign families in Lombardy (expressed as percentages of the total number of foreign families in each year) for 2015, 2020, and 2030, obtained by applying the LATRs to the resident foreign population. Specifically, LATRs from 2015 were applied to the actual foreign resident population (based on data provided by ISTAT) for the same year; the LATRs calculated as the average over the 2015–2019 period were applied to the actual

resident foreign population in 2020; and the same average was applied to the projected foreign population in 2030 (obtained by recursively using the average proportion of foreigners in respect to the total population, as detailed above).

Figure 2 – *Living arrangement type rates in Lombardy, 2015-2019 average.*
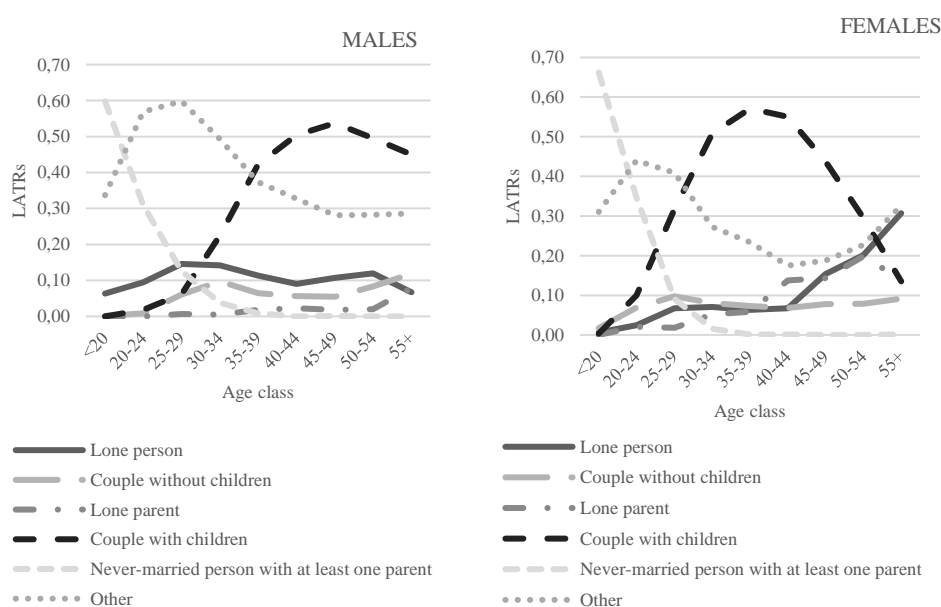
Author's elaboration on ORIM data.

Table 1 – *Foreigner families in Lombardy in 2015 and 2019 and potential projections for 2030 with constant LATRs (percentage values).*

Family type	2015	2020	2030
Lone person	0.28	0.25	0.26
Couple without children	0.07	0.07	0.08
Lone parent	0.12	0.12	0.12
Couple with children	0.34	0.35	0.34
Other	0.18	0.21	0.21

Author's elaboration on ISTAT and ORIM data.

The data show relatively stable percentages over time, but consistently show that the most represented family type is the couple with children.

7. Discussion and conclusion

Lombardy is a key region in the EU due to its high concentration of foreign residents and diverse migrant settlement patterns, making it a representative case for broader migration trends in Italy (Gabrielli et al., 2019). While notable differences in migrant settlement emerge across the country, Mussino and Strozza (2012) found that women arriving in the South, the Centre and the Islands face a lower risk of first birth than those arriving in the North, with no major differences between the North-West and North-East. Nevertheless, further investigation comparing Northern Italy as a whole with the rest of Italy could offer deeper insights into the links between migration, couple formation, and fertility. Existing research, however, remains focused on Lombardy, mainly due to the availability of long-term data from ORIM.

Data on past trends suggest that the migration phenomenon in Lombardy has been evolving, with the family structures of foreigners increasingly aligning with those typical of the Italian population. This is evident when observing the evolution of foreign family types in Lombardy from 2008 to 2019, where data show a downward trend in the "Other" category, particularly among women. For men, "Couple with children" is the second most common family type after "Other," while for women, it becomes the most represented category starting in 2012. The analysis of LATRs, calculated as the average over the 2015–2019 period, further indicates that the family formation patterns among foreigners in Lombardy are broadly similar to those observed among Italians. Excluding the presence of multi-family households, foreigners tend to follow the same age-related stages of household formation, whether with or without children.

The application of LATRs to the actual foreign resident populations in 2015 and 2020, as well as to the projected foreign population in 2030, confirms that the most prevalent family type in Lombardy is "Couple with children," and that no substantial changes are expected in the near future.

Overall, the data suggest that foreign families tend to be more stable compared to the past and are increasingly forming more traditional family structures.

However, no reliable conclusions can be drawn regarding future scenarios for two key reasons. First, the lack of official projections for the foreign population presents a methodological challenge for forecasting. The use of the average proportion of foreigners among the total resident population in Italy over the past five years was deemed a reasonable short-term assumption, but it is clearly inadequate for medium-to long-term projections. Second, the decision to apply constant LATRs – based on

the same rationale – does not account for potential changes in the propensities themselves (Statistics New Zealand , 2004; Barbiano di Belgiojoso, 2010). Future developments of this work will focus on implementing a more sophisticated method for forecasting the foreign population and on estimating variable LATRs.

To promote the long-term settlement and integration of immigrants in the region, several policy considerations are necessary. First, measures should support family reunification and the creation of new family units by removing administrative barriers and ensuring access to adequate housing and employment, key conditions for stability and social cohesion. Second, policies should prioritise families over individuals, addressing both children's integration challenges and parents' difficulties in balancing work and family life. This is especially relevant, as migrant families often lack support from extended kin, such as grandparents. Moreover, while family reunification is generally easier for children and spouses, it remains more complex for grandparents or unmarried partners. Finally, attention should also be paid to the marriage market, particularly where it intersects with access to citizenship, for example, in unions between naturalized citizens and non-citizens.

Acknowledgements

References

BARBIANO DI BELGIOJOSO E. 2010. Le famiglie immigrate in Lombardia: possibili scenari futuri, *RIVISTA ITALIANA DI ECONOMIA, DEMOGRAFIA E STATISTICA,* Vol. LXIV, No. 4, pp. 31-38.

BLANGIARDO G. C., BARBIANO DI BELGIOJOSO E., BONOMI, P. 2012. Le previsioni demografiche delle famiglie. In CAROCCI (Ed) *La famiglia in Italia. Sfide sociali e innovazioni nei servizi*, Vol. 1, pp. 91-123.

BILLARI F. C., DALLA-ZUANNA G. 2011. Is replacement migration actually taking place in low fertility countries?, *Genus,* Vol. 67, No. 3, pp. 105-123.

DE SANTIS G. 2011. Can immigration solve the aging problem in Italy? Not really…., *Genus*, Vol. 67, No. 3, pp. 37-64.

DELLA BELLA S. 2022. Censimento permanente della popolazione; le famiglie in Italia e Lombardia. *Working paper 9*, PoliS Lombardia.

GABRIELLI G., TERZERA L., PATERNO A., STROZZA S. 2019. Histories of couple formation and migration: The case of foreigners in Lombardy, Italy, *Journal of Family Issues*, Vol. 40, No. 9, pp. 1126-1153.

GESANO G., STROZZA S. 2011. Foreign migrations and population aging in Italy. *Genus*, Vol. 67, No. 3, pp. 83-104.

HARPER S. 2016. The important role of migration for an ageing nation. *Journal of Population Ageing*, Vol. 9, pp. 183-189.

IMPICCIATORE, R., GABRIELLI, G., PATERNO, A. 2020. Migrants' fertility in Italy: A comparison between origin and destination, *European Journal of Population*, Vol. 36, No. 4, pp. 799-825.

KULU H. 2005. Migration and Fertility: Competing hypotheses re-examined, *European Journal of Population/Revue européenne de Démographie*, Vol. 21, No. 1, pp. 51-87.

KULU H., GONZÁLEZ-FERRER A. 2014. Family dynamics among immigrants and their descendants in Europe; Current research and opportunities, *European Journal of Population*, Vol. 30, No. 4, pp. 411-435.

MAIORINO S., TERZERA L. 2023. *Il fenomeno immigratorio in Lombardia: uno sguardo di lungo periodo. Fra la recessione economica e la crisi pandemica (2008-2021).* Rubbettino Editore.

MILEWSKI N. 2007. First child of immigrant workers and their descendants in West Germany: Interrelation of events, disruption, or adaptation?, *Demographic Research,* Vol. 17, pp. 859-896.

MULDER C. H., WAGNER M. 1993. Migration and marriage in the life course: a method for studying synchronized events, *European Journal of Population/Revue européenne de Démographie*, Vol. 9, No. 1, pp. 55-76.

MUSSINO E., STROZZA S. 2012. The fertility of immigrants after arrival: The Italian case, *Demographic research*, Vol. 26, pp. 99-130.

ORTENSI L.E. 2015. Engendering the fertility/migration nexus: The role of women's migratory patterns in the analysis of fertility after migration, *Demographic Research*, Vol. 32, pp. 1435-1468.

PATERNO A. 2011. Is immigration the solution to population ageing? *Genus*, Vol. 67, No. 3, pp.65-82.

ZEALAND S N. 2004. *New ZealandFamily and Household Projections: 2001 (base)-2021.* Wellington: Te Tari Tatau.

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MAPPING URBAN SETTLEMENT DYNAMICS: THE CASE OF SRI LANKANS IN FOUR ITALIAN CITIES[1]

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Abstract. This study explores the spatio-temporal dynamics of Sri Lankan settlement in four Italian metropolitan cities – Milan, Rome, Naples, and Catania – over the period 2011-2021. Employing high-resolution spatial grid (100×100 meters), we compute a Location Quotients (LQs) for the Sri Lankan population and examine its variation via Geographically Weighted Ridge Regression (GWRR) in each census year. Our models integrate structural, demographic, and socio-economic dimensions to capture localised influences on ethnic concentration, while a ridge penalty mitigates multicollinearity. Diagnostic metrics (AICc, Moran's *I*) confirm a generally adequate fit with moderate positive spatial autocorrelation in residuals. Results reveal clear north-south contrasts and evolving settlement patterns. Temporal comparisons indicate relative stability in Rome and Naples, contrasted by significant process of redistribution in Milan and Catania. By integrating fine-scale spatial data with GWRR, this work advances methods for studying non-stationary residential segregation patterns and offers insights for context-sensitive urban policy aimed at promoting spatial integration.

1. Introduction

Residential segregation, i.e., the spatial separation of distinct population groups within urban environments, has profound implications for social cohesion, access to opportunities, and the equitable distribution of resources (Massey and Denton, 1993; Peach, 1996). In Southern Europe, rapid and sustained immigration flows over the past few decades have reshaped urban landscapes, giving rise to both diffuse multiculturalism and localized ethnic enclaves (Malheiros, 2002; Benassi *et al.*, 2020). Italy, in particular, has witnessed distinctive settlement patterns among Sri Lankan migrants, who initially concentrated in major metropolises – Rome, Milan, and Naples – before radiating into suburban and peri-urban zones via labor-market and kinship networks (Ambrosini, 2013; Benassi *et al.*, 2015).

Despite a burgeoning literature on immigrant spatial assimilation, fine-scale analyses of Sri Lankans' settlement trajectories in Italian contexts remain few (Benassi *et al.*, 2023; Bitonti *et al.*, 2023). Existing studies tend toward group-

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[1] Authors' contribution: Writing—review and editing, investigation, conceptualization, validation: FrB, FeB, AM, and SS; writing—original draft, methodology: FrB; supervision: FeB, AM, and SS.

specific case reports (Aspinall, 2019; Dharmadasa and Herath, 2020) or cross-city comparisons at coarse spatial resolutions (Benassi *et al.*, 2019; Maloutas and Arapoglou, 2016). The present work addresses this gap by employing high-resolution grid data and Geographically Weighted Ridge Regression (GWRR) to (i) compare spatial heterogeneity of settlement patterns across four divergent urban contexts: Milan, Rome, Naples, and Catania, and (ii) quantify temporal changes in Sri Lankan residential concentration between 2011 and 2021 censuses.

Our objectives are threefold:
1. Contextual variability: elucidate differences in their spatial distribution and clustering across metropolitan areas of different population size.
2. Driver identification: uncover structural (e.g., housing costs), demographic (e.g., population growth) and cultural (e.g., family size, immigrant network) predictors shaping these patterns.
3. Temporal evolution: assess how the Sri Lankan spatial concentration within the selected Italian cities evolved over a decade.

By integrating uniform 100×100 meters grid data with Geographically Weighted Ridge Regression (GWRR), this study advances methodological approaches for spatial non-stationarity in residential segregation research and informs policy strategies attuned to local dynamics and equity considerations.

2. Materials and methods

The analysis covers four Italian municipalities chosen for their divergent scales and socio-economic milieus: Milan and Rome (major northern and central metropolises) and Naples and Catania (southern metropolises).

The primary outcome is the Sri Lankans' Location Quotient (LQ), defined as the ratio of the Sri Lankan population share in each cell to its share in the total municipal population. A LQ>1 indicates over-representation relative to the municipal average, highlighting areas of ethnic concentration, conversely, LQ<1 suggests under-representation. Based on theoretical and empirical precedents (Brunsdon *et al.*, 1998; Fotheringham *et al.*, 2002), we considered the following predictors at cell level:
- Mean growth rate of Italian residents between 2001-2011, and 2011-2021 (Istat).
- Mean growth rate of all foreign residents between 2001-2011, and 2011-2021 (Istat).
- Proportion of foreign residents in 2011 and 2021 (Istat).
- Proportion of large families (≥ 5 members) in 2011 and 2021 (Istat).
- Employment rate of the population aged 15-64 in 2011 and 2021 (Istat).
- Proportion of individuals with no university degree in 2011 and 2021 (Istat).

- Minimum residential rent cost, obtained from the *Osservatorio del Mercato Immobiliare* in 2011 and 2021 (OMI, Italian Revenue Agency).

A regular lattice geography overlays each municipal boundary, providing a fine resolution for capturing micro-scale settlement clusters (Catney and Lloyd, 2020). Following an areal weighted interpolation technique, the source data referring to different spatial units (i.e., census enumeration areas and OMI zones) were rearranged to the target spatial units, that are the squared cells. For this analysis, we implemented two geographically weighted ridge regression models (GWRR), one for each census year considered, which extend the conventional geographically weighted regression (GWR) by adding a penalty term to stabilize coefficient estimates in the presence of multicollinearity. Unlike ordinary least squares (OLS), which fits one global equation and assumes that relationships between predictors and the outcome are spatially invariant, GWR fits a distinct regression at each location, weighting observations by their proximity to the target point. By further incorporating a ridge penalty (λ), GWRR shrinks coefficient magnitudes, thus improving numerical stability when predictors are highly correlated.

Concretely, for each centroid (with coordinates *(u_i, v_i)*) of cell *i*, we specify the local model as:

$$y_i = \beta_0(u_i, v_i) + \sum_k \beta_k (u_i, v_i)x_{ik} + \varepsilon_i \tag{1}$$

where y_i is the Sri Lankans' LQ in cell *i*, x_{ik} the k-th covariate, and ε_i the error term (Fotheringham *et al.*, 2002). The regression parameters are estimated for each cell *i* independently by weighted least squares. The matrix calculation for the estimated regression parameters is:

$$\widehat{\boldsymbol{\beta}}(i) = [\boldsymbol{X}^T \boldsymbol{W}(i)\mathbf{X}]^{-1}\boldsymbol{X}^T \boldsymbol{W}(i)\mathbf{y} \tag{2}$$

where $\boldsymbol{X}$ is the matrix of predictors, the diagonal weight matrix; $\boldsymbol{W}(i) = diag[w_1(i), \dots, w_n(i)]$, varies with the cell *i* and assigns observation-specific weights; $\boldsymbol{y}$ denotes the vector of dependent variables; $\widehat{\boldsymbol{\beta}}(i) = (\hat{\beta}_{i0}, \hat{\beta}_{i1}, \dots, \hat{\beta}_{ip})^T$ is the local regression coefficient vector at cell *i; (p+1)* represents the number of coefficients. The weight w_{ij} follows a bisquare kernel:

$$w_{ij} = \begin{cases} \left[1 - (d_{ij}/b_i)^2\right]^2, & d_{ij} < b_i \\ 0, & otherwise \end{cases} \tag{3}$$

with d_{ij} the Euclidean distance between cells *i* and *j*, and b_i an adaptive bandwidth, defined by the number of nearest neighbours, that varies by location. The penalty parameter λ is chosen via global cross-validation and kept constant across all local models to ensure comparability (Hastie *et al.*, 2001). Optimal bandwidths are determined by minimizing the corrected Akaike Information Criterion (AICc),

balancing model fit and complexity. Finally, to verify the absence of unmodeled spatial structure, we applied Moran's I (Moran, 1948) test to the residuals of each local regression . All procedures were executed in R using the GWmodel package (functions bw.gwr() and gwr.ridge()) (Gollini *et al.*, 2015).

The data presented in Table 1 reveal divergent patterns of Sri Lankan residency across several Italian cities. In Milan and Rome, Sri Lankan settlement has expanded incrementally but remains proportionally moderate, likely reflecting the lure of diversified employment prospects and established urban infrastructures. Conversely, Naples has experienced a pronounced upswing, which highlights its emergence as a primary destination for this community. In Catania, despite their absolute growth, Sri Lankans' proportion over the total foreign population has decreased over time. This points to the distinctive demographic and economic dynamics of smaller southern municipalities.

Table 1 – *Sri Lankans residing in the four selected Italian municipalities in 2011 and 2021.*

Municipality	2011		2021	
	A.V.	% of foreigners	A.V.	% of foreigners
Milan	10,914	6.4	16,637	6.0
Rome	5,442	2.3	9,440	2.6
Naples	6,641	23.2	15,051	26.7
Catania	1,495	19.3	2,574	18.9
Total				0.08*

Note: * = percentages relative to the total foreigners residing in Italy. Source: authors' elaborations on Italian General Population and Housing Censuses

3. Results

Figure 1, depicting early-2021 data, reveals that the spatial configuration of the Sri Lankan population differs markedly between Italy's central/northern metropolises (Milan and Rome) and its southern cities (Naples and Catania). In Milan and Rome, Sri Lankan residents are dispersed broadly across the urban fabric, displaying no pronounced clustering. Conversely, in Naples and Catania the same community is predominantly concentrated within the core central districts.

The Moran's I statistics for the residuals of the GWRR models (Table 2) reveal a consistently positive, albeit moderate, spatial autocorrelation across all cities, with a marginal deterioration in model performance over time, reflected also by a slight uptick in AICc values. This trend likely stems from evolving underlying processes that shape Sri Lankans' settlement behaviours. Examination of the local R^2 for each of the eight GWRR specifications (two GWRR per city: one for 2011 and one for 2021) indicates that the models generally capture the spatial variability in the data effectively, as exemplified by the local R^2 distribution for Milan in Figure 2. Minor

pockets of reduced fit may result from neglected explanatory factors or from non-linear associations between the predictors and the outcome.

Table 2 – *GWRR models' diagnostics.*

Year ->	2011		2021	
Municipality	AICc	Moran's I	AICc	Moran's I
Milan	32,831	0.39	35,069	0.58
Rome	61,744	0.27	64,089	0.36
Naples	8,331,441	0.41	8,716,744	0.49
Catania	5,514,937	0.34	5,591,848	0.38

Figure 1 - *Sri Lankans' location quotients (ref. group: total resident population) in the four selected Italian municipalities, 2021. Spatial grid with 100 x 100 meters cells.*
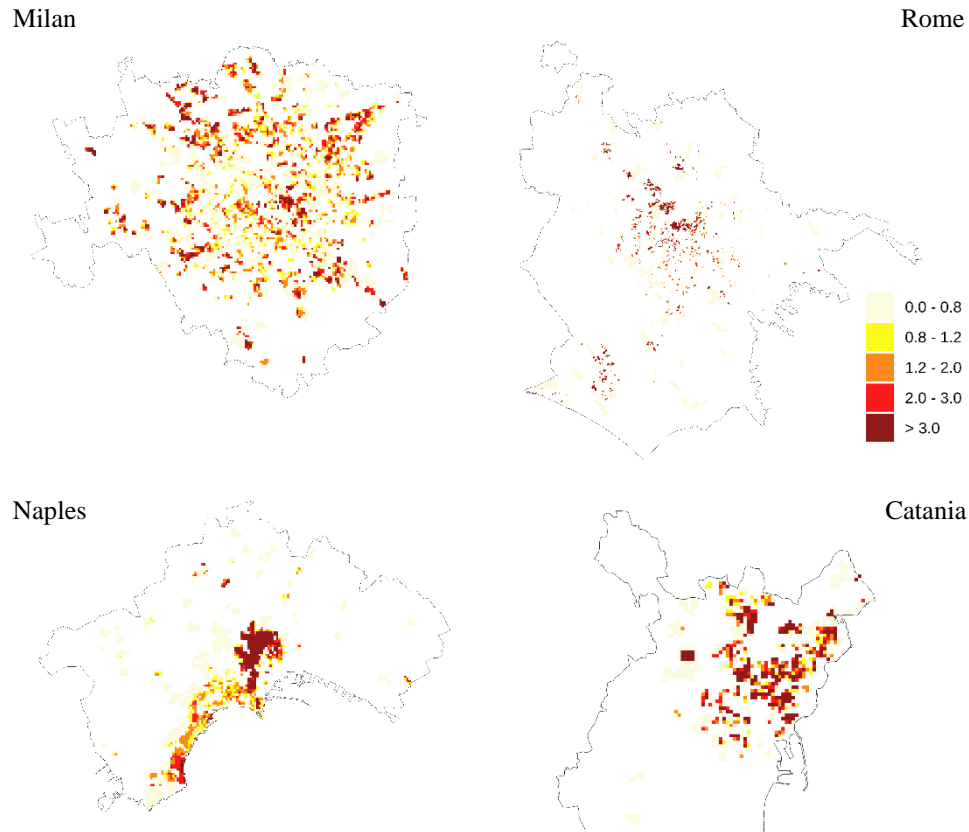
The GWRRs unveiled pronounced spatial heterogeneity in the determinants of Sri Lankan settlement across the four Italian cities between 2011 and 2021 (Figure

3). In Rome, the employment rate (of the population aged 15-64) emerged as a consistently strong positive predictor of Sri Lankans' LQs in both census years. Areas in the northern semi-central districts and the EUR-adjacent southwestern periphery exhibited the highest local coefficients, indicating that zones with robust labour-market conditions continued to attract and sustain Sri Lankan communities over the decade. In Milan, rental cost displayed a marked s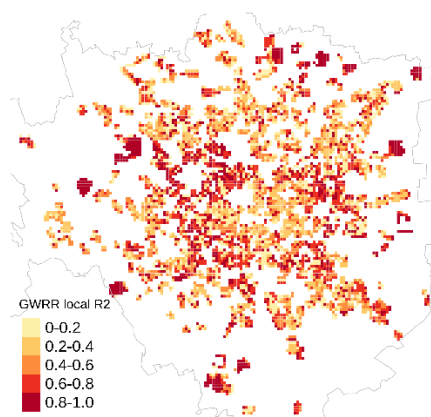patial and temporal evolution. In 2011, lower rent levels across the broader periphery were significantly associated with elevated Sri Lankan concentrations; by 2021, this affinity shifted northward, concentrating on the city's outermost fringes.

Figure 2 – *Local R^2 in the municipality of Milan in 2021 (quantile breaks).*

Concurrently, the mean growth rate of the Italian population facilitated the gradual diffusion of enclaves: intermediate semi-central zones lost relative Sri Lankan share as new settlements emerged in more distal suburbs. Naples demonstrated enduring centralised clustering. The mean growth rate of foreign residents exerted its strongest positive influence around the historic core and the Chiaia district in both time points, underscoring the stability of established migrant networks and their role in reinforcing spatial concentration within these inner-city neighbourhoods. This result is not surprising given that Sri Lankans accounted for about the 25% of the total foreigners' growth during the period considered. In Catania, rental dynamics underwent a complete inversion. Northern semi-central areas, which had attracted Sri Lankan residents in 2011, became zones of repulsion by 2021. Instead, new pockets of attraction arose in the historic centre and the northern fringe. Meanwhile, the effect of Italian population growth, initially manifesting as a modest peripheral pull, vanished and subsequently re-emerged within the urban core, signalling a complex interplay between local demographic change and immigrant spatial behaviour.

Figure 3 – *GWRR selected results: covariates' coefficients in the four municipalities for the model referring to 2011 (left-hand figures) and 2021 (right-hand figures). Significance level: 5%. Note: non-comparable geographical scales.*

LQ 2011　　　　　　　　　　　　　　　　LQ 2021

Share of employed individuals

Rome

[-0.0304,1.17e-09]
(1.17e-09,0.00126]
(0.00126,0.00298]
(0.00298,0.00658]
(0.00658,0.78]

[-0.00938,0.0012]
(0.0012,0.00425]
(0.00425,0.00862]
(0.00862,0.0236]
(0.0236,0.317]

Foreigners' mean growth rate

Naples　　(2001-2011)　　　　　　　　　　　(2011-2021)

[-0.00196,0.000175]
(0.000175,0.000456]
(0.000456,0.000658]
(0.000658,0.000983]
(0.000983,0.00804]

[-0.00298,-4.08e-05]
(-4.08e-05,0.000108]
(0.000108,0.000378]
(0.000378,0.00102]
(0.00102,0.00286]

Figure 3 – cont. *GWRR selected results: covariates' coefficients in the four municipalities for the model referring to 2011 (left-hand figures) and 2021 (right-hand figures). Significance level: 5%. Note: non-comparable geographical scales.*

LQ 2011   LQ 2021

Minimum rent cost per m^2 for private residential properties
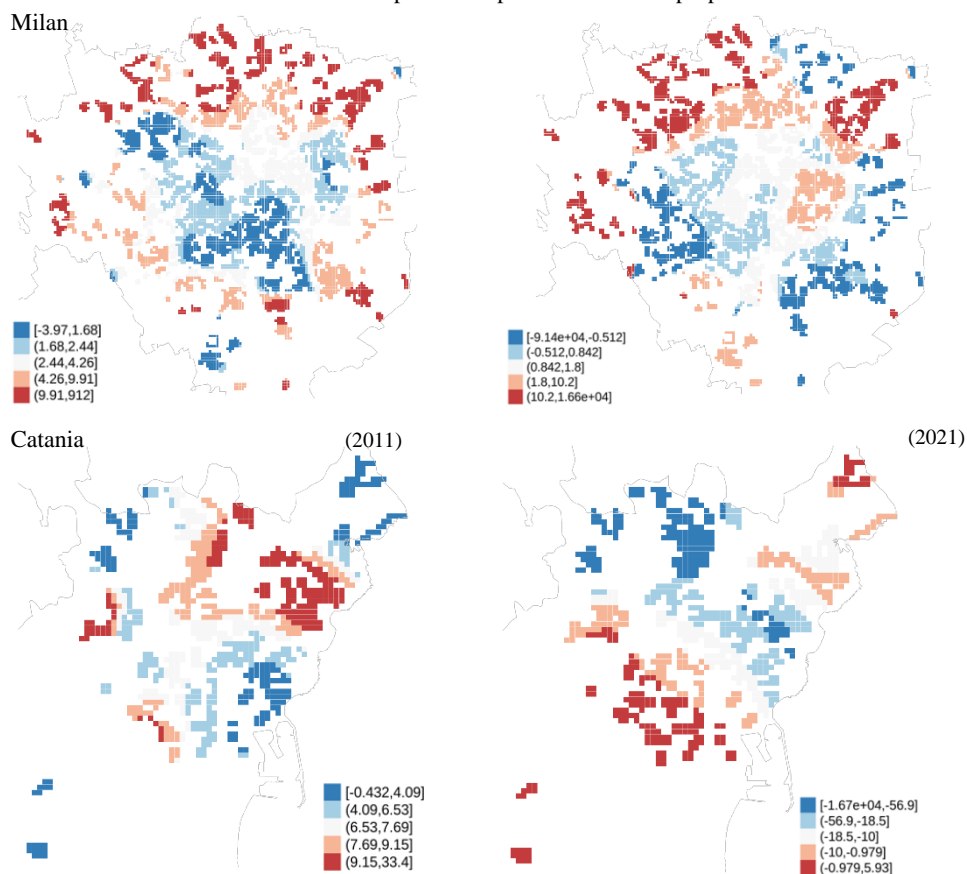
Figure 3 – cont. – *GWRR selected results: covariates' coefficients in the four municipalities for the model referring to 2011 (left-hand figures) and 2021 (right-hand figures). Significance level: 5%. Note: non-comparable geographical scales.*

LQ 2011   LQ 2021

Italians 'mean growth rate
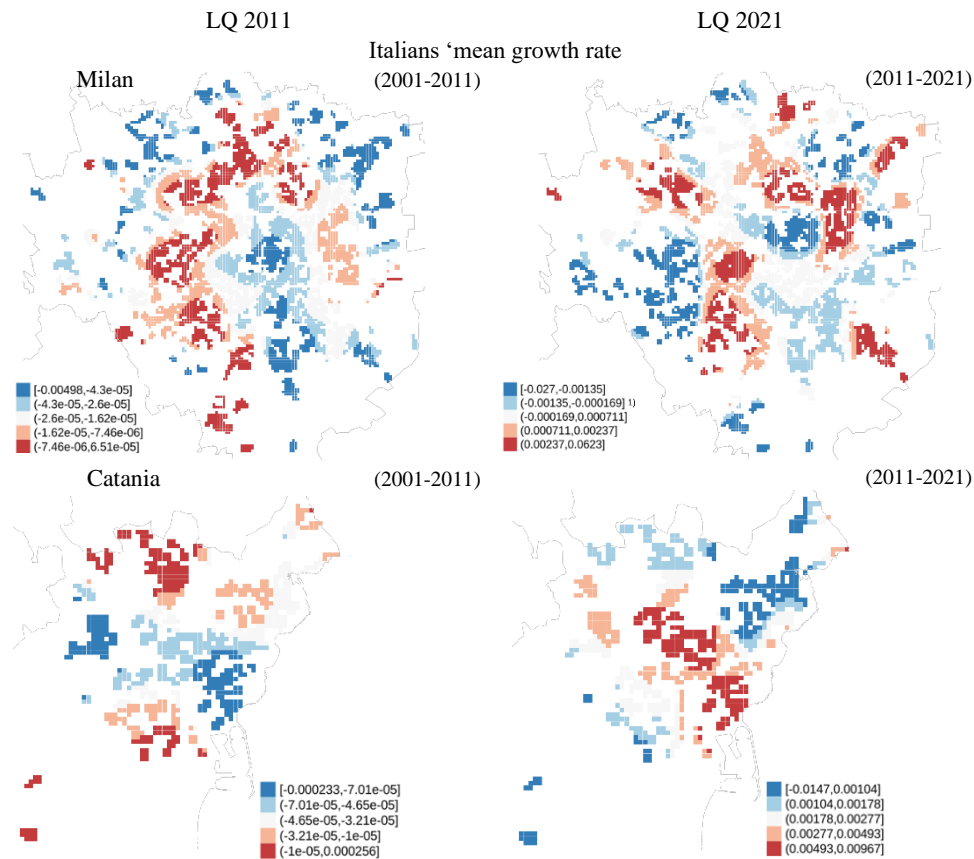
4. Conclusions

This study demonstrates that integrating high-resolution spatially referred data with a GWRR framework effectively captures the spatial non-stationarity inherent in immigrant settlement patterns. The methodology offers a robust, transferable approach for demographic research, enabling fine-grained insights across multiple urban contexts.

By linking our findings to the three objectives formulated in the introduction, the analysis reveals the following:

First, regarding contextual variability, the results confirm that the spatial distribution of Sri Lankan residents diverges significantly across regional and metropolitan contexts: southern municipalities (Naples and Catania) exhibit pronounced ethnic clustering, whereas Rome and Milan display more spatially dispersed Sri Lankan communities. Temporally, settlement structures in Rome and Naples remained comparatively stable over the decade, while Milan and Catania experienced significant redistribution, reflecting divergent urban dynamics and housing-market pressures.

Second, with respect to driver identification, the local models reveal that heterogeneous factors underpin settlement dynamics in different cities. In Rome, labour market opportunities consistently emerge as strong positive predictors, reinforcing the link between employment and immigrant spatial concentration. In Naples, the enduring influence of established migrant networks underpins the persistence of central clustering. Milan shows the shifting relevance of rental affordability, which facilitated suburban diffusion before concentrating at the northern fringes. In Catania, rental market dynamics underwent a complete inversion, reflecting the complex interplay between housing costs and local demographic growth. These findings underscore the importance of considering structural, demographic, and cultural drivers jointly, as their relative weight varies across contexts.

Third, concerning temporal evolution, the comparative assessment between 2011 and 2021 reveals both stability and transformation. While Rome and Naples exhibit continuity in their settlement structures, Milan and Catania display significant redistribution processes. Such divergent trajectories mirror broader urban pressures, ranging from housing affordability to demographic change, that shape immigrant residential patterns over time.

These emerging trajectories stress the necessity for context-sensitive urban policies. In southern cities, sustaining the social cohesion benefits of clustering should be balanced with measures that prevent segregation and guarantee equitable access to services. In northern metropolises, planning interventions ought to accommodate peripheral diffusion by ensuring affordable housing and integrating new settlements into the urban fabric. Such targeted strategies will foster inclusive, resilient cities in an era of ongoing demographic transformation.

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References

AMBROSINI M. 2013. Immigration in Italy: Between economic acceptance and political rejection. *Journal of International Migration and Integration,* Vol. 14, No. 1, pp. 175-194.

ASPINALL P.J. 2019. Sri Lankan Diaspora: Social and Cultural Perspectives. *Diaspora Studies,* Vol. 12, No. 2, pp. 145-161.

BENASSI F., BITONTI F., MAZZA A., STROZZA S. 2023. Sri Lankans' residential segregation and spatial inequalities in Southern Italy: an empirical analysis using fine-scale data on regular lattice geographies. *Quality & Quantity,* Vol. 57, No. 2, pp. 1629-1648.

BENASSI F., IGLESIAS-PASCUAL R., SALVATI L. 2020. Residential segregation and social diversification: Exploring spatial settlement patterns of foreign population in Southern European cities. *Habitat International*, Vol. 101, No. 102200.

BENASSI F., FERRARA R., STROZZA S. 2015. La reciente evolución de los patrones de asentamiento en las principales comunidades de inmigrantes en Italia. *Papeles de población,* Vol. 21, No. 86, pp. 73-104.

BITONTI F., BENASSI F., MAZZA A., STROZZA S. 2023. From South Asia to Southern Europe: A comparative analysis of Sri Lankans' residential segregation in the main Italian cities using high-resolution data on regular lattice geographies. *Genus,* Vol. 79, No. 1, 23.

BRUNSDON C., FOTHERINGHAM A.S., CHARLTON M.E. 1998. Geographically weighted regression-modelling spatial non-stationarity. *Journal of the Royal Statistical Society D,* Vol. 47, No. 3, pp. 431-443.

CATNEY G., LLOYD C.D. 2020. Population grids for analysing long-term change in ethnic diversity and segregation. *Spatial Demography,* Vol. 8, No. 3, pp. 215-249.

DHARMADASA R., HERATH H.M.T.R. 2020. A gravity model analysis of international migration from Sri Lanka to south-east Asian and European countries. *Economic Research,* Vol. 8, No. 1.

FOTHERINGHAM A.S., BRUNSDON C., CHARLTON M.E. 2002. *Geographically Weighted regression: The Analysis of Spatially Varying Relationships*. Chichester: Wiley.

GOLLINI I., LU B., CHARLTON M., BRUNSDON C., HARRIS P. 2015. GWmodel: An R Package for Exploring Spatial Heterogeneity Using Geographically Weighted Models. *Journal of Statistical Software*, Vol. 63, No. 17, pp. 1-50.

HASTIE T., TIBSHRIANI R., FRIEDMAN J. 2001. *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*. New York: Springer.

MALOUTAS T., ARAPOGLOU V. 2016. Social polarization and de-segregation in Athens. In KUNIKO F. (Ed.) *Residential segregation in comparative perspective*, Routledge, pp. 273-300.

MASSEY D.S., DENTON N.A. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Harvard University Press.

MORAN P.A.P. 1948. The Interpretation of Statistical Maps. *Journal of the Royal Statistical Society B*, Vol. 10, pp. 243-51.

PEACH C. 1996. Does Britain have ghettos? *Transactions of the Institute of British Geographers*, Vol. 21, No. 1, pp. 216-235.

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THE CHOICE OF THE LOCATION OF WEDDING CEREMONY IN ITALY: FOCUS ON FOREIGN POPULATION [1]

Claudia Iaccarino, Maura Simone

Abstract. The choice of the location to get married changes over time. The aim of the following work is to analyse the choice of the location of the wedding celebration in Italy. This choice is linked to various religious, social, climatic and economic factors. The objective of the work is to provide a descriptive framework on the choice of place to get married covering a long-time span (1996–2023), and provides a useful descriptive overview of geographic and temporal patterns.

1. Introduction

The choice of the location to get married changes over time. The literature and the cinema after the World War II bring us images of weddings celebrated in a simple way, in the church near home. The marriage represented a central stage in the lives of the couples and the organization of the ceremony itself was a secondary factor. From this model, we get to the nowadays couples for whom the place of celebration of the marriage takes on more and more importance and they are projected in search of increasingly complex events, looking for details that amaze.

Recently the attention of some studies has been placed on a new and promising phenomenon, namely that of weddings celebrated in places other than the usual residence of one or both spouses. Wedding tourism is taking off internationally and many destinations are positioning themselves as "perfect destinations" for this type of market, also by virtue of the possibility of hosting a wedding and honeymoon in a single "overall event". As for Italy, it is one of the most appealing destinations at the level international and with the greatest growth potential in this specific market (Del Chiappa and Fortezza, 2016).

The choice of the location of wedding ceremony is linked to various religious, social, climatic and economic factors. The spouses choose to be married in a church to which they are bound by religious devotion or they choose trendy locations.

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[1] The article is exclusively expressing the authors' opinions. Although the paper is the result of joint work, sections are attributed as follows: paragraphs 2, 3 and 4.1 to Claudia Iaccarino and paragraphs 1, 4.2 and 5 to Maura Simone.

Climatic factors can influence the place of celebration: getting married in a seaside town in summer or in the mountains during the winter period can have a weight in the choice of brides and grooms. Organising a wedding in one locality rather than another also depends on the financial resources of the couple.

Wedding tourism is about travelling in order to be co-present with significant others and therefore can be qualified as a form of "visiting friends and relatives tourism". It is not only about being in a new place, it is also about fulfilling family obligations and reproducing social networks. (Bertella, 2015).

This work is focused on marriages of foreign population. This work represents a first step that fits into a broader study aimed at analysing a particular aspect of nuptiality: the choice of the location of the wedding celebration in Italy. In particular, we will pay attention to the differences and/or similarities regarding their choices in the wedding planning, in two groups of couples with both foreign spouses: with at least a spouse resident in Italy and both spouses resident abroad.

Of particular interest, then, is to understand whether the detachment from traditional choices in the wedding location has affected the population as a whole or whether it has involved individuals with certain socio-demographic characteristics more than others.

In particular, the study will focus on different aspects:

- the evolution of geography of marriages over the last thirty years related to the choice of the location of the wedding celebration;
- the relationship between the choice of the location of the wedding ceremony and the spouse's residence, observed over the time.

2. The marriages with at least one foreign spouse in Italy

The data we analysed include all the celebrations that took place in Italy, regardless of the residence of the spouses. This allowed us to consider the marriages of resident and non-resident foreign citizens. It is therefore possible to distinguish two dimensions: the marital tourism of both non-resident spouses with foreign citizenship and the nuptiality of foreign citizens who have instead chosen Italy as the place to live in.

In the last decades, in Italy the phenomena of marriages with spouses with foreign background has grown. From 1996 to the beginning of the new millennium, the percentage of marriages with at least one foreign spouse on the total of marriages has almost constantly increased, from 4.3% to the peak in 2008 (15.0%). In the following two years (2009-2010) a particularly marked decrease was observed due to the collapse of foreign citizens' marriage, discouraged by legislative changes

aimed at limiting marriages of convenience.[2] Overcome these negative effects, from 2011 the share of marriages between foreigners starts growing again (Guarneri *et al*. 2023).

In 2023, in Italy were celebrated 29,732 marriages in Italy with at least one foreign spouse, +147.9% on 1996 when they were 11,993 (Figure 1). The increase in marriages of foreigners over time is in line with the growing degree of "maturity" of immigration in Italy. The share of marriages with at least one foreign spouse is notoriously higher in areas where the settlement of foreign communities is most entrenched. In the Centre-North, one marriage out of five involves at least one foreign spouse while in the South this type of marriage is 9.3% (ISTAT, 2024a).

Mixed marriages (in which one spouse is Italian and the other one is a foreigner) amount, in 2023, to over 21 thousand and continue to represent the largest part of marriages with at least one foreign spouse (71.3%).

Figure 1 – *Marriages with at least one foreign spouse, by spouses' citizenship. Italy, year 1996-2023 (absolute values and percentage values).*
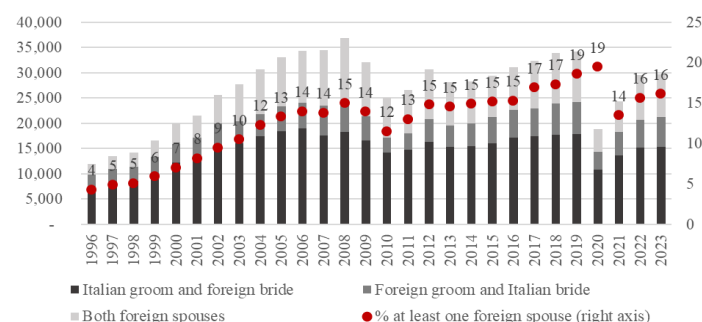
Source: Elaborations on ISTAT data

A particular aspect that characterizes our country is the so-called "matrimonial tourism". Italy exerts a strong attraction for many citizens from abroad, especially from most developed countries, who choose Italy as a place of celebration of their marriages. The phenomenon of matrimonial tourism, often amplified by the media as a purely gossip column, represents for many areas of Italy a real source of income,

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[2] In order to prevent the celebration of marriages of convenience the article. 1 paragraph 15 of law no. 94 of July 2009 has modified the art. 116 of the Italian Civil Code having effects not only to mixed marriages but also to marriages with both foreign spouses. In July 2011, the Constitutional Court, with sentence n. 245/2011, considered constitutionally illegitimate this reformed article, limited to the words "as well as a document attesting the regularity of the stay in the Italian territory". The motivation was that the general prohibition of celebrating the marriage of a foreigner not regularly residing in Italy represents a disproportionate instrument, unreasonably damaging the fundamental right of every human being to contract marriage.

a good share of the local labour market. These marriages, with both foreign spouses resident abroad, pass from 1,220 in 1996 to 3,337 in 2023 (+174%).

Net of this subset, marriages with both foreign spouses and at least a resident in Italy spouse in 2023 were 5,184, five times the value recorded in 1996 (877 marriages) (Figure 2).

Figure 2 – *Marriages with both foreign spouses. Italy, years 1996-2023 (absolute values).*
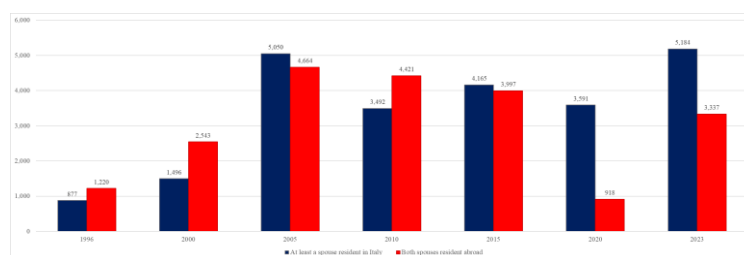
Source: Elaborations on ISTAT data

Mixed marriages (in which one spouse is Italian and the other one is a foreigner) amount to over 18 thousand and continue to represent the largest part of marriages with at least one foreign spouse (75.1%).

3. Data

The analysis has been carried out using data collected from the Survey on Marriages, conducted by the Italian National Institute of Statistics (ISTAT). The marriages' survey, conducted since 1926, provide the official data of all marriages (religious and civil) marriages celebrated in Italy by municipality of celebration.

The subject of the survey, which is individual and exhaustive, is all marriages of the present population, and makes it possible to analyse the phenomenon of nuptiality, by marriage order, in relation to the main socio-demographic characteristics of the spouses.

In this investigation, we used the microdata of all marriages celebrated from 1996 to 2023 as registered in the civil status register of the population. The availability of information on the citizenship (Italian or foreign) and the residence of spouses (in Italy or abroad) have allowed us to analyse marriages of foreign population by studying the type of couple and considering in a "dynamic way" the choice of the location of the wedding ceremony, depending on the citizenship and on the residence of the spouses. In addition, the availability of data at municipal level allows carrying out analyses on the geography of marriages celebrated in Italy, read through its evolution over time.

4. Main Results

4.1 Where they married

One of the analyses that have been carried out concerns the location of the marriages, in relation to the type of couple and province of celebration.

In a focus on marriages of both not resident in Italy spouses, we have analysed the place of celebration of the marriage by type of couple. By observing the ranking of the top ten provinces chosen by the spouses on the total, from 1996 to 2023, we note that both foreigner and not resident in Italy spouses (matrimonial tourism) mainly chose cities of art (Florence, Rome, Venice) (Figure 3).

Figure 3 − *Marriages of both not resident in Italy spouses by type of couple and province of celebration. Years: 1996, 2000, 2005, 2010, 2015, 2020 and 2023 (percentage values).*
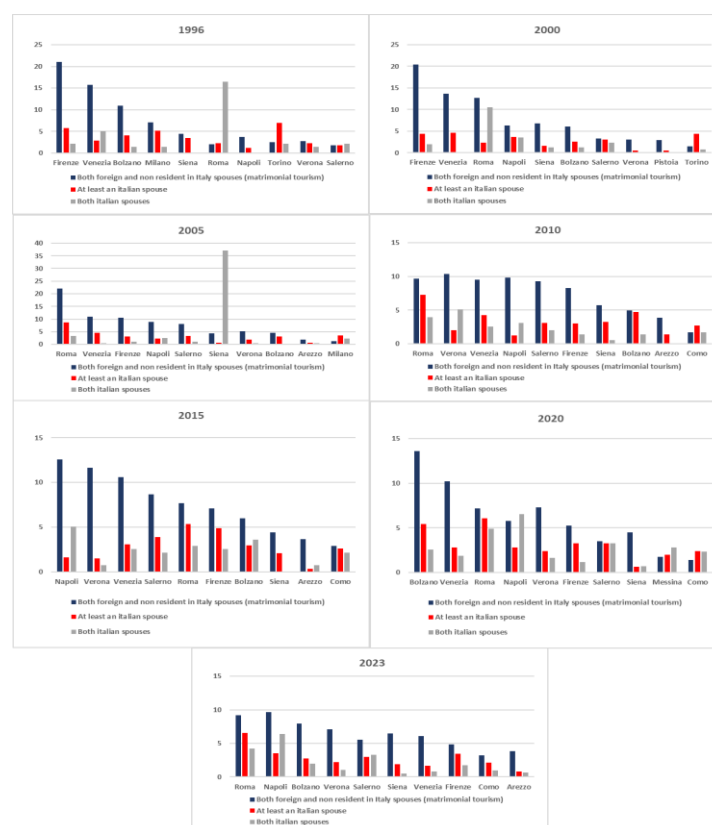
Source: Elaborations on ISTAT data

However, over the years there has been a change both in the ranking of the provinces and in the percentage weight of each on the total. In fact, while until 2000 the provinces of Florence and Venice alone accounted for more than a third of matrimonial tourism, something changes in the following years: in addition to Rome, provinces such as Naples, Bolzano and Verona reach the top of the list, even if their percentage share changes and decreases over the years so much so that in 2023 the top ten provinces affected by matrimonial tourism show percentages on the total below 10% (from 9.7% of Naples to 3.2% of Como). As regards couples with at least one Italian spouse, in the 1996 in addition to the classic provinces also emerge Turin and Milan (respectively with the 6.9% and the 5.2% on the total); in 2023, the province of Rome records the highest percentage values (6.6%). Among the couples of not resident and both Italian spouses, except in a few cases, there is a greater capillarity in the choice of the place of celebration across thirty years.

Selecting marriages with at least one resident in Italy spouse (both Italian and foreigner), the ranking of the top ten provinces of celebration chosen by the spouses, from 1996 to 2023, tell us that both foreigner and at least one resident in Italy spouses chose mainly Rome and Milan: respectively the 13.9% and the 16.8% in 1996; the 9.6% and the 10.1% in 2023 (Figure 4).

Figure 4 − *Marriages with at least a resident in Italy spouse by type of couple and province of celebration. Years: 1996, 2000, 2005, 2010, 2015, 2020 and 2023 (percentage values).*
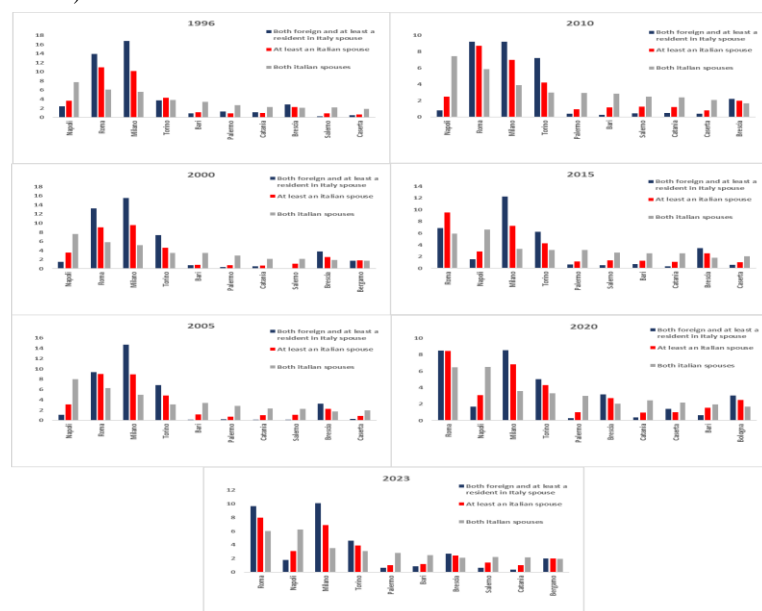

Source: Elaborations on ISTAT data

The province of Milan has a certain weight also among residents with at least one Italian spouse with almost 10% over thirty years. Among the couples of resident and both Italian spouses, particularly important is the choice of the province of Naples ranked in the top three positions.

4.2 The residence in Italy

The residence in Italy is another relevant aspect to take into account in this most general framework. In recent years, there has been a substantial stabilization of the resident foreign population. Its growth has slowed down compared to the first decade of the 2000s, both because immigration has declined both because many foreigners have since acquired the Italian citizenship (ISTAT, 2023).

That's why this work will continue with a focus on resident in Italy spouses, whose choices play a crucial role in the process of family formation. In the decade 2011-2021, the total number of households with at least one component foreigner increased by about 700 thousand units (+38.3%). The observation of migration through the analysis of family size, in a perspective time, provides useful elements to detect its dynamics. On the one hand, the increase in households with four or more components can be attributed to a process of stabilization and completion of the migration project that involves a large part of the foreign presence in Italy. Over time, foreigners tend to form more or less mixed families, with children and reunited members, manifesting the intention of taking root in the country (ISTAT, 2024b).

Selecting marriages with both resident in Italy spouses, the analysis shows that more than 90% of the spouses (either both Italian and both foreigner) clearly choose the province of residence as their place of celebration. Nevertheless, Italian couples are more likely than the foreigner ones to marry in a province other than that of their residence (Figure 5).

Figure 5 − *Percentage of weddings of spouses (either both Italian and both foreigner) both resident in Italy celebrated in a province other than that of their residence out of the total number of marriages by type of couple.*
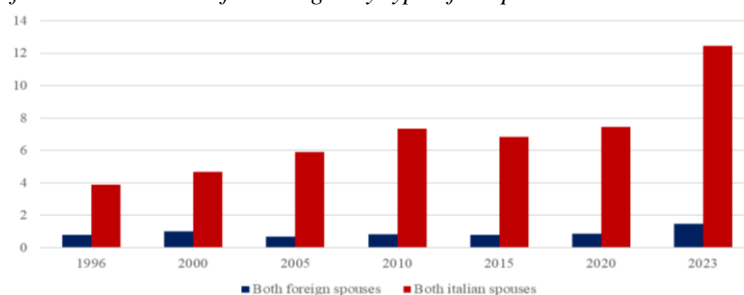
Source: Elaborations on ISTAT data

The analysis continues with a focus on municipalities with more than 5,000 foreign residents in the years 2004 and 2023. Selecting the ranking of the top 10 municipalities by nuptiality rate, we studied both the evolution of the geography of the municipalities in which marriages have been celebrated and the percentage weight of marriages of both resident in those municipalities spouses by type of couple.

The observation of the first 10 municipalities by nuptiality rate shows significant geographical differences between 2004 and 2023 (Figure 6). While in 2004 mainly the large municipalities catalyse the choice of the spouses (for example Genoa, Turin and Florence), in 2023 the municipalities with the highest nuptiality rate are of medium size (at the top of the ranking Monterotondo e Guidonia Montecelio). These differences could result from the fact that over the past twenty years foreign presence has become more widespread in the national territory.

Figure 6 − *Marriages of both resident in the municipality spouses by type of couple (percentage values).*
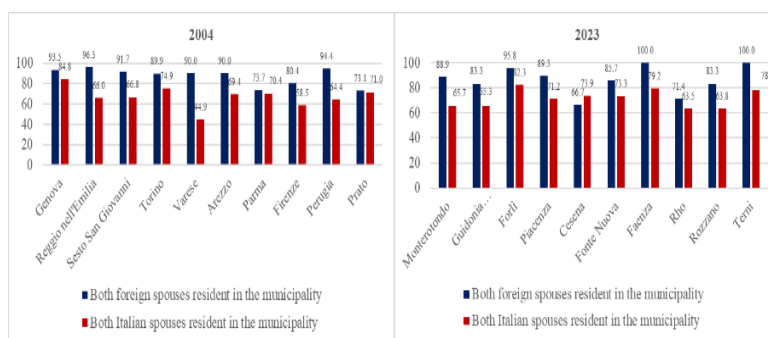
Source: Elaborations on ISTAT data

Regarding the residence of the spouses, we note that most of both foreigner spouses have married in the municipality of residence (over the 80% on a national average), while this percentage, for both Italian spouses, is lower (about the 50% on a national average).

Considering the couples of foreign spouses both resident in the municipality of celebration, in 2004 the municipality with the highest percentage is Reggio nell'Emilia with 96.3%, while Prato is the one with the lowest value 73.1%. On the contrary, observing the both Italian spouses couples, Genoa takes first place, with 84.8%, Varese with 44.9%, takes the last one. In 2023, considering the same aggregates, in Terni and Faenza all marriages with both foreigner spouses concerned only resident spouses, while Cesena, with 66.7%, is at the opposite extreme. As regard the Italian couples, at the first place we find Forlì with 82.3%, at the last one, Rho (63.5%).

5. Conclusions and further steps

In the last thirty years, marriages have been progressively and continuously declining, net of short fluctuations due to cyclical factors. Despite this decline, getting married in Italy is still an important step in people's lives representing a crucial role in the process of family formation (Rosina and Fraboni, 2004).

The general idea is studying, in a longitudinal perspective, the choice of the location to get married changes over time of the foreign population in the last thirty decade.

The study has shown a variety in the geography of the places chosen for the celebration of marriages over the last thirty years, closely linked to the dynamics and stabilization of the migratory phenomenon on the national territory.

Particularly interesting is the connections between the place of celebration and the residence of the spouses. There seems to be a greater propensity by the foreign spouses to marry in place of their residence, while the Italian spouses show more mobility in the organization of the ceremony.

As further step the idea is, through descriptive and multidimensional analysis, to compare the profiles of the resident in Italy spouses over the time. In relation to Italian couples, particularly interesting could be to analyse if the spouses who choose a province other than that of their residence do it to return to their birth ones.

On the other hand as regard to foreign couples, it might be particularly interesting to observe if there is a correlation between citizenship and the choice of marrying in a different province from that of residence.

Acknowledgements

References

BERTELLA G. 2015. Celebrating the family abroad: the wedding tourism experience, *Annals of Leisure Research*, Vol. 18, No. 3, pp. 397–413.

DEL CHIAPPA G., FORTEZZA F. 2016. Analisi delle motivazioni alla base del turismo matrimoniale: un'indagine esplorativa, *Sinergie - Italian journal of management*, Vol. 34, N. 101, pp. 141-157.

GUARNERI A., IACCARINO C., SIMONE M. 2023. Marriages of spouses with a migratory background: focus on "new Italians"?, *RIEDS - Rivista Italiana di Economia, Demografia e Statistica - The Italian Journal of Economic, Demographic and Statistical Studies*, Vol. 77, No. 2, April-June, pp. 163-174.

ISTAT 2024a. Matrimoni, unioni civili, separazioni e divorzi. Anno 2023. *Statistiche Report*, https://www.istat.it/comunicato-stampa/matrimoni-unioni-civili-separazioni-e-divorzi-anno-2023/.

ISTAT 2024b. Le famiglie con stranieri nei censimenti della popolazione - Anno 2021. *Comunicato stampa*, https://www.istat.it/comunicato-stampa/le-famiglie-con-stranieri-nei-censimenti-della-popolazione-anno-2021/.

ISTAT 2023. Stranieri residenti e nuovi cittadini: caratteristiche demografiche e nuovi cittadini. Anno 2021. *Statistica Report,* https://www.istat.it/comunicato-stampa/stranieri-residenti-e-nuovi-cittadini-caratteristiche-demografiche-e-distribuzione-territoriale-anno-2021/.

ROSINA A., FRABONI R. 2004. Is marriage loosing its centrality in Italy?, *Demographic Research*, Vol 11, Article 6, pp. 149-172.

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MARRIAGE AND CITIZENSHIP AMONG IMMIGRANTS IN ITALY: A CLOSER LOOK[1]

Cinzia Conti, Antonella Guarneri

Abstract. The integration pathways for migrants are complex and consist of multiple steps that can vary depending on a wide range of factors, such as legal status, education level, language skills, and host country policies. Moreover, the sequence of these steps may differ significantly from one individual to another. The paper investigates the relationship between the legal integration pathway (residence permit and acquisition of citizenship) and marriage. One of the original contributions of this work lies in the use of integrated administrative microdata sources. The analysis is based on two different cohorts of first residence permits issued in 2014 and 2018, which were integrated both with data on marriages and on citizenship acquisitions and new citizens. Using a longitudinal perspective, the hypothesis of this study is that personal and migratory characteristics influence migrants' integration paths.

1. Framework, hypothesis, and aims

The integration pathways for migrants are complex and consist of multiple steps. The aim of this study is to reconstruct and analyze, through the integration of administrative archives, the order of some key stages in the family trajectories of individuals of foreign origin in Italy. More specifically, the following research hypotheses lead our study:

1. Personal and migratory characteristics influence migrants' integration paths. Particular attention is paid to gender and citizenship as factors that affect both the migration project and the integration process as well as crucial event in life course such as marriage: to what extent do migrants in Italy get married, and how does this vary by reason for migration and gender? Which citizenships marry more frequently?

2. In contemporary migrations, characterized by greater mobility, the timing of certain events that shape integration processes do not necessarily follow the classic stages. At which stage of their settlement or integration path do migrants typically marry?

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[1] Although the paper is the result of joint work, sections are attributed as follows: paragraphs 1, 2, 3 and 4.2 to Cinzia Conti and paragraphs 4.1 and 5 to Antonella Guarneri.

The analysis will focus on three key moments in the migration path: the first residence permit, the marriage, and the acquisition of citizenship.

By adopting a longitudinal perspective, the residence permit is linked to marriage and to acquisition of citizenship. This serves both to study different behaviors and to observe the timing and order of events. Considering the information about the reason of the residence permit, the hypothesis is that migrants arrived for work are more likely to marry in Italy then asylum seekers. However, women who migrated for work, after intermarriage, experience high employment penalties (Justiniano Medina and Valentova, 2025).

Our starting point of analysis are two different cohorts of arrival (year of first residence permit): 2014 and 2018 cohorts (both just over 160,000 individuals). What happens to these cohorts in the subsequent years?

2. Theoretical background

The integration pathways for migrants are complex and consist of multiple steps that can vary depending on a wide range of factors, such as legal status, education level, language skills, and host country policies. Moreover, the sequence of these steps may differ significantly from one individual to another (Penninx & Garcés-Mascareñas, 2016; European Commission, 2020). Obtaining a residence permit is a first step towards integration for many migrants. Trough the residence permit, migrants start their regular process of inclusion. We know that today not all the migrants have permanent migratory projects, temporary and circular migrations are growing, but the residence permit gives to non-Eu citizens the minimal rights for integrating. In recent years, the reasons for coming to Italy have changed (Figure 1).

Figure 1 – *Non-Eu citizens inflows in Italy by reason of the residence permit. Years 2011-2023 (absolute values).*
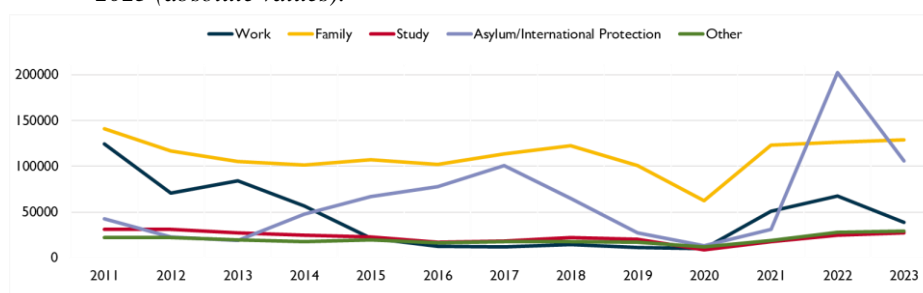
Source: Istat, 2024.

The primary motivation is family, and work permits have increased again only in recent years after a long period of stagnation (also due to the absence of flow decrees). Starting from the past decade, permits granted to people seeking international protection have become very significant (Bonifazi and Conti, 2025). In 2022, there was a peak in the number of new residence permits issued for protection due to the outbreak of the war in Ukraine. However, already the following year, a decline was recorded in residence permits issued for asylum and international protection, which dropped from over 200,000 in 2022 to around 106,000 in 2023 (-47.6%). Even though the levels of new asylum permits remained high.

According to literature marriage and family formation/reunification represent an essential step in the route towards integration, especially mixed marriages. These familiar dynamics are indicators of broader social, economic, and cultural integration and, on the other hand, the cultural and migratory background significantly influence family stability. Andersson *et al.* (2015) highlight that family patterns among immigrants and ethnic minority families serve as indicators of their integration into the host society. In a similar way, Hannemann *et al.* (2020) highlight that the context of the receiving country plays a crucial role in shaping partnership behaviors, indicating that local societal norms and policies significantly impact immigrant family dynamics. On the other hand, different cultural backgrounds influence marriage behaviors. Different studies discuss how cultural and family systems from immigrants' countries of origin impact their marital behaviors and that reflects the varying family dynamics and social norms prevalent in different cultures (Kulu, & González-Ferrer, 2014; Gabrielli *et al.* 2019; Hannemann *et al.* 2020). These studies emphasize the importance of recognizing the heterogeneity within immigrant groups, as factors like origin, migration reasons, and socioeconomic status can lead to differing family behaviours. Furthermore, disruption theory suggests that the economic and psychological burdens of migration create stress, which subsequently results in temporary discontinuities in marital behavior. An exception is made for cases where the marriage has already been planned in advance and represents the very starting point of the integration process in a new country.

In Italy in 2023, marriages with at least one foreign spouse are 29,732 (16.1% on total weddings): of these, more than two out of three concerns mixed couples (intermarriages). Mixed marriages (where one spouse is Italian and the other is a foreign national) totalled 21,211, continuing to represent the largest share of marriages involving at least one foreign spouse (71.3%). Nearly three-quarters of mixed marriages involved an Italian groom and a foreign bride (15,389 cases), 8.4% of all weddings in 2023. Marriages between two foreign citizens totalled 8,521 in 2023. Of these, 5,184 involved at least one spouse residing in Italy, while the remaining 3,337 were celebrated in Italy by non-residents.

The possibility to distinguish the citizenship status of Italian spouses - by birth or by acquisition - makes it possible to shed light on marriage behaviors based on migratory background. In 2023, among mixed marriages, 14.6% involve a spouse who acquired Italian citizenship; in 2018, this share was exactly half. Among marriages between two Italian spouses, those in which at least one partner is Italian by acquisition account for 4.5%, a share more than doubled since 2018 (Istat, 2024b).

The acquisition of citizenship is considered an indicator of advanced stabilization and integration (Conti, Tucci, Strozza, 2021; Bloemraad, 2023), especially in a country like Italy in which in general non-Eu citizens need 10 years of regular residence to apply for Italian citizenship. When analyzing the modes of acquisition of Italian citizenship of non-EU citizens in 2023, the most significant share concerns acquisitions through residence (nearly 78,000) and by minors through parental transmission (over 59,000). Together, these two categories account for nearly 70% of all citizenship acquisitions (Figure 2). In addition, the largest relative increase was recorded in citizenship granted iure sanguinis, which continued to grow in 2023 compared to both 2021 (+241%) and 2022 (+31%).

Figure 2 – *Acquisitions of Italian citizenship of resident non-Eu citizens by reason. Years 2011-2023 (absolute values).*
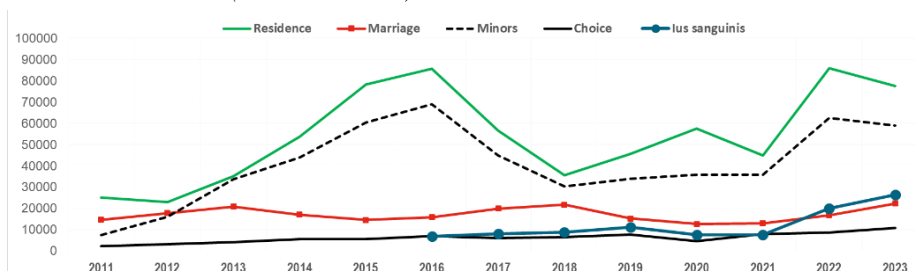
Source: Istat, 2024.

It has to be stressed that there is a strong link between marriage and acquisition of citizenship even if it does not clear which of the two phenomena tends to precede the other in most observed cases. Many acquisitions of citizenship in Italy are based on "marriage". The Italian citizenship may be granted through marriage, under the following conditions: the applicant, whether a foreign national or stateless person, must be married to an Italian citizen and must have legally resided in Italy for at least two years following the marriage. If the spouses reside abroad, the application may be submitted after three years after the date of marriage. These timeframes are halved in the presence of children born to or adopted by the spouses. In 2023 Italy registered 22.330 acquisitions of citizenship based on marriage; in 10 years (2014-2023) they have been almost 170.000.

The choice of partner is affected by both individual preferences and contextual factors (Kalmijn, 1998). Furthermore, getting married to a native and then acquiring the citizenship of the host country can certainly make easier entry into the labour market and into the host society. However, it is not always true that the wedding takes place after an integration process; it could rather indicate a request for integration (Azzolini and Guetto, 2017). This request takes on an even different meaning if the mixed marriage concerns a foreign citizen and an Italian one by acquisition (Guarneri, Strozza and Tucci, 2021). Furthermore, only marriage enables potential citizens to follow the marriage-based route, despite the rising prevalence of nonmarital partnerships, underscores its unique role in immigration policy (McAvay and Waldinger, 2021).

3. Data and methods

Since the early '90s the Italian National Institute of Statistics (Istat) disseminates data on residence permits on the basis of the data supplied by the Ministry of Interior. The available variables include key demographic characteristics of the migrant, along with the reason for the residence permit and its issuance date.

The Survey on marriages collected from Istat allows monitoring trends by the main socio-demographic characteristics of husbands and wives who decide to marry besides the information about the marriage itself.

The "Acquisitions of citizenships" provided by Istat are estimates came from a database based on the stock 2011 individual census data, the data on the type of acquisition from Ministry of Interior and the data of the new micro-demographic accounting information system (updated to 2023). In a previous research, this estimates dataset allows identifying the foreign-born resident in Italy and observing, through a longitudinal approach, whether they have acquired Italian citizenship over time (Strozza, Conti and Tucci, 2021).

One of the paper's original contributions lies in its use of integrated administrative microdata sources that had never been linked before. The analysis is based on two different cohorts of newly issued residence permits, which were linked with data on marriages and on citizenship acquisitions (flow data).

Determinist linkage, performed by an anonymised key, allows to follow cohort of new arrivals (new residence permits) during the time, analysing their propensity to marry taking into account the different reasons at the basis of the permit (work, study, protection, etc.) and the propensity to acquire the Italian citizenship. This longitudinal analysis is affected by a bias, as it is not possible to take naturalization acquisitions into account due to the limited observation period; therefore, the focus is mainly on those acquired through marriage.

This is a descriptive and exploratory investigation offering, for the first time, the possibility to cross-analyze information drawn from several distinct archives and to better address future highly refined statistical analyses.

4. Main results

4.1 Longitudinal approach: analysis by cohort of arrival and type of event

The study was conducted on two cohorts, 2014 and 2018. The first cohort consists of 233,000 migrants, more than 203,000 of whom are over 18 years of age, while the second includes 242,000 migrants, more than 179,000 of whom are over 18. Women represent 41.8% of the 2014 cohort and 45.3% of the 2018 cohort (Figure 3). As can be observed, migrants are predominantly young and therefore largely included in the marriage market.

Figure 3 – *Non-eu citizens inflows by sex and age - Cohorts of arrival 2014 and 2018 (absolute values).*
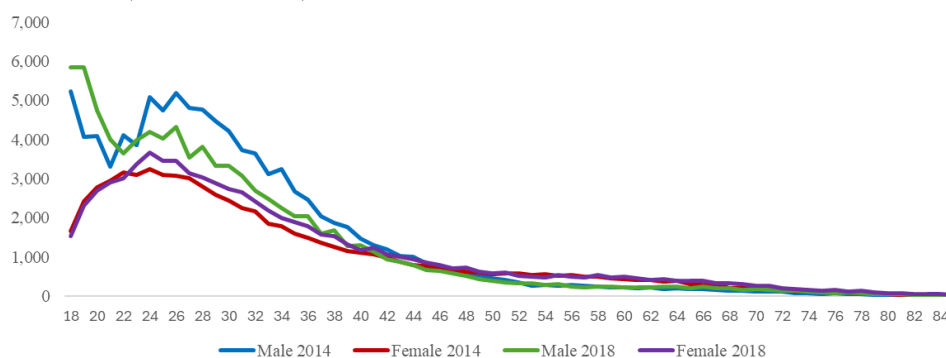
Source: our elaborations on Istat data.

Studies already conducted on non-Eu citizens show a lower tendency to settle in the area among people who arrive seeking international protection. It can be hypothesized that there may also be a lower tendency to form a family among those who remain in the area but in a still temporary condition.

The combination of events most frequently occurred in a time span of 5 years for different cohorts of arrival in Italy is "no marriage and no citizenship acquisition", followed by "marriage and no citizenship acquisition". These results are coherent with the legislation about citizenship that only rarely allows citizenship before 10 years of residence. From a cohort-of-arrival perspective, marriage remains a relevant

pathway to acquiring citizenship. In general, across cohorts as well, the peak in citizenship acquisitions occurs four/five years after marriage (Figure 4).

The trend of citizenship acquisition for 2018 cohort was affected by the impact of COVID-19. As a matter of fact, in 2020 and 2021 the share of acquisitions is particularly low. Besides, the legislative changes regulating the timelines for acquiring citizenship inevitably also impact on 2018 cohort downward trend. [2]

Figure 4 – *Marriage and acquisition of Italian citizenship by cohort of arrival of non-eu citizens (absolute values).*
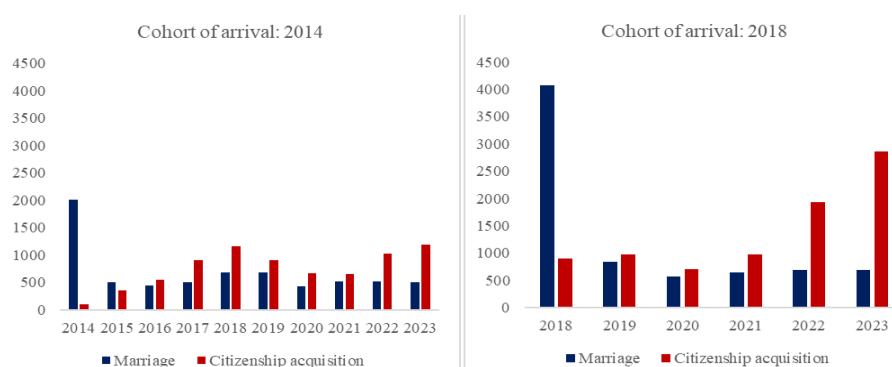
Source: our elaborations on Istat data.

For comparability purposes between the two chosen cohorts, we decided to focus on a five-year time span after the issuance of a first residence permit[3]. After five years, 2.8 percent of non-EU citizens who arrived in Italy in 2014 were married (1.6 percent for men and 4.6 percent for women); for those arrived in 2018 the share rises to 4.8 percent (respectively 2.9 and 6.9 for men and women). When we look at the patterns of marriage among non-EU migrants five years after their arrival, clear differences emerge between men and women, depending on the reason for migration.

Starting with work-related migration, marriage is quite rare for both genders. However, women tend to marry slightly more than men in this category. For example, in the 2018 cohort, around 4.1 of women who came for work reasons got married within five years, compared to only 1.5% of men (Figure 5). Although the overall marriage rate is low here, this small gender gap suggests that even among

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[2] Decree-Law No. 130 of 2020 (converted into Law No. 173 of 2020), came into effect on December 19, 2020, replaced the previous longer deadline for the completion of the proceedings of citizenship acquisitions (48 months) introduced in 2018. Today, the deadline is again of 24-months (extendable up to a maximum of 36 months) from the date of application submission.

[3] The term 'first residence permit' refers to the issuance of a new permit, not a renewal. Of course, the person may have previously held a permit that expired and was not renewed, and then, after some time, obtained another one, which is considered a new permit.

labor migrants, women may be more likely to establish family ties after arrival. The gender effect is observed in both cohorts: for the 2014 cohort, within the five years following arrival, 5.5% of women and 1.4% of men got married.

The family migration category shows the highest marriage rates, especially for women. In the 2014 cohort, 3.6% of women who migrated for family reasons were married within five years, and this figure rises to 4.5% for the 2018 cohort. Among men, the rates are much lower: around 2% in 2014 and 2.5% in 2018. This aspect deserves further investigation to understand whether these are young women reuniting with their parents in order to get married in Italy.

Figure 5 – *Marriage (occurred in the subsequent 5 years after arrival) of non-Eu citizens by sex and reason of the permit. Cohorts of arrival 2014 and 2018 (percentages).*
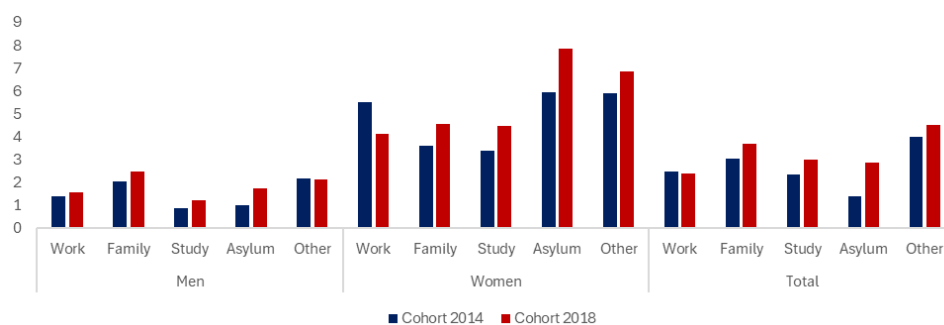
Source: our elaborations on Istat data.

Among those who came to study, gender differences persist. Women again get married more frequently than men. In the cohort of 2018, for instance, about 4.5% of female students married within five years, compared to just 1.2% of male students. This might indicate that female students are more likely to build social and family ties during their studies or are more likely to stay and settle after their education.

For those arriving for asylum or international protection, marriage patterns are more variegate. In the 2014 cohort, women had a significantly higher marriage rate (around 5.9%) compared to men (around 1%). A similar pattern is observed in the 2018 cohort: about 8% of women and 1.7% of men married within five years.

Particular attention will be given to different citizenship groups to highlight distinct behaviors and integration trajectories (Figure 6). In particular, the combination between sex and citizenship offer us a valuable opportunity to outline different profiles. The 4.0 percent of Albanian women arrived in Italy in 2014 appears married 5 years later (the highest percentage among the main citizenships present in Italy); also, among men, albeit to a lesser extent, the Albanian community shows the highest propensity to marry in Italy. For the 2018 cohort of arrival the situation appears radically different in terms of propensity to marry: the 8.9 percent

of Nigerian women appears married 5 years later. Albanians and Moroccans are also the groups that acquire citizenship the most within five years after arrival.

Figure 6 – *Marriage and acquisition of citizenship (occurred in the subsequent 5 years after arrival) of non-Eu citizens by sex and main citizenships. Cohorts of arrival 2014 and 2018 (percentages).*
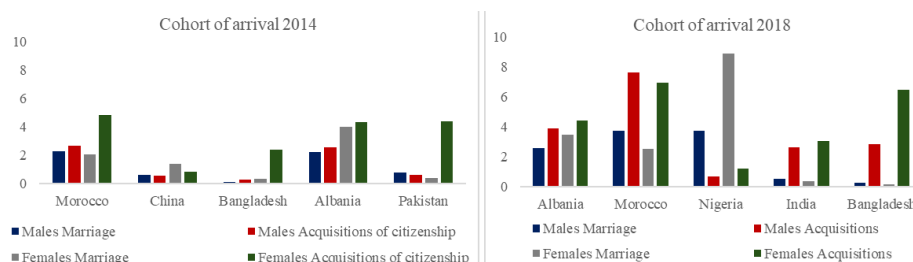

Source: our elaborations on Istat data.

To better understand the results, it is important to stress that in Italy ordinary naturalisation is not possible before ten years of residence, except for certain groups to whom shorter residence requirements apply (four years for EU citizens and five years for recognised refugees and stateless persons). On total acquisitions the ones by marriage are 51.0 for the 2014 cohort of arrival but with a strong gender differentiation (26.7 for men and 62.9 for women); for the cohort of 2018 acquisitions by marriage are lowering to 19.0 of total acquisitions (9.2 for men and 27.0 for women). This data highlights important gender differences in naturalization patterns. In the 2014 cohort, marriage was a key channel for women to gain citizenship. In the 2018 cohort, while the overall citizenship acquisition rates increased, the reliance on marriage as a means decreased, pointing to broader or more autonomous integration trajectories, particularly for women. Even if it concerns small numbers, this evolution deserves further attention, especially to understand the reasons at the basis of the changes. For example, it is also important taking into account changes in migration flows and the arrival of minors who acquire citizenship through their parents, prior to independent transmission.

4.2 Focus on new Italians involved in 2023 marriages

Parallel to the integration process that culminates in acquiring citizenship, increasingly diverse paths are observed, with marriage becoming an increasingly common option among those who have already obtained citizenship. A significant increase in the presence of Italians by acquisition at the time of marriage is observing. This phenomenon is due to multiple factors. Firstly, in recent years,

citizenship acquisition has become more common, in line with a more advanced process of integration for foreign citizens. Considering the anticipating mean age at marriage that characterize foreign spouses or spouses with foreign background, the 33.1 percent of "new" Italians that got married in 2023 had acquired the Italian citizenship before 2011 Italian Census (Figure 7).

Figure 7 − *New Italian citizens who married in 2023 by year of citizenship acquisition (absolute values).*
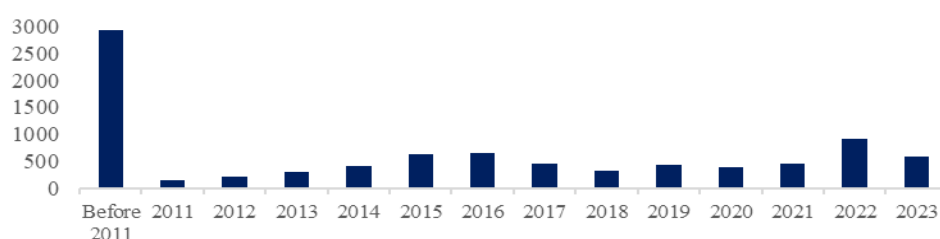
Source: our elaborations on Istat data.

Record linkage revealed that, among those who acquired Italian citizenship before 2011, over 80 percent were individuals born in Italy rather than immigrants. In this case we refer to the second generation in strict sense. If we observe also their age, they are quite young: more than 30 percent are under 33 years old. A large part of new Italians that get married in Italy have acquired the citizenship presumably by choice at age of 18 or by transmission from their parents. This appears to be an interesting point to reflect on and that requires deeper analysis.

5. Discussion and further steps

Integration paths are numerous and strongly differ in the sequence of their stages.

On one side, there has been a gradual decrease/stabilization in the share of citizenship acquisitions through marriage. On the other side, adopting a cohort of arrival perspective, marriage remains a relevant way to acquire citizenship, most of all in a medium-short term.

In general, across cohorts as well, the peak in citizenship acquisitions occurs five years after marriage. Moreover, the extension of the observation period will make it possible to take into account citizenship acquisitions through other procedures as well, such as those by naturalization.

The increased relevance of using administrative data sources in the production of official statistics in Italy has intensified the register-based approach. Seizing this opportunity, the paper seeks to reconstruct, from a longitudinal perspective and

through the integration of microdata sources, the family and migratory behaviors of individuals of foreign origin living in Italy over the past decade.

The results presented here should be considered as the first outcomes of a complex data integration process which, over time, will be able to capture the complexity of integration phenomena that now concern the first generations of migrants — who, as we have seen, have changed in terms of profile and characteristics over time — as well as their descendants.

Acknowledgements

References

ANDERSSON G., OBUĆINA O., SCOTT K. 2015. Marriage and divorce of immigrants and descendants of immigrants in Sweden, *Demographic research*, Vol. 33, pp. 31-64.

AZZOLINI D., GUETTO R. 2017. La crescita delle unioni miste in Italia: un indicatore di accresciuta integrazione degli immigrati e maggiore apertura della società?, *Mondi Migranti*, Vol. 2/2017, pp. 33-55.

BARBIANO DI BELGIOJOSO E., TERZERA L. 2018. Family reunification – who, when, and how? Family trajectories among migrants in Italy, *Demographic Research*, Vol. 38, pp. 737-772.

BLOEMRAAD I., ESSES V. M., KYMLICKA W., ZHOU Y.Y. 2023. Unpacking Immigrant Integration: Concepts, Mechanisms, and Context, *Background paper prepared for World Development Report 2023,* World Bank, Washington, DC.

BONIFAZI C., CONTI C., Migrazioni internazionali, dinamica demografica e giovani generazioni nel contesto italiano, *Sinappsi,* No. 1, 2025, pp. 75-88.

EUROPEAN COMMISSION 2020. Action Plan on Integration and Inclusion 2021–2027.

GABRIELLI G., PATERNO A. 2016. Selection criteria of partner: comparison between transnational and homogamous couples in Italy, *Genus*, Vol. LXXI, No. 2-3, pp. 137-155.

GABRIELLI G., TERZERA L., PATERNO A., STROZZA S. 2019. Histories of couple formation and migration: The case of foreigners in Lombardy, Italy. *Journal of Family Issues*, Vol. 40, No. 9, pp. 1126-1153.

GUARNERI A., IACCARINO C., SIMONE M. 2023. Marriages of spouses with a migratory background: focus on "new Italians", *Rivista Italiana di Economia Demografia e Statistica*, Vol. LXXVII, No. 2, pp 163-174.

GUARNERI A., STROZZA S., TUCCI E. 2021. Acquisizione della cittadinanza e comportamenti demografici. Il caso dei matrimoni e delle emigrazioni. In STROZZA S., CONTI C. AND TUCCI E. (Eds.) *Nuovi cittadini. Diventare Italiani nell'era della globalizzazione*, Bologna: Il Mulino, pp. 99-131.

HANNEMANN T., KULU H., GONZÁLEZ-FERRER A., PAILHÉ A., RAHNU L., PUUR A. 2020. Partnership dynamics among immigrants and their descendants in four European countries, *Population, Space and Place*, Vol. 26, No. 5, e2315.

JUSTINIANO MEDINA, A.C., VALENTOVA M. 2025. Is There an Employment Advantage for Immigrant Women Who Marry Natives in Italy? *Eur J Population*, Vol. 41, No. 15.

ISTAT 2024a. Cittadini non comunitari in Italia. Anno 2023, *Statistiche Report*.

ISTAT 2024b. Matrimoni, unioni civili, separazioni e divorzi. Anno 2023, *Statistiche Report*.

KALMIJN M. 1998. Intermarriage and Homogamy: Causes, Patterns, Trends, *Annual Review of Sociology*, Vol. 4, pp. 395-421.

KULU H., GONZÁLEZ-FERRER A. 2014. Family dynamics among immigrants and their descendants in Europe: Current research and opportunities, *European journal of population*, Vol. 30, pp. 411-435.

MAFFIOLI D., PATERNO A., GABRIELLI G. 2014. International married and unmarried unions in Italy: Criteria of mate selection, *International Migration*, Vol 52, No. 3, pp. 160-176.

MCAVAY H., WALDINGER R. 2021. Accelerating the Passage to Citizenship: Marriage and Naturalization in France. *Frontiers in Sociology*, Vol. 6, No. 5.

PENNINX R., GARCÉS-MASCAREÑAS B. 2016. The Concept of Integration as an Analytical Tool and as a Policy Concept. In B. Garcés-Mascareñas & R. Penninx (Eds.) *Integration Processes and Policies in Europe: Contexts, Levels and Actors,* Springer, pp. 11–29.

STROZZA S., CONTI C., TUCCI E. 2021. *Nuovi cittadini. Diventare Italiani nell'era della globalizzazione*. Bologna: Il Mulino.

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GENDER AND ETHNICITY-BASED EMPLOYMENT DISCRIMINATION

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Abstract. Discrimination leads equally productive workers to receive unequal treatment in the labor market. Our study examines gender and ethnicity-based employment discrimination in Ethiopia. We conducted a field experiment using résumés drawn from a pool of real job applicants balanced by gender and ethnicity, which were randomly assigned to evaluators for hiring decisions. The results reveal that women and ethnic minority candidates have lower employment opportunities compared to men and the ethnic majority candidates. Gender and ethnicity have additive effects on employment outcomes, rather than interacting to generate a compounding disadvantage. The findings provide valuable insights for policies aimed at closing gender and ethnic hiring gaps. In particular, our study emphasizes the importance of robust anti-discrimination policies in effectively addressing these inequalities.

1. Introduction

Employment discrimination based on gender, ethnicity, or other protected characteristics violates the principle of equal employment opportunity. Discrimination imposes costs on workers, employers, and the national economy in multiple ways (Ferrant and Kolev, 2016; Eurofound, 2020). It also limits employment opportunities, reduces income, and exacerbates income inequalities. By contrast, eliminating discrimination can enhance workers' motivation and productivity (Gramozi *et al*., 2023). Consequently, addressing employment discrimination is a crucial step toward achieving the Sustainable Development Goals (SDGs). For instance, Goal 16. B urges countries to ensure laws and policies that do not discriminate against persons based on gender, ethnicity, and other grounds, and actively enforce non-discriminatory laws and policies to achieve the SDGs. However, workplace discrimination based on race, ethnicity, and gender remains a persistent issue in many countries (Heymann *et al*., 2023).

Numerous studies have consistently demonstrated that applicants from ethnic minority backgrounds, such as Black individuals or immigrants, are less likely to receive positive responses or callbacks from employers than their non-minority counterparts, including white or native applicants (e.g., Carlsson and Rooth, 2007; Oreopoulos, 2011; Lippens *et al*., 2023; Zwysen et al., 2021; Stanila *et al*., 2020;

Lancee, 2021; Busetta *et al.*, 2018, 2020). The evidence on gender discrimination in hiring is mixed: while some studies document clear instances of bias, others find that discrimination is minimal or absent, emphasizing instead the role of gender segregation across occupations and industries. An experimental study by Zhang *et al.* (2021) reveals that female applicants are generally less likely to be invited by hiring firms for an interview compared to their male counterparts, and specifically, discrimination in computer and mathematics, architecture and engineering, and sales fields is dominant. González *et al.* (2019) examined employment discrimination in the Spanish labor market and found evidence of bias against women, but it diminished when women possessed higher qualifications, and increased when they had children. In contrast, Benhabib and Adair (2017), in Algeria, found that women received higher callback rates than men when applying for positions in the accounting profession. Similarly, Alaref *et al.* (2020) reveal that women overall received higher callback rates than men for their job applications, though the patterns were sector-specific. That means in the Information Technology sector, women were less likely than men to receive a callback, whereas no gender difference was observed in engineering. By contrast, women were more likely to receive callbacks in marketing and finance. Moreover, Krafft (2023) finds that there are no differences in callback rates by gender and marital status; however, women, especially married women, are asked to provide additional information rather than being invited for an interview.

A growing concept in labor market discrimination research is intersectionality[1]. Intersectional discrimination arises when two or more sources of bias operate simultaneously, meaning individuals with multiple minority statuses experience compounded forms of discrimination (Harnois, 2015). Consequently, analyzing discrimination through an intersectional lens helps reveal how overlapping social identities create complex patterns of advantage and disadvantage that shape labor market outcomes (Browne and Misra, 2003). The intersection of gender and ethnic discrimination is particularly important, although empirical evidence in this area remains inconsistent. A study by Di Stasio and Larsen (2020) in five European countries (Norway, the UK, Spain, Germany, and the Netherlands) reveals that minority men bear the largest burden of ethnic and racial discrimination in hiring. In addition, employers prefer hiring white women over men for jobs that require women, but people of the same race have no special benefits over others. However, in male-dominated jobs, Middle Eastern and Black men have experienced the most significant racial discrimination in hiring. Dahl and Krog (2018) also examine gender and ethnicity intersectional discrimination in hiring by comparing Danish

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[1] Crenshaw (1989, 1991) introduced the concept of intersectionality, emphasizing that individuals who belong to multiple marginalized identities (e.g., race and gender) experience distinct and compounded disadvantages that go beyond the simple sum of racism and sexism.

individuals with those of Middle Eastern descent. The findings suggest that hiring discrimination is driven solely by ethnicity, with no evidence of gender-based discrimination. Besides, Bursell (2014) studied the intersection of gender and ethnic discrimination between Sweden and Arab and North African migrants. The results show evidence of ethnic discrimination against Arabs and North Africans; however, it is not based on gender. A study by Degrous and Pepermans (2019) in Belgium shows that a Maghreb (Arab) female applicant received a lower job offer compared to equally qualified native (Belgian) female and Maghreb (Arab) male applicants when applying for a high-cognitive-demanding job. No differences were found when applying for a low-cognitive-demanding job. This suggests that ethnic minority women face double jeopardy in hiring decisions for cognitively demanding roles.

According to Lippens *et al.* (2023), the bulk of hiring discrimination studies were conducted in advanced countries, which have robust institutions and good anti-discrimination legislation. In contrast, it is not explored in developing countries in general and in Ethiopia in particular, although these countries have weak institutions to limit discrimination. Thus, the primary objective of this study is to assess the magnitude of employment discrimination in Ethiopia, with particular attention to gender, ethnic status, and their intersection, using a field experiment design. Our study differs from previous studies in numerous ways. First, unlike studies that look at hiring discrimination between immigrants and natives, or blacks, Hispanics, and whites, our study focuses on hiring discrimination among ethnic groups with the same nationality and educational background. Second, instead of fictitious résumés, our study used applicants' real education, abilities, and personal characteristics, which may reflect natural variation rather than the false construction of résumés. By analyzing the extent of discrimination, our study provides valuable insights for reducing discriminatory practices.

2. Experimental Design

Evaluators and job applicants served as the two primary data sources for this study. Although size, status, and power are utilized to classify as ethnic majority and minority, in most experimental studies, size is typically used to distinguish ethnic majorities from minorities (Seyranian *et al.*, 2008). We follow a similar approach and classify the majority and the minority groups based on their population size. Since Ethiopia has more than 80 ethnic groups, we designed the study by selecting samples from both ethnic groups. The Oromo and Amhara ethnic groups alone accounted for about 60% of the country's population (Central Statistical Authority, 2007). Thus, the two ethnicities constitute the ethnic majority group. Two ethnic minority groups with a smaller share of the population were also selected. Due to the

difficulty in acquiring sufficient data, ethnic groups with a population size of fewer than 100,000 were eliminated, as were those with a population size of more than 1,000,000, which may not reflect the minority. Using random assignments, the Bench and Berta ethnicities were selected from minority groups.

2.1 Applicant Selection and the Résumés Design

This part has two main activities: the selection of four job applicants for the temporary research assistant role, and the design of résumés[2].

The job applicants' selection: We hired four research assistants on contract who assist us in data collection. We advertised a vacancy and kept it open from August 10 to August 30, 2024. The requirement for the role was indicated on the vacancy, such as a background in statistics, social sciences, business-related fields, and data management and statistical software skills. In addition, it specified that applicants must be fluent in local languages where the data was collected, which we believe serves as a proxy for ethnicity, in addition to inquiries about their ethnicity. Applicants who did not meet the above requirements were not considered further. We received 346 applications, but 76 were rejected because they did not meet the eligibility criteria.[3]

Design of résumés: The data collected during the actual recruitment process were later used to construct the experimental materials. Specifically, information provided by the 234 eligible applicants concerning their educational background, statistical skills, demographic attributes, and other traits was used to create résumés to be presented to evaluators in the hiring process. The goal was to build credible profiles reflecting real job-seeking behavior while allowing experimental control over gender and ethnicity. We removed names, emails, phone numbers, and any personalized information that could identify an applicant. Moreover, we limited the use of the

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[2] This study was reviewed and approved by Wolkite University Institutional Review Board (IRB). All participants provided informed consent before participation in the study.

[3] A week later, we invited 270 qualified candidates to take the exam, but only 234 applicants took the exam. The exam was administered online and took 25 minutes. The exam aimed to select the best applicants who qualify for an interview. In the first section of the exam, applicants were asked to answer questions regarding their gender, age, ethnicity, educational qualifications, statistical software skills, and placebos. We informed applicants that this information is not used for the selection decisions. The exam consists of 50 questions, with 25 quantitative and 25 language questions; each correct answer is worth two points, bringing the total to 100. Upon the exam being concluded, the results were ranked out of 100 to select the top 8 candidates for interviews, 2 from each ethnic group. We computed the average of interview and exam scores, and then the top four candidates, one from each ethnic group, were hired for the research assistant position. In this paper, we do not use the data from exams, but we are planning to use them in a further stage of the research, as we discuss in the conclusion.

applicants' data solely for this experimental study and do not use it for actual job advertisements. To maintain gender and ethnic balance, we randomly removed 34 applicants, and it became 200. We then design résumés, including gender, ethnicity, age, educational qualifications, statistical skills, and a placebo.

2.2 Evaluators Selection and the Hiring Process

Public sector officials were recruited as evaluators in the experimental part of our study. Each evaluator was asked to assume the role of a human resource officer and to make hiring decisions based on a set of résumés. While their decisions did not affect actual employment outcomes, they were framed as part of a realistic selection task to elicit behavior comparable to that of real-world hiring. In Ethiopia, a field experiment with a fake résumé is difficult because most applications require educational credentials and in-person applications. However, our experimental strategy overcomes the challenges of the false résumé studies. Evaluators were chosen from the public sector, assuming it is the major employer in the country, and that they can make realistic decisions based on current labor market conditions. The decisions they made may have external validity since they could be guided by practical experience, making the conclusion applicable to real-world labor market situations.

Considering the geographic distribution of ethnic groups and access to enough participants, we chose evaluators from four zonal administrative towns, one for each ethnic group. Assosa and Mizan Teferi served as study spots to represent ethnic minorities, respectively, for the Berta and Bench ethnicities. Randomly, Woliso administrative town was chosen to represent the ethnic Oromo, while Debrebirhan Metropolitan was chosen to represent the ethnic Amhara. Evaluators were notified that after completing the hiring task, they would be awarded based on the completion of tasks. Out of the 640 evaluators, 434 completed the hiring assignment. We sent the evaluators an email about the hiring process, incentives, and consent information. After data cleansing, 376 evaluators reviewed 8 résumés balanced by gender and ethnicity, resulting in 3008 observations[4]. First, we provide evaluators with detailed

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[4]Although evaluators were instructed to act as human resource personnel, making real hiring decisions, their choices had no direct consequence on actual hiring outcomes. This could introduce a potential source of behavioral noise. Some evaluators may have engaged with the task differently depending on their understanding of its purpose, motivation level, or interpretation of the résumé content. While several measures were taken to mitigate this risk, including framing of the instructions, attention checks, and randomization of résumé presentation, the possibility of inconsistent or strategic behavior among evaluators should be acknowledged. This limitation does not invalidate the results, but must be kept in mind when interpreting patterns of bias or responsiveness across groups.

guidelines on the hiring process, and then, we randomly distribute eight résumés. Evaluators were notified to select four applicants whom they considered suitable for the roles.

2.3 Analytical Strategies

The employment gap is measured using a proportion and interpreted using percentage points. The model specification of the hiring outcome is expressed as:

$$Y_i = \beta_0 + \emptyset G_i + \delta X_i + \varepsilon_i \tag{1}$$

Yi denotes the hiring outcome of candidate i, denoted by 1 if evaluators hired candidates, and 0 if not hired. G_i denotes the treatment variables, gender, or ethnicity group of applicant i. Gender is denoted by 1 if the candidate is male and 0 if female. Ethnicity is denoted by 1 if the candidate is an ethnic majority and 0 if an ethnic minority. X_i includes control variables such as education qualifications, statistical software skills, age, and placebo. ε_i is a normally distributed error term. All job candidates have a bachelor's degree from a domestic university. We split universities where job applicants learn into three clusters based on the Ministry of Education's (MOE) university grouping: research, applied, and comprehensive universities. Applicants applied for the job from 18 fields; however, we allocated them into three groups: business, social sciences, and statistics. Age is a continuous variable that ranges between 22 and 28 years. Statistical software skills are a dummy variable: 1 if the candidate has SPSS skills, 0 if they have Stata skills. The Linear Probability Model (LPM) is used to estimate the causal impact of treatment on the treated. While estimating the LPM, the robust standard error was used to address the heteroscedasticity problem.

3. Results

Table 1 presents the regression results of the LPM. Male applicants are 8.51 percentage points (pp) more likely to be hired than female applicants (Model 1). Ethnic majority applicants are 9.71 pp more likely to be hired than ethnic minority applicants (Model 2). Ethnic-majority female candidates have an 8.11 pp lower employment outcome than ethnic-majority male applicants. Similarly, ethnic-minority male candidates have a 9.31 pp lower employment outcome than ethnic-majority male applicants. Finally, ethnic-minority female applicants have an 18.2 percentage point lower employment outcome than ethnic-majority male applicants.

Table 1- *Employment disparity in hiring (by applicants' characteristics).*

	Model 1	Model 2	Model 3	Model 4	Model 5
Gender (male)	0.0851***			0.0877***	0.0810***
	(0.0181)			(0.0264)	(0.0270)
Ethnicity (majority)		0.0971***		0.103***	0.100***
		(0.0180)		(0.0267)	(0.0272)
Male*Majority				-0.00741	0.00408
				(0.0379)	(0.0384)
Age				0.00111	0.00164
				(0.0063)	(0.0067)
Statistical skills (SPSS)				0.0055	0.0129
				0.0042	-0.0072
Placebo (Prefer coffee)				(0.0175)	(0.0186)
Field of study (reference: Business stream)					
Social Science-stream				(0.0198)	(0.0216)
				0.0209	0.0269
				(0.0194)	(0.0205)
Statistics-stream				0.0415	0.0410
				(0.0311)	(0.0339)
University (reference: Research University)					
Applied University				-0.0207	-0.0176
				(0.0199)	(0.0213)
Comprehensive University				0.0207	0.0358
				(0.0257)	(0.0276)
Gender and ethnicity Interaction (reference: Male*majority)					
Female*majority			-0.0811***		
			(0.026)		
Male*minority			-0.0931***		
			(0.0257)		
Female*minority			-0.182***		
			(0.0248)		
Observations	3,008	3,008	3,008	3,008	3,008
R-squared	0.007	0.009	0.017	0.018	0.143
Evaluators fixed effect	No	No	No	No	Yes

*Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.* Models 1 and 2 show the hiring disparity for gender and ethnicity, respectively. Moreover, Model 3 estimates the interaction of gender and ethnicity. Model 4 includes control variables without evaluator fixed effects, whereas Model 5 includes control variables and evaluator fixed effects.

This finding implies that gender and ethnicity have an additive effect on the hiring process for applicants. Moreover, when the gender-ethnicity interaction is estimated (Model 3), the results show an additive impact on employment discrimination, rather than an intersectional impact. When all control and treatment variables, as well as evaluator fixed effects, are included, the interaction is statistically insignificant. This could be due to the explanatory power of the individual effect, which may mask any extra impact from their interaction. When considering the control variables and the evaluators' fixed effects, the hiring outcome only slightly shifts from the main effects

of the treatment variables. In Model 4, when control variables are included, the gender and ethnic-based hiring disparity increases slightly from the base level; this could be due to the variation in signals of job applicants. However, when evaluators' fixed effect is assumed, gender-based discrimination declines, but ethnic-based discrimination does not change that much. This could be due to evaluators' heterogeneity in the evaluation. In general, the results show that employment disparity is primarily driven by the variation in the treatment variables rather than the variations in the educational qualifications and skills of applicants.

4. Conclusions

The findings show evidence of gender-based discrimination in employment against women applicants. This implies that women applicants with qualifications comparable to those of men applicants are treated unequally in employment opportunities. Employment discrimination against women could arise from traditional gender stereotypes, gender role expectations, motherhood penalties, employer bias, and limited supportive policies, all of which restrict their job opportunities. For example, women are often viewed primarily as family caregivers, and roles involving fieldwork, travel, such as research assistant positions, are typically male-dominated, leading to lower recruitment of women. Our results are in line with the findings of Zhang *et al*. (2021) and González *et al*. (2019), who revealed evidence of employment discrimination against women. Our results also indicate that ethnic minorities have fewer employment opportunities than ethnic majority applicants. Even with comparable qualifications, minority applicants face employment discrimination, which could be due to employer stereotypes and biases, and weak enforcement of anti-discrimination regulations. Our result aligns with the findings of Lippens *et al*. (2023), Zwysen *et al*. (2021), and Busetta *et al*. (2018, 2020a), showing the evidence of hiring discrimination against minority applicants. Our findings also show that gender and ethnicity have an additive effect on hiring outcomes, i.e., women from minority groups experienced cumulative disadvantages. Inclusion and diversity training, inclusive labor market policies, rigorous anti-discrimination rules, and a legal framework are required to combat employment discrimination. Closing the gender and ethnic employment gap is not only a matter of fairness; it is also a key step toward achieving several Sustainable Development Goals (SDGs), including gender equality, no poverty, decreased inequality, better education, decent work, and economic growth.

While this study demonstrates the extent of discrimination, more research is needed to distinguish between sources of discrimination, such as taste-based and

statistical discrimination, which is vital for suggesting intervention strategies[5]. Therefore, this study presents the baseline evidence from an ongoing experimental project. A second step is currently being developed to investigate whether observed discrimination stems from inaccurate or accurate statistical beliefs or from intrinsic preferences (taste-based discrimination). In addition, although Ethiopia has over 80 ethnic groups with diverse sociocultural dynamics, our study focused on four (two majority and two minority) to examine hiring outcomes. We did not explicitly account for interethnic tensions, but recognize this as an important direction for future research to explore how political or social dynamics may shape ethnic-based hiring discrimination.

References

ALAREF J., NIKAEIN S., GUSTAVO T., PAEZ N., AUDAH M. 2020. The Impact of Employer Discrimination on Female Labor Market Outcomes: Experimental Evidence from Tunisia, *Working Paper*, Vol. 9361, Washington, D.C.

ARROW K. 1971. The Theory of Discrimination. *Working Paper*, No.30A, Princeton University, Industrial Relations Section.

BECKER G. S. 1957. *The Economics of Discrimination*: The University of Chicago Press.

BENHABIB L., ADAIR P. 2017. Hiring Discrimination on the Algerian Labour Market: An Assessment with Testing, *Africa Meeting of the Econometric Society*, Algiers, Algeria.

BROWNE I., MISRA J. 2003. The Intersection of Gender and Race in the Labor Market. In *Annual Review of Sociology*. Vol. 29, pp. 487–513.

BURSELL M. 2014. The Multiple Burdens of Foreign-Named Men: Evidence from a Field Experiment on Gendered Ethnic Hiring Discrimination in Sweden. *European Sociological Review*, Vol. 30, No. 3, pp. 399–409.

BUSETTA G., CAMPOLO M. G., PANARELLO D. 2020. The discrimination decomposition index: a new instrument to separate statistical and taste-based discrimination using first- and second-generation immigrants. *International Journal of Social Economics*, Vol .47, No. 12, pp. 577–1597.

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[5] The taste-based discrimination of Becker (1957) describes that labor market discrimination stems from employers' preferences for specific groups of workers, even when productivity is equal. In contrast, the statistical discrimination theory of Arrow (1971) and Phelps (1972) asserts that discrimination arises from employers' incomplete information about workers' productivity. Employers rely on the observable traits of workers as a proxy for productivity, basing their decisions on expected beliefs of productivity.

BUSETTA G., CAMPOLO M. G., PANARELLO D. 2018. Immigrants and the Italian labor market: statistical or taste-based discrimination? *Genus*, Vol. 74, No. 1.

CARLSSON M., ROOTH D. -O. 2007. Evidence of ethnic discrimination in the Swedish labor market using experimental data. *Labour Economics,* Vol. 14, No. 4, pp. 716–729.

CENTRAL STATISTICAL AUTHORITY. 2007. Population and Housing Census of Ethiopia.

CRENSHAW K. 1989. Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. *University of Chicago Legal Forum*, Vol. 1989, No. 1, pp. 139–167.

CRENSHAW K. 1991. Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review,* Vol. 43, No. 6, pp.1241–1299.

DAHL M., KROG N. 2018. Experimental Evidence of Discrimination in the Labour Market. *European Sociological Review*, Vol. 34, No. 4, pp. 402–417.

DEROUS E., PEPERMANS R. 2019. Gender Discrimination in Hiring: Intersectional Effects with Ethnicity and Cognitive Job Demands, *Archives of Scientific Psychology*, Vol. 7, No. 1, pp. 40–49.

DI STASIO V., LARSEM E. N. 2020. The Racialized and Gendered Workplace: Applying an Intersectional Lens to a Field Experiment on Hiring Discrimination in Five European Labor Markets. *Social Psychology Quarterly*, Vol. 83, No. 3, pp. 229-250.

EUROFOUND, CABRITA J., VANDERLEYDEN J., BILETTA I., GERSTENBERGER B. 2020. Women and labour market equality: Has COVID-19 rolled back recent gains? EU Publications Office.

FERRANT G., KOLEV A. 2016. The economic cost of gender-based discrimination in social institutions, OECD Publishing, Paris.

GONZÁLEZ M. J., CORTINA C., RODRÍGUEZ J. 2019. The Role of Gender Stereotypes in Hiring: A Field Experiment, *European Sociological Review*, Vol. 35, , No. 2, pp. 187–204.

GRAMOZI A., PALIVOS T., ZACHARIADIS M. 2023. Measuring the welfare costs of racial discrimination in the labor market, *Economic Inquiry*, Vol. 61, No. 2, pp. 232–252.

HARNOIS C. E. 2015. Jeopardy, Consciousness, and Multiple Discrimination: Intersecting Inequalities in Contemporary Western Europe. *Forum*, Vol. 30, No. 4, pp. 971–994.

HEYMANN J., VARVARO-TONEY S., RAUB A., KABIR F., SPRAGUE A. 2023. Race, ethnicity, and discrimination at work: a new analysis of legal

protections and gaps in all 193 UN countries, *Equality, Diversity and Inclusion*, Vol. 42, No. 9, pp. 16–34.

KRAFFT C. 2023. Do Employers Discriminate Against Married Women? Evidence from A Field Experiment in Egypt.

LANCEE B. 2021. Ethnic discrimination in hiring: comparing groups across contexts. Results from a cross-national field experiment, *Journal of Ethnic and Migration Studies*, Vol. 47, pp. 1181–1200

LIPPENS L., VERMEIREN S., BAERT, S. 2023. The state of hiring discrimination: A meta-analysis of (almost) all recent correspondence experiments, *European Economic Review*, Vol. 151.

OREOPOULOS PHILIP. 2011. Why Do Skilled Immigrants Struggle in the Labor Market? A Field Experiment with Thirteen Thousand Resumes. *American Economic Journal: Economic Policy,* Vol. 3 , No. 4, pp. 148–71.

PHELPS S. 1972. The Statistical Theory of Racism and Sexism, *American Economic Association*, Vol. 62, No. 4, pp. 659–661.

SEYRANIAN V., ATUEL H., CRANO W. D. 2008. Dimensions of majority and minority groups, *Group Processes and Intergroup Relations*, Vol. 11, No. 1, pp. 21–37.

STANILA L., VASILESCU M. D., MILITARU E. 2020. Investigating labor market discrimination in Romania, *Sustainability*, Vol. 12, No. 12.

ZHANG J., JIN S., LI T., WANG H. 2021. Gender discrimination in China: Experimental evidence from the job market for college graduates, *Journal of Comparative Economics*, Vol. 49, No. 3, pp. 819–835.

ZWYSEN W., DI STASIO V., HEATH, A. 2021. Ethnic Penalties and Hiring Discrimination: Comparing Results from Observational Studies with Field Experiments in the UK, *Sociology*, Vol. 55, No. 2, pp. 263–282.

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DOUBLE BARRIERS: GENDER AND MIGRATION BACKGORUND IN STEM STUDIES ACCESS

Eugenia Bellini, Cinzia Conti, Francesca Dota, Massimo Strozza

Abstract. Gender segregation in STEM higher education is creating a gender gap, meaning that in some disciplines female representation does not even reach 30% of the total. In Italy, according to the latest data released by the Ministry of University and Research (MUR), women represent nearly 56% of all university enrolments in the 2024/2025 academic year, but less than 38% in STEM fields. Furthermore, national and international literature highlights significant challenges for foreign students in the transition to university studies (Buonomo *et al.,* 2024). It is hypothesized that in Italy, both gender and citizenship may play an important role in the choice of a STEM path, and that foreign girls could be doubly disadvantaged. This study, based on a longitudinal dataset derived from record linkage of ISTAT survey data on second-generation students (2015) and University Student Registry administrative data (from the 2015-2016 to the 2022-2023 academic years), aims to provide an initial contribution to identifying potential individual and family factors underlying the choices of second-generation students.

Using logistic regression models, the STEM choices of second-generation girls are analysed by taking into account potential interaction effects related to personal characteristics, educational background, and family status.

1. General framework and research hypothesis

Despite notable progress, students with an immigrant background continue to face significant disparities in opportunities to achieve their full academic potential (Alarcón, Parella, & Yiu, 2014). Often part of socioeconomically disadvantaged communities, these students' aspirations and achievements are strongly influenced by family background and social networks (Alba & Holdaway, 2013), frequently resulting in lower academic and professional outcomes compared to native-born peers.

Research on the educational aspirations (Conti & Prati, 2020) and achievements of immigrant students in Italy (Buonomo *et al*., 2023; Buonomo *et al*., 2024) indicates that foreign students not only show a lower inclination to pursue higher education but also encounter greater challenges than Italians in realizing their goals.

Multiple factors—including personal, familial, and relational characteristics—shape both aspirations and outcomes (Buonomo *et al.,* 2025).

International literature has highlighted the importance of ethnic and socioeconomic factors in educational trajectories, particularly in STEM fields (Science, Technology, Engineering, and Mathematics). For instance, Canadian research shows that students' decisions to pursue STEM are strongly affected by high school preparation in mathematics and science, parental education, and family income, with additional variations by gender and ethnicity (Finnie & Child, 2018). Similarly, socioeconomic and occupational backgrounds of parents significantly influence STEM achievement, with gender and ethnic origin further affecting outcomes (Gutfleish & Kogan, 2022).

In Italy, according to the Ministry of University and Research (MUR), 26.5% of university students were enrolled in STEM disciplines in 2022-2023, a proportion higher among international students (40.5%). Gender disparities are substantial: 38.3% of males versus 17.4% of females in STEM. Among foreign students who graduated from Italian high schools, 26.3% enrol in STEM, with an even wider gender gap: 45.1% of males versus 15.6% of females.

There remains a lack of detailed analysis on the personal and family factors influencing second-generation students' educational choices. This study uses an original dataset derived from record linkage of ISTAT survey data on second-generation students (2015) and MUR administrative data (2015-2016 to 2022-2023) to address this gap.

Second-generation students face multiple selection processes in transitioning to higher education. Not all remain in Italy, and many—more than Italian peers—opt not to enrol in university. Data also suggest that foreign students tend to make certain educational choices more frequently. This study traces the pathways toward university for foreign students in upper secondary schools, focusing on factors (territorial, school-related), behaviors (relational, participatory, cultural), and characteristics (personal, familial, migratory) associated with the choice of scientific-disciplinary groups, particularly STEM.

We hypothesize that gender and citizenship play a critical role in the selection of STEM pathways in Italy, potentially placing foreign girls at a double disadvantage. Previous research indicates that gender differences in education may be shaped by the migration experience (Ravecca, 2010).

2. Data and methods

The "Integration of the Second Generation" (ISG) survey, conducted by Istat in 2015 with funding from Italy's Ministry of Interior and the European Union's Fund

for the Integration of Third-Country Nationals, examined the integration of second-generation immigrants. The survey focused on students in secondary schools with at least five foreign students and included those with an immigrant background, particularly students with non-Italian citizenship, including those born in Italy to foreign parents. To provide a comprehensive understanding of integration, the survey also included Italian-citizen students as a control group (Conti & Quattrociocchi, 2017; Conti & Prati, 2021).

The sample follows a two-stage selection process. The first-stage units are schools with at least five foreign students, and the second-stage units are individual students. The selection list was based on the archive of the Ministry of Education, University, and Research. A total of 1,448 schools were selected. Istat interviewed 38,054 foreign students, along with an equivalent number of Italian students as a control group. This sample allows for detailed analysis at a territorial level and represents the top ten nationalities, three of which are also represented at the regional level. In this study, the focus is limited to students attending upper secondary school in 2015.

To study university transitions and educational choices of second-generation students, data from the Ministry of University and Research (MUR) on university enrolments from the academic years 2015–2016 to 2022–2023 were used. An integrated dataset was built through record linkage between administrative data and the ISG 2015 survey, allowing longitudinal analysis of students' educational trajectories from high school to university, including their field-of-study choices (STEM vs. non-STEM).

The analytical dataset combines selected information from multiple sources: the ISG 2015 survey, the Base Register of Resident Individuals (2018–2022), and the MUR archives on university enrolments and degree programs (2015–2023).

Overall, the cohort of upper secondary school students consists of approximately 1,308,000 individuals (corresponding to 35,025 respondents to the survey), with over half located in the North (54.1%), one-quarter in Central Italy (25.1%), and one-fifth in the South (20.8%). In 36.3% of cases, students attend academic high schools (licei), while 63.7% attend technical or vocational schools. Males represent 51.7% of the cohort and females 48.3%, and approximately 12% are foreign students.

The integration of ISG 2015 data with the Base Register enabled tracking of students' life trajectories over time. Specifically, it allowed identification of both their presence or absence in the population register and any transitions to Italian citizenship—two key indicators for analysing social and civic integration processes

Linkage with MUR data enabled analysis of transitions to tertiary education and students' choices regarding STEM versus non-STEM disciplines. Additionally, the ISG 2015 survey provided crucial variables not available in administrative sources, such as migratory background, family socio-economic and employment conditions,

social integration, and aspirations of second-generation students. These variables were included in statistical models as potential factors associated with the likelihood of choosing a STEM degree. Overall, the construction of this integrated dataset allows for a longitudinal and multidimensional study of the educational and social pathways of second-generation youth.

Through descriptive and multivariate analyses, we aim to investigate the relationship between the decision to pursue a STEM course of study at university and the socio-demographic characteristics of respondents and their families

3. Descriptive results

Considering the stability of the presence in Italy and also the inclusion process the record linkage reveals that in 2022, 8,9% of foreign students enrolled in upper secondary school in 2015 were no longer listed in the resident population register, suggesting possible international mobility or a discontinuity in their migration trajectory. At the same time, 35% had acquired Italian citizenship, marking a significant milestone in their stabilization process and a tangible indicator of social inclusion.

About the education paths the record linkage stresses that among students at high-school in the 2015 (Istat ISG), a share of 50,0% enrolled in university for at least one academic year over 2015-2016 and 2022-2023. This share drops to 41.2% among foreign students were born in Italy and it rises to 52.0% among the Italians control group. The share of females enrolled in university is higher than male peers, this gender gap increases among the second-generation group of students. The Lyceum students are more likely to enrol in university (8 out of 10 students) compared to technical or vocational school students (3 out of 10). According to Paba and Bertozzi findings (2017), our study confirms the high proportion of foreign students with a Lyceum diploma who do not continue their study compared to Italian native peers. Among Italians more than 8 out of 10 were enrolled in university compared to 6 out of 10 students of foreign background.

The access to university is a difficult goal for the children of immigrants even when they aspire to continue their studies (Buonomo *et al*., 2023; Buonomo *et al*., 2024). In the cohort of Istat ISG students 78.5 per cent of the students who intended to enrol in university realized their aspiration over the academic year 2015-2016 and 2022-2023. There are high differences again between Italians and the immigrant children (80.3 per cent compared to 62.2 per cent). Among second-generation students, the share of students with a realized aspiration to continue their studies at university is higher among those who have fully completed their studies in Italy because they were born in Italy or arrived before primary school (Fig.1).

Figure 1 – *High-school students of ISTAT Second Generation Survey 2015 enrolled in university (at least one year in the period 2015-2023), by future intentions expressed during the survey and migratory generation by gender (%).*
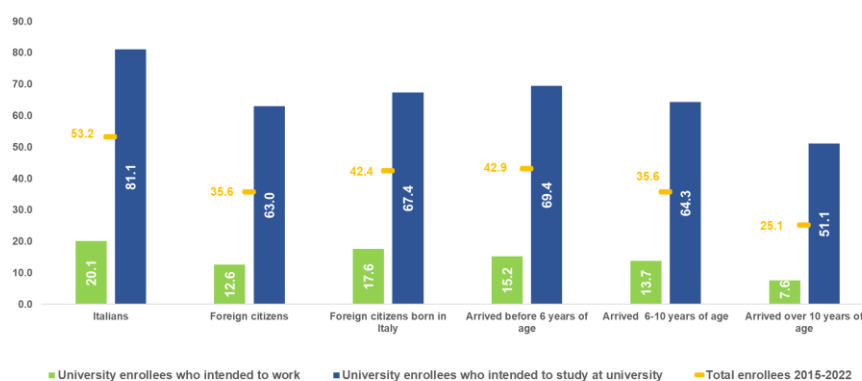
Source: elaboration on Istat and MUR data

Building on what has been explored in previous research, this work aims to specifically explore the transition towards STEM fields.

According to the literature, STEM choice is gender-driven. The longitudinal analysis of integrated data founds that gender disparities are clearly visible across all categories (Tab.1). Overall, women are more likely to be enrolled in university than men (58.6% vs 42.0%), and this outcome is especially pronounced among Italian students (60.5% for women vs 44.2% for men). However, this female advantage diminishes sharply in STEM fields, where only 11.2% of women are enrolled compared to 18.6% of men. This suggests persistent gender segregation in academic disciplines, with women underrepresented in STEM despite their overall higher university participation.

Ethnic disparities are also evident. Foreign citizens have substantially lower enrolment rates than Italians, both overall and within STEM and non-STEM fields. For instance, only 34.8% of foreign students are enrolled, compared to 52.0% of Italian students (Tab.1). The gap is even more striking among foreign males, whose enrolment rate is just 25.0%. This suggests that foreign students, particularly males, face structural or socioeconomic barriers to accessing higher education. Many studies have individuated several factors that make it more difficult for foreign-born students to access university education in Italy (Buonomo *et al.* 2024, Buonomo *et al.* 2025). It is interesting to note that among men, the differences between Italian and foreign students narrow when we consider STEM fields. When foreign students decide to pursue university studies, they appear to choose STEM fields more frequently than their Italian peers—perhaps also because, as a result of a more

selective process, it is often the most capable students who make it to enrol in university. It should also be considered that families likely view STEM pathways as a more secure investment in their children's future.

It is different when we consider the situation for girls.

Combining both gender and ethnic lenses reveals compound disadvantages: foreign females are doubly marginalized in STEM, with an enrolment rate of just 8.5%, the lowest of any group. On the other hand, Italian females are the most represented in non-STEM fields (48.9%), indicating a strong gendered preference or channelling into certain disciplines.

Table 1 – *High-school students of ISTAT Second Generation Survey 2015 enrolled in university, STEM and not-STEM, at least in one academic year between 2015-2023 by gender (%).*

	Enrolled in university			Enrolled not STEM			Enrolled STEM		
	Male	female	total	male	female	total	male	female	Total
Italian	44.2	60.5	52.0	24.8	48.9	36.4	19.3	11.6	15.6
Foreign citizens	25.0	44.9	34.8	12.4	36.5	24.2	12.6	8.5	10.6
Total	42.0	58.6	50.0	23.4	47.4	35.0	18.6	11.2	15.0

Source: elaboration on Istat and MUR data

Considering both gender and the different countries of citizenship - Albania, Romania, Morocco, the Philippines, and China - clear differences emerge not only in overall participation in higher education but also in the specific field of STEM, reflecting varying cultural, educational, and possibly socio-economic factors. About gender Albanian students show a remarkable imbalance in university enrollment, with a very high rate of female participation (55.0%) compared to males (23.2%). However, when it comes to STEM fields, both genders register much lower percentages, and the gender gap narrows considerably (12.0% male, 10.3% female). This suggests that although many Albanian women pursue higher education, they may tend to choose fields outside of STEM (Tab.2). Chinese and Romanian males are the most likely to pursue STEM disciplines, while female students, particularly from Morocco and the Philippines, are the least represented in these areas. Chinese students show a relatively balanced university enrollment between genders (34.9% male, 36.9% female), yet a striking difference emerges in STEM: Chinese males (21.4%) are more than twice as likely as females (10.0%) to pursue studies in these fields. China stands out for having the highest male participation in STEM.

Table 2 − *High-school students of ISTAT Second Generation Survey 2015 enrolled in university (Total and STEM) at least in one academic year between 2015-2023 by gender and selected countries of citizenship (%).*

Countries of citizenship	Enrolled in university			Enrolled in STEM		
	male	Female	Total	male	female	Total
Albania	23.2	55.0	38.4	12.0	10.3	11.2
Romania	27.6	45.5	36.9	14.1	8.2	11.0
Morocco	17.4	42.5	29.9	8.0	7.5	7.7
Philippines	25.7	41.5	34.9	11.1	9.1	10.0
China	34.9	36.9	36.0	21.4	10.0	14.9
Total Foreign countries	25.0	44.9	34.8	12.6	8.5	10.6

Source: elaboration on Istat and MUR data

Differences emerge across a variety of academic and socio-demographic characteristics (Tab. 3).

Table 3 − *Percentage of STEM students from the ISTAT Second-Generation Survey 2015 with at least one year of enrollment (2015–2023), by gender and family characteristics and educational background..*

	Gender		
	male	female	Total
Repeating a school year			
Yes	7.1	3.2	5.6
No	24.0	13.5	18.7
Academic performance			
Good/very good	25.0	13.6	19.0
Low academic performance	12.3	7.4	10.4
Post secondary-school plans			
Work	6.3	3.4	5.3
Other plans	16.9	6.4	11.8
University	36.4	16.1	23.2
Parental Education			
Up to lower secondary education	9.9	6.2	8.1
Upper secondary diploma	20.1	12.2	16.2
University degree or higher	30.0	18.3	24.6
Type of High-School			
Academic high school	38.6	18.2	25.9
Technical or vocational institute	12.4	5.4	9.6
Math grade			
Above average of 8	30.9	19.9	25.2
Below average of 8	16.8	9.2	13.2
Total	19.6	11.7	15.8

Source: provisional elaboration on Istat and MUR data

For instance, students who have repeated a school year are underrepresented in STEM, particularly among females, who account for only 3.2% of STEM enrollees in this group compared to 7.1% of males. Academic performance also plays a key role: among students with good or very good grades, males constitute 25.0% of STEM enrollees, whereas females make up 13.6%.

Future educational intentions are strongly correlated with STEM enrollment. Students who plan to attend university are overrepresented, with males at 36.4% and females at 16.1%. Parental education also appears to be influential: children of parents with a university degree are more likely to enrol in STEM, with males representing 30.0% and females 18.3%. School type and math performance similarly exhibit a pronounced gender gap. Students from academic high schools and those with math grades of 8 or higher are more likely to enrol in STEM, with males dominating both categories.

4. Regression model

A logistic regression model was used in this analysis to explore the relationship between various individual, familiar, and contextual factors and students' educational choices, as suggested in literature[1]. The analysis is limited to students who attended upper secondary school during the ISG survey and were enrolled in an Italian university for at least one year between 2015 and 2022. The outcome variable is: whether a student enrolled in a STEM course or in a non-STEM course.

The results of the logistic regression model offer a clear picture of the factors that influence students' educational choices. Among all the variables considered, gender and citizenship emerge as particularly significant in shaping these trajectories.

Starting with gender, the effect is both substantial and highly significant. Female students, when compared to their male peers, are much less likely to reach the considered outcome. The odds ratio is 0.250, indicating that, all other factors being equal, girls have 75% lower odds than boys. This is a striking result, which points to a persistent gender gap. It suggests that girls may encounter specific barriers that limit their progression or aspirations within the education system.

Citizenship is also a key variable. Compared to Italian students (the reference group), several foreign student groups show a higher likelihood of enrolling in STEM programs. Notably, students from China are the most likely to choose STEM, with an odds ratio of 1.709, suggesting they are over 70% more likely than Italians to do so. It should be remembered that these are Italian students from the control group, and they are not representative of all Italian upper secondary school students.

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[1] Normalized weights were applied to individuals in the model.

Table 4 – *Determinants of STEM choice among students enrolled in university for at least one academic year in the period 2015-2023. Odds-ratio and p-values of selected characteristics with adding control variables [a]. Logistic regression model. Students enrolled upper secondary school in 2015 (grades 11-13).*

Variables	Odds – ratio	p-values[b]
Gender (ref. Boys)		
- Girls	0,250	***
Parental Education (ref. Upper secondary diploma)		
- Up to lower secondary education	0,985	
- University degree or higher	1,187	***
Geographical Area of residence (ref. North)		
- Central Italy	0,864	***
- South and Islands	1,000	
Country of Citizenship (ref. Italy)		
- Albania	1,244	***
- Romania	1,144	**
- China	1,709	***
- Philippines	1,183	
- Morocco	1,137	
- Other Country of citizenship (rif. Italy)	1,231	***
Repeating a school year (ref. No)		
- Yes	*0,638*	***
Academic performance (ref. good/very good)		
- Low academic performance	0,920	***
Perceived Economic Condition (ref. neither poor nor rich)		
- Rich/very rich	0,723	***
- Poor/Very poor	1,004	
Post secondary-school plans (ref. University)		
- Work	0,537	***
- Other plans	0,794	***
Type of High-School (ref. academic high school)		
- Technical or vocational institute	0,858	***
Math grade (ref. above average of 8)		
- Below average (ref. above average of 8)	0,561	***
Pseudo R2	0.3772	
N	15875	

(a) *Control variables: Gender, Area of Residence, Parental Education, Country of Citizenship, School Experiences path variables as Repeating a School Year, Academic Performances, Math Grade, Type of High School, Post Secondary School Plans.*
(b): *Statistical significance of the relationship is marked by * if p<0,1, ** if p<0,05, *** if p<0,01*
Source: our elaboration on ISG data (2014/15) and MUR data on university students in the period 2015-2023

Students from Albania and Romania also have significantly higher odds (OR = 1.244 and 1.144, respectively), indicating a clear tendency among some foreign groups to pursue STEM studies.

Other variables also play a meaningful role. Students with highly educated parents are more likely to enter STEM fields, while those with lower parental education do not differ significantly from the reference group. Educational path is especially important: students who have repeated a grade, those with low math performance, or those who report poor general academic performances are all significantly less likely to choose STEM. This highlights the role of prior preparation and confidence in academic ability in influencing study choices.

Furthermore, students who plan to enter the labor market immediately after high school are much less likely to enrol in a STEM degree (OR = 0.537), as are those attending technical and vocational schools compared to those from Lyceum programs. Interestingly, coming from a rich or very rich family is associated with a lower likelihood of choosing STEM (OR = 0.723), which might suggest that wealthier students may have access to broader career options and may be drawn to other fields, such as economics, law, or the humanities.

5. Discussion and further steps

Despite increasing presence in Italian schools and gradual integration in terms of language and academic participation, second-generation students continue to face structural barriers and unequal opportunities, which affect their transitions into higher education.

A key result is the persistent role of gender and citizenship in shaping academic choices. Other important factors include academic background and family characteristics. Students with higher academic performance, no grade repetition, and higher parental education levels are more likely to pursue STEM paths. Conversely, those from technical or vocational schools, or who plan to enter the workforce immediately after high school, are significantly less likely to choose STEM. Interestingly, students from wealthier families are also less likely to choose STEM programs, possibly because they have access to broader academic and career options outside the scientific-technological fields. Unfortunately, the survey does not allow us to take into account some factors that are considered important in the literature for university choice, such as teachers' recommendations and the influence of parents and peers. However, this work could be further developed in the future. It is important to acknowledge that the analysis may be subject to selection effects. Students who reach university - especially among foreign young people- are often

those with stronger academic profiles or higher motivation, which could partially explain their overrepresentation in certain fields like STEM.

Future research should aim to apply models that account for potential selection mechanisms, in order to better understand the dynamics underlying educational inequality. A further step would be to consider separately those who were identified as foreign in the 2015 survey but have since acquired Italian citizenship, to gain a clearer understanding of the relationship between integration pathways and educational choices.

It would also be valuable to extend the study with a model that includes an interaction between gender and country of citizenship, to investigate how gender and migration jointly influence STEM choices. The development of science, technology, engineering, and mathematics (STEM) fields requires more qualified professionals; however, gender segregation in higher education continues to produce a notable gender gap (Verdugo-Castro *et al.*, 2022).

There are indications that foreign students may be more inclined to embrace the challenges posed by new technologies by choosing STEM pathways, but this trend seems to hold primarily for male students.

Overall, this study highlights the complex interplay of gender, citizenship, and academic preparation in shaping access to STEM education. Addressing these disparities will require targeted policy measures, improved guidance in secondary schools, and broader efforts to support the educational ambitions of second-generation students, particularly girls.

Acknowledgements

References

ALARCÓN A., PARELLA S., YIU J. 2013. Educational and Occupational Ambitions among the Spanish 'Second Generation': The Case of Barcelona, *Journal of Ethnic and Migration Studies*, Vol. 40, No. 10, pp. 1614–1636.
ALBA R., HOLDAWAY J. (Eds.). 2013.*The Children of Immigrants at School: A Comparative Look at Integration in the United States and Western Europe*. NYU Press.

BUONOMO A., CONTI C., GABRIELLI G.,ROTTINO F.M., STROZZA S. 2025. Do aspirations during upper school influence university enrollment of immigrants' children?, *RIEDS. Rivista Italiana di Economia Demografia e Statistica*, Vol. LXXIX-2 April-June, pp.127-138.

BUONOMO A., CONTI C., GABRIELLI G.,ROTTINO F.M. 2023. *La transizione scuola-università degli alunni di origine straniera: un primo approccio esplorativo*. In: FELLINI I., STROZZA S., VITTORIA A. (Eds.) *Gli immigrati in Italia: tessere di una realtà in cambiamento*, Special Issue, *La Rivista delle Politiche Sociali*, Vol. 1, No.gen-mar, pp.57-71.

BUONOMO A., GABRIELLI G., GARGIULO G., ORIENTALE-CAPUTO G. 2024. Lyceum and university aspirations among migrants and non-migrants in Italy, *British Educational Research Journal*, Vol. 50, No.3, pp. 1208-1228

CONTI C., PRATI S. (Eds.). 2020. *Identità E Percorsi Di Integrazione Delle Seconde Generazioni In Italia*. Istat, Metodi-Letture Statistiche.

CONTI C., QUATTROCIOCCHI L. (Eds.). 2017. *L'indagine sull'integrazione delle seconde generazioni: obiettivi, metodologia e organizzazione*, Istat, Metodi-Letture Statistiche.

GUTFLEISCH T., KOGAN I. 2016. Parental occupation and students' STEM achievements by gender and ethnic origin: Evidence from Germany, *Research in Social Stratification and Mobility*, Vol. 44, pp. 13-27.

FINNIE R., CHILDS S. 2012. Who goes into STEM disciplines? Evidence from the Youth in Transition Survey, *International Journal of Educational Research*, Vol. 57, pp. 24-38.

PABA S., BERTOZZI R. 2017. What happens to students with a migrant background in the transition to higher education? Evidence from Italy, *Rassegna Italiana di Sociologia*, Vol. 58, No. 2, pp. 315-351.

RAVECCA A. 2010. Immigrant children school experience: how gender influences social capital formation and fruition?, *Italian Journal of Sociology of Education*, Vol. 2, No. 1, pp. 49-74.

VERDUGO-CASTRO S., GARCÍA-HOLGADO A., SÁNCHEZ-GÓMEZ MC. 2022. The gender gap in higher STEM studies: A systematic literature review, *Heliyon*, Aug 19; Vol. 8, No. 8, e10300.

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DIGITAL INEQUALITY AND MIGRANT STUDENTS' EDUCATIONAL PERFORMANCE: EVIDENCE FROM CAMPANIA[1]

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Abstract. This article explores the relationship between digital access, migratory background, and educational performance among Grade 10 students in the Italian region of Campania. Using data from the 2022-2023 INVALSI assessment and employing multilevel modeling, the study examines how inequalities in access to digital technologies impact proficiency in the Italian language, focusing particularly on differences between native-born students and those with a migratory background. The findings reveal significant disparities in digital access, especially among first-generation immigrant students; over one-quarter of these students report lacking both a personal computer and an internet connection at home. These material disadvantages are strongly correlated with lower educational achievement. For students with a migratory background, access to digital resources emerges as a strong predictor of language proficiency, regardless of socio-economic status. Additionally, second-generation students consistently outperform their first-generation peers, although both groups still fall short compared to native-born students. The analysis indicates that while digital inclusion is important for addressing educational inequality, it is not sufficient on its own to overcome the broader socio-cultural and institutional barriers faced by youth of immigrant origin. The results highlight the need for targeted policy responses that combine improved access to technology with broader integration strategies, particularly in regions experiencing significant structural disadvantages.

1. Introduction

In recent decades, increased immigration has reshaped the demographic and social landscape of many European regions, generating significant challenges and opportunities within educational systems. Italy has been no exception, experiencing a substantial rise in the number of school-age children with a migratory background. This demographic shift has intensified concerns about persistent educational disparities between native-born students and those with immigrant origins, especially in regions marked by structural disadvantage. Research consistently shows that these disparities are shaped by a combination of socio-economic

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[1] This work is the result of a close collaboration among the authors.

vulnerability, limited familiarity with the host country's schooling system, and linguistic barriers (Rumberger 1995; Strozza 2015; Strozza *et al*., 2018).

While traditional explanations for achievement gaps have focused on parental education, economic hardship, and language proficiency, increasing attention has been paid to the role of digital access as a determinant of educational opportunity (Azzolini and Schizzerotto, 2017; Buonomo *et al.* 2024). The growing integration of digital technologies into teaching and learning processes has made access to a personal computer and a stable internet connection indispensable for full participation in school life. This trend was further accelerated by the COVID-19 pandemic, during which remote learning became the norm across education systems. Students without adequate digital tools, particularly those from low-income or immigrant households, were placed at an acute disadvantage, unable to engage fully with online materials, maintain continuity in learning, or develop digital competencies essential for academic success (Buonomo *et al.,* 2019).

The interplay between digital deprivation and educational underachievement is particularly relevant for first-generation immigrant students, who frequently encounter multiple vulnerabilities: economic hardship, limited parental support in navigating technological demands, and fewer opportunities for digital skill acquisition (Buonomo *et al.,* 2025). Second-generation students, though typically more integrated linguistically and socially, are also affected by unequal access to digital infrastructure within the home (Feliciano 2001). These patterns raise critical questions about the extent to which digital exclusion may compound existing inequalities in educational outcomes, particularly in territories where structural disadvantage is most pronounced.

Despite growing scholarly attention to digital divides, much of the existing research has been conducted at the national level, often overlooking the importance of regional contexts. Yet, localised socio-economic conditions, infrastructural disparities, and variations in school provision strongly mediate the lived experience of students and their ability to benefit from digital tools. Campania, a region in Southern Italy with both a significant immigrant student population and high levels of socio-economic disadvantage, represents a salient case for investigating these dynamics.

This study focuses on Grade 10 students in Campania to assess how digital access, or lack of it, intersects with migratory background in shaping language proficiency outcomes. Employing recent standardised data and a multilevel modelling approach, the analysis distinguishes between first- and second-generation immigrant students and their native peers, while controlling for relevant socio-demographic variables. In doing so, it addresses a critical empirical gap and contributes to a better understanding of how digital inequality functions as both a symptom and a driver of educational stratification. The findings not only highlight

the persistent disadvantages faced by immigrant-origin students in the digital domain but also underscore the urgent need for regional policies that promote equitable access to educational technologies and foster inclusive learning environments for all.

2. Theoretical background

Persistent disparities in educational achievement between native students and those from immigrant backgrounds have been widely documented across various countries. These differences arise from a mix of linguistic, socio-economic, and institutional factors that affect students' academic paths. In countries like Italy, where immigration has significantly increased in recent decades, educational systems have faced challenges in accommodating a more diverse student population, many of whom may have limited knowledge of the host country's language and educational practices. First-generation immigrant students typically encounter the toughest obstacles, while second-generation students generally show better outcomes. However, they still face socio-economic challenges and varying levels of integration into society (OECD 2006).

A variety of explanatory frameworks have been proposed to understand the disparities in educational outcomes. Classical assimilation theory suggests that, over time, the academic performance of immigrant-origin students will converge with that of their native peers (Alba, and Nee 1997). However, empirical evidence reveals a more complex picture, with segmented pathways where generational progress is uneven and heavily influenced by social class, ethnicity, and the structures of educational opportunities (Portes and Zhou 1993). In highly selective educational systems, early academic tracking and limited institutional support often reinforce existing inequalities, placing immigrant students, particularly those from disadvantaged households, at a significant disadvantage. Factors such as parental education, occupational status, and access to cultural capital continue to be strong predictors of academic success (Buonomo *et al.,* 2024).

Within this broader context, digital access has emerged as a new and increasingly salient axis of educational inequality. The integration of digital technologies into everyday teaching and learning practices, accelerated by the COVID-19 pandemic, has deepened the divide between students who can readily engage with digital learning environments and those who cannot. The so-called "digital divide" is often conceptualised in two dimensions: a first-order divide related to basic access to devices and internet connectivity, and a second-order divide concerning the ability to use these tools effectively (Di Maggio *et al.,* 2004). While both dimensions are relevant, basic infrastructural access remains a critical barrier for many students, particularly those from migrant and low-income backgrounds.

Unequal access to digital resources affects not only students' ability to complete assignments or access information, but also their long-term academic engagement and skill development. For immigrant-origin students, digital exclusion can reinforce other structural disadvantages, including language difficulties, lack of parental educational support, and reduced familiarity with national curricula (Coleman 2021). Conversely, digital inclusion, when paired with adequate support, can serve as a compensatory resource that mitigates, at least in part, the effects of social disadvantage.

Despite increasing policy attention, empirical research on the specific role of digital access in shaping immigrant students' academic performance in Italy remains limited. Most studies address socio-economic determinants of educational inequality but fail to isolate the impact of technological exclusion. This gap is particularly concerning given the growing centrality of digital infrastructure in the contemporary education landscape. While digital inclusion alone cannot resolve the broader challenges faced by marginalised students, it constitutes a necessary foundation for equitable participation in school life.

Understanding how digital inequalities intersect with migratory background is therefore essential. It calls for a more integrated approach that considers both material and structural factors in explaining achievement gaps. In contexts where socio-economic vulnerability and high immigration rates coincide (such as Campania) examining the role of digital access becomes critical to identifying how disadvantage is produced and sustained within the educational system. This study contributes to this topic by investigating how differences in digital access relate to language proficiency among native and immigrant students, highlighting the intergenerational and socio-economic dynamics that shape educational inequality.

3. Data and methods

This study draws on data from the 2022-2023 administration of Italy's INVALSI standardised assessment, which tests nearly the entire national student population. The analysis focuses on students in Grade 10 (approximately age 15), a critical stage in upper secondary education just before compulsory schooling ends. This cohort allows for a comprehensive assessment of educational outcomes before dropout becomes legally permissible.

Our dependent variable is Italian language proficiency, measured through a Rasch-scaled INVALSI test score that enables comparability across students and schools. The analysis concentrates on how digital access and migratory background influence these outcomes.

Digital access is captured through students' self-reported access to both a personal computer and a home internet connection, an indicator reflecting basic technological availability. Migratory background is measured using both citizenship and generational status, distinguishing between first-generation (foreign-born), second-generation (foreign citizens born in Italy), and native students.

To ensure robustness and disentangle the potential interaction between digital access and migratory background, we implement two models, each incorporating different operationalisations of socio-economic status (SES). The first model extends a baseline set of demographic and educational covariates (namely gender, school track, and region of enrolment) by including a series of disaggregated SES indicators at the individual level. These comprise parental educational attainment (highest qualification obtained by either parent), parental employment status (whether at least one parent is in work), and a set of household-level conditions reflecting the student's learning environment, such as the presence of a dedicated study space, a personal desk, and a private bedroom. This detailed specification allows for control how specific dimensions of economic and cultural capital are associated with both digital access and academic performance.

The second model replaces these disaggregated controls with a composite SES index drawn from the INVALSI dataset. This index consolidates multiple socio-economic attributes, including those included in the first model, while also incorporating additional proxies of household cultural capital, such as access to encyclopaedias and home digital resources. This aggregated measure serves both as an alternative SES operationalisation and a robustness check for the initial specification. Furthermore, Model 2 integrates a contextual SES variable at the school level, which reflects the average SES profile of the student body within each institution.

In order to explore more precisely the interaction between digital access and migratory background, we implemented an alternative modelling strategy inspired by the contrast-based approach outlined in Yaremych *et al*. (2023). Rather than including digital access and migratory generation as independent covariates, we introduced three analytically distinct contrasts: (1) a Digital Access contrast, distinguishing between students with and without access to key digital resources; (2) a Digital Migrant vs. Digital Native contrast, comparing immigrant-origin students with digital access to their digitally connected native-born peers; and (3) a Digital Generational contrast, isolating the difference in outcomes between first- and second-generation immigrant students who both report access to digital tools.

In this specification, digital access is defined using a stringent operational criterion: students are classified as digitally connected only if they report simultaneous access to both a personal computer and an internet connection within the home. This dual-condition measure offers a more comprehensive representation

of effective digital availability, avoiding partial or inadequate forms of technological access.

The models were estimated separately using two analytical samples. The first sample includes the entire population of Grade 10 students in the Campania region, which allows for an assessment of broader patterns and disparities among different groups. The second sample focuses specifically on students with a migratory background, enabling a more detailed examination of variations within this group and intergenerational differences among immigrant-origin students.

4. Results

In Campania, the analysis of Grade 10 students in the 2022-2023 school year reveals significant inequalities in access to digital technologies, particularly among pupils with a migratory background. A substantial share of students in this group, especially those born abroad, report lacking essential digital resources such as a personal computer or a reliable internet connection at home. Notably, over one in four first-generation immigrant students are digitally excluded, lacking both a computer and internet access (28.3%). Even among second-generation students, levels of digital deprivation remain high, with nearly a quarter reporting insufficient access (26.0%).

These figures reflect a broader pattern of structural disadvantage affecting immigrant-origin students in Campania, many of whom reside in socio-economically marginalised households. While digital inequalities also affect some native-born students, the gap is markedly more pronounced among those with a migratory background. This digital divide raises serious concerns regarding the equitable distribution of learning opportunities, especially as educational processes increasingly rely on technological infrastructure.

Language proficiency outcomes mirror these disparities. Students with full digital access, defined as having both a personal computer and internet connection at home, consistently achieve higher scores in Italian language assessments compared to their digitally excluded peers. This holds true across all student groups. Among native-born students, the mean score in Italian is significantly higher for those with access to digital tools. Yet the performance gap is particularly acute among immigrant-origin students. First-generation students without digital access show the lowest average proficiency, while those with access perform considerably better, though still below the levels of their native peers. Second-generation students occupy an intermediate position, outperforming their foreign-born counterparts but remaining behind native-born pupils.

The multilevel estimates presented in Table 1 further highlight the relationship between digital access, migratory background, and language proficiency in Campania. The results offer robust evidence of the persistent disadvantages faced by immigrant-origin students, while also highlighting the distinct and beneficial role of digital inclusion.

Among the general student population, digital access does not appear to have a statistically significant independent effect on performance in Italian language assessments once we control for socio-demographic and socio-economic variables. In both Model 1 and Model 2, the coefficients associated with digital access are negative and non-significant. This suggests that, for native-born students, the benefits of home technological resources may largely stem from broader patterns of socio-economic advantage. When we take household and institutional socio-economic status (SES) into account, digital access no longer adds explanatory power for this group. However, the findings change significantly when we focus solely on students with a migratory background. In this case, digital access becomes a strong and statistically significant predictor of Italian language proficiency. In Model 1, which includes specific socio-demographic factors and disaggregated SES controls, the effect size is positive, and this association

Table 1 – *Multilevel estimates of Italian language achievement by digital access and migratory generation contrasts[a] (grade 10, school year 2022-2023)[c].*

Proficiency in Italian	Mod.1		Mod.2		Mod.1		Mod.2	
	Coef.	Pval.	Coef.	Pval.	Coef.	Pval.	Coef.	Pval.
	Whole sample				*Foreigners*			
			Campania					
Digital access (ref: no)	-2.822		-2.845		17.171	***	26.635	***
Foreigners digital (Ref: Ita. digital)	-13.015	***	-13.523	***				
2G digital (Ref: 1.5G digital)	5.035	***	5.535	***	6.033	***	7.238	***
N	42544		42544		1704		1704	
AIC	415168		415500		16744		16775	
BIC	415376		415639		16869		16857	
Socio-demographic[b]	✓		✓		✓		✓	
SES student (specific)[b]	✓				✓			
SES student (composite)[b]			✓				✓	
SES institution (composite)[b]			✓				✓	

Table notes. Notes: a. Contrasts include: (1) Digital Access (with vs. without access); (2) Digital Foreigners (migrant vs. native students with digital access); (3) Digital Migratory Generations (generational differences among digitally connected migrant students). b. The ✓ symbol indicates that the corresponding variable is included in the model. A blank cell indicates that the variable is not included. c. Full model in the Table A3.
*Statistical significance: *p < 0.1; **p < 0.05; ***p < 0.01*
Source: INVALSI data.

In addition, the generational gradient within the immigrant population remains clearly visible. Second-generation students with digital access consistently outperform their first-generation counterparts, even when controlling for a comprehensive set of background characteristics. The difference in proficiency between these groups is both statistically significant and substantively meaningful, with positive coefficients in both Models.

Finally, the contrast between digitally connected foreign and native-born students confirms a persistent performance gap. Even when both groups report full digital access, migrant students continue to score significantly lower in Italian in both Models. This suggests that digital access alone is not sufficient to equalise outcomes and that structural and linguistic barriers continue to shape educational trajectories.

5.   Conclusions

This study has examined the intersection between digital access and migratory background in shaping educational outcomes among Grade 10 students in Campania, a region marked by both structural disadvantage and high levels of immigration (compared to other Southern regions). Drawing on recent INVALSI data and employing multilevel modelling, the analysis has revealed three core findings.

First, access to digital tools remains highly unequal, with students from immigrant backgrounds, especially those born abroad, disproportionately affected by digital exclusion. These disparities are not merely a function of household deprivation but reflect broader patterns of structural inequality embedded within the regional educational landscape.

Second, digital access plays a critical, independent role in shaping educational performance, particularly among students with a migratory background. While digital access alone does not account for the entirety of the achievement gap between native and immigrant students, it nonetheless serves as a key enabling factor. Among immigrant-origin students, those with access to both a personal computer and home internet consistently outperform their digitally excluded peers, even when socio-economic conditions are held constant.

Third, important generational differences persist within the immigrant population. Second-generation students perform significantly better than their first-generation counterparts, suggesting that familiarity with the Italian school system and cultural context enhances students' ability to capitalise on digital resources. However, despite this intergenerational improvement, second-generation students still lag behind their native peers, underscoring the continued relevance of structural barriers and the need for targeted intervention.

Taken together, these findings indicate that digital access should be understood not only as a technical issue of infrastructure provision but as a critical dimension of educational equity. Policies aiming to reduce educational disparities in contexts such as Campania must therefore go beyond generic investments in connectivity and address the social and structural conditions that prevent marginalised students from fully engaging with educational technologies.

Acknowledgements

References

ALBA R., NEE V. 1997. Rethinking assimilation theory for a new era of immigration, *International Migration Review*, Vol. 31, No. 4, pp. 826–874.

AZZOLINI D., SCHIZZEROTTO A. 2017. The second digital divide in Europe. A cross-national study on students' digital reading and navigation skills, *Research Institute for the Evaluation of Public Policies*, No. 2, pp. 1–17.

BUONOMO A., CAPECCHI S., DI IORIO F., GIANNANTONI P. 2024. Assessing Literacy Proficiency of Students with a Migratory Background: The Case of Lombardia Region. In *Scientific Meeting of the Italian Statistical Society*, Cham: Springer Nature Switzerland, pp. 303–308.

BUONOMO A., CONTI C., GARCÍA-PEREIRO T., PATERNO A., STROZZA S. 2025. Differences in School Failure in Italy. New Insights from Children of Mixed and Non-mixed Parental Couples. In *Scientific Meeting of the Italian Statistical Society*, Cham: Springer, pp. 284–289.

BUONOMO A., GABRIELLI G., STROZZA S. 2019. Does maternal ethnic identity affect the educational trajectories of immigrant descendants, *Rivista Italiana di Economia Demografia e Statistica*, Vol. 73, No. 3, pp. 101–110.

COLEMAN V. 2021. *Digital Divide in UK Education during COVID-19 Pandemic: Literature Review*. Research Report, Cambridge Assessment.

DIMAGGIO P., HARGITTAI E., CORAL C., SHAFER S. 2004. Digital Inequality: From Unequal Access to Differentiated Use. In NECKERMAN K. (Ed.) *Social Inequality*, New York: Russell Sage Foundation, pp. 355–400.

FELICIANO C. 2001. The benefits of biculturalism: Exposure to immigrant culture and dropping out of school among Asian and Latino youths, *Social Science Quarterly*, Vol. 82, No. 4, pp. 865–873.

OECD. 2006. *Where Immigrant Students Succeed – A Comparative Review of Performance and Engagement in PISA 2003*. Paris: OECD Publishing.

PORTES, A., ZHOU, M. (1993). The new second generation: Segmented assimilation and its variants, *The annals of the American academy of political and social science*, Vol. 530, No. 1, pp. 74-96.

RUMBERGER R.W. 1995. Dropping out of middle school: A multilevel analysis of students and schools, *American Educational Research Journal*, Vol. 32, No. 3, pp. 583–625.

STROZZA S. 2015. L'inserimento scolastico dei figli degli immigrati: una questione aperta, *Rivista delle Politiche Sociali*, No. 2-3, pp. 127–146.

STROZZA S., BUONOMO A., MUCCITELLI P., SPIZZICHINO D., CASACCHIA O., GABRIELLI G. 2018. I giovani stranieri e la scuola. In *Vita e percorsi di integrazione degli immigrati in Italia*, Roma: Istituto Nazionale di Statistica, pp. 193–218.

YAREMYCH H.E., PREACHER K.J., HEDEKER D. 2023. Centering categorical predictors in multilevel models: Best practices and interpretation, *Psychological Methods*, Vol. 28, No. 3, pp. 613.

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DIFFERENCES IN CHRONIC HEALTH ISSUES BETWEEN REFUGEES AND OTHER MIGRANTS: A CROSS-COUNTRY STUDY IN THE EU

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Abstract. This study investigates chronic health disparities between refugees and other migrants in Europe. While economic migrants often benefit from positive health selection, refugees face unique challenges related to trauma and vulnerabilities associated with forced displacement. Using data from the EU-MIDIS II survey (2015-2016), we analyze chronic health conditions by migration status. Descriptive results show variation in the distribution of health issues across a range of individual and contextual characteristics, including age, socioeconomic conditions, length of residence and context of destination. Regression analyses do not show statistically significant differences in the likelihood of reporting long-term health problems between refugees and other migrants. These findings highlight the importance of addressing migrant health disparities through targeted policy interventions, with a particular attention to on socio-economic integration, equitable access to healthcare services, and the role of family support in improving health outcomes across Europe.

1. Introduction

The relationship between migration and health is complex and multifaceted. A growing body of research consistently shows that migrants often arrive in destination countries in relatively good health, largely due to positive selection processes (McDonald and Kennedy 2004; Norredam et al. 2012). Typically, those who choose to migrate are younger, healthier, and more resilient than the broader populations they leave behind. The migration journey itself - often long, challenging, and fraught with risks - requires substantial physical, mental, and financial resources. As a result, only individuals with sufficient social, economic, and personal capital are likely to undertake and complete such journeys successfully. This process is commonly known as the "healthy migrant effect," whereby migrants tend to exhibit better health upon arrival than the average population in their countries of origin (Domnich et al. 2012). However, this positive selection mechanism, generally does not apply to refugees, who represent a distinct category of migrants (Nørredam et al. 2012). Refugees are often forced to flee their countries due to conflict, persecution, or disaster, leaving little time for preparation. As a result, they frequently arrive in destination countries in poorer health, having endured severe physical and psychological stress during their displacement (Crepet et al. 2017; Simonnot et al. 2016). The urgent and unplanned nature of their migration, coupled with limited

access to resources, means that refugees often do not benefit from the same positive selection processes that favour healthier individuals in other migrant groups. This distinction highlights the unique health challenges faced by refugees, who may require more comprehensive health support upon arrival and may face more barriers to access health services.

Numerous studies have examined the health outcomes of both international (Aldridge et al. 2018; Shor & Roelfs 2021) and internal migrants (Holz 2022), comparing them with those of native populations in destination countries and non-migrants in their countries of origin (Barbiano di Belgiojoso et al., 2024; Gruber, 2020; Kennedy et al., 2015). Recent research has increasingly examined the health of refugees in Europe, although most studies remain confined to national or local settings, such as Germany, Austria, Sweden or specific areas within Italy. These contributions predominantly focus on mental health problems including depression, anxiety and trauma-related symptoms (Leiler et al., 2019; Crepet et al., 2017), or on self-rated health and health-related quality of life (HRQoL) among refugees and asylum seekers (Georges et al., 2021; Gottvall et al., 2019; Jesuthasan et al., 2018; Nante et al., 2016).

Only a few works adopt a broader cross-national perspective, and these are mainly systematic reviews and meta-analyses synthesising evidence from multiple countries, yet they still concentrate largely on mental health outcomes (Lindert et al., 2009; Steel et al., 2009).

As a result, other dimensions of health, such as physical health and chronic health conditions remain underexplored in the literature on refugee populations. Moreover, only a limited number of literature reviews consider both migrants and refugees within the same analytical framework (Lindert et al., 2009; Lebano et al., 2020; Pavli et al., 2017). Among these, Lindert et al. (2009) is the only study that directly compares health outcomes between refugees and labour migrants, but this comparison is restricted to mental health and does not extend to physical or chronic health conditions.

Taken together, this evidence highlights a persistent lack of studies that compare refugees with other migrant groups in terms of health outcomes, particularly focusing on chronic health conditions and analyzing a broader European context.

To address these gaps, the present study draws on the Second European Union Minorities and Discrimination Survey (EU-MIDIS II), a valuable dataset which remains largely underutilized in migration and health research. EU-MIDIS II offers a unique opportunity to explore a large and diverse sample across European countries, providing detailed and comparable information on migrants' and refugees' socio-demographic and health-related characteristics.

This study adopts a cross-national European perspective and compares chronic health conditions between migrants and refugees. By incorporating legal and socio-

economic status into the analysis, this study contributes to a more comprehensive understanding of health inequalities within migrant populations in Europe.

2. Data

This study relies on data from the EU-MIDIS II (Second European Union Minorities and Discrimination Survey), collected during 2015–2016 (FRA, 2018). EU-MIDIS II was conducted across 28 EU countries, targeting specific population groups, including immigrants and their descendants from Turkey, North Africa, Sub-Saharan Africa, South Asia, and Asia. In addition, two ethnic minority groups were included: Roma communities and individuals of Russian background. The survey aimed to collect nationally representative data for each targeted group through face-to-face interviews using translated questionnaires (FRA, 2018). The final dataset includes a total net sample size of (Ni =) 77,656 interviews across the (Nj =) 28 EU member states.

2.1 Sample

The focus of our study is on assessing the health of migrants and refugees. To this end, we first excluded all respondents who were under 18 years old at the time of the interview (25,492 individuals), as the analysis targeted the adult population.

From the remaining sample, we retained only individuals explicitly identified as migrants or refugees, excluding 23,271 respondents belonging to non-migrant ethnic minority groups (such as Roma and Russian minorities). An additional 1,304 cases with missing information on target group membership were also removed. The exclusion criteria were aligned with those applied in a previous study based on the same dataset, which identified migrants using the same approach (Van Tubergen, 2025).

Our final analytical sample comprised 27,589 observations drawn from 19 EU member states: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and the United Kingdom.
The reduction in the number of countries included in the analysis is due to the fact that, in several countries (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, and Slovakia), only non-migrant ethnic minority groups were surveyed. Additionally, for Poland and Slovenia, data identifying respondents' target group membership were not available.

Listwise deletion of observations was applied to handle missing data and to ensure internal consistency across analyses. These exclusions result in a clean

analytical sample - with no missing values - on which all models were estimated (N=11,476 observations).

In the weighted final sample, 8% of respondents are classified as refugees and 92% as migrants. Among them, 91% are first-generation migrants and 1% are second-generation individuals.

3. Methods

For the empirical analysis, we employed logistic regression models to estimate the likelihood of experiencing chronic health issues based on migratory status (refugee vs. migrant). The dependent variable was chronic health issues (0 = no; 1 = yes). The key independent variable was refugee status (0 = migrant; 1 = refugee). The set of control variables included demographic characteristics (gender, age and citizenship and residence permit), contextual factors such as ethnic group (Asian, Turkish, North African, South Asian, Sub Saharian Africa), country of residence (grouped according to the UN geoscheme: Eastern Europe, Northern Europe, Southern Europe, Western Europe) and length of residence. We also included family-related variables (marital status and the number of household members) and socio-economic factors such as education level (No formal education/Primary, Secondary, Upper Secondary, Vocational, Post-secondary or Tertiary), language proficiency and employment status. In addition, we considered other relevant aspects including experienced discrimination and access to healthcare services.

3.1 Variable description

The dependent variable is chronic health issues (CHI), measured through the EU-MIDIS II question: *"Do you have any longstanding illness or health problem?"*. Answers were coded as a binary outcome (1 = yes; 0 = no). This item captures the respondent's self-reported presence of any chronic or long-standing condition and does not provide a predefined list of specific diseases.

The key independent variable is migratory status coded as a binary outcome (1 = refugee, 0 = migrant). The migrant group includes both first- and second-generation migrants.

The questionnaire allowed respondents to select multiple reasons for coming to their current country of residence. Those who selected seeking asylum/protection were categorized as refugees, even if they also selected other options. Respondents who did not select this option were classified as migrants.

For the variable citizenship and residence permit, we assigned a value of 1 if the respondent reported in the EU-MIDIS II survey "National citizenship or residence permit" and 0 for "Limited, no residence permit, or other."

For the variable "Access to healthcare services", we used the EU-MIDIS II question: *"Does the national basic health insurance scheme currently cover your health care expenses?"* Responses were coded as 1 for "Yes" and 0 for "No".

For the variable "Experienced discrimination", we followed the approach of Van Tubergen & Kros (2024), who used the same dataset to explore ethnic harassment among immigrants. The EU-MIDIS II survey includes three questions related to face-to-face ethnic harassment (EH). Respondents were asked how often in the past five years, in their country of residence, someone had: (a) "made offensive or threatening comments to you in person, such as insulting you or calling you names," (b) "threatened you with violence in person," or (c) "made offensive gestures to you or stared at you inappropriately." If respondents reported experiencing any of these situations, they were further asked how often these incidents happened in the past five years "because of their ethnic or immigrant background." In cases where EH was reported, a follow-up question assed the frequency of such experiences in the past year. Based on these items we constructed a binary variable for EH coded 1 if the respondent reported experiencing any form of harassment due to ethnic or immigrant background in the past year, and 0 otherwise.

4. Results

4.1 Descriptive analysis

Weighted descriptive results (Table 1) indicate that chronic health problems appear slightly more prevalent among other migrants (27%) than among refugees (23%). With respect to origin, respondents from North African (25%), Turkey (22%), and Sub-Saharan Africa (22%) report higher levels of health issues compared to those from Asia (10%). Women report slightly higher levels of CHI (24%) than men (22%). As expected, the prevalence of CHI increases substantially with age, ranging from 9% among individuals aged 18–24 to 54% among those aged 60 and over.

Respondents with citizenship or residence status report a higher prevalence of CHI (24%) compared to those without such status (20%). However, this difference may reflect longer exposure to host-country conditions among individuals with legal status. In fact, individuals who have been in the host country for ten years or more report higher levels of chronic health issues (25%) compared to those with shorter durations of stays (14%). These patterns align with prior research on migrant health, which suggests that the initial health advantage observed among migrants tends to erode over time due to factors such as socioeconomic hardship, barriers to healthcare, and acculturation-related stressors (Wallace et al. 2019).

Table 1 - *Distribution of Chronic Health Issues Across Independent and Control Variables*

% weighted	Chronic health issues	
	Yes	No
Migratory status		
Refugee	23%	77%
Other migrants	27%	73%
Origin		
Asian	10%	90%
Turkish	22%	78%
North African	25%	75%
South Asian	20%	80%
Sub Saharian Africa	22%	78%
Gender		
Man	22%	78%
Woman	24%	76%
Age class		
18-24	9%	91%
25-29	8%	92%
30-34	12%	88%
35-39	19%	81%
40-44	19%	81%
45-59	34%	66%
60-85	54%	46%
Country		
Eastern Europe	0%	0%
Northern Europe	23%	77%
Southern Europe	8%	92%
Western Europe	25%	75%
Citizenship/Residence Status		
No	20%	80%
Yes	24%	76%

Table 1 (cont.) - *Distribution of Chronic Health Issues Across Independent and Control Variables.*

	Chronic health issues	
% weighted	Yes	No
Length of stay		
<10	14%	86%
=>10	25%	75%
Education		
No Formal/Primary	37%	63%
Secondary	26%	74%
Upper Secondary, Vocational	20%	80%
Post-secondary or Tertiary	17%	83%
Language proficiency		
No	31%	69%
Yes	22%	78%
Employment condition		
Unmployed	31%	69%
Employed	16%	84%
Marital status		
Unmarried	22%	78%
Married	24%	76%
Access to national health services		
No	18%	82%
Yes	23%	77%
Experienced discrimination		
No	73%	77%
Yes	24%	76%

Individuals with no formal or only primary education show the highest prevalence of chronic health problems (37%), whereas those with post-secondary or tertiary education report a substantially lower prevalence (17%). A similar pattern is observed with employment status: the proportion of respondents with chronic conditions is nearly twice as high among the unemployed (31%) compared to the employed (16%). Language proficiency also appears to play a role: respondents with limited language skills report a higher prevalence of chronic health problems (31%)

compared to those with good proficiency (22%). Although the difference is modest, a slightly higher prevalence of chronic health issues is observed among individuals who report having experienced discrimination (23.6%) compared to those who did not (22.6%). Finally, a higher prevalence of CHI is also observed among respondents covered by national health systems (23%) compared to those not covered (18%). This result likely reflects greater diagnostic opportunities and health awareness among individuals with access to national health insurance scheme, rather than a negative effect of coverage itself.

4.2 Multivariate analysis

Table 2 presents the results from the logistic regression models estimating the probability of reporting chronic health issues based on migratory status. We report findings for the full sample, as well as stratified models for women and men to assess possible gender-related heterogeneity.

Table 2 - *Logistic regression on Chronic health issues (reference no Chronic health issues) for the whole sample, sample stratified by gender (woman, man).*

Chronic Health issues	Whole sample	Woman	Man
Migratory status (ref. migrant)			
Refugee	0.13 (-0.17)	-0.22 (-0.48)	0.33 (-0.32)
N	11,482	4,746	6,736
Pseudo - R²	0.17	0.14	0.22

Source: authors' elaborations on EUMIDIS II data.
Results from a weighted logistic regression controlling for age, gender, citizenship and/or residence permit, context of origin, country of residence, education, language proficiency, employment, marital status, household size, access to health services, and experienced discrimination. Control variables are at mean values, with 95% confidence intervals.
Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

In contrast to findings on mental health (Lindert et al., 2009), which generally document worse outcomes among refugees than among other migrant groups, overall, our empirical results indicate no statistically significant difference in the likelihood of experiencing chronic health problems between refugees and other migrants. This result holds both in the full model and in models disaggregated by gender.

Nevertheless, the absence of a significant association warrants reflection.

One possible explanation lies in cultural differences in health perception and reporting. Prior research has shown that different migrant groups may vary in how they conceptualize and disclose health problems - particularly chronic or psychosomatic conditions (Mazzetti, 2019). In addition, psychological resilience and

adaptive coping strategies, especially among those who have experienced forced displacement, may influence how health problems are experienced and reported.

Another contextual element that may help interpret this result concerns the temporal structure of our sample. All individuals included in the analysis arrived in Europe before 2015, prior to the large-scale refugee inflows associated with the so-called European migration crisis. It is plausible that those who arrived during earlier periods encountered relatively more stable and better-organized reception and integration systems, with broader access to social and healthcare services. These more favourable initial conditions may have contributed to mitigate the health vulnerabilities typically associated with forced migration.

5. Conclusion

This study contributes to the understanding of health inequalities among migrants in Europe by examining differences in the prevalence of chronic health issues between refugees and other migrants across 19 EU member states.

Drawing on data from the EU-MIDIS II survey (2015–2016), we focus on the presence of chronic health conditions as an indicator of individuals' physical health. Although this measure is based on self-reported information and therefore may be subject to reporting bias, it captures a concrete dimension of health status that is particularly relevant for assessing long-term health needs and vulnerabilities among migrant and refugee populations.

Our findings do not reveal statistically significant differences between refugees and other migrants in the likelihood of reporting chronic health issues.

Several elements may help to interpret this outcome. First, our sample includes individuals who arrived prior to 2015, a period marked by more structured and potentially more supportive reception and integration systems in many European countries. Second, cultural differences in health reporting, along with individual resilience and adaptative coping mechanisms, may have contributed to mitigating the perceived or reported health disadvantages among refugees.

Our results reinforce the importance of acknowledging the heterogeneity within migrant population and adopting a multidimensional perspective on migrant health. Policies aimed at reducing health inequalities should prioritize gender-sensitive interventions, as well as measures that support labour market participation, social inclusion, education, and equitable access to healthcare services. Family reunification and family-based services also play a key role by providing both emotional and practical support. Equally important is the need to address discrimination and foster inclusive environments that promote well-being across the life course. Tackling these systemic barriers is essential to improving the health of both migrant and refugee populations across Europe.

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References

ALDRIDG, R.W., NELLUMS L.B., BARTLETT S., BAR, A.L., PATEL P., BURNS R., HARGREAVES S., MIRANDA J.J., TOLLMAN S., FRIEDLAND J.S., ABUBAKAR I. 2018. Global patterns of mortality in international migrants: A systematic review and meta analysis. *The Lance*, Vol. 392, pp. 2553–2566.

BARBIANO DI BELGIOJOSO E., CELA E., TRAPPOLINI E. 2024. The effect of migration and time spent abroad on migrants' health: A home/host country perspective. *Demographic Research*, Vol. 50, No. 37, pp. 1113-1150.

CREPET A., RITA F., REID A., VAN DEN BOOGAARD W., DEIANA P., QUARANTA G., DI CARLO S. 2017. Mental health and trauma in asylum seekers landing in Sicily in 2015: A descriptive study of neglected invisible wounds, *Conflict and Health*, Vol. 11, pp. 1-11.

DOMNICH A., PANATTO D., GASPARINI R., AMICIZIA D. 2012. The "healthy immigrant" effect: does it exist in Europe today?. *Italian journal of public health*, Vol. 9, No. 3.

EU-MIDIS II. 2017. The Second European Union Minorities and Discrimination Survey.

GALENKAMP H.; VAN OERS H.; STRONKS K. 2020. To what extent do socioeconomic inequalities in SRH reflect inequalities in burden of disease? The HELIUS study. *Journal of Public Health*, Vol. 42, No. 4: pp. e412-e420.

GEORGES D., BUBER-ENNSER I., RENGS B., KOHLENBERGER J., DOBLHAMMER G. 2021. Health determinants among refugees in Austria and Germany: A propensity-matched comparative study for Syrian, Afghan, and Iraqi refugees. *PloS One*, Vol. 16, No. 4, pp.e0250821.

GOTTVALL M., VAEZ M., SABOONCHI F. 2019. Social support attenuates the link between torture exposure and post-traumatic stress

disorder among male and female Syrian refugees in Sweden, *BMC International Health and Human Rights*, Vol. 19, pp. 1-11.

GRUBER S.. 2020. The long-term effect of intra-European migration on cognitive abilities in later life. *Social Science & Medicine*, Vol. 265, pp. 113399.

HOLZ M.. 2022. Health inequalities in Germany: Differences in the 'Healthy migrant effect' of European, non-European and internal migrants. *Journal of Ethnic and Migration Studies*, Vol. 48, No. 11, pp. 2620-2641.

JESUTHASAN J., SÖNMEZ E., ABELS I., KURMEYER C., GUTERMANN J., KIMBEL R., FEMALE REFUGEE STUDY (FRS) INVESTIGATORS. 2018. Near-death experiences, attacks by family members, and absence of health care in their home countries affect the quality of life of refugee women in Germany: a multi-region, cross-sectional, gender-sensitive study, *BMC Medicine*, Vol. 16, pp. 1-9.

KENNEDY S., *et al.* 2015. The healthy immigrant effect: patterns and evidence from four countries. *Journal of international migration and integration*, Vol. 16, pp. 317-332.

LEBANO A. *et al.* 2020. Migrants' and refugees' health status and healthcare in Europe: a scoping literature review. *BMC public health*, Vol. 20, pp. 1-22.

LEILER A., BJÄRTÅ A., EKDAHL J., WASTESON E. 2019. Mental health and quality of life among asylum seekers and refugees living in refugee housing facilities in Sweden, *Social Psychiatry and Psychiatric Epidemiology*, Vol. 54, pp. 543-551.

LINDERT J., VON EHRENSTEIN O.S., PRIEBE S., MIELCK A., BRÄHLER E. 2009. Depression and anxiety in labor migrants and refugees: A systematic review and meta-analysis, *Social Science & Medicine*, Vol. 69, No. 2, pp. 246-257.

MAZZETTI, M. 2019. Il dialogo transculturale: Manuale per operatori sanitari e altre professioni d'aiuto. Carocci.

MCDONALD J.T., KENNEDY S. 2004. Insights into the 'healthy immigrant effect': Health status and health service use of immigrants to Canada. *Social Science and Medicine* Vol. 59, No. 8, pp. 1613–1627. doi:10.1016/j.socscimed.2004.02.004

NANTE N., GIALLUCA L., DE CORSO M., TROIANO G., VERZURI A., MESSINA G. 2016. Quality of life in refugees and asylum seekers in Italy:

A pilot study, *Annali dell'Istituto Superiore di Sanità*, Vol. 52, No. 3, pp. 424-427.

NORREDAM M., MYGIND A., KRASNIK A. 2006. Access to health care for asylum seekers in the European Union: A comparative study of country policies, *The European Journal of Public Health*, Vol. 16, No. 3, pp. 285-289.

PAVLI A., MALTEZOU H. 2017. Health problems of newly arrived migrants and refugees in Europe, *Journal of Travel Medicine*, Vol. 24, No. 4, pp. tax016.

SCHWEITZER R.D., BROUGH M., VROMANS L., ASIC-KOBE M. 2011. Mental health of newly arrived Burmese refugees in Australia: Contributions of pre-migration and post-migration experience, *Australian & New Zealand Journal of Psychiatry*, Vol. 45, No. 4, pp. 299-307.

SHOR E.; ROELFS D. 2021. A global meta-analysis of the immigrant mortality advantage. *International Migration Review*, Vol. 55, No. 4, pp. 999-1028.

SIMONNOT N., RODRIGUEZ A., NUENBERG M., FILLE F., ARANDA-FERNANDEZ P.E., CHAUVIN P. 2016. Access to healthcare for people facing multiple vulnerabilities in health in 31 cities in 12 countries. Paris: Médecins du Monde.

STEEL Z., CHEY T., SILOVE D., MARNANE C., BRYANT R.A., VAN OMMEREN M. 2009. Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: A systematic review and meta-analysis, *JAMA*, Vol. 302, No. 5, pp. 537-549.

VAN TUBERGEN F.; KROS M. 2025. Determinants of ethnic harassment among first-and second-generation immigrants in Europe. *European Sociological Review*, Vol. 41, No. 1, pp. 38-51.

WALLACE M., KHLAT M., GUILLOT M. 2019. Mortality advantage among migrants according to duration of stay in France, 2004–2014. *BMC Public Health*, Vol. 19, No. 1, p. 327. doi:10.1186/s12889-019-6652-1.

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TIME AND RESILIENCE. EVIDENCE FROM A NEW SURVEY OF REFUGEES AND ASYLUM SEEKERS IN ITALY[1]

Annalisa Busetta, Daria Mendola

Abstract. Migration studies agree that resilience is a crucial dimension for migrants, refugees and asylum seekers; however, how resilience differs across age groups and its association with the integration process remain poorly understood. This study aims to investigate the role of time on resilience. Particularly, whether resilience differs by age and whether it is related to the length of time spent in the host country. Our analysis benefits from the ItRAS (Italian Refugees and Asylum Seekers Survey), the first nationally representative survey of asylum seekers and beneficiaries of refugee status or other forms of international protection. The survey was conducted in 2024 and included individuals who had resided in Italy for at least six months but not before 2011. We explored the interplay of time and resilience, controlling for the main individual socio-demographic characteristics. The analysis was grounded in an ordinal logit regression to explain variations in the intensity of refugees' adapting capacity (ego-resilience). Among older individuals, the probability of being highly resilient is higher than among the younger. On the contrary, there is no significant evidence of the association between the length of stay in Italy and resilience. By providing insights into the role of time in studies on resilience, this paper debunks the view of older people as more vulnerable and in need of support per se, drawing our attention to the need for an accurate vulnerability assessment that does not proceed by stereotyped macro-category.

1 Introduction and literature background

The literature on the opinions, experiences and behaviours of refugees in high-income countries has long been hindered by the lack of survey data. This has represented a significant limitation for research on this topic, both in terms of the range of research questions that can be explored and the comparability of study results. Researchers agree that "[b]eing a refugee exacerbates migrants' vulnerability through trauma and loss" (Abraham *et al.*, 2018). Nevertheless, numerous refugees demonstrate an ability to confront and adapt to hardship before, during, and after

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[1] Authors contribution - Annalisa Busetta: idea of the relation between time and resilience, conceptualisation, writing (original draft), writing (review & editing), methodology, data analysis and visualisation. D. Mendola: conceptualisation, writing (original draft), writing (review & editing), methodology, data collection; data analysis; funding acquisition.

resettlement by mobilising internal psychological resources. This phenomenon aligns with the notion of resilience, defined as the capacity to rebound from adversities and "connotes inner strength, competence, optimism, flexibility and the ability to cope effectively when faced with adversity" (Wagnild and Collins, 2009). Migration studies increasingly recognise resilience as a key dimension in the lives of migrants and refugees (Lindert *et al*., 2023). It plays a significant role in supporting their psychological well-being and health (Mendola and Busetta, 2025) and has recently been conceptualised not only as distinct from, but also as a counterpoint to, vulnerability, offering a crucial balance to the adversities these populations often face (Siriwardhana *et al*., 2021).

The debate among psychologists on the conceptual definition and measurement of resilience is broad and long-standing. Resilience has been conceptualised in diverse ways, including as a trait, an outcome and a process, reflecting its complexity and varied applications (Fletcher and Sarkar, 2013). Also, in the context of migration and refugee studies, resilience is defined as the individuals' ability «to recover from chronic and acute stress» (Ungar, 2011), to «resist without breaking » (Roberto and Moleiro, 2016) or to positively adapt «despite significant adversity» (Lindert *et al.*, 2023).

Moreover, resilience is increasingly understood as shaped by interactions between migrants and their environments, reflecting an ecological perspective (Berding-Barwick and McAreavey, 2024). This view aligns with descriptions of resilience as a social and dynamic process, emphasising its circumstantial and adaptive nature (Pickren, 2014; Qamar, 2023). As an "ongoing and dynamic process of adaptation," resilience involves constant negotiation with changing circumstances (Bottrell, 2009). The importance of social dimensions in resilience is also discussed in Qamar (2023) and Siriwardhana *et al.* (2021). Qamar (2023) proposes broadening the concept of resilience to include community dynamics, adaptability, and the accompanying psychological, cultural, economic, and political characteristics of the phenomenon. He points out that "Individuals or groups going through this experience [i.e., being refugees] learn to re-examine their lives in the new context and shape their adaptive and transformational capabilities". Together, these perspectives highlight resilience as a complex, relational and adaptive construct that is essential for understanding the experiences of refugees and migrants in their journey of adaptation and integration.

Our knowledge of refugee resilience has only been developing in recent years. A great part of our comprehension of migrants' and refugees' resilience comes from qualitative studies. The systematic review by Lindert *et al.* (2023) identified 36 qualitative studies on refugees, most of which were conducted in high-income countries such as the USA, Australia, and Canada. The studies include participants of different ages and backgrounds and highlight the importance of factors like

faith/religion, social and family support, hope for the future, personal ingenuity, and adaptability in overcoming challenges. The study by Roberto and Moleiro (2016) explores the challenges faced by Portuguese-speaking migrants and refugees in Portugal, as well as the resources they utilise to adapt. It examines how migrants navigate cultural, legal, and socioeconomic barriers while leveraging support systems such as family and friends, community associations and cultural practices to foster integration and well-being. Alachakar's (2023) study on recently arrived Syrian refugees in the UK explores the factors that support individuals in overcoming traumatic migration experiences and in rebuilding their lives. The research identifies three main categories of resilience-enhancing factors: interpersonal factors; factors linked to religion, faith, or belief systems; and personal factors, such as hope, optimism, future orientation, moral values, and specific coping strategies. Walther *et al.* (2021) study explored psychological resilience in adult refugees in Germany, mainly from Syria, Afghanistan, and Iran. The study emphasised the importance of strength-based models to avoid pathologising refugees. They showed that younger individuals find it easier to integrate, make new connections and learn the language thanks to their greater adaptability and easier access to educational structures. The study by Berding-Barwick and McAreavey (2024) on forced migrants in the North-East of England demonstrates that time plays a crucial role in processes of personal resilience — serving as a strategic resource for some individuals, while posing a challenge or constraint for others.

Lindert *et al.* (2023) also identified 30 quantitative studies, nearly all of which were cross-sectional, except for two, highlighting that resilience can vary depending on individuals' cultural, developmental, and historical contexts. These factors may also vary by individual characteristics, such as age and gender. They show that age has been associated with resilience in at least one quantitative study and is frequently included as a control variable in many quantitative studies. The review emphasises how the different study methodologies and applied methods, particularly the various sampling techniques, limit the extent of the results and make generalisations difficult.

Among the recent quantitative studies, that by Mendola and Busetta (2025) reveals how, among adult refugees hosted in Germany, higher levels of resilience are associated with better health outcomes. This relation is both direct and mediated by perceived discrimination and by the interplay between discrimination and loneliness. Mollica *et al*. (2002) highlighted higher levels of resilience among younger refugees, hence suggesting that children and adolescents may be less susceptible to the prolonged stresses associated with displacement.

There are no studies on the time pattern of resilience among refugees. However, several studies examining the experiences of those who face hardship provide evidence that resilience is not static, while, in some cases, it declines over time due

to some contextual and individual factors. Okuyama *et al*. (2018) state that "resilience is a highly changeable component of mental health among people who have faced adversity". Similarly, Vanderbilt-Adriance and Shaw (2018), in their review of resilience over time, find no conclusive results among the seven identified longitudinal studies, with some studies showing an increase over time, while others show stability or a decrease.

There are a limited number of studies that have examined the temporal dynamics of resilience among refugees and asylum seekers, most of which focus on minors (e.g., Popham *et al.*, 2022). Siriwardhana *et al*. (2015) study on forcibly displaced people in Sri Lanka shows unclear results. Comparing two points in time (with a 1-year distance), they found that the people's resilience increased. However, the authors cannot disentangle the fact that during that year, the conflict ended and a process of return migration was initiated. With a similar research design, Popham *et al*. (2022) conducted a longitudinal study of the resilience of Syrian refugee children in Lebanon, examining the dynamic interplay between resilience (measured through proxies) and risks over time. Their findings underscore the critical role of the family environment in shaping children's responses to war and displacement and illustrate how it can lead to both improvements and deteriorations in mental well-being and resilience among displaced children. The scarcity of longitudinal data continues to hinder a deeper understanding of the dynamics of resilience among refugees and forced migrants.

In this study, as elaborated in the following section, we adopt the concept of ego-resilience, emphasising individuals' capacity to adapt to external changes and also encompassing the social dimension of resilience. This study is based on the first Italian survey on refugees (ItRAS), a cross-sectional study involving more than 1,300 refugees, asylum seekers and beneficiaries of international protection residing in Italy in 2024.

This study aims to address two research questions:

RQ1: Does resilience vary by age, and in particular, are older individuals more resilient than younger ones?

RQ2: Does the length of stay in Italy influence the degree of resilience, and specifically, does a longer duration of residence, when combined with deprived living conditions, contribute to the erosion of resilience?

2 Data and methods

Data for this research were collected within the framework of the nationally relevant research project (PRIN) *AVRAI*, through the Italian Refugees and Asylum Seekers Survey (ItRAS), conducted between April and July 2024. The target

population comprised individuals aged 18 or above who are Beneficiaries of international protection, granted Refugee status or Asylum Seekers who have not received a definitive denial (simply refugees or BRAS hereafter). ItRAS is the first nationally representative survey of this target population, involving 1,327 individuals and it offers a unique dataset that ensures scientific validity for the analysis of resilience in the context of refugee studies. ItRAS relies on Centre sampling technique[2] (Baio *et al*., 2011). Eligibility criteria required participants to have lived in Italy for a minimum of six months at the time of the interview, with arrival no earlier than 2011. The survey was designed to ensure a macro-level representativeness for the North, the Centre and the South of Italy and to avoid overrepresentation of recently arrived asylum seekers. All the cities selected for the interview belong to provinces that host a Territorial Commission responsible for granting asylum. In the end, ItRAS covered nine regions and 66 cities (mainly medium and large cities).

The questionnaire, supplied in Italian, English, French and Arabic, was administered by trained interviewers who had a migration background, belonged to the target community, or worked as cultural mediators. Cultural mediators were also involved as interpreters for respondents who spoke languages other than the four mentioned. This choice helped to ensure effective communication and cultural sensitivity.

2.1 Sample description

The sample comprised individuals aged 18-82 years; however, it was generally skewed toward younger participants, with nearly 70% under 40 and fewer than 13% aged 50 or older. The mean age was 36.1 years, and the median age was 34. Women constituted 47% of the weighted sample, mainly Ukrainians.

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[2] According to the Centre Sampling technique, all the interviewed individuals are weighted based on their centre-attendance patterns to assess the probability of a certain individual taking part in the survey. A further reweighting was undertaken using official statistics data on gender and nationality, and so the ex-post sampling weights ensure representativeness of the sample at the macro-regional level. All the descriptive statistics in this section are weighted to reflect the overall population of BRAS in Italy. For more information on the survey, please see Mendola et al. (2026).

Table 1 – *Percentage distribution of the sample by sex and age*

Age classes	Male	Female	Total
Up to 30 yrs	45.5	26.5	36.6
31-39 yrs	33.2	33.0	33.1
40-49 yrs	14.9	21.0	17.8
50+yrs	6.4	19.5	12.6
Total	100.0	100.0	100.0
No. obs.	702	621	1,323

Note: Weighted percentages.

The average time since arrival among respondents is 4.5 years, with Ukrainians at 2.9 years, Pakistanis at 4.8 years, and Nigerians at 6.2 years. In terms of legal status, 75% of participants held some form of protection (including both refugees and Ukrainian nationals with temporary protection), while 25% were asylum seekers at the time of the interview.

The survey results reveal that 63.4% of the respondents reported being able to adapt when changes occur (our measure of resilience, as explained in the next section), answering "frequently true" or "almost always true". Figure 1 shows the percentage distribution of responses. Women seem to have more adaptability than men, but this difference is not statistically significant.

As per the distribution across the Italian territory, 51.3% resided in the Northern area, 23% in the Central area and 25.7% in the Southern area. The survey encompassed individuals from 67 nationalities, but the four most represented nationalities were Ukrainians, Pakistanis, Bangladeshis, and Nigerians, who together accounted for 63% of the weighted sample. Noticeably, 79.7% of respondents were enrolled in the Italian population register.

2.2. Statistical model

In this paper, we measure resilience (our response variable), focusing on the individuals' ability to adapt to changes (what Block and Block, 1980, labelled as "ego resilience"), measured through the degree of agreement with the statement "*I can adapt when changes occur*". The answers were recorded on a 5-point Likert scale, ranging from 1 (not at all true) to 5 (almost always true), see Figure1, although, to face sparseness, we combined the first two levels into one category.

Time is measured by both the respondent's age at the time of the interview and the years since arrival in Italy, thereby capturing two distinct dimensions of the time–resilience relationship, albeit within a cross-sectional framework.

Figure 1 – *Percentage distribution of responses to the statement 'I'm able to adapt when changes occur'.*
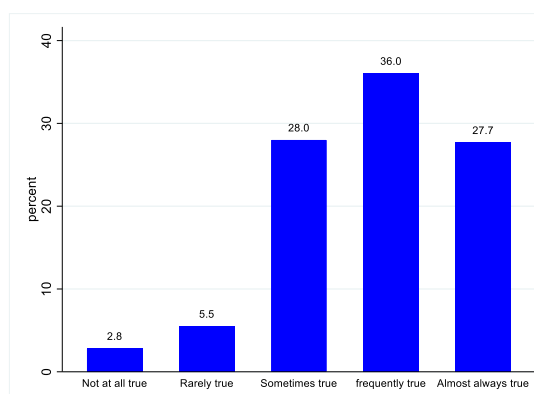
The regression analyses used an ordinal logit model, accounting for within-cluster correlation by main nationalities to correct for potential biases arising from shared experiences or backgrounds. We estimated the effect of time, controlling for individual factors such as main grouped nationalities (with at least 100 interviewed individuals), gender, low education, no employment, and degree of life satisfaction. In line with the extensive literature identifying social networks and community support as key protective factors in fostering resilience (see, for example, Mendola and Busetta, 2025, for a review), we include being married (vs. single or widowed) and the size of individuals' social support networks as covariates in the model. This last is the number of people in the refugee's household plus the total number of individuals whom respondents feel they can refer to in the event of a personal problem (Italian or non-Italian friends and number of relatives). Finally, the study by Kosyakova *et al.* (2023) showed that there is a significant and growing gender employment gap among refugees in Germany, with female refugees experiencing much lower employment rates than males over time. To control for this also in the Italian setting, we include in the model the interaction of no employment participation and sex.

Importantly, we tested the proportional odds (parallel lines) assumption for the ordered logit model. The test rejected the assumption (Brant: 50.81, P-value: 0.000). Indeed, estimating a generalized ordinal logit, it stood out that the parallel line assumption holds for almost all the covariates, including the two main explanatory variables (i.e., age and years since arrival in Italy). Among those covariates that differ across levels of the response variable, there are those related to relationships and life satisfaction, as well as some nationalities. These elements deserve further investigation going beyond the scope of this contribution. Hence, the proportional

odds assumption appears to be reasonably satisfied and ordered logit results are reported for interpretability.

3 Model results

Regarding RQ1 (the link between age and resilience), estimates from the ordinal logit model show how the ability to adapt to changes emerges as significantly associated with age. Figure 2 (left panel) shows the probability of being resilient at the two extreme values. These marginal effects (which are essentially overlapping with those from the generalized ordinal model) provide clearer insights into the relationship between age and levels of resilience among refugees and asylum seekers in the Italian context, net of introduced covariates.

It stands out that the probability of being highly resilient is higher among older individuals, controlling also for years since arrival in Italy. In particular, individuals aged 20–29 are significantly less likely to be highly resilient compared to those aged 50–59. No age-related differences are observed among the least resilient individuals (bottom line).

Figure 2 – *Average marginal effects of age (left) and years since arrival in Italy (right) on ego resilience (90%CIs).*
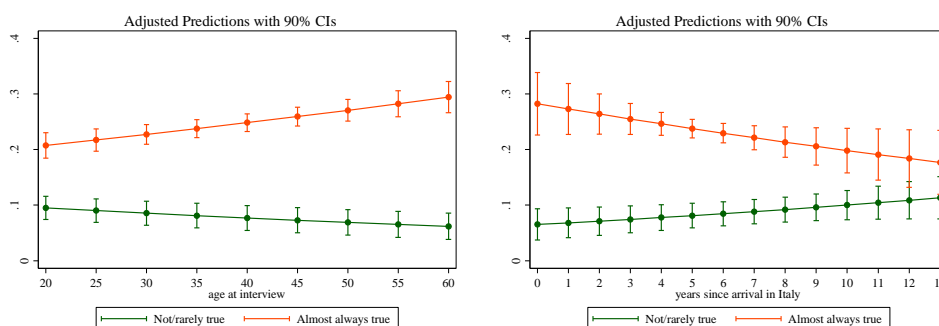
Note: The ordinal logit model included controls for individual characteristics and perceptions as mentioned before.

Regarding RQ2 (the relationship between length of stay in Italy and resilience), the findings indicate that a high ability to adapt to change is not significantly associated with the duration of residence in the country. As in the left panel, the right panel of Figure 2 presents the predicted probabilities by year since arrival in Italy. Among the most resilient refugees and asylum seekers, those who arrived less than five years before the interview seem to exhibit a higher probability of being highly

resilient compared to those who arrived ten or more years before, but differences are not statistically significant. Similarly, the bottom line shows no evidence of association between resilience and length of stay in Italy also among the least resilient individuals. Their low resilience is stable, whatever the duration of stay.

4 Discussion

This paper contributes to the literature on refugee well-being by analysing ego-resilience among refugees and asylum seekers in Italy, using the first nationally representative survey conducted on this population, the ItRAS. As clearly acknowledged, ego-resilient individuals are intelligent, resourceful and adaptive in stressful situations and are ambitious and extraverted (Paulhus and Martin, 1987). Socialisation processes shape their lives, sustain and enhance their resilience (Block and Block, 1980). These characteristics can foster better integration and predict successful participation in the host country's social life, and this explains the relevance of resilience in the scientific debate.

We examined the role of time on resilience, considering both refugee' age at interview and the number of years since their arrival in Italy. Our findings indicate that resilience is not uniformly linked with these two different time dimensions. While age shows a statistically significant association with high levels of ego-resilience, length of stay does not. Younger individuals are significantly less likely to be highly resilient than older individuals, even after controlling for many socio-demographic factors, including years since arrival in Italy. This finding, reported for the first time for refugees in Italy, is consistent with the literature on the elderly and resilience (see the systematic review by Angevaare *et al.*, 2020). For example, the study by Gooding *et al.* (2012) in the UK suggests that this elevated resilience is attributed to the elderly's superior emotional regulation and problem-solving skills, which are viewed as a natural consequence of their accumulated experience in managing feelings and overcoming problems. Applying these insights to the refugee context, older individuals who have successfully navigated adversity to reach and settle in a new country possess a demonstrable history of prior adaptation and success. This history instils confidence and the capacity to overcome danger, strengthening their overall resilience.

Despite the ItRAS data being cross-sectional, which do not allow for causal or temporal dynamics, the observed association with age raises important questions about how refugees' psychological resources change with age. In light of these findings, there is a need for further research using longitudinal data to assess whether and how resilience diminishes over time. Nonetheless, our results provide a valuable starting point for reflection and underline the importance of timely interventions to

support mental well-being and social inclusion among refugees, especially the younger. In particular, this evidence debunks the view of older people as more vulnerable and in need of support *per se*, drawing our attention to the need for an accurate vulnerability assessment that does not proceed by stereotyped macro-categories. By focusing on refugees' strengths and capacities, this research aligns with the literature that views refugees as capable, resourceful and motivated individuals who possess agency. In particular, emphasising resilience rather than vulnerability represents a crucial paradigm shift in how we understand and support refugee populations and can guide different policy interventions.

Finally, we recognise that resilience is a multidimensional construct and that using only one or a few items cannot fully capture its complete meaning. Furthermore, resilience is a culturally sensitive construct, and individuals from diverse ethnic backgrounds may interpret and respond to the same questions differently, influenced by their unique cultural frameworks. This challenge is further complicated by potential language barriers during interviews. To address these issues, interviews were conducted using a standardised questionnaire available in four main languages and administered by individuals with migration backgrounds, many of whom also served as cultural mediators. This may have smoothed the concern, but it is unlikely to have eliminated it.

References

ABRAHAM R.; LIEN L.; HANSSEN I. 2018. Coping, resilience and posttraumatic growth among Eritrean female refugees living in Norwegian asylum reception centres: A qualitative study, *International Journal of Social Psychiatry*, Vol. 64, No.4, pp. 359-366.

ANGEVAARE M. J., ROBERTS J., VAN HOUT H. P., JOLING K. J., SMALBRUGGE M., SCHOONMADE L. J., ... HERTOGH C. M. 2020. Resilience in older persons: A systematic review of the conceptual literature. *Ageing Research Reviews*, Vol. 63, 101144.

BAIO G., CARLO BLANGIARDO G., BLANGIARDO M. 2011. Centre sampling technique in foreign migration surveys: a methodological note, *Journal of Official Statistics*, Vol. 27, No. 3, pp. 451–465.

BLOCK J. H., BLOCK J. 1980. *The role of ego-control and ego-resiliency in the organization of behavior*. In W. A. Collins (Ed.), *The Minnesota Symposia on Child Psychology*: Vol. 13., Hillsdale, NJ: Erlbaum, pp. 39-101.

BERDING-BARWICK R., MCAREAVEY R. 2024. Resilience and identities: the role of past, present and future in the lives of forced migrants, *Journal of Ethnic and Migration Studies*, Vol. 50, No. 8, pp. 1843-1861.

BOTTRELL D. 2009. Understanding 'Marginal' Perspectives: Towards a Social Theory of Resilience, *Qualitative Social Work*. Vol. 8, No. 3, pp. 321–339.

FLETCHER D., SARKAR, M. 2013. Psychological resilience, *European psychologist*, Vol. 18, No. 1, pp.12–23.

GOODING P. A., HURST A., JOHNSON J., TARRIER N. 2012. Psychological resilience in young and older adults. *International Journal of Geriatric Psychiatry*, Vol. 27, No.3, pp. 262-270.

KOSYAKOVA Y., SALIKUTLUK Z., HARTMANN J. 2023. Gender employment gap at arrival and its dynamics: The case of refugees in Germany, *Research in Social Stratification and Mobility*, Vol. 87, 100842.

LINDERT J., SAMKANGE-ZEEB F., JAKUBAUSKIENE M., BAIN P. A., MOLLICA R. 2023. Factors contributing to resilience among first generation migrants, refugees and asylum seekers: A systematic review, *International Journal of Public Health*, Vol. 68, 1606406.

LOI S., LI P., MYRSKYLÄ M. 2025. Unequal weathering: How immigrants' health advantage vanishes over the life-course, *Journal of Migration and Health*, Vol. 11, 100303.

MENDOLA D., BUSETTA A. 2025. Resilience and discrimination: unravelling the multifaceted nature of refugee health in Germany, *Genus*, Vol. 81, No.1, pp. 1-19. https://doi.org/10.1186/s41118-025-00252-5.

MOLLICA R, CUI X, MCINNES K, MASSAGLI M. 2002. Science-based policy for psychosocial interventions in refugee camps: a Cambodian example, *Journal Nerv Ment Dis*, Vol. 190, pp. 158-166.

OKUYAMA J., FUNAKOSHI S., TOMITA H., YAMAGUCHI T., MATSUOKA H. 2018. Longitudinal characteristics of resilience among adolescents: a high school student cohort study to assess the psychological impact of the Great East

Japan Earthquake. *Psychiatry and clinical neurosciences*, Vol. 72, No.11, pp. 821-835.

PAULHUS D.L., MARTIN C.L. 1987. The structure of personality capabilities. *Journal of Personality and Social Psychology,* Vol. 52, No.2, pp. 354–365.

PICKREN W. E. 2014. What is resilience and how does it relate to the refugee experience? Historical and theoretical perspectives. In L. Simich L. Andermann (Eds.), *Refuge and Resilience: Promoting Resilience and Mental Health among Resettled Refugees and Forced Migrants.* New York, NY: Springer, pp. 7-26.

POPHAM C.M., MCEWEN F. S., ..., PLUESS M. 2022. The dynamic nature of refugee children's resilience: a cohort study of Syrian refugees in Lebanon, *Epidemiology and psychiatric sciences*, Vol. 31, e41, pp. 1-10.

QAMAR A. H. 2023. Conceptualizing social resilience in the context of migrants' lived experiences, *Geoforum*, Vol. 139, 103680.

ROBERTO S., MOLEIRO C. 2016. Looking (also) at the Other Side of the Story. Resilience Processes in Migrants, *Journal of International Migration and Integration,* Vol. 17, pp.929–946.

SIRIWARDHANA C., ROBERTS B., MCKEE M. 2021. *Vulnerability and resilience*. International Organization for Migration (IOM) Development Fund.

UNGAR, M. 2011. Social ecologies and their contribution to resilience. In: UNGAR, M. (Eds) *The social ecology of resilience: A handbook of theory and practice*, York, NY: Springer New York, pp. 13-31.

VANDERBILT-ADRIANCE E., SHAW D.S. 2008. Conceptualizing and re-evaluating resilience across levels of risk, time, and domains of competence, *Clinical Child and Family Psychology Review*, Vol. 11, pp. 30-58.

WAGNILD G. M., COLLINS J. A. 2009. Assessing resilience, *Journal of Psychosocial Nursing and Mental Health Services*, Vol. 47, No. 12, pp. 28-33.

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THE ECONOMIC PERFORMANCE OF FOREIGN CONTROLLED FIRMS IN ITALY: A COMPARISON BETWEEN INDUSTRIAL AND FINANCIAL INVESTORS

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Abstract. It is well known from the theoretical and applied economic literature on industrial economics and international business that foreign control positively affects the economic performance of enterprises. This is motivated by the presence of a technological and managerial advantage that the multinational enterprise possesses, as an industrial investor, over domestic companies. On the other hand, the distinction between foreign direct investments and portfolio investments is consolidated both in official statistics and applied analysis as a factor that that discriminates between industrial from financial investment.

The growing relevance of foreign direct investments finalised to the control of resident companies and led by international financial investors, such as international investment funds and other types of institutional investors, calls into question this traditional approach, since this type of investor, although making acquisitions or greenfield investments with a majority stake, is classified as a financial and not an industrial operator. As a result, the presence of a positive effect on economic performance of companies under the control of an international investment is not yet clearly defined in the literature.

The aim of this work is to empirically test the presence of this effect – statistical significance, magnitude and direction – by using an innovative micro-level dataset in order to support further empirical and theoretical analyses in this field. In particular, the micro-level dataset is derived from the survey on foreign-controlled companies in Italy carried out by Istat, with respect to which financial investors are identified as a subset of foreign investors by manual profiling. The statistical model used is regression with robust estimators applied to this cross-section of micro data.

1. Introduction

Inward Foreign Direct Investments (Inward FDI) aimed at acquiring the control of resident companies led by international financial investors (IFI), such as international investment funds and other type of institutional financial investors, represent a fast-growing trend in Italy as in many other advanced countries. This phenomenon, of significant interest for policy makers, is however still little investigated by the empirical and theoretical literature.

The aim of this paper is twofold. Firstly, it aims to split foreign affiliates resident in Italy operating in manufacture and with at least 100 persons employed between

international industrial investments (III) and international financial investments (IFI) based on the profiling of Ultimate controlling institutional unit (UCI) characteristics of the foreign MNE. Secondly, it empirically tests the presence and magnitude of a statistically significant effect of different types of company governance, including IFI as a subset of foreign affiliates (FA), on enterprise economic performance with a regression model that controls for other business characteristics. The empirical analysis refers to the census of manufacturing firms with at least 100 person employed operating in Italy in 2022.

The paper is organized as follows. Section 2 conducts a short review of the relevant economic literature that refers to the scientific streams of industrial economics and international business. Section 3 introduces the international statistical standards currently adopted to classify FDIs and MNEs, and it also discusses the criteria that can be used to identify IFI from III. Section 4 illustrates the key characteristics of the dataset used for the empirical analysis, the list of variables and the statistical model. Section 5 reports and analyses the main results obtained from the application of the model to empirical data. Section 6 highlights the main conclusions, with particular regard to policy implications and the identification of future research areas.

2. Review of the relevant economic literature

The literature on multinational enterprises has attributed, since its origins (Hymer, 1970; Dunning, 1980), a positive effect of foreign control on the economic performance of the controlled firms, usually defined as foreign affiliates (FA) (Criscuolo, 2005). This positive effect is motivated by the technological superiority or in any case by the organizational capacity of the foreign parent company and by its interest in transferring its knowledge to the subsidiary in order to better compete with other domestic companies. The empirical literature has also confirmed the presence of a positive effect of foreign control on the performance of firms, in some cases also extending to the national supply chain (Frenda and Kané, 2025). More recently, the analysis of this positive effect on corporate performance has also been extended to domestically controlled multinationals to the extent that they operate globally and follow strategies similar to foreign MNEs (Grasseni, 2010).

International Financial Investments (IFI) aimed at acquiring control of a domestic resident company or to establish a new company (greenfield investment) have so far received a limited attention in the theoretical and empirical literature on MNEs. Some relevant exceptions can be found in the work of scholars such as Bloom *et al.* (2015), Davis *et al.* (2014), Kaplan and Strömberg (2009) and Lerner *et al.* (2011). In particular, Bloom *et al.* (2015) emphasise and empirically test the positive role of

private equities in boosting TFP in target firms. In a similar vein, Davis *et al.* (2014) show the positive effect on employment and productivity of private equity buyouts, while Lerner *et al.* (2011) investigate the long terms effects on investments and innovation.

IFI finalised to foreign control of resident companies embrace a large and heterogeneous set of financial actors, such as international investment funds and other types of institutional financial investors, namely pension funds, insurance companies, mutual funds, hedge funds, and sovereign wealth funds.

Each of these foreign institutional investors may have different motivations and objectives in terms of the nature, duration, and strategic value of the investment. For example, in the case of international investment funds, the presence of professional management that aims to diversify investments in different industrial sectors with a medium-long term perspective will certainly have a different focus and investment management perspective compared to hedge funds which notoriously have a more speculative and short-term perspective.

On the other hand, when comparing international financial and industrial international investments, it is necessary to take into account that global financial investors could direct their investments to the best companies, and therefore those that presented the best performance before the M&A operation. This latter effect is called "cherry picking" by the international business literature (Aitken and Harrison, 1999). Consequently, the comparison of the performance of foreign subsidiaries between IFIs and IIIs should be conducted with a long-term horizon to verify the effect of the different economic and financial management after an appropriate period of time from the acquisition or establishment of the new investment.

3. International statistical standards to classify FDIs and MNEs

IIF are a specific type of multinational enterprise that operate in the financial sector. According to the Bank of Italy, an IIF is a collective investment scheme that invests in financial instruments of various types, issued by entities belonging to different countries, including non-European ones. These funds can invest in shares, bonds, money market instruments and other assets, seeking to exploit the opportunities offered by different global markets and industrially diversified investments. IIF are managed by professionals, who analyze the markets and select the most promising investment opportunities looking for higher return potential in the short-medium terms. Therefore, their investment strategy is assumed to be speculative rather than industrial.

The statistical classification of multinational enterprises in official statistics refers to two different domains. The first is represented by the Balance of payments

statistics (BOP) in which the operations of multinational enterprises are captured within the statistics on foreign direct investments (Inward and Outward FDI) as a subset of international movement of capital flows. The second domain refers to business structural statistics with particular attention to the statistics on the activities of multinational companies (FATS statistics). These two domains, although they are progressively convergent, reflect different concepts and definitions of particular interest for the purposes of this paper.

In the statistical domain of balance of payments, it is usual to distinguish portfolio investment from foreign direct investment (FDI) in the classification and analysis of a country international capital flows. FDIs are investments made to acquire a lasting interest in a company (direct investment enterprise) that operates in a country other than that in which the investor is resident. In particular, FDIs are considered to reflect an investor's industrial strategy and to generate technological transfer. In contrast, portfolio investments are purchases of financial securities (shares, bonds) of a foreign company, made by financial operators without the intention of acquiring effective control over the management of the company but with the exclusive goals to generate financial returns, often through portfolio diversification. They are generally short or medium-term investments.

International statistical standards, which are defined to guarantee international comparability but also to make the compilation of official statistics feasible especially when it is based on large numbers of economic operators, refers to the composition of company since they do not explicitly consider the type of investor and the purposes of the investment. In particular, foreign direct investments are distinguish from portfolio investments only when the share of participation in a company shares is equal or higher of the 10% threshold.

A good starting point to distinguish IFI from III as two specific sub-sets of FA operating in Italy is to start from an in-depth analysis of the characteristics of the final foreign investor (UCI). The information on the county of location and as well as on the company name of the UCI is collected by ISTAT in the context of the survey on FA resident in Italy carried out within the domain of FATS statistics. The process of analysis of UCI is usually called profiling in official statistics and it is finalized to classify each company with respect to statistical variables of interest through an in-depth analysis of all available documentation, both of public origin and acquirable through company websites.

As described in more detail in the next section, the empirical analysis focuses upon 4,780 "large" companies, of which 1,188 are FA. These FA are under the control of 884 foreign MNEs each of which corresponds to a UCI. The profiling activity was carried out by considering not only the name of the corporation at the top of the group and its economic activities, but also considering the company documentation in doubtful cases, as for example in the case where it is necessary to

distinguish between financial holdings at the head of industrial groups or IFI. The result of this carefully performed analysis has led to the identification of 86 FA under the control of IFI[1].

4. Data and statistical model

The dataset consists of a cross-sectional sample of 4,780 companies, representing the entire population of manufacturing enterprises with 100 or more employees operating in Italy in the year 2022. This comprehensive coverage ensures that the analysis reflects the structural characteristics and economic performance of large manufacturing firms within the country.

The dataset is constructed by integrating multiple official statistical sources provided by ISTAT (Italian National Institute of Statistics), including:

- Inward FATS Statistics: This source provides detailed information on foreign affiliates operating in Italy, offering insights into the internationalization of production and the role of foreign-controlled enterprises in the Italian economy (Istat, 2024).
- SBS Frame: A harmonized system that combines administrative and statistical data to produce detailed economic accounts for enterprises. It serves as a foundational framework for structural business statistics in Italy. Material and immaterial assets were also integrated from administrative data.
- Group Register: A statistical register that tracks enterprise groups operating in Italy, enabling the identification of corporate structures, ownership links, and group-level dynamics within the business sector.

The variables considered in the statistical model are of three different types:
- Dependent variable
- Explanatory variables
- Control variables

The dependent variable, labelled as PROD, represents the target of the analysis and is measured as the log of apparent labour productivity (value added over number of persons employed).

Explanatory variables are identified as a set of dummy variables that detect different types of enterprise governance as shown in table 1.

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[1] The names of the ultimate controlling shareholders of foreign affiliates resident in Italy cannot be disclosed to protect statistical confidentiality. However, the analysis conducted identified international equity funds as the predominant type, with some evidence from sovereign sources. Other types of foreign institutional investors, however, appear to be entirely residual or absent.

Table 1 - *Manufacturing companies with 100 or more employees operating in Italy by type of enterprise governance, year 2022.*

Variable name	Description of the governance type	Number of enterprises
IE	Independent enterprises	638
DG	Domestic groups	842
ITMNE	Italian multinational enterprises	2,112
III	International industrial investments as a subset of Foreign affiliate resident in Italy	1,102
IFI	International financial investments as a subset of Foreign affiliate resident in Italy	86
Total		4,780

Sources: Inward Fats, Register Group..

In particular, III and IFI are two dummy variables that identify , respectively, foreign affiliates operating in Italy under the control of international industrial investors and international financial investors following the methodology defined in the previous section.

The large majority of Italian manufacturing firms with at least 100 person employed is either under the control of Italian MNEs (44.2%) or foreign affiliates under III (23,1%). Foreign affiliates under IFI control account only for 86 companies (1,8%). The rest of the companies is either independent (13,3%) or belongs to domestic national group (17,6%).

Different types of enterprise governance exhibit a similar degree of concentration by industry, with the limited exception of International Investment Funds that appear to be more concentrated in Food processing (table 2).

Control variables are identified from the literature to take into account differences in productivity level across firms related to factors other than the type of enterprise governance. These include:

- company size, labelled as SIZE, is measured as the log of the number of person employed in the company[2]
- industry effect, labelled as EA, is measured as a set of 24 dummy variables running from code NACE 10 to code NACE 33
- Stock of Material assets, labelled as MA, is measured by the log of the Monetary value of material assets reported in the company balance sheet
- Stock of Immaterial assets, labelled as IA, is measured by the log of the Monetary value of immaterial assets reported in the company balance sheet.

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[2] The log transformation is applied to all continuous variables in order to mitigate heteroscedasticity problems. "Apparent" labour productivity is measured in terms of person employed rather than hours worked since this latter variable is not available in the microlevel data survey databases.

Table 2 – *Number of manufacturing enterprises by industry and type of governance. Top 10 industries ranked by numerber of IFF(share in % over the total number of companies), year 2022.*

Industry (nace 2 digit)	Type of governace					Total
	IE	DG	ITMNEs	III	IFI	
10 Manufacture of food product	16.5	12.9	7.4	4.5	18.6	9.1
25 Manufacture of fabricated metal products	18.5	16.6	10.5	6.4	10.5	11.7
28 Manufacture of machinery and equipment	9.4	10.6	23.7	21.3	10.5	18.7
21 Manufacture of basic pharmaceutical products and preparations	0.6	2.1	2.3	5.1	9.3	2.8
17 Manufatcure of papar and paper products	3.4	4.3	1.9	2.4	8.1	2.7
32 Other manufacturing	0.9	1.8	2.2	4.0	7.0	2.5
13 Manufature of textiles	2.8	3.2	2.8	1.1	4.7	2.5
14 Manufatcure of waering apparel	2.7	2.4	4.0	1.3	4.7	2.9
20 Manufacture of chemicals and chemical procucts	1.9	2.7	4.6	8.7	4.7	4.9
22 Manifacture of rubber and plastic products	7.1	6.2	6.5	7.4	4.7	6.7
Share of top 10 industries over the total	**63.8**	**62.8**	**66.0**	**62.2**	**82.6**	**64.5.**

Sources: Inward Fats, Register Group, SBS Frame.

The statistical model that defines the relationship between the dependent variable and the independent variables is specified as a linear regression. Model 1 and model 2 both consider the full set of explanatory dummy variables, while model 1 differs from model 2 in terms of control variables (MA and IA variables are considered only in model 2):

Model 1

$$PROD_i = \beta_0 + \beta_1 SIZE_i + \beta_2 IFI_i + \beta_3 III_i + \beta_4 ITMNE_i + \beta_5 DM_i + \sum_{j=1}^{24} \delta_j EA_{ij} + \varepsilon_i \tag{1}$$

Model 2

$$PROD_i = \beta_0 + \beta_1 SIZE_i + \beta_2 MA_i + \beta_3 IA_i + \beta_4 IFI_i + \beta_5 III_i + \beta_6 ITMNE_i + \beta_7 DM_i + \sum_{j=1}^{24} \delta_j EA_{ij} + \varepsilon_i \qquad (2)$$

where the suffix i represents the i-th company and j identifies the j-th industry.

In matrix terms, ε, a vector related to the random variable, must satisfy the following assumptions, expressed in matrix notation:

$$E(\varepsilon) = 0 \qquad (3)$$

$$Var(\varepsilon) = E(\varepsilon \varepsilon') = \sigma^2 I_n \qquad (4)$$

In particular, assumption 4 implies both homoscedasticity and uncorrelation of the causal variables. In order to cope with heteroskedasticity and correlation problems, robust estimators are adopted in the model.

Moving from the target population to regression models 1 and 2, the loss of coverage in terms of number of enterprises is very limited and well balanced by enterprise governance types (table 3).

Table 3. *Companies included in target population, model 1 and model 2 by type of enterprise governance (number of units).*

Governance	Target population	Model 1	Model 2	Coverage mod.1 in % over the target population	Coverage mod.2 in % over the target population
IE	638	634	600	99,4	94,0
DP	842	835	805	99,2	95,6
ITMNEs	2,112	2,099	2,020	99,4	95,6
III s	1,102	1,092	1,033	99,1	93,7
IFI	86	85	82	98,8	95,3
Total	4,780	4,745	4,540	99,3	95,0

5. Empirical results

The specification of Model 1 includes all governance dummy variables, and only enterprise size and industry dummy variables as control variables. All estimated parameters with robust standard errors are statistically significant and the regression explained 68% of the total variability (R-squared) (Table 4).

The parameters of control variables exhibit the expected sign, thus confirming that the size of the firm has a positive effect on its productivity level and that part of

the variability in productivity level across firms depends on the sectoral component. Considering independent firms as the baseline of the model, more complex governance models have a positive effect on the level of productivity of firms. in particular, the positive effect is amplified when moving from domestic business groups to multinational companies. Quite interestingly, IFI exhibits the highest positive effect on firms' productivity.

Table 4. *Regression models with robust standard errors.*

Variables	Apparent labour productivity (PROD)	
	Model 1	Model 2
SIZE	1.060***	0.888***
	(0.013)	(0.019)
MA		0.125***
		(0.012)
IA		0.020***
		(0.003)
IFI	0.385***	0.264***
	(0.067)	(0.071)
III	0.260***	0.201***
	(0.029)	(0.026)
ITMNE	0.285***	0.170***
	(0.024)	(0.021)
DG	0.166***	0.099***
	(0.028)	(0.025)
CONS (a)	0.835***	-0.179
	(0.076)	(0.119)
Number of obs	4,745	4,540
F (30, 4509)	345,50	395,77
Prob > F	0,0000	0,0000
R-squared	0,6802	0,7271
Root MSE	0,53251	0,48345

(a) NACE code 33 for variable EA and the IE dummy variable were excluded to prevent multicollinearity. Industry level dummy variables are not included in in this table for reason of synthesis.
SE reported in brackets,*** p<0.01, ** p<0.05, * p<0.1.

Moving from model 1 to model 2, all estimated parameters included in the model are statistically significant and the regression explained 73% of the total variability

(R-squared). The parameters of control variables that are shared with model 1 confirm the expected sign, while the new control variables, MA and IA, show a positive impact on firm productivity. The parameters of the governance dummy variables decrease slightly but they still are all positive and increase in magnitude moving from domestic groups, Italian MNEs and III. IFI confirms to have the stronger positive impact on productivity. Hower, these results should be interpreted with caution, given that endogeneity between control variables and productivity levels has not been addressed in this paper and that, furthermore, additional control variables that better characterize firms' performance profiles, such as export propensity and research and development intensity, could lead to a more accurate estimation of the model.

Furthermore, as anticipated in the literature review, the presence of a largely positive and statistically significant effect of the presence of the international financial investor on foreign affiliate productivity may lead to two quite different types of economic interpretation.

In the first case, it could simply be due to a greater ability of international financial investors to pre-select the most productive and profitable companies (cherry-picking effect), without, however, providing a specific contribution after the acquisition. In the second case, it is assumed that the international financial investor possesses the managerial capacity and strategic motivation to invest in the controlled company as part of a concrete and effective industrial strategy. This type of investor is more common in international private equity funds, which appear to characterize the majority of foreign control investments in Italy from foreign institutional investors. A distinction between these two motivations is currently not possible based on the results of the analysis conducted.

6. Conclusions

This paper aims to contribute to both the empirical and theoretical literature on the impact on firm productivity generated by foreign control, focusing on the increasing relevance of international financial investors (IFI).

Based on a unique micro level dataset, the empirical analysis shows that IFI exploit a statistically significant, large magnitude positive effect on firm productivity level, in line with foreign and domestic industrial multinational enterprises. This quite surprisingly result can be explained in two different ways. On the one hand, it can be a simple effect of a priori selection of the best companies that is made by international investors. This effect is called Cherry picking by the relevant literature. On the other hand, the financial managers of IFI could also be less oriented to short terms financial returns than expected. In particular, seeking for medium-long terms

returns of their investments, they could also have adopted a more industrial approach, by exploiting for instance technological synergies across controlled companies included in their portfolio.

The empirical results obtained from this analysis certainly deserve further study with regard to the following issues:
- a more detailed classification and analysis of international foreign investors. In particular, it would be interesting to consider separately different types of international financial investors which can be characterised by different objectives and duration of the foreign control investment and therefore show substantially different behaviours with respect to the strategic and industrial nature of the investment itself
- to the for the relevance of the cherry picking effect by analysing the performance of the company before the acquisition and after a minimum of 5 years after the acquisition
- to introduce appropriate solutions to mitigate endogeneity concerns about the correlation between key explanatory variables and productivity.

It would be also useful to refine of the estimation methodologies and to include additional variables, such as export orientation and R&D intensity in the model in order to further explore the potential causes underlying the positive effect found for IFI on firms' productivity.

References

AITKEN B., A. E. HARRISON. 1999. Do domestic firms benefit from direct foreign investment?. *American Economic Review*, Vol. 89, No. 3, pp. 605-18.

BLOOM N., SADUN R., VAN REENEN, J. 2015. Do private equity-owned firms have better management practices? *American Economic Review*, Vol. 105, No. 5, pp. 442–446.

CRISCUOLO C. 2005. The Contribution of Foreign Affilliates to Productivity Growth: Evidence from OECD Countries. OECD Science, Technology and Industry Working Papers, No. 2005/08, OECD Publishing, Paris, https://doi.org/10.1787/534235088410.

DAVIS S. J., HALTIWANGER J., HANDLEY K., JARMIN R., LERNER J., MIRANDA J. 2014. Private equity, jobs, and productivity. *NBER Working Paper* No. 17399.

DUNNING J.H. 1980. Towards an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies.* Vol. 11, pp. 9-31.

FRENDA A. KANÉ A. 2025. An investigation of foreign affiliates and supply chain productivity in the European Union industrial sectors. *Supply Chain Analytics*, Vol. 9.

KAPLAN S. N., STRÖMBERG P. 2009. Leveraged buyouts and private equity. *Journal of Economic Perspectives*, Vol. 23, No. 1, pp. 121–146.

HYMER S. 1970. The efficiency (contradictions) of multinational corporation. *American Economic Review.* Vol. 60, No. 2.

ISTAT. 2024. Struttura e competitività delle imprese multinazionali - Anno 2022, https://www.istat.it/comunicato-stampa/struttura-e-competitivita-delle-imprese-multinazionali-anno-2022/.

LERNER J., SORENSEN M., STRÖMBERG P. 2011. Private equity and long-run investment: The case of innovation. *Journal of Finance*, Vol. 66, No. 2, pp. 445–477.

OECD. 2025, *OECD Benchmark Definition of Foreign Direct Investment (Fifth Edition)*, OECD Publishing, Paris, https://www.oecd.org/en/publications/oecd-benchmark-definition-of-foreign-direct-investment-fifth-edition_7f05c0a3-en.html

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HOSPITALIZATION AMONG NATIVES AND MIGRANTS.
THE CASE OF LOMBARDY, 2010-2019

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Abstract. The usage patterns of healthcare services differ significantly between the native and migrant populations. Using the administrative health database of the Lombardy Region, we compared the hospitalization rates of natives and migrants from 2010 to 2019. Migrants were categorized into two groups: those from countries with high emigration rates (HMPC) and those from other countries (HDC). Standardized hospitalization rates decreased between 2010 and 2019 for both men and women across all groups (Italians, HMPC migrants, and HDC migrants). Women exhibited higher hospitalization rates compared to men due to childbirth and pregnancy-related complications. Among women, HMPC migrants had the highest standardized hospitalization rates throughout the study period, though the gap with natives has recently narrowed. Among men, HMPC migrants had the lowest standardized hospitalization rates, with the disparity between natives and migrants remaining consistent over time. Poisson and negative binomial regression models were used to analyse the crude hospitalization rate as the dependent variable to highlight the differences among geographic groups and sex across years. Age plays a key role, with younger women and those under childbearing age showing lower hospitalization rates. Additionally, we calculated crude and standardised rates for avoidable hospitalization and access to the Emergency Department.

1. Introduction

The usage patterns of healthcare services differ significantly between the native and migrant populations. Overall, migrants tend to underutilize preventive services (Rimoldi and Terzera, 2022) and face greater barriers in accessing healthcare (Allegri *et al.*, 2025). These challenges often lead to delays in medical visits and treatments and may result in a higher reliance on Emergency Departments for non-urgent conditions (Trappolini *et al.*, 2020), ultimately increasing the risk of avoidable hospitalization compared to natives (Allegri *et al.*, 2022).

Usually, migrants exhibit better health outcomes than natives upon arrival, largely due to the 'healthy immigrant effect', a selection process favouring the emigration of those who are healthier (Sander, 2007). This could result in lower rates of hospitalization and poor health needs for the young pioneers. However, as the length of stay in the destination country increases, migrants' health tends to

deteriorate, a phenomenon known as the 'exhausted migrant effect' (Bollini and Siem, 1995). Over time, healthy and selected migrants often reunite with other family members who are non-selected (primarily children and spouse, and occasionally parents) and eventually age in place. The cumulative impact of declining health throughout the migration experience, barriers to healthcare access (both formal and informal), limited preventive care, and the ageing process among longer-term migrants lead to increasing and diversified needs for healthcare.

This study focused on hospitalization in the Lombardy Region as an indicator of healthcare access. The Lombardy Region serves as a particularly relevant case study: as of January 1, 2025, the Lombardy Region hosted 1,230,362 foreign citizens, representing 22.6% of the resident foreign population in Italy. Lombardy, due to the attractiveness of its labour market, has a longstanding migration process with an increasing share of long-term migrants. Additionally, we observed hospitalization rates for a long period, from 2010 to 2019, which predated the COVID-19 pandemic. Therefore, analyzing hospitalization trends may provide some insight into the evolving health needs among migrants and indicate whether their healthcare patterns are converging with those of the native population.

An essential analysis of the population assisted by the Regional Health Service (RHS) shows that migrants are overrepresented in the RHS, accounting for 19.2% of the assisted population, compared to 12.7% in the Istat resident population in Lombardy, by country of birth. This overrepresentation is particularly pronounced among women: in the most recent year of observation, they constitute 25% of women assisted, while they represent only 13.0% of the female resident population. This discrepancy is largely attributable to the exclusion of individuals aged 65 and over from the RHS dataset, a demographic group that is predominantly among Italians.

When focusing on the migrant subpopulation, and specifically the top ten nationalities, only a few appear to be underrepresented in the RHS compared to their share in the resident population. These include Egyptians (3.4% vs. 3.6%) among women, and Romanians (9.2% vs. 9.9%), Chinese (3.8% vs. 4.1%), and Filipinos (3.3% vs. 3.4%) among men. These differences may indicate lower utilization of the RHS among specific groups or the presence of social or cultural barriers limiting access to healthcare services (Allegri *et al.*, 2025).

Using the administrative health database of the Lombardy Region, we aimed at comparing the standardized hospitalization rates of natives and migrants and studying their trends, considering the period from 2010 to 2019. For analytical purposes, we categorized migrants into two groups: those from countries with high migration pressure (HMPC) and those from other countries (HDC).

2. Data and methods

2.1 Data source

We used administrative data on all subjects assisted by the regional health service in the Lombardy region aged 18-65 in the period 2010-2019, which encompassed 8,259,158 subjects and provided data for research purposes. Data on each patient were extracted from the hospital discharge chart and included socio-demographic characteristics such as age, gender and province of residence, clinical information such as principal diagnosis and co-diagnosis identified by the ICD-9-CM code system, main and secondary procedures, length of stay, the ward of admission and type of discharge (e.g. death), financial information such as the Diagnosis Related Group (DRG) and hospital discharge chart reimbursement, as well as information regarding the Emergency Departments (ED). The data from these three datasets were linked using a deterministic linkage procedure, which utilized a common anonymized personal code to ensure the privacy of the subjects. The population was stratified by gender and geographic area of origin: Italians, HMPC, and HDC, based on the country classification by Trappolini *et al.* (2021). For each year, only subjects aged between 18 and 65 years old were included in the study, meaning that subjects exited the study when they reached the age of 65, and subjects entered the study only from their 18th birthday. This choice was made to avoid particular categories of subjects, such as children and the elderly, especially because of the analysis on HMPC. Age was clustered in periods of 5 years, except for the first period [18-19] and the last one [60-65].

2.1 Statistical analyses

To study the need for hospitalization services, we used hospitalization rates, calculated as the total number of hospital discharges for all subjects (considering also multiple discharges) in a year, divided by the total person-years for each geographic group, gender, and age class per 1,000 population. We computed age-standardized rates using the 2019 Italian population as the standard population provided by Istat (Italian National Statistics Institute). Thus, we estimated the mean year-to-year variation using a Poisson regression model for the standardized rates. Crude rates were initially analyzed using both multivariable Poisson and negative binomial regression models, with the number of hospital discharges per year as the dependent variable and year and age classes as explanatory variables. We fitted a model for each geographic group and gender. To prevent possible overdispersion effects, we opted to use the negative binomial model. Statistical analyses were performed within the RHS platform.

3. Results

Among the 8,259,158 considered subjects assisted by the Lombardy regional health system during the study period, 17.72% belonged to the HMPC group, while 1.52% belonged to the HDC group. Figure 1 shows the gender distribution by year in the foreign population. An increasing trend is observed throughout the entire period, with a percentage of women higher than that of men. Furthermore, from 2010 to 2019, women's rates increased more than men (4.5% versus 4.1%), showing a slight increase in the gender gap during the decade, mainly explained by the change in the origin countries and the variation in the sex composition of the new inflows related to the reunification process and the gender role in the origin countries.

Women mostly came from Romania, Albania, Morocco, Ukraine, Peru, the Philippines, and China, while men mostly came from Romania, Egypt, Morocco, Albania, India, Pakistan, and Senegal. Although minors and individuals over 65 were not included in our analysis, these main groups differed from those in the Istat resident population in Lombardy, where women, Egyptian nationals were more numerous than Moldovans, while among men, Senegalese nationals were fewer in number than Filipinos. In general, the most represented countries tend to be overrepresented in the RHS compared to the resident population, with a few notable exceptions: Egyptian women, as well as Romanian, Chinese, and Filipino men.

In Figure 2, the age distribution by geographical groups shows a clear difference, especially between Italians and HMPC, with the IT population ageing more rapidly than migrants from HMPC. There is also a higher percentage of subjects over 60 in the HDC population compared to the Italian group, and a lower percentage of young individuals.

The most frequent primary diagnoses at first hospitalization for the studied population are: diseases of the digestive system (12.1%), neoplasms (10.5%), injury and poisoning (9.8%), diseases of the musculoskeletal system and connective tissue (9.7%), diseases of the genitourinary system (9.4%), diseases of the circulatory system (8.9%), diseases of the respiratory system (5.8%). In particular, complications of pregnancy, childbirth, and the puerperium (18.6%) were prevalent among women. The median age at first hospitalization is higher among men than among women in the three groups (50 vs 43 for Italians, 40 vs 33 for HMPC, 47 vs 42 for HDC).

Figure 1 – *Percentage of foreign-born (HPMC and HDC) by sex and year. Lombardy Region years 2010-2019.*
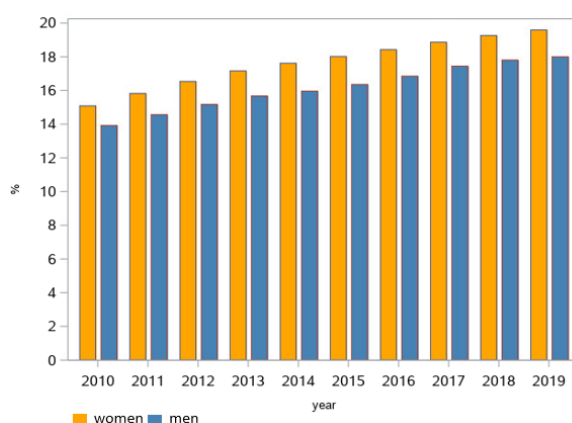

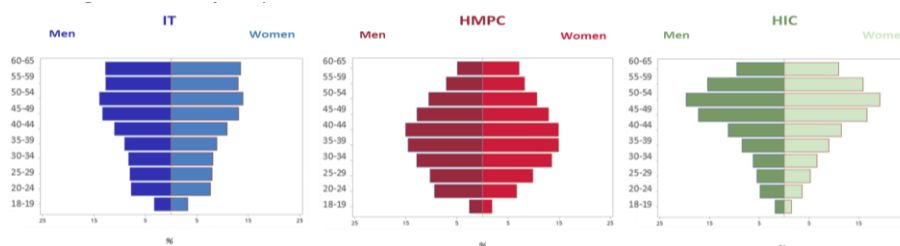**Figure 2** – *Age Pyramid by geographical group. Lombardy Region 1.1.2019.*

Figure 3 shows a slight decreasing rate in all groups, with a higher rate in women compared to men. Even though the available data are insufficient to explain this decrease fully, we can propose three plausible hypotheses. Firstly, our results do not account for the population ageing process because we could not include hospitalizations among people aged 65 and over. Secondly, the decreasing trend was not observed in hospitalizations for all causes. For example, there has been a clear decrease in hospitalization rates for pregnancy and childbirth due to a decrease in the Total Fertility Rate, even among migrant women, and an increase in adherence to antenatal care. Meanwhile, hospitalization rates related to genitourinary diseases have remained stable. Thirdly, health decision-makers promote prevention and home care instead of hospitalization when possible.

Among women, rates for HMPC are higher than those for IT for all years, while the reverse is observed among men. The mean year-to-year variation of these rates estimated through a Poisson model shows a decreasing trend that is higher for men

compared to women (IT: −3.44% vs −2.60%; HMPC: −3.82% vs −2.88%; HDC: −2.79% vs −2.33%).

Figure 3 − *Standardized hospitalization rates per 1000 population. Years 2010-2019. Black: IT, red: HMPC, green: HDC. a. women; b. males.*
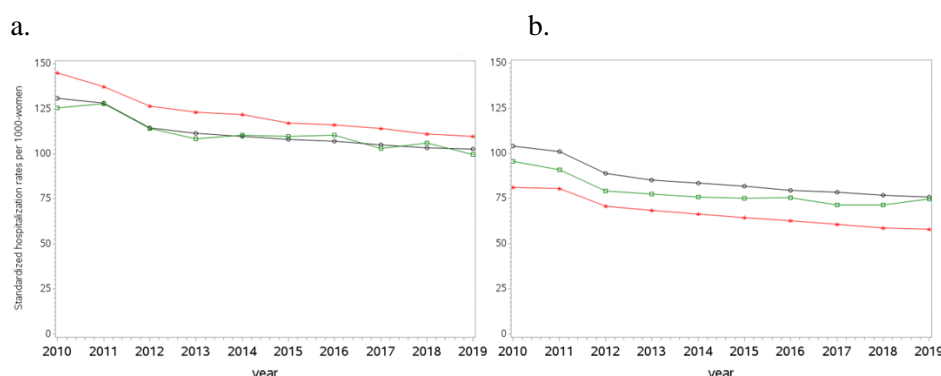
When stratifying by province, a clear difference emerged between Milan and the other provinces, particularly in the trend of standardized hospitalization rates among women. Indeed, Milan is a big city, more attractive to workers and with a higher cost of living than the other Lombardy provinces, which are more attractive for families. Figure 4 illustrates the ratio of standardized rates for HMPC versus IT in the provinces of Milan and Lecco, which is the most representative among all other provinces.

Looking into the cause-specific hospitalization rates, the HMPC group has higher rates than Italians only for pregnancy and childbirth complications and diseases of the digestive system (among women) and infectious and parasitic diseases (both among women and men).

Since the AICs were lower in all multivariable negative binomial models compared with those from the corresponding Poisson regression models, we used the former ones to analyse the trend of crude hospitalization rates. Results are illustrated in Table 1 (estimates and significance levels). A model was run for each sex and geographical group, including age classes as categorical (with the reference class set to the 40-44 age class) and year as a continuous variable. The association between year and hospitalization rate was negative and significant in all models. Among women, a positive association is observed in childbearing ages, while among men, it is observed in those over 45 years old. Italian women show a positive association from the age class 30-34, while HMPC shows a positive association from the age class 20-24.

Figure 4 – *Rate-ratio: rate HMPC/rate IT. Years 2010-2019. a. Milan; b. Lecco.*

a.   b.
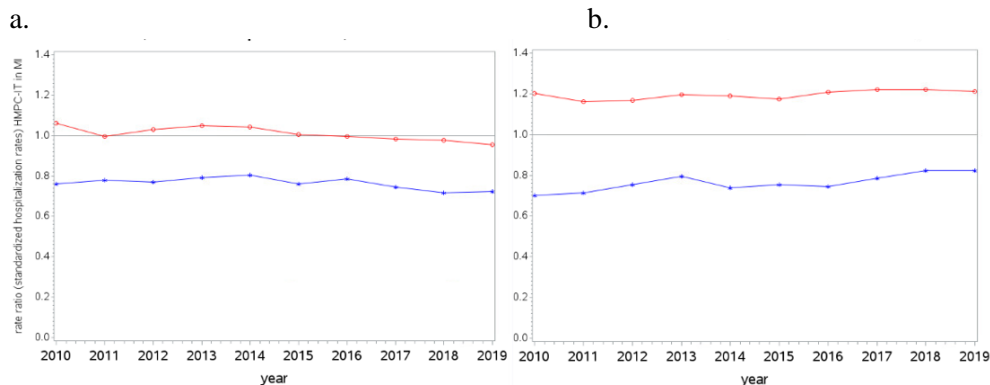
Regarding cause-specific hospitalization rates, we focus on the trend of complications of pregnancy, childbirth, and puerperium. When considering all codes (ICD-9-CM 630-679), the trend decreased, and the HMPC women's rates were higher than the Italian ones. The results of the model for the crude rates exhibit negative estimates for the effect of year, with some significant differences among geographic areas (IT: $\beta= -0.011$, *p*-value= 0.0019; HMPC: $\beta= -0.033$, *p*-value<0.0001; HDC: $\beta= -0.012$, *p*-value=0.0037). The effect of age varied among geographic areas, with an increasing rate in Italians from 25 to 39 years old. In contrast, the rate increased from 18 to 39 in the HMPC group and from 20 to 39 in the HDC group. Moreover, the estimates for the 25-29 age-class effect were $\beta=0.748$ for the IT group, $\beta=1.592$ for the HMPC group, and $\beta=0.832$ for the HDC group; all the estimates have a significant *p*-value less than 0.0001.

Then, crude and standardized rates of overall access to Emergency Departments (EDs) were calculated. The standardized ones showed an increasing trend from 2010 to 2013, with a clear gap between the HMPC population and IT among both women and men (Figure 5). The mean year-to-year variation in these rates shows an increasing trend, which is higher among women than among men (IT: 6.37% vs 5.50%; HMPC: 6.25% vs 5.35%; HDC: 6.46% vs 5.72%). A clear difference emerges when the rates are analysed by triage. Indeed, while white and green triages (i.e. not or less critical) shown an initial increasing trend, with the white triage decreasing from 2013 on (when a copayment was introduced for non-urgent visits), yellow and red triages (i.e. mild or high critical) shown an increasing trend, with the IT and HMPC groups close for women and men in the red triage and men in the yellow one.

Table 1 – *Estimates for the trend of hospitalizations crude rates: Negative binomial model.*

	women			men		
	IT	HMPC	HDC	IT	HMPC	HDC
class age						
18-19	-0.713 ****	-0.121 ****	-0.645 ****	-0.028	-0.085 ***	-0.211 **
20-24	-0.559 ****	0.599 ****	-0.468 ****	-0.109 ****	-0.115 ****	-0.217 ****
25-29	-0.048 *	0.748 ****	0.008	-0.192 ****	-0.170 ****	-0.205 ****
30-34	0.458 ****	0.624 ****	0.408 ****	-0.213 ****	-0.204 ****	-0.347 ****
35-39	0.437 ****	0.412 ****	0.411 ****	-0.139 ****	-0.146 ****	-0.141 **
45-49	-0.308 ****	-0.380 ****	-0.361 ****	0.184 ****	0.192 ****	0.190 ****
50-54	-0.213 ****	-0.359 ****	-0.269 ****	0.451 ****	0.483 ****	0.459 ****
55-59	-0.097 ****	-0.277 ****	-0.206 ****	0.752 ****	0.801 ****	0.733 ****
60-65	0.103 ****	-0.086 ***	0.050	1.089 ****	1.138 ****	1.057 ****
year	-0.028 ****	-0.032 ****	-0.024 ****	-0.034 ****	-0.036 ****	-0.029 ****

*Significance level codes: **** <0.0001; *** <0.001; ** <0.01; * <0.05; ref. age class = 40-44*

The mean year-to-year variation in the rates across all triages shows an increasing trend that is higher among women than men, except for the red one (IT: 16.60% vs 17.74%; HMPC: 15.70% vs 17.81%; HDC: 15.87% vs 18.09%).

Furthermore, the mean year-to-year variation of the rates increased from white to red (women: IT from 3.67% to 16.60%, HMPC from 3.82% to 15.70%, HDC from 4.14% to 15.87%; men: IT from 3.58% to 17.74%, HMPC from 3.70% to 17.81%, HDC from 3.93% to 18.09%).

Focusing on access to ED with a subsequent hospitalization, the most frequent triages are the green and yellow, with the first one decreasing and the second increasing in percentage.

Stratifying by sex and geographic area, men's rates overlap, while a clear difference is seen between IT women and HMPC ones. Rates increased only from 2010 to 2013.

Finally, avoidable hospitalization standardized rates showed a stable trend similar to the overall hospitalization rates; however, HMPC had higher rates than IT among both women and men, and men had higher rates than women in all groups (Figure 6). Furthermore, the gap between HMPC and IT is higher among men than among women. Stratifying these hospitalizations into acute and chronic illnesses further reveals a difference between women and men (Figure 7).

Figure 5 − *Standardized rates per 1000 population of overall access to ED. Years 2010-2019. Black: IT, red: HMPC, green: HDC: a. women; b. men.*

a.   b.

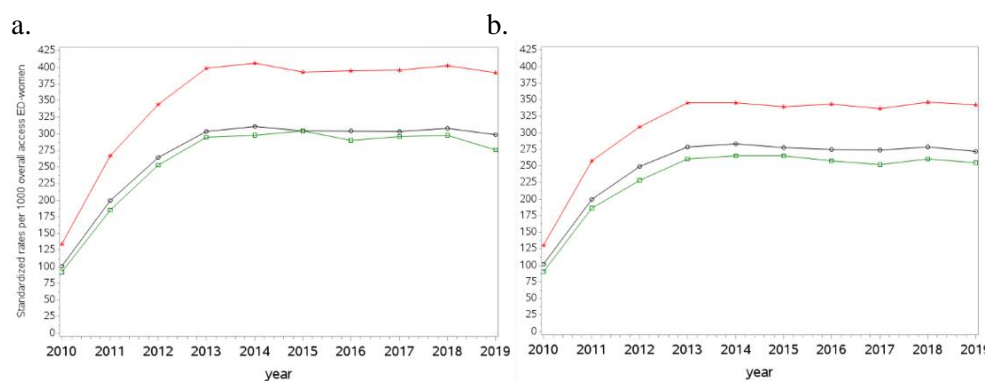**Figure 6** − *Standardized rates per 1000 population of avoidable hospitalizations. Years 2010-2019. Black: IT, red: HMPC, green: HDC: a. women; b. men.*

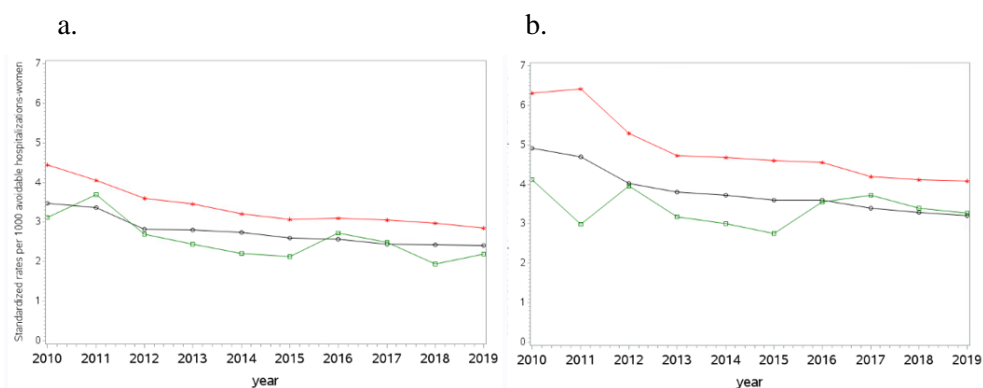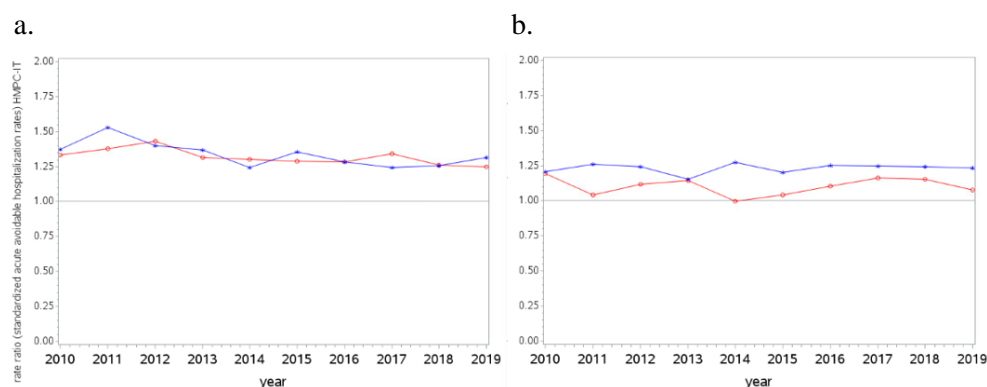a.   b.

Figure 7 – *Standardized rates ratio HMPC/IT of acute (a) and chronic (b) avoidable hospitalizations. Years 2010-2019. Red: women, blue: men.*

a.   b.

4. Conclusions

Our study compared hospitalization rates for natives and migrants from 2010 to 2019 using the administrative health database of the Lombardy Region.

Standardized hospitalization rates of women are higher than those for men across all three population groups considered, and show a decrease over time. However, among women, the rates for migrants from HMPC are consistently higher than those for IT nationals, while the opposite is observed among men, where IT nationals have higher rates than HMPC migrants. The analysis of the cause-specific hospitalization rates helps explain the higher standardized rates among HMPC women. Indeed, the most significant differences are observed in hospitalizations due to complications of pregnancy, childbirth, and the puerperium, where the gap between HMPC and Italian women reached 25‰ in 2019, although this difference has slightly decreased over time. A notable disparity is also observed in cases of normal delivery, with a difference of about 5‰ in 2019. This gap is largely attributable to the younger age at childbirth among HMPC women, as evidenced by regression analysis of crude birth rates by age group. The analysis highlights a higher likelihood of childbirth for HMPC women in the 20–24 to 30–34 age ranges compared to Italian women. In this context, it is worth noting that maternity care may represent a crucial point of access to the welfare system, enabling not only mothers but also other members of migrant families to engage with the healthcare system (Barsanti, 2018).

Another important finding is that both HMPC men and women have higher standardized hospitalization rates for infectious and parasitic diseases compared to

Italian nationals, confirming the greater vulnerability of the HMPC population to these conditions (Baggaley, 2022).

Our analyses also reveal that use of Emergency Departments (EDs) is significantly higher among both HMPC men and women relative to Italians. However, this increased utilization is mainly observed in non-urgent or low-priority cases—classified as green or lower colour codes upon arrival. This pattern aligns with existing literature, which identifies the ED as a primary point of access to the healthcare system for many immigrants, due to various barriers—such as irregular legal status, language difficulties, and limited health literacy—that hinder their access to other forms of care (Allegri et al., 2025; Trappolini et al., 2020).

Avoidable hospitalizations for both acute and chronic illnesses are more frequent among migrants, suggesting that they face more barriers to accessing timely and effective healthcare services than natives. The reduction of avoidable hospitalizations may substantially reduce the costs of hospitalizations.

Lastly, an interesting insight emerges from the analysis of standardized hospitalization rates at the provincial level. Among women, two distinct patterns can be observed when comparing the province of Milan to the other provinces. In Milan, no significant differences are found among the three population groups. In contrast, the other provinces consistently show higher hospitalization rates for HMPC women compared to Italian women, reflecting the general regional trend. This divergence suggests the presence of demographic, socio-cultural, or occupational condition differences between the female populations in the metropolitan area of Milan and those in the rest of the region. These differences may also be associated with variations in lifestyle, access to care, or health-seeking behaviours (Benson and O'Reilly, 2016).

Acknowledgements

References

ALLEGR, C., BANKS H., DEVILLANOVA C. 2022. Avoidable hospitalizations and access to primary care: comparisons among Italians, resident immigrants and undocumented immigrants in administrative hospital discharge records, *eClinicalMedicine*, Vol.46.

ALLEGRI C., BARBIANO DI BELGIOJOSO E., RIMOLDI S.M.L. 2025. Immigrants' Self-perceived Barriers to Healthcare: A Systematic Review of Quantitative Evidence in European Countries, *Health Policy*, Vol. 154.

BENSON, M., O'REILLY, K. 2016. From lifestyle migration to lifestyle in migration: Categories, concepts and ways of thinking. *Migration Studies*, Vol. 4, Np. 1, pp. 20-37.

BOLLINI P., SIEM H. 1995. No real progress towards equity: Health of migrants and ethnic minorities on the eve of the year 2000. Social Science and Medicine, Vol. 41, No. 6: pp. 819–828.

RIMOLDI S.M., TERZERA L. 2022. The utilisation of preventive health services among migrants in Italy. *Journal of Immigrant and Refugee Studies*, pp. 1–16.

SANDER M. 2007. Return migration and the healthy immigrant effect. *DIW SOE Papers on Multidisciplinary Panel Data Research*, Vol. 60. Berlin: DIW.

TRAPPOLINI E., MARINO C., AGABITI N., GIUDICI C., DAVOLI M., CACCIANI L. 2020. Disparities in emergency department use between Italians and migrants residing in Rome, Italy: the Rome Dynamic Longitudinal Study from 2005 to 2015. *BMC Public Health*, Vol. 20, pp. 1-14.

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TERRITORIAL INEQUALITIES:
THE THEORY OF URBAN LIFE CYCLE APPLIED TO SUB-MUNICIPALITY DEMOGRAPHIC DYNAMICS

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Abstract. Depopulation is a widespread process in Italy, a country where the population reached its peak around 2014, according to demographic forecasts by Istat. However, it is known that this process follows different spatial patterns: alongside areas characterized by systematic depopulation, there are others where the phenomenon appears as a new event, along with few territories where the population is conversely increasing. Generally, depopulation is observed at the municipal level; in this contribution, instead, the phenomenon is captured by distinguishing, within the municipal unit, the inhabited centre (the main one) from the periphery, a detail rarely considered in studies carried out on the topic. This is indeed a territorial partition for which the data is little used, not available except during census surveys, and difficult to adopt as it is often subject to territorial variations that are hard to manage. The objective of the work proposed here is to verify whether the demographic trend of the two sub-municipal partitions referred to - the main centre of a municipality and its periphery - in two regions, Latium and Umbria, both in the centre of the country and characterized by very different dynamics regarding sub-municipal demographics, follows the pattern of the *city life cycle* theory. For each municipality we built a path inside the theoretical spatial scheme. To our knowledge, this framework is being used for the first time to identify a typical trend in sub-municipal demographics. Starting from the analysis of the population trend from 1991 to 2021 in the main inhabited centre and in the periphery of the 470 municipalities of the two regions, results are obtained that partially confirm the sequentiality of the population dynamics, in the last period especially in Latium, less so in Umbria, at least according to the life cycle theory that identifies the phases of centralization, decentralization, depopulation, and re-population.

1. Introduction

Depopulation process is among the top concern topics in current debates (Reynaud & Miccoli, 2018; Del Panta & Detti, 2019), as the need for a transition towards more balanced territorial patterns is evident.

From the Istituto Nazionale di Economia Agraria big research in the '30 of the '900, to the various contributions by Sonnino and his school many authors faced this phenomenon. Nowadays many scholars (Benassi *et al.,* 2023; Dalla Zuanna & Gargiulo 2021; Del Panta & Detti, 2019; Reynaud *et al.,* 2020; Reynaud & Miccoli, 2018 and 2023) devoted themselves to this theme, placing this phenomenon inside the general

process of population decline started in Italy since 2014. According to Sonnino (1979), a territory is defined as depopulated if it experiences a decrease in the resident population over the course of one or more intercensal period.

At present, in Italy depopulation process follows different spatial patterns: alongside areas characterized by systematic depopulation, there are others where the phenomenon appears as a new event, along with territories where the population is conversely decreasing after robust increasing.

Depopulation process is generally observed at municipal level. However, an effective description of the depopulation process cannot be limited to an analysis conducted at the municipal level, considering the strong heterogeneity that often characterizes these administrative units. Therefore, in this research, the analysis contrasts the main central area with the rest of the municipality (the "periphery")[1].

The aim of this research is to analyze whether the demographic trends of the centre and the periphery of a municipality are different, assuming the City Life Cycle Model (CLCM) as theoretical framework. Territorial patterns theories have largely evolved in recent years thanks to various approaches. In this work we adapted the well-known CLCM used to describe the dynamics of metropolitan areas (contrasting the core with the ring composed of the municipalities that are part of the metropolitan perimeter).

However, following this theoretical scheme here, for each municipality we observe the path followed by the two sub-municipality areas, the main centre and the ring. To our knowledge, it is the first time that the life cycle theory is used to detect typical trend in sub-municipal demographic dynamics.

The analysis concerns two regions of Central Italy, Latium and Umbria. The first is characterized by the presence of a strong hub (the municipality of Rome accounts for 55% of the region's population), which exerts a significant influence on the observed flows across the regional territory (that's why in the following analysis Rome is excluded). The second is distinguished by the presence of various historical centres and the absence of a major main hub (the municipality of Perugia represents 10% of the region's population).

The work is organized as follows. Section 2 provides some background material on the CLC model. In Section 3, we introduce the research questions, and the CLCM version adopted to reach the work's aims. Section 4 presents the main data features and results from the analysis, while Section 5 gives some concluding remarks.

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[1] A distinction is drawn between the municipal centre, often the historical area (a part of the municipal territory of older formation) - primarily characterized by contiguous housing and, most notably, by essential public services such as the Town Hall, schools, and the main square - and the remainder of the municipality (the "periphery" or the "ring"), which is sometimes located beyond the urban boundary and typically consists of smaller hamlets (settlement nuclei), scattered dwellings, and extensive agricultural or industrial areas.

2. Conceptual framework: the City Life Cycle Model revised

In this chapter, the theoretical framework is presented, illustrating its main features as well as some critical points identified by certain authors (section 2.1). Subsequently, a modified framework is introduced to adapt it to the territorial classification adopted in this research, which incorporates the centre-periphery dichotomy within a municipality rather than framing it—as in the classic CLCM scheme—in a metropolitan area (section 2.2).

2.1 The City Life Cycle model

The City Life Cycle Model (CLCM) is one of the most widely applied models used to explain the urban dynamics. Originally developed by Norton (1979), this model was subsequently applied in Europe by Hall and Hay (1980) and Van den Berg *et al.* (2013) and many other authors (see, for instance, Salvati and Carlucci, 2012; Wolff, 2017; Xue *et al.,* 2025).

The original model includes the following key concepts. The dynamics of the area follows a certain cyclical pattern. The CLCM theory posits that urban development progresses through distinct stages. These stages are closely related to population movements between urban cores and peripheral areas (the ring) (Van den Berg *et al*, 1982). In short according to the changes in the population of the urban core and the rings - where the core is typically viewed as some economic or social focus, while the ring represents the territory surrounding the core - the urban spatial evolution process consists in four stages (Salvati *et al.,* 2020): (i) an expansion of population of the urban cores (*urbanization*); (ii) growing rings (i.e., commuter belt) and declining urban cores (*suburbanization*); (iii) population loss in the core exceeding the population gain in the ring, resulting in total population decline (*counter-urbanization*); (iv) urban cores start re-attracting population and rings still experience a demographic decline (*re-urbanization*).

During the urbanization phase population gravitate towards city centres drawn by economic opportunities and expansion of urban infrastructure. In the suburbanisation phase individuals follow urban sprawl into suburban areas seeking improved living conditions while maintaining proximity to the city's benefits. Counter-urbanization marks a reversal of this trend, as people actively choose to move from urban to rural areas in response to the urban lifestyles. Finally, the re-urbanization phase is characterized by the revitalization of urban centres driven by redevelopment initiatives that encourage populations to return to urban core areas (Xue *et al.*, 2025).

These stages are held to exist in an ordered sequence to form a cycle, through which an area is expected to proceed over a specified time horizon. A feature of the standard version of the CLCM is that the progress of any area through the stages of the cycle will occur in an *anti-clockwise* direction (Parr, 2012).

Some criticisms of the model have been raised in the past by various authors (Salvati, 2022; Xu *et al.,* 2025). In summary, a problem arises from the fact that the model overlooks important structural elements such as the effect of age structure, the

issue of changing configurations between cities and processes beyond city borders, and the failure in many cases to reach the fourth and final phase (that of re-urbanization). A common opinion is that CLCM provides an important narrative background to spatial change, as well as a simple accounting structure for describing it. Additionally, it offers an efficient means of organizing and presenting data on population changes across different areas and over various time intervals.
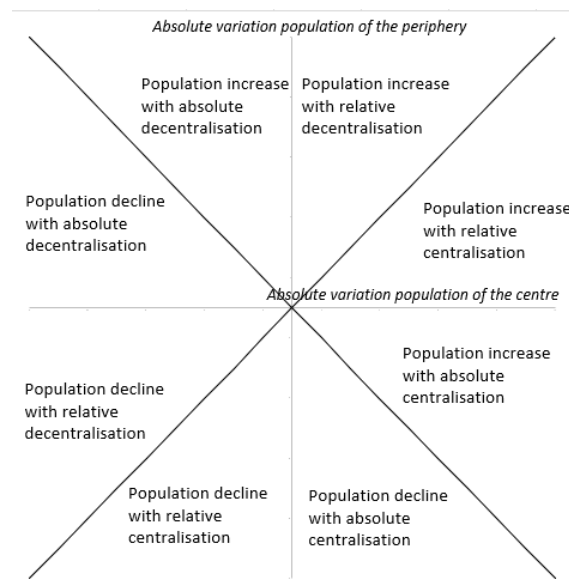
2.2 A CLC model applied to the sub-municipality dynamics

To analyse the evolution of the population in the municipalities of the two regions selected, in our research the attention is devoted to the different dynamics in a municipality by using the CLCM. For each municipality we observe the path followed by each sub-area, taking into account the crucial distinction between the two sub-areas:

a) the population - and its dynamics - in the main centre (or pole) of one municipality;

b) the population - and its dynamics – in the rest (the periphery) of a municipality.

As far as we know, it is the first time that the CLCM is used to detect typical trend in sub-municipal demographic evolution. The *revised model* can be described in an usual way by taking into account that we don't observe metropolitan areas but municipality.

Figure 1 – *The Revised City Lyfe Cicle Model.*

Absolute variation population of the periphery

Population increase with absolute decentralisation

Population increase with relative decentralisation

Population decline with absolute decentralisation

Population increase with relative centralisation

Absolute variation population of the centre

Population increase with absolute centralisation

Population decline with relative decentralisation

Population decline with relative centralisation

Population decline with absolute centralisation

Source: figure adapted from Wolff, 2017

In the model the *xy* axes host the absolute variation in a certain period of time either of the population of the main centre (horizontal axis) or the population in the periphery (y-axis): see Figure 1. The revised model involves eight stages, as each of the four stages of the classic model is further divided into two sub-stages: the first, called *absolute*, in which the evolution of the two sub-areas follows contrasting trends (one decreases, the other increases; for example, the population of the center declines while that of the periphery increases: these correspond to sectors III, IV, VII, and VIII - see Figure 1); the second, called *relative*, in which the signs of demographic evolution are consistent but of different intensities (sectors I, II, V ad VI in Figure 1).

In the phase I both the centre and the periphery of a municipality experience a population growth phase, with the increase in the first case outweighing that of the second: this is a period characterized by a positive demographic dynamic of the municipality, accompanied by a *relative centralization*. In phase II, instead, the increase in the peripheral area prevails, leading the municipality into a phase called *population growth and decentralization*. Phase III describes an *absolute decentralization*, as the municipality's population increases due to a positive dynamic in the periphery that counterbalances the negative trend in the centre. In phase IV, the whole municipality enters a depopulation phase (absolute decentralization), caused by an increase in the periphery that cannot offset the further decline of the population in the main pole. Phase V marks a further and more pronounced phase of depopulation, where both sub-areas are in decline, with a stronger decrease in the centre (which can be described as *decentralization*). This is followed by a period of further decrease (phase VI), where the contraction of the centre is less intense than that of the periphery, leading to a period of population *centralization* in the municipality. In the phase VII the main centre regains its demographic vitality, even though the periphery experiences a more substantial decline (the phase of absolute depopulation and centralization). Finally, in phase VIII, the municipality's population enters a positive phase, as the more robust increases in the centre more than compensate for the weakness of the periphery.

In this article, the CLC model is therefore applied in a way that differs from its traditional use (Benassi & Salvati, 2020). Adopting a different territorial approach, the comparison between the periphery (ring) and the municipal core is carried out within a single municipality. The aim is to provide a linear interpretation of expansion at the sub-municipal scale, thereby highlighting the differences in the evolutionary dynamics of its two components.

This approach outlines a process that identifies cycles shaping a typical pattern of relationships between the municipal core and its surrounding ring, in line with the logic of centralization–decentralization sequence. This revised model captures a

series of specific population changes in both the core and the ring, which together define a sequence of stages in spatial transformation (Parr, 2012). These stages are understood to unfold in an ordered progression, forming a cycle through which an area is expected to evolve over a given time horizon.

Nevertheless, the model should be simply regarded as an empirically based attempt to characterize long-term spatial population change, rather than as a comprehensive theory of spatial development. In this perspective, the model could even be adopted in a predictive framework, allowing for the formulation of future scenarios for both the core and its ring.

3. Modelling the dynamics of the sub-municipality

This work exploits data collected through the population censuses. In our analysis we consider a very long period, from 1951 to 2021, that is 70 years of history of the population dynamics. With reference to each of the years involved, we estimate the population in the main centre of each municipality and then we obtain the estimation of the population of the periphery by subtracting the first estimate from the size of the whole population of the municipality.

As in the classic model, a feature of the revised version is that the progress of any area through the stages of the cycle will occur in an *anti-clockwise* direction.

Two main assumptions led this research work:

RQ1: Can the CLC revised model properly describe the sub-municipality dynamics?

RQ2: Are there any difference between the two regions, Latium and Umbria, in terms of pattern across population growth and territorial dynamics?

4. Results

In this section, the dynamics of the two territorial partitions in which the municipalities of Latium and Umbria were classified between 1951 and 2021 are presented[2]. Subsequently, the results of the analysis are illustrated, focusing on the transitions that occurred during the observed periods, identifying those consistent with the model's statements.

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[2] The analysis covered all the municipalities of the two regions. Only in a few cases the amounts of the population used for the analysis are not very significant: in 26 municipalities (out of a total of 470) the population of the periphery drops — though only for certain years — below 20 inhabitants. All municipalities were retained in the analysis essentially in order to preserve the general scope of the findings.

4.1 Regional level

In the thirty-year period from 1951 to 1981, Latium is characterized by a phase of population growth with *absolute centralization* (see figure 2): when looking at the total of 377 municipalities, the increase in population in the city centres more than compensates for the demographic loss in the peripheral areas. As a result, the region's population shows an overall increase. The proportion of the population residing in the city centre during this period increases significantly (from 57% in 1951 to 73% in 1981). Subsequently, a phase of significant *relative decentralization* (see figure 2) of the population in municipalities begins: during the decade from 1981 to 1991, the suburbs of the region experience a strong increase in resident population, while the main centres see a much more modest growth. In the following three decades, the regional average value consistently remains in the first quadrant with slight fluctuations, indicating a slow phase of relative decentralization of the population (see figure 2A). The suburbs of the municipalities absorb a significant share of the region's demographic growth: the percentage of residents in the city centre gradually decreases, from 73% in 1981 to 66% in the most recent census.

The case of Umbria is different: during the first four decades, the process of decline in the resident population in the suburbs of the 91 municipalities of the region continued. The positive variation in the population of the main centres in the first twenty years (1951-1971) was not enough to counterbalance the strong demographic decline in the suburbs, resulting in the region appearing depopulated during that period. The outcome was a significant increase in the level of population concentration in Umbria, which rose from 51% in 1951 to 66% in 1971.

Figure 2 - *The evolution of the sub-municipalities (main centre and periphery) in the 1951-2021 years. Latium and Umbria.*

A.   *Latium*   B.   *Umbria*
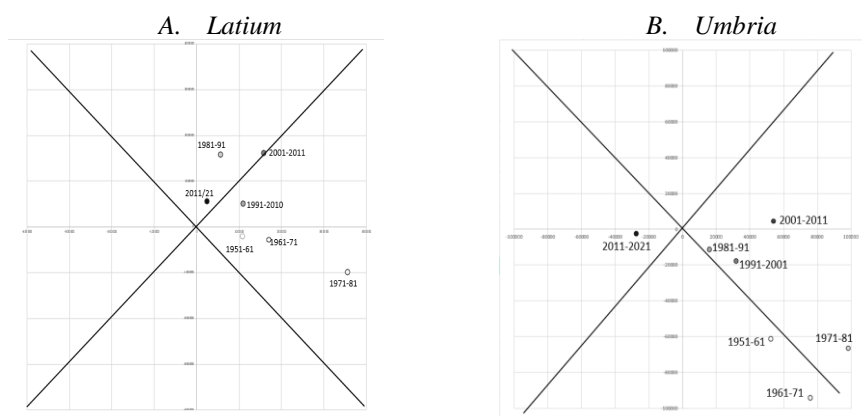
Between 1971 and 1991, also, the phase of strong *absolute centralization* of the Umbrian population persisted (see figure 2B), with the urban centres accounting for over 80% of the population. In the new century, the situation changed radically: the suburbs halted the depopulation process, and a phase of demographic growth began. During the decade 2001-2011, even the main towns experienced an increase in population. Subsequently (2011-2021), there was a slight decline (phase of *absolute decentralization*). The result is that the percentage of the population residing in the city centre stabilized around 18%, roughly the level from 30 years earlier.

4.2 Trajectories followed by municipalities

The model adopted here, as previously mentioned, assumes that the transitions from one stage to the next generally follow a specific order: a municipality can move from the centralization stage to the depopulation stage, even skipping or quickly passing through the other stages, but a reverse path is not foreseen (Cecchini, 1989).

Table 1 - *The transition sequence in the 1951-2021 period: Latium municipalities.*

Period/ The transition sequence	1951-61/ 61-71	1961-71/ 71-81	1971-81/ 81-91	1981-91/ 91-01	1991-01/ 01-11	2001-11/ 11-21
			%			
A. Same sector	46.4	26.5	28.4	27.3	28.4	21.2
B. In order (anti-clockwise direction)	14.1	16.7	19.1	15.9	17.2	18.8
C. In "skipped" order	7.4	14.9	17.8	17.2	13.8	26.5
In reverse order (clockwise): reversion to the previous stage	20.7	15.6	13.8	14.6	17.8	6.6
In "skipped" reverse order: reverse to two (or more) previous stage	8.0	18.0	14.1	16.7	15.4	11.9
Undefined trajectory (symmetrical transition)	3.4	8.2	6.9	8.2	7.4	14.9
% coherent with the CLC revised model	**70.3**	**63.3**	**70.1**	**65.9**	**64.2**	**78.2**

Source: own elaborations on Istat Data

Additionally, transitions are defined as "indefinite" when the municipality, between one period and another, is exactly in a sector symmetric to the previous phase, making it impossible to determine whether it arrived by traversing the quadrant anti-clockwise (as predicted by the model) or clockwise.

In the decades considered, in Latium very different transitions are observed. The first phase appears to be one of immobility: municipalities that remain in the same sector account for almost 50% of the total. Immobility is an important characteristic, even if its weight diminishes in the periods after 1961-71, when the percentage of municipalities remaining in the same sector ranges from 21% (in the last period) to 28% (between the decades 1971-81 and 1981-91: see Table 1).

Throughout the entire period considered, the sequences consistent with the model make up about 70% of the total; this value was calculated by considering the percentage weight of the first three sequences (A plus B plus C) listed in the table out of the total sequences considered as defined (excluding "undefined trajectories").

In Umbria, the sub-municipalities generally show more coherent sequences with the model throughout most of the considered period (coherence percentages ranging from 71% to 90%). In the most recent period, between 2001-2011 and 2011-2021, the percentage of sequences consistent with the model drops to 57%. This phenomenon seems to be related to the high mobility characterizing the latest period for Umbrian municipalities—an instability that becomes evident when looking at the low value of the weight assigned to municipalities that remain in the same sector over the years considered (Table 2). In short it emerges over time in both regions that the stability of municipalities – particularly in Umbria - tends to decrease.

Table 2 - *The transition sequences in the 1991-2021 period: Umbria municipalities.*

Period/The transition sequence	1951-61/ 1961-71	1961-71/ 1971-81	1971-81/ 1981-91	1981-91/ 1991-01	1991-01	2001-11/ 2011-21
A. Same sector	48.9	40.2	40.2	32.6	33.7	7.6
B. In order (anti-clockwise direction)	19.6	34.8	21.7	25.0	20.7	7.6
C. In "skipped" order	3.3	15.2	15.2	12.0	21.7	31.5
In reverse order (clockwise): reversion to the previous stage	22.8	9.8	10.9	9.8	6.5	12.0
In "skipped" reverse order: reverse to two (or more) previous stage	5.4	0.0	8.7	18.5	10.9	22.8
Undefined trajectory (symmetrical transition)	0.0	0.0	3.3	2.2	6.5	18.5
% coherent with the CLC revised model	**71.7**	**90.2**	**79.8**	**71.1**	**81.4**	**57.3**

Source: own elaborations on Istat Data

The distribution of transition sequences among municipalities changes over the years. Moreover, a quite high percentage of municipalities still follows the pattern

predicted by the CLC model (either in order or skipped order). In the most recent period, there is a prevalence of skipped order transitions, where the centre or peripheral area shifts by two or more sectors. Additionally, symmetric shifts among municipalities increase over time. Overall, only a minority of municipalities has not necessarily followed the pattern predicted by the CLC model.

5. Concluding remarks

CLC revised model provides an important narrative background to spatial change, as well as a simple accounting structure for describing this. In addition, it offers an efficient means of organizing and presenting data on population changes across different areas and over various time intervals. The CLC revised model cannot be regarded as a strict theoretical framework. However, it is important to analyse the dynamics of the municipalities using the proposed framework, which we believe proves to be extremely useful. Without this framework, it would be difficult to capture, in summary, the high heterogeneity that emerges when examining phenomena at this territorial level. Once the framework is established, of course, there is a need to deepen the analysis to understand the influence of structural factors (for example, the effect of age structure on demographic dynamics and vice versa) and other factors related to the coexistence of different populations (for example, the role of foreign immigration in mitigating rural depopulation), which are not addressed here. Further insights will concern at least three different aspects: a) analysis of the individual trajectories of the municipalities by identifying two sets, that is, distinguishing municipalities that are consistent or not with the pattern suggested by the model; b) the use of the "Depopulation Tables" (Sonnino, 1979) in which following the framework of the life table, the decline of the population is analysed to assess the intensity of the process and to study, for example, the probability of transition from a depopulated state to a stationary state; c) the use of models taking into account the variation in population over time related to demographic size and to other information such as the altitude zone, the accessibility indicator from the SNAI (National Strategy for Inner Areas), other socioeconomic covariates.

The findings of this analysis can inform the design of targeted policy interventions. For local administrators, understanding the intensity and pace of depopulation is crucial in order to implement effective and context-specific strategies. In this study, the demographic evolution of the centre was examined separately from that of the periphery, with the objective of enabling policymakers to adopt differentiated measures in response to possibly diverging trends between the two contexts.

Acknowledgements

References

BENASSI F., SALVATI L. 2020. Urban Cycles and Long-Term Population Trends in a Southern European City: A Demographic Outlook, *Applied Spatial Analysis and Policy*, No. 13, pp. 777-803.

BENASSI F., BUSETTA A., GALLO G., STRANGES M. 2023. Neighbourhood effects and determinants of population changes in Italy: A spatial perspective, *Vienna Yearbook of Population Research*, Vol. 21, pp. 311–338.

CECCHINI D. 1989. Stadi di sviluppo delle aree urbane in Italia, *Rivista economica del Mezzogiorno*, n. 4, ISSN 1120-9534.

DALLA ZUANNA G., GARGIULO C. 2021. La popolazione delle Venezie dopo la transizione demografica 1981-2041. In D. MARINI (Ed.), *MutaMenti*, Marsilio, Venezia.

DEL PANTA L., DETTI T. 2019. Lo spopolamento nella storia d'Italia. 1871-2011. In G. MACCHI JÀNICA, A. PALUMBO (Eds.) *Territori spezzati. Spopolamento e abbandono nelle aree interne dell'Italia contemporanea*, Centro Italiano per gli Studi Storico-Geografici.

HALL P., HAY D. 1980. *Growth Centres in the European Urban System,* Heinemann Educational Books, London.

NORTON, R.D. 1979. *City Life-Cycles and American Urban Policy*, Academic Press - New York, S. Francisco, London.

PARR, J. 2012. The Spatial-Cycle Model Revisited, *Regional Studies,* No. 2.

REYNAUD C., MICCOLI S. 2018. Depopulation and the Aging Population: The Relationship in Italian Municipalities, *Sustainability,* Vol. 10, No. 4.

REYNAUD C., MICCOLI S. BENASSI F., NACCARATO A., SALVATI L. 2020. Unravelling a demographic 'Mosaic': Spatial patterns and contextual factors of depopulation in Italian Municipalities, 1981–2011, *Ecological Indicators*, DOI: 10.1016/j.ecolind. 2020.106356

REYNAUD C., MICCOLI S. 2023. Demographic sustainability in Italian territories: The link between depopulation and population ageing*, Vienna Yearbook of Population Research*, Vol. 21, pp. 1-22.

SALVATI L. 2022. Exploring long-term urban cycles with multivariate time-series analysis, *Urban Analytics and City Science*, Vol. 49, No. 4 pp. 1212–1227.

SALVATI L, BENASSI F., MICCOLI S, RABIEI-DASTJERDI H., MATTHEWS S. 2020. Spatial variability of total fertility rate and crude birth rate in a low-fertility country: Patterns and trends in regional and local scale heterogeneity across Italy, 2002–2018, *Applied Geography*, ISSN 0143-6228, Vol.124.

SALVATI L., CARLUCCI M. 2012. In-Between Stability and Subtle Changes: Urban Growth, Population Structure, and the City Life Cycle in Rome, *Population, Space Place*, Vol. 22, pp. 216–227. DOI: 10.1002/psp.1877.

SONNINO E. 1979. Ricerche sullo spopolamento in Italia. L'evoluzione del fenomeno e alcuni suoi riflessi sulla recente dinamica demografica. In EUGENIO SONNINO (Ed.) *Ricerche sullo spopolamento in Italia: 1871-1971*, Roma, Comitato italiano per lo studio dei problemi della popolazione e Istituto di Demografia dell'Università degli Studi di Roma.

VAN DEN BERG L., DREWETT R., KLAASSEN L.H., ROSSI A., VIJVERBEG C.H.T. 2013. *A Study of Growth and Decline*. Pergamon Press.

WOLFF M. 2017. Understanding the role of centralization processes for cities – Evidence from a spatial perspective of urban Europe 1990–2010, *Cities*, February DOI: 10.1016/j.cities.2017.01.009.

XUE X., JUE M., KOJIRO S., FUMIHIKO S. 2025. *Unipolar Concentration in Tokyo. Under Population Shrinking* available at SSRN:https://ssrn.com/abstract=4784819 or http://dx.doi.org/10.2139/ssrn.4784819.

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EXPLORING ASYLUM PATTERNS IN EUROPE:
A FOCUS ON ITALY[1]

Marco Rizzo, Fabio Massimo Rottino

Abstract. In recent years, asylum applications have become a central issue in the European migration context, with varying dynamics across countries. In 2024, Italy ranks third in Europe for number of first-time asylum applicants. Excluding temporary protection requests granted due to the Russia-Ukraine conflict, asylum applications in 2023 and 2024 have returned to the peak levels recorded during the Mediterranean crisis in 2016. This study aims to enhance understanding of the phenomenon through a multi-level approach. At the European level, we implement a descriptive analysis of asylum applications using Eurostat data. The goal is to analyse the distribution of socio-demographic indicators, such as the share of women or young people among applicants, within the European countries. Through multivariate analysis, we look for common patterns in asylum applications and groups of countries with similar profiles. The focus then shifts to Italy, where we investigate the evolution of asylum-seeker inflows, with particular attention to the cohort that entered in 2016, following the Mediterranean crisis. We trace these individuals up to 2024, to assess their presence and the reason for the residence permits they hold. A multinomial regression model is used to analyse the factors associated with permit transitions. The analysis seeks to highlight patterns and potential determinants that shape the asylum experience in Italy, contributing to a broader understanding of long-term migration dynamics and supporting evidence-based policy.

## 1. Trends in Asylum Applications Across Europe

An *asylum seeker* is an individual who has left their country of origin, has applied for asylum in another country, and is awaiting a decision from the host country's authorities regarding the recognition of refugee status (UNHCR). The term *refugee* applies to anyone who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of their nationality and is unable or unwilling to avail themselves of the protection of that country (United Nations, 1951).

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[1] Although this paper is the outcome of the authors' joint reflections, paragraph 1-3 was drafted by Fabio Massimo Rottino, paragraphs 4-7 by Marco Rizzo. Conclusions were written jointly by the authors.

Over the past decade, the demand for international protection has increased both in Italy and across all European Union countries (Figure 1). The phenomenon has particularly affected the main Mediterranean countries, and especially Germany, which remains the country with the highest number of asylum applications (approximately 230,000 applications in 2024). The time series reflects the major events that have influenced asylum flows.

The most prominent is the so-called Mediterranean refugee crisis, which affected European countries with varying intensity and timing during the 2015–2017 period. Germany registered the highest number of arrivals, particularly from Syria. Since 2021, following the COVID-19 pandemic, asylum applications in Europe have once again increased. In 2024, Italy recorded the highest number of applications (approximately 150,000) since the first available data in 2011. This renewed growth over the past four years is mainly attributable to the conflict in Ukraine and to ongoing tensions in the Middle East. However, Figure 1 underestimates the impact of the Russia-Ukraine war, managed through exceptional protection mechanisms outside standard asylum procedures. (Council of the European Union, 2001).

Figure 1 – *Asylum applications in Germany, Greece, Spain, France, and Italy; 2011–2024. Values in thousands.*

Source: Eurostat, 2025.
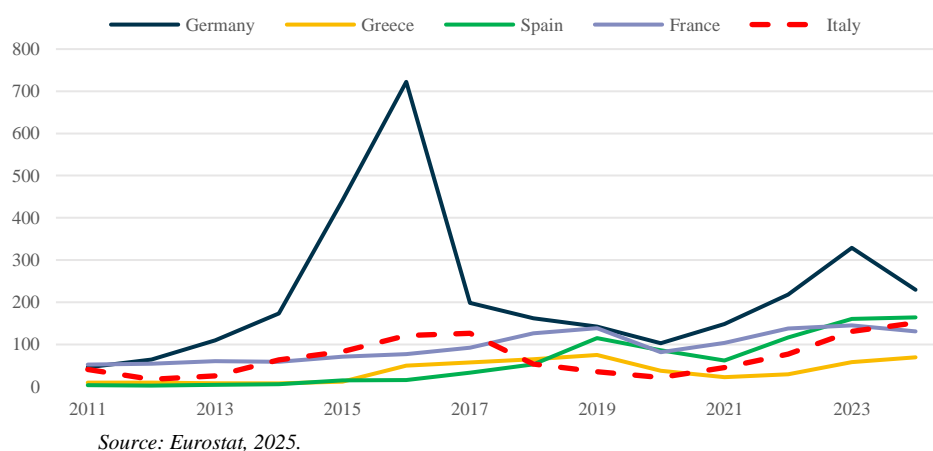
The main entry routes into Europe are diverse. In the Mediterranean area, the Western, Central, and Eastern Mediterranean routes are particularly significant, involving countries of North Africa. Another major influx originates from Asia and the Middle East and from the Atlantic route from West Africa, which is considered the most dangerous due to the length of the journey (Ministry of the Interior, 2024; McAuliffe and Oucho, 2024). This diversity in entry routes is reflected in the diverse range of citizenships that most influence host countries. The top four countries in

terms of asylum applications in 2024 have markedly different profiles in terms of applicants' nationalities (Table 1). In Germany, one third of all applications come from Syria, as happened during the Mediterranean crisis, the country continues to be the primary destination for this population. Spain, by contrast, registers a predominance of asylum seekers from South America, due in part to linguistic affinities, with 64% of all 2024 applications coming from Venezuela and Colombia alone. France displays a more heterogeneous distribution of citizenships, with no clear prevalence of any single nationality; however, among the top five citizenships represented, three are African countries where French is the official language. In this context, Italy records a mix of flows primarily from North Africa countries, such as Egypt and Morocco, and South Asia, including Bangladesh and Pakistan (Istat, 2023).

Table 1 – *Asylum applications in Germany, Spain, France, and Italy by main countries of citizenship; 2024. Absolute and percentages values.*

Germany			Spain		
	a.v.	%		a.v.	%
Syria	76.765	33	Venezuela	65.460	40
Afghanistan	34.150	15	Colombia	39.765	24
Türkiye	29.175	13	Mali	10.585	6
Iraq	7.840	3	Peru	10.360	6
Somalia	6.955	3	Senegal	7.655	5
Other	*5.230*	*33*	*Other*	*4.010*	*18*
Italy			France		
	a.v.	%		a.v.	%
Bangladesh	32.865	22	Ukraine	13.355	10
Peru	15.595	10	Afghanistan	10.375	8
Pakistan	11.740	8	DPR Congo	9.295	7
Egypt	11.595	8	Guinea	7.990	6
Morocco	9.985	7	Côte d'Ivoire	6.975	5
Other	*9.435*	*46*	*Other*	*5.870*	*63*

Source: Eurostat, 2025

2. Literature Review

The classification of European countries based on asylum seeker flows, aimed at identifying patterns common to multiple states, has been addressed in the literature with different perspectives and levels of detail. Among the various approaches, one strategy is to classify countries according to their capacity to grant protection, combining indicators of application pressure, administrative efficiency, and recognition outcomes (Forte et al., 2025). Another perspective is to group countries according to their structural and socio-economic context, taking into account factors

such as economic performance, inequality, or governance, which influence their attractiveness to asylum seekers (Manafi and Roman, 2022). A simpler strategy distinguishes countries by the volume of applications received over a given period, thereby identifying high-, medium-, and low-pressure destinations (Nicolescu and Drăgan, 2020). Despite relying on different sets of variables, these approaches consistently show that European states tend to cluster into relatively stable groups, whether defined by policy effectiveness, structural conditions, or application volumes.

The study of migrants' retention in the host country is a well-established area of research, particularly within the work of official statistical offices and in response to the growing interest of policy makers in this issue. By relying on longitudinal databases that monitor individuals' presence or absence over time, it is possible to estimate retention rates several years after admission (Statistics Canada, 2024). With specific regard to asylum seekers, territorial presence can be examined in relation to socio-demographic factors such as age, migratory cohort of entry, and citizenship- the latter being one of the main determinants of the phenomenon (Casacchia et al., 2023). Another crucial dimension for assessing integration into the host society is labour market participation, which can be analysed in terms of its evolution throughout the period of residence (Bakker et al., 2017).

Overall, the literature highlights the importance of combining structural, policy, and individual-level factors to fully understand the dynamics of asylum applications and subsequent integration paths across European countries.

3. Objectives

The aim of this study is to investigate the issue of asylum seekers, starting from a European-level perspective and subsequently narrowing the focus to the Italian context.

At the European level, the research question guiding our analysis is whether it's possible to identify common patterns in asylum flows across countries. Specifically, by examining key socio-demographic characteristics of asylum seekers, we aim to determine whether certain types of flows are concentrated in specific groups of European countries, or whether the phenomenon is overall heterogeneous and lacks a systematic distribution.

Once the European framework has been explored, the focus shifts to Italy. Here, first we try to identify the typical and most prevalent profile of asylum seekers. The analysis then focuses on the integration process resulting in the granting of an asylum residence permit, its subsequent conversion into another type of permit, or the individual's disappearance from the national territory. The aim is to identify and

describe the profiles of asylum seekers in Italy and the factors shaping their condition eight years after arrival.

4. Data

The data used for the European-level analysis come from Eurostat. We considered the cumulative number of asylum applications submitted in 2022 and 2023 across 32 European countries for which Eurostat collects information. Liechtenstein, Montenegro, and Hungary were excluded from the analysis, as they reported very low numbers of applications - fewer than 325 over two years - and were therefore treated as outliers. For each country, the total number of applications was broken down by key variables relevant to the analysis: age, sex, citizenship (grouped by macro-regions), the presence of unaccompanied minors, and the share of rejected applications.

For the Italian case study, we used administrative data on residence permits granted to non-EU citizens in Italy. These data, provided by the Ministry of the Interior, are validated and processed by Istat. The analysis focused on individuals who were granted their first residence permit for seeking asylum in 2016 and whose status was traced in the stock of valid permits in the latest available archive, referring to 2024. As with the European-level data, the main socio-demographic characteristics of these individuals were also considered.

5. Results of PCA

To study the phenomenon at the European level, a Principal Component Analysis (PCA) was carried out using 29 countries from the European region as units of analysis. To avoid the influence of absolute volumes of asylum applications, standardized indicators were constructed. These indicators represent the share of asylum seekers with specific characteristics over the total number of applications in each country. To summarize the geographical origin of asylum seekers, countries of origin were grouped into macro-regions, considering the share of applications from "North and West Africa", "Centre-South Asia", and "West Asia". Additional variables included the share of female applicants, age groups (18-34 and 35-64 years), the proportion of unaccompanied minors, and the share of rejected applications. Table 2 presents the rotated (Varimax) loadings of the first two principal components, which together explain 69% of the total variance. The first component contrasts two distinct profiles of asylum seekers. On one side are countries with a high proportion of applications from women aged 35 to 64; on the

other are countries with younger applicants (aged 18–34), mostly originating from North and West Africa and Centre-South Asia. These countries also tend to have a higher rate of rejected applications. The second principal component is mainly driven by flows characterized by a high share of unaccompanied minors, particularly from West Asia. These two features are closely linked: the main countries of origin for unaccompanied minors in Europe are in that region, such as Syria, Afghanistan, and Palestine (EUAA, 2024).

Table 2 – *First two principal components with variable loadings and explained variance.*

Variable	PC1	PC2
North and West Africa	0.72	-0.23
Centre-South Asia	0.82	0.05
West Asia	0.06	0.88
Females	-0.80	-0.32
Age: 18-34	0.91	0.01
Age: 35-64	-0.71	-0.50
Unaccompanied minors	0.09	0.92
Rejected	0.39	-0.37
Proportion Variance explained	**0.42**	**0.27**
Cumulative variance explained	**0.42**	**0.69**

The biplot of the first two principal components (Figure 2) confirms that the selected variables strongly characterize the components themselves. In contrast, the European Union countries do not show a clear distribution along the axes. Most of them are spread evenly, forming a cloud of points, with the overall structure being pulled in the direction of the principal components by a few individual countries.

Figure 2 – *Biplot of the first two principal components with European countries and variables.*
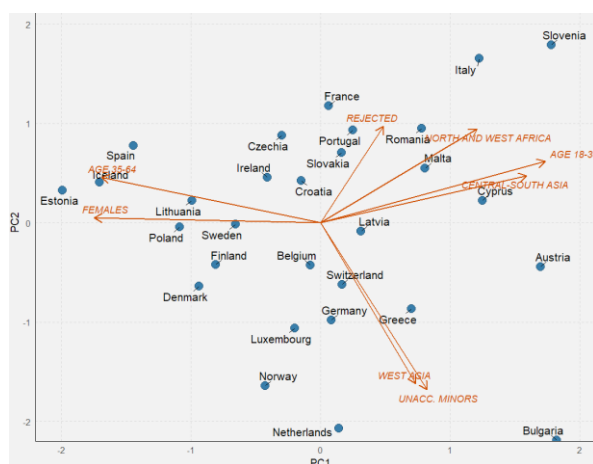
6. Three clusters of European countries

To explain the distribution of countries within the framework defined by the Principal Component Analysis, a Cluster Analysis was performed on the first two principal components. As an exploratory step to determine the optimal number of clusters, a hierarchical cluster analysis was first conducted. The result, shown in the dendrogram (Figure 3), suggests that three clusters provide a good solution.

Figure 3 – *Dendrogram of the hierarchical cluster analysis.*
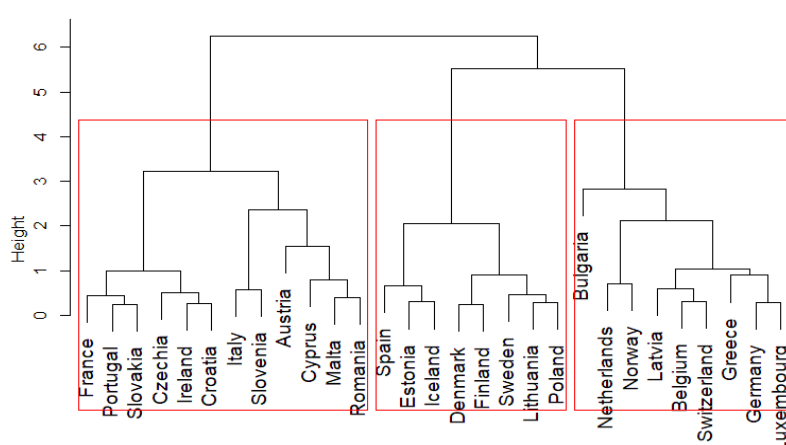
Subsequently, a non-hierarchical k-means Clustering Analysis was carried out, aiming to partition countries into three groups that maximize the explained variance. The resulting model accounts for 64.3% of the total variance. This outcome is consistent with the interpretation of the biplot (Figure 1), showing that countries are not clearly separated into sharply distinct groups.

The three identified clusters (Figure 4) align with the profiles defined by the variables loading on the principal components.

The first cluster (Figure 4, in green) includes countries where asylum applications are predominantly submitted by women aged 35–64. This group includes many of the Baltic and Scandinavian countries, which have received significant per capita inflows from the Russia–Ukraine conflict (Eurostat, 2025). Spain is also part of this group, mainly due to the large number of applications from South America. These flows tend to have a higher proportion of female applicants compared to those from North Africa or the Middle East (Schiele M., 2024).

The second cluster (Figure 4, in red) consists of countries receiving asylum applications primarily from North and West Africa and from Central-South Asia, with a predominance of applicants aged 18–34. Italy and Slovenia are the most

representative countries in this group. These characteristics reflect the Italian situation, where the main origin countries in 2024 included Bangladesh, Pakistan, Egypt, and Morocco (see Table 1). Italy also stands out for the high share of rejected asylum claims; a feature that further defines this cluster. According to Eurostat data, in 2023 Italy granted protection in 47.5% of processed cases, compared to 62.2% in Germany and an EU average of 53%.

The third cluster (Figure 4, in blue) exhibits higher within-cluster variance than the other groups. It includes countries with a high share of asylum seekers from West Asia and a significant proportion of unaccompanied minors. Among the countries in this group are Germany, the Netherlands, Austria, Bulgaria, and Greece-the top five countries in terms of unaccompanied minor asylum applications in 2023 (EUAA, 2024).

Figure 4 – *Biplot of European countries on the first two principal components, grouped by cluster.*
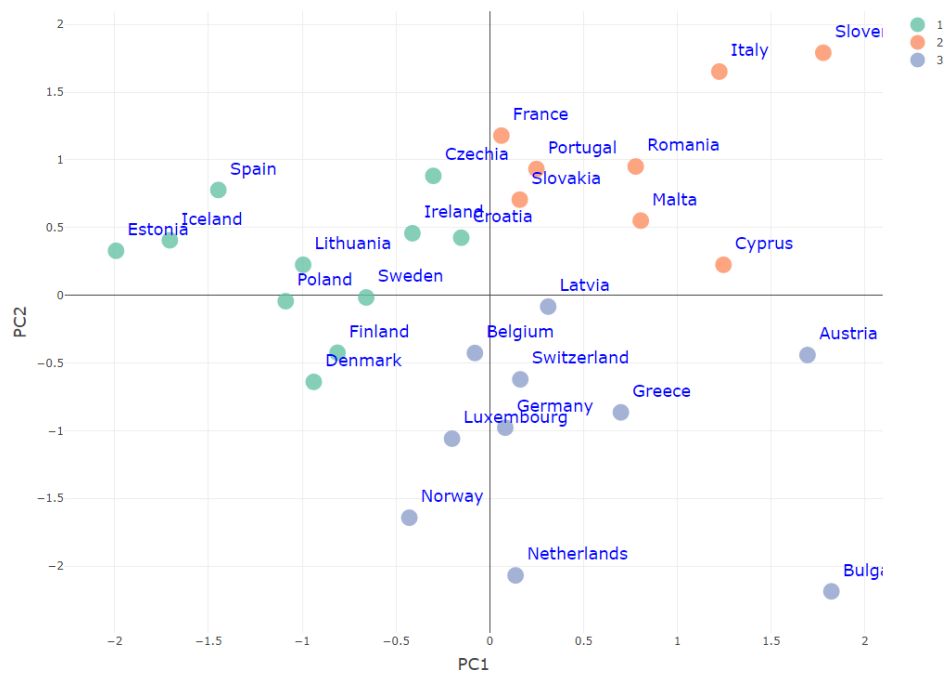

Figure 5 displays these three clusters using the same colours adopted in the biplot. The map highlights that the clusters do not follow a clear geographical pattern. This supports the idea that, while certain specificities exist in asylum flows, the phenomenon remains largely heterogeneous and not systematically structured across countries.

Figure 5 – *Map of European countries grouped by cluster.[2]*
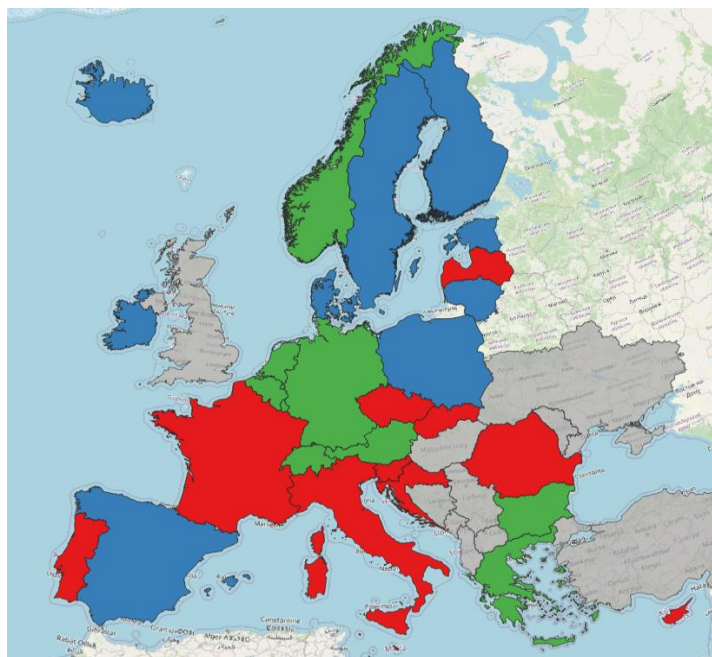

7. From Asylum Application to International Protection

After identifying the socio-demographic characteristics that define the typical profile of asylum seekers in Italy compared to other European countries, the analysis moved to a more detailed level. We asked how these characteristics, which shape the seeking of asylum in Italy, affect long-term residence outcomes. We focused on individuals who applied for asylum in Italy in 2016, a year marked by high inflows due to the Mediterranean crisis. We linked their records to the stock of valid residence permits as of 2024.

The analysis was carried out using a multinomial regression model, where the dependent variable is categorized into three outcomes with respect of the status at 2024: (1) present in Italy with an international protection permit; (2) present with a different type of residence permit (e.g., for work, family, etc.); and (3) no longer present in the country (reference category). The results of the model are shown in Figure 6, reporting the odds ratios and 95% confidence intervals in relation to the selected covariates: sex, age, citizenship, and the territorial area of entry into Italy.

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[2] Thanks to Alessandro Cimbelli for the elaboration.

Figure 6 – *Odds ratios (with 95% IC) from multinomial regression model on asylum seekers'*
status in 2024.
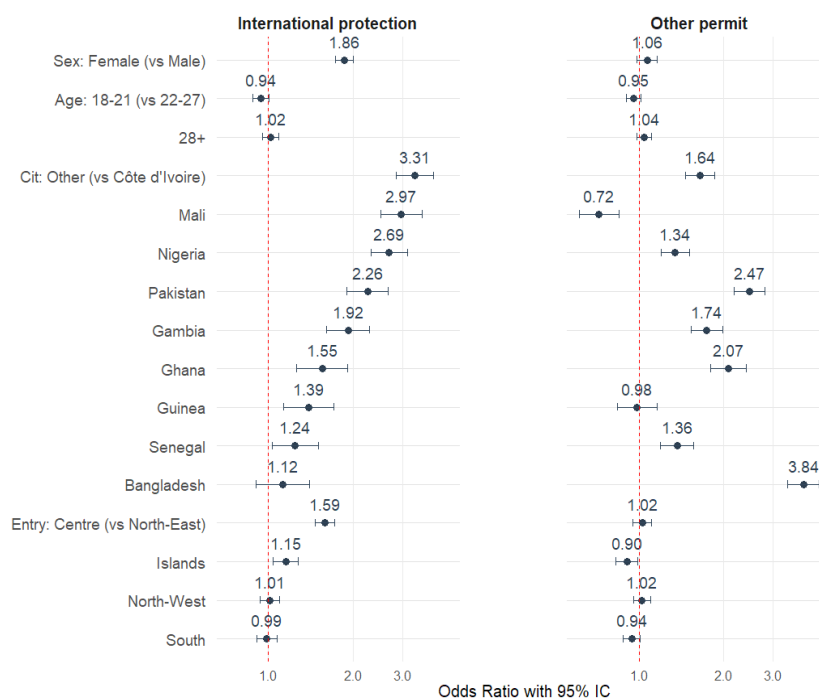
Gender shows a statistically significant effect on the likelihood of remaining in
Italy with an international protection permit: women are 86% more likely than men
to still be present with such a permit. Age does not appear to significantly influence
the probability of remaining in the country-neither for protection-related permits nor
for other types. Similarly, territorial area of entry is generally not significant, except
for individuals who entered through Central Italy, who are 60% more likely to still
be present in 2024 as refugees compared to those who entered through the North-
East (reference category). By contrast, citizenship emerges as a strong predictor. The
model includes the ten most common citizenships among asylum applicants in 2016.
Applicants from Mali, Nigeria, and Pakistan show significantly higher odds
(between 2.3 and 3) of obtaining a protection-related permit compared to those from
Côte d'Ivoire, which serves as the reference category due to its lower probabilities.
As for other types of residence permits, higher odds are observed for individuals
from Bangladesh (3.84), Pakistan, and Ghana, suggesting alternative pathways to
residence, likely connected to labour market integration or family networks.
Notably, Malian citizens have significantly lower odds of obtaining a non-protection
permit (OR < 1), indicating a higher likelihood of either exiting the country or being

granted international protection. Their lower tendency to remain with another type of permit may reflect weaker or less established support networks in Italy.

8. Conclusion

The analysis confirms the heterogeneous nature of asylum applications across Europe, while also highlighting the existence of some recurring patterns among countries. Citizenship emerges as the most decisive variable in shaping asylum seeker profiles, more so than age or gender. In fact, such characteristics are typical of the migrant populations from specific countries of origin, rather than being traits that make individuals more likely to be accepted by host countries regardless of their nationality. Established migration routes play a key role in determining the geographical distribution of asylum seekers: for instance, the prevalence of Syrians in Germany, Latin Americans in Spain, or certain African communities in France. These flows are largely influenced by historical, linguistic, and political ties, as well as pre-existing migration networks, which appear to guide migrants' choices more than individual socio-demographic characteristics.

In the Italian context, there is a clear prevalence of flows from North Africa and South Asia-regions often associated with higher rejection rates for asylum claims. The longitudinal analysis of those who entered Italy in 2016 shows that citizenship also strongly affects the type of residence permit held in the long term. Certain groups-such as those from Mali, Nigeria, and Pakistan-are more likely to receive international protection, while for others, such as Bangladeshi nationals, alternative pathways to residence emerge, often linked to employment or family reasons. Gender plays a role in the likelihood of obtaining protection status, whereas age and the region of entry into Italy do not appear to be significant predictors.

Overall, the findings underscore the complexity of the asylum process and the importance of considering the specific characteristics of each citizenship group, as well as the presence and strength of social networks on the territory. Considering this, further research is recommended to better understand the diverse integration trajectories among those who received protection, those who remained through other channels, and those no longer present in the country-particularly in relation to the presence and cohesion of their national communities within the host society.

References

BAKKER L., DAGEVOS J., ENGBERSEN G., 2017. Explaining the refugee gap: a longitudinal study on labour market participation of refugees in the Netherlands. *Journal of Ethnic and Migration Studies*, Vol. 43, No. 11, pp. 1775-1791.

CASACCHIA O., CONTI C., PANGALLO C., ROTTINO F.M., 2024. Beyond the emergency: characteristics and behaviour of refugees and asylum seekers in Italy. *Rivista Italiana Di Economia, Demografia E Statistica* - ISSN 0035-6832. – Vol. LXXVII: No.3, pp. 115-126.

COUNCIL OF THE EUROPEAN UNION 2001. Council Directive 2001/55/EC of 20 July 2001 on minimum standards for giving temporary protection in the event of a mass influx of displaced persons and on measures promoting a balance of efforts between Member States in receiving such persons and bearing the consequences thereof. *Official Journal of the European Communities*, L 212.

EUAA 2024, Asylum Report 2024, Annual Report on the Situation of Asylum in the European Union June 2024.

EUROSTAT 2025. 4.3 million under temporary protection in January 2025, 10 March 2025.

FORTE M.V., GATTI R., GABRIELLI G., BENASSI F., STROZZA S. 2025. Europe and the recent influx of asylum seekers: the EU Member States capability to grant international protection. *Genus*, Vol. 81, No.9.

ISTAT 2023. Report cittadini non comunitari in Italia, 3 ottobre 2024, pp. 2.

MANAFI I., ROMAN M. 2022. A Way to Europe: New Refugees' Migration Patterns Revealed. *Sustainability* 2022, Vol.14, No.748.

MCAULIFFE M., OUCHO L.A. 2024. World Migration Report 2024. International Organization for Migration (IOM), Geneve.

MINISTRY OF THE INTERIOR 2024. Principali flussi migratori nell'Unione Europea, Ufficio della Sede Didattico Residenziale Carlo Mosca, pp. 4-5.

NICOLESCU A., DRĂGAN G. 2020. The EU Migration Crisis in Terms of Asylum Applications Received. A Cluster Analysis over the Period 2015–2018. *Studia Europejskie – Studies in European Affairs*, Vol. 4/2020, pp. 109-124.

SCHIELE M. 2024. The Role of Gender in Asylum Migration to Europe: Analyzing Country-Level Factors of Gendered Selection of Asylum Seekers to Europe, *Journal of Immigrant & Refugee Studies*, pp. 10.

STATISTICS CANADA 2024, Immigrants admitted in Ontario, British Columbia, Alberta and Quebec most likely to stay in their provinces of destination, *The Daily*, December 19, 2024.

UNITED NATIONS 1951. Convention Relating to the Status of Refugees, Art. 1. Geneva: United Nations.

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EXPLORING INEQUALITIES
IN BIRTH OUTCOMES BY MATERNAL CITIZENSHIP:
EVIDENCE FROM LOMBARDY

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Abstract. This study examines disparities in neonatal outcomes between Italian and foreign mothers in Lombardy for the years 2010–2023 using individual-level administrative data from Birth Assistance Certificate (CEDAP). Logistic regression and multilevel models with hospital-level random effects assess the influence of maternal citizenship on outcomes, adjusting for maternal, pregnancy, and delivery characteristics. The initially higher risk of low birth weight among foreign mothers disappears after adjustment, while disparities in preterm birth and Apgar scores persist. However, multilevel models do not reveal any evidence of hospital-based discrimination. Persistent differences may reflect behavioral or genetic factors. Findings highlight the need for broader data and targeted public health and educational efforts to reduce maternal and neonatal health disparities.

1. Introduction

Maternal health is a critical global issue, closely related to economic progress, social stability, and individual and community well-being. Despite notable improvements in healthcare access over recent decades, disparities persist, particularly in neonatal outcomes such as low birth weight (LBW), preterm birth (PTB) and Apgar score (AS). These outcomes not only pose immediate health risks but also have long-term socioeconomic repercussions. In Italy, where universal healthcare exists, these disparities reveal significant socioeconomic and environmental influences, especially among immigrant mothers compared to native Italian mothers.

LBW refers to infants weighing less than 2500 grams at birth (Almond *et al.* (2005)). This condition arises from insufficient intrauterine growth, and it is associated with a mortality risk 20 times higher than that of normal-weight infants. PTB, on the other hand, refers to births occurring before 37 gestational week and is the leading global cause of mortality among children under five years old (Cnattingius *et al.*, 2013). Preterm births may occur spontaneously or because of medical interventions such as induced labour or cesarean delivery. AS is a quick test to assess a newborn's physical condition (at 5-minutes birth), and it evaluates five dimensions (breathing effort, heart rate, muscle tone, reflex response, and skin

colour). An overall score lower than 9 identifies a negative AS (Chong and Karlberg, 2004). These three adverse outcomes will be used to estimate potential inequalities in neonatal health between Italian and foreign mothers in Lombardy over the period 2010–2023.

Recognizing potential risk factors holds value for prevention and targeted actions and social programs could be developed to address the specific needs of at-risk populations (Hidalgo-Lopezosa *et al.*, 2019).

Adverse neonatal outcomes are linked to a significantly heightened risk of death, as well as various future health complications. These include but are not limited to high blood pressure, increased susceptibility to infections, growth restriction, cognitive development issues, cerebral palsy, sensory impairments such as deafness and blindness, as well as respiratory conditions like asthma and lung diseases. LBW is correlated with factors such as lower IQ, behavioral challenges and speech disorders. Furthermore, LBW infants typically demonstrate lower levels of educational attainment, report poorer overall health statuses, and encounter diminished employment prospects and earnings in adulthood compared to their normal-weight counterparts (Almond *et al.*, 2005; Hidalgo-Lopezosa *et al.*, 2019).

An additional consequence concerns socioeconomic status (SES). Maternal socioeconomic status (SES) is a key predictor of birth outcomes, with lower SES and poverty being significantly associated with an increased risk of LBW (Currie and Moretti, 2007). At the same time, the impact of poor neonatal outcomes on later socioeconomic status (SES) is significantly more pronounced for women who give birth in high-poverty areas compared to those in low-poverty areas. Compromised health during childhood could potentially contribute to the intergenerational cycle of poverty. In other words, children born to impoverished adults are more likely to experience health issues, increasing the likelihood that they will remain in poverty when they become parents themselves (Currie and Moretti, 2007).

Extensive research has identified a wide range of factors that influence neonatal outcomes. Key maternal characteristics, such as being younger than 20 or older than 35, body mass index (BMI), have all been shown to play a significant role. Additionally, social determinants including educational attainment, marital status, and access to prenatal care are recognized as important predictors (Almond *et al.*, 2005). Instances of violence and abuse endured by women throughout their lives, including during pregnancy, are acknowledged as potentially modifiable risk factors for adverse pregnancy outcomes (Fried *et al.*, 2008). Then, maternal behaviours such as smoking and substance use, as well as obesity or undernutrition, further increase the risk. Some pregnancy related information and the obstetric history of the mother can be determinants of poor neonatal outcomes: type of birth (C-section), sex of the newborn (male for PTB, female for LBW), and the occurrence of multiple births (twins). The absence of previous children or the presence of congenital defects or

maternal hereditary constraints could also influence the neonatal outcome (Currie, 2020; Hidalgo-Lopezosa *et al.*, 2019; Cnattingius *et al.*, 2013; Currie and Moretti, 2007).

Moreover, geographic and environmental factors significantly impact neonatal outcomes, such as urban living, air pollution, water and soil pollution, and neighborhood SES (Hidalgo-Lopezosa *et al.*, 2019; Coker *et al.*, 2016; Currie and Moretti, 2007).

While the previously identified determinants are broadly applicable to the general maternal population, the migration context, focus of this paper, introduces additional complexities that shape the health trajectories and vulnerabilities of immigrant mothers. Moreover, evidence suggest that migration impacts maternal health through factors related to both origin and destination countries, including SES, healthcare access, job opportunities, housing, and institutional support (Coker *et al.*, 2016; Urquia *et al.*, 2010; Currie and Moretti, 2007). Immigrant mothers often face language barriers, cultural differences, and discrimination (job applications, dining in restaurants, housing rentals, or college admissions), which can limit the quality and accessibility of care. Acculturation can lead to the adoption of unhealthy host-country behaviors, while interethnic unions may both facilitate integration and introduce psychosocial stress. In addition, voluntary migrants tend to be healthier than refugees, and genetic and biological factors also contribute to maternal and neonatal outcomes (Hidalgo-Lopezosa *et al.*, 2019; Giuntella, 2016; Riva and Zanfrini, 2013; Urquia *et al.*, 2010).

2. Background

In Italy, the healthcare system is structured around the National Health Service (NHS), which provides universal coverage and is primarily funded through public taxation. This system ensures that essential healthcare services are accessible to all residents.

The organizational structure of the NHS grants to the Italian Regions considerable autonomy, allowing for heterogeneity in governance models and strategic implementation, conditional on maintaining fiscal balance and ensuring the provision of the essential levels of care.

In this context, our study focuses on the Lombardy Region, which constitutes a distinct case in Italy. Notably, Lombardy is the only region to have formally adopted a 'choice and competition' model (Brenna, 2011), including in the healthcare system both public and private providers. In the last decades Lombardy have been one of the European regions with the highest levels of immigrant presence, providing

valuable insights into the evolving dynamics of immigration in Italy (Mussino *et al.*, 2015).

Understanding immigrants' living conditions is essential for identifying potential disparities with the native population, particularly in areas such as housing, employment, healthcare access, and education. Foreign families in Italy often experience greater economic hardship than Italians, although this varies across communities. While some groups reach comparable income levels, others face marked disadvantages. Migrants are frequently employed in low-skilled jobs despite possessing higher educational qualifications, and few achieve upward occupational mobility, reinforcing socioeconomic inequalities (Barbiano di Belgiojoso, 2017).

3. Data

Data analysis exploits Birth Assistance Certificates (CeDAP) for Lombardy region, covering the years 2010-2023. This administrative data provides a comprehensive overview of all birth events in Lombardy during the specified period.

CeDAP database, filled by healthcare professionals, collects several data. Among these, it is worthy to cite data on parents' socio-demographic information, such as age, nationality, educational level, and employment; pregnancy characteristics such as the mother's obstetric history and labour details are available. In addition, data on previous pregnancies are recorded, for instance the number of previous births, and miscarriages. Information on pregnancy duration, prenatal medical visits, diagnostic tests, and whether conception occurred via assisted reproductive technology was also documented. Finally, information on newborn, such as gender, weight, and Apgar score, and other additional data not considered in our analysis, are collected.

To the aim of this paper, some exclusion criteria have been applied. First, with the aim of restricting a mix of cultural influence, we remove cases where the place of birth and citizenship do not match. Then, we exclude twin births, as multiple births follow distinct distributions that differ from those of LBW and PTB in single births: twins tend to be lighter and, on average, they are typically born earlier than singletons (Almond *et al.*, 2005). In addition, we remove elective C-sections as this group is associated with intrinsic characteristics that could increase the likelihood of poor neonatal outcomes (Silva *et al.*, 2001). Finally, mothers under the age of 15 and over 50, as well as stillbirths, do not meet inclusion criteria due to underlying characteristics that differ from those of the population we aim to study. The application of these exclusion criteria allows us to select for the analysis 858,670 deliveries.

4. Methodology

Since all our outcomes are dichotomous, we exploit logistic regression to assess the coefficients of interest (mother's citizenship) and to adjust the effect of each covariate on the three considered outcomes. We then use a multilevel model to investigate the role of the hospitals in the outcomes' heterogeneity. Finally, an extension to the multilevel model including the random effect of the covariate related to the migrant mothers helps us to capture a potential discrimination effect within the hospitals. Hence, the empirical strategy starts with a logistic regression taking the following form:

$$logit(\Pr(Y_i = 1)) = \alpha + \beta_1 Citizenship_i + \sum_{k=2}^{K} \beta_k X_{ki} \tag{1}$$

where Y_i equals to 1 when an adverse outcome (LBW, PTB, or AS<9), is observed, and 0 otherwise; β_k is the k-dimensional vector of coefficients related with the k-1 covariates included to adjust the risk of an adverse outcome; β_1 is the coefficient of interest which estimates the difference between Italian and migrant mothers. Several models, including incremental set of covariates, are estimated for each outcome. Model 0 includes exclusively the citizenship variable, whereases Model 1 includes age, level of education, occupation, marital status, father's presence, and local health authority of residence. Model 2 adds to Model 1 the covariates related to the pregnancy: number of previous pregnancies, number of previous C-sections, number of miscarriages, gestational week of first visit, number of ultrasounds, amniocentesis test, ultrasound at 22th week of pregnancy, and the growth defects. Finally Model 3 includes, in addition, sex of newborn, the year of delivery, and the month of delivery. The aim of this strategy is to observe if the initial differences observed in Model 0 in terms of migrant status disappear when the outcomes are adjusted by several groups of relevant covariates.

At this point we exploit a multilevel logistic regression to consider the hierarchical structure of the data and to control the effect of being hospitalized in different hospitals in the regional healthcare system, The multilevel model takes the following form:

$$logit(\Pr(Y_{ij} = 1)) = \alpha + \beta_1 Citizenship_{ij} + \sum_{k=2}^{K} \beta_k X_{kij} + u_{0j} \tag{2}$$

which differs from equation (1) by the inclusion of the term u_{oj} capturing unobserved heterogeneity across hospitals in Lombardy and following a Normal distribution with 0 mean and a σ_u^2 variance. In addition, we also consider an extension of equation (2) allowing the effect of the main predictor, Citizenship, to vary by group (hospital) through a random slope (β_{1j}). The multilevel model and

multilevel model with random Citizenship are both estimated in the form of the Model 3 previously described, where all the covariates are included.

5. Descriptive Analysis

The final sample includes 858,670 deliveries occurred in Lombardy between 2010 and 2023, adopting the exclusion criteria previously described. Table 1 reports the cross-distribution of maternal citizenship and place of birth, which was used to define the two study groups: Italian mothers (born in Italy with Italian citizenship) and migrant mothers (foreign-born with non-Italian citizenship). To ensure homogeneity, mixed cases were excluded, resulting in roughly 70% Italian and 28% migrant mothers.

Table 1 – *Maternal Citizenship and Birthplace Distribution.*

Place of Birth	Citizenship	
	Italian	Non-Italian
Italy	716,489 (69.00%)	2,183 (0.21%)
Non-Italy	30,471 (2.93%)	289,229 (27.85%)

Source: Elaboration on Lombardy administrative data (CEDAP)

A more detailed overview of maternal, pregnancy, and delivery characteristics is presented in Table 2. Substantial and systematic differences emerge across most indicators. Migrant mothers are, on average, younger (30.1 vs 33.2 years) and exhibit a greater number of previous pregnancies. They also present a higher frequency of previous C-sections, suggesting a more complex obstetric history.

Significant inequalities are observed in the use of antenatal services. Migrant mothers typically begin prenatal care later (first visit at 9.6 weeks vs 7.8 weeks for Italians) and have smaller number of ultrasound examinations (4.15 vs 5.29 on average), and amniocentesis, reflecting both socioeconomic and cultural factors influencing access to healthcare. Similarly, the share of women attending at least four prenatal visits is markedly lower among migrants (82.9% vs 90.9%).

Socioeconomic differences are even more pronounced. The share of university-educated mothers is more than twice as high among Italians (39.8%) than among migrants (17.9%). Regarding occupation, most Italian mothers are employed (83% vs 31%), while 57% of migrant mothers report themselves as homemakers. Interestingly, the proportion of married mothers is higher among migrants (76.7%) than among Italians (58.7%), suggesting different cultural and family structures.

In addition, trends over time reveal important demographic shifts. ISTAT (2024) data indicate an ongoing process of demographic alignment between foreign and

native mothers in Italy. In Lombardy we observe the same process of reducing fertility and assimilation between Italian and foreign mothers. Total fertility rate gathered by ISTAT reveals that between 2010 and 2023, fertility in Lombardy declined from 1.34 to 1.10 among Italian women and from 2.70 to 1.87 among foreign women. These values reflect a gradual convergence in reproductive behavior between native and migrant mothers.

Table 2 – *Comparison of Maternal, Pregnancy, and Neonatal Characteristics between Italian and Migrant Mothers.*

Variable	Italian	Migrant	
	Mean (SD)	Mean (SD)	p-value
mother's age	33.2352 (4.9325)	30.1335 (5.5803)	***
# previous pregnancies	0.5596 (0.7257)	0.9347 (1.0026)	***
# previous c-sections	0.0435 (0.2195)	0.0849 (0.3263)	***
# miscarriages	0.2408 (0.5869)	0.2531 (0.6064)	***
gestational week of first visit	7.8256 (2.7160)	9.6360 (4.9391)	***
# ultrasound	5.2910 (2.2274)	4.1528 (1.9632)	***
sex newborn (male)	0.5167 (0.0523)	0.5170 (0.0385)	-
mother's educ. level (degree)	0.3975 (0.0489)	0.1785 (0.0239)	***
amniocentesis (yes)	0.0698 (0.0236)	0.0275 (0.0096)	***
ultrasound 22th (yes)	0.9647 (0.0502)	0.9497 (0.0483)	***
growth defects (yes)	0.0184 (0.0124)	0.0211 (0.0084)	***
mother's occupation			***
employed	0.8296 (0.0534)	0.3090 (0.0308)	
stay at home	0.0978 (0.0276)	0.5707 (0.0401)	
mother's marital status (married)	0.5873 (0.0535)	0.7665 (0.0449)	***
# prenatal visits (equal or more than 4)	0.9095 (0.0518)	0.8288 (0.0461)	***
Total Fertility Rate 2010	1.34	2.70	
Total Fertility Rate 2023	1.10	1.87	

*Source: Elaboration on Lombardy administrative data (CEDAP). Total fertility rate provided by ISTAT (https://demo.istat.it/app/?i=FE1&l=it) - Note: *** p<0.001, ** p<0.01, * p<0.05.*

Finally, Table 3 shows the outcomes' distribution in our data, where LBW occurs in 4.78% of births, slightly lower than PTB rate of 4.90%. AS in the last two columns shows that potential issues at birth affect a small proportion of the sample (3.30%).

Table 3 – *Neonatal outcomes distributions.*

	LBW		PTB		AS	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	41,073	4.78%	41,700	4.90%	28,336	3.30%
No	817,597	95.22%	809,735	95.10%	830,334	96.70%

Source: Elaboration on Lombardy administrative data (CEDAP).

6. Results

Table 4 highlights the four logit models described in the Methodology section, showing that migrant status is associated with a small but statistically significant increase in the likelihood of LBW, however when any additional covariates are included this significance disappears. Regarding PTB, migrant status has a positive and significant effect in all four models, although the size of the coefficient decreases after including additional covariates. Migrant mothers are more likely to experience low AS, highlighting additional disadvantages faced by migrant mothers.

Table 4 – *Estimated Effects of Maternal Citizenship on Neonatal Outcomes across Models with Additional Covariates.*

Outcome	Variable	Model 0	Model 1	Model 2	Model 3
LBW	Intercept	-3.0211***	-4.0501***	-4.4442***	-4.6290***
		(0.0061)	(0.0393)	(0.1036)	(0.1086)
	Migrant Mother	0.0532***	0.0212	-0.0278	-0.0119
		(0.0112)	(0.0141)	(0.0156)	(0.0156)
PTB	Intercept	-3.0322***	-4.3312***	-3.9380***	-4.3292***
		(0.0061)	(0.0387)	(0.0960)	(0.1008)
	Migrant Mother	0.2152***	0.1975***	0.0971***	0.1089***
		(0.0107)	(0.0135)	(0.0143)	(0.0143)
AS	Intercept	-3.4396***	-4.2237***	-4.6278***	-4.6428***
		(0.0074)	(0.0467)	(0.1225)	(0.1272)
	Migrant Mother	0.1942***	0.2057***	0.1999***	0.1949***
		(0.0130)	(0.0164)	(0.0170)	(0.0171)
Covariates:	Mother		√	√	√
Covariates:	Pregnancy			√	√
Covariates:	Delivery				√

Note: Model 0 include only the covariate indicating the foreign status, whereas from Model 1 to Model 3 we include additional covariates adjusting respectively for mothers' characteristics, pregnancy and delivery. - *** p<0.001, ** p<0.01, * p<0.05. Source: Elaboration on Lombardy administrative data

Turning to the results of the multilevel models, we observe in Table 5 that the association between migrant status and neonatal outcomes remains stable when compare with the logistic regression previously described. However, an interesting finding is that the hospital-level effect appears to play a role in shaping these outcomes. As shown in Figure 3, some hospitals exhibit significantly higher risks of LBW, PTB, and low AS, while others appear to offer a protective effect (Berta et al (2020)). Notably, there is no evidence of differential treatment between Italian and migrant mothers at the hospital level. In fact, the estimated random slope model (not reported here) indicates no statistically significant variation in the effect of migrant status across hospitals[1].

Table 5 – *Multilevel models result with random intercept (migrant non b_{ij}).*

	LBW	PTB	AS
Intercept	-3.3962***	-2.2102***	-2.7562***
	(0.0832)	(0.0795)	(0.1023)
Migrant Mother	-0.0252	0.0910***	0.2005***
	(0.0157)	(0.0144)	(0.0172)

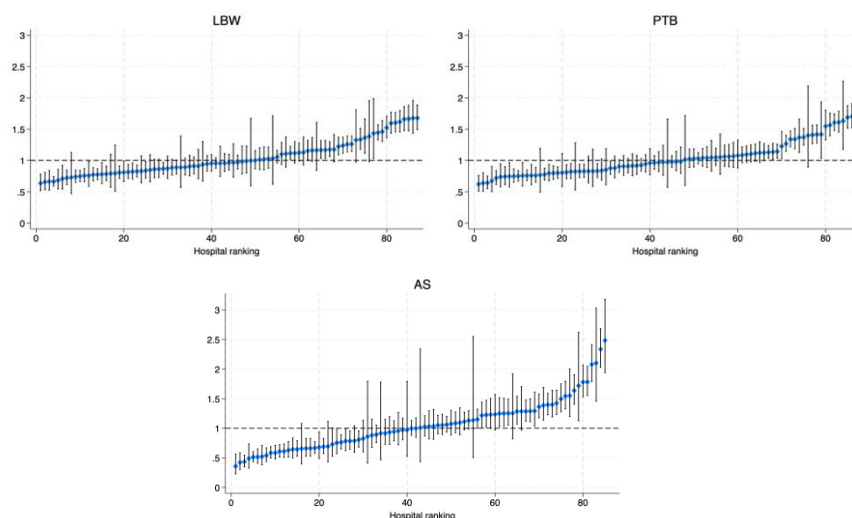*Source: Elaboration on Lombardy administrative data - Note: *** p<0.001, ** p<0.01, * p<0.05*

7. Conclusions

This paper analyses the differences in neonatal outcomes between Italian and migrant mothers, using data from the Lombardy CEDAP between 2010 and 2023. The main results do not evidence any significant differences in the risk of LBW, but show that migrant mothers experience a higher risk of PTB and low AS.

These potential disparities between Italian and migrant mothers can be explained by the substantial differences observed in maternal characteristics and pregnancy pathways. Variations in the use of prenatal care services, time at the first visit, and access to diagnostic tests suggest a different behavior and engagement during pregnancy. These differences highlight that part of the inequality in birth outcomes reflects broader social and cultural determinants rather than differential treatment within the Lombard healthcare system.

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[1] Detailed results of each estimated models (logistic regression, multilevel logistic regression with random intercept, and multilevel logistic regression with random intercept and slope), including the effects of each covariate and the distribution of random effects in the multilevel models are omitted for requested brevity but available upon request.

Figure 3 – *Hospital random effect for LBW, PTB and AS.*

Source: Elaboration on Lombardy administrative data.

In addition, cultural norms and lifestyle could contribute to these gaps, but data availability does not allow us to control for these characteristics. Indeed, smoking, a well-known risk factor in developed countries, mainly affects foetal growth and is linked to LBW but not to the duration of pregnancy, whereas nutritional habits are more related to PTB (Cnattingius *et al.*, 2013). Similarly, because of limitations in the data, we could not control for the level of integration or acculturation in the host (Giuntella, 2016).

In synthesis, our findings highlight that the Lombardy healthcare system appears to be structurally fair, and it can reduce pre-existing inequalities at birth. Still, inequalities in outcomes remain, probably due to cultural differences in prenatal care, genetics, and language or environmental barriers.

To reduce remaining inequalities, clinical care must be combined with broader and more integrated public health policies. It is essential to continue promoting targeted support programs, including cultural mediation, psychological support, personalized education, and a strong local network that can detect vulnerability early. Only through these efforts can formal universalism be transformed into real equity for all newborns.

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References

ALMOND D., CHAY K.Y., LEE D.S. 2005. The costs of low birth weight, *The Quarterly Journal of Economics*, Vol. 120, No. 3, pp. 1031-1083.

BARBIANO DI BELGIOJOSO E. 2017. The occupational (im)mobility of migrants in Italy, *Journal of Ethnic and Migration Studies*, Vol. 45, No. 9, pp. 1571–1594.

BERTA, P., MARTINI, G., PIACENZA, M., TURATI, G. 2020. The strange case of less C-sections: Hospital ownership, market concentration, and DRG-tariff regulation. *Health Economics*, 29, 30-46.

BRENNA E. 2011. Quasi-market and cost-containment in Beveridge systems: The Lombardy model of Italy, *Health Policy*, Vol. 103, Nos. 2–3, pp. 209–218.

CHONG DS, KARLBERG J. 2004. Refining the Apgar score cut-off point for newborns at risk. *Acta Paediatr*. Jan; Vol. 93, No. 1, pp. 53-9.

CNATTINGIUS S., VILLAMOR E., JOHANSSON S., BONAMY A.K.E., PERSSON M., WIKSTRÖM A.K., GRANATH F. 2013. Maternal obesity and risk of preterm delivery, *JAMA*, Vol. 309, No. 22, pp. 2362-2370.

COKER E., LIVERANI S., GHOSH J.K., JERRETT M., BECKERMAN B., LI A., RITZ B., MOLITOR J. 2016. Multi-pollutant exposure profiles associated with term low birth weight in LA County, *Environment International*, Vol. 91, pp. 1-13.

CURRIE J., MORETTI E. 2007. Biology as destiny? Short-and long-run determinants of intergenerational transmission of birth weight, *Journal of Labor Economics*, Vol. 25, No. 2, pp. 231-264.

CURRIE J. 2020. Child health as human capital, *Health Economics*, Vol. 29, No. 4, pp. 452-463.

FRIED L.E., CABRAL H., AMARO H., ASCHENGRAU A. 2008. Lifetime and during pregnancy experience of violence and the risk of low birth weight and preterm birth, *Journal of Midwifery & Women's Health*, Vol. 53, No. 6, pp. 522-528.

GIUNTELLA O. 2016. Assimilation and health: evidence from linked birth records of second-and third-generation Hispanics, *Demography*, Vol. 53, No. 6, pp. 1979-2004.

HIDALGO-LOPEZOSA P., JIMÉNEZ-RUZ A., CARMONA-TORRES J.M., HIDALGO-MAESTRE M., RODRÍGUEZ-BORREGO M.A., LÓPEZ-SOTO P.J. 2019. Sociodemographic factors associated with preterm birth and low birth weight: A cross-sectional study, *Women and Birth*, Vol. 32, No. 6, pp. e538-e543.

ISTAT 2024, Natalità in Italia. Anno 2023. Istituto Nazionale di Statistica.

MUSSINO E., GABRIELLI G., PATERNO A., STROZZA S., TERZERA L. 2015. Motherhood of foreign women in Lombardy: Testing the effects of migration by citizenship, *Demographic Research*, Vol. 33, pp. 653-664.

RIVA E., ZANFRINI L. 2013. The labor market condition of immigrants in Italy: The case of Lombardy, *Revue Interventions Economiques. Papers in Political Economy*, Vol. 47.

SILVA A.A.M., LAMY-FILHO F., ALVES M.T.S.S.B., COIMBRA L.C., BETTIOL H., BARBIERI M.A. 2001. Risk factors for low birthweight in northeast Brazil: the role of caesarean section, *Paediatric and Perinatal Epidemiology*, Vol. 15, No. 3, pp. 257-264.

URQUIA M.L., GLAZIER R.H., BLONDEL B., ZEITLIN J., GISSLER M., MACFARLANE A., NG E., HEAMAN M., STRAY-PEDERSEN B., GAGNON A.J. 2010. International migration and adverse birth outcomes: role of ethnicity, region of origin and destination, *Journal of Epidemiology & Community Health*, Vol. 64, No. 3, pp. 243-251.

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