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Airbnb in Urban Regions
What In-Becoming Issues and Opportunities for Public Policies from
Airbnb as a Complex System?

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*Par un point situé sur un plan
 On ne peut faire passer qu'une
 perpendiculaire à ce plan.
 On dit ça...
 Mais par tous les points de mon plan à moi
 On peut faire passer tous les hommes, tous
 les animaux de la terre.
 Alors votre perpendiculaire me fait rire.
 Et pas seulement les hommes et les bêtes
 Mais encore beaucoup de choses
 Des cailloux
 Des fleurs
 Des nuages
 Mon père et ma mère
 Un bateau à voiles
 Un tuyau de poêle
 Et si cela me plaît
 Quatre cents millions de perpendiculaires.*

Par un point situé sur un plan...¹
 Robert Desnos, 1939
 Recueil : "La Géométrie de Daniel"
 for the son of the composer Darius Milhaud, 1939

Summary

The thesis intercepts the broad debate about the relationship between planning practices, urban and regional policy and complex systems, that the governance system is called to respond to, regulate and strategically address. The research aims at adding a small step forward in knowledge to this long-standing theoretical and practical debate, indicating issues and opportunities for the Italian urban and regional public policies concerning the short-term rental market, a disruptive sector with impacts on urban environments, discussed in the light of the Complexity Theories of Cities (CTC) and Critical Urban Studies. Quantitative and qualitative analyses verify the hypothesis that the Airbnb platform is a complex system as emerged in the preliminary observation of a multifaced nature of Airbnb dynamics driven by a mingling of human and non-human actors, global and local interests, opening to the problem of the distance between complex features of a system and the multi-level policy and governance acts that intervene on it.

Therefore, the research is focused on the platform mediated short-term rental (STR) dynamics in urban regions, with the aim of discussing the efficiency of the urban and regional governance system on STR dynamics in the light of the evidence of Airbnb as a complex system with a regional dimension. Framing Airbnb in the complexity studies and aiming at the definition of the STR platform as a complex system allow to sustain analyses with rooted theories that involve reflections on urban and regional planning and governance, while contribute to define and analyse Airbnb through specific definitions inherited by research of scholars framed in those complexity theories. Thus, the analyses focus on the features of Airbnb material and immaterial

¹ "Through any point on a plane". *Through any point on a plane / You can pass only one line perpendicular to the plane. / So they say... / But through all the points on my plane / You can pass all the people and animals on earth / So your perpendicular makes me laugh. / And not just people and animals / But plenty besides / Pebbles / Flowers / Clouds / My father and mother / A sailing-boat / A stovepipe / And if I choose / Four hundred million perpendiculars.* < <https://thehighwindowpress.com/2021/12/17/french-poetry-3/#Robert%20Desnos>>

aspects to evidence how they contribute to the system complexity. Isolating specific selected aspects of the Airbnb system, the case study intends to verify the hypothesis discussing i) the complexity of the system *per se* and ii) the complex relationships of the material and immaterial dimensions of Airbnb with its complex environments, as urban regions, interpreting aspects and relations in the light of theoretical definitions, and thus, of a well-defined set of theories that support reflections on the relationship between complex systems and urban and regional policy and planning.

Therefore, the analysis and discussion of Airbnb as a complex system frames the issues involved in a specific field of studies and opens to reflections on the efficiency of paradigms and tools of planning and governance in guiding the short-term rental dynamics toward the common good. This is the reason behind the analysis dedicated to public policy and regulation at different scales in the platform mediated short-term rental market.

Considerations at the root of the research emerged from ambits of open questions often horizontally discussed in different fields of study. These ambits are frames for the three pillars of the thesis. The first pillar of the thesis consists of the definitions of the *environment* and *complex systems*, as in the Complexity Theories of Cities, which are in continuous becoming (Portugali 2016; De Roo 2016), crossed by material and immaterial dynamics (De Roo 2018) and in which uncertainty is unavoidable (Beauregard 2021). The ultimate example of complex systems (and environments) are cities, which conceptualisation is, perhaps not by accident, still under discussion (Lefebvre 1974[2018]; Amin and Thrift 2016; Perulli 2016; Brenner and Schmid 2017), as well as its borders, because the limits between what is urban and what is not are fuzzy. The upscaling and downscaling of global events and financial neoliberal exploitation processes, the role of the governance and the fuzziness of the city limits are at the centre of the regional urbanisation theory (Schmid 2019), one of the theoretical ambits considered in this work.

The second pillar of the thesis is the problematic market of the short-term rental promoted on platforms, and specifically on Airbnb, the most used in Italy and a powerful stakeholder among the innumerable actors that interplay with the city. Platforms like Airbnb are investigated as drivers of social, economic, and spatial inequalities (Cocola-Gant 2016; Barron et Al. 2018). Many studies on different contexts are focused on the Airbnb Platform, meant as a global company in the neoliberal financial frame of the *platform capitalism* (Srinceck 2017; Cox and Haar 2020), but also as the actors that gravitate around the short-term rental platforms and the dynamics or even urban fallouts triggered by them, and, lastly, studies also concern the regulative frame (Colomb and De Sousa 2021).

The third pillar regards urban and regional governance. Specifically, Italian planning and governance paradigms, the predictive role of planning on territorial development and the concept of unpredictability, ontologically inscribed in the concept of the city (Portugali and Stolk 2016) are at the centre of the debate within the Complexity Theories of Cities (De Roo 2010; De Roo and Boelens 2016; Rauws 2016), and the post-structuralist approach to strategic planning (Balducci et Al., 2011; Perulli 2016). The need or will of prediction of some current planning tools must face the unpredictability of urban environments or the many open systems, made up of material and immaterial dimensions, that are in it. In this complex theoretical and practical context, the Covid-19 pandemic emergence has further contributed to the disequilibrium in the systems and environments because of its externalities in many, almost all, living systems, but it has also contributed to highlighting some dynamics, adding complexity and instability to the ordinary continuous changes.

From this three-dimensional setting, the problem of the research emerged as a gap, a conceptual and practical distance between the three pillars. Specifically, the short-term rental market dynamics challenge the public urban and regional policy at different levels because they evolve and revolve in complex environments such as cities or urban regions in which the immateriality

and materiality of processes coexist in the same place at the same time and their nature implies a continuous becoming. Furthermore, this multi-level multi-player domain of STR dynamics in urban regions intercepts many – economic, social, fiscal, work stances, real markets, financial markets, local and global, and urban – questions and issues while the regulative frame is a multi-layered and multi-player environment constituted by a definite division of competencies.

Thus, the research is based on more than one theoretical framework. Many different streams and theories involved are mentioned not to be reassembled, but because each of them touches specific issues that contribute to i) the general and overall interpretation of the Airbnb system and its relationships with the urban regional environment and ii) the final aim to discuss current governance and regulative actions in the light of the Airbnb complexity. Specifically, the research inherits definitions and meaningful reflections from the complexity sciences applied to cities, such as the Complexity Theories of Cities (CTC) but also the Actor-Network Theory (ANT) to read the material and immaterial urban dynamics linked to the short-term rental market. The other broad frame of reference is the Critical Urban Studies domain, used to define the concept of the city, since it is the most suitable for framing and describing the case study, especially because several authors from this field contextualised their theories in neoliberal, financial processes of exploitation, that we contend are involved in the platform mediated short-term rental market. These two broad theoretical frameworks meet between local and global because they both enhance a multi-scale interpretation of the systems and the private-public relationships, the dynamics between the planning and single economic actors and also global companies that move great stocks of capitals. For instance, the extended regional urbanisation is pillared around the concept of globalisation itself, studying its externalities at different levels in terms of spaces and processes, which are often extractive processes of local resources. Therefore, the extended urbanisation theory has the role of meaning framework to interpret the geographic context of the case study, while the Complexity Theories of Cities and the Actor-Network Theory contribute to the research with fundamental concepts and definitions that give lenses through which organise the analyses and discuss results. The selected fundamental concepts are *Uncertainty and resilience; Situatedness, Ever-changing assemblages of paths and actors; Evolution revolution coevolution; Emergence in in-becoming environments. Bifurcations and Transitions; Complex Adaptive Systems and the role of the Past*. Simplifying, the first is about the impossibility to foresee the development of complex adaptive systems, that depend on uncontrollable variables which make the system resilient in environments in continuous change, pushed by site-specific material and immaterial dynamics and by the agency of the actors that cross them with their interests and assets, through markets that are partially independent of the local context. The assemblages of human and non-human actors, such as the platform, hosts, guests, management agencies, local communities, the public bodies, the territories, the external conditions, the global flows and the unpredictable events involved in this in-becoming process have different paces, aims and powers, and produce impacts on cities, but the thesis focuses only on dynamics and not effects.

Nonetheless, the analysis of the speed of change contributes to the definition of the case study as a complex system because refers to revolutionary and evolutionary processes of change. Moreover, the analysis of the context at different scales enhances to have more contextualised inferences on the system Airbnb, because from the observation of the relationships between a changing environment and a system that remains in a dynamic equilibrium, being flexible and robust at the same time, we can deduce the complexity of the system. Finally, the last category constitutes a bridge between the main aspects of the Airbnb system and the local environment, the geography of places, the *roughness* of places (Paba et Al, 2017a), and the infrastructures that guided the evolution of the urban regions.

Thus, the research question is based on this broad and multi-facet theoretical background and preliminary studies on Airbnb, and it is focused on which reflections from complexity theories

about cities can improve the efficiency of urban policy related to the platform mediated short-term rental market. And with what tool and at what scale the governance system might efficiently address material and immaterial in-becoming dynamics of this market? These ambitious questions imply the hypothesis that Airbnb is a complex system, and thus, the first aim is to verify this hypothesis. Then, fragmenting the problem within the theoretical frameworks, the research wonders how the Airbnb complex features can influence processes and tools of urban and regional governance on the short-term rental market in Tuscany? And further, which are the in-becoming issues and opportunities in the current Italian governance at different levels, in the light of the complex material and immaterial features of the Airbnb system?

The main aim of the research is to reflect on processes and practices of the governance and planning system in Italy at the regional and local level through the analyses i) of Airbnb as a complex system in a context of regional urbanisation, exploring the mutual influence between the system's dynamics and the territorial features of the case study and ii) of strengths and weaknesses of current regulation and the relationship between the public and the private actors in the short-term rental activities mediated by the Airbnb platform.

The definitions from the theoretical framework enhance the description of material and immaterial Airbnb dynamics, firstly organising the quantitative and qualitative analyses and secondly guiding the discussion of the results from the case study. As for the Airbnb dynamics and its relationship with the environment, the governance and regulative acts were analysed through a critical survey on official documents, reports, and specific literature.

The methodology of the research is based on a theory-driven approach because it is designed from a theory and aims at enucleating reflections to advance the theoretical background, but, for the features of the research and the case study, it was also oriented by a data-driven approach that modified goals and expected results on account of the available or accessible data. The methodology for the case study is a mixed-method approach in which both qualitative and quantitative data contribute to the interpretation and discussion of the case,² that consists in the analysis of the Airbnb dynamics in the Florence-Prato-Pistoia urban region, a context in which people, practices and systems work as a whole, even if crossed by administrative borders. To better introduce and critically discuss the regional dimension of the Florence-Prato-Pistoia urban region, the research analyses the Tuscany level, not to be compared, but to reduce the degree of subjectivity in the choice of the case study's borders and highlight the issue of the massified tourism in Tuscany, at the regional scale, that present a regulative and normative frame. Therefore, in the thesis, these two levels aren't compared, but the analyses and reflections at the different scales are integrated to discuss the regional dimension of the Airbnb system.³

The discussion of the case study verifies that Airbnb is a complex system because it presents a double structure, flexible and robust, while its dynamics are in-continuous becoming, making the supply and demand variable at different paces, guided by the global and local market, and inner policy of the Platform, but also external policies of countries and specific contingencies such as the Covid-19⁴ pandemic that triggered revolutions, fast changes with temporary effects. The interpretation of the role of local morphological features in the case study, and the monitoring over twelve months support the investigation and identification of ongoing dynamics that produce Airbnb patterns of diffusion specific to the place they emerge from, and the role of the local path dependency in the attraction of assets that can also depend on global actors.

² The quantitative analyses are based on georeferenced data that describes the geographic environment (official data from public administrations at different levels) and the Airbnb dynamics, thanks to the collaboration with the Italian National Council of Research and the purchase of a dataset from the provider Airdna.

³ The temporal domain of the case study is also dual because the case study is in-depth analysed during the pandemic period (April 2020-2021), while the analyses on the complex system Airbnb in Tuscany cover a pre-pandemic period (November 2019-October 2020)

⁴ This is an inference from the qualitative and quantitative comparison between dynamics on a temporal range

In conclusion, the research is not aimed at formulating a list of ‘do and don’ts’ for the public administration or policymakers but it aims to highlight issues and opportunities of the current urban and regional governance on platform mediated short-term rental activities, in the light of the complex features that one of the most powerful actors of the sector presents. Even though the specificity of places and governance paradigms don’t permit a direct generalisation of results, the analytical protocol, constituted by the methodologies through which open data are analysed, can be applied to other contexts to open a further debate on the regional dimension of the dynamics linked to Airbnb. In conclusion, the definition of Airbnb as a complex system, within the conceptualisation inherited from the Complexity Theories of Cities and Actor-Network Theory, can open a field of discussion in the planning and complexity debate, that stresses planning and governance roles in the light of the complexity of urban systems.

I PART

INTRODUCTION

1. Introduction to the Research

The research investigates complex dynamics in territories focusing on material and immaterial aspects of Airbnb, interpreted as in-becoming challenges for governance. Specifically, the materiality and immateriality of dynamics (De Roo 2018) concern Airbnb's patterns of supply and demand diffusion, the interplay among actors involved and, finally, the multi-level governance of the short-term rental market. Therefore, the thesis hypothesizes that Airbnb is a complex regional system that, as cities and urban regions, is constituted by *assemblages* of myriads of individual plans (Portugali 2008) implemented at the local scale, in which both public institutions and private companies – that address the change at many scales driven by different interests, decisions and actions – intervene. Frequently, these interventions arise at the global level from globalized actors. In this multi-scale and multi-level spatial social and political environment, the Covid-19 emergency (and emergence) sets unique environmental – political, social, and economic – conditions to investigate the Airbnb system's complexity in transition phases.

Hypothesizing that Airbnb is a regional complex system, the research assumes that regional and local governance systems are challenged by Airbnb dynamics, which include both local individual private aims and plans and global flows of interests that change the environment they are in and, simultaneously, are subject to changes in the environment triggered by contingent transitions, such as the Covid-19 pandemic. Eventually, the research explores critical issues of the current Tuscan and local governance on Airbnb dynamics.

Even before the pandemic, which slightly remodelled the aims and case studies of this research, the thesis focused on Complexity Theories assumptions and was aimed at exploring complex features in territories, analysing processes of evolution. Now, as before, unpredictability emerges as a core feature, challenging the governance and planning environments. Moreover, the Covid-Era highlights the very little control on how situations can evolve and revolve (De Roo and Rauws 2016), making fragile systems more fragile and increasing social, economic, and urban inequalities (Florida et Al. 2021). Even though uncertainty and unpredictability are not eliminable by analyses for strategic processes of development, we are not in a totally 'blind chance' world, but we can recognize principles of evolution in non-linear dynamics of change, in bifurcations and transitions introducing the role of the past in the new patterns' formations. Thus, history and memory are crucial for the system's interactions with its environment and, therefore, in processes of coevolution because trajectories and individual pasts merge and assemblage, making new situations fluid, vague and fuzzy, but in a continuum with their generating conditions. This is why planning and governance are crucial for reducing inequalities even in complex, unpredictable in-becoming systems and environments.

Therefore, the study of Airbnb, as a complex system made up of material patterns in territories and immaterial dynamics of private powers and public regulations, allows to critically analyse the governance actions that address or regulate Airbnb, reflecting on the policy instruments and actions to face a current issue of cities (and territories), analysing its material and immaterial dimension under the complexity theories lens.

Thus, the analyses represent an experiment on a pilot case made possible by the support in data scraping of two National Council of Research Groups (Institute of Information Science and Technologies "Alessandro Faedo" - ISTI and Istituto di Informatica e Telematica IIT §3.2) and by the acquisition of data from Airdna, a provider of data collected from the Airbnb and HomeAway⁵ websites. Given the experimental nature of the analyses, I chose to focus only on quantitative and qualitative analyses and interpretation of material and immaterial aspects of Airbnb, excluding the territorial impacts of the Short-term Rental (STR) market from the analytical process and therefore from the discussion of the case study, because the current literature on the

⁵ Data are distinguished by the platform they were scraped from, therefore it was possible to select only those from Airbnb.

topic presents many brilliant cases of Airbnb's impacts on urban centres and cities, while on the territorial side there are many unfolded aspects of the Airbnb dynamics to research. To advance a case study on the territorial effects of Airbnb, it was needed a demonstration of the regionalisation of the system and the evidence of its complexity. Therefore, the process described allows for discussing governance and planning weaknesses and strengths related to the system complexity.

Even if Airbnb is analysed as a system and its impacts on urban and regions are postponed to future research, this contribution arises a set of new questions and reflections enhanced by Friedmann's question to planners about "the reality of what is happening now, [...] whether planning powers should intervene to shift the balance of forces toward goals of social justice and inclusion in the ongoing processes of urban and regional restructuring, and with what tools at hand?" (2011: 215)

In conclusion, the research remarks that the spatiality of the Airbnb system (its materiality) and assemblages of actors (its immateriality) in the Florence-Prato-Pistoia urban region, framed in the wider system and environment of the Tuscany region before and during the Covid-19 pandemic, are crucial factors to cope with for producing strategies and policies adaptive to changing environments at the regional and local government levels.

1.1 The Context, as a Complex Multi-Scale Urban Environment

Cities are complex systems and, at the same time, complex environments for other systems (§2.2). Their nature is difficult to limit within institutional borders because the ‘city region’ described by Perulli (2016) is a ‘web of contracts’, an assemblage of assemblage, “relational contracts linking economic, political and social actors in their complex interplay” (Perulli 2016:21). Thus, not only the institutional borders are inefficient, but also the border between rural and urban and even between local and global flows, actors, projects are variable and therefore difficult to set because “[i]n other words, the city is a large-scale collective and complex artefact that, on the one hand, by means of the activities of its inhabitants and users (the urban agents), interacts with its environment, while on the other, as a consequence of its size, functions as an environment for the large number of people that live and act in cities” (Portugali 2016:6). And Airbnb is one of the many recent actors that act in cities, a subject and object of policy and changes, as well as the pandemic dynamics that can be considered a transition phase setting off a rethought of systems at any level, from the single actor to Institutions, and letting emerge more clearly some complex features of systems. While approaching single actors’ plans is impossible because of the number of private variables, the field of planning and complexity studies offers a chance to introduce complexity in the governance discourse, even if it is interpreted by numerous perspectives. Moreover, the issues involved in the relation between planning and complexity vary from country to country according to the ‘local’ planning paradigms (Berisha et Al. 2021) and local systems, therefore, the geography frame was one of the first variables in the research to be set (§1.3). According to preliminary literature reviews and quantitative analyses, it appeared necessary to set a wider geographic domain for the case study and to analyse the Airbnb system in regions, not only in cities. For instance, the maps of Airbnb in Florence showed a tendency to spread into the outwards, possibly for the saturation of the city centre, while other studies highlight that Florence is deeply linked to the urban region of Prato and Pistoia for flows of people goods and information, trespassing the institutionally established borders of the Metropolitan City of Florence. Those flows can be visible at the local level but are triggered by multi-level dynamics, that are often framed in a neoliberal and neo-capitalist environment which results involve the spatiality, processes and the ontology of the urban (Brenner 2015; Schmid 2019).

Since Airbnb, its spatial dimension in cities and territories and its assemblage of actors are in constant ferment, challenging the governance at many scales, the research investigation is the product of an incremental work of integration, selection and adjustment on in-becoming materials and information about the focus of the thesis. Like the pandemic conditions, the Airbnb system puts into question and challenges governance paradigms and political actions at different levels, that are aimed at the public good for definition. But with what tool at hand can the governance system do it, facing Airbnb as a continuously changing system that also presents problems of definition in terms of spatial bounding and actors involved?

1.2 Objectives and Research Questions

As defined by literature, the complexity of systems is a feature that planning needs to conceive and address. Airbnb, as found in preliminary literature reviews and analyses, was likely to have complex characteristics, and its assemblage of material and immaterial actors is a challenging matter for governance because of its impacts on equity and urban liveability, as evidenced by many studies in urban contexts.

Within the research field of “planning and complexity”, the assumptions and reflections on planning and governance rely on complex features of systems and are aimed at improving the effectiveness of policy in real dynamics. To apply this perspective on Airbnb’s issues, the research hypothesizes that Airbnb is a complex system and that it has a regional dimension in which it’s possible to detect patterns that are deeply linked to how a region works as a system. Therefore, the hypothesis implies that morphological and topological path dependency has a crucial role in enabling or constraining Airbnb’s patterns dynamics, which is not just determined by single variables, but it interplays with assemblages of human (actors’ plans and decisions) and non-human (territories, planning paradigms, platform algorithms...).

This hypothesis, to be verified through the case study, is at the base of the broader research questions.

If Airbnb is a regional complex system, how do its complex and regional features influence the current urban governance models and tools for short-term rental in Italy, and specifically in Tuscany? And thus, limited to Airbnb material and immaterial dynamics, what are the weaknesses and strengths of the current governance and planning paradigm at different levels in Italy, considering the complex features detected in the Airbnb system?

These questions aim to identify the dimension and the specific attributes of a gap between the governance system and the complex features of the Airbnb system. The measure of the distance between these two systems allows introducing a third ambitious question about what evidence from the interpretation of Airbnb under the Complexity Theories of Cities lens might improve the effectiveness of the urban policy on short-term rental in measuring, guiding and softening material and immaterial patterns, and thus possibly impacts, of the Airbnb dynamics?

The main aim of the research is to reflect on governance and planning models and actions in Italy, specifically at the local level of the Municipality, Provinces or Metropolitan Cities of the case study environment, and at the regional level because they are recognised as inefficient by previous studies on the field and in other European contexts.

For the specificity of places and planning and governance paradigms, results are not directly generalizable. Nonetheless, the analysis protocol can be applied in other contexts, opening the debate on the territorialisation of the Airbnb dynamics and its role in sustaining the improvement of efficiency of the urban and regional governance and planning of the short-term rental market.

1.3 The Case Study. Airbnb in Urban Regions

The environments with which Airbnb interplays are multiple (global and local social, economic, financial, and political), but the material results of all these interplays are in territories, cities and regions that are subjects and objects of the Airbnb dynamics at the same time. For instance, the hosts' private decision to put their estate assets on the short-term market, and mostly on the Airbnb platform, instead to live in or to rent on the long-term market, is also triggered by conditions linked to the nature of places, regulative statutes and actions at different scales and the platform policies and its marketing campaigns, while the pandemic emergence added a degree of complexity to reality, but, at the same time, allowed to highlight more clearly the complex multi-layered dynamics around Airbnb.

To discuss the effectiveness of policy in governing Airbnb as a complex system with a regional dimension, aiming at making emerge the gap between Airbnb's complexity and current governance approaches, we wondered where and how Airbnb's dynamics evolve and revolve. Therefore, the case study's development was guided by questions nurtured by the Complexity Theories of Cities (CTC) and Planning Approaches theories. An in-depth survey on the CTC frame can advance reflections and useful hypotheses for the urban and regional planning and policy environment, while the idea of studying an urban region instead of a single city centre, the most common choice in Airbnb's dynamics studies, grew within the Extended Regional Urbanisation Theory. This approach to the urban is consistent with the theoretical concepts that define complex systems. For instance, the fuzziness of borders, the necessity to overcome institutionalisation of flows and the dynamic interactions among territories, economies and people are the most relevant aspects inherited by these two frameworks and involved in the research. Furthermore, the extended regional urbanisation theory is based on an interpretation of dynamics at the global scale from a neoliberal capitalism exploitation processes perspective. We contend that this perspective fits the Airbnb processes of diffusion in cities.

To choose and define the case study realm, we took as a reference a Paolo Perulli's definition of the geographic scale that the neoliberal flows of interests and capitals involve, because "[t]he scales of the city – medium, large or small – does not mean much if compared to the system of [global and local] flows which become a major factor for territorial development." (Perulli 2016: 27-28). Therefore, the geographical domain selected for the case study is the Florence-Prato-Pistoia (FPP) urban region, a unique realm consisting of urban domains without a scale, that works as a system independently from the many institutional borders that fragment it but are deeply linked to the global and local flows that influence its territorial development. To better understand the regional dimension of this system, recognising the difficulty to define a geographic border in complex systems, it was elaborated a set of analyses on Tuscany, as similar to those on the FPP as possible. The temporal domain of the analyses is consistently dual because of the different datasets. Specifically, the Airbnb system is in-depth analysed during the pandemic and overviewed at the Tuscany scale before and during the pandemic.

Thus, the case study consists of the analyses and discussion of Airbnb dynamics in the Florence-Prato-Pistoia urban region, a realm that was recognised as a system since the 50s of the XX century but that has never been represented by a single political body. It is a kind of 'puzzle' of municipalities and provinces (§3.3.1), that make the FPP urban region a complex coalescence of strategies, plans, laws, and instruments that have different paces and leverage. Moreover, the systems of flows (of people, interests, goods) are deeply interconnected in this region, in line with the territorial peculiarities, because "[a]ssemblages [are] not only of territories but of policies too: variable packages which are congruent with differentiated development strategies regarding local opportunities and constraints". (Perulli 2016: 27). Thus, the research discussion and conclusions are based on a single case study supported by further exploration in Tuscany since it is a branded institutionalised region with a specific governance system and laws on tourism. Two scales of the case study are necessary to test a protocol of analysis, but they are not aimed at a comparison between the two contexts.

The case study analysis and discussion are built and implemented as those for the “descriptive case studies”, which seems the fittest methodology for achieving the objectives and questions of the research because “[d]escriptive studies seek to reveal patterns and connections, concerning theoretical constructs, to advance theory development. [...] A descriptive case study distinguishes itself from other types of case studies by its preoccupation with articulating a descriptive theory. In so doing, robust concepts emerge, conflate, and expand to inform, confirm, refute, and further shape a priori theories. Most important, descriptive case studies allow the reader to see the case through the theory-driven lens of the researchers” (Mills et Al. 2010: 289).

In this methodological path, a mixed-method approach was considered the most efficient to reassemble the benefits from quantitative and qualitative analyses and the most feasible approach to a complex real-world made up of multiple variables. An abductive logic or approach (Palermo 1992) was used recursively in data analyses, because one of the most challenging issues of this research methodology is the elaboration of data, indeed. In Beauregard’s words: “[i]t is not just that different things enable some uses and not others: things affect how we think and how we act. GIS⁶ not only has helped planners to document what is occurring in cities but has changed the way they look at cities and their understanding of how cities work. GIS makes us think about places in terms of populations rather than individuals, regularities rather than serendipity, and categories (people who book accommodations with Airbnb) rather than groups (neighbours joined together in a food cooperative, some of whom use car-hailing services and others of whom ride the bus)” (Beauregard 2021: 220). To mitigate this unavoidable issue, the case study relies on different types of data. The GIS analyses were combined with results from a questionnaire via social media, semi-structured interviews and infographic tools to reflect on assemblages more creatively, changing perspectives on interpretations but always referring to theoretical principles, because “[m]aking use of a robust descriptive theory enables the descriptive case study researcher to penetrate the essential understandings of the case and offer up for scrutiny a case for informing theory development, in addition to potentially providing a valuable addition to the case study databank for future researchers” (Mills et Al. 2010: 289). The trustiness, as the internal and external validity based on statistics of the ‘pure quantitative’ approach and the credibility, transferability and flexibility of the ‘purely qualitative’ approach are combined in a mixed-methods approach based on evidence congruence and quality of the research conduction. Data that might seem essentially qualitative, like the survey via social media, is structured so that it can be used in the quantitative investigation. Generally, the dataset’s collection and elaboration of the case study are achieved through strategies in parallel and not chronologically ordered. This way, the analyses were more flexible to internal and external changes since pandemic continuously and fast changed conditions and the research questions were slightly adapted to current needs. Finally, the mixed-methods approach was chosen also because it consents not to be linear in the project development. Since this research tries to reconnect the two parallel paths – of Airbnb’s material and immaterial patterns in territories and the governance on short-term rentals at different scales – in a single path of new knowledge on Airbnb and governance, it uses mixed procedures, that we contend can reassemble the complexity of the Airbnb system with the weaknesses and strengths of regional regulations and local policies.

⁶ The example is significant and appropriate because most of the analyses are elaborated in a Geographic Information System (GIS) environment

1.4 The Research Approach

The hypothesized gap between a world in continuous becoming and the Italian planning approaches and methods triggered initial reflections of the thesis. Therefore, questions were inspired by Complexity Theories of Cities assumptions and enriched by reflections inherited by the Extended Urbanization theories and Actor-Network Theories. Data used in the case study analysis constitute the empirical, yet mutable, set to verify the initial hypothesis of the research. It's mutable because the theoretical frame and the peculiar features of Airbnb in the case study slightly changed priorities during the analyses of the case study in a recursive manner. Therefore, steps proceed through a data-driven approach, modelling advancements based on the findings and new data,⁷ but the research project was built on a theory-driven approach, inspired by challenges opened by the quite recent field of study that relates complexity and planning. This approach structured the aprioristic research design, discussed by the datasets analyses. Simplifying, the research method can be framed within the 'explorative analyses' because it tries to confirm the initial hypothesis through data and at the same time proposes models for data analyses and elaboration while suggesting bases for future research projects, elaborating more feasible hypotheses that fit the topic and possible advancements in the knowledge of the short-term rental market. This is in deep relation with the tourism market, a complex domain that involves a multiplicity of issues – economic issues, social stances, geographic analyses – and thus, a multiplicity of disciplines that can be at the same time strength or weakness in taking policy and planning decisions. The more variables are engaged, the more complex is the arena in which dynamics happen and situations evolve and/or revolve, as defined in CTC (§2.1.2). Within this complex domain, a simultaneously global and local actor, Airbnb, takes the fore and needs to be studied and addressed by a multi and inter-disciplinary approach, because it diffusely involves individual actions and interests within the global frame of the Platform, touching and contemporary being touched by economic, social and spatial dimensions of the city, and we hypothesize, of urban regions.

Considering the theoretical frame and the focus chosen to discuss the case study, an interdisciplinary approach is necessary, not to reassemble the different perspectives under a unique lens or general theory, but to frame specific issues of this research within the most effective theories to describe them as they appeared. Indeed, this has been a recursive process of preliminary overview, introduction, study and selection of theories that seemed best fitting the issues the case study presents. Therefore, many collaborations in more or less formal ways have been activated with experts from different fields (see §3 and Appendices) helping to discuss and reframe under specific lenses.

⁷ For instance, at the beginning of the research process, the Tuscany level was not included since data wasn't available in this context

1.5 The Structure of the Thesis

The thesis focuses on urban and regional policy related to complex systems, investigating territorial environments, meant as assemblages of places, people and powers, and their interplay with global systems both real and virtual. Uncertainties and complexity are explored in the case study, described and assumed as assets of territories.

To analyse and interpret chaotic, overlaid, multidimensional systems, such as the environment of the case study and the Airbnb system and the system itself, the thesis is structured in four distinct parts, all connected as in a loop, starting from its positioning within a theoretical frame, exploring the case study environment through a descriptive method and the features of Airbnb in the case study, discussing results from the analyses and interpretation to open to the conclusion part, consisting in the overview of the impact of the research and a trigger for a future research agenda that could add knowledge to the initial theoretical frame. The loop is an efficient design for aiming at never-ending research, intending to set small advancements, while opening further questions in the field of planning and complexity.

The first part introduces the context of the research, objectives, research questions and the case study, with specific paragraphs on research methods and approaches. This general introduction allows following the concepts and frames that addressed the research project.

The second part is entirely dedicated to the theoretical and practical positioning of the research. Chapter 2 delves into the main theoretical frame of the research which goals and results refer to Complexity Theories of Cities. Specifically, the relation between complexity concepts and planning are reviewed in the literature, not only from the Complexity Theories of Cities authors but from scholars that mainly refer to other theoretical backgrounds such as the Actors Network Theories and the Critical Urban Studies. There's no intention of reframing these different backgrounds on common ground, but each of those enriches the thesis with different perspectives and approaches to the issues arising by the many levels involved in it.

The third part unpacks the case study through four chapters. Chapter 3 overviews the methodological approach assumed for the case study, while Chapter 4 describes the territorial domain of the case study, presenting the environment in which the Airbnb system evolved, going into the morphological, social, economic dimensions of the case study of the Florence-Prato-Pistoia urban region and the wider geographic frame with which the urban region interacts, evidencing territorial features that can be interpreted as hints of complexity (§4.1). This is a brief overview of the main regional aspects involved in the STR market, which is then analysed focusing on the Airbnb dynamics, reporting main qualitative and quantitative analytical findings both in Tuscany and in the Florence-Prato-Pistoia urban region (§4.2). Chapter 5 delves into the policy and governance system related to the STR market at different levels. This is a crucial introduction to the core of the research, because, after having investigated the material and immaterial dimensions of Airbnb dynamics in relation to the materiality of territories, it is analysed concerning the immaterial sphere of the public intervention delving into the current governance and regulative systems. Chapter 6 is based on the findings from the previous chapters. Reflecting on the transition phase triggered by the pandemic, territories and Airbnb are discussed as complex systems that challenge policy and planning local systems.

The fourth part draws conclusions and explores open questions and, thus, what comes next, in terms of possible future research agenda (Chapter 7). Chapter 8 reports the conclusion of the thesis, also discussing limitations to the methodological approach here assumed.

Appendices are structured as the thesis, from the theoretical background and its multiplicity of links to the quantitative and qualitative analyses, with specific disclaimers on cartographic elaborations that constitute the essential part of the analytical protocol.

Specific Recommendations and Bibliographic References close the thesis.

II PART

THEORETICAL FRAMEWORK OF THE RESEARCH

2. Theoretical Framework

All the living matter on Earth, together with the atmosphere, oceans, and soil, forms a complex system that as all the characteristic patterns of self-organization. It persists in a remarkable state of chemical and thermodynamic nonequilibrium and is able, through a huge variety of processes, to regulate the planetary environment so that optimal conditions for the evolution of life are maintained.

Fritjof Capra, 1982
The Turning Point p.284

This chapter bears on critical questions, inheriting insights from different theoretical perspectives. The main goal of the research involves the concept of complexity as a crucial lens to look at multi-scale processes of change in urban and regional domains, which are also questioned by the planning discourse. Among the processes of change that challenge the planning and governance structures, the research considers virtual global actors such as online platforms, with their material and immaterial dimensions in virtual and global domains and real local places. The slight border between global and local is discussed and interpreted by critical urban studies that assume a deep interrelation between the two scales and the role of financial actors as drivers of an ontological change.

The attempt to grasp this complex world of relation implied a selection and simplification of concepts from different theories that refer to different fields of studies and different backgrounds, sometimes methodologically or theoretically far from each other. Therefore, it is important to underline that this chapter doesn't aim to reconduct theories under a unique perspective or unify them, but it is a collection of theoretical insights that fit with the research questions and the objects of this work. For instance, the universe from the Complexity Theories of Cities (CTC) gives frame-definitions of urban and territorial dynamic features (§2.1), approaching the many questions arising from the interplay between the 'urban' immateriality, as the agency of the numerous actors on the ground and materiality, as the ground indeed, the tangible dimension of the city or the urban regions. These two dimensions of cities and territories are crucial in the planning and policy discourse (§2.2), which is challenged by the complexity of an in-becoming material and immaterial world. To simplify the operations, five features from Complexity Theories of Cities were selected and explored in the theoretical background (§2.1.2) and then, analysed for their contribution to the theoretical reflection on Western planning and policy paradigms (§2.2).

As far as the complexity of *immaterial* agency is concerned, the research inherits definitions from the Actor-Network Theory (ANT) to highlight the multi-scale tangle of virtual and real, global and local, private and public agency and plans of the actors involved in the short-term rental market in urban regions.

About the second category, the *material* city, this chapter (§2.3) goes into the multitude of current definitions, exploring the unease of describing what a city is. Within the countless perspectives, here selected and only grasped, the extended regional urbanisation theories seemed the most useful to interpret and frame the case study domain also because of its arguments on administrative and governance borders. This approach mainly relates to different geographic contexts, in scale and processes, from the one proposed in this work, but the relationship between the global and the local dimensions and the nature of the actors involved, recognised as exponents of extractive capitalism processes, make these theories fruitfully referable to the case study. Furthermore, the local level is explicitly interpreted under the materialist non-determinist approach of the *territorialist school* and the Latourian perspective, assuming the obduracy of places as a crucial aspect to be considered.

Thus, the materiality and immateriality, space and time, action and space, humans and non-humans are intertwined and in continuous interaction and constitute the research background to introduce the Airbnb issue in cities (§2.4). The Airbnb platform dynamics are investigated because their effects in cities are studied and invest many fields of the urban life, triggered by a multitude of variables that seemed interacted in complex ways. But it is something to discuss in chapters 4, 5 and 6. This Chapter presents the Airbnb platform, as the most used in Europe, among many other short-term rental online platforms and within the neoliberal economic and financing global market that created Airbnb and in which regulation is discussed at different scales and in which actors are not yet fully defined and, possibly, definable.

The chapter proposes single paragraphs for theoretical approaches and conceptualisations that face different aspects, such as the definition of features in complex systems; planning and policy paradoxes and the approaches to them; the concept of the urban, considering the specific issue of the short-term rental market in cities, and, we add, urban regions.

2.1. Complexity Theories to Interpret In-Becoming Systems and Environments

The pandemic emergence explicitly showed that all systems appear inextricably intertwined and that complexity is an inner element of those, while the fragility of not richly diversified urban systems considerably boosted social injustice (Florida et Al. 2021; Farzanegan et Al. 2021). In this environment, it is more and more evident the need to frame current issues within a complex theoretical background. Therefore, this first introduction to complexity aims at setting the stage for verifying the hypothesis that Airbnb is a complex system.

The first paragraph explores a selection of authors and concepts in the complexity studies field. “It is important to distinguish between complicated and complex systems. A complicated system, such as a clock or a turbocharger, is indeed sophisticated, consisting of several parts all working together as a single unit. However, when broken, it is possible for specialists to disassemble these systems into their various components, study them separately, repair them where necessary and put the systems back together again into working wholes. This would not be possible in a complex system, as each of its parts influences the others reciprocally, exchanging (dissipating) information mutually and in accordance with the specific circumstances or contexts. Disassembled and reassembled – even if this were a realistic option for complex systems and their fluid behaviour – the system would not be the same, as the circumstances which sustained it would have changed meanwhile, and the system’s parts and context are subject to discontinuous, interactive change not allowing a return to the system’s initial settings. Subsequently, complex systems are difficult to predict, in disequilibrium and probably fundamentally different at various moments” (Boelens and De Roo, 2016: 46). This definition gives all the main hints for approaching complex systems, which conceptualisation originated in the ‘hard sciences’ (§2.1.1) and was adapted to social sciences (§2.1.2) (Bertuglia and Vaio, 2019). Within this perspective, a set of definitions of selected crucial concepts highlights theoretical connections between complexity science pillars and urban studies, as other authors already detected, assuming urban systems as *complex adaptive systems*. This set of definitions is the toolbox of the thesis, a lens through which observing Airbnb in cities and urban regions.

2.1.1 A Brief History of Complexity Theories. From Hard Sciences to the Socio-Spatial Urban Environment

Complexity Sciences originated in the hard sciences, such as mathematics, physics, biology. Since Darwin’s evolutionary theory, scientists had to shift their mindset towards a “universe [...] as an evolving and ever-changing system in which complex structures develop” (Capra, 1982: 72). Not only biologists but also physics elaborated new theories from new paradigms. If in life science the route was drawn towards an increasing order, in physics the focus was on disorder systems. The physics laws of thermodynamics, defined as the “science of complexity” by Capra (1982), explore the conservation of energy. In detail, the second law states that all processes proceed towards an increasing disorder. It was Rudolf Clausius, with the third law, who introduced a new quantity, the ‘entropy’, that “measures the degree of evolution of a physical system. According to the second law, the entropy of an isolated physical system will keep increasing, and because this evolution is accompanied by increasing disorder, entropy can also be seen as a measure of disorder (Capra, 1982: 73)”. This opens to one of the rooted concepts in complexity sciences, which is the balance between order and chaos in evolutionary and revolutionary processes. Clausius’ discovery was so revolutionary to be impossible to explain it with existing Newtonian theories. A step forward was made by Ludwig Boltzmann

who introduced the concept of probability that included the idea that processes are not possible or impossible, but likely or (even extremely) unlikely.⁸

Since the 40s, Schrödinger theorized that a living organism in thermodynamic equilibrium is dead, creating room for future debate on order and chaos within the ‘complexity sciences’ (Portugali and Stolk, 2016: 4). Compared to living organisms, cities create entropy, which is needed to maintain the system under fair levels through negative entropy, or negentropy (Brillouin 1953; Saragosa 2011; 2016) because “organization is maintained by extracting ‘order’ from the environment” (Portugali and Stolk, 2016: 4) through a metabolic process (Georgescu-Roegen, 1982), that clarifies the crucial notion of “order out of chaos” in complexity theories. On this, Ilya Prigogine demonstrated how, under certain circumstances, matter also behaves as if it has life (Nicolis and Prigogine 1977). Furthermore, laws of thermodynamics, in Schrödinger theory, introduce the idea that ‘thermodynamic equilibrium’ corresponds to the death of living systems. Therefore, if we consider cities as living systems, as complexity theories of cities do, it is evident that the question of equilibrium represents a crucial variable in urban realms (Portugali and Stolk 2016; Saragosa, 2016).

The Sixties and Seventies are fruitful decades since Prigogine developed his theory of complex dissipative structures, Lorenz the crucial theory of chaos, Georgescu-Roegen applies theories from chaos and complexity to economic systems (1975) while a few years later Mandelbrot (1983) developed his fractal geometry, Bak (1996) his self-organized criticality, and more recently the new science of networks was introduced by theorists such as Barabasi (2002) and Watts (2004).

“While all of the above refers to open and complex systems in far from equilibrium conditions, each of these theories emphasizes specific aspects of complexity”. (Portugali and Stolk 2016:4)

Therefore, complexity theories are a multifaceted interdisciplinary environment, that fascinates and stimulates many scholars from different fields of study. The bridges between urban studies and complexity have deep and far-in-time roots since cities have been interpreted as living systems out of equilibrium. This peculiarity makes cities a source of order. Complexity Theories of Cities (CTC) have been firstly developed by Peter Allen (1997), a student of Prigogine, and “demonstrated that cities exhibit all the properties of natural complex systems: they are open, complex and self-organized, and often fractal and chaotic” (Portugali and Stolk 2016: 5).

Scholars from urban studies and planners (Allen, 1997, [...] Byrne, 2003; Portugali, 2000, 2011, 2012, who also works with Hermann Haken; Rauws, 2015; [...] Zhang et Al., 2015) have also interpreted cities as “example of non-linear development [presenting] the behaviour of complex adaptive systems” (De Roo, 2018: 19).

Exploring cities through this lens means accepting the weakness of deriving a deterministic origin from events in chaotic systems (Saragosa 2016; De Roo et Al. 2012), but it does not suggest abandoning planning and governance. Contrariwise, an increasing number of research studies are exploring how planning might cope with complexity principles, as shown in §2.2.

To conclude this brief introduction to complexity from hard sciences to urban studies, as Sennet (undated: 6) highlighted, “[t]o the scientist, open systems are familiar companions. Chance events, mutating forms, elements that cannot be homogenized or are not interchangeable – all these disparate phenomena of the mathematical and/or natural world can nonetheless form a pattern, and that assemblage is what we mean by an open system. In time, an open system can be non-linear [...]. In space, an open system resembles a chemical colloid rather than a compound⁹. The most familiar and most magnificent open system familiar to all of us is

⁸ “In microscopic systems, consisting of only a few molecules, the second law is violated regularly, but in macroscopic systems, which consist of vast numbers of molecules, the probability that the total entropy of the system will increase becomes virtual certainty” (Capra, 1982: 73)

⁹ A colloid is one of the three primary types of mixtures, with the other two being a solution and suspension. A colloid is a mixture that has particles ranging between 1 and 1000 nanometers in diameter yet are still able to remain evenly distributed throughout the solution. These are also known as colloidal dispersions because the substances remain dispersed and do not settle to the bottom of the container.

Charles Darwin's version of evolution, which combines elements of chance mutation, path dependencies, and the environment conceived as a colloid within which natural selection does its work". The role of past and time, and thus of the path dependency, is also present in the work of Geddes, as pointed out by De Roo (2018), who individuate a common ground that paved the way to complexity theories in urban studies because "Geddes was well aware of Darwin's theory of evolution, a theory of the non-linear and transformative development of living systems (species), which he adapted to the world of settlements, towns and cities. He [...] develop[ed] an understanding of the energy and material entering into, passing through and exiting the urban domain (Geddes 1915)" (De Roo 2018:6). More recent theories, such as the Jane Jacobs view of urban society (2000), are inspired by the evolutionist approach in the very sense of cooperation - and not competition as often misinterpreted - between species for the selection. Two decades before, Wolman (1965) labelled this view 'the Metabolism of Cities' (De Roo 2018: 6). And still, urban metabolism is a fruitful domain of discussion and an ecological lens to analyse and intervene in urban and territorial dynamics (Magnaghi 2010; Saragosa, 2016; Raffestin 2012; Odum and Barrett 2006; Morin 1988; Turco 1988).

From the cultural revolutions triggered by Heisenberg's uncertainty principle and Lorentz's Chaos Theory (1963), that paved the way to Prigogine's pillars for Complexity Science, the far-from-equilibrium environment, the time conception, up to the Kauffman's principle that "[a]ll free-living systems are nonequilibrium systems" (Kauffman 1995: 21) influenced theories that look at the city as a complex adaptive system, which "have been transformed, from being not much more than nodes on trade routes and river and mountain crossings, into markets, which at some point required protection, leading to defensive walls, and so on, heading towards the industrial revolution with its enabling and constraining conditions, producing the twentieth-century city, which can variously be characterized as booming, functional, congested, communicative or progressive, or as a centre of knowledge and learning, leisure and entertainment. [...] 'Finally,' cities have become places where the local and the global meet (Sassen 1992)" (De Roo 2018: 20). This reconstruction is not to be meant as a linear interpretation of the "evolution of cities", but, on the contrary, to assume that, like the present, also the past of cities, but also the scale of dynamics, both local and global, can be generatively analysed and interpreted in the frame of complexity.

For its roots and the many variables involved, the CTC have many exponents and different streams of thought. Michael Batty is one of the most eminent scholars and his vision of complexity is focussed on modelling as a tool to analyse and envision cities future (Batty and Torrens 2005). Thus, complexity is also meant as modelling and big data analyses linked to 'smart cities' as a tool for 'smart humans'. Nonetheless, great comprehensive visions and the 'governance by code' approach (see §2.4.2) unfold ethical issues and might address top-down decisions, often supported by algorithm bias (McQuillan 2015).

The next paragraph explores selected concepts related to complex systems to introduce a toolbox of useful principles to look at and interpret urban dynamics more likely to be linked to the short-term rental market.

2.1.2 Theories about Complexity in The City. Frame Concepts

Urban complexity is a long-time rooted concept, crossing several disciplines and fields of study. In Geddes' works, we find interactions among patterns as "[...] simple, intricate, often mazy beyond our unravelling, and all well-nigh are changing even day by day, as we see". (Geddes 1915: 5). The very idea of a city *that changes day by day* is consolidated in scholars such as Jacobs' urban issues as problems of organized complexity (1961), that suggest a strong link between systems and processes (Barnett 2012) in which factors interrelate in

([https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_\(Physical_and_Theoretical_Chemistry\)/Physical_Properties_of_Matter/Solutions_and_Mixtures/Colloid](https://chem.libretexts.org/Bookshelves/Physical_and_Theoretical_Chemistry_Textbook_Maps/Supplemental_Modules_(Physical_and_Theoretical_Chemistry)/Physical_Properties_of_Matter/Solutions_and_Mixtures/Colloid)). A compound is a substance formed when two or more chemical elements are chemically bonded together (<https://www.chemicool.com/definition/compound.html>)

an organic whole (Weaver, 1958). These are only two examples, among others, further discussed in §2.2 of the many attempts to bridge the gap between urban studies, planning and complexity.

Thus, the question of complexity in cities can be approached from several perspectives. The thesis works on the materiality and immateriality of complex spaces and dynamics between human and non-human actors in a non-dualistic and non-hierarchical way but as two features of a continuous flow of reality. The research needs these two wide categories to put in close relation the spatiality of the city – its materiality – and the a-spatiality of the short-term rental platforms and the actors' interactions that create markets.

The following works theorize that material dynamics can emerge from immaterial interactions and vice-versa. In 1998, Arendt created a broad reference frame to reflect on the materiality and immateriality of systems made of tangible and intangible qualities in human relations. Thus, “[...] for all its (*of human acting and speaking n/a*) intangibility, this in-between is no less real than the world of things we visibly have in common. We call this reality the "web" of human relationships, indicating by the metaphor its somewhat intangible quality” (Arendt 1998: 183). And because of this “web of human relationships, with its innumerable, conflicting wills and intentions, [...] action almost never achieves its purpose; but it is also because of this medium, in which action alone is real, that it "produces" stories with or without intention as naturally as fabrication produces tangible things.” (Arendt 1998: 184). Therefore, not all plans of the actors achieve their planned goals but have effects, assume a material dimension, possibly uncontrolled by the actor that enhanced them. The added degree of complexity is constituted by the different natures of the actors, which are “[...] anything to which another thing responds (Latour 2005: 71). In this way, nonhuman things become actors with theoretical and practical standing and thereby earn their presence in our thoughts about the world” (Beauregard 2021: 219). In approaching the issue of the web of relationships, immaterial space and material outcomes from interactions, the research takes as a reference the notion of synergetic and cognitive mapping (Haken and Portugali 2021) to reflect on the relationship between human and non-human, people and artifacts because “it must be emphasized that artifacts are not just the outcome of human interaction; rather they are also the media of interaction between the urban agents: Artifacts such as texts, cities, buildings or roads are external representations of ideas, intentions, memories and thoughts that originate and reside in the mind/brain of urban agents; that is to say, of internal representations. However, exactly as material artifacts (e.g., buildings, roads, ...) cannot directly interact among themselves, so also ideas, thoughts, intentions, plans and other internal representations cannot. They interact by means of the externally represented artifacts; be they utterances, texts, clothes...buildings, neighbourhoods and whole cities and metropolises. Urban dynamics thus involves an ongoing interaction between external and internal representations” (Haken and Portugali 2021: 10). This perspective adds a degree of complexity, in approaching the materiality and immateriality of cities, that is not central in this research, but it is important to cite because it involves the capability of people to travel in space and in time with their mind, and this ability is crucial for the implementation of the many little single plans and the strategic planning processes and paradigms. But this will be further discussed in §2.2.

Considering the intimate connections between cities – as material and immaterial systems – and complexity, pillar concepts were selected to build a toolbox of definitions to refer to, in approaching adaptive urban, multi-scale, non-linear systems dynamics, which include emerging networks of agents, transitions due to bifurcations, the role of the path dependency in coevolutive processes.

Uncertainty and resilience

Talking about resilience is a hard-working task that would need, and has needed, thousands of pages written by brilliant scholars. This term, and the others that will follow, are dense in meaning and were often born in other disciplines. Here we aim at proposing brief overviews to set the stage for the case study perspective.

Thus, resilience is a term discussed in many fields of study. “[W]hile particularizing an already established definition, which sees resilience as the capacity of a system to respond to change or disturbance without

changing its basic state (Walker and Salt 2006), Zolli and Healey (2012: 126) define resilience as the ability of people, communities, and systems to maintain their “core purpose and integrity in the face of dramatically changed circumstances”, with the key factors being agility, adaptation, and the ability to face change in flexible ways (Chapin, Folke and Kofinas 2009)” (Pizzo 2015: 134).

In general, the concept of resilience is often involved in thought-provoking theories about risk and disasters prevention management and recovery, but in this research, it refers to dynamic little changes of a complex system in search of *new states* of equilibrium (De Roo 2018; Davoudi et al., 2012; Cilliers 1998; Allen 1997; Boelens and De Roo 2016). It means that resilience isn't a property of systems to bounce back to the state before the transition or before the crisis but to build back the equilibrium state phase (Portugali, De Roo). Specifically, “[i]n a world in-flow, the uncertainty that comes with this and the non-linear development that is produced, reflects a transformative environment within which systems thrive and transform. These systems that are capable of transforming, adapting and self-organizing are complex adaptive systems. Cities and settlements are examples of such systems.” (De Roo 2018: 28).

The nature of complex systems is concurrently flexible – because it adapts to dynamic and turbulent changes – and robust – because those turbulent changes do not affect the wholeness of the system – (Cilliers 1998; De Roo 2018). This reminds the concept of ‘invariants’ (‘invarianti’) as permanence in transformative processes, developed by Maturana and Valera (2001), and further discussed by Alberto Magnaghi (2010) and Claudio Saragosa (2011; 2016) (see also the following sub-paragraph on Complex Adaptive Systems). Also in Beauregard and Lieto (2016), we find similar concepts: “the stability – obduracy – [...] does not preclude change. Even when a building, such as Frank Lloyd Wright’s Fallingwater, survives as an architectural icon, it also changes. [...] The issue is dynamic stability, not stasis. Maintaining stability – and here is where this is useful for thinking about uncertainty – means being able to constantly adapt to changing conditions and new opportunities (Beauregard and Lieto 2016). To be stable is to be able to respond to the dislocations caused by uncertainty in such a way as to preserve the integrity of the building, the project, or the organization – the assemblage. For an assemblage to become stable, the solution is quite simple to state if not to implement. Those involved in the assemblage¹⁰ have to attract allies who are strong and committed to its existence and persistence” (Beauregard 2021: 222). Thus, in a frame of complexity, resilience and uncertainty are deeply connected in in-becoming systems and environments.

Uncertainty is a fascinating issue for many scholars, and not only. For instance, one of the most cited statements was proposed by the U.S.A Secretary of Defence, Donald Rumsfeld who affirmed “as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tends to be the difficult ones” (Rumsfeld as cited in Balducci, 2020a). This way of thinking about uncertainty takes the awareness of it to another level that necessarily admits our failure in controlling dynamics, often imagined, or perceived as static. Not only the material space but also the space of human interaction is involved in the concept of uncertainty, as Beauregard brings to the fore. “One way to think about the socio-materiality of uncertainty is to begin with the notion of distributed action. Instead of interpreting action as a quality of a single individual - that is, the world comprising autonomous actors - consider action as materializing only when individuals act with others. Nobody acts alone; no person is by him- or herself acting. In effect, all action is shared action, that is, always collaborative” (Beauregard, 2021: 219). Thus, uncertainty is not eliminable and represent challenges for all sectors, especially those rooted in control practices, such as traditional planning rationales (§2.2). As we see, the concept of uncertainty (and thus resilience) involves the concept of interaction both as a material and immaterial feature of dynamics (Arendt 1998; Beauregard 2021).

¹⁰ See the following sub-paragraph

Situatedness, Ever-changing assemblages of paths and actors

“The term assemblage is ‘increasingly used in social science research, generally to connote indeterminacy, emergence, becoming, processuality, turbulence, and the sociomateriality of phenomena [...] primarily focused on ‘socio material transformation’, ‘grammars of gathering, networking and composition’, and ‘interactions between human and nonhuman components’ that as ‘co-functioning’ can be ‘stabilised’ or ‘destabilised’ through ‘mutual imbrication’” (McFarlane 2011: 206-208 cited in Brenner et Al. 2011).

Furthermore, it is crucial to remember that “no human action of any significance occurs without humans’ using tools of some kind (Beauregard 2012; Latour 1999: 1–23; Lieto 2017). Humans can act with other humans, and they almost always do, but whether acting alone or together, they invariably act with nonhuman things as well. In actor-network theory, these heterogeneous collaborations are called assemblages. (Think of them as “messy” and “unstable” networks.)” (Beauregard 2021: 219).

Thus, cities can be also defined as assemblages of assemblages, in which interplay can be a keyword to describe their functioning. The concept of assemblage has deep roots in many different disciplines, and it is interpreted and used in many ways, as for complex systems. For instance, inheriting Deleuze and Guattari (1987) vision, other scholars within and outside the complexity sciences (Hillier and Van Wezemaal 2012; Monno 2012; Amin and Thrift 2016) explored assemblages as key factors for complex systems (see below). Specifically, *relational complexity* includes assemblages of trajectories and ‘metamorphic agents’. In this view, scholars assume matter and energy, not as passive elements of the processes but creative features among systems, environments (DeLanda et Al., 2004) and individual pasts (De Roo 2016). In other words, “[i]n a non-linear environment we do not observe isolated objects, entities or events. [...] We have to accept that situations as we encounter them (in non-linear environments) are fuzzy, fluid and vague in their relationships with their surroundings. Situations emerge from various directions and trajectories, having evolved from individual pasts to a point where their paths merge in the sense that we see them represented by a manifestation in the material world we would label a single ‘situation.’ This merging relates strongly to the idea of ‘assemblages’ (Van Wezemaal 2008). The merging of paths and trajectories is often unintentional and conditioned by the contextual environment. Such an environment is never a plain level field. Instead, it will be unstable and discontinuously transforming, affecting the various paths and trajectories which evolve within it and with it” (De Roo 2016: 172).

Situations in a state of continuous becoming perceived by multi-level agents (Hartman et al. 2011) are at the core of the concept of ‘situatedness’, in which not only the agents but also the time assumes a crucial role, continuously changing the situation and the matter over time through independent or interdependent paths and trajectories. The term situatedness describes the feature of “being place and time-related, a manifestation within a place-time continuum. Every tick of the clock moves us forward in time, a process characterized by spatial movements which trigger processes of continuous acknowledgement and reformulation of our ideas about reality, and consequently a continuous reinterpretation of facts” (De Roo 2016: 173). Thus, ‘situatedness’ has a crucial role in the way urban realms are interpreted in the research because it implies that path dependencies and materiality of places, both the time and space dimensions, are all fundamental elements of the existing networks of agents and future development paths.

Evolution/Revolution/Coevolution

Even if unpredictability, because of uncertainty, is a key concept linked to processes of evolution, these are not guided by ‘blind chance’ but represent learning processes characterized by order and complexity. There are some generally recognized and detectable principles of evolution that include “the progressive increase of complexity, coordination, and interdependence; the integration of individuals into multileveled systems; and the continual refinement of certain functions and patterns of behaviour.” (Capra 1982: 288). Moreover, humans are subject to both a slow natural evolution process and fast cultural evolution (Portugali and Stolk 2016). All

in all, “revolution and evolution are expressions of change which occurs without thoughtful planning, ranging from abrupt transformations to almost invisible adjustments” (De Roo 2018: 2). The change in absence of thoughtful planning is linked to the human’s ability to co-evolve mutually influencing continuously and changing themselves from a changing environment, also economic systems can co-evolve with the environment. For instance, modifications in spatial distributions of markets and firms are related to shifts and changes in interactions between networks of actors and agents, technologies, institutions, geographic and spatial peculiarities (Boschma and Frenken 2015).

Generally, co-evolution, linked to self-organization in out-of-equilibrium environments, is one of the main features of complex adaptive systems (Allen 1997; Boelens and De Roo 2016). About it, see the specific section below.

Emergence in in-becoming environments. Bifurcations and Transitions

An in-becoming environment could be understood as a representation of the Latin adage ‘*in medio stat virtus*’ because a fully ordered environment is in a state of equilibrium – or dead, as we already saw – preventing itself from developing, but a completely chaotic environment is also dangerous for its surviving. In this context, “emergence occurs between order and chaos [...]. This expectation is the trademark of the complexity sciences. It is the consequence of the contextual environment being unstable” (De Roo 2016:18), neither stable nor fully chaotic. “A situation, earlier seen as ‘very complex’, we would now call ‘emergent’: a shift from open systems to emerging networks. Relatively stable situations will never be entirely fixed or ordered, and emerging networks are unlikely to become completely chaotic. If they were, this would mark the end of both situations. Instead, we will see that all situations are open to transition (De Roo 2010)” (De Roo 2016: 18). Thus, emergence is linked to the idea of mutation in in-becoming environments, always ready for a change. “The Complexity Sciences see a bifurcation as a transition moving towards another level of temporal stability [...] moving towards an ‘undefined becoming’ (De Roo and Rauws 2012).” The Covid-19 pandemic has aggressively shown that fast changes can occur and modify the way we think, move, act, work, live, as detected in recent works. In the complexity study field, this pandemic moment could be defined as a bifurcation, unexpected rapid transformations in uncertainty, “key moments of temporal compression” (Jessop 1997), that are “the consequence of circumstances disrupting the system’s transformative space, with the system pushed off track” (De Roo 2018: 17). Also, Jane Jacobs (2000) presents bifurcations as changes that affect the systems at multiple scales, emerging pushed by the search for stability and being themselves source of a new stage of instability at the same time. In emerging environments subject to continuous processes of transformation “a transition is [...] a dynamic period where a system co-evolves from one stable period or level to another, seeking a better fit with its environment. Moreover, while the system is in transformation, it will undergo a process of change or becoming in which structure and function *co-evolve*.” (De Roo 2016: 174)

Therefore, bifurcation is a concept deeply linked to the idea of evolutionary processes in non-linear systems (both physical and biological) that present strong interactions (mutual feedbacks) between components. As De Landa states, it is needed to know the history of the system to understand the dynamical far from the equilibrium state of its fluctuations because “when a system switches [*has a transition n/a*] from one stable state to another (a critical point called bifurcation), minor fluctuations may play a crucial role in deciding the outcome” (De Landa 2000: 14). The necessary feature of this process is the energy that flows through the system from and to the environment which “*constrains* the system’s present trajectory while *enabling* the system to perform in a completely different way” towards unknown directions with “the structure being reshaped and its connected functions obtaining new meanings” (De Roo 2018: 18).

These frame-concepts are more evident if related to the pandemic moment, but they have been studied concerning stable systems, conditions that might seem ordinary and supposedly stable but are continuously in-becoming.

Complex Adaptive Systems and the role of the Past

This reference concept is lined with all the others, as the previous are all features of the complex adaptive system. As already said, all these conceptualisations of the world have long-lasting research paths in different disciplines, which is not possible to fully explore here, but proposed as a selection of definitions fit for their objectives. Even if the following interpretation by Capra (1982) doesn't perfectly fit with the thesis assumptions, it gives the idea of the wide range in which the discussion on complex systems evolves over the years and the range of its outcomes. He stated that “[a]ll the living matter on Earth, together with the atmosphere, oceans, and soil, forms a complex system that has all the characteristic patterns of self-organization. It persists in a remarkable state of chemical and thermodynamic nonequilibrium and is able, through a huge variety of processes, to regulate the planetary environment so that optimal conditions for the evolution of life are maintained” (Capra 1982: 284). As far as living biological systems are concerned, self-organization is a principle of multilevel structures, which are complex systems, wholes organized in smaller elements and at the same time working as elements of larger wholes (Capra 1982; De Roo 2018; Portugali 2012). These systemic structures can be also found in Christopher Alexander (2004) specifically in his theory of ‘wholeness and the centres’ referred to the materiality of the world – explicitly buildings – as living structures organized in multileveled systems (smaller elements) of different complexity (centres) which different interplay and different way of living them make the ‘wholeness’ (Alexander 2004; Saragosa 2016).

Going back to Complexity Theories of Cities, considering the system as a whole, Cilliers defined self-organization as an emergent property of them, especially in the system-environment relation, theorizing that “[t]he system’s individual components only operate on *local* information and general principles. Interactions between the system and its environment have a crucial role because the structure of a self-organizing system is a result of them, adapting dynamically to its environment changes, not being defined a priori by external conditions.” (Cilliers 1998: 92-93; see also Portugali 2011; 2012; De Roo 2018; De Roo and Rauws 2016; De Roo et Al. 2012).

Cities are particular complex systems because they, as a whole, are “[...] hybrid complex system and each of agents is also a complex system (Portugali 2011). [Moreover] cities are hybrid complex systems as their agents are simultaneously subject to two evolutionary processes: very slow natural evolution, which they rarely witness in their lifetime, and very fast cultural evolution, whose effect on the urban agents is instantaneous – urban agents have to adapt to the quickly – changing urban environment.” (Portugali 2016: 6). In evolutionary processes self-organization is a crucial matter because it “is not merely the result of processes like feedback or regulation that can be described linearly. It involves higher-order, nonlinear processes that cannot be modelled by sets of linear differential equations. [...] Self-organising systems *increase* in complexity” (Cilliers 1998: 92-93). In this reflection, it is important to underline that each change implies an increase of entropy, and, therefore, an energy or information expense flowing through the system (Nicolis and Prigogine 1977; Cilliers 1998; Saragosa 2016) concerning its out-of-equilibrium environment. The inherently unstable positions of systems prevent them from the death of the environment, represented by stability, uniformity, and perfect order. And at the same time, thanks to self-organization systems are prevented by absolute chaos (and therefore annihilation): “these systems adapt to external situations, self-organize internally, coevolve structurally and functionally, and transform in such a way that a new temporal internal and external balance are attained.” (De Roo 2018: 9). These systems are complex adaptive systems, dynamic and non-linear through time (Portugali and Stolk 2012; De Roo 2018; Waldrop 1992; Holland 2006). As we saw before, a system needs to be concurrently flexible and robust, so that changes do not affect the wholeness of the system in its interaction with its environment (Cilliers 1998; De Roo 2018). As we can deduce, complex systems are open to their environment and they must ‘learn’ from experience, ‘remember’ previously encountered situations and compare them with new ones. If more ‘previous information’ can be stored, the system will be able to make better comparisons (Cilliers 1998: 92-93). As we already saw, in DeLanda’s work (2000), but also Jacobs’ (2000) and Alexander’s (2002), history and the past have a fundamental role in approaching the interpretation

of these systems. “This diachronic component cannot be ignored in any description of the system since previous conditions of the system form vital influences on present behaviour. Memory, on the other hand, is impossible without some form of selective forgetting. [...] Integration is not ‘performed’ through some form of decision-making within the system. Information that is not used simply fades away. This process not only creates space in memory but, more importantly, provides a measure of the significance of the stored pattern. The more something is used, the stronger its ‘representation’ in memory will be. Use it or lose it. Self-organisation is only possible if the system can remember *and* forget.” (Cilliers 1998: 92). This conception of time and memory can be detected in the theory of wholeness by Alexander (2002: 6), who states that “[t]he various centers within a wholeness may be in harmony one another in different degrees, or at odds with one another in different degrees. And this is where the degree of life, or degree of value, in any given thing comes from. Thus, we see that each given wholeness has a certain history: the wholeness becomes more valuable if history allows this wholeness to unfold in a way that is considered respectful of the existing structure, and less valuable if the steps which are taken in the emergence of the wholeness are antagonistic to the existing structure. What is fascinating, then, is the hint of a conception of value which emerge dynamically from respect for existing structures.” Alexander here connects concepts like emergence, coevolution between *centers* and the role of the past, because “[s]elf-organisation is impossible without some form of memory [...]. Without memory, the system can do no better than merely mirror the environment” (Cilliers 1998: 92).

Thus, the importance of path-dependency and its deep link with self-organization emerges from the literature. The internal restructuring of a system means new pattern formation, through a process of exchange with its environment: indeed, “Prigogine (Nicolis and Prigogine, 1977) identified these systems as being dissipative: the ability to cause the interdependency with external influences to resonate internally” (De Roo 2016: 175). In conclusion, cities are complex adaptive systems that self-organize in a frame of evolutionary and revolutionary situations in interaction with their environments, but at the same time represent environments for complex systems and all this is a competence of planning and governance.

In the next paragraph, the relation between a selection of concepts formulated in complexity sciences and a selection of planning approaches (in the frame of planning theory) will be explored.

2.2 Planning Theory and Approaches within Complexity Theories

For years, scholars from the social and urban studies fields recognize the complex world we are in and work on how its dynamics could be consistent with the planning rationale. Webber and Rittel (1973) introduced the idea of *wicked problems*: “malignant, [...] vicious, [...] tricky” (1973: 160) that cannot be fully understood. And therefore “are never solved. At best they are only re-solved over and over again” (ibid), in a context in-becoming, non-linear, in which the control is limited (De Roo 2018; De Roo and Porter 2007). In the planning debate, this represents a turning point about the limits of the rational approach.

Even before, Alexander (1965) interpreted the city interactions not as a tree-structured image, but as a semi-lattice-structure organization that better represented the vibrant environment of cities exploring links between functions and space. These ideas are consistent with theories from complexity sciences scholars (Portugali 2000, 2011; Boelens and De Roo 2016; De Roo and Rauws 2012; Hillier 2007; Marshall 2009; Portugali 2000) who, starting from the demonstration that the world is in a non-linear in-becoming state (see §2.1.1 and 2.1.2), have opened recent debates on how planning might introduce a ‘non-linear kind of rationale’ in its paradigms (De Roo 2010; De Roo and Perrone 2020).

In spatial planning, De Roo and Boelens (2016) recognise that “differently from creating futures or differently from mediating towards agreed futures, the planner could seek for supportive or adjusting mechanisms of flows towards the future. From this perspective the spatial planner is only or at least mostly responding, anticipating or adapting to changes, which are considered to be more or less evolving autonomously and in various directions” (De Roo and Boelens, 2016: 17). Specifically, embracing the concept of self-organization can feed the planner’s awareness of uncertainties “not just as blanks, but of uncertainties, which include a whole package of rhythms, systemic rules, potentials and aspirations. This understanding could be about triggering, influencing, avoiding or even preventing self-organization processes from happening within the daily environment for the good of society” (ibid: 84).

Gert De Roo (2018) refers to planning and decision making along a line, a spectrum from technical to communicative planning dividing into three classes different approaches and theories between the two edges of the spectrum: the I class of closed systems representing blueprint planning; the II class of circular feedback systems representing scenario planning and the III class of open network systems representing communicative and participatory planning. In this class, we found examples of Public-Private Partnerships that are considered good practices of cooperating networks in an open and ready to change the environment, even if they present cons related to the timing of the contract, which once stipulated, remain the same up to the end of the development project (De Roo et Al., 2012). The Holy Spectrum of Planning goes from the left part which presents more simple paradigms and less adapted to a world in becoming, to a higher degree of complexity on the right, contemplating fuzzy and fluid issues. De Roo pushes its theory even beyond, with the IV class related to complex adaptive systems (see §2.1.2). Moreover, it is Gert De Roo and Ward Rauws, among others, who attempt to build a frame for planning, introducing the idea of ‘adaptive planning’ that embrace uncertainties as values, not considering them as problems. “Central to this approach is that it does not aim to establish one particular future configuration – thus assuming that the precise predictions of an urban development trajectory can be understood and defined – but instead aims to support a range of possible future configurations based on conditions for development (see also Hartman, 2016). These conditions for development generate ‘possibility spaces’ within which urban structures can take shape and development processes can unfold.” (Rauws and De Roo, 2016: 1053). Reconducting these principles to the paradigms and practices of urban planning and regional governance is a great challenge still under discussion in different fields of studies and across different disciplines. Among the others, Allen (2016: 52) states that “[p]lanning should be made with knowledge of possible futures, and options should be maintained wherever possible. It is better to make many small experiments than adopt the ‘monolithic’ option. We have entered a post-modern era, which is about learning,

change and adaptation and we need to bring knowledge of complexity science to planners.” This perspective reminds Jacobs’ call for the “[g]enuine, rich diversity of the built environment [as a] product of many, many different minds, and [...] of different periods of time with their different aims and fashions. Diversity is a small-scale phenomenon. It requires collections of little plans.” (Jacobs 1981). Jacob’s position can be considered one of the many attempts to bridge complexity sciences and planning theory, introducing roots for a vision of the city also from an economic perspective that takes into consideration both the global level and the local dimension.

The thesis enriches not by referring to a specific field of planning but exploring the role of the selected concepts from CTC in §2.1.2 in helping to bridge the gap between complexity rationale and planning paradigms.

Uncertainty and resilience

Uncertainty is a feature of the world but also a way to look and interpret it. “The transformative model has a cognitive orientation, as it mirrors the functioning of our thinking and its capacity to grasp the world. The spectrum, therefore, represents our mental capacity to understand the world as it presents itself to us: at one end, clarity and certainty, which we claim on the basis of a factual reality, and at the other end, fuzziness and uncertainty, which force us to relate to each other and construct an agreed reality. When certainty decreases and uncertainty can no longer be ignored but is increasingly apparent, people change their attitudes to the world around them (Cialdini, Reno and Kallgren 1990)” (De Roo 2018: 16). And therefore, also planning paradigms change their attitudes in approaching reality from a positivist rationale. The process of defining the adaptive planning strategies to approach urban complexity is far to be closed, moves at different paces in different countries and presents paradoxes difficult to be solved, but it started far in time and there is still room to discuss and re-discuss terms and implications.

Uncertainty and resilience are two meaningful words that can be interpreted under many lenses. This can result in misleading interpretations and tricky applications in planning practices and discourse (Pizzo 2015), especially in a neoliberal economic environment. For instance, “[w]e can schematize the argument considering two debated ways of improving resilience: 1. Through spontaneous, self-adaptation capacity; 2. Through collective, organized behavior and action. In the first case, the focus is on individual, autonomous, and spontaneous behavior and action; in the second case, on planned-organized actions. From the viewpoint of planning theory, it is rather clear that the emphasis on the first approach could be interpreted as a further step in weakening planning, implying that cities and regions are able to evolve even without its action, or even better without its action. Neoliberal policies are fed by rhetoric on individual capacities whose potential is limited and inhibited by rules and plans. This is clearly a simplification and a trivialization of the problem” (Pizzo 2015: 138). This claim for carefulness on the implication of terms is crucial, especially if we accept that planners and policymakers need to approach and guide complex environments in which actors are not fully defined or framed within regulative lines.

As we saw resilience and uncertainty are two closely related words at the centre of theoretical discussion for many years. In 1985, Christensen affirmed that reality is “much more complex”, with different levels of uncertainty involved in open systems and closed system strategies (Thompson 1967). Despite her predominance in planning discourse, “the way she addressed the inevitability of uncertainty and complexity as a concept relevant to planning and its institutional environments was primarily object oriented, with reference to a functional world and the technical-rational side of planning. It concerned a world that ‘is’ rather than a world of ‘becoming’. Thus, Christensen’s notion of complexity is above all a ‘static’ one” (De Roo 2018: 6).

The shift from a rational-comprehensive paradigm is approached by John Friedman position on planners, who “have [no] way of making long term forecasts of how the urban complex at any given scale is likely to evolve under alternative assumptions, such as political change, demographic dynamics, economic

performance, and sudden shifts in global trends, to name only four sets of variables over which city planners have little or no control” (Friedmann 2011: 217).

In §2.1.2 under the section dedicated to resilience and uncertainty, we stated that risk and disasters’ perspective on resilience isn’t taken as a reference. Nonetheless, it is important to cite the research effervescence around the concept of *preparedness*, significantly on the fore even before the Covid-19 pandemic. We cite it because reflections from this perspective seem to be relevant not only for the disaster relief processes but also for the ordinary processes of strategic planning and policy. The studies on preparedness, were born, once again, in other disciplines (Lakoff 2007; 2017) but develop in urban planning starting from the concept of radical uncertainty (Balducci 2020a; Bovo and Galimberti, 2021). Alessandro Balducci (2020b) proposes the preparedness as a way to build the capability to react to disaster, accepting the difficulty if not the impossibility to plan a defined solution in front of radical uncertainty, of what we don’t know to not know, starting back from the fragilities of the systems and working also on the micro-scale, on the specificity of territories, as proposed by the *Territorialist Approach* (Magnaghi 2010), and the Bruno Latour category of the “terrestrial” (Latour 2017b; Paba 2019).

Situatedness, Ever-changing assemblages of paths and actors

The myth of control has been further discussed and challenged by reflections on variables to be investigated and considered by planners. One of the most interesting fields of study is the (human and non-human) actors’ agency. From Juval Portugali to Bruno Latour and in the frame of the Actor-Network Theory, many levels of the agency are detectable. The first theorizes active participation of tools and plans in development processes – which are also self-organized (Portugali 2008). The second (as in Paba 2019: 114) interprets the terrestrial as “an overcoming of dualisms, an explosion of mutuality” and proposes the Earth as an actor, no more as an object to be studied, designed, or manipulated, calling for a new way to represent it. “Elle (*the Earth n/a*) agit. Elle est un acteur et non plus un objet” (Latour 2017a: 361).

Like other sets of variables, the agency is a challenging dynamic question for planning and policies. If we consider the issue of how planning can cope with constantly changing conditions at different levels and scales, it is necessary to present a very narrow selection of scholars’ investigations, in close relation to the research question.

In 1959, Lindblom theorized the science of ‘muddling through’ as an alternative to synoptic planning. He proposed to adopt a ‘disjointed incrementalism’ approach through which independent actors linked in networks could adjust their short-term plans while conditions were changing. Perhaps, these continuously changing conditions are interpretable as dynamic interactions between the system and its environment (§2.1.2.). The very question in this system of mutual adjustments is “whether planning powers should intervene to shift the balance of forces toward goals of social justice and inclusion in the ongoing process of urban and regional restructuring, and with what tools at hand?” (Friedmann 2011: 215). Furthermore, Friedmann proposes planning “as an integrative transdisciplinary field of studies, [that] addresses life in all its on the ground complexity. Such an understanding of its mission cannot dispense with the normative foundation such as human flourishing and just city, which of course will be always contested, forever remaining under construction.” (ibid: 225)

Evolution/Revolution/Coevolution

The muddling through and the transformative development approaches seem to be congruent with a call for “rethink the project from a different perspective, one of self-sufficiency: a project that does not have an ‘ex-ante’ scenario to be fulfilled, but that is self-sustaining.” (Perulli 2016: 27). This idea is conceptually close to concepts presented in the ‘adaptive planning’ approach (Rauws and De Roo 2016) pushed by the open questions set by the awareness of unavoidable uncertainty, which has always been a crucial issue in humans’

visions. Dewey (1929: 227) claimed that people are so scared about it to try to get “rid of it by fair means or foul.” This position is possibly one of the main reasons also for politicians and actors (in particular the economic ones) to be so interested in designed futures and certain solutions. “Planners need to be more aware of the uncertainties in the situation (Christensen 1985) and anticipate the avoidance of uncertainties by powerful organizations. [There is evidence from case studies that] organizations with the power to affect the planning outcome acted to protect their interests and plans and avoid new uncertainties. [...] In a consensus process, as advocated by Innes and Booher (1999: 151) for metropolitan planning, there will be a tendency to revert to the trend growth pattern as organizations avoid uncertainties. However, this is not inevitable and depends on the powers, political resolve, and leadership of key players to achieve better futures” (Abbott 2008: 515). Thus, once again, the planning process is a matter of inter-action. And in this regard, excellent scholar such as Latour and Paba observed that ‘there is nothing more contemporary than negotiating the land on the ground. Space has become a restless history of which we are participants with others who react to other reactions’ (Latour 2017b, as quoted in Paba 2019: 113).

Emergence in in-becoming environment. Bifurcations and Transitions

Within the frame of CTC, many approaches and theories are currently at stake to cope with emergence in in-becoming environments. From *model-based synergetic views* to theoretical rooted proposals, advancing new definitions in the planning debate, such as ‘*adaptive planning*’ (Rauws 2015; Rauws and De Roo, 2016) and ‘*self-organized planning*’ (Portugali 2005) referred to “a relatively complex ‘open system’ planning process, which, like other open and complex systems, exhibits phenomena of non-linearity, chaos, bifurcation and self-organisation” (Portugali 2005: 21). It is argued by many CTC scholars that “[u]rban planning is traditionally based on planners’ capacity to predict or envision the future; and yet, one of the implications of CTC is that cities are ontologically unpredictable – not as a result of lack of data, but inherently so. This inherent unpredictability has led to a search for a planning approach based not on predictions but rather on planning rules” (Portugali and Stolk 2016: xxi) In this regard, the *future studies* field and the *scenario planning* (Albrechts 2004; Shearer 2005; Fanfani 2007) constitute an interesting and consistent branch to be investigated. Furthermore, the scenario planning theories and approaches present different perspectives (Chermack 2018). In this research we take the definition of Chermack and Lynham (2002) as a reference for reflecting on planning paradigms, design needs and complex dynamics to be addressed: “Scenario planning is a process of positing several informed, plausible and imagined alternative future environments in which decisions about the future may be played out, to change current thinking, improving decision making, enhancing human and organization learning and improving performance”.

Planning approaches and methods have been further discussed with the non-linearity of the city dynamics by Richard Sennet, who states that planning a closed city is a linear narrative. “[...] Real life rarely follows the script of a linear narrative, and in the actual process of development, this compulsive clarity is rarely practical. Nonetheless, in all planning work, we are thinking in terms of narrative, in another sense of that word; we focus on the stages in which a particular project unfolds. This can be a matter of the if-then sort of logical thinking (scenario approach), or it can be a more adventurous logic - what next, what-if? But still, we are trying to think of events in terms of consequences rather than as a random series. Planning in the open city, like open systems in mathematics and the natural world, should embrace non-linear forms of sequence.” (Sennet undated: 13)

The non-linearity of systems is a crucial aspect for theorists from complexity sciences. Specifically, we refer to the perspective of Juval Portugali (2008), who invites to look at the duality of reality and approaches proposing a fundamental discrepancy in the urban and regional planning domain. Thus, on a side, planning theories and practices often interpret territories as predictable, while, on the other side, urban studies embrace the concept of a non-linear, complex self-organizing system. “The planning paradox arises when a set of

apparently acceptable assumptions about the past, followed by apparently acceptable deductions-predictions about the future, further followed by apparently acceptable policies and actions, lead to apparently contradictory results. As paradoxes in general, a planning paradox¹¹ is useful because it can show that something is wrong even when everything appears to be right” (Portugali 2008: 253).

Complex Adaptive Systems and the role of the Past

Ignacy Sachs (1987) described his contemporary planning as an (unsuccessful) tool for the ideal management of resources. The impossibility to frame the idea of ‘ideal’ management through the exact preview of social benefits and costs was the origin of the unsuccess of planning. With his *ecodevelopment model*, Sachs interpreted a new possible planning structure as a frame of normative criteria and questions avoiding a rigid model, getting closer to a visionary and pluridimensional planning through which the planner enables and triggers the happenings.

In the path of these theories, the *post-structural strategic planning* (Balducci et Al., 2011) represents new horizons for the discipline having strong theoretical roots in critical geographers, sociologists, philosophers such as Michel Foucault, Gilles Deleuze, Bruno Latour, Nigel Thrift. The post-structural approach introduces the uncertainty issue in planning, asking “how might spatial planners seek to affect and ‘manage’ environments in undecidable situations? Can we develop theories and practices that rely less on closure and more on openness to possibilities and opportunities? How might we plan in situations of fluidity and complexity?” (Balducci et Al., 2011: 488).

Going back in time, at the very local scale, the Jacobsian Street-Level approach (see §2.3.3) is an innovative perspective on “street [a]s a socio-spatial experimental laboratory to understand the myriads of ways in which a self-generating and self-organising city becomes a liveable place” (Perrone 2019a: 11). This approach to analyse and interpret urban dynamics for economists and planners involves the materiality of self-organizing processes and the unpredictability inherited in spontaneous processes of change, sharing a pillar question with the Complexity Theories of City (CTC) theorists on planning debate (Alfasi and Portugali 2007; De Roo 2016).

These topics have entered the planning discourse in the literature. Nonetheless, it is still under discussion how and up to what point these reflections can enter the planning and policy practice.

In the myriads of facets and positions that introduce and challenge the relation between planning and in-becoming territories, it seems suitable in the frame of the research to refer to the idea forwarded by Albrechts and Balducci (2013: 20) according to which “[s]trategic processes may not be seen as static descriptions of problems, challenges, visions. They must rather comprehend and portray the dynamic nature of development, structural constraints, and changing challenges and contexts.”

In conclusion, these approaches – and many others not included because more distant from the frames of the research – are attempts to integrate complexity in planning theory and practices, considering uncertainty in systems, multiple scales and agents’ actions and reactions.

¹¹ “A real case of planning paradox due to self-falsifying prediction followed the immigration wave from the former Soviet Union to Israel in the early 1990s. The professional planning prediction was that Israel was approaching a housing shortage. The entailed plan was that the government should therefore purchase a large number of mobile houses and locate them on the outskirts of towns and cities. The implementation of this policy ended in failure due to spontaneous initiatives by a large number of individuals (‘latent planners’), who, as a consequence of the predicted shortage and the prospect of making money, transformed existing non-residential buildings into residential ones. [...] From the theory of complexity [...] that predictions and plans, once produced, become participants in complex urban dynamics. This is the main reason why the ‘normal responses of market forces’ and of cities are hard to predict.” (Portugali 2008: 254)

2.3 The Urban Studies Perspective

the city... is a human habitat, of which one is aware to the same extent one is of the air one breathes. It is a contract with nature, the past, tradition, a metaxy. This ancient Greek word means intermediary, a bridge between different worlds.

Simone Weil, 2019
Venice Saved

You sound as if there are only two types of settlements: big cities containing great economic diversity, on the one hand, and small, machinelike, economically monotonous settlements on the other. That doesn't check with the world I see.

Jane Jacobs, 2000
The nature of economies

Current urbanization processes continuously re-signify the relationships between (traditionally ontological) urban questions such as rural-urban, density-diffuseness, urban-suburban, in an information-intensive and globalized environment that the research interprets as an urban region (Soja 2011: 684; Perulli 2016).

Coping with the traditional ontology of the city at the local level, the research explores global dynamics that affect the city at multiple levels and the way people live in (Paba and Perrone 2016; Perrone 2019; Jacobs 1961). “It may indeed be both the best of times and the worst of times to be studying cities, for while there is so much that is new and challenging to respond to, there is much less agreement than ever before as to how best to make sense, practically and theoretically, of the new urban worlds being created.” (Soja 2000: xii).

Given this assumption, this chapter aims to build a broad frame made of different theories about the city to support the complex lens through which the research investigates the Airbnb dynamics in urban contexts.

The chapter is constituted of three paragraphs.

The first overviews the materiality of the city, built at the intersection of local and global events, urban issues from a global perspective and the exploration of selected theories to look at local dynamics, considered in a continuous multi-scale exchange with the global, because actors from different scales enter the game in new capitalist forms of acquisition in local realms, creating expectations and positive/ negative fallouts on “cities [that] have become places where the local and the global meet.” (Sassen 1992 as quoted in De Roo 2018). The second paragraph is focused on issues from the global scale and theories on forms of new capitalist extraction of value, enhanced by globalisation and global dynamics. Eventually, the third paragraph is about the local dimension of the city and its interpretation in theoretical references that discuss space and time, change in local dimension taking back some insights from CTC and introducing bridges with governance.

Among the multiple ways of interpreting the urban in its social, economic, physical, and temporal dimensions, in the next paragraphs, a selection of theories, approaches, and perspectives are mentioned and briefly explored to draw the conceptual framework within which the research question unfolds through the global and the local scale.

2.3.1 Materiality of the City between Local and Global Dynamic Forces

This paragraph explores different seminal theories about urban materiality as part of larger-scale processes of change, investigating principles and lenses that will also support the interpretation of the Airbnb patterns in urban regions.

“The city, as a second nature, is caught between fixity and motion. Every urban development creates new possibilities, but at the same time also establishes fixed structures, thus limiting the potential for later corrections or changes to the course of development” (Schmid, 2015: 295). This pillar concept, concerning the materiality of the city thought as a strategic matter, involves spaces of flows, virtual and real dynamics, human and non-human agents, time and space, which are deeply interconnected and intertwined.

The role of the actor’s network (Wachsmuth et Al. 2011; Amin and Thrift 2016) in a complex frame of multi-scale, globally and locally interplayed events (Sassen 1992; Perulli 2009; De Roo 2016; Castells 2004; Perrone and Paba 2019) is introduced to link materiality and forms of interactions, that from Lefebvre perspective “cannot dispense from a practical-sensible basis, from a morphology”¹² (Lefebvre 1968: 67-68).

Urban changes involve the materiality of the territory, but also flows, movements, communications activities and events in multidimensional and complex dynamics (Paba and Perrone 2016; Dematteis 2001; Thomashow 1999; 2021). This physicalist lens «claims that everything is physically constituted, not that everything should be studied by the methods used in physical science» (Papineau 2001: 25 as cited in Paba and Perrone 2016). Thus, the centrality of physicality in processes of urbanization does not imply a deterministic approach (Paba and Perrone 2016).

At the global level in the 40s Vernadsky (Turner 2005) introduced the concept of the *noosphere* as the impact of humans on Earth surface guided by human wills, a new kind of biosphere manipulated by humans for their (our) needs. Vernadsky’s theory was centred on an optimistic vision for which humanity was ready to understand the global mechanism and guide them successfully toward the end of wars and the common good. His upbeat vision did not happen and Odum (1959) labelled his theory as dangerous since made humans think to be kind of ‘*Deus ex Machina*’ actors in the biosphere processes. In recent interpretations, the noosphere is a multi-level, multi-scale interaction between humans and their environment, the ability of humans’ organizations to influence the environment. The advent of technology has made this more evident and powerful. “The exponential growth in capacity for processing, storing and transmitting raw information, [...] has made the Internet a medium for collective thinking, particularly at the global scale” (Turner, 2005: 507). Accordingly, Castells and Cardoso (2005) affirm that urban changes, also the material ones, in the informational era are triggered by the network society, in a realm between local and global, between the physical space and the space of flows. Cities are passages where global flows – which are ‘sticky, lumpy and thick’ (Perulli 2009: 83-84) – pass modifying the local.

All in all, urbanization is constituted by multidimensional and polymorphic processes of transformation that involve material structures, practices of urban space production, normative frames, territories and daily interaction practices between humans and non-human agents (Lefebvre 1974 [2018]; Harvey 1982; Schmid, 2015; Schmid 2019; Latour 2005; Wachsmuth et Al. 2011). In a complex environment of continuous changes, maintaining a multi-scale view of processes is crucial in approaching them.

Therefore, the paragraph proposes a brief overlook of local and global dynamics through some major scholars’ lens, considering the disruptive implications of globalized networks in local territories, policies, societies. The object of this part is the city in its material, immaterial, and governance structures, considering that “[t]he super-profit-making capacity of many of the leading industries [that] is embedded in a complex combination of new trends: technologies that make possible the hypermobility of capital at a global scale and the deregulation of multiple markets that allows for implementing that hypermobility [...]” (Sassen 2000, 2014) (see also §2.4). Nigel Thrift interprets Western cities as “destabilized in spaces (Robins 1991): by its

¹² «Niente opera [...] senza cose, senza una materia da modellare, senza una realtà pratico-sensibile, senza un sito, una ‘natura’, una campagna e un intorno. I rapporti sociali [...] non sono sospesi nell’aria. [...] La vita urbana, la società urbana, in una parola ‘l’urbano’, non possono fare a meno di una base pratico-sensibile, di una morfologia». (Lefebvre 1968: 67-68)

boundedness (as represented by examples like the increasing importance of ‘edge cities’ and the increasing difficulty to make a distinction between ‘urban’ and ‘rural’ (Brenner and Schmidt 2015); by the city (dis)location in a globalised space flow made up of information, media products, money capital and people (Appadurai 1990). [...] The [urban n/a] has, in a sense, become mobile (Robins 1991) and ‘place’ is constantly put into question” (Thrift, 1993: 230). Moreover, the ongoing global processes of change and “the rapidly transforming worldwide landscapes of urbanization” (Brenner et Al. 2011; Sassen 2000; Soja 2000; Taylor 2004; Roy 2009; Thomashow 2020) are linked to crucial issues of our times, such as “long-term trends as geoeconomic restructuring, market-driven regulatory change (including both privatization and liberalization), the worldwide flexibilization/informalization of labour, mass migration, environmental degradation, global warming, the creative destruction of large-scale territorial landscapes and the intensification of polarization, inequality, marginalization, dispossession and social conflict at all spatial scales” (Brenner et Al. 2011: 226).

The urban scale is also questioned by scholars as Bruno Latour, who refuses the traditional definition and the differentiation between local and global but focuses on the circulation between places. A multipolar urban world comes to light, made of flows and links in all directions between the various poles, and a set of networks, both horizontal and vertical, suggesting global risks and disjointedness. The nodes consisting of cities and regions have been interpreted as *global city-regions* (Scott 2006), which thus reacquire a central role in globalization. But the weak entities of this new geography are institutions, naturally static and fixed within borders (Perulli 2009). There is a fruitful debate around the definition of *city regions*. “Despite its increasingly widespread use, there is no commonly accepted definition of what a city-region is (Parr 2005). In most cases, the concept is used without being clearly defined, often intermingled, or confused with other similar or complementary concepts, such as those of “world cities” (Hall 2001; Scott 2001a), “global cities” (Sassen 2001; Scott 2001), “functional urban regions” (Cheshire 1990), “regional economies” (Storper, 1995), or “region states” (Ohmae, 1995). In some other cases, “city-region” is only used in combination with adjectives – such as “world” (Kunzmann, 1998) or “global” (Scott, 2001a) – which introduce a size bias to the concept. The equivalence of city-regions with large metropolitan areas is, however, questioned by others (cf. Le Gale’s 2002), who purposely apply this concept to medium-sized cities and their hinterlands, as an alternative to the sprawling metropolises of the world. The consequence of this imprecise but widespread use is that the concept of city-region can be used to refer to almost any individual or a combination of territorial units at sub-national level, with the sole exception of small local governments” (Rodriguez-Pose 2008: 1027).

The research intends to indicate that the city is a very questionable word and describing it can be much more a matter of questions than statements. And for this, theories explore further horizons critically overviewing and critically inheriting the traditional categories on the inputs of changing contingencies. For instance, it is interesting to look at networks inheriting the vision of Amin and Thrift (2016) and Neil Brenner (Wachsmuth et Al. 2011) who adapted to the critical geography some pillar concepts from Latourian Actor-Network Theory, giving a deeper meaning to materiality. “As urban theory, assemblage thought asks how urban ‘things’—including, quite appropriately, the urban itself—are assembled, and how they might be disassembled or reassembled.” (Brenner et Al. 2011: 227). Crucial here is to introduce the concept of local features, of milieu to face re-assemblages or dis-assemblages of cities. Consistently, Perulli claims that “[w]e are not starting from the place, from *this* place, but we start from the fact that this place has been made possible because it has been pre-formed by a number of other places, sites, actors, moments that have formed it: what we see is not so much the place itself in its definition, but the systems of movement between places that have made each of these places possible.” (Perulli 2016: 27-28). This perspective highlights the importance of history and it is consistent with the concept of assemblages, which are “not only of territories but of policies too: variable packages which are congruent with differentiated development strategies regarding local opportunities and constraints. Here, I believe, lies a significant question to consider when talking about cities, namely whether the city can still be a point from which we reassemble society, abandoning the *matryoshka*-like system of institutions contained within each other, and restructuring new forms of society, interactions,

and cities. [...] The scale of the city – medium, large or small – does not mean much if compared to the system of flows which become a major factor for territorial development.” (Perulli 2016: 27-28).

The fundamental aspect of the [re]production of the city is in the work of Juval Portugali (2016: 5-6) for who “as a complex artificial system, the city emerges out of the interactional activities of its agents. But once it emerges, its structure and dynamics affect (or “enslave,” in the language of synergetics) the behaviour of its agents and so on in circular causality—a process that in the domain of social theory is termed *socio-spatial reproduction*¹³ (Portugali 2000; 2011). In other words, the city is a large-scale collective and complex artifact that, on the one hand, by means of the activities of its inhabitants and users (the urban agents), interacts with its environment, while on the other, as a consequence of its size, functions as an environment for the large number of people that live and act in cities.” This perspective confirms that the complexity of urban systems is not a feature linked to the scale. Moreover, one of the externalities of agents’ behaviour, the materiality of the city, can affect the behaviour of people and vice-versa in circular causality.

In conclusion, Brenner sees cities as multiscale projects in continuous recreation under the pushes of global capitalist and financial processes that make the city the object of strategic contestation rather than a defined and delineated site. Nonetheless, the risk of reifying the urbanity is mitigated by the introduction of Latourian Actor-Network Theory (Brenner et Al. 2012) conceptualisation of human and non-human actors’ interplay. The thesis inherits Perulli’s view on city-regions, which appears to be consistent with ANT and some aspects of Brenner discussion, assuming that “[c]ities are ‘networks of networks’ of actors: enterprises in productive networks, people in mobility and communications networks, institutions in policy networks. Hence it is only for simplicity’s sake that we speak of ‘city-regions’: in actual fact, we are speaking of networks of networks (or ‘assemblages of assemblages’). The ontology of the global city-region as a ‘web of contracts’ fits well into the assemblage theory. Contracts are defined here as relational contracts linking economic, political and social actors in their complex interplay” (Perulli 2016: 21). The ‘contractual nature of the city’ (Perulli 2016) derives from the existence of a *space of flows*, the origin of the power of connection in all of its forms (technical, political, cultural). Reinforcing the idea of a city of networks, Amin (2004: 34) affirms that “cities [...] are made through the spatiality of flow, juxtaposition, porosity and relational connectivity”, leaving traditional categories, such as dimensional features, of a city in the background.

In Perulli’s (2016: 220) words, the city “[i]n essence, it is a meeting between global and local, between macroscopic social phenomena and the irrepressible individual dimension of societies. The city is precisely that commutator that integrates global knowledge and technology and local contexts of action, that device that connects direct and remote interaction.”

2.3.2 Issues and Conceptions at the Global Scale in Urban Studies Field

In the previous paragraph, we outlined selected dynamics between local and global. This paragraph aims to present a set of issues developed in theories that approach cities from a global perspective to include this ‘variable geography’ in the idea of the city proposed in the research. In the era called the ‘urban century’, not without paradoxes (Brenner and Schmid 2014a; 2014b; 2015), the city is at the centre of myriads of visions. Paradoxes are driven by the very conception of the city. For instance, we can talk about the ‘urban century’ if we accept that the urban realm is something different from its ‘outside’.

The Planetary Urbanization Theory supports a vision of a whole urbanized planet, inheriting the Lefebvrian ‘complete urbanization’ (Lefebvre 1970 - 2003) – a critical view on the explosion of suburbs and the ‘rural exodus’ – adapting it to the current condition of human settlements on Earth (Perrone, 2019b; Schmid, 2019).

¹³ Italic as in the original text

Neil Brenner, major representatives of the Planetary Urbanization Theory, introduces the concept of the city as “the phenomenon of urbanization [...] manifested in an enormous expansion of urban agglomerations and the spread of urban networks. The metropolis is exploding, scattering countless urban fragments throughout its surroundings” (Schmid 2014: 69), while “[...] the urban represents an increasingly worldwide condition in which political-economic relations are enmeshed” (Brenner and Schmid, 2014a: 162). Rural places, “absorbed and obliterated by vaster units, have become an integral part of post-industrial production and financial speculation, swallowed up by an ‘urban fabric’ continually extending its borders, ceaselessly corroding the residue of agrarian life, gobbling up everything and everywhere in order to increase surplus value and accumulate capital.” (Merrifield 2011: 468–9). And this process of absorption and value extraction from ‘rural’ is subtle, and it doesn’t always involve material dynamics, but also immaterial ones (e.g., the destruction of traditional endogenous farming knowledge replaced by totally exogenous flows of matter (manure, seeds, pesticides, money subsidies) and knowledge (reduced and predefined technical skills portfolio) producing negative externalities in urban domains (Dehaene and Tornaghi 2017).

The Planetary Urbanization Theory has its roots in a critic to late modernity capitalism, highlighting that “in this respect, the planetary urbanization is seen as the product of forces, financial, corporate and state interests, able to extend the Haussmannization of the past cities on a global scale” (Perulli 2016: 34). Neoliberal practices are the object of long-lasting studies by different scholars from different fields (economists, sociologists, geographers). To frame the scope and the weight of the capitalist and neoliberalist dynamics in the research, we briefly introduce the Polanyian questions of embedding, dis-embedding of the economy and the double-movement. These concepts were explored in Polanyi works’ and further discussed by a wide range of scholars, including Neil Brenner. The core concept we intend to adopt from this frame is the deep connection between economy and governance and, consequently, between economy and society, highlighting the risks of neoliberal drifts. For instance, Polanyi theorized the dis-embeddedness of the economy from the social system, producing a society under the control of self-regulating markets. “A self-regulating market demands nothing less than the institutional separation of society into an economic and a political sphere. [...] No society can exist without a system of some kind which ensures order in the production and distribution of goods. But that does not imply the existence of separate economic institutions; normally, the economic order is merely a function of the social order. Neither under tribal nor under feudal nor under mercantile conditions was there, as we saw, a separate economic system in society. [...] A market economy can exist only in a market society. [...] A market economy must comprise all elements of industry, including labor, land, and money. [...] But labor and land are no other than the human beings themselves of which every society consists and the natural surroundings in which it exists. To include them in the market mechanism means to subordinate the substance of society itself to the laws of the market.” (Polanyi [1944] 2000: 74-75) This point is of particular interest if we consider the dynamics of a global actor such as Airbnb in the city and its urban effects such as gentrification and diffused inequality about housing rights. Furthermore, Polanyi sustains that fostering the self-regulating market has fallouts in terms of costs on ‘ordinary people’; people are made more vulnerable to unemployment, and workers are more subject to entrepreneurial risks than in the past (ibid.: xxvi). Nevertheless, “[t]o the typical utilitarian, economic liberalism was a social project which should be put into effect for the greatest happiness of the greatest number; laissez-faire was not a method to achieve a thing, it was the thing to be achieved. True, legislation could do nothing directly, except by repealing harmful restrictions. But that did not mean that government could do nothing, especially indirectly”. (Ibid: 145) As we will delve into §4.2, the Airbnb platform takes a double advantage from the public and the private.

The complexity of the relation between economy and society is also theorized in the ‘double-movement’ Polanyian argument, which states that the market societies are subjected by two movements: the laissez-faire (that aims to expand the market) and the protective movement (that aims to protect the economy from dis-embedding). Both can be spontaneous and unplanned responses to the changes and crises. Brenner (et Al. 2010) adopts this vision, adding that the double-movements’ evolutionary paths are deeply linked to the nature

of territories involved in the economic process, even if it is pushed by global forces, because “[...] the mottled, striated, and volatile ‘moving map’ of neoliberalization across places, territories and scales has been co-evolving in close conjunction with the tendentially neoliberalizing global, supranational and multilateral rule regimes [...]. Through a mutually recursive process of institutional and spatial structuration, such rule regimes variously collide with, parameterize and iteratively meld with these subordinate institutional landscapes.” (Brenner et Al. 2010: 196-197). Once again, place flows, actors, networks of actors are invested by new significance at the global level under a capitalist logic.

“Neoliberalism, from this perspective, is less of a structurally rooted rationality, institutional matrix or ideological formation, and more of a mutable logic – ‘abstract, mobile, and dynamic’ – which is perpetually embedded and disembedded in hybrid, liminal settings, ‘space[s] of betwixt and between’” (Ong 2006: 101, 13 as cited in Brenner et Al., 2010: 200)

This framework on economic theories opens to the role of the space because the research assumes it is the material arena on which local and global meets. Planetary Urbanization Theory offers an interesting point of view on this, theorizing that “we can understand almost every transformation of the Earth as a product of ‘the urban’: from the oceans to the deserts, from land grabbing to population expulsions, evictions, enclosures and dispossessions. Brenner and colleagues invite us to realize that a new category, *operational landscapes*, is able to reunite different phenomena under a common understanding of contemporary urban condition” (Perulli 2016: 34). Nevertheless, these different phenomena let emerge variegated form of urbanization because of the differentiation of socio-spatial conditions and various geographical scales at which the investigation needs to be set (Brenner and Schmid 2014b). Forms of concentrated and diffused urbanization – with a strong focus on urban society – often coexists without discontinuities in a dialectic relation. This shift of attention from the city to the urbanity and urban society has developed in the field of critical geography and economic geography as well as in urban studies.

The space transformation must be integrally analysed in the frame of social transformations in an almost completely urbanized world as Castells (2004) points out, detecting a spatial concentration and decentralization that form new geography of poles and urban networks spread all over the world, which can be considered *urban constellations* (see also: Gandy, 2011; Söderström, 2013; Keil, 2013) in vast territories that ‘explode’ along the lines of a multicentric structure. The process of concentration in suburban realms makes emerge a new role of the public space, influenced by the ongoing ways of habit. It is, indeed, the public space where new social practices make ‘explode’ the concept of the city between physical space and space of flows – challenging the nature of institutions - at the local scale which physical limits are not precise in space (Perulli 2016). The local systems that in Simmel (1908) were extended throughout the national level, are today spreading throughout the global scale.

This context is the field for “[g]lobal firms, local enterprises, research universities, political institutions and social networks [to] play a relational game which is not zero-sum. Agents’ associations and institutional densities vary among the different contexts and need to be measured and compared. Historical and cultural factors influence the moulding of territories. Indeed, geographical scale and territorial dimension, however, are not given entities” (Perulli 2016: 22).

We can see that the global-city region is not a matter of dimension, but a question of ‘implosion’ of interest from and to the global level. Therefore, it is constituted by a complex interplay between the ‘material’ cities and territories and the increasing growth of global flows (which are interests, finances, policies, activities, goods, people).

2.3.3 Theories and Approaches about the Local Dimension of the “City”

Brenner and Schmid’s (2015) – who inherited Lefebvrian ([1970] 2003) outlook – interpretation of the urban “as a multi-scale *process* of socio-spatial transformations”, where the economic factor is also crucial is the theoretical basis of the interpretation of the urban in this work. After the previous outlook on global perspectives, this paragraph is an exploration of questions at the local scale, what we might call ‘the city’.

Territories are both economic and societal open entities and their (new) globalised nature pushed by global flows challenges their political representation because institutional borders are overcome, and local places of the city region are global by nature (Perulli 2016). This vision is shared by Ash Amin (2004: 42) who assumes that “place matters [...] through the challenges – cultural, economic and political – thrown up by the spatial juxtaposition of difference and by the effects of connectivity in a multitude of relational spaces. [...] These spatial effects really do count, in terms of what is conjured up for political attention, what is deemed significant or possible, and what, who and where are mobilized by the political process”.

The research assumes that “urbanism as a way of life, once confined to the historical central city, has been spreading outwards, creating urban densities and new ‘outer’ and ‘edge’ cities in what were formerly suburban fringes and greenfield or rural sites. [...] [I]n some cases city regions are coalescing into even larger agglomerations in a process that can be called ‘extended regional urbanization’” (Soja and Kanai 2006: 59). Once again, as for the city region, it is not a matter of dimension but of complexity in the interaction between actors and materiality of places but also the path dependency, not blindly relying on, nor totally refusing traditional categories of the urban. Therefore, the conceptualisation of Perulli is of particular interest since it is about dynamics and not only space with the definition of a ‘contract city’. This is a domain composed of two dimensions: “a vertical axis including institutions, rules, laws and regulations, objective power, monopolies and markets; and a horizontal axis including the agents’ subjectivity and belief systems, social conventions, urbanity as a cultural artefact and urban metabolism. The two axes intersect differently according to the historical and sociocultural variable patterns of cities” (Perulli 2016: 22). To avoid misinterpretation of the terms, we will refer to the case study domain as ‘urban region’, which merges the conceptualisation from extended regional urbanisation and city regions and Perulli’s vision of contract cities.

A further reflection on the complexity of local dimensions is present also in one of the most famous works of Jane Jacobs (1998), as Perrone (2019a) highlights investigating the notion of ‘autonomy’, as “self-management, self-government or even self-organisation”. As we saw in § 2.1.2, self-organisation is a feature of the cities as complex adaptive systems and, from Jacobsian perspective, it is a tangible positive factor because “ordinary people’s knowledge makes it possible for spontaneous and collective practices to emerge, and for a complex urban system to regenerate itself” (Perrone 2019a: 14).

In Saragosa (2011; 2016) the concept of self-organization is linked to the ‘autopoiesis’ as an inner feature of self-sustainable systems, possible only within a bioregional context. On the contrary, current urban systems are considered linear because need external resources, dispersed throughout the globe, far areas that consist of both the energy-resource and the energy-waste environment. As we already outlined, in complex systems, such as cities, flows and materiality are crucial agents of co-evolutive processes between the system and the environment. In this ‘*structural match*’ (‘*accoppiamento strutturale*’ in Saragosa 2011; 2016; Maturana and Varela 1985 [2001]), limits and ‘invariants’ (see § 2.1.2) in transformation emerge (Saragosa, 2011: 86) as local spatial configurations (Saragosa op.cit.; Alexander 2004). The word ‘spatial’ also includes the concept of social. As defined in Bill Hillier works, space is a product of social, economic, perhaps cognitive interactions (B. Hillier 2008). Hillier, inheriting Giddens’ perspective, states that “social structures are virtual, or immaterial, entities, but they appear in space-time as concrete ‘situated practices’, that is as social behaviours and interactions that occur, as they must, in real space-time locations. Giddens’s key spatial argument is that these virtual social structures are produced and even more importantly reproduced by being realized in space-time. In other words, society may be ‘virtual’, but it only really exists and projects itself through time by being

realized in dispersed space-time practices.” (B. Hillier 2008: 222) About space and sociality, Soja reflects on “a key first step in recognizing a socio-spatial dialectic is to recognise that physical space has been a misleading epistemological foundation upon which to analyse the concrete and subjective meaning of human spatiality...Space in itself may be primordially given, but the organization, and meaning of space is a product of social translation, transformation, and experience. (Soja 1989: 79–80)” (ibid.)

It is important to underline that local spatial configuration can emerge not only from ‘structure-preserving transformations’ that produce that *quality without a name* (Alexander 2004) that make a place flourish, but also ‘structure-destroying transformations’ which lead to de-contextualization and de-territorialization (Saragosa 2016: 301-302). Furthermore, socio-spatial transformations are not only produced by people, but also by Institutions, often in top-down ways. Sometimes without a designed project, but just through policies, governance acts or with the decision to not act.

To conclude, Jane Jacobs detects in development and growth the result of deep interaction between geosphere, biosphere, processes of cooperation, symbiosis and interdependency, calling it *co-development* (Jacobs 2001). This process is impossible to think linearly because it is an integrated whole of open lines that work as a network of inter-dependent developments where cooperation (Allen 2016), beneficial-loops, positive feedbacks strengthen in human and non-human interactions (Jacobs 2001 as cited in Paba 2019: 109-112).

2.4 Introducing Platform Economies and Airbnb

[A]nd this is a further rule, capitalism is performative: it is always engaged in experiment, as the project is perpetually unfinished. Capitalism is therefore a highly adaptive and constantly mutating formation; it is a set of poised systems

Manuel DeLanda, 2005

in Nigel Thrift *Knowing Capitalism*, p.3

*If technology is understood in the broadest sense of the term, as the application of human knowledge to the solution of practical problems, it becomes clear that we have concentrated too much on "hard," highly complex, and resource-intensive technologies and must now shift our attention to the "soft" technologies of conflict resolution, social agreements, cooperation, recycling and redistribution, and so on. As Schumacher says in his book *Small Is Beautiful*, we need a technology with a human face.*

Fritjof Capra, 1982

The Turning Point pp.219-220

Global flows of people, information, goods make the urban a material and digital interconnected space in which, as we are witnessing, emergent phenomena occur and disrupt the environment, sometimes more strongly and fast than others. From the literature (§2.1.2), we can assume that non-linear phenomena are ongoing processes of change in the environment we live in, and, therefore, they are in close interactions with the city and its drivers from the market, such as Airbnb, the most known company from the wide online and asset-light market of short-term rental (STR) among the Platform Economies.

Considering the multiplicity of perspectives through which the topic can be discussed, this paragraph firstly explores i) the main global-driven features of Platform economies and the dynamics in the city, a complex environment in which unexpected events – such as the recent Covid-19 pandemic – emerge and change the state of play; ii) peculiar issues of the short-term rental (STR) platforms in general and specifically of Airbnb to explore the main social and economic effects of STR in the urban context, with iii) a brief reference to primary data from the disrupting event of Covid-19.

The ‘combo’ of the socio-economic-spatial patterns that constitute Airbnb materiality and immateriality in and across the urban systems need some reflection on the private-public interface, but this will be discussed in §5.

2.4.1 Platform Economies and ‘Home-sharing’ Platforms

Cities are complex environments, in which unexpected events may change the current conditions. In this *in-becoming* context, recent and continuously changing drivers, such as the platform economies, are grafted. “[We] are experiencing a combinatorial technology explosion. Customers are reaping some of the rewards, and our notions of value delivery are changing. [...] And the terms of competition are changing: as interconnected networks of partners, platforms, customers, and suppliers become more important, we are experiencing a business ecosystem revolution”.¹⁴ In this *business ecosystem revolution*, Platform Economies play a distinctive role in enhancing digital global transactions that can involve products or services that

¹⁴ <https://www.mckinsey.it/idee/the-global-forces-inspiring-a-new-narrative-of-progress>

platforms do not own. To briefly explain, platforms are “simultaneously computational (as in a software code [...]), architectural (as in a raised surface), figurative (as a grounding for an action), and political (as in a political position or base)” (Gillespie 2010: 349). “[A]t the most general level, platforms are digital infrastructures that enable two or more groups to interact. They, therefore, position themselves as intermediaries that bring together different users: customers, advertisers, service providers, producers, suppliers, and even physical objects. [...] A platform position itself (1) between users and (2) as the ground upon which their activities occur, which thus gives it privileged access to record them” (Srniczek, 2017: 43-44). Therefore, ‘recording’ is the core of the platform economies because the information has become one of the main profit channels of the platforms. “Just like oil, data are a material to be extracted, refined, and used in a variety of ways. The more data one has, the more uses one can make of them” (Srniczek 2017: 40). And of course, the more one can profit from them.

As we can observe, Platform Economies rise a variety of issues: (new) processes of capitalization (Langley and Leyshon 2017; Celata 2018), the exploitation of ‘immaterial’ and ‘affective labour’ (Boutang 2012; Greene and Joseph 2015), the ‘platformed masses’ traced by a common interest (Lovink and Tkacz (2015: 14), the impact of platforms in the traditional job market (Ciccarelli, 2018), producing a ‘gig economy’ (Friedman 2014; Kenney and Zysman 2016). Moreover, many other aspects of platforms’ effects have been investigated, introducing definitions as Platform Society, Platform Surveillance, Platform Revolution, Platform Urbanism and others that shows how this new economic model is involved in our daily lives. As Barns (2018) claims: “Platform urbanism, enacted daily as we commute, transact, love, post, listen, tweet or chat, deeply implicates the everyday urban encounter.”

2020, when the Covid-19 pandemic outbreak, has been a disruptive year for platforms. Some of them, such as Amazon or Deliveroo, has had incredible growth, while some other, like Airbnb and Uber, have been negatively affected from the economic side of their users and not from the financial side of the companies. During the peak-pandemic months, the sharing economy seemed to be at the end, and the new ‘Isolation Economy’¹⁵ was ready to replace it. Nevertheless, it doesn’t seem to be happening. Airbnb has fast changed its policies regarding the private users (with a strong marketing campaign that promote safety and domestic travel) and the public institutions. Not only, in the months before the Covid-19 emergence, the CEO Brian Chesky said in an interview to CNBC¹⁶: “We don’t need to raise money, and so we haven’t been in a rush”. Of course, the pandemic was not predictable and only three months after this interview the Company had to fundraise to refund hosts and guests. The Company’s initial public offer (IPO) changed again this situation and the finance strategy got Airbnb back on the edge.¹⁷

Of course, it is not predictable how the complex relationship between the Covid-19 implications and the state of play of the Airbnb Company will impact the estate market and specifically the long term rental sector, which involves questions of justice and gentrification in the city, the tourist sector and all those systems related.¹⁸ And it is not easily foreseeable not only because the estate market and the long term rental sector are involved in multiscale and multi-variable economic, social and political dynamics, but also because Airbnb itself apparently behave as a fast-adaptive system.

At the general level, Nick Srniczek identifies five typologies of platforms that do not fully portray the differentiated galaxy of Platform Economies, considering that some of these typologies coexist in some platform corporations. Among different kinds of platforms, there are 1) *advertising platforms* (such as Google or Facebook that earn money from advertising space), 2) *cloud platforms* (e.g. Dropbox or Amazon Web Services that provide cloud computing services), 3) *industrial platforms* (e.g. GE, Siemens that have

¹⁵ <https://www.forbes.com/sites/kmehta/2020/03/23/welcome-to-the-isolation-economy-goodbye-sharing-economy/>

¹⁶ <https://www.cnbc.com/2019/11/18/airbnb-ceo-on-ipo-process-odds-in-2020-we-dont-need-the-money.html>

¹⁷ <https://www.forbes.com/sites/arielshapiro/2020/04/06/with-ipo-plans-looking-shaky-airbnb-raises-1-billion-in-funding/#56dcd284c0e7>

¹⁸ <https://www.bloomberg.com/news/articles/2020-04-03/can-airbnb-survive-coronavirus>

introduced inter-connected process into their traditional production processes), 4) *product platforms* (e.g. Spotify that involves other subjects to make a service from a traditional good), and 5) *lean platforms* (e.g. Uber, Deliveroo, Airbnb which are asset-light companies that do not own the goods they have on the platform, but they only own the p2p (peer-to-peer) relation between seller and buyer and all data concerned). As far as this last category is concerned, “any-to-any models have taken the fore. These companies are at the center of platform-based ecosystems. [...] The world’s largest accommodation provider, Airbnb, does not own rooms; the world’s largest taxi company, Uber, does not own cars and neither company existed ten years ago.”¹⁹

As we have seen, this new economy presents issues linked to many different aspects, depending on the typologies of platforms. This research is focused on the *short-term rental platforms*, and specifically on Airbnb, under the label of *lean platforms*. “Lean platforms have turned what was once non-tradable services into tradable services, effectively expanding the labour supply to near-global level [...] these companies have also offloaded costs from their balance sheets and shifted them to their workers²⁰” (Srniczek 2017: 82-83). In this frame, many studies are investigating the short-term rental platform dynamics focusing on Airbnb in particular because of its predominance in the European home-sharing market and the collective imagery enhanced by a strong marketing policy (Gainsforth 2019) that characterizes this platform.

Airbnb is a transnational home-sharing platform that hosts 6 million private listings²¹ around the world and, like other *lean platforms*, is changing rapidly and continuously its policies and philosophy, boosted, at the very beginning, by the economic crisis of 2008 (Srniczek 2017; Gurran and Phibbs 2017). Its role in urban contexts is the object of many researchers and increasing recent literature on the theme (Van Doorn 2019; Leszczynski 2020; Shabrina et Al. 2019). Other companies are extending, in the case of *Booking*, or strengthening, in the case of *HomeAway* - now (again) Vrbo by Expedia Group - their intermediary Short-term rental (STR) services. Anyway, these companies are more diffuse in other geographical contexts²², while in Europe Airbnb is the most used STR platform.

The pandemic highlighted the inner vulnerability not only of digital economies but also of the real ones, especially, of monofunctional sectors, such as the tourist sector. Nevertheless, due to the asset-light nature of platforms and to the fast capacity of responsiveness, it is improbable that Airbnb disappears, but what directions it might need to go through is an interesting object for future research.

2.4.2 The Centrality of Data in Platform Economies

The economic role and the centrality of data for Platform Economies, short-term rental (STR) platforms included, is mentioned above. Therefore, one of the most constraints in studying – and in regulating or governing – the Airbnb dynamics is data collection.

Platforms, and Airbnb specifically as demonstrated by several trials in front of the European Court of Justice, do not share the data they collect from users, and the only way to access quantitative information for researchers is to *web scrape*. This is a process to extract information from the official website that hosts the platforms through an IT engineering algorithm. For many years, researchers in different fields, have used data

¹⁹ <https://www.mckinsey.it/idee/the-global-forces-inspiring-a-new-narrative-of-progress>

²⁰ An example of this principle is the Airbnb decision to fully refund the guests who wanted/had to renounce to the trip in the recent covid-19 emergence. But the refund would have been covered by the host (<https://www.wired.co.uk/article/airbnb-coronavirus-london>). After two weeks of flooding out of hosts from the platform, adding to the fact that many are trying to rent their properties on long-term rental market, Airbnb decided to allocate 250 million for covering the hosts refunds. (<https://techcrunch.com/2020/03/30/airbnb-commits-250-million-to-helping-hosts-cover-cancellations-due-to-covid-19/>)

²¹ <https://ipropertymanagement.com/research/airbnb-statistics>

²² On Vrbo more than 1 mln listings are available in Europe. On Booking it is more difficult to immediately access data considering that the company recently merged the searching including home rentals in the hotel section under the label ‘stays’. Considering that a range of 6-13% in Firenze (source: AirDna) is listed contemporary on both two platforms like Airbnb and Vrbo, we can exclude these data from the research for economic and time resources reasons.

from the independent non-commercial online data platform InsideAirbnb. It provides updated and time-series web-scraped databases, constituted by “public information compiled from the Airbnb website including the availability calendar for 365 days, and the reviews for each listing. Data is verified, cleansed, analysed, and aggregated.”²³ Other sources of data are commercial providers such as AirDna, to cite one also used in this research. In March 2020, Airbnb signed an agreement with European Commission for sharing its data,²⁴ possibly opening to a more collaborative season with Institutions.

Data is an issue in the public sphere (Söderström and Mermet 2020). Anticipating what will be further analysed in §5.1.3, at the regional level, Tuscany enforced a law on tourism (Testo Unico sul Sistema Turistico Regionale LR n. 86) in 2016. Its regulation - the applying rules of the law (d.p.g.r. 47/R/2018) - is from 2018 and was approved after a process of amendment in administrative trials. The law aims to control the STRs data.

Nonetheless, the role of data in regulation or strategic processes can be liable to critique. We assist a recent drift of politicians and policymakers, fascinated by a ‘real-time city’ governance (Kitchin 2014). This governance by code paradigm relies on big data from the same companies they expect to control. “For governments, big data and integrated analysis and control centres offer more efficient and effective city management and regulation. For corporations, big data analytics offers new, long term business opportunities as key players in city government” (Kitchin 2014: 12). Paradoxes need to be unpacked and analysed also through an ethical revision of datasets, methodologies to collect and process – consider bias behind the algorithms – and responses from the governance by code experiences, but this work cannot afford this enormous goal.

2.4.3 A Brief Introduction to Airbnb

The problem of data accessibility, even if there are some good signs for increasing transparency in the future, remains a central issue in the investigation of short-term rental impacts in the city.

“Tourism is a function that organizes global flows. A person in four is a tourist (OCSE)” (Perulli 2009: 58) In this great industry, Airbnb represents a constantly growing voice. Consider that a few months ago, Airbnb was the most influential platform in Europe for the number of users and in 2019 the Company occupied fourth place in the ‘Unicorn Companies, businesses valued more than \$1b.’²⁵

company	Valuation	Date join	country	industry	Select investors
Toutiao (Bytedance)	\$75 (\$B)	7/4/2017	China	Artificial intelligence	Sequoia Capital China, SIG Asia Investments, Sina Weibo, Softbank Group
Didi Chuxing	\$56 (\$B)	31/12/2014	China	Auto & transportation	Matrix Partners, Tiger Global Management, Softbank Corp.,
Stripe	\$35.25 (\$B)	23/1/2014	USA	Fintech	Khosla Ventures, LowercaseCapital, capitalG

²³ <http://insideairbnb.com/about.html>

²⁴ <https://news.airbnb.com/airbnb-signs-data-sharing-partnership-with-european-commission/> and https://ec.europa.eu/commission/presscorner/detail/en/ip_20_194

²⁵ <https://www.cbinsights.com/research-unicorn-companies/>

Airbnb	\$35 (\$B)	26/7/2011	USA	Travel	General Catalyst Partners, Andreessen Horowitz, ENIAC Ventures
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Table 2.T01 This table is readapted from <https://www.cbinsights.com/research-unicorn-companies>

The list above reported values of October 2019. The update list, after a year, reports Airbnb valuation for 18 billion dollars. In the same year, its value passed from 18 billion to 80 billion dollars due to an incredible IPO at the end of the year.

These data only scratch the surface of a complex, multifaceted economic, social, spatial phenomenon (Gyodi 2019) and affected by a ‘turbulent environment’, in which unpredictable events – such as the Covid-19 pandemic – take place and create uncertainties. Nevertheless, among short-term rental (STR) platforms, Airbnb is still the first and the best-known of them in Europe. Its success is due to the chance for low-budget tourists to travel and visit places that might have been inaccessible in traditional accommodation solutions. Consequently, STR platforms enhanced tourism and boosted the sector (with all related categories such as the catering sector, travel sector, experiences and guided tours, and so on) at the local and national levels. Furthermore, the daily tourist tax, compulsory also for Airbnb users, has increased cash flow in many Italian²⁶ cities.

Nevertheless, studies show how and to what extent Airbnb dynamics can constitute a disruptive phenomenon that affects the social, economic, spatial dimensions of cities (Barron et Al., 2018; Lee 2016; O’Neil and Ouyang 2016; Picascia et Al., 2017). For instance, higher revenues for hosts in renting on the short-term market rather than to long-term residents (Ferreri and Sanyal 2018; Cocola-Gant 2016) have an impulse in the ‘migration’ of long-term residents in less tourism-suited areas of the city, often in suburbs and peripheral areas (Cocola-Gant and Gago 2019), while central areas are subject to gentrification processes with non-stable residents (Cocola-Gant 2016).

Scholars from many disciplines observe social and economic but also spatial fallouts in urban Airbnb-preferred areas. The crucial issue is that “[i]n the age of maximum accessibility new major deprivations of fundamental rights is likely to emerge, such as the right to housing and to belong to a place (Lefevbre 1968)” (Perrone et Al., forthcoming). These crucial aspects and issues seem to be mainly linked to multinational exploitation modes in the estate market (such as in the case of London and the Buy-To-Let phenomenon)²⁷ in which global capitals buy vast parts of the housing stock in strategic urban areas to rent them more often on the short-term rather than on the long-term rent market (see Cocola-Gant and Gago 2019).

These dynamics are connected to global logic (Srnicek 2017; Heo and Blengini 2019) that seem to ‘land’ in local contexts triggering unexpected effects (Harvey 2001; 2005; Brenner 1998; 2016; Brenner and Schmid 2014a; b; Sassen 2000; 2002). The scientific community, especially in the geography, economy, urban studies fields, is looking at these upscaling and downscaling interactions in different sectors and from different perspectives (Ferreri and Sanyal 2018). Many scholars (Holman et Al. 2018; Barron et Al. 2018; Nieuwland and Van Melik 2018), interested in the socio-spatial injustices, point out how Airbnb is producing unexpected effects such as gentrification (Cocola-Gant 2016; Lees et Al., 2016; Gainsforth 2019) or the progressive exclusion of long-term residents from some areas of the city due to higher rental prices after the increase of Airbnb supply in the neighbour (Barron et Al., 2018). The spatial distribution of Airbnb listings in a sample of Italian cities has been widely analysed and discussed by LADEST (Picascia et Al., 2017) highlighting the diffusion of both the supply and demand in the city centres. The great (and fast) growth of Airbnb supply in

²⁶ Not all cities in Italy have a tourist tax. The National Law 23/2011 (art.4) specifies which cities or municipalities can set it. It was difficult to collect taxes from guests in Airbnb accommodation. Thus, Airbnb accepted an agreement with some cities to collect the daily tourist taxes in order to reduce the undeclared revenue.

²⁷ <https://www.independent.co.uk/voices/housing-crisis-london-high-rise-luxury-developments-property-local-councils-austerity-a8618171.html>; <https://www.theguardian.com/business/2018/jan/26/ghost-towers-half-of-new-build-luxury-london-flats-fail-to-sell>

Western cities has been boosted by many factors. After the 2008 crisis, people were both in search of new revenues – peer-to-peer markets of the sharing economy were a chance for their easy-to-use for their fuzzy policies and the almost absence of laws about taxes and charges of traditional markets – and in search of a low-cost solution for services in general and travel, in the specific case of Airbnb. The European governance hasn't kept pace with Airbnb growth and subtle changes (§5.1.1), such as the professionalisation of hosts (Finck and Ranchorda's 2016; Slee 2016; McCoy and Sigee 2016; Martin 2016) in new unregulated markets. For instance, estate owners do not list only rooms or their second houses to earn extra money, but become entrepreneurs, listing more than one property (also investing in their activities buying new houses) and in some cases having employees or paying external services providers, such as cleaning staff. This is only a part of the professionalization of the hosts, since we are witnessing – for many years actually – a diffuse acquisition of estate stock from big investors and global companies to be rented on the short-term market. At first, these types of accounts were associated with an alias on the platform. Hosts like 'Bettina' have thousands of lists on the market because they represent global capitals as Halldis. As evidence of the range of the professionalization of hosts, in 2019 Airbnb allowed multi-listings hosts to have an official account of their companies or agencies.

Ferreri and Sanyal's work on 'regulated deregulation' and the key critique of the platform and 'sharing rhetoric' shows that Airbnb encourages professional use and the accumulation of additional properties to estate income. Higher-income for hosts from short-lets rented on Airbnb have also incentivised property owners to shift to letting on the platform rather than putting it on the long-term rental market where they would earn less.

This process of profit extraction created an economic bubble and socio-spatial dynamics in cities that Covid-19 pandemic restrictions on the tourism sector have only partially affected (Pizzo et Al., 2021).

Furthermore, it is interesting to monitor the Airbnb marketing campaigns, since they represent future or even ongoing intentions of the platform, which systematically observe the real market and its dynamics. For instance, in 2017, Airbnb promoted the project 'Italian Villages', a specific section of the platform that emphasized Italian beauty to visit outside the traditional tourist paths. Or better, outside the 'fast tourism' routes because promoted villages were already tourist destinations. It is to underline that the Airbnb 'Italian Villages' project was promoted by the Italian Ministry of Tourism and Culture. Anyway, this Airbnb project represents a surprising case of the platform interest in rural landscape-oriented areas. And this trend could be reinforced by the current pandemic frame, since the Platform fast adapted the homepage to promote domestic travel within national borders, after the restrictions imposed by Covid-19 laws.

In conclusion, the Airbnb dynamics are linked to low-budget tourism and subjective stances and interests of the front-actors in the Platform, while the deregulation has led to an explosion of the supply and demand triggering disruptive effects for social, spatial, economic questions, as evidenced in overtouristified cities.

2.5 Conclusions. Complex Challenges in Planning Theories

In complex adaptive systems' organization and processes of evolution, unpredictability emerges as a core feature. During the Covid-Era, it is 'in front of us' that we have very little control over how situations evolve and even faster, revolve. From the hard sciences to the urban studies, concepts framed into complexity are more and more compatible with and decisive in a world which is every day more evidently in-becoming. Something we could not imagine has happened, something we couldn't understand or accept has been scientifically proved. We're mentioning the Covid-Era because it is here and now, but even before the pandemics, categories and relations were questioned by the circumstances. Actors are but also were, challenged at any scales during transition moments and the role of the city – where the 'local and global meet' – is central. Furthermore, it is also questioned how to interpret the term *city*. Renouncing to define it, an unreachable goal, the research defines roots for a conceptualisation of urbanity, inheriting Perulli's vision. A contract city is a network of networks in which the administrative borders are fixed, while the urban dynamics at any scale move freely crossing them. Those urban dynamics are prompted by actors, another very difficult category to frame. The Actor-Network Theory helps in defining them as multiscale, essentially complex assemblages of human and non-human agents acting and reacting in an environment. This perspective is inevitably linked to complexity and uncertainty, which help in the conceptualisation of the actors and the environment because "[u]ncertainty, then, exists at the intersection of the filters of perception, the vibrant matter of nonhumans, and the precariousness of socio-material assemblages. We need, though, to add one more factor that contributes to our doubt—actions overtake us. All action, Latour (1999: 281–82) has argued, has the potential to surprise us in unanticipated ways. Not only are there unintended and unanticipated consequences, but action is always path-dependent; that is, it opens up new opportunities and closes down others. Planners act, and the world is different than what it was in ways that they had not imagined. As a result, they are forced to rethink what they did and to react" (Beauregard, 2021: 221). Thus, we are not in a totally 'blind chance' world, but we can recognize principles of evolution even in non-linear dynamics of change, and we are aware of the role of the past in the new patterns' formations, also in bifurcations and transitions. For instance, history and memory are crucial for the system's interactions with its environment and therefore, in all self-organising processes of coevolution because trajectories and individual pasts merge and assemblage, making new situations fluid, vague and fuzzy, but in a continuum with their generating conditions. The improvement of resilience in urban systems and the renounce to a positivist control over agreed reality is something already discussed in the planning discourse. But these can be tricky and misleading concepts because at an edge of the spectrum they can open to neoliberal capitalist interpretation of a (much more) free market (Pizzo, 2015), but on the other edge, a renovation of the concept of control can be also ambiguous. Indeed, big data and the explosion of 'smart cities' philosophy are useful in analytical parts of the design, as Michael Batty (2016) and Bill Hillier (Yamu et Al., 2021) demonstrated through their work, but they can be harmful to envisioning the future if they assume the face of governance by code, not critically and ethically framed, yet.

In conclusion, we can start back to the initial question about complex dynamics in cities and territories and the urban and regional policy response to them for social justice. Can Airbnb be interpreted as a complex system in a blurry-bordered regionalised urban domain? And what does it mean for urban and regional policy and planning?

To answer this question the thesis discusses (§6) results from a case study (§ 4 and 5). But, before delving into the case, a brief paragraph on the case study methodology follows.

PART III
THE CASE STUDY

3. Methodological Approach to the Case Study

This chapter presents the methodology for the case study's analysis and discussion. The methodological approach of the thesis represents the overall logic that guided the research and it is presented in the Introduction (§1.4).

The first paragraph describes the case study approach justifying theoretical and methodological choices in the general aims of the thesis. The second paragraph goes in-depth in the methodology that guides the case study analyses and discussion, while the third paragraph contains a disclaimer about the data collection modes and the software used to elaborate them. For detailed disclaimers about specific data and cartographies please see Appendix B.

3.1 The Case Study Approach. Theoretical and Methodological choices

The case study approach is based on a single case study, analysed through qualitative and quantitative data. This method was considered the best to achieve the research goals because it helps in the investigation of complex causal links, describing real-life contexts to evaluate key factors in the interplays.

All phases that involve the case study's choice, analysis, interpretation and discussion are framed in theories that oriented the lens of description, analysis, interpretation and discussion. Briefly going through them, the thesis needs to question i) what it is meant with urban and what methodological approach is used to analyse Airbnb in the 'materiality' of the urban; ii) the problem of the borders and the boundary of the case study; iii) the central role of the materiality of 'the local' and the strong belief that place matters; and to conclude, how the urban and regional governance can 'enter the game' of Airbnb dynamics in territories.

Thus, starting with the first point (i), the research proposes that the case study domain is not definable urban in traditional terms, but that it's urban since it is in the process of urbanisation, triggering dynamics in which centres and *peripheries* or hinterland change influencing each other (Schmid, 2019, Fedeli et Al. 2017; see §2.3). The choice of framing the single case study of the Florence-Prato-Pistoia (FPP) urban region within a wider geographic context is related to the hypothesized necessity of investigating global flows and interests at the local level, not only in a strong bounded space but in a local urban region that interacts with its wider region(s). As already claimed, in the thesis urbanisation is meant as a simultaneity of imploding and exploding (shrinking and expansion) processes that persist in a dialectic relation and that sometimes, make urban explosions and implosions ceaseless as Brenner and Schmid sustain (2015). In their words, "[t]he fabric of urban space is being at once expanded and blurred, as urban fragments are distributed extensively, if unevenly, across large-scale territories. Formerly central city functions, such as shopping facilities, corporate headquarters, multimodal logistics hubs, research institutions, cultural venues, as well as spectacular architectural forms, dense settlement patterns and other major infrastructural arrangements, are now being dispersed outward from historic central city cores, into erstwhile suburbanized spaces and hinterlands, among expansive catchments of small- and medium-sized towns and along major transportation corridors such as superhighways and rail lines" (Brenner and Schmid 2017: 48). This description fits with the FPP urban region (see §4.1.1) and Airbnb has been introduced in this context through quanti-qualitative data.

Thus, a serendipity moment (Merton 1968:preface) occurred when preliminary analyses on Airbnb supply and demand in Florence evidenced a tendency toward the urban fringes and a concentration along with the railway infrastructure that connects the FPP. Because of that, I chose to broaden the boundaries of the analyses (ii). Furthermore, investigating Airbnb dynamics in this domain is interesting because, even though the Metropolitan City excludes part of the FPP from its boundaries, many other functional/administrative bodies with a deep impact on the territories and people assume this ambit as a unique region, such as the *USL Centro*²⁸, the territorial branch of the regional healthcare system, and the *Consorzio di Bonifica 3 MedioValdarno*²⁹, a vast domain to control and manage water basins. Moreover, funded projects and pacts connect various parts of the FPP urban region. Thus, the extent of the Airbnb dynamics, a global-local issue (§2.4.3), in this domain, but also the broader domain of Tuscany, is something to be analysed and discussed, because the investigation at two scales allows to evidence the regional dimension of Airbnb and to understand some FPP dynamics in relation with other regions of Tuscany, evidencing that complex networks and socio-economic, morphologic, political changes do not have static boundaries. Finally, the description and the analysis of the case study at two scales open on issues to be further investigated in future research agenda (§7). The big question about the

²⁸ <https://www.uslcentro.toscana.it/index.php/sedi-territoriali> <seen on 05/05/2020>

²⁹ <http://www.cbmv.it/il-consorzio-cos-e/territorio> <seen on 05/05/2020>

urban in the research has been addressed through the knowledge of published studies and the expert knowledge of a region I live in.

The aim of the case study is not to compare Airbnb patterns in the FPP urban region and Tuscany, but to verify the hypothesis that a broader contextualisation of questions about Airbnb dynamics is necessary approaching a territory whose boundaries are fuzzy and not efficiently analysed as static entities. Unquestionably, for analytic needs, the FPP urban region is bounded, but the analyses on Tuscany permit us to have an unbounded image of relations and flows through the regions.

About the third point to be methodologically addressed (iii), we took as a reference the work of authors (Barca *et al.*, 2012; Barca, 2009; Paba Perrone, 2016; Perrone Paba 2017; Lucchesi, et Al. 2015) who consider crucial the spatial place-based approach in analysing and interpreting also global dynamics. The research approach assumes the vision of Lucchesi, Zetti Paba (Lucchesi et Al. 2015), who strongly claim and demonstrate that spatial analysis in the northern Tuscany context has gained more importance in globalised processes. “[G]lobalization has also drawn attention to the often-neglected role of space. Globalization has made localities and their interaction more important for economic growth and prosperity [...]. Space is becoming increasingly ‘slippery,’ in the sense that capital, goods, people, and ideas travel more easily [...], but, at the same time, increasingly ‘sticky’ and ‘thick’ because capital, goods, people, and ideas, despite being constantly on the move, tend to remain stuck in large agglomerations [...]. Consequently, globalization has made space and place more rather than less important. [...*In conclusion,*] space matters and shapes the potential for development not only of territories but, through externalities, of the individuals who live in them. Consequently, development strategies should not be space-neutral, but [...] placed-based and highly contingent on context” (Barca *et al.*, 2012: 136-139)”. (Lucchesi et Al. 2015: 28-29). To demonstrate the essential role of the space, not only in strategies of development – that aren’t touched by the research – but also in the interpretation of the complex dynamics, the methodology consists of expert knowledge ‘on the field’ and quantitative and qualitative data.

These reflections challenge the governance modes, as actions based on “isomorphic policies”, while space needs to be conceived as “dynamic, problematic, developmental, ideologically charged, and filled with action, dialectics, process, and social causality, rather than as fixed, dead background, container, stage, extra-social environment” (Soja, 2011: 687). Such a spatial *rough* context is related to exchanges in fuzzy networks that are in continuous becoming, modifying their variable geometries, incessantly trying to rebalance. Therefore, regional governance is a crucial research topic, and the fourth (iiii) in this excursus (Addie 2013:188-217; Young e Keil 2014:1589-1608; McFarlane e Rutherford 2008:363-374). Specifically, the research refers to socio-spatial transformations trespassing administrative limits in a ‘post-metropolitan’ dimension, often prompt by public/private networking that needs to be addressed or managed by the urban and regional governance.

In this context, the mismatch between the ‘unbounded space’ of the play among actors and the ‘bounded space’ of traditional institutions is a meaningful issue. Facing this dichotomic process of post-metropolitan transition might enable a discussion on strategic regional governance approaches, towards new paradigms aimed at embracing those unbounded cooperative actions among privates and public actors at different scales (Perrone et Al. 2019). For instance, most of the governance tools are designed and implemented in institutional or geographical units that do not include processes that generated those questions of governance, preventing the efficacy of cooperation among actors within a governance framework still anchored to planning strategies and urban policies not plastic to changes and social complex processes, even if territories and actors from the local and the global scale invoke, sometimes prompt, a new political toolset more adaptive to changing conditions (Perrone et Al. 2019). This topic has been addressed in the research mainly through qualitative data such as semi-structured interviews and reports from other studies.

In the next paragraph, methodology and data are discussed and collaborations that allowed the multi-disciplinary approach are pointed out.

3.2 Methodology

The reasons behind the choice of a single case study are linked to the goals of the research which needed a more in-depth investigation to demonstrate that Airbnb is a complex system, that it has a regional dimension and to reflect on current local policies. The single case study approach permitted to go deep in both the Airbnb system and in the features of territories involved through qualitative and quantitative data processed in an inferring process. The choice of the case study's boundaries is mainly driven by qualitative assumptions.

Short-term rental (STR) mediated by digital platforms, and specifically Airbnb, is the focus of the case study analysis and discussion because from a preliminary literature review and a preliminary analysis of the dynamics, it appeared to be a complex system, and thus it could have been a perfect example of complex system dynamics interplay with public policy systems.

But why consider only Airbnb and not the whole panorama of the many STR platforms? Firstly, it is needed to make clear the difference between STR platforms and OTA (Online Travel Agency). Airbnb offers only short-term rentals, also from professionals or from bed&breakfast and more recently has boosted the 'experience' section, but it does not offer travelling solutions as Booking or Expedia do. These two platforms are classified as OTA, Online Travel Agencies, and dynamics linked to those are different from those linked to Airbnb. On Vrbo (the short-term rental platform of Expedia Group) more than 1 mln listings are available in Europe. On Booking it is more difficult to immediately access data considering that the company recently merged the searching options, including home rentals in the hotel section under the label 'stays'. Since there was a technical issue about the data scraped on Booking it was automatically excluded by the research, while preliminary investigation found that only a low range of housing stock was listed contemporary on Airbnb and Vrbo platforms, and the percentage was not so high to be relevant for the listings only on Vrbo.³⁰ Therefore, also Vrbo data were excluded from the research for economic and time resources reasons.

This choice of analysing only Airbnb in regional domains is supported by a collaboration with CNR (Consiglio Nazionale delle Ricerche – National Council for Research) for the collection of quantitative data. In the Covid-19 emergency, we've worked on data from Airbnb to understand how and to what extent the contingencies were and are 'disruptive moments' or *transitions* (De Roo, 2018) for city realms affected by touristification processes, analysing different patterns of supply, demand and multiple-listings hosts stocks in cities and territories. The data-driven analysis was guided by specific objectives, but part of this process of analysis, interpretation and further analysis, was also based on a trial-and-error process to discover the most interesting issues and features linked to the Airbnb supply, demand and hosts nature.

Furthermore, the single case study is deeply linked with the specificity of the local context of the FPP urban region and Tuscany. Therefore, results from this thesis are not automatically generalisable in other contexts.

Nonetheless, the quanti-qualitative analyses applied to other regions can be reproduced anywhere. The replication of the analytical method for the Florence-Prato-Pistoia is experimented in the research for the Tuscany region with different datasets, adapting some maps, but elaborating them with the same protocol. In Yin words: "[t]he replication of results across multiple studies, again whether occurring with case studies or with a series of laboratory experiments, is, therefore, a methodic and desired extension of the process of making analytic generalizations" (Yin 2010: 22). The replication of the analysis and interpretation of Airbnb, as a complex regional system and reflections on local or regional governance, led to confirmation of the hypothesis.

³⁰ 3% listed on both in Firenze (88% on Airbnb and 9% on Vrbo), 2% in Prato (93 on Airbnb and 5% on Vrbo) and 1% in Pistoia (73% on Airbnb, 26% on Vrbo) Percentage is from the Airdna website <https://www.airdna.co/vacation-rental-data/app/it/toscana/pistoia/overview> <seen on 14/06/2021>

The analytical protocol of the case study is based on a mixed-method that involves qualitative and quantitative data referring to a specific period, that goes from November 2019 – a few months before the emergence of the Covid-19 pandemic in Italy – to October 2020 as far as the regional scale is concerned, while on the FPP urban region we have data from April 2020 to August 2021, in full pandemic period (see the scheme below). It could have been interesting to acquire data from Airdna coincident with the temporal range of dataset scraped by the National Council of Research, but it would have been ‘out-of-time’ to proceed with analyses in due time for the thesis deadlines and I was interested in exploring the state of the art in Tuscany regions (the FPP urban region included) before the Covid-19 emergence. This period was chosen for its peculiarity and because it was definable a ‘transition phase’, a turbulent period that generated turbulent environments, or better, more turbulent than usual times. The temporal range of the analyses, as anticipated, was also determined by the availability of data and the sustainability in gathering it.

DATA WE HAVE

*Firenze-Prato-Pistoia included

2019

2021

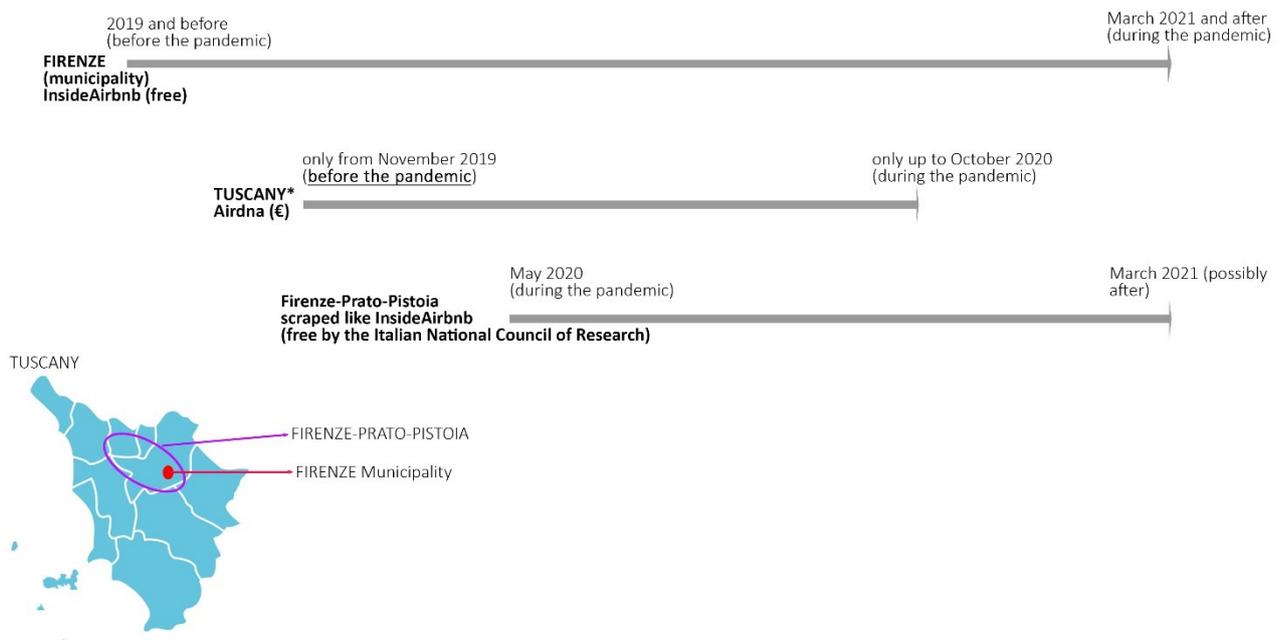


Figure 3.01 Data temporal range, geographic reference and source.

Qualitative data consist of reviews of official documents, newspapers and blogs regarding the actors involved, while a selected sample of stakeholders was called to participate in single semi-structured interviews. More than the extent of the sample, I was interested in a very updated narrative of the issues linked to Airbnb and the city. Thus, I drafted a guideline for questions, but I was often guided by the participant to talk about what she or he was interested to discuss most or most informed about.

Furthermore, in the last year of the thesis, I joined a research group on the topic of short-term rent geographic distribution and governance approaches for a comparative study between five main Italian cities. The group is made up of planners from different Italian Universities: Barbara Pizzo and Serena Vicari Haddock as principal investigators, Guido Anselmi and Veronica Conte, from the University of Milan-Bicocca and recently granted a post-Doctoral position at the KU Leuven on the topic of short-term rentals, Alessandra Esposito, from Roma

University La Sapienza and Federico Prestileo from the University of Milan-Bicocca. This experience re-framed some questions and gave the research other points of view on the topic and working methods.

Research analyses also produced a survey via social media thanks to the collaboration with the London School of Economics (LSE) and specifically with Professor Nancy Holman, who has worked on Airbnb from the perspective of regulation and governance in London. She involved colleagues of her research group on surveys via social media: PhDs Jacob Karlsson, Martina Rotolo and Davide Zorloni. Before the Covid-19 emergence, Professor Nancy Holman invited me as an independent researcher for discussing the topic. Unfortunately, circumstances prevented me from having this period abroad and just permitted me to have online meetings, that were anyway inspiring and triggered reflections that addressed the research questions. Thanks to this exchange, I put the light on the demand during the pandemic as a complex unpredictable feature of the Airbnb system. Therefore, with the help of three researchers from the LSE, experts in surveys via social media, we built and share a questionnaire to be diffused via social media. To make it more accurate and to be more effective in structuring and analysing data I used Qualtrics, a licensed software generously provided by Professor Nancy Holman.

As far as quantitative data is concerned, they are mostly georeferenced information about Airbnb. It is important to underline that research has been guided also by the lack of official data (§2.4.2), and results need to be evaluated considering this issue (see *Recommendations*). The problem of data affects not only the political process but also investigations. Thus, while AirDna, a private company provider, sells data about any municipality, InsideAirbnb provides free data on a selection of over-touristified cities. Therefore, non-funded studies are often influenced by a lack of data outside the city centre or, in the case of Florence, are necessarily limited to the municipal borders. To fill this gap in data, this research has been supported by two groups of informatic engineers from the National Council of Research (Prof. Fabrizio Falchi and eng. Fabio Carrara from the ISTI – Institute of Information Science and Technologies "Alessandro Faedo" – and Prof. Maurizio Tesconi and eng. Andrea d’Errico from the IIT – Informatic and Telematic Institute). Moreover, I had great support in discussing the correctness of analyses, since their experience as data scientists.

The datasets used in this research are considered big data. But, as already said, the research is based not only on it, but it is also enriched with qualitative analyses since “[b]ig and small data thus do not negate each other, but rather co-exist in complementary relations” (Haken, Portugali, 2021: 13).

3.3 Data Disclaimer. Collection and Interpretation Modes

The paragraph synthetically reports the typology and the collection modes of quantitative and qualitative data used for the analyses.

Data

Qualitative data

- N. 13 Semi-structured interviews to a sample of actors and stakeholders involved in the Airbnb dynamics, as subjects or as objects of these dynamics. The interviews were taken between 07/03/2021 and 08/07/2021. Unfortunately, none of these was in presence, but they were all managed via the Google Meet platform. The average time for the interviews was 60 minutes. For reports and specific disclaimers, please see Appendix C;
- Survey via social media coordinated by Professor Nancy Holman (London School of Economics). The survey was built, and its results were analysed in Qualtrics, a technical platform generously made available by Professor Nancy Holman. It was not aged or gender-targeted because the aim was to reach as many people as possible to understand whether and why they used (or not) Airbnb during the pandemic months. For results and specific disclaimers, please see Appendix C;
- Newspaper review. A periodical manual search of local journals and newspapers about tourism, housing and short-term rental activities of platforms;
- Official news and communications from Airbnb. Periodical check on the official website;
- Official websites of the main Institutions involved in the research for policy and governance analysis (Tuscany Region; Metropolitan City of Florence; Florence Municipality; Prato Municipality; Pistoia Municipality). Periodical check on the official website;
- Statistical reports from the Tuscany Region and the main municipalities of the case study. Targeted search;
- Information and insights from peer-to-peer informal comparison with experts and peers at conferences, but also during collaborations for Urban@it and the building of the survey via social media.

Quantitative data

- Airbnb listings, reviews and calendars were weekly scraped by the CNR groups ISTI and IIT and geographically limited to the FPP (see §4.1). The listings, reviews and calendar files were collected as .csv files and imported in Qgis as georeferenced text files since they reported coordinates. For specific disclaimers, please see Appendix B;
- Airbnb and Homeaway listings (reviews and calendar in the same table) were acquired from Airdna. Data were monthly scraped by Airdna and geographically limited to Tuscany administrative borders. The listings files were collected as .csv files and imported in QGis as georeferenced text files since they reported coordinates. For specific disclaimers, please see Appendix B;
- ISTAT (Italian National Institute of Statistics). Indexes linked to census units, georeferences heterogeneous patches defined by the Institute as a reference for statistical data collected every ten years from the Census campaign. Recently, the Institute proposed a more frequent campaign that

generalises data from samples to give more updated information about demography, job, and agriculture. By now, the ISTAT released only updated data on population. For specific disclaimers, please see Appendix B;

- Several geographic data from Tuscany Region open databases (see Appendix B);
- Ars Toscana (Regional Agency for Health care System) for statistical data on the pandemic (new positive cases, healed, deceased). These data are not georeferenced, but they refer to the Tuscany Region;

Software

- QGis (open and free)
- Microsoft Excel (student version for free from the University of Firenze)
- Qualtrics (made available by Professor Nancy Holman personal account of the London School of Economics)
- Miro (free online software for collaborative brainstorming and mind mapping)
- Prezi (free online software for presentations and infographics)

4. Case Study Analyses: Airbnb in (Urban) Regions

*Ogni città è fatta così di movimenti che essa
inghiotte, ferma a proprio vantaggio, poi
rilancia*³¹.

Fernand Braudel, 1999
Civiltà e imperi del Mediterraneo nell'età di Filippo II,
Torino, Einaudi, 1999, vol. I°
p. 330 nel Documento di Piano del PIT: 44

The research discusses a single case study on the Florence-Prato-Pistoia (FPP) urban region. It presents this context in a broad domain of analyses at the Tuscany Region level. As the §3.2 delves into, the double scale analysed, is not aimed at a comparison between the FPP and Tuscany, but it is deeply linked to the conceptualisation proposed by Paolo Perulli about “[a]ssemblages not only of territories but of policies too: variable packages which are congruent with differentiated development strategies regarding local opportunities and constraints. Here, I believe, lies a significant question to consider when talking about cities, namely whether the city can still be a point from which we reassemble society, abandoning the *matryoshka*-like system of institutions contained within each other, and restructuring new forms of society, interactions, and cities. [...] The scale of the city – medium, large or small – does not mean much if compared to the system of flows which become a major factor for territorial development.” (Perulli, 2016: 27-28). The assumption of this perspective justifies the introduction of a double scale for this single case study to overview flows that overcome administrative borders and their simplification of reality.

On this perspective, the next paragraphs (§4.1.1 and 4.1.2) present the case study in its urban and regional dimensions as the environment of a hypothetical ‘Airbnb system’. The features of the environment are organised in spatial, temporal, political and socio-economic aspects at the centre of the short-term rental discourse, such as the *spatiality and materiality of urban and territorial realms; the tourist and housing sectors; government and governance approaches*. These lenses propose to interpret contexts as in-becoming places made of material and immaterial relations and processes of change.

Then, the second part of this chapter (§4.2) describes quantitative and qualitative analyses and results. the Tuscany Region domain and the Florence-Prato-Pistoia (FPP) urban region are at the centre of the analyses focused on Airbnb dynamics in regions under the Complexity Theories of Cities perspective.

The aim of the case study is to verify the hypothesis that Airbnb can be a complex system with a regional dimension. Therefore, the analyses are organised following the categorisation presented in §2.1.2 and 2.2. Each category (*uncertainty and resilience; situatedness, ever-changing assemblages of paths and actors; evolution/revolution/coevolution; emergence in in-becoming environments, complex adaptive systems and the role of the past*) presents analyses elaborated through a mixed-method approach.

Results will be discussed in Chapter 6, after a review of policies and regulations of the short-term rental markets (both digital and non-digital) at different levels in Chapter 5.

³¹ *Every city consists of flows that engulfs, stops to its advantage and then propels* (free translation of the author)

4.1 The FPP and Tuscany: Introducing the Case Study as a Complex Environment

The two following sub-paragraphs explore i) selected aspects of Tuscany, as the frame of the case study and present ii) the geography of the single case study of the Florence-Prato-Pistoia (FPP) urban region. The description frames specific socio-spatial and economic processes of change and at highlighting traces of complexity in the “meaning of space [which] is a product of social translation, transformation, and experience” (Soja, 1989: 80). The aspects chosen to describe the Tuscany and FPP domains are more likely to be involved in Airbnb dynamics (see §4.2.1 and 4.2.2). Indeed, if Airbnb is a complex system, it is important to explore its relationship with the environment(s).

To simplify and make information more accessible and linked to the specificity of the case study, the aspects of territories under study are organised in 1) spatiality and materiality of urban and territorial realms; 2) socio-economic dimension; the tourism sector in cities and territories; 3) government and governance approaches. This class also introduces significant changes in the last decades that have had considerable effects on ongoing urban systems, interpreted as complex passages that strongly influenced the current environment.

The four aspects deal with 1) the importance of the spatiality and materiality of urban and territorial realms as discussed in §2.3; 2) the role of the socio-economic dimension in territories, considered central to interpret Airbnb’s patterns of diffusion; and 3) the study of government and governance approaches in the FPP urban region and Tuscany.

Therefore, these classes are explicitly linked to the focus of the case study and the aims of the research because they report changes and dynamics in the environment with which Airbnb interplays.

The analyses are based on both quantitative and qualitative data from official documents from the municipalities within the urban region and the Tuscany region. Statistical data from the National Institute of Statistics (ISTAT) describes socio-economic dynamics in 2011, with updates from 2018 and 2019. The Regional Plan of Tuscany Region (2015), with its strong address on the landscape, is a pillar reference for the description of FPP urban region, which is represented as an organic whole also in the Plan. Previous research studies are crucial sources for this paragraph and represent a structured and solid knowledge background on which the thesis builds its assumptions.

4.1.1 The Geographic, Economic, Social and Governance Frame of the Case Study: Tuscany

Spatiality and materiality of urban and territorial realms

The Landscape and Territorial Plan³² (2015) describes the Tuscany Region as an “urban universe”. This can sound surprising if we stick with the usual representation of this region as a stunning postcard constellated of cypresses and villas. But, without excluding that part of the narrative of the territory, the Landscape and Territorial Plan describes it as a unified whole urban universe, a (regional) city made up of cities with their history and peculiarity that creates a complex urban domain variable in dimension and compactness, depicted as a changing pattern of urbanity here spotty, there assuming the form of an urban network. And the very innovative perspective of this Plan consists in the strategic description of a regional urban universe deeply connected with the rural dimension of the region, recognising their relationship, especially in a path-

³² Specifically in the ‘Documento di Piano’ papers (27-44) <

<https://www.regione.toscana.it/documents/10180/460098/Documento%20di%20piano%20il%20pit%20nelle%20sue%20scelte%20e%20nelle%20sue%20agende/91eca712-0c43-4993-822a-d373daba022f> > (last seen on 09/12/2021)

dependency perspective because of the common history of ‘human work’ in both cities and rural places, always connected to the urban development they surround and pervade. They’re so intertwined that their representation as two distinctive universes (the urban and the rural) is an analytical simplification of reality. For instance, the Tuscan coast is defined as a city by the sea because of its role at the national and European levels. Nonetheless, the simplification in terms allows recognising the diverse urban and rural universes that constitute the Tuscany region, underlining the innumerable inner correlations between the universes. In this regard, from the Middle Age to the first half of the XX century, the territories of Tuscany were organised and designed by and for the metayage (‘mezzadria’ in Italian). This economic and cultural system produced new forms of landscapes and regions, enhancing the equilibrium between the urban and the rural that nurtured the cities (Poli, 2018). This is not a nostalgic look at the past, but it is a brief overview to evidence that the work and the economic hierarchies produced poly-agricultural lands and the famous terraces for the olive oil cultivation with cereals and vineyards, and thus, those immaterial aspects produced recognisable, still at the centre of the local cultural dimension, material patterns. This path dependency let emerge traces of these human prints on territories (and on cultural archetypes, I would add) up to the XIX Century (Catasto Lorenese) and the first half of the XX century (aerial photos of the Volo GAI 1954).



Regione Toscana



MINISTERO
PER I BENI E
LE ATTIVITÀ
CULTURALI

Cartografia del PIT con valenza di Piano Paesaggistico

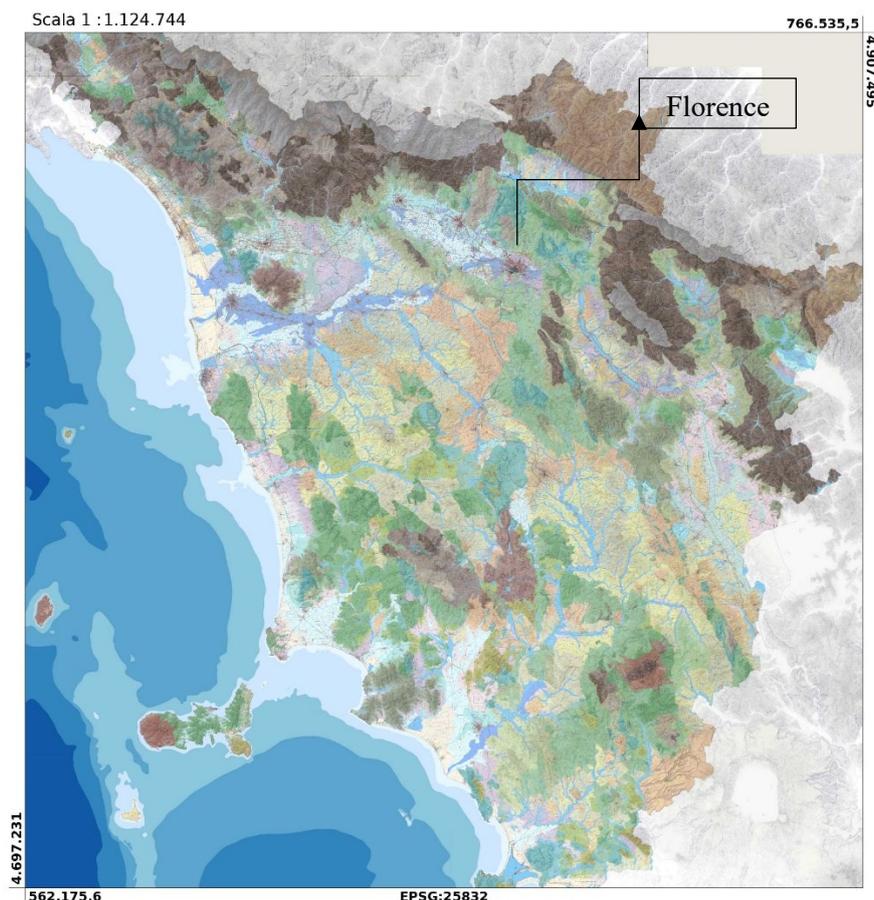


Figure 4.01: Cartographic elaboration of the Morpho-genetic systems
Source: Landscape and Territorial Plan of Tuscany Region (2015)³³

³³shorturl.at/hwM58 [last seen on 09/02/2021]

Today, Tuscany is a constellation of single cities that do not ‘reach a critical mass’ to be influential at the global level (Landscape Plan, 2015). Nevertheless, they can have a role at the global level if considered in their polycentric nature. For instance, the medium and low Valdarno valley is characterised by a polycentric urban system along the Appennine ridge and the norther-central coasts. Extensive urban settlements sprawl around historical cities of Siena, Arezzo (the ‘internal Tuscany’) and Grosseto-Piombino, the southern coast. But the polycentric nature of Tuscany is something to be achieved or maintained because the path-dependency of territories is also defined by extreme localism, in which big medium and also very little towns jealously conserve their specific dimension and traditions, often in contrast with the town nearby. Nonetheless, strengthening the polycentrism of urban Tuscany can improve common governance at the regional level, but also at the local level with a proposal of intergovernmental actions among municipalities to have a new role in the international agendas. Explicitly, the idea of polycentrism is based on the concept of a city of cities, each with its dimension and limits, reason why the Regional Plan involved strategies to contain the soil consumption and the expansion of urban areas (*please, see the sub-paragraph on government and governance approach*).



Regione Toscana



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Cartografia del PIT con valenza di Piano Paesaggistico

Carta del Territorio Urbanizzato

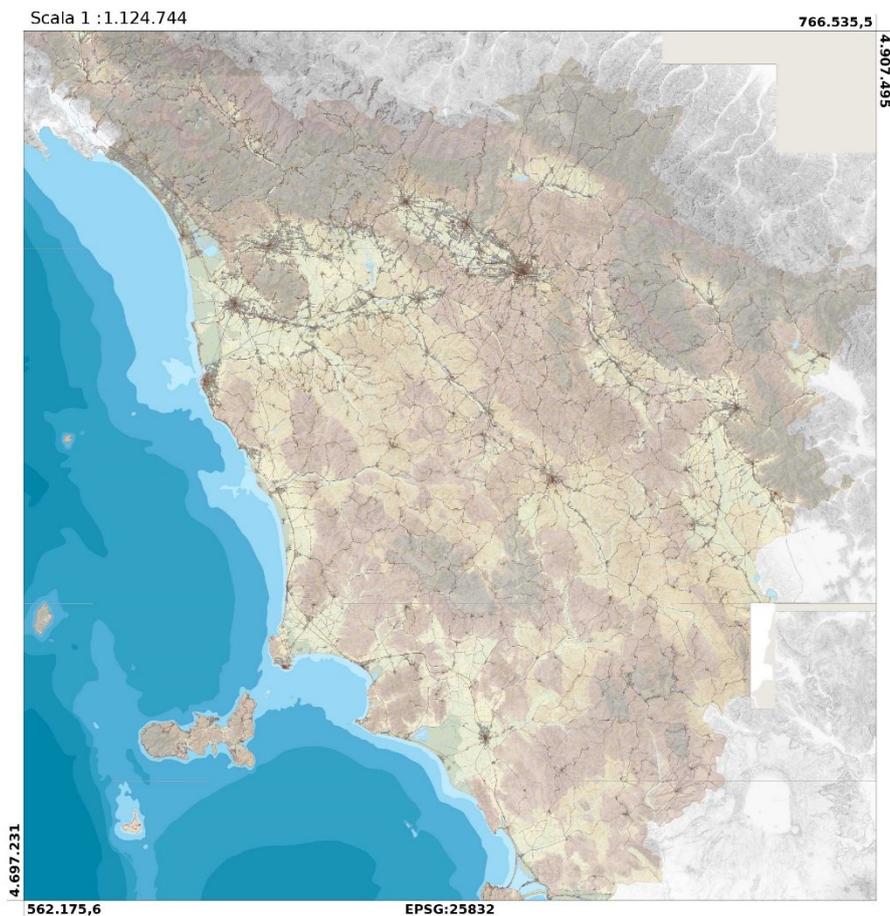


Figure 4.02: Cartographic elaboration of the Urbanized territory
Source: Landscape and Territorial Plan of Tuscany Region (2015)

Recent processes of globalisation have taken some Tuscan poles at the fore of global dynamics. This shift of power and the entrance of new actors constitutes a challenge in the maintenance of a polycentric structure

of the urban universe in Tuscany. That's why the Plan from 2015, which already detected these globalisation processes in major cities of Tuscany, wished for a strengthening of the regional governance and inter-governmental coordination actions, such as the creation of a Metropolitan City of Florence. And, besides the institution of a specific public entity, flexibility – meant as a response to the dynamism of demands, needs and opportunities that arise from the urban universe – was considered a pivoting approach in addressing political lines. In the Plan, flexibility also means reversibility in uses and users, in the limits of rights and invariants, so that “[i]f the territory is a scarce resource, that necessarily faces a fast-changing demand, the exigence of mobile and flexible responses (that territories do not naturally own) must guarantee mechanisms of efficient competition, proportionally adjusting spaces and functions for activities ‘open to the market’ and for local and public need, and thus, protected” (free translated from PIT PPR Documento di Piano: 36-7).

Setting these ambitious goals, the regional Plan identifies four ‘structural invariants’ (see also §2.1.2), meant as flexible and concurrently robust parts of the landscape.³⁴

The Structural Invariants are defined from the interpretation of the spatiality, the role of the past in this materiality of the territory, and relationships between material features and actors.

- *The hydro-geo-morphologic features of morphogenetic systems and watersheds* constitute the physical structure at the basis of the historical evolution of Tuscan landscapes and, therefore, the processes of territorialisation that distinguish specific features of different urban and rural regions
- *The eco-systemic features of the landscape* consist in the biotic structure. This defines the eco-mosaic of Tuscany, which dominant matrices are forestry or agricultural associated with high levels of biodiversity
- *The polycentric and reticular nature of urban systems* represents the dominant structure of the Tuscan landscape, resulting from the historical ‘sedimentation’ from the Etruscan age until modern times. The polycentric feature is organised in networks of small and medium towns differentiated by their morpho-typologies deeply linked to hydro-morphologic and rural features and only partially affected by the recent diffusion of central-peripheric models of settlements
- *The features that identify Tuscan rural landscapes* despite the strong differentiation among them, present common features, such as the deep link between the urban and the rural territory; the urban and architectural high quality of rural buildings; the persistency of rural infrastructures and the historical agricultural patterns.³⁵

³⁴ In the Plan, the landscape is interpreted in the frame of the Code of Cultural Heritage (Dlgs 42/2004) that gives landscape the quality of territories, elevating it from the mere position of a beautiful view

³⁵ This description is free translated from the *Relazione Generale del Piano Paesaggistico* (2015): 14

**Cartografia del PIT con valenza di Piano Paesaggistico**

Carta dei Caratteri del Paesaggio

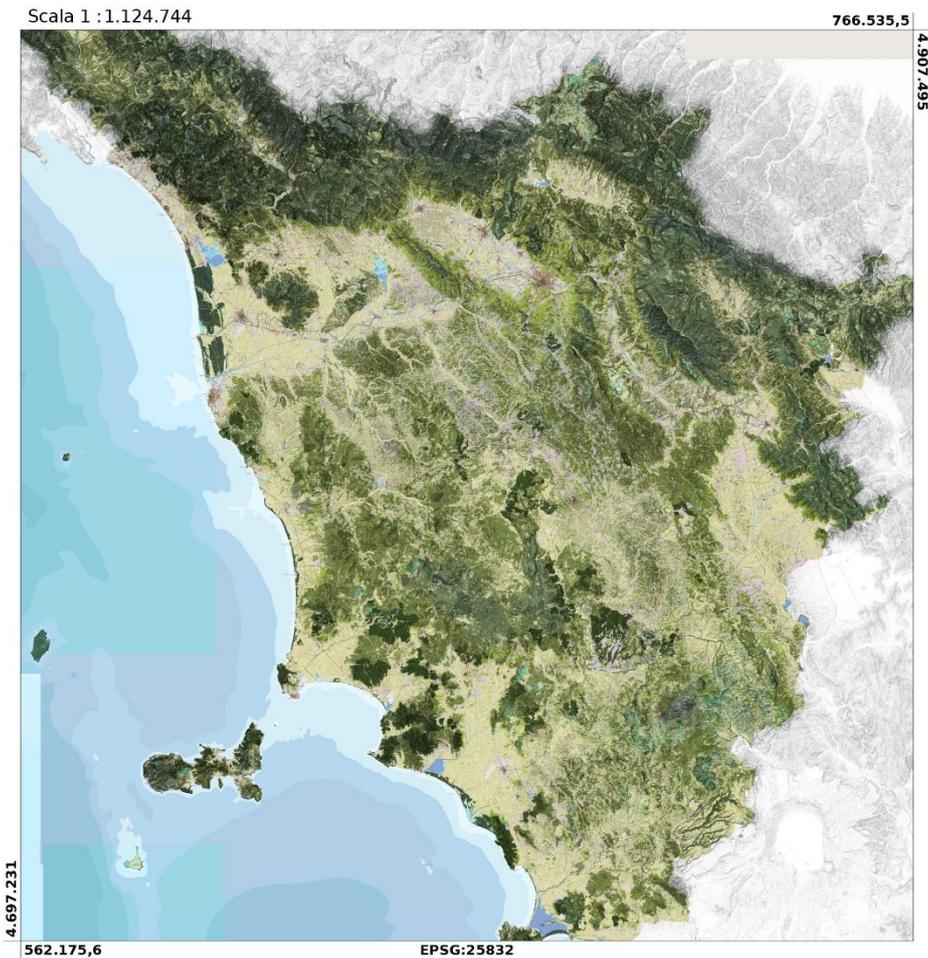


Figure 4.03: Cartographic elaboration of the Landscape features
Source: Landscape and Territorial Plan of Tuscany Region (2015)

Socio-economic dimension; the tourism sector in cities and territories

This complexity ‘from the past’ has structured the peculiar aspect of Tuscany and has fed the brandisation processes that make this region one of the most known stereotyped getaway-dreams in other parts of the world.

The tourism industry is a key sector for the economies of cities and territories in Italy, and particularly in Tuscany, which is highly dependent on territorial features since it is both a cultural historical-cities and landscape-driven tourism. For instance, the traditional tourist paths do not only include cultural cities such as Florence, Pisa or Siena but are also spread in the whole region, boosted by the branded historical patterns of settlements and landscape (Paba et Al. 2017; Paba and Perrone 2018; Landscape Plan for Tuscany Region 2015³⁶). Specifically, Florence is just one of the cores of a wider urban region that is extended to Livorno and Pisa and includes the largest part of northern Tuscany. The ‘Firenze-Pisa-Livorno post-metropolitan urban region’ presents intertwined flows (Paba and Perrone, 2016; Perrone and Paba, 2019) and it is interconnected to other regions characterized by high tourism demand and supply, such as the Chianti region. Coastal

³⁶ <https://www.regione.toscana.it/-/piano-di-indirizzo-territoriale-con-valenza-di-piano-paesaggistico> [last seen on 09/02/2021]

territories and inner landscape-driven attractions constitute a network of urbanity, also in areas that wouldn't be traditionally defined as 'urban' but that are deeply linked to urban dynamics.

As already said, fuzzy borders between urban and non-urban domains characterize the Tuscany region since "urbanism as a way of life, once confined to the historical central city, has been spreading outwards, creating urban densities and new 'outer' and 'edge' cities in what were formerly suburban fringes and green field or rural sites. [...] [I]n some cases city regions are coalescing into even larger agglomerations in a process that can be called 'extended regional urbanization'" (Soja and Kanai 2006: 59). For instance, in the last decades, accommodation structures and tourist facilities boomed in the southern coastal areas of Tuscany, regions that used to be less urban (with fewer infrastructures and services) than the northern part and mostly devoted to agricultural and farming activities. In recent times these regions became popular tourist destinations. This kind of process of 'industrialisation' for tourist purposes, had been already experienced in the northern part of Tuscany.

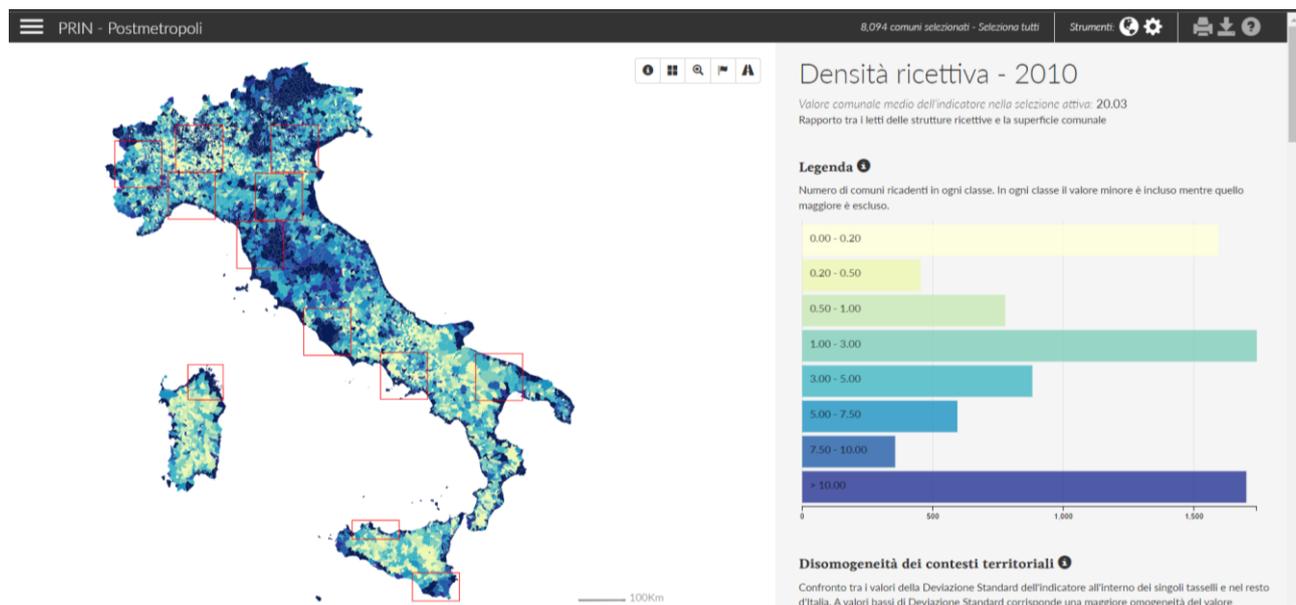


Figure 4.04. Screenshot of Accommodation Density in Municipalities – 2010 PRIN National Research Projects “Post metropolitan territories as emergent urban entities: sustainability, habitability and governance challenges”. The whole dataset is available at this link (source: Atlante Postmetropolitano < <http://www.postmetropoli.it/atlante/>>)

As we can observe in the map above, Tuscany also in 2010 was a dense, unique domain of tourist accommodation supply, with very low differentiation in accommodation density degrees. The map represents only the 'official' supply, in which Airbnb isn't included, but it gives a hint of the regional diffusion and concentration of the tourism market in Tuscany. For example, in the West, the coast region is dotted by small cores, while central areas, historic cities and landscaping regions – such as the Chianti region – create a network of highly touristic poles connected by diffused and spread links. The *Firenze-Pisa-Livorno extended urban region*³⁷ is the most involved in the flows of people, goods, services, still it is included in a wider network of nodes and links with other territories, that are subjected also to Airbnb flows (§4.2.1).

Therefore, Tuscan territories can be interpreted as a highly connected network of settlements, in which most of the poles are suited, if not already equipped, for tourism. To present an extent of this dimension, in

³⁷ It was defined by the National Research Project (2010-2011) “Territori Post-Metropolitani come Forme Urbane Emergenti: le Sfide della Sostenibilità, Abitabilità e Governabilità” This project ended up in publications cited in the paper especially from the university of Firenze unit (coordinators: Giancarlo Paba and Camilla Perrone) <<http://www.postmetropoli.it/>> [last seen on 11/02/2021]

2018 the hotel supply in Tuscany mainly consists of 3 stars hotels, and 4 to 5 stars hotels (see Graph 4.G01), while in the extra-hotel accommodation sector agriturismo structures are predominant, followed by room rentals and housing rentals, even if the camping structures have the majority of the beds' supply (see Graph 4.G02). This is consistent with the old tradition of rural and landscaping tourism in Tuscany, also promoted by institutional marketing campaigns that often offer stereotyped or oneiric images. An example of this is the 'Voglio Vivere Così' brand campaign (I want to live like this) promoted by the regional administration in 2009. Brandisation is such a broad phenomenon that: "place branding has become an integral part of economic development initiatives that are designed by those regions willing to enter into this global game" (Pasquinelli 2010: 559). And tourism is a global game that attracts people because "Tuscany is a 'famous place' (Anholt, 2007, p. 8), thanks especially to tourism and media, thus making it the most well-known Italian region in the world (Guarini et Al., 2004). The regional economy has been characterized by manufacturing districts, whose claimed success contributed to the 'glorification of a material production culture' (Cavalieri, 1999) and the related values. [...] The manufacturing industry (leather, textiles, jewellery, and furniture) and tourism refer to and perfectly fit the traditional and stereotypical image of Tuscany. [...] Particularly, history represents not only the glorification of the past, but also the preservation of values that determine an ongoing continuity between past and present. Tourism, agriculture, and traditional manufacturing, whose origins can be traced into the distant past, take advantage of the selected values." (Pasquinelli 2010: 564-565)

Therefore, the supply naturally follows the demand and, the tourist supply outside urban areas has been covered for many years only by agriturismo offer. In 2017 in Tuscany there was 19.9 agriturismo every 100 square kilometres, while the Italian average was 8³⁸. The 24.8% (890.000 out of 4 million tourists) of the total arrivals in Tuscany in 2017 was covered by the supply in agriturismo.

Most of the tourist demand in Tuscany in 2018 came from abroad (see Graph 4.G03), with an average stay of 3.29 nights, while the Italian flows stay for an average of 3.4 nights.

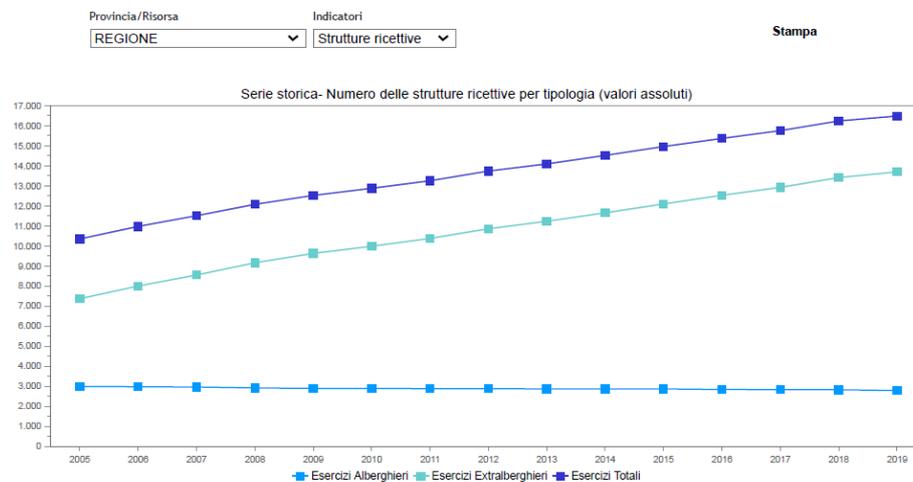
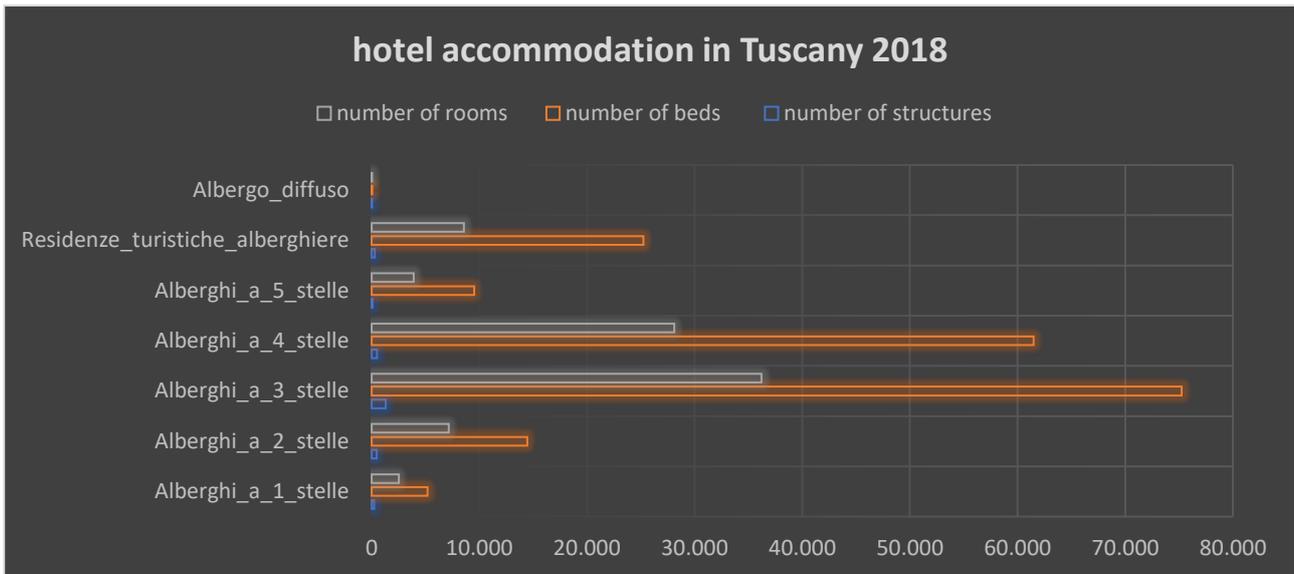
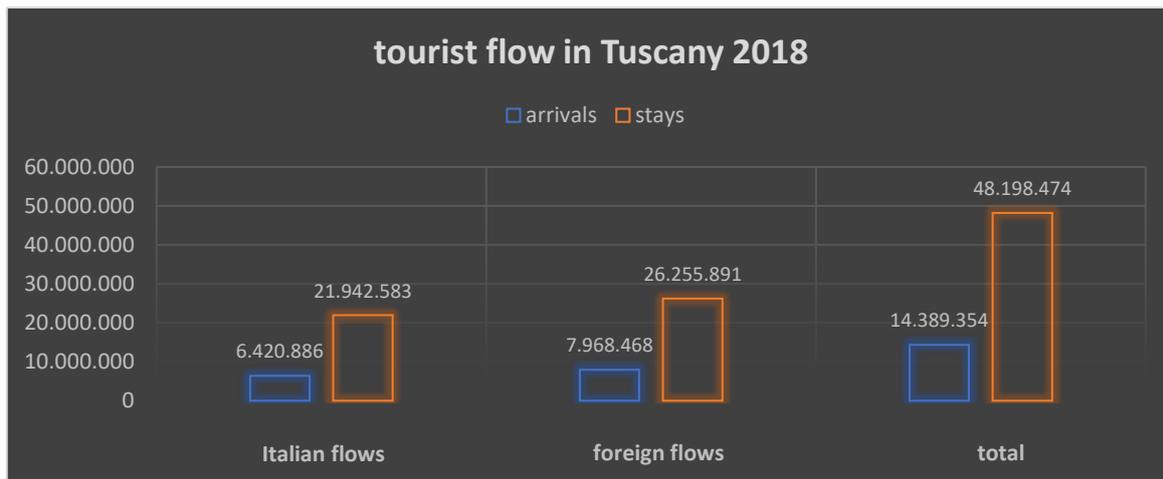


Figure 4.05. Graph of the progress from 2006 to 2019 of accommodation structures typologies in the Tuscany Region. The dark blue line represents the total amount of structures; the teal line is for the extra-hotel accommodation, while the light blue is for the hotel accommodations. Please note that the extra hotel is a difficult subject to trace because it is liable for problems of control, especially for short-term rental activities.

³⁸ Source: ISTAT [https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/la-misurazione-del-benessere-\(bes\)/gli-indicatori-del-bes](https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/la-misurazione-del-benessere-(bes)/gli-indicatori-del-bes) [last seen on 09/02/2021]



Graph 4.G01 and 4.G02 original graphs on Tourism industry consistency in 2018. Data are from the Regional Statistics Centre and based on ISTAT data. Datasets are available here: <https://www.regione.toscana.it/-/movimento-turisti-nelle-strutture-ricettive-e-struttura-dell-offerta-dati-2018>



Graph 4.G03 original graphs on Tourism flows in 2018. Data are from the Regional Statistics Centre and based on ISTAT data. Datasets are available here: <https://www.regione.toscana.it/-/movimento-turisti-nelle-strutture-ricettive-e-struttura-dell-offerta-dati-2018>

Government and governance approaches

Tuscany has a homogeneity in legislation and regulation at the regional level (§5.1.3), but studies (Granatiero et Al., 2015) have pointed out the presence of myriads of local negotiations that are crucial parts of the political system, even if fragmented. These studies have traced “[t]he post-metropolitan transition in Tuscany [...] analysed regarding the role of geo-historical matrices in determining a polynuclear pattern of settlements and a reticular organization of inter-institutional cooperation” (Paba et Al. 2017a: 95). This is consistent with the Regional Plan (2015) perspective on the role of ‘geo-historical matrices’ in the organization of territories and political relations, and thus, their role and the role of the past in transition phases. Therefore, the research bases part of its analyses on the recognition of these matrices and the need to study current phenomena or systems in relation to them. This enforces the necessity of variable political interactions in the region that do not observe the administrative recognised borders.

Nonetheless, the Region is a stable political and administrative entity with competencies in tourism and duties on statutory and strategic regional planning. Furthermore, the regional level is the most local ambit with legislative powers in Italy (§5). The regional governance on urban and regional planning in Tuscany is constellated by innovative actions and legislative acts. Specifically, in the last 20 years, three regional laws on territorial government have been enforced. To go briefly in detail, the regional law 5/1995 introduces the concept of territorial government (Art. 1) as the public action to address public and private activities toward the sustainable development guaranteeing participation and transparency thanks to the use of SIT (Systems of Information on Territories) based on cartographic analyses of georeferenced data. The innovation of this law is the openness of this system of information that can be accessed also by citizens. One of the pillar aims is the respect and valorisation of structural invariants locally recognised (*see paragraph on spatiality and materiality*), with objectives like the avoidance of new urbanised soil, or only if other options of reuse aren’t practicable. One of the most interesting innovations from this law was the division at the municipal level of the general plan in two deeply linked planning documents, one statutory and definitional, the other committed to the implementation of single projects from public and private initiatives. In 2001 the regional law needed to be adjusted to a changed law environment at the national level that reformed the role and competencies, but also general principles of relationships between public entities (Riforma del Titolo V della Costituzione). Therefore, the regional law 1/2005 provided new tools of negotiation and more flexible contracts between municipalities, promoting their adoption to stimulate cooperation. The latest and still valid law is the 65/2014.

It was required by social changes and the introduction of a new reform at the national level that involved the local administration and the public administration framework and hierarchy (Legge Delrio L. 56/2014). This national law aims to redefine administrative borders and competencies at the local level, abolishing the Provinces and confirming the institution of Metropolitan Cities already existing in the national Constitution, but never implemented (see also §5.1.3). The regional law 65/2014 incorporates the new national directive and add some new elements. The prominent role of the environment and its protection was present also in the previous regional laws, but in 65/2014 it is more stressed, also after the Paris Conference on Climate 2015, and the soil is recognised as a non-renewable resource, consumed by human activities often irreversibly. Furthermore, the territorial heritage and *long-durée* structures, constituted by the four invariants, are products of human and environmental co-evolution and are considered for their value for future generations. Therefore, the transformative actions on the four invariants need to be considered after an overall reflection and review of effects on all components of systems.

As many studies, here briefly introduced, observe, Tuscany is crossed by many borders. Some of them, such as the institutional and administrative limits, ‘forcedly’ delimitate territories, while others, traced by the economic geography, ‘naturally’ define domains. And, more importantly, the Regional Plan from 2015 claims that these new borders, more updated than the administrative ones, determine powerful relations and innovative and broader forms of territoriality (Documento di Piano, PIT PPR 2015).

Therefore, Tuscany is a regional administrative and political, but also socio-economic domain in which is possible to distinguish other sub-regional systems. In the 80s and 90s, Tuscan cities and regions experimented with innovative governance tools (Area Conferences, pacts, participatory processes). For instance, the Florence-Prato-Pistoia (FPP) urban region was the case pilot for a three-phased planning act, the *structural scheme*, from the envision to the implementation (Astengo, 1990). This last phase was not accomplished, and it is further analysed in the next paragraph.

To conclude, the Covid-19 can be considered a revolutionary transition phase that struck many sectors of our economies, lives, and cities, especially in Tuscany. In Italy the tourist sector loses 81 million visitors, reaching low points in February-March 2020.³⁹



Figure 4.06. Impact of Covid-19 on the tourism sector in Italy. Source: ISTAT

Tuscany has been extremely penalized by the nature of its tourist flows, mainly from the USA and China. Specifically, the United States seem not to be able to recover fast from the pandemic and therefore its citizens

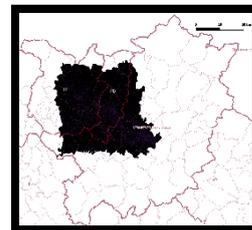
³⁹ https://www.infodata.ilsolz24ore.com/2020/06/10/turismo-2/?refresh_ce=1 [last seen on 15/02/2021]

won't be able to come as tourists and there is a tendency of States to push for internal tourism. Thus, the national recovery strategy supports the consolidation of domestic travel and a more attractive offer for Italians, who usually prefer travelling abroad, as suggested by the Italian Touring Club (TCI).⁴⁰ The Covid-19 emergence highlighted the inner fragility of the Tuscan massified and branded tourism sector, highly dependent on external resources and actors. We can describe the governance of the Tuscan imaginary or brand with Pasquinelli words about the “[l]ocal and regional developmental initiatives [which] are often branded in order to deliver messages aimed at attracting and retaining resources [...]. Increasing attention has thus been paid to branding, which has been interpreted within the framework of a neo-liberal shift in public management urging regional and local authorities to show an entrepreneurial attitude” (Pasquinelli, 2010: p.558). If the governance is focused on the promotion of tourist flows, the regulation of the tourism market is more complicated because it is a specific competence of regions, but it is also liable to interventions from the central state. But this issue will be delved into §5.

4.1.2 The Case Study Territorial Domain: Description of Selected Socio-Economic, Tourism and Spatial Dimensions of the Florence-Prato-Pistoia Urban Region

Spatiality and materiality of urban and territorial realms

Since the 50s of the XX century, the region of Florence-Prato-Pistoia has been considered a whole system and many strategies have been related to this dimension. Nevertheless, the region has never been represented by one political power, but it is a kind of ‘puzzle’ of municipalities and provinces⁴¹. In the FPP urban region, as bordered in the thesis, there are 33 municipalities⁴² and two (part of) provinces (Prato and Pistoia) and part of the Metropolitan City of Florence⁴³.



⁴⁰ <https://www.touringclub.it/notizie-di-viaggio/turismo-in-toscana-come-cambiera-con-il-coronavirus> [last seen on 11/02/2021]

⁴¹ Provinces represent a political middle-level mainly aimed at the territorial and environmental governance. The central state reorganized them in 2014 with the Law 56/2014, that introduced the political middle-level of Metropolitan Cities (14 in Italy. Firenze is one of those). See below subparagraph government and governance

⁴² See below subparagraph government and governance

⁴³ “ the comma 6 of the law identifies as territorial reference the area of the former provinces; but in the second period of the same comma leaves room for free decisions of the local communities, allowing Municipalities or group of Municipality to getting out or coming in the Metropolitan area, even if it will be necessary a complicated procedure as in the article 133 of the Constitution” free translation from the I dossier delle Città Metropolitane. Città Metropolitana di Firenze, DARA, 2017

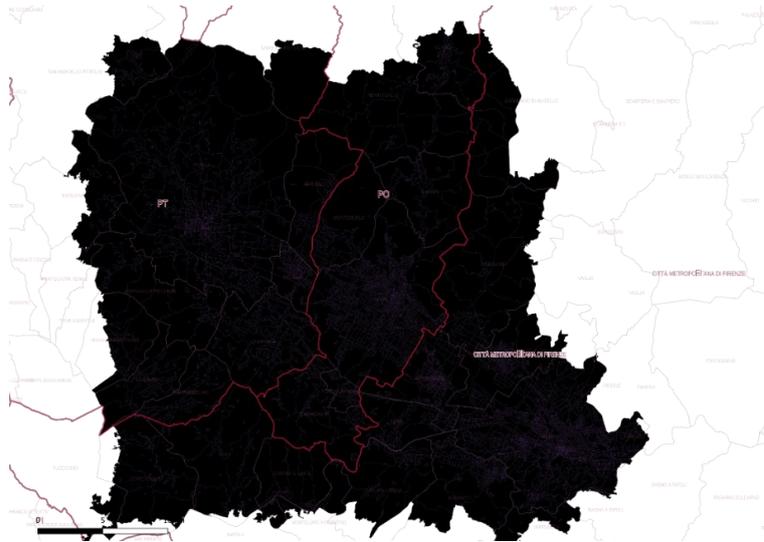


Figure 4.07. Map of the institutional borders (Municipalities, Province of Prato and Pistoia, Metropolitan City of Florence) and the limits of the case study (the black area). Original map. Source: official data from Tuscany Region

Therefore, the context is a complex coalescence of strategies, plans, laws, and instruments that have different paces and leverage, in which many systems of flows (of people, interests, goods) are deeply interconnected regardless of the official borders and linked to the territorial peculiarities that will be presented in this paragraph.

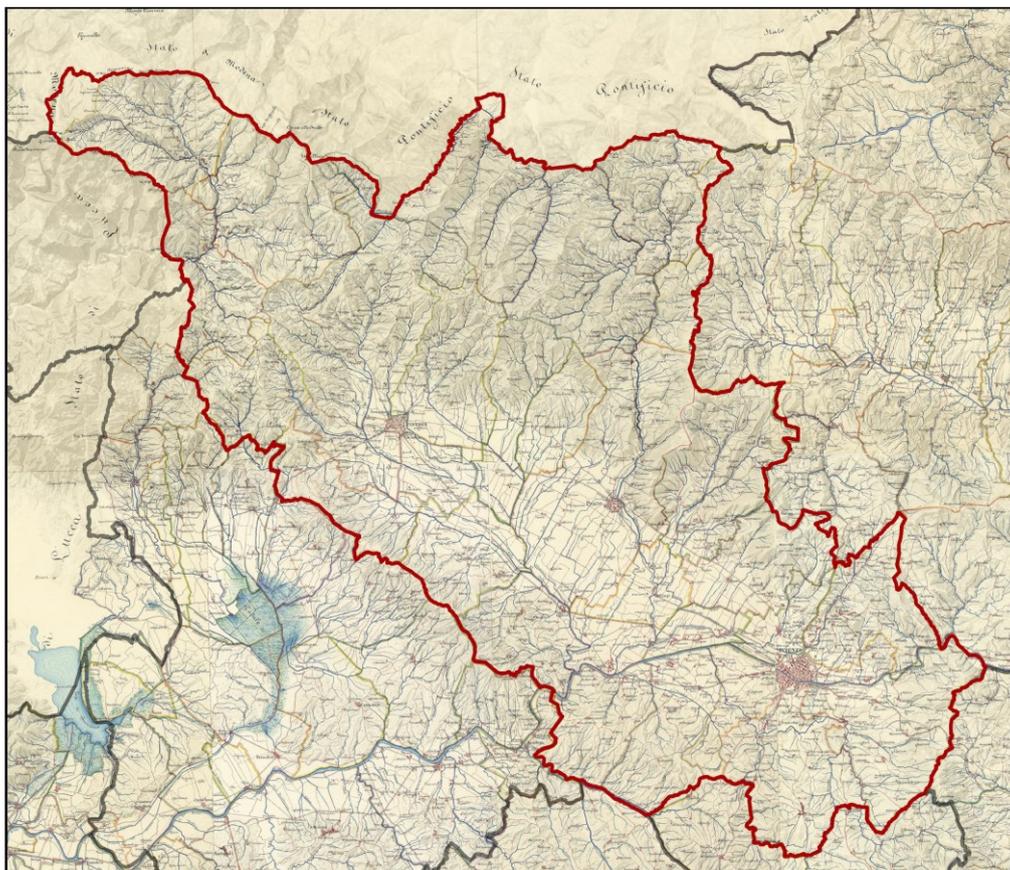


Figure 4.08. The territory of Tuscany. Author: Giovanni Inghirami 1825-30 scale 1:100.000 (Archivio Nazionale di Praga). The red line is the interpretative border of the Piana Firenze-Prato-Pistoia in the Landscape Plan 2015. Source: p.13 scheda d'ambito 06

The urban region of Florence-Prato-Pistoia finds its common roots in the geological and morphological features of this territory. First, the orographic history makes this place a unique region, a vast floodplain bordered by two low mountain ranges, the Calvana hills, a part of the Apennines system, and Montalbano hills. The mountain ranges define a set of minor watersheds of the Arno River, which are mainly wooded and for minor parts constituted by meadow spots that embrace the lower areas of the FPP urban region. The ecosystems of this region are nurtured by the torrential regime of rivers (Bisenzio, Ombrone Pistoiese) tributaries of the major river in the plain (Arno) that were also at the centre of the historical development and striving for the political and economic control of the region. Higher areas surrounding the plain frame this region in picturesque landscaping places, formed by centuries of work and culture. In the southern part of the Florence floodplain the ‘heterogeneity of the agricultural mosaic, mainly consisting of cultures like olive groves, vineyards, harvest fields, is deeply linked to a *long-durée* settlement and human system. Around Bagno a Ripoli, Sesto Fiorentino and Pistoia, the characterizing feature of the hills is the presence of terraced slopes with olive trees.⁴⁴

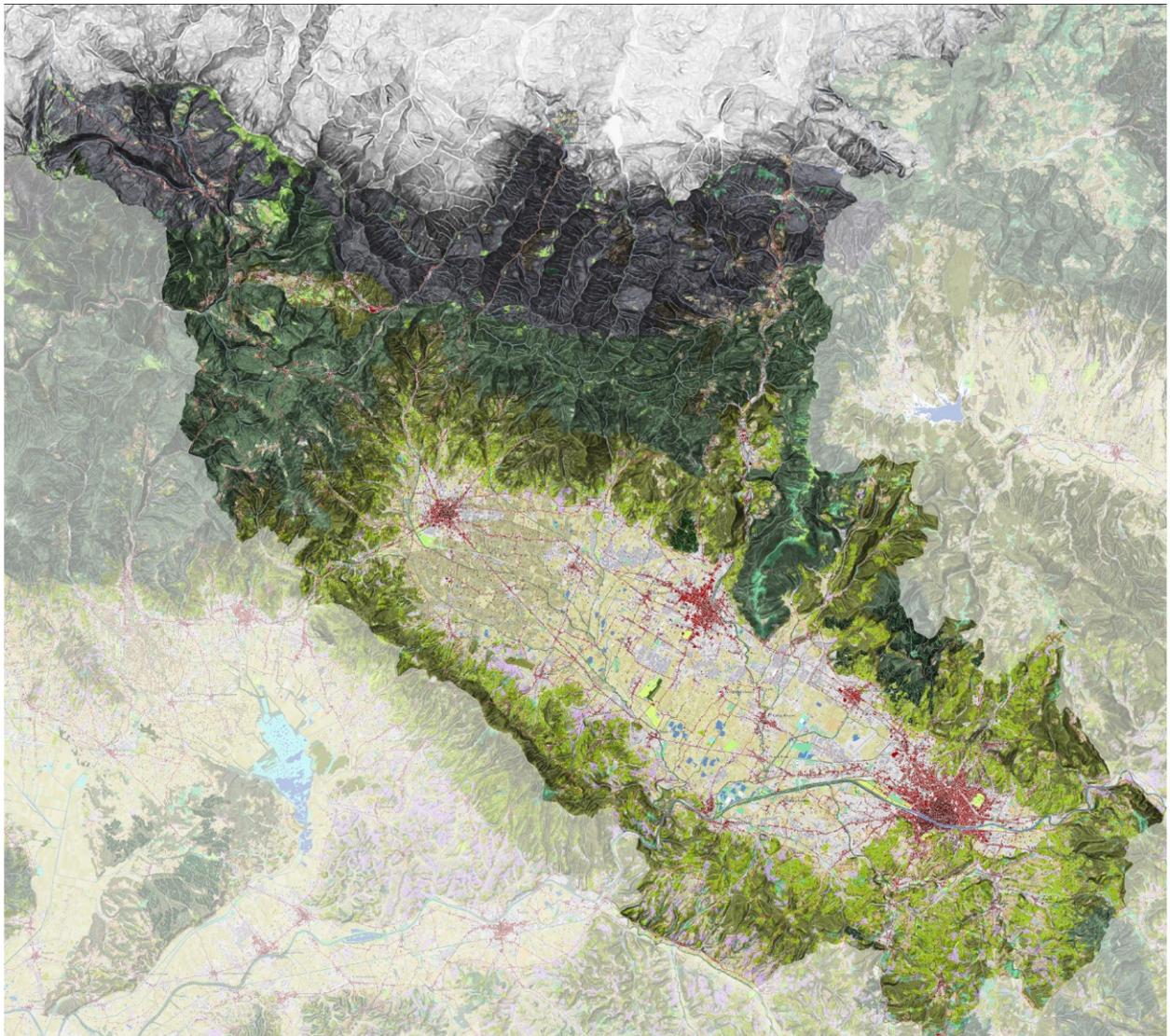


Figure 4.09. Landscape features. Source: scheda d'ambito 06 p.16

⁴⁴ Free translation from scheda d'ambito pit 06 (Landscape and Regional Plan 2015)

This research study, as the Tuscan Regional Plan, sustains that the fascination of the Tuscan landscape, perceivable also in the FPP urban region, is connected to the relation between the historical settlements system and the agricultural system. For centuries these two systems were perfectly related and coexisted in assemblage with human needs and nature enablers and constraints, like a perfect match between nature and culture. Life wasn't idyllic nor bucolic, but the Tuscan landscape originated from the human agents' modification of the 'nature' for living purposes. And what we see and perceive is not the Renaissance landscape nor the XIX century landscape. It is a contemporary landscape that is constantly in movement under the sign of historical and current agents (work, economic, cultural) forces. The traditional relation that linked the villa (the main palace of the landlord), the settlement of workers and the rural land mainly based on sharecropping exploitation system is still visible in some places, often acquired by local and foreign privates and by global companies of luxury estate and leisure.

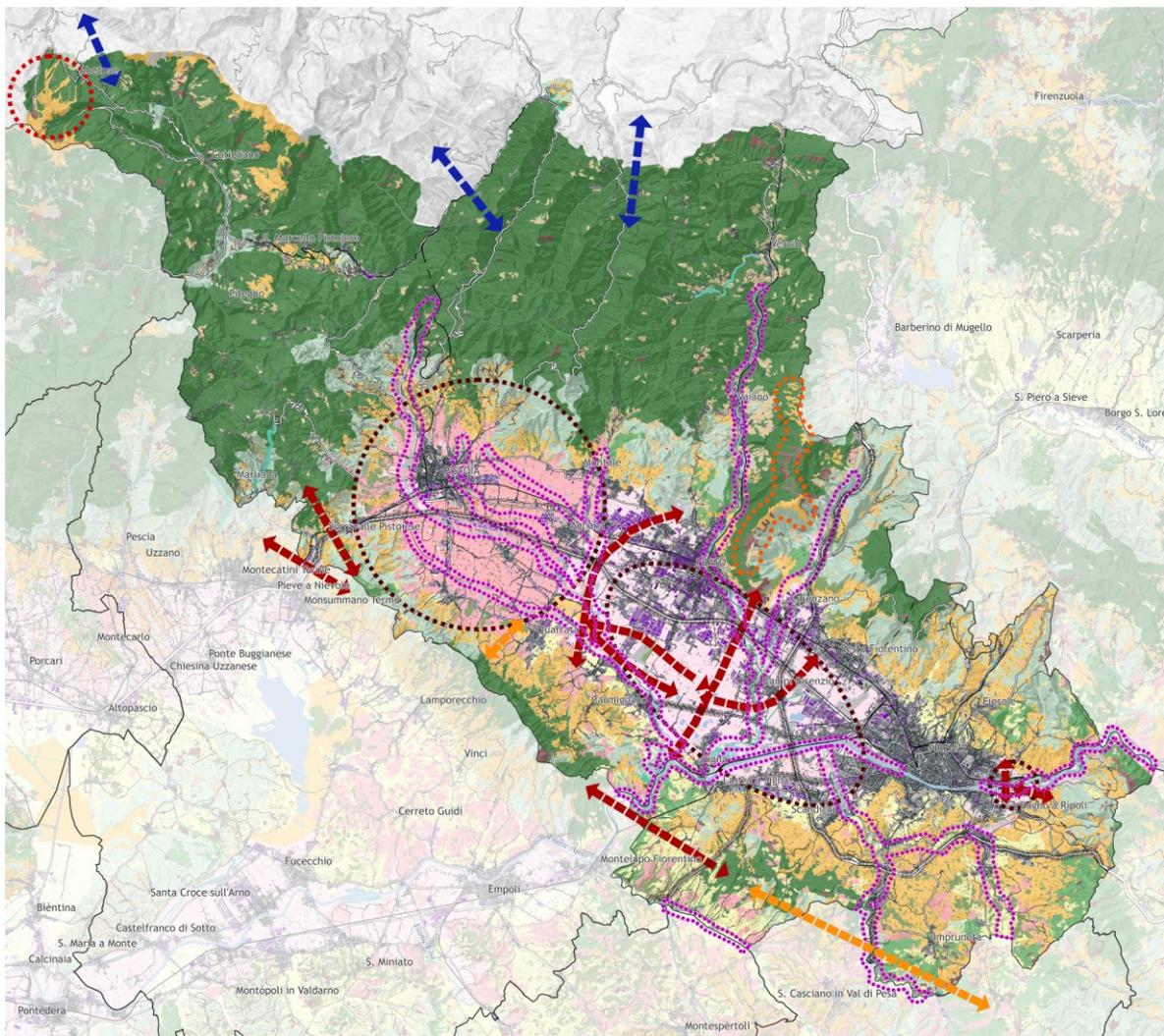


Figure 4.10. Ecological Network. Source: scheda d'ambito 06 p.38

Nonetheless, the traditional image of the Tuscan rural landscape is often replaced by intensive culture such as the greenhouse in Pistoia and other agro-industrial commodities markets that changed the cultures, abandoning the traditional mixed crop for allegedly more profitable, quantitative and less labour intensive activities that simplified the landscape. Also, in mountains, most of the chestnut woods were abandoned when the population migrated in the floodplain centres or abroad. Agriturismo might represent both an

entrepreneurial choice and a way to re-inhabit the hills and mountains (see §4.1.1), nonetheless, this entrepreneurial activity can be facades of extractive leisure and tourism activities, and not effective productions of renovated landscapes.

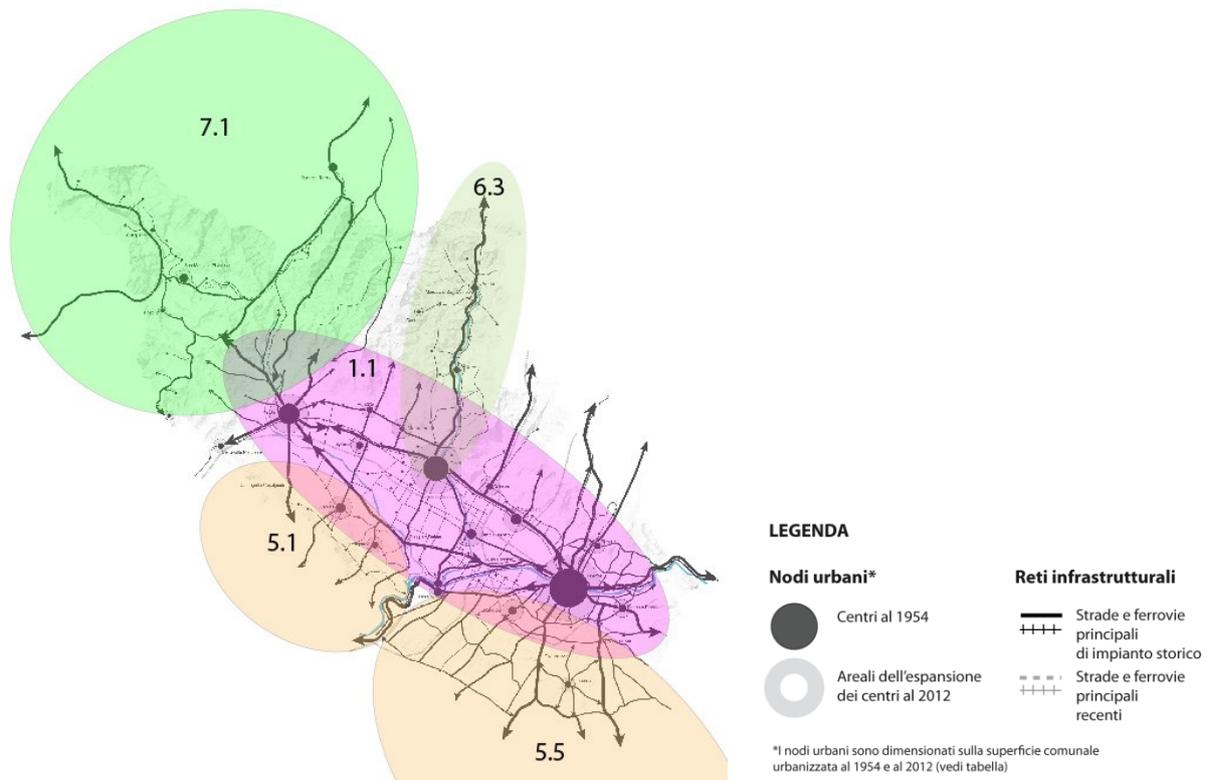


Figure 4.11. Morpho-types of settlements. Source: scheda d'ambito 06 p.40

At the centre of the landscape conceptualisation, we find the concept of urban morpho-types. The morpho-typology of the FPP urban region has been an enabling and constraining driver of the settlements' structuration processes, such as the historic routes in the plain (Cassia and Pistoiese) and the Appennines and mountain routes Etruscan originated across Tuscany and Emilia. As the Territorial plan of Tuscany Region shows, there are four 'families' of settlements typologies in the Piana FPP⁴⁵: the polycentric one in the floodplain; the settlement type of the Chianti and Montalbano hills; the Bisenzio valley settlement type; the typology of settlements in the Appennines around Pistoia. The rivers flowing into the plain have a strategic position at the openings of the valley towards the Appennines border crossing, and a strategic role in the development of urban poles supported by different economic social and environmental systems. Furthermore, this part of Tuscany is a crossroad between north-south Italy and the Arno Valley, one of the most productive regions in Tuscany, and this position triggered the development of denser urban settlements and a predominance of the urban culture on the rural one, an integrated part of the urban life. Three main roads (Via Cassia, Via Pistoiese or Fiorentina and Via Pisana) triggered and guided the development of the main historical settlements that have different morpho-typological features. Along the Via Cassia, built in the Roman age, the settlement system is described as a 'valley edges system', while along the Via Pistoiese, built in the Grand Duke period, we have a settlement system at the foot of Montalbano. Finally, along the Via Pisana, there is a 'linear settlement system' that persists also in the recent expansion patterns. The two edges of the urban system of the floodplain, on a side Florence, and on the other, Pistoia, are starting points of an infrastructural network system that link the FPP with the rest of the Tuscany region. In more recent times, the role of railway infrastructures

⁴⁵ Here we report the Tuscan Regional Plan definition of the ambit "Piana Firenze-Prato-Pistoia"

is crucial in guiding and structuring the development and change of settlements. For instance, at the turn of XIX and XX century main railways lines were built and connect strategic areas such as Florence-Prato-Pistoia up to Lucca (Maria Antonia line); Firenze-Livorno via Pisa (Leopolda line); Porrettana line between Pistoia and Bologna; the Faentina line that connects Firenze and Bologna via Mugello and the parallel Direttissima line that connect Prato and Bologna.



Figure 4.12. Map of 'urban links' in Central Tuscany as in the Landscape Plan (2000-2005). Source: De Luca Lingua, *Programmare o Pianificare i territori delle città metropolitane? Atti della Conferenza Siu Italia 45-45. Radici Condizioni Prospettive* p.237 https://issuu.com/planumnet/docs/at1_pacchetto_complessivo/212

Settlements along the foot of the hills imprinted their development along the railway line that connects Florence to the northern coastal areas, while the lines to Bologna served the settlements in the Arno and Bisenzio valley. Montalbano hills were and still are uncovered by strategic infrastructures. Highways (A1 Bologna-Roma via Florence and A11 between Florence and the coastal areas via Lucca) and fast routes (Firenze-Pisa-Livorno and Firenze-Siena) started to 'cut' the plain from the 30s in the XX century and for each 'cut' there is an in-between area often rural, especially in the Florence and Prato peripheries.

The map below represents the fragmentation of urbanised areas. As we can observe, each municipality of the FPP urban region has the same index. This can be interpreted as a confirmation of the common features of the FPP urban region as far as the urbanisation patterns are concerned.

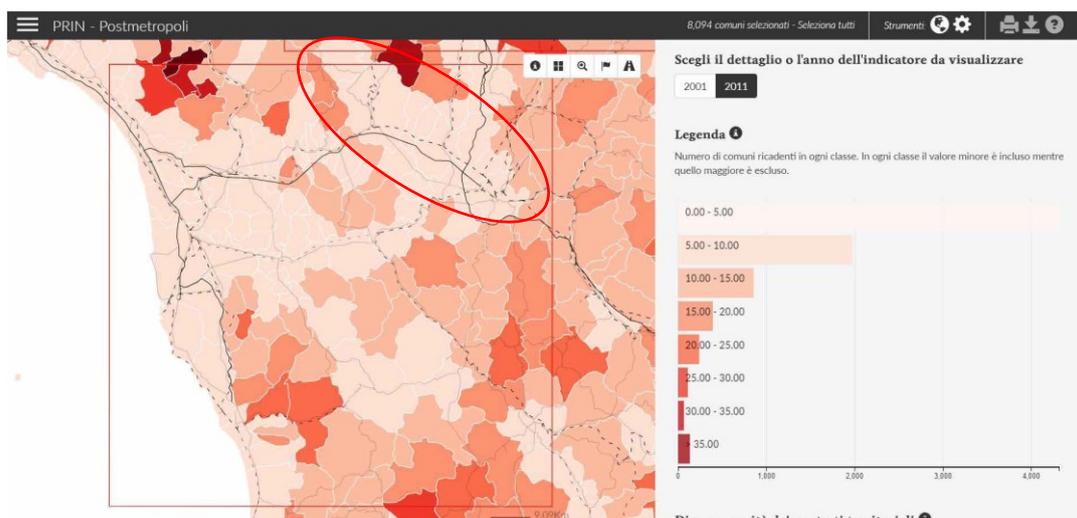


Fig. 4.13. Screenshot of Urbanised areas fragmentation index – 2011 PRIN National Research Projects “Post metropolitan territories as emergent urban entities: sustainability, habitability and governance challenges”. The whole dataset is available at this link (source: Atlante Postmetropolitano < <http://www.postmetropoli.it/atlante/>>)⁴⁶

Socio-economic dimension; the tourism and housing sector in cities and territories

The socio-economic and housing market conditions of the FPP urban region are variable in time and space. Official Statistical data used in the thesis are mainly from 2011, and 2018-2019 data are available for demography trends (see Appendix B).

To highlight the multiplicity of local socio-economic dimensions, the FPP urban region has been divided into sub-areas. Each of them is described through a set of indicators from the ISTAT. The division is mainly based on field evidence and a simplification of categories of urban and rural areas.⁴⁷



⁴⁶ How it's calculated It's the percentual ratio (%) between the urbanised surface (ISTAT source: polygons belonging to types 1, 2, 3 of ISTAT locations) and the number of polygons that describe the urbanised territory of each Municipality as follows: $FI = p/A * 100$ wherein: p = number of polygons that compose each urbanised settlement A = surface of urbanised areas in the Municipality (hectars). What does it mean? It states the percentual ratio between the number of clusters in each urban area inside the municipal boundaries; given an identical surface (denominator), more clusters you have (numerator), higher is the value of the urban fragmentation index

⁴⁷ The city centre of Firenze is the Neighborhood named 'centro storico'; the city centre of Prato is the historical domain within the walls; the urban areas are meant as settlements domains (residential, industrial areas and so on) defined by a selection on census units area (they're all census units equal to or smaller than 500.000 square meters) and then random controlled with the aerial view. The 'non-urban' areas are those census units bigger than 500.000 square meters. Montalbano Hills area is selected by the orographic, topological and with the aerial map check.

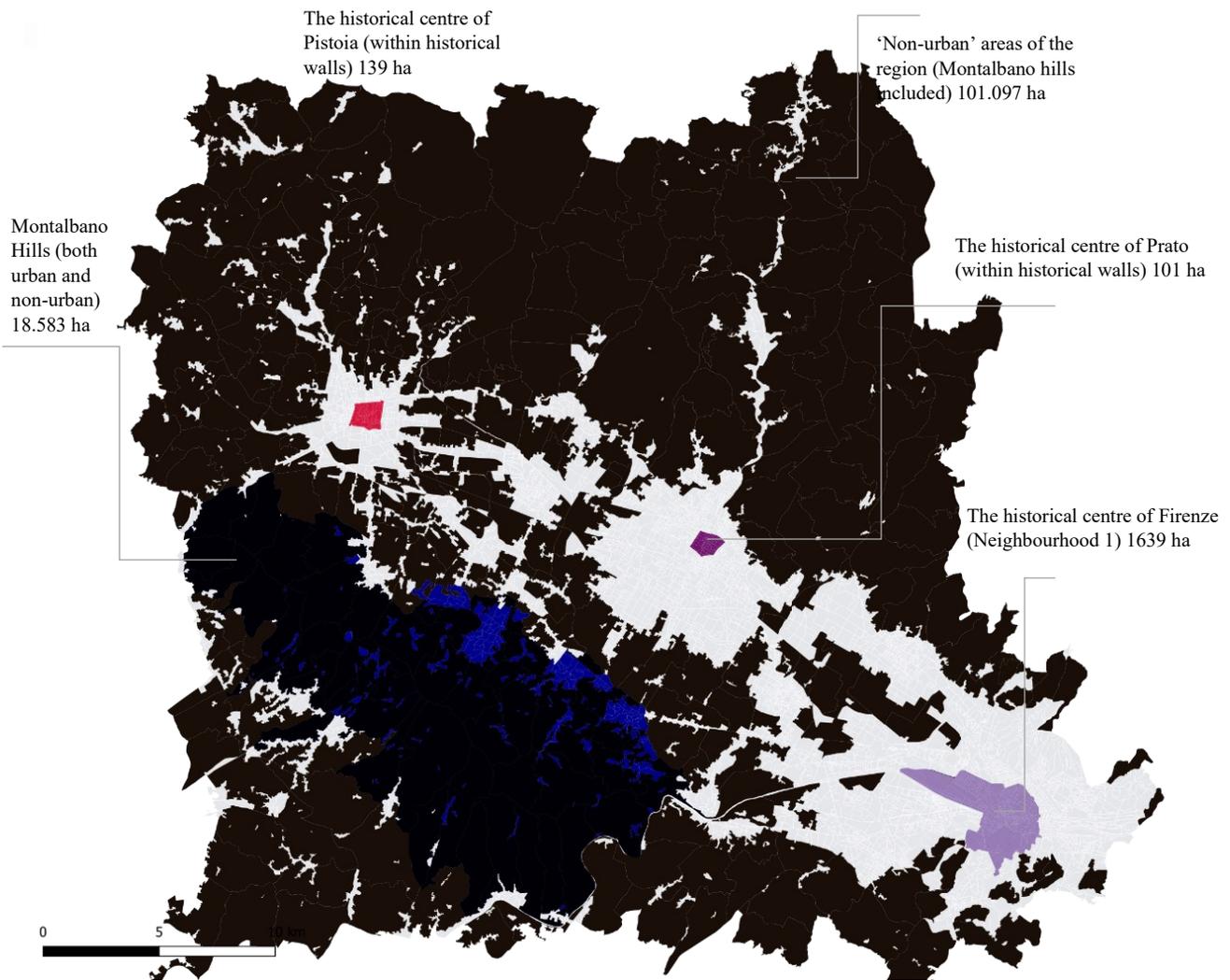


Figure 4.14. Selected urban and non-urban areas of the FPP

The census indicators were chosen among a list because they were the most involved in the dynamics useful to frame the case study of this research. The five indicators can be grouped in 2 sets, the first that regards people, as residents or families that live in houses for rent or of their property, and the second that concerns the buildings, as their residential use or the empty or occupied by non-resident people.

census indicators (2011)

areas	Residents (P1= total resident population)	Families in rented houses (A46= number of families in rented houses)	Families in property houses (A47= number of families in property houses)	Residential buildings (E3= number of residential buildings)	Empty houses and occupied only by not resident people (A3)
Centre of Florence (Neighbourhood 1)	70.098	9.721	22.725	8.054	2.221
Urban areas of the region (city centres included)	959.738	75.891	302.616	121.855	37.399
'Non-urban' areas of the region (Montalbano hills included)	42.192	2.377	11.913	10.550	3.775
The historical centre of Prato (within historical walls)	7.941	1.154	2.024	1.268	1.117
The historical centre of Pistoia (within historical walls)	8.755	1.336	2.516	1.425	1.126

Montalbano Hills (both urban and non-urban)	47.111	2.495	13.677	10.085	3.010
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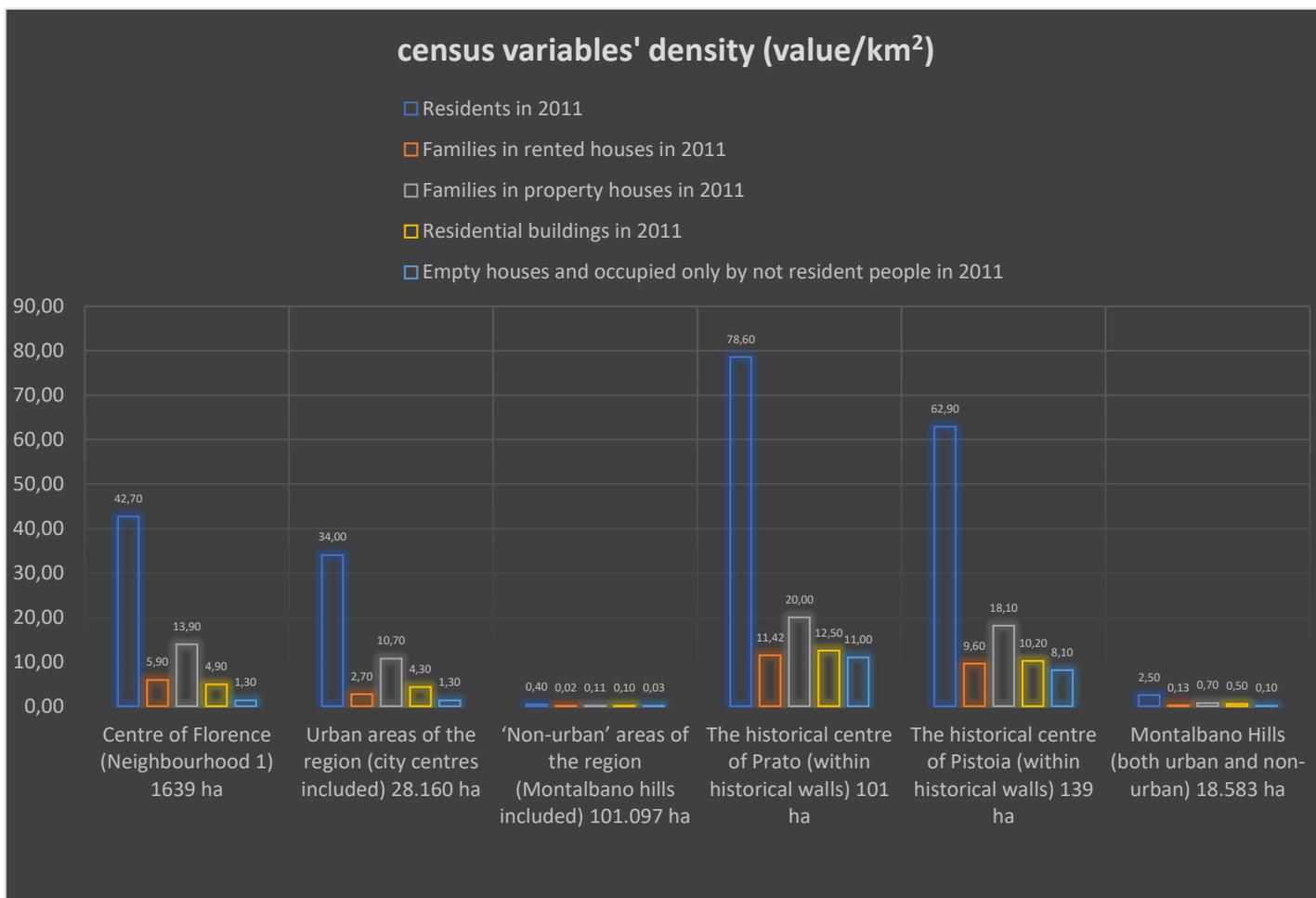
Table 4.T01. Statistical data from ISTAT. Absolute numbers in specific areas of the FPP urban region. Data are from 2011. Areas were chosen by the research needs. The computation is elaborated in the GIS environment.

The density of census indicators (2011)

areas	Residents (P1= total resident population)	Families in rented houses (A46= number of families in rented houses)	Families in property houses (A47= number of families in property houses)	Residential buildings (E3= number of residential buildings)	Empty houses and occupied only by not resident people (A3)
Centre of Florence (Neighbourhood 1)	42.7	5.9	13.9	4.9	1.3
Urban areas of the region (city centres included)	34	2.7	10.7	4.3	1.3
'Non-urban' areas of the region (Montalbano hills included)	0.4	0.02	0.11	0.1	0.03
The historical centre of Prato (within historical walls)	78.6	11.42	20	12.5	11
The historical centre of Pistoia (within historical walls)	62.9	9.6	18.1	10.2	8.1
Montalbano Hills (both urban and non-urban)	2.5	0.13	0.7	0.5	0.1

Table 4.T02. The density of indicators from statistical data (source: ISTAT) in specific areas of the FPP urban region. Data are from 2011. The density is calculated as a ratio between the variable (e.g. residents in 2011) and the area calculated in hectares. Areas were chosen by the research needs. The computation is elaborated in the GIS environment.

The following graph helps the comparison of these indicators.



Graph 4.G04. Graph of the density of variables from statistical data (source: ISTAT) in specific areas of the FPP urban region.

As we can observe in 2011 the historical centres of Prato and Pistoia have almost the same ratio between residents and families in rented houses, in property houses, residential buildings and empty houses and occupied by non-residents, even though Prato is denser in residents. In the centre of Florence, we have less density of residents and a less ratio between the density of residents and residential buildings if compared to Prato and Pistoia city centres. Montalbano hills are 6 times denser in residents than the average in 'non-urban areas', but it has 1.5 times lesser families in rented houses, while families in houses of property are 7 times more. Furthermore, there are 3 times more 'empty houses and occupied by non-residents'. This means that the FPP urban region is a variable-demography realm, with highly concentrated urban centres and fewer residential units in rural ambits.

These data are to be rediscussed if we consider the peculiar situation of Florence where many residents, especially those who own a property, are counted as residents in Florence but they are not domiciliated in the municipality. This has been known for years empirically, but it was proved during the lockdown period (April 2020) thanks to the distribution of face masks. Volunteers didn't find something like half of the official residents. For this reason, the Mayor of Florence wanted to make an accurate census to find out those who do not actually live in Florence (see also §5.3) and those who register as residents to have fiscal vantages on housing taxes⁴⁸. This census investigation hasn't started yet.

⁴⁸https://corrierefiorentino.corriere.it/firenze/notizie/cronaca/21_giugno_11/firenze-fa-conto-residenti-persi-mentre-intorno-comuni-crescono-68c75e9a-ca6f-11eb-a9ca-ed9887ba1b31.shtml (last seen on 17/12/2021)

To summarize, this region, like many others in Italy, is subject to a concentration of people in urban centres. Changing times and the needs of the industrial work transformed the rural culture. For instance, landscaping crops and harvesting changed their role, from the engine of the FPP urban region to an industrialized market with intensive crops in the floodplain and to leisure places in the hills (Landscape Regional Plan, scheda d'ambito pit 06, 2015). The agricultural system hasn't been the only market and productive system to change. For instance, the industries in Pistoia were mainly metallurgic with the assemblage of cars of trains (the main industry was AnsaldoBreda, today HitachiRail), but during the last decades, the greenhouses market has been overtaking the land used for crops agriculture, with great impacts on the environment. The greenhouse market between Pistoia and Prato is one of the most environmentally impactful uses of the land outside the residential settlements. It seems that this sector is an economic and physical limit to any other possible market development. Differently, Prato has boomed in the second half of the XX century thanks to the textile industry of regenerated fabrics. This exploding market typical of developing countries has declined also due to the delocalization of industries, while Chinese *prêt-à-porter* factories started opening calling many workers that constituted the second populated Chinese community of Europe. The Italian textile industries closed or have specialized, but the services and tourism sector is increasing, especially in the most central areas of the city. In Florence, there is a strong prevalence of tertiary sector and tourism but there are still optical industries and precision engineering (Pignone, Nuovo Pignone General Electrics). The satellite cities of the FPP region exploded along the railway line also around core industries (Richard Ginori industries from the XIX Century are a clear example of this), while other centres developed thanks to road infrastructures and big hubs (such as the logistic centre of Gonfienti Interporto della Toscana, nearby Prato, the many industrial/logistic settlements such as Capalle, Macrolotto 1 and 2, Osmannoro, and so on between Florence and Prato). At the end of the 90s, the 'Malls-Era' emerged with its products in the whole FPP urban region. In Campi Bisenzio there is the biggest mall in Tuscany, which attracts over 20 million visitors a year.⁴⁹ Then, leisure facilities centres were built in the same part of the metro area and recently spread all over the region.

Paba and Perrone (2018: 32) claim that in this context the economic model was previously place-based, contextualized in local environments, and it characterized the Tuscan local "industrial district". This is an economic model conceived as a form of light and flexible manufacturing mainly triggered and based on contextual inherited skills and competence (Becattini 2000). Recently, the entrance on the market of new actors, different from traditional stakeholders and involved in global logic of extraction, and still not fully regulated, produced a network of new economies that builds a multi-scale, interconnected regional structure.

As for the manufacturing sector, also the estate market dynamics are variable in time and space. We analyse it in the main cities of the region, Florence, Prato and Pistoia.

Florence is the city with the highest-selling and renting (Rapporto OMI 2020) prices in Italy among municipalities between 100.000 and 500.000 inhabitants.⁵⁰ One of the most interesting trends in the city is the quite recent process of selling historical private but also public estate heritage to global companies of luxury estate and tourism (Fiorentino, 2020; Giallorenzo, 2021). Not surprisingly, this trend explodes in central areas of the city of Florence, as for the trend of the buy-to-let phenomenon, or more in general acquisitions for investments. Possibly this is also one of the main reasons why people such as families in rented houses and students has needed to change their accommodation solutions. One of the consequences is also the change of destination use of offices or commercial properties. Anyway, not only the city centre but also the Novoli-Careggi area (Rifredi Neighborhood) is subject to this kind of acquisition due to the presence of main services such as the great university pole, the main hospital of Florence, the Courthouse, many administrative offices.⁵¹

⁴⁹ <https://www.eurocommercialproperties.com/portfolio/italy/i-gigli> <last seen on 09/05/2021>

⁵⁰ <https://www.mercato-immobiliare.info/toscana/prato/prato.html> <last seen on 09/05/2021>

⁵¹ <https://news.tecnocasagroup.it/ufficio-stampa/comunicati-stampa/mercato-nazionale-e-attualita/investire-nel-mattone-si/> <last seen on 09/05/2021>

Below an effective table of estate acquisition for residential housing or for investments, also buy-to-let, in the main Italian cities in 2013 and 2017.

Milano	2013	2017
Residential purpose	81,8%	70,7%
Investment purpose	18,2%	29,3%
Roma	2013	2017
Residential purpose	84,3%	81,2%
Investment purpose	15,7%	18,8%
Napoli	2013	2017
Residential purpose	72,1%	58,9%
Investment purpose	27,9%	41,1%
Firenze	2013	2017
Residential purpose	72,4%	67,0%
Investment purpose	27,6%	33,0%

Table. 4.T03. Table of acquisition for residential or investment's purpose in 2013 and 2017 (source: OMI 2020)

We can see that cities like Milano and Napoli are those in which the phenomenon of buy for investments grows the most. Some factors can be linked to the Expo (2015) in Milano and the boom of Airbnb in Napoli (Pizzo et Al., 2022), following the booming trend of tourism. Diversely, cities as Roma and Florence have not such a recent boom but decades-long softer increasing trends of tourist flows. Therefore, it is important to analyse the percentage changes between years in a wider framework of local data.

The estate market in the Metropolitan City of Florence, made up of 42 Municipalities, represents 24% of the listings – houses for selling and renting – in Tuscany. In May 2021, the estate market is more active in Florence, Empoli, Campi Bisenzio, Scandicci, Sesto Fiorentino. Four on five are within the FPP urban region. In the whole Metropolitan City of Florence are listed 85744 listings for sale, 27207 for rent, 110 for every 1000 inhabitants. The average price in the Metropolitan City for sale is 2.300€/ m², 23% more than the regional average.⁵²

In the municipality of Florence, which represents 45% of listings in the whole Metropolitan City, the most active zone in terms of the number of listings for sale or rent, is the Historical Centre – specifically the zone of Duomo, San Frediano, Santa Croce – and in decreasing order Novoli, Campo di Marte, Careggi and Gavinana. The Municipality of Florence presents 51.389 listings, 32981 for sale and 18401 for rent, 143 listings every 1000 inhabitants. The average price in the city, between 1500€/m² to 4550 €/m² for the sale and from 6,1 €/m²/month to 16 €/m²/month for rent, is 60% higher than the average price in Tuscany.⁵³

In May 2021, the Province of Prato, made up of 7 municipalities, counts 10819 estate listings for sale and 2473 for rent, 54 every 1000 inhabitants and that represents 2% of all listings in Tuscany.⁵⁴ The average price in the province for apartments is 1500€/m². Almost 67% of all listings in the Province of Prato are within the Municipality of Prato with 9038 estate listings, 7246 for sale and 1792 for rent, 48 every 1000 inhabitants. In May 2021 the estate market in Prato is more active in terms of listed properties for sale and rent in peripheral areas of the city centre of Prato. Prices vary from 1150€/m² to 2300 €/m² for the sale and from 6,8 €/m²/month to 11,9 €/m²/month for rent. The price is quite uniform in the zones of the city.⁵⁵

In the same period, the estate market in the Province of Pistoia, made up of 20 municipalities, is more active in terms of listed properties for sale and rent in the municipalities of Pistoia, Montecatini Terme, Pescia, Quarrata, Monsummano Terme, Agliana, Serravalle Pistoiese, Montale, Buggiano. The great majority of these municipalities are within the FPP urban region. The province is vast, but it represents the 4% of all estate

⁵² <https://www.mercato-immobiliare.info/toscana/firenze.html> <last seen on 09/05/2021>

⁵³ <https://www.mercato-immobiliare.info/toscana/firenze/firenze.html> <last seen on 09/05/2021>

⁵⁴ <https://www.mercato-immobiliare.info/toscana/prato.html> <last seen on 09/05/2021>

⁵⁵ <https://www.mercato-immobiliare.info/toscana/prato/prato.html> <last seen on 09/05/2021>

listings for sale and rent of Tuscany with 20056 estate listings for sale and 2691 for rent, 77 every 1000 inhabitants. The average price in the province for apartments is 1500€/m².⁵⁶ Almost 29% of all listings in the Province of Pistoia are within the Municipality of Pistoia with 6694 estate listings, 5615 for sale and 1079 for rent, 75 every 1000 inhabitants. Prices vary from 750€/m² to 1950 €/m² for the sale and from 3,3 €/m²/month to 9,3 €/m²/month for rent. The price is quite different in different zones of the city⁵⁷.

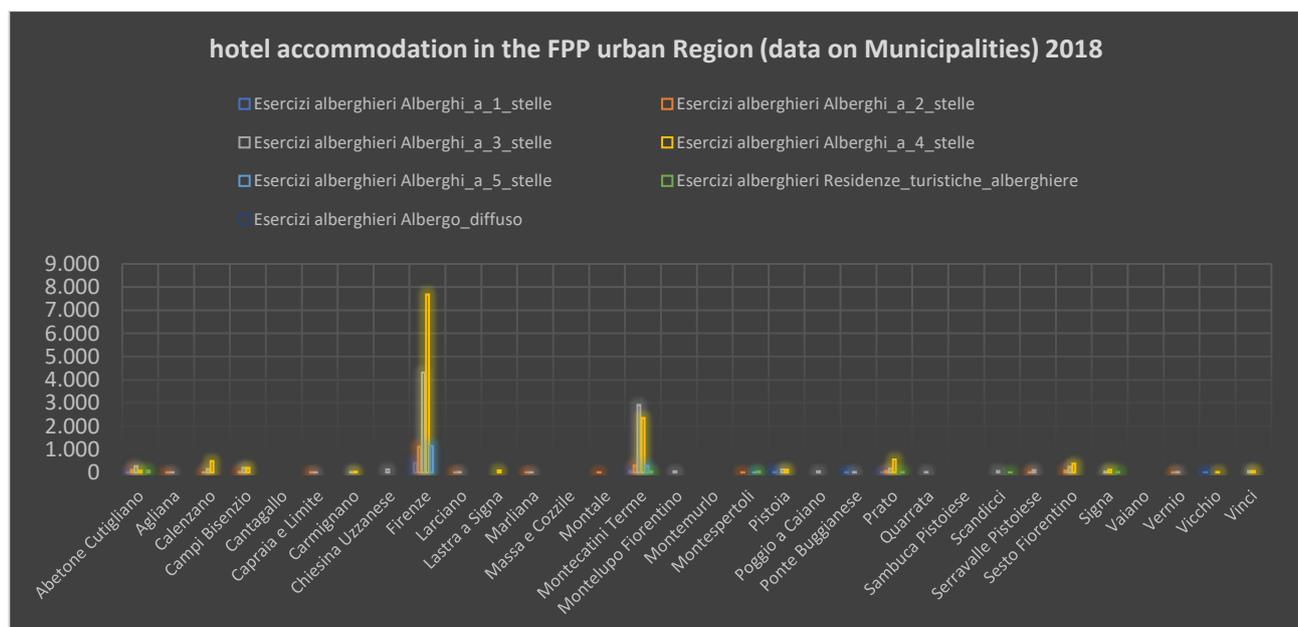
Therefore, we can observe multiple geographies of the estate market in the main cities of the FPP urban region.



Figure 4.15. From the left: Screenshot of the density of estate listings in Firenze, Prato and Pistoia (source: mercatoimmobiliare.info)

And this multivariate geography can be observed also for the tourist market. Florence is like a magnet for tourism (Agostini et Al., 2020; Galli and Lensi, 2019). In the first semester of 2020, the situation changed, with national borders closed. Nonetheless, the city of Florence hasn't changed policy on tourism: many strategies of the Municipality and the Metropolitan City and also of the Tuscany Region, with the very recent Piano Operativo per il Turismo 2021 (see §5.1.3) are still focused on tourist promotion.

If we compare the tourist supply in the FPP urban region in 2018 (4.G05 and 06) we can observe how much Florence is dependent on this industry, with a predominance of 4 stars hotels and room rental supply. Please, consider that the datum of the extra-hotel sector is underestimated because it is highly probable that the count of the room rentals considers only the entrepreneurial activities. The flow that supports the demand is double from abroad in 2018. Florence is still the most demanded, but we have also Montecatini Terme, Sesto Fiorentino, Prato and Calenzano behind (see Graph 4.G07).

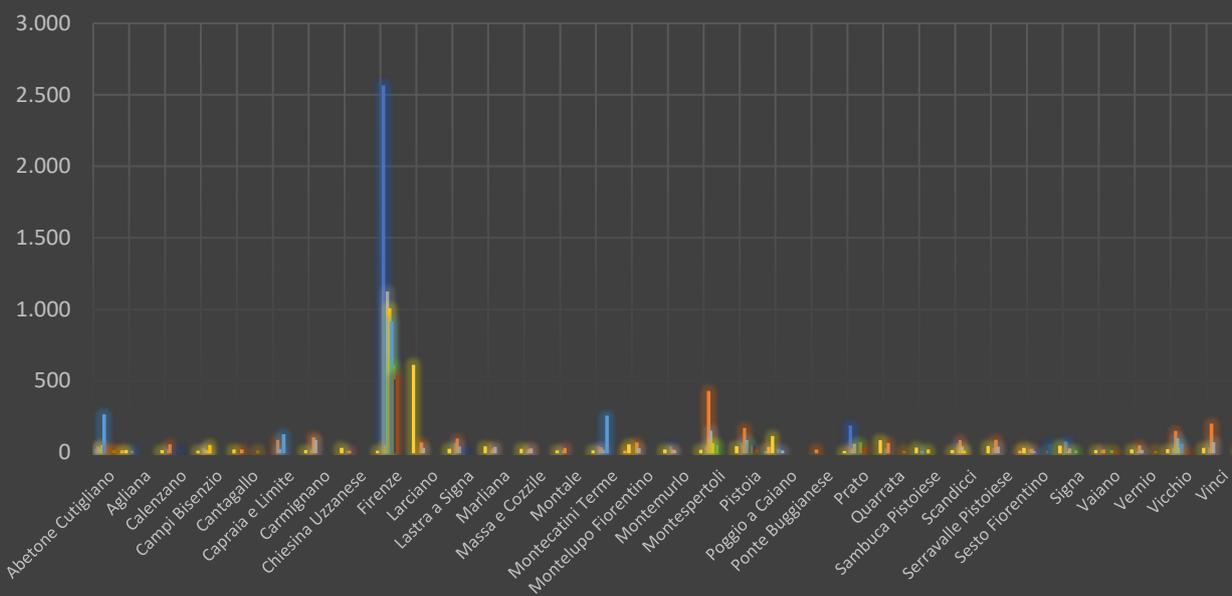


⁵⁶ <https://www.mercato-immobiliare.info/toscana/pistoia.html> <last seen on 09/05/2021>

⁵⁷ <https://www.mercato-immobiliare.info/toscana/pistoia/pistoia.html> <last seen on 09/05/2021>

extra-hotel accommodation in the FPP urban Region (data on Municipalities) 2018

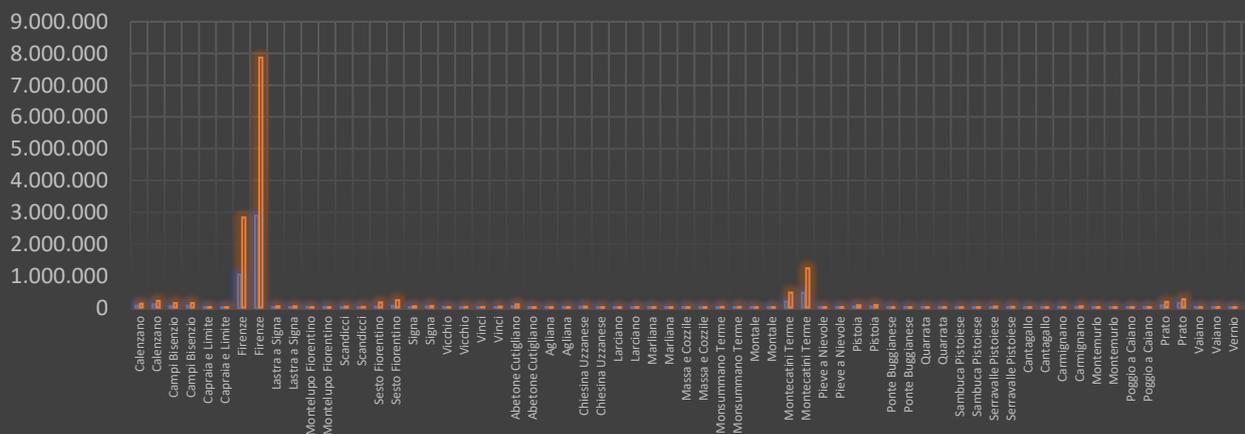
- Esercizi extra-alberghieri Affittacamere
- Esercizi extra-alberghieri Alloggi_agrituristici
- Esercizi extra-alberghieri Case_e_appartamenti_per_vacanze
- Esercizi extra-alberghieri Case_per_ferie
- Esercizi extra-alberghieri Campeggi
- Esercizi extra-alberghieri Residence
- Esercizi extra-alberghieri Residenze_d_Epoca
- Esercizi extra-alberghieri Ostelli_per_la_giovent_
- Esercizi extra-alberghieri Villaggi_turistici
- Esercizi extra-alberghieri Rifugi_alpini
- Esercizi extra-alberghieri Aree_di_sosta
- Esercizi extra-alberghieri Bed__Breakfast_imp
- Esercizi extra-alberghieri Bed__Breakfast_non_impr_
- Esercizi extra-alberghieri Locazione_turistica_non_impr_
- Esercizi extra-alberghieri Locazione_turistica_imp
- Esercizi extra-alberghieri Alloggi_privati



Graph 4.G05 and 4.G06. original graphs on Tourism industry consistency in FPP urban region in 2018. Data are from the Regional Statistics Centre and based on ISTAT data. Datasets are available here: <https://www.regione.toscana.it/-/movimento-turisti-nelle-strutture-ricettive-e-struttura-dell-offerta-dati-2018>

Tourist flows in FPP urban region 2018

- Arrivi
- Presenze



Graph 4.G07. original graphs on Tourism flows in 2018. Each municipality presents two couples of columns. The first couple of columns is the arrivals and presence of Italian tourists, the second of tourists from abroad. Data are from the Regional Statistics Centre and based on ISTAT data. Datasets are available here: <https://www.regione.toscana.it/-/movimento-turisti-nelle-strutture-ricettive-e-struttura-dell-offerta-dati-2018>

Even though numbers of supply and demand are incomparable to Florence, the FPP urban region can be interpreted as a unique system also for the tourism dimension. The following map represents the ratio between the number of beds in accommodation structures and the area of the Municipality. As we observe, in 2010 the accommodation supply density was uniform from Florence to the west, up to Prato and in the Montalbano hills. And even if the absolute number of beds in 2002 registered a different situation, because it didn't take into consideration the dimension of the municipality, we see that in 2011 the number of beds increases proportionally in the whole area.

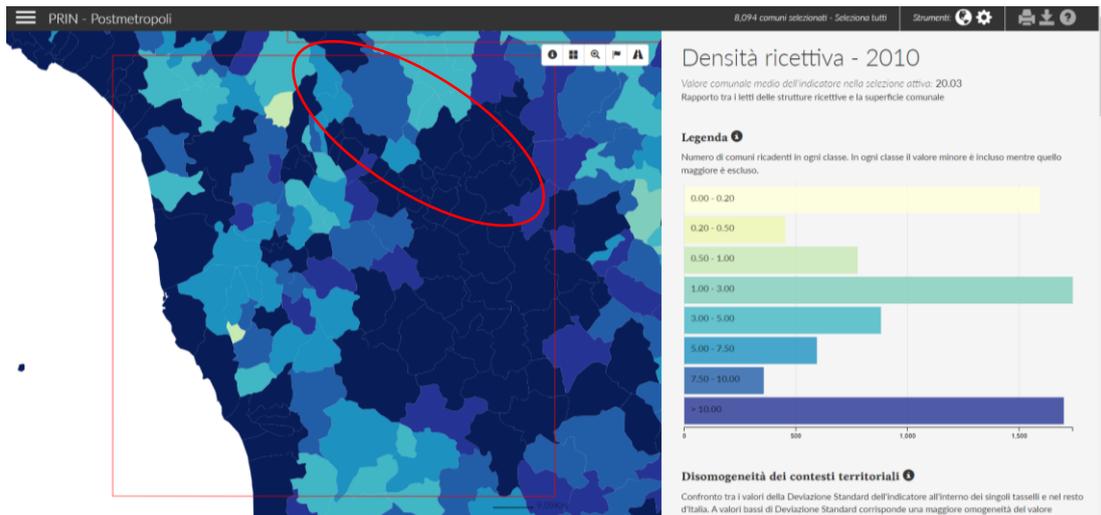


Figure 4.16. Screenshot of Accommodation density - 2010 PRIN National Research Projects “Post metropolitan territories as emergent urban entities: sustainability, habitability and governance challenges”. The whole dataset is available at this link (source: Atlante Postmetropolitano < <http://www.postmetropoli.it/atlante/>>)

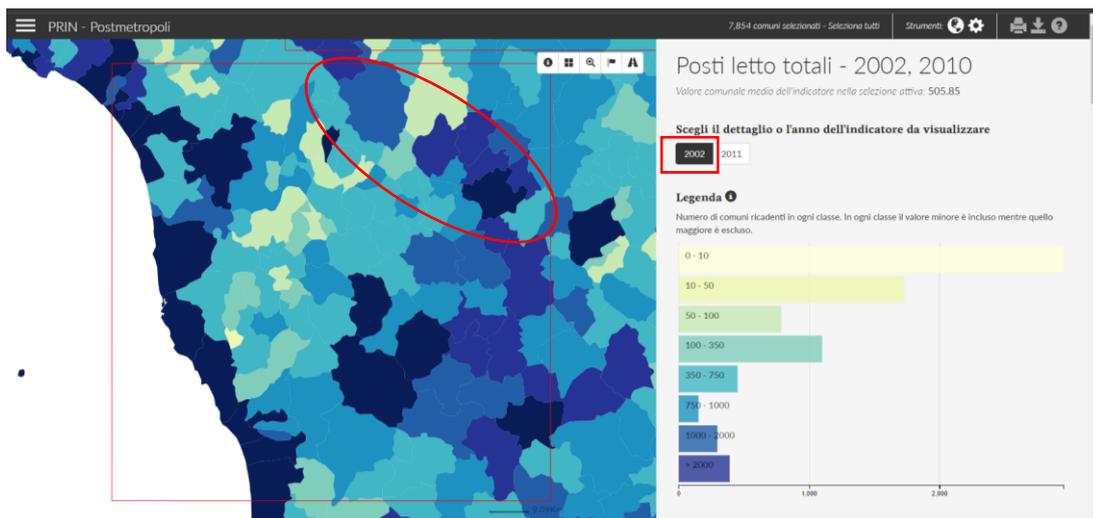


Figure 4.17. Screenshot of Number of total accommodation places - 2002 PRIN National Research Projects “Post metropolitan territories as emergent urban entities: sustainability, habitability and governance challenges”. The whole dataset is available at this link (source: Atlante Postmetropolitano < <http://www.postmetropoli.it/atlante/>>)

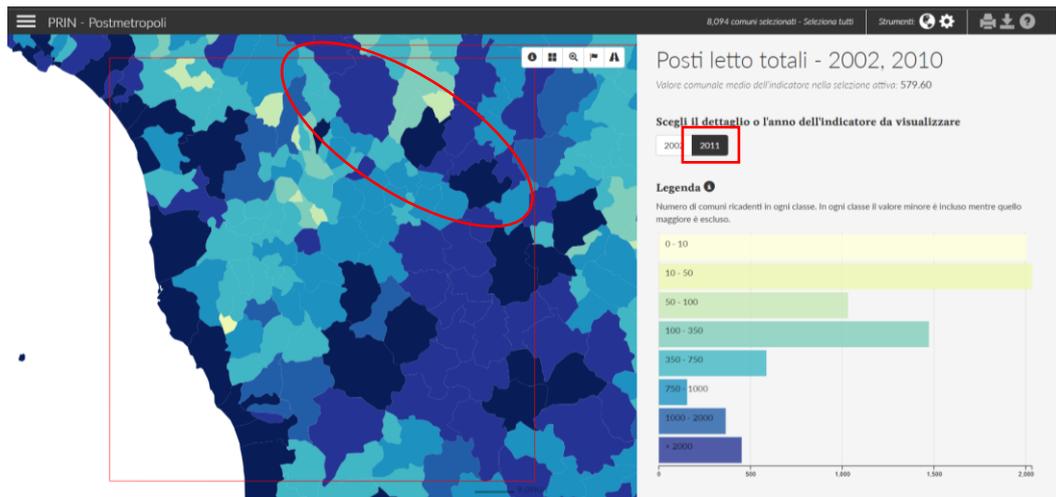


Figure 4.18. Screenshot of Number of total accommodation places - 2011 PRIN National Research Projects “Post metropolitan territories as emergent urban entities: sustainability, habitability and governance challenges”. The whole dataset is available at this link (source: Atlante Postmetropolitano < <http://www.postmetropoli.it/atlante/>>)

In numbers, the accommodation supply in 2020 Prato consists of 263 structures, 7 more than in 2019, 3744 beds and 1906 rooms,⁵⁸ while in Pistoia there are 1166 accommodation structures.⁵⁹ The increasing trend is consistent with the monitoring of beds between 2002 and 2010 that upwards for Prato and Pistoia (see figure 4.16 and 4.17).

To briefly conclude, the tourist sector increases constantly in space and time over the ten years (2002-2012), even if with different absolute numbers.

Government and governance approaches

For 50 years the urban region known as ‘Piana Firenze-Prato-Pistoia’ has been investigated and strategically imagined as a whole. But this vision hasn’t been very often implemented in territorial and local plans. Nonetheless, the case study is focused on this region and not on the Metropolitan City of Florence because its flows of people, goods, and political exchanges enhance the idea of a unique functional urban region. Furthermore, great investments and projects go in the direction of a unique context, especially as far as the infrastructures are concerned, such as the implementation of the Airport of Florence, the Florence Stadium, and recent infrastructural projects such as the tramway and fast routes between Prato and Pistoia.⁶⁰ Moreover, many conflicts have emerged in the last years and decades that involve not only the municipality they are in but the whole region (Agostini, 2020).

The FPP urban region, as defined by this research, can be described as a political puzzle of different institutions with different scopes, powers, and governance tools. It is made of 33 municipalities,⁶¹ 15 of them

⁵⁸ http://allegati.comune.prato.it/dl/20210330105720948/Turismo_2020.pdf <last seen on 09/05/2021>

⁵⁹ <https://dovodormirepistoia.regione.toscana.it/> and omunedipistoia.it/sites/default/files/media/Gennaio%202021.pdf <last seen on 09/05/2021>

⁶⁰ For a detailed analysis see Alberti, Giallorenzo 2018

⁶¹ 15 municipalities totally included in the case study area: Firenze, Campi Bisenzio, Signa, Carmignano, Capraia e Limite, Poggio a Caiano, Lamporecchio, Larciano, Quarrata, Prato, Vaiano, Montemurlo, Montale, Agliana, Serravalle Pistoiese. 18 municipalities partly included in the case study area: Impruneta, Scandicci, Lastra a Signa, Sesto Fiorentino, Calenzano, Barberino di Mugello, Montelupo, Empoli, Cerreto Guidi, Fucecchio, Monsummano terme, Montecatini Terme, Marliana, San Marcello Piteglio, Pistoia, Sambuca Pistoiese, Cantagallo, Vernio

completely and 18 of them partly included in the area, distributed in part of two provinces – Prato and Pistoia – and part of the Metropolitan City of Florence.

Tab. 1 - Classificazione Censis delle regioni-aree urbane (v.a. e val. %)

Denominazione	Città principali	Numero comuni	Popolazione al 31/12/2014		Popolazione al 31/12/2010		Var. % 2014/2010
			v.a.	val. %	v.a.	val. %	
A) Grandi regioni urbane							
A1 - Mega regione lombarda	Milano/Bergamo/Verona	569	6.778.084	11,2	7.506.214	11,9	10,7
A2 - Mega regione veneta	Vicenza/Padova/Trento/Venezia	165	2.448.961	4,0	2.674.953	4,3	9,2
A3 - Area romana	Roma	42	3.869.402	6,4	4.444.045	7,1	14,9
A4 - Area napoletana	Napoli/Caserta	131	3.912.677	6,4	3.864.086	6,1	-1,2
Totale A		907	17.009.124	28,0	18.489.299	29,4	8,7
B) Medio-aree urbane							
B1 - Area torinese	Torino	50	1.705.419	2,8	1.858.206	3,0	9,0
B2 - Area ligure	Genova/Savona	43	985.533	1,6	1.002.189	1,6	1,7
B3 - Area emiliana	Bologna/Parma/Reggio/Modena	36	1.520.360	2,5	1.813.250	2,9	19,3
B4 - Area fiorentina	Firenze/Prato/Pistoia	22	1.088.230	1,8	1.271.667	2,0	15,8
B5 - Sistema costieroigure-toscane	La Spezia/Pisa/Livorno	36	1.106.228	1,8	1.165.748	1,9	5,4
B6 - Sistema lineare alto adriatico	Forlì/Cesena/Rimini/Pesaro/Ancona	49	1.280.666	2,1	1.403.970	2,3	13,5
B7 - Area barese	Bari/Barietta/Taranto	26	1.160.120	1,9	1.134.341	1,8	-2,2
Totale B		262	8.856.576	14,6	9.699.371	15,4	9,5
C) Piccole regioni urbane							
C1 - Area veneta	Verona	25	567.329	0,9	659.866	1,1	16,3
C2 - Sistema lineare adriatico centrale	Taranto/Pescara/Chieti/Aquila	30	680.558	1,1	749.238	1,2	10,1
C3 - Area bresciana	Brescia	57	705.399	1,2	734.676	1,2	4,0
C4 - Area salentina	Salerno	16	385.639	0,6	356.437	0,6	-7,6
C5 - Area palermitana	Palermo	15	922.341	1,5	958.367	1,5	3,9
C6 - Area catanese	Catania	23	725.779	1,2	806.822	1,3	11,2

Figure 4.19. “Censis”⁶² Classification of regions-urban areas. Source: https://www.censis.it/sites/default/files/downloads/6_-_Territorio_e_reti_2015.pdf

Even if it is not recognised as an administrative entity, a political document from *Consiglio Regionale della Toscana* on 29/03/2000 (Delibera n°13063) identifies it as an area recognising its dimension as a unique functional area, defining it as the "Metropolitan Area of Florence, (art. 17, comma 2 law 8.6.1990, n. 142 as modified by the law n. 265/1999), constituted within the ambit of Florence, Prato and Pistoia provinces” where "forms of collaboration and cooperation of local entities in the Metropolitan Area" should be enhanced by institutions.

Let me open a brief and not comprehensive digression on these institutional levels and their related competencies on cities, regions, and tourism. This parenthesis is needed to frame the bounded powers and specific governance domains of each level of administrative institutions that constitute the case study urban region and will be further analysed in §5.

In Italy, among other crucial tasks such as social services, local economic development, recreation and culture, the municipal level is deputed to regulate urban and rural territory through specific statutory and strategic planning tools and policies. Municipalities norm rights of use of public and private soil in the public interest.

The governance intermediate level is covered by Provinces. In 2014 the competencies assigned to these entities changed. The national law 56/2014 regulated the implementation of Metropolitan Cities as new intermediate level entities and provided a transitory regulation for provinces. These transitory norms were planned to end up with the eventual demise of provinces through a national referendum that came up with a negative pronouncement on this reform. The situation is still quite unbalanced because the national law 56/2014 is in force and provinces are under the transitory regime.⁶⁴ To briefly explain, Italian Metropolitan Cities are 14⁶⁵ and the rest of the Italian territories are covered by ‘provinces’, that still have strategic plans for territories, environmental protection and enhancement actions, roads maintenance, and secondary schools organization,

⁶² Censis (Centre of study for social investments) is a reliable centre for socio-economic studies

⁶³ https://web.archive.org/web/20110807161532/http://www.comune.firenze.it/comune/area/Delib_130_regione.htm

⁶⁴ This document from 2021 briefly explains the current normative and related domains of action for provinces and metropolitan cities. <https://www.camera.it/temiap/documentazione/temi/pdf/1104880.pdf>

⁶⁵ 10 in ordinary regions and 4 in regions under special statutes, that have specific forms of autonomy

as well as rural development operational competences. Before 2014 provinces were political entities. Today, elections of political figures in provinces are delegated to political figures in municipalities.

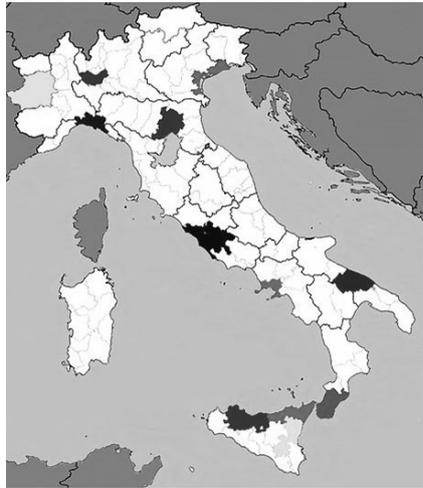


Figure 4.20. Metropolitan Cities in Italy source: <https://www.urbanit.it/bologna-7-novembre-presentazione-dellosservatorio-sulle-citta-metropolitane/>

Almost all Italian Metropolitan Cities (MC) maintained the same geographic domain of their previous provinces, but for the law 56/2014 they assumed a different political infrastructure and other tasks. Political bodies are the metropolitan mayor, who is the mayor of the main city of the MC (Florence in this case) and has also the power to propose changes to the economic budget of the institution; the metropolitan council is made up of the metropolitan mayor and a group of counsellors – elected by political figures from all the municipalities of the MC – which number is proportional to the resident population of the metropolitan city. The Council oversees the address and control of political decisions of the MC, and it approves the economic budget. Finally, the metropolitan conference is made up of the mayor of the MC, who convenes and presides it, and all mayors from the other municipalities of the metropolitan city. This entity has advisory powers on budget and the statute can give it other powers. It is important to note that the metropolitan mayor is in chief of every political entity of the metropolitan city. Tasks of the MC are partly new and partly from the ‘old provinces’ system. The main aims of the MC are the strategic development of the metropolitan territory and the systemic management of services, infrastructures, and communication networks of the metropolitan city. The main tasks of the MC are the general planning of the territory, communication, infrastructure and service network included, with the possibility to put limits to the municipal faculties on these matters; the coordination and management of coordinated public services; roads and mobility; economic development promotion and coordination; management and coordination of digitalization and informatization processes; others provided by the Regions and the State. The main tool to achieve these goals is the metropolitan strategic plan, which is valid for three years, but every year is revised and updated, and constitutes a constraint reference policy framework for municipalities in the MC.

The roots of these reforms are in a substantial legislative turn in 2001 with the re-assembly of competencies among public entities through the Constitutional Reform, which followed the simple and general principle of decentralization of power, allocating responsibilities among administrations closer to citizens’ needs according to the subsidiarity principle. This turn opened a season of confronting, sometimes arguments, also characterized by administrative trials discussions, about the competencies of each level of territorial government, especially the two levels that have legislative powers in Italy. Regions acquired exclusive competence and therefore, exclusive legislative and administrative powers in every matter outside the

competence domain of the State. Specifically, on economic development, social services, housing, culture, and others.

In the pandemics, the State-Regions 'conflict' on matters under 'exclusive legislation' has exploded especially around healthcare, which is an exclusive competence of regions, and the school system. Furthermore, Regions share with the State some domain of competencies, the so-called 'concurrent responsibilities' matters, like in the case of spatial planning. Nevertheless, even on matters under exclusive legislative powers of regions, there is room for the State to intervene (see the case of short-term rentals in §5.2.3).

In 2016 the National Law n. 56/2014, as we premised, weakened the role and competence of provinces, giving more room for power to Metropolitan Cities. But the case study domain is made up of Municipalities also. These entities have no legislative powers (as Metropolitan Cities) but they have administrative powers and, more importantly, strategic and statutory duties in the urban planning field. Moreover, they control the sustainability of land uses, preserve property rights, and defend public interests through two main tools. The Structural Plan is a statutory document that report the knowledge on the municipal territory and invariants, while the Urban Regulation (now called Operative Plan) is committed to defining actions and projects to be implemented in the next 5 years from the adoption of the document.

Therefore, the FPP urban region doesn't have a single political system, but its dynamics are addressed by many different strategies at the very local level. Nonetheless, in the past decades, there have been attempts to reassemble the multiple strategic visions on the Piana in specific plans and documents that could pass the institutional borders and give a complex picture of this region, because of its integrated economic, social, territorial processes. It's not possible to define the exact time when the process started because this urban region has been thought of as a whole region and invested by the interests of powerful people or families, since it was dried out. Anyway, this excursus on FPP institutional strategies starts from 1951, when Edoardo Detti imagined an 'ordered and measured linear development between Florence and Prato when the foothill areas were almost free from urbanisation'. Ten years later, a similar plan failed in its implementation because of a (well-known and studied) characteristic of Italian and Tuscan municipalities, a widespread geographical parochialism (Astengo, 1990). The ordered and measured linear development in the structural scheme was approved by the regional law n.112/1990. This was the result of a wider and earlier process of "metropolitan planning" based on local conferences that were also tested in the Pisa and Livorno metro system, and the southern part of Tuscany (Grosseto) as well. But only for Florence, that process resulted in official planning documents, whereas for Grosseto the conferences of metro systems paved the way for the provincial-territorial plan elaboration. Therefore, in the 90s, the territorial coordination of the Florence Prato Pistoia area as a 'metropolitan area' is delegated to the 'Structural Scheme' (*see fig. 4.21*), not a plan but a vision with general objectives for a whole FPP region, not only for the urban settlements. Some pillars of the structural scheme are still up-to-date, and the conflicts linked to those pillars are up to date, too. For instance, the metropolitan park in Sesto Fiorentino and the extension of the airport at the periphery of Florence are still critical and argued nodes of the future development of this region. The goal of the Structural Scheme was to create a new environment and a new whole and consistent realm. With some ingenuities – such as the idea of control and landscape reconstruction linked to the homogenization of urban peripheral areas – the structural scheme proposed to implement its strategies through many little plans (see Jacobs, 2001; Portugali, 2016), trying not to upset the strategic planning of each municipality (Astengo 1990).

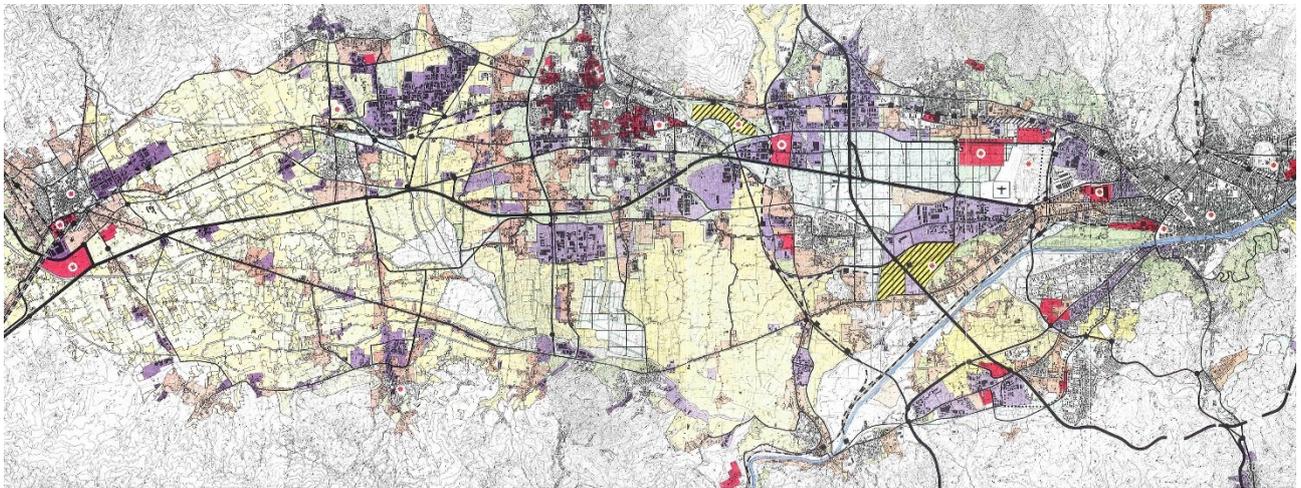


Figure 4.21. The Structural Scheme from 1992

Possibly, these seasons of strategic spatial and systemic planning without borders, of governance without government, fuelled the theories and approaches behind the first regional law on territorial planning (Regional Law 5/1995).

The complex, flexible and dynamic nature of urbanization processes began to enter the political and research agenda in the 90s, and this agenda was also focussed on governance issues, but we still witness substantial preservation of the paradigms and institutions facing a constantly changing environment and systems. The *Structural Scheme* from 1990 addresses general goals starting from the knowledge of the historical and coeval territorial features. Especially in its socio-economic, infrastructural, and morpho-typological dimension this region can be seen and has been seen for centuries as a unique region.

These plans were never implemented. Thus, it could be interpreted as a missing occasion of transitions, but in the context of complexity theories, it is only the institutional transition that failed to become reality. After all, many actions from many different directions come from many different actors succeeded and gave life to a ceaseless process of change and rethought and an assemblage of interests, powers and conflicts produced a constant out-of-equilibrium urban system (as described below). An explosion of individual, public or private and public-private intents, that also generated conflicts and raised the NGOs' and associations' response, created a constellation of possible futures not driven by a unique strategy but invested in projects that make this region as a whole region. And this happens outside the municipal plans, respecting their enabling and constraining conditions but substantially ignoring the institutional borders.

Examples of these little and big transitions are the Airport enlargement and the Agricultural Park of FPP, both included in the Tuscany Region Strategic Territorial Plan. The actual incompatibility of these two development goals exploded in a constant back and forward process moved by private supra-local interests,

political interests, public interests, paradoxically different from the political ones, associations and people movements, the introduction of other projects connected with both the Airport enlargement and the Agricultural Park.

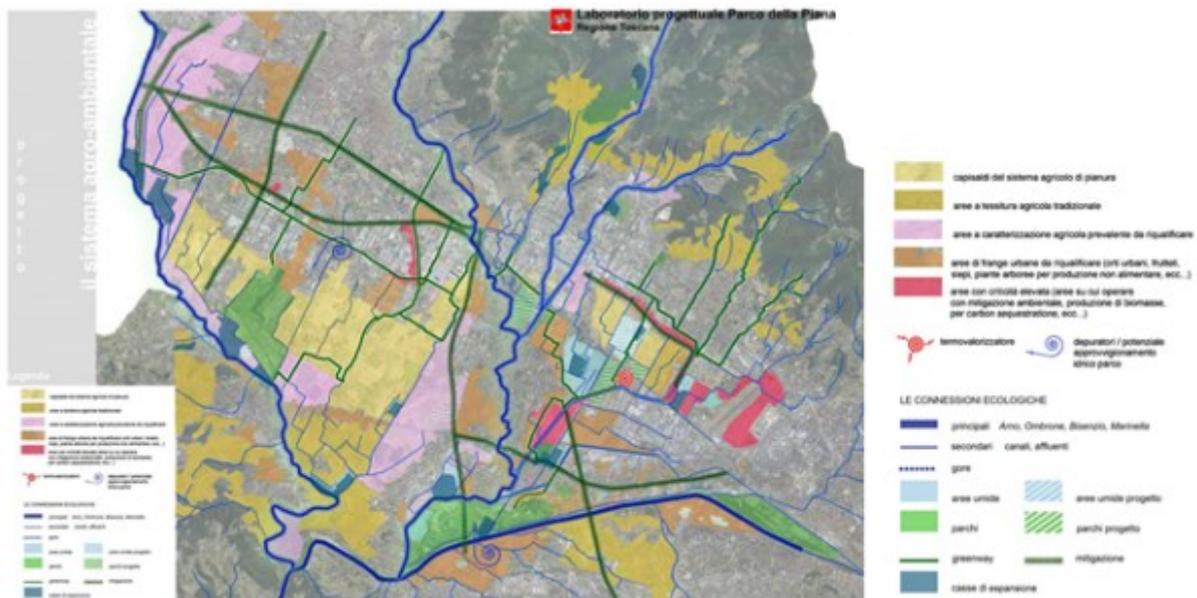


Figure 4.22. Schema di progetto per il Parco Agricolo della Piana Metropolitana Fiorentina: il sistema agro-ambientale Source: Regione Toscana 2013 (extracted from <https://agrireregionieuropa.univpm.it/content/article/31/44/agricoltura-periurbana-e-progetto-di-rigenerazione-del-territorio-lesperienza>)

The agricultural park of Prato, as a part of the Plain Agricultural Park, is an interesting example of a complex process because it was “promoted by the urban and regional planning sector of the regional government, has carried on through a process characterized not only by a multilevel and multi-sectorial governance approach but, even, with the active involvement of, citizens, associations and stakeholders, especially promoting public participative tools and forums.” (Fanfani, 2018: 65). “Among these, it is possible to point out Periurban Agricultural or rural Parks that, under various modes of kick-off, design and management [Fanfani, 2009], represents a concrete sample of the recovery of a co-evolutionary relationship between human settlements and local environmental features, between nature and culture, accordingly with the Alexander’s ‘single countryside’ pattern image. [Alexander, 1977]. Nevertheless, many of these experiences are not exempt by difficulties especially referred to the lack of support on behalf of administrative representatives and private stakeholders” (Fanfani 2018: 64).

In the overall process of transition, which dates back to the 90s (and before) and continues, also administrative trials played a crucial role. Conflicts marked the change of this region and represent the activism behind the conflicts.⁶⁶ For both sides of the same coin, it is possible to show the complexity and the spatially (and temporary) ceaseless region object of the case study from this Atlas, which maps emergencies from territories, myriads of projects and processes generally from the top, and hampered from the bottom.

⁶⁶ <https://www.perunaltracitta.org/2017/11/25/latlante-dei-conflitti-nella-piana-fiorenze-prato-pistoia/> (last seen on 11/03/2021)

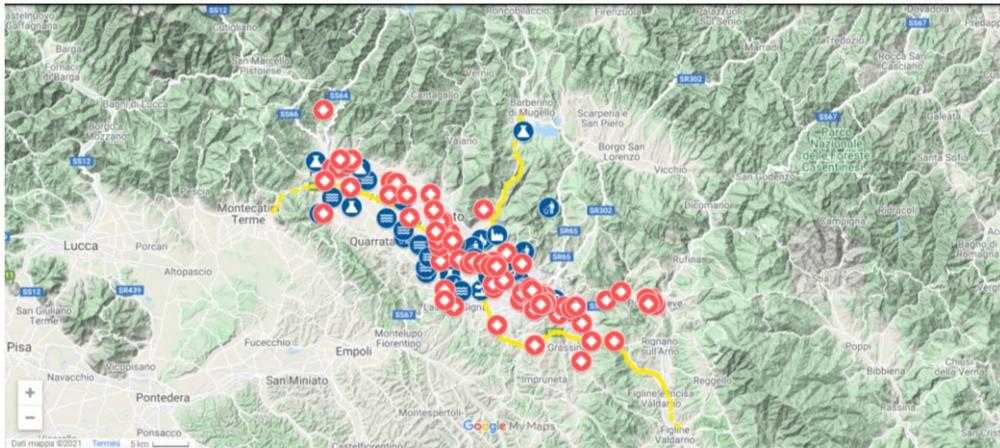


Figure 4.23. The FPP atlas of conflicts. Author: Antonio Fiorentino

<https://www.perunaltracitta.org/speciali/atlante-dei-conflitti-nella-piana-firenze-prato-pistoia/> (shot on 03/05/2021)

Some traces of transitions, that have had a strong impact on the city of Florence and still have effects on its dynamics, are datable back up to the 60s.⁶⁷ The great flood of 1966 can be considered the edge line of great changes in the urban region, linked to urban renewal and private restructuring works. People started to leave the historical centre, while some main functions were delocalised in the 80s and 90s. Moreover, the political decision to move crucial services and functions from the city centre to the first periphery (the courthouse, university, hospital) has deeply changed the urban life with its flows and economies linked to them (as highlighted in some interviews).

More recent projects that can be outlined as traces of transitions are the new bicycle lane between Prato and Florence⁶⁸ answering a pressing demand for more sustainable commuting between the two cities. This path enters another bicycle infrastructure project, which is the Ciclovía del Sole,⁶⁹ that will connect Verona with Florence with a tourist aim.

⁶⁷ As emerged from the interview with Tommaso Montanari (see Appendix C)

⁶⁸ <https://www.comune.fi.it/comunicati-stampa/approvato-dalla-giunta-il-progetto-esecutivo-del-collegamento-ciclabile-viale> (last seen on 21/05/2021)

⁶⁹ <https://cicloviadelsole.it/en/home-2/> (last seen on 21/05/2021)

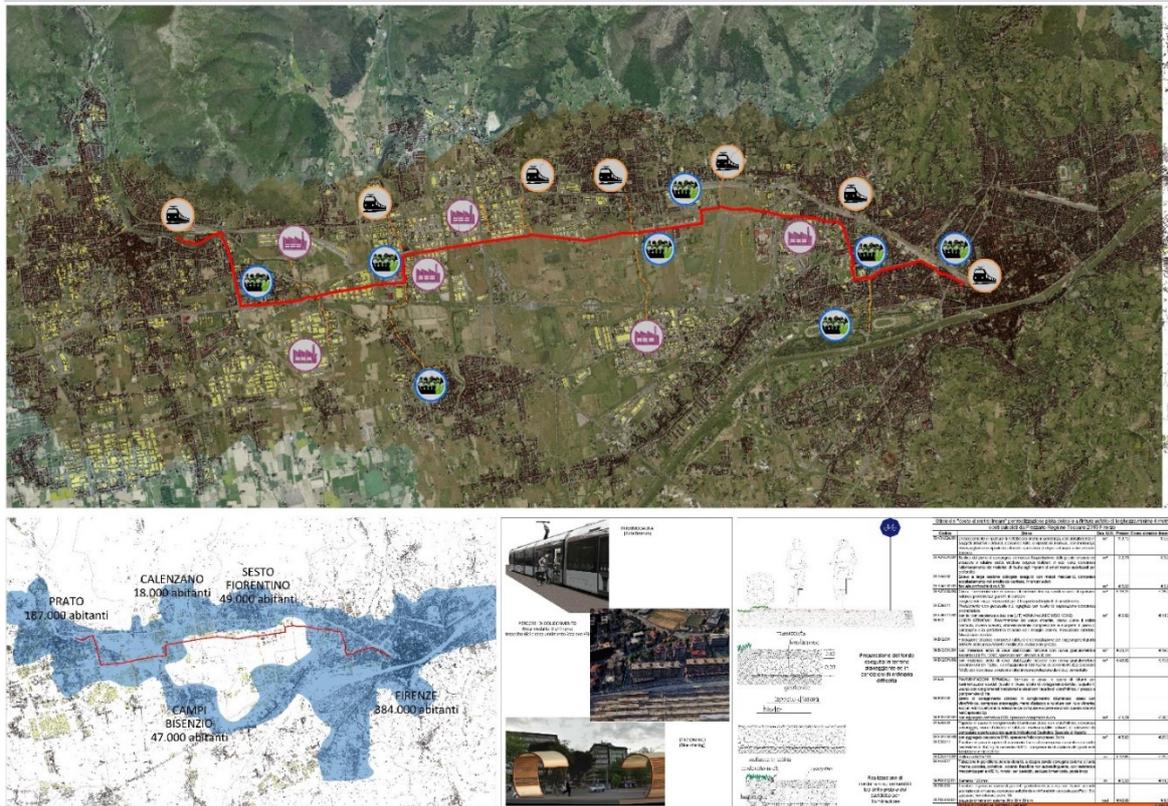


Figure 4.24. Fast cycle lane between Prato and Firenze. Source: preliminary studies and projects by Professor Pietro Giorgieri, University of Florence. Alberti Giallorenzo, IRPET p.125

One of the most interesting projects in the FPP domain is the Bio-district of Montalbano hills. An assemblage of local actors and interests that can enable other processes of development and change in a territory thought as a whole realm and system (Poli, 2018). The Bio-district pact is based on the territoriality process of the Montalbano domain, as a high-value rural realm. “The two mountainsides present different geologic features which gave them local peculiarities in the ancient response to the need of building safe infrastructures and settlements [...]. Thus, before the industrialisation and extractive capitalist actions, territorial projects were guided by the fundamental principle of the aim at territorial equilibrium” (Poli 2018: 30-31). And the bio-district is inspired by this principle since its name presents the root of life (bio) as a constant regeneration and the territorial reference of the local community (district). This pact intends to strategically address actions for the maintenance and regeneration of life in rural contexts, assuming the local scale and the small-medium enterprise as reference dimensions, finding forms of collaboration among different actors and institutions at different levels to achieve multiple objectives (Barca, 2009; Poli 2018). Something similar is proposed in Prato and Sesto Fiorentino rural areas that are part of the Agricultural Park of the Piana. An assemblage of actors and institutions, rural entrepreneurs, universities, and associations signed a pact for sustainable productions to feed the local scale, from the producer to the consumer, and to protect rural areas from the urban, such as the Airport implementation.

To conclude, spatiality and material components and relations in places, stock and flows distribution, the demographic trends, changes in the governance system are all deeply, intrinsically connected dynamics, sustained and fuelled by networks of actors, human and non-human interactions material and immaterial elements on which global interests ‘land’, in a more and more connected world, as the pandemic dynamics evidenced, not only for the health and healthcare system but also for the tourism and its flows, estate stocks conditions and governance actions.

Through this brief diachronic and multi-scale analysis of the FPP urban region's main dynamics and governance issues linked to the aim of the thesis, the research assumes the FPP as an urban region, and a possible complex environment for the Airbnb system.

4.2 The Airbnb Platform in the Case Study. Evidence from the Analyses

Starting from the hypothesis that Airbnb can be described as a complex system, the analyses were guided by definitions from the Complexity Theories of Cities (CTC) and Actor-Network Theories (ANT) selected through preliminary unstructured quali-quantitative analyses on Airbnb and the literature review on Airbnb urban effects and then confirmed in a recursive process.

The next two paragraphs present cartographic analyses, guided by theoretical frameworks, about Airbnb in Tuscany and the Florence-Prato-Pistoia (FPP) urban region, which is also qualitatively analysed considering the features associated with assemblages of human and non-human actors.

Analyses are ordered in sections entitled with the five categories introduced in §2.1.2. This order was given *a posteriori* to help follow the discussion of the case study (Chapter 6). Even if these categories ordered the analyses after their elaboration, the principles and the approaches behind the categories selected were drivers of the analytical work. The analyses on Tuscany and the FPP urban region were structured in the light of CTC and ANT, which introduce the approach and method to interpret Airbnb, while the Extended Regional Urbanisation theories propose a geographic perspective on unbounded financial dynamics and thus, the necessity to reflect on this analytical process at different scales.

The categories – *Uncertainty and resilience; Situatedness, Ever-changing assemblages of paths and actors; Evolution revolution coevolution; Emergence in in-becoming environments. Bifurcations and Transitions; Complex Adaptive Systems and the role of the Past* – identify main insights from complexity theories that in this paragraph have the role of ordering the analytical compendium, and do not interpret it. The interpretation and discussion on findings are in Chapter 6, completed by the survey on policy and regulation on short-term rental activities at different levels in Chapter 5.

4.2.1 Airbnb in Tuscany at the Turn of the Pandemic

What patterns of diffusion are produced by the main Airbnb dynamics in Tuscany? Which material shapes does Airbnb assume in cities and regions through the action of its immaterial dimension consisting of interests from its actors? How fast are these dynamics? And how do they interplay their environmental contingencies? But even how do they interplay with their long-lasting material contingencies, such as the local milieu and the spatiality of cities and urban regions? This paragraph is a report on the main findings from these questions through quantitative and qualitative analyses at the scale of the Tuscany region. In the *Uncertainty and Resilience* category, the supply and demand patterns are analysed through cartographic methods; *Situatedness and ever-changing assemblage* present the state of the art of multiple-listings hosts'; *evolution revolution coevolution* category gives insights on the speed of the dynamics that involve supply and demand on the platform; *emergence in in-becoming environments* is a more qualitative analytical report on policy and political addresses in turbulent environments, in this case, linked to the pandemics; while *complex adaptive systems and the role of the past* reports qualitative analyses in a multi-variate analysis with landscaping, morphological and systemic features. In this case, the Airbnb material and immaterial dynamics are investigated through quantitative cartographic analysis consisting of maps and graphs about the relationship between Airbnb and peculiar features in Tuscany.

Analytical results at this scale are aimed at i) framing the Airbnb dynamics of the Florence-Prato-Pistoia urban region in the wider domain of Tuscany and its sub-regions and ii) primarily verifying the internal validation of the analytical method (principle of generalisation for results).

Uncertainty & Resilience

The next cartographic analyses are categorised as aspects of Airbnb’s dynamics related to Uncertainty and Resilience, and specifically Airbnb’s patterns of diffusion and concentration before and during the pandemic. In this sub-paragraph, the supply and demand stocks are analysed as extracted from the context, since cartographies are related to the only feature of supply or demand distribution, without linking with any other dynamic or feature of the territory. The interpretation of the maps is necessarily linked to the peculiarity of places where the density or diffusion pattern of Airbnb emerge.

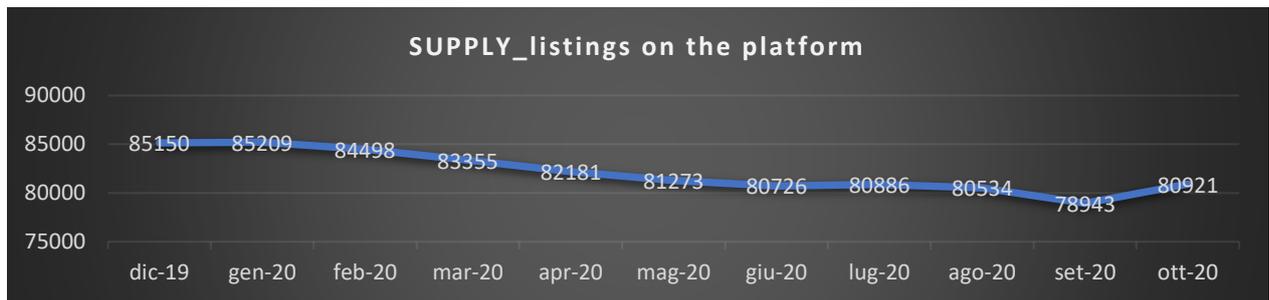
These maps are ‘photographs’ in specific moments of material aspects of Airbnb, namely the supply, as the listings proposed on the platform consisting of houses or apartments for short-term rental, and the demand, as booked nights consisting of people that move from a place to their destination and ‘in-habit’ a city for a certain period.

The four stages are chosen because complex dynamics are more likely to emerge and easier to be detected in the system during a fast-changing environment, as the pandemic year represents.

For specific disclaimers on data collection analysis and interpretation, please see Appendix B.

*Airbnb supply patterns of concentration and diffusion on four stages of the pandemic: December 2019, April 2020, July 2020, October 2020

The maps of the supply in Tuscany before and during the pandemic show a quite stable situation. No increasing or decreasing peaks were registered between the four stages (fig 4.24) and over the year (fig 4.25 and Graph 4.G08).



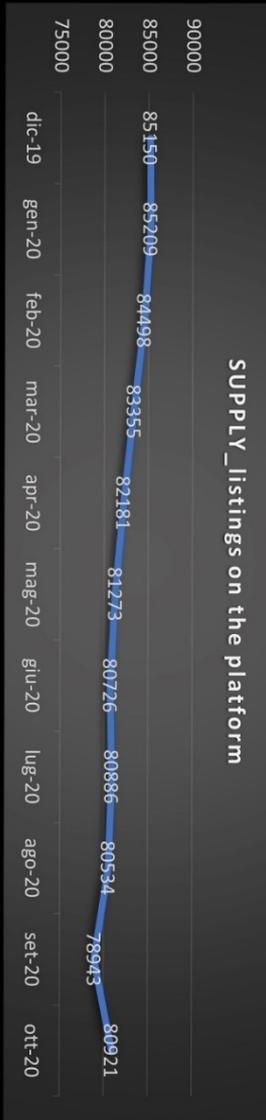
Graph 4.G08. A year of Airbnb supply in Tuscany. Source: Airdna data.

The supply density is calculated as the presence of listings on the Airbnb platform in the patches created (homogeneous areas of 86 hectares). Maps show that the density is not subject to a drastic change in the four stages of the pandemic. Between December 2019 – before the pandemic – and April 2020 – the second month of Italian lockdown – there’s the fastest decrease (-3%) and it stabilizes in July 2020 around the -5% respect to December 2019.

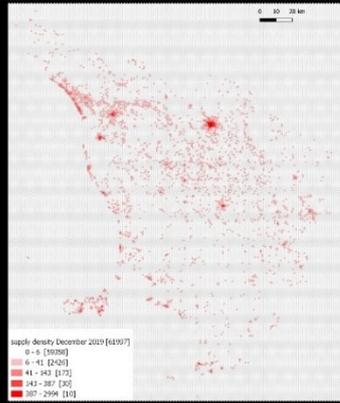
Airbnb Supply Analysis

> density of listings in homogeneous patches

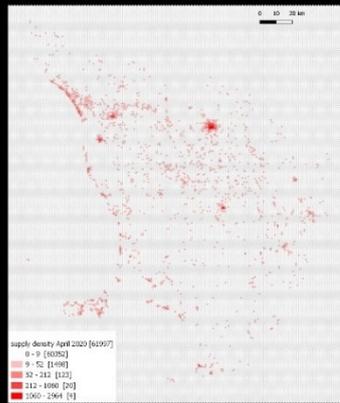
graph supply over 12 months



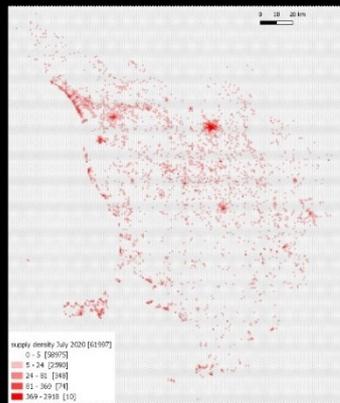
december 2019



april 2020



july 2020



october 2020

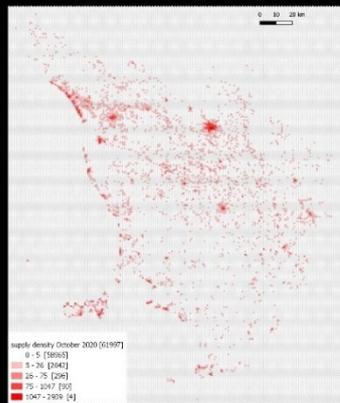


Figure 4.25. Four stages of Airbnb supply density in Tuscany. Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

The distribution of the supply isn't geographically homogeneous in Tuscany. Florence is the densest city for supply and demand with classes of density that goes from 200 to 3000 listings⁷⁰, but also the city of Lucca is covered by a single patch with high levels of listings density. The density in the two cities persists over the 4 stages. The second-class range for supply density shows a spotted distribution on coastal areas, and the Elba Island, in the FPP urban region, but also in the great metropolitan area that goes from Florence to the coast of Valdarno Inferiore. In December 2019 there were cores of supply (number of listings in patches between 56 to 387) in Versilia, the northern coastal region, and in Florence, Lucca, Pisa and Livorno. In the southern part, Siena and Arezzo present cores in the city centres.

Surprisingly, the Chianti region does not present as many dense patches as could be expected because of its brandisation. In April 2020 just a few spots of high concentration (regular patches of 100 to 200 listings) of supply remain, such as Florence, Prato, Pistoia, Versilia but decreasing in number, while the core of Siena decreases its listings density and changes the range of classification of the patch. Patches of the second class of density come back increasing in numbers in July 2020, especially in Versilia, Elba, the southern coast, but also Florence increases its patches and Siena rises again in the number of listings up to 80 to 350 listings in patches. The situation remains almost the same in October 2020, but Versilia loses most of its patches classified between 100 to 300 listings. Lower classes of density create a kind of constellation that is spread all over the Region.

In December 2019 in Florence, Siena, Lucca, and Pisa these patches created a 'belt' of supply around the city, while in Prato and Pistoia they are in city centres, and in the 'peripheral areas' and in 'rural areas' there is almost no concentration of supply. In the northern region, from Pistoia to the coastal region of Versilia, we find a ceaseless band of supply concentration, even if it presents a low number of listings in patches, between 4 to 59 listings. The Chianti region is where the 'constellation' becomes thicker, as in the northern coast and Elba, while in the southern part of the region many places are uncovered. In April 2020 some patches disappear,⁷¹ but the regional pattern remains almost the same.

Finally, in October 2020 the number of patches in these classes keeps decreasing in number but the regional pattern registered in December 2019 is still visible. This is also validated by the analysis of two stages before and during the pandemic on supply in landscape regions, as defined by Tuscany Region (see the section *Complex adaptive system*). Patterns of distribution remain, while the total number of listings decreases.

⁷⁰ In regular patches of 86 hectares each

⁷¹ Consider that in the map the first class (from 0 to 5 listings in an area of 86 hectares) is not visible. But data referred to this class is reported in legends.

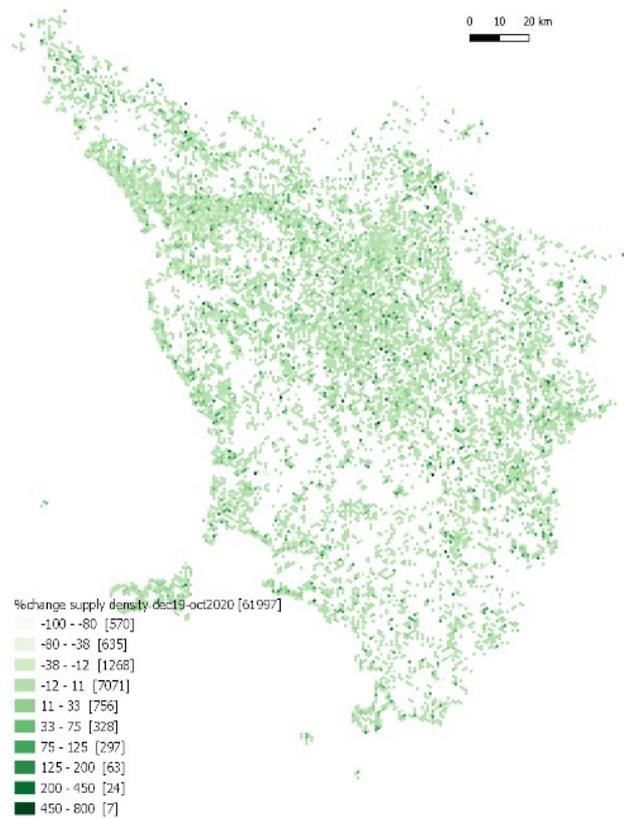


Fig. 4.26. Percentage change in supply density in Tuscany December 2019-October 2020. Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

Over the year, there are only 100 patches (on 61997) in Tuscany that have an increment in percentage change (from 100 to 800%) and they're all outside urban areas.⁷² Patches that are subject to a percentage change in a range between 0 to 100% are 1669 and are spread all over Tuscany, following the pattern evidenced in December 2019 for supply density (fig. 4.26). The patches that from December 2019 to October 2020 lose from 80 to 100 % of density are 9254 and are all over Tuscany, with thickening patterns in Florence on the side of the Chianti region, from Pistoia to the Versilia region and in the Elba Island.

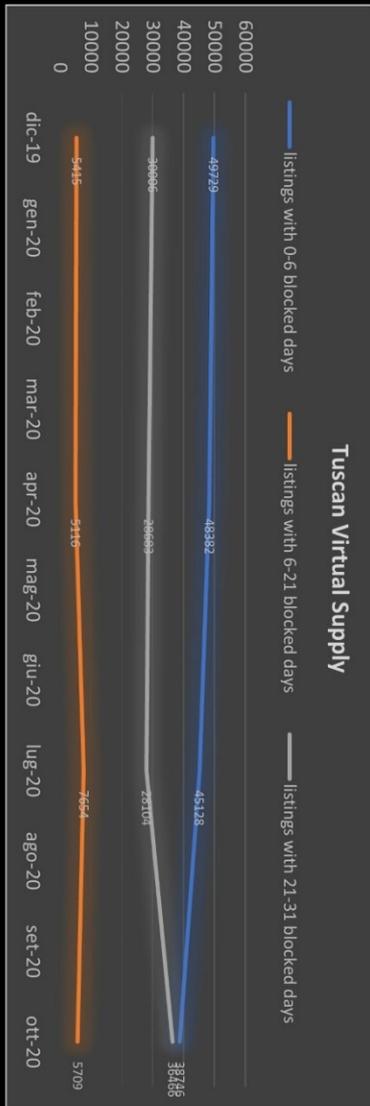
Nonetheless, the 'genuine datum' of Airbnb listings can be tricky. Indeed, there's the possibility that hosts 'frozen' their listing(s), blocking some days on the calendar to not remove the listing from the platform and to not keep the chance for guests to book it. This situation here's defined 'virtual supply' is mappable through the 'blocked days' field in data (fig 4.27).

⁷² as defined by Tuscany Region

Airbnb Virtual Supply Analysis

> listings blocked
for >= 21 days/month

graph virtual supply in the 4 stages



december 2019

april 2020

july 2020

october 2020

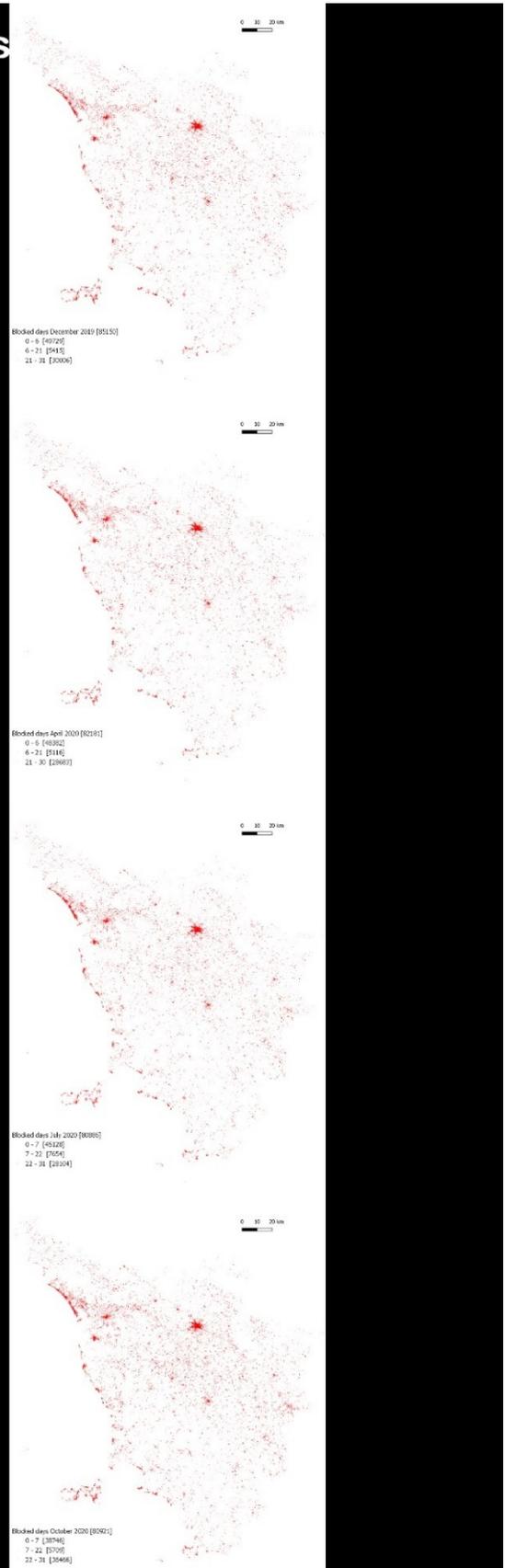
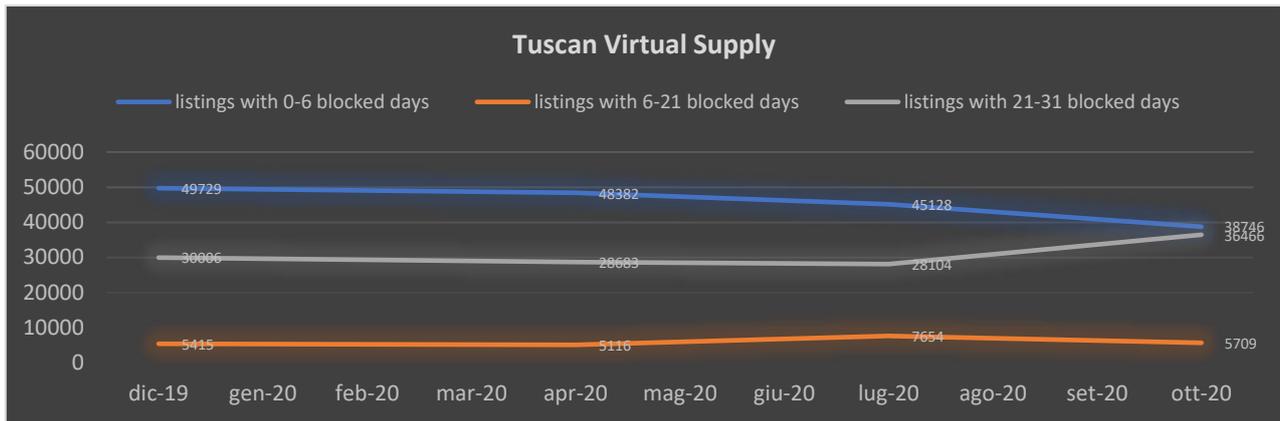


Fig. 4.27. Four stages of Airbnb 'Virtual supply' in Tuscany (from the top to the bottom: December 2019, April 2020, July 2020, October 2020). Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.



Graph 4.G09. Four stages of Airbnb Virtual supply in Tuscany as the number of listings in classes of blocked days. Source: Airdna data.

What is meant here with virtual supply, is the necessity to distinguish between the ‘pure datum’ of listings present on the platform when scraped and listings available for guests. For instance, hosts might have decided to not remove the listing from the platform – which is still scrapable, and thus is counted in the ‘supply’ maps of the research – but to make it unavailable for booking and stays, since the calendar options of the Airbnb platform allow hosts to block certain days. This option could be used to spend time in their own house or to have maintenance works and so on.

The Airdna dataset is processed with algorithms that specify the field ‘blocked days’, a piece of information unavailable on other datasets of this research.

Listings with 0-6 days blocked on the month (blue line graph 4.G09) are those more likely to be available for bookings and decline with no peaks over the year, while those at the opposite side of the spectrum that are blocked for most of the month decrease up to July 2020 and then increase in number in October 2020 (grey line graph 4.G09). Listings blocked between 6 and 21 days/month are stable on the period December 2019-October 2020. This analysis shows that the class of listings with 0-6 blocked days/month represents most of the listings on the platform, therefore, we can simplify the reading of data and take the ‘supply’ analyses as realistic photography of current dynamics.

*Airbnb demand patterns of concentration and diffusion on four stages of the pandemic: December 2019, April 2020, July 2020, October 2020

The Airbnb demand⁷³ before and during the pandemic is highly variable.



⁷³ The Airdna dataset is processed with algorithms that allow specifying the field ‘reserved days’, as booked days on a month for a specific listing. Reserved days is the sum of days booked. These do not need to be consequent or booked by the same person. This kind of analysis isn’t possible with other dataset of this research because the scraping algorithm is built differently.

Graph 4.G10. A year of Airbnb demand in Tuscany. Source: Airdna data

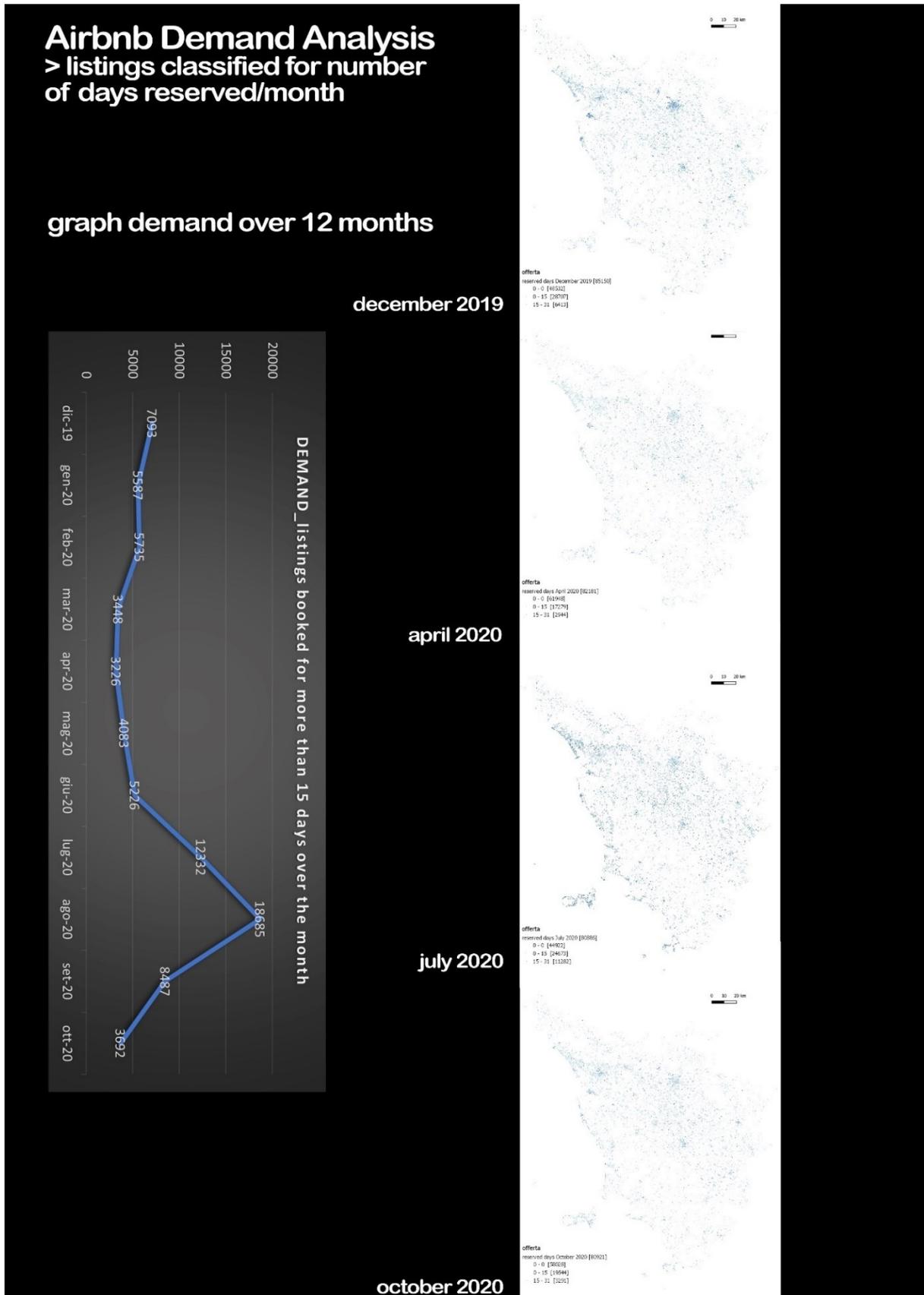


Figure 4.28. Four stages of Airbnb demand in Tuscany (from the top to the bottom: December 2019, April 2020, July 2020, October 2020). Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

In December 2019, 7% of listings were reserved for 15 to 31 days a month. In July 2020 the ratio between supply and listings booked for 15-31 days is double compared to December 2019. April 2020 registered the lowest percentage of booked listings for most of the month (3,5%) while in October 2020 this percentage arrives at 4% (see Graph 4.G10).

The listings booked for 0 days on the month are all over Tuscany constituting a constellation, that follows the same pattern evidenced in the supply maps. This is logic because the demand, as the access to the Airbnb listings, is necessarily based and deeply linked to the supply stock.

The listings reserved for 15-31 days have a drastic increase in July 2020. They're even more than those in December 2019, before the pandemic emergence. Compared to December 2019, it is visible that the most booked areas are the coastal, from northern to southern coasts, but also the areas of Chianti and Valdarno Superiore up to Arezzo are very demanded. In July 2020, the demand assumes the pattern of a thick constellation of spots and a more sprawled fine dust that covers almost all Tuscany, but it is more concentrated on those cities and regions that form the 'typical pattern of Airbnb in Tuscany'. Indeed, it is recognisable both in supply and demand a kind of persisting form in the listings density as a diagonal that comes to the Versilia costs and goes down to Arezzo, while the rest of the region is less dense. In July this pattern is more evident with the adjunction of coastal areas and Elba Island (Fig. 4.27).

April 2020 and October 2020 have almost the same consistency in number and pattern of distribution, even though the environmental contingencies were very different in the two periods (see *Emergence in in-becoming environments* and the interviews in Appendix C).

Situatedness, Ever-changing assemblages of paths and actors

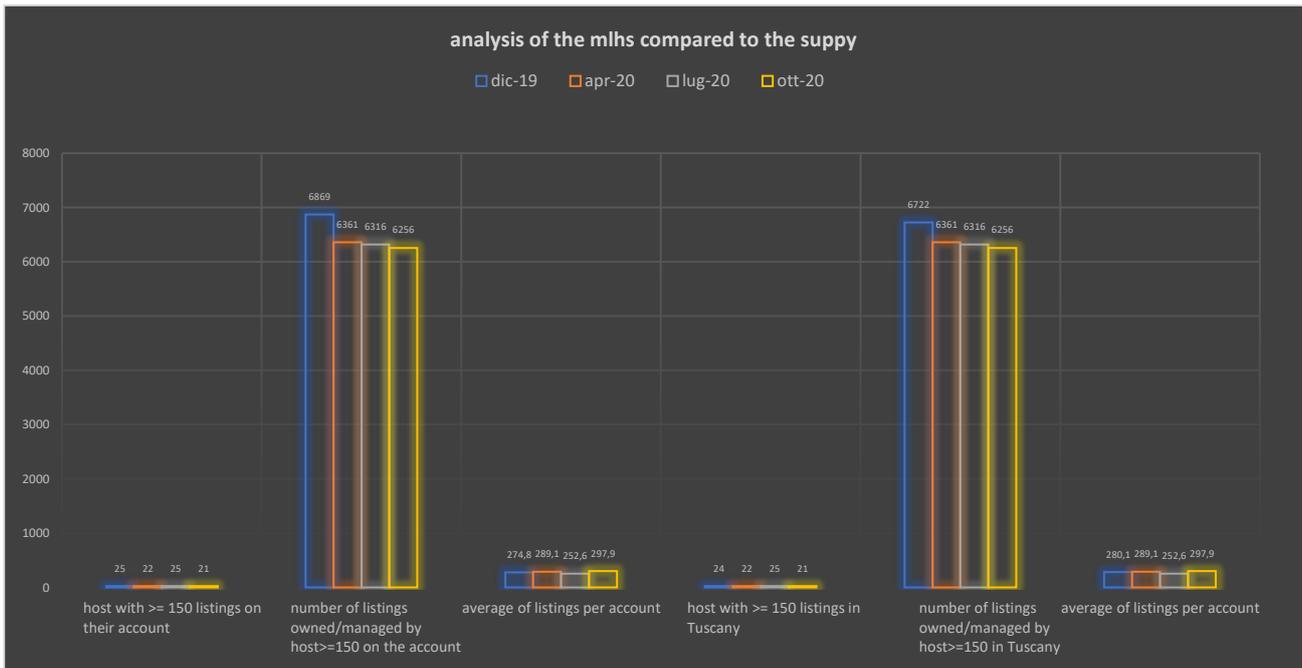
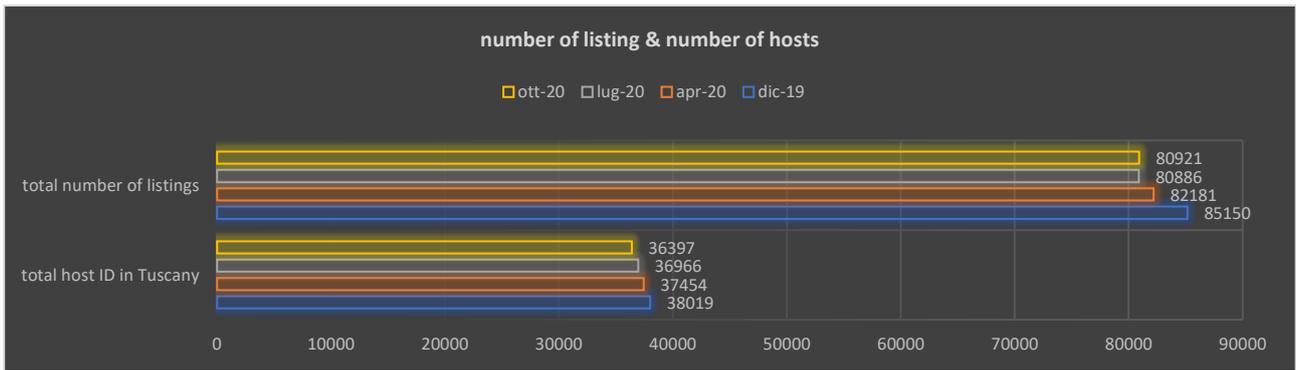
The next cartographic analyses are categorised as Assemblages of Airbnb's dynamics. Specifically, through elaborations on Airbnb's patterns of the estate stock owned or managed by multi-listings hosts (mlhs) before and during the pandemic. This sub-paragraph explores i) the distribution of the local assets of mlhs compared to their total assets; ii) the comparison between the supply and the number of mlhs; iii) the distribution patterns of the listings owned or managed by mlhs; iv) the provenience of mlhs. As for the supply and demand analyses, these maps are 'photographs' of material aspects of Airbnb as the estate stock owned or managed by mlhs. These material aspects can be triggered by economic and financial forces at different scales linked to the inextricable mingling of private interests analysed as assemblages of human/non-human actors.

*Airbnb Multi-listings Hosts (mlhs) patterns of concentration and diffusion on four stages of the pandemic: December 2019, April 2020, July 2020, October 2020

In §2.3 the role and power of different types of hosts in the Airbnb dynamics were introduced. The following maps show the diffusion of the host that own or manage multiple listings. The externalities of the consistency of the mlhs are further discussed in §5 from a perspective on regulative frameworks.

In December 2019 on Airbnb there were 85150 listings owned or managed by 38019 hosts, with an average of 2.24 listings per host. During the pandemic, there's a downward fluctuation in supply and demand (see the section above), but the ratio between hosts and their supply stock remains almost the same (2,19 in April 2020; 2,18 in July 2020 and 2,22 in October 2020. See graph 4.G11 and 12).

Among those, there are multiple listings hosts (mlhs) with more than 150 listings on their account that remain stable before and during the pandemic, fluctuating between 25 and 21 accounts. The total housing stock owned or managed by them is also quite stable passing from 6869 before the pandemic to 6256 listings in October 2020. The patterns of geographic distribution do not change in stages (see fig. 4.29)

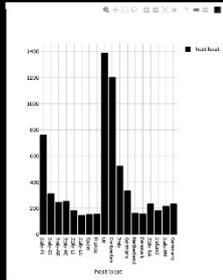


Graph 4.G11 and 4.G12 Four stages of Airbnb hosts and mlhs in Tuscany. The first graph describes the total number of listings on the platform at the scraping date (supply) and the total number of hosts in Tuscany. The second graph reports the number of hosts with more than 150 listings on their account (thus, their estate stock could be anywhere) and the number of listings owned or managed by those mlhs. Then, it is calculated the average of listings per account of those mlhs. The last groups of columns in the right part of the graph indicate the number of hosts with more than 150 listings in Tuscany and the number of listings owned or managed by those mlhs in Tuscany. Finally, it is calculated the average number of listings in Tuscany that mlhs own or manage. Source: Airdna data.

The graphs above help the interpretation of the mlhs situation. First, the host with more than or equal to 150 listings are few and are not more than 25, with little downturn fluctuations over the year, but the housing stock owned or managed is never less than 6000 listings. This means that each of those 25, in certain periods less, mlhs own or manage an average of 250 listings each. It is interesting to note that the average number of listings owned or managed by them increases over the pandemic year. Another interesting point to note is that the number of mlhs with more than or equal to 150 listings in Tuscany is the same as the mlhs that have 150 or more listings on their account, with the very exception of one multi-listing host that in December 2019 has more than 150 listings on its account but are partially located elsewhere and do not reach the number of 150 in Tuscany.

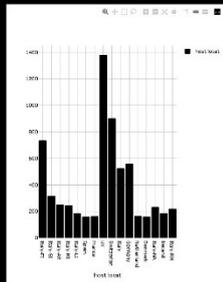
Host Analysis > host ID* [colour]

graph host location



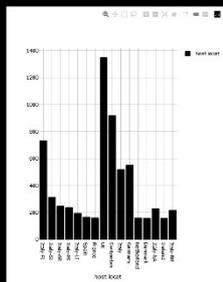
december 2019

```
mlhs x=150 to December 2019 (1099)
102947538 (157)
1090942 (154)
12983782 (150)
12986799 (160)
13100975 (154)
13105031 (153)
15162951 (238)
15966794 (159)
18153118 (149)
18153113 (147)
18153111 (145)
22275235 (186)
2983782 (143)
21897989 (140)
2176615 (208)
22284116 (217)
2383543 (225)
2390884 (227)
24230010 (289)
3796381 (111)
4136491 (207)
425064 (147)
4670000 (256)
5026683 (251)
9591097 (299)
[NA]
```



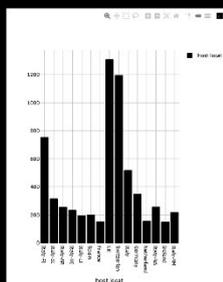
april 2020

```
mlhs x=150 to April 2020 (361)
102947538 (161)
1090942 (156)
12986799 (160)
12986799 (160)
13100975 (153)
13100971 (149)
15162951 (159)
15966794 (149)
18153118 (164)
18153111 (149)
18153113 (146)
22275235 (184)
2983782 (143)
21897989 (140)
2176615 (208)
22284116 (217)
2383543 (225)
2390884 (227)
3796381 (111)
4136491 (207)
425064 (147)
4670000 (256)
5026683 (251)
9591097 (299)
[NA]
```



july 2020

```
mlhs x=150 to July 2020 (621)
102947538 (161)
1090942 (157)
12986799 (160)
12986799 (160)
13100975 (153)
13100971 (149)
15162951 (159)
15966794 (149)
18153118 (160)
18153111 (149)
18153113 (146)
22275235 (186)
2983782 (143)
21897989 (140)
2176615 (208)
22284116 (217)
2383543 (225)
2390884 (227)
24230010 (289)
3796381 (111)
4136491 (207)
425064 (147)
4670000 (256)
5026683 (251)
9591097 (299)
[NA]
```



october 2020

```
mlhs x=150 to October 2020 (1020)
102947538 (152)
1090942 (159)
12986799 (160)
12986799 (160)
13100975 (154)
13100971 (150)
15162951 (258)
15966794 (149)
18153118 (161)
18153113 (149)
18153111 (145)
22275235 (180)
2983782 (143)
21897989 (140)
2176615 (208)
22284116 (217)
2383543 (225)
2390884 (228)
24230010 (289)
3796381 (111)
4136491 (207)
425064 (147)
4670000 (256)
5026683 (251)
9591097 (299)
[NA]
```

*All these hosts are selected (>=150 listings on their account)

Figure 4.29. Four stages of Airbnb mlhs supply stock distribution in Tuscany (from the top to the bottom: December 2019, April 2020, July 2020, October 2020) and the graphs of the host location. Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

The host ID field helps to map the distribution of supply stocks of each host (fig.4.29). Only hosts with more than 150 listings on their accounts were included in the elaboration. Each colour represents a single host. Those with very numerous stocks of listing were graphically highlighted with glowing shades behind the dots. Over the four stages, there aren't high up or down peaks. What is visible by a qualitative glance is the concentration of the same hosts in specific parts of Tuscany (Florence, the northern coast – that loses its main mlh from December 2019 to the rest of the year – Elba Island and the Chianti). Over the four stages, there aren't evident changes in distribution since the mlhs remains almost the same and keep the same stock with the only exception of a 10% decrease in October 2020 compared to December 2019. The graphs on the left help to read the host location, and thus track from where capitals invest in Tuscan short-term rental listed on Airbnb. We can see that all over the period most of the listings are owned or managed by hosts or companies from UK, Switzerland, and Italy. Italian investments are the highest since their location is divided into major cities from Italy (we have Florence first, Milan, Siena, Livorno, Naples, Rome, Arezzo). Absolute numbers change in the four stages, but the provenience of the host is almost unchanged, except for the Switzerland that reduce the consistency of its stock in April and July 2020. Below the maps of the mlhs' location show the distribution of provenience of the capitals (fig. 4.30).

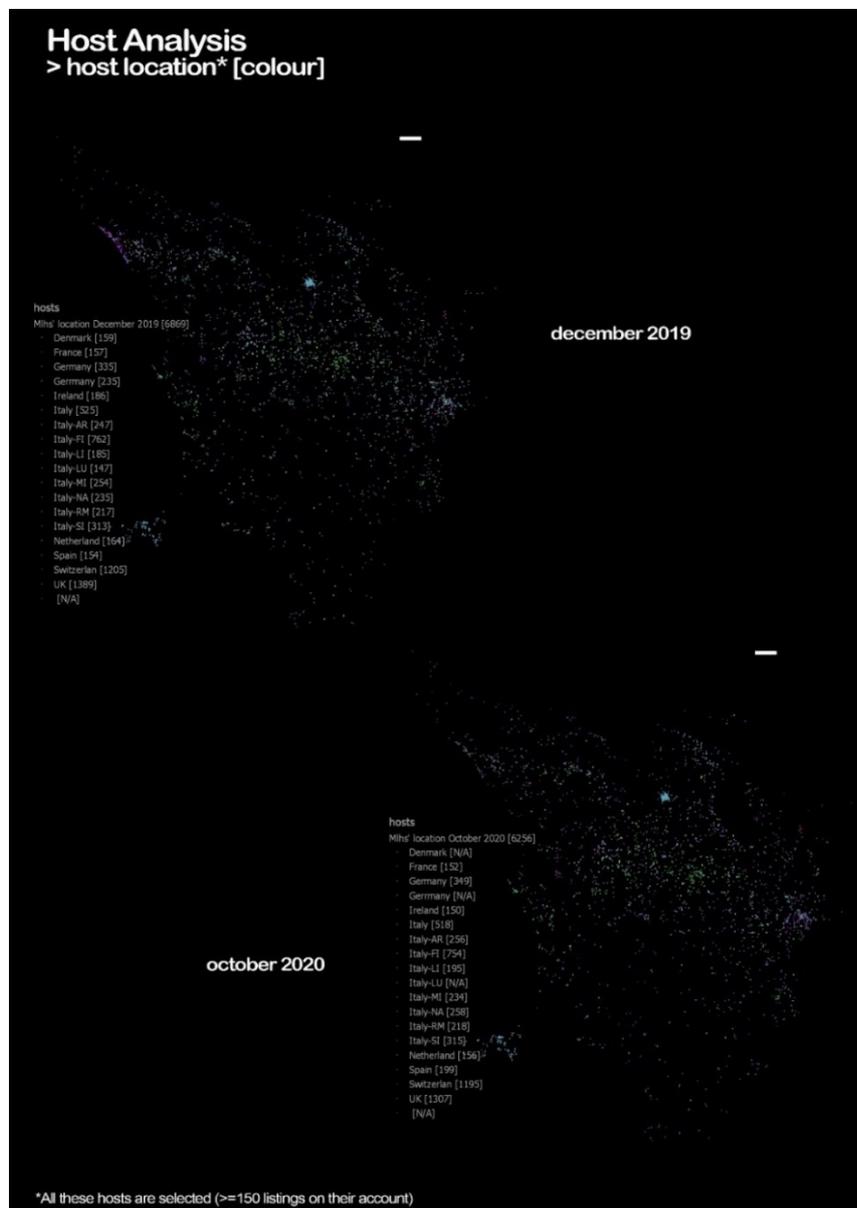


Figure. 4.30. Two stages of Airbnb mlhs location (December 2019 and October 2020). Source: Airdna data.

For example, the concentration of light blue dots in Florence, of blue dots in Elba and of green spread dots in the Chianti region indicates that capitals from a single country concentrated their investments or made campaigns for managing listings in specific areas or spread in regions.

*Airbnb Assemblages of Human/Non-Human actors. The Tuscany region level

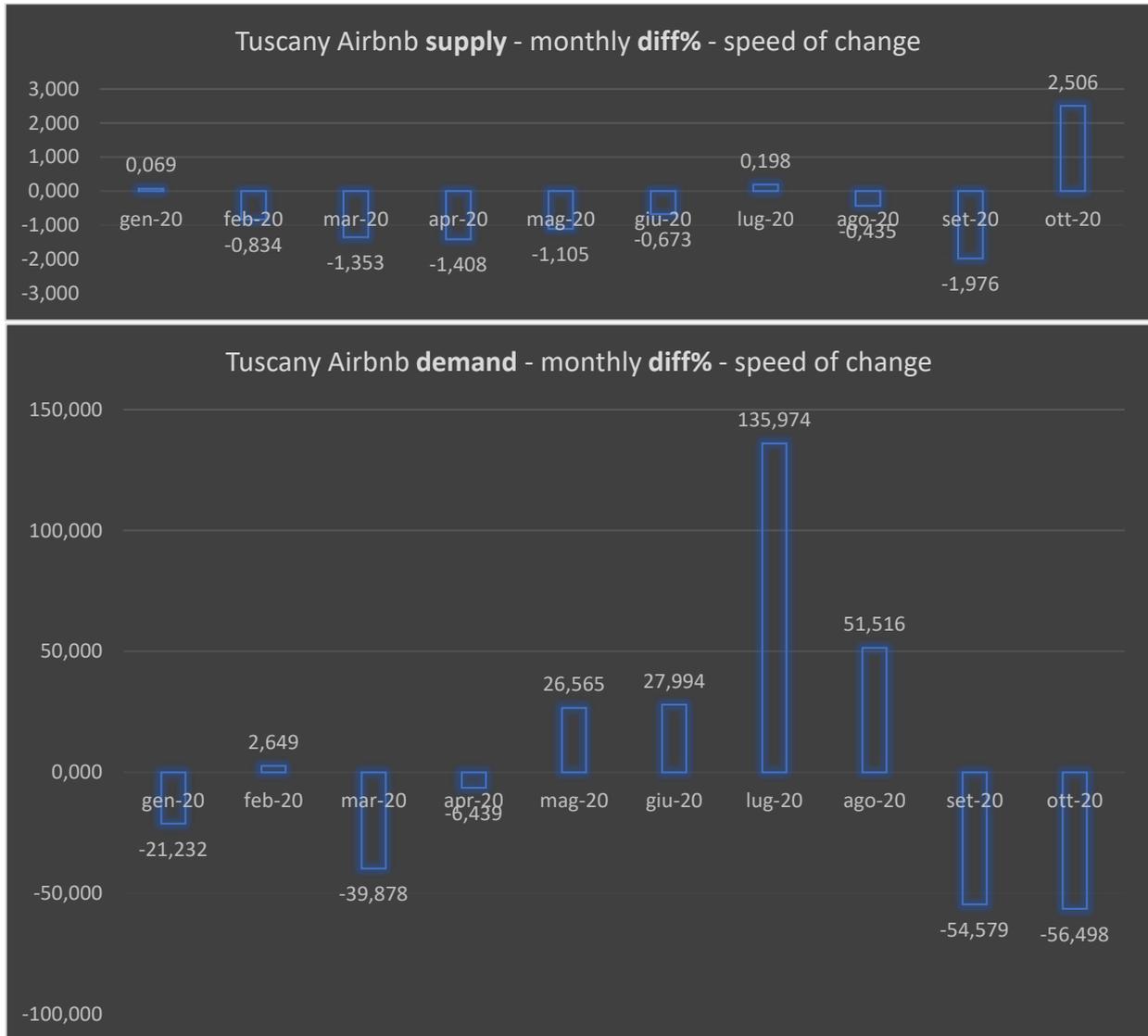
The analysis of Airbnb driven by the hypothesis that it can be a human/non-human assemblage, and thus, present complex system's features to be addressed, is set on qualitative data.

At the link below there is an infographic representation of the main variables used to evidence the assemblage nature of Airbnb. These are the supply evolution in Italy and Florence, the demand consistency reported from the survey via social media, a qualitative interpretation of the different power of the actors involved over years, current laws and acts at different levels and the pandemic demand.

<https://prezi.com/i/f4qzs-wnbcln/>

We can observe how the role of different actors changed over the years from the funding of the Airbnb platform up to the years of the boom. This increment in the power of the Platform as a Company, the role of mlhs and the management agencies in the geometric increase of the supply is also linked to the policy acts at different scales that govern the short-term rental market. The demand is a crucial factor. The reasons behind it are many and differentiated also because the marketing policy of Airbnb aims at spreading the range of opportunities for guests, but most of all it is still used for leisure travel. And therefore, the tourist sector is inevitably involved in these reflections, especially in the pandemic, as you can see in the section about the *emergence in in-becoming environments*.

Evolution revolution coevolution



Graph 4.G13 and 4.G14. Graph of the Airbnb supply and demand weekly detailed change. The delta between each week has been calculated in percentage Source: Airdna data

The aim of the graphs above is to highlight the degree of change, and thus, as much as higher, or lower, is the column, as much as greater is the difference between the two months, and thus the speed of the change. Consistently with the previous analyses, the calculation of the percentage change between a month and the other shows a quite stable situation for the supply and a variable situation for the demand. The demand speed of change follows the season of the tourist flows, but the supply remains still, or it follows counterintuitive rules confronting the demand (see October 2020). We can see that the pace of the change in the supply is slow while the demand accelerates and decelerates fast.

Emergence in in-becoming environments. Bifurcations and Transitions

Figure 4.31 and 4.32. Airbnb's Supply, Policy choices at different scales and Pandemic Trends.

The situation of the policies and acts to fight the negative externalities of the Covid-19 pandemic have effects on many fields and markets. In this case, tourism is at the centre of this elaboration because Airbnb is one of the powerful actors in this market at the global level, but also at the local scale. From the infographics we can see that at the European levels, except for a few critical moments, public interventions have been aimed at proposing relief actions, also funding member states. Italy has had oscillations of policy between peaks of restrictive actions and less-tense addresses on virus fight also to relieve the economic sectors, and the tourist one specifically, as we see from the graph in the summer period.

Complex Adaptive Systems and the role of the Past

Under the first three framework concepts, the analyses cover specific dynamic aspects of the Airbnb analysed *per se*. In this part, the aim is to identify possible correlations between those aspects and the material environment on which they 'land'. Theoretical references of this thesis about territories evolutions and path dependency claim for the correlation of human activities, also the most intangible, and the tangible features of territories and the vice versa relation.

*Supply and Demand in Landscape Regions as defined by the Tuscany Region Landscape and Territorial Plan (2015).

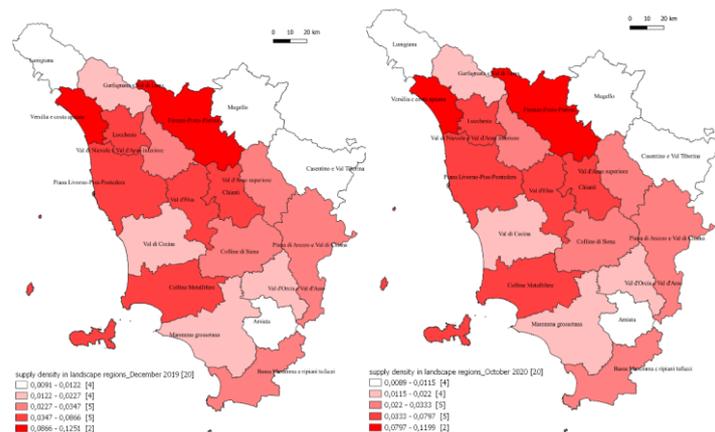


Fig. 4.33. Two stages of Airbnb supply density in Tuscany Landscape regions (on the left: December 2019; on the right: October 2020). Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

The maps above report a quantitative analysis of the supply density in landscape regions, as defined by the Landscape Territorial Regional Plan (2015) and free shared by the Tuscany Region open database (fig 4.32). Consistently with the analyses from *uncertainty and resilience*, there are no substantial changes over the period. Anyway, it is interesting to note the distribution of the Airbnb supply in the landscape regions. We see that the FPP Piana and the coastal areas of Versilia are the densest, while the Mugello is one of the less dense areas and, in fact, one of the nearest to Florence.

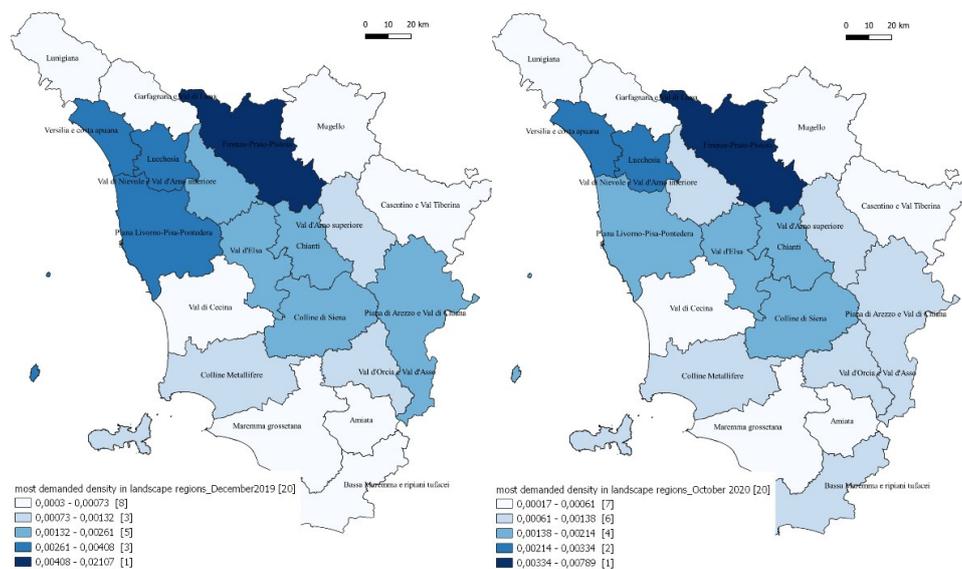


Figure 4.34. Two stages of Airbnb most demanded listings density in Tuscany Landscape regions (on the left: December 2019; on the right: October 2020). Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

The cartographic analysis of the demand in landscape regions confirm this trend, showing a general decrease in demand density. Especially the Val di Chiana and Arezzo regions and the Livorno Pisa regions lose the most in October 2020 compared to December 2019. Both stages show that the FPP Piana is the most demanded region, unrivalled by any other region in Tuscany, nor by the coast of Versilia, as dense as FPP in supply.

But if we compare the decrease in the number of booked listings in the period December 2019-October 2020, we see that the Florence Prato Pistoia region decreases most, as the Amiata region, in the southern part of Tuscany. Amiata is characterised by a “fine dust”, a pattern of diffused supply and demand stock (fig. 4.25 and 4.28).

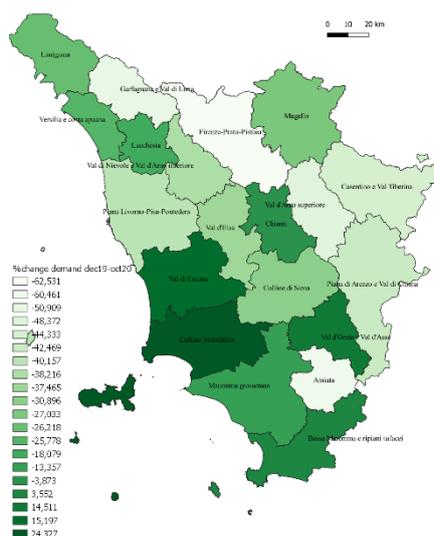
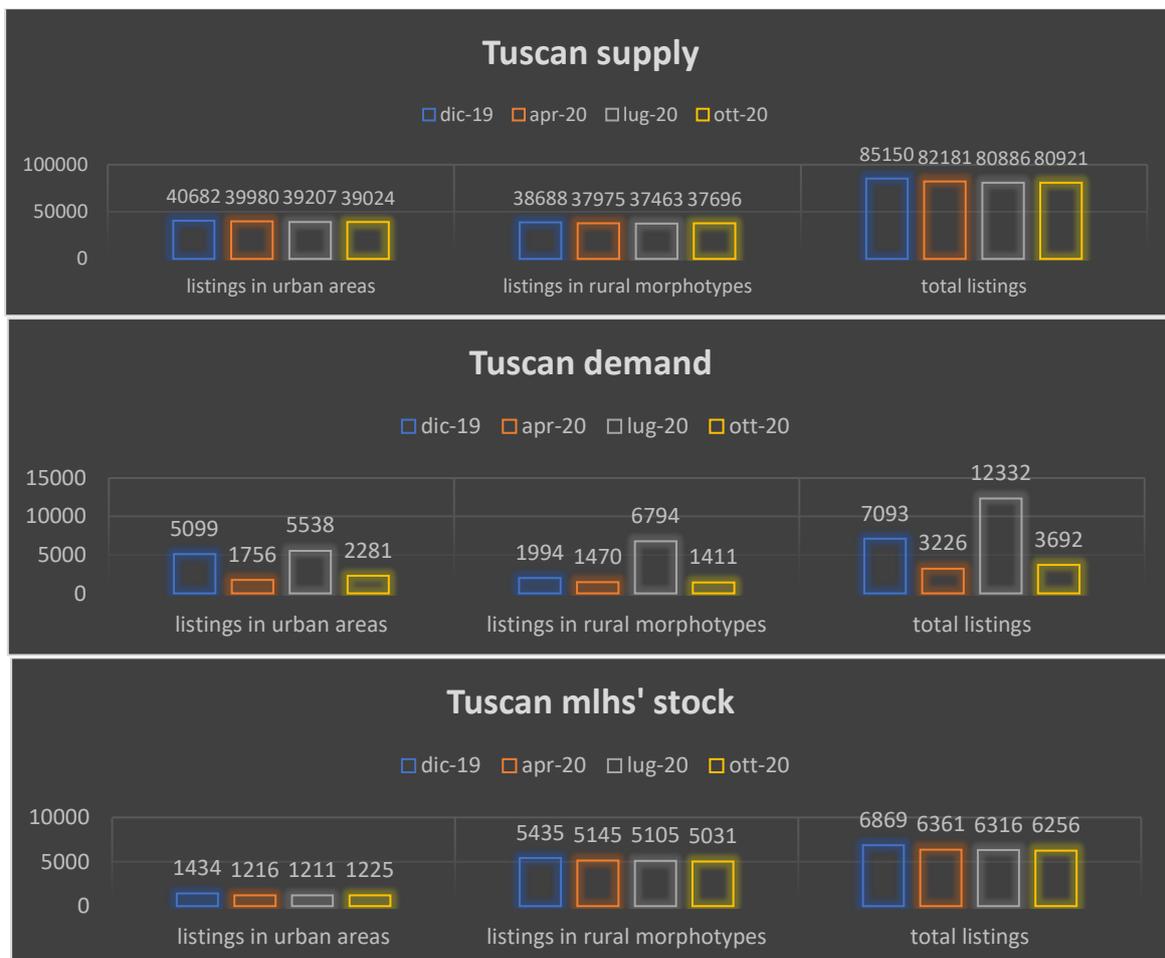


Figure 4.35. Percentage change in demand density in Tuscany Landscape Regions from December 2019 to October 2020. Source: Airdna data. For specific disclaimer on map elaboration please see Appendix B.

Almost all Landscape regions decrease their percentage of most demanded listings density. Only four of them increase in a range between 3 and 25% of their demand density: two on the coast (Val di Cecina and Colline Metallifere, Elba included) one in the southern inner part (Val d’Orcia), and one that covers the coast and the inner parts of Tuscany (Massa Marittima).

*Supply, Demand and Multi-listings Hosts’ Stock in Urban and Rural Areas as defined by the Tuscany Region Landscape and Territorial Plan (2015).

Each of those Landscape regions has peculiar features. Some of them are more ‘urban’ some others more rural (see §4.1.1). So, how are the supply, demand and multi-listings hosts stocks diffused in the urban and rural realms of Tuscany?



Graph 4.G15, 4.G16, 4.G17. Four stages of Airbnb supply in Tuscany. The first two groups of columns describe the total number of listings on the platform at the scraping date in urban areas (as defined by the Tuscany Region Landscape plan) and in Rural Morphotypes (ibidem). Four columns identify four stages of the pandemic. The last group of columns indicate the total supply on the platform at each stage of the pandemic. Source: Airdna data

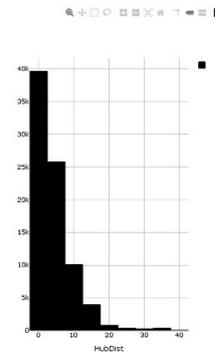
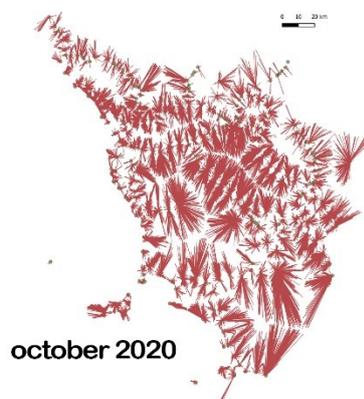
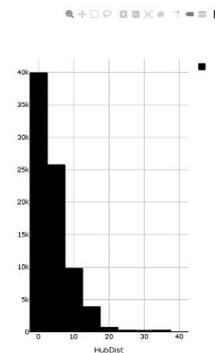
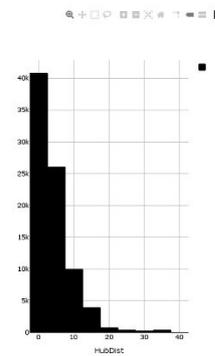
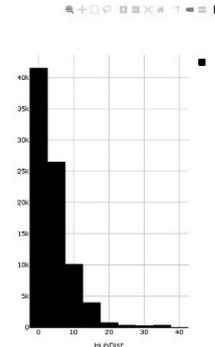
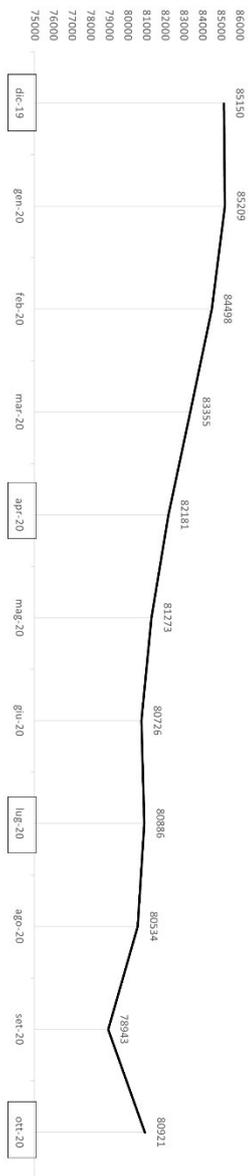
What emerges from the graph is that at the regional level, listings in urban areas and out of the urban areas are almost equal in absolute numbers. The demand invests the urban areas more before the pandemic (December 2019), while urban areas and rural morphotypes are not differentiated in terms of demanded listings in the other stages, except for October 2020 when the reserved listings in urban areas almost double-up those in rural areas. An interesting data is from the multiple-listings hosts’ stock. We see that mlhs tend to invest 5 times more in the rural areas of Tuscany than in the urban areas.

*Supply, Demand and Multiple-Listing Hosts Patterns related to access infrastructures (distance from railways stations, ports, and airports on 4 stages: December 2019, April 2020, July 2020 and October 2020)

Distance Analysis

> supply on Airbnb
from
> infrastructure hubs

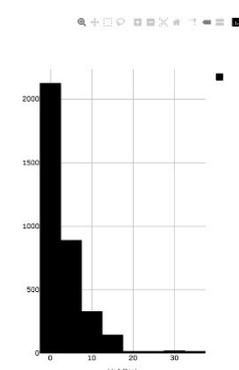
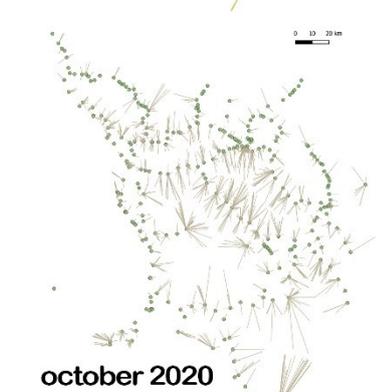
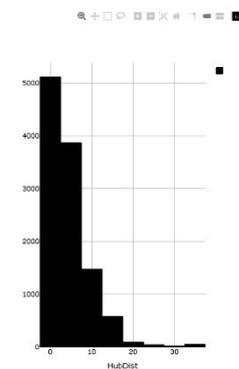
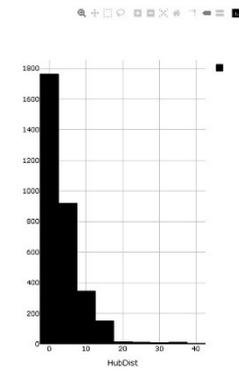
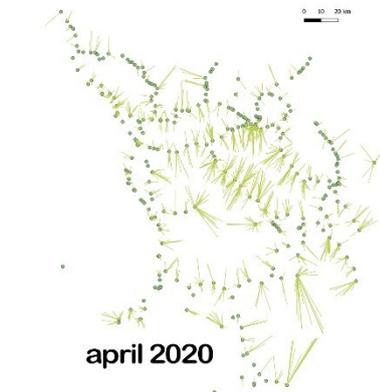
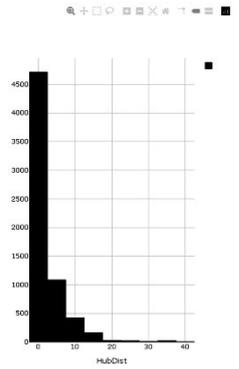
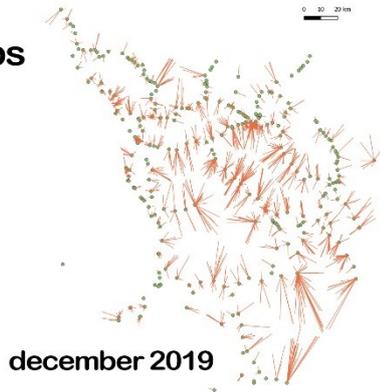
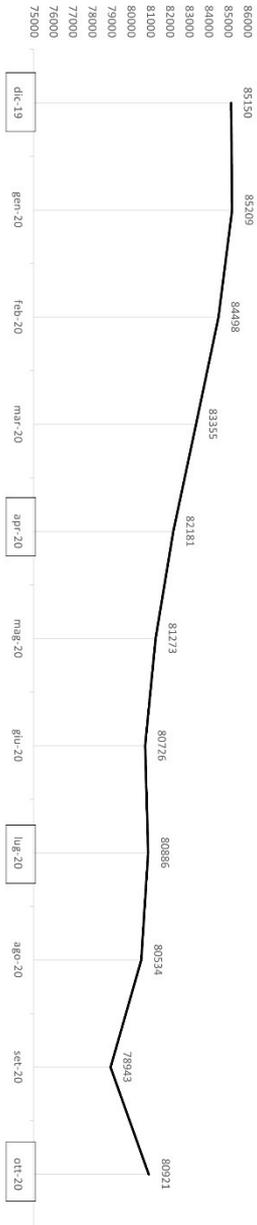
graph of the Airbnb supply (listings on the platform/month)



Distance Analysis

> demand on Airbnb
from
> infrastructure hubs

graph of the Airbnb supply (listings on the platform/month)



Distance Analysis

> milhs' stock on Airbnb*
from
> infrastructure hubs

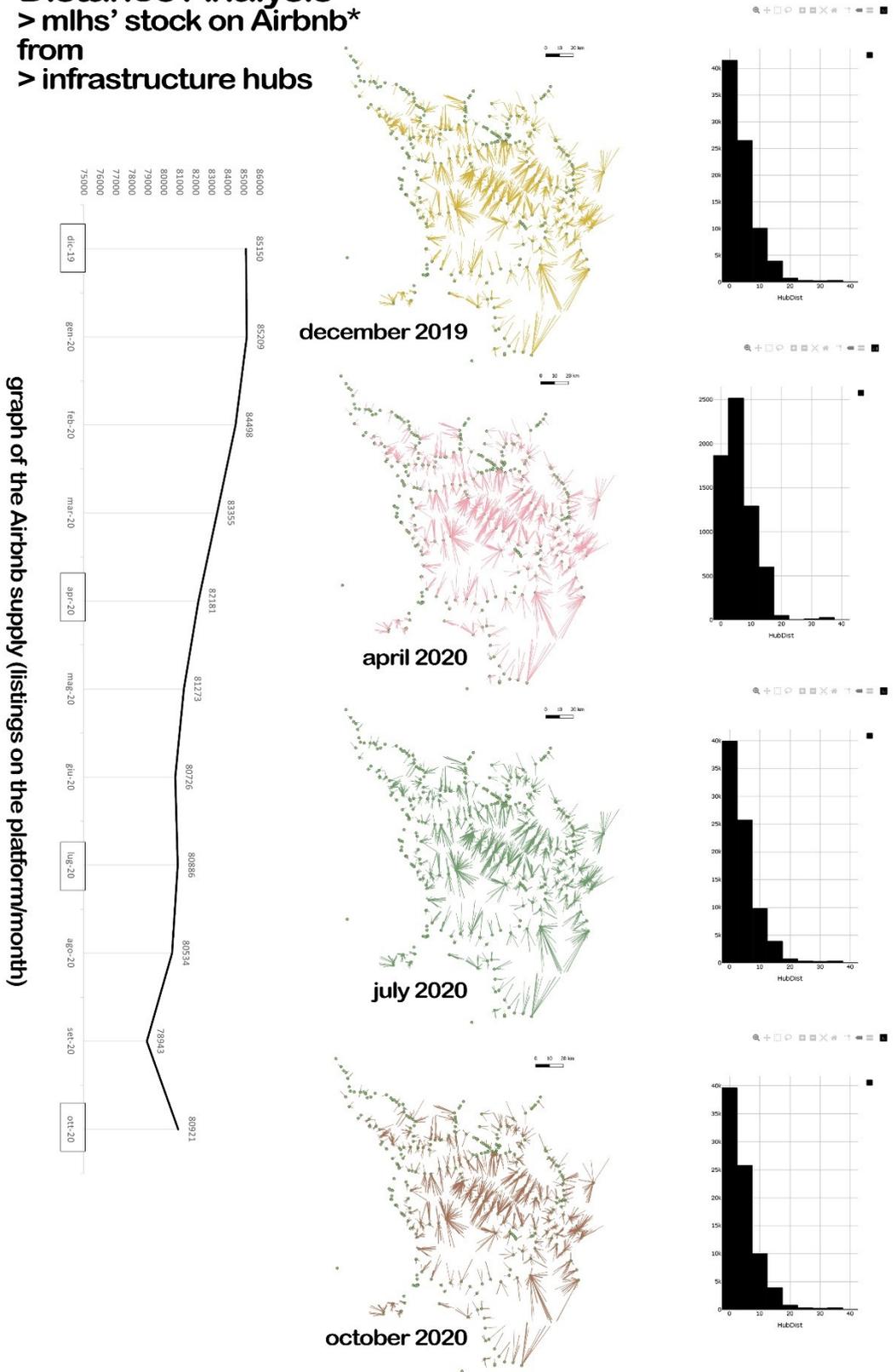


Figure 4.36, 4.37, 4.38. Four stages of Airbnb supply, demand, multi-listings hosts' stock distance from infrastructural hubs. Source: Airdna data and official data from Tuscany Region. For specific disclaimer see Appendix B.

The analysis of the distance relation between Airbnb supply and the infrastructural hubs shows there are no significant differences between the stages. And that's because the supply doesn't fluctuate over time, thus we have almost no changes in supply stock linked to the position of the accessibility infrastructures. Nonetheless, we can see an interesting pattern of the distance between railway stations and listings on the platform, noting that in the northern part of Tuscany distances are closer (less than 5 km), while in the Chianti region and the southern part are quite long. This is linked to a territory less serviced by infrastructures, and the brandisation of a territory known for the landscape and thus accessed also without public transport as train lines. The coastal areas are characterized by frequent access hubs (the ports and the many railway stations on the coastline) that create a dense network of accessibility. But it should be weighted because not all ports are touristic.

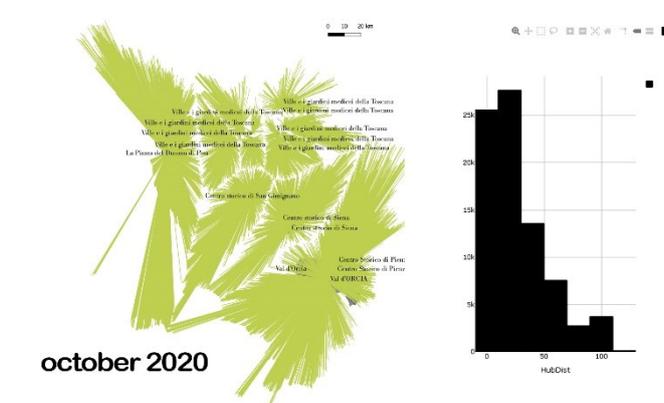
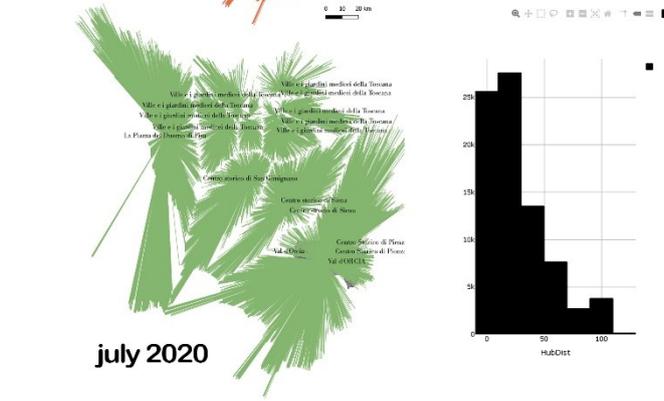
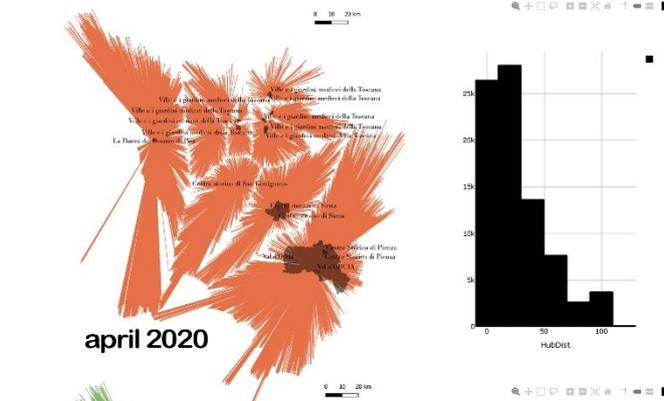
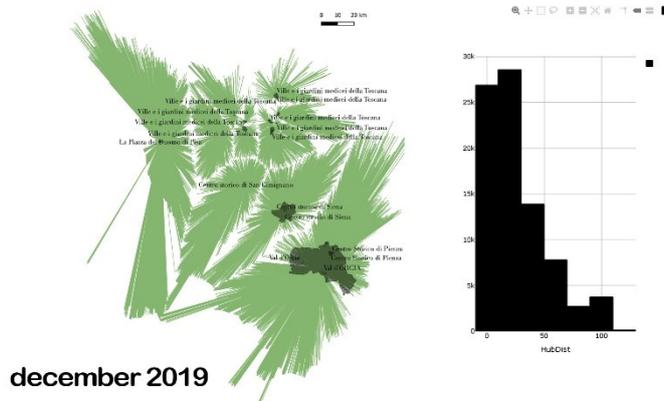
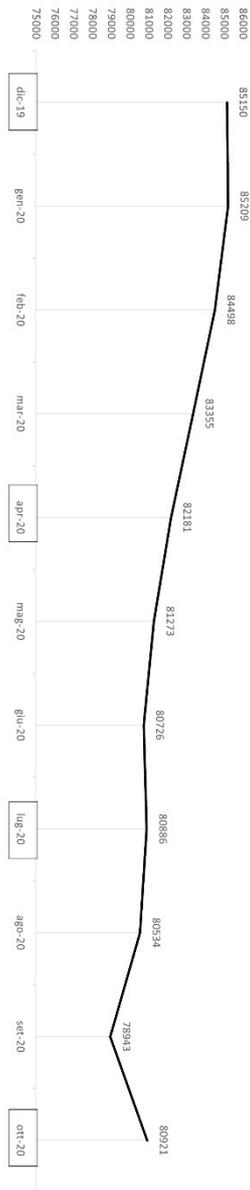
The same analysis is proposed on the demand. Here we see a significant fluctuation in absolute numbers (see the *uncertainty and resilience* section), and the distance between the railway stations and the listings booked changes. From December 2019 to the rest of the year observe that most reserved listings are between 5 to 10 kilometres from railway stations. In July and October 2020, the demanded listings in the range further than 20 kilometres increase. This can be a symptom of a search for more secluded places or a tendency to travel with own cars. Finally, we note no significant difference in the pattern of distances between the stock of mlhs and the access infrastructural hubs, but contrariwise the supply stock, the pattern of the mlhs hosts most stands in the range between 5 and 10 kilometres from the accessibility hubs.

*Supply, Demand and Multiple-Listing Hosts Patterns related to attractive hubs (distance from UNESCO sites on 4 stages: December 2019, April 2020, July 2020, October 2020)

Distance Analysis

> supply on Airbnb
> cultural hubs

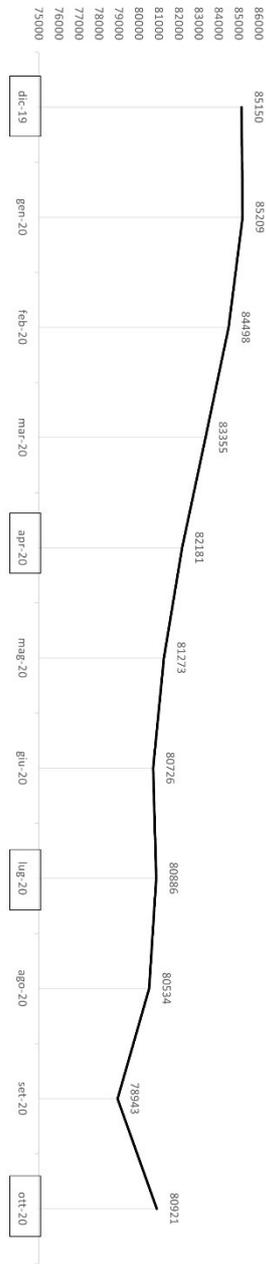
graph of the Airbnb supply (listings on the platform/month)



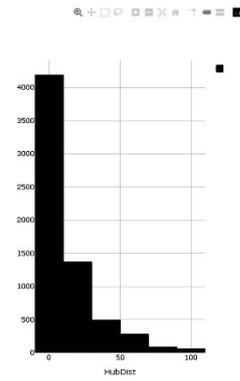
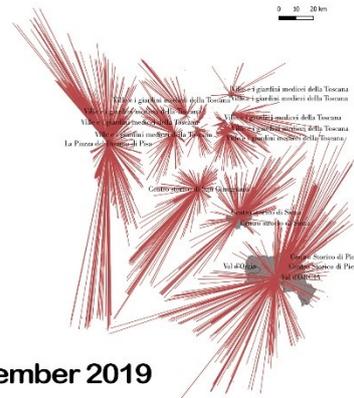
Distance Analysis

> demand on Airbnb
> cultural hubs

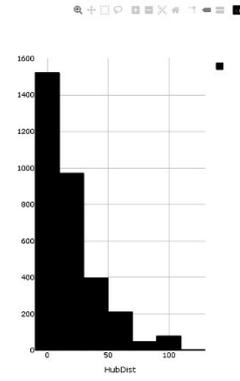
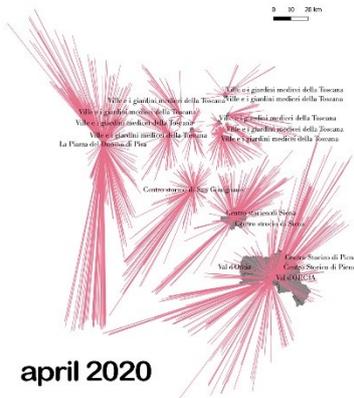
graph of the Airbnb supply (listings on the platform/month)



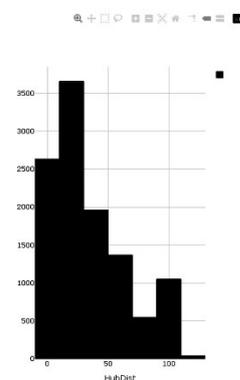
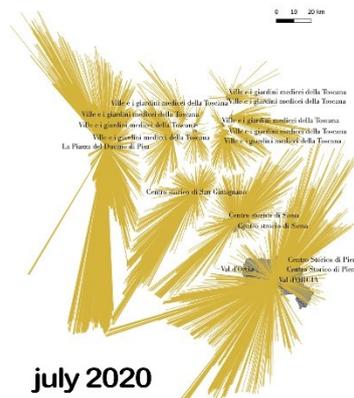
december 2019



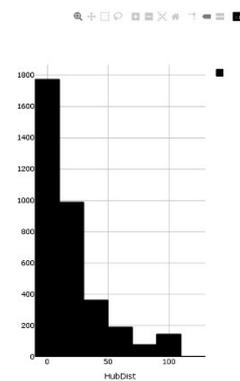
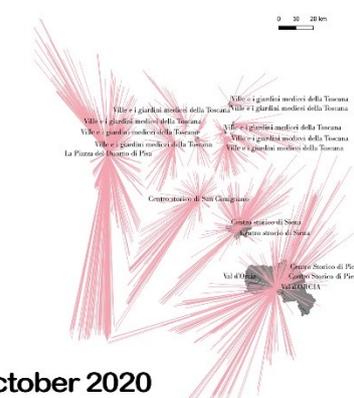
april 2020



july 2020



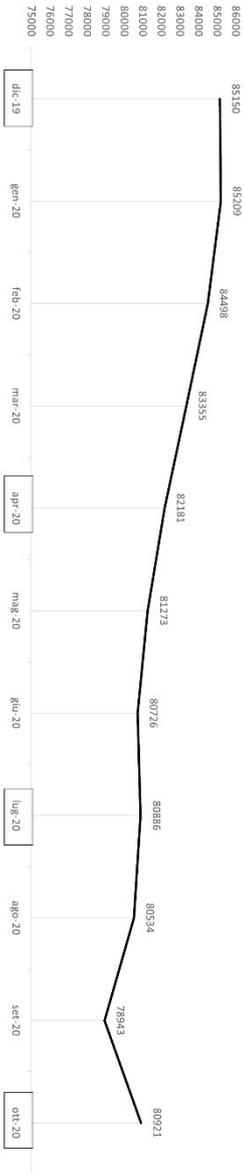
october 2020



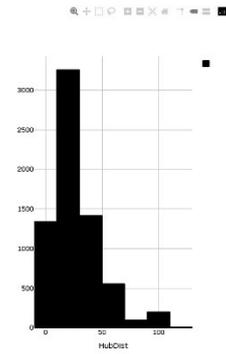
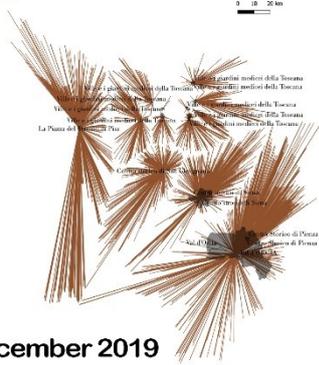
Distance Analysis

> mlhs' stock on Airbnb*
from
> cultural hubs

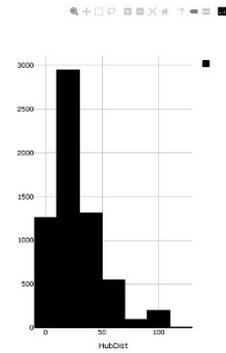
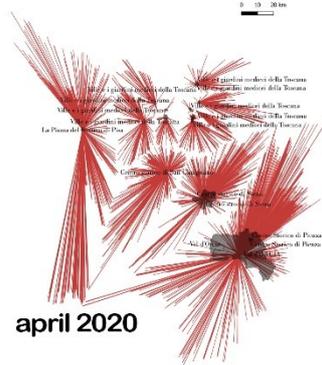
graph of the Airbnb supply (listings on the platform/month)



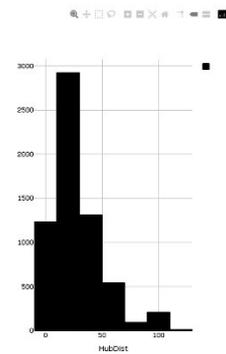
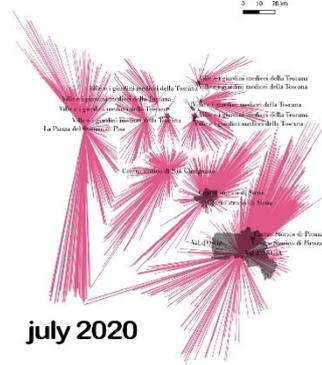
december 2019



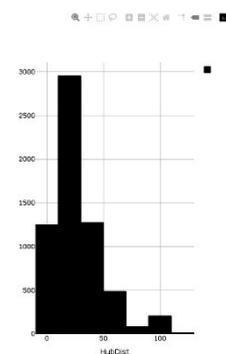
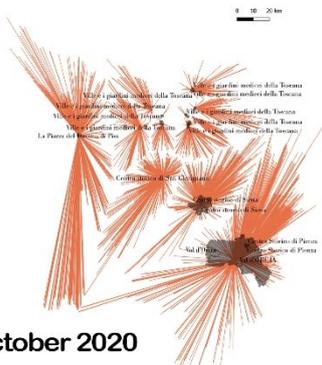
april 2020



july 2020



october 2020



*host that own >= 150 listings on their account

Figure 4.39, 4.40, 4.41. Four stages of Airbnb supply, demand, multi-listings hosts' stock distance from cultural hubs (UNESCO sites)

As for the previous analyses on the access infrastructural hubs, we analyse the distance relationship between the supply, demand and mlhs' stock and the UNESCO sites, which nature is both urban, with historical city centres, and non-urban, such as the Medici's villas and gardens, as officially recognised attractions for tourists. We find in the demand the most interesting case because it has a variable pattern of distribution, especially if we compare it to the completely unchanged pattern of distribution of the supply and mlhs' stock. The booked listings proportionally increase from December 2019 to July 2020 in the range of 10-25 kilometres from UNESCO sites. In October 2020 the nearest classes of distance rise again in the number of booked listings. The maps evidence a period in which the demand for listings on Airbnb linked to 'cultural' tourism have declined, and possibly because it is a typical form of tourism sought after people from abroad.

4.2.2 Airbnb in Florence Prato Pistoia (FPP) Urban Region during the Pandemic

As we have seen in §4.1.2, the FPP urban region is a complex socio-economic and political system. This paragraph turns around the question: how these characteristics interplay with the Airbnb system, making the FPP the complex environment of complex short-term rentals (STR) dynamics?

In the next paragraphs, we explore results from the analyses, organized as for the Tuscany level (§4.2.1). Stages have been chosen after a preliminary unstructured overview of the most significant changes. The temporal range and some elaborations are different from the previous set of analyses because the dataset is built differently (see Appendix B). For instance, we have no data before the pandemic period in the case study domain, but georeferenced data refers to the first year of pandemic, from April 2020 to April 2021.

Analytical results will be interpreted and discussed in §6.

Uncertainty & Resilience

This paragraph is about how Airbnb patterns of diffusion and concentration change during the pandemic. The following maps are 'photographs' of material aspects of Airbnb and specifically the supply, as the listings proposed on the platform consisting of houses or apartments for short-term rental and the demand, as reviewed listings. Please note that the demand information is processed differently from the Tuscany level. But the dynamic mapped is the same because the reviewed listings consist of people that move from a place to their destination and 'in-habit' a city for a certain period, demonstrating their staying with a review. It is a partial datum because some guests might not have reviewed it even if they rent a listing. These material aspects taken *per se*, without considering the context, can be prompted by economic and financial forces at different scales linked to the inextricable mingling of private interests.

For specific disclaimers on data collection, analysis, and interpretation, please see Appendix B.

*Airbnb supply patterns of concentration and diffusion on four stages of the pandemic: April 2020, August 2020, October 2020, April 2021

The map of the density of the Airbnb supply is based on the listings scraped on the platform at a specific date. The grid in which the density is calculated consists of heterogeneous patches (census units) developed and free shared by the Italian National Institute of Statistics. The patches represent the basic unit that the ISTAT Institute uses to analyse and report statistical data and related indexes.

The density map is categorised through the count of listings in areas per the area of the unit.

Supply Analysis

> density of listings in census units

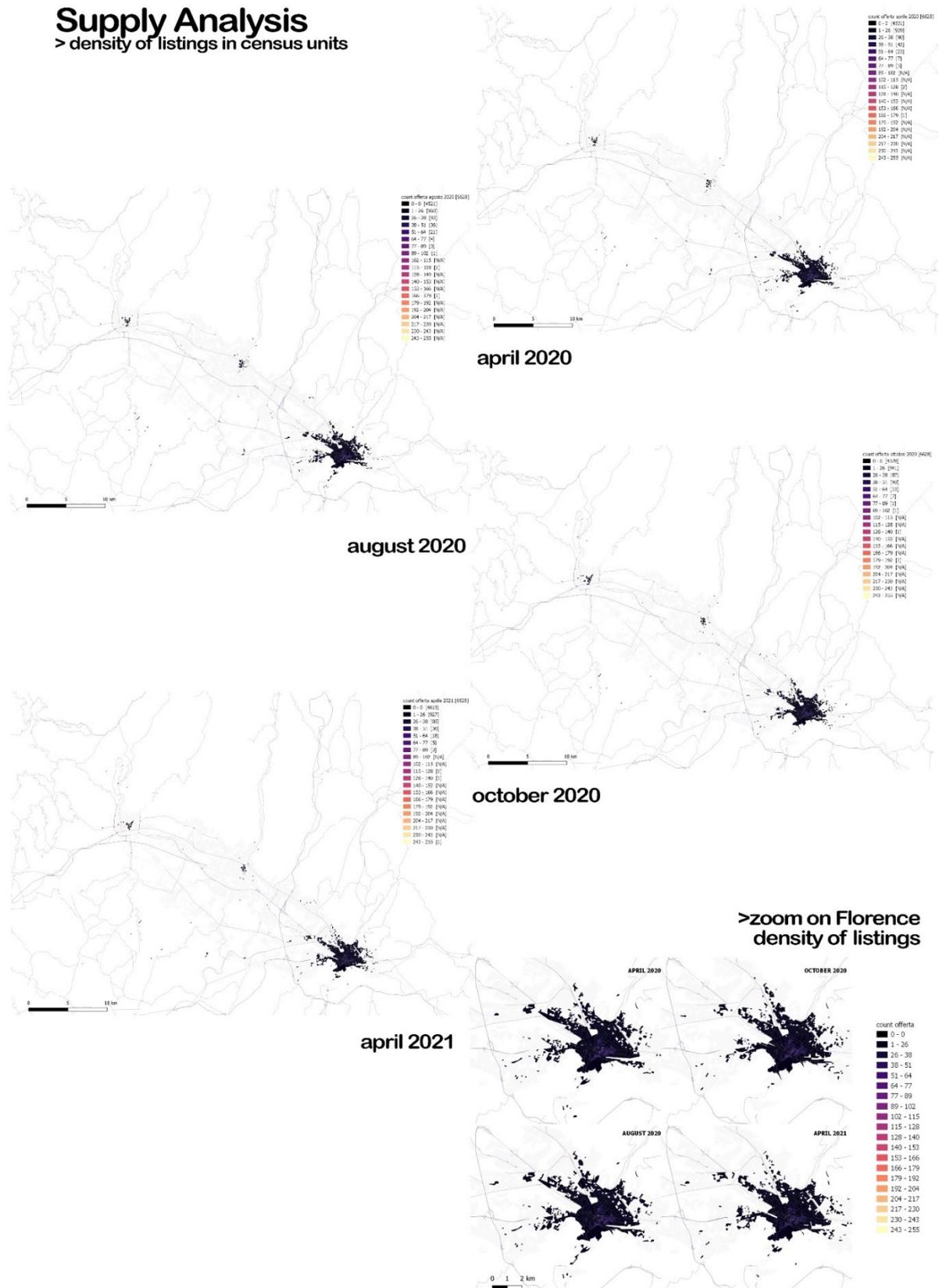
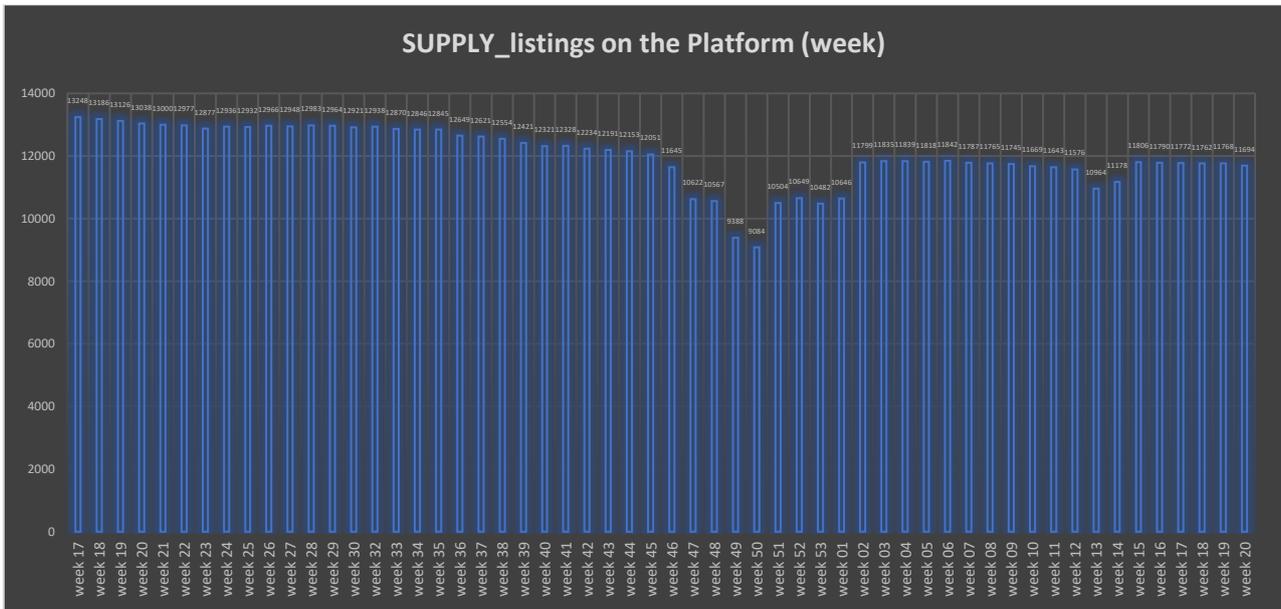


Figure 4.42. The four stages of the Airbnb supply during the pandemics (from the left to the right: April 2020, August 2020, October 2020, April 2021). Source: CNR dataset. For specific disclaimer on map elaboration please see Appendix B.



Graph 4.G18. A year of the Airbnb supply during the pandemics.

As far as Airbnb supply was concerned, the most concentrated units were in the city centre of Florence. Specifically, the supply was concentrated in Oltrarno and the roman quadrilateral, the most central and turistified area of the city.

We see also the distribution of supply in the whole FPP urban region, in the city centres of Prato and Pistoia, but also on the Montalbano hills. The overall pattern of the supply in April 2020, when Italy was getting through a national lockdown, is made up of two main guidelines with a spring in the centre of Pistoia, one toward Florence passing the centre of Prato and the other toward the Montalbano hills. Florence is a huge hub that spread its supply in the whole municipality and beyond, on the two sides of the river Arno in the western part of the area.

In August 2020 the densest census units are still in the city centre of Florence, while the peripheric patches are less dense. Specifically, in the outskirts of Florence, we see that the supply units decrease in number in the western part (toward Prato), while they increase in the eastern part toward the Valdarno Superiore and Chianti regions. In Pistoia, the supply is overall reduced in the city centre, while in peripheries new listings appear along another road line at the foot of the Montalbano hills. In Prato, the supply comes down both in the city centre and at the first peripheral belts. In the Montalbano hills region, nothing changes except for a patch that goes down to zero listings of supply. In October 2020 the rural areas of Montalbano keep on losing supply, while the southern part of Florence Municipality grows in the number of listings, as the city centre. In April 2021, a period of further national restrictions for the pandemic, the overall supply come back growing and, thus the pattern in the municipality of Florence consolidates its density, while in the city centre of Prato and Pistoia the pattern becomes more spread towards the outskirts. Montalbano comes back to the pattern evidenced in April 2020. In the areas between Prato and Pistoia, nothing changes in the period considered.

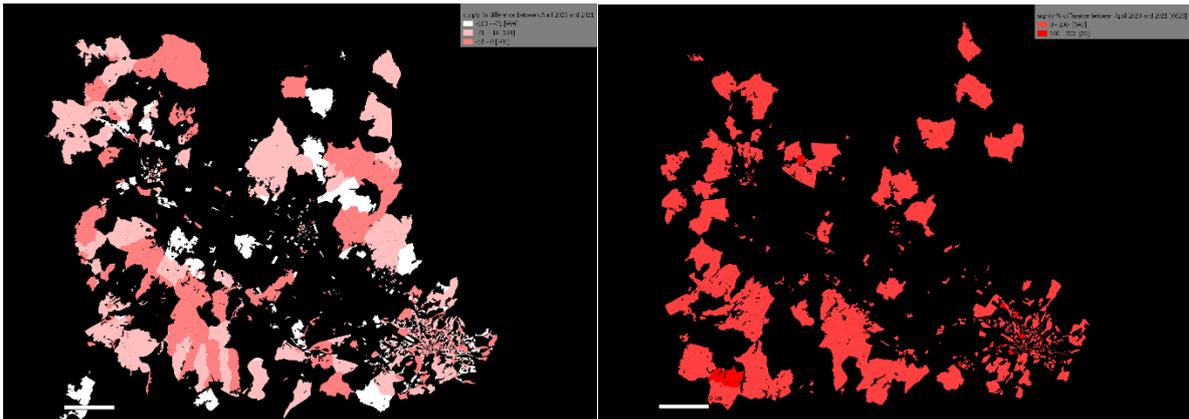


Fig. 4.43. The supply percentage change: April 2020-April 2021. On the left: % decrease; on the right: %increase. For a specific disclaimer of the map please see Appendix B

As we can see there are no great peaks of change between April 2020 and April 2021, but there's a generalised reduction of the supply stock. 1429 units decrease in supply, while 668 increase. Patterns of increase and decrease of supply distribute quite uniformly over the FPP urban region. The many census units that do not appear on the map are those with a zero count of listings in April 2020 and 2021. We can observe a concentration of decreasing units around the cities of Prato and Pistoia and in general in the lower areas of the plain.

*Airbnb demand patterns of concentration and diffusion on four stages of the pandemic: April 2020, August 2020, October 2020, April 2021

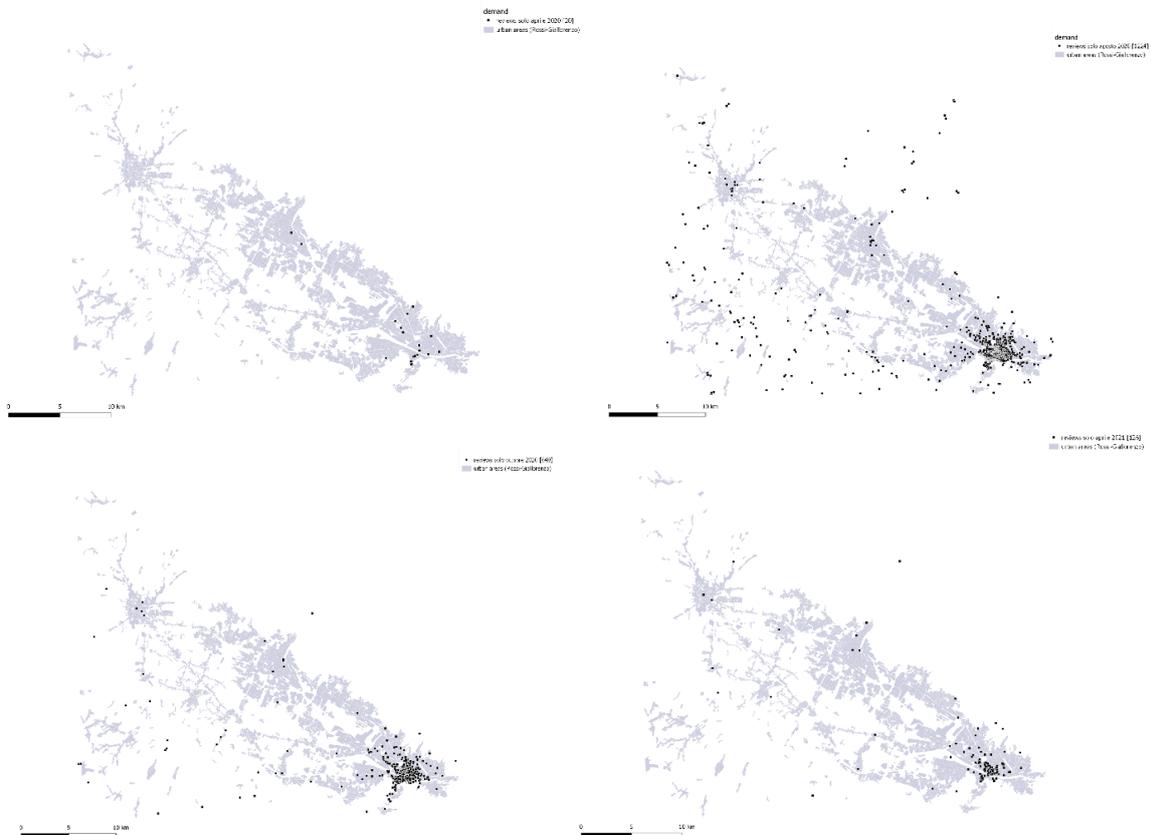
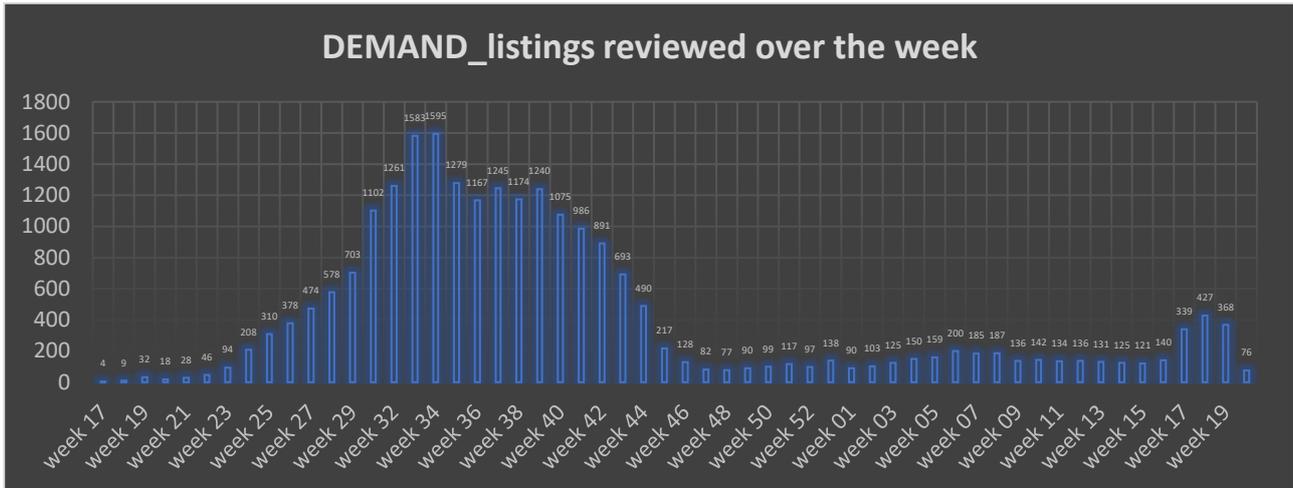


Figure 4.44. The demand on Airbnb. Reviewed listings in 4 stages: April 2020, August 2020, October 2020, April 2021. For specific disclaimer of the map please see Appendix B



Graph 4.G19. The demand on Airbnb from April 2020 to April 2021 (week data. Weeks are numbered as 2020 and 2021 calendar)

The demand, mapped as reviewed listings, is highly variable in absolute numbers and for the patterns it creates. The peak in FPP is, not surprisingly, in the summer period. Indeed, what is surprising is that during the lockdown period (April 2020) there is a small number of listings reviewed, and thus, booked. The pattern of distribution of the demand has a constant concentration of bookings in the centre of Florence, except for April 2020 when reviews are spread in the outskirts of Florence, and specifically in Rifredi, the neighbourhood of the city where services are concentrated (the Hospital included). We have also two reviews in Prato, outside the city centre and far from the Hospital. As far as the demand in Montalbano is concerned, we have the peak in August 2020 and a constant decrease up to the almost total disappear in April 2021. This is a strange datum because Montalbano might have been a classic tourist destination for the Easter holidays and spring breaks. This downward peak can be explained by the political decision to set another lockdown due to the pandemic conditions.⁷⁴

Situatedness, Ever-changing assemblages of paths and actors

The term assemblage refers to human and non-human actors that can have effects on dynamics. The quantitative analyses on (mlhs) multi-listings hosts (the distribution patterns of listings owned or managed by mlhs; the provenience of mlhs; distribution of mlhs’ assets in FPP compared to their total supply stock) and qualitative reports of interactions between materiality and immateriality of actors and actions at different scales, from the global to the local and back, can be categorised under this set of definitions from the literature.

*Airbnb Multi-listings Hosts (mlhs) patterns of concentration and diffusion on four stages of the pandemic: April 2020, August 2020, October 2020, April 2021

This section reports main results from the quantitative cartographic analysis on i) patterns of distribution of the listings owned or managed by mlhs, as both private companies, single owners or listings’ management companies that do not own the estate and provenience of mlhs, and thus, the provenience of capitals in the area and ii) distribution of the local assets of mlhs, compared to their total assets.

⁷⁴ <https://www.governo.it/it/articolo/comunicato-stampa-del-consiglio-dei-ministri-n-10/16525> <last seen on 23/12/2021>

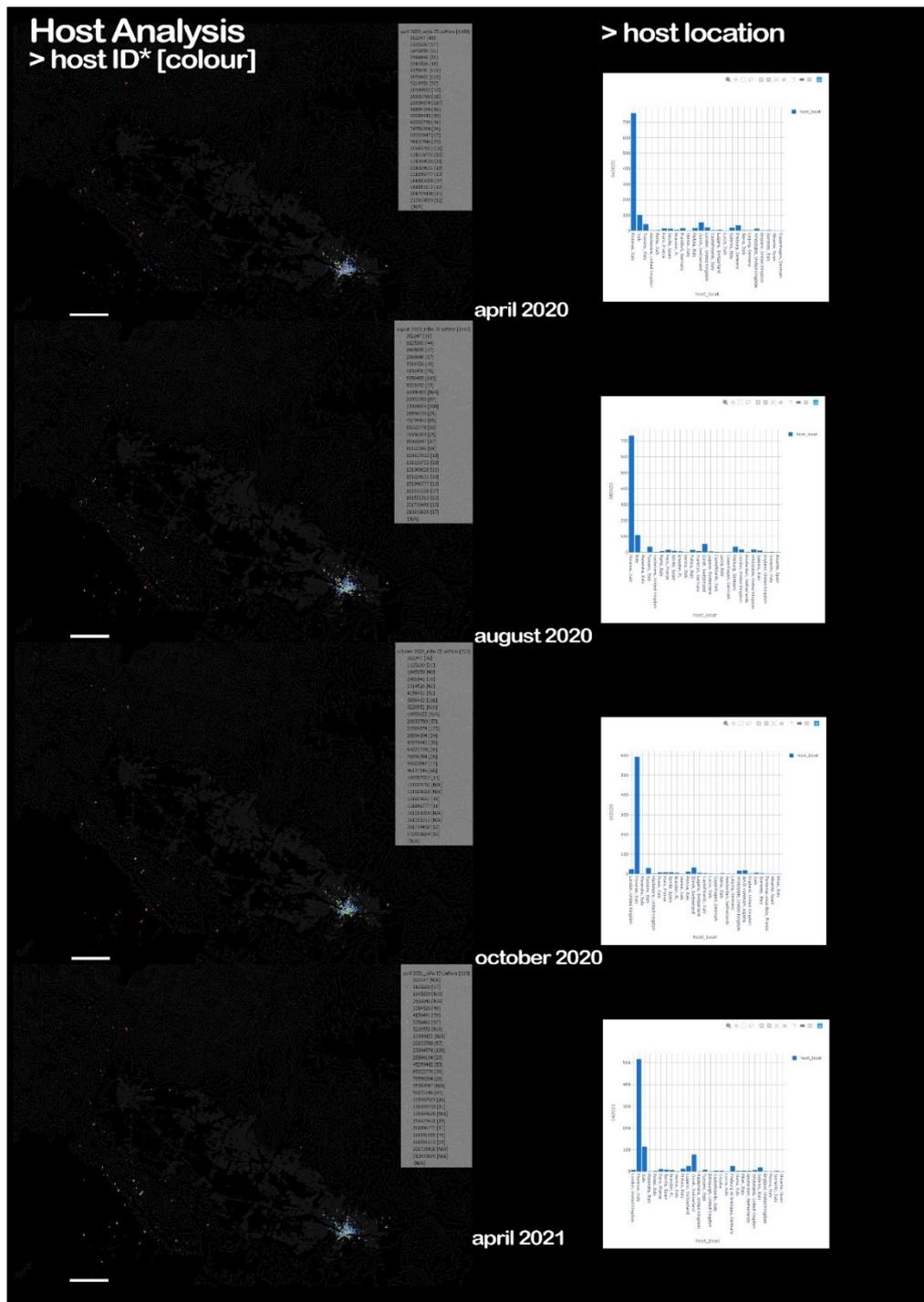


Figure 4.45. Four stages of Airbnb mlhs in FPP (from the top to the bottom: April 2020, August 2020, October 2020, April 2021). Each colour represents the stock of a single mlhs. The graphics on the side report the host location, as declared on the account. Source: CNR dataset. For specific disclaimer on map elaboration please see Appendix B.

In the maps, we can see a double dynamic driven by multi-listings hosts decisions. The first is that mlhs decline in numbers (they are 26, 25, 20 and 17). This can mean that either they closed their account or that they removed some of their listings and, thus, having less than 50 listings in the FPP urban region, they haven't been counted anymore as mlhs. As we can qualitatively observe in the maps, the mlhs invested most in the city of Florence, both in the city centre and in the other neighbourhoods in the immediate around the centre⁷⁵, and

⁷⁵ For more details on the municipality of Florence see Giallorenzo, 2021

Montalbano hills, the two “most luxury destinations” of the area. We see that while in Montalbano different hosts invested,⁷⁶ in the city centre of Florence there is a concentration of few hosts that own or manage a vast stock of properties.

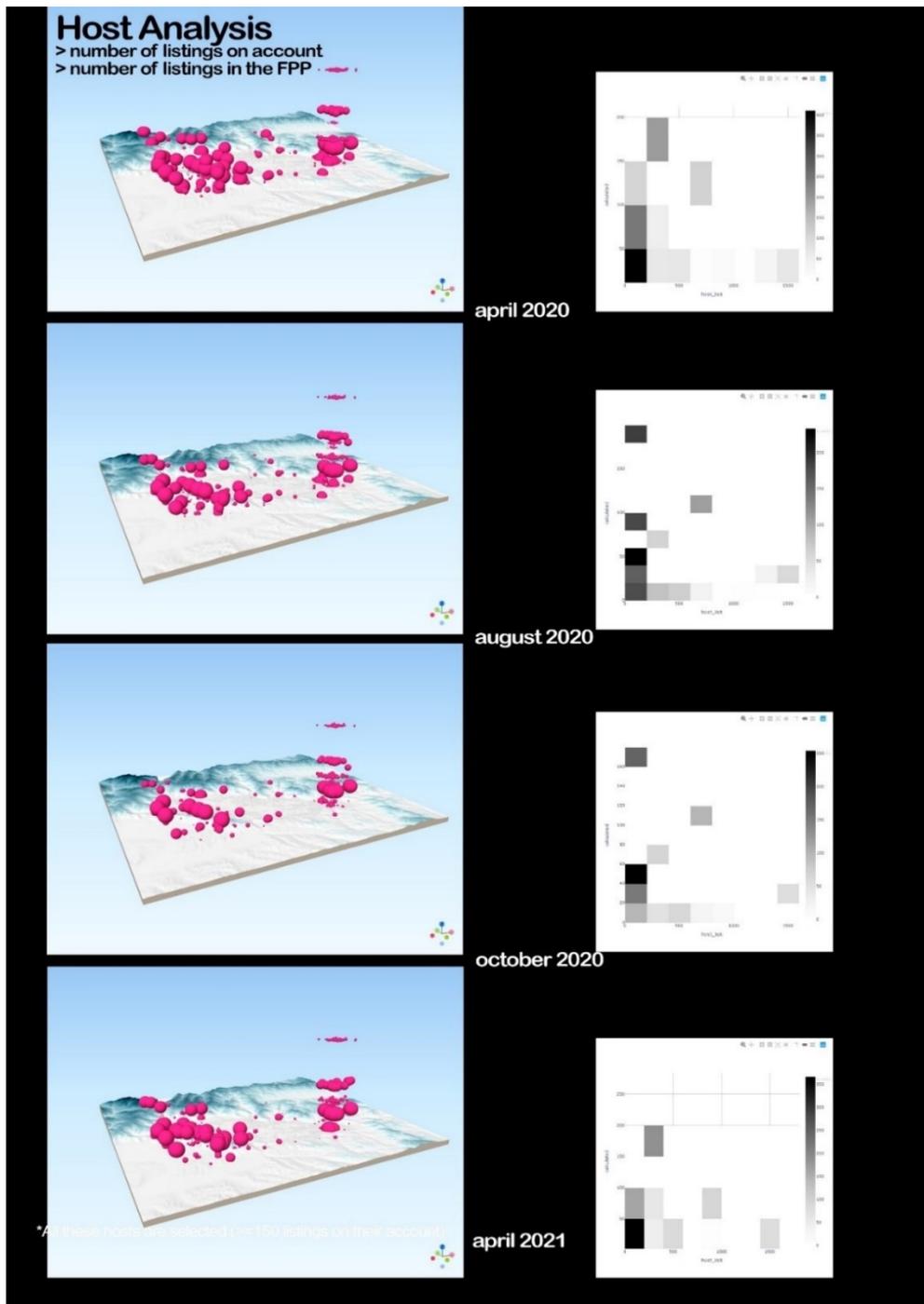


Figure 4.46. Four stages of Airbnb mlhs in FPP (from the top to the bottom: April 2020, August 2020, October 2020, April 2021). The dimension of the spheres represents the mlhs stock on the account, while the height is proportional to the number of listings of the host in the FPP urban region. The graphics on the side report the relation between these

⁷⁶ Different colours represent different hosts

*two dimensions: the x-axis is the number of listings on the account; the y-axis is the number of listings in the FPP.
Source: CNR dataset. For specific disclaimer on map elaboration please see Appendix B.*

In the maps above we observe the relationship between the stock that multiple listings hosts manage or own on their account, and thus, it can be distributed anywhere in the world, and the stock they have in the FPP urban region. The georeferentiation of this relation allows to observe if in different areas of the FPP emerge different 'behaviours or choices of investments from the mlhs. For instance, in Florence, there is a host that invested almost everything in the area (spheres are small and high), so most of the listings of this host is located in the FPP urban region. But there are other types of hosts that differentiated their investments. In Montalbano, the first evidence is that mlhs decreased in absolute numbers in the central stages of the study and that the hosts with many listings on the account are those who declined most. It is possible that they removed listings from the Montalbano and remained mlhs for their stock in other parts of the world.

The graphs on the right support the interpretation of the relationship absolute stock/stock in the FPP without reference to the geographic position. The initial and final stages are almost the same, but there is a decrease in absolute numbers of listings (see previous cartographies). In April 2020 and 2021 we see that most of the listings are concentrated near the vertex of the graph, which means that mlhs invest in the area and do not have so many listings on the account in other places. In a sense, they do not differentiate their stock but have invested only in the FPP, and possibly in Florence. In the central stages, this situation doesn't change, but it is more fragmented in classes in which most listings are owned or managed by mlhs with 40 to 60 listings in the FPP. This can mean that some mlhs closed their account or removed some listings becoming undetectable by this analysis.

✳️Airbnb Assemblages of Human/Non-Human actors. The Florence-Prato-Pistoia urban region level

To demonstrate the hypothesis that Airbnb is a complex system, quali-quantitative analyses were moved questioning if Airbnb can be considered as an assemblage of human-non-human actors.

The qualitative representation below offers a graphic synthesis to reflect on participants to the Airbnb system and their level of intervention and interaction starting from literature, newspapers, a review of official communications from the platform and Institutions, and quantitative data on hosts and guests, but also data from the survey via social media filtered on the FPP urban region and some topics emerged from the interviews.

The steps of the scheme should be read as layers from the top to the bottom but also as a circle. We didn't set a point to start from because all these dimensions are interrelated and intertwined and change partially dependently and independently from each other. At the global level, we define immaterial dynamics the market trends of the Airbnb company since its IPO. We support that these fluctuations have impacts on the local level, on touristification of places, but at the same time, touristification of places have impacts on global financial fluctuations. Local places are nestled in the materiality of places that influences the hosts' choices to invest or not and the guests' choice to travel or not in a place. But, once again, these decisions are also prompted by global dynamics, like the Covid-19 pandemic, and local or supralocal governance addresses that are multi-layered because refers to different competencies and power in implementing laws or strategies. And the global contingencies, like the pandemic, affect the financial global trends of the Airbnb company. This is a simplification of the real dynamics but synthesizes all the dynamics taken into consideration by this work.

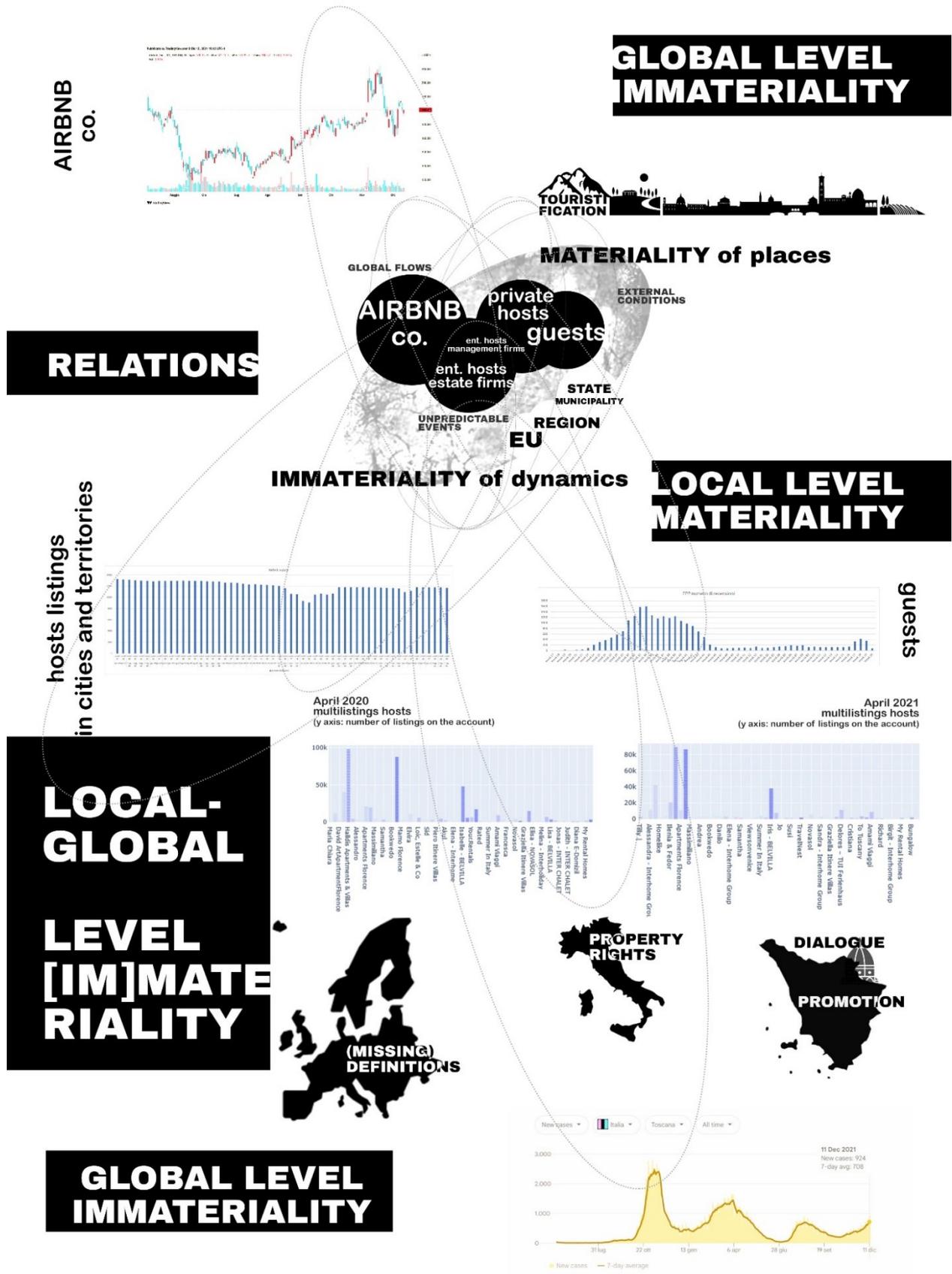
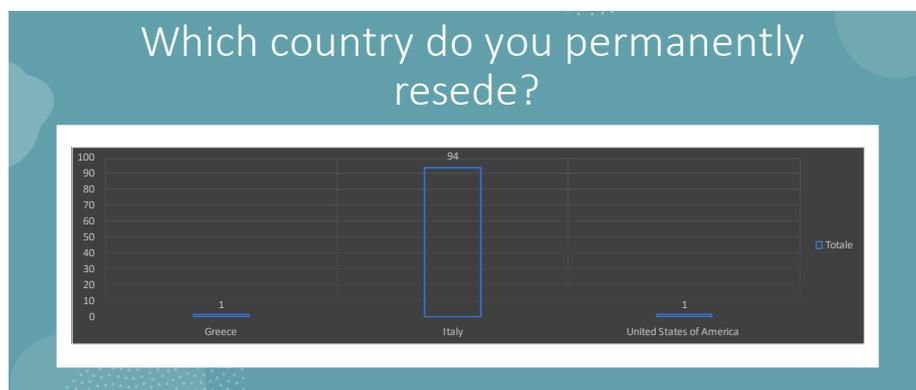
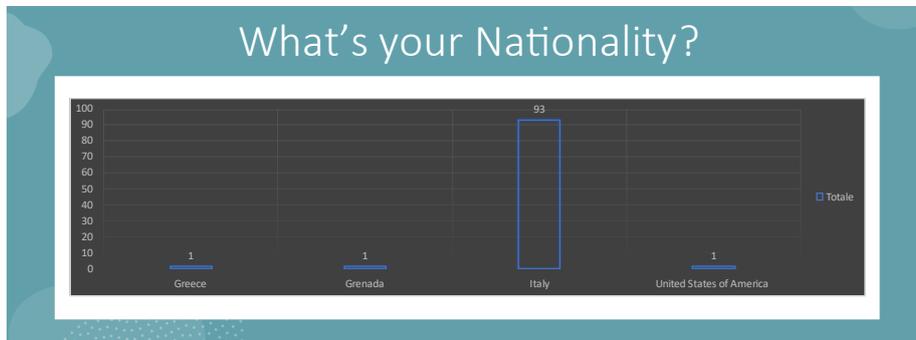


Figure 4.47. Graphic of Airbnb actors. A first attempt to show levels of interaction among actors.

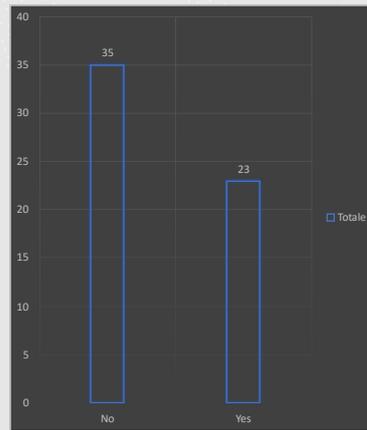
Below you find the main results from the survey via social media. This was intended to investigate the reasons behind travelling and accommodating on short-term rental (STR) platform during the pandemic because we saw that there were reviews and reservations on Airbnb also during the lockdown period. If we refer to figure 4.47 this would be an in-depth qualitative look at the variable 'guests'.



Q5

Have you booked accommodation on a short-term rental platform in the last 16 months (since January 2020)? Please answer yes also in case you cancelled the booking

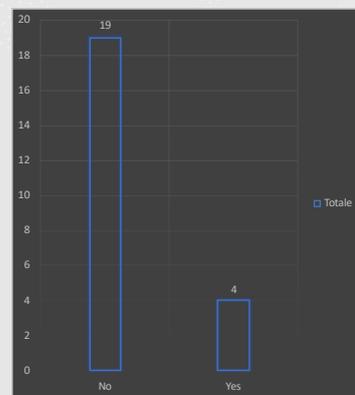
Among who answered yes at Q4



Q6

Have you rented a house or other types of accommodation on a short-term rental platform in the last 16 months (since January 2020) in Florence Prato or Pistoia?

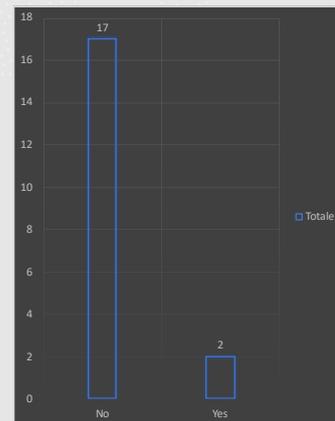
Among who answered yes at Q4 and Q5



Q7

Have you rented a house or other types of accommodation on a short-term rental platform in the last 16 months (since January 2020) in Tuscany?

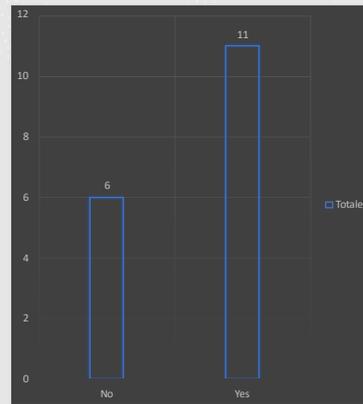
Among who answered no at Q6



Q8

Have you rented a house or other types of accommodation on a short-term rental platform in the last 16 months (since January 2020) in Italy?

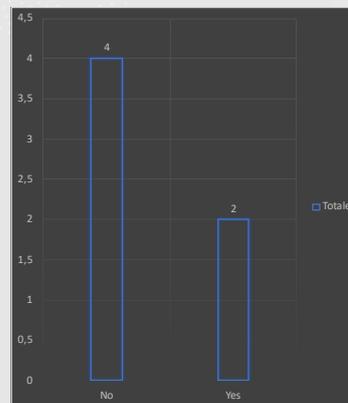
Among who answered no at Q7



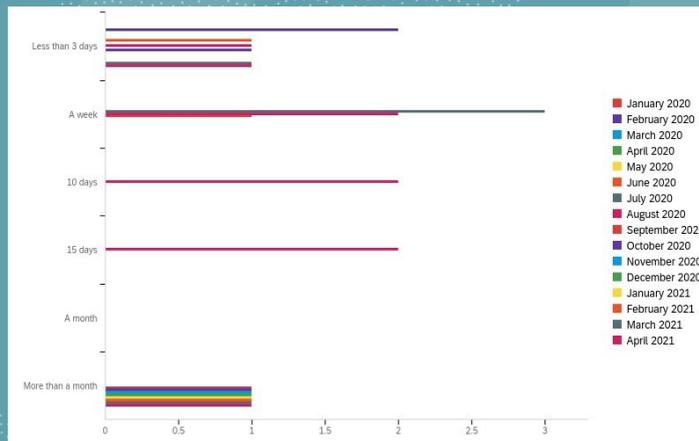
Q9

Have you rented a house or other types of accommodation on a short-term rental platform in the last 16 months (since January 2020) in Europe (UK included)?

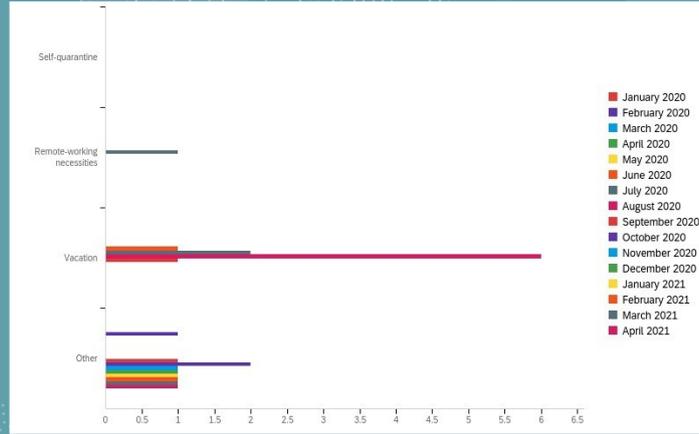
Among who answered no at Q8



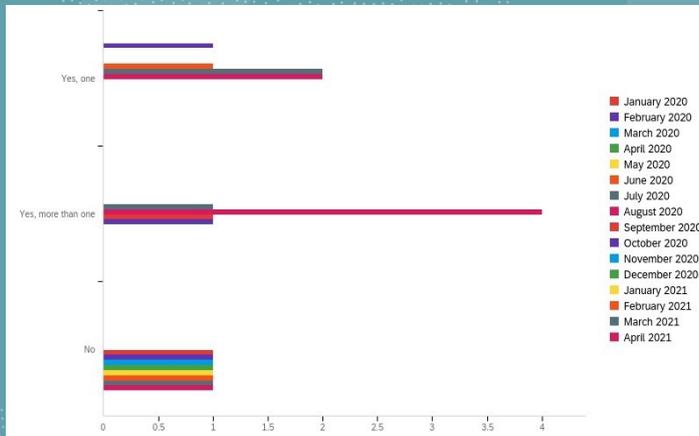
Q10.1 - During which month/s did you rent it/them? How long did you stay?



Q10.2 - During which month/s did you rent it/them? Why did you rent?

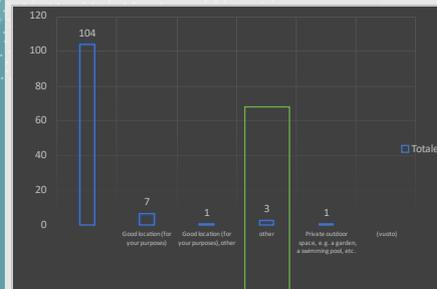


Q10.3 - During which month/s did you rent it/them? Did you cross regional borders?



Q11

What features were important to you when selecting accommodation? (select as many as apply)



La soluzione più economica possibile
 Luogo destinato alle vacanze
 spazi aperti, natura
 Un appoggio prima di trovare casa

The cheapest solution
 A place for holidays
 Open spaces, nature
 A place to stay - waiting to buy home

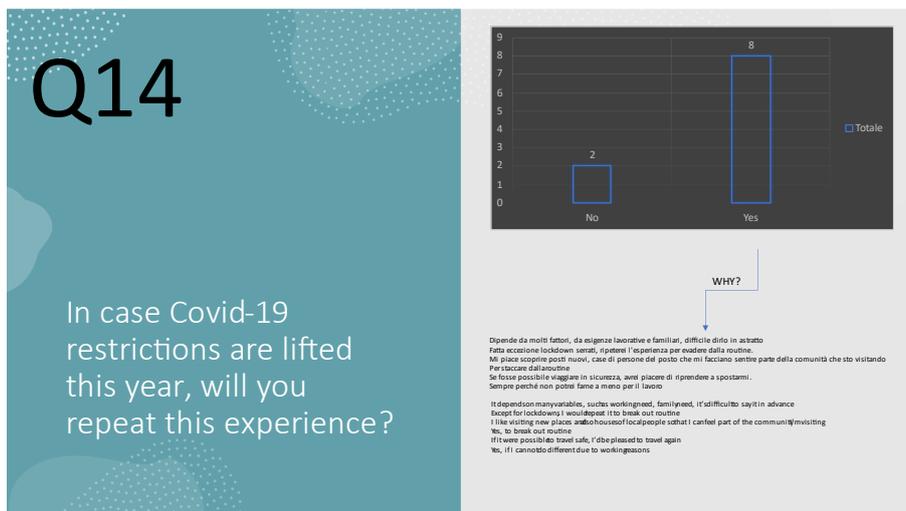
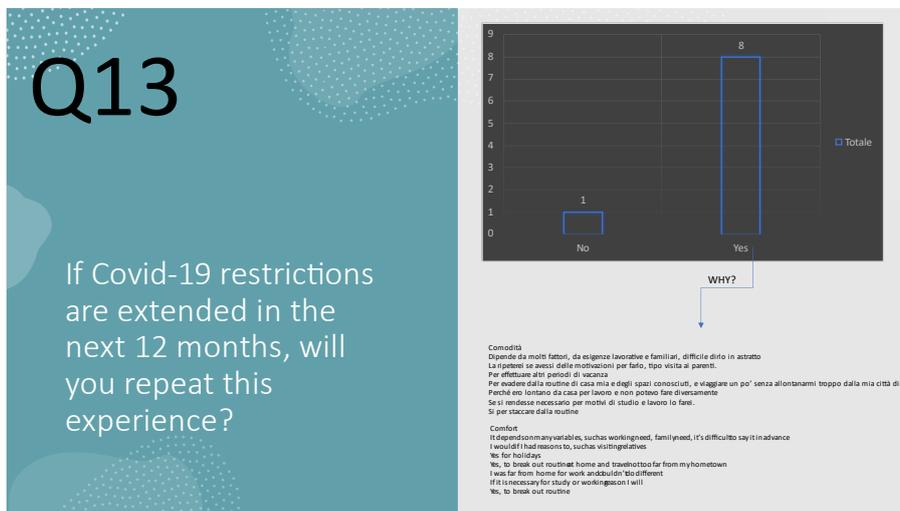
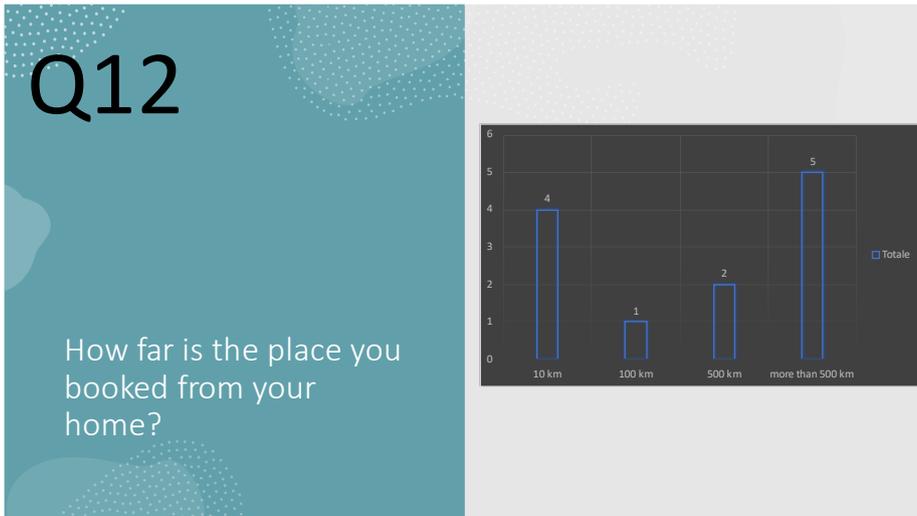


Figure from 4.48 to 4.62. Results from the survey via social media on Airbnb demand in the pandemic. See appendix C for specific disclaimers Data can be explored for geographic areas (EU, Italy, Tuscany, FPP)

We collected 114 responses, but only 96 people completed the questionnaire. Almost everybody was from Italy and chose the Italian version of the questions. The questionnaire is built to try to reach as many people as

possible and it is divided into geographic areas. Thus, if a person did not book in the FPP urban region or Tuscany, there was the chance to have data on other contexts such as Italy and Europe. In the 16 months of the pandemic, only 23 out of 96 booked accommodations on an STR platform. The question was general and not specific on Airbnb because the intention was to understand the reasons behind the booking in a period of low touristic flows. Only two booked accommodations in Tuscany. One of them travelled for vacation. The other didn't answer the question about why he/she reserved on an STR platform.

This method of investigating the short-term rental demand is aimed to give insights about if and why people short-term rented during the pandemic. The initial hypothesis of the use for sanitary reasons (e.g., the use of medical employees) or self-quarantine periods cannot be verified with data from the survey via social media because the sample is too small. It might be possibly further investigated through structured interviews with specific actors, such as the sanitary staff of the biggest hospitals and the Chinese community of Prato, for instance. Anyway, from the responses, we can observe that short-term rental accommodation was chosen for vacation uses especially in the summer/spring period, when the contagion curve was lower and the communication from the authorities was more relaxed about the virus. Who answered "other" did not specify the reason behind their booking, so we do not have the specificity of the use but two on 23 (those who answered yes in Question 5) didn't use a short term rental accommodation for self-quarantine, working or vacation. In the summer/spring period people had also distant journeys from home, crossing more than the regional border in Italy, while all over the year we had people that stayed in Tuscany but booked an STR or crossed just one regional border. We don't know in which direction. Six cases in different months booked an STR for more than a month, especially in the first part of 2021. Less than 3 days and weekly trips are the most chosen for staying in an STR.

About the reasons behind travelling and staying in an STR accommodation options during the pandemic period, there are the economic vantage, the open spaces and nature by the accommodations, and in a specific case a place to stay waiting to buy a house. People were questioned to consider repeating the experience of the STR in a pandemic and why in two cases: i) if restrictions were confirmed in the next months and ii) if restrictions were lifted. In both cases, people answered yes for the most. About reasons, they answered that many factors are involved in the choice of a trip and the booking on an STR platform. Anyway, the comfort – we don't know if it is referred to the location, the house or the way of staying; family or working needs; vacancies; breaking routines without going too far from home; working needs. An interesting reason indicated in the second option and not in the first, so just in case restrictions were lifted, is the will to visit new places and know local people and communities this person will meet in his/her trip and stay on an STR accommodation.

Evolution revolution coevolution

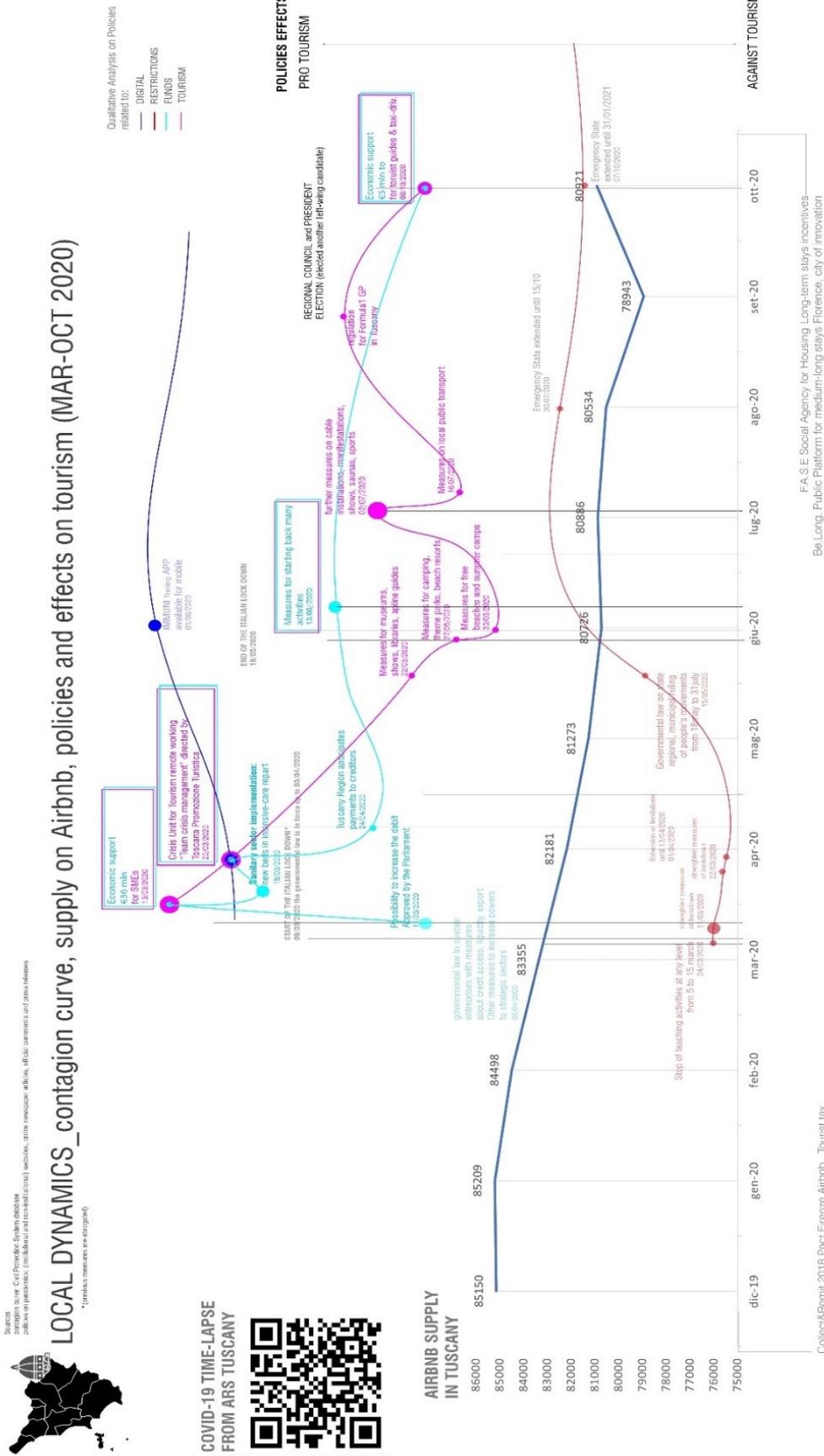


Graph 4.G20 and 4.G21. Graph of the supply and demand speed of change.

These two graphs represent respectively the supply and the demand speed of change over a year. They're based on weekly data and the columns represent the percentage difference between two weeks. For instance, we can observe that the demand increases by 125% from week 17 to week 18 (from April 26, 2020, to May 03, 2020). We can observe only a jump in supply corresponding to the last weeks of 2020 with a decrease of up to 11% and a bounce-back of 15% in the following week. This increase in speed of change can be triggered by a multitude of reasons both global and local. On the contrary, what we see in the demand is the fast pace of changes especially upward in April 2020, possibly linked to the communication of the end of the lockdown and the tendency to decrease in October-November 2020, when the pandemic curve started to grow back. At the end of April 2021, we have a bounce up and then again, a decrease. This fast-paced swing is not aligned with the supply curve. Possibly, they're pushed by different interests and are driven by different strategies and reasons. Non-entrepreneurial hosts, for instance, might not be so interested in letting their estate all the time

so, the fluctuation might be linked to the 'inexperience' of the non-entrepreneurial or to the need of using the house for personal reasons.

Emergence in in-becoming environments. Bifurcations and Transitions



02/07/2021
new app for sanitary purposes

Figure 4.63. Airbnb's Supply, Policy choices at the regional and local scale before and during the Covid-19 pandemic

The infographic above relates politics at the regional and national scale to the pandemic curve and the Airbnb supply over a year, from December 2019 to October 2020. The political responses at the regional level were slowed down by the wait for the national decisions and laws. Furthermore, Tuscany had the election of the new President of the Region and the nominee of its Council. In the period, while the contagion spread had a variable pace across the months, the absolute number of listings, the Airbnb supply, decreased only by 6% in a year. The actions are almost the same as for the national level, but there is a high percentage of addresses on tourism.

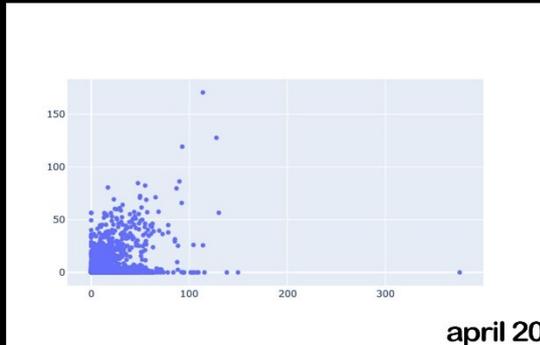
Complex Adaptive Systems and the role of the Past

The supply, demand and host features are analysed and interpreted in a multi-variable analysis with landscaping, morphological and systemic features through quantitative cartographic analysis.

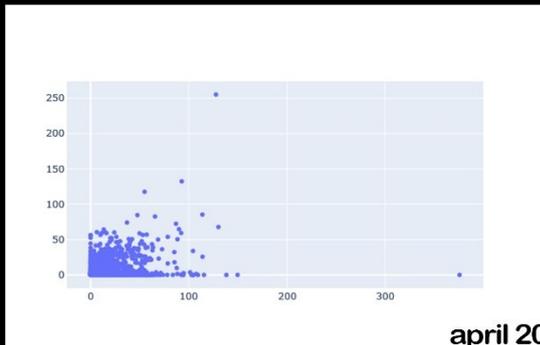
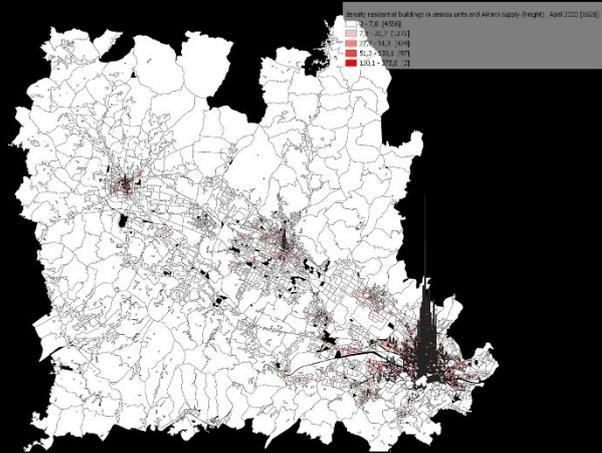
Results from morpho-typological and path dependency analyses are reported.

*Supply density compared to socio-demographic indexes (4 stages: April 2020, August 2020, October 2020, April 2021)

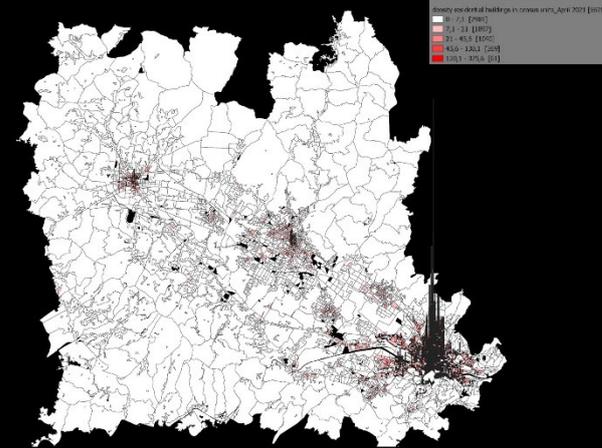
density families in houses for rent



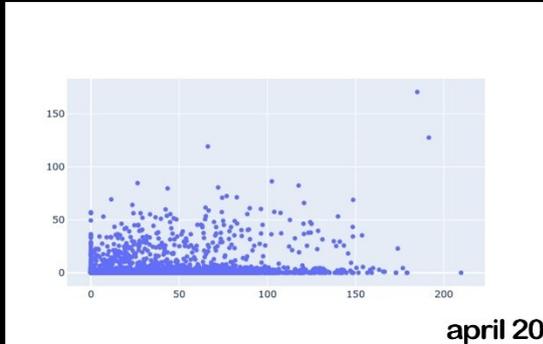
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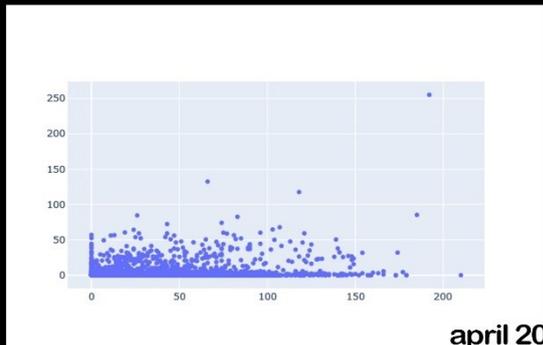
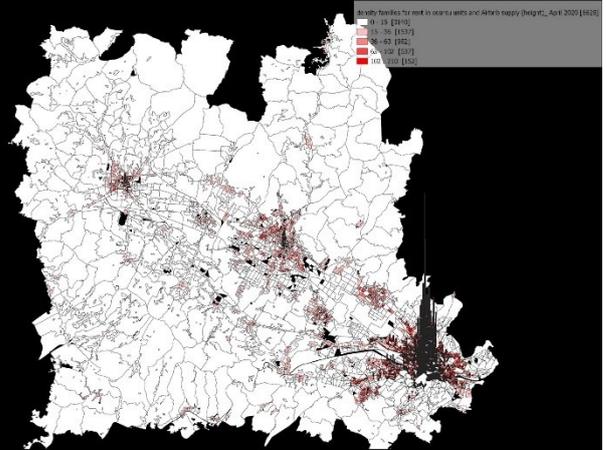
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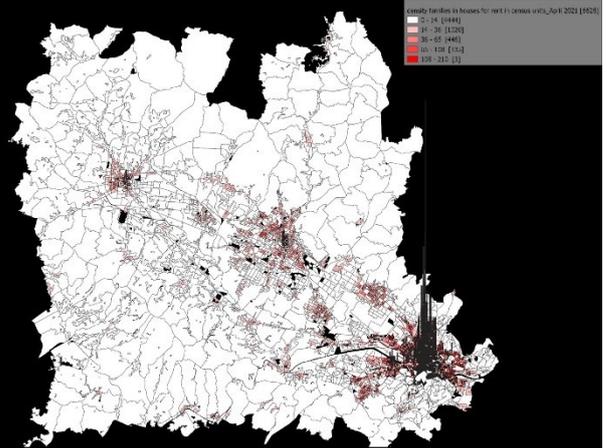
density families in houses of property



april 2020



april 2021



density residential buildings

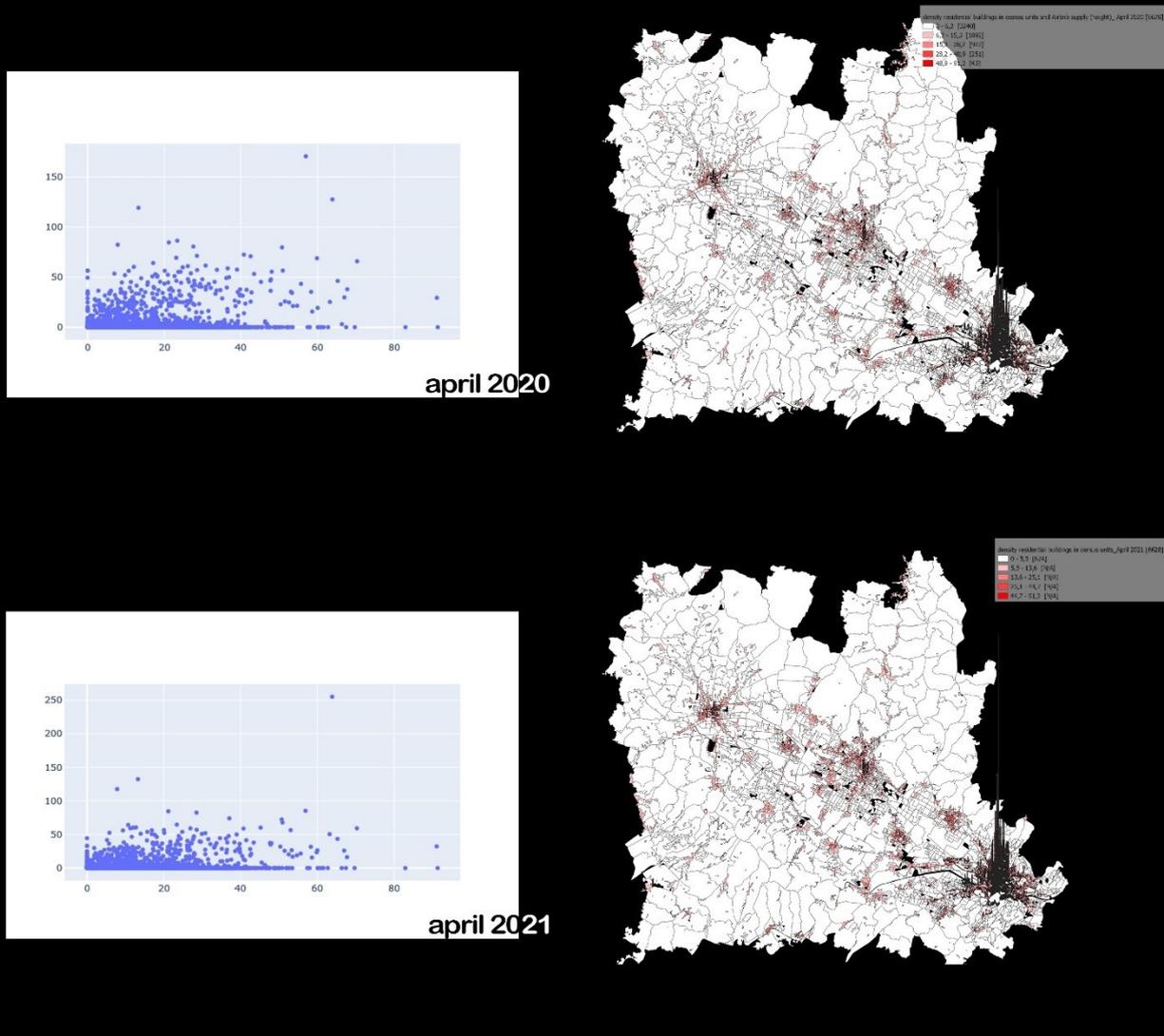


Figure from 4.64 to 4.66. Maps and graphs to describe the relationship between the Airbnb supply (y-axis) on the graph, and density of selected indexes in census units (x-axis). Source: CNR data and ISTAT data. For specific disclaimer on map elaboration please see Appendix B.

In April 2020 the relation between the Airbnb supply and the density of families which live in houses for rent tends to be more spread because the values of the supply are distributed in more classes of families for rent density, while in April 2021 these values of supply up to 50 listings for each census unit aggregates more in the first class of density of families that live in rented houses. We can observe a decrease in listings in areas where the density of families in rented houses was higher. The curve of the relation between the supply and density of families in houses of property does not differ from the previous. This can mean that Airbnb listings are spread in many different urban and socio-economic contexts, as we can observe also from the maps. The relation between the Airbnb supply and the density of the residential buildings in census units, we see once again to be more aggregated around the lower classes in April 2021, while in April 2020 the number of listings is higher but less concentrated in lower classes of the density of residential buildings.

In the table below we can observe a high variability of the Airbnb supply in the selected zones in absolute numbers, but quantitative and qualitative data relative to the dynamics within the system and outside the system

can give further perspective on Airbnb in urban and non-urban areas (see the supply and demand density in urban morphotypes – Tables 4.T05 and 4.T06).

areas ⁷⁷	Residents (P1= total resident population)	Families in rented houses (A46= number of families in rented houses)	Families in property houses (A47= number of families in property houses)	Residential buildings (E3= number of residential buildings)	Empty houses and occupied only by not resident people (A3)	Airbnb supply April 2021
Centre of Florence (Neighbourhood 1)	70.098	9.721	22.725	8.054	2.221	7.209
Urban areas of the region (city centres included)	959.738	75.891	302.616	121.855	37.399	10.413
'Non-urban' areas of the region (Montalbano hills included)	42.192	2.377	11.913	10.550	3.775	1.356
The historical centre of Prato (within historical walls)	7.941	1.154	2.024	1.268	1.117	82
The historical centre of Pistoia (within historical walls)	8.755	1.336	2.516	1.425	1.126	98
Montalbano Hills (both urban and non-urban)	47.111	2.495	13.677	10.085	3.010	596

Table 4.T04. Absolute numbers of demographic indexes in selected urban and non-urban areas of the FPP.

⁷⁷ Please note that the selection of different areas was made by a simplification of categories. The city centre of Florence is the Neighborhood named 'centro storico'; the city centre of Prato is the historical domain within the walls; the urban areas are meant as settlements domains (residential, industrial areas and so on) defined by a selection on census units area (they're all census units equal to or smaller than 500.000 square meters) and then random controlled with the aerial view. The 'non urban' areas are those census units bigger than 500.000 square meters. Montalbano Hills area is selected by the orographic, topological and with the aerial map check.

*Supply and Demand Patterns in relation to access infrastructures (distance from railways stations and the airport of Florence on 4 stages: April 2020, August 2020, October 2020, April 2021)

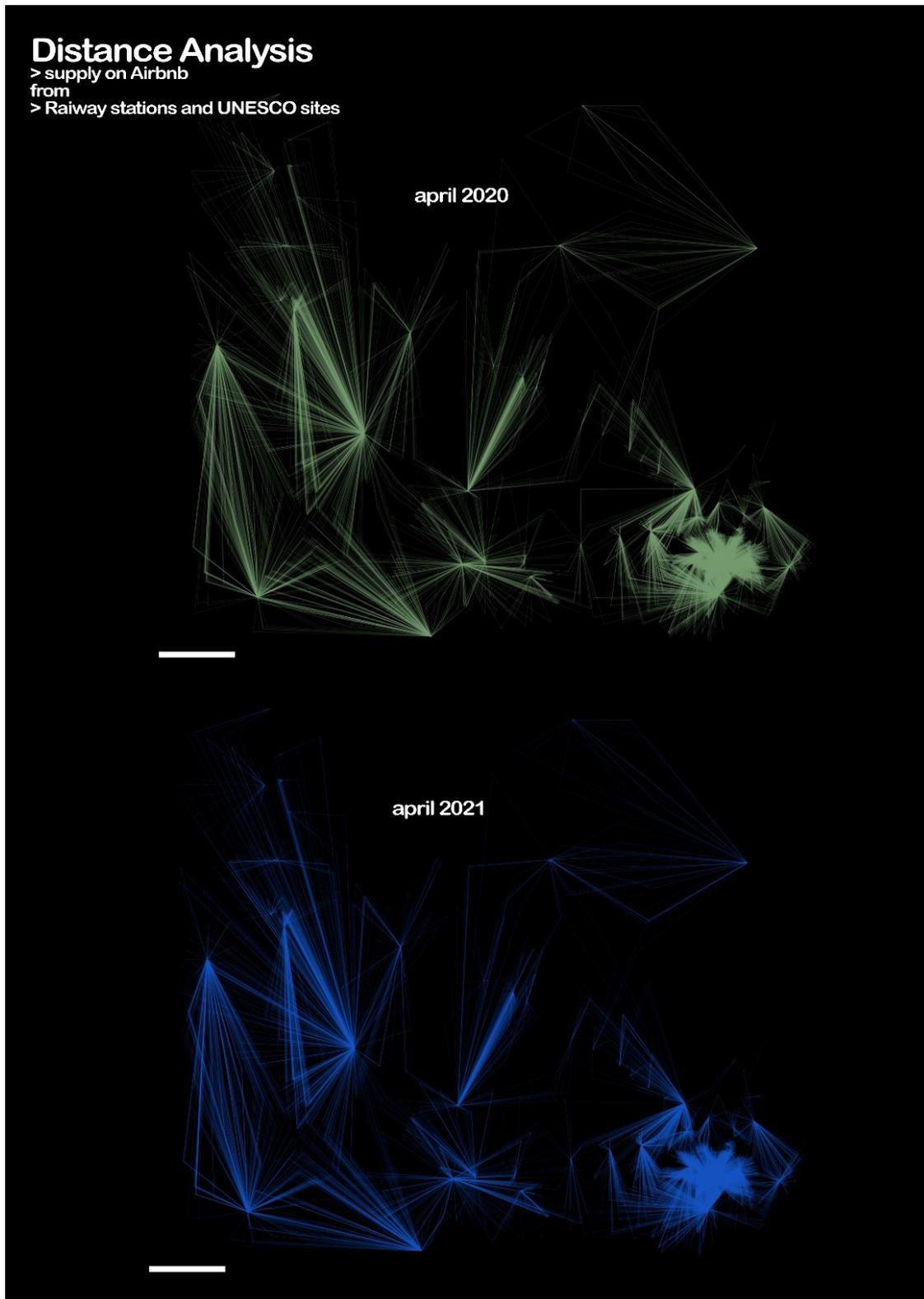


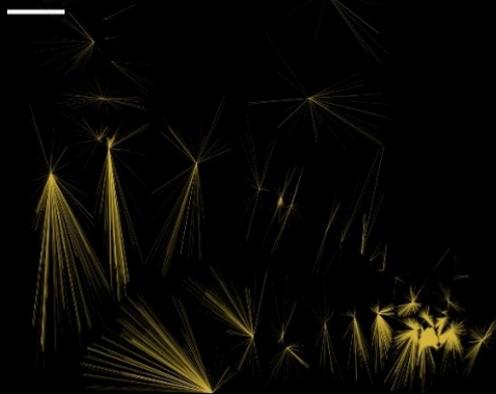
Figure 4.67. Maps of the distance of Airbnb listings (supply: listings on the platform) from railway stations and UNESCO sites. Two stages: April 2020 and April 2021. Source: CNR data

Distance Analysis

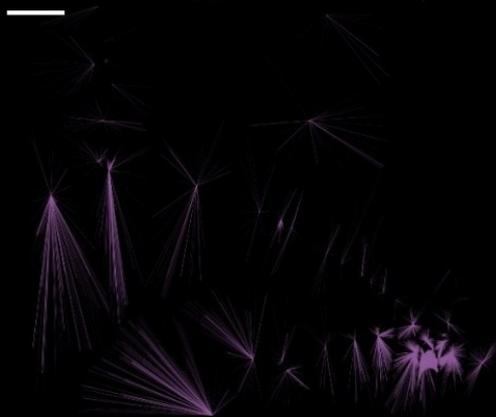
> supply on Airbnb
from
> railway station



april 2020



august 2020



october 2020



april 2021

Distance Analysis

> demand on Airbnb
from
> railway station

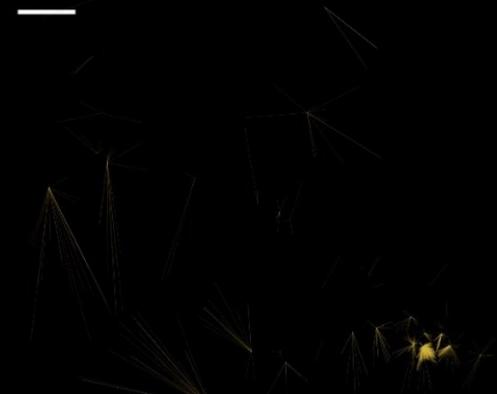


Figure 4.68. Maps of the distance of Airbnb listings (supply: listings on the platform; demand: listings reviewed) from railway stations. Four stages: April 2020, August 2020, October 2020 and April 2021. Source: CNR data

*Supply and Demand Patterns in relation to attractive hubs (UNESCO sites) on 4 stages: April 2020, August 2020, October 2020, April 2021)

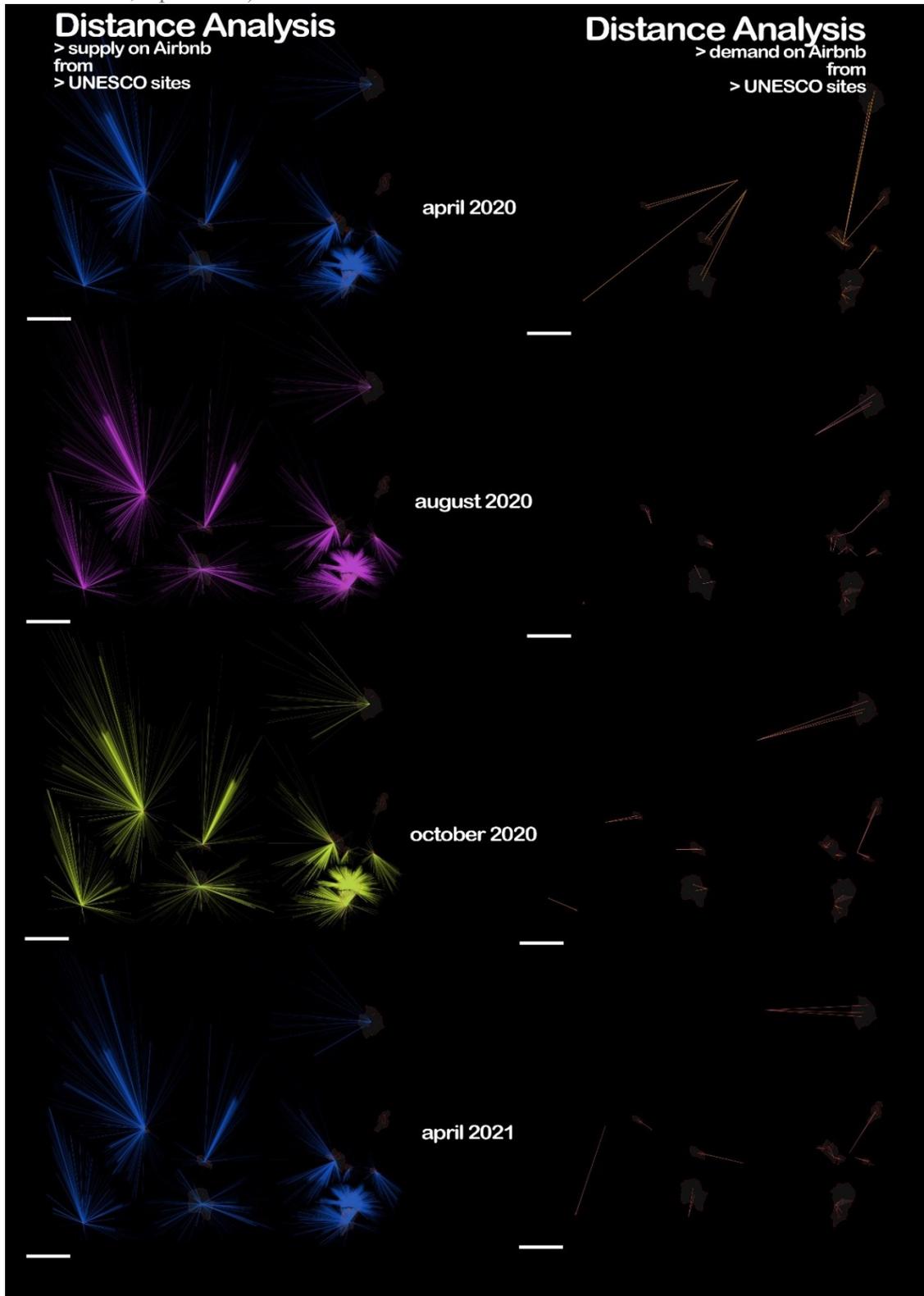


Figure 4.69. Maps of the distance of Airbnb listings (supply: listings on the platform; demand: listings reviewed) from UNESCO sites. Four stages: April 2020, August 2020, October 2020 and April 2021. Source: CNR data

The infrastructural network on the railway serves the Airbnb supply especially in the Municipality of Florence, but also in Prato is visible its importance in the supply distribution, while it doesn't have the same role in Pistoia, where listings are further from the stations. As far as the role of Unesco sites is concerned, we see that are crucial in Florence, while are secondary drivers of supply distribution in the other parts of the urban region. The Airbnb demand is always quite far from Unesco sites of the FPP urban region, except for the stage October 2020. On the contrary, the demand is located nearby the railway stations of the main centres of the FPP. This is possibly because the Montalbano hills aren't as infrastructured as the lower areas of the FPP.

*Supply, Demand density in urban morphotypes and rural areas (see also §7, the research agenda)

The supply density was also analysed in specific morphological urban and territorial patterns, inherited by the research of Giacomo Rossi, who studies the contemporary urban morphotypes of the FPP urban region in the lower areas between Florence and Pistoia, and further investigated in Montalbano and the hills around Pistoia.

Selected ⁷⁸ types of urban pattern	Number of listings in urban types in			
	April 2020	August 2020	October 2020	April 2021
Tr1a_ closed and semi-closed blocks historical pattern (buildings until 1820-1870) ⁷⁹	5669	5467	5047	5011
Tr1b_ closed and semi-closed blocks from the XX century pattern (buildings until the 60s)	2457	2372	2190	2085
Tr1c_ closed and semi-closed blocks recent pattern (buildings from the 60s until now)	66	77	77	64
Tr2a_ open blocks and isolated residential buildings on historical urban matrice pattern	64	62	71	75
Tr2c_ open blocks and isolated residential buildings pattern	72	71	73	73
Tr3a_ open blocks mostly residential on historical urban matrice pattern	125	119	84	93
Tr3c_ open blocks mostly residential pattern	199	203	198	177
Tr8a_ continuous linear pattern (from XIX and XX century)	112	121	118	114
Tr8c_ recent linear patterns	91	81	75	77

Selected ⁸⁰ types of rural pattern	Number of listings in rural types in			
	April 2020	August 2020	October 2020	April 2021
Code 22_ crops in drained areas	641	651	585	595
Code 23_ crops with trees/orchards	13	14	24	32
Code 24_ complex mosaics of cultivations	85	95	80	71

⁷⁸ These types were chosen among the others to be reported in the table because they were the densest in listings.

⁷⁹ Definitions of urban patterns are from Giacomo Rossi's research.

⁸⁰ These types were chosen among the codes of the Regional data on Land use.

Code 31_vineyards	211	199	195	196
Code 32_orchards in monocultures	55	55	42	50
Code 33_olives in monocultures	0	0	1	0

Table 4.T05 and 4.T06. The number of Airbnb listings (supply) in urban morpho-types and rural areas (defined rural by the land-use analyses of the Landscape Territorial Plan).

About the distribution of Airbnb supply in urban morpho-types we observe that it is concentrated in the historical patterns, represented by the city centres of the area and some villas and villages in rural contexts. Nonetheless, there are listings in contemporary morpho-types, such as the closed and semi-closed blocks patterns dated back to the XX Century until the 60s and from the 60s until now, that traditionally represent the first peripheric belt and the contemporary expansions of the city. We also have listings in linear patterns that historically developed along strategic roads. About the distribution in rural areas, we can observe that they are not so many and are concentrated in crops and vineyards. Possibly their position is linked to the historical agricultural settlements and the villages still present, especially in this domain, and the inner bug of the datasets of Airbnb.⁸¹ Anyway, it is interesting to note that vineyards and complex mosaics, which are the most representative of the typical Tuscan landscape, host most of the listings in the rural areas.

⁸¹ Listings might be located within a range of 250 meters, and for the fragmentation of the urban fringes and the many in-between agricultural lands, it is possible that the count of the listings is faulted by this error

4.3 Conclusions. Airbnb Dimensions in Territories: Multi-Scale Resilient Dynamics and Assemblages

The urban region of the case study presents numerous borders, some of them politically fixed, historically inherited, some others naturally set, continuously changing, and adapting to new gravitational forces, which can be social or ecologic but especially economic. These are fuzzy and more resilient to the changing environment than the institutional ones. Preliminary analyses on main aspects of change required the investigation of the morphologic, social, economic, and historical drivers of these ‘naturally set’ borders (§4.1.1 and 4.1.2). The choice of a two-scale single case study is linked to the fuzzy nature of these borders and the necessity to verify the hypothesis that Airbnb is a regional complex system, but without aprioristically knowing which scale this hypothesis might emerge with geographic evidence.

Therefore, the preliminary knowledge on Tuscany and the FPP urban region, reinforced by further structured analyses, indicated that the regional scale and the landscaping, socio-economic recognised area of the FPP could be the two ambits to study Airbnb dynamics not in comparison, but in parallel (§4.2.1 and 4.2.2), following the same analytical protocol, as far as possible using two different datasets.

The Tuscany region is a defined and recognised political, cultural, and territorial domain. Nonetheless, it is not a homogeneous realm, but it is described as a city of cities. This can be a curious way to describe a region well-known for its traditional rural landscape, the wine production and the historical small towns and city centres. But this vision of Tuscany is a branded perspective, a marketing imaginary that simplify the contemporary global and local dynamics that invest this territory. The brandisation for tourists itself involves global flows that are supported by the current nature of Tuscany, both in its immaterial and material aspects.

The complexity of the ontological nature of the urban environment, in its material visible and tangible patterns and immaterial flows and interactions among actors, introduces questions about the governance of cities, meant as extended regional urbanizations and global city-regions, “interpreted as networks of relational contracts. Such contracts are both formal and informal, implicit (like the ‘framework programmes’ between the EU, states, regions, cities and companies on such areas as knowledge, technologies and human capital), incomplete and open to the future (like the multilevel and multi-agent agreements on environmental goods and global commons). In all these contracts, we are dealing with relational contracting among urban actors (both governmental and functional), states, global networks and supranational governments” (Perulli, 2016: 34). This is the main reference that guided the interpretation of the urban as the environment in relation with the main dynamics linked to Airbnb, as a material and immaterial multi-scale, virtual and real actor of the short-term rental market. As said, the environment of this market is plural, involves different scales and is urban. New ontologies of the urban, explored also through the concept of noosphere, are emerging, proposing a city without an outside (Brenner and Schmid, 2015; Schmid, 2019; Perrone, 2019b). Therefore, the city is everywhere and in anything (Amin and Thrift, 2016), and, at the same time, it is not paradoxically a defined object anymore (Brenner and Schmid, 2015).

There are obvious differences between the North American context, which extended regional urbanisation theories firstly related to, and the Italian, and especially Tuscan context, such as the scale of the processes. Nonetheless, extended regionalization features can define Tuscany because of its spread urbanity, its being city of cities, and the landscape and tourism industries linked to brandisation, the global financial forces that invest these territories, but also the FPP urban region. This is a polycentric structure saturated by the urban, as traditionally meant, and in which rural and agricultural places are subject to the urbanization processes and needs. Where there are still wide open and not ceased by polluting and large infrastructures, the ‘rural’ areas are committed to intensive farming and greenhouses. Few natural areas protected or environmentally significant, resist but are at the centre of urbanisation processes, as the Florence Airport implementation demonstrates. In this realm, constellations of urbanization and suburbanization explode and cover ancient

matrices built for human needs interplaying with the non-human agents (land, waters...) such as the villages of Brozzi, Quaracchi, Peretola, San Giusto, Iolo, now swallowed up, at least partially, by the urban process of expansion that started around the 70s. A cluster of other poles exploded thanks to the railway, along its line (Sesto Fiorentino and Calenzano) and also at the bottom of Calvana and Montalbano hills (Quarrata, Signa, Poggio a Caiano, Artimino). The rail infrastructure partly drove the urban saturation between Florence and Pistoia and sustains the commuting dynamicity, the pulsing heart of this system, especially between Prato and Florence.

Thus, we have many different ambits in the FPP urban region. These interplay differently with the Airbnb dynamics as reported in §4.2.2. For instance, the cartographic analyses on supply show a ‘linear’ trend in a non-linear turbulent environment, specifically triggered by the Covid-19 pandemic. And this stability is a characteristic of the FPP urban region and the entire Tuscany Region, equally distributed also in landscape regions. From the ‘virtual supply’ analysis, we see a stable trend up to October 2020, when the positive cases increased again, and a political crisis was ongoing. Maps show that in October 2020 the number of listings blocked for 0 to 6 days a month decreased, while those listings blocked for most of the month increased. From the analysis on the percentage change in supply density, it emerges, that only a minority of increase in listings all outside the urban areas, as defined by the Tuscany Region, while the demand is subject to fluctuations in absolute numbers before and during the pandemic, even if for three stages out of four is recognisable the pattern of diffusion. July 2020 is the stage in which the demand exploded in Tuscany as disordered fine dust of listings booked from 15 to 31 days a month.

A third fundamental aspect of Airbnb is multi-listings hosts. These are powerful actors of the local Airbnb dynamics. Nonetheless, they can be also defined as global because they represent estate investors or management companies that boost the dimension of Airbnb because, in the first case, they enter big stocks, often concentrated in space, of listings or, in the second case, because they facilitate the entry of small actors, often single listings’ hosts, that might have preferred to list their property on the long-term rental market.

We examined the multiplicity of Airbnb aspects meant as actors that develop their interests – as owners or managers of estates and guests – and at the same time enhance the interests of the global Company Airbnb. But we’ve also discussed these aspects reflecting on the dynamicity in a turbulent environment as the pandemic year is. But, more interesting than the subsequence of pictures from each phase, can be investigated the speed of the responses of these actors to changing conditions. The analyses of the percentage change on supply and demand from one month to another, or from a week to another, try to investigate the pace of these two dynamics over the period. What we see is that Airbnb supply and demand curves are different not only in absolute numbers – the first keep still while the second fluctuate – but also their pace of action or reaction is different both among the supply and demand and among the scales.

But a reaction to what? This is the question that drove the *emergence and in-becoming environment* section that graphically reports the entanglement of relations at different scales between the Covid-19 pandemic moment with related policy and restrictions, the main aspects from Airbnb, including their inner policy and marketing campaigns, the interpretation of their effects on tourism market and flows. The policy’s addresses at the European level are the most linear ones, all aimed at the economic sustain to the Member States. Very different is the fluctuating way the Italian government faced the virus, with peaks of restrictive measures and re-opening stages in which the communication from the institutions was prompting the domestic travel. At the regional level, we observe the same trends for restrictive measures, deeply linked to the national laws on the Covid-19 fight, funds, also directly linked to the European and National levels, while the measures on tourism are several and are divided in more and less restrictive actions basing on the contagion curve also. This is possibly caused by the law competencies framework, for which Regions have legislative powers on tourism. Nonetheless, we observe that Tuscany had a reason for the inefficiency of policy because in September 2020 there were elections of the new President. About the local level, it is more effective going through local public actions in Chapter 5.

To conclude, in Tuscany listings inside and outside the traditionally defined urban areas are almost equal in absolute numbers. Density is higher in urban areas, which represents a small percentage of the regional territory. The demand is concentrated in urban areas before the pandemic, while is almost equally distributed in the central stages of 2020. Even if the listings distribution appears equal between rural and urban areas, and still the demand is concentrated in urban areas, the multi-listings hosts tend to invest 5 times more in rural areas in Tuscany. Possibly is it for the strong brand of Tuscany? Contrariwise, in the FPP region, the supply and demand in absolute numbers and density is concentrated in urban areas and especially in Florence. The multi-listings hosts' stock does not significantly change over the period and keeps its consistency in Florence and Montalbano hills. The supply and demand, but also the choices of the mlhs, as the strongest actors in the Airbnb game after the Company, aren't linked to cause-effects relations, as more evidently demonstrated in other more traditional economic sectors. The proximity to cultural hubs, such as the centre of Florence, or access hubs, such as the railway stations, isn't a fixed driver of supply or demand concentration. For instance, at the Tuscany level, we see that the Mugello landscape region is one of the less interested by the Airbnb dynamics, even if it is very close to Florence, which is the densest hub in supply, demand and mlhs stock of the FPP urban region but also of the entire Tuscany region.

To simplify the reading of the chapter and the sense of the case study, the analytical results, that aren't read as cause-effects indexes, was ordered in categories firstly described in §2.1.2. These will be used in §6 to discuss the results. Before delving into the interpretation of quantitative and qualitative results, another aspect needs to be investigated to have a far-to-be-completed picture of the dynamics (§5). Thus, the governance and regulative field on Airbnb, less traceable on maps, is crucial in reflecting on a possible gap between the Airbnb system, with its material and immaterial aspects, and the urban governance frame.

5. Policies and Governance Issues in the Case Study. Analysing Airbnb within Planning Theories in Complexity

Il gioco a due che appassiona le folle e che oppone solo umani [...]. E quale terzo! Il mondo stesso. Qui le sabbie mobili; domani, il clima. L'acqua, l'aria, la terra, il fuoco, la flora e fauna, l'insieme delle specie viventi...questo paese arcaico e nuovo, inerte e vivente [...]. Fine dei giochi a due; inizio di un gioco a tre. Ecco lo stato globale contemporaneo.
Michel Serres 2010
Tempo di crisi pp. 42-3

Lo spazio urbano è contested space: spazi e luoghi della città disputati e contesi, in particolare gli spazi pubblici, le piazze, le strade ed in generale il territorio aperto, i parchi, i giardini e le aree marginali e di connessione, le zone e gli edifici abbandonati.
Giancarlo Paba, 2002
Insurgent city p. 7

This chapter is built on the questions: who guides recognizable material and immaterial patterns of Airbnb development in cities and regions? and with what tools?

“The city region, today, is the frame within which our life unfolds between local and global” (Perulli, 2009: 59). Thus, as we also highlighted in §2.2, global actors have a crucial role in local spatial conflicts, while at the intermediate level of governance, the national states are losing their sovereignty on flows space (Brenner, 2004). The criticalities in cities are deeply intertwined with a governance crisis that needs to cope with a multiplicity of delocalised, dispersed, fragmented actors (Perulli 2009; De Roo and Boelens 2016).

In this complex interrelation of interests and actors at multiple scales, non-linear dynamics emerge in the environment and challenge planning theories and practices. The major aim of the planning discourse considered in the research is guided by Friedmann’s question about the role of planners, but also about the governance system that supports planning. “Given the reality of what is happening now, they [planners n/a] have to ask themselves whether planning powers should intervene to shift the balance of forces toward goals of social justice and inclusion in the ongoing processes of urban and regional restructuring, and with what tools at hand?” (2011: 215)

Starting from these questions, the following paragraph explores the regulative and strategic lines that directly or indirectly involve the short-term rental market and its actors at different scales, from the European to the Municipal. The second paragraph questions the interplay between local policies and Airbnb as a result of the public and private interface.

5.1 The Current Normative Framework of Short-Term Rental Platforms in Multiscale Complex Political Environment

In a globalized world, the local public sphere has a central role due to its flexibility between the local scale and issues and the global flows of money and power (Borja and Castells, 1997). Castells (2004) supposes that this is not specifically because of the virtue of local administrations, but because higher levels of the public sphere in the vast institutional areas which do not share culture are weakened in their political responsibility (Sassen, 2001). In the emergence of global spaces of flows (Castells, 2004 – see §2.2.1) political responsibility and institutions are challenged by networks of global firms that produce new cities forms: global city-regions (§2.3). To cope with this ‘environment’ “[t]he answer can no longer be localism or communitarianism: the dichotomy between a universal economy and technology and the policy of local identities is an oversimplification of the issue.” (Perulli, 2009: 219) The view of Thomashow and the theorization of cosmopolitan bioregionalism can give fruitful insights on this topic (see §2.2.1) to avoid simplifications on the relation between local and global dynamics.

Perulli (2009: 207) proposes that the “term ‘governance’ brings the local and global together; emerging from the science of international politics to deal with a world system of inter- and transnational relations increasingly adrift from solid principles of international law. Governance, then, is the system of networks linking up the actors on the world scene”. Thus, governance and urban regional policy specifically, is crucial in approaching the question of the research since Airbnb is a global actor ‘landing’ on local territorial contexts.

In the next two paragraphs, the short-term rental (STR) market, and precisely the Airbnb platform and its users, will be framed within the European regulation, Italian and Regional laws and the local policy which reflects the strengths and weaknesses of the governance structures. In the European case, we see a tendency of not over-regulate, with related problems of vagueness, while, to describe the Italian case, we can adjust to our case the Perulli’s description of an “institutional inertia [that] has produced a society rich in productive units and networks but weak in regulation due to the historical background to its public administration” (Perulli, 2016: 23). But this might be a simplification of a multidimensional reality. Airbnb, like other online platforms, isn’t efficiently regulated yet because of an ontological problem of the definition of these actors. While the hosts and the private interests of owners are regulated by national laws, the role of the platforms is blurred and still not labelable in current normative categories. Furthermore, there is active action of lobbying at the European level, while STR platforms objectively support the local tourist market, even though the platforms generally promote tourism for shorter stays and lower budgets. This can firstly boost the local finances, not only indirectly with positive effects on satellite activities, but also directly through the tourist tax collection. The regional level is demanded to set political and regulative actions on tourism, but exceptions linked to the competencies among the public levels make the law environment complicated and confused, especially for the actors involved.

5.1.1 The European Policy Frame

The normative frame on the short-term rental market is multi-layered. At the European level, the STR phenomenon is included in the COM (2016) 356, “A European agenda for the collaborative economy⁸²”.

⁸² “the term “collaborative economy” refers to business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods or services often provided by private individuals. The collaborative economy involves three categories of actors: (i) service providers who share assets, resources, time and/or skills — these can be private individuals offering services on an occasional basis (‘peers’) or service providers acting in their professional capacity (“professional services providers”); (ii) users of these; and (iii) intermediaries that connect — via an online platform — providers with users and that facilitate transactions between them (‘collaborative platforms’). Collaborative economy transactions generally do not involve a change of ownership and can be carried out for profit or not-for-profit.” (COM (2016) 356) This concept is central in the debate on

Approaching the issue of a conflict between traditional professionals and non-professional actors' categories, the EU Commission aimed at aligning national legislations. But, trying to avoid the risk of over-regulation on the Member States, the EU Commission enhanced a 'soft regulation', producing "non-binding guidance". The COM (2016) 356 contains guiding lines that regard key issues, such as the requirements of access to the market, professional and peer-to-peer provisions of services, collaborative platforms, liability regimes, users' protection, self-employed and workers in the collaborative economy, taxation and monitoring of the phenomenon.

In detail, as far as the requirements/restrictions of access to the market are concerned, "under EU law, in particular the fundamental freedoms of the Treaty and the Services Directive⁸³, service providers are not to be subject to market access or other requirements, such as authorisation schemes and licensing requirements [...]. This also applies to the regulation of professions" (COM (2016) 356: 3-4). Hatzopoulos and Roma outlined some reflections on the COM (2016) 356. Firstly, "[t]he lack of definition [...is a problematic issue] since a coordinated approach between the European Commission and the Member States is essential to avoid fragmentation of regulation across EU borders" (Hatzopoulos and Roma 2017: 5). Thus, one of the crucial issues of Airbnb is about the host type and "EU legislation does not establish expressly at what point a peer becomes a professional services provider in the collaborative economy. Member States use different criteria to differentiate between professional services and peer-to-peer services" (COM (2016) 356: 5). Secondly, there are critical aspects around labour laws in single states, which are different and that must be respected by the actors of the collaborative economy. Third, "providers of underlying services who qualify as "traders" are subject to the same consumer protection obligations as collaborative platforms who are themselves "traders"; with the difference that they may not claim the applicability of the E-commerce Directive [Directive 2000/31/EC] and the exclusion of liability contained therein. [...] Those providers who do not qualify as "traders" but as mere prosumers are not subject to any specific liability regime; they may be held liable based on the general provisions of contractual (or indeed, extra-contractual) liability under the rules of civil law applicable in each Member State." (Hatzopoulos and Roma, 2017: 31).

This Directive is based on the principle that "[a] free market, which compels the Member States to eliminate restrictions on cross-border provision of services while at the same time increasing transparency and information for consumers, would give consumers wider choice and better services at lower prices." Therefore, in the art. 9 it states that the Member States shall not provide authorisation schemes unless the activity isn't discriminatory, or it is "justified by an overriding reason relating to the public interest" (Directive 2006/123/EC: *whereas* (2) and art.9).

Therefore, the guidelines of the COM (2016) 356 are fully congruent with the existent European legislation.

One of the most weakening factors in Airbnb's regulative process is the "judgment of 19 December 2019, Airbnb Ireland (C-390/18), [with which] the Grand Chamber of the Court held, first, that an intermediation service which, by means of an electronic platform, is intended to connect, for remuneration, potential guests with professional or non-professional hosts offering short-term accommodation services, while also providing a certain number of services ancillary to that intermediation service, must be classified as an 'information society service' under Directive 2000/31 on electronic commerce".⁸⁴

Nonetheless, the Directive 2011/83/Eu of the European Parliament and of the Council of 25 October 2011 (the EU Consumer Rules) triggered a European demand from Airbnb for some changes. In September 2018⁸⁵, the EU required and obtained from Airbnb to be clearer on pricing hidden voices and, more importantly, "to

STR legislation. Indeed, the EU Commission deciding to define 'collaborative' and not 'peer-to-peer' economy, focus the attention on the positive side and does not register at a first approach the issue of the under regulation of peer-to-peer markets.

⁸³ See Article 9 and 16 of Directive 2006/123/EC ('the Services Directive') and Articles 49 and 56 of the Treaty on the Functioning of the European Union (TFEU).

⁸⁴ <https://curia.europa.eu/jcms/upload/docs/application/pdf/2019-12/cp190162en.pdf>

⁸⁵ https://ec.europa.eu/commission/presscorner/detail/en/IP_18_4453

clearly identify if the offer is made by a private host or a professional, as the consumer protection rules differ”. Nonetheless, on Airbnb you read this statement: “Airbnb is unable to evaluate your host status and is not required to do so. If you are unsure, consult a lawyer or other legal counsel.”⁸⁶

A more recent European judgment on the short-term rentals market is from 2020. “The Grand Chamber of the Court held, in the first place, that Directive 2006/123⁸⁷ applies to the legislation of a Member State relating to activities consisting in the repeated short-term rental activities, for remuneration, whether on a professional or non-professional basis, of furnished accommodation to a transient clientele which does not take up residence there. [...] The authorisation scheme must be justified by an overriding reason relating to the public interest and that the objective pursued by that scheme cannot be attained by means of a less restrictive measure (proportionality criterion), the Court noted, first, that the legislation in question is intended to establish a mechanism for combating the long-term rental housing shortage, the objective of which is to deal with the worsening conditions for access to housing and the exacerbation of tensions on the property markets, which constitutes an overriding reason relating to the public interest.”⁸⁸ Thus, the Court suggest the implementation of an authorisation scheme both for professional and non-professional figures, bypassing the problem of definition, but only where an exacerbation of tensions on the property market linked to the long-term rental supply is identifiable. Furthermore, the Court recognises that less restrictive measures than an a priori authorisation scheme would be ineffective because “an a posteriori inspection would take place too late to be genuinely effective.”⁸⁹

“As Martínez-Mata (2017) stresses, the evaluation of any given regulatory measure by national courts and/or by the CJEU will have to be undertaken on a case-by-case basis. It will depend on the evidence and justifications put forward by a local public authority in terms of the ‘public interest objectives’ that are pursued through particular forms of regulation of STR. For city governments, this means collating solid evidence of the impacts of STR on housing markets, among other types of impacts. The CJEU ruling of September 2020 defers to national courts the responsibility to ‘verify, in the light of all the evidence available to it... whether that option is an effective response to the shortage of long-term rental housing that has been observed in the territories concerned’. The legitimacy of public intervention and regulation is therefore grounded in the capacity of public actors to demonstrate a ‘serious and grave risk’ to the availability of affordable housing causally linked with the proliferation of STR in a particular city (or territorial unit). This is challenging” (Colomb, de Souza 2021: 54).

The European political agenda of Ursula von der Leyen (president of the European Commission 2019-2024) includes the intention to develop “a new Digital Services Act will upgrade our liability and safety rules

⁸⁶ <https://www.airbnb.it/help/article/1321/determinare-che-tipo-di-host-sei-su-airbnb> To comply with EU consumer law, Airbnb is required to require all hosts to declare whether they are businesses or individuals. This information also helps us to provide you with the appropriate functionality based on how you conduct your hosting business. We'll show your status to guests in search results and in your listing. Determination of the status of professional or private host

You are a professional host if: your profile matches that of a business, hosting on Airbnb is your primary profession or source of income, or you are part of an established business, such as a boutique hotel or property management company. If you rent as a business or sole proprietor outside the network, your Airbnb hosting business is likely to be considered a business. Also, you are a professional host if you regularly offer accommodation on Airbnb for profit over an extended period of time. This list is not exhaustive and other businesses that you manage may indicate that you are a professional host.

You are a private host if: your profile matches that of a private individual or hosting on Airbnb is not your primary profession or source of income (for example, if it is a side business or you post your ad on Airbnb occasionally).

⁸⁷ Directive 2006/123/EC of the European Parliament and of the Council of 12 December 2006 on services in the internal market (OJ 2006 L 376, p. 36)

⁸⁸ Judgment in Joined Cases C-724/18 and C-727/18 HX <https://curia.europa.eu/jems/upload/docs/application/pdf/2020-09/cp200111en.pdf> It is necessary to remind that “The Court of Justice does not decide the dispute itself. It is for the national court or tribunal to dispose of the case in accordance with the Court’s decision, which is similarly binding on other national courts or tribunals before which a similar issue is raised.”

⁸⁹ <https://curia.europa.eu/juris/document/document.jsf?docid=233725&mode=req&pageIndex=1&dir=&occ=first&part=1&text=&doclang=EN&cid=40124451>

for digital platforms, services and products, and complete our Digital Single Market”⁹⁰. Therefore, the topic, in the meaning of digital platform economies too, is central to the European agenda, and it is supposed that there will be further initiatives on it from the EU authorities. As confirmed in the speech for her ‘first hundred days’, that arrived in a crisis moment due to the pandemic, the strategy for Shaping Europe’s Digital Future and the European Green Deal to fight against climate change was presented as part of a unitary strategy for just transitions.⁹¹ The Next Generation EU, also known as Recovery Fund, represents a tool to help member states during the pandemic but a necessary condition to be funded is the green and digital aspect involved in projects, so that the Covid-19 won’t be a more urgent problem to solve than Global Warming or the under-digitalisation of economies. Thus, the new funding lines NextGenerationEU are aimed to “give all Member States a fair chance to overcome the crisis and to modernise.”⁹² And in doing this, cities and regions have a crucial role with their policies and governance systems in administering the funds from REACT-EU – Recovery Assistance for Cohesion and the Territories. The health system is also supported with funds, but the emergency linked to the Covid-19 is not reducing the scope of the European political agenda, because the goal of a green, digital and resilient future is embedded in funds for the pandemic. And the role of all governance scales is explicit in her speech: “We want to use these investments not only to restart the economy. We also want to use them to improve the air we breathe in our cities or to help small enterprises take up digital solutions. And for all this, local administrations must be in the driving seat.”⁹³

Within this European normative context, liable to remands to the European Court of Justice (CJEU), the research will briefly go through the national legislation of Italy as far as the topic of ‘collaborative economy’ and short-term rentals are concerned.

5.1.2 The Normative Framework in Italy

Airbnb activities cover many fields regulated by different laws and norms, often enforced much time before platforms even exist. For example, the short-term rental (STR) market involves the housing market (rent contracts), the tourist market since STR is mainly used for vacation, fiscal issues since the STR represent a source of income and finally national security because guests’ flows hosted in STR accommodations need to be traced. Thus, also data and information are fields involved in STR digital platforms. A law on urban (and regional) space interested in STR activities is missing at this moment.

Starting from the legislative upper levels, the Italian Constitution and the Civil Code are currently primary sources of legislation on the topic because they both regulate the private properties rights and duties.

The tourism and accommodation industry are under regional competence (art. 117 Italian Constitution). Nevertheless, over the years, many interventions of the Corte Costituzionale (the Italian highest court in matters of constitutional law) gave the competence to the central State. For instance, the Regione Lombardia in 2009 enacted a law to restrict the freedom of starting a Bed and Breakfast activity in a condo apartment without permission of the condo’s assembly. A sentence of the Corte Costituzionale removed this passage from the regional law because the freedom of a person to start an activity is covered by the Civil Code statute of property rights. Other examples of the State intervention in regional laws involve food and beverage in agritourism - considered under the health protection legislation by the Constitutional Court - and the condo-hotel regime. Condo-hotels are hotels that provide both ‘traditional’ rooms and entire apartments for residential use. The Constitutional law excludes the possibility to regulate these situations at the regional level because the subject involves several intertwined multilevel competencies. Therefore, given the impossibility to distinguish the statal and regional competence, the Court judged the State as responsible for the matter. This sentence produced the DPCM (a governmental Law) no. 13/2018 concerning exclusively condo hotels.

⁹⁰ https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf

⁹¹ https://ec.europa.eu/commission/presscorner/detail/en/ip_20_403

⁹² https://ec.europa.eu/commission/presscorner/detail/en/speech_20_1879

⁹³ https://ec.europa.eu/commission/presscorner/detail/en/speech_20_1879

Thus, tourism and accommodations in Italy are considered a fuzzy regulative matter, liable to interpretations as far as competencies are concerned, because the Central State initiatives on regional laws are justified by the principle of the primacy of national law over the regional law concerning specific areas/subjects of state competence (Principio di prevalenza in materia). The multiple nature of tourism, which include many aspects of everyday life (from public safety to national security, from the job legislation to specific cases, such as Condo-hotel), caused a shift of powers from Regions to the State.

As far as definitions are concerned, the national law (Ln 135/2001) mandates Regions to define categories of accommodation structures, that do not have a clear binding frame in the European normative context as we have seen in §5.1.1. Nonetheless, a national law (L.27/2020 – national normative code on the tourist market) defines tourist enterprises as those enterprises that make economic activities to produce, commerce, intermediate and manage products or services part of the tourist supply. But articles 8, 9 and 10 of the same law that classified tourist accommodation structures were amended by the Constitutional Court, because unconstitutional for excess of competencies.

Less recently, the national law L.50/2017 defines the short-term rental activities (up to 30 days of rent in contracts between privates) as ‘pure let’ because short-term rental contracts regulate just the rights and obligation related to the use of the estate, and not the services provided (ancillary or additional services), which are expressly forbidden.

As far as tourist rentals are concerned, the normative process of this field is quite recent. For the national law, L.96/2017 tourist rentals contracts are signed by individuals external to trade practices. About that, the Regions Assembly (Conferenza delle Regioni e delle Province Autonome) claimed that the L.96/2017 introduced only fiscal reflections and not civil goals. Therefore, in 2018, the Regions Assembly involved the National Government to establish common criteria on the professionals in tourist rentals. This multi-governance table work has been slowed down by the Covid-19 emergence⁹⁴, but in 2020 the Parliament approved the L.27/2020 – national normative code on the tourist market. This provides that residential houses exclusively rented for vacation, anywhere on the state territory, are regulated by the Civil Code norms in the matter of let and rent.

Thus, the Civil Code (art. 1150 et seq.) is taken as a reference for the housing market since it regulates rights and obligations for tenants and renters. From this, many other laws were enforced over the years, such as national law L.431/98 that rules contracts and actions for rent residential houses. This is a reference for the Airbnb legislation frame because houses rented for short-term rentals and vacation are classified as residential units in many local plans (see §5.1.4).

As anticipated, tourism is also a matter of data, and statistic coordination is a state competence.

All administrative levels must communicate data about tourist flows and stays, as the Piano Statistico Nazionale (National Statistic Plan) requires, in respect of national security aspects. The national law L.96/2017 and the L.132/2018 respectively norms: i) the information from tenants, or intermediaries, even if not fiscally resident in Italy and ii) the extension of the obligation to communicate to police headquarters to who let or sub-let for short periods (up to 30 days). The L.178/2020 (art. 1 c.597) modifies the comma 7 of Law 96/2017, expanding the measures not only to tourist structures but also to subjects that let residential houses for short periods, and it modifies the comma 4 of Law 96/2017, demanding to a future law (to be enforced in 60 days from the enforcement of L.178/2020) to define rules and modality guidelines for the management of the regional databases, as for the acquisition of data about STR through regional identification codes and access procedures to information in the database (see §6.1.3).

One of the most regulated matters in the STR field is the fiscal matter. The DPR (a legislative act of the Republic President) 917/1986 regulates the let sub-let and rent contracts (also for vacation). Income from these activities is liable to the fiscal regime for who let or sub-let. From 2017 (Law n. 96/2017 and Circular No. 24

⁹⁴ <http://amp.ilsole24ore.com/pagina/ADWQdW>

from 12th October 2017 of the Tax Revenue Agency) incomes from STR are under an optional tax regime (Cedolare Secca, *dry coupon*) that is calculated by applying a rate of 21% on the annual rent⁹⁵.

In 2020, the Budget Law 178/2020 (art. 1 c.595) partly modifies the fiscal regime provided by Law 96/2017 defining differences between tenants of properties for short-term let. From the fiscal year 2021, the fiscal regime of STR defined in the L. 96/2017 applies only to those tenants that have not more than 4 properties rented for short periods within each fiscal year period. In all other cases, to protect consumers and free competition, the STR is defined and regulated (by article 2082 of the Civil Code) as an entrepreneurial activity. The L.178/2020 disposes of an ID code of each service promoted, also for tenants who let for less than 30 days, accommodation structures, but also e-portals or platforms that connect people who offer and people who demand STR accommodations, imposing a fine up to 5000€ to transgressors.

Within this over-regulative approach on specific sectors, such as the fiscal one, and confusing normative context, liable to administrative and civil trials, the research will briefly go through the regional legislation of Tuscany as far as the topic of ‘collaborative economy’ and short-term rentals are concerned.

5.1.3 The Normative Framework in Tuscany

In the Italian regulatory system, tourism is an exclusive competence of regions. This means that Regional Administrations constitutionally have regulative power on the topic, but the National Parliament can oppose regional acts and laws and modify them (with an administrative trial) since specific aspects involved in the tourism sector - such as public health, national security, etc. - are competences of the State.

For instance, the Tuscany regional law on tourism (Testo Unico sul Sistema Turistico Regionale LR n. 86/2016) is from 2016 and its regulation - the applying rules of the law (D.P.G.R. 47/R/2018) - was enforced in 2018 after a process of amendment in administrative trials. The first draft of the law provided a licence and a maximum number of days a year to rent a property⁹⁶, but these norms were amended in the final and currently enforced version, which provides rules about the hosts’ communication of the short-term rented property and the STR activity (for statistical use). Thus, if this law was thought in the first draft to be a preventive ‘control room’ with licence regimes, today it aims to control data, possibly with the main aim of avoiding tax evasion.

The Regional Law n. 86/2016 (Testo Unico del Sistema Turistico Regionale) along with its following modification laws (L.R. 58/2017; L.R. 24/2018; L.R. 3/2019; L.R. 51/2020) and the applying rules of the law (d.p.g.r. 47/R/2018, Regolamento di Attuazione della Legge Regionale 20 dicembre 2016 n. 86 Testo Unico del Sistema Turistico Regionale) specifically provides the obligation for the host, even if he/she doesn’t directly manage the property, to register to the public vacation rental registry, that was created by the law for statistical purposes. From the 1st of March 2019, the host must communicate its activities within 30 days from the first touristic rent (decisions of the Regional Council n.1267 e 1462 del 2018). Information to be reported are the position of the house/houses, the activity (for statistic use) and the possible entrepreneurial nature of the activity. To each communication, referred to every single listing, it is linked an identifying code generated at the end of the registration process. The houses (or portions) must respect structural, hygiene and health conditions required for dwellings according to the laws in force. If the report of the finalised contracts is missing or incomplete, the owner is fined up to 1500 euros (art.70).

The Tuscany regional law on tourism isn’t only about short-term rentals and vacation rentals, but on tourism as a system. Among the declared aims of the law, there is i) the design of new governance focussed on municipalities since the weakened of the intermediate level of APT (Tourist Promotion Agencies) in 2010 and

⁹⁵ The income subject to coupon is excluded from the total income; The income subject to coupon and the coupon itself cannot be relied on deductible charges and deductions respectively; Income subject to coupon must be included in income for the purpose of acknowledging the interest or determination of deductions, allowances or benefits of any security related to the possession of income requirements. <http://www.venice-cera.it/dry-coupon-information-click-here/>

⁹⁶ In Article 72 it was admitted a *sporadic use of houses for tourism only* after getting the clean bill from the municipality, and for periods shorter than 60 days over the year. This norm is not included in the current dispositions of the law.

the competencies of Provinces in 2014 (Law 56/2014); ii) the clarification of the vacation rentals and professional and non-professional B&B; iii) the introduction of specific rules for short-term rentals “in the light of the so-called sharing-economy”.⁹⁷ The objectives of the law are mainly focused on the promotion of tourism in Tuscany and the improvement and the widening of the tourist supply, addressing policies for economically, environmentally and socially sustainable tourism. The law supports the chance for municipalities to cooperate and enhance a common tourist promotion linked to the territory coordinated by the Regional Agency for Tourism Promotion, "Toscana Promozione Turistica", constituted by the Regional Law 22/2016. Furthermore, the law sets the tourism control room, a new governance body that has consultant powers, collects evidence of misuses and problems sharing them with control bodies, proposes analyses and research on the tourism sector and annually evaluate activities of the information points. The control room is constituted by the regional tourism assessor, 5 representatives of municipalities, 1 member from the Metropolitan City of Florence, 4 representatives from associations of tourism entrepreneurs, 3 representatives from workers associations, 1 representative of agriturismo associations.

In Tuscany, recent policies about the sector are represented by the new ‘Operative Plan on Regional Tourism for 2021’⁹⁸ based on current travelling trends, such as the discovery of ‘living culture’ in villages through local products, art cities and wellness tourism. A newly introduced category, possibly boosted by pandemic implications, is travelling for reconnecting with nature through the disconnection from ITC, and, even more innovative, the medium and long-term rentals in rural areas for working from home. The Operative Plan, one of the first actions of the new administration of the Region (in office from October 2020), focuses on the recovery, restart and on the omnipresent (in Tuscan politic discourses) ‘renaissance’ after the pandemic, but it did not mention Airbnb or the STR platforms as partners or strong actors of the sector and therefore, of the process. The Operative Plan for Tourism (Piano Operativo del Turismo) 2021⁹⁹ devolves 6 million euros on 5 intervention areas, namely the business travel, brand ‘Toscana Rinascimento senza fine’¹⁰⁰ and the focus ‘China’ promotion; promotion of islands and coastal areas; paths; governance intervention with ‘Tuscany Together’ and market studies. All these lines aim at promoting and boosting tourism.

A year before this plan, in the full pandemic period, the Tuscany Region published the Operative Strategic Document Destination Tuscany (Documento Strategico Operativo Destinazione Toscana) 2020.¹⁰¹ In it we read: “[t]he policy on tourism must primarily aim at stimulating competition in the sector, considering that on

⁹⁷ This text is literally translated from the Tuscany Region website <https://www.regione.toscana.it/-/turismo-la-nuova-legge-regionale-testo-unico-sul-sistema-turistico-regionale->

⁹⁸ Press Reslease 12/01/2021 available at <https://www.regione.toscana.it/it/web/toscana-notizie/giunta/eugenio-giani/-/asset_publisher/bEFrAPfO0zNA/content/id/36531783> [last seen on 11/02/2021]

⁹⁹ *Verranno investiti circa sei milioni di euro su cinque aree di intervento: “business to business con le fiere e i workshop con i grandi tour operator internazionali; l’area comunicazione del brand con la campagna “Toscana. Rinascimento senza fine” e il focus “China”; gli interventi di valorizzazione dell’offerta “Costa Toscana / Isole Toscane”, “I Cammini” e le celebrazioni per i 700 anni dalla morte di Dante Alighieri; gli interventi sulla governance con “Tuscany Together” ed infine le ricerche di mercato. A Toscana Promozione Turistica spetterà l’importante ruolo d’intervento nel coinvolgimento e nell’ascolto e di specifico supporto nella governance, nella strategia e nel design dell’offerta e del marketing.”* https://www.regione.toscana.it/it/web/toscana-notizie/giunta/eugenio-giani/-/asset_publisher/bEFrAPfO0zNA/content/id/36531783 [last seen on 11/02/2021]

¹⁰⁰ Tuscany, endless renaissance

¹⁰¹ <https://www.toscana-notizie.it/documents/735693/1421823/Destinazione+Toscana+2020+documento+strategico/b3c60138-69ac-4dd7-9803-76b7ac3cc0c6> *Di fronte alla crisi ed alle sempre maggiori difficoltà che pesano sulla sua attività, il turismo regionale deve evolvere. A tal fine sono necessari adattamenti a tutti i livelli. La politica del turismo deve mirare principalmente a stimolare la competitività del settore, senza dimenticare che, a lungo termine, la competitività è strettamente legata alla sostenibilità del suo modello di sviluppo. Occorre sviluppare l’innovazione nel turismo, rafforzare la qualità dell’offerta in tutte le sue dimensioni, migliorare le competenze professionali nel settore, cercare di ovviare alla stagionalità della domanda, diversificare l’offerta turistica e contribuire infine al miglioramento delle analisi sul turismo. Il settore turistico presenta un importante potenziale di sviluppo dell’attività imprenditoriale dal momento che le imprese turistiche sono costituite in larga maggioranza da piccole e micro imprese. La politica turistica ha bisogno di un nuovo slancio. Di fronte a sfide che richiedono risposte concrete e sforzi di adattamento, gli operatori del settore devono potere unire le loro forze e lavorare in un quadro politico consolidato che consideri queste nuove priorità. Qui di seguito viene sintetizzato il nuovo sistema di “governance” regionale del settore dopo lo scioglimento delle APT (2010) e la riorganizzazione delle province a seguito della legge Del Rio, completando il quadro normativo inaugurato con le leggi 22 e 25/2016.*

the long-term the competitiveness is linked to the sustainability of the development model of the system. We need to promote innovation, strengthen the quality of the offer, enhance professional competencies and the quality of the analyses on tourism. The entrepreneurial activity in the tourist sector can potentially develop further because it mainly consists of small and micro companies.”¹⁰²

All these political actions are framed in the normative frame of the Regional Law on Tourism (86/2016) that stated the governance role of the Toscana Promozione Turistica Agency (created in 2016 by the regional law R.L.22/2016) which aims to increment the touristic flows in Tuscany and strengthen the regional tourist system. Interventions are devoted to promoting the territory through the concept of Tuscan Lifestyle, an easily recognisable brand for tourists and investors from all over the world, based on the intangible values that define what is Tuscany.¹⁰³

The lack of data is a problem also at the regional level. The Regional Observatory on Tourism was constituted in 2003 (Deliberazione del Consiglio Regionale n. 94 del 20 maggio 2003) to analyse in-depth and constantly monitor tourism trends about the supply and the offer, arrivals and presences, services’ prices curves, employees training, fundings to entrepreneurs, impacts of tourism on the economic system, tourist flows. The Regional Observatory is defined as a technical tool to support local administrations, constantly evaluating sustainability, and competitiveness of accommodation activities. Its archives provide data up to 2014, but possibly, the application of the Regional Law 56/2014 will give further implementation to the Observatories goals. Today, data are mainly available on the traditional accommodation market, but maybe with the implementation of the regional law on tourism and the obligation to inform public authorities, the reports of the Observatories might be also on the platform mediated STR market.

Within regulative frame and strategic documents, the research will briefly go through the local level of governance as far as the topic of ‘collaborative economy’ and short-term rentals are concerned.

5.1.4 The Administrative and Policy Framework at the Local Level

In Tuscany, the local level involved in tourism policy can be defined by the Metropolitan City of Florence and Municipalities.

Both levels don’t have regulative or legislative competence in the tourist sector. Thus, in the regional law, the major municipalities and the Metropolitan City of Florence have administrative functions, such as the structures classification, update of the register of local promotion association, the collection and analysis of statistical data on tourism; other municipalities must monitor the activities of tourist structures and other professional activities and the information about tourist offer on its territory.¹⁰⁴

The Metropolitan City of Florence presents some issues linked to i) the government model defined in the national law that created the metropolitan cities (MC) in Italy (national law 56/2014) and ii) the definition of its borders. The first critical point is linked to issues in the democracy model of MC because there is no direct election of government bodies, which are elected by representatives of each municipality. But the most weakening part of the process is the automatic election of the Metropolitan Mayor as the Mayor of the Main

¹⁰² *La politica del turismo deve mirare principalmente a stimolare la competitività del settore, senza dimenticare che, a lungo termine, la competitività è strettamente legata alla sostenibilità del suo modello di sviluppo. Occorre sviluppare l'innovazione nel turismo, rafforzare la qualità dell'offerta in tutte le sue dimensioni, migliorare le competenze professionali nel settore, cercare di ovviare alla stagionalità della domanda, diversificare l'offerta turistica e contribuire infine al miglioramento delle analisi sul turismo. Il settore turistico presenta un importante potenziale di sviluppo dell'attività imprenditoriale dal momento che le imprese turistiche sono costituite in larga maggioranza da piccole e micro imprese.*

<https://www.toscana-notizie.it/documents/735693/1421823/Destinazione+Toscana+2020+documento+strategico/b3c60138-69ac-4dd7-9803-76b7ac3cc0c6>

¹⁰³ Free interpretation of the text in the official website of Toscana Promozione Turistica <<http://www.toscanapromozione.it/content/9/Strategia-Strumenti>> (last seen on 10/2021)

¹⁰⁴ <https://www.regione.toscana.it/-/turismo-la-nuova-legge-regionale-testo-unico-sul-sistema-turistico-regionale->

Municipality (Spadaro, 2015: 16). The second critical point is about the missing chance to integrate functional areas of the Metropolitan system into the administrative body of the Metropolitan City of Florence. Thus, areas linked to the structure and the function of the city of Florence such as Prato and Pistoia or the Valdarno remain out the MC of Florence.

Metropolitan cities are deputed to address the strategic development of the territory at this intermediate level adopting a Strategic Plan. In 2015 the MC of Florence elaborated and adopted the 'Metropolitan Renaissance' Plan 2030. As far as the tourist measures are concerned it proposes the adoption of a metropolitan touristic card to support tourist attractions such as museums in the MC territory. It also proposes the creation of a Metropolitan Tourist Observatory to collect and analyse data at a more detailed level than the regional one and with a more comprehensive perspective compared to the municipal one. This strategy is not a new approach to tourism since observatories were analytical bodies of Provinces before the 56/2014 law.

Nonetheless, it is evident the crucial role that the MC can play in the analyses of flows and infrastructures, but some weaknesses are still present and weaken the process of innovation and sustainability of tourism sector policies.

The municipal administration cannot regulate or contain the tourist sector activities. Nevertheless, there are other types of regulative powers that touch tourism and short-term rentals. In Florence, the houses for short term rentals and vacation rentals are under regulations for residential use (Regolamento Urbanistico approved in 2015, Norme Tecniche di Attuazione art.19 c.2¹⁰⁵). The change of building use toward the commercial or hospitality are admitted only if the sustainability of the change is verified (art. 65 Norme Tecniche di Attuazione). It's forbidden the creation of new accommodation activities in residential estates with the possible exception of enlargements of accommodation activities in buildings with 'prevalent hospitality and touristic use', within the limit of 2000 m² and the number of beds that cannot exceed the double of the beds before the intervention. It is not possible to propose new hospitality activities (hotels and extra-hotels) in buildings protected by the Code of Cultural Heritage and Landscape (Dlgs 42/2004). This rule was enforced only within Neighbourhood 1, the Historical Centre of Florence, while in the new Regolamento Urbanistico, now called Piano Operativo that is going to be adopted it is proposed to broaden it to the whole municipality. In the preliminary document of the new Piano Operativo¹⁰⁶ it is claimed that the Airbnb phenomenon is uncontrollable at the local level, even if the planning tool has had a role in fighting the STR abuse in garages and other spaces unsuitable for residential uses. At the local level, the Municipality of Florence has to adopt a Function Plan to norm the changes in the use of the buildings. The uses can be specified, but at the moment the residential use doesn't present any sub-categories. The categorisation of the residential uses would be consistent with a general planning principle that relates to urban development and change called 'urban standards' (standard Urbanistici) implemented with the national law (DM. 1444/68). The urban standards are requirements on school services, common social services, parking and green spaces, to be covered by the private actor that intends to develop or make changes in the city with an impact on urban liveability. This is a brief and not satisfying synthesis that also doesn't mention the fruitful debate around them, their position between protection of the public interest and the outdated definitions of standards from the 60s, with also documented attempts of privates to escape from the law and strange ways to compute the standard surfaces from the public. This is one of the unsolved paradoxes of Italian urban planning. Specifically about the case study, the greater paradox, under the complexity lens in a critical position to the neoliberal paradigm, is how bringing together the complex flows of information, capitals, people in the city, between the global and local,

¹⁰⁵ Regolamento Urbanistico (after the 65/2014 regional law its name is Piano Operativo) is a normative instrument that lasts 5 years and every municipality in Tuscany must adopt. Its double aim is to implement the strategic vision of Piano Strutturale, the other Statutory and Strategic plan that every municipality must adopt, and to discipline the use of the territory. In the Norme Tecniche di Attuazione there are all the binding lines for public and private transformations and urban changes.

¹⁰⁶ [https://accessoconcertificato.comune.fi.it/OdeProduzione/FIODEWeb5.nsf/AllegatiPerNumAttoFile/2019-G-00647-All_A_RelaUrbaPOVarPS_Avvio\(firmato\)_signed_2019sg419107.pdf/\\$FILE/All_A_RelaUrbaPOVarPS_Avvio\(firmato\)_signed_2019sg419107.pdf](https://accessoconcertificato.comune.fi.it/OdeProduzione/FIODEWeb5.nsf/AllegatiPerNumAttoFile/2019-G-00647-All_A_RelaUrbaPOVarPS_Avvio(firmato)_signed_2019sg419107.pdf/$FILE/All_A_RelaUrbaPOVarPS_Avvio(firmato)_signed_2019sg419107.pdf) p.42

which are unpredictable, in-continuous becoming and need to flourish to keep the urban system alive, and the protection of the weaker actors, those who do not access the financial market and have no power to move capitals or don't own a house, for instance, but still need to inhabit, reside, work, walk, play and, in a word, live in the city.

The tools that municipal planning has for the moment are the Regolamento Urbanistico (now Piano Operativo), which in Florence is from 2011, that must be consistent with the Piano Strutturale, a Statutory and Strategic plan at the local level. At the art. 31 c.3 of the Norme Tecniche di Attuazione of the Piano Strutturale, there's the explicit aim of containing new tourist and hospitality activities, especially in the city centre. As already said, the forthcoming update of the Piano Strutturale will probably extend this norm to the entire municipal territory.

Other strategic and not regulative actions from the Municipality of Florence are the Social Agency for Housing (Agenzia Sociale per la Casa F.A.S.E. (Firenze: abitare solidale per l'empowerment di comunità), a public-private agency born in 2020 that aims to let long-term rental supply and demand meet efficiently and promote agreed rentals. The private part of the F.A.S.E is represented by Casa Spa, the current agency that manages the social housing supply in the northern part of Tuscany, while the public part consists in the Municipality of Florence. The F.A.S.E project is addressed to people in a 'grey area', not able to buy a house in the free estate market, but not in the recognised low-incomes category to be in the social housing lists. The owners of the houses listed by the project are guaranteed by a pact with banks. But now, this part of the project is still a work-in-progress.

In 2021, the Municipality of Florence and Destination Florence Convention and Visitors Bureau, a public-private entity that supports tourism, in collaboration with universities, hubs and business accelerators, real estate agencies and property managers launched the online platform 'Be.Long'¹⁰⁷. The project aims to promote medium and long-term rentals proposing Florence as an innovative centre for creatives in many fields, thanks to its temporary inhabitants. For instance, the registration process on the platform provides only a few categories to define "who are you", which are: student, worker from home, startupper, visiting worker, sanitary tourist, digital nomad (see fig. 5.01). From just one month from the opening of the Be.Long platform, Airbnb proposed itself as a partner of the project.

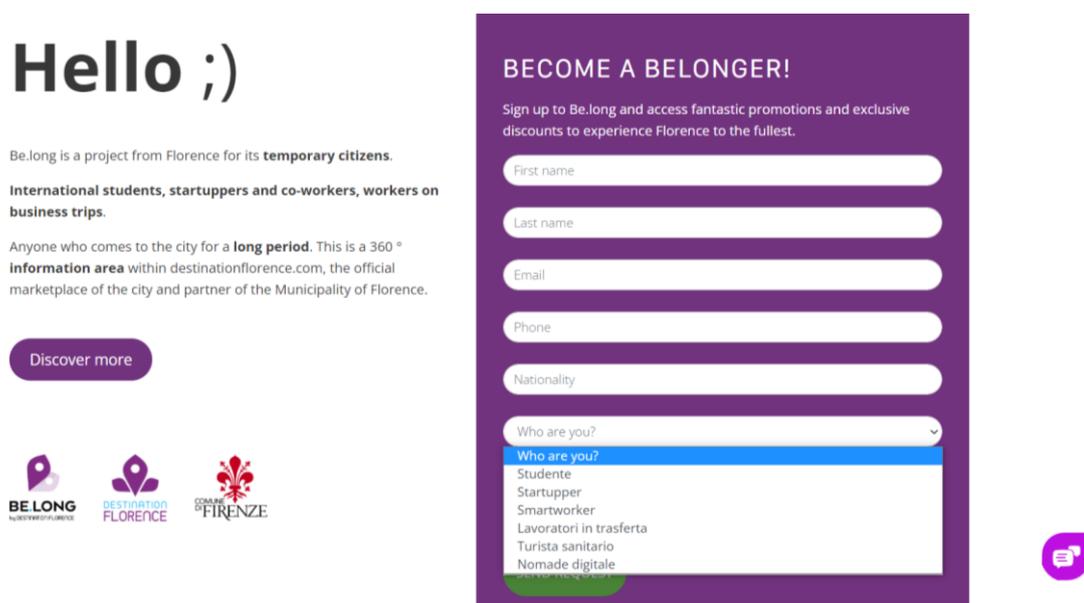


Fig. 5.01. Screenshot from the online platform Be.Long <19/11/2021>

¹⁰⁷ <https://belong.destinationflorence.com/en/>

Furthermore, the local administration of Florence promote policy on urban regeneration projects. A recent agreement with the private global investors on the former San Gallo Military Hospital provides that the residential part of the project cannot be rented for short-term periods or involved in B&B activities¹⁰⁸.

One of the first fields on which municipalities negotiated with the Airbnb platform was the tourist tax.

This provides that tourists must pay a fee every night they stay in the city. Every municipality is free to decide whether place it or not and to define the amount of money, increase or decrease passing days. In Florence, the daily tax is required only for the first 7 days of stay.

This tax, introduced with the National Law Dlgs. 23/2011 that defined the pillars for the current enforced tourist tax, is not regulated by regional laws, but the Regional Law 86/2016 only provides that short-term rental guests are also required to pay the tax. Therefore, *Firenze collect and remit* is an agreement between the Municipality of Florence and Airbnb. It's been in force since 01/01/2019 and provides that Airbnb collect the tourist taxes of guests through Airbnb or Keesy, that deposit the incomes to the Municipality. The host must declare to the Local Administration the amount of daily taxes. Only in 2018, the first year of the Collect and Remit pact, Airbnb collected 6 million and 800.000 euros from daily taxes¹⁰⁹. This is 16% of the total amount for the same year.

Also, in Prato¹¹⁰ and Pistoia¹¹¹ tourists must pay the daily tax, but there is no agreement with Airbnb for the collection. Therefore, it's the host that must collect in person the tax from guests and then deposit it to the administration. Both the Municipalities of Prato and Pistoia's Piano Operativo (2019) and Regolamento Urbanistico (2013) define short-term rental activities structures as residential use, like in Florence.

To conclude, even if Italian municipalities cannot regulate the system through laws and norms, in the last years, the fiercest actors to oppose Airbnb have been some European big cities (Florence included) subject to short-term rental impacts. Therefore, many letters of intent and local strategies have been pursued¹¹². In one of the many meetings with mayors from European cities, Dario Nardella, Mayor of Florence and Vice President of Eurocities, said: "cities are ready and able to "work with the European Commission to ensure an effective EU framework that protects and empowers people and businesses while ensuring data and new technologies are used to deliver better public policy."¹¹³ Nonetheless, as we evidenced, there is a lack of data and the strategies enacted at different levels promote tourist flows, while the Municipalities negotiate with Airbnb for collecting taxes and the public cooperates on projects, such as the Italian Villages promotion action.

The next paragraph explores the complex interplay between the public sphere and a private global 'virtual' actor, consisting in a coalescence of many local and global private actors' interests in the physical world.

¹⁰⁸ https://firenze.repubblica.it/cronaca/2022/05/05/news/firenze_ospedale_san_gallo_militare_appartamenti_no_airbnb-348156979/<08/05/2022>

¹⁰⁹ <https://www.comune.fi.it/comunicati-stampa/imposta-di-soggiorno-incassati-oltre-6-milioni-e-800mila-euro-da-airbnb>

¹¹⁰ [Deliberazione di Consiglio Comunale n. 29 del 11.06.2015](#); Deliberazione di Consiglio Comunale n. 1 del 10.01.2019

¹¹¹ The municipality of Pistoia set the tourist tax in 2018 (deliberazione di Consiglio Comunale n. 4 del 15 gennaio 2018).

¹¹² <https://eurocities.eu/latest/cities-want-eu-to-help-against-airbnb/> <19/11/2021>

¹¹³ <https://eurocities.eu/latest/opportunities-and-challenges-in-a-digital-era-cities-meeting-with-margrethe-vestager/> <19/11/2021>

5.2 Analyses on the Interplay between the Public - Urban Policies and Strategies - and the Private - the Airbnb Company and Hosts

In this paragraph, the relation between the private and public sphere in disruptive markets such as the short-term rental is put in question and investigated referring to relevant scholars' work. It is aimed at exploring the relationship between the norms and governance at different scales and the current policies for global actors such as Airbnb at the local level, especially in a global direction "towards more economic growth-based paradigms which rely on deregulation and market forces (Allmendinger, 2016)" (Holman et Al. 2018: 609). Deregulation, here, is meant not as the absence of regulation but a 're-regulation, a regulated deregulation'. The notion of regulated deregulation is framed in neoliberalist contexts as a process in which "some economic agents are given greater freedom from state control but the market framework itself is regulated" (Aalbers, 2016: 3). We take this concept as a reference because "[t]he global 'scaling up' of platforms such as Airbnb has crucially raised the question of the role of existing urban policy frameworks and their multiple geographically specific manifestations." (Ferreri and Sanyal, 2018: 3358). Around the world, dozens of site-specific governance approaches are coping with the issues triggered by the Airbnb phenomenon (in detail, see §2.4.3). Thus, Airbnb asked for homogenization of rules that could simplify their attempt to respect them, but it has been impossible since now, considering the socio-economic and urban – the territorial in a word – local complexity that specific policies are called to guide.

Some countries have national laws to regulate Airbnb (France and the UK), some others let single cities, municipalities or regions cope with it autonomously (as in the case of the United States). The UK is an interesting case of regulated deregulation, with its Deregulation Bill from 2015, which supported the online-mediated rental market of residential properties, putting a limit only to those hosts who list their property for more than 90 days, and "in which new forms of regulation and new terms of enforcement are established to create a variegated playing field where some market actors are privileged over others, leading to the generation of socio-economic inequalities" (Ferreri and Sanyal, 2018: 3362). The English regulation system is challenged by internal weaknesses about the control of the law implementation and evidence to prosecute (Ferreri and Sanyal, 2018; Lord and Tewdwr-Jones, 2014). Furthermore, politicians may assume different interpretations of the Bill, such as the one of the Chancellor of the Exchequer in 2014, who claimed, possibly directed to those 'privileged market actors', "tell us what we can do to help you break down barriers" (as quoted in Stephany, 2015: 151). This kind of policy line has a long-last legacy. David Harvey (1989) discussed the shift in governance at the local scale from 'managerialism to entrepreneurialism', a process that was boosted by the crisis period of the early 70s. In that context of deindustrialization, unemployment and fiscal austerity, Harvey found that the decline of the national power in controlling multinational flows of money made room for the local administrations to negotiate with capitalist flows of interests and capitals. Here it is not the intention to demonise the private-public negotiation which is undoubtedly effective under certain conditions. Nevertheless, the vulnerability of the public sphere (at any level) is remarkable when its relationship with the private actor is oriented by capitalist criteria. In this broad frame, the work of Finck and Ranchorda (2016) detects two extreme poles of local governance systems: the laissez-faire or minimalist approach from one side, and the restriction/rejection of STR regulation on the other. Especially the second approach opens some practical issues linked to the control of the phenomenon and about the extent of it.

Many studies show that micro-and-macro-entrepreneurialism triggered by platform economies, and specifically by STR platforms, has social and spatial effects on the city, both in its public and private sphere. Furthermore, the virtual nature of Airbnb and the question of data open to further discussion, both in scientific and political arenas, on how to cope with negative externalities. Governance approaches, at different levels and scales, are more and more calling for technological support, especially introducing big data analysis in their practices. Under the definition of "smart city", policymakers and technicians have modelled policies and practices in many ways, also considering the idea of a 'real-time city', in which governance systems base their

strategies interpreting big data (Batty, 2013; Kitchin, 2014). This “technocratic mode of governance via information and analysis systems [...] ‘presumes that all aspects of a city can be measured and monitored and treated as technical problems which can be addressed through technical solutions’ (Kitchin, 2014: 9). [...] With digital technology increasingly affecting the governance of physical spaces, concerns have been raised about the power shift from regulation by law to a new paradigm of ‘governance by code’ [also in Barns, 2016] dominated by private companies towards what critics have called ‘algorithmic states of exception’ (McQuillan, 2015).” (Ferreri and Sanyal, 2018: 3364). One of the main issues raised by this vision is that access to big data could be possible only by relying on platforms and cloud server companies, that would have a ‘monopoly position’ (Kitchin, 2014). “In other words, it is not just that the change of regulations through deregulation are likely to privilege corporate and elite interests (Aalbers, 2016), but also that corporate and elite interests are becoming fundamental to the remaking of regulations as a tool of corporate urban governance through digitisation and big data” (Ferreri and Sanyal, 2018: 3365). It is something already in process. For instance, platforms and private companies are new powerful actors in public policies, especially at the European level where they can work on lobbying and advocacy actions (Colomb, de Souza 2021).

At the local level, platforms like Airbnb elude duties proposed by regional and national regulation invoking the current EU normative framework that define them as Digital services and not rental estate agencies. For instance, the identification code is a current control strategy in Italy and already applied in many regions, but it is not a duty of platforms to “understand or verify the complex laws of each market” (Cox and Haar, 2020: 15), and only the “city governments remain in charge of verifying the legality of a listing based on the registration or permit number. Public authorities can notify STR platforms that a listing does not have a registration or permit number, that it is invalid or has been denied or revoked. In those cases, as Cox and Haar found in their investigation (2020), STR platforms must remove illegal listings, but do not always do so” (Colomb, de Souza 2021: 48). The avoidance of control on users from the Airbnb platform occurs also for the entrepreneurial or non-entrepreneurial nature of the hosts. On the Airbnb website is reported: “Airbnb is not able or required to evaluate or verify your status as a host. If you’re unsure about your status, seek advice from a lawyer or other legal advisor.”¹¹⁴

Below you find an interpretation of regulative acts and strategic policy on STR at different levels. For each, main governance acts are reported and fields of regulation or impacts of policy are indicated. From the analyses, five main fields on which laws and acts intervene were detected: 1) contracts between privates, fiscal issues or information to the public authorities; 2) the urban space; 3) the relation between public bodies or institutions at the same level or between different levels; 4) the relation between privates with the same or with different roles and powers; 5) the Platforms that provide STR services, such as Airbnb. Please note that the idea of a table to simplify and synthesize the analysis and the interpretation of impacts of norms and laws was born during a collaborative project to compare the Airbnb situation in 5 Italian Cities (Pizzo et Al. 2021).

¹¹⁴ <01/11/2021>

Europe		Laws on				
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
Directive 2000/31/CE ¹¹⁵	Airbnb is under the information society law					x
Directive 2011/83/Eu ¹¹⁶	Professional/non-professional hosts				x	x
Comm. 2016 (356)	Definitions; missed chance; member states					x
Court Sentence impact on						
Court Sentence	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
September 2020	Urban regulation; control over uses		x			x
Italy		Laws on				
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
Costituzione, art. 117	competencies ¹¹⁷			x		
Civil Code, art. 1571-1654	Rights and duties of the renter and letter				x	
DPR 917/1986 T.U. Taxes and Revenues	Sublease for tourists	x				
L. 431/98	Regulation of leases				x	

¹¹⁵ In 2019, the European Court of Justice defines Airbnb as a ‘information society service’ and therefore regulated under the [Directive 2000/31/CE](#).

¹¹⁶ In 2018 the European Commission and EU authorities for consumer protections obtained that Airbnb clearly shows if the listing is offered by a private or an entrepreneurial actor because regulations on consumers’ protection is different (https://ec.europa.eu/commission/presscorner/detail/it/IP_18_4453). Nonetheless on Airbnb website FAQ users are warned: “Note: Airbnb is not able or required to evaluate or verify your status as a host. If you’re unsure about your status, seek advice from a lawyer or other legal advisor.”

¹¹⁷ *L'intervento legislativo dello Stato in materia di turismo è, altresì, consentito quando sussistono le seguenti esigenze di carattere unitario: a) valorizzazione, sviluppo e competitività, a livello interno ed internazionale, del settore turistico quale fondamentale risorsa del Paese; b) riordino e unitarietà dell'offerta turistica italiana.*

Dlgs 23/2011, art.3	tax at 21% on touristic leases	x				
L. 27/2020 ¹¹⁸ art 4; 53	Definition of touristic enterprise ¹¹⁹	x				
L. 96/2017 ¹²⁰ and circolare Agenzia delle Entrate n. 24 del 12 ottobre 2017 ¹²¹	Short rent (less than 30 days) among privates ¹²²	x			x	
L. 132/2018 ¹²³	Duty to inform public authorities about guests (also for short periods)	x				
L. 178/2020 ¹²⁴ Art. 1 c.595	From 2021, the rent of more than 4 properties is defined as entrepreneurial activity ¹²⁵				x	
Policy/acts/agreements impact on						
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
2017: Ministry of Culture and Tourism Partnership on Italian Villages by Airbnb ¹²⁶	Inner areas; villages; public-platform partnership		x			x
Toscana						
Laws on						
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between	Relation between privates	STR Platforms

¹¹⁸ "Codice della normativa statale in tema di ordinamento e mercato del turismo". Articles 8 9 and 10 were judged unconstitutional by the Constitutional Court (sentenza 5 aprile 2012, n. 80) for 'excess of legislative delegation'. Those articles defined a classification for touristic accommodation structures. Previous laws about it: allegato al Decreto legislativo 79/2011 (art. 12 e 14), modificato dal D.L. 17 marzo 2020, n. 18, convertito, con modificazioni, dalla L. 27/2020 art 4 e art..53

¹¹⁹ And regulation of houses for residential uses exclusively rent for touristic uses (Civil Code - locazioni). If the touristic rent lasts for more than 30 days, within 24 hours, the host must inform the local public authority for public safety or the Mayor. This communication must be done in any case if the guests are extra EU citizens.

¹²⁰ DL 50/2017 art.4120, now L. n. 96/2017

¹²¹ About the definition of the fiscal regime of short term leases.

¹²² Sono chiamate anche Locazioni Pure poiché si limitano a regolare i termini relativi al solo godimento temporaneo del bene e non anche la fornitura di servizi di tipo accessorio o complementare per i quali vige espresso divieto.

¹²³ Il decreto sicurezza (DI 113/2018) convertito in L. n.132/2018

¹²⁴ Legge di bilancio n. 178/2020 Art. 1 c.595 (modifiche alla L. n. 96/2017)

¹²⁵ The fiscal regime of short term rent [...cedolare secca], from 2021 fiscal year, is congruent with hosts that rent not more than 4 apartments for each fiscal year. In other cases, to protect consumers and fair competition, the rent activities is considered entrepreneurial (art. 2082 Civil Code). This norm is valid also for contracts signed with the intermediation of managers of online portals that make real estate intermediation activities, relating people that look for an accommodation with people that have accommodations to let.

¹²⁶ <https://italianvillages.byairbnb.com/it/> "The project, sponsored by ANCI, the National Association of Italian Municipalities and developed in collaboration with MiBACT, the Ministry of Cultural Heritage, Activities and Tourism"

<https://news.airbnb.com/airbnb-joins-ministry-of-tourism-and-anci-to-promote-small-town-italy-with-italian-villages-project/<07/12/2021>>

				public entities		
L.R.86/2016	governance; information	x		x		
		Policy/acts/agreements impact on				
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
Strategic Document: Tuscany Destination 2020	governance			x		
Operative Plan on Tourism 2021	promotion	x				
Florence		Regulative Acts on				
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
Urban Regulation Plan 2015 Art.19	Uses destinations		x			
		Policy/acts/agreements impact on				
Law/Act Ref.	keywords	Contracts/fiscal/info	Urban space	Relation between public entities	Relation between privates	STR Platforms
Collect&Remit 2018 Pact Firenze Airbnb	Tourist tax	x				
F.A.S.E Social Agency for Housing	Long-term stays incentives	x	x		x	
Be.Long. Public Platform for medium-long stays	Florence city of innovation	x	x		x	x

Table 5.T01 Recap on laws, regulative acts, strategic documents on short-term rental activities at different scales (European, National, Regional and Municipal). Qualitative interpretation of the issues impacted by current political actions.

We can observe a horizontal interest in monitoring contracts and fiscal issues at any level. Very few acts relate to the urban space, except for the EU Justice Court from 2020 which has only the power to suggest Member States principles to proceed with national legislation. At the local level, we see initiatives that can have effects on the urban space, but the destination uses in the regulative act of the Piano Operativo are still

under discussion because they affect the private right of use of the landowners, and thus, initiatives on this instrument might be unconstitutional.

The other big actor at the table is the STR platforms, which aren't a direct subject of regulative acts except for the European level. At the national level, the current laws don't cite STR platforms, but the Italian Villages action from the Cultural and Tourism Ministry provide its support to the Airbnb initiative of promotion.

The relation between private actors is regulated by the Civil Code, a national law that takes legal precedence on all the other levels of regulation and defines the privates' rights and duties. Moreover, the relationship between public entities is regulated at different levels. At the Italian level, the Consitution provide the most general principles of cooperation and subsidiarity, which introduce the initiative of another level among the public institutions to support the administrative body officially demanded by law to address a specific task. Furthermore, at the regional level, we find brief references to specific duties for different institutions specifically about the exchange of information about the STR activities.

5.3 Conclusions. Regulative Frames, Policy and Planning Roots. Analysing Airbnb in a Multi-Layered Normative Context

The starting question to analyse the regulative frames and policy and planning roots that involve the STR market was *who guides recognizable material and immaterial patterns of Airbnb development in cities and regions? and with what tools?*

To answer this question, the research proposes a journey through the European, National Regional and local scale to highlight main laws acts or documents that are directly or indirectly related to the STR market. Each level reports regulative and normative acts, such as laws, and strategic or addressing documents conformed to the political lines. Furthermore, we delved into strategic policies that imply reflections on the STR market.

The European Commission worked on definitions of the actors involved in the so-called ‘collaborative economy’, in which the digital platforms have a forefront role. But the document COM 365 didn’t finalise a categorisation of the stakeholders, and demanded its formulation to member states, possibly to avoid an over-regulation approach on them. This missing definitional background, along with the Court Judgement from 2019 that defines the work of Airbnb as ‘information society service’ under Directive 2000/31 on electronic commerce and not as an estate rental intermediate service, set the main issues at the European level, that create regulative fallouts on the Member States. Therefore, the Italian normative framework on STR market approaches it as a traditional market dealing with traditional actors, leaving the Platforms’ role in the background. For instance, the laws that regulate it are generally focused on rental contracts and fiscal issues or incentives between the private actors involved. There’s only an attempt to define the tourist categories at the national level, but the articles have been amended because they exceeded the national competencies. As we saw, the regional level is the one exclusively delegated to the regulation of the tourist market, but interventions of regional laws from the State are possible, as we observed, justified by the many exceptions linked to the mingle of fields involved in the short-term rental market, especially the platform mediated market, which involves not only the tourism sector but also the national security, urban issues, fiscal questions, the housing stock and the natural rights and duties of the landlords. The local level has no regulative powers on tourism, but it is demanded to regulate the urban and regional dynamics, with rights and duties both from the private and from the public spheres.

The governance at the local level is the most active ambit with projects and strategic documents on the issues linked to Airbnb, but also many letters of intent are signed by mayors of the most touristified European cities, Florence included. It is the political administration of Florence that proposed a census for investigating the real residents in the city, after evidence from the pandemic moment. Concurrently, the municipal level enhances medium-term residents such as students, workers from home, digital nomads and so on to live in Florence, meeting the supply of private houses for rent. This is specifically aimed at diverting part of the demand from the Airbnb platform to this new public-private platform, possibly also to monitor more efficiently the supply and demand, because the control over the dynamics and their consistency is one of the big issues at the table. Another problem related to the STR digital platforms is the preference of landowners of proposing their assets on the STR markets instead of the long-term rental market, mainly dedicated to residents and not tourists. The main driver behind this preference is only partially linked to the economic vantage and it is greatly influenced by the current regulation on the long-term rental market that doesn’t guarantee the owners or landlords rights, risking not being paid. And if we consider the Italian context, strongly based on the estate revenue and with high percentages of families with estate properties, we have the perfect background for the explosion of the STR market, especially the platform mediated one that facilitates the access to the demand, the visibility of the assets and the fuzziness of a market not yet fully regulated and in which the categories of entrepreneurial and non-entrepreneurial are liable to interpretations. This question from the housing market side has been recently approached by the F.A.S.E project between the Casa Spa, a public-private body that controls the social housing sector in Tuscany and Emilia Romagna, and the Municipality of Florence to let supply and demand meet for long-term rental activities. The initiative is addressed to people in a grey area of

revenue that cannot access the social housing advantages and isn't able to provide a house in the free estate market. Nonetheless, the initiative has just started and guarantees for each part of the contract are to be verified monitoring the implementation phases.

6. Discussion of the Case Study

The behaviour of the market is determined by the interaction between the message predicted by agent 1 and its interpretation by agent 2: until agent 2 interprets agent's 1 message (that is to say, 'opens the box'), the prediction, like Schrödinger's cat, is at once dead and alive.

Juval Portugali, 2008
Learning from Paradoxes p.225

The discussion of the results from the analyses aims to verify if Airbnb is a complex system with a regional dimension, interpreting the case study in the light of the literature references.

The regional frame, both as the Tuscany region and the FPP urban region, allows highlighting current dynamics that produce patterns of diffusion specific in places, therefore, it was analysed the role of spatial local features and path dependency to investigate the degree of attractiveness of the places in the Airbnb supply, demand, and multi-listing host investments. Before delving into the relationship between specific aspects of Airbnb and the territorial features, they were analysed to observe if and how the complex nature of Airbnb emerged. For instance, Airbnb dynamics were analysed questioning if and how it was found the double nature, flexible and robust of the actors, the strategies on their stock, and the speed of change in the supply and demand, the continuous becoming of the changes in the STR market driven by the market, by the internal policy of the Platform and external policies such as single States initiatives and by contingencies such as the Covid-19 pandemic. These elements, followed by an in-depth investigation on regulative frames and governance actions for the STR market, enhance some reflections on in-becoming issues and opportunities for public policies in Italy and the regional domains of Tuscany.

The recognition of Airbnb as a complex system is a first step for evidencing the gap between it and the regulative and governance addresses on it, but it is important to put the light also on the urban and territorial effects of this system and not only on its dimensions. In this work, it hasn't been possible to delve into the matter of externalities, but in chapter 7 we open the discussion for a research agenda and in §6.2 we set the stage for this discussion.

6.1 A complex Environment for a Complex System

What does complex mean? And why it is important for urban and regional planning and policy? There is a whole universe of theories around these questions. The thesis proposes a selection of concepts to guide analyses and interpretation of the dynamics of Airbnb, as a primary actor of the platform mediated short-term rental (STR) market. These kinds of actors are a coalesce of assets, both virtual, such as users' data, and real, as the estate stock for rent. Moreover, these actors that can be categorised as public, that enters the game to regulate or negotiate, and private, which can be hosts – considered under the many interpretations of this role – guests, the Airbnb Platform itself, other platforms or service companies, management agencies, residents, local and transnational associations. And this dynamic coalesce relates to the local territories, as its material and immaterial counterpart and nest. Therefore, urban and regional planning plays a crucial role in these dynamics. In the analyses, we 'de-structure' parts of Airbnb i) as a company and ii) as a coalesce of real actors and assets to be interpreted under the complexity science lenses. This is aimed at describing Airbnb as a complex system in relation to the ultimate complex systems, which are cities and territories. The verification of this hypothesis is aimed at exploring the gap between the complexity of the Airbnb system that interacts with the city as an hybrid complex system (Portugali and Stolk 2016) and the current regulative and policy system.

The structure of the case study might seem complicated because it consists of multiple perspectives on multiple dimensions. Specifically, it comes into a brief description of the main socio-economic and territorial features more likely to be involved in the STR market, and a set of analyses on the Airbnb dynamics at two scales that does not compare the Tuscany and the FPP urban region domains but shows the multi-scale complexity of the Airbnb dimensions i) in material aspects such as the diffusion and concentration of estate stock on the Platform and ii) in immaterial dynamics such as the relationship between the stock and the actors that own or manage it. Furthermore, the temporal range of the datasets, and the information in them, only partially overlap.

Therefore, the double geographic and temporal scale makes the information difficult to be compared, but this is not the aim of the case study. The double scale allows to come and go from the very local regionality of the Airbnb dynamics to a broader and less fuzzy administrative context in which framing and discussing the material and immaterial STR issues. The trans-scalarity of analytical reflections allows setting a complex perspective not limited to pre-ordered borders (Brenner and Schmid 2015; Schmid 2019), making the choice of the FPP borders something to be discussed and re-discussed in the light of the Tuscany analyses, giving insights before and during the Covi-19 pandemic. The question of borders implies reflections on the relationship between governance and territorial systems because, while the urban and regional policy are still framed in matryoshka-like systems (Perulli 2018), the urban and regional dynamics flow upscaling and downscaling crossing borders at different paces and speeds, while involved actors change their role and position exploring different types of relationships between the public and the privates (Srnicek 2017; Holman et Al. 2017). This is the reason for a doubly complicated structure of these analyses that have tried to grasp complex features from a complex world in becoming that still changes while writing and reading these pages. Therefore, the thesis does not attempt nor aim to be comprehensive of the problem, being also aware of the almost impossible solution in the very expression of theoretical and physical borders of the issue.

6.1.1 The (Urban) Regional Dimension of Airbnb as a Complex System

The pillar question in the case study analyses that set the stage of the discussion and generalisation of results is if Airbnb in the urban region of FPP can be defined as a complex system. In other words, is it confirmed the initial overall research question? And if yes: under which conditions?

The first part of the case study proposes the picture of a complex environment, expecting to verify the hypothesis that Airbnb is a complex system that presents regional dimensions and relations beyond the city scale. Therefore, data and aspects were chosen with reference to territorialism and bioregionalism, which share theoretical roots on complexity (§2.1.2), that also framed the Tuscany Plan strategies from 2015. The unboundedness of territorial flows and stocks emerged from the document survey and further analyses on social dimension and market indexes, even if the local peculiarities promotion and parochialism attitude are common features of the Tuscan environment. Moreover, the local path dependency plays a crucial role in the brandisation of the Region and regions and the exploitation of Tuscan images and imaginaries. Nonetheless, the cultural path dependency is a driver for political processes of decision as we can observe in the conflict between the implementation of the airport of Florence and the set of the Piana Agricultural Park. In this specific stalemate, the public and the private interests seem to diverge and for almost 30 years the public bodies haven't been able to solve the paradox of two opposite uses on the same area, opting for one or the other. The territorial, social-economic dynamics found in the Florence-Prato-Pistoia urban region are interpreted as hints of processes of regionalisation. We observed the physicality of the urban settlements and the almost inextricably relation between the three main cities and their 'rural' surroundings. Montalbano hills are historically the Medici's villas domain and today they are in close relation with Prato and the valley to the West, Empoli and Livorno. With explicit reference to the case study of Florence, Magnier and Morisi (2018) claim that mass globalised tourism is also outside city centres, and there the mayors' hopes for mitigation of overtourism are placed. If this system 'outside city centres' is sustainable and effective in fighting overtourism is something questioned. The relationship between these two universes, the rural and the urban is a topic that involves all scales of official and unofficial domains of governance (Fanfani, 2018; 2014) because it is a crucial matter for planning for its strategic role of bridging the characteristic exploitable past and the promising future, recognised also by the Tuscany region Plan (§4.1.1). As we inherited from the PRIN 'Postmetropolis' research, the FPP urban region is part of a greater urban region that extends up to the coastal areas. Therefore, we can consider the FPP urban region a multi-scale multi-actor region as a complex environment difficult to be bounded.

The second part of the case study involves two scales to i) cover the Airbnb dynamics in the Tuscan ceaseless urbanity and ii) reflect on borders and two partially shifted periods for the analyses due to the dataset's origins. Furthermore, the analyses provide elements to discuss qualitative and quantitative results in the light of selected theoretical frameworks, and specifically selected concepts from Complexity theories of Cities (CTC) and the Actor-Network Theory (ANT) framed by the research questions: how the Airbnb complex and regional features can influence the current urban governance models and tools for short-term rental in Italy, and specifically in Tuscany? Limited to Airbnb material and immaterial dynamics, what are the weaknesses and strengths of the current governance and planning paradigm at different levels in Italy, considering the complex features detected in the Airbnb system?

Therefore, the analyses firstly explored the complex and regional dimension of Airbnb through a quantitative and qualitative mixed-method approach to investigate Airbnb as a system and its environment in a "transformative space, which is defined by its contingent conditions and keeps the system on track towards the future. Changes will be adaptively conditioned if the system is pushed off track, with dynamics throughout, and bifurcation towards another level of relative stability. Secondly, each open system, situation, issue and environment is by definition transformative and conditioned. Contextual environments have an impact on systems, through which these systems coevolve, adapt, self-organize and therefore transform, while

coevolving, adapting and self-organizing systems also affect their environments. Consequently, and thirdly, there is insight into the system's transformative behaviour. This conclusion is not merely relevant as such. It also provides a bridge to the arena of human interventions and the role of institutional design: humans and their institutions should be willing and capable of 'reading' systems and their transformative capacity, as well as the trajectory these take and the characteristics and exposure of these systems along this path. Thereby, they will have to understand the contingent and adaptive transformative conditions that are relevant to systems and their capacity to develop, and to which the planners' desire to interfere also relates" (De Roo 2018: 3).

Inheriting this vision of the world and returning to the selected framing concepts from CTC and ANT, we discuss results from cartographies.

Uncertainty and resilience

From the analyses of two main dynamics of Airbnb under the category of *Resilience and Uncertainty*, we find that the Airbnb distribution patterns of demand and supply present qualities of uncertainty because we cannot relate with certainty the actions and interests of actors involved. Furthermore, we can define the Airbnb system as resilient because while supply, and thus the interests of the actors behind it, persists in a little range of oscillation during the period, the demand crashed in certain times and resumed in others, in a visible fluctuation at the scales studied. Zolli and Healey (2012: 126) define resilience as the ability of people, communities, and systems to maintain their "core purpose and integrity in the face of dramatically changed circumstances", with the key factors being agility, adaptation, and the ability to face change in flexible ways (Chapin, Folke, and Kofinas 2009)" (Pizzo 2015: 134). If we interpret the Covid-19 pandemic, with the many policy fallouts (see section *emergence in in-becoming environments*) as "dramatically changed circumstances", we can observe a degree of resilience in the features that refer to the material sphere of Airbnb, because supply and demand are linked to tangible stocks and flows, triggered by immaterial aspects of the system boosted by economic and financial drivers at the global level. Therefore, we have different drivers of economic dynamics at different scales from the global to the local.

Furthermore, the asset-light nature of the platform is a crucial aspect for the resilience of the Airbnb system, which couldn't survive without its Company, that not only survived but also flourished in the pandemic moment at the edge of which Airbnb launched an incredibly successful initial public offer. The double nature of the Airbnb system, as a Company and as a coalesce of private actors, is characterised by the complex systems' nature concurrently flexible – because it adapts to dynamic and turbulent changes – and robust – because those turbulent changes do not affect the wholeness of the system (Cilliers, 1998; De Roo, 2018).

The coalesce of actors has a crucial role in approaching uncertainty, and thus resilience. And it will be further discussed in the next section.

Situatedness, Ever-changing assemblages of paths and actors

Assemblages of paths and trajectories must deal with the distributed action that is at the base of the socio-materiality of uncertainty (Beauregard 2021). Single actors' decisions and actions are related to situatedness as the temporal and geographic peculiarity of their very close environment, of the daily environments of the single players, but also of the bigger scale environments that we pictured in the environmental investigation, and also of the global situation. Each actors' interest, taken to the fore by actions, assumes its role in the changing of the system and in the response of the environment. For instance, the distribution of the assets of the multi-listings hosts shows that in the FPP urban region multi-listings hosts invest essentially in it, while in Tuscany we have many management agencies or estate companies that invest in the region but still have other investments in other parts of the world. Therefore, at different scales we see different choices and behaviours by the same kind of hosts, those that own or manage many listings.

Possibly, the FPP situation, deeply influenced by the high values of Florence, is linked to the local – geographic and temporal – ‘situatedness’. In this case, we refer to a local estate market in which ancient bourgeois families are still present and own a substantial part of the residential real-estate stock for revenue in Florence and the first peripheral and rural areas linked to tourism landscape exploitation (Giallorenzo 2021). The dynamic picture of these multi-listings hosts shows that they did not renounce short-term at the edge of the pandemic, as could be reasonable to face the expensive response to the crisis, such as the employees’ wages needed for the management of great stocks. This is valid, especially for management companies. The pandemic seemed not to affect them too, but it is a situation to monitor.

The point is that actors always act with each other, at different scales with different powers and different paces in entering, arranging, or getting out a continuously changing game, as we see in the next two sections.

Evolution revolution coevolution

Mutuality of relationships is central in coevolutionary processes of change. And we have seen that actors coevolve in the frame of the Airbnb system, changing the environment and making the system, or part of the system, jump fast or move slowly towards new dynamic moments.

Specifically, we refer to the difference between the pace of the supply change and the demand change. These two aspects of the markets are traditionally in close relation and respond one to the other. In the Airbnb system, possibly for the non-always-entrepreneurial nature of the hosts and the at least two intermediate digital levels, the demand and the supply follow parallel but different paths of evolution. The two intermediate levels are i) the Platform itself, with its soft unregulative policies on listings proposal, and ii) the management agencies that help non-entrepreneurial hosts enter the market. This multiplicity of layers of intervention and intention – and here, we are considering only the internal layers to the Airbnb system, omitting for the moment e.g. the estate markets fluctuations and the national policy on housing – creates unexpected results in the supply dynamics, while the demand, as the guest presence, is arguably linked to the seasonality of tourism flows.

Furthermore, the difference in speed, like the absolute number of demand and supply, can be ascribed to the agile control of the single host to propose its stock or avoid that potential guest reserved it. Therefore, as a non-human actor, the algorithm of the Platform partially drives the economic behaviours of human agents. In conclusion, the demand is definable as more revolutionary because its pace is fast and non-linear and impacts on the system are temporary, while the supply follows a more evolutionary pace with more slow changes in getting in or out the platform. But they’re both involved in coevolutionary processes of change because they’re linked to the geographic and temporal situatedness and respond to local material and immaterial peculiarities (see the *complex adaptive systems* section).

Emergence in in-becoming environments. Bifurcations and Transitions

The pandemic period has been a shake to the outwardly linear and ordinary processes in social economic and urban systems. Transition moments let emerge more evidently the changes and the complexity of relations between different systems, showing their open feature. Political choices, at different levels with different forces and effects, respond to the pandemic curve and the economic and financial requirements. From the qualitative representation of this intermingling of multi-scale interests and approaches to issues, in a simplification of the very complex and inextricable agency of the actors, we expected to reflect on the impacts of transition phases on the tourist sector, making emerge differences at different governance levels. Thus, we observe how at the European level policy are aimed at supporting and funding the Member States, that are deputed to limit the free circulation and set lockdowns in the most critical moments of the pandemic. The Italian case is noteworthy because the government chose to alternate restrictions and less rigid moments dismissing some action of control over the virus spread. At the regional level, we observe the most variable situation because of the

competence of this administrative ambit in the tourism market. Nonetheless, the inefficiency and the slowdown in proposals can be partly imputed to the necessity to wait for national indications on many other fields that concerned national safety and sanitary emergence. Thus, we see that each level interprets the contingency in the light of its duties and competencies. But Airbnb responds to transitions differently if we consider i) the Platform as a Company fast adapt itself to changes environmental conditions, both as the pandemic and as a changing (under)regulative environment (see §6.1.2), and ii) the single actors that own or manage the stock and are drivers of the Platform interests. In this case, we observe that hosts wait for changes in the market, from the stillness of the lockdown to the relief that has already partially occurred, while the guests sustained that relief of the tourism, and specifically the short-term rentals, considered safer than the traditional one, as evidenced by the survey via social media and the interviews.

Transition phases and changes, triggered by different questions and scales in the city, are evolutive processes, “open and indeterminate. There is no [unified and comprehensive] goal in it or purpose, and yet there is a recognizable pattern of development.” (Capra, 1982: 288). This pattern of development is linked to the temporal and geographic situatedness but also to the assemblage of the past actions that formed the current landscape and patterns of urbanisation. This is the pillar issue discussed in the next section.

Complex Adaptive Systems and the role of the Past

This section is deeply linked to the contents of the others because all the features previously analysed are crucial in complex adaptive systems.

The processes of change have material echoes on the urban, on the socio-spatial patterns of the city, whether these processes are ‘structure preserving’ or ‘structure destroying’. Therefore, the materiality of places, the physicality and path dependency of cities and territories have a crucial role in interplaying with the complex systems’ dynamics and the governance on them. Thus, the brief parenthesis dedicated to the description of territorial features and socio-economic dimensions of the case study environments is also aimed at framing how the ‘out of centres’ tourist supply and demand is driven by territories, their historical and cultural heritage, their infrastructures, and ways people live and interact with them, as much as those in traditional urban centres.

We observe that there are listings in contemporary morpho-types, such as the closed and semi-closed blocks patterns dated back to the XX Century until the 60s and from the 60s until now, that traditionally represent the first peripheric belt and the contemporary expansions of Tuscan cities. This is consistent with data about families and the maps that show how Airbnb listings are spread in many different urban and socio-economic contexts, even if the density is higher in the city centre of Florence.

At a different scale, there is curious evidence of Airbnb dynamics. For instance, in the landscape region of Mugello, the supply is less concentrated as in other regions around Florence, even if the Mugello is close to the city and it is also part of the Metropolitan City of Florence. Therefore, actions like the Metropolitan Museums card or the “Uffizi diffusi” project might have enhanced tourist flows also in that region, but at the moment it seems not. Thus, we support that morpho-typological and structural features of the Mugello region constrain the explosion of Airbnb dynamics.

The historical geo-matrices (Perrone and Paba 2017) and the *structural invariants* (Magnaghi 2010; Saragosa 2018; Fanfani 2014) identified in the Landscape Regional Plan determined and partly still determine the polynuclear configuration of the Florence-Prato-Pistoia urban region and the variable geography of inter-institutional cooperation (Paba et Al. 2017). In §4.2.1 and 4.2.2, the research finds preliminary ways to put into relation the presence of Airbnb supply or demand with morphological and structural elements of the urbanisation. For sure, it is a simplification of the reality, and it assumes a sectorial perspective on the complexity, but it is an analytical starting point for future agenda and for approaching the issue of territorial effects of the Airbnb diffusion and concentration.

6.1.2 The Role of the Public in Airbnb Dynamics

After the discussion of the regional and complex nature of Airbnb, the main aim of the thesis was to discuss the role of urban and regional public governance in the Airbnb complex and regional dynamics. The analyses about regulation and governance are mainly framed within the perspective proposed by Paolo Perulli, who claims that “[t]he ontology of the global city-region is necessarily plural: it is a ‘web of contracts’, different in nature and more extensive than in the times of the nation-state, involving multifaceted governments, global enterprises, services and networks. All are involved in the ownership management and representation of different aspects of what cities are.” (Perulli, 2016: 13). Even though all these actors are involved in what cities are, they do not have the same responsibility and the same power in the change of it. Their role is so dynamic that the fact that they exist does not guarantee their efficiency in a complex network of powers, especially as far as the public actors are concerned. As in Polanyi’s vision, “the existence of the state – the (democratic) ‘liberal’ state – is not synonymous with embeddedness, just as social protection measures are not synonymous with (re)embeddedness. Conversely, separation between politics and the economy is the very proof of disembeddedness” (Nuno Miguel Cardoso Machado, 2011: 123-4). For instance, laissez-faire policies on cities and regional dynamics at any scale can trigger economic processes that are at expense of something else, such as the socio-spatial justice, environment, global warming and so on, because “[v]irtually the entire planet is now under the thumb of a system that treats people as ‘human capital’ and nature as a commodity (‘natural capital’). What kinds of cities did such a system produce?” (Steinberg 2019: 269). The research doesn’t aim at reframing different theoretical perspectives but takes some pillar conceptualisations from each of them to observe the deep connection between global flows and interests and the governance at different scales, from the supra-national to the local, which are explored in Chapter 5 and here discussed in their approach to a complex system such as Airbnb, an actor that drives global flows of people, capitals, money. And this actor, in its material and immaterial dimensions and aspects, opens a set of issues that challenge and need to be addressed by the public sphere at different levels.

Specifically, from the analyses, we can identify main aspects involved in the short-term rental market approached by laws or acts, such as the information about contracts; the taxes from owners, hosts, and guests; the contracts among privates; the nature of actors; the urban dimension of the dynamics; the relationship and the setting of competencies between the public bodies.

Even if many local administrations, like municipalities or metropolitan cities, and in some cases, state governments opted to regulate the Airbnb explosion through a limited number of nights to rent or houses for rent in neighbourhoods, this approach faces the specific problem of control. For instance, research on regulation in other case studies evidence this problem contemplates i) the possibility that a host may not communicate information to the administration, and ii) the consequent difficulty finding and demonstrating the contravention of the law (Ferreri and Sanyal, 2018; Holman et Al. 2018), and therefore the difficulty to fine offenders. This inherent weakness of this kind of regulation triggers a loop in which people can quit on the communication, making the control system even more fragile.

The issue of control from public bodies is deeply linked to the problem of data, which is a real question for public decision-makers. For instance, in this matter, it could be primary the role of the platforms, as the owners of data and the builders of datasets since they decide what to ask and how to collect information. For now, the platforms avoid their role of checker behind their recognised role of Information Society Service by the European Law. Initiatives like *Firenze collect and remit* can be a basic indicator of the percentage of tourists that choose an Airbnb solution. Nonetheless, it is non-georeferenced data, that do not let perceive the diffusion and concentration of supply and demand of Airbnb accommodations. This chronic lack of data on the STR has been discussed at the European level and it is often remarked at the local level, also by the Mayor of Florence. Thus, in 2020, Airbnb provided a ‘data portal’ open to 15 major cities administrations to report data about hosts and guests. The ‘City Portal’ is active but still in a pilot phase, as claimed on the Airbnb website

dedicated.¹²⁷ Within this collaborative action with the public sphere, Airbnb published notes about how the company is conforming to the European digital agenda.¹²⁸ While the public sector is striving for data, the private sphere, as we just said, Airbnb, but also the landlords, is moving faster, getting information on the STR market from AirDna, a private company that sells scraped data from the main STR platforms. The question of data to be aware of dynamics from the public bodies is even more urgent in pandemic periods, and thus, Airbnb provided a contact person for each city for safety and security issues to speed response time on issues linked to pandemic rules lack of observance. And this is justified by Airbnb promotion because “have an obligation and responsibility to make sure this platform is working as well as possible [and] to work with cities.”¹²⁹ Nevertheless, consider that even if Airbnb is working to be more transparent with institutions, the players they’re referring to are Municipalities and big cities, the scope of the knowledge is in total control of the platform, and it is geographically bounded within municipal borders, when available.

It is evident, thus, the problem of contrasting interests between the public and the private sphere, but also among private actors. For instance, the explosion of the Airbnb supply has damaged the traditional accommodation sectors, especially because of the unregulated definition of the entrepreneurial or non-entrepreneurial nature of stakeholders in the STR platforms. The European normative frame on platform mediated short-term rental activities is a non-binding environment for the Member States. This is a policy line from the EU Commission and Parliament. Nonetheless, a clearer definition of actions and actors involved in the STR process, from the digital to the real world, or a stronger action on data diffusion would have helped the Member States to have more specific regulations on the short-term rental market. As far as the current Italian laws, there is no specific legislation on STR online platforms, but only on the ‘real-world’ contracts of rent and let. Furthermore, the fields that Italian regulations and acts cover are essentially related to contracts among private users, especially as far as the fiscal issues are concerned. National laws do not provide regulations or moral suasion through urban and regional planning and policy to cope with strong actors like Airbnb now. Therefore, the current European regulation opens two linked orders of problems. First, the COM (2016) 356 does not enhance the creation of common national laws and criteria between professional and peer-to-peer services, and second, it generates an ambiguous background through which determine in what cases the Services Directive (2006/123/EC) is applicable or not. “The Commission, so far, has followed the “wait-and-see” approach: to avoid proposing new legislation and, instead, to explore the potential hidden in the application of existing rules” (Hatzopoulos and Roma 2017:12). We can observe that the tendency of delegating decisions and definitions to single State Members is horizontal to all the key issues listed in the COM (2016) 356, in line with the principles of the current European normative framework. As seen, “[b]esides this guidance, until now the EU has not adopted a specific legal instrument to tackle directly issues related to the collaborative economy. Nonetheless, a significant amount of EU legislation already affects directly or indirectly the collaborative economy”.¹³⁰ The fields that European regulations and acts cover, with more or less effective fallouts on the Member States, are essentially related to users-platform relations whereas only the European Court of Justice sentence from 2020 (Case C724-18¹³¹) involves the urban space and town planning regulation, evidencing a problem of control *a posteriori* and suggesting a municipal authorisation scheme for short-term rentals activities in areas where rent pressure is particularly severe. This is the first attempt to address urban issues at that scale. For instance, there is no urban legislation that takes into

¹²⁷ <https://www.airbnb.com/cityportal> (last seen on 07/01/2022)

¹²⁸ <https://news.airbnb.com/airbnb-welcomes-progress-towards-a-new-eu-digital-services-act/>

¹²⁹ <https://www.bloomberg.com/news/articles/2020-09-23/why-airbnb-launched-a-data-sharing-tool-for-cities>

¹³⁰ Study on the Assessment of the Regulatory Aspects Affecting the Collaborative Economy in the Tourism Accommodation Sector in the 28 Member States (580/PP/GRO/IMA/15/15111J), Task 1 Report. Description of the regulatory environment surrounding the collaborative economy in the tourism accommodation sector p.14. This study was carried out for the European Commission by Spark Legal Network and Valdani Vicari & Associati.

¹³¹ <https://curia.europa.eu/juris/documents.jsf?num=C-724/18#>

consideration the short-term rental activity in Florence, but the new Piano Operativo will set up a limit for new tourist structures, not only in the city centre, as it was already provided, but in the whole Municipality. But there is the claimed awareness of a problem of residential abuses from the landlords and the issue of a city centre voided of stable residents. This consciousness from the public administration enhanced strategic actions such as the Be.Long platform, through which the local administration is looking for specific categories of people as new medium-stay inhabitants. The hosts have incentives on the housing taxes (Tassa sulla casa IMU), while medium-term guests have incentives on urban facilities and cultural activities.

To conclude, “more generally, the relationships between large platforms and local governments have oscillated between conflict and collaboration” (Colomb and de Souza 2021: 58), as discussed in §5.2. This is possibly linked to the multiplicity of fields and interests that STR platforms touch and move. For instance, from a side there is a strong impact of those platforms, specifically Airbnb, on cities liveability and spaces, producing negative externalities that the public sphere is called to mitigate, while, from the other side, cities take economic advantages from heavy tourist flows, prompt also by the economic and the marketing appeal of Airbnb supply. It might be for this kaleidoscopic position of the public that initiatives like the Be.Long platform emerge, attempting to attract people, and specifically medium-stay residents in the pandemic new frame, autonomously from the Airbnb or other STR platforms. Nonetheless, this attempt has immediately got the attention of global STR platforms. If the municipal level has the power to refuse or address this intromission is a crucial question and it is something to be investigated.

6.2 What Emerges from a Critical Interpretation of the Analyses

The chapter discusses the complexity of the Airbnb system, exploring the interplay with the complex environment of the urban regions it lands on, and the current regulation and acts on the short-term rental market. The first is a jumble of ambits, interests, actions in continuous becoming pushed by unpredictable and almost untraceable dynamics depending on virtual and real, global and local, human and non-human actors; while the second is i) a rigid ambit, that needs to be inflexible to guarantee the rights and the respect of duties, and ii) a sectorial system because its actions and products must reflect the differentiation of competencies and scales of powers.

When the public administrations and the stances to address these complex local and global, virtual and real dynamics, invest the real (immaterial) agency of the actors involved at different scales, and the real (material) urban and regional dimension, the governance perfect storm occurs. The gap between the bureaucratic and legal structures and the real in-becoming world emerges. The delicate balance, always unstable, between the public and the private interests is challenged and explodes at all scales.

The interplay between the two environments and the diverse natures of the Airbnb system, discussed in § 6.1.1 and 6.1.2, let emerge missing points between the complex dynamics of the Airbnb system and the rigidity of the governance system, opening issues, such as the problem of control over Airbnb dynamics in urban regions; the problem of data to analyse the system; the contrasting interests among privates or private-public entities framed within diverse regulative systems; the definition of the actors involved in the STR market and their power on socio-economic patterns in urban regions and thus, the urban space question; the problematic relationship between public entities at different scales and their governance systems; and eventually, the problem of the scale to study and regulate the Airbnb system.

Many attempts around the world, and some promoted but not implemented in Italy, was aimed at restricting, or controlling the STR activities, geographically or temporally. But the flexibility of actors, as analysed in the uncertainty and resilience category of complexity, and the opposition of the platforms to cooperate in the control can imply the failure of these attempts.

In the issue of control, data plays a crucial role, but the information system is the most regulated aspect of the STR market. Nonetheless, the use of the information from hosts is still weak in approaching the urban and regional issues, especially the second one, uncovered by reflections from policymakers. Furthermore, data can be a powerful aspect at the negotiation table between STR platforms and public bodies that, especially at the local level seem unable to create tools to observe the ongoing process in the residential and housing market, possibly without bias or basic mistakes linked to the census declarations in the residential count.

The speed of change in the major aspects of the Airbnb system and both evolutionary and revolutionary processes of change creates an in-becoming environment that needs to be monitored to be addressed by urban and regional policy, taking the challenge of a dynamic critical tracking, while the regulative system could be more specific and frame general aspects of the STR market in urban regions. Thus, even if situations change fast, the evolutionary process of the Airbnb system sets long-lasting patterns of diffusion and thus problems, such as the conflict of interests i) among privates, as long-term residents and short-term residents as evidenced by published studies; ii) between traditional accommodation market and the platform's market, especially in the Covid-19 pandemic that greatly affected the traditional markets; iii) between the public and the private sphere.

From a side, the public has the duty to aim at the common good, providing services for all, but in over-tourist economies, it is economically and socially demanding to convert the trend to call long-term residents back to urban spaces devoted to tourism. On the other side, the private, as STR platforms or the actors that provide the estate stock for short-term rent, push for the simplification of rules and the promotion of tourism. In Tuscany, the governance at the regional level supports this vision with laws and strategic documents, in the

frame of a regulation that requires the information of hosts to public authorities about contracts. How this information is analysed and interpreted to address the ongoing dynamics and the negative and positive fallouts is something unclear.

The issue of conflicts between actors is almost impossible to be approached until policy and regulation frames will not improve the definition of actors involved in the platform mediated STR. The European court applied digital information services norms to platforms, but this doesn't help the public sphere at any level in requiring duties from them. And this is particularly serious in approaching the urban dimension of the Airbnb system. Furthermore, there are problems also from the side of the other private actors involved in the Airbnb system. For instance, the Italian local regulation has almost no power because the national Civil Code guarantees freedom to use the property, but there are some cases, like the Paris fight against STR, that open to restrictive measures to the listings' diffusion, which unfortunately is liable to the problem of control. From the side of strategic policy, we observe a tendency of major cities involved in tourist flow to negotiate with Airbnb for daily taxes, for example, while at the regional level there is no trace of negotiation initiatives, even if the tourist competency is of the Regions in Italy. Especially in Tuscany, the dimension of the Airbnb system needs to be framed not only in major cities but also in villages and rural landscape regions, which here are defined urban regions as well. We highlight the absence of reflection from the political side on the regional aspect of the Airbnb system, which could be an effective scale to approach it because imply discussion among local public entities and a defined-by-law regulative frame at the regional level that address the many Airbnb system aspects that relate i) geographically, responding to local features representing complex environments, and different-scales dynamics, representing complex systems, ii) temporally in evolutionary and revolutionary processes of change, iii) internally to the system in material aspects, making emerge uncertainty and resilience aspects of the system, and immaterial interplays supported by ever-changing assemblages of actors. In this mingle, the regulative powers observe a strict protocol of competencies and sectors of interests of laws, regulations, or also strategic documents, that invest single aspects of the mingle at a time, and even not all or not relating them, even if strictly connected such as the housing policy with the STR market.

The problematic relationship between public entities in Italy and the rigidity of their structures, even if the National Constitution provides room for support and interlevel discussion among legislative and administrative bodies, is the perfect regulative frame for Platforms to flourish, while landlords respect overabundant norms that are primarily focused on fiscal issues, information, and hygiene requirements. And still, this problematic relationship between the public bodies and the Airbnb system arises the question of the scale to approach Airbnb regulation and strategic policy addresses.

What's the most efficient level for regulating the platform as a company? And the actors involved? And for responding to the Airbnb system in its material aspects, such as the supply and demand patterns of diffusion?

The tourism sector is under regional competence, nonetheless, the multiplicity of fields involved in the STR market implies interventions from the State level. We can say that Italian laws on tourism are intrinsically contractual if we consider the relationship between different scales and the public institutions of the central State and the Regions. In this dynamic, often fuzzy, overcrowded law frame, the Airbnb platform and its users might be facilitated in (mis)interpreting regulations and laws and hampered from respecting them. Nonetheless, as we saw, "Airbnb is making an effort to be more transparent and this led to several partnerships with cities across the world [and t]here is evidence suggesting that such partnerships allowed cities to implement short-term-rentals-specific taxes that led to a substantial increase in city revenues."¹³² For instance, the complex relationship between the public emerges also in the forms of partnerships at the national level. In this regard, the participation of the Ministry of Culture in the Airbnb 'Italian Villages' project was meant at

¹³² <https://www.bloomberg.com/news/articles/2020-09-23/why-airbnb-launched-a-data-sharing-tool-for-cities> <last seen 05/06/2022>

promoting inner areas. Even if this might seem a 'good practice', delving into the project we find that villages promoted are already in touristic routes, and thus, Airbnb has a marginal role in their recovery. About this, the problem of villages and inner areas revival is a complex issue that is deeply discussed and, in this research, we just want to question ourselves if this kind of neoliberal extractive public-private initiative is efficient in taking residents back in inner areas. But this is a too broad and challenging field to be opened in this context.

One of the main issues linked to the governance of the Airbnb system is not only represented by an overcrowded regulating environment, just for specific fields or matters, but also the difficulty of public entities to organise their rigid structure as a complex system in which each component is separate and still efficiently apport its contribution to the whole system, with proportion in its action and adapting its acts to the changing situation, being at the same time robust and flexible, still ensuring the single privates' interests and rights and the public good.

PART IV
CONCLUSIONS and WHAT COMES NEXT?

7. A Research Agenda

“We live on an eternally restless planet,” said Hiram. “Its very creativity and fecundity require endless further corrections. No help for that. Pessimistically, we can despair at being trapped in economic and social system impossible to perfect or even to make tolerably secure except, at best, for the time being. Or optimistically, we can take zest in the fact that the world affords, among its riches, endless streams of interesting and constructive opportunities to correct and correct and correct what we do. “And remember dynamic system possess means in addition to bifurcation for holding instability and collapse at bay.

Jane Jacobs, 2000
The Nature of Economies

The thesis is based on three let's say universes, which are the complex Airbnb system, the urban regions as complex environments and the governance approaches on short-term rental activities in urban regions, but it is also interested in grasping what relationships are among the three pillars. Therefore, many aspects that should have been investigated are just mentioned because the timing and the resources for this work were limited. Nonetheless, some advances were attempted, such as the production of an analytical protocol implementable in other contexts and the analysis of the gap between the governance paradigms at the regional and local level and the complexity of Airbnb dynamics, especially those linked to the analyses of the Airbnb environment and the regional perspective on the system dimensions.

Qualitative and quantitative data opened many questions, and the curiosity was going to ‘push the research off track’, but the rational timetable did not accept deviations and the awareness of future chances to delve into open questions let me prosecute forthwith. Therefore, it follows a document of intents from the analytical and theoretical insights found on the path of this work.

First, the future research agenda on this theme should include other platforms like HomeAway, another influent digital actor in Tuscany, and studies on the social and spatial impacts of STR platforms, widely investigated in urban case studies, should be implemented in this territorial context. Secondly, it could be illuminating to advance the research with comparative studies on other cases, adopting the same protocol, also improving it, to analyse similarities and discrepancies in the supply, demand and multiple listings hosts patterns of diffusion, both in space and time, in different urban realms. The observation of these cases could lead to a better understanding of the reasons behind the constant and changing dynamics, that can be linked to many different factors such as the local features, the path dependency – geographic, economic, cultural –, the governance structures and the planning paradigms. The improvement of the protocol is something still on the table, it has been all the time during the research process, with many trial and error stances. For instance, I was interested in demonstrating another category of complexity, that I defined principles of order in chaos. After having observed the distance relationship between listings and attractive hubs or accessibility hubs, I hypothesised that there can be a stable ratio between the distance of supply/demand/multiple listings hosts (mlhs) patterns of diffusion and attractive hubs such as historical city centres, peripheries and recognisable landscaping areas. I qualitatively observed that the density of supply/demand/mlhs is high in city centres, especially those promoted by Tuscany brandisation, then it declines in peripheries – residential or industrial – and then is high again in landscaping regions. The analysis of principles of order in chaos should be based on the geographic distribution of supply and demand in Tuscany and the Florence-Prato-Pistoia urban region, considering the path dependency of territories and their morpho-typological features as crucial drivers of Airbnb patterns. I think that the category ‘Principles of Order in Chaos’ deserved a specific paragraph aside from the geographic frame of the case study since it is a generalisation of dimensional and geographic pattern,

recognisable both in the FPP urban region and in Tuscany, but the problem I haven't solved yet is how to produce a map that doesn't treat the distance from the cores of the supply and demand as an isotropic matter.

Unfortunately, I haven't been able to manage the issue of the isotropic simplification of the map and thus this cartographic elaboration is still under construction, and hopefully, it will be discussed in future papers.

Moreover, the research could have great advancement in delving into the bioregional approach and scholars from bioregionalism in the theoretical frames, thanks to their perspective on urban regions, the relationship between what is urban and what is not, the complex lens on urban metabolism and political borders, which assume a primary role in this research.

Furthermore, how the pandemic is going to impact big estate companies, multi-listings hosts, management agencies, small entrepreneurs and single hosts is to be analysed in the next months. For instance, it is interesting to investigate the levels of Covid-19 implications on hosts because the short-term rental market and the effects in the city depend greatly on big companies but also on small entrepreneurs that move the housing market and therefore the social and spatial fallouts. These issues are crucial for reflections and insights on housing and urban policies.

The research, as it is now, explores the material and immaterial aspects of the Airbnb dynamics to demonstrate that it is a complex system with a regional dimension, without approaching the effects of these dynamics in cities and territories. Many studies investigate the socio-economic and spatial fallouts of the Airbnb diffusion in major over-tourist cities, but it could be thought-provoking to observe the externalities, positive or negative, linked to supply and demand from the platform mediated short-term rental market in regions and domains of extended urbanisation, as proposed by this research.

In doing this, it will be determinant the observation of both the environment and the system, and thus, the exploration of the cities and territories path dependency and structural invariants, as those aspects that remain constant in changes, relationships between the social, ecologic, and economic spheres that create material or immaterial territorial heritage. The three spheres have a crucial role in enabling or constraining the Airbnb system and its effects. Framing them in the local context is the essential step for enhancing local and regional policy aimed at having positive externalities and not being subject to the negative fallouts of the Airbnb sovereignty, especially in those already branded or over-tourist context, as Tuscany is.

Furthermore, if we consider the traditionally urban context, we have a change in the use of the city responding to short-term rental diffusion and concentration. In this, the urban regulation can have a role, both in its strategic and statutory responsibility and in its regulatory duty. For instance, the enhancements of projects that invest in the long-term rental market can be successful, if sustained by funds, while the control over building uses and the position to not relocate the services from the most touristic areas might be effective in gaining back residents in the city centre. Moreover, the monitoring of the real residents in over-tourist areas is crucial to understanding the degree of the touristification process.

Therefore, interesting questions that would set a step forward in total consistency with this thesis, even proposing the same conceptualisation and the same aim of this work could give a more complete picture of Airbnb in urban regions, imply a reflection on Airbnb effects. Thus, I think a future research question could be about what reflections from Complexity Theories of Cities might improve the effectiveness of the urban policy on short-term rental in guiding material and immaterial impacts of Airbnb dynamics.

In conclusion, there are still many aspects of the Airbnb system and the STR market to be discussed. The Covid-19 emergence helped read some, but the fast responses to the pandemic imply a need for monitoring the STR market, especially for its unbounded and resilient nature both as a company and as single actors in critical times. The monitoring process and the public responses might raise further questions about the role of urban and regional planning and policy.

8. Conclusions. In-becoming Issues and Opportunities for the Urban and Regional Governance on Short-Term Rental Market in Italy and Tuscany

*Ma dove è il pericolo, cresce anche ciò che salva*¹³³

Maurizio Ferraris, 1990

Cronistoria di una svolta in Martin Heidegger, La Svolta,

In the pandemic, it emerges clearly that Airbnb and other short-term rental companies in Platform Economies, as disruptive global markets, are evolving fast and continuously to adapt themselves to the changing environment. Revisioning constantly their policies, possibly for to the asset-light nature of the platforms that do not need to rethink and manage the whole process that generates revenues but only their intermediate position, this kind of business can be interpreted as an *in-becoming process of change* that involves the internal assets of the business but even the urban spatial, social, political systems.

The massive phenomena created by platform economies and in this specific case by home-sharing platforms concern and generate great revenues. The tourism sector is one of the most influenced by these global drivers and, with the traditional accommodations and all the other services, tourism markets are crucial branches of the national Italian GDP. But, even more for the nature of the platform's business, made of asset-light models and based on the intentions of millions of privates, unexpected global events can make the system fragile, especially in those cities over-touristified and that invested mainly in tourism. Nevertheless, this volatility might be the strength of these companies that react faster than expected. Airbnb is an example of this process because it flourished in the pandemic, since, after a first difficulty in the very initial moment of the Covid-19 outbreak, the company set an incredible IPO and has had positive reactions in the stock markets. In the same period, the actors that constitute its dynamics in the real world with their real assets as their estate stock listed on the Airbnb platform waited for the recovery of 'normal' flows that occurred in summer 2020, but was concentrated in seaside, countryside, and villages of Tuscany, leaving the cultural cities behind in the ranking of the most demanded places. The deep relationship between tourist STR dynamics and local morphotypological features was hypothesized and still not fully demonstrated even before the pandemic. But in this *transition* moment, dynamics are faster and thus emerge more evidently, even if the correlation of the Airbnb patterns of diffusion or concentration and local features as drivers of them is not based on exact science and the myriads of variables involved make the analyses liable to bias and misinterpretations. The first attempt in the thesis aims at setting the stage for further analyses under the lens of CTC and highlighting the need for them in the public governance process. Furthermore, and in close relation to the local territorial drivers, the research highlights how this global actor explodes, diffusing or concentrating, in urban regions depends on the local and global actors that have the property or the management of the real assets, the estate stock that constitutes the supply stock on Airbnb. Thus, in the analysis of Airbnb's patterns instead of effects, we have at least two couples of levels – global and local, with innumerable scales among the two; virtual and real – of geographic scales, interests, and powers, in which the actors play and plan their intentions. The individual or company plans is important because they imply a material outcome in the diffusion of the short-term rental supply and, thus *in nuce*, of the demand. The demand creates positive externalities, namely revenues for the owners, management agencies, the Airbnb company, and the city administration through the daily taxes paid by guests. Nevertheless, the city administration must face also negative externalities linked to fallouts of two intertwined markets: the over-tourism and the short-term rental market. These negative externalities are linked

¹³³ "Yet, where the danger is, the saving power also grows."

to the fast use, often an abuse, of the city by a touch-and-go and massified tourism because the flows of people that visit places occupy the spaces living them with few aims and needs as compared to the residents who diversify their activities. Thus, where these flows are mostly concentrated, they can also naturally address, in economic neoliberal environments, the uses of a city, their economic and social development, changing the face of neighbourhoods with specific activities that open, the reduction of services because of the reduction of residents. For instance, Florence has been subject to this kind of process of change even before the diffusion of the STR market. This is a necessarily brief and simple picture of what happens in different places at different paces, but the research takes the effects of the STR market and over-tourism in the background, as the underlying reason to approach the topic of the governance of dynamics linked to STR platforms in cities and regions, focusing instead on i) the material and immaterial dimension of the Airbnb dynamics, as one of the main actors of the platform mediated short-term rental market, and ii) how these complex dynamics are far from the governance approach.

Therefore, the issues discussed in §6.1.1 and 6.1.2 in the light of the theories selected are problematic because of the gap between the governance approaches and the complexity of the Airbnb system (§6.2), but from this perspective, we can identify some issues and opportunities for urban and regional governance in Italy and specifically in Tuscany.

General issues regard the problem of control, which is impossible to solve if the internal policy of Airbnb remains volatile and the Platform doesn't enhance protocols of control over its users. Moreover, the current regulation on STR is rigid and problematic in addressing STRs' impacts on cities, because they remain implicit in the law, while it is focused on fiscal issues, and it is even more problematic considering the complexity and resilience of the Airbnb platform both as a company and as a system of private individuals and of firms' interests. Furthermore, the Airbnb company hasn't been yet regulated, but only labelled under the information society law at the European level. This work considers the European definition inefficient in the chance for national levels to regulate STR platforms, that impact cities at least in two spheres, the physical and relational in cities and the government with lobbying. Indeed, "[i]f the corporate-led 'sharing economy' is a movement that challenges existing ways of working and living in cities, it is also, importantly, a movement to reregulate and consolidate the role of digital corporate powers in transforming and embedding themselves into urban societies and their governance, directly, through lobbying, or indirectly, through maintaining control over data" (Ferrerri and Sanyal, 2018: 3365). That's a very important point to take into consideration, especially when considering planning and policy solutions determined by big data previsions.

At the very centre of this thesis, we find the relationship between private and public, and the even more complex relationship between the multi-layered public initiatives respecting also competencies, and the multiscale private sphere, with a global company, international firms in the estate or the management estate sector and the local private actors. The local scale in the FPP urban region represents a double challenge on control. First, census data are liable to mistakes and technical issues due to residential declaration, horizontal to almost all local environments, and second, the region presents a fragmentation of municipalities without political coordination. Thus, the scale of the policy is something to be questioned reflecting on the efficiency to address the STR dynamics, and in this case, the Airbnb material, and immaterial patterns of diffusion. As we saw, the public sphere must deal with private actors with different powers at different scales. Administrative borders are a limit in this sense because reduce the interaction among the municipalities, that are part of the same territory. For instance, Metropolitan cities were aimed at overcoming this issue in the theoretical attempt, but in practice are weakened by their own structure. Landscape regions from the Regional Plan aim at the same objective, based on morpho-typological and historical features and not on political matters, but they have just analytic and interpretation roles, not political ones. Therefore, the analyses of the FPP urban region and Tuscany are crucial for approaching the Airbnb system, which expands and shrinks, diffuses, and concentrates, without considering the administrative borders, but functional, economic, social, tourist drivers or constrainers.

In this thesis, what is called “the public sphere” is not homogeneous and it presents levels, competencies and contrasts often solved at inter-institutional tables or in administrative trials. These many contrasts weakened the efficiency of the public in contrasting or addressing the STR market dynamics or even fallouts, and Tuscany laws on tourism are a clear example of the fuzzy limits between the domain of regional and national competencies. Therefore, it’s difficult to foresee and thus anticipate rules or policy to address a very varying market such as the STR in regions because too many variables, from the system and the environment, are on the table.

Can these issues represent pushes for goals to achieve in such changing environments? Are there opportunities to be found in past paradigms and rationales facing disruptive and unforeseeable events? As entropy relates to negentropy, and order to chaos, issues present opportunities.

The complex nature of the Airbnb system, if approached as so by governance systems, could advance some opportunities in the addressing and regulative process because it relates to a defined theoretical framework. The question is about how to regulate and address the assemblages of human and non-human actors in the Airbnb system for the common good, without ignoring the neoliberalist environment that nurtures these assemblages? We sustain that this challenging system and related environments need to be faced by strategic cross-scale cooperation in the public sphere. The adaptability of the Airbnb system to changes, and transition phases, showed the resilience of the system at different levels, at any scale, waiting for the revival of the tourist market, which is the ‘natural matched system’ of the STR market. For instance, the belief that the tourist market will survive the pandemic transition convinces STR owners and managers to keep their role and assets in the STR market. Thus, the governance system is called to be adaptable, or more adaptable than it is, possibly multiplying its small plans, avoiding overall and comprehensive solutions to specific issues, which often imply the problem of control, but, at the same time, is called to support and fix as a principle the protection of the weakest actors, namely the residents. Guaranteeing private rights is fundamental and a principle stated by laws, that all laws and acts must respect, but also, the whole legislative and administrative system, both with laws acts and policy strategies, need to enhance a different perspective in approaching the Airbnb system through systemic thinking, a horizontal, vertical and diagonal perspective on dynamics, actors, economic ambits, and not last, geographic domain at the same time, proposing more cooperative actions also in other fields touched by the STR market diffusion or effects. For instance, approaching the Airbnb system from an urban regional perspective can improve the interpretation of processes of distribution of supply and demand, helping to monitor the spread over time, observing main drivers of supply and demand from territories and local stances against them. Thus, the research introduces the regional dimension of the Airbnb system not to propose a diffusion of the over tourist flows in wider urban domains, but to recommend to policymakers a more complex view of the system, concerning the *roughness* of the urban regions we live in. This complex view might take to more complex, not complicated, governance strategies, more *prepared* to 1) changes linked to the interference of the strongest actors in the market, namely the global firms of the luxury estate or digital platforms that strongly influence the in-becoming environments and continuously change the power balance in assemblages of actors, 2) the fast pace and different paces that contemporary dynamics move forward the Airbnb system, 3) to the resilience of the Airbnb system itself, at any level.

Here we decided to sustain the chance for the public sphere to be *prepared*, instead of being *adaptable* (or adaptive), because the concept of resilience linked to the adaptability of governance is liable to neoliberalist approaches interpretations.

For the assumption that any region has its history, obduracy and local features structured by myriads of variables in space and time, this thesis has no aim in giving ready-made solutions about the governance approach – which is also involved in historical, cultural and political path dependency processes – to the Airbnb system, especially at the very local level. This thesis aims at introducing complexity-related concepts in the

interpretation of Airbnb as a system to highlight the gap between complex system dynamics and the regulative and governance system, providing the setting stage for further research studies on related topics and open questions, but also on comparative case studies thanks to the analytical and interpretative protocol, which is repeatable in every context, but it needs to be tailored to local peculiarities.

From the case study discussion, we contend that the control approach is not the answer in a multi-scale and multi-actor free market such as the STR one. Quantitative data can be useful if used in a contextualised environment, in which the local dynamics are meant as complex environments of the complex Airbnb system in which the variable time is not detachable from the variable space, and the interpretation of data concerns the material and immaterial dimension of territories. The research contends also that adding data and methods to the debate, and, thus, enhancing the knowledge about the Airbnb system, especially about its dynamicity consisting of spreading and shrinking patterns in cities and territories is crucial. But we warned about the governance-by-code drifts, which can be fascinating for their immediate and cause-effects responses to complex problems, but that is useful only in the analytical phase and not at strategic and decisional tables. Moreover, politicians need to be aware that governance by code or the management of big data necessarily involves actors such as Google or Amazon to obtain and stock data. This implies conflicting interests between the private entities, such as those platforms and the public spheres at any level. Nonetheless, this problem exists also in current dynamics and not only in the case of the implementation of a big-data approach.

The Covid-19 pandemic set a revolutionary moment, that in the first phases made people claim at the end of the sharing economy and its actors, but that still didn't create revolutions in regulative frames, either governance acts or policy lines. For instance, regulative bodies with competencies on STR did not differently approach issues considering the Covid-19 implications and this is consistent with a necessary rigid framework. Recent regional governance strategies, such as the new Operative Plan on Regional Tourism for 2021, underestimate the Airbnb's role and impacts, reducing and disregarding the potentiality of the Platform and its thousands of users as stakeholders in the tourist sector, possibly also due to the lack of a European efficient definition and general information about the Airbnb's state of the art. Indeed, the Regional Plan on Tourism does not cite the short-term rental platforms, as the regional Law on Tourism, which precedes the Covid-19 outbreak. All in all, Italian and Tuscany policy and regulations adopt a 'wait-and-see' approach, possibly for the missing of a European regulative frame, the lack of data, but also for the rigid Italian normative frame of private rights and the division of competencies among public bodies at different scales.

At the local level, the impossibility to foresee private plans doesn't imply the impossibility for other normative levels to set framing rules for STR platforms and correlated dynamics to protect the weakest actors. In this unpredictable context, the thesis claims that effective rules arise from systemic thinking to approach the STR market, because its main actors, such as Airbnb, involve a multiplicity of scales, and powers and touch many markets and life systems mainly in cities, for absolute numbers, but also in urban regions, for the morphogenetic and flow system that constitute them and attract tourist flows. Furthermore, the players that boost the Airbnb system in the 'real world', namely the hosts and guests, are characterised by different natures and powers. For instance, in Italy, the long-lasting economic regime of housing revenues takes at the table of the STR market both small owners, with just a house to rent, and great owners, even real estate companies with dozens of properties to be listed. This environment must be managed by the governance system with a systemic approach, especially if we consider STR platforms as complex systems, which implies a collaborative governance environment, in which different public bodies at different scales discuss and cooperate toward a common good. Even if the neoliberalist economy is the contemporary socio-economic environment in which dynamics move through, the governance and planning system must be prepared to drive changing conditions in the game, toward a sustainable horizon for the local communities that are involved in the STR market material and immaterial dimensions, and thus effects.

But with what planning tools and at what scale? After discussing the approach needed to improve the efficiency of policy, and before going through the nature of policy, we want to reflect on the scale of the policy and laws about the platform mediated STR market.

We argue that municipalities, especially those overtouristified, do not represent the most efficient level for negotiating with Airbnb, because the stake, as effects of STR on the local dimensions, is too high and the daily taxes are too attractive for the municipal incomes. The Italian Regions could be the most efficient governance levels to improve policy on the tourist dynamics linked to the STR platforms, even before the mitigation of their effects. Furthermore, to ensure the transparency of the Platforms, a negotiation table with the national level is needed because regions such as Tuscany are strongly imprinted with the tourism industry and keep going promoting tourism also in over-touristified contexts. Therefore, from negotiation the national institutions could obtain the role of overseers of the sustainability of flows at the regional level, which we support is the right level to collect data about urban regions of the whole national territory, and thus, distribute it to the metropolitan city, provinces, and municipalities. This distribution of data shouldn't be a top-down process, but from the most local levels could be advanced stances linked to the territorial obduracy and roughness to face or address the STR explosion or progress. The Metropolitan City, also in coordination with territories linked to it as a system of flows, could efficiently work on data elaboration, cooperating with the provinces and setting common protocols of analyses and interpretation to be occasionally revised and monitored. But we contend that strategies should be drawn by humans, by reflective practitioners and not by algorithms, useful to analyse and interpret quantitative and qualitative data. This inter-institutional discussion could also reduce some problems of relationships and competencies between governance levels and could enhance the negotiation with Airbnb or other STR platforms, which are ineradicable actors, as the Covid-19 transition showed us. Therefore, we support that it would be more efficient to involve them in the process, at least to obtain data, instead of failing to control them.

Finally, an incremental system of policies at the local scale, framed within a necessary binding definition of the actors gravitating around the STR platforms at the European level, also imposing transparent rules on data could be effective in adapting public governance opportunities to the changing environment. The incremental system of policy we refer to at the local level could be implemented through the planning tools. For instance, the Regolamento Urbanistico, now Piano Operativo, can set restrictive or incentivising rules on housing destinations. But the Municipality does it through the Plan of Functions, which is an inflexible instrument because related to private rights regulated and protected by the national law, namely the Civil Code. It could be used in the fight against STR diffusion and concentration working on residential sub-categories, which could also find a justification for the urban standards regime (DM. 1444/68). But this strategy necessarily opens two sets of problems because if implemented arose a matter 1) of retroactivity, that would mean that the uncontrolled situation, almost saturated, we have in Florence would be stabilised and the current hosts wouldn't be liable to the new regime of destinations; and 2) of the control over the new regimes, which is a huge *vulnus* of the public urban sphere, as we saw. But the biggest problem is that these kinds of urban instruments need to be planned by someone, a planner who has no predictable power on the unpredictability of urban dynamics or on the Airbnb complexity, as we demonstrated.

Therefore, this planning paradox, between neoliberal dynamics, unpredictability and less powerful players' protection, isn't solved, but it is put in light, assuming that as for the local instruments, regional laws on tourism shouldn't aim to control a constantly changing system of dynamics and single choices but to check data and promote public institutional cooperation at the local level to monitor and adapt small strategies and projects for incentivising the long-term residential uses, considering the territorial features of regions, while negotiating with the platforms for improving transparency in operations. Finally, the negotiation or cooperation with the platforms at the national level could prevent the same process at the municipal or metropolitan level that could boost a sovereignty circle of a city more prompt by the platform over the others. But this system risks favouring powerful economic and financial actors. We can just say that given the strength of the economic

actors, like the STR platforms, and given that the economic advantages (e.g., daily taxes) are so important for the cities' revenues and the municipalities so much in search of a flourishing market like the tourist one in Italy, the local administrations deserve the protection of more powerful levels of governance from processes that could open to or reinforce overtourism dynamics.

The systemic approach to the STR market system concerns also other ancillary fields beside the tourism and the taxes issues. For instance, the central State should be called to reform the housing market to sustain the long-term rental activities not only in the peripheral areas of the cities but also in city centres and urban regions. The landlords need to have a reasonable choice between the STR option, also facilitated by the estate management agencies, and the long-term rental market that, now, doesn't give guarantees of income. In doing this, the public sphere could be more efficient if renounced to running after the dynamics – which are almost unpredictable and resilient – analysing them as a system to be influenced by policies for giving other options to landlords. For instance, the call back of students and families in the city centres needs to be sustained by reinforcement of public services, while the exploitation of landscape in Montalbano hills must be monitored and balanced out by real agricultural work in the realm, for example, funding with part of the daily taxes the farms that do not have an accommodation supply but work on the landscape that fascinates tourists. Indeed, it's important to remark that, from the literature review on worldwide cases, the semi-structured interviews and the comparative study on five Italian cities, similarities and differences emerge in Airbnb dynamics, as the ways of interaction among actors and urban and regional enablers or constraints from the territorial path dependency.

All these reflections are unfertile if not supported and nurtured by cooperation among municipalities and different levels of governance through pacts which are not only and not mainly aimed to promote tourism, but to promote common lines on the housing market, the public services, not the preservation but the work on landscape, not the creation of platforms that are pressed by the existing platforms for visibility and liability but the strategies on real dimensions with urban plans and interinstitutional projects to create an environment suitable for long-term residents.

The many perspectives and insights from different theoretical and practical frameworks that characterize this work leave open many issues and questions that the analyses raised and didn't answer. These can be also considered part of the results of a thesis that analytically overlooked the material and immaterial dimensions of the Airbnb complex system in urban regions to highlight the distance between complex systems and urban and regional governance paradigms.

In conclusion, these reflections about the urban and regional governance cannot be effective without approaching the STR platforms as complex systems, because of their upscaling and downscaling dynamics, the assemblage of actors and interests involved, the inseparability of material and immaterial dimensions of the Airbnb system and its material and immaterial patterns of diffusion in urban regions.

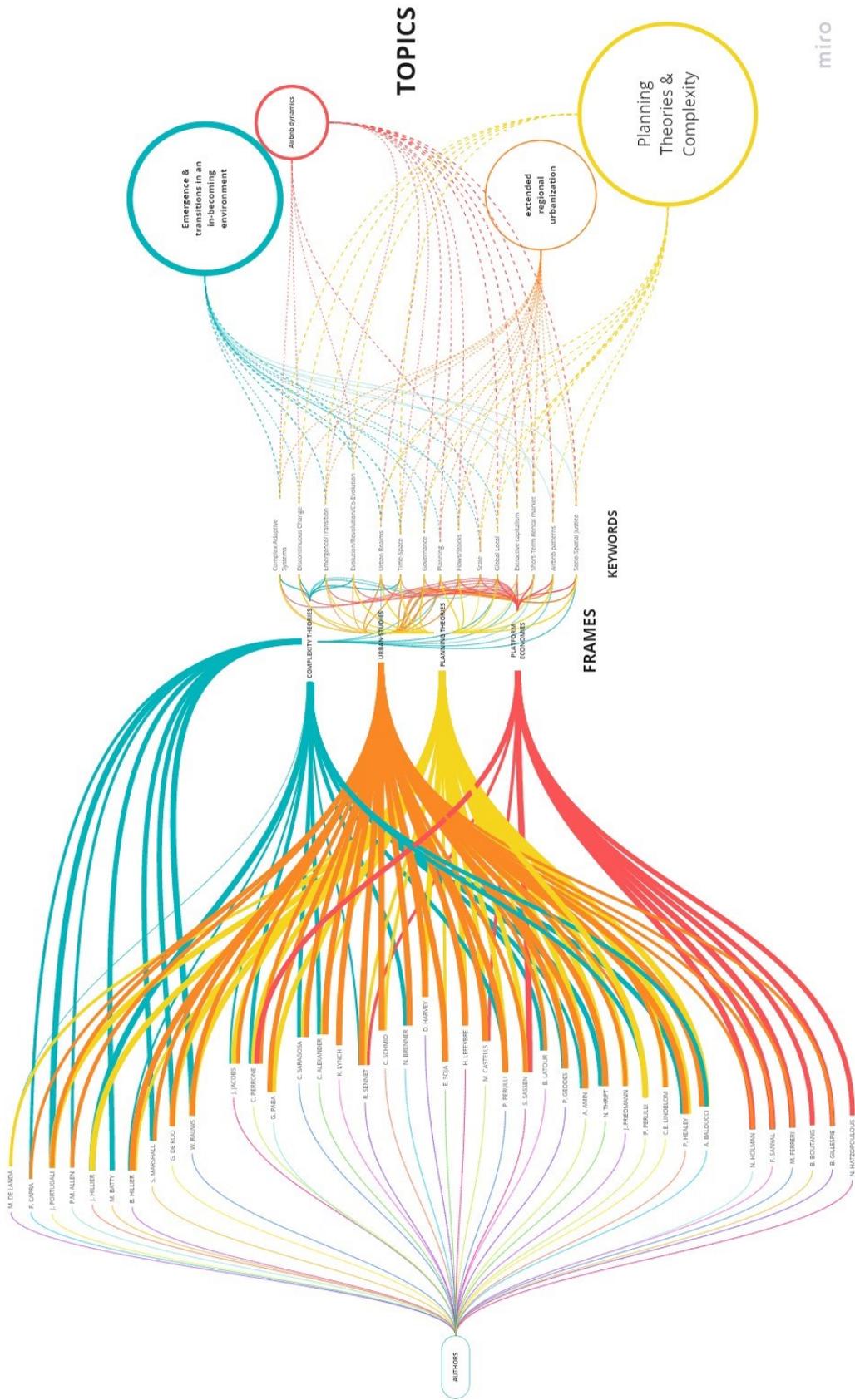
APPENDICES

Appendix A. Theoretical Reference Map (and interpretative connections)

Appendix B. Quantitative Data. Cartographic Methods; Cartographies; Tables and Graphics.

Appendix C. Qualitative Data. Report of the semi-structured interviews and the survey via social media.

Appendix A. Theoretical Reference Map (and interpretative connections)



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APPENDIX B: Quantitative Data. Cartographic Methods; Cartographies; Tables and Graphics.

Airbnb in the Tuscany region

General disclaimer:

The quantitative analyses on the Tuscany region are built to frame the dynamics of Airbnb in the FPP. For this context, the dataset permits the analysis of the pre-and-during Covid-19 situations.

The limits of the analysis on Tuscany are the institutional borders of the Region.

The only free data on Airbnb are available on *InsideAirbnb*¹³⁴ and *TomSlee*¹³⁵ websites that cover only a certain number of cities around the world particularly involved in *touristification* processes and subjected to the Airbnb supply and demand. Therefore, it has been necessary to acquire the database used for this case study from a private provider, Airdna¹³⁶. The database is constituted by a 12-month package of georeferenced data from November 2019 to October 2020. Economic resources provided by the University of Florence were invested in it.

The grid used for density maps of supply and demand is made up of 61997 hexagons, with an area of a single patch of 86 hectares, to cover the whole region. Each of those is 1000 meters high x 1000 meters wide and covers an area of 5.369.341 hectares.

The grid has this extension top-left, bottom-left; top-right, bottom-right: 554716.1765073540154845, 4677271.4321309532970190: 772377.2279918430140242, 4924771.4321309532970190

It was preferred the grid instead of the kernel density map because the output of a kernel interpolation is a raster layer. A vector layer, such as the hexagons' grid allows to easily interpolate with other vectors and add information to the table.

Many maps were classified with Jenks mode because data are not linear but generate clusters of values. Thus, it was needed to cluster similar values and maximise differences among classes since this method set the limits of the classes where there are significant differences.

The research analysis is based on three main aspects of Airbnb's system that contribute to describing its patterns of distribution. First, the 'ID Listings' field is used to map the supply in the Region at a specific moment. Second, the 'Reservation Days' field consists of the number of days booked for a specific listing in a month. Airdna's data give the chance to distinguish between booked or blocked days through internal processing that allows differentiating this basic information, "an absolute must for a sound revenue management strategy."¹³⁷ The Airdna's internal processing is based on "artificial intelligence and machine learning technology that allows for accurate identification of blocks and unavailable days on Airbnb and Vrbo. By looking at 16 different booking signals such as the length of stay and how far in advance the booking is made, our booked vs blocked methodology is extremely accurate".¹³⁸ Since listings are geolocalized, it is used to identify both the less and most demanded places, detecting patterns of concentration of demand and their changes over time. Third, the 'Host count' describes the number of listings listed by each host in Tuscany. This datum is used for speculations about the complexity of *actors' assemblages* because it gives information about hosts' housing stock available on Airbnb and therefore, unavailable on the long-term rental market.¹³⁹

¹³⁴ <http://insideairbnb.com/> [last seen on 09/02/2021]

¹³⁵ <http://tomslee.net/> [last seen on 09/02/2021]

¹³⁶ At this link their data disclaimer is available <https://www.airdna.co/airdna-data-how-it-works> [last seen on 15/01/2021]

¹³⁷ <https://www.airdna.co/airdna-data-how-it-work> [last seen on 06/06/2021]

¹³⁸ *ibid*

¹³⁹ Please note that the datum is referred only to the listings owned by the host within Tuscany regions borders. If we had taken the count of listings listed on the 'Host ID' without geographical reference, the result would have probably been different. Indeed, hosts are also global companies or agencies (see § 'Introduction') that might not have strongly invested in Tuscany, resulting 'invisible' in

Stages have been chosen since they represent different phases of the Covid-19 evolution. November 2019 exemplifies the situation before the pandemic explosion, April 2020 corresponds to the Italian lock-down with closed borders, July 2020 stands for the re-start of (domestic) travel and October 2020 represents a new peak of the pandemic contagion in Italy.

A report of specific disclaimers on maps organized by *categories of complexity* follows.

Uncertainty and resilience

Analyses of the Airbnb supply before and during the pandemic

- **The supply density map** is the count of listings present on the platform at the scraping moment in each hexagon of the grid. Please note that they're all equal in shape and area. The 5 classes are categorized with Jenks mode.
- **The percentage change of density in the hexagons' grid** is made from the comparison between the supply density in **December 2019 and October 2020**.

percentage change in supply density (% of listings/hectares)

$$\frac{\text{count of listings in hexagons Oct. 2020} - \text{count of listings in hexagons Dec. 2019}}{\text{count of listings in hexagons Dec. 2019}} \times 100$$

The blank patches are those in which the supply density in 2019 or 2020 was zero.

The Classification mode of this map is a graduated through the 'pretty breaks' mode.

A brief parenthesis on the supply is dedicated to what here we called 'virtual supply', because, especially in the pandemic period, many hosts might leave their listings on Airbnb, but implement some strategies to not let them bookable. Recent papers are referring to this wait and see approach from hosts like 'frozen listings'.

To map the 'virtual supply' in Tuscany the field '**blocked days**' is taken into consideration thanks to the Airdna database and its reliability about the accuracy of these quantities. Therefore,

- **the map of 'virtual supply'** is a classification of ranges of blocked days in the reported period of a month. The chosen 3 ranges of value (0-6 blocked days; 7-20 blocked days; 21-31 blocked days) are classified with Jenks mode. To make the map clearer only the third class is visible on the map, but in the legend, all values are reported.

Analyses of the Airbnb demand before and during the pandemic

- **The demand map** is a classification of listings based on the number of reserved days over a specific month. It was chosen to classify into 3 classes: 0 days of reservation; 0-15 days of reservation; 15-31 days of reservation.

this preliminary analysis that maps the hosts with 150 listings or more (here called 'major hosts') in Tuscany. Nonetheless, the same 'invisible host' in Tuscany could be a strong stakeholder with more than 150 listings in other geographic contexts. Further analyses will be taken on to highlight possible different patterns of hosts characters.

Situatedness, Ever-changing assemblages of paths and actors

Analyses of the Airbnb *multiple-listings-hosts* (mlhs) before and during the pandemic

The first step, common to all the following maps, consisted in the selection of hosts that own or manage more than one listing on their account¹⁴⁰ ("host_listi" >=150).

- A map of the multi listings *host ID* pattern of distribution. **Listings of the same colour are owned or managed by the same host.** Therefore, each colour identifies a host estate stock. To make this map more readable it was selected only hosts with **150 or more listings on their account.** Quantitative changes that occur between the 4 stages are reported in the legend and graphs.
- The provenience of the host (private, company or management agency) were checked only for those with the greatest stocks because this process was made manually, searching on the internet, starting from the Host code, searching on Airbnb adjusting this link <https://www.airbnb.it/users/show/hostidnumber>, and then checking the state indicated in the host account page or on the official website of companies/agencies. This map describes **the hosts ‘assemblage’.** The ‘host location’ field gives a hint on the global interests in this region. **The same colour indicates the same provenience of the host.** A graph reports the number of listings in Tuscany for each multi-listings host location.

Quanti-qualitative analysis. Insights from the survey via social media

Output: report (see Appendix C)

Qualitative analysis. Airbnb Assemblages of Human/Non-Human actors. The Tuscany region level

Output: Infographic on Prezi.com

It is created on Prezi (a free account). It is a graphic representation of multiple data, both qualitative and quantitative about Airbnb, the actors involved in Platform dynamics and political actions. Data on Airbnb 1) at the National level are from literature and newspapers¹⁴¹ information 2) at the local level are from the datasets used in the case study. The interactive graphic about actors involved is a qualitative analysis based on literature and case study analyses: the dimension of words represents the power and the impact of the actor for a specific year. The interactive plot about laws and political acts at different levels is based on the survey reported in Chapter 5. The interactive graphs about the demand in the pandemic are based on results from the survey via social media.

Evolution/Revolution/Coevolution

The Airbnb *speed of change on monthly data (Airdna) from December 2019 to October 2020 (11 months)*

This is a monthly detailed graph of the Airbnb supply and demand change. The percentage delta between each month has been calculated as below* to show how much supply or demand decreased or increased from one month to another. We can roughly observe how fast is the change in those fundamental aspects, specifically the supply and demand, of Airbnb.

**Monthly percentage change of absolute number of listings present on the platform (supply); of absolute number booked listings for more than 15 days over the month (demand)*

¹⁴⁰ Please, note that the following situation might occur. Selected hosts with more than 150 listings on their account can own or manage even just one listing in the Tuscany Region.

¹⁴¹ Data of Airbnb listings from 2008 to 2019 are from <https://www.statista.com/statistics/808690/airbnb-rentals-in-italy/>

$$\frac{\text{number of listing (or booked listings) month 2} - \text{number of listings (or booked listings) month 1}}{\text{number of listings (or booked listings) month 1}} \times 100$$

Emergence in the in-becoming environment. Bifurcations and Transitions

Insights from the environment. A qualitative analysis.

Output: Infographic

This infographic is an attempt to trace the complex interaction between the environment and the system. It is reported the pandemic curve and the regulative acts and policies at the European and National scale, surveyed on institutional websites and newspapers, interpreted as enablers or constraints of the tourism market.

Complex Adaptive Systems and the role of the Past

Analyses of the Airbnb supply patterns. *Physicality and Path Dependency*

- **The supply density in Landscape Regions** is the count of listings present on the platform at the scraping moment in each polygon that identifies landscape regions as defined by the Tuscany Region Landscape Plan (2015). Then the count is normalized to be compared by dividing it for the landscape region area. The 5 classes are categorized with Jenks mode.
- **The demand density in Landscape Regions** is the count of listings reserved for 15 days or more in a month in each polygon that identifies landscape regions as defined by the Tuscany Region Landscape Plan (2015). Then the count is normalized to be compared by dividing it for the landscape region area. The 5 classes are categorized with Jenks mode.
- To show and analyse the demand clearer, the **percentage change of density in landscape regions¹⁴² is made from the comparison between the demand in December 2019 and October 2020**. Most demanded listings (booked more than 15 days over the month) are selected and counted within the landscape regions polygons. Then, the density is calculated: $([\text{number of listings/area}] * 10000)$. The map is the result of Jenks classification model from the following formula:

percentage change in demand density (% of most demanded listings/hectares)

$$\left[\frac{\text{density of most demanded listings in lands.regions 2020} - \text{density of most demanded listings in lands.regions 2019}}{\text{density of most demanded listings in lands.regions 2019}} \right] \times 100$$

The classes report unique values and not ranges since the number of landscape regions is not so high.

- **Graph of Supply, Demand and Mlhs' stock in Urban Areas and Rural Morphotypes Areas as defined by the Tuscany Region (4 stages: December 2019, April 2020, July 2020, October 2020)**
To create the graph two preliminary steps were made: first, the rural morphotypes shapefile was dissolved as it was constituted by a single polygon, and the same process was made for the urban areas. Both shapefiles are officially distributed by the Tuscany Region and framed within the Landscape Plan

¹⁴² Definition and classification from the Tuscany region Landscape Plan 2015

elaborations. Second, the urban areas were cut from the rural morphotypes where they overlapped, with the symmetrical difference tool. Indeed, the rural morphotypes are elaborated at a smaller scale (1:250.000) than the urban areas, therefore their detail is much less precise, but it is a good degree of simplification for a gross analysis. Then, listings, listings booked for more than 15 days and listings owned or managed by mlhs are selected by position (within the urban areas). The count of rural areas is found by difference.

- **Nearest Neighbour analysis between supply, demand, mlhs stocks and strategic infrastructures for tourism (Airports, Ports and Railway Stations) (4 stages: December 2019, April 2020, July 2020, October 2020).**

GIS environment allows analysing the proximity of georeferenced objects. Official files of airports, ports and railway stations from the Tuscany Region databases were merged. It was analysed the closeness between strategic access hubs to territories in Tuscany and

- the supply stock, as listings present on the platform at the scraping moment
- the most demanded listings (booked for ≥ 15 days/month)
- the mlhs' stock.

The distance is calculated in kilometres.

- **Nearest Neighbour analysis between supply/demand/multi-listings hosts stock and attractive hubs (Unesco sites) (4 stages: December 2019, April 2020, July 2020, October 2020)**

Analyses cover four stages (before and during the pandemic) of

- listings' supply stock on the platform closeness to potential attractive hubs;
- the most demanded listings (booked for ≥ 15 days/month) closeness to UNESCO sites as potential attractive hubs;
- listings' stock of mlhs (those with ≥ 150 listings on their account) closeness to UNESCO sites as potential attractive hubs.

Graphs help reading differences between stages and differences between the three aspects analysed (supply, demand, mlhs). The distance is calculated in kilometres.

Airbnb in the FPP urban region

General disclaimer:

The quantitative analyses on the FPP case study are delimited by a polygonal shapefile designed starting from the availability of CNR data scraping area consisting of a square in the FPP in which the municipality of Florence is merged into. From this big square, I adjusted the FPP polygon on statistical census units from the Italian National Institute of Statistics, 2011¹⁴³ that are built on territorial features. It was also checked with the morpho-typologies of landscape extracted from the Regional Plan of Tuscany.¹⁴⁴ All scraped data are within this area.

Data are scraped weekly by the ISTI and IIT groups of Pisa National Council of Research.

Density maps are computed based on the Census Units by ISTAT, Italian National Institute of Statistics.

Many maps were classified with Jenks mode because data are not linear but values generate clusters. Thus, it was needed to cluster similar values and maximise differences among classes since this method set the limits of the classes where there are significant differences.

Stages have been chosen considering the pandemic situation: in April there was still the national lockdown in Italy, in August the domestic travel was on the edge, in October the pandemic curve increased again and in April 2021 the situation was highly unpredictable with high numbers of new Covid-19 positive cases and unclear political indication about possible re-openings.

It is necessary to permit the methodology for the analyses on the Airbnb demand with the CNR dataset, which is similar to the dataset from Tomslee and InsideAirbnb. While the Airdna dataset was elaborated through company algorithms, the other mentioned datasets cannot distinguish between booked or blacked days on the Airbnb calendar. Therefore, we cannot be sure if the unavailability of the listing would be caused by the booking of the listing or its temporary block on the host account calendar (for house works, cleansing, personal use, etcetera). To overcome this problem, some studies have worked on a model to weigh the datum to be more realistic. Here are some examples from the Inside Airbnb website: A Review Rate of 50% is used to convert reviews to estimated bookings.

- Alex Marqusee uses a review rate of 72%, however, this is attributed to an unreliable source: Airbnb's CEO and co-founder Brian Chesky.
- The Budget and Legislative Analyst's Office (page 49) also use a value of 72% for their review rate, and in addition, introduce a higher impact model using a review rate of 30.5% - based on comparing public data of reviews to The New York Attorney General's report on Airbnb released in October 2014.
- Inside Airbnb analysis found that using a review rate of 30.5% is more fact-based, however probably not conservative enough, given that the Budget and Legislative Analyst's Office did not take into account missing reviews because of deleted listings. A review rate of 72% is unverifiable - therefore 50% was chosen as it sits almost exactly between 72% and 30.5%.

None of these models was used in this thesis, but the field of reviews is taken as it is.

The indication of the month is related to data scraped in the last week of the month

- The April 2020 map is built on data from week n. 18 of 2020 (27/04/2020-03/05/2020). Data have been scraped in two days (30th April and the 1st of May 2020).

¹⁴³ The census unit is a portion of the territory obtained from a partition or a zoning of the national territory for static collection and diffusion uses. The census unit consists of a single piece delimited by a closed broken line (source: Istat)

¹⁴⁴ morfotipi del PIT PPR invarianti 50k

- The August 2020 map is built on data from week n. 35 of 2020 (24/08/2020-30/08/2020). Data have been scraped in two days (26th and 27th August 2020).
- The October 2020 map is built on data from week n. 44 of 2020 (26/10/2020-01/11/2020). Data have been scraped in two days (28th and 29th October 2020).
- The April 2021 map is built on data from week n. 17 of 2021 (26/04/2021-01/05/2021). Data have been scraped in two days (28th and 29th April 2021).

Urbanised areas and their classification modes are inherited by research studies of Arch. Giacomo Rossi for the Tuscany Region. He set the stage for the interpretation of the Airbnb dynamics in urban areas at a very close scale because his analyses on urban morphotypes of the FPP urban region are detailed and define main categories of urban morphology. Therefore, the thesis bases its reflection on his interpretation of urban contemporary urban morphologies. In Rossi's research, the Montalbano urbanised areas were missing. Therefore, they were added following his methodology. Adjunct data, listed below, were downloaded from the open geo-database 'Geoscopio' <<http://www502.regione.toscana.it/geoscopio/cartoteca.html>>.

Urbanized areas (AU.shp) from CTR scale: 10.000

S_262160_1998_3003, S_275010_1998_3003, S_274040_1993_3003, S_274030_1993_3003, S_262150_1998_3003, S_262110_1998_3003, S_262040_1998_3003, S_262030_1995_3003, S_251150_1995_3003

Streets (ac_veic.shp) from CTR scale: 2.000

DBT2K_047017_2010_2011_3003, DBT2K_047007_2010_2013_3003, DBT2K_047015_2010_2013_3003
 DBT2K_047019_2013_2013_3003, DBT2K_047020_2010_2010_3003, DBT2K_047006_2010_2010_3003,
 DBT2K_047005_2010_2010_3003, DBT2K_048050_2009_2011_3003

Then I clipped the AU with the ac-veic shapefile through Symmetrical Difference¹⁴⁵ to have a more specific detail of blocks since the streets are at a bigger scale. Then, I refined the analysis with historical data such as the date of the buildings, satellite images and destination use data from municipalities. Finally, I merged the new shapefile analysis with the original one of Giacomo Rossi's research. The added analyses were made only for the Montalbano areas and hill areas around Pistoia because the presence of Airbnb listings on Val Bisenzio (Vaiano and Vernio municipalities) isn't significant.

¹⁴⁵ This algorithm extracts the portions of features from both the Input and Overlay layers that do not overlap. Overlapping areas between the two layers are removed. The attribute table of the Symmetrical Difference layer contains original attributes from both the Input and Difference layers.

Uncertainty and resilience

MAP of the Airbnb supply on 4 stages: April 2020, August 2020, October 2020, April 2021

- The **supply density map** is a count of points (listings) in polygons (statistical census units) with no weight field counted every month of the four stages. Please note that the values are found by the ratio between the number of listings counted in a unit and the unit area (in hectares, see the formula below).

Supply density (listings/hectares)

$$\frac{\text{count of listings in census unit}}{\text{square meters shape area}} \times 10.000$$

The classification of the supply maps is graduated through a ‘Natural Breaks (Jenks)’ mode. Please note that the first class is reported in the legend, but it is blank on the map.

- To show and analyse the supply clearer, the **percentage change of density** is made from the comparison between the supply density in **April 2020 and in April 2021**.

Percentage change in supply density (% of listings/hectares)

$$\frac{\text{count of listings in census unit 2021} - \text{count of listings in census unit 2020}}{\text{count of listings in census unit 2020}} \times 100$$

The blank census units are those in which the supply density in 2020 or 2021 was zero. The Classification mode of this map is a graduated through the ‘pretty breaks’ mode.

MAP of the Airbnb demand on 4 stages: April 2020, August 2020, October 2020, April 2021

Since ‘reviews’ data are collected as single .csv with no geographic reference, the first step was to join the attribute table of the weekly review scraping output and the correspondent attribute table of the listings scraped in the same week.

A preliminary process of selection of data was made, given the fact that the scraped data report the total amount of reviews for single listings since the first. So it was necessary to extract only reviews for the specific month of the stage (select by the expression: for example “date” >= ‘2020-04-01’). After that, a process to join the no geometry layer of reviews with the point shapefile of listings is needed. Please note that the number of records imported in the shapefile is possibly smaller than the no geometry input.

Situatedness, Ever-changing assemblages of paths and actors

MAP of the Airbnb *multiple-listings-hosts* on 4 stages: April 2020, August 2020, October 2020, April 2021

- The first set of maps is aimed at describing the multi listings **host ID** pattern of distribution. **Listings of the same colour are owned or managed by the same host**. Therefore, each colour identifies a host estate stock. To make this map more readable it was selected only hosts with **50 or more listings on their account and then only those with 10 or more listings in the FPP**. This map is repeated on the four stages. The graphs report the ‘**host location**’ giving a hint on the global interests in this region. The first step of the analysis was the selection of hosts with 50 or more listings on their account (‘host-listings’),

but to make the map more readable it was selected only listings owned or managed by 10 or more listings in the FPP. **The same colour indicates the same provenience of the host.** A graph reports the number of listings in the FPP for each host location. Please consider that hosts fill this field autonomously, therefore some hosts leave it empty, or indicate their location generically ('Italy', 'Italia', 'Tuscany' are just some examples of this). If we consider only the listings owned or managed by hosts with 50 or more listings each in the FPP urban region, we discover that most of the hosts are located in Florence, but we also see that in April 2020 of 727 listings owned or managed by hosts with 50 or more listings in the FPP, only 558 reports the information about host location (Florence); in August 2020 we have 423 listings of hosts located in Florence out of 597 of the same category; in October 2020 337 out of 506; in April 2021 355 out of 516. Therefore, data inform respectively the 76%, 70%, 66%, 68%.

- The second set of maps '**Hosts investments on local**' shows multiple-listings host (**MLsH** since then) patterns of diffusion. In this case, it was chosen to set a 3D map, so that the two variables involved in the map could be more evident.

The first step consisted in the selection of hosts that own or manage more than one listing on their account¹⁴⁶ ("host_listi" >=50).

Then two sets of information were used:

- the 'host listing', which is the number of listings related to the account of the host – listings can be located anywhere in the world, not only in the FPP urban region. The sphere dimension is proportional to the 'host listings' quantity classified Jenks (5 classes);
- the 'calculated' number of listings per host in the FPP, which is the count of the host's listings within the FPP urban region. Therefore, this field can be minor or equal to the 'host listings' field, never greater. Spheres height from the terrain is proportional to the increasing number of listings calculated in the FPP for every single host.

Qualitative analysis. Airbnb Assemblages of Human/Non-Human actors. The Florence-Prato-Pistoia urban region level

Output: Infographic

This infographic is an attempt to merge the material and immaterial factors, the human and non-human actors that enable or constraint the Airbnb system. Thus, from the global level, we find the financial reports of the Airbnb Company and the touristification of cities and territories in the case study, as effects of globalised tourism on the local scale. Airbnb's dynamics such as supply, demand and multi-listings hosts stock, are both global and local, have effects on territories, while territories, in their material and immaterial aspects, affect them. For instance, maps from the complex adaptive system sections explore the correlation between the material aspects of territories and Airbnb, while immaterial dynamics, such as the political actions and regulations produce externalities on Airbnb dynamics. Three images and keywords from each level are to evidence this point. Another example of interaction between local and global is the Covid-19 pandemic which is part of the environment of the Airbnb system. All these levels are represented in a scheme of relations between them at the centre of the page. Ellipses link each player in the scheme to its quantitative representation.

Quanti-qualitative analysis. Insights from the survey via social media

Output: report (see Appendix C)

¹⁴⁶ Please, note that this situation is possible: selected hosts with more than 1 listing on their account, can own or manage even only one listing in the FPP urban region.

Evolution/Revolution/Coevolution

Graphs of the Airbnb speed of change on weekly data (CNR) from April 2020 to April 2021 (52 weeks)

Graph of the Airbnb supply and demand weekly detailed change. The delta between each week has been calculated in percentage to show how much decrease or increase supply or demand from one week to another. Given the week as a high frequent observation, we can observe how fast is the change in those fundamental aspects such as supply and demand of Airbnb.

Weekly percentage change of absolute number of listings (supply); of the absolute number of reviews over the week (demand)

$$\frac{\text{number of listing (or reviews) week 2} - \text{number of listings (or reviews) week 1}}{\text{number of listings (or reviews) week 1}} \times 100$$

Emergence in in-becoming environments. Bifurcations and Transitions

Insights from the environment. A qualitative analysis.

Output: Infographic

This infographic is an attempt to trace the complex interaction between the environment and the system. It is reported the pandemic curve and the regulative acts and policies at the local level, the regional and municipal scale, surveyed on institutional websites and local newspapers interpreted as restrictive or not on tourism. These variables are confronted with the Airbnb supply curve, which is linked to the acts on tourism and the sensation of people's safety.

Complex Adaptive Systems and the role of the Past

MAP of the Airbnb supply patterns: physicality and path dependency

- **Supply in census units. Correlation between Airbnb supply (in two stages: April 2020 and April 2021) and i) residential buildings density; ii) density of families that live in rented houses; iii) density of families that live in property houses.**

The map is constituted by a classification (Jenks classes) of the density of three indexes from census statistics, while the density of the Airbnb supply in Censis units in the two stages is represented as the height of the unit. Graphs help confront a) the relation between the census statistics indexes and the supply on the Airbnb platform and b) the differences between the same month (April) in 2020 and 2021. The choice of exploring only the supply is linked to the indexes chosen, regarding families and type of buildings in the area. These are mainly associated with the Airbnb supply because they are part of the variables in the complexity of the system and specifically in the complex dynamics linked to the availability of the estate stock for the supply.

- **Nearest Neighbour analysis between supply/demand/multi-listings hosts stock and attractive hubs (4 stages: April 2020; August 2020; October 2020; April 2021)**

A unique layer of the natural and cultural area of interest was selected and cropped on the FPP urban region. Then, was elaborated a map for each of the four stages (during the pandemic) of listings' supply stock on the platform closeness to potential attractive hubs; the reviewed listings on the month closeness

to potential attractive hubs; listings' supply stock of mlhs (those with ≥ 50 listings on their account) closeness to potential attractive hubs. Graphs help reading differences between stages and differences between the three aspects analysed (supply, demand, mlhs). Distance is calculated in kilometres.

- **Nearest Neighbour analysis between supply, demand, mlhs stocks and strategic infrastructures for tourism (the Airport and Railway Stations) (4 stages: April 2020; August 2020; October 2020; April 2021)**

Official files of airports, ports and railway stations were merged and selected by position to be only within the FPP urban region. Through the same process of the set above, it was analysed the closeness between strategic access hubs to territories in Tuscany and the supply stock, the reviewed listings and the mlhs stock. All these maps are set and compared in four stages. Distance is calculated in kilometres.

- **Supply count in urban morphotypes (see also §Research Agenda) and rural areas as defined rural by the land-use analyses of the Landscape Territorial Plan (4 stages: April 2020; August 2020; October 2020; April 2021)**

The Airbnb supply was also analysed in specific morphological urban and territorial patterns, inherited by Giacomo Rossi's research and further investigated in Montalbano and the hills around Pistoia. First, listings present on Airbnb at each phase were counted in polygons of urban patterns, here meant as urban morphotypes. Then, in the table a new field is created to compute the sum of every listing in polygons of each specific morphotype with this command: `sum ("stage x", group_by:= "cod_tess")`. The same process was made for the supply in rural areas. These aren't processed and interpreted in the light of many insights but are a result of the analyses of the land use of the area because elaboration on rural morphotypes was available only at a small scale, too rough to be efficient for this purpose.

APPENDIX C: Qualitative Data. Report of the semi-structured interviews and the survey via social media. Methodological notes

List of actors

TYPE OF ACTOR	Name of the participant	Role of the participant
Public institutions		
Casa Spa/ Federcasa – agency for social housing in Firenze and the Metropolitan City of Firenze	Luca Talluri	Technic
Entrepreneurs Associations		
Host+Host president	Gianni Facchini	President
Host Italia Association	Valerio Nicastro	President
Italian Association for Conscientious Tourism (associazione italiana turismo responsabile – AITR)	Maurizio Davolio	President
Tourist Guide	Susanna Mantovani	Professional
Entrepreneur in accommodation sector (hotel)	Stefano Arnetoli	Professional
Entrepreneur in accommodation sector (historical residence)	Fabrizia Scassellati	Professional
Member of the municipal council of Prato and entrepreneur	Marco Wong	Professional
Others		
Progetto Firenze	Grazia Galli	Secretary of the association and author of ‘La filosofia del trolley’
Journalist, expert of local dynamics	Maurizio Bogni	Local Journalist
Author, an expert on the topic	Sarah Gainsforth	Journalist
University of Siena, Firenze inhabitant	Tomaso Montanari	Resident, local expert and politician
Urban Law expert	Duccio Traina	Expert

Methodological notes

Participants were chosen among the main fields involved in the Airbnb dynamics, from tourist to housing and urban professionals, association, political figures. Unfortunately, not all actors responded to the email of invitation to the interview. Nonetheless, the sample of figures interviewed is enough differentiated to have many perspectives on the topic. Not every actor interviewed has direct knowledge of Florence and FPP urban region or Tuscany but was chosen because of his/her experience about the general topic of Airbnb. Some actors were added to the list indicated by other actors. Some of them, especially among professionals, were chosen because close to the author and thus reachable.

Actors were emailed to ask for participation in interviews, explaining the aims and modes for the interviews. They were also informed about the chance to use part of the information for the research “Chi possiede la città. Proprietà, Poteri, Politiche”, funded by the Fondazione Cesifin Alberto Predieri (<https://www.cesifin.it>) and aimed at building a portrait of the city of Florence in three fields: digital networks, urban properties, commons. Findings are published in the VII Annual Report on Cities by Urban@it – Centro Nazionale di Studi per le politiche urbane” (<https://www.urbanit.it/chi-siamo/>).

Interviews were guided as semi-structured interviews on the Google meet platform. Programmed timing was 1 hour. It was respected for all interviews, but many actors offered another meeting if necessary. Participants were asked to be video recorded for practical reasons. Registrations will be deleted after the report and won't be published, as agreed with participants.

INTERVIEW #0

Name and role of the participant: Luca Talluri, President of Casa Spa, agency for social housing

Type of actor: manager of a public-private company for social housing

Date of the interview: 08/03/2021 18.00 CET

Mode: Google Meet

Other notes: this interview was mainly conducted by Benedetta Masiani, Università degli Studi di Firenze, and Federico Tosi, Fondazione Cesifin, in the frame of the Urbanit@It and Cesifin research on estate income in Florence. Some questions arose directly linked to the topic of this research.

KEYWORDS: Social Agency for housing (Agenzia Sociale per la Casa); pilot case; negotiation; short-term rent and long-term rent; estate market in Florence

Brief Report: The role of Covid-19 and its effects on the real estate market is underestimated by L.T. because Firenze presents a very exclusive market, in which historical bourgeois families are protagonists. These families are considered conservative by L.T. and therefore, there has been and there is resistance in selling properties. This is seen as a positive aspect of this market because it seems to be a barrier to criminal organization estate affairs and the entrance of great foreign investments. The cases of buildings and palaces sold to global companies are overestimated and cannot affect the 'normal' estate market. No significant changes emerge from the analysis of Casa Spa, the agency for the management of the social housing in the florentine area. Just a decrease of around 10 to 17% in long term rents.

A new agency, the project F.A.S.E, is recently born from the public initiative of the Municipality of Firenze and supported by Casa spa. The Social Agency for housing is aimed at enhancing the return of estate assets to the long term rental market by incentivising owners and renters.

Hot topics: The Social Agency for housing has just started, thus results are to be monitored. A closed real estate market in the city.

INTERVIEW #1

Name and role of the participant: Maurizio Davolio, president of AITR (Italian Association for Responsible Tourism)

Type of actor: Tourism Association

Date of the interview: 10/03/2021 18.00 CET

Mode: Google Meet

Other notes: he was happy to have other meetings if necessary or to update information

KEYWORDS: Tourist Tax; Overtourism and Covid-19; Airbnb stay solution; villages and internal regions; national and local governance

Brief Report: M.D. is also part of the National Cluster for Cultural Cities, that aggregated cities with their political representatives and actors from the academic world. The Cluster was born to discuss the issues linked to the overtourism (economic, demographic, urban problems for residents and students from other cities that stay for long periods during University courses). The Cluster quitted its work during the pandemic period, but "Covid-19 wiped out the overtourism, but not in summer and not in villages and internal regions", M.D. said. Furthermore, the over tourism's effects are deeply linked to the specificity of places and cities, e.g. in absolute numbers, Roma has more tourists than Pienza, but possibly Pienza for its little roads and small scale is less able to overcome problems from touristification. Anyway, in all these overtouristified places, there is also a 'silent consensus' on the topic from privates that work on it and the public for the incomes from tourist tax (see below). Overtourism is an irreversible process and when it will be possible people will come back again travelling as before. Not all categories of travellers will do. For example, business travel could have a big strike from Covid-19 fighting measures, even after the pandemic.

Airbnb is considered as resilient for the type of supply, that offer the sensation to be safe in a private apartment or villa, without the promiscuous spaces that every hotel has. The struck on low-budget traditional stay solutions, such as 1 or 2, but even 3 stars hotels, is heavy. Many of those closed even before the pandemic and very few will reopen after it. Possibly, many low-budget tourists that were still optioned for those hotels will look for an Airbnb listing.

Airbnb was present in villages and internal regions even before the pandemic also enhanced by the central policies of the Platform that foreseen trends out of the cultural-historical cities. These trends will go on increasing.

Two reflections on policies. At the local level, it is necessary to make the tourist tax more effective on urban issues and incomes should be used for both tourists and residents' services, to make the city more attractive. At the national level, a fiscal law on long term rent should be enforced, with the same incentives as for the landlords who decide for the short-term rental market. Today, the long-term rental market is not competitive at all compared to short-term rental solutions.

Hot topics: the fact that the peculiar morphology and urban typology of places are linked to the effects of over-tourism support the hypothesis of the thesis. The proposals at two levels of governance indicate that the issue is complex and need to be faced by multiple bodies at different scales and with different perspectives.

INTERVIEW #2

Name and role of the participant: Sarah Gainsforth

Type of actor: Journalist and author on the topic

Date of the interview: 17/03/2021 18.00 CET

Mode: Google Meet

Other notes: informal mood

KEYWORDS: housing and working system fragility; Airbnb acquisition for managing estates; platforms on public initiative; complexity and resilience of Airbnb; irreversible processes?

Brief Report: Airbnb bases its success on rhetoric and private welfare supported by the consumption system. It's complex because it is crossed by an entangling of issues and questions. Airbnb is resilient as a Company. For instance, in 2018 Airbnb acquired a company of property management, even if it is contradictory to the rhetoric of sharing and local experience. It is not available for the Italian market, but it is a pilot project in Spain and France. Could it evolve in something similar to the monopoly of *Amazon* logistics?

The long-term market is not competitive. During the pandemic in Italy, owners rented out medium-long stays. Not many passed to the long-term rental market and thus, they didn't remove the listing from the platform, ready to welcome back tourists again.

The problem of Airbnb in villages and internal regions is also a problem of control. At the regional level could be useful to reflect also on inner areas and peripheric territories. A possible solution could be public platforms alternative to Airbnb managed by local entrepreneurs.

Nonetheless, S.G. sustains that platforms such as Fairbnb cannot compete if Airbnb is a direct competitor. They can only work and have success if the main actor is absent from the market. In cities, she suggests putting a limit to the number of tourist accommodations per resident. The pilot case of San Francisco's municipality public initiative though the statistical office had results with this method.

The issues linked to Airbnb are caused also by the unsolved issue of housing and work systems, regarding the culture of estate income, too.

Some processes can be irreversible, as sustained also by Murray Cox, founder of InsideAirbnb. It is necessary to set up a network of stakeholders from different fields to reflect and propose actions.

Hot topics: Airbnb is defined as a complex and resilient company. This does not mean that hosts and other actors around are as resilient as the company. Public governance needs to be strengthened but it is necessary to be aware that impacts of Airbnb are exacerbated by inner weaknesses of other crucial systems for social and economic, and thus, territorial development.

INTERVIEW #3

Name and role of the participant: Valerio Nicaastro

Type of actor: president *Host Italia* association. Host Italia is a bridging association between hosts, platforms and public institutions.

Date of the interview: 22/03/2021 15.00 CET

Mode: Google Meet

Other notes: formal and welcoming mood

KEYWORDS: decreased demand; a new (temporary) demand; virtual supply; national federation of extra-hotels hosts; simplified bureaucracy

Brief Report: Hosts affiliated to Host Italia reacted differently to the pandemics: some of them closed, some others passed to the medium-term rent, but the demand, also from students is decreased due to the online university courses. Anyway, the sector is not stopped: people stay in houses for rent to work, self-quarantine or quarantine, and during the first months of the pandemics also for works linked to the healthcare. The association made the point on numbers in March and October 2020 through the Airdna dataset. They registered a reduction between 15-20% of supply in Turin, but almost 20% of the supply still present on the platform was unavailable in the following three months.

On the normative side, they are working to set up a national federation of extra-hotel entrepreneurs. They mostly want the simplification of bureaucratic procedures and the control over tourist flows since 50% of supply is on the touristic rental that is not recognized by the National Institute of Statistics. There is also a problem with professionalisation. Many hosts (87%) are not in compliance with identifying code. Having a national database of identifying codes could be better than the regional system today in force.

Many vacant apartments (6 million in Italy) could be put on the market if the sector could be less regulated: a temporary use of not too long periods without any regulated rent could meet different needs.

The strong reaction from the association to the call for action of Firenze and Venezia mayors. In the mayors' letter, there is a problem of misleading knowledge and communication around the topic.

Hot topics: the necessity of more precise data from and to the public institutions is central.

INTERVIEW #4

Name and role of the participant: Gianni Facchini

Type of actor: President of *Host+Host* and *MyGuestFriend*

Date of the interview: 22/03/2021 18.00 CET

Mode: Google Meet

Other notes: formal and welcoming mood

KEYWORDS: over-regulation; simplify; bureaucracy; estate rents; virtual supply

Brief Report: Hosts have to be constantly informed on new laws and regulations of the sector. They are subject to strict rules of information to local authorities and denounce an over-regulation on fiscal aspects of the short-term rental market. This is an issue horizontal to many fields in Italy and the simplification of bureaucracy is a question at the table for many years. As horizontal is the problem of competence and legislative powers on different topics. The tourist rent is under the national competence, not regional nor local.

Their relationship with public bodies is based on their recognised role as stakeholders in the market. They propose projects and collaborations among associated clients for providing services to privates.

About Airbnb supply during the pandemic and the choice of hosts to not remove listings from the Platform even during lockdown periods, G.F. said that it is not necessary to remove the listing, since hosts can set higher prices in periods they don't want guests, or even unable the direct booking. These decisions of the single hosts create a 'virtual supply' due to the rule given by Airbnb algorithms: if a host closes the calendar, the algorithm penalizes the listing. Therefore, not all listings present on the platform are bookable during the pandemic. Some hosts decided to put the estate on the medium-term rental market waiting for tourist flows.

Hot topics: the normative frame is focused on fiscality, and it is over-regulated. The problem of competencies at different normative and regulative levels (national/regional/local).

INTERVIEW #5

Name and role of the participant: Grazia Galli

Type of actor: main role in the Association 'Progetto Firenze' and co-author of "La filosofia del trolley", a book on the topic

Date of the interview: 23/03/2021 17.30 CET

Mode: Google Meet

Other notes: she was available to have other meetings if necessary or to update information. We had other informal phone conversations and informal exchanges of views.

KEYWORDS: local governance approach; over-tourism; restrictions

Brief Report: the association 'Progetto Firenze' is a residents' association that aims at improving the quality of life in the city and de-constructing rhetoric discourses both from the public and the platforms spheres, starting from the observation of daily urban life in Florence city centre. The association disseminates information about the governance approach at the municipal level that promotes tourism as the main industry of the city. G.G. observes the difficulty to discuss with public administration if you aren't a strong economic or financial stakeholder. Over the last decades, the association observed the fragmentation of the social aggregation in public spaces of the city centre. The main issues highlighted in the laws are linked to taxation, while it is missing reference to regulation on urban impacts of the short-term rental, such as urban wastes of great tourist flows and safety aspects for long-term residents. The regulative attempts at the national level didn't cope with the tourist accommodation in residential buildings and didn't face the problems of long-term residents in blocks where there are many listings for the short-term rental. The association proposed some governance interventions such as clear rules to organize the co-existence of the tourist industry, tourists, and the citizens, and systems of monitoring to ensure transparency and legality. The relationship with platforms needs a European normative even more strict than the current one, especially on data. Then, the current national laws about the registration of portals of institutional bodies (taxation offices, police offices,...) should be implemented and then at the local level should be opened a portal to publish all accommodation activities in the city, both entrepreneurial and non-entrepreneurial in houses or hotel. So, the institutions and citizens in the city could monitor the accommodation system, which implies taxes on citizens (wastes and safety).

Airbnb is resilient because it is out of regulation, as other actors from the gig economy, and it can transfer responsibilities to other subjects. The communities involved in this vast grey area aren't resilient. Airbnb, and the OTAs, can be also defined as contagious in a fragile system like the tourist one. A dimension of this system could be implemented by investing in other sectors (such as the craft and the agriculture that are also linked to the tourism sector at the local level) with a strong political will. Local governance has a great impact on the Florence STR situation. The choice to stop new hotels in the city centre (and then in the whole municipality) has fed the Airbnb explosion. And this extractive economy gives economic advantages to the municipality because the daily taxes are paid for the first week, so the touch-and-go tourism is perfect for making revenues (consider that the 20% of the local incomes from taxes is from the tourist industry as daily tax, bus and museum tickets and so on).

The regional law on tourism is pivoted around the promotion, while the monitoring of the effects on the territory isn't implemented, also the tourist observatories are not efficient on this.

Hot topics: the impact of the local governance on the whole system

INTERVIEW #6

Name and role of the participant: Stefano Arnetoli

Type of actor: entrepreneur in the tourist accommodation sector. Hotel owner

Date of the interview: 25/03/2021 18.00 CET

Mode: Google Meet

Other notes: The mood was formal and welcoming

KEYWORDS: flexibility of platforms; Expedia and Booking; fiscal regime

Brief Report: Until Airbnb took the fore, it was difficult that someone could rent a house for less than 6 months in Florence. Airbnb is flexible because can offer an accommodation solution in places that couldn't be reached by traditional entrepreneurial of the accommodation sector because there isn't enough demand. Furthermore, it is easy to spread because it is easy for owners to rent. Many traditional activities have closed and will close in the city centre because of the Covid-19 restrictions. And Airbnb will be the solution for travelling.

It is convenient for the owner to put its stock on Airbnb because of the taxes. If it is an entrepreneurial activity, it must have a VAT registration number and pay taxes for its revenues, while if it is a non-entrepreneurial service of short-term rental, the fiscal regime is much less severe. S.A. knows some examples of entrepreneurs that can easily escape their fiscal position even if they have 12 rooms. This would be a hotel activity (consisting of 7 or more rooms for the law), but the owner divided the property into two parts registered to two different people, having 6 rooms each, and thus, falling under the room-rental fiscal regime.

S.A. is the owner and manager of an entrepreneurial accommodation structure. For the hotel sector, the big competitors are Expedia and Booking since they listed also apartments. On Airbnb, there are only houses and apartments, but the hotels were reached and booked by people primarily on Booking and Expedia, which now are promoting also other structures. Therefore, it is even more difficult for hotels to get noticed in the *mare magnum* of the offer. Before the listing of apartments and houses on Booking, his hotel was in the first three pages of Booking, but now it is after the 30th page. S.A. thinks that an intervention of Federalberghi, the national organisation of the hostelry entrepreneurs, might protect the entrepreneurs in the traditional accommodation industry.

Hot topics: impacts of Expedia and Booking on the hostelry entrepreneurs

INTERVIEW #7

Name and role of the participant: Susanna Mantovani

Type of actor: entrepreneur in the tourist accommodation sector. Tourist guide

Date of the interview: 14/04/2021 12.00 CET

Mode: Google Meet

Other notes: the mood of the interview was informal

KEYWORDS: gentrification; services; brand Tuscany; city centre and country prices.

Brief Report: the Sant' Ambrogio neighbourhood, where S.M. has her enterprise as a tourist guide, has drastically changed in the past 8 years. In 2013 it was a depressed zone. Today prices of rental for housing and commercial activities are boomed and there are many more incoming and tourist enterprises. Since the 80s and 90s, the city centre has been gradually abandoned by residents while services has been reduced, until the new millennium in which the tourist sector has changed again the city. Ingent flows of tourists, hosted in hotels but also in private houses, have prompted new services and activities for them. Airbnb has created a diffused hotel, while in the 80s the city centre was a diffused office.

The Tuscany brand is immutable because it resists on a solid basis, but there might be different conceptualisation and thus shades of this brand. Nonetheless, S.M. observes a missing of engagement in the public bodies committed to the brandisation. For instance, Toscana Promozione Turistica should advertise more and better because its image isn't efficient. Maybe involving the entrepreneurial part of the sector in its planning phases and strategies could be successful in promoting a new offer for living in Tuscany as a tourist.

As the owner of an apartment in the city centre of Florence, S.M. noted that in a decade the prices of the short-rent went down for a third, and possibly for the saturation of the supply stock due to the easy access to the market on Airbnb. About country houses in landscaping regions the prices trend is much different from the city centre.

Hot topics: management of the Tuscany brand from the public

INTERVIEW #8

Name and role of the participant: Maurizio Bogni

Type of actor: journalist and resident in Firenze

Date of the interview: 14/04/2021 12.00 CET

Mode: Google Meet

Other notes: draft questions sent in advance as required to have time to check for specific aspects

KEYWORDS: metropolitan city of Florence; tourist accommodation;

Brief Report: The pandemic period could have been an occasion to design new strategies for tourism, recovering the liveability of the city without penalising the housing revenue. It is important to create socialising occasions in the city. The solution could be a distribution of the tourist flows in the area of the Metropolitan City. Tourists might accommodate in cities of the hinterland only if the infrastructural system is efficient and in these cities, tourists can find something pleasant, a vital part of the metropolitan city. This strategy could control prices or make the supply in the city centre excellent. For instance, there is a criminalisation of the foreign capitals, but if the industry isn't criminal, even if it is foreign is a good thing that it invests in the building, even if the beneficiaries will be very selected and limited. This elitarian tourism won't exclude the other tourists, that could accommodate outside the city centre, in the metropolitan city of Florence. This is the best domain for a policy pilot case because it is supported by an administrative structure.

The tourist promotion is inefficient and unorganized because there are too many subjects involved.

More than asking for control and prohibitions, it is better to promote policies for incentivising the long-term rental.

The pandemic has stopped the great impact of Eastern flows in Florence. Thus, M.B. claims that the "worst" was yet to come and the flows would have increased before the Covid-19 outbreak.

Hot topics: a rethought of the tourist system at the local level

INTERVIEW #9

Name and role of the participant: Fabrizia Scassellati

Type of actor: entrepreneur in the tourist accommodation sector. Hotel owner

Date of the interview: 19/04/2021 10.00 CET

Mode: Google Meet

Other notes: The mood was anyway formal and welcoming

KEYWORDS: sustainable tourism; city revenue

Brief Report: F.S. is the manager and owner of a boutique hotel of 7 rooms opened in 2018 in the Oltrarno neighbourhood. Airbnb fuels the “touch-and-go” tourism use of the city, without revenues for the activities in the city. The Covid-19 have had a great impact on the activity. She hopes in the flows due to Pitti, the famous fashion event.

Oltrarno was defined as the coolest neighbourhood in the world. The streets are changing their services and commercial activities, but some of the traditional ones are still open and give that sense of local real urban life that fascinates tourists. F.S. promotes her activity for familiar and sustainable tourism. For instance, 30% of her guests book for a week or more on their website, since the boutique hotel is on OTA, but there is a tendency in booking directly from the website of the structure. It is a kind of elitarian guest who can stay longer and spend more in the city, bringing also ‘culture’. Nonetheless, if the city life costs more, it doesn't mean that the tourists are more educated.

Hot topics: sustainable tourism-elitarian tourism

INTERVIEW #10

Name and role of the participant: Tomaso Montanari

Type of actor: Resident, local expert politically engaged

Date of the interview: 17/05/2021 11.00 CET

Mode: Google Meet

Other notes: formal and welcoming mood

KEYWORDS: far-in-time roots of city centre residential situation; great real estate stakeholders; the urban regional scale; policy makers' role

Brief Report: Possibly residents started leaving the historical centre of Firenze after the great flood in 1966. The liberalisation actions triggered by the National 'Bersani Law' (L. 248/2006) enhanced the exponential growth of shops and activities linked to the tourism sector. Finally, the choice to move strategic activities like the University pole, the CourtHouse, Offices of the Tuscany Region from the centre to the peripheries is another reason behind the residents left. Trying to reduce tourist flows in Firenze is a failure. It is better to incentive the residential uses. The housing market is mainly owned by the Church, ancient families and foreign investors. The issue linked to this last category isn't that they are foreign – Nuova Pignone, an historical industry in Firenze, was bought by General Electrics and it is still giving many workplaces, enriching the local – but the real issue is that it is linked to estate income, a market that leaves very few on local and takes a lot from it.

The problem is also the scale issues are faced and the inner weaknesses of institutions. The Metropolitan City of Firenze could have a role in strategic actions on the topic, but there is a fundamental problem of democracy within the institution. The strategic actions on tourism and STR problems could experiment in the Firenze-Prato-Pistoia urban region, but it is necessary to make the infrastructures more efficient.

The problems that the city is facing today aren't casual, they're caused also by the policy makers' choice to act or not. Even spatial and urban projects have a role in incentivizing tourist flows. What about non-commercial covered public spaces for residents?

Hot topics: great unpredictable shocks can have a role in changing a city, but policy and strategic actions are the most significant triggers of long-term changes. Institutions have the great responsibility to act or not at many levels in the specific case: housing policy, urban strategies and projects and a territorial vision that include regions that work as a whole, not necessarily within fixed institutional limits.

INTERVIEW #11

Name and role of the participant: Duccio Traina, an expert on urban legislation

Type of actor: Professor at the University of Florence on Public Law

Date of the interview: 28/07/2021 16.30 CET

Mode: Phone call

Other notes: formal and welcoming mood

KEYWORDS: Regulations, Laws, Governance

Brief Report: the planning tools at the municipal scale cannot classify the buildings in entrepreneurial categories, but only in the residential, as it is now, because of the regional law (art. 44 and 47), which derives principles from the national law on tourism (Legge Quadro sul Turismo). The problem is not the overtourism, but governing it. Previous administrations of Florence have responsibilities in the current situation of residents in the city centre because they opted to move main services and directional functions in the peripheral neighbourhood of Florence. But these strategies, maybe implemented excessively, were aimed at revitalising the other neighbourhoods.

We are in an overtourism regime in Florence, so why refuse new hotels outside the city centres, while incentivising the residential uses in the city centre? Here's open the problem of the residential for short-term rental that accelerates gentrification and long-term residents exclusion processes. But residents also move outside the city centre because the quality of life is low for the access to services, the nightlife – tolerated by the administration also for the lobby of the operators – the housing conditions in ancient buildings. A good housing policy could improve the liveability of the city centre but avoiding to ban other destinations of use. For instance, at the municipal level, the Plan of buildings functions can be efficient (even if the administration says it is impossible to face the STR problem) in guiding the Airbnb explosion, because it could ban or incentive residential uses for short-term, indicating other subcategories for residential buildings at the already existing plan. This sub-categorisation could be justified by the standard regime linked to urban uses because a student resident or a classic residential use or an STR house would imply different urban standards (health services, schools, gardens, parking areas). Two orders of problems for this option. 1) the plan of the function is something that harnesses the city and requires a certain degree of control and predictability; 2) what about the pre-existing contracts? The plan cannot be retroactive. About the first point, D.T. notes that in Milan, the administration set only the forbidden destination of uses, while all the others are free to be implemented. About the social justice linked to this, he suggests providing deposit-guarantee schemes to support tenants and owners in the long-term rental market.

D.T. claims that letting on Airbnb or the long-term market is almost the same in terms of revenues. Possibly, the long-term occupant takes care of the house and partially cover the municipal taxes and bills. But the tenants go on Airbnb because the house is at your disposal and there are no risks of tenants in arrears, that are difficult to evict in Italy. The solution is at the national level with a good housing rent law and an efficient legal system. Different if the owner has many listings because it is an entrepreneurial activity and it has to be taxed and legally framed under other conditions. And also this is under the national competencies. So, what is the planning at the local level? On entrepreneurial hosts can be a strategy of maximum days of rent, even if there's a problem of control.

INTERVIEW #12

Name and role of the participant: Marco Wong

Type of actor: entrepreneur and politician in Prato

Date of the interview: 30/07/2021 19.00 CET

Mode: Phone

Other notes: formal and welcoming mood

KEYWORDS: Chinese community; tourism; traditional accommodation sector; short-term rentals; Covid-19

Brief Report: The Chinese community in Prato rents and lets properties not only on Airbnb, but also and mostly via other platforms. The most used are the social media platforms, such as 'Wechat'. Tourists from China use these platforms, word of mouth recommendations or they book in traditional accommodation structures, especially those owned or managed by Chinese entrepreneurs because western entrepreneurs rarely meet the needs of eastern cultures. The big stakeholders can be more efficient in introducing improvements also as a system, while small entrepreneurs or private short-term letters can improve their offer only by their sensitivity. The eastern flows are important for the local tourism sectors also because the calendar of flows is different from the American and European tourists so that the flow can be constant all over the year. Consider that the traditional trip for the Chinese New Year was to come back to the original village (also for those who live in China), but recently the days off are used to travel around the world. About Airbnb and the self-quarantine in the very first stages of the Covid-19 pandemic, the Chinese community was very responsible because of the news from the Chinese social media, update information not easily accessible by the Italian institutions. For instance, people who came back from China (February 2020) self-quarantine to prevent virus spread, while the local administration did not completely approve this in the very first days because there was an attempt to minimise and to not panic. The very first quarantine took place in their own houses, while it is more probable that the next quarantine took place in houses for rent, but it is improbable that people rent it on Airbnb in their city. The percentage of the platform is off-putting. The Chinese community asked the local health institutions to arrange structures to quarantine. Unfortunately, institutions were too slow. And this unpreparedness is clear also in other actions, such as the vaccination for who doesn't have visa or green cards. Nonetheless, there was also positive interplays between the local community and the administration, especially on the management of the schools and the decision to close them or not. And possibly, this is thanks to the presence within the institutions of Chinese representatives.

Hot topics: communities from different countries, especially those from the Eastern countries, may use different platforms to short-term rent. The self-quarantine was in the houses, differently from the journalists reports, but it was nearly opposed by the municipal administration of Prato because of the message to the whole population. The unpreparedness of the public roughly emerged in the first phases of the pandemic, but later it was influenced by other communities advises to face the pandemic.

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