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Brief

Extended urbanisation and Covid-19 in Northern Italian Labour Market Areas: what density tells for municipal resilience

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Abstract

FEEM Policy Brief

Extended urbanisation has emerged in the contemporary debate as a notion embracing the globalised nature of urban phenomena. This includes how urbanisation exerts an influence beyond the city's limits, often in places far beyond dense population centres, through a global network connecting geographically distant areas. With its sprawling urbanisation patterns and a globalised industrialisation and economy, Northern Italy perfectly fits within this definition. The context of extended urbanisation is also at the core of the theoretical framework provided by a range of studies devoted to the spatialities of infectious disease (Connolly, Keil, and Ali 2020; Connolly, Ali, and Keil 2020). A spatial analysis of excess mortality during the first wave of Covid-19 in Northern Italy is proposed at the scale of Labour Market Areas (LMAs – Sistemi Locali del Lavoro), with specific attention to density. More in detail, some topological density indices relating to relational intensity and territorial permeability are correlated with 2020 COVID-related deaths, that is, excess deaths compared to the previous five years. This analysis allows combining a snapshot of the contemporary situation with an overview of inter-area disparities. This can highlight the chronic weaknesses of different territorial development models and inform resilience strategies at the inter-municipal scale.

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Extended urbanisation, density and disease

More space for the urban process: extended urbanisation

Both data and urbanisation narratives describe our century as the most urban one in human history, with the UN famously stating that urban settlements have hosted more than half the world's population since 2007 (UN-Habitat 2006, iv). However, there is a lack of consensus on how to label some contemporary manifestations of the urban, not only because of the widely varying definitions of urban areas (UNDESA 2018, 16) but, some argue, because of the lack of awareness as to what the urban means. This short-sightedness is labelled 'methodological cityism' (Angelo and Wachsmuth 2015), a bias that leads to ignoring the broader territory cities affect beyond traditional urban boundaries (Brenner and Schmid 2015, 157).

This persists in spite of a decades-long debate on the emergence of a new urban question that has been going on since the post-war period, notably with Henri Lefebvre predicting the advent of 'complete urbanisation' (1970). Another key advancement was Soja's 'postmetropolis' (Soja 2000), an umbrella term summarising the discourses relating to the emergent urbanisation processes of the late twentieth century. Soja also introduced the notion of synekism, 'the economic and ecological interdependencies and the creative ... synergisms that arise from the purposeful

clustering and collective cohabitation of people in space' (Soja 2000, xii), embracing areas and flows that need to be accounted for in urban analyses but are often not classified as such.

Following Soja's lines, Brenner and Schmid introduce the concept of extended urbanisation, a component of a three-moment urbanisation process of concentrated, extended and differential urbanisation. Extended urbanisation features such processes as "the operationalisation of places, territories and landscapes ... far beyond the dense population centres", "the ongoing construction and reorganization of ... infrastructure in support of these operations", and "the enclosure of land from social uses in favour of ... profit" (Brenner and Schmid 2015, 167).

The spatial transformations Brenner and Schmid list help find the places where the flows and relations of contemporary urbanisation are located. This way, we reverse-engineer the question: it makes sense to look for the areas where processes, flows, relations, lifestyles, etc. that can be defined urban take place – especially considering that some traditional combinations, such as urbanity and density, have been disentangled (Keil 2017, chap. 8). The phenomenology authors use to illustrate extended urbanisation shows striking similarities with developed countries, such as the North Italian case.

Density: the ever-evolving category of the urban

The contested nature of the urban is reflected in the categories used to define it. Among them, density holds a special place: it is a 'central terrain for negotiation of what is urban and what is not [...] through the political and social ecology of boundary setting exercises' (Keil 2017, chap. 8).

When picturing a city, density immediately springs to mind as the common denominator of the embodiment of the urban environment. Clusters of people, buildings and infrastructure are the physical and abstract agglomeration that builds and keeps cities alive. Static density metrics are useful metrics for bringing aspects of extended urbanisation to light; but if extended urbanisation is at least as mobile as it is embodied in static infrastructure, ignoring this mobility would mean missing a crucial part of the picture.

We can start by looking for a fitting philosophical framework in terms of time and space. In his reflection on global cities, Smith (2003, 564) writes that 'space is folded into everything [...] geographical scales are little more than straitjackets and space should be set free'. This resonates in McFarlane's fresh look at urban density. He states that density 'emerges not just as a topographical, linear, or numerical problem, but as a topological problem connecting multiple concerns and spaces in ways that have consequences for other spaces, some planned and some unplanned' (McFarlane 2016, 631, emphasis by the author). Topological density, a seemingly more complex notion than its topographical

counterpart, is aptly exemplified here as 'the density of a city market or busy train or bus terminal or activist occupation, where the form of order that is put in place is there precisely to allow for change in relations (over a day or week or season)'.

This should not lure us into doing away with topographical density as integral to urban studies, but rather making room for what is possibly the most distinctive feature of the globalised world: flows. The first 'point of departure for understanding density' proposed by McFarlane are 'the relations that make and unmake density' (2016, 632), conveyed by the infrastructures that serve the needs of urban mobility (as well as energy provision, water sanitation, etc.). Put another way, these areas become the linchpin of these flows and the true core of globalised urbanisation (Connolly, Keil, and Ali 2020). Now, there is an aspect of urbanisation whose relationship with the many facets of density can be revealing: disease.

Density and/as disease

Urbanisation is so deeply linked with disease that infections have been theorised to have emerged thanks to the development of villages, where humans and livestock were in close proximity (Diamond 1997). Cities have subsequently been associated with poor hygiene conditions and disease spread for much of human history. It wasn't until the 1950s, with great advancements such as better water sanitation, that the gap closed (Davis 1965, 44). This turning point from epidemics to degenerative diseases was labelled by Omran (1971) as the 'epidemiologic transition'.

While cities were becoming havens of public health, though, a large-scale shift in urbanisation patterns magnified the so-called diseases of affluence. Urban sprawl and suburbanisation, made possible by increasing car ownership and promoted to sustain demand for products as the automobile (Harvey 1985, 122), resulted in sedentary lifestyles, water quality degradation and the expansion of the urban heat island.

In the era of globalisation, exploding international trade and mobility co-star in the explosion of pandemics. Keeping in mind Brenner and Schmid's (2015, 167) features of extended urbanisation, it is apparent that communication and transportation infrastructure, the loci of extended urbanisation, are key in the process. Fixed infrastructure helps to absorb more and more topographical space into the topological

networks of the global economy. What can be derived, and what evidence might show in the case of Covid-19, is that the topological densities inherent to these infrastructures might be instrumental in the spread of pandemics. An important dimension is what Keil (2018) calls the 'global suburb', a sub-network that turns out to have a life of its own. Suburban (or, as it were, extended-urban) ways of life have as much to do, in health terms, with what is going on in their global counterparts as with the life of the metropolitan centres (Connolly, Keil, and Ali 2020). This is apparent in cases such as the recent SARS and Ebola outbreaks, which originated in the hinterlands and only later spread elsewhere through the global network (Keil and Ali 2007), in a deadly mix of traditional customs and the expansion of global capitalism linking global hubs and remote villages (WHO 2015).

02

A metropolitan archipelago: extended urbanisation in Northern Italy

In the complexity of the global extended urbanisation trend, we concentrate on the highly urbanised region of the Po valley in Northern Italy. This allows for a more uniform interpretation and creates a context for policy insights.

Piedmont (Piemonte), Lombardy (Lombardia), Emilia-Romagna and Veneto are the four largest administrative regions of Northern Italy. Their recent history sets them apart as the national economic powerhouse. Thanks to investments in key manufacturing sectors of the heavy industry, in the early twentieth century, north-western Italy formed the 'industrial triangle' (Felice 2015). Against the background of a socio-economic divide between Northern and Southern Italy, other regions of North-eastern and Central Italy caught up in the following decades. The economic boom, which shrank this gap, was fuelled by a different model of development. Third Italy (Bagnasco 1977) did not owe its fortune to Fordist industrialisation, but rather to small and medium-sized enterprises (SMEs), which later developed into today's 'pocket-sized multinationals' (Colli 2002).

This explains both why Northern Italy hosts just shy of 50% of the Italian population and how the population is spread. Globalised

SMEs have contributed to shaping the morphology of urbanisation, encouraging sprawling housing and industrial areas, via lax municipal and regional legislation (Savino 2009), leading to congested roads, fragmented manufacturing systems and unplanned strips where incompatible activities stand side by side. In what the urbanist Francesco Indovina (1990) labelled 'diffuse city' ('città diffusa') and later 'metropolitan archipelago' (2009), topographical density is replaced by accessibility through mobility, creating attractive markets for private services. The result is a city in functional and social terms, but not in physical form. The metropolitan archipelago comes with its drawbacks in terms of reduced efficiency, with heavy motorisation rates, long travel times, environmental depletion, high energy consumption, high costs for public services provision, as well as social isolation for disadvantaged demographics.

Leaving aside value judgements, urbanisation in the Po valley is a prime case of extended urbanisation. With its combination of sprawl and high levels of relations, daily activities take place both on a local and a metropolitan level. Substantial differences between urban and suburban lifestyles and landscapes disappear, and metropolitan networks become denser with the support of hubs and infrastructures.

Topographical density is less significant, with dense and less dense, rural and urban areas equally contributing to the production of the urban (Balducci, Curci, and Fedeli 2019, 53). Recreational mobility becomes more relevant, and an overall increase in mobility is observed, notably where density is lower (Balducci, Fedeli, and Curci 2017, 53). In general terms, monocentric metropolitan mobility perspectives prove inadequate, with strongly polycentric functional urban areas.

A final perspective is offered by studies at the scale of Labour Market Areas (LMAs, SLL or 'Sistemi Locali del Lavoro' in Italian) the 'regional geographical areas where the bulk of the labour force lives and works, and where establishments can find the main part of the labour force necessary to occupy the offered jobs [...] the key criterion being the proportion of commuters who cross the LMA boundary on their way to work' (ISTAT 2019).

Thanks to a more dynamic job market, LMAs tend to be larger in Northern Italy as opposed to Southern Italy, with higher mobility flow rates and a trend of expansion (Cruciani et al. 2015). Lower rates of supply self-containment (the ratio of internal commutes and residents in employment) are observed in peri-urban areas, where major urban centres most strongly exert their attraction, resulting in higher LMA porosity (Cruciani et al. 2015, 102). A peculiar feature of some LMAs in Lombardy is the sprawling job supply, with a lower concentration of jobs in the LMA core city than usual (Cruciani et al. 2015, 119). There is also a strong prevalence of inflows and outflows of LMAs in Lombardy and Veneto. The same happens with the seven-type classification of LMAs proposed by Benassi and Lipizzi (2015), where 'diffuse city' LMAs generate high commuting rates, reaching 26.7% against a national average of 19.1%.

03

Topological density and Covid-19 in Northern Italy

Extended urbanisation in Northern Italy has long been under the eye of experts. As for many other global regions, however, the Covid-19 pandemic was a first-ever event. Besides a few cases from Chinese tourists, the first officially recognised Italian outbreaks of Covid-19 were reported in little towns in Lombardy and Veneto. While Italian nationals were being repatriated in a rush, the virus had already made its way through global mobility.

As the pandemic began to spread over Italy, unexpected patterns surfaced, with a clear distinction between heavily infected and relatively unaffected regions. ISTAT's report (ISTAT 2020b) on the impact of Covid-19 in the first quarter of 2020 is unequivocal. The first nine provinces (Italy's intermediate administrative entities between municipalities and regions) with the highest mortality excess are in Lombardy or Emilia-Romagna. Northern Italy had an increase in deaths of 94% in March 2020 compared to the 2015-2019 average, roughly ten times as much as Central Italy (9,1%) and fifty times as much as Southern Italy (2%). What's most interesting, however, is how the pandemic spread within the hardest-hit area. Instead of ravaging the urban cores of Italy's big cities, Covid-19's first wave took its toll on areas such as Bergamo and the Seriana Valley, one of the many in-between heavily industrialised regions in the metropolitan region surrounding Milan (Barcella 2020). As Biglieri,

De Vidovich, and Keil (2020) put it, 'where the virus is concentrated, you find the peripheral'.

However surprising, these patterns are plausible in topological terms. Topographical density does not seem to accurately describe Covid-19 spread, as a study focusing on the Bergamo area finds out (Cremaschi, Salone, and Besana 2021). The authors also highlight that the combined effect of relational networks and (hyper)mobility infrastructure is something existing local institutions are unsuitable to cope with. This failure in pandemic governance has spurred several proposals for more effective territorial scales for containing outbreaks. The Italian economic think-tank Tortuga has suggested that Labour Market Areas would be an effective territorial division for localised lockdowns (Tortuga 2020). Their argument is that, by construction, LMAs enclose areas where most home-to-work commutes of residents take place – a mobility bubble, as it were. LMAs are a reasonable approximation of outbreak areas, and LMA-based lockdowns would be less disruptive than alternatives based on arbitrary administrative subdivisions. Other studies suggest clusters of LMAs called 'Economic Regions' where an even higher rate of mobility is self-contained (Anitori et al. 2020).

Building on Tortuga's and Anitori et al.'s intuitions, we argue that topological densities generated by daily mobility are more

informative than topographical densities in describing Covid-19 spread in areas of extended urbanisation. We investigate this possibility quantitatively using IIRFL (Relational Intensity Index within LMAs) and SCO (supply-side self-containment), two ISTAT-produced Labour Market Areas quality indicators (ISTAT 2020a) as proxies of relational intensity within and in relation to neighbouring LMAs.

The results are encouraging. Correlating these indices with excess mortality in the months of the first wave of Covid-19 pandemic exposes the influence of topological density on pandemic spread: areas with higher relational intensity – more people commuting to different municipalities – and lower self-containment – more people commuting outside their own Labour Market Area – have higher excess mortality. This still holds when we control for the four different regions studied, a crucial factor considering the differences in

regional public health performance during the pandemic. Map visualisations offer another perspective on results. The excess mortality map (Figure 1) highlights that hardest-hit LMAs are indeed those around major urban areas and not the largest cities themselves, with Milan’s large LMA showing a lighter shade than Eastern Lombardian and Emilian LMAs surrounding it. The IIRFL map (Figure 2) shows a less unmistakable pattern. However, it shows how high IIRFL values spread well beyond metropolitan cores (e.g., in Lombardy) and are sometimes higher for peri-urban areas than for the metropolitan core itself (e.g., in the north-western region of Piedmont, with higher values north of Turin than for the city’s LMA itself). Lastly, the self-containment (SCO) map shows peri-urban LMAs stand out as distinctively porous, with the lowest values in areas surrounding urban cores in dark green (Figure 3).

Figure 1. Excess mortality by LMA

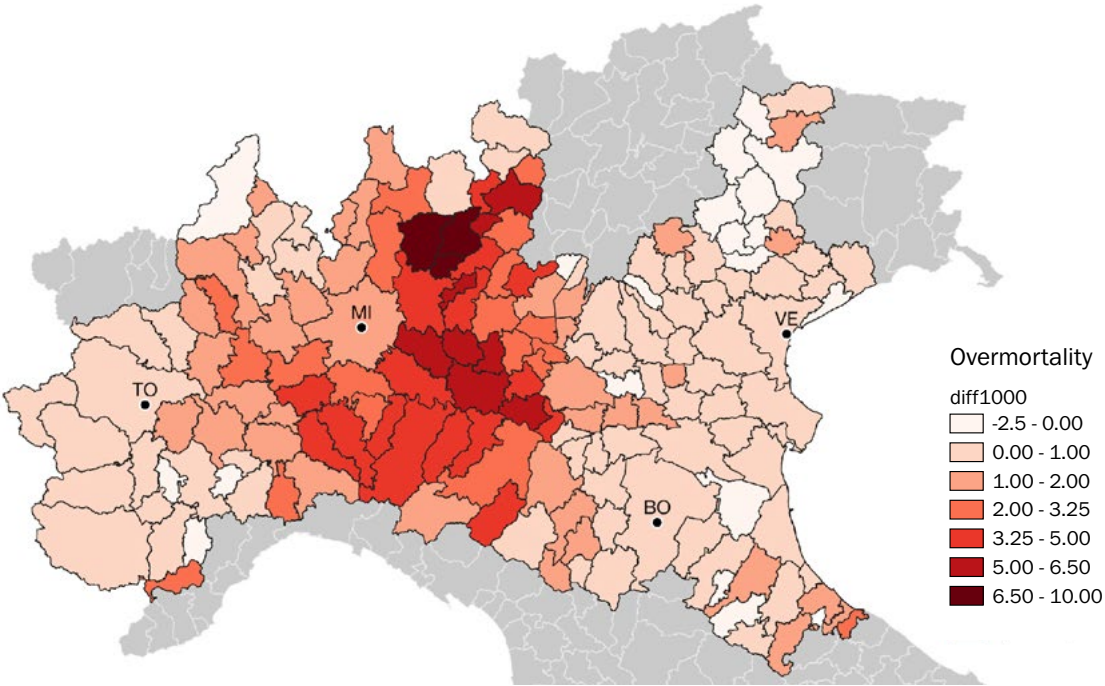


Figure 2. Relational intensity (IIRFL index) by LMA

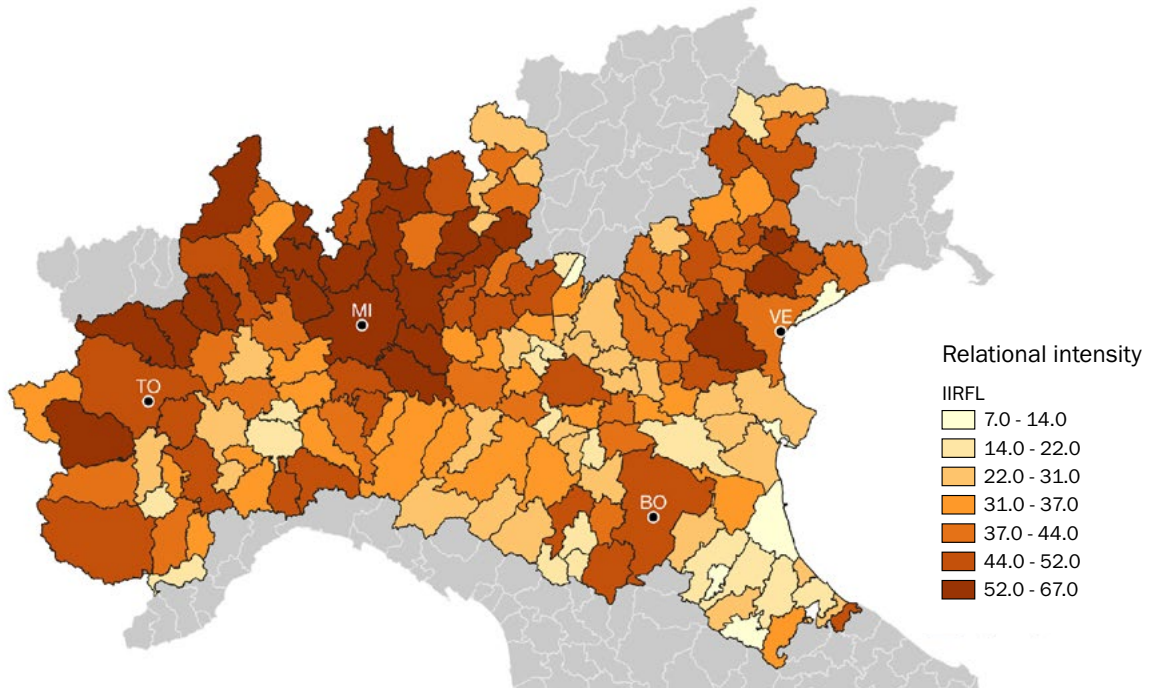
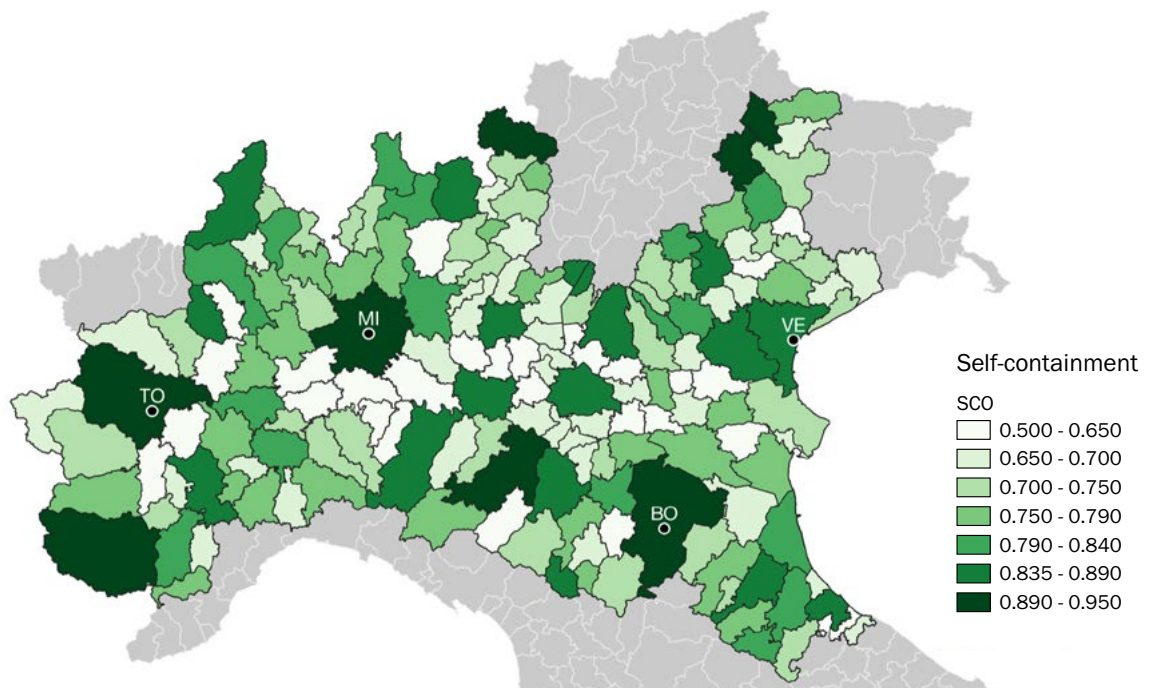


Figure 3. Self-containment (SCO index) by LMA



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Policy Conclusion

As the contrasting views of the scientific community suggest, the complexity of COVID-19 spread calls for rigorous studies. Here, we find out that the topological densities of daily mobility patterns in Northern Italian municipalities correlate with excess mortality during the first wave of Covid-19, consistently with the relational and global dimensions of extended urbanisation. Conversely, contrary to common belief, topographical density seems unsuitable to find out weak spots for pandemic outbreaks.

What can be implied for local policy is that there is a lack of awareness and preparation in public perception and local governance as to what being part of extended urbanisation entails. Another important point is that functional areas are still unappreciated as an effective tool for policies such as lockdown measures, despite the arbitrary nature of jurisdictional delimitations. In this respect, our contribution highlights that mobility is key for studying topological densities within functional areas and LMAs, or larger delimitations based on LMA clustering, offer rich opportunities for local governance for building resilience.

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