The City in the post-COVID Era: Between Centrifugal Trends and Functional Changes

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Abstract

The COVID-19 pandemic represented a moment of transformation, not only in terms of health, but also economic and social behaviours, some of which are capable of bringing about changes that are sometimes permanent. In particular, the lockdown imposed to tackle the health crisis led on the one hand to a profound crisis for businesses, above all tertiary activities that rely on people's mobility, and on the other to the consistent spread of other activities that were somewhat underdeveloped before, such as smart working, e-commerce and distance learning. It is reasonable to suppose that the remote performance of these activities, although reduced in the post-emergency phase, will not completely disappear. For these reasons, on the one hand we can see that the city might change its functional configuration, at least in part, and on the other that some territories may become more attractive than they have been until now. To this end, the paper offers an in-depth analysis of these issues, referenced through the analysis of a case study in the Tuscan context.

1. Introduction

The health emergency expeditiously precipitated the prospect of living in a radically different way from in the past, made possible by digital tools (Delventhal *et al*., 2021). This evolution, also known as the "zoom shock" (De Fraja *et al*., 2020), was mainly supported by the fact that there was less need to move around due to the shift to being able to work remotely, as well as online consumption and learning, and although this has been scaled down in the post-emergency period it does not seem set to disappear altogether and will also leave clear traces in the near future. The spread of smart working, e-commerce and distance learning has produced a twofold effect: while it has reduced, and is still reducing,

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the time and need to travel on the one hand, on the other it raises the question of new location requirements for businesses and different living standards for families (Mariotti, 2021). In fact, on the business front, the health emergency has led to both a profound crisis in terms of urban activities linked to the mobility of people, and a change in the location preference of some businesses, which until now favoured the city but could lean towards a less concentrated territorial distribution. As for families, on the other hand, having to spend much more time inside their homes, both for work purposes but also to slow the spread of the virus, has raised questions about the quality of life based, in this case too, on different parameters from in the past. For families, in fact, decisions about where to live are made considering the difference in the cost of housing between the centre and the suburbs, or a small or large town, comparing the costs to be incurred with the advantages offered by the various locations, and nowadays taking into account new needs and a different concept of accessibility from that of the past (Mouratidis, 2021). Moreover, if reference is made to residential costs, it should be borne in mind that the latter are not only connected to location but also apartment size and quality of life. It follows that once the amount of income to be spent has been defined, this sum can be divided among the costs deriving from the location (size of the city and reduced cost of transport) and those relating to the size of the apartment. This element should also be cross checked with the growing demand for better quality of life, referring to both housing in itself and the external territorial context (more green areas, less congestion, less difficulty in finding parking spaces), conditions that are easier to find outside of large urban concentrations.

This is why, alongside indicators that detected changes in terms of presences and mobility in the emergency phase, it is also useful to analyse the price trend of both properties for business use and housing (sale and rental costs) in order to promptly identify the change in the uses of the city and in the preferences accorded. Property values, in fact, as they change over time, can represent a first sign of the territorial distribution of the demand for specific locations, for both housing (more or less stable) and other types of use (services, commerce, etc). In this regard, the expected impact on the residential market will not only concern the overall demand trend, but it will mainly be supported by the search for larger homes where people can spend long periods living together as a family, with outdoor areas and in a place with adequate accessibility for remote working (including Hart, 2020). However, people are not expected to renounce *tout court* the opportunities offered by an urban concentration linked to social interaction, the supply of essential services for the population or accessibility, but rather the urban and territorial structure and their functional set up are expected to change,

albeit in a selective and slow manner, hopefully moving towards greater resilience and liveability (Nathan *et al.*, 2020).

2. The Pandemic and the City

2.1. The crisis of urban economies

The pre-pandemic scenario saw cities, and especially metropolitan ones, as places that should almost exclusively be entrusted with the growth and development expectations of vast territories (Glaeser, 2012). Favoured by multiple factors (OECD, 2006, p.56), including the economies of agglomeration, with higher levels of physical and human capital and a distinct production variety of high added value, metropolitan areas have until now stood out for higher than average productivity and per capita income levels than the respective towns. Just to give some emblematic examples, in 2017 the urban area of Paris contributed 32% to the French GDP despite employing only around 19% of the national population; Madrid provided 19% of the GDP, with a population of 15%; London 29%, with population of 19% (Source: OECD Metropolitan Areas Dataset). Despite operating within a national context that is not particularly dynamic, Italian metropolitan areas also represent a significant asset for the country as they are home to important segments of services and higher urban functions that are crucial in this specific development phase. In fact, in the first two decades of the century a new phase emerged in advanced countries with respect to the dominant economic paradigm of globalisation and the spread of information and communication technologies (ICT): a phase in which knowledge, creativity, digitisation or the economy 4.0 prevail (Camagni, 2021), and that find (or would find) larger urban contexts to be a natural place for settlement and development. However, examining some of the main metropolitan areas of Italy more closely, we see how these expectations have only partly been met. Next to the excellent results achieved by Milan, which over the long term has fortified its role as an economic driver, strengthening precisely those services mentioned above based on the creation of knowledge and digitisation, and the encouraging results achieved by Bologna, cities of art seem to be more static, Venice in particular. Florence, which has scaled down its manufacturing industry, recovered a share of the services primarily thanks to the professional and scientific activities component, while Rome stands out for its role in information and communication services (Table 1).

However, the most recent dynamic, referred to the first phase of the health crisis, has put a strain on even the most purely urban economies, albeit with a different level of criticality affected by the sectoral composition (Anderson, 2021). Sectoral composition and demand for mobility in the local labour market have

Table 1 – % Change in the sectors' contribution to Italian added value, 2000-2019 and changes of added value 2000-2019 and 2019-2020

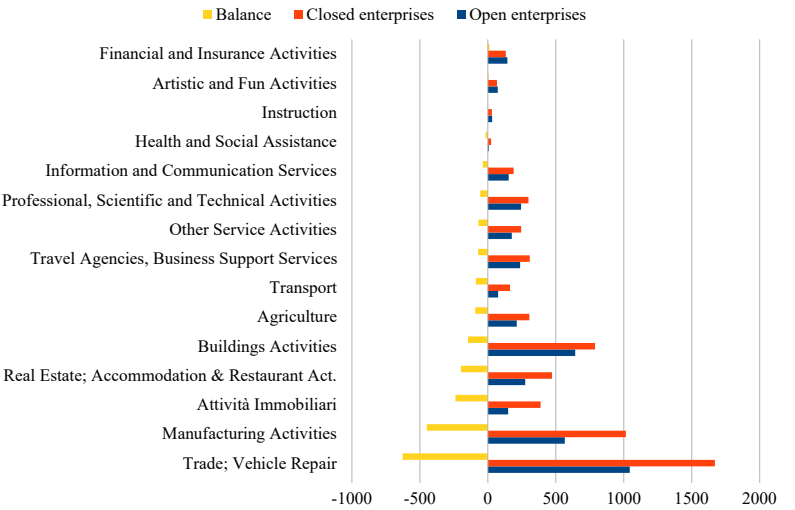
	Industry			*Services*								
	Manufacturing industry	*Construction*	*Industry total*	*Commerce, transport, hotels and catering*	*Information and communication services*	*Finance and insurance*	*Real estate*	*Professional, scientific and technical activities*	*Artistic, entertainment activities*	*Services total*	*VA 2000-2019 contribution*	*VA 2019-2020 contribution*
Milan	-6.1	13.3	0.8	21.3	27.5	42.6	29.3	23.6	21.2	21.7	19.1	-5.64
Venice	5.1	9.8	7.1	0.5	-26.3	-39.6	3.8	-0.1	-5.5	-3.0	-0.1	-7.02
Bologna	10.5	22.2	10.9	-0.5	25.8	34.1	-8.7	7.5	14.2	5.9	7.7	-6.49
Florence	-13.5	26.3	-11.7	6.4	-24.8	6.9	-5.2	22.5	13.0	4.2	0.9	-9.83
Rome	-35.7	-6.4	-1.3	-6.2	39.1	-12.4	7.7	-2.0	10.1	-0.8	1.5	-6.56

Source: processed by IRPET using TAGLIACARNE Institute data

been identified as the primary causes of virus spread during the pandemic, and resilience during the recovery period (Ascani *et al.*, 2021; Borsati *et al*., 2022). These differences show a greater capacity for resilience for Milan, and greater suffering for Florence due to lower specialisation in services, except for professional services, and strong reliance on tourism (Figure 1).

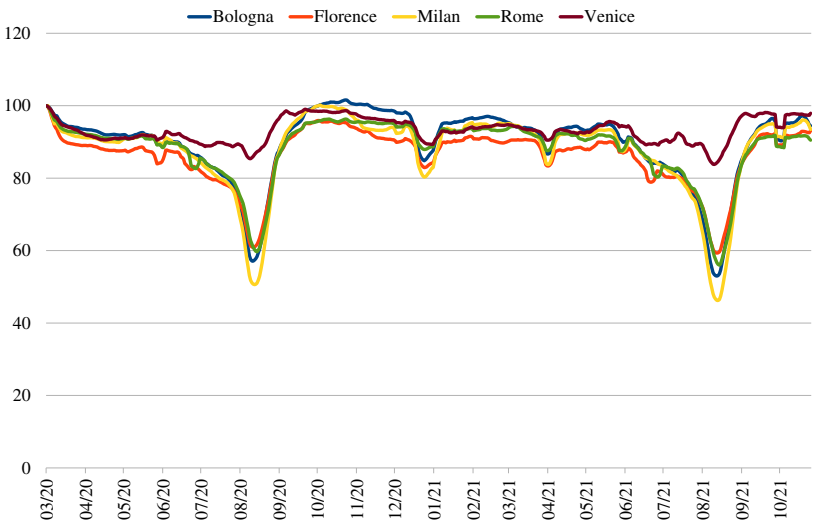
Within the Florentine metropolitan area we see how the difference between businesses that closed and businesses that opened during the first phase of the crisis reveals the suffering in the tertiary sector related to services that support tourism, but also the difficulties experienced in the manufacturing industry, which was affected by the unfavourable international dynamics (Figure 2). It is clear how the scenario just described, although extremely critical, is linked to the restriction measures put in place during the health emergency phase and does not necessarily imply that the city will experience a crisis *tout court* in the future nor a drastic loss of its power to attract (Bellandi *et al.*, 2021). What can more realistically be imagined instead is, on the one hand, the territory becoming increasingly attractive, even outside of the city, made possible by a series of functions performed in places that until now had been excluded, and on the other hand changes in a different direction in the urban context moving towards the reduced availability of functions that have instead undergone great development in recent years. We are in fact coming from a phase in which cities have been affected by functional changes that aimed to accentuate their specialisation, in particular in the central areas, favouring

Figure 1 – Balance of enterprises in the metropolitan city of Florence, 2019-2020. Number of enterprises



Source: processed by IRPET using UNIONCAMERE data

Figure 2 – Population present in urban areas, from March 2020 to October 2021. Change estimated by Facebook data (mobile average over seven days). Index 100=first week of March 2020



Source: processed by IRPET using Facebook data

tourism and tertiary activities to the detriment of those that support residence. This process occurred by exacerbating competition between businesses favouring those that were willing to support higher costs (urban rents). Competition for the most central locations often resulted in conflicts to the detriment of concerns linked to stable residence, giving impetus to centrifugal tendencies, especially of certain segments of the population. The pandemic, from this perspective too, represented a moment of discontinuity since, as it hit sociality and mobility particularly hard, it halted the spread of services for "city-users", a category that was completely absent during the health emergency.

The effects of what has been described can clearly be seen not only in the outcome already illustrated, which shows the balance between new businesses and ones that have closed, but also by looking at property prices. A glance in particular at those referred to tertiary functions and commerce shows that they have significantly reduced following lower demand for locations to be used for these activities. As regards prices for non-residential functions, the 2020-2021 dynamic indicates, in fact, how greater losses were recorded for these sectors than for residence, particularly accentuated by rental fees which on average went down by 9.8% for offices and 15% for commerce. Distinguishing by city size, we see how the contraction mostly concerns small and medium-sized urban centres and cities, which record the most significant losses in terms of both rental fees and sales prices, while for large towns and cities – and this is an important fact – the loss was smaller, revealing how the recovery expectations are higher (Table 2).

2.2. Presences and mobility

Towns and cities were particularly affected by the restrictions imposed during the emergency phase, as by their very nature they are places where most social

Table 2 – Prices for the non-residential sector. Italy, property prices. % changes, 2020-2021

	Tertiary sector and offices		*Commerce sector (small and medium surface areas)*	
	Sale prices	*Rental fees*	*Sale prices*	*Rental fees*
Large cities	-2.4	-8.6	-2.8	-13.2
Intermediate cities	-3.0	-10.0	-4.3	-15.0
Small cities	-4.3	-10.8	-5.0	-17.2
Italy Average	-3.2	-9.8	-4.0	-15.1

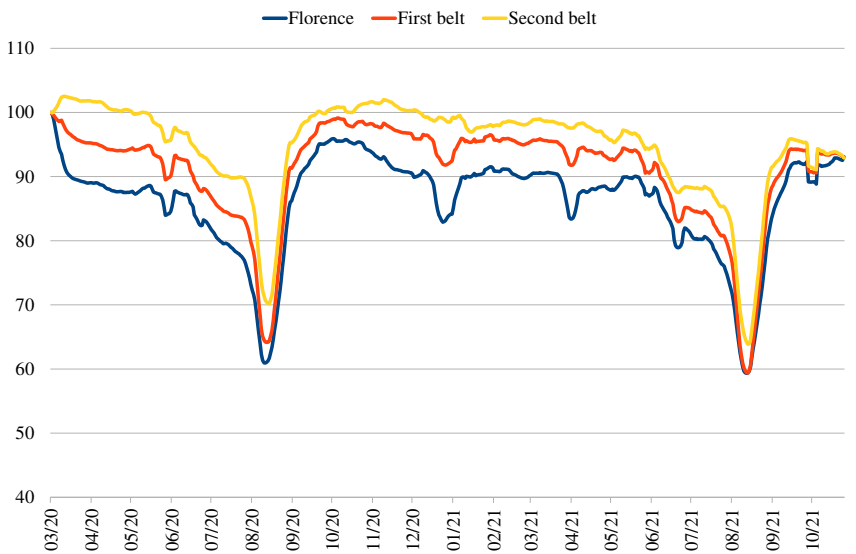
Source: processed using Scenari Immobiliari data

activities occur and they attract more or less intense mobility flows, which were interrupted or significantly curtailed during the lockdown (Benita, 2021; Borkowski *et al.,*2020; Eisenmann *et al.*, 2021; Scorrano *et al.,* 2021; Suji Kim *et al*., 2021).

To quantify this phenomenon, we can use the data made available by various unstructured sources (Facebook and Google), which can indicate the presence of residents and city users in the various territorial contexts. In particular, the dataset made available by Facebook through the *Facebook for Good* (dataforgood.fb.com) programme and platform can offer information on the location of the population and the movement of its people during a particularly significant event. In the case of Italy, national data is available, with some detailed focuses on individual areas or cities and containing spatial and temporal information based on the behaviour of Facebook users with active GPS and Location History detected passively after the data has been made completely anonymous.

The figures below show the population presence trend with respect to the first week of March (note that the Italian lockdown started on 10 March 2020), which

Figure 3 – Population present in the urban area of Florence, in the first and second urban belt, March 2020-October 2021. Change in the population presence estimated by Facebook data (mobile average over seven days) for urban areas. Index 100=first week March 2020



Source: processed by IRPET using Facebook data

clearly shows a significant reduction in the number of people present in the main cities, not only during the great summer exoduses but also during a large part of the rest of the year (Figure 3).

If instead we compare the urban area of Florence with the municipalities in its first and second belt we see how the presences in the last two years had different trends for these types of territories. In particular, presences in the more suburban areas were more constant, with the sole exception of the summer period. This data should be read taking into account the functional vocation of the different areas: the first belt has a significant manufacturing component which drew in fewer workers during the restrictions, while the second belt has a higher prevalence of residential functions, which resulted in a higher presence of individuals (Figure 4).

The significantly lower presence of people in cities was instead due to both the reduction of the working population that travelled daily to the main urban centres to study or work, and the total absence of the tourist population. These smart workers, who in the pre-pandemic period travelled to the closest city centre on a daily basis to carry out their profession, in the emergency phase reduced the share of inflows into the city.

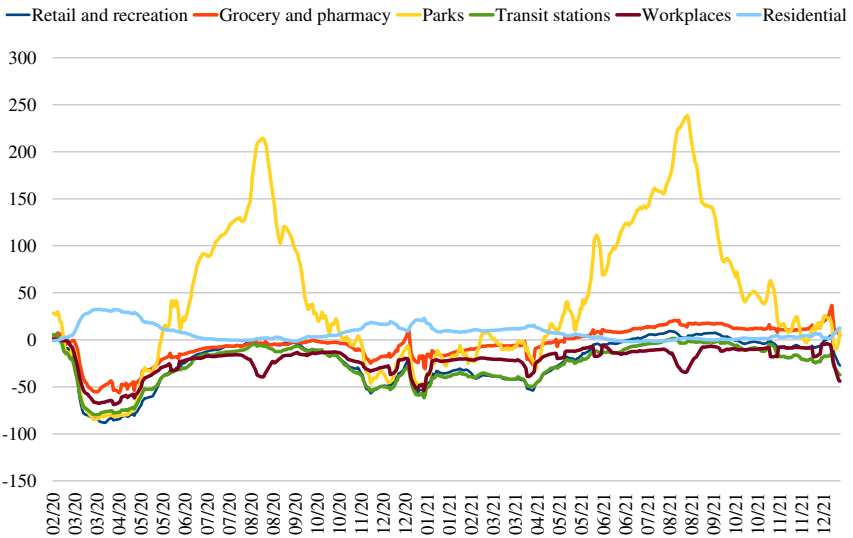
Mobility for work reasons however did not suffer the greatest contraction as a share of workers employed in sectors or professions where remote work is not possible continued to travel, although not to the same extent as in the pre-COVID period, above all reducing the use of public transport (measured by the flows accessing the public transport hubs). Instead, the segment that saw the greatest reduction during the emergency phase was linked to free time, while only movement flows from the homes of employees who could not work remotely remained positive. The movements that represented a real change in the whole emergency phase and that point to the renewed need for contact with nature were those towards "parks, gardens and beaches", the growth of which coincided with the summer period but also saw peaks at times immediately after the first reopening.

Mobility linked to necessity purchases also recorded a significant reduction of up to 50%, above all during the first lockdown, suggesting there was a marked increase in the distance purchasing of goods.

3. The Dynamics of Property Values

While the presences trend in the urban context, corresponding to the most acute phase of the health crisis, takes into account the significant reduction in the number of visitors to the city, the analysis of the property market provides an overview of the demand for urban locations also over the medium term. Before analysing the recent dynamics, it should be remembered that the choice of location, for both

Figure 4 – % change in daily flows of commuters per place of destination with respect to a median day pre-COVID. Tuscany: February-December 2020



Source: processed using Google LLC data (2020)

households and businesses, is guided by property values which in turn reflect the clear advantage of the location, that is the relative attractiveness of the various territorial areas (urban rents). For this reason the analysis of the prices of homes and properties to be used for other functions (sale and rental costs) can quickly point to a change in the uses of the city and new trends in housing preferences.

As for the housing demand, the impact on the property market of the changed ways of working did not so much affect the overall demand trend but rather resulted in the search for larger homes with outdoor spaces and in locations with adequate accessibility. The pandemic in fact did not penalise the property market as expected, which was instead supported by greater attention to the quality of life and the emergence of new housing requirements. A glance in particular at the main urban centres in the period just passed shows that the sales market did not come to a complete halt even during the health emergency, although the growth trend seen in the previous period (Milan, Rome, Bologna and Florence) was interrupted, while cities geared more towards tourists and students experienced an actual contraction (Venice). Rents, instead, which more quickly reflect the variations in unstable housing demand, experienced a sharp decline everywhere,

primarily as a result of a lack of students and visitors in these cities; Venice and Florence in fact suffered the greatest losses.

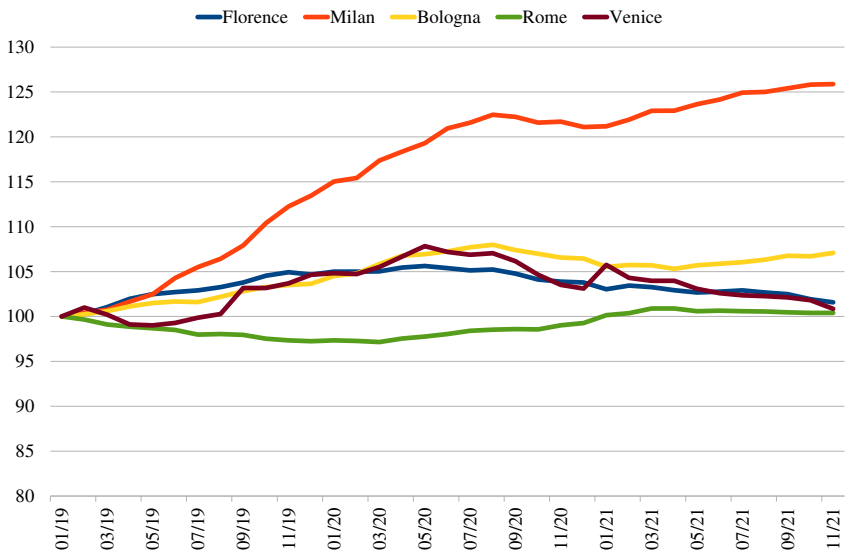
However, precisely due to their marked sensitivity to changes in demand, as of last summer there was a recovery in rental values which coincided with the return in the main cities of some categories of city-user (tourists and students in particular) (Figures 5 and 6).

As regards future prospects, we can imagine a scenario with two demand components. An incentive to change one's living situation in order to cope with the critical issues that emerged during the forced closure (from limited domestic spaces to the lack of outdoor space), which cannot be solved by the housing available in the main urban centres. The other, caused by a reduction in income, may result in a tightening up of the current housing situation or a push towards areas where the cost of living is lower than the departure point. Both cases, in any event, anticipate the consolidation of a phenomenon that is already taking place, namely the growing attractiveness of the belt areas around the main urban centres; with a radius, however, that could theoretically expand to include more distant areas. If this process were to consolidate, the population's incentive to relocate could affect a large number of regions, like Tuscany, characterised by widespread good quality settlements made up of urban centres, including smaller ones, with a satisfactory supply of services and good environmental and landscape quality.

4. Changes in Location Choices

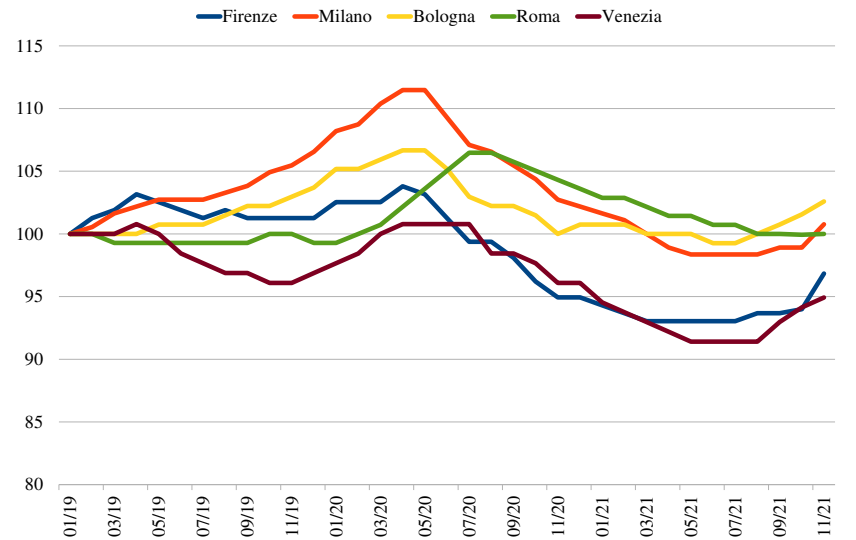
The induced changes in people's behaviours and expectations during the emergency phase are set to become established also going forward, at least to some degree. In particular, these include remote working which, although scaled down with respect to the initial phase of the pandemic, is a method still used in alternation with in-person work. In this regard, it seems useful to remember that access to remote working is not universal but strongly linked to the type of profession carried out (OECD, 2020): for this reason and in order to provide a general overview of this eventuality, IRPET has quantified the population potentially able to work remotely, based on the functions performed and the business sector (Dingel *et al*., 2020). It is not difficult to imagine that jobs that can be carried out via remote working, mainly clerical and intellectual work pertaining to the tertiary sectors, are primarily located in the main urban areas: in fact, 37% of employees in major cities perform jobs and belong to sectors that can potentially work remotely, while this percentage drops to 24% in other types of areas where commercial, manufacturing and agricultural activities prevail. At the same time, a consistent section of the population, more specifically 37% of those in central areas and 25% of those in suburban areas, are employed in jobs they can do

Figure 5 – Average house prices per square metre January 2019-November 2021. Index January 2019=100



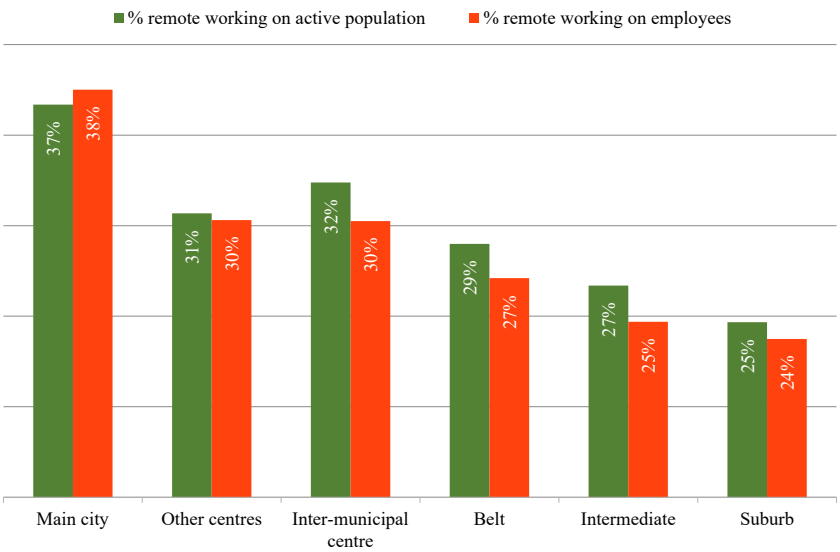
Source: processed by IRPET using immobiliare.it data

Figure 6 – Average residential rents per square metre, January 2019-November 2021. Index January 2019=100



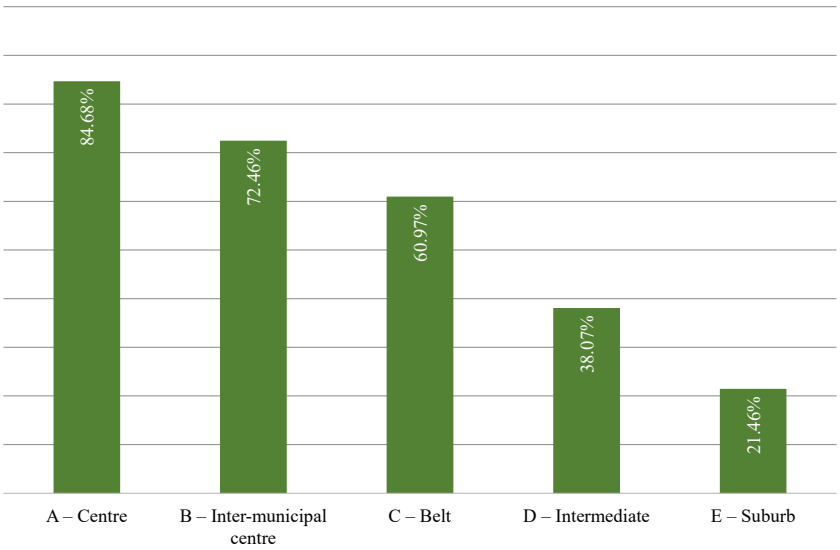
Source: processed by IRPET using immobiliare.it data

Figure 7 – Jobs that can potentially be done remotely (defined by sector and function, clerical and intellectual) by place of residence and place of work. Tuscany, 2019



Source: IRPET estimates

Figure 8 – Families with broadband access. Tuscany. 2019. % Values



Source: processed by IRPET using AGCOM data

remotely and therefore do not need to travel on a daily basis within or outside of the city to get to work (Figure 7).

More specifically, cross referencing the jobs that can be done remotely with commuter flows shows that remote working, if used to its full potential, would reduce inflows to cities by up to 40%; this would reduce direct flows to the municipalities where the clerical and intellectual sectors are more concentrated. Together with lower congestion and traffic, the reduction in travel to the city for work reasons could also be accompanied by a reduction in revenue for urban contexts as a whole, as consumption opportunities for those sections of the population that are more inclined to spend will also be reduced (Figure 8).

Within the framework just outlined, digital accessibility will play a key role in redefining some location choices, to the detriment of accessibility to the transport network. In terms of territorial competitiveness, territories that are able to provide digital accessibility conditions fit for performing remote work will benefit, while peripheral areas that still do not have a fast connection will be penalised. The best equipped areas are in fact both centres and belt areas, where over 60% of households have broadband coverage, while in the peripheral areas this number is significantly lower (Amankwah-Amoah *et al*., 2021).

Aspects to be considered when it comes to the territorial reallocation of a part of the Tuscan population include the availability of free housing. The supply of new constructions has grown to a limited degree in recent years, to the point that it can be considered substantially still, also thanks to a new culture of governing the territory primarily aimed at reusing what already exists rather than taking up new ground. It therefore seems important to try and estimate the distribution and potential surplus of housing (in addition to the main home) assuming that the reallocation of Tuscan people occurs with reference to the "free" existing heritage. As can reasonably be expected, the number of homes and their distribution throughout the territory tends to follow that of the population, showing a higher concentration in urban areas (Table 3).

However, the ratio between the number of families and the available homes shows very low values in areas affected by depopulation, where a large part of the housing stock is abandoned, and in tourist areas where there are many second homes. These areas may be of growing interest in the search for new homes, the former for the wide range of spaces, and the latter as they are already available to the owners.

As a whole, according to our estimate, there are around 375,000 homes that are not main homes, 19% of the total. The availability of free homes represents an opportunity to find a living situation that more fully meets the new requirements and, sometimes, at more affordable prices.

Table 3 – The housing surplus, homes for families

	Homes	*Families*	*Home-Family*	*(Home-Family)/ Home*100*
A – Centre	815,435	731,358	84,077	10.3
B – Inter-municipal centre	147,554	113,417	34,137	23.1
C – Belt	686,746	567,223	119,523	17.4
D – Intermediate	228,713	150,047	78,666	34.4
E – Suburb	125,622	67,619	58,003	46.2
F – Outlying region	1,461	639	822	56.3
Total	2,005,532	1,630,303	375,229	18.7

Source: processed by IRPET using Cadastral data

4.1. Some observations on territorial hierarchies

The pandemic will bring with it persistent changes in the competitiveness of the territories and in the disparities between and within regions (Capello, Caragliu, 2021; Bailey *et al.*, 2021). Moreover, as mentioned in the opening remarks, the pandemic may have significant consequences for our lifestyles over the long-term and, therefore, for the structure and configuration of our cities, including their relationship with the urban belts and other areas of the territorial hierarchy (Florida *et al.*, 2021). In response to these changes there may be impacts for population growth and composition, the market, and lastly land use. It is in fact reasonable to imagine that if the risk of infection – or fear of it – should remain over time, the inhabitants of cities might seek more personal space and more private services; this need could drive some people away from urban centres and from areas with the most crowded neighbourhoods (Florida *et al.*, 2021) towards territories where these needs can be better met. This phenomenon has already been identified in Italy by some sector operators (Scenari Immobiliari) which have provided an estimate of the number of families that moved out of the city in 2020, driven precisely by the need to respond quickly and for the most part temporarily to the pandemic. According to these estimates, around half a million households were affected by the phenomenon; these household units decided to move out of the city, renting a home or using their second home.

Moreover, if remote working remains the norm, many of these out-movers might not want to return to the urban areas they came from but, instead, transform their life in the suburbs or peri-urban areas from a temporary situation into a definitive one (Hart, 2020).

Table 4 – Registered movements out of Florence, 2000-10 and 2010-20

	Total
Years 2000-2010	
Left Florence	77,370
of whom Left Florence for Municipalities in Tuscany	57,181
of whom Left Florence for Municipalities in the Province of Florence	40,725
Years 2011-2020	
Left Florence	71,457
of whom Left Florence for Municipalities in Tuscany	51,522
of whom Left Florence for Municipalities in the Province of Florence	37,619

Source: processed by IRPET using Municipality of Florence Civil Registry data

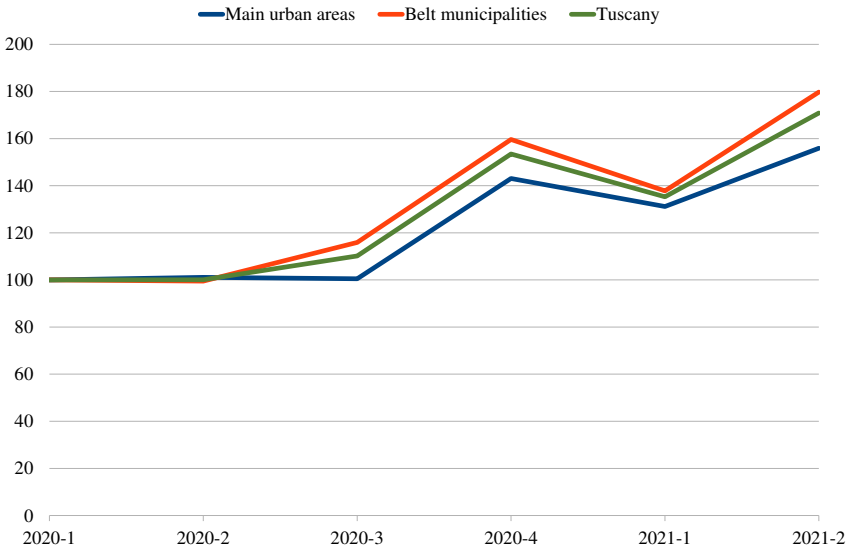
The trends just outlined are in any case not entirely inconsistent with what has happened in the recent past, nevertheless the health emergency and the lifestyle changes it has induced will be able to accentuate their distinctive features or multiply their speed.

Looking more specifically at the movements of residents in the Tuscan capital, for example, we see that in the decade 2000-2010 and the subsequent decade 2010-2020 Florence lost around 148,000 inhabitants, 77,000 in the first and 71,000 in the second decade, for an average of around 7,000 inhabitants per year. Around 73% of them relocated within the Tuscan territory, and more than half (53%) to municipalities in the Florentine metropolitan area (Table 4).

Looking at the overall regional trends in relation to the situation from the beginning of the health crisis up to May 2020, we have employed an indicator sensitive to demand trends provided by the property market, namely the trend of the number of distinct transactions for the main urban areas and for belt municipalities (Figure 9).

This variable allows us to highlight greater dynamism in the areas outside of the main urban centres. The replacement or search for a new home during the health crisis mainly concerned the hinterland with respect to urban centres, thanks to both more affordable housing, size being equal, and lower congestion and therefore the higher quality of life offered by such contexts.

Figure 9 – Property market. Tuscany, January 2020-May 2021. Number of standardised transactions. January 2020=100



Source: processed by IRPET using OMI data

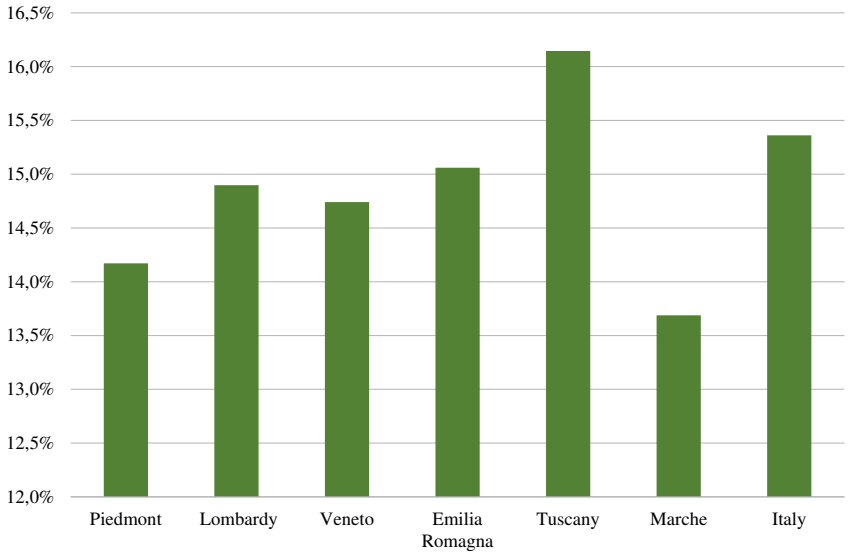
5. Scenarios Suggested by Changed Lifestyles

In light of the changed needs, individuals and families may review their location choices, with families searching for a better quality of life/cost ratio, while functions referred to sectors that experienced a bigger crisis during the pandemic, as well as those that can make greater use of remote working, may continue to express lower demand for urban locations. On the other hand, the cost of living for families is a relevant aspect with respect to the income received, with differences that are sometimes significant at regional level. It is not surprising that Tuscany is one of the regions with the highest bearing on family income (16%): the proportion of rent in Tuscany (real or figurative) to income is higher than the Italian average and other regions in the central north, affected by the highest house price levels in Italy and with one of the lowest internal variances (Figure 10).

Leaving aside these possible causes, we must ask how many families could potentially be affected by lifestyle changes and above all which territories might be involved (Table 5).

Looking at the convenience for families of relocating to municipalities in the belt of metropolitan cities such as Milan and Bologna, it is not surprising to note how, for both those seeking a home of the same size and those who want to find a

Figure 10 – Bearing of the cost of rent (real or figurative) on family income. Year 2018



Source: processed by IRPET using EU-SILC data

Table 5 – Average cost saving (+) or increase (-) for each family deriving from travel from the main city to other municipalities

Province	*Municipalities to move to. Home of the same size (number)*	*Municipalities to move to. Purchase of an extra room (number)*	*Number of municipalities in the province (number)*	*Maximum distance from main town (minutes)*	*Annual average family saving net of transport costs (in euro)*
Turin	69	46	316	42.5	3,871
Genoa	9	7	67	25.2	3,744
Milan	111	111	134	31.1	22,262
Bologna	37	35	55	45.3	9,993
Florence	33	33	41	54.9	14,575

Source: processed by IRPET using immobiliare.it data

bigger living space, Milan is the city that offers the greatest alternatives in terms of potential territorial relocation and the greatest savings. This result suggests how the polarisation exercised by the city of Milan is higher than elsewhere, to the point where leaving the Lombardy capital results in average annual family savings of over €20,000. In cities such as Turin and Genoa, on the other hand, the presence in belt areas of both tourist areas and very peripheral areas reduces the possibility of relocation and savings. Florence and Bologna have similar scenarios as they both offer good options for relocation in the territory and economic benefits of the same magnitude, slightly higher for Bologna where the tourist accommodation pressure is lower.

However, in order to define more precisely those who could leave the major cities, at least potentially, and the destination of such households, we shall assume that the population most directly concerned is made up of those who have the possibility of remote working and that this condition will remain structural even after the health emergency is over. To do this, we shall use the estimate made for Tuscany of 37% of the active population residing in the city centre, who no longer have to travel to work on a daily basis and who could therefore decide to move outside of the city in order to meet their new needs and find more suitable living conditions for working from home, as well as more pleasant outdoor environments. As long as they can count on adequate digital accessibility, naturally. The lower (but not entirely eliminated) need to access the workplace and the simultaneous request for the availability of work space alongside living space might also drive some people to more distant areas which until now were considered inadequate for professional needs. Alongside this changed order of requirements and needs, we cannot forget the economic crisis that went hand-in-hand with the pandemic and the consequent need for many people to reduce the cost of living which we have seen to be particularly high in our region. To provide a territorial reading of the areas potentially affected by this phenomenon, first of all the households that might be driven to relocate was estimated, selecting them from those that reside in the provincial capitals, which coincide with the main urban centres in the region, and that work remotely (Irpet, 2021)[1].

For each household the economic benefit that would result from a different living choice was calculated, taking into account the cost differential between the centre and suburbs (or between a large and small urban centre) and assessing the trade-off between falling prices and rising transport costs the further one gets from the main centre. Leaving aside location, however, living costs are also linked to

1. The estimate of remote working positions was transformed into households. Of these, only one-person households with the head of the household under 65 and childless couples with incomes between €15,000 and €120,000 per year were considered. Couples with children and households with an income at the two ends of the distribution were therefore excluded.

apartment size and quality of life. It follows that once the amount of income to be spent has been defined, this sum can be divided among the costs deriving from the location (size of the town and cost of transport) and those relating to the size of the apartment. Taking these considerations as a starting point, two scenarios were envisaged, one involving a more peripheral location as a result of moving to belt municipalities in the same provincial area; the other instead involving a new location as a result of a search for more domestic space and therefore improved living conditions[2]. The two options are intended to take into account households that move because they are driven by the need to save money on the one hand, and households that instead decide to raise their standard of living, on the other. To this end, in the first case reference is made to a situation where the home is of average size (80 m^2) and the family intends to move from the urban centre but maintain the same size home; whereas in the second case examined the choice is still to leave the city but to seek a larger living space. In both cases, the overall savings resulting from the difference in housing costs before and after the move, net of commuting costs, are assessed, depending on the location chosen for the new residence. Whereas, to identify the possible destinations, first of all the annual average savings resulting from the change of home are calculated (assuming that the overall gain ends after 10 years) deducting the commuting costs (calculated by applying the journey time indicated in the relative ISTAT matrix, a time cost spent in moving) taking into account that that there is less need to travel than before the pandemic (assuming that the worker will return to the workplace 3 days a week) but more need than there was during the most acute phase of the health emergency and when the greatest restrictions were in place (when instead smart working was carried out 5 days a week). Starting with the locations where this difference is still positive, those that offer "free" housing (where there is a surplus of housing with respect to resident families, both tourist areas and areas undergoing abandonment) and above all adequate conditions of intangible accessibility (connection speed of 50 Mega or more) are chosen since, as has already been pointed out, the possibility of working remotely is the condition underlying the move.

The total savings from moving house to the peripheral areas shown in Table 16 are the result of the trade-off between lower housing costs the further one moves from the city and increased transport costs, digital accessibility being equal (Table 6).

It is clear how on average the saving is proportional to the distance from the provincial capital, which represents the place that offers employment and where a series of rare tertiary services can be found. Moving to a distance that corresponds to around 15 minutes of travel time, for a home of the same size, can

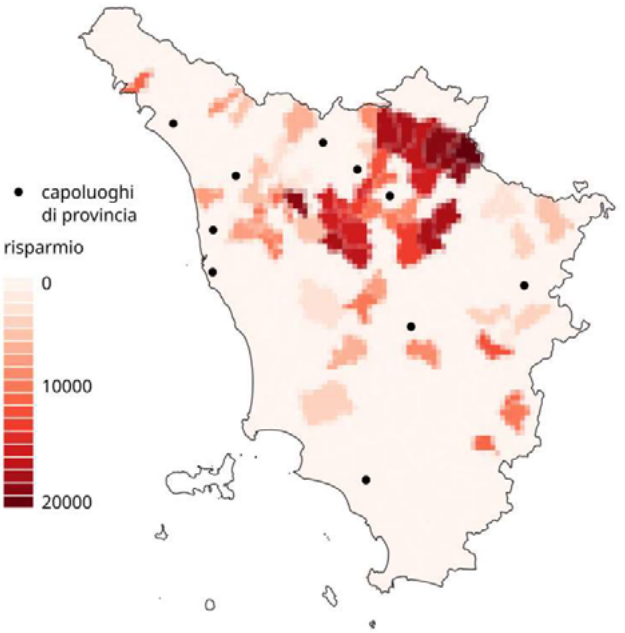
2. The sample examined includes 4% of households resident in Tuscany's major cities, approx. 20,000 households.

Table 6 – Average cost saving (+) or increase (-) for each family deriving from travel from the main city to other municipalities by classes of travel time. Values in euro

	House of the same size	*Purchase of an extra room*
Up to 15 minutes	39,880	-2,276
From 15 to 30 minutes	49,555	14,347
Over 30 minutes	83,121	53,064
Tuscany	65,083	33,566

Source: processed by IRPET using immobiliare.it data

Figure 11 – Map of the annual benefit of relocation of households living in the urban capitals. Values in euro



Source: processed by IRPET using immobiliare.it data

result in average savings of up to roughly €40,000. The further away one moves the greater potential for savings: at a distance of 15 to 30 minutes the savings are around €50,000, and over €80,000 when moving over half an hour away. If instead the reasons for the move are also driven by the search for a higher standard of living (exemplified in our case by an increase in the available living space), in order to also obtain an economic benefit the new location must be around 15 to 30 minutes travel time from the main urban centre; while at a distance of 15 minutes travel time from the main city no economic benefit would be obtained but only more living space. On the contrary, at a distance of over 30 minutes both benefits can be obtained, an economic one (around €53,000) and more living space (Figure 11).

Distributing the economic benefit resulting from a different choice of location over a ten-year period according to the two relocation possibilities, the size of home and increase in living space being equal, provides us a geography of advantages, shown in the map: in the case of the regional capital the classic trend of concentric circles of income (and of the isochrone) is fairly typical, while in the other territories the configuration is less clear because alongside the less attractive role of some urban centres there is the effect linked to the presence of second homes, which results in a different distribution of these benefits.

From a more territorial perspective, it is interesting to try to understand which areas might be the most attractive. The estimate assumes that some of the changes induced by the pandemic will become structural (remote working) therefore the parameters on which it is based are distance (assessed as transport cost considering 2 visits to the workplace per week), property value per square metre, intangible accessibility (only municipalities with connection speeds of over 50 Mega were considered) and the presence of empty homes. The property value changes according to the level of urbanisation as well as the level of tourism, and can be much higher in some coastal municipalities, for example, or in some rural areas that offer living contexts with high environmental and landscape value (Table 7).

Based on the parameters considered, we see how for an apartment of the same size, maintaining the double condition of adequate intangible accessibility and economic advantage, greater possibilities can be obtained by choosing a belt municipality. This type of location guarantees a significant advantage in terms of living costs (distributing the benefit over ten years corresponds to approx. €3,600 per year for an apartment of the same size) or does not require any financial outlay if a decision is made to increase the living space. At the same time this is the most numerous territorial category (45 municipalities in the first case and 33 in the second) where it is advantageous to relocate since the necessary intangible infrastructures are offered. This possible redistribution however excludes the peripheral areas, except for only a few cases, and the outlying areas as they lack the infrastructural profile. In this

Table 7 – Annual advantage of relocation for households (values in euro) and municipalities affected by the redistribution. Tuscan municipalities

	Home of the same size		*Home with an extra room*	
	No. of municipalities concerned	*Net benefit*	*No. of municipalities concerned*	*Net benefit*
A – Centre	5	4,477	5	974
B – Inter-municipal centre	6	4,117	4	-315
C – Belt	45	3,663	33	67
Main city	0	0	0	0
D – Intermediate	12	3,813	9	801
E – Suburb	3	5,198	2	2,877
F – Outlying region	0	2,137	0	-360
Overall total	71	3,786	53	634

Source: processed by IRPET using immobiliare.it data

perspective however, which assigns a different weight to factors that drive housing options, it is in any case advantageous to rethink one's choice if one opts for belt areas where transport costs remain low but does not rule out, at least potentially, the more peripheral areas from this possible geography of relocation, which could see their attractiveness increase if their intangible infrastructures increase.

This scenario is based on the assumption of the "structural" use of smart working, which nevertheless requires a presence in the workplace. These hypotheses, which unlike the most acute emergency phase in which the use of smart working was higher and in which people were more likely to be willing to accept less efficient connectivity levels, led to the assumption that the number of locations considered convenient would be larger, even involving the peripheral areas. In fact, during the lockdown there were those who chose to spend this period of isolation in non-urban locations, including in the more outlying areas. The scenario just outlined could in any case become an objective scenario to strive towards in the long term if these territories are adequately equipped with infrastructures and connectivity.

What we wanted to investigate here, as already stated, was the potential of the centrifugal phenomenon, namely the move away from cities in the assumption that certain changes to lifestyles will become structural and are able to accentuate the phenomena already underway. To this end, the results reveal a geography of the territories suitable to accommodate households in search of renewed living standards or those who are driven simply by the need to save, and those that could become so if certain infrastructural deficiencies were overcome. It is clear how the distribution of households in the territory depends on many factors, not

all of which can be exemplified in an exercise such as this. In addition, housing propensity, even if peri-urban, will have to deal with the fact that the city will continue to play an attractive role at least for some segments of the population and for many purposes. Nevertheless, the city's degree of attractiveness will depend on its capacity to take up the challenges and meet the needs that emerged during the emergency phase and that are set to persist over time.

6. Conclusions

This paper has analysed the main changes involving urban areas during the emergency phase, both in terms of altered attractiveness and functional changes, some of which have been expedited by the pandemic crisis. Starting with the transformations highlighted, some possible scenarios were outlined from a post-emergency outlook, analysing a different spatial configuration of the location choices of households and the implications, also in terms of opportunities, that may derive from them both for the more outlying areas and those within the belts and, last but not least, for cities. Moreover, we are coming from a long period of great confidence in urban areas – especially metropolitan ones – which have been handed great responsibility for determining the competitive positioning of entire regions, while attributing a less central role to the rest of the territory. In light of the changes that have occurred, the first final consideration suggests how it is necessary to endorse an integrated territorial vision capable of recognising that each category has a role to play and contributes to the achievement of greater and renewed territorial equilibrium. This perspective is all the more necessary because, in times of crisis, territorial disparities tend to widen in an extremely selective way. There is in fact a risk that if these disparities were to increase they would accentuate one of the distinctive traits of the Tuscan system which, while characterised by limited polarisation from an urban point of view, from a territorial point of view instead has a highly dualistic structure, concentrating functions, services and inhabitants in a relatively small portion of territory, giving rise to critical issues in terms of congestion/saturation on the one hand and abandonment/depopulation on the other. In the proposed vision, based on a different housing demand and a different concept of proximity, we can in fact see an opportunity for our territory, both in terms of greater balance and the drive towards digitalisation and innovation. It is clear, however, that despite the changes that have taken place, not all territories are capable of significantly increasing their attractiveness as functional links with the main centre in addition to a good supply of services remain central, albeit mitigated by the reduced need to travel around. From this point of view, it is conceivable that the areas closest to the city, above all in the medium term,

will be able to better meet the needs of families in terms of housing standards, further supporting the suburbanisation processes already taking place. As for the peripheral areas, if they are able to seize the opportunities offered, for example, by digitalisation, which is useful not only for smart working but also for the provision of services, they will be able to reverse the trend which, for a long time now, has seen them lose significant shares of their population. On the other hand, if cities are able to embrace change they could benefit from lower congestion and housing pressure, increasingly their attractiveness to a younger and more dynamic population, thus favouring an allocation of human resources and, subsequently, economic resources, that better serves agglomeration mechanisms than that highlighted until now.

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La città in era post-COVID: tra tendenze centrifughe e cambiamenti funzionali

Sommario

La pandemia da COVID-19 ha rappresentato un momento di trasformazione, oltre che sul piano sanitario, anche su quello economico e dei comportamenti sociali alcuni dei quali in grado di indurre modifiche, talvolta permanenti. In particolare, il lockdown imposto per fronteggiare la crisi sanitaria ha determinato da un lato una crisi profonda di quelle attività soprattutto terziarie dipendenti dalla mobilità delle persone e dall'altro la consistente diffusione di altre prima poco sviluppate quali lo smart working, l'e-commerce e la didattica a distanza. È lecito ipotizzare che lo svolgimento a distanza di

attività di lavoro, consumo, istruzione, seppur ridotto nella fase post-emergenza, non scomparirà del tutto. Per questi motivi da un lato possiamo immaginare che la città possa, almeno in parte, cambiare la propria configurazione funzionale e dall'altra che alcuni territori potranno diventare più attrattivi di quanto non lo siano stati fino ad oggi. Il contributo propone a tale scopo un approfondimento relativo a tali temi richiamati attraverso l'analisi di un caso di studio riferito al contesto toscano.