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Who Owns Zurich, Where, and Why Does It Matter? Analysing the Spatial Dimensions of Property Ownership and the Production of Socio-Spatial Inequalities in Zurich

GEO 511 Master's Thesis

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Preface

> *"While power relations can be expressed in many ways, their territorial manifestation is of significance, especially in relation to property in land. […] Territory serves as a consequential communicative marker, particularly through the meanings attached to the spatial boundary" – Nicholas Blomley (2019, 234)*

The choice to write a thesis on property ownership in Zurich was both an academic and a personal one. Living in a city where housing is scarce and rents are rising has made it impossible to ignore how deeply property ownership shapes everyday life. It was this tension between space, power and inequality that I wanted to make visible. This topic therefore combines a pressing social question with my own interest in understanding the visible and invisible dimensions of property ownership.

The path towards this work was not always straightforward. Finding, processing and interpreting ownership data revealed just how much opacity characterises this field of research. At the same time, the difficulties I faced along the way did not discourage me but rather strengthened my conviction that questions of ownership deserve more visibility in both research and public debate. What began as a puzzle about housing and inequality gradually unfolded into a much broader reflection on how urban space is produced and contested.

I owe particular thanks to my supervisors, Prof. Dr. Hanna Hilbrandt and Dr. Hoda Allahbakhshi, whose guidance, critical feedback and encouragement have been essential throughout this process. I am sincerely grateful for their support and could not imagine this work without their great supervision. I am also grateful to the Statistical Office of the City of Zurich for providing access to the data and for their helpful support in making this research possible. My thanks further go to Nicholas Blomley, whose theoretical approach on relational property ownership have inspired much of the perspective taken in this thesis. Finally, I want to thank my family and friends for enduring my constant chatter about this topic and for supporting me throughout the process. They reminded me that research is not done in isolation and that this work would not have been possible without their community.

Leah Heuri Zurich, September 2025

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List of Abbreviations

	Englisch	German
AIC	Akaike Information Criterion	Akaike-Informationskriterium
BIC	Bayesian Information Criterion	Bayes'sches Informationskriterium
BZO	Building- and Zoning Regulation	Bau- und Zonenordung
GP	Private Development Plans	Private Gespaltungspläne
HEV	Homeowners Association	Hauseigentümerverband
MAUP	Modifiable Areal Unit Problem	Problem der veränderbaren Gebietseinheiten
MV	Swiss Tenants' Association	Mieterinnen- und Mieterverband
OLS	Ordinary Least Square	-
SAC	Spatial Autoregressive Combined	-
SBV	Special Building Regulations	Sonderbauvorschriften
SDM	Spatial Durbin Model	-
SEM	Spatial Error Model	-
SLM	Spatial Lag Model	-
SOZ	Statistics Office of the City of Zurich	Statistisches Amt der Stadt Zürich
SZ	Statistical Zone	Statistische Zone
WBG	Housing Cooperative Association	Verband Wohnbaugenossenschaft

Abstract

This master's thesis analyses the spatial distribution of property ownership in the City of Zurich between 2010 and 2024 and examines its implications for socio-economic inequality. While housing research has long highlighted the effects of rents, segregation and displacement, ownership itself has often remained obscured by fragmented and inaccessible data. Building on Nicholas Blomley's approach of property as a social, political and territorialised relation of power, the study analysis *who owns Zurich, where, and why does it matter*.

The empirical analysis combined descriptive spatial mapping with geostatistical methods, including Global Moran's I and spatial regression models. Three ownership datasets are examined across multiple scale (districts, neighbourhoods and statistical zones). The results reveal clear ownership patterns: Private Companies dominate redevelopment areas, Housing Cooperatives remain clustered in peripheral areas facing structural barriers to expand, and Natural Persons are increasingly decrease, leaving them concentrated only in affluent neighbourhoods. Temporal analysis further shows that financialised owners expanded their shares disproportionately after 2010, reshaping both ownership structures and its socio-economic effects.

Spatial regression analysis indicates significant spatial dependencies between ownership categories and socio-economic variables such as income, nationality and age structure. These findings demonstrate that ownership is not randomly distributed but systematically linked to processes of inequality and exclusion. In Zurich where 92% of households are tenants, property owners ultimately hold the decisive power to determine who is allowed to live where. Knowledge about the spatial distribution of ownership structures and opacity thus requires even greater significance. This thesis concludes that making ownership visible is essential for understanding urban restructuring, democratic accountability and socio-economic justice, while highlighting the lack of ownership transparency as a central obstacle for both research and public debate.

Keyword: Zurich, property ownership, socio-economic inequality, financialisation, urban governance, spatial distribution, spatial autocorrelation, spatial regression model, transparency in property data

1 Introduction

1.1 Motivation and Research Gap

Who owns the city? This seemingly simple question dives right into the very heart of urban life. This question is neither rhetorical nor abstract but wants to address a core element of the "social question of the twenty-first century"[1] (Trautvetter 2020, 6). In critical urban research, property is no longer recognised as a neutral legal category but a key element of urban power relations, shaping access to housing, capital and participation, while also defining who gets excluded (Blomley 2004). In this sense, property ownership is not just about possession but must be understood as a socio-economic power relation that regulates urban life.

Through the profound transformation of housing over the last few decades, this perspective becomes even more urgent. Processes of financialisation, globalisation and neoliberal restructuring have turned property into a global investment vehicle, disconnecting housing from its social function (e.g. Theurillat et al. 2015; Fernandez and Aalbers 2016; Wijburg et al. 2018). Although studies show that ownership structures significantly shape housing conditions, rents, tenant stability, and thus broader socio-economic inequalities (e.g. Fields and Uffer 2016; Hochstenbach and Arundel 2020; Casanova Enault et al. 2025), the spatial distribution of property ownership itself remains surprisingly underexplored (Van Sant et al. 2023; St-Hilaire et al. 2024).

The case study Zurich, the subject on this thesis, exemplifies these dynamics: despite its cooperative housing sector (Balmer and Gerber 2018) and multilayered regulatory framework (BWO 2024), the city faces persistent housing shortages, resulting in socio-economic inequality (e.g. Feller 2017; Kaufmann et al. 2023; Mieten-Marta 2023). Financialised actors increasingly shape its housing stock, while restructuring entire neighbourhoods (Theurillat et al. 2015; Scherr 2016; Rérat 2019). Existing scholarship on Zurich has examined the housing market (Corpataux et al. 2009, e.g.; Theurillat et al. 2015; Crevoisier et al. 2025), segregation dynamics (e.g. Heye and Leuthold 2008; Plüss et al. 2017; Rérat 2019) or displacement (Kaufmann et al. 2023; Meuth and Reutlinger 2023), while the systematic spatial analysis of property ownership itself has remained limited.

1.2 Research Objective

This master's thesis therefore addresses this gap by examining the urban property ownership structure and its influence on socio-economic inequality in Zurich across spatial scales between 2010 and 2024. To uncover how property ownership patterns are distributed, how they changed over time and how they intersect with socio-economic inequalities, my research approach combines descriptive spatial analysis and geostatistical analysis with the relational approach of property as an urban power relation from Nicholas Blomley (2004) for the theoretical contextualisation.

With the guiding question *Who owns Zurich, where, and why does it matter*, this thesis seeks to make property ownership visible as both a spatial structure and a social relation. The work wants to provide further empirical findings to critical urban property research on urban justice, exclusion, and politics of property. By connecting debates on relational property, financialisation and displacement with spatial

[1] German: «soziale Frage des 21. Jahrhunderts»

analysis of property ownership, it contributes to a field that is still emerging but increasingly recognised as central to understanding urban inequality.

However, the central aim of this master's thesis is not only to provide empirical findings, but also to trigger debate on property ownership and data availability in the urban context of Switzerland and Zurich in particular. In a city where 92% of household are tenants (Municipal Statistics Office 2025e), property owners ultimately hold decisive power over who can access housing, making the invisibility of ownership structures a pressing social and political problem.

1.3 Outline

The structure of this master's thesis moves from theoretical approach through contextualisation and empirical analysis towards broader implications for research and urban debates. Chapter 2 develops the theoretical foundation by presenting the dominant *Ownership Model* and its critical revision from Blomley (2004) that emphasise property as a relational power structure. Chapter 3 situates this perspective within the wider field of research on housing financialisation, ownership strategies and highlights their socio-economic consequences, while Chapter 4 turns to a more focused perspective on the case study Zurich and its contested housing market. Chapter 5 presents the methodological approach with the chosen spatial scales and the datasets used alongside the descriptive and geostatistical tools used. Chapter 6 then presents the empirical results, trying to answer the question *who owns Zurich?* by showing how ownership is spatially districted across Zurich, how patterns have shifted between 2010 and 2024, and how they correlate with socio-economic inequality. It reveals clear spatial patterns, temporal trajectories and indicate significant influence on socio-economic inequality for each ownership category. Chapter 7 discusses their findings in relation to the theoretical approach and comparative research. It highlights that Zurich reflects global dynamics of financialisation, but also retains specific features shaped by its cooperative sector and regulatory frameworks. Chapter 8 provides a critical reflection of the empirical analysis and addressing the broader question of *why does it matter?* Beyond presenting results, it situates them in debate on urban justice, transparency and democracy. It argues that ownership is an important structuring principle of urban life, with direct implications for who can access housing and under what conditions. The thesis concludes in Chapter 9 by synthesising the critical findings across empirical, methodological and theoretical dimensions. The conclusion also offers an outlook for future research, emphasising the need for more transparent ownership data, the value of temporal and comparative studies and the importance of linking ownership data to the understanding of relational power relations and urban governance.

2 Theoretical Approach

To examine ownership structures and their socio-economic implications, the master's thesis first introduces a theoretical framework. This chapter therefore outlines the theoretical framework for the subsequent empirical analysis, drawing on the work of legal geographer Nicholas Blomley (2020; 2019; 2004), who perceives property ownership as a relational, socially and territorially embedded structure of power. This approach was chosen to establish a foundation for analysing urban property structures. Its aim is to demonstrate that property cannot be reduced to a legally secured relation of possession, but must instead be recognised as a central structuring force of urban order. The chapter thus first introduces the dominant Western liberal conceptualisation of ownership and then draws on Blomley's relational approach by unpacking its misconceptions, thereby providing the framework for the subsequent analysis of urban property relations.

2.1 The Ownership Model

Throughout history, a wide range of theoretical approaches to property ownership relating to land, buildings or housing have been developed, discussed and refined (Angebauer and Wesche 2024). To understand the current distribution of property in Zurich, it is useful to situate it within the dominant legal model through which ownership in today's Western liberal societies is conceptualised. Researches often refer to it as the *Ownership Model* (Singer 2000) and I will therefore also use this term in the following. It considers private property as the central point of reference (Macpherson 1978, 1ff.) and is historically rooted above all in John Locke's theory of property (Singer 2000, 175ff.).

Locke's (1690, §27) starting point was the claim that "the labour of his body, and the work of his hands […] are properly his". By removing something from the state of nature through labour, the individual "hath mixed his labour with, and joined to it something that is his own". In this view, property arises when an individual appropriates and transforms a natural object through labour, independently of the consent or participation of others. Property thus becomes the material expression of personal freedom and autonomy, as well as the foundation of social order (Von Pechmann 2021, 59). This linkage provides the ideological foundation for the rise of capitalism, while also underpinning the dominant understanding of ownership in Western liberal societies: an understanding of private property as an exclusive, clearly demarcated and individually enforceable right (Blumenfeld 2023, 9; Von Pechmann 2021, 57ff.).

Legal foundation: The *Ownership Model* conceives of property not as an absolute dominion over a thing, but as a clearly defined 'bundle of rights' (Grey 1980, 74) – a set of entitlements – held by an individual. This shift in perspective to bundle can be traced back to Wesley Hohfeld (1913), who identified distinct legal relations: claim, liberty, power, and immunity. Building on this, the legal scholar Joseph William Singer (2000) characterises the prevailing view of property ownership as a legal arrangement in which rights are bundled and assigned to an individual. At its core, it emphasises exclusive control, autonomy and transferability, making property appear as a stable and neutral legal entitlement. Singer (2000, 12) outlines this model in detail:

> *"What is property? One might think this was a simple question. Property is about rights over things and the people who have those rights are called owners. What powers do owners have over the things they own? Owners are free to use the property*

> *as they wish. They have the right to exclude others from it or grant them access over it. They have the power to transfer title — to pass the powers of ownership to someone else. They are also immune from having the property taken away from them without their consent, or they must be adequately compensated if the property is taken by the state for public purposes."*

The *Ownership Model* concentrates the rights of a property bundled in a single legal person. Charles Donahue (1980, 32) describes this tendency as the concentration of power "in a single legal person […] the exclusive right to possess, privilege the use, and power to convey the thing". In this model, the owner is seen as self-centred, caring only for their own property and having little obligation to those who live outside his property boundaries. Property rights are designed to protect owners, strengthen their freedom and oblige non-owners not to interfere (Singer 2000, 13). Singer (2000, 12), however, emphasizes that these rights are not unrestricted. Restrictions are seen as exceptions, but they need to be legally justified. For example, owners may not use their property to harm others or property rights may also be restricted, for example to prevent discrimination. In this *Ownership Model*, the state's role is primary to enforce and protect the rights, ensuring stability and predictability in private property relations, rather than to restrict it (Blomley 2004, XIX).

Within the *Ownership Model*, only those claims that align with the formal definition of property rights are recognized and enforced by the state. Property law therefore operates as a filter, distinguishing between legitimate and illegitimate claims (Blomley 2004, 11). A claim to ownership is merely a "social relation that defines the property holder with respect to something of value […] against all others" (Bromley 1991, 2). Only when validated by the state does it become a property right "an enforceable claim to some use or benefit of something" (Macpherson 1978, 3).

Dichotomy of ownership: The *Ownership Model* not only defines property ownership in individual terms but also relies on a binary concept between private and state ownership. Within this model, private property is normative, while state ownership is seen as exceptional and subordinate (Blomley 2004, XIX). The state does not have the role to act as an autonomous owner but as a guardian of private rights, protecting rather than challenging them (Blomley 2004, 5ff.).

While this model views private property ownership as the dominant and default form of property ownership, other forms such as common ownership tend to be less visible within this framework and ignore them or regard them as not 'real property ownership' (Blomley 2004, 11; Rose 1994, 132). This binary structure mirrors a broader orientation within Western legal thoughts, that "assumes a view of rights, such as those relating to property, as belonging to atomized individuals located in a realm of private liberty, confronting a threatening collective (either the state or other contributions)" (Blomley 2004, 5).

Private ownership as a narrative practice and social implication: The *Ownership Model* does not merely define legal entitlements, it also conveys the normative assumptions about the role of private property in society (Blomley 2004, 7). As Carol Rose (1994, 11) argues, it not only defines *what property is*, but also communicates *what property ought to be*. Property discourse often takes the form of persuasive narratives, associating private ownership with "valued behaviours, including responsible citizenship, political participation and economic entrepreneurship" (Blomley 2004, 4). Within the logic of the *Ownership Model*, which is shaped by a Western liberal perspective, privatisation is framed as progress, enabling individual control and free disposal of property (Angebauer and Wesche 2024, 239).

This aligns with the market-oriented logic of property in liberal societies, where land is expected to be put to its 'highest and best use' (Blomley 2004, 84).

By presenting private property as an opportunity to prevent social conflicts through clear allocations and boundaries, it promotes the idea of 'undisturbed enjoyment' that helps reduce tensions over access and use (Blomley 2004, 4). In this framing, the 'land of private property' appears as a calm and secure land where property ownership is clearly defined and can be possessed without interference, while potential conflicts are relocated into the private domain and often rendered less visible (Blomley 2004, 23).

Property as bounded space: The *Ownership Model* is not only a legal, but also a spatial construct based on a specific spatial logic. Property is understood as clearly defined and fixed in space, with rights anchored to physical boundaries (Blomley 2004, 5). As Blomley (2004, 6) notes, this produces a strong alignment of property law with physical boundaries and demarcation. Singer (2000, 3) describes this logic:

> *"We know the extent and the limits of the property by a physical description of the space that is to be controlled by the owner. The boundary separates the owner from nonowners. The owner's property rights are absolute within the boundaries of the property and non-existent outside those boundaries."*

The spatial logic therefore rests on an absolute notion of space, representing property as discrete and clearly bounded (Harvey 2006, 122; Singer 2000, 30). In practice, this logic fuses law and spaces in ways that reinforces each other as they are 'spliced together'. Thus, property boundaries not only mark legal claims but also materialise them, producing a powerful ideological framework (Blomley 2014, 5).

The spatial turn, however, has since the 1980s marked both a theoretical and methodological shift in social sciences. Space has increasingly been theorised as a relational and socially constructed product (Soja 2011; Löw 2001; Lefebvre 1991), shaped by economic interests, symbolic meanings and systems of political regulation (Lefebvre 1991, 26). Doreen Massey (2005, 9), among others, therefore, argues for moving away from the conception of space as an absolute notion and towards an understanding of space as "open, relational and always under construction".

2.2 Relational Property Ownership

While the *Ownership Model* reduces property to the legal rights to which an individual is entitled, my thesis requires a broader framework which takes up this perspective shift to investigate the guiding research question *Who owns Zurich, where, and why does it matter?* Blomley's relational approach (2004) provides this by situating property ownership not only as a legal entitlement bounded to physical boundaries, but also as a social and political relation. Its effects reach far beyond the property boundaries, and it is exactly these dynamics that this thesis aims to uncover in Zurich.

Blomley (2020, 39) applies this shift by interrogating the apparent stability and self-evidence of ownership in the *Ownership Model*. Building on Gibson-Graham's (1996, XI) concept of capitalist hegemony, which shows how economic order is portrayed as without alternative, Blomley (2004, 14) transfers this reasoning to property and asks: "what if we were to similarly depict property 'at loose ends', and refuse its circular and settled self-representation?".

Drawing on critical property theorists such as Rose (1994), Singer (2000) and Underkuffler (2003), Blomley (2004, 14) argues that the stability and objectivity of property, as fixed through borders, law and representation, is not a neutral fact but a hegemonic discursive practice. In this sense, property is not a static legal object but a dynamic, socially effective power relation, spatially embedded in practices, meanings and state regulations. It operates across space by regulating access, enabling some use while restricting others (Blomley 2004, XVII; 2020, 38f.).

Blomley (2004, 22) captures this spatially constitutive perspective with the statement: "property is not a noun; it is a verb". From this standpoint, property does not exist independently, but must be performed, defended and legitimised (Blomley 2004, 2). He conceptualises it as a geographic technique of government, an instrument through which spatial order is generated and maintained by legal, discursive and material techniques (Blomley 2019, 233). In this sense, property is never settled but continuously contested, negotiated and transformed and therefore a product of social space production (Blomley 2004, 18ff.).

These considerations from the basis of Blomley's (2004) spatially grounded relational perspective, which seeks to analyse the complexity and contradictions of property, particularly in relation to urban space from a geographical standpoint. The following section summarises Blomley's critique of the dominant *Ownership Model* in three steps: first, disentangling the dichotomy between private and state ownership; second, outlining his conceptual framework of relational property rights; and third, showing how ownership is spatially produced, reproduced and territorially embedded. In this way, it aims to show how property can be conceptualised as a structure of power territorially embedded in space with profound socio-economic consequences.

2.2.1 Property ownership is not binary

A central concern of critical property theory is to question the continuing dualism of ownership. Singer (2000, 16) critiques this 'absolutist paradigm' in the liberal legal tradition, portraying it as a robust and self-contained entitlement of single owners. He argues that this conception "more often than not […] misdescribes the ideals that underlie the institution of private property, as well as the legal rules that define the basic structure". Blomley (2004, XIX) extends this critique, emphasising that the *Ownership Model* is sustained by an imagined certainty which renders property as closed and secure: "the imagined certainty of ownership […] promotes a view of property relations as settled". This image, however, produces a 'certain cultural myopia' towards alternative forms of property (Blomley 2004, 8). For Blomley (2004, 14) it is therefore essential to recognise that property is far more diverse than the *Ownership Model* suggests and extends well beyond prevailing assumptions.

In practice, many forms of property ownership diverge so markedly from the *Ownership Model* that it becomes a misleading conceptual starting point (Singer 2000, 116). Yet, as Blomley (2004, XV) notes, urban research still tends to neglect the extent to which urban space is structured by property regimes and must therefore always be seen as "land over which a legal regime of real property is operative". The enduring influence of the *Ownership Model* lies in the way it "shapes understandings of the possibilities of social life, the ethics of human relations, and the ordering of economic life" (2004, 2f.). Blomley (2004, 23) therefore asks: "what if property isn't clear and established, but open to overlapping and conflicting possibilities?". To make this complexity tangible, the following section highlights four key dimensions of overlap and ambiguity within property relations.

Private and state ownership: A first dimension lies in dismantling the supposed separation between private and state ownership. The *Ownership Model* represents private property as autonomous and clearly separated from the state (see Section 2.1), but Blomley (2004, 15) insists that "there is no clear distinction between private property and state property". Rather, private property is deeply embedded in legal, political, and social structures. The 'private' is never detached from state action, as it is pervasively shaped by laws, regulations and normative expectations. Private property therefore depends fundamentally on both state authority and social recognition (Blomley 2004, 13).

Common ownership: A second dimension in which the *Ownership Model* obscures complexity lies in the systematic invisibilisation and marginalisation of common ownership (Waldron 2020). As Blomley (2004, 8) observes, while state ownership is at least acknowledged within the model, albeit framed as inefficient or even threatening, common ownership is not recognised as a legitimate form at all, but is instead dismissed as obsolete, dysfunctional or simply non-existent.

This neglect is not the result of an actual disappearance of commons but rather of a hegemonic discourse which has established private ownership as the normative foundation of freedom, prosperity and responsibility (Blomley 2004, 14; Rose 1994, 17; Gibson-Graham 1996, 258). Scholars explicitly question the legitimacy and viability of commons, arguing that the ideal of common property is historically in decline, has rarely existed as a stable form, or is plagued by internal contradictions and ethical dysfunctions that would inevitably lead to collapse. From this perspective, common ownership is dismissed as unrealistic in the first place (Blomley 2004, 8). Blomley (2004, 8), by contrast, highlights scholars such as Elinor Ostrom, Daniel Bromley and Carol Rose, who demonstrate that "the dominant version is based on a misreading of the workings of common ownership and document the stubborn persistence of the commons, noting its remarkable resistance and flexibility". In the same context, he also refers to Gibson-Graham's (1996, 258) analysis of the 'singularity of capitalism', which frames alternative economic forms as necessarily marginal in the face of capitalism's exclusivity. From this perspective, the marginalisation of commons is not a product of inherent dysfunction, but of the predominance of capitalist economic forms which suppress and delegitimise alternative practices, even though they persist locally and remain viable (Blomley 2004, 8f.).

Diversity and fluidity of ownership: Beyond those three ownership types, within legal classification ownership takes many more different legal entities, which are more diverse and fluid (Blomley 2004, 16). Thus, the central question becomes not "what is property?" but rather "what is count as property?" (Blomley 2004, 15). Property is continuously contested, negotiated and transformed (Blomley 2004, 18ff.), thus it is not an inherent nature of property that defines property, but rather the social recognition of certain relations or claims as property (Blomley 2004, 15).

2.2.2 Relational property ownership rights

Blomley's relational approach challenges not only the binary perception of property owners, but also the way property rights are conventionally framed. The *Ownership Model*, as introduced in Section 2.1, understands property rights as anchored to physical boundaries (Blomley 2004, 5). Ownership is therefore often seen as a thing rather than a 'bundle of juridical relationships'. Buying land is not imagined as 'the alienation of exclusionary rights', but rather as the appropriation of a piece of land. If property rights are reduced to a thing, the relationship appears as one solely between the owner and the property object (Blomley 2019, 238; 2004, 6 & 55). As Edward Thomson observed: "Since property was a thing, it became possible to define offences as crimes against things, rather than as injuries to

men" (in Steinberg 1995, 13). It shows that if property rights are only considered in relation to a thing, it leads for example to property rights violations only being considered as crimes against things and not as violation against people. Blomley (2004, 6) raises concerns about the effects of this perception that suppresses the social and often unequal power relations inherent in property rights, such as those between landlords and their tenants.

Furthermore, for Blomley (2004, 12) the assumption of the *Ownership Model* that there are "consolidated, permanent rights vested in a single identifiable owner, who is identified by formal title, exercising absolute control, and distinguished from others by boundaries that protect him or her from others by granting the owner the power to exclude - are simply inaccurate". In his relational approach, property rights are not objective or neutral, but rather an expressions of social and political decisions: "when we organize and distribute property rights, we allocate and enforce social privileges and resources" (Blomley 2020, 38). For Blomley (2020, 38), it is therefore essential to recognize that if property is a social institution, property rights are also profoundly social.

The critique is not only that the *Ownership Model* misrepresents social practice, but also that it mischaracterises the legal structure itself (Singer 2000, 16). It "vastly over-simplifying both the kinds of property rights that exist and the rules governing the exercise"(Singer 2000, 5). Drawing on Macpherson (1978, 3), Blomley defines property rights as "[a]n enforceable claim to some use or benefit of something, whether it is a right to share in some common resource or an individual right to some particular things". Furthermore, he stresses that such property rights are not neutral or absolute entitlements 'against all others' but must instead be understood as conditional and deeply political (Blomley 2004, 11).

Complexity of property rights: The relational perspectives recognise that property rights always unfold their effect in the social space, affecting both owners and non-owners (Singer 2000, 16). Through interaction and relationships, property rights are as diverse as property itself and encompass a whole spectrum from land rights to contractual rights (Blomley 2019, 237). In contrast to the *Ownership Model's* attribution of this bundle of rights to one legal person, in practice these rights are divided among multiple actors, such as tenants, mortgage holders, neighbours or the state through tenancy law, neighbourhood law or easements towards the state. Those rights can be obvious, such as in the case of tenants, but can also be concealed by the appearance of secure entitlement, such as that of a mortgage holder (Blomley 2020, 39).

Property rights as power relations: Through the relational perspective of property law, all individuals are embedded in property relations, although the terms of these relations vary significantly according to one's legal status. Property law determines this status in relation to land, whether it is owner, tenant or unauthorised user (Blomley 2020, 38). Every parcel of land consist of multiple overlapping rights and duties (Blomley 2019, 235). The relational nature of property thus entails that all subjects are continually implicated in spatial property relations, as there is no moment in any day in which we stand beyond land law (Blomley 2004, 12). Property law is therefore not the neutral protection of an individual entitlement to a discrete object, but a framework that structures complex entitlements "of dependence, sovereignty, and privilege" (Blomley 2020, 38), from which no one can withdraw (Blomley 2020, 38; 2019, 235).

On this basis, Blomley (2019, 245) defines property as "a system of relationships between people, which derive from, enforce, and sustain a set of relationships of power". Property law thus produces and stabilises inequality and must be seen as a central element of broader systems of power (Blomley 2019,

237). Different individuals, organisations, and institutions hold distinct legal powers to gain and control access to land, so that "several people may have power to control various aspects of the same piece of property" (Singer 2000, 16). The interlocking relationsof law therefore reproduce the exercise of power over property both complex and multi-layered (Blomley 2020, 39).

Within this complex and multi-layered perspective, Blomley (2004, 153) shows that alternative property relation, such as tenants, are often excluded from formal legal recognition, whose claims to space cannot be protected by property rights. As Omar Razzaz (1993, 341) points out, "property relations which are endowed with the protection of legal rights and duties […] are only a subset of the universe of property relations". With Blomley's (2004, 15) statement "if property is theft, the larceny entails that of the diversity (and perhaps, the radical potential) of property", he goes one step further and questions the legitimacy of alternative forms of property by implying to Proudhon's (1840) 'property is theft'. It reveals a 'radical potential' for a diversity of property that has been suppressed by the powerful influence of the dominant *Ownership Model* (Blomley 2004, 15).

Blomley (2004, 154) thus insists that "our collective failure to acknowledge these property claims […] is significant", because it influences how urban dynamics and conflicts are understood (Blomley 2004, 154). In this light, the *Ownership Model* is not merely descriptive but performative. He refers to this as the staging of ownership, in which the model is presented as the natural solution to social problems, while alternative possibilities are denied or ignored in order to maintain this representation (Blomley 2004, XVI&22). Although this model promises to decentralise and distribute power, it paradoxically reinforces highly unequal and exclusionary structures (Blomley 2004, 3f.).

Property law as deeply political: Another core element of Blomley's (2004, 5) critique is that the *Ownership Model* portrays property not only as neutral but also as apolitical. From a relational perspective, however, property must be understood as "a set of relationships of power" (Blomley 2019, 245), where the "property law is the institutionalised expression of these relations" (Blomley 2020, 42). Property law is thus neither fixed, pre-social nor self-defining, but constantly redefined through political decisions that reshape the various definitions of property rights. As Singer (2000, 10) puts it, "the distribution of power is a political problem of the highest order".

Blomley (2004, 13) emphasizes that property does not exist by nature but is attributed and recognised by the state, which transforms mere claim into an enforceable right. Without state sanctioning, property would disappear as a legal category and would be meaningless (Blomley 2004, 23). Property exists only based on collective recognition and legal protection by the state. The state thus acts as the 'guarantor' of these rights (Blomley 2004, 13), while politics, acting through the state and its legal system, ultimately have the power to define, recognise and alter them (Blomley 2019, 234; 2004, XVII). Although multiple claims to property exist, only some are endowed with legal recognition (see Section 2.2.1). This underlines that ownership is never pre-political, but always a part of a broader order that ties directly to the questions of power and governance.

Private Property as a regime: The political perspective thus demonstrates that private property is an institutionalised regime. A regime, in this sense, describes the social construct of norms, laws, practices and power relations that stabilises and reproduces property rights (Singer 2000, 11; Blomley 2004, XVII). While individual property rights are protected through the regime, the social and cultural values of communities are often ignored (Blomley 2004, 11). Therefore, the selective recognition concentrates power and "places a heavy burden on those seeking to regulate or limit the property right" (Blomley

2004, 3f.). The regime furthermore not only protects private property ownership but also profit-making out of property (Angebauer and Wesche 2024, 239). As Blomley (2020, 41), notes there is "no extractive market without the law". Even the displacement of non-owners through evictions is regulated by law and supported by the state through police reinforcement. In this sense, property law stabilises not only individual rights, but also the economic order that underpins them. Rather than existing as a natural entitlement, property ownership is thus constituted through regimes that define whose claims are recognised, whose rights are enforceable and how conflicts are resolved (Blomley 2004, 96&103f.).

2.2.3 Territorialisation of property

The spatial logic of property rights exerts a pervasive influence from which we can never escape (Blomley 2020, 38). No matter where one moves in space, one engages with property. Property is always associated with space, but how the spatial structure manifests is not universally valid. In the relational approach, property needs to be seen as a central concern of human geography as it can take very different spatial forms depending on context, society, and legal structure (Blomley 2020, 41). For Blomley (2019, 233) it is therefore "necessary to analyse the particular manner in which property became territorialized". In geography, territoriality is understood as a strategy of actors to exercise power over a marked section of space and its resources, people and their activities (Strüver 2001).

Blomley (2019, 234) criticises the contemporary geography, which tends to link territory primarily with the state boundaries and he argues that the territorial dimension should instead focus attention on property, since there is "a vital, recursive, complex and consequential relationship between property and territory". Property only acquires spatial form through processes of territorialisation, which rely on an abstracted concept of space. As a result, complex social relations are perceived in a materialised form (as outlined in Section 2.1). Blomley's (2019, 236) intervention therefore calls for this process of materialisation to be challenged and to be seen as inseparable from its physical, legal and social infrastructures of property. As my analysis relies on mapping property ownership and its socio-economic consequences, I consider it necessary to take up this call and show how property itself is territorialised. The following section therefore outlines how Blomley (2019; 2020) approaches territorialising technologies such as surveying, planning regulations and boundary demarcation not only as technical processes, but also as social and political technologies that underpin the property structures observable in Zurich.

Surveying: The surveying of property is the result of a conscious political decision to spatially fix ownership (Blomley 2019, 235), since "enforcing power relations is often easier when they are territorialized" (Blomley 2020, 42). Blomley (2019, 236) therefore points out that the modern surveying was not merely a technical innovation, but a fundamental reterritorialisation of property itself. Previously, surveying was a social practice, enumerating use-rights and relationships within a community rather than measuring geometrically (Blomley 2019, 239).

With the rise of geometric surveying, property was redefined as discrete, measurable parcels, replacing non-cartographic methods that had emphasised collective rights (Blomley 2019, 236). Modern surveying pursued completeness where all land had to be mapped and allocated, leaving no empty spots (Blomley 2019, 241). This shift relocated property relations from locally embedded social networks "into wider circuits of calculation, appraisal and comparison", standardised through universal metrics such as the chains, tables of calculation and surveying instruments (Blomley 2019, 240). It shows that property boundaries are not natural but produced and guaranteed by the state, which provides legal

recognition and state protection (Blomley 2004, 13). Blomley (2004, XVII&9) further notes that when the state itself sets property boundaries through cadastre and legitimises them through policing, it not only acts as 'guarantor' of property. It also reproduces historical dispossession through surveying, for example by not mapping native claims to land.

Planning regulations: Planning regulations, such as zoning, constitute another political technology through which the state produces and regulates space (Blomley 2004, 77). They are far from neutral by enforcing normative assumptions about who and what belongs where. As Blomley (2004, 13) notes, zoning provides another example of why the boundary between private ownership and the state is less determined than presented in the *Ownership Model*. Zoning defines the permitted form of buildings, while maintenance obligations even allow the state to intervene directly on private land. In this sense, property may be seen as "the boundary to governmental power" (Nedelsky 1990, 248 in Blomley 2004, 13), but this boundary is drawn by the government itself. The state thus has the power to reinforce exclusionary practices by "encourages owners to enhance the values of their properties through acts of exclusion and policing of the urban poor" (Blomley 2004, 81).

Boundary demarcation: Property is inherently spatial, yet without mapping, its spatial structure is not always clearly. Land, as a unique and rivalrous resource, cannot simply be removed or protected from others (Blomley 2020, 41). Physical demarcation thus became necessary to visualise ownership and render legal claims tangible (Singer 2000, 30). This externalisation of boundaries takes geometric forms, enclosing territory as controlled zones. For owners, these arrangements serve not only use, but also surveillance and exclusion (Blomley 2019, 242). Blomley (2019, 243) illustrates this with the hedge as a central symbol. It communicates ownership and exclusion by showing where the boundaries of property are, while simultaneously acting as a physical barrier that enforces "an emergent form of class discipline". Moreover, property boundaries are not only physical but also metaphorical. In liberalism, they mark the separation between public and private, promoting security and autonomy, while in reality resting on social, political, and state processes (Blomley 2004, 5f.).

Blomley (2019, 235) takes up the approach from Larissa Katz (2008, 281) which highlights that ownership rests on the right to exclude, which indirectly creates the space in which the owner's liberty is preserved. Owners thus perform a 'gate-keeping function' that protects their boundaries and excludes the others. This frames ownership as a border-based system of exclusion, drawing on Macpherson's idea of 'possessive individualism', where property is a border-based form of territorial strategy (Blomley 2019, 241). This 'gate-keeping function' reflects a central political ideology of the *Ownership* Model, which assumes that "autonomy is to be achieved by radical separation, rather than communal connection" (Blomley 2019, 236). Boundaries such as property lines are in this sense strictly demarcated, reproducing a political ideology of separation (Blomley 2004, 5). Boundaries therefore make land appear exclusive: if one person has it, another does not (Blomley 2019, 239). Through the relational approach, it becomes clear that the spatialisation of property is never a neutral allocation of rights to things, but a political practice that organises power over people within these boundaries, while obscuring and legitimising the power relations emerged through the territorial order (Blomley 2020, 42).

Ideological simplification through territorialisation: The change in cadastral surveying and boundary demarcation was inseparable from the changing nature of property. As property was re-imagined spatially, its legal and economic meaning was simultaneously reconstituted, detaching it from community and preparing it for commodification (Blomley 2019, 236).

Firstly, the reduction of land to numbers and coordinates rendered property tangible as a territorial, measurable area. Negotiations over use rights were replaced by universal metrics. Tables, calculations and instruments lent an aura of scientific objectivity, integrating property into "circuits of comparison and economic calculation" (Blomley 2019, 240). This quantification simplified the management, valuation, and exploitation of land as a resource for capitalist accumulation (Blomley 2014, 2.12).

At the same time, property was stripped of its social and political dimensions. It ceased to be understood as a bundle of social relations and was reframed as a 'bounded parcel of space' (Blomley 2019, 339). Relationships between people were displaced by a technical relation between an owner and a thing, masking the underlying power structure. By presenting property as neutral and technical space, its "rules and spatial arrangements of private property appear pre-political, obvious, and unproblematic" (Blomley 2004, 6). Maps thus distort reality by creating an apparent order that obscures the conflicts and political decisions that constitute it, thereby depoliticising the territory while sustaining power relations (Blomley 2020, 42).

Finally, property no longer requires physical oversights or negotiation but could be visualised abstractly. Blomley (2004, 55) warns that such maps are immensely persuasive. Maps are not mirrors of reality, but 'representation of space' shaped by human imagination and legal purpose. As Lefebvre (1991, 38) notes, they are the "space of scientists, planners, urbanists, technocratic subdividers and social engineers, […] all of whom identify what is lived and what is perceived with what is conceived". The territorial perspective of Blomley's (2019, 240) relational ownership approach thus emphasises a core point of this master's thesis: maps are not passive representations but active tools to develop a particular conception of territory and shape reality.

3 State of Research

Addressing the question *Who owns Zurich, where, and why does it matter?* requires an urban context, where most residents are tenants, bringing housing and property into the same analytical frame. Property, as outlined in Chapter 0, is in this thesis not understood as a neutral legal entitlement but as a relational structure of power that determines access to and control over land. Housing, in turn, is the residential space in which these property relations manifest, shaping affordability, tenure security and displacement (e.g. Marcuse and Madden 2016; Hochstenbach and Arundel 2020; Meuth and Reutlinger 2023). To analyse current ownership structures and their socio-economic consequences in Zurich, it is therefore necessary to consider ownership not only of property but also of housing, as both are interdependent dimensions of urban development. In this section is the term *property* is primarily understood as property with residential buildings within it, which in urban contexts largely takes the form of rental housing, meaning that the users are primarily tenants rather than owners (Trautvetter and Knechtel 2023, 11).

Within this perspective, the state of research reviews studies related to this thesis in the context of urban ownership types and is structures in four interrelated sections. In Section 3.1, research on the commodification and financialisation of property is discussed, with a focus on how property has increasingly been transformed into an investment asset within global markets. Section 3.2 turns to studies on the diversification of ownership types and strategies, examining the heterogeneous actors who own property and their different logics as landlords. Section 3.3 addresses the research on the power asymmetries and their consequences for socio-economic inequality.

3.1 Urban Dynamics and Their Historical Trajectories

In the post-world war era, housing policy across many Western countries was characterised by strong state interventions in both regulation and provision of housing. Public Institutions promoted non-profit rental housing through municipal housing and supporting cooperatives, regulated markets and aimed to ensure affordability for broad segments of the population (Loganes 2014; Kockelkorn et al. 2024; Casanova Enault et al. 2025). From the 1980s onwards, however, these housing policies were increasingly dismantled under the influence of neoliberal restructuring. Market liberalisation facilitated the access to homeownership but also created new opportunities for corporate landlords, while simultaneously reducing the influence of the state (Knoepfel et al. 2012; Rolnik 2013; Aalbers 2017). This shift, driven by privatisation and deregulation, marked the commodification of housing, turning it from a basic need to an economic asset. As scholars show, through this shift is property no longer primarily used for self-occupation but increasingly serves as a source of income or a form of private pension provision. At the same time, they reveal how neoliberal restructuring contributed to a broader transformation in ownership and tenure structures through the profit-driven use of property (Doling and Ronald 2010; Aalbers 2017; Benites-Gambirazio and Bonneval 2024).

This shift toward profit-oriented housing provision has also been further deepened by processes of financialisation. Scholar have shown that neoliberal restructuring not only enabled economic exploitation but also repositioned rental housing as a new investment vehicle. Property is in this context no longer understood primarily as a consumer good but increasingly as a financial instrument (e.g. Theurillat et al. 2015; Fernandez and Aalbers 2016; Wijburg et al. 2018). A key driver for this was the deregulation of financial markets in the 1990s (Aalbers 2017), which enabled mortgages to be bundled

and sold as tradable securities, expanding their mortgage lending and linking property more directly to capital markets (Kalman-Lamb 2017; Hochstenbach and Arundel 2020). Through the integration into the financial market became property, and therefore also rental, became tradable on financial markets, with values increasingly determined by investment potential rather than use value (Aalbers 2017). Research on the financialisation largely employs the term real estate to denote property as a financial asset, which should capture the investment-oriented dimension of property central to financialisation debates (e.g. Fields 2017; Christophers 2022; Crevoisier et al. 2025).

This financial turn was further reinforced by the globalisation of capital flows into real estate, which embedded real estate more and more as a central asset within global finance (e.g. Fernandez and Aalbers 2016; Wetzstein 2017; Christophers 2022). At the latest after the 2008 financial crisis, institutional investors increasingly recognised the stability of returns from real estate, which contributed to rising demand, higher property values and rents. Historically low interest rates after the financial crisis further increased liquidity and enhanced the attractiveness of real estate assets (Fields and Uffer 2016; Fernandez and Aalbers 2016).

Recent research has shown that this financialisation and integration into global capital markets have reshaped the perception and use of property as real estate. Regarded as a comparatively stable and profitable asset class, unlike more volatile asset classes such as commodities, real estate provides predictable long-term cash flows through rents and mortgage payments (Aalbers 2017; Hasenmaile et al. 2024). Despite this perceived stability, real estate remains deeply embedded in global financial markets and is therefore "directly related and intertwined with economic and political shifts, crisis and shock waves" (Çelik 2024, 1). Within this logic, investment strategies in financialised housing markets concentrate primarily on metropolitan areas and standardised real estate products. Studies show that large cities offer favourable conditions for capital accumulation due to their high market liquidity, regulatory stability and institutional infrastructures (e.g. Theurillat et al. 2015; Romainville 2017; Heeg 2018; St-Hilaire et al. 2024). As a result, in urban environments real estate serves as 'safe deposit box' (Paccoud 2020, 104) for capital, attracting large-scale investors seeking stable and long-term returns (Beswick et al. 2016; Fernandez et al. 2016). This contributes in global cities to excess demand and "allow[s] speculation to be scaled up massively" (Wetzstein 2017, 3163). As Harvey (2012) emphasises, the value of real estate is often based not on current use or transactions but on expectations of future gains. This expectation-based valuation fuels a self-reinforcing cycle of investments, rising land prices and speculative bubbles, which are inherently unstable and can potentially burst (Fields 2017, 134; Van Loon and Aalbers 2017, 234; Wijburg et al. 2018, 1100).

The globalisation of real estate markets has also further transformed the nature of ownership itself. As property has become increasingly tradable across borders as a financial instrument, ownership is no longer necessarily linked to physical presence or local embeddedness (Aalbers 2017, 6). Scholars have shown that large-scale investors often decouple from place, holding extensive portfolios managed remotely without spatial connection to their assets (e.g. Theurillat et al. 2015; Beswick et al. 2016; Aalbers 2017; Wijburg 2021). Consequently, local property markets are increasingly shaped by global capital logics, while ownership and local responsibility become structurally disconnected. Resulting in a geography of ownership that is increasingly opaque and aligned with global financial logics (Fields 2017, 592).

3.2 Ownership Types and Their Strategies

In the context of this transformation, ownership types have become increasingly diverse, each pursuing different strategies in how property is used and exploited. Research highlights that owners are not neutral actors but each of them are embedded within specific economic, institutional and normative logics that shape their behaviour. Depending on the ownership type, the goal, time horizon and strategy for use and exploitation vary (e.g. Fields and Uffer 2016; Özogul and Tasan-Kok 2020; Christopf Trautvetter 2020). Against this backdrop, the following section presents four overarching ownership types as landlords, providing an analytical framework to review their differentiated roles within the housing system.

3.2.1 Private natural landlords

Within the category of **private natural landlords,** one or more natural persons own and rent residential property. Empirical studies have shown a striking heterogeneity in their motivations and strategies. Drawing on the research that analyses them (e.g. Soaita et al. 2017; Özogul and Tasan-Kok 2020; Christoph Trautvetter 2020), three broad categories can be distinguished: Micro landlords with fewer than five residential dwellings, small-scale landlords with more than five residential dwellings and large-scale landlords (limits set differently).

Micro landlords with fewer than five dwellings occupy an ambiguous position in housing markets. They are heterogeneous individual owners who typically hold one to a few rental properties (Özogul and Tasan-Kok 2020, 481; AEMP 2024, 15). They often make up the majority of unique landlords, even when they account for few dwellings (Schmid et al. 2020, 20; Coulton et al. 2024, 17). Research shows that they frequently live near their properties and are locally embedded, which can support place-based administration and neighbourhood stability (Preis 2024). Yet deeper research on them remains fragmented, as the category can range from inheritance-based ownership to speculative buy-to-let properties. This makes them difficult to define as a coherent group and limits understanding of their role in reproducing housing inequality (Özogul and Tasan-Kok 2020).

Recent scholarship has identified the expansion and diversification of the private rental sector through housing market transformation, from which **small-scale landlords** have emerged who own more than five dwelling for rental purposes. Empirical studies highlight that small-scale landlords are not professionalised actors but rather engage in landlordism as a part-time or side activity (Soaita et al. 2017; Ronald and Kadi 2018; Hochstenbach 2022). For example, Ronald and Kadi (2018, 792) found that 90% of British multi-property owners operate part-time with only a few dwellings and Soaita et al. (2017, 620) found that for most landlords the rental income represents less than a quarter of their total income. Nevertheless, in high-demand urban context, even a small portfolio may suffice to secure retirement, assuming they are not heavily indebted (Christoph Trautvetter 2020, 27). Furthermore, studies show how some small-scale landlords increasingly use the spatial connection to identify and manage risks through their geographical proximity to their property, which allows them to ‘keep an eye’ on (Hochstenbach 2024, 2240).

Building on the diversification of private landlordism, scholars have also identified the rise of **large-scale landlords**, so-called ‘super-landlords’ (Paccoud 2020, 101), who systematically accumulate larger property portfolios. Instead of landowners who own a few dwellings, a growing group now operate at larger scales and adopts professionalised, investment-driven strategies. While oriented towards risk management and self-sufficiency, their practices increasingly resemble those of institutional investors

(Hochstenbach 2022, 329ff.). They employ strategies such as buy-to-let models, micro-apartments, short-term rentals or business apartments (Kadi et al. 2020, 7).

Although research on private natural landowners in general remains limited, recent research provided insights into their social composition. First, studies highlight a generational shift: While younger adults face structural barriers to entering the housing market, older generations, who benefited from more favourable market conditions, are increasingly investing in property. Second, findings show that private landlords are disproportionately represented among society's wealthiest groups, reflecting broader patterns of housing-related inequalities (Ronald and Kadi 2018, 798; Hochstenbach 2022, 332f.). Fernandez, Hofmann & Aalbers (2016) especially analyse how transnational wealth elites have become prominent actors in global cities, channelling their assets through offshore structures and legal intermediaries using property as a 'safe deposit box'.

3.2.2 Private corporate landlords

Within the landscape of private corporate landlords, research identifies also a wide spectrum, ranging from locally embedded companies to highly financialised investors (e.g. Theurillat et al. 2015; Özogul and Tasan-Kok 2020; Trautvetter 2020). To capture this diversity, studies often distinguish three overarching groups with different strategic orientations.

Small to medium-sized landlords are typically locally embedded and pursue stability over maximising their profit. They may be rooted in other sectors, such as a brewery or supermarket securing long-term spatial stability (Trautvetter 2020, 24; SfA 2022), or smaller companies focusing on long-term values stability and moderate returns. Their strategies are characterised by direct management, sustainable maintenance and so-called 'don't wake the market' approaches, characterised by extensive management and minimal intervention to avoid tenant turnovers or attention (Trautvetter 2020, 24).

Market-oriented corporate landlords pursue moderate returns over medium investment horizons. Recent research has identified a range of different strategies employed by these corporate landlords. Strategies here include for instance are 'light-touch renovations' used to justify rent increases (Holm 2010) as legal frameworks are frequently instrumentalised to legitimise value extraction and rent increases even without substantial improvements (Fields 2017, 594; Wijburg et al. 2018, 1112). Other strategies are buy-to-let properties, where entire buildings are purchased for long-term rental with minimal maintenance to generate stable cash flows (Fields 2017; Ronald and Kadi 2018; Hochstenbach 2022), or portfolio-oriented logics, selling underperforming units and concentrating investment in profitable locations (Kadi et al. 2020). Kadi et al. (2020, 13) observe that even traditionally conservative landlords are shifting towards profit maximisation.

Landlords directly embedded in the financial market treat residential property primarily as a real estate asset, shaped by logics of asset valuation, capital circulation and return maximisation (Rolnik 2013; Theurillat et al. 2015; St-Hilaire et al. 2024). Theurillat et al. (2015, 1423) distinguish between short-term strategies based on acquisition, targeted restructuring and resale (often employed by private equity firms and real estate investment trusts), and long-term strategies focusing on stable returns generated through rental income, typically of pension funds, insurance companies and investment funds (e.g Fields and Uffer 2016; Aalbers 2017; Aveline-Dubach 2022).

Beyond the core of those two strategic groups, some special actors play a more diverse role in the financialisation of real estate. Banks and financial institutions, for example, are closely linked, either by

providing loans for real estate investments or by entering the market directly (Beswick et al. 2016, 329; Theurillat 2023, 6). Typically, they do not act as direct market participants but use subsidiary vehicles to invest (e.g. Romainville 2017; Trautvetter 2021; St-Hilaire et al. 2024). Property developers and construction companies also significantly shape urban landscapes by collaborating with investors to realise large-scale projects (Theurillat et al. 2015; Schmid et al. 2020).

Furthermore, within this group of financialised actors, global corporate landlords have emerged from the globalisation of financial markets and represent a powerful force in today's housing systems. Large transnational companies actively exploit global real estate markets by using a large pool of capital (Beswick et al. 2016) and invest across multiple countries worldwide (Romainville 2017; Wijburg 2021). As a result, their presence significantly shifts rental market dynamics, as smaller actors often lack the capacity to invest on such financial scale thus reshaping local rental markets (e.g. Fields and Uffer 2016; García-Lamarca 2021; Hochstenbach 2024).

For short-term perspectives, scholars identify strategies focused on temporary property ownership and asset appreciation through acquisition and resale (e.g. Fernandez and Aalbers 2016; Aalbers 2017; Wijburg et al. 2018). A common tactic, highlighted by Holm (2010), is the use of targeted renovations or conversion into condominiums that primarily serve to increase value before resale. Heeg (2018) further highlights that entire portfolios are increasingly traded through specialised investment funds managed by asset management firms. The transaction thus is no longer a single property, but multiple properties bundled in an asset, reinforcing the impersonal, abstract and financialised treatment of properties (e.g. Van Loon and Aalbers 2017, 224; Wijburg et al. 2018, 1115; Theurillat 2023, 6).

In contrast, long-term return strategies, as scholars examined, are typically associated with rental-focused actors seeking to maximise income over long periods. The buy-to-let strategy, already mentioned before is used by medium-sized market-oriented landlords, primarily aiming for value appreciation and stable returns with minimal involvement (Kadi et al. 2020; Hochstenbach 2022). Meuth & Reutlinger (2023) point out within this buy-to-let strategy that properties are at the end of their lifecycle sold or subjected to extensive modernisations. In many cases, those renovations are argued to be impossible while occupied, resulting in tenant eviction. Such interventions are usually followed by substantial rent increases, making it almost impossible for most previous tenants to return. Given persistently strong housing demand in global cities, risks of vacancy remain low, reinforcing the attractiveness of this strategy (Theurillat et al. 2015; Debrunner et al. 2020). Alongside large-scale renovations, another widespread strategy is minor renovations that serve as a basis for legal rent increases. While generating high returns at relatively low cost, they often impose significant rent burdens on tenants. Studies show that those landlords strategically exploit non-transparent information policies to prevent legal objections and thus try to prevent tenant resistance (Holm 2010; Çelik 2024).

Another set of strategies that scholars observes relates to standardisation and centralisation of property management, which results in reduced maintenance, minimal tenant services and cost-cutting of staff, ultimately leading to a decline of housing conditions (Holm 2010). Fields (2022) for example identifies the emergence of 'automated landlords' employing algorithmic tools, digital tenant screening and platform-based technologies to maximise efficiency and control, often at tenants' expense. At the same time, landlords increasingly standardise their portfolio by concentrating on specific market segments, such as senior residences that promise stable demand in ageing societies (Wijburg et al. 2018, 1109), or luxury housing with high expected returns (Schönig et al. 2017, 36).

3.2.3 Cooperative landlords

A rather small but growing body of scholarship examines private non-profit models as counter-model to both financialised and state-controlled housing (Balmer and Bernet 2015; Marcuse and Madden 2016; Kockelkorn et al. 2024) which "offer shelter not as commodity, but as social infrastructure" (Marcuse and Madden 2016, 78). They are defined as a legally distinct form of property ownership (Schipper and Vollmer 2020, 25) that combines elements of homeownership and rental housing, offering flexibility while ensuring long-term security typically associated with ownership. Furthermore, as legally registered cooperatives, they are bound to cooperative principles, enabling internal governance and resistance to speculative pressures (Holm 2022, 244; Ruhl 2024, 14f.).

Research highlights five principles that distinguish cooperatives from market provision (Holm et al. 2017): **First,** they operate on a non-profit basis, allocating surpluses to specific purposes in cooperative accounts or pay into revolving funds in order to provide needs-oriented and affordable housing on a long-term basis (Holm et al. 2017, 27; Ruhl 2024, 15; WBG 2025). **Second,** affordability is pursued through cost-rent principles rather than market value, which contributes to rent stability and long-term housing security, although rising land prices and construction costs increasingly challenge the model (Debrunner and Hartmann 2020, 4; Hübinger and Laug 2022, 28). **Third,** cooperatives promote social diversity by allocating housing to households with different ages, income and backgrounds, yet capital contributions and administrative procedures can lead to social selectivity and favour middle-class applicants (Balmer and Gerber 2018, 378; Schipper and Vollmer 2020, 25). **Fourth,** democratic governance allows members participation, which promotes solidarity compared to traditional rentals (Theurillat et al. 2015, 1427; Hübinger and Laug 2022, 26; WBG 2025), though its extent varies with cooperative size (Christopf Trautvetter 2020, 34). **Fifth,** they emphasise long-term residential stability, granting members lifelong residence rights and protecting against termination (Ruhl 2024, 15; 2025, WBG).

Financially, cooperatives combine member shares and external loans, often operating with high dept-to-equity ratios (Christoph Trautvetter 2020, 35). Research highlights that their investment strategies prioritise maintenance over values extraction, as renovation strategies focused on long-term preservation rather than short-term values extraction (Holm et al. 2017; Meuth and Reutlinger 2023). While private profit-oriented densification typically leads to displacement, Meuth & Reutlinger (2023, 46) points out how Housing Cooperatives demonstrate a socially responsible alternatives by renovating with tenants in place, offering temporary dwellings and phasing projects to minimise disruption. They also promote spatial sufficiency through smaller units and shared spaces (Schmid et al. 2020, 11; Hübinger and Laug 2022, 21; Debrunner and Hengstermann 2023, 91). Cooperatives further collaborate with municipalities, for example through land lease agreement or preferential land allocation. These partnerships help secure land below market prices, making affordable constructions viable despite rising land values (Debrunner and Hartmann 2020, 7). Increasingly, they also form alliances with public or private landlords to pool resources for realising housing projects (Hübinger and Laug 2022, 24).

3.2.4 Public landlords

Public landlords include state-affiliated entities that hold and manage housing stocks under different levels of public oversight and market exposure. They range from municipal and state-level bodies that directly own and manage housing to publicly mandated foundations or semi-public companies (City of Zurich 2024). The latter are majority-owned by public authorities, but legally structured as corporate

entities, often emerged through outsourcing of formerly integrated public institutions. They operate under commercial law but remain politically steered through mandates, supervisory boards and regulations (Dixon 2009, 547; Trautvetter 2020, 31).

Research highlights that over the recent decades, their role in providing affordable housing has declined through privatisation and neoliberal reforms (Balmer and Bernet 2015, 187; Wijburg 2021, 1481). At the same time, public and semi-public institutions have become increasingly influenced by financial logics, operating under conditions of fiscal austerity and performance-based governance that align their practices more closely with those of private actors (Aalbers 2017, 7; Debrunner and Hartmann 2020, 5).

Despite these constrain, public landlords remain crucial for securing non-profit housing. Alongside cooperatives, they are described as key instruments for detaching housing from profit-driven logics (Theurillat et al. 2015, 1427; Balmer and Gerber 2018, 366). Debrunner et al. (2024, 3) further introduced the concept of 'decommodifying capacity' to capture how regulations can shield tenants by improving both access and tenure security. It thereby preserves non-profit housing within an increasingly financialised market. Bylaws and statuses promote non-market provision (Balmer and Gerber 2018, 366), while rent regulation and cost-rent principles decouple rents from market returns and link them to production and maintenance costs, thereby strengthening affordability as a social objective (Balmer and Bernet 2015, 187; Hötzli and Nuissl 2022, 38).

Research also draws attention to access and participation of public housing: Mechanisms such as occupancy limits or income-based eligibility aim to ensure targeted support and protection, but risk narrowing reach and undermining socio-economic diversity (Balmer and Gerber 2018, 363). As Theurillat et al. (2015, 1427) argue, maintaining social heterogeneity requires policies that extend beyond social housing provision as broader public housing can significantly contribute to decommodification and urban diversity (Balmer and Bernet 2015, 187). Furthermore, participation, such as tenants' involvement or self-organised housing initiatives, although resistance from providers and limited competences remain persistent challenges (Schönig and Vollmer 2020, 177ff.).

3.3 Power Relations and Socio-Economic Effects

Following the discussion of different landlords and their strategies, recent research has increasingly examined the structural conditions that enable and legitimise these practices. Building on relational perspectives on property as a power structure (see Section 2.2), scholars emphasise that strategies of landlords are not simply the outcome of individual decisions but are embedded in broader structures of power relations that govern urban development and produce hierarchies. Studies show that power asymmetries have further intensified through neoliberal restructuring and the financialisation of housing (e.g. Rolnik 2013; Aalbers 2016; Romainville 2017; Wijburg et al. 2018). Displacement is thus analysed not merely as a market by-product but as a structural consequence of contemporary capitalist urbanisation (e.g. Fields and Uffer 2016; Marcuse and Madden 2016; Wetzstein 2017).

3.3.1 Power asymmetries in property and housing relations

Research on the power asymmetries in property and housing relations highlights primarily four interrelated power asymmetries that unfold across economic, political, legal and discursive dimensions:

Economic power asymmetries are widely discussed and derive from the structural imbalance between owners and tenants. They manifest in the power of owners to decide key aspects of housing conditions such as rent levels, renovations or demolitions, often without meaningful tenant participation (e.g. Holm 2010; Wijburg et al. 2018; Kadi et al. 2022). Scholars highlight how ownership functions here as a central medium of capital accumulation by employing strategies of capital valorisation that increases profits at the expense of tenants while further strengthening their economic power (e.g. Van Loon and Aalbers 2017; Soaita et al. 2017; Wijburg et al. 2018).

Political power asymmetries, often overshadowed by the focus on economic power, have gained attention as studies emphasise that the housing crisis cannot be reduced to market demand alone (e.g. Holm et al. 2018; Aalbers et al. 2021; Debrunner and Kaufmann 2023). Schönig et al. (2017, 16) remark that the housing crisis must be understood as the result of austerity-driven welfare rollbacks and shifting housing policy. Scholars furthermore highlight how economically powerful actors exert influence through lobbying, close long-standing ties with political elites and initiation of privatisation reforms. While at the same time, broader tenants populations, especially those without voting rights, lack structural representation and political participation (Gehriger 2025).

Legal power asymmetries, closely linked to political power asymmetries, are actively produced and upheld by the state. While tendency law is often presented as a balancing instrument, research findings show that it reproduces structural inequality as property rights are legally reinforced through tendency and eviction laws that systematically favour landlords (e.g. Katz 2008; Blomley 2020; Leffers and Wekerle 2020). Mechanisms, such as rent increases, eviction procedures and selective allocation, provide landlords with authority over access to housing while tenants remain structurally vulnerable. Law thus does not act as a neutral judge, but actively legitimises and facilitates dispossession (Debrunner and Hengstermann 2023; Meuth and Reutlinger 2023).

Discursive power asymmetries concern the ways of how public perception of housing and property is shaped. Research highlights how dominant economic actors use their power to reframe displacement in real estate founded campaigns, market-oriented think tanks and media outlets as a ‘natural’ market outcome, while weakening processes of political subjunctivisation through discursive framing (Gehriger 2025, 118; Marcuse and Madden 2016, 85ff.). At the same time, a growing body of critical media and cultural productions articulate tenants’ perspectives, highlighting resistance strategies such as protests, legal appeals, media engagement and grassroots initiatives (Vollmer 2019; 2022, SfA; Meuth and Reutlinger 2023).

3.3.2 Socio-economic inequalities through urban displacement

The patterns of property ownership therefore have direct implications for the socio-economic structure. With the growing financialisation of housing, profitability has increasingly outweighed the social function of housing (Wetzstein 2017; Kadi et al. 2022). Financialised strategies as shown in section Ownership Types and Their Strategies have contributed to the affordability crisis, intensified inequality and driven processes of displacement and segregation (e.g. Fields and Uffer 2016; Wetzstein 2017; Wijburg et al. 2018). Gentrification, which exemplifies these dynamics, can be defined as the transformation of urban areas for middle- and upper-class groups, driven by the reinvestment of capital into renovations, often accompanied by displacement (Rérat et al. 2010; Theurillat et al. 2015).

Displacement, understood as the involuntary removal of individuals or communities from their homes and driven by a broader political, economic or spatial restructuring, is typically associated with urban (re)development. However, in the context of capitalist urbanisation, displacement also manifests in specific forms and is shaped by intersecting structures of inequality (Pull 2023, 110f.). Displacement involves not only physical relocation, but a multidimensional process with varying degrees of visibility and impact. Drawing on Marcuse's (1986) typology which was updated by Holm (2013), four types of displacement can be distinguished: direct displacement, such as forced evictions or demolitions; symbolic displacement, where alienation arises when neighbourhoods undergo socio-economic and demographic transformation; exclusionary displacement, when rising rents or access conditions prevent certain groups from moving (back) into a neighbourhood and displacement from the standard of living, where households remain in place but can no longer afford adequate living conditions (Gehriger 2025, 8).

These different forms of displacement, while analytically distinct, are rarely experienced in isolation. They contribute to growing patterns of residential segregation across spatial scales (Tammaru et al. 2016; Hochstenbach and Arundel 2020; Musil and Kaucic 2024). Residential segregation is here seen "as the formation of distinct patterns of over- and underrepresentation of specific social groups across residential space" (Musil and Kaucic 2024, 2). Recent scholarship in residential segregation has increasingly questioned the assumption of classical socio-ecological model. While earlier approaches typically understood segregation as the outcome of free-market dynamics within homogeneous neighbourhoods, more recent studies argue that this perspective overlooks the complexity of the housing market (Musil and Kaucic 2024).

Housing is not allocated within a unified market, but across segmented submarkets: rental versus owner-occupied, social versus private or public versus private. Each is shaped by distinct property ownership structures and underlying power relations. While a wide range of research focuses on income-based disparities, critical scholarship emphasises the intersectional perspective of housing inequality. Researchers such as Madden & Marcuse (2016) analyse how the housing system is structurally embedded within broader hierarchies of class, gender, race and other social variables. They highlight how different forms of residential oppression thus do not affect all groups equally. Rather than mitigating inequality, the housing system reproduces, reinforces and naturalises it. The inequality in residential oppression has also been explored in displacement research, which shows that both occurrence and severity are not uniformly distributed but influenced by social status, race or legal position (e.g. August and Walks 2018; Fields and Raymond 2021; Kaufmann et al. 2023).

These insights further support the view that ownership structures are not neutral but play a decisive role in producing and maintaining housing inequality. Especially with the growing presence of financialised landlords, who treat property primarily as an asset (see Section 3.2), these structures further reinforce segregation across social-economic and spatial scales (e.g. Tammaru et al. 2016; Hochstenbach and Arundel 2020; Musil and Kaucic 2024). In this light, researchers increasingly refer to a 'new housing question' (Schönig and Vollmer 2020), marking a shift where the issue is not only a shortage of affordable housing but also a polarisation of socio-economic inequalities of housing availability (e.g. Schönig et al. 2017; Hochstenbach and Arundel 2020; Kaufmann et al. 2023).

4 Zurich as Case Study

Having grown up in Zurich myself, I have witnessed first-hand how the housing crisis impacts everyday life in media, in political debates and in general society. Intense disputes revolve around the drivers of the crisis, who benefits from rising land values and who is affected by displacement processes. Campaigns such as *#ZürichAufdecken* (Reflekt 2021), initiatives like "Protecting housing – regulating Airbnb and business apartements"[2] (City Council of Zurich 2025) and housing demonstrations proclaiming that "housing must not be a commodity" (Wohndemo Collective 2025) illustrate that property is not merely a legal category but a politically and socially charged field of contestation.

Despite this visibility, the spatial distribution and structure of ownership in Zurich have rarely been studied systematically. Existing research on Zurich has primarily focused on housing markets (e.g. Theurillat et al. 2015; Scherr 2016; Crevoisier et al. 2025), socio-economic segregation (e.g. Heye and Leuthold 2008; Plüss et al. 2017; Rérat 2019) or displacement factors (Tellenbach and Klemens 2014; Kaufmann et al. 2023; Meuth and Reutlinger 2023). By contrast, the analysis of contemporary property ownership and its spatial development remains a blind spot in urban research, even though Zurich presents itself as a highly suitable case for several apects. In the following section two aspects will be discussed: first, its territorial real estate consequences due to its development into an 'international financial centre' (Crevoisier et al. 2025, 6) and secondly, the particular challenges posed by Switzerland's political diversity.

4.1 Zurich's Economic Transformation

Over the past decades, Switzerland exhibited, despite its small size, a remarkable evolution of economic activities (Schröter 2009; Crevoisier et al. 2025, 5) embedded in a federal institutional system shaped by strong decentralisation (Plüss et al. 2017, 19; Debrunner and Hengstermann 2023, 87). It has undergone a profound transformation from a "cartelised and regionally based system of banking finance to a national/international financial system in which the financial markets are playing an increasingly influential role" (Theurillat et al. 2008, 317). As a result, regional banking channels have steadily declined in importance, while decision-making power and capital circulation have become increasingly concentrated in financial centres such as Zurich (Corpataux et al. 2009).

Alongside a very high concentration of financial-sector jobs (Crevoisier et al. 2025, 7), Zurich is characterised by strong infrastructure, economic attractiveness, and high levels of transparency and liquidity, positioning it as a global hub for capital flows (Theurillat et al. 2015, 1424). Today, Zurich is considered one of the world's major financial centres, with the financial sector accounting for nearly one third of the city's economic potential (Canton of Zurich 2025b). The city's historical development illustrates this transformation: while industrialisation shaped Zurich in the nineteenth and early twentieth century (Kurz 2022), deindustrialisation from the 1970s onwards accelerated its reorientation towards financial services (Schröter 2009; Willi 2021).

Demographic change mirrored these economic transformations. From 1900 until the early 1960s, Zurich's population grew steadily, peaking at around 440'000 inhabitants in 1962. Therefore, similar to other European cities, the city experienced a pronounced wave of suburbanisation, with the population falling to roughly 356'000 inhabitants by the 1990s (Näf 2025). This decline was driven primarily by

[2] German: "Wohnraum schützen – Airbnb und Business Apartements regulieren"

younger middle-class households relocating to the agglomeration, while socially marginalised groups became increasingly concentrated within the city. The outflow coincided with a backlog of renovations: around 75% of Zurich's buildings were constructed before 1970, and nearly half of them had never undergone major modernisation (Meuth and Reutlinger 2023, 44). This resulted in a 'filtering-down' process within the housing stock (Heye 2008, 5).

Since the 1990s, Zurich has undergone a phase of reurbanisation, which reversed earlier population decline (Heye and Leuthold 2008; Näf 2025). The economic transformation from an industrial city to a financial centre (Schröter 2009; Willi 2021) created renewed interest in Zurich as a residential location for diverse social groups (Heye and Leuthold 2008; Plüss et al. 2017). Immigration was particularly pronounced among international labour migrants, young adults and non-family households, while families and elderly residents continued to suburbanise (move out of the city). This change since the 1990s has not only brought a new wave of residents to the city, but at the same time, at the other side, a further increase in precarious living conditions which has led to a widening of the socio-economic polarisation (Heye 2008; Rérat 2019). As Rérat (2019, 371) describes it in his research on the reurbanisation of Swiss cities: "reurbanisation can more broadly be interpreted as a return of cities in terms of residential aspirations, political agenda and real estate activities".

By 2023, Zurich had surpassed its 1962 peak, reaching 447'000 inhabitants (Näf 2025). Given the city's finite territorial extent, horizontal expansion is severely constrained, leading to a reliance on vertical densification. Contemporary buildings now commonly reach more than twice the height of those constructed a century earlier (Rey 2018). The combination of limited land availability and persistently high demand for housing stock has intensified the structural housing shortage. Projections suggest that by 2026, Switzerland will face a shortage of approximately 50'000 dwellings, further aggravating the challenges of urban housing provision (Wicki et al. 2024, 7 & 24).

4.1.1 Change in ownership structure

The persistent shortage of housing in Zurich has already been evident for many years in the form of constant excess demand, transforming dwellings into a secure asset for capital investment (Balmer and Gerber 2018, 368; Debrunner and Kaufmann 2023, 9). As Switzerland's main financial centre together with Geneva, Zurich is in a prime position to channel capital, producing a circular and self-referential system in which financial markets and real estate are closely intertwined, reflected in the 'real built urban environment' (Theurillat et al. 2015, 1425). Especially after the 2008 financial crisis, the profit potential of real estate gained growing recognition (see Section 3.1). With average returns of 6.24% generated by Swiss real estate between 2009 and 2021 (Mazeau et al. 2025), real estate became to be recognised as a 'safe deposit box' (Paccoud 2020, 104) offering stable and long-term returns (Schmid et al. 2020, 22).

As highlighted in Section 3.1, the globalisation of real estate markets has also transformed the nature of ownership itself. The Federal Act on the Acquisition of Immovable Property in Switzerland by Foreign Non-Residents (Fedlex 2023), commonly known as *Lex Koller*, makes the acquisition of real estate by foreign individuals and legal entities subject to approval. Initially intended "to prevent the excessive ownership of Swiss territory by foreign nationals" (Fedlex 2023, Art.1), the act was conceived as a legal barrier to the globalisation of the Swiss real estate market (Scherr 2016, 52).

The 1997 reform of *Lex Koller*, however, fundamentally altered this housing regime. While the purchase of residential property by foreign individuals remained tightly controlled, the reform opened the Swiss

market to international investors through listed real estate companies, provided the residential holdings did not exceed 20% of their portfolio (Theurillat et al. 2015, 1430; Scherr 2016, 52). This legal change effectively integrated Swiss property into the global financial circuit by enabling international investors to access the housing market indirectly via shares traded on global stock markets.

The implications of this shift become visible when examining Switzerland's four largest publicly listed real estate companies, each with a market value exceeding USD 2 billion (MarketScreener 2025). Under Article 120 of the *Financial Market Infrastructure Act* (Fedlex 2016, 5377), all shareholdings above 3% must be disclosed, providing partial transparency over shareholding structures. While smaller holdings remain opaque, the disclosed data nonetheless reveal key patterns. Across all four publicly listed real estate companies, the public limited company *UBS Fund Management* holds stakes ranging between 13% and 15%. The largest foreign investor is *BlackRock Inc.*, the world's leading asset manager (WAV 2025), with significant positions in each of the four publicly listed real estate companies: *Swiss Prime Site* (10%), *PSP Swiss Property* (6%), *Mobimo Holding* (5%) and *Allreal Holding* (5%) (Allreal Holding AG 2025, 87; Mobimo Holding AG 2025a; PSP Swiss Property 2025; Swiss Prime Site AG 2025). Research from *Spotlight on Black Rock* (WAV 2025) furthermore found that in 2020 *BlackRock Inc.* held a 6% aggregated stake in Swiss publicly listed companies within the real estate sector, underscoring its substantial influence in the sector. It exemplifies how large global investors such as *BlackRock Inc.* structure their activities at a transnational scale (Theurillat et al. 2015; Beswick et al. 2016), exploiting the globalisation of real estate by allocating capital to property markets across multiple jurisdictions (Wijburg 2021; Christophers 2022).

Recent findings from the project *The changing role of real estate in Swiss urban development* (Crevoisier et al. 2025) have classified Zurich and Geneva as international financial centres within their conceptual framework of *Territorial Real Estate and Economic Systems (TREES).* According to this research "it is mainly in these places where financialised real estate is to be found, almost exclusively […] owned by institutional investors, who are very active in the cities, having concentrated their investments there between 2011 and 2019" (Crevoisier et al. 2025, 7).

In Zurich, the beginning of the impact of globalised financialisation of housing is marked by the global financial crisis in 2008, which as seen in the state of research (see Section 3.1) shifted the investment interest towards housing (Crevoisier et al. 2025, 3). This shift is particularly visible in Zurich in the form of rapidly rising land prices since 2008. While the estimated median price per square metre increased annually by CHF 52 between 1975 and 1990, and by CHF +33 between 1990 and 2010, the past fourteen years have witnessed a dramatic acceleration: land values tripled from CHF 1'897 in 1990 to approximately CHF 5'795 in 2024, corresponding to an annual increase of CHF +278 per square metre (Rey 2022; Canton of Zurich 2025a).

A key outcome of this escalation is the diminishing capacity of natural persons to acquire property. In Switzerland, substantial equity capital is required at the point of purchase, rendering access to ownership increasingly unattainable for households outside the highest income brackets (Wicki et al. 2024, 6; Gehriger 2025, 120). This shift is mirrored in Zurich's housing stock (see Figure 1), where the ownership

structure has shown a marked turning point since 2010. Between 1990 and 2010, the relative share of all major ownership categories, particularly Natural Persons (here including Condominiums), remained largely stable. Since 2010, however, the share of Natural Persons has declined steadily, while Private Companies have expanded significantly. Excluding Condominiums from the calculation, Private Companies overtook Natural Persons in 2023, emerging as the dominant ownership category in Zurich's housing market (Municipal Statistics Office 2025j).

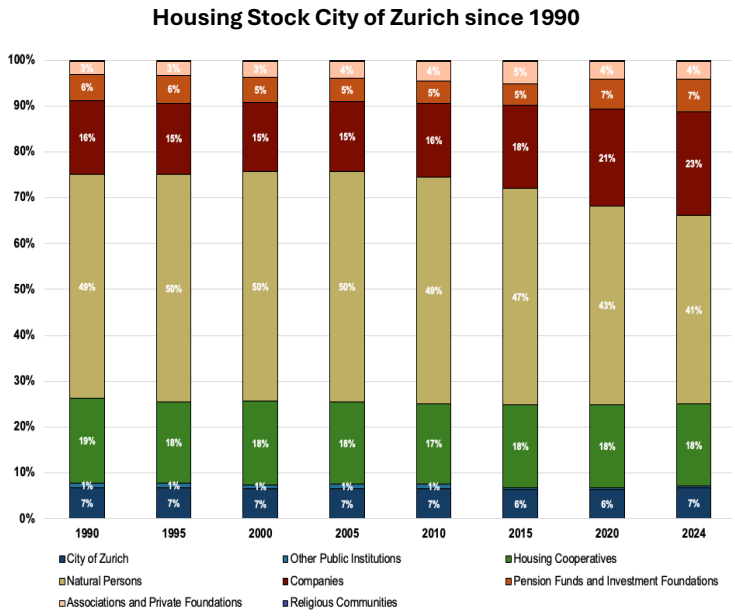


Figure 1: Change in share of Housing Stock since 1990 per ownership category across city of Zurich.

4.1.2 Renting instead of owning

The rental share in Zurich is exceptionally high, with 92% of dwellings occupied by tenants (Municipal Statistics Office 2025e). This makes Zurich one of the cities with the highest tenants' rate in Europe (Trautvetter and Knechtel 2023, 11). In addition to declining affordability due to rising land prices in Zurich (see Section 4.1.1), scholars have attempted to explain this phenomenon for Switzerland in general with factors such as financial stability, that property does not need to be used as protection against inflation and the high quality of rental housing (Theurillat et al. 2015, 1418; Wicki et al. 2024, 6). Yet, when considered through the lens of power relations, tenants remain in a structurally precarious condition (Meuth and Reutlinger 2023; Debrunner et al. 2024).

Figure 2: Effective rent index, expected rent index based on the relevant cost factors in accordance with applicable tenancy law between November 2005 and November 2021 and national consumer price index since 1990 (BASS 2022, 9).

Within this asymmetry, rents constitute a central field of contention, characterised by a striking paradox. By law, existing rents are formally linked to the reference mortgage rate (Schärrer et al. 2022, 13). However, while the reference mortgage rate has been in continuous decline since the 1990s, the rent index has risen steadily, diverging markedly from the expected trajectory of the legally intended mechanism (see Figure 2; Schärrer et al. 2022, 9). Unlike Austria or Germany, Switzerland lacks rent caps or stable reference-rent regulation, enabling landlords to exploit legal loopholes, for example, by

raising rents following renovation or by imposing increases without prior notification (Debrunner et al. 2024, 13). In principle, tenants should have benefitted from considerable reductions in housing costs, yet in practice the opposite has occurred, showing that the declining reference mortgage rate has rarely translated into effective relief.

The asymmetries of tenancy law become even more pronounced in the case of new contracts. Swiss law provides no effective protection against contract termination: landlords may terminate leases with three months' notice without justification, and are obliged to provide reasons only if a tenant formally contests the decision. Moreover, there is no requirement that new rents be aligned with neither the previous rent nor the local average (Debrunner et al. 2024, 11ff.). Evidence from Zurich's last population survey in 2023 shows that more than 50% of respondents had their last rental contract terminated due to renovation or demolition (City of Zurich 2023, 50). This dynamic has been documented in detail by Meuth & Reutlinger (2023, 44), who demonstrate how profit-oriented investors frequently employ terminations not only for densification projects but also as a strategy of deliberate tenant removal and rent increase. Similarly, research by the ZHAW (Suppa et al. 2019) confirms that renovations systematically generate rent increases. As Debrunner et al. (2024, 17) argue, this imbalance is reinforced by the limited legal means available for tenants to defend themselves against such practices.

Taken together, these mechanisms show that Zurich's housing crisis is shaped less by absolute scarcity than by the unequal distribution of housing and the steady rise of rents within the legal framework that reinforces power asymmetries (see Section 3.3 and 4.2). The research from Debrunner et al. (2024, 12) also reveals that tenants in Switzerland enjoy weaker protection than in neighbouring countries, Austria and Germany both enforce *Federal Acts of Equal Treatment* that prohibit discrimination in rental markets. In Switzerland, by contrast, landlords retain broad discretion in tenant selection. Although discrimination is formally a criminal offence, tenancy law provides no enforceable right to rent, effectively "Swiss landlords […] are free to choose their tenants" (Debrunner et al. 2024, 12).

Empirical studies further confirm that the interconnection between eviction, redevelopment and rising rents systematically produces socio-economic inequality. Kaufmann et al. (2023, 2) show that new households after displacement earn on average CHF 3'623 more per year than those they replaced, underscoring the socio-economic selectivity of redevelopment. This reduces the supply of affordable housing, replacing lower-income tenants with wealthier residents (Meuth and Reutlinger 2023, 46; Debrunner et al. 2024, 5). Furthermore, Kaufmann et al. (2023, 8) found out that in Zurich vulnerabilities are not evenly distributed: single parents, tenants with nationalities not EU Europe and tenants with nationalities Latin America, Asia and Africa are disproportionately at risk of direct displacement. While Kaufmann et al. (2023) did not find increased direct displacement risks for older residents, municipal data indicate that residents over 60 years old face overlapping exclusionary pressures. The research from Tellenbach and Klemens (2014), however, documents persistently negative housing balances among older residents, driven by the lack of age-appropriate housing and increasing rents. Those who remain are frequently subject to forms of symbolic displacement, as neighbourhoods undergo social and cultural transformation, producing experiences of alienation among long-standing residents.

4.2 Challenges of Switzerland's Political Diversity

From this perspective of relational property ownership (see Section 2.2), property is not limited to a simple private-state dichotomy but forms a plural field in which different ownership types are unevenly recognised and regulated. In Switzerland, this plurality is especially pronounced because the role of the

state is fragmented across multiple levels of governance. As seen in the previous Section 4.1.1, Geneva and Zurich are the cities most affected by the growing presence of large-scale investors in the housing market (Scherr 2016; Crevoisier et al. 2025). The limited municipal response is less a matter of inaction than of the institutional architecture of Swiss federalism. Housing law, planning and policy are not governed by a coherent national framework. Instead, governance is fragmented across the federal state, the cantons and the municipalities (Plüss et al. 2017, 19f.). Within this configuration, municipalities can intervene in the housing sector through planning and regulatory instruments (e.g. allocation of land-use shares, construction obligations, subsidies for non-profit housing) (BWO 2024). Cantons, however, retain most legislative power, while tenancy law, identified by Debrunner et al. (2024) as a central driver of power asymmetries in the Swiss housing system, is an exclusive federal competence (BWO 2024). The result is a governance framework in which multiple political levels shape housing outcomes, depending on institutional mandates and shifting majorities.

This multi-scalar distribution explains both the uneven character of housing policy in Switzerland and the persistent gap between political intentions and outcomes. The following section briefly touches on the various levels to illustrate how, depending on political majorities, legislation, planning and housing policy, they serve different interests or fail to change despite attempts to do so.

Federal legislative level: At the national level, a growing body of research has demonstrated that the Swiss National Council (federal legislative) is marked by structural power asymmetries that systematically privilege property-owner interests at the expense of the broader public interest (Banz and Plana 2024; Debrunner 2024; Gehriger 2025). A striking indicator is that 72% of the National Council members own property, underlining the asymmetrical legal and political relationship between owners and tenants (Gehriger 2025, 121). This imbalance is further reinforced by the close entanglement to the real estate sector as many members act as landlords themselves or are affiliated with the *homeowners' association (Hauseigentümerverband HEV)* and other industry interest groups (Debrunner 2024, 143). Banz and Plana (2024) published a comprehensive study of the *Swiss Tenants' Association (Mieterinnen- & Mieterverband MV)*, drawing in particular on Lobbywatch data. Their analysis revealed that 61% of National Council members (150 out of 246) maintain interest-group connections, yet only 6% of are linked to social or non-profit housing organisation and 7% to the Tenants' Association. The study also shows that lobbying also occurs through financial contributions and campaign funding, thereby further entrenching the power asymmetry. These political constellations manifest in policy outcomes, as already shown in Section 4.1.1, in policy outcomes, most visibly in national tenancy law (Debrunner et al. 2024) and in the legislative changes such as the relaxation of the *Lex Koller* (Theurillat et al. 2015, 1430; Scherr 2016, 52).

Cantonal legislative level: At the cantonal level, ownership structures and interest ties are less systematically examined. The only notable analysis stems from the regional HEV from Winterthur, which concluded that the SVP, EDU and FDP[3] parties were consistently aligned with homeowner and property-owner interests. About 40% of Cantonal Council members belonged to the cross-party working group on property ownership, dominated by centre-right parties. With a centre-right majority, decisions mirror national decision patterns (HEV Region Winterthur 2022). For example, the Council refused to introduce a *pre-emptive purchase right (Vorverkaufsrecht*) for public authorities, leaving the municipalities without a key instrument to secure non-profit housing (Canton of Zurich 2024). Although

[3] *Schweizerische Volkspartei* (SVP), *Eidgenössisch-Demokratische Union* (EDU) and *Freie Demokratische Partei* (FDP)

a cantonal referendum is scheduled for May 2026, until then (depending on the election results also continues to) the cities remain constrained by existing legislation (City of Zurich 2024, 20).

Municipal legislative level: Zurich's Municipal Council is shaped by a durable left-of-centre majority, while the right-wing rarely commands stable majorities (Plüss et al. 2017, 21; Municipal Council 2025). The political structures limit direct municipal law-making, but core competences in planning rest within the 26 cantons and many binding instruments are delegated further to municipalities (Debrunner and Hengstermann 2023, 87f.). Consequently, Zurich's municipal power operates primarily through planning and regulatory implementations rather than primary legislation (BWO 2024).

In Zurich, the *building and zoning regulation (Bau- und Zonenordnung* BZO*)* is a municipal ordinance that allocates every parcel to a utilisation zone and sets parcel-level development boundaries, subject to cantonal and federal law (Debrunner & Hengstermann 2023: 87f.). Since its introduction in 1931 (City of Zurich 2025a), the BZO has been central to urban restructuring, for example through the in 1976 introduced *housing share plan (Wohnanteilsplan;* Scherr 2016, 45). A recent example of how powerful the BZO can be, shows the development project of the building complex *Harspeln* from the Investment Foundation *Swisscanto*, where a land swap and rezoning were prerequisites for access and development. The City Council (executive) signalled willingness to transact, but the left majority on the Municipal Council (legislative) conditioned approval on non-profit quotas. *Swisscanto*, however, was not interested in these conditions and withdrew the application. The city subsequently acquired the property to steer it towards non-profit housing (City of Zurich 2025c).

Beyond the BZO, Zurich deploys further special instruments: *private development plans* (*Private Gestaltungspläne* GP) and *special building regulations* (*Sonderbauvorschriften* SBV), for example, can privilege specific projects over 6000 m^2 through a freer development and are often tied to 10% area bonus (City of Zurich 2025a; 2025b). One of Zurich's main land-policy lever that is already widely used for non-profit housing, however, is the long-term leasehold contracts. The municipality remains landowner, while non-profit developers (mainly Housing Cooperatives) hold building ownership for up to 100 years on cost-rent terms (Balmer and Gerber 2018, 374). The base rent depends on the agreed use rather than on market prices, which protects projects from speculative increases in land values (Balmer and Bernet 2016, 133).

Finally, the City of Zurich comprises, in contrast to international research who observed a decline in public property ownership (see Section 3.2.4), a small but stable housing stock share of 7% which are run under the cost-rent principles (Balmer and Gerber 2018; Municipal Statistics Office 2025k). The political mandate to further expand the housing stock was reinforced in a municipal referendum in 2011, which anchored in the municipal ordinance (Art. 155) the goal of increasing the share of non-profit housing[4] to 33% by 2025 (City of Zurich 2024, 7; Plüss et al. 2017, 53).

[4] Not only public housing stock; it also includes housing cooperatives, non-profit private foundations, non-profit associations, non-profit public limited companies, etc.

5 Methodological Approach

5.1 Analysing the Distribution of Property Ownership

The housing crisis, framed as the 'new housing question' as seen in the state of research (see Section 3.3.2), cannot be understood without asking who owns the properties in those areas most affected by displacement and segregation. As ownership holds a high degree of power (see Section 2.2), the question of property ownership is of crucial importance in such conflictual issues (e.g. Trautvetter 2020; Casanova Enault et al. 2023; Theurillat 2023). Current research can be organised along four analytical axes shaped by data availability (what), spatial dimensions (where), ownership groups (who) and methodological approaches (how):

Data availability (what): From the very outset of the new relational perspective (see Section 2.2), scholars such as Doreen Massey and Alejandrina Catalano in *Capital and Land: Landownership by Capital in Great Britain* (1978), drew attention to the shifting patterns of landownership and their economic and political implications. They already identified the lack of knowledge about ownership as a fundamental societal problem. Nearly six decades later, the question of who owns land remains in a pervasive 'black box', obscured by legal and institutional opacity. Research continues to be constrained by inadequate or entirely unavailable ownership data (e.g. Trautvetter and Henn 2020; Casanova Enault et al. 2023; Trautvetter and Knechtel 2023). Nevertheless, several studies have pierced this veil: while publicly accessible datasets remain limited, some projects draw on more detailed state-level registries (An et al. 2024; Hess 2024; Rieder 2024). Most others rely on aggregated city-level data (European Commission 2020; Trautvetter and Knechtel 2023).

To obtain finer-grained insights, researchers and activists have developed alternative strategies, including web-scrapping property and business registries (Canada; St-Hilaire et al. 2024), using commercial land registry services (Austria; Musil, Brand, and Wonaschütz 2022, 335), or purchasing the land registry data for grassroot mapping projects, such as Redwood City (USA) by the Anti Eviction Mapping Project (AEMP 2024, 5), or *Who owns England?* (Shrubsole and Powell-Smith 2025). In Switzerland, land registry data are technically free but restricted to limited daily queries (see Section 8.2), prompting grassroot initiatives such as the *Betongold* poster series in Basel from the Association *Stadt für Alle (SfA)* (2022), which discloses ownership patterns neighbourhood by neighbourhood, or the *#ZürichAufdecken* from the journalist research collective Reflekt (2021), which was a city-wide crowdsourced inquiry that collected and published information on major property owners across the city.

Spatial dimensions (where): In the small but growing field of spatial ownership distribution research, the most prominent studies focus on individual cities, such as Montreal in Canada (St-Hilaire et al. 2024), Jacksonville in USA (Torres 2024), Stockholm in Sweden (Ismail et al. 2022) and Opfikon in Switzerland (Hess 2024; Rieder 2024). Comparative research is also emerging: For example Preis (2024) analyses eight US cities with rental registries, offering one of the most systematic large-scale investigations on where landlords live. At European scale the European Commission's Joint Research Centre (JRC) published *Who owns the City? Explanatory Research Activity on the Financialization of Housing in EU Cities* (2020), analysing ownership pattern across city like Athens, Barcelona and Lisbon. More recently, a collaboration between *Dark Matter Labs* and *Institute for Human Rights and Business* (2023) mapped property ownership in Athens, Copenhagen, Lisbon and Prague, linking

concentrations to unaffordability, spatial injustice and residential segregation. Similarly, in Germany, Trautvetter and Knechtel (2023) examined multiple urban contexts as part of the *Who owns the city?* project (Rosa-Luxemburg-Stiftung 2025) and aim to make ownership structures visible and sparking public debates on political solutions.

Ownership groups (who): Previous research on ownership distributions takes two directions: some focus on all owners and divide them in categories, while others study just one specific ownership type. Trautvetter (2020, 7), for example, differentiates four main ownership groups and eleven distinct types based on census data; AEMP (2024, 5) uses business models, location and portfolio size; Casanova Enault et al. (2023) highlight four overarching landlord categories; whereas Hess (2024) and Rieder (2024) classify owners by their level of commodification, ranging from self-provision to financialization. Other studies focus on homeowners (Lerbs and Oberst 2014), small private landlords (Ronald and Kadi 2018), the spatial embeddedness of landlords (Csabay et al. 2021; Hochstenbach 2024; Preis 2024), financialised landlords (Romainville 2017; St-Hilaire et al. 2024) or the share of the top wealth distribution (Paccoud 2020).

Methodological approach (how): Research on spatial ownership distribution has so far been dominated by descriptive methods, with most studies relying on non-spatial diagrams and graphs (e.g. Ronald and Kadi 2018; Trautvetter 2020; Ismail et al. 2022). While such approaches provide an important step towards opening the 'black box', they remain limited in spatial dimensions of analysis. More recently, scholars have thus started to use spatial mapping to analyse ownership data in cities (e.g. Liu 2022; Casanova Enault et al. 2023; St-Hilaire et al. 2024), while in activist projects the use of cartographic methods is also already used widely (e.g. SfA 2022; AEMP 2024; Shrubsole and Powell-Smith 2025).

Statistical analysis is more common in related fields such as housing prices and socio-economic inequalities (e.g. Kim and Kim 2016; Chen et al. 2020; Kadi et al. 2022) but still rare for ownership shares themselves. Where applied, it examines the broader impacts of housing structures rather than the distribution of ownership as such. Nonetheless, with the increasing availability of spatial datasets, geostatistical approaches have become increasingly used in housing crisis analysis. To measure the overall spatial distribution, research uses Global Moran's I to statistically measure the clustering for example in housing prices (e.g. Kim and Kim 2016; Chen et al. 2020; Mbatha 2021) or socio-economic analysis (e.g. Koo et al. 2018; Medina et al. 2020; Kadi et al. 2022).

However, as the availability of ownership data is limited and research shows that property ownership also has direct implications for the socio-economic structures (see Section 3.3), many studies approach the housing crisis through the use of different forms of regression models, to analyse socio-economic effects of the housing crisis and address it without using ownership data. These methods focus primarily on housing prices, tenure structures and socio-economic variables as proxies to analyse inequality, affordability and segregation (e.g. Medina et al. 2020; Kadi et al. 2022; Orr and Stewart 2022). Still, several studies use non-spatial regression models to explore tenure and residential differentiations. Musil et al. (2022) use multivariate linear regression to trace transformations of Vienna's housing stock, linking these to shifts in socio-economic variables. Medina et al. (2020) also used a similar technique using Spearman's rank correlation based on socio-economic variables to develop an eviction model and detecting spatial clustering of evictions. A growing body of research, however, incorporates the spatial dimension by applying spatial regression techniques to link housing prices (e.g. Kim and Kim 2016; Wang et al. 2017; Mbatha 2021) or rent prices (Orr and Stewart 2022) with spatial structures. Further research examine socio-economic variables in relation to housing prices (Jun 2017) or homeownership

rates (Lerbs and Oberst 2014), while Kadi et al. (2022) integrate compound indices to build inequality metrics and demonstrate increasing socio-economic polarisation with the use of spatial regression models. Overall, these studies demonstrate a methodological pluralism. Ownership itself is often visualised through descriptive and cartographic analysis, while geostatistical methods are predominantly used to assess its effects on housing markets and socio-economic inequality. However, most research on housing crisis lacks a spatially detailed analysis of property ownership that goes beyond descriptive data analysis. This master's thesis therefore wants to fill this gap by conducting besides descriptive analysis also a geospatial analysis of property ownership distribution and its effects on socio-economic inequality.

5.2 Research Questions

The previous chapters have shown why it can be assumed that the distribution of property in Zurich is not a random phenomenon, but rather that the thesis can be proposed that there it is a spatially organised and socially reproduced power structure. By understanding property ownership as a spatially embedded form of power, this thesis investigates who owns Zurich, how property ownership is distributed across the city, and what forms of spatial concentration, transformation, and inequality emerge from these distributions. The overarching guiding question for this master's thesis is therefore:

Who owns Zurich, where, and why does it matter?

This guiding question should not be read as an empirical research question, but rather as a framing device that guides through the thesis and connects the empirical and analytical part of this study. The empirical analysis addresses primarily the first part *who owns Zurich where?* by mapping and examining the spatial distribution of property ownership and their socio-economic consequences. The second part *Why does it matter?* is taken up in the discussion (Chapter 7) and critical reflexion (Chapter 8), where the broader implications of ownership distributions are critically analysed in light of inequality, urban governance and transparency. The following section sets out two analytical steps with concrete research questions that guide the empirical analysis.

Step 1 Ownership distribution: In the first step, the study focuses on the descriptive and geostatistical analysis of ownership patterns across the city of Zurich. The focus lies in the spatial distribution of different ownership types across multiple scales, allowing for the identification of concentrations, dominance structures, and their temporal transformations. The time frame from 2010 to 2024 was selected deliberately, as the case study on changing ownership structures (see Section 4.1.1) has already demonstrated that this shift began in the early 2010s.

This step is guided by the following research questions:

1.1 Distribution between ownership categories: What are the spatial patterns of different property ownerships categories across different spatial scales?

1.2 Distribution within ownership categories: How is property ownership in the city of Zurich distributed within the different property ownership categories?

1.3 Temporal change of ownership distribution: How has the spatial distribution of property ownership categories evolved across Zurich since 2010?

Step 2 Impact on socio-economic inequality: In a second step, the analysis shifts to the socio-economic consequences of property ownership. As emphasized by Blomley (see Section 2.2), property ownership is not merely a legal title or a financial asset, but a powerful instrument that regulates access to urban space, defines the conditions under which such access is granted, and structures the vulnerabilities of those excluded from ownership. As seen in the state of research (Chapter 3), previous studies have demonstrated that different ownership structures produce markedly different housing outcomes, particularly in terms of rent, investment strategies, tenant stability and displacement. While some forms of ownership are associated with more stable and affordable housing, others reinforce displacement pressures and residential segregation.

To investigate these dynamics in Zurich, the spatial patterns identified in Step 1 are correlated with selected socio-economic variables (see Section 5.3.3) that serve as proxies for urban segregation and displacement. This allows for an analysis of which populations are most exposed to exclusionary dynamics and how these patterns vary across ownership categories, leading to the following research question:

2.1 How is the spatial distribution of property ownership categories related to socio-economic variables associated with displacement processes?

5.3 Data and Spatial Scales

Answering the research questions requires not only asking *who owns what?* but also deciding how ownership data can be embedded within available spatial reference systems. Understanding ownership as a spatially embedded form of power (see Section 2.2) requires a careful selection of data capable of capturing different dimensions of property. As seen in Section 5.1, research often faces the challenge that data on ownership distributions are incomplete, difficult to access, or only available in aggregated form. This lack of data availability is also a challenge in Zurich. While the most accurate approach would be to analyse ownership structures at parcel scale and compare them across aggregated scales, such data are not accessible for research purposes (see Section 8.2). This master's thesis is therefore limited to the data and spatial scales available for research purposes. Given these limitations, particularly regarding ownership categorisation, a multi-scalar approach was chosen to enable a spatially differentiated analysis. This following section sets out the datasets selected and their integration into this multi-scalar approach. It is structured in four parts: first, the spatial scales and reference units used in the analysis; second, the ownership datasets; third, the socio-economic datasets; and fourth, the additional datasets considered in the discussion part.

5.3.1 Spatial scales

The spatial analysis of property ownership in this master's thesis is situated within the administrative boundaries of the city of Zurich, which serves as the overarching spatial frame. Administratively, Zurich is subdivided into 12 districts (violet borders), which are further divided into 34 neighbourhoods (orange borders; see Figure 3). For statistical and planning purposes, Zurich is even further divided into 216 statistical zones (see Appendix 11.1; Statistics Office 2024c) providing a fine-grained spatial resolution suitable for micro-scale urban analysis.

Based on these structures, the empirical analysis adopts a three-scale approach (districts as macro-scale, neighbourhoods as meso-scale and statistical zones as micro-scale) to capture ownership patterns across different levels of aggregation. This multi-scalar approach not only enhances analytical precision but also addresses the methodological challenges posed by the Modifiable Areal Unit Problem (MAUP; Openshaw 1984). By engaging with multiple scales, the analysis remains sensitive to the effects of spatial aggregation and internal heterogeneity (Fischer and Getis 2010, 213), thereby allowing for a more differentiated understanding of how ownership structures manifest across Zurich. The vector data for districts (Municipal Statistics Office 2024a), neighbourhoods (Municipal Statistics Office 2024b) and statistical zones (Municipal Statistics Office 2024c) were sources from the Statistical Office of the City of Zurich in ESRI Shapefile format. These vector data provide the basis to perform spatial joins with the datasets through attribute matching.

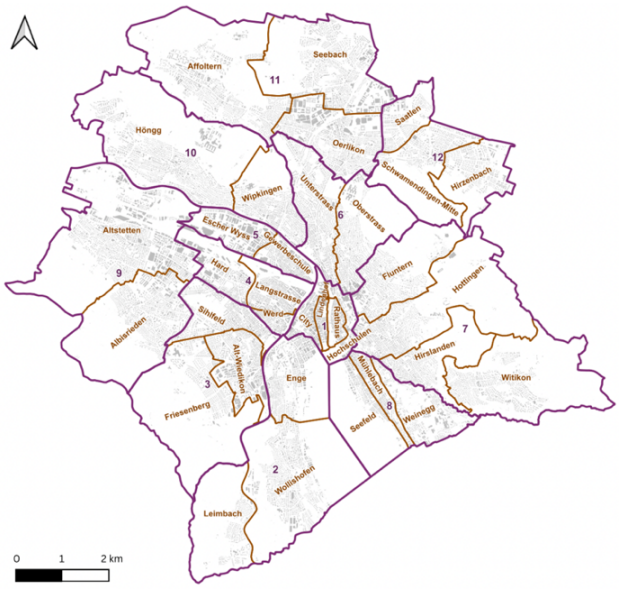


Figure 3: Administrative boundaries of the City of Zurich, showing districts (purple boarders and numbers) and neighbourhoods (orange borders and names).

5.3.2 Ownership datasets

While selecting the datasets used in this master's thesis, it was necessary to critically assess the range of ownership-related data available. Rather than providing a single comprehensive dataset, the SOZ provides a diverse set of datasets that differ in terms of indicators, level of aggregation, spatial resolution and temporal availability. This heterogeneity required a systematic evaluation to determine which data sources are best suited to address the research questions. The two main datasets (see Table 1)on which the empirical analysis draws are: Building Area (derived from Ground Area) and Housing Stock. Each of these capture a different dimension of property ownership and contribute distinctively to the spatial analysis of ownership structures in the City of Zurich.

Dataset	Units	Categorisation of ownership types	Spatial scale	Time frame	Source
Housing Stock	Number of dwellings	Ownership categories	City, district & neighbourhood	2010 & 2024	(Municipal Statistics Office 2025k)
			Statistical zone	2010 & 2024	By request from Statistical Office
Building Area	Building area [m^2]	Ownership categories and legal entities	City, district & neighbourhood	2024	(Municipal Statistics Office 2025c)
			Statistical zone	2024	(Municipal Statistics Office 2025h)
Ground Area	Ground area [m^2]	Ownership categories	City	2024	(Municipal Statistics Office 2025i)

Table 1: Ownership datasets and their key indicators.

Categorisation of ownership types: Since each dataset reflects a different dimension of property ownership, an understanding of how the ownership types are grouped is essential for the further examination of the structure of the three selected datasets in greater detail. For the datasets used in this master's thesis, two levels of ownership grouping are provided, which are applied by the municipal statistical office from the City of Zurich: broadly aggregated into five main categories, and a more fine-grained grouping of legal entities into 22 subcategories (see Table 2).

Ownership Categories	Legal Entities
Natural Persons	Single Natural Persons
	Heirs' Communities
	Multiple Natural Persons
Condominiums	Condominiums
Housing Cooperations	Housing Cooperatives
Private Companies	Cooperatives
	Public Limited Companies
	General Partnerships
	Limited Commercial Partnerships
	Limited Liability Companies
	Mixed Ownerships
	Associations and Private Foundations
	Pension Funds
	Investment and Pension Foundations
	Evangelical-Reformed Church
	Roman-Catholic Church
	Other Religious and Cultural Communities
Public Institutions	City of Zurich
	Municipal Foundations
	Canton of Zurich
	Federal Government
	Other Public Owners

Table 2: Categorisation of datasets.

On the one hand, they aggregated the original 31 legal entities from the official Building and Housing Register into five overarching categories to enhance readability and analytical tractability. These categorisations will be called *ownership categories* in the following and include Public Institutions, as well as Housing Cooperatives and divide the Private Ownerships in Private Companies (all private corporate owners), Natural Persons (all private natural persons) and Condominiums, which are treated separately due to its legal and empirical complexity[5] (Municipal Statistics Office 2025k). While this aggregation facilitates comparability across space and time, it also entails a simplification of the ownership diversity (see Section 2.2.1), that can potentially masking important differentiations within the ownership categories.

On the other hand, the municipal statistical office also provides datasets with a more detailed grouping that focuses primarily on legal entities and are therefore also called here after *legal entities*. This refined classification breaks down the original 31 legal entities into 22 distinct groups (see Table 2), allowing for a greater analytical nuance: Within the ownership category Public Institutions, the classification distinguishes four legally separate entities. As there are many other smaller public owners, they are summarised in one group labelled Other Public Owners. Housing Cooperatives are represented as a standalone category and include this legal entity. The broad ownership category Private Companies are subdivided into twelve specific groups - eight of which are just one legal entity. Two are grouped together with another legal entity: Associations and Private Foundations, as well as Investment and Pension Foundations. Two additional groups were summarised to account for more complex cases: one comprising numerous small legal entities affiliated with Religious and Cultural Communities (excluding the two major national churches: Evangelical-Reformed Church and Roman-Catholic Church), and another for Mixed Ownerships, where property is co-owned by multiple legal entities and cannot be clearly assigned to a single legal entity. The Natural Persons include the three private natural persons in

[5] Not easy to classify, as it is one property and each floor belongs to a seperate legal entity – for example it can consist of only private natural persons, only private legal persons, or a mixture of different legal entities.

legal entities. Condominiums is also represented as a standalone due to its distinct legal structure and empirical ambiguity.

Datasets, measurement units and time frames: After clarifying the categorisation, a more detailed examination of the underlying datasets can be made. The dataset **Building Area** records the total building area in square metres owned by each legal entity. It is derived from the broader Ground Area dataset, which captures all land ownership in Zurich since 2009. While Ground Area provides useful citywide orientation, it also includes large shares of non-developable such as roads, bodies of water, forests and public infrastructure. These components distort the interpretation of ownership, as they reflect general land ownership rather than urban property, that this thesis focuses on. For this reason, Ground area is briefly referenced at the city scale but do not serve as an essential dataset for the empirical analysis. The Building Area in contrast capture only the built environment and thus offers a more meaningful indicator for this research. This dataset retains the detailed classification of legal entities but is only availability for 2024, which limits temporal comparisons. Nonetheless, its fine-grained categorisation and direct relevance to the analysis of built environment make it essential for this empirical analysis.

The dataset **Housing Stock** complements this perspective by providing the number of dwellings owned by each ownership category. Unlike Building Area, it is only available at aggregated ownership category and not for legal entities. Nevertheless, it offers a valuable complementary perspective by shifting the focus from building area to the residential function of property. For the year 2024 the dataset is available online on the website of the municipal statistical office, but the data from previous years is not available online. For the year 2010, the data was provided by the municipal statistical office upon request for this research. Since the data is available for both 2010 and 2024, it allows for a temporal insight into ownership distribution trends.

The analysis therefore primarily relies on the combination of the dataset Building Area and Housing Stock. These two indicators capture distinct yet complementary aspects of urban property ownership. To ensure greater comparability between the datasets, an aggregated version of the Building Area (and Ground Area) was made, matching the categorisation from the Housing Stock dataset. Together, these sources enable a multidimensional analysis of who owns Zurich across space, category, and time.

5.3.3 Socio-economic datasets

To examine the socio-economic variables potentially influenced by the spatial distribution of property ownership, this master's thesis focuses in particular on indicators associated with displacement vulnerability. The selection of socio-economic variables (see Table 3) is based in the findings of previous research on displacement pressures in Zurich (see Section 4.1.2). Following Kaufmann et al. (2023, 8), the analysis includes Income, single parents and two groups of foreign residents. In line with Tellenbach and Klemens (2014), Age over 60 is considered to capture vulnerabilities linked to inadequate housing accessibility. Although gender is not explicitly addressed in the before mentioned studies, it is included here due to its structural relevance. As noted by Mieten-Marta (2023), Women are disproportionally affected by indirect displacement due to systematic economic inequalities including income inequality, unequal property ownership and over-representation in vulnerable groups, such as single parent households. Thus, this analysis includes gender as a variable to contribute to a more comprehensive and intersectional understanding of displacement dynamics.

Dataset	Data	Variables	Scale	Time frame	Source
Family Structure	Count	Single Parent	Statistical Zone	2024	(Municipal Statistics Office 2025d)
Age	Count	Age over 60	Statistical Zone	2024	(Municipal Statistics Office 2025a)
Gender	Count	Women	Statistical Zone	2024	(Municipal Statistics Office 2025a)
Nationality	Count	Not EU Europe and Latin America, Asia & Africa	Statistical Zone	2024	(Municipal Statistics Office 2025b)
Income	Mean	Household Equivalent Income	Statistical Zone	2021	By request from Statistical Office

Table 3: Socio-economic variables and their key indicators.

The variables Single Parent, Age over 60, Women and Nationality Not EU Europe as well as Latin America, Asia & Africa are all publicly available through the website of the municipal statistical office (Municipal Statistics Office 2025g) and are fully accessible for statistical zones which are used in this analysis. For each variable at the statistical zone scale, the relative share to the total population was calculated. By contrast, the variable Household Equivalent Income is not publicly available at the finest spatial resolution of statistical zones. Upon request, however, the municipal statistical office provided access to the data at this level. Nevertheless, this dataset comes with three important limitations that must be acknowledged, as income is considered as particularly sensitive data. First, only mean values are available, which prevents the use of relative shares as with the other indicators. Second, the municipal statistical office requires a minimum of 30 valid data points per spatial unit to calculate a robust and reliable mean. At the level of statistical zones, four units fall below this threshold and are therefore excluded from the available dataset and subsequent analysis. Third, the income data are based on tax declarations and are thus only available up to the year 2021, in contrast to the 2024 reference year used for the other variables. Despite these limitations, the income dataset retained in the analysis, as it remains the most reliable and spatially detailed proxy for socio-economic status currently available at that level.

5.3.4 Additional datasets

Along the main datasets, six additional datasets (see Table 4) were included to provide further contextual depth in the discussion of the empirical findings. As shown in Section 5.1 different research on housing inequality has relied on these types of datasets, as ownership data are not always available. These datasets are thus not central to the empirical analysis but offer valuable reference points for situating ownership patterns further within broader housing dynamics.

Dataset	Variables	Scale	Time frame	Source
Owner-occupied Housing Stock	Number of dwellings [count]	Neighbourhood	2024	(Municipal Statistics Office 2025e)
Construction Activity	Number of new dwellings per ownership category [count]	Statistical Zone	2010 - 2024	(Municipal Statistics Office 2025f)
Building Age	Age [years]	Parcel	2019	(Cantonal Statistics Office 2024)
Land Price	Median price per sqm [CHF]	City	1974 - 2024	(Canton of Zurich 2025a)
	Median price per sqm [CHF]	Neighbourhood	2018 - 2022	(Rey 2022)

Table 4: Additional datasets and their key indicators.

The dataset Owner-occupied Housing Stock at neighbourhood scale for 2024 provides insights into the distribution of owner-occupied structures (see Appendix 11.4.1), while Construction Activity dataset captures the spatial dimensions of new housing supply for each ownership category between 2010 and 2024 (see Appendix 11.4.2). The dataset Building Age at parcel scale adds further insights into the renewal of the building stock over larger temporal scales and Land Price datasets captures the economic dimension of property of a city-scale since 1974 and on neighbourhood scale for current insights.

5.4 Methods

To address the research questions (see Section 5.2), the empirical analysis combines a set of quantitative and spatial methods aimed to process, visualise, and geostatistically evaluate the data presented in the last section. The methodological approach follows a three-step structure: (1) descriptive analysis with choropleth maps and graphs are used to illustrate the spatial distribution and identify initial patterns across scales, (2) geostatistical analysis to analyse the influence of ownership to socio-economic inequality that uses Global Moran's I to detect significant spatial structures and (3) spatial regression modelling to examine the correlation between ownership data and socio-economic variables, accounting for spatial dependence. By combining visual, spatial and statistical tools, this approach wants to provide a coherent analytical framework to investigate the ownership patterns and their effects on urban socio-economic inequality. Step 1 & 2 were performed using the open-source software QGIS 3.34 (2023) and step 3 was conducted with the open-source software RStudio (2024). The following section describes each method and their respective role within the broader analytical framework.

5.4.1 Descriptive analysis

As an initial step of the empirical analysis, thematic visualisations, namely choropleth maps and stacked bar charts, were employed to illustrate the spatial distribution and concentration of ownership categories. These visual tools serve as a primarily descriptive and diagnostic purpose, providing initial insights into property ownership as well as socio-economic variables across different spatial scales (Fischer and Getis 2010, 3f.). By making distributions and concentrations visible, they not only highlight spatial variation but also facilitate the identification of spatial disparities and provide early indications of spatial dependencies to be formally tested in later modelling stages (O'Sullivan and Unwin 2010, 23).

Ownership distribution in 2024: In a first step to answer the research question 1.1 (see Section 5.2) choropleth maps are made that visualise the spatial distribution of ownership in the most recent year available 2024. The two datasets Building Area and Housing Stock, each aggregated into broader ownership categories, were mapped across the different spatial scales (districts, neighbourhoods and statistical zones). This cross-sectional mapping assesses the distribution of ownership shares across space and scale, providing an overview of the differences in concentration and spatial reach among the datasets. In a second step to answer the research question 1.2 (see Section 5.2) only Building Area is used in the further disaggregated categorisation of legal entities within each ownership category. This refinement enables an intra-category differentiation that reveals the internal heterogeneity of ownership hidden within the broader categories.

For both steps, the data per ownership category/legal entity were expressed as the share relative to the total area (for Building Area) and total count (for Housing Stock) per spatial unit to ensure comparability across space. Furthermore, a uniform classification was chosen across all maps, using equal intervals of 5% to generate 20 distinct categories (from 0% to 100% ownership) (Fischer and Getis 2010, 20). This

decision is rather unconventional as the chosen number of categories is quite large (Peterson 2009, 86). This classification method, however, was selected with purpose (more in Section 8.1) as it represents a compromise that enables the simultaneous visualisation of differences across spatial scales and types of ownership data, as well as most of the socio-economic variable. For this classification, a sequential colour ramp 'Magma' was selected for the share-based maps, as it offers a perceptually uniform progression and performs well with a high number of classes.

Temporal change between 2010 and 2024: For the research question 1.3 (see Section 5.2), the temporal change in ownership shares is assessed. This analysis focuses solely on the Housing Stock (as justified in Section 5.3.2). Furthermore, the diachronic analysis is limited to the most fine-grained scale available (statistical zones) available, which allows for the most accurate detection of localised change. The change is calculated as the differences in ownership category between 2010 and 2024, divided by the total Housing Stock in 2024 per statistical zone:

$$\Delta^{cat}_{i,2024-2010} = \frac{N^{cat}_{i,2024} - N^{cat}_{i,2010}}{N^{total}_{i,2024}}$$

Where $\Delta^{cat}_{i,2024-2010}$ denotes the share of change in ownership category in spatial unit i.

Thirteen classes were constructed to visualise this temporal change, spanning from -100% to +100%. Ten of which spanning from -25% to +25% in uniform increments of 5%, with an additional class defined between -0.001% and +0.001% to distinctly capture units exhibiting no measurable change. Shares beyond $\pm$25% were grouped into two extreme classes to account for outliers with substantial variation. For this classification, a divergent colour scheme (red – white – blue) was applied, with red indicating decreases, blue indicating increases and white denoting areas of no net change. This form of visual encoding was chosen because it is particularly useful for scales with meaningful midpoints, such as zero change, as it supports intuitive interpretation of direction and magnitude.

Socio-economic variables: To answer the research question 2.1 (see Section 5.2), the socio-economic variables were also visualised using choropleth maps to contextualise the ownership patterns. Except for Household Equivalent Income, all variables are calculated as relative shares of the total population per statistical zone and were thus mapped using the same classification and colour scheme as the ownership data.

In contrast, the mean of the Household Equivalent Income represents a continuous metric, with values ranging from CHF 0 to CHF 112'000. To appropriately reflect this distribution, a separate continuous diverging colour scheme was applied, centred on the middle value of CHF 56'000. This approach not only captures income inequality across space but also reinforces the visual distinction between mean income levels and share-based distributions. For this continuous map, also a continuous colour scheme (blue – white – red) was used diverging from the median value, similar to the temporal change, to enhance interpretability and support intuitive interpretation.

5.4.2 Spatial autocorrelation

While descriptive maps and graphs provide an essential starting point for exploring the spatial distribution of ownership, their interpretative capacity remains limited by the lack of statistical calculations. Visual clustering does not confirm whether observed spatial concentrations are statistically meaningful or are a product of random spatial variation (Fischer and Getis 2010, 258; Darmofal 2015, 24). As Haining (in Fischer and Getis 2010, 214) warns, can visual interpretation alone be misleading

in the presence of an underlying spatial autocorrelation. Therefore, to ensure also empirical robustness, spatial autocorrelation measures provide an analytical bridge between cartographic interpretation and statistical validation.

Spatial autocorrelation describes the extent to which values of a variable at one location is systematically related to values at a nearby location. It reflects the spatial structure of data and captures the degree of spatial dependence among the other data points (Fischer and Getis 2010, 256). This concept is rooted in Tobler's (1970, 236) First Law of Geography, which marks that "everything is related to everything else, but nearby things are more related than distant things" which implies that ownership distribution in one unit is not spatially isolated but embedded in broader spatial processes.

This means that the spatial arrangement of values is often clustered and influences across spatial units, reflecting underlying spatial independencies. As Haining (in Fischer and Getis 2010, 205ff.) outlines, spatial autocorrelation is a second order of spatial data that reflects the tendency of similar values to cluster across space. Ignoring such interdependencies in statistical models can compromise empirical accuracy, potentially resulting in biased coefficient estimates or misleading significance levels. Overlooking spatial dependencies does not just affect spatial accuracy but can lead to fundamentally misguided narratives about spatial structures.

Spatial weight matrix: To address these interdependencies, spatial data analysis methods rely on a core component: the spatial weights matrix (*W*). As Getis notes, that "the *W* matrix embodies our preconceived or derived understanding of spatial relationships" (in Fischer and Getis 2010, 260). It defines the structure and intensity of spatial relations between observed units by specifying which locations are considered neighbours and how strongly they influence one another. Therefore, the matrix represents either theoretical, geometric or data-driven assumptions about the spatial association (Fischer and Getis 2010, 261).

In QGIS various types of spatial weights matrices are available, such as distance-based, fixed-number-of-neighbours or contiguity-based matrices. The appropriate choice depends on the data structure, the spatial scale and the analytical objectives. When comparing spatial patterns across different scales within one dataset, it may be useful to make a multi-scalar analysis and apply different spatial weights matrices tailored to each scale (Fischer and Getis 2010, 244). This geostatistical analysis is conducted only at the scale of statistical zones due to the limited scope, which would favour the use of multiple spatial weights matrices. Nevertheless, multiple datasets from ownership shares to socio-economic variables are incorporated in this analysis. To ensure analytical consistency and to reduce methodological complexity, one type of spatial weights matrix is applied across all variables and models.

The choice of the spatial weight matrix is an important step, as it determines how the spatial relationship between observational units is defined and measured. Different spatial weights matrices produce different assumptions about the proximity and influence. K-nearest neighbour (KNN) matrices include a fixed number of neighbours for each unit, independently of their actual distance. In a city like Zurich, where the size of the statistical zones varies significantly, it can lead to spatially implausible neighbour definitions. For example, in the centre of Zurich, the statistical zones are relatively small, resulting in a limited radius of neighbourhood influence. By contrast, in peripheral areas, where individual statistical zones can be nearly as large as the entire District 1, a significantly broader spatial area is classified as neighbouring, thereby introducing asymmetries in spatial representation (Jun 2017, 722).

A distance-based matrix with a fixed threshold may therefore seem appropriate. However, such distances are for polygons measured from the centroids. This means that for larger spatial units, it would require a disproportionately large threshold to ensure they have neighbours, potentially distorting comparability across units and compromising statistical robustness. The contiguity edges corners matrix avoids these distortions by including all immediately adjacent units regardless of their geometry (Anselin 2003, 78ff.). This makes it especially suitable for urban morphologies with heterogeneous spatial units like Zurich, as it avoids arbitrary cut-off distances and better aligns with the political boundaries of Zurich's urban statistical zones (Fischer and Getis 2010, 258ff.). Moreover, preliminary tests with the housing stock dataset showed that the contiguity edges corners matrix had the highest Global Moran's I value, which approach was proposed by Kooijman (1976) indicating the best empirical fit (Jun 2017, 722).

Based on the specified spatial weights matrix, spatial analysis was conducted to analyse spatial autocorrelation on a global scale using Global Moran's I statistic invented by Moran (1950). During the process of this work, a local analysis of spatial autocorrelation was considered using Local Spatial Autocorrelation (LISA; Anselin 2003, 99), but as these results did not provide any additional interpretive value to this research, they were omitted in order to keep the master's thesis within a certain scope.

Global Moran's I: To assess the presence of spatial dependency in the distribution of the ownership as well as socio-economic variables, the Global Moran's I statistic (Moran 1950) was applied as a measure of global spatial autocorrelation. As a widely used indicator in geostatistical analysis, Global Moran's I calculate the extent to which similar values are spatially clustered or dispersed across the whole study area. It is an adaption of the Pearson correlation coefficient, but with an explicitly spatial dimension. Instead of correlating two separate variables, it estimates the correlation of a variable with its own neighbours' variables, as defined by the spatial weight matrix (Fischer and Getis 2010, 264). Formally, Moran's I is defined as (Kadi et al. 2022, 6):

$$I = \frac{n}{\sum_i \sum_j W_{ij}} \frac{\sum_i \sum_j W_{ij} \ (x_i - \bar{x}) \, (x_j - \bar{x})}{\sum_i (x_i - \bar{x})^2}$$

$n = number\ of\ observations$
$x_i = value\ from\ point\ i$
$x_j = value\ of\ neighbour\ j\ from\ point\ i$
$\bar{x} = mean\ of\ observed\ vlaues$
$W_{ij} = spatial\ weight, based\ on\ spatial\ weights\ matrix$

The resulting values range from – 1 (indicating strong negative spatial autocorrelation) to +1 (indicating strong positive spatial autocorrelation) and values near 0 reflecting spatial randomness (Medina et al. 2020, 5). To evaluate the statistical significance of the observed Global Moran's I value, a permutation-based approach outlined in Anselin (1986) was used, in which reference distributions are generated by random reshuffling the data values. This method follows simulation logic and provides an empirical basis for assessing spatial dependence by remove and its spatial structure. Through this permutation, a statistical significance gets evaluated based on the pseudo-significance permutation value p-values to indicate that the observes spatial autocorrelation is unlikely to have occurred by chance and thus rejecting the null hypothesis of spatial randomness and confirm the presence of spatial dependence (Anselin 2003, 91). The thresholds to evaluate the strength and reliability are by default set at 10%, 5% and 1% significance level in QGIS (2023).

5.4.3 Spatial regression models

Building on the analysis of spatial autocorrelation to incorporate spatial dependency into the data analysis, spatial regression models will be applied to examine how ownership structures relate to various socio-economic variables. The baseline of this analytical step is the non-spatial ordinary least square (OLS) regression model to estimate the relationship between one dependent variable (here one of the socio-economic variables) and explanatory independent variables (here the ownership categories of Housing Stock) based on thesis that in a city where 92% of residents are tenants (see Section 4.1.2), property owners hold the power to decide who can live where.

However, Anselin (1988) highlights that the presence of spatial dependence violates the fundamental OLS assumption of independent and identically distributed errors, leading to biased estimates and inefficient inference when spatial effects are present. LeSage &Pace (in Fischer and Getis 2010, 355) also emphasise that "sample data collected for regions or points in space are not independent, but rather positively spatially dependent". To address these methodological limitations, spatial regression models are used in this empirical methodological approach, which is built on a growing body of empirical research that addresses the spatially embedded nature of property ownership and its effects. Studies, as seen in Section 5.1, show that correlating ownership structures with socio-economic variables or other variables such as rent levels and ignoring spatial autocorrelation can lead to biased estimates, wrong significance levels and misattributed effects.

Since the emergence of spatial econometrics as an intersection of spatial analysis and econometrics as a formal field, rooted in the foundational word of Paelinck & Klaassen (1979) and later formalised by Anselin (1988), a variety of spatial regression models have been developed to address different forms of spatial dependence in cross-sectional data. Such as the Spatial Lag Model (SLM) that accounts for spatial dependence in the dependent variable, capturing potential feedback or interaction among neighbouring units, the Spatial Error Model (SEM) that addresses spatial autocorrelation in the disturbance term arising from omitted spatially structured variable, the Spatial Autoregressive Combined (SAC) Model that is a combination of SLM and SEM or the Spatial Durbin Model (SDM) that further extend this framework by including spatial lag of the independent variables, allowing for indirect spillover effects via covariates (LeSage and Pace 2009).

Model selection: The selection of the model is a crucial step, as different model specifications capture distinct forms of spatial dependence. To adequately capture the spatial structure embedded in the data, it is therefore necessary to identify the specification that best reflects the underlying spatial process. A widely accepted approach to determine the most appropriate model is commonly addressed using the information criterion, notably the Akaike Information Criterion (AIC; Akaike 1974) and the Bayesian Information Criterion (BIC; Schwarz 1978). Both criteria formalise a trade-off between best fit and simplification but differ in how severely they penalise the model complexity (LeSage and Pace 2009, 168).

The AIC estimates the expected information loss associated with the given model relative to the unknown data-generating process and therefore is designed to optimise predictive accuracy and can favour more complex models (Burnham and Anderson 2010). The AIC is given by:

$$AIC = -2logL + 2k$$

where $logL$ is the maximum log-likelihood of the model and k the number of estimated parameters (Darmofal 2015, 113).

In contrast, the BIC imposes a stronger penalty for model complexity by incorporating sample size n directly, which leads to the selection of more simplified models (Lee and Ghosh 2009, 96). The BIC is defined as:

$$BIC = -2logL + klog(n)$$

For this model selection the combined use of AIC and BIC was chosen which allows for a more robust model selection, due to their different premises and sensitivities to the model complexity. For each model, the corresponding AIC and BIC values are calculated and the model with the lowest criterion value is selected as the preferred model. Consequently, multiple models may exhibit comparable fit. Therefore, the interpretation of the different AIC and BIC values follows established thresholds: an indicates strong empirical support and would justify the selected as best model, whereas gets rejected because it indicates decreasing plausibility and reflecting less empirical fit (Burnham and Anderson 2010).

Ordinary Least Squares Model: For the socio-economic variables in this empirical analysis, the model comparison based on AIC and BIC values identified the OLS model, as well as the two spatial model SLM and SAC Model providing the best empirical fit (see Section 6.3.1). Therefore, the underlying framework of these models are briefly outlined.

As already mentioned in the introduction of this section, the OLS model serves as a baseline under the assumption of spatial independent and identically distributed errors and is defined as:

$$y_i = \sum_{r=1}^{k} X_{ir}\,\beta_r + \varepsilon_i$$

$i = number\ of\ observations$
k = number of explanatory independend variables

where y_i respresents the observed values of the dependent variable (socio-economic variable), $X_{ir}, r = 1, \dots k$ contains the explanatory independent variables (ownership categories) for each spatial unit (statistical zones), β_r is the associated coefficient that describes the strength and direction of these relationships and ε_i captures the random variation not explained by the model (Lerbs and Oberst 2014, 850).

Spatial Lag Model: While efficient under spatial independence, the OLS model becomes biased or inefficient if spatial effects are present in the data (Darmofal 2015, 4). The *SLM* therefore addresses one of these limitation by incorporating spatial dependence directly into the dependent variable (Fischer and Getis 2010, 357):

$$y_i = \rho \sum_{j=1}^{n} W_{ij}\,y_j + \sum_{r=1}^{k} X_{ir}\,\beta_r + \varepsilon_i$$

n = number of neighbours
$y_j = value\ of\ neighbour\ j\ from\ point\ i$
$W_{ij} = spatial\ weight, based\ on\ spatially\ weighted\ matrix$

Here, to the OLS a spatial lag dependence for the dependent variable y_i is added by the spatial weight matrix W_{ij} and the spatial autoregressive coefficient ρ capturing the strength and direction of the spatial dependence. The inclusion of $\rho \sum_{j=1}^{n} W_{ij}\,y_j$ in the dependent variable y_i captures the extent to which outcomes in one unit are influenced by outcomes in neighbouring units and thus accounting for potential spillover effects (Fischer and Getis 2010, 355ff.).

Spatial Autoregressive Combined Model: The SAC Model, also known as the Spatial Autoregressive Model with Autoregressive Disturbances (SARAR), adding to the SLM a spatial error term to simultaneously accounting for spatial dependence in both the dependent variable and the error term. It is suitable when the spatial dependence arises not only through interactions among the outcomes, but also due to omitted variables that are themselves spatially correlated, thus addressing also unobserved spatial influences that are not explains by the covariation (LeSage and Pace 2009, 359). By incorporating two spatial weight matrixes, the model is classified as a higher order model and is formally defined as (Fischer and Wang 2011, 34f.):

$$y_i = \rho \sum_{j=1}^{n} W_{ij}\, y_j + \sum_{r=1}^{k} X_{ir}\, \beta_r + u_i, \quad where\ u_i = \lambda \sum_{j=1}^{n} W_{ij} u_j + \varepsilon_i$$

Here, to the OLS model not only a spatial lag dependence for the dependent variable is added but also a spatial error dependence $\lambda \sum_{j=1}^{n} W_{ij} u_j$ for the error term u_i is added with the corresponding autoregressive disturbance parameter λ. Therefore, it not only incorporates spatial dependence directly into the dependent variable or unobserved spatially structured disturbances but combined both and addressing multiple forms of spatial autocorrelation within one framework (Lerbs and Oberst 2014, 853).

6 Results of Empirical Analysis

6.1 Spatial Distribution of Ownership Types

6.1.1 Distribution between ownership categories

As an initial overview, the aggregated distribution of the three datasets is first examined at a city-wide level. Since this scale has no spatial differentiation, the results are only presented in the form of a stacked bar chart (Figure 4) and not with choropleth maps as in the following chapters.

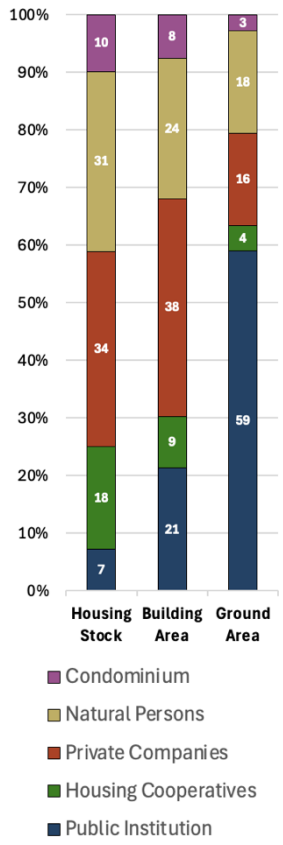


Figure 4: City-wide ownership distribution of the three ownership datasets.

The comparison of datasets reveals marked differences in ownership structures, highlighting the importance of methodological choices for addressing the research questions (see Section 5.2). Ground Area provides a citywide orientation of overall land ownership and shows Public Institutions (59%) as dominant owners. However, as noted in the methodological approach (see Section 5.3.2), this dataset includes large non-developed area. And is therefore not suitable for addressing the problem of housing crisis. In contrast, the sub-dataset **Building Area** isolates the building environment and thus offers a more meaningful indicator of property ownership in Zurich. Here, Private Companies dominate (38%), followed at some distance by Natural Persons (24%) and Public Institutions (21%), while Housing Cooperatives (9%) and Condominiums (8%) remain below 10%. The **Housing Stock** shifts the focus to the residential function of property. It reveals a different distribution, with Private Companies (34%) and Natural Persons (31%) almost equal in share, Housing Cooperatives make up a significantly larger share (18%). Public Institutions account only for 7% and Condominiums (10%) remain consistently low across all datasets.

These differences highlight how the choice of dataset shapes the perception of ownership structures. Thus, for the following analysis, only Building Area and Housing Stock will be used, as they more accurately reflect the relevant ownership functions. The spatial distribution of each ownership category is analysed separately across different spatial scales. Figure 5 (Building Area) and Figure 6 (Housing Stock) visualise these maps, with the different ownership categories represented on the y-axis and spatial scales on the x-axis. This layout allows for direct comparison of scale-dependent variation within and between ownership types. For reference purposes, all districts and neighbourhoods mentioned below are shown in Figure 3 and for the statistical zones in Appendix 11.1 Figure 17.

Public Institutions: The distribution of shares in the *Building Area* is relatively homogeneous overall at **district scale**. Districts 1, 4 & 10 have slightly higher shares, each with a share of over 25%. In contrast, District 7 stands out as the lowest share, with only around 15%. Despite these slight differences, the overall distribution on this scale remains relatively even. The breakdown at **neighbourhood scale**, on the other hand, shows a much more differentiated distribution: strong differences are visible in districts such as District 1 with internal heterogeneity. The Neighbourhood Hochschule stands out clearly with a very high share in Building Area of 57%, both in comparison to the other neighbourhoods

within the district and to the other districts. Neighbourhoods Hard in District 4, Neighbourhood Oberstrass in District 6 and Neighbourhood Saatlen in District 12 also show comparatively high shares of 35-38%, which were not discernible at the district level. Another clear contrast can be seen within district 3, where the Neighbourhood Friesenberg reaches 35%, while Alt-Wiedikon only has 8%. In the transition from the south-eastern to the north-western neighbourhoods of District 7, there is also a continuous increase in the share across the district border to the Neighbourhood Oberstrass in District 6. At the finest spatial resolution of the **statistical zones scale**, these differences become even more pronounced. The distribution is much more fragmented and partly extremely uneven. Particularly striking is the Statistical Zone (SZ) ETH Hönggerberg in the Neighbourhood Höngg with a share of 98%, followed by SZ Auzelg in neighbourhood Saatlen with 93% and SZ ETH Hönggerberg in Neighbourhood Hochschulen with 80%. In addition, SZ ETH Hönggerberg is a clear outlier, as the neighbouring SZs have very low values. In contrast, the neighbouring SZs to the east of SZ ETH / Universität also have higher shares and form a small cluster. On the other hand, the neighbouring SZ to the east in the Neighbourhoods Oberstrass, Fluntern and Hottingen show again extremely low shares and form a clear boundary within the districts, but beyond the district boundaries. Otherwise, the proportions of the Building Area are very dispersed throughout the city.

The share of *Housing Stock* is significantly lower overall than in the Building Area. On the **district scale**, the shares in all districts are below those of the Building Area. Within the Housing Stock, only district 1 achieves a slightly higher share with 22%, followed by District 4 with 13%. Districts 7 and 10 have the lowest shares, with both shares below 5%. At **neighbourhood scale**, too, the shares remain very similarly low with less marked differences. As indicated at district level, the highest shares are found in District 1, with the Neighbourhood City (26%) and Rathaus (24%), alongside with Hard (24%) in District 4. Only the **statistical zones scale** reveals the extreme fragmentation in some cases. Individual SZs with very high shares appear here, which are not noticeable in aggregated form. Particularly prominent is SZ Hardhof in the Neighbourhood Altstetten with a share of 70%, which represents an outlier, as surrounding SZs have significantly lower shares. The SZ Auzelg (51%) in the Neighbourhood Saatlen, Kornhaus (66%) in the Neighbourhood Gewerbeschule and ETH/Universität (59%) in the Neighbourhood Hochschulen also show very high shares. However, in their neighbourhoods there are other SZs with higher shares, so that they form local clusters. The cluster around SZ ETH/Universität was already recognisable on the neighbourhood scale, but is much more precisely visible on the statistical zone scale. On the other hand, the north-east of District 7 shows the SZ Dolder with 30%, which is balanced out on neighbourhood scale by lower shares of the other SZs. Most of the remaining statistical zones have little or no share of Housing Stock.

Housing Cooperatives: Although Housing Cooperatives account for only 9% of the total *Building Stock* citywide, their spatial distribution is highly structured and reveals pronounced clustering, particularly at the neighbourhood and statistical zone scale. Even at the **district scale**, a clear concentration can be observed in District 12, with moderately elevated values in the adjacent District 6. Additionally, slightly higher shares are found at the south-western periphery, especially in District 2, 3 and 9. In contrast, an extensive cluster of low shares is evident in the city centre and on the Zürichberg area, spanning District 1, 5, 7 and 8, all of which exhibit shares below 5%. At the **neighbourhood scale**, these patterns become more precisely delineated. The neighbourhoods within District 12 consistently display higher shares, although differences between neighbourhoods remain. The cluster previously identified at the south-western edge becomes more distinct, now clearly extending across multiple neighbourhoods in District 2, 3 and 9 an shows a pattern that was less visible at the aggregated district scale. Conversely, the cluster

of low shares also becomes more expansive, extending beyond the inner city to include adjacent neighbourhoods in District 2, 3, 4 and 6, all of which shows shares below 5% that were not detected at the district scale. At the finest spatial resolution, the **statistical zone scale**, further differentiation emerges. The south-western cluster is interrupted by the SZ Albisgütli in Neighbourhood Friesenberg, which stands out as a negative outlier with a particularly low share. Similarly, SZ Sihlweidstrasse in Neighbourhood Leimbach exhibit a markedly lower share than its surrounding SZ – both of which were not evident in the neighbourhood scale. In the northern part of the cluster, elevated shares appear in the south-west of Neighbourhood Altstetten, while the north-eastern parts of the same neighbourhood show much lower shares. This highlights that even within a single neighbourhood, the spatial distribution of Building Area can be internally clustered and uneven. In the Neighbourhood Unterstrass, the data reveals a clear spatial divide: the southern part consistently remains below 5%, while the northern part forms a contiguous high-share cluster extending into southern Neighbourhood Wipkingen and Affoltern, reaching as far as western neighbourhood Seebach. Conversely, the cluster in District 12 appears smaller at that scale than at the neighbourhood scale, as statistical zones such as SZ Auzelg in Neighbourhood Saatlen and SZ Bocklerstrasse in Neighbourhood Schamendingen-Mitte fall below 10%. Meanwhile, the cluster of low shares expands further at the northern part of Neighbourhood Altstetten and adjacent areas in Neighbourhood Höngg and Oerlikon, confirming a broader spatial extent of low shares of Housing Cooperatives that was not fully visible at the coarser scales.

The spatial distribution of Housing Cooperatives based on the *Housing Stock* dataset reveals a similar overall pattern to the Building Area, but with general higher shares and even more pronounced clustering. At the **district scale**, District 12 once again displays by far the highest share, even more clearly reaching 30%. The cluster at the south-western edge of the city is also highly visible. However, in contrast to the Building Area, District 3 shows a slightly lower share, while Districts 6, 10 and 11 have higher shares. As a result, this cluster stretches almost continuously from District 2 to District 12, tracing the urban periphery. Districts 1, 7 and 8, each with shares below 5%, form a distinct low-share cluster, although District 5 lies somewhat outside this cluster due to its relatively higher share. At the **neighbourhood scale**, the pattern established in the Building Area is largely the same, though the shares are generally higher. Peripheral neighbourhoods (from Wollishofen to Hirzenbach) show elevated shares, forming also in this scale a coherent high-share cluster. The cluster of neighbourhoods with low shares remains largely similar to the previous dataset, although four of them now fall into a slightly higher share (5-10%). Nevertheless, given the overall rise in share, these SZs can still be considered part of the low-share cluster. At the **statistical zone scale,** the spatial distribution becomes even more differentiated and in parts more expansive. The SZ Sihlweidstrasse in Neighbourhood Leimbach and SZ Albisgütli in Neighbourhood Friesenberg show here higher shares and are thus incorporated into the broader high-share cluster. At the same time, the large cluster visible at aggregated scale is now interrupted by SZ Juchhof in Neighbourhood Altstetten, as well as SZ Ettenfeld and SZ Leutschenbach both in Neighbourhood Seebach, all of which exhibit distinctly lower shares. The cluster in District 12 remains robust, except for SZ Auzelg in Neighbourhood Saatlen, which stands out as a local low-share outlier. In contrast, the cluster between northern Neighbourhood Unterstrass and western Neighbourhood Seebach is more extensive than in the Building Area dataset. This is primarily due to higher shares across Neighbourhood Affoltern, which stretch into north-western Neighbourhood Höngg and to the northernmost parts of Neighbourhood Altstetten. Conversely, areas around Lake Zurich and the Zürichberg (especially in District 7 and 8) as well as the Neighbourhoods Alt-Wiedikon, Werd, Langstrasse and Escher Wyss, consistently remain in the range of very low shares.

Private Companies: The spatial distribution of Private Companies in the *Building Area* also reveals distinct patterns across different spatial scales. At the **district scale**, a cluster of higher shares emerges along the eastern lakeshore of Lake Zurich and the Limmattal area, encompassing District 1, 4, 5 and 8 (between 45% and 60%). Additionally, all districts situated further south also show noticeably elevated shares of Building Area. In contrast, a cluster of comparatively lower shares is visible along the axis of District 6, 7 and 10, as well as District 12, although even here the shares remain between 20% and 30%. District 11 with 39%, by contrast, exhibit a significantly higher share and appears as an outlier surrounded by districts with lower shares. At the **neighbourhood scale**, the overall distribution resembles that of the district scale, yet greater internal variation becomes evident. In Districts 2, 3 and 9, for instance, the neighbourhood scale distribution reveals the opposite pattern to that seen for Housing Cooperatives: the inner-city neighbourhoods closer to the centre tend to have higher shares, while peripheral neighbourhoods in the south-west exhibits lower share, effectively balancing out the aggregate district scale shares. The axis of high shares stretching from the eastern shore of Lake Zurich along the Limmattal area remains clearly visible. Within District 11, the Neighbourhoods Oerlikon and Seebach show higher shares than Neighbourhood Affoltern. In contrast, the lowest shares are again concentrated in District 12 and along the Zürichberg area, though here a gradient becomes visible: the further south-west one moves within the neighbourhoods, the higher the shares of Private Companies become. At the **statistical zone scale**, a distinctly more fragmented spatial pattern emerges. While Neighbourhood Oberstrass generally shows very low shares, the Neighbourhoods Fluntern and Hottingen display significant internal differences, for example, the SZ Zoo in Neighbourhood Fluntern and SZ Dolder in Neighbourhood Hottingen record markedly higher shares than their immediate surroundings. The cluster along the eastern lakeshore and the Limmattal area is still clearly identifiable at the finer resolution. However, the higher level of detail also reveals the cluster's westward extension into Neighbourhood Enge and Wollishofen, with very high shares in the northeastern part of Neighbourhood Enge and the adjacent Neighbourhood City, as well as in Neighbourhood Escher Wyss and along the boundary between Neighbourhoods Hard and Albisrieden and show patterns that are not visible at the neighbourhood scale. Further internal differentiation becomes visible in Neighbourhood Alt-Wiedikon, where the northeastern area shows relatively low shares, whereas three SZs in the south-west (particularly in SZ Binz) exhibit strikingly high shares of up to 90%. This area borders neighbourhood Friesenberg, which continues to display predominantly low shares, forming a clearly defined low-share cluster along the south-western edge of the city. In the northern part of Zurich, as already suggested by the coarser scales, shares are comparatively lower. However, the finer resolution now makes it possible to clearly identify a high-share cluster centred around SZ Neu-Oerlikon in Neighbourhood Oerlikon, with shares exceeding 80% and shows a pattern that already influenced shares seen in District 11 at the district scale.

In comparison to the Building Area, the spatial distribution of *Housing Stock* at the **district scale** appears more homogenous. Slightly elevated shares are found in District 4 and 8, both exceeding 40%, whereas District 12 records the lowest share at still 25%. All other districts fall within a range of 30-40%, indicating relatively limited variation across this spatial scale. At the **neighbourhood scale**, the differences between neighbourhoods are also considerably less pronounced than in the Building Area. Few neighbourhoods stand out distinctly. Nevertheless, the pattern along the Zürichberg area and in the District 12 remains visible, though the contrast with adjacent neighbourhoods is more subtle. Only Neighbourhoods Leimbach and Friesenberg display notable lower shares, emerging more clearly as low-share areas. At the **statistical zone scale**, the Housing Stock distribution remains generally aligned with

the Building Area, yet distinct localised fragmentations become visible. While many SZs follow similar patterns across both datasets, some important divergences emerge. For instance, in the Zürichberg area, the SZ Zoo in neighbourhood Fluntern and SZ Dolder in neighbourhood Hottingen, which had relatively high shares in the Building Area, no longer stand out as prominently in the Housing Stock data. Conversely, several SZ in Neighbourhood Witikon markedly higher shares. An especially notable shift is observed in the SZ ETH Hönggerberg in Neighbourhood Höngg, which had a share of under 5% in Building Area, but exhibits a striking 65% in Housing Stock. The opposite shows in SZ Albisgütli in Neighbourhood Friesenberg, which previously stood out due to its higher Building Area share, but now aligns more closely with the cluster of low-share SZ in the Housing Stock. These shifts highlight the importance of differentiating between general building and residential building ownership, as they capture district spatial logic within the urban landscape.

Natural Persons: In the case of Natural Persons, the overall share increases when comparing the Building Area to the Housing Stock. The spatial distribution of this ownership category tends to exhibit inverse patterns to that of Private Companies. At the **district scale**, District 7 stands out with a notably high share of over 40% in *Building Area*, while Districts 6 and 10 also form a corridor of relatively elevated shares (over 30%). By contrast, District 1 and 5, located in the city centre, exhibit distinctly lower shares. The remaining districts show no makable deviations. At the **neighbourhood scale**, the pattern becomes clearer: Neighbourhood Hirslanden appears as a local hot spot, and although surrounding neighbourhoods show slightly lower shares, they still register above-average shares – forming a spatial cluster that includes Neighbourhood Schwamendingen-Mitte, which was not apparent at the district scale. Further fragmentation becomes visible, especially in districts with lower shares. For instance, within District 1, the Neighbourhood Hochschulen shows higher shares than the rest of the district. Similarly, in District 3, 4, 5, 9 and 12, considerable intra-district variation and patterns become evident that were not observable in the more aggregated scale. At the **statistical zone scale**, compared to other ownership categories, the spatial distribution of Natural Persons in Building Area is less clearly defined. While certain patterns emerge, the overall distribution is more mixed. A noticeable cluster of higher shares is visible in the south-western SZ of District 7, which extends into District 6, 10 and parts of 11 and 12. Conversely, a smaller cluster of higher shares appears in the south-west of District 9, which was not discernible at the neighbourhood scale due to spatial averaging. In District 1 to 5, shares are generally lower, but scattered SZs with elevated shares prevent the formation of a clear low-share cluster, except for the Neighbourhoods Escher Wyss and northern Altstetten, where a more coherent cluster of low shares can be identified.

In the *Housing Stock*, the shares are mostly higher. At the **district scale**, the distribution appears far more homogenous, with only minor differences. District 7 still has the highest share of almost 45%, but adjacent Districts 1, 6 and 8 also register high shares of above 35%. At the **neighbourhood scale**, greater variation emerges. The Zürichberg area cluster is again clearly visible, though Neighbourhood Witikon shows a lower share, while Neighbourhood Oberstrass displays a higher share than in the Building Area. In District 8, Neighbourhoods such as Seefeld show increased shares in Housing Stock as well. Outside this main cluster, several additional patterns emerge. In Districts 4 and 5, the western Neighbourhoods Hard and Escher Wyss display significantly lower shares than their eastern counterparts Werd, Langstrasse and Gewerbeschule. In District 12, Neighbourhood Schwamendingen-Mitte records higher shares than the other two neighbourhoods. A similar pattern is visible in District 3, where Neighbourhood Sihlfeld has the highest share, followed by the Neighbourhoods Alt-Wiedikon and Friesenberg. At the **statistical zone scale**, the spatial patterns largely mirror those of the Building Area,

though the values are consistently higher. A striking shift occurs in SZ Zoo in Neighbourhood Fluntern, which had very low shares in Building Area but now displays a particularly high share in Housing Stock, extending the Zürichberg area cluster to the city's northern edge. In general, the distribution at the city's south-western and northern peripheries appears more homogenous in Housing Stock. Moreover, consistent across both datasets, the finest resolution reveals a previously undetected cluster of higher shares along Lake Zürich, while SZs along the Limmattal area remain lower.

Condominiums: Compared to Natural Persons, the overall share of Condominiums is significantly lower across both datasets. Nevertheless, some spatial similarities can be observed. In *Building Area* at the **district scale**, differences are minimal due to the overall low shares. Districts 7 and 10 show slightly elevated shares, each exceeding 10%, whereas the rest of the districts have notably lower shares. At the **neighbourhood scale**, faint spatial patterns become visible despite the low overall share. In District 7, the Neighbourhoods Fluntern and Witikon register relatively higher shares, while in District 10 the Neighbourhood Höngg stands out. Additional Neighbourhoods such as Escher Wyss and Mühlebach also show elevated values – though these were not visible at the district scale. What initially appeared as a low-share cluster in District 1, 3 and 4 becomes less coherent. In District 3, the Neighbourhoods Alt-Wiedikon and Sihlfeld exhibit slightly higher shares and connect the cluster, meanwhile Neighbourhood Friesenberg exhibits slightly lower shares that almost interrupt the cluster. In contrast, disaggregation within District 9 reveals a clearer extension of the low-share cluster along the Limmattal area, extending into Neighbourhood Altstetten. At the **statistical zone scale**, the level of differentiation increases. A corridor of higher shares becomes visible across the SZs of District 7 and Neighbourhood Oberstrass, though this axis is interrupted by the SZ Susenberg in Neighbourhood Fluntern, which has a markedly low share. In District 10, the SZs surrounding SZ ETH Hönggerberg show distinctly higher shares, as parts of District 9's south-west. Strikingly, the SZ Manegg in Neighbourhood Wollishofen exceeds 30% and SZ Mühlacker in Neighbourhood Affoltern surpasses 40%, yet their surrounding SZs have significantly lower shares, which neutralised their influence at the neighbourhood scale and made them invisible at coarser resolutions.

In the *Housing Stock* dataset, overall shares of Condominiums remain similarly low. At the **district scale**, District 7 again shows a moderately higher share. While District 10 has a slightly lower share than in the Building Area and District 5 shows here a comparable share to District 7. The only district with less than 5% is District 12. At the **neighbourhood scale**, spatial fragmentation becomes more pronounced compared to Building Area. A clear cluster of elevated shares stretches across the Zürichberg area in District 7 into Neighbourhoods Oberstrass and Hochschulen, as well as Weinegg and Mühlebach. This intra-district variation emphasises the need for disaggregated spatial analysis. Particularly noteworthy is District 5, where Neighbourhood Gewerbeschule records just over 5%, whereas Neighbourhood Escher Wyss has over 40%, which is also by far the highest share across all neighbourhoods. At the **statistical zone scale**, the differences also intensify. The SZ KV Business School in Neighbourhood Escher Wyss stands out with a share of nearly 70%, followed by SZ Technopark with almost 60%. Compared to Building Area, the Zürichberg area cluster in Housing Stock exhibits higher shares overall. Additionally, SZ Susenberg in Neighbourhood Fluntern shows an increased share, as does SZ Leutschenbach in Neighbourhood Seebach, further highlighting the spatial diversity of Condominiums at fine-grained resolutions.

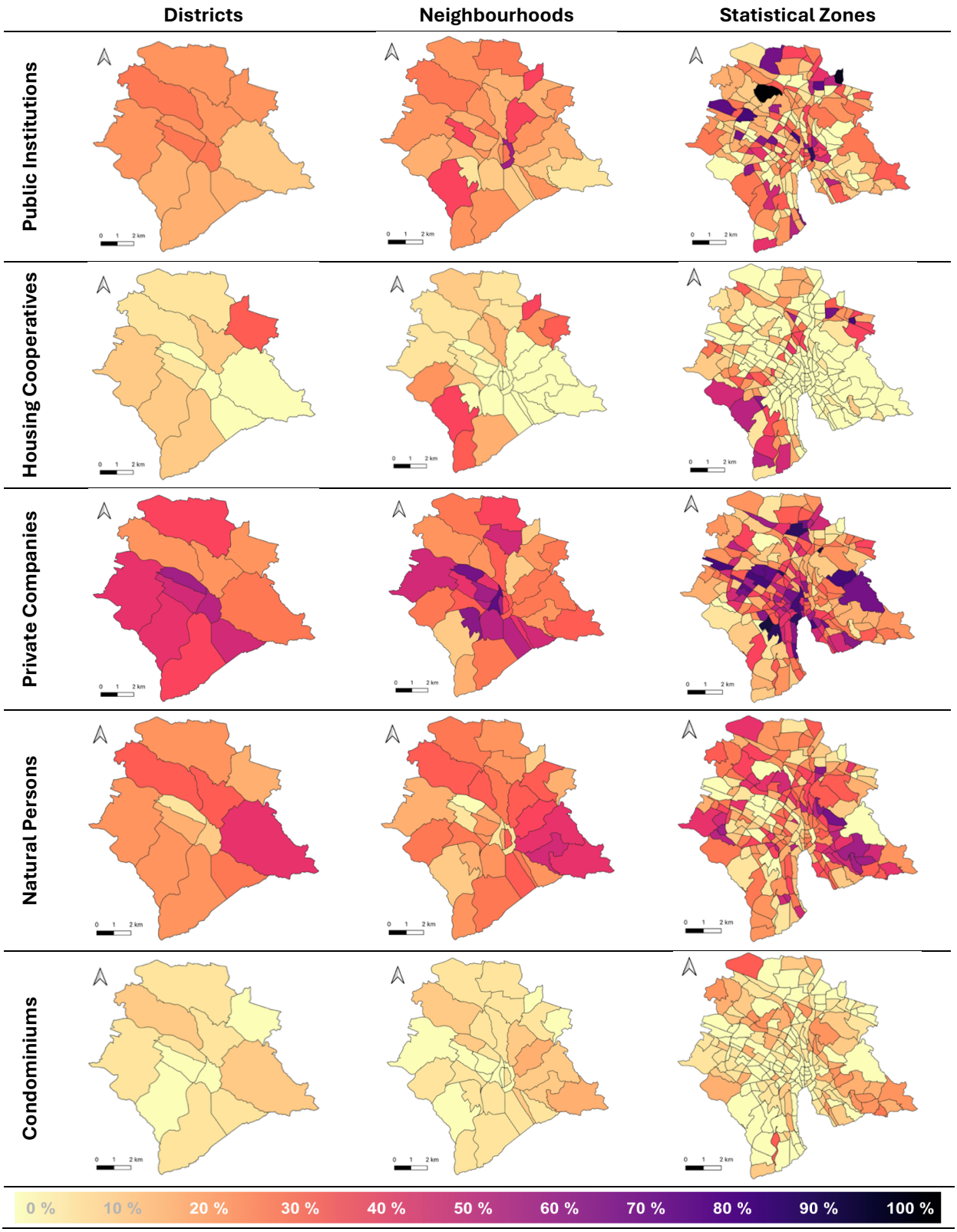


Figure 5: Share of Building Area in 2024 for each ownership category across districts, neighbourhoods and statistical zones.

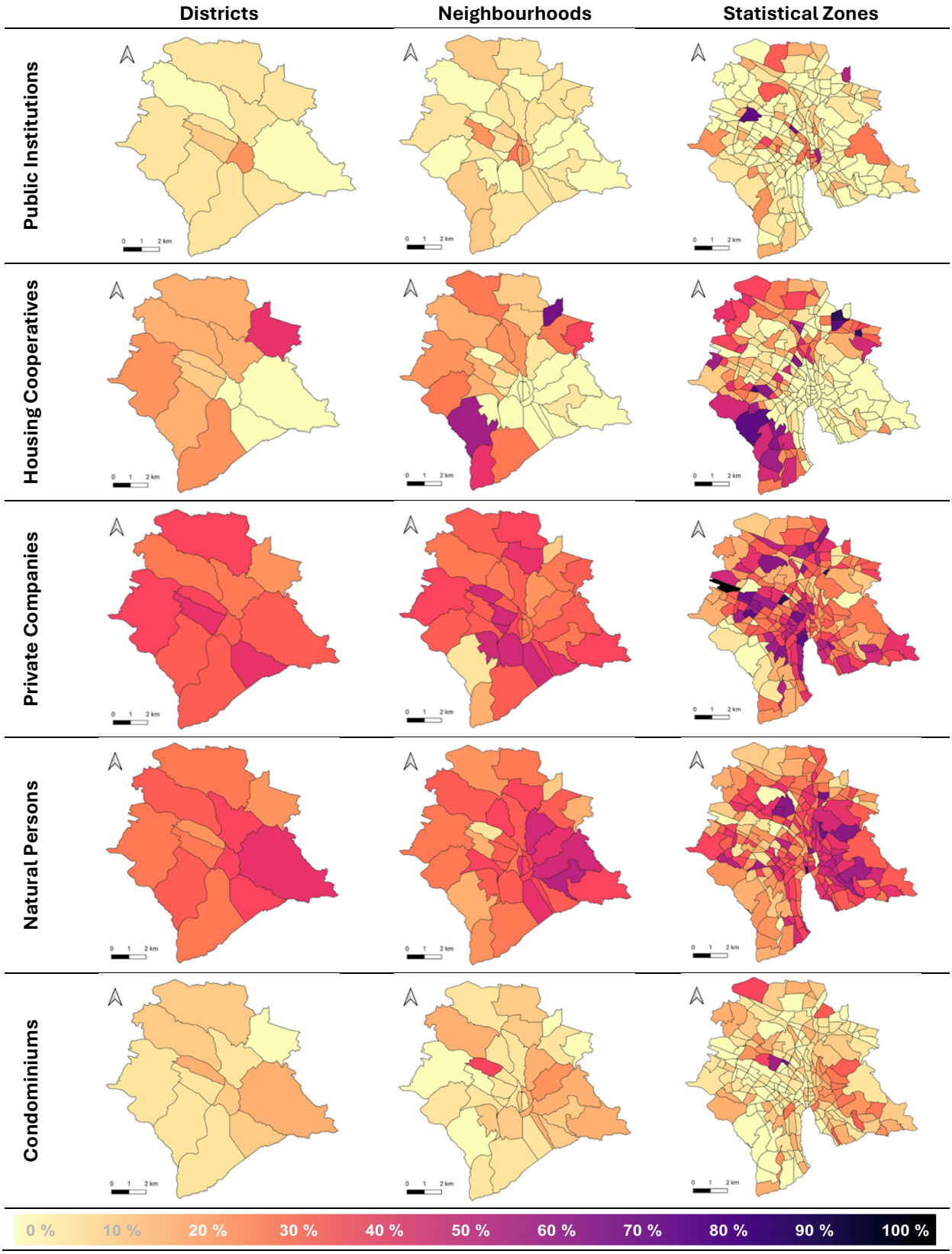


Figure 6: Share of Housing Stock in 2024 for each ownership category across districts, neighbourhoods and statistical zones.

6.1.2 Distribution within ownership categories

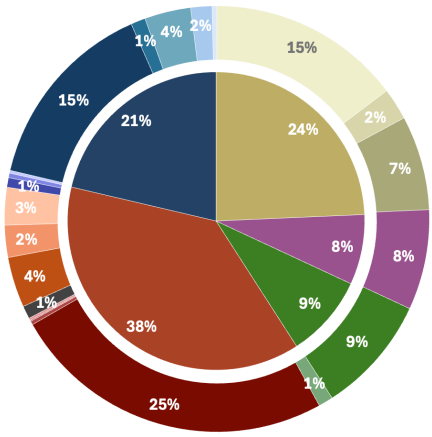
While the five overarching ownership categories analysed in Section 6.1.1 offer a robust framework for comparative analysis across the datasets and spatial scales, they nonetheless encompass a considerable degree of internal heterogeneity. This internal diversity becomes particularly evident when disaggregating the dataset Building Area by legal entity, revealing distinct spatial patterns that remain obscured in the aggregated categories.

Figure 7 illustrate this internal fragmentation by displaying the relative shares of legal entities within each ownership category across the city of Zurich. The ownership category Private Companies, in particular, comprises a wide range of legal entities highlighting the analytical values of a more nuanced subdivision beyond the five overarching ownership categories. Since the ownership categories Housing Cooperatives and Condominiums already constitute distinct legal entities without further internal differentiation, the subsequent analysis focuses exclusively on the remaining three categories as outlined in the methodological approach (Chapter 5).

Public Institutions: The disaggregation of the Public Institution Building Area reveals four distinct legal entities in this ownership category. To illustrate the internal differentiation, Figure 7 presents a city-wide overview of their respective shares. It reveals that the legal entity City of Zurich accounts for by far the largest share at 14.7 %, or around two-thirds. The Canton of Zurich follows with just under a quarter, while Municipal Foundations (1.1%) and the Federal Government (1.6%) account for nominally small shares. All remaining other public owners combined represent only 0.4% of the total Building Area.

The spatially disaggregated analysis at the statistical zone scale underscores the fine-grained fragmentation within Public Institutions. Figure 8 illustrates the relative shares of the five legal entities included in this ownership category. Despite the generally modest shares (under 5% for all entities apart from the City of Zurich) spatially concentrated patterns and distinct hot spots are recognisable for each entity.

Share of Building Area in City of Zurich



Ownership Categories		Legal Entities	
Natural Persons	24.3%	Single Natural Persons	14.7%
		Heirs' Communities	2.4%
		Multiple Natural Persons	7.2%
Condominiums	7.6%	Condominiums	7.6%
Housing Cooperations	9.0%	Housing Cooperatives	9.0%
Private Companies	37.8%	Cooperatives	1.1%
		Public Limited Companies	24.7%
		General Partnerships	0.3%
		Limited Commercial Partnerships	0.1%
		Limited Liability Companies	0.2%
		Mixed Ownerships	1.0%
		Associations and Private Foundations	3.8%
		Pension Funds	2.4%
		Investment and Pension Foundations	2.8%
		Evangelical-Reformed Church	0.8%
		Roman-Catholic Church	0.3%
		Other Religious and Cultural Communities	0.2%
Public Institutions	21.3%	City of Zurich	14.7%
		Municipal Foundations	1.1%
		Canton of Zurich	3.5%
		Federal Government	1.6%
		Other Public Owners	0.4%

Figure 7: Share of Building Area in 2024 by ownership categories and legal entities across the City of Zurich. Legal entities representing less than 1% (rounded) are not labelled in the pie chart.

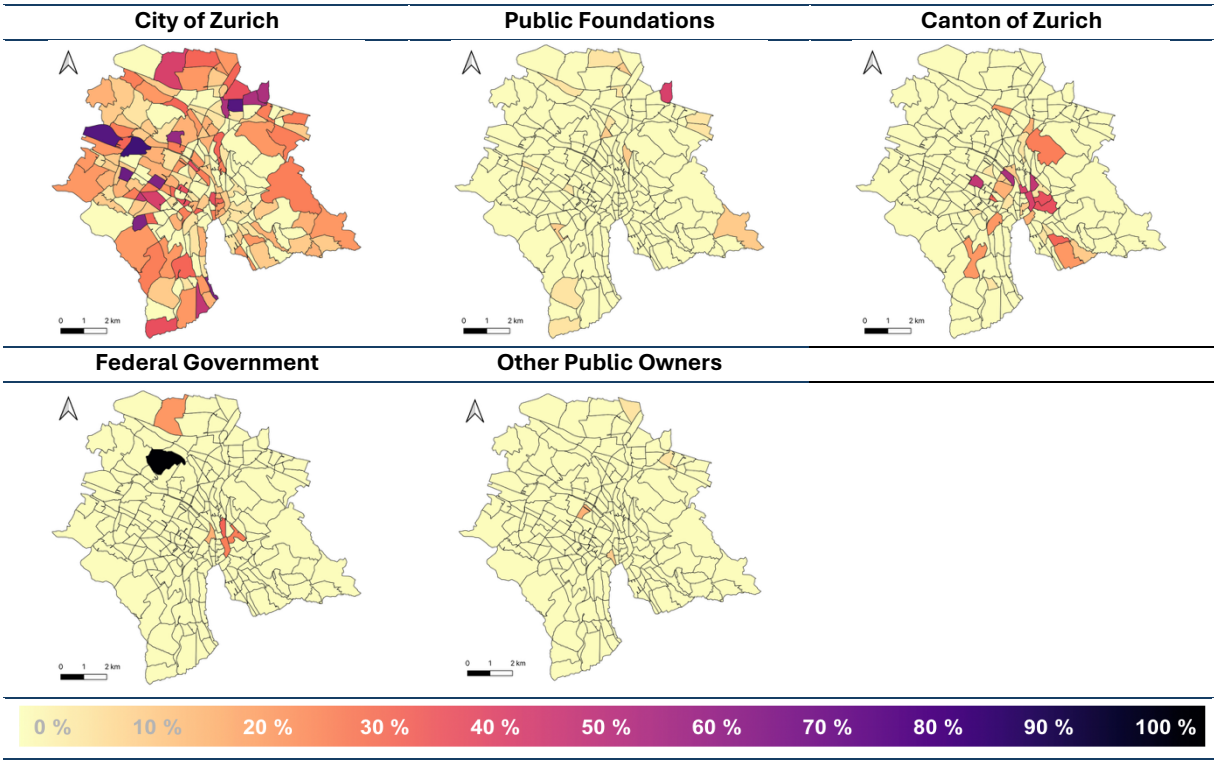


Figure 8: Share of Building Area in 2024 by legal entities from ownership category Public Institutions across statistical zones.

The **City of Zurich** clearly dominates within this ownership category, exhibiting notably elevated shares along the northern and southern peripheries, as well as in the Limmattal area. By contrast, the south-eastern Districts 7 and 8, as well as the Neighbourhoods Oberstrass, Höngg, City, Hochschulen and Enge, display markedly lower shares. The spatial distribution of city-owned Building Areas is therefore characterised by discernible spatial clusters, even though the city, in virtue of its numerical dominance, appears more spatially diffuse. The **Municipal Foundations**, in contrast, hold only marginal shares in terms of Building Area. A notable spatial outlier in this regard is the SZ Auzelg in the Neighbourhood Saatlen, where they account for over 40% of the Building Area, which is a striking exception in the broader urban context. Beyond this, their distribution remains highly uniform and spatially unremarkable. The **Canton of Zurich** exhibits a more structured spatial pattern, with a pronounced cluster centred in District 1. Further clusters of elevated shares are visible in the north-eastern part of District 6 and the south-eastern part of District 8, each containing smaller but nonetheless coherent clusters.

In the case of the **Federal Government**, shares are highly localised and concentrated in a handful of significant SZs. A prominent cluster lies at the intersection of the Neighbourhoods Hochschule, Oberstrass and Fluntern, with shares reaching 25-30%. A close concentration occurs in the SZ Bahnhofplatz within the Neighbourhood City. In the northern area of the city, two additional outliers emerge: SZ ETH-Hönggerberg in Neighbourhood Höngg, here Federal Government has 100% of Building Area, and SZ Reckenholz in Neighbourhood Affoltern, with just over 20%. These sites stand in strong contrast to the rest of the northern city, where Federal Government ownership is virtually absent. The category of **Other Public Owners**, while accounting for a mere 0.4% of the total Building Area city-wide, displays some notable concentrations in specific SZs. In District 5, this category reaches a peak of 2.3%, primarily due to an accumulation of over 15% in the SZ Neue Hard within the

Neighbourhood Escher Wyss. A similar concentration is found in the SZ Paradeplatz in Neighbourhood City, with over 10%. Additional outliers include SZ Eichrain in Neighbourhood Seebach and SZ Auhof in Neighbourhood Schwamendingen-Mitte, each slightly above 5%. Though these figures are modest in absolute terms and barely perceptible at city scale, they are striking when contrasted with the near-negligible citywide average.

Private Companies: The ownership category Private Companies encompasses a broad spectrum of legal entities, reflecting the complexity of ownership. In total, it is subdivided into eight distinct legal entities, two aggregations of two legal entities, as well as two aggregated groups of more legal entities. At city-wide scale (Figure 7), the ownership category Private Companies account for 37.8% of the Building Area. Within this ownership category, Public Limited Companies are by far the most dominant, comprising nearly two-thirds of the Building Area (24.7%). This is followed at a considerable gap by Associations and Private Foundations (3.8%), Investment and Pension Foundations (2.8%), Pension Funds (2.4%) and Cooperatives (1.1%). All other legal entities contribute less than 1% individually and thus remain marginal in their overall influence. To uncover the spatial variation within the aggregated ownership category, Figure 9 provides a fine-grained spatial resolution at the statistical zone scale. Despite the relatively low shares of many legal entities, the maps reveal distinct spatial patterns for several of them.

Public Limited Companies largely mirror the overall distribution of the Private Companies, although with somewhat lower intensity. Higher shares are most prominently concentrated around Lake Zurich, along the axis encompassing District 1, 4 and 5, as well as the northern part of District 9. Additionally, the curved cluster around SZ Neu-Oerlikon in Neighbourhood Oerlikon constitutes another high-share cluster, most notable the SZ Murwiesenstrasse, which exhibits the highest overall share at 80%. Further hot spot includes the SZ Zoo (74.4%) in Neighbourhood Fluntern and SZ Dolder (56%) in Neighbourhood Hottingen, both located in the northern area of District 7. In contrast to their aggregated distribution, a considerable number of SZs, particularly across Districts 6, 10 and 12, as well as north-western District 11 and the city's south-western periphery, exhibit markedly lower shares.

Associations and Private Foundations reveal a clear spatial concentration, forming a pronounced axis along Districts 6, 7 and 8. Notable hot spots include the SZ Rehalp (35.6%) and SZ Burghölzli (26.0%) in Neighbourhood Weinegg. Additional significant outliers include the SZ KV-Business School (30.5%) in Neighbourhood Escher Wyss, SZ Albisgütli (18.3%) in Neighbourhood Friesenberg and SZ Aussendorfstrasse (16.6%) in Neighbourhood Seebach. Outside these SZs, the shares are consistently low (typically below 5%) highlighting a spatially fragmented pattern in which few SZs exhibit elevated shares while the majority remains marginal.

Pension and Investment Foundations present a moderately structured spatial pattern. Two distinct clusters emerge, although they may not be visually prominent due to overarching cartographic classification. The first is centred in Neighbourhood Altstetten, where the SZ Altstetterplatz represents the principal hot spot, with 22.6% of the Building Area. The second cluster spans the southern part of Neighbourhood Affoltern and north-western Neighbourhood Höngg, with the SZ Zehntenhausplatz (Affoltern) reaching 22.4%. Somewhat peripheral to clusters are SZ Manegg (16.4%) in Neighbourhood Wollishofen and SZ Mahrbachweg (14.6%) in Neighbourhood Leimbach, both of which appear as isolated outliers. Further statistically significant localised peaks include SZ Gartenstrasse (15.3%) in Neighbourhood Enge, SZ Marktplatz Oerlikon (11.9%) and SZ Wiesliacher (11.6%) in Neighbourhood Witikon. In the inner-city SZs of Districts 1, 4 and 5, higher shares do occur intermittently but are

interspersed with lower ones, preventing the emergence of discernible clustering. In contrast, Districts 7 and 8, southern District 2, and the northern portion of District 11 show consistently low shares with only very occasional outliers. Overall, the Pension and Investment Foundations are less concentrated geographically. However, they still have a recognisable spatial pattern with two clear local clusters, as well as the outliers and the well-distributed inner-city area.

The distribution of **Pension Funds** on the other hand reveals several medium-sized clusters above the city average (2.4%). The most prominent spatial cluster is in the Neighbourhood Seebach with the SZ Schwandenholz (22.5%), which also is the highest share city-wide. The Neighbourhood Witikon also forms a cluster with higher shares, as is the SZ Glockenacker with 14.3%. A less dominant cluster forms in the south-western part of the Neighbourhood Alt-Wiedikon with the SZ Saalsporthalle and the SZ Rieterpark attached in the Neighbourhood Enge with both over 10%. Quite an outlier is shown in the north of the Neighbourhood Unterstrass with the SZ Nordheim with a clear high share of 17.3%, as well as in the south the SZ Drahtschmidli with 13.7%. Apart from SZ Roswiesenstrasse (11.3%) in the Neighbourhood Schwamendingen-Mitte, the entire District 12 remains low, as well as District 10 except for SZ Rütihof (8.5%) and District 2 (apart from the before mentioned SZ Rieterplatz). The Neighbourhood Oberstrass and most of the neighbourhoods in District 7 (exept Witikon) are as well clustered with very low shares, as well as the District 5. Overall, Pension Funds shares are not evenly distributed but characterised by several medium-sized hot spots and outliers in very low clusters, which illustrates the heterogeneous and complex spatial pattern.

The share of **Cooperatives**, on the other hand, has only ten statistical zones with shares over 5% and therefore not a lot of patterns. A clear hotsport appears in District 5, with the SZ Kornhaus (36%) in the Neighbourhood Gewerbeschule together with KV-Business School (28.8%) in the Neighbourhood Escher Wyss. In the same Neighbourhood, the SZ Hardturm (25.2%) is also recognisable an outlier with but interrupted by SZ Technopark with a share of less than 5%. In Neighbourhood Altstetten, however, several SZs form a smaller cluster (Calandastrasse 23.9%; Letzigrund 13.8%; Dachslernstrasse 6.1%). In District 1, on the other hand, shares remain between 5-10% and are very scattered. Apart from Districts 1, 5 and 9, however, no SZs exceed 5% and the distribution is very homogeneous. This makes it clear that the share of Cooperatives is massively concentrated in individual districts in particular and shows that it makes sense to look at the spatial resolution of statistical zones.

Mixed Ownerships entities show very limited spatial presence, with few SZs exceeding the 5% threshold. Still, two small clusters can be identified: in Neighbourhood Alt-Wiedikon (SZ Saalsporthalle 21.2%; SZ Binz 5.1%) and in Neighbourhood Affoltern (SZ Zehntenhausplatz 15.4%; SZ Mühlacker 7.4%). Additionally, two SZs stand out as relatively high-share outliers: SZ Werdplatz (8.7%) in Neighbourhood Werd and SZ Brahmsstrasse (6.1%) in Neighbourhood Sihlfeld. Although absolute shares remain modest, they are substantially higher in comparison to the city-wide average (0.7%), thereby justifying their identification as localised concentrations. Beyond these, the distribution is relatively homogeneous, which also shows that the lower the average and the smaller the range of the distribution gets, the more difficult it is to view the maps with the chosen classification.

The **remaining legal entities** exhibit shares of less than 5% across all SZs and their spatial footprint is correspondingly minimal. In most cases, the SZs where these legal entities have own Building Area, the share is so small that their influence on the Building Area within any given SZ is negligible. Consequently, a more detailed investigation of their spatial distribution yields little analytical shares and was therefore not pursued further.

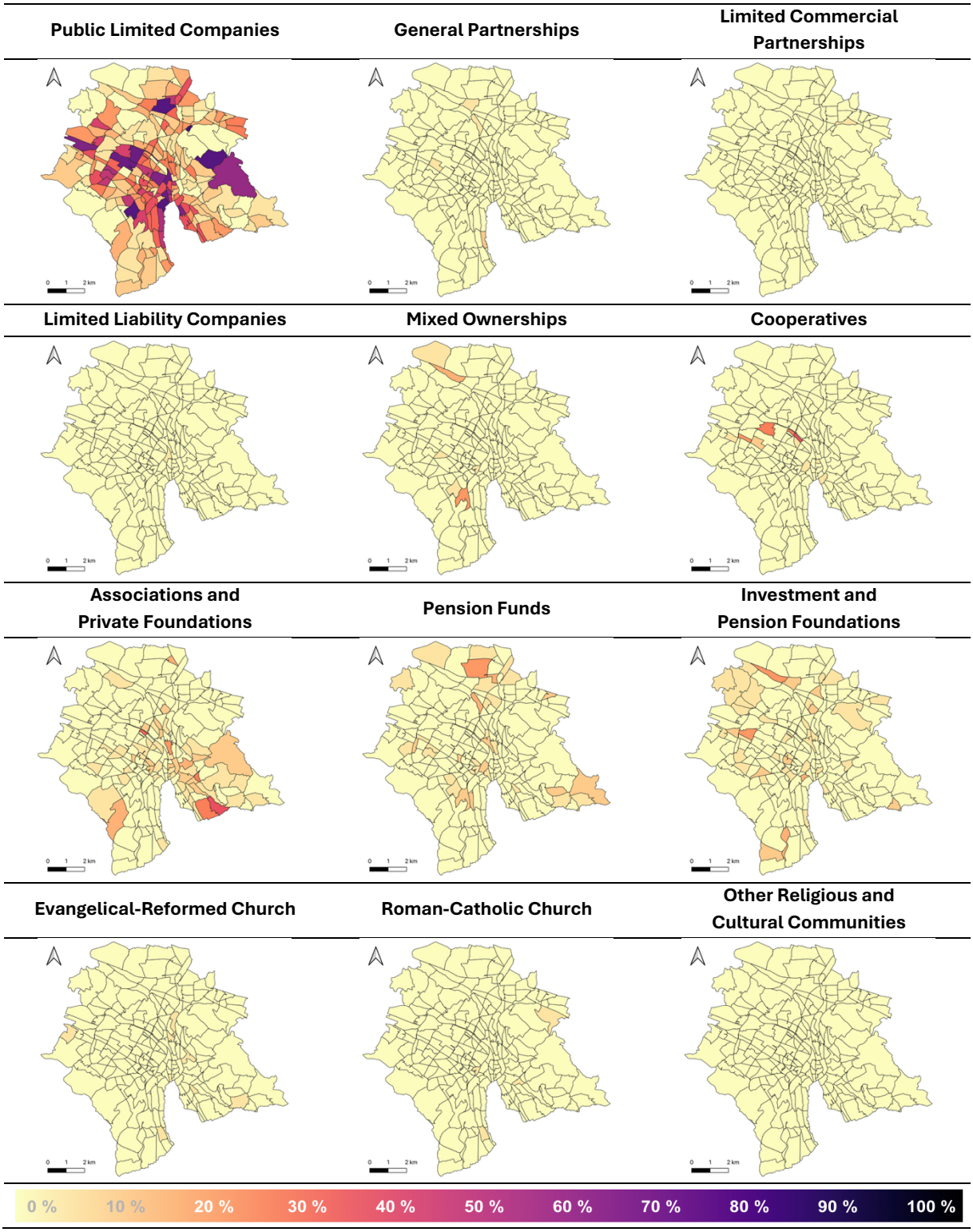


Figure 9: Share of Building Area in 2024 by legal entities from ownership category Private Companies across statistical zones.

Natural Persons: The ownership category Natural Persons is made up of three legal entities: Single Natural Persons, Heir's Communities and Multiple Natural Persons. However, a look at the urban

average shows that these also have significantly different shares in the Building Area (see Figure 7). Single Natural Persons account for 60% of the ownership category Natural Persons with 14.7% of the total share, Multiple Natural Persons account for almost half as much, with 7.2% and Heirs' Communities only account for 2.4% of the Building Area at city scale. To show the distributions in the city of Zurich at a more precise spatial resolution, the share of the Building Area of the three legal entities is mapped for each statistical zone in Figure 10. In the total share, the distribution within the category is again very clearly visible. Although the shares of Heirs' Communities remain consistently low (nowhere exceeding 10%) subtle spatial differences are still visible, even if they are less pronounced.

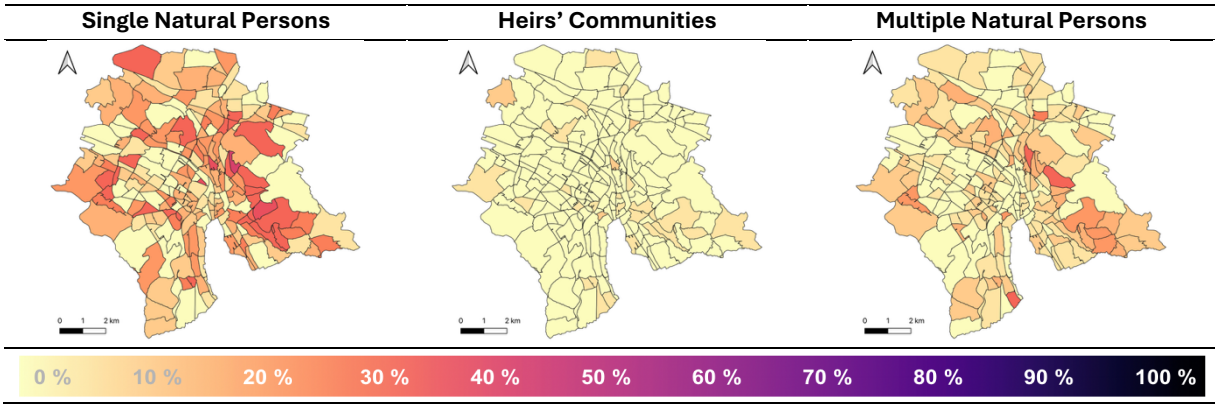


Figure 10: Share of Building Area in 2024 by legal entities from ownership category Natural Persons across statistical zones.

On a closer look, the legal entity **Single Natural Persons** has a clear hot spot, as already assumed by the district scale, especially in District 7, but this cluster of higher shares extends on the one hand in the north-western part via District 6 to the middle part of District 10, and to the District 11 as well as on the northeast edge of District 6 to the Neighbourhood Schwamendingen-Mitte. The highest share in this cluster occurs in the SZ Rigiblick in the Neighbourhood Oberstrass. The second cluster stretches from the south-west of District 9 across the centre of District 3 to the western part of the Neighbourhood Enge and then down to the north-western part of the Neighbourhood Wollishofen. Clusters of lower shares include the eastern part of District 11 together with the Neighbourhood Saatlen and the low share in the Neighbourhood Hirzenbach also extends over the north-eastern part of District 7. On the other hand, the Neighbourhoods Hard and Escher Wyss form together a quite large cluster of low shares with the northeastern part of the Neighbourhood Altstetten. Overall, the centre and Limmattal area is relatively uniformly characterised by lower shares and is surrounded by a peripheral area of connected clusters with higher shares.

Although the distribution of the **Heirs' Communities** is significantly lower, it is also very well distributed, so that there is no large hot spot, but the shares are neither homogeneously distributed spatially. A cluster of relatively higher shares in the more northerly area of District 8 can be identified, as well as the southern part of District 7. Another small cluster is in the southern part of the Neighbourhood Wollishofen. Apart from these weak clusters, SZs with shares of over 5% are very dispersed across the city, so no clear patterns are discernible. Overall, the shares are low, but there are some SZs with significantly higher shares. Most of which are distributed homogeneously except from two weak clusters.

The distribution of the shares of legal entity **Multiple Natural Persons** is very similar to that of Single Natural Persons but with lower shares overall. A cluster in District 7 together with the Neighbourhood Oberstrass is also clearly visible, but this legal entity is almost broken up by the SZ Sonnenberg (2.4%) in Neighbourhood Hottingen with a very low share. The hot spots in this cluster are primarily the SZ Susenberg 30.6% in Neighbourhood Fluntern and Letzistrasse in Neighbourhood Oberstrass with 30.2%. The northern part of the Neighbourhood Unterstrass has rather lower shares but mostly still over 5% and expands the cluster with the District 10, which even extends around the outlier SZ ETH Hönggerberg with 0% to the southern part of the Neighbourhood Affoltern. Here too, the south-western part of District 9 is a small cluster with higher shares, as are the SZs around the south-western part of the Neighbourhood Sihlfeld. The central part of the Neighbourhoods Enge and Wollishofen also form a cluster with higher shares, which continues in the north-west of the Neighbourhood Wollishofen as far as the Neighbourhood Leimbach. This cluster also has the highest share of this legal entity with the SZ Seeblickstrasse with 34.7% in the Neighbourhood Wollishofen. Overall, the spatial distributions very clearly reflect the patterns of the legal entity Individuals, except for a few differences.

6.1.3 Temporal change of ownership distribution

This section analyses the temporal development of ownership structures in Zurich between 2010 and 2024, with the aim of identifying shifts in distribution and spatial pattern in across different ownership categories. As outlined in the methodological approach (see Section 5.4.1), this analysis is based exclusively on the Housing Stock dataset and the statistical zone scale, where spatial differentiation is most pronounced, and a city-wide perspective for contextual orientation. The maps for each ownership category at statistical zone scale are presented in Figure 11 and the statistical insides in Appendix 11.2.2.

On the city level, the most significant relative increase is observed among Private Companies, with an increase of +11.5%. Housing Cooperatives (+2.4%) and Condominiums (+2.9%) also show a moderate increase. In contrast, Natural Persons have decreased -5.2% of their housing stock share, marking a clear decline in individually held property while Public Institutions remain relatively stable, with a slight increase of +0.5%.

The change in housing stock owned by **Public Institutions** at statistical zone scale shows a mean of +0.6%, with a standard deviation of 6%, which highlight that the overall dynamics at the statistical zones scale remains relatively moderate. In contrast to the city-wide scale, this scale reveals that over 40% of SZs experience an increase in the number of dwellings, while another 40% show a decrease. However, only 10% of SZs show a change of more than +5% and just 7% a decline exceeding -5%. Spatially, these changes are relatively evenly distributed across the city. The most significant decrease occurred in the SZ ETH / Universität, where the number of dwellings owned by Public Institutions declined by 24%. The highest increase was recorded in the SZ Hardhof in the Neighbourhood Altstetten, with a rise of 66%, followed by the SZ ETH Hönggerberg in the Neighbourhood Höngg, which shows an increase of roughly half that magnitude. Aside from these exceptional cases, there are neither widespread losses nor gains, indicating the absence of any overarching spatial trend.

The development of **Housing Cooperatives** reveals a markedly different pattern. A total of 17% of the SZs experienced an increase of more than +5%, while only 2% recorded a decrease exceeding -5%. With a mean change of +2.1%, the data indicate a moderately positive overall trend in the Housing Stock held by Housing Cooperatives. However, this development is far from spatially uniform. Increases are particularly concentrated at the northern and south-western edges of the city. The most pronounced growth occurred in the Neighbourhood Saatlen, with the SZ Hagenholz showing the highest increase citywide with +33%. Similarly, in the Neighbourhood Leimbach, substantial increase was observed in the SZ Höckler with +27% and Mahrbachweg with +21%. At the same time, certain SZs surrounding Leimbach also show decreases, illustrating the fragmented growth. Other SZs with declining shares are scattered across the city without forming a coherent spatial cluster. In contrast, Districts 1, 7 and 8 exhibit virtually no change, with only isolated SZs showing minimal notable differences. These patterns highlight the pronounced spatial unevenness in the development of Housing Cooperatives across Zurich's landscape.

Private Companies exhibit a markedly different trend, characterised by widespread and substantial growth across the city. Over 90% of the SZs show an increase in Housing Stock, and nearly 70% gained a rise of more than +5%. With a mean increase of +10%, the data clearly indicate a strongly positive development in the presence of Private Companies within the housing sector. This trend is also evident in the spatial distribution, where distinct clusters of growth can be identified across large parts of the city. A particularly prominent cluster is located in the Limmattal area, including the Neighbourhoods of Altstetten, Hard and Escher Wyss. Here, several SZs experienced very high increases exceeding +25%, with the SZ Juchhof standing out at +60% which is also the highest recorded increase citywide. Another notable cluster appears in the Neighbourhood Seebach, where the SZ Ettenfeld shows a substantial rise of +49%, indicating concentrated growth in this area as well. In contrast, only 15 SZs registered a decrease in the number of dwellings owned by Private Companies. Among these is a small cluster of three SZs in the Neighbourhood City, including SZ Sihlporte, which recorded a decline of -18%. The greatest decline occurred in the SZ ETH / Universität in the Neighbourhood Hochschule, where the share dropped by -48%. Additionally, a minor cluster of three SZs on the eastern edge

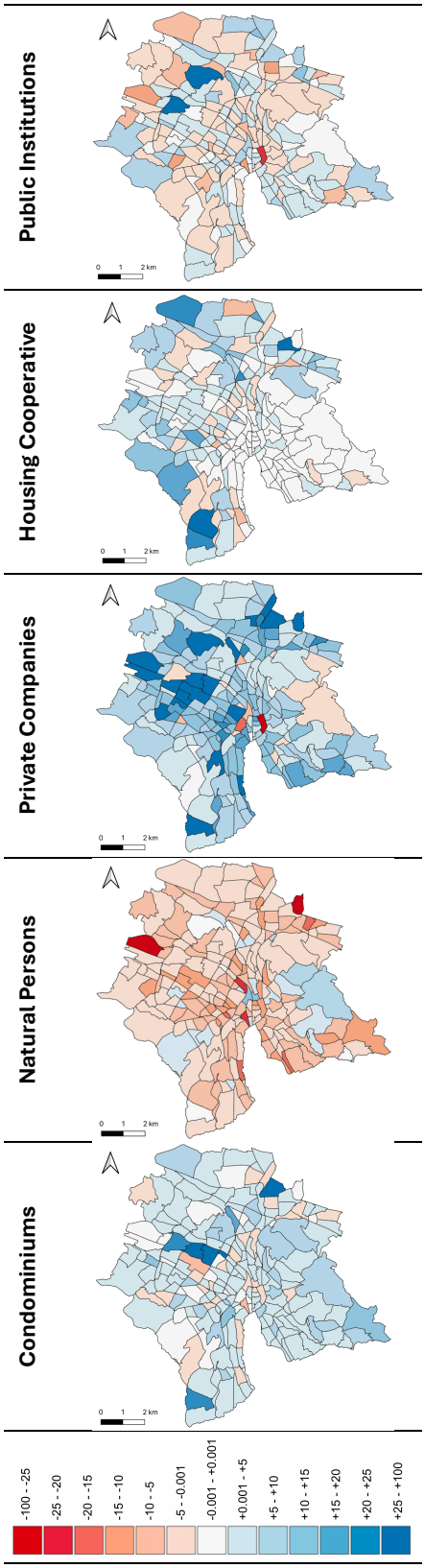


Figure 11: Change of share in Housing Stock between 2010 and 2024 by ownership categories across statistical zones.

of the city shows deceases, though all of these remain below -5%. Notably, there are virtually no SZs in which the share of Private Companies remained unchanged, further underlining the broad and dynamic expansion of this ownership category.

As already implicated at the city-wide scale, **Natural Persons** show a clear downward trend in Housing Stock. On average, a decline of -5% is observed, with 88% of SZs experiencing a decrease in dwellings held by this ownership category. Only 10% of SZs show an increase – primarily within a small cluster on the edge of the city in District 7, as well as in the northern part of District 1 and Neighbourhood Friesenberg, where the Housing Stock has grown since 2010. Aside from a few isolated exceptions scattered across the city, the data reveal a general pattern of decline. This downward trend is particularly pronounced throughout the Limmattal area, along the north-eastern edge of the city, and in the areas surrounding Lake Zurich. The most substantial decrease is found in the SZ Werdhölzli in the Neighbourhood Altstetten, with a decrease of -40%, followed by SZ Auzelg in Neighbourhood Saatlen with -25%. Nevertheless, more than half of the SZs recorded only moderate changes, with declines below -5%. Despite these nuances, the Natural Persons stand in marked contrast to the other ownership categories, clearly representing a countertrend to the broader pattern of growth observed elsewhere in Zurich's housing landscape.

For **Condominiums,** three-quarters of all SZs recorded an increase in the number of dwellings, while only two SZs experienced a decline greater than -5%. This broadly positive development is also visually reflected in the map, which is dominated by blue tones indicating widespread growth. The Neighbourhood Escher Wyss is particularly notable, with substantial increase in the SZs KV Business School, Technopark (+42%) and Hardturm (+30). A similarly pronounced increase is observed in the SZ Leutschenbach in the Neighbourhood Seebach, which grew by +29%. However, this case stands more isolated, as it is surrounded by SZs with more modest or even negative changes. The Zürichberg area down to Lake of Zurich shows consistently high levels of growth, with nearly all SZs experiencing substantial increases. The only exception is the SZ Doldertal in the Neighbourhood Hottingen, which shows a very slight decline of -0.8%. More marked decreases were recorded only in a few areas, including SZ Paradeplatz (-7.0%) in the Neighbourhood City and SZ Schlachthof (-6%) in Neighbourhood Hard. These findings confirm that Condominiums have undergone a broad and spatial expansion across Zurich, with localised exception.

In summary, the temporal analysis of Housing Stock development between 2010 and 2024 reveals clear divergences between ownership categories, both in terms of magnitude and spatial pattern. While Private Companies and Condominiums exhibit widespread and often substantial increases across the city, frequently forming spatial clusters, Natural persons show a consistent and city-wide decline, marking a clear countertrend. Housing Cooperatives, by contrast, display a more moderate yet spatially uneven growth, concentrated primary on the northern and south-western peripheries. Public Institutions, meanwhile, exhibit only marginal change overall, with their spatial distribution remaining largely stable and fragmented. These developments underscore the dynamics and spatially differentiated transformation of Zurich's housing ownership structure over the past decade.

6.2 Spatial Autocorrelation

While the cartographic and exploratory analysis provided valuable initial insights into the spatial distributions, they remain subject to perceptual biases and are influenced by classification choices and map design. To assess whether the observed patterns are statistically robust and to quantify the degree of spatial autocorrelation, the following section applied the geostatistical method Global Moran's I as outlined in the methodological approach (see Section 5.4.2) for Housing Stock as well as the socio-economic variables at statistical zone scale to statistically identify their extent, direction and significance of clustering across Zurich.

Housing Stock: These results for the Housing Stock, as presented in Table 5, indicate statistically significant positive spatial autocorrelation for all ownership categories in 2024. This suggests that the spatial distribution of ownership shares is not random but clustered, allowing us to reject the null hypothesis of spatial randomness for all ownership categories (see Section 5.4.2).

The spatial autocorrelation in Housing Stock is particularly pronounced for Housing Cooperatives, with a Moran's I value of I = +0.420, indicating a strong spatial clustering effect. Natural Persons (I = +0.266), Condominiums (I = +0.259) and Private Companies (I = +0.237) exhibit moderate but still statistically significant positive autocorrelation, pointing to more localised clustering patterns. While in contrast, Public Institutions (I = +0.087) show only weak positive autocorrelation, suggesting a comparatively even distribution across the city.

A comparison with 2010 results reveals divergent temporal developments. The strongest increase in spatial autocorrelation is observed for Natural Persons (ΔI = +0.097) and Housing Cooperatives (ΔI = +0.094), both of which indicate a trend towards more pronounced clustering over time. Private Companies also show a moderate increase (ΔI = +0.055), while Condominiums display only a slight rise (ΔI = +0.021). By contrast, Public Institutions indicate a decline in spatial autocorrelation (ΔI = -0.017).

Overall, their results underline that Housing Cooperatives were already strongly clustered in 2010 and have become even more concentrated over the study period. Natural Persons, while less clustered in 2010, have also exhibited the most pronounced increase in spatial concentration. Private Companies and Condominiums already showed a moderately clustered pattern in 2010, with only minor intensification since then. In contrast, Public Institutions had a weakly clustered spatial pattern at the beginning of the study period, which further diminished over time – pointing to an increasing spatial dispersion and deconcentration. These findings clearly demonstrate that the degree and evolution of spatial autocorrelation are highly dependent on the ownership category and that no overarching trend of convergence or spatial interweaving between categories can be observed.

	Public Institutions	Housing Cooperatives	Private Companies	Natural Persons	Condominiums
2010	+0.104 ***	+0.326 ***	+0.182 ***	+0.169 ***	+0.238 ***
2024	+0.087 ***	+0.420 ***	+0.237 ***	+0.266 ***	+0.259 ***
Δ 2010 – 2024	-0.017	+0.094	+0.055	+0.097	+0.021

Singifikance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level

Table 5: Results of Global Moran's I for Housing Stock for 2010 and 2024 by ownership category across statistical zones.

Socio-economic variables: As outlined in the methodological approach (see Section 5.4.2), the first step prior to undertaking spatial regression analysis is to determine whether the socio-economic variables display spatial dependence. Identifying such dependence is crucial, as it provides the justification for employing spatial models in place of a conventional OLS model. The Table 6 shows the results of the Global Moran's I for each variable. At first glance, it is evident that all variables exhibit statistically significant spatial autocorrelation, although the degree of this autocorrelation vary across cases.

	Single Parent	Women	Age over 60	Nationality not EU Europe	Nationality Latin America, Asia & Africa	Household Equivalent Income
I	+0.190***	+0.356 ***	+0.320 ***	+0.225 ***	+0.372 ***	+0.435 ***

Singifikance level: * Statistically signifiant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level

Table 6: Results of Global Moran's I for socio-economic variables across statistical zones.

All variables show statistically significant spatial autocorrelation. The strongest clustering is observed for Household Equivalent Income with an $I = +0.435$, followed by Nationality Latin America, Asia & Africa ($I = +0.372$), Women ($I = +0.356$) and Age over 60 ($I = +0.320$). Nationality not EU Europe with $I = +0.225$ exhibit a slightly more moderate spatial autocorrelation and Single Parent with $I = +0.190$ even more. Although the variables differ in their Global Moran's I value, they are all highly significant and therefore suitable for spatial regression analysis.

6.3 Spatial Regression Models

6.3.1 Comparison of model quality

To analyse the relationship between ownership structure and spatial characteristics, four regression models were considered as outlined in methodological approach (see Section 5.4.3) selected based on a comparative assessment using AIC and BIC.

	AIC	BIC	Select
Single Parent	SLM (SEM & SAC)	SLM (SEM)	SLM
Women	SLM (SAC)	SLM	SLM
Age over 60	SLM (SEM & SAC)	SLM (SEM)	SLM
Nationality Not EU Europe	SLM (SAC)	SLM	SLM
Nationality Latin America, Asia & Africa	SAC	SAC	SAC
Household Equivalent Income	SAC	SAC (SLM)	SAC

Table 7: Model selection results for socio-economic variables.

The model selection results (see Table 7 and in further detail in Appendix 11.3.2) indicate that for all variables, a spatial regression model provides a better fit than the baseline OLS model. For the variables Single Parents, Women, Age over 60, and Nationality not EU Europe, both information criteria identified the SLM as the most appropriate specifications. For Nationality Latin America, Asia & Africa and Household Equivalent Income, the SAC Model emerged as the best-fitting model. In general, the model selection was based on objective model performance criteria to ensure the most accurate and spatially robust interpretation of the relationship between ownership structures and the socio-economic variables.

6.3.2 Spatial regression models

In this section, the results are presented consecutively for the socio-economic variables. Only the spatial distribution maps and the spatial regression model outputs are provided here, while the basic statistics are provided in the Appendix 11.3.1.

Single Parent: The spatial distribution of Single Parent, as shown in Figure 12, does not reveal a pronounced clustering pattern but rather a more dispersed distribution across the city. Slightly elevated concentrations can be observed at the Neighbourhoods Hard and Langstrasse. A slightly evenly distributed higher share can be seen in District 12, in the northern edge of the city, as well as in the northern area of Neighbourhood Unterstrass and south-eastern Neighbourhood Wipkingen. In contrast, the southern area of Neighbourhood Unterstrass exhibits a notably low share, similar to the Nighbourhoods of Enge and Alt-Wiedikon. Furthermore, the SZ ETH Hönggerberg in Neighbourhood Höngg stands out as a clear negative outlier. This overall pattern aligns with the results of Global Moran's I, which indicated a comparatively low but statistically significant level of spatial autocorrelation ($I = +0.190$).

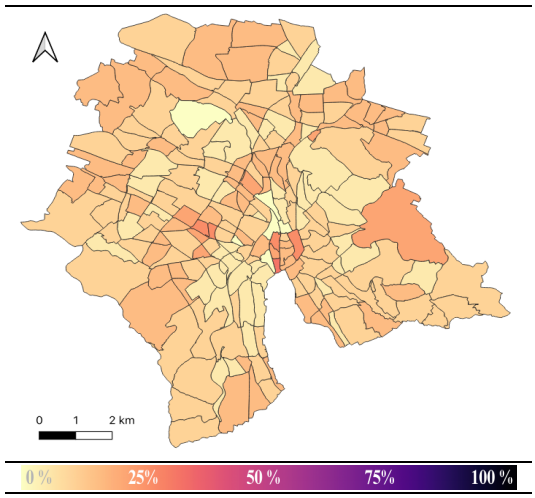


Figure 12: Spatial distribution of Single Parents in 2024 across statistical zones.

Accordingly, both AIC and BIC suggested the use of a spatial regression model, with the SLM identified as the most appropriate specification. As presented in Table 8, the model yields a residual variance $\sigma^2 = 0.737$, which indicates that, despite being the best-performing model according to AIC and BIC, it still leaves a considerable amount of unexplained variance. The results should therefore be interpreted with caution. At the same time, the model demonstrated a significant spatial spillover effect through the spatial lag coefficient ($\rho = 0.278$), suggesting that approximately 27% of the variation in the share of single parent family structures is influenced by neighbouring statistical zones.

Regarding the ownership structures, the model reveals that all ownership categories exert a significant influence on it. Strong and significant negative associations are observed in the model regarding Private Companies ($\beta = -0.527$), followed by Condominiums ($\beta = -0.351$) and Natural Persons ($\beta = -0.323$). Housing Cooperatives also show a negative impact coefficient ($\beta = -0.252$), though the effect is comparatively weaker.

Coefficients of the model	***Estimate***
(Intercept)	*-0.004*
Housing Cooperatives	*-0.252 ** *
Private Companies	*-0.527 *** *
Natural Persons	*-0.323 *** *
Condominiums	*-0.351 *** *
Spatial Parameters	
ρ (spatial lag)	*0.278 *** *
λ (spatial error)	*-*
Wald Statistic	*9.187 *** *
LR Test	*8.565 *** *
LM Test	*0.006*
Model quality	
Log-likelihood	*-270.003*
Akaike information criterion (AIC)	*554.01*
Model fit & scattering	
σ^2 (Residual variance)	*0.737*
σ (Standard deviation)	*0.858*

*Significance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level*

Table 8: Results of Spatial Lag Model with share of Single Parents as dependent variable.

Women: The spatial distribution of Women in the city of Zurich, as shown in Figure 13, appears relatively homogeneous in the visual analysis – despite the Global Moran's I indicate a statistically significant positive spatial autocorrelation (I = +0.356). Most SZs display similarly high shares of Women, with few areas standing out. Slightly higher shares can be observed around the Zürichberg area, while lower shares are visible in specific SZs in the north-eastern parts of Neighbourhoods Höngg and Altstetten, as well as in the Neighbourhood Langstrasse. This highlights that statistically significant spatial autocorrelation does not always correspond to clearly visible spatial clusters in choropleth maps.

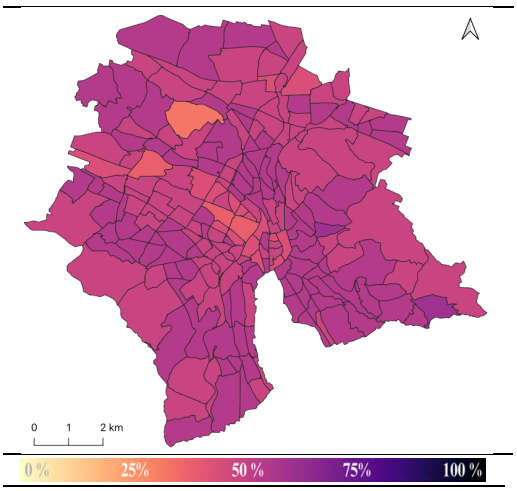


Figure 13: Spatial distribution of Women in 2024 across statistical zones.

The results of the SLM, presented in Table 9, suggest the presence of significant spatial spillover effects. The spatial lag parameter $\rho = 0.493$ is highly significant, indicating that the share of women in a given SZ is strongly influenced by values in neighbouring SZs.

Substantively, the analysis reveals strong and highly significant positive associations for Housing Cooperatives ($\beta = 0.531$) and Natural Persons ($\beta = 0.381$). Condominiums also exhibit a moderately significant positive effect ($\beta = 0.168$), whereas Private Companies show no statistically significant influence on the share of Women.

Overall, the results suggest that the share of Women in Zurich is not only spatially structured and shaped by neighbourhood spillover, but also systematically associated with specific ownership categories – most notably with Housing Cooperatives and Natural Persons, while no effect is observed for Private Companies.

Coefficients of the model	***Estimate***
(Intercept)	*0.015*
Housing Cooperatives	*0.531 ****
Private Companies	*0.112*
Natural Persons	*0.381 ****
Condominium	*0.168 ***
Spatial Parameters	
ρ (spatial lag)	*0.493 ****
λ (spatial error)	*-*
Wald Statistic	*45.426 ****
LR Test	*39.663 ****
LM Test	*0.135*
Model quality	
Log-likelihood	*-250.894*
Akaike information criterion (AIC)	*515.79*
Model fit & scattering	
σ^2 (Residual variance)	*0.593*
σ (Standard deviation)	*0.770*

*Significance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level*

Table 9: Results of Spatial Lag Model with share of Women as dependent variable.

Age over 60: The spatial distribution of individuals with age over 60 is presented in Figure 14 and reveals a more fragmented pattern compared to the last two variables. Higher shares are particularly concentrated in the Zürichberg area, with especially elevated values in the Neighbourhoods Witikon and Höngg. However, the SZ ETH Hönggerberg stands out with a notably low share of older residents (below 5%) despite being embedded in a surrounding area with higher values. Other areas with comparatively low shares of Age over 60 include the Limmattal area and parts of Neighbourhood Oerlikon. In addition to SZ ETH Hönggerberg, SZ Manegg

in Neighbourhood Wollishofen also stands out for its distinctly low share in comparison to adjacent SZs. Here, the overall spatial distribution aligns with the statistically significant result of Global Moran's I ($I = +0.320$), which confirms the presence of positive spatial autocorrelation and thus supports the use of a spatial regression model.

The results from the SLM (Table 10) show a highly significant spatial lag parameter of $\rho = 0.460$, indicating that the share of Age over 60 in a given SZ is also influenced by adjacent SZs. This points to the spatial interconnectedness of demographic ageing processes, rather than isolated local developments.

Regarding ownership structure, the strongest associations are found for Natural Persons ($\beta = +0.204$) and Condominiums ($\beta = +0.198$), both of which are significantly and positively associated with higher shares of elderly individuals. Housing Cooperatives also display a positive coefficient ($\beta = +0.196$), though this effect is only significant at the 10% level and should therefore be interpreted with caution. In contrast, Private Companies exhibit a significant negative correlation ($\beta = -0.236$), suggesting that SZs with higher shares of Private Companies tend to have lower shares of individuals with Age over 60.

Overall, the findings indicate that the spatial distribution of Age over 60 in Zurich is clearly structured, shaped by neighbourhood effects, and systematically associated with specific forms of ownership categories.

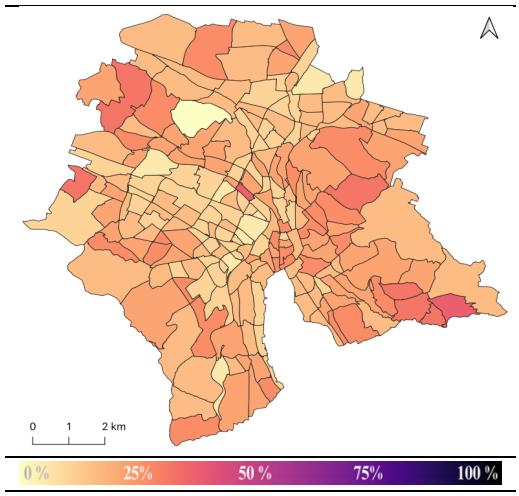


Figure 14: Spatial distribution of Age over 60 in 2024 across statistical zones.

Coefficients of the model	***Estimate***
(Intercept)	*0.007*
Housing Cooperatives	*0.196 **
Private Companies	*-0.236 ***
Natural Persons	*0.204 ****
Condominium	*0.198 ****
Spatial Parameters	
ρ (spatial lag)	*0.460 ****
λ (spatial error)	*-*
Wald Statistic	*38.029 ****
LR Test	*32.758 ****
LM Test	*0.058*
Model quality	
Log-likelihood	*-247.756*
Akaike information criterion (AIC)	*509.51*
Model fit & scattering	
σ^2 (Residual variance)	*0.580*
σ (Standard deviation)	*0.762*

*Significance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level*

Table 10: Result of Spatial Lag Model with share of Age over 60 as dependent variable.

Nationality Not EU Europe & Nationality Latin America, Asia & Africa: The key indicator nationality is divided into two separate variables: (1) Not EU Europe and (2) Latin America, Asia & Africa. The spatial distribution of both groups is presented in Figure 15. For Nationality Not EU Europe, the values are consistently low across almost the entire city, rarely exceeding 20%. Slightly higher shares are visible in the north-eastern periphery, as well as in isolated SZs such as SZ Glockenacker in Neighbourhood Witikon, which stands out with a relatively high share. The distribution of nationalities from Latin America, Asia & Africa is somewhat more dispersed, although the shares remain generally low as well. Elevated shares appear again at the north-eastern edge of the city and along the eastern boundary of District 7. Higher shares are also visible at the south-western periphery, particularly in Neighbourhood Leimbach. In the northern part of Neighbourhood Altstetten, a small cluster of higher shares emerges, with the SZ Hardhof recording the highest share citywide. By contrast, the city centre, as well as the south-western areas of

the areas Hönggerberg and Zürichberg, and most of the SZs along Lake Zurich, tend to exhibit considerably lower share.

In both cases, there is a general tendency for higher shares to be located in more peripheral areas, while central neighbourhoods show a more diffuse or lower distribution. This pattern corresponds to the results of the spatial autocorrelation analysis: for Not EU Europe the Global Moran's I is $I = +0.225$, and for Latin America, Asia & Africa it is $I = +0.372$. Both of which are statistically highly significant. These findings indicate that both nationality groups are spatially clustered to a certain degree. However, the clustering is localised rather than widespread across the entire urban area, to specific areas of concentration rather than citywide patterns.

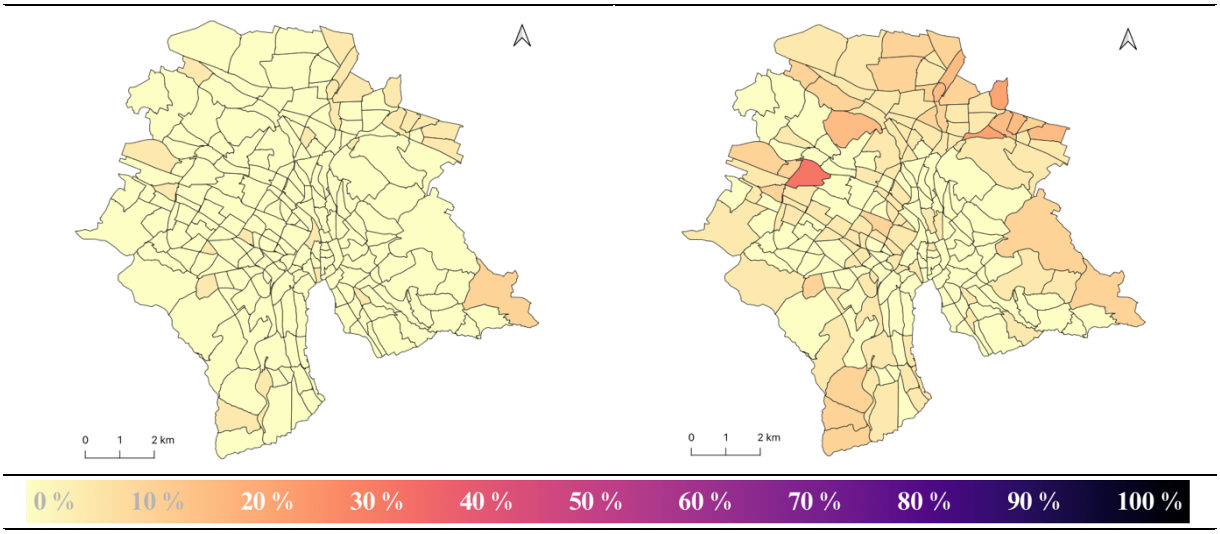


Figure 15: Spatial distribution of Nationality Not EU Europe (left) and Nationality Latin America, Asia & Africa (right) in 2024 across statistical zones.

The results of the regression analysis for the share of individuals with Nationality Not EU Europe are presented in Table 11. Model selection based on information criteria identified the SLM as the best-fitting model, confirming that the variable is influenced by neighbouring SZs. The spatial lag parameter is statistically highly significant with a value of $\rho = 0.393$. This indicates that approximately 39% of the variation in the share of individuals with Nationality Not EU Europe can be attributed to spatial spillover effects from adjacent SZs thus providing strong evidence that the observed spatial patterns are unlikely to be random.

Regarding the impact of ownership structures, the model reveals particularly string and significant negative associations for Natural Persons ($\beta = -0.245$) and Condominiums ($\beta = -0.234$). These findings suggest that higher shares of Natural Persons are associated with lower shares of Not EU Europe individuals. Housing Cooperatives also show a negative coefficient ($\beta = -0.190$), but this effect narrowly misses conventional significance thresholds. Private Companies, by contrast, have a negligible and statistically non-significant effect ($\beta = -0.081$).

Overall, the results indicate that the spatial distribution of individuals with Nationality Not EU Europe nationality is both statistically clustered and systematically associated with certain ownership categories. Specifically, areas characterised by high shares of Natural Persons and Condominiums tend to have a

lower share of this ground, pointing to an underlying spatial logic in the relationship between ownership structure and nationality.

The results of the analysis of the spatial distribution of individuals with Nationality from Latin America, Asia & Africa are presented in Table 11. Based on the model comparison using information criteria, the SAC model was selected as the most appropriate model. This due to the fact that both the spatial lag and spatial error components are statistically highly significant, allowing for a more nuanced representation of complex spatial dependencies.

Coefficients of the model	***SLM Estimate***	***SAC Estimate***
(Intercept)	*0.0039*	*0.067*
Housing Cooperatives	*-0.190*	*-0.676 ****
Private Companies	*-0.081*	*-0.508 ****
Natural Persons	*-0.245 ****	*-0.454 ****
Condominium	*-0.234 ****	*-0.355 ****
Spatial Parameters		
ρ (spatial lag)	*0.393 ****	*-0.527 ****
λ (spatial error)	*-*	*0.841 ****
Wald Statistic	*20.094 ****	*-*
LR Test	*17.012 ****	*73.201 ****
LM Test	*1.682*	*-*
Model quality		
Log-likelihood	*-280.655*	*-243.073*
Akaike information criterion (AIC)	*575.31*	*502.15*
Model fit & scattering		
σ^2 (Residual variance)	*0.802*	*0.456*
σ (Standard deviation)	*0.895*	*0.675*

*Significance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level*

Table 11: Result of Spatial Lag Model with share of Nationality Not EU Europe as dependent variable (left) and result of Spatial Autoregressive Combined Model with share of Nationality Latin America, Asia & Africa as dependent variable (right).

The spatial lag parameter is highly significant negative (ρ = -0.527), which indicates that higher shares in neighbouring SZs are associated with lower local shares. This suggests the presence of spatial separation or exclusion effects rather than spatial diffusion. At the same time, the spatial error component is strongly positive and highly significant ($\lambda = 0.841$), indicating that spatially structured unobserved factors play a substantial role in shaping the distribution of this group. This implies that while ownership categories are an important explanatory factor, they do not fully capture the spatial logic behind the observed patterns.

All ownership categories exhibit highly significant negative coefficients. The strongest effects are observed for Housing Cooperatives ($\beta = -0.676$) and Private Companies ($\beta = -0.508$), followed by Natural Persons ($\beta = -0.454$) and Condominiums ($\beta = -0.355$), which shows the weakest negative association. The consistent and significant negative coefficients across all ownership categories suggest that higher shares are associated with lower shares of individuals with nationalities from Latin America, Asia & Africa. However, the presence of a strong spatial error component ($\lambda = 0.841$) underscores that these relationships should not be interpreted causally. The model does not imply that all ownership categories actively drive displacement but rather highlight relative differences in the strength of association across ownership categories.

In sum, the SAC model confirms that the spatial distribution of the individuals with nationalities from Latin America, Asia & Africa is shaped by both ownership structures and additional spatially correlated factors not directly captured in the model, pointing to broader mechanisms of spatial or structural exclusion.

Household Equivalent Income: For the variable Household Equivalent Income, no share is displayed. Instead, Figure 16 illustrates the spatial distribution of the average Household Equivalent Income per SZ in Zurich. The spatial distribution reveals a clearly segmented income landscape, with pronounced spatial boundaries. In the western and northern areas of the city (particularly in the Neighbourhoods Affoltern, Altstetten, Friesenberg and Schwamendingen-Mitte) very low averages dominate, often falling well below CHF 56'000. In contrast, high income clusters are concentrated along the Zürichberg area, around the Lake of Zurich, and in the Neighbourhood Escher Wyss. These patterns do not represent isolated hot spots, but rather reflect a pronounced spatial polarisation, pointing to a deeply rooted spatial segmentation within the city.

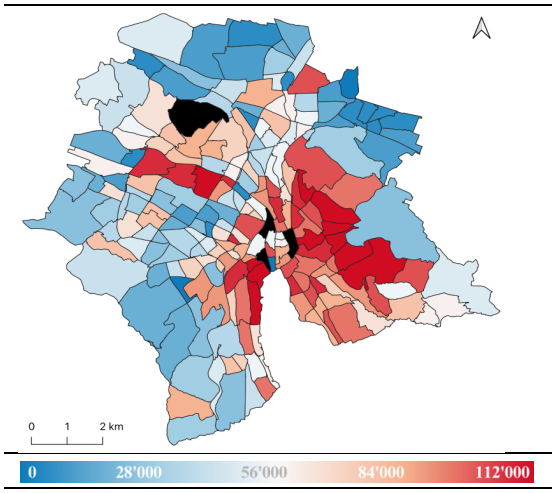


Figure 16: Spatial distribution Household Equivalent Income in 2021 across statistical zones.

For this variable, the SAC model (see Table 12) was selected as the most appropriate specification. The spatial lag parameter ($\rho = 0.651$) is highly significant, indicating that the Household Equivalent Income is strongly influenced by neighbouring SZs. In parallel, the spatial error component ($\lambda = -0.549$) is also highly significant, suggesting that spatially correlated, unobserved factors beyond the ownership structures continue to shape the distribution of Household Equivalent Income. The significance of both parameters confirms that the joint modelling of spatial dependence and residual spatial correlation is necessary for an unbiased estimation of coefficients.

Coefficients of the model	***Estimate***
(Intercept)	*0.000*
Housing Cooperatives	*0.127*
Private Companies	*0.349 ****
Natural Persons	*0.218 ****
Condominium	*0.445 ****
Spatial Parameters	
ρ (spatial lag)	*0.651 ****
λ (spatial error)	*-0.549*
Wald Statistic	*-*
LR Test	*40.362 ****
LM Test	*-*
Model quality	
Log-likelihood	*-201.875*
Akaike information criterion (AIC)	*419.75*
Model fit & scattering	
σ^2 (Residual variance)	*0.350*
σ (Standard deviation)	*0.592*

*Significance level: * Statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level*

Table 12: Result of Spatial Autoregressive Combined Model with Household Equivalent Income as dependent variable.

In this model, all ownership categories exhibit positive coefficients, and most are highly significant. Condominiums show the strongest effect ($\beta = +0.445$), followed by Private Companies ($\beta = +0.349$) and Natural Persons ($\beta = +0.218$), though with the weakest effect. Housing Cooperatives do not show a statistically significant relationship in this model. Due to the presence of a significant spatial error term, these coefficients should not be interpreted as causal effects, but rather as relative indicators of association strength across ownership categories.

Overall, the analysis of Household Equivalent Income reveals a marked spatial polarisation within Zurich. The selected SAC model confirms not only the influence of neighbouring SZs but also the presence of spatially structured, unobserved mechanisms. Ownership categories, particularly Condominiums and Private Companies, suggest to significantly explaining the spatial variance in Household Equivalent Income, though they represent only part of the broader explanatory aspects.

7 Discussion

7.1 Spatial Patterns of Property Ownership

The empirical analysis demonstrates that the spatial distribution of property ownership in Zurich in neither random nor uniform, but deeply structured and highly scale dependent. These uneven geographies matter because they highlight how Zurich exemplifies a broader shift towards what has been identified by Crevoisier et al. (2025, 7) as the "most important international financial metropolises […] where financialized real estate is to be found, almost exclusively […] owned by institutional investors, who are very active in the cities" together with Geneve in Switzerland. Rather than being in a late or mature homeowner society, Zurich offers a multilayered case that illustrate how the rise of the private rental sector (PRS) and the reconfiguration of ownership structures unfold most sharply within a 'financialised homeownership society' (Aalbers et al. 2021, 558). Addressing this section wants to focus that in connection with the theoretical perspective of Blomley (see Section 2.2) and previous research, distinct clusters found in the results can be connected to territorial concentrations, exclusion mechanisms and diverse power mechanism behind it that reflects both historical trajectories and contemporary investment strategies.

This discussion therefore disentangles the complexity of Zurich's ownership structure observed in the empirical results. It shows that ownership categories are far from binary divisions between 'private' and 'state' property as theorised by the *Ownership Model* (Blomley 2004, 16) but encompass a heterogeneous field of actors, from Heirs' Communities, Housing Cooperatives to Pension and Investment Foundations (e.g. Municipal Statistics Office 2025h). This heterogeneity also translates in a markedly different strategy management (as seen in Section 3.2). The following subsections thus zoom into three selected ownership structures, where spatial patterns of ownership indicate broader housing regime shifts. Each of these sites illustrates in different ways how Zurich is undergoing a turn from a 'mature homeowner society' city to a 'financialised homeownership society' (Aalbers et al. 2021, 558) where property ownership operates simultaneously as a spatial filter, a financial asset as well as an instrument of urban territorialisation through historic trajectories or intense reconstruction activities.

Two preliminary comments for this discussion section: on the one hand, it will not be focused on public institutions in this section. Public Institutions remain a visible owner in Zurich's housing landscape, but their overall share is limited to just 7% of the total housing stock and exhibit a fragmented, non-clustered pattern. As mentioned in the case study, the absence of concentration does not indicate a lack of strategy but reflects the explicit aim to maintain a deliberately dispersed portfolio and secure access for groups who face difficulties in the private housing market (City of Zurich 2024, 22ff.). For this purpose of this study, the focus therefore shifts away from a focus on Public Institutions, but still be mentioned in some points. On the other hand, as already mentioned in the Section 5.3.2, the discussion focuses primarily on the empirical results of Housing Stock, as it directly reflects the number of dwelling and this residential provision. Only where relevant connections to the Building Area are evident will they be explicitly mentioned, otherwise all connections to empirical results are based on Housing Stock and will not be explicitly mentioned.

7.1.1 Heterogeneity and shift of Private Companies

The ownership category Private Companies constitutes the most complex field of ownership in Zurich's housing market. The empirical disaggregation reveals in Building Area a heterogeneous field of legal entities, whose representation and spatial distributions differ markable. Not only the differentiation between Natural Persons and Private Companies as private owners, but also the further subdivision into many various legal entities challenge any notion of the *Ownership Model* in which there is such a thing as 'private ownership' as a uniform entity. However, as the State of Research has shown in Section 3.2.2, it is of limited analytical values to differentiate these actors solely by legal entity. Even within a single legal entity, especially in the largest of Public Limited Companies, multiple strategic orientations may coexist, ranging from long-term accumulation to speculative redevelopment strategies. Consequently, the empirical findings require contextualisation beyond formal categories, together with existing scholarship that pointed to the layered composition of private property actors and emphasises the increasing role of financialised investors (Theurillat et al. 2015; Crevoisier et al. 2025; see Section 4.1.1). From this perspective, the evolution of Private Companies cannot be understood as a gradual, linear process, but as a field marked by historical continuities on the one hand and profound structural shifts on the other. The heterogeneity thus also reflects markable different temporal trajectories.

Historically, Private Companies in Zurich emerged from family business, locally rooted holding companies or connections to traditional sectors such as manufacturing or trade (Theurillat et al. 2008, 316; Willi 2021). The ownership patterns which reveal high shares of Private Companies in the inner-city and around the Lake show not a strong increase in Housing Stock in the empirical results (see Section 6.1.3). These areas are among Zurich's most valuable in terms of land prices (Rey 2022) and were historically framed as elite neighbourhoods, where the Neighbourhood Enge got called 'Villenquartier' (Fritzsche 2009, 19). Together with the contextualisation of Construction Activity (see Appendix 11.4.2) that show less to no construction activity in those areas indicates that the strategies dominant in these areas are more characterised by path-dependence, based on long term valorisation of prime location and capital accumulation than by rapid portfolio turnovers. These patterns align with international research findings that long-term seeking institutional investors focus particularly on inner-city high-value areas where returns are secure (Hochstenbach and Arundel 2020; Aalbers et al. 2021).

The case study contextualisation shows remarkable stability on the Housing Stock share of Private Companies between 1990 and 2010 (see Section 4.1.1). This stability gave way to a decisive structural shift after 2010, as seen in the empirical results in Section 6.1.3, when Housing Stock shares increased in over 90% of Zurich's statistical zones and nearly 70% over +5%. Importantly, this increase was not spatially uniform: the mapping of temporal change shows distinct clusters and outliers where Housing Stock has increased by more than +25% relative to 2010. The correspondence of these patterns with those of higher construction activities by Private Companies (see Appendix 11.4.2), reinforcing the thesis that the increase in Housing Stock was not driven primarily by acquisitions of existing properties but by extensive new construction undertaken on a large scale in those areas. Empirical findings indicate coherent structure of redevelopment hotspots in Neighbourhood Escher Wyss, the northern parts of Altstetten and Albisrieden, eastern Seebach and northern Oerlikon, as well as outliers such as the SZ Kaserne in Neighbourhood Langstrasse, SZ Saalsporthalle in Neighbourhood Alt-Wiedikon and the SZ Manegg in Neighbourhood Wollishofen. In the following, this section discusses three central patterns identified across the areas, which supports the findings of Crevoisier et al. (2025) that financialised investors have emerged strongly: first, the strong increase in former industrial areas through large-scale

new construction; second, the dependency on municipal planning instruments for intensified redevelopment and their exploitation; and third, the growing influence of large companies that prioritise value extraction and their further deconnection from use reinforced by deregulation.

Formel Industrial Areas: Those areas are all located in former industrial areas (BZO 1946; City of Zurich 2025a) which offer significant potential for large redevelopment processes and confirm that Private Companies have become central actors in reshaping Zurich's post-industrial landscape. These dynamics correspond to what Rérat et al. (2010; 2012; 2019) describe as 'new-build gentrification', in which gentrification occurs not only through renovation of existing stock, as widely known in the research field, but more also through large-scale construction of new housing stock on industrial areas or demolished sides. Comparable research underline that Zurich is not an exception. Similar investment shifts into peripheral working-class areas have been observes in Basel (Switzerland; SfA 2022), in German cities (Heeg 2018, 115) and in Vienna (Musil et al. 2022, 984), where deindustrialisation and planning reforms created new value gaps through redevelopments based on large building complexes. The clearest indicator of this is that institutional investors own only 7% of buildings in Switzerland, yet control 40% of dwellings, confirming that "institutional investors mostly own multifamily dwellings, where individual measures have a greater absolute effect than in single-family dwellings" (Schmid et al. 2020, 20).

Relational ownership and dependency on municipal policies: Conceptualising these areas further, it becomes evident that the post-2010 expansion of Private Companies cannot be separated from the municipal policies. On one hand arise most of them hand in hand with major redevelopment projects initiated by the municipal government (City of Zurich 2000; 2009). On the other hand, as in those redevelopment plan areas are higher utilisation rates, denser construction methods and longer planning horizons feasible (Schmid et al. 2020, 22) actors frequently rely on SBV and GP, which override existing zoning regulations and allow a higher utilisation of the property (City of Zurich 2025b).

The exploitation of those instruments is not coincidental. As Schmid et al. (2020, 22) emphasise, institutional investors occupy a key role in the Swiss real estate sector compared to natural persons. As they have the financial opportunities to heir contractors with high degree of expertise in legal frameworks, regulatory requirements and construction management. This provides institutional investors with significant leverage to exploit planning instruments to achieve the 'highest and best' use of their properties. Similar cases have been observed in other countries, where empirical research shows that corporate landlords actively pursue strategies such as redevelopment and strategic use of regulatory frameworks to maximise their return (Wetzstein 2017, 3163; Wijburg et al. 2018, 1099). Such exploitation exemplifies the connection to the discourse of 'highest and best use' (Blomley 2004, 84 & 96) where redevelopment is framed as the natural and inevitable progression of land towards more profitable and intensive functions.

However, no actors operate entirely autonomously and can simply use these instruments, which illustrates the importance of taking the complex system of interdependencies into consideration. In Zurich, those special use plans provide opportunities for intensified land use, but they also require approval by both the municipal council and executive (City of Zurich 2025b). Furthermore, the state exerts beyond these project specific instruments also influence through general regulations such as the building and zoning ordinance. Property owners may also request modification to parcelling or even to zoning classifications to enable construction activities, but these remain as well subjective to municipal approval. These shows how the land parcelling, zoning ordinances and building regulations are created

and reproduced by the municipality and thereby have a powerful lever to shape the scope of private accumulation strategies as seen in the case of *Haspeln* in Section 4.2. Such dynamics shows the entanglement of state and market in contemporary urban restructuring and reflects Blomley's (2004, XVII&30) relational ownership approach, in which on the one hand ownership cannot be reduced to an absolute right over land but is continuously co-constituted through interactions between state and private owners where the enforcement of private property is exclusively possible through state practices. On the other hand, since *Harspeln* is a special case and most requests for special use plans or altering of the current BZO have been permitted (BZO 2023; City of Zurich 2025a) show how neoliberal urbanism is marked by the embrace of public-private partnerships and entrepreneurial governance.

Financialisation and the disconnection from use: The "social question of the twenty-first century" (Christoph Trautvetter 2020, 6), referring to the widening gap between rich and poor in the wake of globalisation and its complex social consequences (Von Pechmann 2021, 9), has become central in critical urban studies. It is particularly pronounced in relation to financialised property ownership, where the concentration of power in residential real estate is becoming increasingly pronounced. One of the most significant aspects here is the "dissociation between property ownership and use" (Theurillat 2023, 6). Property is no longer primarily understood as a personal resource for security or subsistence, but rather as a tradable asset within the urban land market. The shift is also reflected in Zurich, where the distribution of the Housing Stock has changed markedly since 2010 as the share from Private Companies has risen by 11.5% while that of Natural Persons has declined by 5.2% (see Section 6.1.3). An illustrative example of the disconnection between ownership and use in Zurich can be seen in the SZ Zollfreilager where the increase in Housing Stock is +46.4% for Private Companies. This significant increase can be primarily explained by the large building complex *Zollfreilager*, completed in 2016, which comprises 850 dwellings where the registered owner is the public limited company *Züricher Freilager* (2025). However, behind it stand Public Limited Company *AXA Leben* and the Pension Fund of *AXA Switzerland*, which hold the shares of the joint-stock company. Thus, what appears in land register data as a single private company masks a layered ownership structure that channels rent flows into institutional portfolios. It demonstrates that the focus is no more on the property itself but, as various scholars have shown, on the rental extraction it generates, illustrating how properties are increasingly considered financial assets (Fernandez et al. 2016; Christophers 2019; Aveline-Dubach 2024).

The focus of redevelopment through new construction is also no coincidence in terms of legal situation, as it is actively shaped and sustained by legal and institutional frameworks. As outlined in the case study (Chapter 4), Swiss property law secures ownership rights while leaving initial rents in new buildings insufficiently regulated, thereby safeguarding profit logics (Debrunner et al. 2024, 11ff.). It underlines not only the protection of ownership but also the maximisation of profit is institutionally guaranteed through landlord-oriented law (Angebauer and Wesche 2024, 239). Blomley (2020, 41) captures the principle succinctly: "no extractive market without the law". The 1997 reform of *Lex Koller* further accentuated this logic (see Section 4.1.1) by creating a new ownership regime that shifted market access and opened loopholes for international investors (Scherr 2016, 52f.) while reinforcing the perception of housing as a liquid financial asset (Theurillat et al. 2015, 1430).

The empirical findings of this thesis confirm how these frameworks manifest in Zurich's ownership distribution. As discussed, are the most significant increases for Private Companies in redevelopment areas tightly to large scale projects. A considerable amount of them is realised through the four strongest real estate companies where BlackRock Inc. in among their major shareholders (as shown in the Section

4.1.1). *Mobimo Holding,* for instance, controls a property portfolio of around CHF 3.8 billion and was responsible for the *Labitzke Areal* project in Altstetten, comprising eight buildings with 277 dwellings completed in 2018. More recently, *Mobimo Holding* has been redeveloping the *RAD Areal* in northern Neighbourhood Oerlikon, converting one former assembly hall and constructing another new building that together will deliver around 150 dwellings by 2030 (Gigon Guyer 2025; Mobimo Holding AG 2025b). But not only real estate companies drive these transformations. Diversified Public Limited Companies, backed by global financial institutions, are equally decisive. The Public Limited Company *UBS Group*, Switzerland's fourth-largest company listed by market capitalisation (USD 113 billion), in which *BlackRock Inc*. holds a 5.01% share (SIX Exchange Regulation AG 2025), also controls significant residential assets. These include for example the building complex *James* in Neighbourhood Albisrieden, completed in 2007 with 283 dwellings (SGGK Arch 2025). The extent of these examples lies not in each size, but also in their cumulative effect, which illustrate how Zurich's redevelopment hotspots are dominated by Private Companies whose strategies are aligned with shareholder value.

Such patterns confirm how financial investors increasingly use Private Companies in Zurich as a vehicle for capital accumulation rather than as a social resource. The empirical results contextualised with previous research show that all other ownership categories are being displaced by Private Companies whose strategies are steered by transnational investors, often geographically and socially detached from the urban fabric in which their assets are located. This shift represents not only an economic but also a political transformation, as the governance of housing is progressively subordinated to shareholder value and dividend extraction (Debrunner et al. 2024, 11ff.). Van Loon and Aalbers (2017, 236) conceptualises this as a transition from direct ownership to 'fictious capital', a process that, in Theurillat's (2023, 5) terms, "deterritorialises the urban built environment" and erodes the influence of local communities and institutions. While at first sight, Theurillat's (2023, 5) notion on deterritorialization and Blomley's concept of the territorialisation of property (see Section 2.2.3) may appear contradictory. They are in fact, however, complementary: territorialisation provides the institutional and spatial ordering which highlights the ongoing practices (see Section 3.2.2Private corporate landlords) that "relies on and helped sustain a particular type of visualization and spatialisation" (Blomley 2019, 236). It constitutes the necessary condition for the subsequent deterritorialization of property which captures "securitization, insertion into global investment circuits and control of the financialised space of value creation and extraction by the Global City" (Theurillat 2023, 5). Although Blomley does not explicitly use the term deterritorialization, his analysis demonstrates how "property become disentangled from a localized nexus" (2019, 236).

One specific strategy of spatial production that can also be linked to the empirical findings is the build-and-sell strategy (see Section 3.2.2). The results show that in several large-scale redevelopment high share of Condominiums have emerged, notably in Neighbourhood Escher Wyss, the SZ Leutschenbach in Neighbourhood Seebach and the SZ Mühleacker in Neighbourhood Affoltern (see Section 6.1.1 and 6.1.3). Further contextualisation confirms this indication for example is the SZ Mühleacker, a former industrial area (Meier et al. 2016), where almost the entire southern half consists of new buildings constructed after 2000 (Cantonal Statistics Office 2024). These include the building complex *Im Blumenfeld*, which was completed in 2006 with 69 condominiums by Public Limited Company *Allreal Holding* (see Section 4.1.1), as well as the building complex *Manhattanpark* completed in 2009 with 212 condominiums developed by Public Limited Company *SuissePromotion Immobilien* (Meier et al. 2016, 27f.). Such cases illustrate how Condominiums operate as a hybrid form between owner-occupation and speculative investment: on the one hand, they remain one of the few accessible forms of

ownership for segments in upper middle class in Zurich's financialised housing market; on the other hand, they serve as vehicle for speculative capital accumulation (Heeg 2018, 115; Christoph Trautvetter 2020, 11).

Overall, these different strategies exemplify that ownership is not a neutral structure but a selective ordering mechanism that hierarchises actors and their legal entitlement (see Section 2.2). The case of Private Companies highlights that ownership produces territories that extend beyond cadastral maps, actively shape former industrial zones into capital-intensive residential areas and materialising new forms of exclusivity. In this sense, the expansion of Private Companies since 2010 marks not only an economic transformation but also a political one, in which state-enabled corporate ownership decisively shapes the territorial and social ordering of Zurich's urban space.

7.1.2 Persistence of socio-economic privilege at Zurichberg

The analysis of Natural Persons reveals not only a decline in Housing Stock across most of Zurich but also the persistence of historically rooted enclaves, most clearly exemplified by the north-western part of District 7, where ownership structures have remained unusually stable due to regulatory protection and social boundaries that continue to shape access. The empirical findings (see Section 6.1.1 and 6.1.3) demonstrate a pronounces city-wide decline of Natural Persons in Housing Stock share over the last fourteen years, where the strongest decrease occurred across the Limmattal, the north-eastern edge and around the lakeshore. This shift since 2010 shows the other side of the coin behind, as those areas where especially the Private Companies expanded most aggressively. This underlines a fundamental restructuring: As shown in the case study in Section 4.1.1 are Natural Persons since 2023 no longer the dominant ownership category in Zurich but are increasingly marginalised by Private Companies. Against this overall decline, 10% of the statistical zones particularly in the north-western District 7 (Neighbourhood Fluntern, Hottingen and Hirslanden), which will be called western Zürichberg in the following, stand out as an exception. Here, Natural Persons not only retrained but slightly expanded their Housing Stock share. This Zurichberg area indicates a stabilised enclave of property held by Natural Persons, buffered against the broader spread of Private Companies therefore focuses the following section focuses on this to contextualise it within historical trajectories and territorial practices.

Historical trajectory of privilege: A closer look at the historical contextualisation in western Zürichberg reveals insights in at historical processes and planning frameworks that could have contributed to this anomaly. Since Zurich's incorporation in 1893, the Zürichberg has been shaped and protected as an upper-class residential area, intentionally isolated from mixed-use development and higher densities. Already at the beginning of the expansion into this area, SBV were applied restricted construction to low-density single-family housing, embedding bourgeois residential ideals of privacy, separation of work and home, and exclusivity (Brunner and Fehlmann 2013, 5; Kurz 2022, 31 & 75ff.). Such historical processes highlight on the one hand that 'private' can never be disentangled from state action, as all land is structurally permeated by laws, regulations and normative expectations and on the other hand, these owners within this area are perceived through lens of 'possessive individualism' as sovereign, autonomous and capable (see Section 2.2.3).

State-supported stability as structural filter: The empirical findings, which show either an increase or only a slight decline, indicate that this historically rooted stability continues to prevail to this day. The contextualisation with shares of owner-occupied Housing Stock (see Appendix 11.4.1) shows that the western Zürichberg is still the most pronounced hot spot for owner-occupied dwellings, with

Neighbourhood Fluntern reaching 21.8%. Research indicate that these homeownership rates are closely linked to middle- and high-income residents (Trautvetter 2021), shaped by three interrelated mechanisms of intergenerational wealth transition (Piketty 2011), legal framework effects, and the intergeneration of housing wealth with location features (Paccoud 2020, 102).

The legal framework today show that this stability continues to be protected through regulations. The first BZO of 1931 remains largely unchanged in these areas, continues to preserve two-floor residential zones (City of Zurich 2025a). This moderate zoning indicates that it contributes to reducing the potential for large-scale redevelopment, as it reflects the prevailing building typologies as well as in the comparatively low levels of construction activity (Jörg and Rey 2025). As mentioned in the State of Research (3.2.2) and discussed in the last Section 7.1.1, tend large corporate landlords and institutional investors to focus on area with larger multifamily building and high redevelopment potential (Theurillat et al. 2015; Schmid et al. 2020). The western Zürichberg, by contrast, lower construction activity is evident (Jörg and Rey 2025) which indicates a structural unattractiveness for capital-intensive investment strategies as the construction of larger new buildings is difficult and a further insulation further from external pressure serving as a structural filter for access. This would also support the findings of Kaufmann et al. (2023, 9), according to which the influx of displaced persons in western Zürichberg is very low compared to the rest of the city, and would serve as an explanation why land prices, despite the high Location Class (Cantonal Tax Office of Zurich 2019), are comparatively moderate (Rey 2022). All these aspects together support the thesis that the historically embedded and still existing stricter legal frameworks reinforce the existing ownership structure and lead to an accessibility barrier for new inhabitants.

Boundaries and their manifestations: However, District 7 all together is not that homogenous. Empirical findings show that while in the western Zurichberg forms a stabilised higher share of Natural Persons complemented by a clustering of Condominiums, the Neighbourhood Witikon on the eastern periphery shows the opposite trend. Here, the share of Natural Persons declined by up to -15% since 2010, while Private Companies expanded strongly, hold around 50% of the Housing Stock in several statistical zones (SZ Buchzelgstrasse 54%; SZ Carl Spitteler-Strasse 48%). The findings therefore highlight an internal boundary within the District 7 that corresponds with higher shares of Construction Activities (Jörg and Rey 2025), less favourable Location Classes (Cantonal Tax Office of Zurich 2019), and BZO zonings that allow additional floors (City of Zurich 2025a). Furthermore, is this boundary not only evident through empirical findings and contextualisation but also materially and physically visible. The border corresponds to the change in slope of the Zürichberg and extends along the ravine of *Stöckhalden,* marked by the *Elefantenbach* stream and framed by a narrow forest line (Canton of Zurich 2025c). Although empirical results are supported by natural boundaries, it shows that boundaries are socially constructed. The fast that it is a choice to use or not use these boundaries as a basis for decisions, such as through BZO classification and the different Construction Activities associated with it, demonstrates their socially constructed reality.

The juxtaposition of these two areas in District 7 shows another perspective of how governmental territorialisation influences ownership distribution. The western Zürichberg forms a stabilised enclave where ownership by Natural Persons has not only persisted but slightly grown. This enclave has been historically produced and institutionally reinforced by special use plans, restrictive zoning and limited construction. By contrast, Neighbourhood Witikon illustrates the disappearance of Natural Persons, showing how regulatory conditions and redevelopment potential open territories to corporate landlords.

This connection indicates how state practices support the territorial approach through legal frameworks. Furthermore, it shows an example that underlines on the one hand that "boarders are not just spatial: they also have histories" (Blomley 2004, 80), and on the other hand that boundary can serve as a gate-keeping function while "enforcing an emergent form of class discipline" (Blomley 2019, 243) by social norms and cultural imaginaries (see Section 2.2.3).

7.1.3 Collective ownership and territorial boundaries

The geography of Housing Cooperatives in Zurich reveals far less dominance, characterised instead by uneven yet consisting clusters. Their presence is concentrated in the south-western periphery (Neighbourhood Leimbach, Friesenberg and Albisrieden), northern peripheries (District 12 and Neighbourhood Affoltern and Seebach) and northern part of Neighbourhood Unterstrass and Wipkinen. Large parts of the city, however, remain virtually devoid of Housing Cooperatives. Since 2010, larger increases have occurred exclusively within these existing clusters, leading to a modest expansion that has intensified their peripheral presence rather than rebalancing of city-wide structures. These empirical findings indicate that Housing Cooperatives in Zurich, much like the other two categories discussed previously, are strongly anchored in the historical trajectory (Loganes 2014; Debrunner et al. 2024; Kockelkorn et al. 2024), reflecting both a pattern of resilience and the persistence of structural limitations.

Historical anchoring and institutional framework: In Zurich Housing Cooperatives are not just marginal anomalies as the *Ownership Model* would argue but a historically deeply sedimented and institutionally unique ownership category. With a current share of 18% of Housing Stock showed in the results, it reflects more than a century of deliberate housing policy characterised by decommodification strategies. With the municipal housing law in 1924, a crucial institutional milestone was set, which anchored non-profit housing in public land policy through leasehold contracts and was later reinforced by civic initiatives which continue to this day, for example through the most recent political goal of reaching 33% non-profit housing by 2050 (Balmer and Gerber 2018, 375). Looking back at the beginning of their presence, Housing Cooperatives already expanded into the very clusters that were identified in the results, reflecting an early and long-lasting spatial anchoring (Loganes 2014, 24ff.; Schmid et al. 2019, 64).

These specific cluster areas, such as those on the western Zürichberg, did not emerge by accident but were shaped by strategic class-based settlement patterns, influenced by topographical conditions. The historian Bruno Fritzsche (1986, 59) the topology has led to historically determined residential distributions. The wealthier settled on the lake shore and the sunny slopes of Zürichberg with beautiful views, while people in lower income classes often lived in less desirable areas such as foggy river valleys and shady north-facing slopes. This pattern also has a clear impact on location quality, with Housing Cooperatives predominantly concentrated in area of medium to low Location Classes (Cantonal Tax Office of Zurich 2019).

The clear boundaries of Housing Cooperatives hotspots are shaped not only by the historical 'choice' of settlement but also by physical structures such as building typologies and demarcations. These building structures did not emerge through SBV, as in the western Zürichberg, but rather through class logics. Proximity to industrial zones in District 4, 5 &12 made the provision of affordable housing an urgent necessity (Kurz 2022, 52 & 75; Meyer 2022, 140). Embedded in former workers' areas, Loganes (2014, 40) analysed those Housing Cooperatives by characterised patterns of larger building complexes with

distinct building types such as linear and parallel types, which historically were avoided by wealthier households.

Boundary effects: Due to the relatively homogeneous areas with strong clustering, the boundary in the results between the higher shares in Neighbourhood Friesenberg and the adjacent low shares Neighbourhood Alt-Wiedikon is especially remarkable (see Section 6.1.1). This boundary is also reflected in the BZO: in Neighbourhood Friesenberg, the permissible building heights are predominantly two to three floors, while in Neighbourhood Alt-Wiedikon they are generally four to five. The only exception is SZ Binz, which is classified as an industrial and commercial zone. In Neighbourhood Friesenberg, the BZO has remained almost unchanged since its introduction in 1931, when the entire neighbourhood was classified as two floors. In the first revision of 1946, selected parts were reclassified to three floors, but no substantial changes have been implemented since. Neighbourhood Alt-Wiedikon, by contrast, the industrial and commercial zones, which at the time of the first BZO covered roughly three time their current size, were progressively rezoned: the upper third into four floor residential zones in 1992 and the lower third into five to seven floors preservation zones in 1999, leaving only SZ Binz designated for industrial and commercial use (City of Zurich 2025a). This boundary is particularly sharp, not only visually legible in aerial imagery due to the contrasting building forms, but also materially reinforced by a green belt of trees (Canton of Zurich 2025c).

Economic logics and competitive pressures: Housing Cooperatives operates under fundamentally different economic logics than the institutional investors, yet both have a strong interest in expanding their ownership. As non-profit organisations, Housing Cooperatives neither treat properties as financial assets nor employ speculative strategies such as rent-gap exploitation or portfolio optimisation for profit maximisation (see Section 3.2). However, as demonstrated in the case study Section 4.1.1, institutional investors have increasingly entered Zurich's property market since 2010, creating a more aggressive competitive environment for Housing Cooperatives (Wicki et al. 2024, 25). This competition has contributed to rising property prices, thereby further undermining affordability also for Housing Cooperatives (Hochstenbach and Arundel 2020). Despite active effort to expand, the contextualisation of the empirical results indicate that the dynamics continue to constrain the ability of Housing Cooperatives to grow.

Structural disadvantage and exclusion: As a consequence seen in the empirical results (see Section 6.1.3), while Private Companies expanded their share in Housing Stock by +11.5%, Housing Cooperatives increased only by +2.4%. Taken together, the Housing Cooperative clusters and the areas where they gained housing stock since 2010 suggest broader findings: despite their stabilising role and interest in expanding, they remain structurally disadvantaged in the production of urban space. As argued by Balmer & Bernet (2015) and Debrunner et al. (2024), such Housing Cooperatives face systemic exclusion as they operate within a competitive land market that privileges high-return uses, leading to their exclusion from the most profitable location. This aligns with Blomley's theoretical perspective (see Section 2.2.3) of territorial boundaries produced by ownership and spatially embedded power structures, where the spatial distribution not simply reflect natural given structure but reflect actively produced power relations which produces space by setting limits, enabling use and excluding others.

This economic power asymmetry, as highlighted in Section 3.3.1, support the findings that Housing Cooperatives especially in relation to Private Companies remain clustered in historically secured enclaves on peripheral areas, as they can stabilise their existing territory but face barriers to expand. One

example of these dynamics can be observed in District 12. As seen in the results, in the eastern parts of Neighbourhood Seebach (SZ Leutschenbach +32% and SZ Ettenfeld +49.3%) and the northern part of Neighbourhood Saatlen (SZ Auzelg +34.2%), Private Companies expanded rapidly in the last 14 years, while Housing Cooperatives remain nearly absent with shares all below 5%. The SZ Auzelg is the only statistical zone in Neighbourhood Saatlen without any share of Housing Cooperatives while at the same time in the other two statistical zones they remain exceptionally strong and creating stable territories resistant to external invasions by Private Companies.

This perspective further reinforces Blomley's theoretical claim that property is not neutral but rather a socially produced instrument of power (Blomley 2020, 39ff.). Through political authority, municipalities can adjust their public land policies to support Housing Cooperatives (see Section 4.2). Yet, as non-profit organisation, Housing Cooperatives are legally required to operate on a cost-rent basis and are prohibited from generating profit. They therefore lack the legal capacity for rent extraction (see Section 3.2.3). By contrast, private and institutional investors are legally entitled to pursue profit, reinforcing their economic power, which strengthens their capacity for further expansion. Ultimately, the interplay of these legal, political and economic asymmetries determines who can expand, who is most exposed to displacement, who can maintain a stable position and who is effectively excluded from access.

7.2 Socio-Economic Inequality

Based on the relational ownership approach (see Section 2.2), property ownership is not simply a matter of legal title, but a concentrated and powerful social and political structure that shapes the city's spatial order, controls access to housing and sustain socio-economic hierarchies. As demonstrated in Section 7.1, property ownership is in the city of Zurich embedded in many different power asymmetries which shaped the trajectory of ownership distribution, resulting in a far from evenly distributed ownership structure both in share and space.

In the Swiss tenants' law, as mentioned in Section 4.1.2, is this power reinformed by a hierarchical structure that legalises the strategic rent extraction, removal of tenants and racial decisions in selecting new tenants (Debrunner et al. 2024). Therefore, the power of ownership is not only reflected in the distribution of ownership, but also embodies a concentrated 'power of disposal'. It gives the owner the authority to decide who is admitted or excluded, thereby enforcing social boundaries through the access to buildings and housing (Blomley 2019, 234 & 245). This legal entitlement drives these practices seen in the previous Section 2.2, such as strategic renovations, condominium conversions and speculative redevelopment, under the capitalist valorisation logic of 'highest and best use' (Blomley 2004, 84). Zurich is thus not just profitable city with a tights housing market, but also a case study in how neoliberal property regimes translate legal ownership into territorial control, through the depoliticization and desocialisation of property, reducing it to a vehicle of rent extraction and capital accumulation. Crucially, the question is not only who gets displaced, but also which ownership categories actively shape where different groups can or cannot live.

As presented in the methodological approach (see Section 5.4.3) the applied spatial regression models seek to address this empirically. The following section first discusses the general spatial dependencies of the socio-economic variables while focusing on their distribution and general model results before turning to the specific ownership dependencies to discuss how specific ownership categories influence socio-economic inequalities.

7.2.1 Spatial dependency of socio-economic variables

The first and central insight, that the empirical results reveal, is the spatial clustering of socio-economic inequality. Across all socio-economic variables, spatial regression model had been selected as most accurate model to analyse the socio-economic inequality in Zurich's Housing Stock (see Section 6.3.1) and thus confirm that those variables are not spatially independent, but shaped by neighbouring structures. The spatial effects present in the data can indicate a broader territorial logic that actively produces social-economic inequality (Blomley 2019, 234). These findings resonate with the arguments in relational urban geography that socio-economic inequality is not randomly distributed but inherently spatialised (Blomley 2020, 39): they tend to cluster, spillover and reproduce themselves in a broader relational geography of inequality that stretch across neighbourhoods and scales (Tammaru et al. 2016; Musil and Kaucic 2024).

However, the models do not perform evenly across all variables, which provides important interpretive insights. The SAC Models with the variables Household Equivalent Income and Nationality Latin America, Asia & Africa show the strongest spatial signatures, with high clustering, as well as a robust spatial lag and spatial error effect. Those results can therefore indicate how class stratification and racialised exclusion are territorially structured within Zurich, with ownership categories acting as filters or barriers who have a territorial 'gatekeeping function' (Blomley 2019, 236).

The two SLM with the variables Women and Age over 60 reveal a relatively high degree of spatial clustering with a robust spatial lag, while no significant spatial error was detected. For both models, the residual variance, indicating the amount of unexplained variance, is higher than in the two SAC models. The results should therefore be interpreted with some caution, as these models are slightly less robust. However, in urban socio-economic analysis where processes are highly complex, a comparatively slightly higher residual variance is not unusual and has been observed in other studies within this field (e.g. Lerbs and Oberst 2014; Chen et al. 2020; Musil and Kaucic 2024). These models can nonetheless serve as meaningful indicators, highlighting specific vulnerabilities across ownership categories in relation to socio-economic variables such as gender and age.

By contrast, the two SLMs for Single Parent and Nationality Not EU Europe exhibit lower levels of spatial clustering and higher residual variance than the other models. As their explanatory power is weaker, these findings suggest that such phenomena are less effectively captured through neighbouring interactions in this model alone and may require consideration of more intersectional approaches or diverse urban processes.

Overall, the results indicate that ownership categories account for part of the spatial structuring of inequality, but additional explanatory factors must be taken into account to fully capture the urban geography of vulnerability and privilege. Thus, these variabilities of spatial model performance across socio-economic variables reflect both the empirical realities of urban inequality and the methodological limits of spatial modelling.

The variable **Single Parents** was best fitted by the SLM although the results (see Section 6.3.2) reveal a comparatively weaker model. One possible explanation would be that the variable itself exhibits only modest spatial autocorrection, which limits the strength of spatial modelling (see more in Section 8.1). At the same time, the finding connects with existing research in meaningful ways. Single parents represent 6% of all households in Zurich (Municipal Statistics Office 2025d) which is well above the national average of 4.9% in 2023 (Federal Statistical Office 2025b). This points to a comparatively high

share of single parents in the city, while at the same time their situation is characterised by pronounced intersectional vulnerability. Nearly 50% of single parents report financial difficulties (Federal Statistical Office 2025a), while a study from the City of Zurich in 2015 underlined a clear gender gap: the Household Equivalent Income for single mothers are CHF 27'000[6] per year compared to CHF 39'000 for single fathers and almost 90% of all single parents were women (Schwierz 2015, 37f.). Thus, it is not simply the status of being a single parent, but rather the intersection of household form, income precarity and gender that creates specific vulnerability. Resonation with the findings from Kaufmann et al. (2023) who identified single parents as disproportionately affected by displacement.

The variable **Women** show a specific methodological pattern. While the map does not reveal any visually distinct clusters, apart from slightly lower shares along the Limmattal and in the SZ ETH Hönggerberg (see Section 6.3.2), the Global Moran's I of +0.356 indicates clear and statistically significant spatial autocorrelation. This demonstrates how geostatistical analysis can uncover patterns that remain invisible to the naked eye (Darmofal 2015, 24).

Survey data from the City of Zurich (2023, 17) show that a higher share of men report discrimination in the rental market (20% compared to 13% among women), but as already shown for single parents, gender inequality in the housing market is deeply intersectional. Research on intersectional feminism underlines with further aspects why gender dimension of housing vulnerability cannot be captured by women's share alone. Housing is a central place of reproduction (Madden 2025, 583), securing the daily survival of people, yet the unpaid and emotionally demanding care work necessary for everyday life is carried out mostly by women (Böckmann 2022). At the same time women earn less on average, are more often employed part-time or in low-wage sectors and thus spend a higher share of their income on rent, which are all compounded by lower pension entitlements and limited access to financial stability (Althaus and Birrer 2020; Klosterkamp and Latocha 2024; Federal Statistical Office 2025a). It shows that the intersection of gender composition therefore reinforces socio-economic vulnerability in housing market.

The pronounces spatial lag (+0.493) further highlights the relational geographies of gender, indicating that women's distribution is shaped not only by intersectional vulnerability, but also by neighbourhood dynamics. Examples include the SZ ETH Hönggerberg, where the student population is predominantly male, and therefore gender ratio is markedly uneven (ETHZ 2025), and the neighbourhood Langstrasse, which is socially perceived as less secure thus tenants' sense of safety is negative connoted especially for women (City of Zurich 2023). It confirms that housing is not gender-neutral, as women intersect with broader socio-economic structures that further reproduce inequalities.

The variable **Age over 60** shows results very similar to those of Women when considering the general model without the ownership coefficients. Both have a stronger spatial clustering as well as a pronounced spatial lag (see Section 6.3.2). This indicates that elderly residents do not distribute randomly but rather concentrate in 'ageing neighbourhoods', reflection to the importance of age-appropriate infrastructures and social environments. The findings correspond with the results from the report from the City of Zurich (Tellenbach and Klemens 2014), which identified indirect displacement vulnerabilities, such as limited accessibility or inadequate facilities, as factors driving elderly residents to relocate.

[6] For comparison the average Household Equivalent Income 2021 in Zurich over all SZ was CHF 59'000 (Dataset from Statistical Office).

In addition to neighbourhood infrastructure, retirement centres play a direct role in shaping a part of the spatial distribution of the share of Age over 60. The socio-spatial monitoring report (Plüss 2024, 26) shows that such facilities are predominantly located in peripheral areal, with only limited presence in the Limmattal area, which influence the observed pattern. This is also evident in specific SZ on the map: in SZ Kornhaus in the Neighbourhood Gewerbeschule where the only higher share in the Limmattal area can be observed is a municipal retirement residence. Such examples underline how the presence of retirement facilities, combined with wider infrastructural conditions, influence the spatial clustering of residents with age over 60.

For the variable **Nationality Not EU Europe**, the overall share in Zurich is very low, yet modest clusters of higher concentrations are visible in the north-eastern periphery, alongside one outlier in SZ Glockenacker in Neighbourhood Witikon. It reflects broader patterns of segregation and exclusion observed in other cities. Studies demonstrate that ethic and national minorities are systematically pushed to the margins of the cities, often through property barriers and discriminatory housing markets (e.g. Tammaru et al. 2016; Musil, Brand, Huemer, et al. 2022). Still, the explanatory strength of the model is limited and must be treated with caution. One plausible explanation is that the group is too heterogeneous to yield conclusive patterns. More plausible, however, is that the statistical weakness lies in its low average share of 3.3% across all statistical zones (see Appendix 11.3.1). When the entire population of a statistical zone is placed in relation to the ownership structure, the small representation of this group undermines the possibility of the model to detect meaningful associations. As methodologically, regression models with numerous low-share observations tend to lose validity (Fischer and Getis 2010, 427). As Kaufmann et al. (2023) observed greater vulnerability to displacement among this group, yet the absence of larger concentrations in central Zurich may itself be interpreted as an empirical finding. Exclusionary dynamics do not always materialise as visible enclaves but can also be seen through the absence of minority populations in specific districts, signalling more subtle forms of spatial exclusions.

By contrast, the variable **Nationality Latin America, Asia & Africa** shows a far more stable model with pronounced centre-periphery clustering (see Section 6.3.2), even though the mean share of 6.2% is not markedly higher. When examining the basic statistics (see Appendix 11.3.1), the standard deviation is almost three times higher, resulting in a stronger and more robust model fit. These empirical results also resonate with international debated on the racialisation of housing markets which emphasise that immigrant-dense areas expand primarily in proximity to existing clusters, typically within rental segment (Tammaru et al. 2016, 125). Yet, the spatial error term highlights unobserved exclusionary mechanisms, which are not captured by ownership data.

Particularly striking is that this model alone produces a strongly negative spatial lag. This suggests that, once the effects of ownership categories are taken into account, there is longer any neighbourhood dependence. This means that without the structuring influence of ownership, the distribution of this group would be much more heterogeneous. Thus, it indicates that ownership strategies appear to drive these groups to concentrate in certain statistical zones, while adjacent areas, despite physical proximity, show persistently low shares. This means that the clustering logic for this group is not homogeneously additive, but fragmented and channelled by ownership structures. The outcome resembles classical segregation patterns, where access to certain neighbourhoods remains restricted.

Furthermore, the model indicates that no ownership category actively promotes the residential integration of these groups. This absence itself can also be read as evidence of systematic exclusion.

The finding aligns with evidence of discrimination practices in the Swiss rental market. Auer et al. (2019), in an analysis involving over 11'000 fictitious applications, demonstrate that applicants with Turkish- or Albanian-sounding names were less likely to be invited to dwelling viewing than those with Swiss-sounding names. Showing that such discrimination occurs before tenancy even begins, as landlords and real estate managers act on racialised assumptions, reproducing structural barriers to access. Lipsitz (2007) calls this the 'racialization of space' as race is not only a social category, but also shapes where people can live, what resources they can access and how they are governed.

The variable **Household Equivalent Income** has the strongest spatial clustering as well as the most stable model result. As seen in the choropleth map (see Section 6.3.2) wealthier households cluster in central and lakeshore areas, while lower-income groups are increasingly observed in peripheral areas. Rising inequality in housing markets is widely recognised as a driver of such segregation, producing the "increased spatial concentration of low-income groups" (Zwiers et al. 2016, 666). This reinforces the argument that housing markets are not merely shaped by class, but are also among the most important areas in which class relations are reproduced and spatially anchored (Heeg 2018; Hochstenbach and Arundel 2020; Musil and Kaucic 2024). The spatial error term further suggests that unobserved factors also shape these inequalities.

Overall, the models demonstrate that all socio-economic variables, except for the Nationality Latin America, Asia & Africa, exhibits significant positive spatial lags, indication that neighbourhood effects persist even when ownership structures disappear. As these variables represent marginalised groups and given that the city of Zurich committed to counteract segregation, it becomes crucial to blur those neighbourhood effects to foster stronger socio-economic equality. Policies must therefore aim to create equitable living environments that overcome both neighbourhood boundaries and ownership structure influence. In this regard, Klosterkamp and Latocha (2024) propose the concept of *socio-economic infrastructures*, highlighting the need to design urban environments that actively counteract structural disadvantage.

7.2.2 Ownership dependency of socio-economic variables

In terms of ownership dependencies, the empirical results demonstrate that all socio-economic variables show significant dependencies on at least some ownership categories. The following section thus turns to the different ownership categories themselves, examining based on the empirical results how they shape socio-economic outcomes and influence the differentiated vulnerabilities of social groups.

Housing Cooperatives: The empirical results show that Housing Cooperatives, despite their socially progressive mission and long-standing reputation as basis for non-profit housing in Zurich, are not uniformly accessible. Their housing stock is strongly spatial concentrated and for some socio-economic variables the results indicate uneven inclusion, thus while they contribute significantly to affordable housing supply and social stability (see Section 3.2.3), barriers to access remain a central issue. As the regional association of Housing Cooperatives themselves note, "stable residency makes it very difficult for external applicants to move into cooperatives. Cooperatives want to guarantee long-term housing for their existing residents and at the same time remain open to new members, the only way forward is to grow"[7] (Müller 2021, 7). In terms of socio-economic inequalities, research generally highlights

[7] German: "hohe Stabilität macht es jedoch sehr schwierig für externe Interessentinnen und Interessenten, in eine Genossenschaftswohnung zu wechseln. Wollen die Genossenschaften ihren bestehenden Bewohnenden langfristig

Housing Cooperatives as more inclusive and socially mixed forms of tenure (Balmer and Bernet 2016; Holm et al. 2017; Debrunner and Hartmann 2020), yet the empirical results show different findings.

The results for Single Parent show the least negative association with Housing Cooperatives. Therefore, indicating that their housing stock is comparatively open for single parents. This matches with the report from the association that single parents' households are overrepresented compared to the city average (Müller 2021, 7). Although, families in general are also disproportionately represented in Housing Cooperatives, which is why the effects of the vulnerability of Single Parent should be critically examined (Schwierz 2015, 28). Nevertheless, the results suggest that Housing Cooperatives play an important role in offering affordable and stable housing for single parents, who are, due to their intersectionality, among the most vulnerable to displacement (as discussed in Section 7.2.1). Thus, the cost-based rent model and stable housing conditions (Debrunner and Hartmann 2020) may act as a protective buffer.

The same argumentation can be applied to the interpretation of the significantly positive association with the share of Women, based on the intersection of gender pay gap and unequal care burdens already mentioned before (Klosterkamp and Latocha 2024). The positive correlation furthermore points to a hidden egalitarian potential, suggesting not only a reduction in economic inequality through cost-based rents, but also the promotion of more gender-equitable housing structures (Kockelkorn et al. 2024, 46). In contrast to the *Ownership Model,* which implicitly reproduce the male normative subject of the housing market, Housing Cooperatives appear less discriminatory, offering a housing form that better accommodates socio-economic vulnerabilities and care responsibilities. Also, the variable Age over 60 shows significant positive correlation, reflecting the stability of cooperative housing forms, which allow residents to 'age in place', supported by familiar social environments.

The results from variable Household Equivalent Income, shows as well a positive association, however, it is not statistically significant. Yet their own documentation show that cooperative households have substantially lower taxable median incomes[8] (CHF 58'000) than those in private rental housing (CHF 76'600). This discrepancy between statistical modelling and descriptive data illustrate the complexity of cooperative effects. Their influence is spatially superimposed on other ownership categories; therefore, the significant spatial lag may contain certain part of the Housing Cooperative clustering. As Housing Cooperatives are strongly clustered and do not exist in vacuum, it can lead to Private Companies, Natural Persons and Condominiums 'win' statistically and absorb the effect that is visually seen. Thus, this result does not mean Housing Cooperatives simply have no statistical effect, but rather that their impact cannot be robustly distinguished within spatial regression models. Therefore, all of those positive connections underline their overarching goal to specifically provide housing for families, the elderly and people with low to moderate incomes (Müller 2021, 7).

Regarding nationalities, the results show opposite trends: for Nationality Not EU Europe a moderate negative correlation with no significance emerged, while for Nationality Latin America, Asia & Africa a very strong statistically significant negative correlation appears. Despite that the report from the association acknowledge this underrepresentation, noting "Swiss citizen makes up 80% of residents" (Müller 2021, 7), it must be recognised that, with regard to nationality, Housing Cooperatives present a

Wohnraum garantieren und gleichzeitig für neue Personen offen bleiben, bleibt ihnen nur der Weg, zu wachsen und zusätzliche Wohnungen zu erstellen"

[8] Not the same as Household Equivalent Income

significant structural barrier preventing access. What is often celebrated as stability and affordable housing simultaneously act for certain groups as a filter and reproducing social closure.

Private Companies: Private Companies stand out in the empirical analysis, not just as the most clearly profit-driven and exclusionary ownership category but also as they are significantly correlated with higher household incomes and negatively with vulnerable groups such as single parents, elderly and residents with nationality Latin America, Asia & Africa. These results align with wider research that identified financialised landlords as central drivers of displacement, affordability crises and socio-economic polarisation (e.g. August and Walks 2018; García-Lamarca 2021; Fields and Raymond 2021).

The negative correlation with single parents is particularly pronounced, with a far stronger coefficient than for any other ownership category. This aligns with the intersectional disadvantages discussed in Section 7.2.1. In the light of the city's attractiveness to financialised landlords pursuing profit-maximising strategies (see Section 4.1), the empirical results underline that this group represents a major barrier to housing access. The significant positive correlation with higher Household Equivalent Income further indicates their role as gatekeeper for affluent market segments. The scale of their involvement in housing production further underscores this finding. In 2024, Private Companies were responsible for 79% of all approved dwellings in Zurich (Jörg and Rey 2025). Findings by Kaufmann et al. (2023) demonstrates that displaced households earn well below average, while post-renovation tenants exhibit substantially higher incomes. This supports recent scholarship highlighting financialised landlords as filtering regime that allocate housing not by social need but by profit expectation (see Section 3.2.2).

The correlation with Women, although consistently low, is not statistically significant and therefore difficult to interpret. However, considering women earn 16% less income in Switzerland (Federal Statistical Office 2025a), even weak negative tendency remains plausible. More striking is the significant negative correlation with residents over 60. Although Kaufmann et al. (2023) do not identify the elderly as directly vulnerable to displacement, municipal survey evidence suggests that many older residents leave Zurich due to rising rents, noise or a lack of suitable housing (Tellenbach and Klemens 2014, 4). The results indicate that Private Companies are uniquely responsible for this exclusionary pattern, confirming Althaus and Birrer's (Althaus and Birrer 2020, 35ff.) findings that corporate landlords rarely invest in age-appropriate housing. They often avoid tenants over 75 due to fear of risks and administrative costs, focusing instead on purpose-built senior residences in peripheral locations. International research confirms similar dynamics, including a shift towards 'automated landlords' that further marginalises older tenants (Fields 2022). These practices underscore Blomley's (2019, 235) point that property operates as a gatekeeping device. Rather than supporting ageing in place, corporate landlords actively reterritorialise markets to attract younger, affluent tenants, thereby reinforcing the socio-economic exclusion of older people.

The absence of significant correlation for the variable Not EU Europe is surprising, given the common assumption that Private Companies drive displacement. However, as argued earlier (see Section 7.2.1), this may reflect model limitations. Recent analysis from Feller (2017) paints a clearer picture: in neighbourhoods (Sihlfeld, Langstrasse, Gewerbeschule and Escher Wyss) with strong presence of Private Companies (as discussed in Section 7.1.1) the share of foreign residents has declined markedly, particularly among residents with nationality from Balkan. This illustrates that invisibility, who is no longer present, is as crucial as visible clustering in understanding exclusionary housing dynamics. By contrast, the variable Nationality Latin America, Asia & Africa show one of the strongest negative correlations (second after Housing Cooperatives), indicating clear patterns of segregation. These

findings mirror dynamics observe in other cities, where migrant displacement is not led by affluent households but by differently positioned groups, producing what Musil et al. (2022, 990) calls 'marginal gentrification'. Taken together, these results indicate that the absence or very low share of specific nationality groups reflects ownership-driven exclusion and confirming the finding of Kaufmann et al. (2023, 2) that structural vulnerabilities overlap and reinforce one another.

The case of Escher Wyss further illustrates the scale of financialised landlords. Over the past two decades the Housing Stock has doubled in this neighbourhood (Municipal Statistics Office 2025k). As discussed in Section 7.1.1, the new housing stock was predominantly built by Private Companies and is characterised predominantly by high-priced dwellings and Condominiums, which account for 40% of the current Housing Stock. The results show that Household Equivalent Income in Neighbourhood Escher Wyss now exceed those of district 7 (see Section 6.3.2). Furthermore, Feller (2017) notes that the population in that neighbourhood is skewed towards high-earning residents aged 30-39, with fewer children and elderly residents. He also marked shifts in foreigner structure between 1993 and 2016. Residents with nationality of Germany increased by 30%, while residents with Balkan nationality declined by 26% and Italian nationality by 20%. This demonstrates how profit-oriented redevelopment selectively reconfigures neighbourhoods, producing dense socio-economic inequalities.

Overall, the findings confirm that Private Companies act as the most discriminatory and exclusionary ownership category. They benefit from the legal framework in Switzerland, which does not impose obligations on landlords to avoid discriminatory tenant selection. Thus, these dynamics reveal the weakness of tenancy protections, unlike Austria or Germany, tenants in Switzerland face limited safeguards against displacement or rent increase through renovation or redevelopment (see Section 4.1.2). As Blomley (2020, 45) argues, property law legitimises the power of owners to grant and deny access, reproducing structural asymmetries. Private Companies exemplify this gatekeeping role most sharply, using ownership not only to extract profit, but also to reterritorialise urban space for their advantage.

Natural Persons: Natural Persons represent a distinctive ownership category within Zurich's housing system, with the empirical results pointing to a complex interplay between socially stabilising and exclusionary logics. Significant positive correlation with Women and Age over 60, alongside moderate positive correlation with Household Equivalent Income and moderate negative correlation with Single Parent and both Nationality groups, suggest a mixed influence. On the one hand, they sustain neighbourhood stability and continuity; on the other hand, they reproduce socio-economic exclusion through classed and racialised boundaries.

Beyond the model results, the spatial overlap between Natural Persons and affluent neighbourhoods such as Zürichberg, together with the fact that district 7 has the city's highest share of self-occupied housing stock, indicates that property owned by Natural Persons functions as an intergenerational reservoir of wealth. It secures long-term class advantage through the capacity to store and transmit property across generations. International research confirms that homeownership operates as a main driver for intergenerational asset transfer, embedding wealth and advantage within an affluent group (Ronald and Kadi 2018; Hochstenbach and Arundel 2020; Aalbers et al. 2021), While Natural Persons may lack the corporate scale of financialised investors, their collective practices reinforce asset-based class structures in Zurich and intensify spatial socio-economic polarisation not through market dynamics, but through the accumulation of privileges.

The variable Age over 60 further shows how the Natural Persons are temporally stable. An investigation in neighbourhood Riesbach demonstrates that nearly 90% of individually owned parcels are held by persons over 50 and one third by owners over 70 (Authors' group housing 2024, 15). This temporal stability facilitates 'ageing in place' and reflects Blomley's (2019) argument that property ownership operates not only through exclusion, but also through reproduction and continuityAs Piketty (2011) argue, property inequalities accumulate over the lifespan, reinforcing territorialisation across life courses.

Turing back to Household Equivalent Income, the model shows the weakest positive correlation (after the insignificant Housing Cooperatives), which also indicates that, in relation to tenants, their landlord strategies lead to relatively low displacement on lower-income households compared to others. This is also consistent with the more aggressive strategies of financialised landlords, which reinforce income segregation (as seen in Section Private Companies). Also, the moderate negative correlation with Single Parents indicates, that unlike Private Companies, Natural Persons may not strategically raise rents or deploy modernisation to displace low-income households (see Section 3.2). Furthermore, the moderate positive correlation with Women suggests that gender in neither a primary axis of exclusion for Natural Persons. By contrast, the strongest exclusions emerge along nationality. Negative correlation with both Not EU Europe and Latin America, Asia & Africa reveal that areas dominated by Natural Persons remain disproportionately inaccessible to them and reflect possible discriminatory practices in rental market (Auer et al. 2019; Debrunner et al. 2024, 12).

Condominiums: A comparatively small segment of Zurich's housing market are Condominiums. With a city-wide share of 10%, they remain numerically modest, the model results must therefore be treated with more caution. Their importance lies instead in the exceptionally high share of owner-occupied Condominiums, with 52.3% compared to only 8% across Zurich's overall housing stock (Municipal Statistics Office 2025k). Condominiums thus embody the duality of ownership as both an individualised dwelling form and an asset-based strategy of wealth accumulation, as already discussed in relation to Natural Persons.

These empirical results show the strongest positive correlation with Household Equivalent Income, reflecting the classed nature of owner-occupied condominium. In the Neighbourhood Escher Wyss with the by far the highest share of Condominiums, the owner-occupation rate is with 23% also the highest in the city and the average household equivalent income in 2021 reaches in the SZ Technopark the fifth highest with CHF 96'000.[9] These findings are consistent with scholars conceptualising Condominiums as predominantly middle- and upper-class linked to asset-based class formation (Le Goix et al. 2021, 73; St-Hilaire et al. 2024, 140). Condominiums also show a significant positive correlation with the variable Age over 60*,* which may appear contradictory in Escher Wyss, where Feller (2017), as seen in the Section 7.2.1, revealed a population concentration among 30-39 year-old with relatively few older residents. The distribution pattern of Condominiums, however, reveal two distinct clusters, the Neighbourhood Escher Wyss and the District 7.

The latter as seen in Section Natural Persons align with wider research on generational homeownership dynamics, showing how older people entered the market under more favourable financial conditions and benefitted from deceased of dept-fuelled price inflation, thereby accumulating substantial housing

[9] For comparison the average Household Equivalent Income 2021 in Zurich over all SZ was CHF 59'000 (Dataset from Statistical Office).

wealth, while younger people are confronted with a barrier for stepping into the housing market (Ronald and Lennartz 2018, 156; Hochstenbach and Arundel 2020, 566). Zurich's Condominiums therefore embodies not only individualised ownership, but also the temporal stratification of class and privilege, where age and property reinforce one another. Similarly, for Women the lowest positive correlation shows, which aligns with the intersectional vulnerability already mentioned before (Klosterkamp and Latocha 2024).

By contrast, Single Parents show a moderate negative correlation. Given the intersectional vulnerability (see Section 3.3.2) alongside the strong positive correlation with Household Equivalent Income, this result appears somewhat contradictory. Yet the low spatial autocorrelation (see Section 6.2), combined with a relatively small share of Condominiums (see Section 6.1.1) and a lower significance might suggest that the coefficient is not that strong. If interpreted only with respect to tenants rather than owner-occupied, the findings align with the argumentation for Natural Persons. Nevertheless, it makes sense not to draw any indication here, as there is a high probability that the result is not ideal. Similar caution for the moderate negative correlations that appear for both Not EU Europe and Latin America, Asia & Africa as the small average share may lead to false positive correlation rather than substantial effects. This would also explain the deviation from existing research such as the clear nationality-based segregation in Neighbourhood Escher Wyss (Feller 2017). This argument is also reinforced by a comparison of the distribution maps, which suggests that the lack of model stability is probably the decisive factor behind these results.

8 Critical Reflexion

Although the analysis of spatial patterns of property ownership in Zurich provides valuable insights, the action of producing such knowledge is no neutral. Data, maps, and models are all not transparent windows into reality, but are conceptualised 'representation of space' within specific institutional regimes and power relations (Blomley 2004, 55 & 67). It is therefore necessary to critically reflect on the main challenges associated with the data, the cartographic practices and the analytical approaches employed in this master's thesis.

8.1 Methodological Dimensions

The moment data are translated into maps and models, they begin to operate within a distinct logic. Spatial data is never neutral, but the product from reality shaped by measurement choices, scales, and models into a specific spatial matrix. What appears as an objective spatial fact is therefore always a 'representation of space' deeply conditioned by the choices and epistemic assumptions of those who produce it (Fischer and Getis 2010, 214). As Monmonier (1991, 4) argued, "maps must be white lies but may sometimes become real lies", not because they always mislead intentionally, but because reduction is inherent as they reduce complex realities into bounded and legible categories which can be potentially used for intentionally misleading maps. Following Harley (1989, 15), maps do not represent an objective progression of science, but constitute discourses of power-knowledge, constructing order while silencing alternatives. Deconstructing maps therefore enlarges their meaning, revealing competing narratives and mechanisms. Rather than accepting the results as neutral representations, the different aspects of the results were deconstructed and discussed in Chapter 7. These critical insights directly shaped the analysis process in this master's thesis. Translating ownership data into legible outputs required a series of decisions: which data were available, what does the data show, what they left out, and which questions can get addressed? This section therefore reflects on the methodological choices made with the selected datasets, while the following Section 8.2 focuses explicitly on the data availability themselves.

Classification: With a total of two spatial ownership datasets, analysed across three spatial scales and six socio-economic variables with differing units of measurement, ensuring comparability across them posed a considerable challenge. Each dataset needed to retain interpretive value in relation to the research questions, while at the same time allowing for cross-comparison. Achieving this required deliberate simplification, even at the cost of further distorting the empirical reality. As the underlying spatial units differ markedly in size, all variables (except Household Equivalent Income) were pragmatically converted into shares (see Section 5.3.3). To enable comparison across datasets and scales, a classification with twenty classes in 5% intervals was chosen, although this decision departs from common mapping practices (see Section 5.4.1) and inevitably shapes the visual narrative. This approach makes large comparison possible, but necessarily suppressed finer differences. The aim of these maps, however, is not to capture the smallest differences between spatial entities, but to reveal broader city-wide patterns and shifts in the data. As at the statistical zone scale, which emerged as the most meaningful scale, 5% represents only a marginal share difference, its differentiation was set aside for the sake of analytical clarity. Yet such decisions are reasonable, they reduce nuance and can hide subtle spatial variations, which means the simplification must always be kept in mind. In retrospect, a slightly more refined legend, recognising 0% as an own category, might have captured absence more

explicitly. Nevertheless, these reflection underlines Blomley's emphasis (see Section 2.2.3) that mapping is not a neutral mirror of reality but a process of drawing boundaries of representation while defining thresholds of visibility and invisibility.

Scale dependency and MAUP: Scale introduces a further layer of distortion. The multi-scale analysis clearly shows that the spatial patterns shift substantially with the scale of observation. While the district scale offers a broad overview, the empirical results (see Section 6.1.1) proves it insufficient for understanding intra-urban ownership patterns and spatial structures that shape urban inequality. The apparent homogeneity at district scale hides distinctive internal variation, as empirically demonstrated across all ownership categories in Section 6.1.1. Dominant areas with high shares are absorbed into districts with lower shares, creating an illusion of evenness. By contrast, the statistical zone scale reveals the most fragmented distribution of Public Institutions and the most accurate extension of the Housing Cooperative clusters, which would be invisible at higher scales of aggregation. This underscores the analytical importance of fine-grained resolutions. More aggregated scales would risk obscuring the complex and uneven geographies of urban property, a phenomenon long captured by the MAUP (Openshaw 1984). Furthermore, the findings demonstrate that ownership is not distributed homogeneously within administrative units, but follows diverse and uneven patterns. Referring to Blomley's territorial approach (see Section 2.2.3), the observed misalignment between patterns and administrative units can indicate that those spatial units reflect political and historical decisions rather than urban realties.

Geostatistics and their robustness: The interpretation of maps is inevitably shaped by the viewer's own persecution. As Darmofal (2015, 24) reminds, that the human mind is predisposed to apophenia, which is the tendency to perceive meaningful patterns or relationships where none exists. One striking example is the results from the variable Women as discussed in Section 7.2.1, which shows that the values of geostatistical methods are precisely that they move beyond such 'eyeball examinations' by testing whether spatial dependence is present, and if so why. In the case of Zurich, analyses using Global Moran's I confirm that ownership categories (as well as the chosen socio-economic variable) are not randomly distributed. All categories exhibit spatial autocorrelation, although the strength varies (see Section 6.3.2). Nevertheless, the interpretive validity of these outcomes, however, rests on whether the observed clustering reflects meaningful processes rather than statistical artefacts (Darmofal 2015, 68). The connection of the empirical findings with the relational property approach and previous research findings as argued in Chapter 7, suggest that these spatial patterns are not clustered by coincidence but reflect, for instance, historically sedimented trajectories, planning interventions and strategies. Nevertheless, despite the assumption that the distribution is not random, the spatial regression models shows that caution is still warranted. Even Monte Carlo simulations, designed to test significance, may yield chance that appear to support the results. This can lead to statistical significance being indicated where little substantive meaning exists (Fischer and Getis 2010, 297).

Multicausality and omitted variable bias: Beyond questions of statistical significance, a relational understanding of space (Blomley 2004) draws attention to the problem of 'omitted variable bias' (Fischer and Getis 2010, 488; Darmofal 2015, 33). Socio-economic distribution cannot be reduced to a single causal factor, nor can the presence or absence of population groups be attributed solely to one explanatory variable (as discussed in Section 7.2). Nevertheless, the empirical discussion highlights clear ownership effects. The high share of Condominium in Escher Wyss is directly linked to decisions by property owners who developed sites and sold them as ownership units. Likewise, the comparatively

lower Household Equivalent Income in Housing Cooperatives points to the socio-economic composition fostered by this *Ownership Model*. At the same time, research shows how ownership logics interact with broader socio-economic inequalities, such as the exclusionary practices of Private Companies producing non-inclusive space (e.g. Auer et al. 2019; Althaus and Birrer 2020).

Defining boundaries for this analysis meant focusing on socio-economic variables that prior research has identified as vulnerable to displacement (Tellenbach and Klemens 2014; Kaufmann et al. 2023). This necessarily produces omitted variable bias. Yet, in a city where 92% of Housing Stock in rental (see Appendix 11.4.1), as argued in Section 7.2, property owners ultimately hold the power to decide who may live where. While multiple factors shape housing demand, it is the landlord's consent that determines actual access. As the models developed here cannot account for all factors, their explanatory power remains limited, and statistical correlations should be interpreted with caution. Model selection tests revealed no significant spatial error, except for Nationality Latin America, Asia & Africa and Household Equivalent Income. This suggests that omitted influences are likely not spatially structured and therefore do not systematically shape the observed spatial distribution (see Section 5.4.3). It underlines the importance of distinguishing correlation from causation, as statistical significance alone cannot be taken as proof of causal relations without contextualisation. Nevertheless, recognising these limits should not deter statistical analysis, but instead encourage a critical reading of outputs and potentially uncover connections and insights within the complex structures of urban property and their socio-economic inequality.

8.2 Data Availability

As seen in this analysis in Section 5.3.2, as well as in previous research (see Section 5.1), the accessibility of data is not neutral, but is deeply shaped by legal frameworks and political decisions. The state determines through cadastral law, statistical offices and open data guidelines the extent to which data, in this case ownership data, can be analysed at all. The following section discusses how governmental filtering of information influences the scope of research on property ownership and housing markets, leading to systematic asymmetries between public authorities, commercial actors and society.

Barriers to accessing ownership data: As shown in Section 5.1**,** research into private property ownership has long been constrained by limited and fragmented data availability. Since the 1970s, scholars like Massey and Catalano (1978) have highlighted how the absence of systematic records constitutes a 'fundamental problem' for urban research. More recently, studies have emphasised that the persistent data gap particularly continues to limit empirical analysis, particularly in large cities where corporate ownership is suspected to play a disproportionate role (Kadi et al. 2020; Trautvetter and Henn 2020; Casanova Enault et al. 2023). Piketty (2013, 755) even identified such 'financial opacity' as intrinsic to wealth concentration. Where data exists, it is often incomplete or geographically selective, covering only certain owners (see Section 5.1). St.-Hilaire et al. (2024, 132) observe that planning research has consistently struggled to engage with private ownership precisely because corporate structures actively conceal beneficial ownership, rendering even 'open' registries incomplete. In England, for instance, the Land Registry provides public access, yet more than a third of entries lack detailed ownership information (Dixon 2009, 544). Comparable critique have been made in Germany and Austria, where cadastral information remains either paywalled or locked into commercial applications, leaving researchers to rely on derivative statistical products rather than direct registry

analysis (Musil et al. 2022, 335). At the same time, on the other end of the spectrum, open data initiatives can overwhelm rather than resolve the issue. As An et al. (2024, 627) argues, large property datasets are filled with misspellings, miscoding and duplications through complex corporate structures, which systematically obscure the identities of landlords. Thus, open data initiatives often shift the burden of data cleaning onto researchers and activists, creating new technical barriers to meaningful analysis.

The role of the Land Registry: In Switzerland, cadastral offices formally hold the mandate for recording property ownership. The land register lists parcel numbers, the names, and identification of owners, legal forms and acquisition dates (Notary Inspectorate Canton of Zurich 2025). Federal law specifies under Article 26 of the *Land Registry Ordinance (Grundbuchverordnung)* that any individual may request extracts of this information without demonstrating legal interest. However, Article 27 restricts access by requiring that queries remain parcel-based and protected against serial requests (Fedlex 2012). In practice, the Canton of Zurich has implemented a cap of five daily queries and, due to technical and legal reasons, also do not see any exceptions for research purposes (Notary Inspectorate Canton of Zurich 2025). This regulatory design effectively blocks the analysis of large-scale ownership datasets. As Trautvetter and Henn (2020, 6) note, the result is that analyses of property structures must rely on statistical offices or indirect sources, since systematic evaluation of the land register is 'virtually impossible'. Paradoxically, while European data portals have opened up large parts of administrative information, property ownership remains largely excluded (Casanova Enault et al. 2023, 1751).

The role of the municipal open data policies: Against this restrictive backdrop, Zurich's Statistical Office (2025g) represent a relative outlier. It had advanced open data provisions far beyond most other cities, making large amounts of anonymised property ownership data publicly accessible for planning and research. In addition, the office processes and publishes data analysis in graphical and cartographic form, ensuring that results are interpretable even for people who are not familiar with working with raw data sets (e.g. Rey 2022; Jörg and Rey 2025; Näf 2025). Researchers can also request non-public datasets for specific projects, though these are still subject to the overarching constraints of statistical secrecy.

The *Swiss Charter of Public Statistics* (Federal Statistical Office and CORSTAT 2025, 13f.) codifies strict principles of confidentiality and data protection. The 5. Principle stipulates that all individual-level information on natural or legal persons is to be treated as strictly confidential. While this charter guarantees trust in official statistics, it also means that fine-grained ownership information is systematically withheld from the public. Overall, it reflects a shift towards greater data transparency in Zurich, yet it also illustrates the limits of municipal discretion in the federalist system. While statistical offices can open aggregated data, they cannot override national cadastral law or the principles of statistical confidentiality.

Structure and comparability of data: The open data policy by Zurich's Statistical Office (2025g) is a benefit for urban research, but still presents challenges of use and interpretation as the available datasets differ considerable in their dimensions, categories, temporal and spatial scale. The choice of available dataset therefore has direct consequences for interpretation. As this master's thesis has shown, the same ownership structure looks markedly different when analysed through different datasets, since each reflects a district property dimension (see Section 5.3 and 6.1.1). Furthermore, several potentially relevant datasets could not be employed precisely because they operate with different classifications and/or are only available at more aggregated scales (for example seen in Section 4.1.1 for a larger temporal scale). Although the Housing Stock share can be contrasted over time since 2010 and reveals change in ownership structures, datasets like Building Area which has more precise categories are not

available on a temporal scale (see Section 5.3.2). This means that it remains unclear whether stability in aggregated shares conceals internal shifts between owners, especially within strong internal differentiations as in Private Companies. Therefore, a fully diachronic analysis is not possible within the scope of this master's thesis.

In terms of scale, the empirical results (see Section 6.1.1) clearly demonstrated that ownership patterns cannot be meaningfully understood at the neighbourhood scale alone, as neighbourhoods differ widely in size and internal structure. Statistical zones therefore offer a finer, more detailed spatial resolution for analysing those urban inequalities. However, access to these datasets remains restricted. Despite official commitments to open data (Municipal Statistics Office 2025g), data on statistical zone scale are not always openly accessible. This limitation may reflect institutional attempts to control the amount of detailed information available. From a critical perspective, such opacity functions as a strategic simplification. If only aggregated data are provided, spatial distortions are introduced that exceed informational loss. They risk creating a misleading empirical foundation for public debate by concealing inequalities that are visible only at finer scales. This underlines both the importance of multi-scalar analysis and the need for caution when interpreting coarser-scale aggregations.

Furthermore, the statistical zone scale is not the finest spatial resolution, but ownership data remain unavailable at the official legal and territorial unit of property (the scale of cadastral parcels). The discussion in Section 7.1 as well as mapping initiatives, such as the *Betongold* project (SfA 2022) or the *#ZürichAufdecken* project (Reflekt 2021), illustrate the relevance of parcel-scale analysis. This scale allows tracing the consolidation of larger properties under profit-oriented companies and thus to grasp a closer extent of their presence in the city. The analysis therefore shows not only where property ownership patterns can be mapped, but also where the limits of available knowledge become evident. At the same time, it highlights how deeper access to fine-scale ownership data would strengthen research on the territorial logics and power asymmetries of property in Zurich.

Hidden territorial logics and power asymmetries beyond cadastral data: Yet the limits of ownership data are not exhausted by the absence of parcel scale access. They lie deeper in what remains invisible even when cadastral data is available. As seen through Section 7.1 of the discussion as well as emphasised through Blomley's approach (see Section 2.2), mapping parcels can show who legally holds a title, but it cannot capture the wider power relations through which property in mobilised, contested and reproduced. The formal geography of ownership thus only partially reflects the distributed networks of power that define what ownership means in practice.

Even a complete parcel map could therefore not fully illustrate who owns the city. As Trautvetter and Henn (2020, 6) highlighted do land registers frequently list only for example Public Limited Companies established to manage assets and leaving the ultimate profiters outside the data. This limitation is already well known in relation to for example Public Limited Companies and Investment Foundations. As the case of *Zollfreilager* in Section 7.1.1 have shown, Public Limited Companies also use subsidiaries in which they hold all the shares to manage real estate. This is also evident in Municipal Foundations, but there the connections to the city are all transparent and visible (Municipal Statistics Office 2025g). Thus, the data on parcel scale would deepen our knowledge of distribution and large holdings, especially in financialised areas, but it could still fail to capture the relational dimension of property power.

8.3 Reproduction of State Order

Blomley describes property as a 'rule without appearance', where ownership and spatial boundaries operate as if they were natural givens, rather than historically and politically produces constructs (see Section 2.2). This insight is crucial for interpreting the data employed in this study. The spatial units, the legal entities and the categories used to classify owners are not neutral descriptors of reality.

Spatial units: Spatial units such as parcels, statistical zones, neighbourhoods, districts and so on, as described in Section 5.3.1, are all state-produced frameworks that structure the way in which property is known, mapped and governed. As shown all over this master's thesis are they historically sedimented, politically negotiated and continuously reproduced through law, planning and statistical practice. It exemplifies the territorialised approach from Blomley (see Section 2.2.3) as those boundaries were not naturally occurring but an outcome of governmental ordering. Since these spatial references have been defined in this way and there is no movement to adjust them, even though they continue to shape and contain how inequality is measured and represented. They are reproduced by the state, for example by the statistical office that works with them, but also by society, which has access to this data and is bound to these spatial references when analysing the data.

Legal entities: Legal entities are likewise historically contingent governmental constructs, rooted in civil code and continuously reshaped by political decision-making (shown in Section 4.2) which have lasting effects on ownership structures. *Lex Koller*, for instance, fundamentally redefined the scope of access for international investors. At the same time, legal forms blur the boundary between public and private as mentioned in Section 3.2.4, where semi-public companies are majority-owned by public authorities, but legally structured as corporate entity (City of Zurich 2024). Conversely, Private Companies strategically exploit the flexibility of corporate law by creating subsidiaries, as shown before in the case of *Zollfreilager* (see Section 7.1.1). In shows that law does not simply register ownership, but actively produces the legal entity through which property is organised and contested.

Categories: Finally, the ownership categories employed in statistical datasets must themselves be read as state-constructed frameworks. Their aggregation reflects both legal entities and institutional choices made by statistical offices. While categories such as Public Institutions, Natural Persons or Condominiums appear straightforward, the broad grouping of Private Companies conceals substantial differences among twelve distinct legal entities with strongly divergent rights, obligations and economic logics (as seen in Section 6.1.2). This produces a smoothing out of heterogeneity that obscures significant distinctions (as seen in Section 3.2).

In terms of power asymmetries, most important is that a substantial share of owners within Private Companies are Public Limited Companies, while many smaller legal entities make little difference in aggregate terms as seen in Section 6.1.2. This broad aggregation risks marginalising claims to land of a more collective nature (Blomley 2004, 27). The analysis therefore demonstrates the need for a finer categorisation of Private Companies, at the very least distinguishing between non-profit entities such as Cooperatives or Private Associations and profit-oriented actors such as Public Limited Companies, Pension Funds or Investment Foundations.

Yet even the simple binary of profit versus non-profit remains insufficient. As Theurillat et al. (2015, 1423) emphasise, two distinct types of profit-oriented actors operate in financialised property markets. Pension Funds can be described as 'patient investors' of real capitalism. They are not listed in the stock market, have no shareholders, and use real estate primarily as a secure long-term financial asset. In

contrast, ‘financialised actors’ such as Public Limited Companies or Investment Foundations are potentially integrated into stock markets, tradable and leveraging property both as a long-term asset and as a source of short-term returns therefore operate with a dual logic. Recognising these distinctions is essential for understanding how different ownership structures shape urban markets and contribute in divergent ways to processes of financialization.

The rationale behind such aggregation is partly technical and partly ethical. As mentioned above, statistical offices are bound by the *Swiss Charter of Public Statistics*, which requires both confidentiality and long-term comparability (Federal Statistical Office and CORSTAT 2025, 13f. & 22). Fine-grained disaggregation may risk identification of individual owners, while reclassification across time series would undermine statistical coherence. From a critical perspective, however, such aggregation reproduces a partial and selective view of property that privileges certain categories, while rendering other invisible. As Blomey (2004, 27) underlines, “it is also analytically consequential. It affects the ways in which we conceive of cities, the preeminent human ‘settlement’”.

Once such categories have been defined, they are reproduced each time the data is used. The Statistical Office itself continues to use these classifications in its annual updates and in the analyses it publishes (see Section 8.2). Researchers who work with these datasets likewise adopt and reinforce the same categories, often likely without access to the internal reasoning or detailed knowledge behind their construction. For the wider public, which engages with statistical outputs, without insight into the categorisation process, the risk is even greater. The resulting appearance of ownership and socio-economic inequality may appear authoritative and complete, yet it is already framed by prior classificatory decisions as a ‘rule without appearance’ (Blomley 2004, 55 & 67). Thus, the *Swiss Charter of Public Statistics*, which defines the practices of statistical aggregation, not only serve to manage confidentiality, but also contribute to the reproduction of property as a seemingly neutral order.

Critically address ‘rule without appearance’: In working with datasets from the Statistical office, this master’s thesis inevitably reproduces state-constructed maps of ownership. These do not depict social reality in its complexity, but only the structures that have been codified in law and enforced politically. By visualising and analysing them, this master’s thesis too participates in the normalisation of a historically embedded order of property, an order so deeply institutionalised, that it appears self-evident and difficult to escape.

As discussed, are maps not neutral mirrors but practices of power, privileging some categories while silencing others. Therefore, the aim of critical mapping is not to simply abandon maps altogether, but to historicise and contextualise them, to interrogate their political content and to explore emancipatory perspectives that question hegemonical representation (Michel 2010, 16). From this perspective, reproducing the datasets from the Statistical office is not an analytical flaw but also a gain. Since one objective of this master’s thesis is to examine financialised dynamics within neoliberal urban structures, it is both necessary and useful to analyse normative territorial units, precisely because they underpin political practice and public debate. At the same time, by engaging with Blomley’s relational perspective (see Section 2.2), it seeks to move beyond a merely descriptive reproducing of cadastral categories. The analytical ambition is thus to deconstruct their seeming naturalness and exemplify some teasers on how property operates as a politically and socially constituted order.

8.4 Democratic Need for Accessible Ownership Data

One of the key findings of this master's thesis has been to show how ownership clusters and hotspots, such as Escher Wyss, highlight the importance of knowing who owns what in the city of Zurich. The empirical results demonstrate how large profit-oriented companies are actively engaged in producing urban space, shaping redevelopment areas and setting new spatial boundaries. This resonates with Crevoisier et al. (2025, 7), who identify Zurich alongside with Geneva as one of Switzerland's two 'international financial metropolises', characterised by the dominance of financialised real estate.

Yet these dynamics remain obscure when reduced to the broad statistical category of Private Companies and aggregated to the statistical zone scale. Investigative projects such as *#ZürichAufdecken* (Reflekt 2021) illustrate how much effort is required to reconstruct ownership patterns in the absence of systematic data access. Although cadastral records exist, they can only be consulted through individual queries, which makes large-scale analysis practically impossible. Until 2005, land transactions in Zurich were still published, offering at least partial insight into property transfers, but this practice has since been discontinued (Notary Inspectorate Canton of Zurich 2025). The result is a situation where critical ownership information remains technically available yet structurally inaccessible.

The underlying problem lies less with the cadastral offices themselves than with the legal framework under which they operate. As Trautvetter and Henn (2020, 6) argue for Berlin, the land registry has become the foundation of opaque property markets. Furthermore, the deeper issue lies with politics as it is the law that limits or enables transparency, thus the state has the power to decide whether ownership data is restricted or not. The barriers of access are therefore not technical necessities but political choices.

From an ethical standpoint, one common argument is the protection of natural persons. Confidentiality in ownership data is justified as a safeguard of individual privacy. Yer in practice, this protection extends equally to legal persons that own large portfolios for profit. From a critical perspective, this blending is deeply problematic. While there are certainly rent-seeking natural persons, equating natural persons with Private Companies under the same shield of privacy obscures the structural impact of large landlords in ownership structures.

Critical researchers emphasise that these profit-oriented owners are of high public interest precisely because their strategies undermine housing security for vulnerable populations. Trautvetter and Henn (2020, 6) notes that the available data on ownership and rental markets is wholly inadequate for evidence-based regulation, taxation or combating misuse and calls for comprehensive land registers that include ownership information. As Angebauer and Wesche (2024, 235f.) argue, the conflict over urban housing crystallises the contradiction between housing as a basic need and as an investment asset, a contradiction rooted in the private coding of ownership rights.

The persistence of opacity also reflects a historical tradition of treating ownership as a 'private matter', a perspective that aligns with the normative assumptions of the *Ownership Model* (see Section 2.1). However, this stands in direct opposition to democratic accountability. It is at odds with Article 1a of the *Swiss Federal Freedom of Information Act (IDG)*, which states that the law "it aims to make the actions of public bodies transparent and thus promote the free formation of opinion and the exercise of

democratic rights, as well as facilitating the monitoring of government actions"[10] (Fedlex 2006). However, without knowing who owns the city, neither tenants, residents nor policymakers can engage in informed debate or divide targeted solutions to the housing crises. Policy decisions are instead made in the dark, approximating ownership structures without transparency over who ultimately profit. The risk is that political responses remain ineffective, while concentrated ownership interests are minimised or dismissed as anecdotal. Therefore, if ownership data is withheld under the same logic that protects natural persons' privacy, it obstructs precisely the democratic functions it is meant to serve.

Against this background, the empirical analysis has shown how different ownership concentrations shape the conditions of access and affordability and reinforce the need to treat ownership data as part of the public infrastructure of democracy. Greater transparency would allow society to base its perception not on approximations, investigative journalism or statistical aggregation, but on a clear foundation of property ownership holders. Only then can property ownership be analysed more precisely and in greater detail as a structural power relationship that profoundly shapes urban life.

[10] German: "Es bezweckt, das Handeln der öffentlichen Organe transparent zu gestalten und damit die freie Meinungsbildung und die Wahrnehmung der demokratischen Rechte zu fördern sowie die Kontrolle des staatlichen Handelns zu erleichtern"

9 Conclusion

This thesis has been guided by a seemingly simple yet profoundly political question: *Who owns Zurich, where, and why does it matter?* The answer, as the analysis has shown, is neither neutral nor simple. Building on Blomley's (2004, 22) claim that "property is not a noun, it is a verb", it has shown that ownership does not merely reflect existing inequalities, but actively produces them in space. Zurich does not appear to be an exception, but rather a prime example of the "social question of the twenty-first century" (Christoph Trautvetter 2020, 6), where the distribution of property is inseparable from the reproduction of socio-economic inequalities.

9.1 Empirical Research Findings

1.1 Overall Distribution: The research question 1.1 intended to uncover the spatial distribution of the dataset Housing Stock and Building Area for each ownership category across multiple scales. The results (see Section 6.1.1) show that property ownership in Zurich is anything but evenly distributed and that it makes a significant difference which dataset on which spatial scale is viewed. In terms of spatial scales, the findings demonstrate that the higher the level of aggregation, the less informative the results become, as the ownership appears increasingly evenly distributed. The analysis emphasised that only the statistical zone scale provides somewhat sufficient differentiation to enable a meaningful spatial analysis, whereas more aggregated scales risk producing misleading interpretations. In terms of the observed dataset, the patterns also vary, as on one side the Building Area reveals how ownership categories control the built surface, while Housing Stock the amount of control regarding residential use. The comparison shows that in various cases, Private Companies own a wide amount of Building Area without directly corresponding Housing Stock, highlighting how ownership categories extend beyond residential provisions. On the other side, Housing Stock distribution reveal the socio-economic implications more directly but remain blurred by data aggregation. The divergence between these two datasets underscores the political importance of data regimes. What is measurable in building terms is not equivalent to what matters in social terms and the opacity between the two conceals precisely those ownership dynamics (especially among Private Companies) that are most consequential for socio-economic inequality.

1.2 Internal Differentiations: The research question 1.2 highlighted that ownership categories are far from coherent. The analysis primarily concentrated on the Housing Stock, yet the lack of disaggregated housing data presented a substantial limitation. While the distribution of Building Area for legal entities could be mapped, the disaggregation of Housing Sock remains opaque. This is especially critical in the case of the highly heterogeneous Private Companies. The empirical results reveal that potentially profit-oriented and financialised owners (such as Public Limited Companies, Pension and Investment Foundations or Pension Funds) cannot be distinguished from one another, nor from other legal entities, when analysed the Housing Stock. As a result, it is not possible to identify overall where profit-oriented companies have formed their hotspots in Housing Stock, instead the analysis is restricted to Building Areas, which may be misleading. In contrast, neither the disaggregation of Natural Persons (which distribution is quite similar) nor the Public Institutions (whose data is openly available) show the same urgency for disaggregation. These limitations underscore the political significance of data opacity, which ensures that precisely the most profit-oriented legal entities remain hidden.

1.3 Temporal Change: The research question 1.3 examined the shift in ownership distribution since 2010. The analysis reveals that Zurich's ownership trajectory diverges in certain aspects, while in others provide a perfect example of broader international findings. Whereas international research has observed a sharp decrease of public landlords under neoliberal restructuring (Romainville 2017; Adisson and Artioli 2020), Zurich shows remarkable stability as their share has remained stable, supported by local protection mechanisms (see Section 7.1). Yet stability of public landlords does not equate to continuity in the broader urban landscape. Like observed in various international studies (August and Walks 2018, e.g.; Musil, Brand, Huemer, et al. 2022; Çelik 2024), the findings indicate how the processes of financialization have reterritorialized ownership in Zurich. Private Companies have on one side systematically accumulated properties formerly held by Natural Persons and merging them as assets into portfolios, while on the other side, acquire former industrial areas and restructuring them in redevelopment areas for profit, aligned with global circuits of capital. Housing Cooperatives, by contrast, remain spatially selective and defensive. Despite their political support and public recognition, their expansion is strongly limited. They continue to reproduce their historical clusters, but are mostly structural excluded from prime locations. This reveals not only the resilience of Housing Cooperatives, but also its structural marginalisation within an ownership regime dominated by profit-oriented owners. While Housing Cooperatives embody an alternative logic of ownership, their scope is actively limited by the continuing dominance of the *Ownership Model*.

2.1 Socio-economic Inequality: Finally, the research question 2.1 investigated how ownership structures intersect with socio-economic variables associated with displacement. The results demonstrate that ownership is not a uniform driver of exclusion. Each ownership categories follow different trajectories, with diverging risks of displacement and mechanisms of distribution. The models confirm broader findings from Kaufmann et al. (2023), while it reveals different impacts for each variable depending on the ownership category. Additional variables on the one hand for Age over 60 present another variable that didn't show more direct displacement vulnerability in Kaufmann et al. (2023), but are more vulnerable towards indirect displacement. While most ownership categories correlate positively with residents age over 60, Private Companies stand out with a negative correlation, reinforce concerns about age-unfriendly Housing Stock, renovations and redevelopment strategies as mentioned from Althaus and Birrer (2020). This case resonates with Marcuse's typology (see Section 3.3.2), underlining that displacement in not just direct, but can also be identified in indirect ways. On the other hand, findings from the variable Women show contrary to the expectations no systematic disadvantage in the model. It aligns with municipal survey results (City of Zurich 2023) which identified that a higher share of men are discriminated in housing markets. Yet coefficients suggest significant variations across ownership categories, which Housing Cooperative correlating much more positively than the others. Lastly, the case of Nationality Latin America, Asia & Africa emerges as the most structurally significant, where none of the ownership categories show a positive effect. Even Housing Cooperatives, which are often seen as social inclusive, appear as the most exclusionary. This points to broader structural racism in the housing market and underscore Blomley's (2019, 237) claim that "property law produces and stabilises inequality".

9.2 Broader Contributions

This master's thesis makes thus four broader contributions:

First, this thesis made the **first systematic multi-scalar analysis** of property ownership distribution in Zurich. By disaggregating ownership patterns down to the statistical zone scale, clusters of concentration and exclusion could be revealed that had never been published at this resolution. It reveals the most accurate current distribution of ownership structures in Zurich for Housing Stock and Building Area, while at the same time revealing a precise mapping per statistical zone of how the Housing Stock has changed since 2010. It thus emphasises that the scale, that had previously been absent from published data, proved to be the most revealing and essential for a better understanding of the ownership structures.

Second, the application of **spatial regression analysis** proves that these models are not limited to economic modelling of housing prices, but can also be usefully extended to the study of ownership effects. While the models inevitably simplify complex realities, the plausibility of results across the variables (see Section 7.2) suggest their possibility to capture meaningful socio-economic dependencies. If the data is interpreted with caution, it empirically shows how the ownership categories have significantly different influences on socio-economic inequality and thus noticeably influence distribution.

Third, the discussion of the results (in Chapter 7) emphasises the **analytical relevance of Blomley's theoretical approach** (see Section 2.2). The empirical findings and their conceptualisation not only reflect his argument concerning the inherent complexity of ownership structures and the internal contradictions of the *Ownership Model*, but also reinforces his claim that property is a profoundly relational power relation. In Zurich, ownership emerges as a multi-scalar combination of visible and invisible power relation (state vs. private, tenant vs. landlords, profit-oriented vs. non-profit, natural persons vs. legal persons and so on) in which territorialisation and the reproduction of exclusion are continuously enacted and normalised. In this respect, this master's thesis provides an empirical contribution to support the claim that Blomley's approach is paramount for further research on urban ownership structures. It presents a conceptual lens through which the façade of seemingly neutral ownership categories can be deconstructed, revealing the political, territorial and exclusionary mechanisms that underline them.

Fourth, **knowledge creates power and control over ownership data,** which secures structural advantages. The master's thesis has contributed to reveal the hidden ownership patterns, but also exposed the profound restrictions that shape what can be seen and what remains obscure (see Section 0). While non-profit owners, such as Public Institutions and Housing Cooperatives, are fully documented in publicly available datasets, other legal persons, such as corporate and financialised owners, remain opaque. This asymmetry of transparency systematically protects and prevent accurate analysis of precisely those owners most implicated in processes of financialisation and market-driven restructuring. The findings thus underline the proposition that transparency end where profit begins.

What results then (see Section 8.4) is a structural information deficit that actively reproduces inequality. Tenants, activists and politics cannot challenge ownership regimes that remain invisible. By uncovering this deficit, this master's thesis contributes to demonstrating that ownership transparency is not a technical matter of data management, but a foundation for democratic housing policy. Thus, systematic disclosure of ownership data is essential if entrenched power asymmetries are to be addressed and the growing financialization of Zurich's housing market effectively countered.

9.3 Outlook

The message should be clear: the society, politics and research must push further to address the invisibility of ownership data and reveal their implications. In terms of research, the findings of this master's thesis open several points for further research:

A central obstacle remains the opacity of ownership data. If the land registry data or even the Housing Stock/Building Area data would be accessible on parcel scale, it would allow attributes to be identified such as the residence or headquarters of owners, to differentiate between Swiss and foreign residence of owners or to more clearly separate profit-oriented from non-profit owners. It would make it possible to undertake detailed analyses of the largest owners to systematically answering the question of *who owns how much* and facilitate the uncovering of the financialised actors hidden behind the owners.

Greater data transparency would also directly improve the modelling, as current analyses rely on still highly aggregated ownership data, obscuring internal variation. Disaggregated datasets would enable ownership types to be modelled separately and their distinct effects on socio-economic variables. Even a partial step, such as the disaggregation of Housing Stock by legal entities, would already give more insights. It would bring ownership structures to light that remain invisible with the current data availability. Similarly, adding a temporal dimension to Building Area dataset would also uncover not just static distributions but the dynamics of accumulation, investments and redevelopments over time.

But even with the data currently available, there is still a lot more that can be done. First, the temporal refinement: the comparison of Housing Stock in 2010 and 2024 make in this master's thesis provided a valuable insight, but it obscures the timing and sequencing of ownership change. Annual observations could reveal when specific ownership categories expanded, which neighbourhood were targeted at what moment and how shifts in regulation or market conditions triggered changes in ownership structures. Furthermore, could socio-economic modelling be strengthened by moving beyond single-year correlation to multitemporal analyses across the period, providing more robust evidence of relationships between ownership and socio-economic variables.

Further analyses could also try to expand the number of explanatory independent variables. For example, infrastructural factors, such as access to public transport, schools or green space, may also influence the distribution of certain groups. But what is perhaps even more interesting is the change of ownership data as explanatory independent variable to construction activity classified in ownership categories, as construction activity is perhaps the most direct lens on how ownership strategies materialise. Based on the findings of this master's thesis, the fact that Private Companies are responsible for nearly 80% of approved new Housing Stock in 2024 (Jörg and Rey 2025) indicates that the continuous growth of financialised owners shows no sign of decrease despite the scarcity of building land. Building on the research on Kaufmann et al. (2023), this construction activity data could be correlated with the change of socio-economic variables when it is finished to analyse who is moving into the financialised building complexes, potentially further highlighting their impact on socio-economic inequality.

Another idea would be the extension of the dependent variable, as one can use the spatial regression analysis not only for socio-economic variables, but also for housing-related indicators such as building age, construction activity, rental prices or land prices. Except for rental price, all these variables could also be correlated with the Building Area dataset as they are not only influenced by residential housing, offering a wider analytical base that goes beyond current findings. A more specific but certainly interesting approach would be to correlate Building Area dataset with zoning regulations (BZO) and

systematically testing whether the patterns observed qualitatively is this master's thesis hold statistically across the city.

Another approach would be to further develop the approach from Crevoisier et al. (2025) by defining variables based on the results of the spatial regression models and incorporating them into a principal component analysis (PCA) followed by an ascending hierarchical classification (AHC). This would allow categorising the statistical zones according to ownership regimes and producing a typology of urban property configurations. Such an approach would go beyond descriptive mapping and provide a structural classification of ownership strategies across the city, potentially enabling the early identification of future financialised areas.

Overall, this master's thesis has demonstrated that property ownership in Zurich is far more than a static legal category. By situating the empirical findings within Blomley's perspective, it revealed the deeply social and political relation of ownership structures and raise an unavoidable question: can Zurich's housing market be governed in the public interest while ownership remains concentrated, financialised and opaque? Housing policy, transparency regulations, cooperative expansions and regulatory frameworks are all not minor technical details, but key tools for socio-economic justice. Thus, without systematic disclosure of ownership date, neither democratic debates nor tenants' resistance can function effectively. Addressing ownership is therefore not simply about mapping who holds title, but about redefining the future terms of urban justice.

10 Literature

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11 Appendix

11.1 Administrative Boundaries

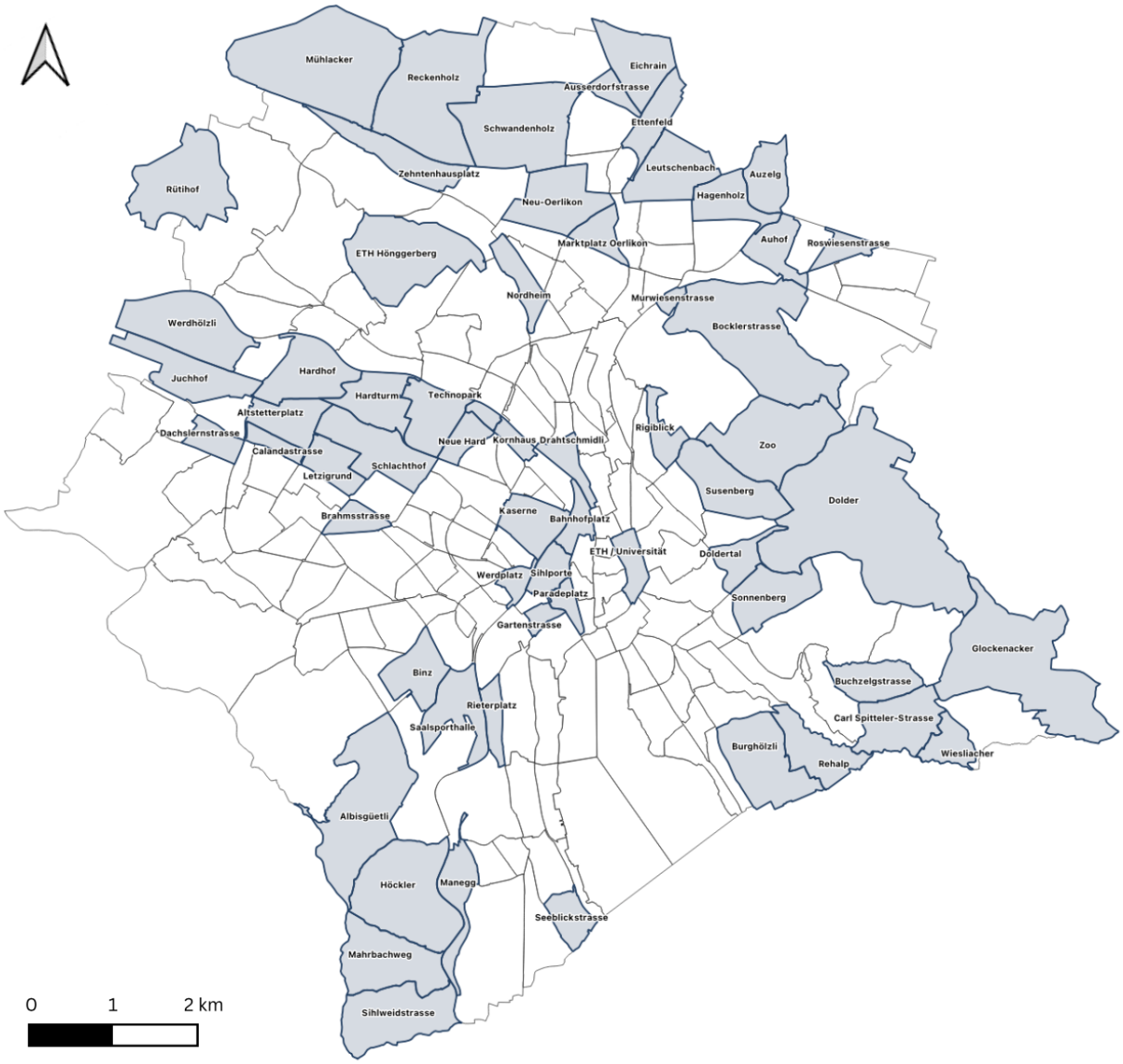

Figure 17: Statistical Zones (SZ) of Zurich. The map highlights only those SZ mentioned in the thesis to contextualise empirical analysis.

11.2 Ownership Distribution

11.2.1 Statistical Zones

	Mean	St. Dev	Min	1.Quantile	Median	3.Quantile	Max
Public Institutions	8.5%	11.2%	0.0%	1.8%	5.0%	11.0%	70.0%
Housing Cooperatives	16.0%	19.7%	0.0%	0.0%	8.0%	25.3%	82.0%
Private Companies	33.4%	17.5%	0.0%	20.8%	32.0%	43.3%	96.0%
Natural Persons	31.9%	14.7%	0.0%	20.8%	33.0%	41.3%	76.0%
Condominium	10.4%	9.4%	0.0%	4.0%	8.0%	14.0%	68.0%

Table 13: Basic statistics for share of Housing Stock in 2024 for each ownership category across statistical zones.

	Mean	St. Dev	Min	1.Quantile	Median	3.Quantile	Max
Public Institutions	21.9%	19.2%	0.0%	7.0%	17.0%	30.0%	98.0%
Housing Cooperatives	10.2%	14.9%	0.0%	0.0%	3.0%	17.0%	79.0%
Private Companies	34.5%	20.8%	0.0%	18.0%	31.5%	46.0%	88.0%
Natural Persons	25.6%	15.6%	0.0%	13.0%	24.0%	36.0%	68.0%
Condominium	7.8%	7.4%	0.0%	2.0%	5.5%	12.0%	31.0%

Table 14: Basic statistics for share of Building Area in 2024 for each ownership category across statistical zones.

	Mean	St. Dev	Min	1.Quantile	Median	3.Quantile	Max
City of Zurich	15.7%	15.7%	0.0%	3.9%	11.2%	22.3%	79.2%
Municipal Foundations	1.4%	3.5%	0.0%	0.0%	0.4%	1.3%	40.8%
Canton of Zurich	3.3%	9.3%	0.0%	0.0%	0.0%	0.5%	51.2%
Federal Government	1.1%	7.7%	0.0%	0.0%	0.0%	0.0%	97.6%
Other Public Owners	0.4%	1.6%	0.0%	0.0%	0.0%	0.0%	16.9%
	Mean	**St. Dev**	**Min**	**1.Quantile**	**Median**	**3.Quantile**	**Max**
Cooperatives	1.1%	4.1%	0.0%	0.0%	0.0%	0.3%	36.0%
Public Limited Companies	21.5%	17.9%	0.0%	7.5%	17.0%	30.2%	80.0%
General Partnerships	0.3%	1.5%	0.0%	0.0%	0.0%	0.0%	14.8%
Limited Commercial Partnerships	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	7.2%
Limited Liability Partnerships	0.2%	0.6%	0.0%	0.0%	0.0%	0.2%	5.0%
Mixed Owners	0.7%	2.2%	0.0%	0.0%	0.0%	0.5%	21.2%
Associations and Private Foundations	4.1%	5.3%	0.0%	0.7%	2.3%	5.2%	35.6%
Pension Funds	2.3%	3.8%	0.0%	0.0%	0.8%	2.4%	22.5%
Investment and Pension Foundations	2.8%	3.8%	0.0%	0.0%	1.3%	3.7%	22.6%
Evangelican-Reformed Church	0.8%	1.6%	0.0%	0.0%	0.0%	0.6%	7.6%
Roman-Catholic Church	0.4%	1.3%	0.0%	0.0%	0.0%	0.0%	9.1%
Other Religious and Cultural Communities	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%	4.3%
	Mean	**St. Dev**	**Min**	**1.Quantile**	**Median**	**3.Quantile**	**Max**
Single Natural Persons	15.1%	10.9%	0.0%	5.1%	14.1%	22.9%	43.2%
Heirs' Communities	2.6%	2.5%	0.0%	0.6%	2.1%	3.8%	14.2%
Multiple Natural Persons	7.9%	6.5%	0.0%	2.5%	7.3%	11.1%	34.7%

Table 15: Basic statistics for share of Building Area in 2024 for each legal entity across statistical zones.

District 1

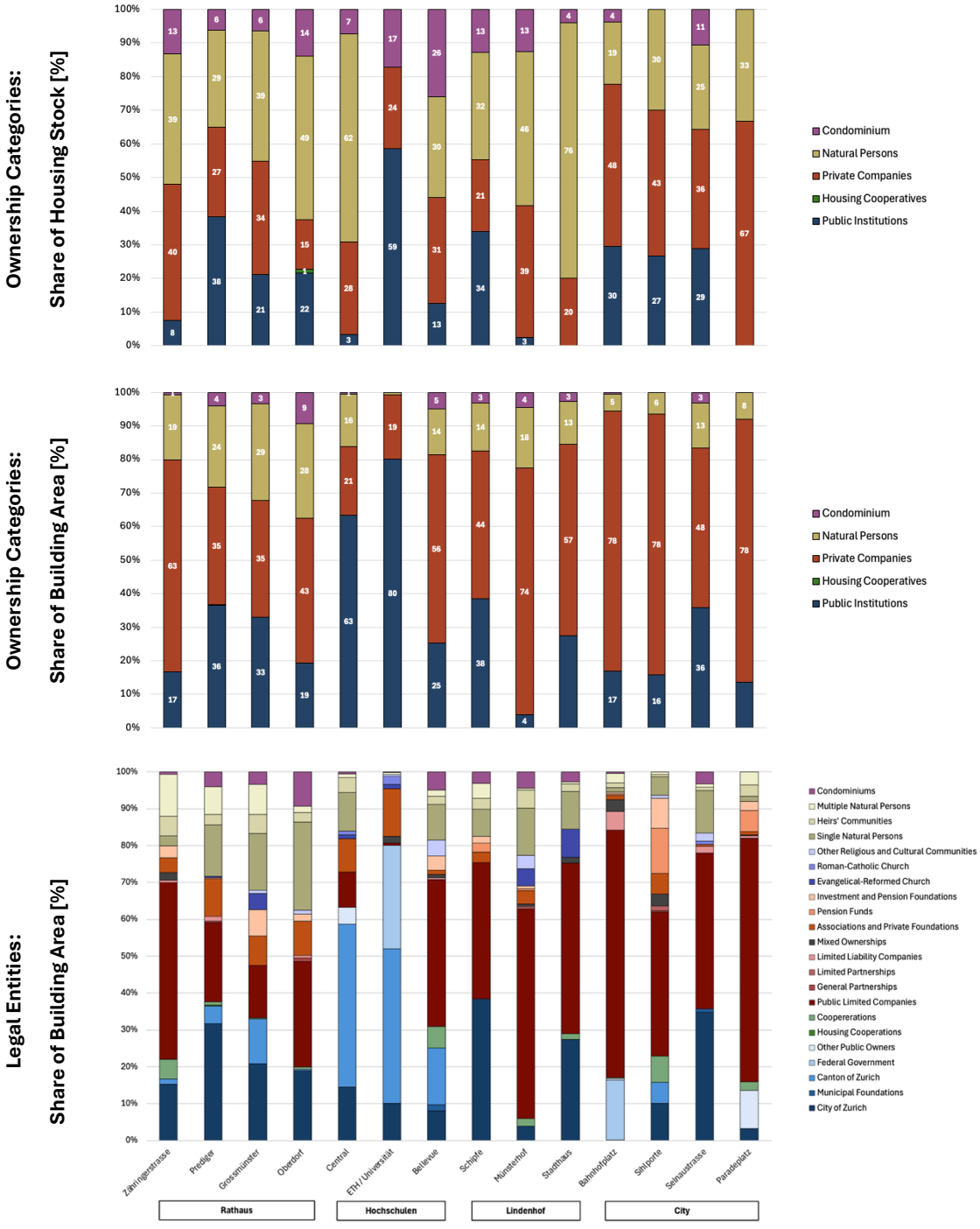

Figure 18: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 1.

District 2

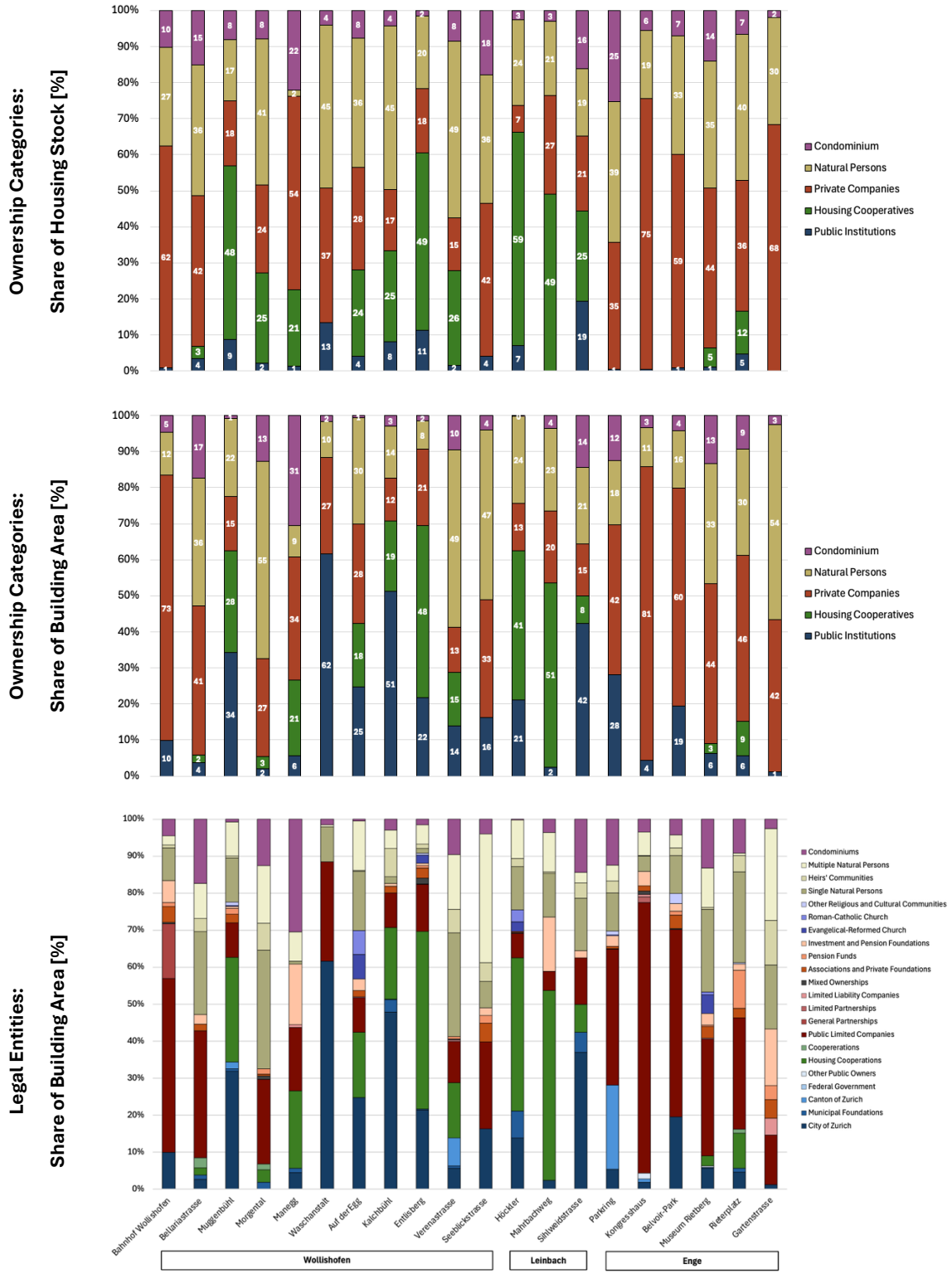

Figure 19: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 2.

District 3

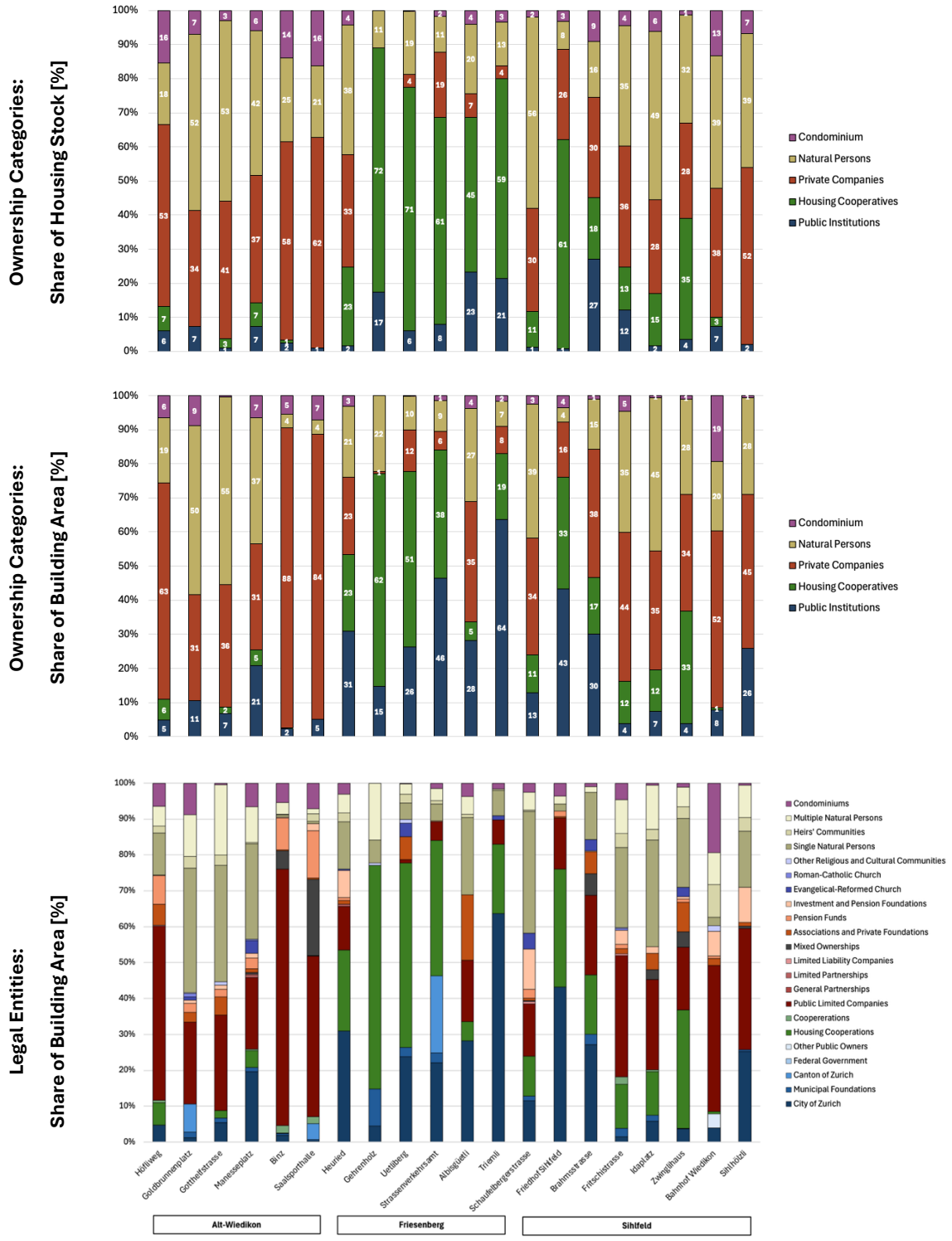

Figure 20: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 3.

District 4

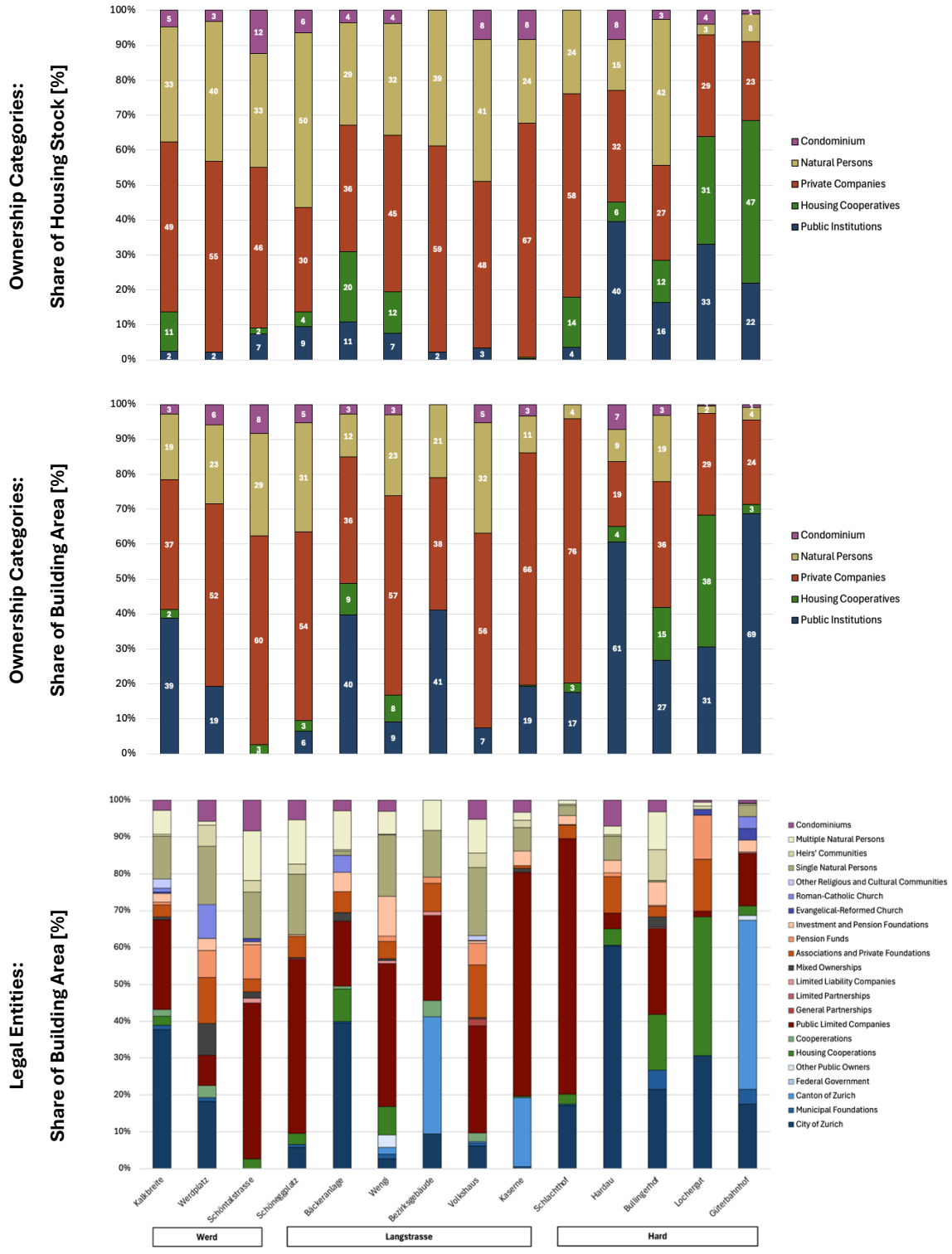

Figure 21: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 4.

District 5

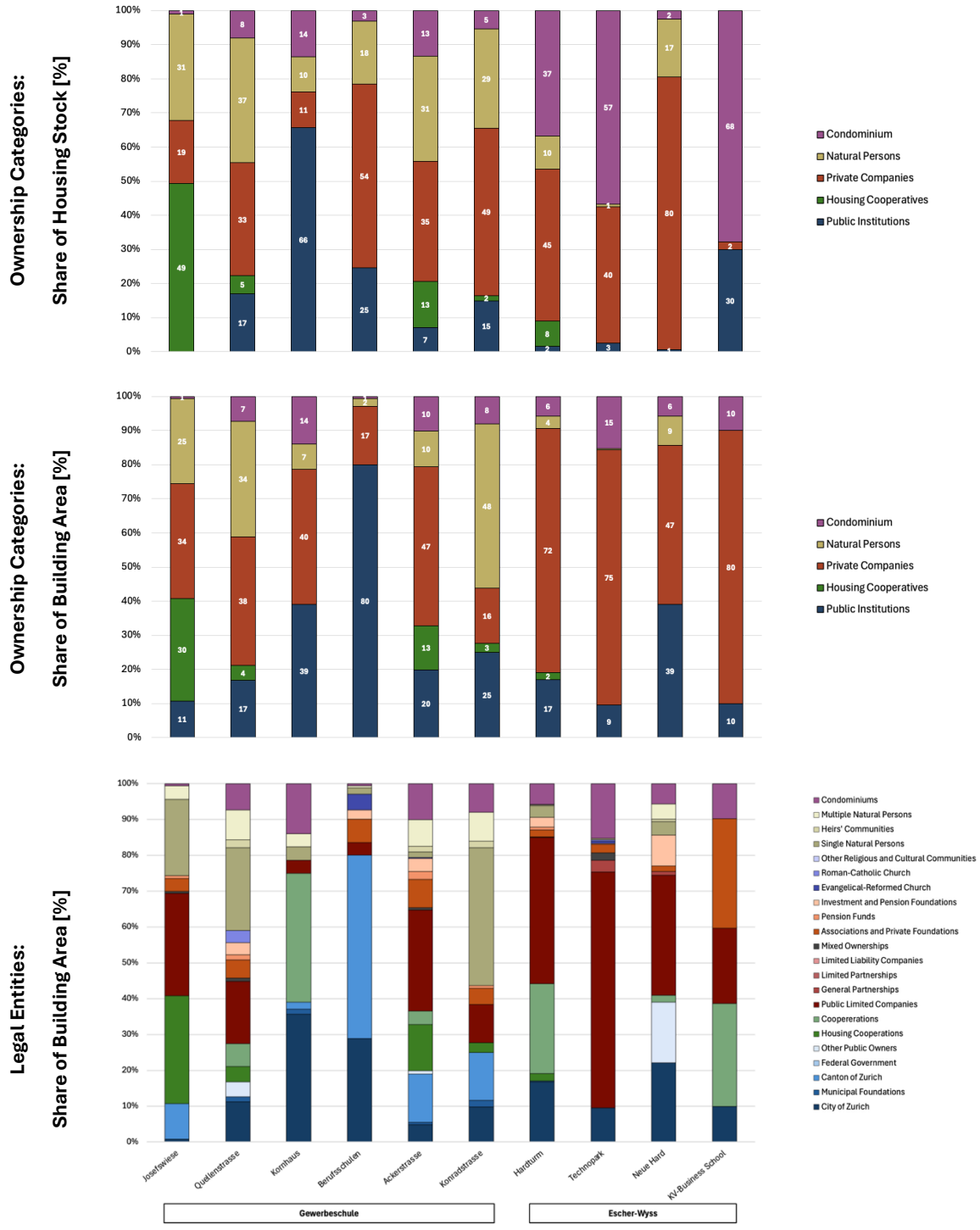

Figure 22: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 5.

District 6

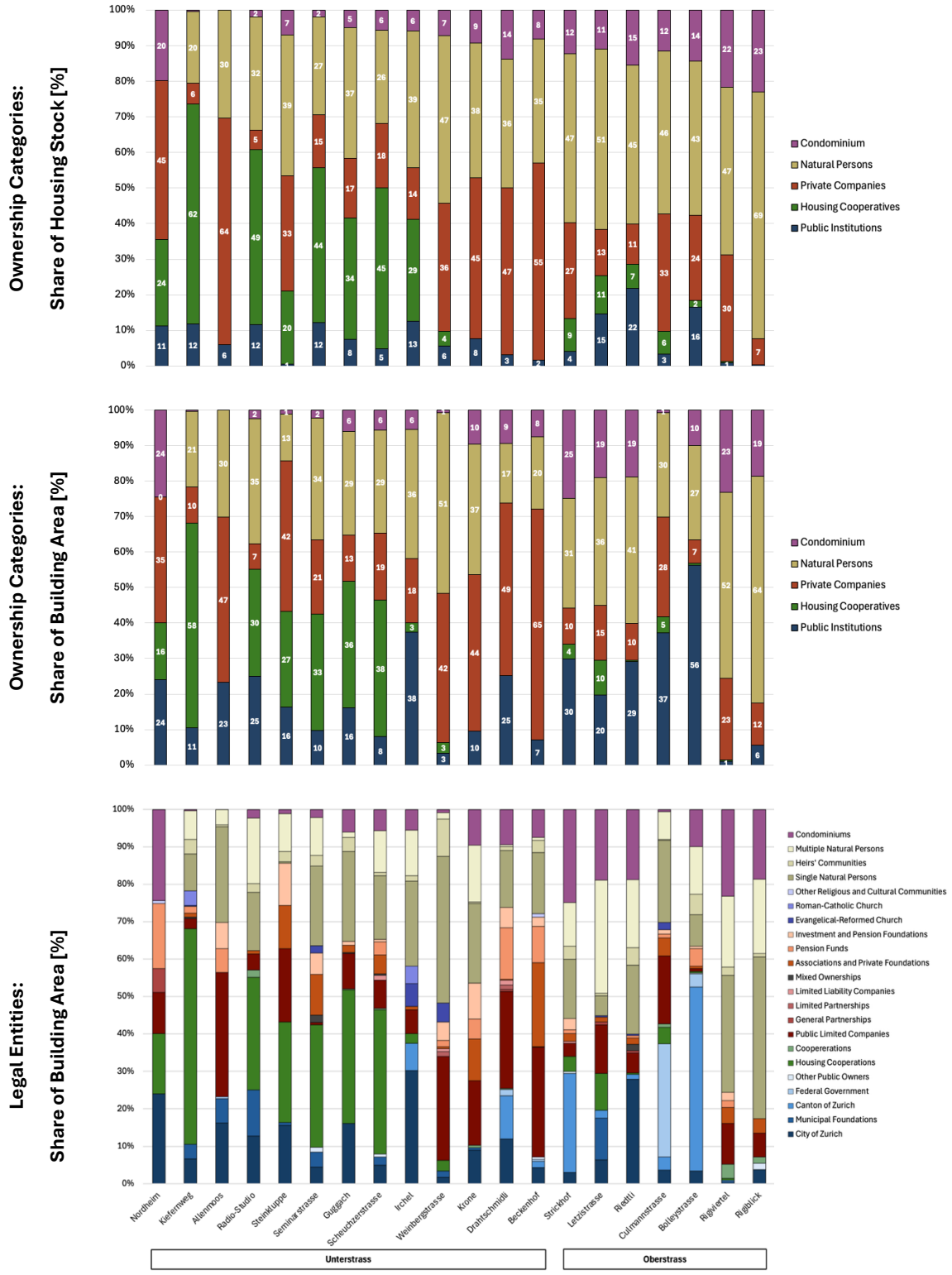

Figure 23: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 6.

District 7

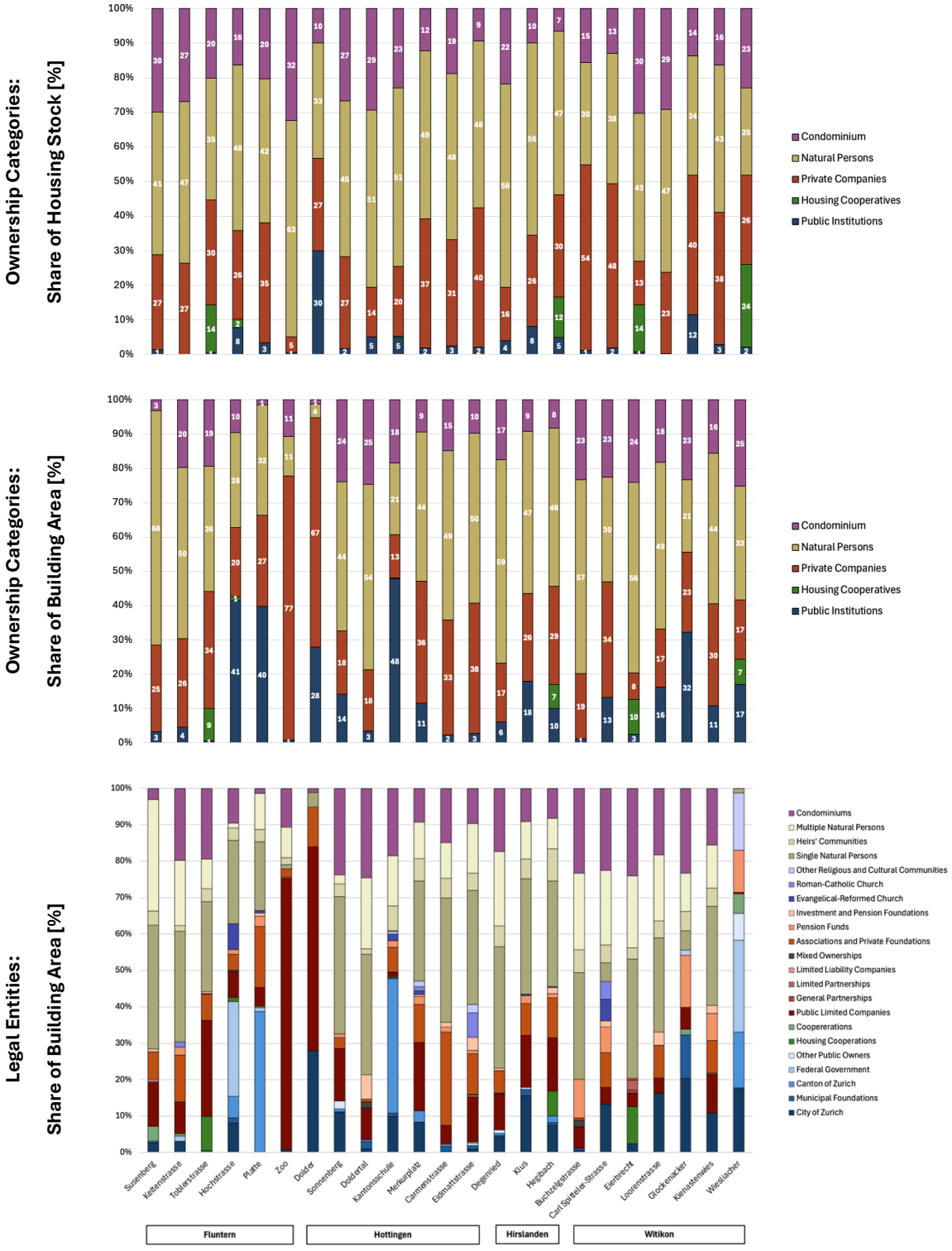

Figure 24: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 7.

District 8

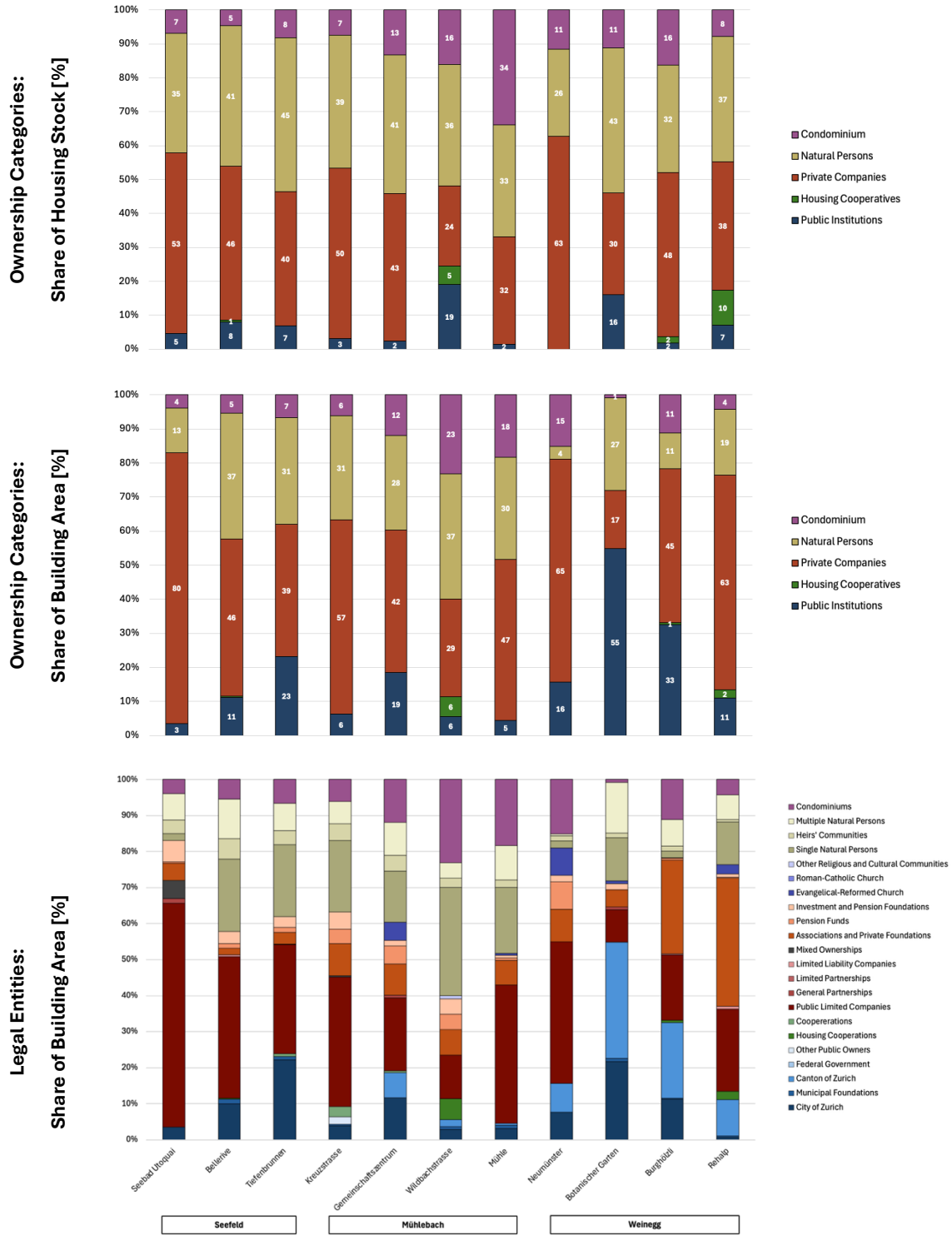

Figure 25: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 8.

District 9

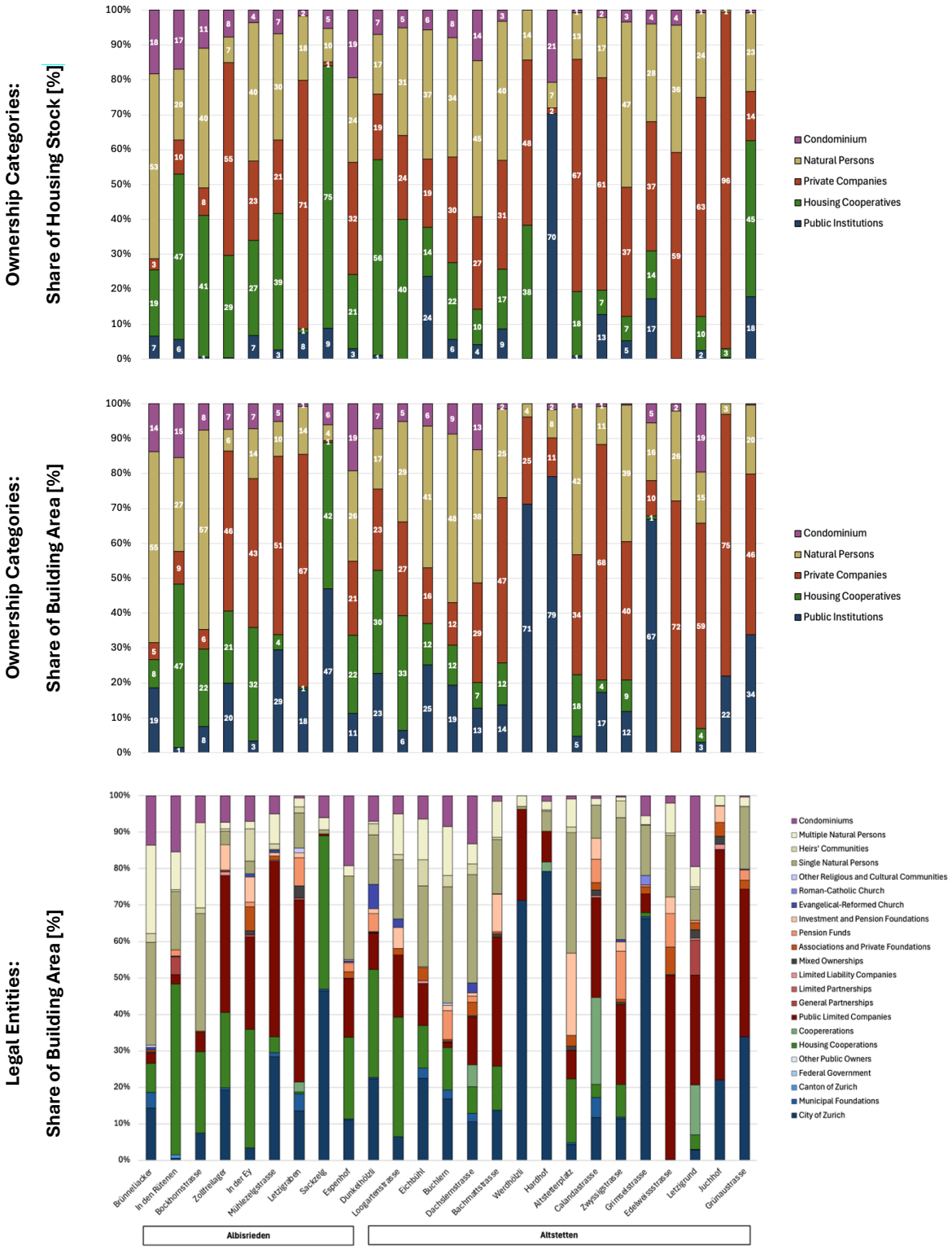

Figure 26: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 9.

District 10

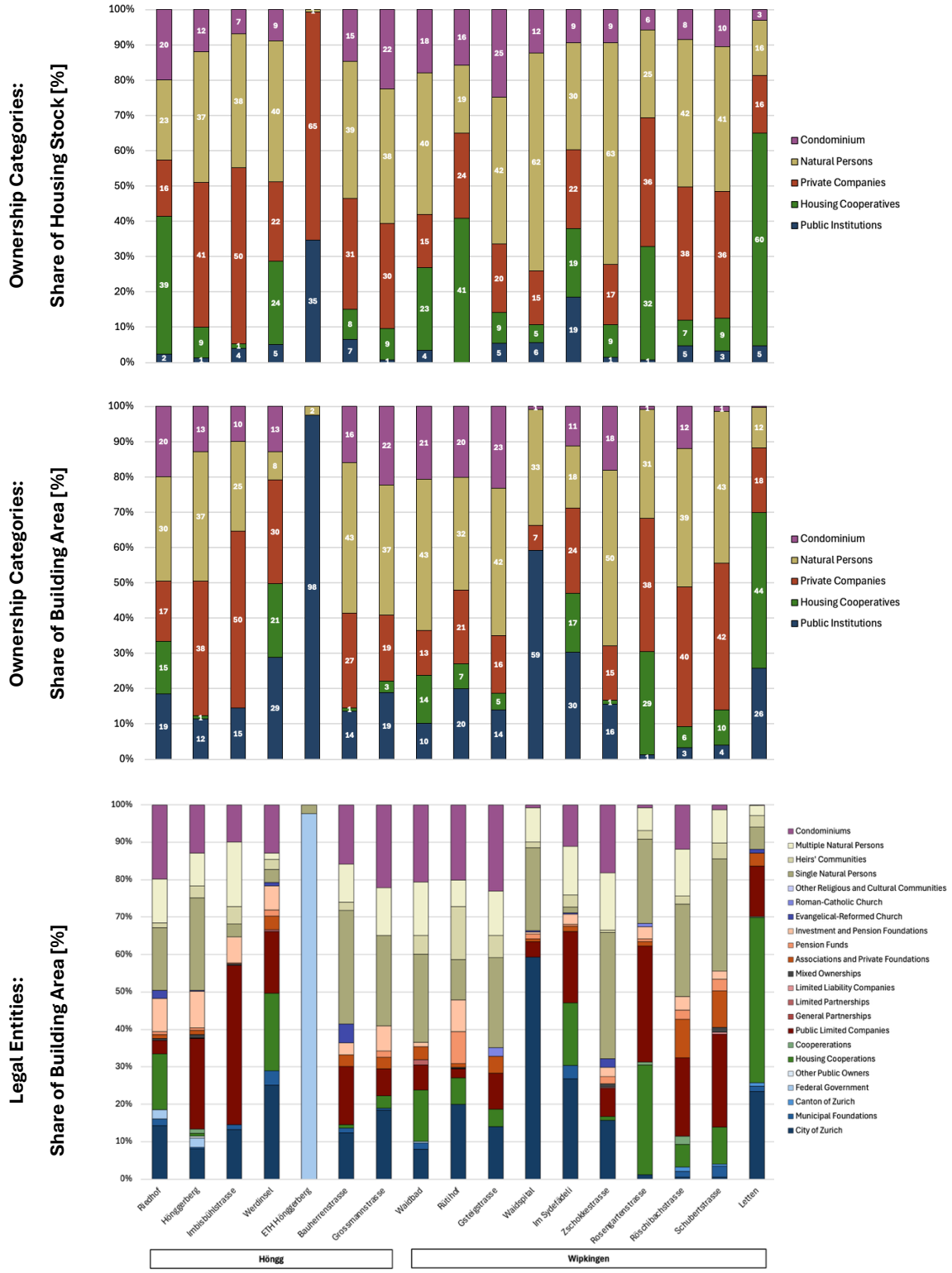

Figure 27: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 10.

District 11

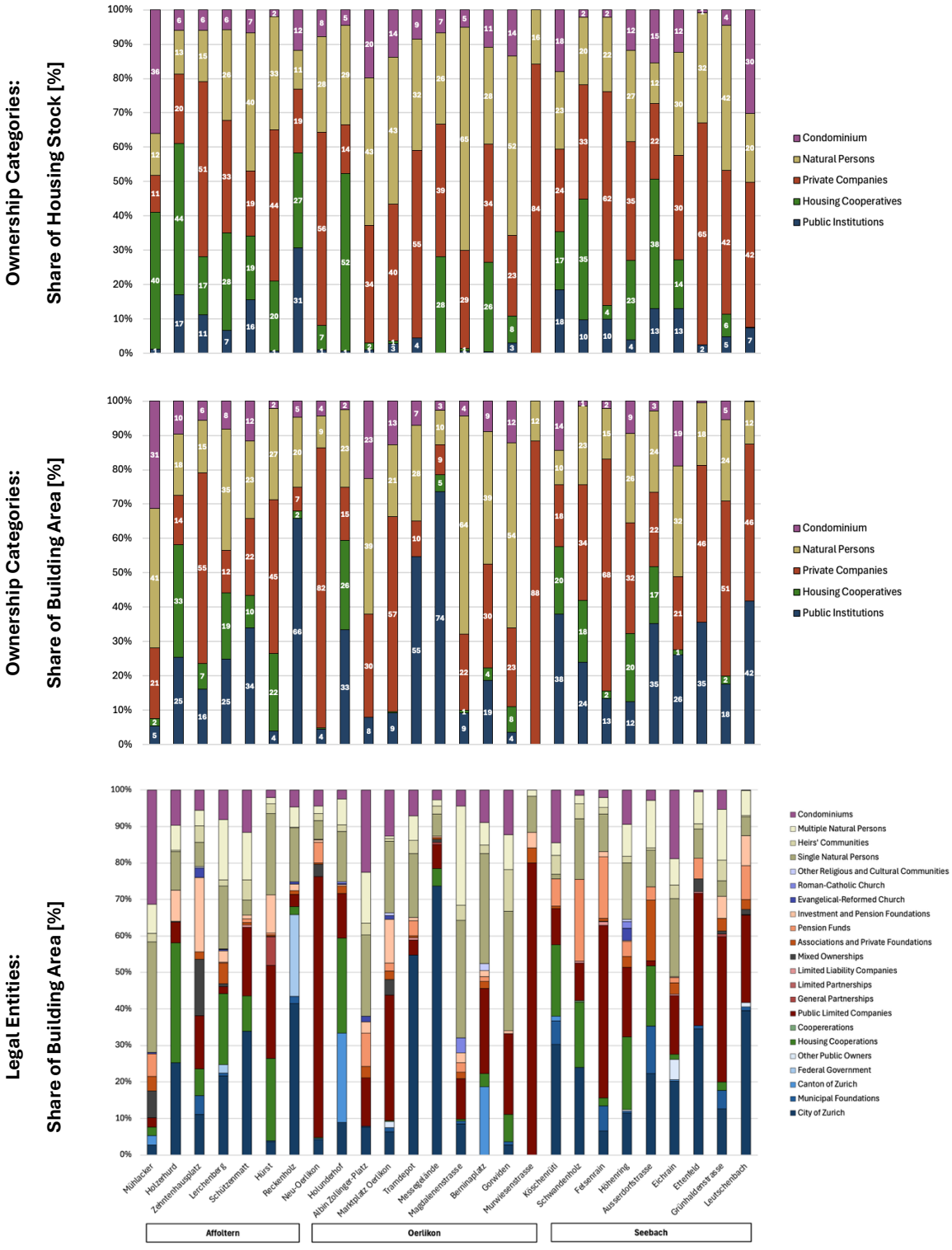

Figure 28: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 11.

District 12

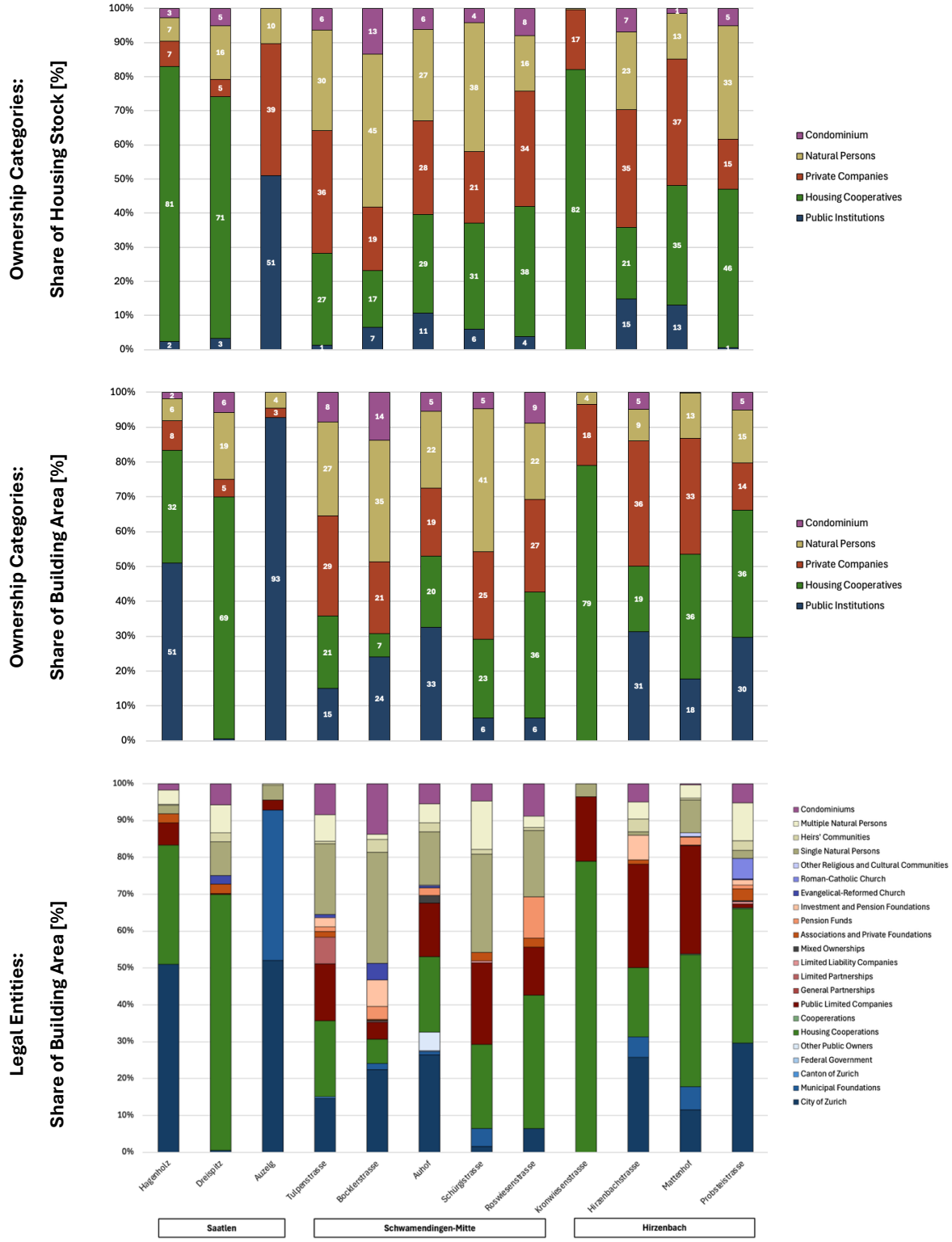

Figure 29: Share of Housing Stock in 2024 per ownership category, share of Building Area in 2024 per ownership category and share of Building Area in 2024 per legal entity across statistical zones in District 12.

11.2.2 Temporal change of ownership distribution

	Mean	St. Dev	Min	1.Quantile	Median	3.Quantile	Max
Public Institutions	+0.6%	6.3%	-24.1%	-0.6%	0.0%	+1.3%	+65.9%
Housing Cooperatives	+2.1%	5.3%	-9.9%	0.0%	0.0%	+2.0%	+33.1%
Private Companies	+10.4%	12.1%	-48.3%	+3.7%	+8.3%	+13.8%	+64.6%
Natural Persons	-5.0%	5.6%	-40.3%	-8.0%	-4.4%	-1.7%	+11.1%
Condominiums	+3.0%	6.8%	+6.7%	0.0%	+1.7%	+3.7%	+67.8%

Table 16: Basic statistics for change of share in Housing Stock between 2010 and 2024 for each ownership category across statistical zones.

	under -5 %		-5 % < x < 5 %		over +5 %	
	Count	Percent	Count	Percent	Count	Percent
Public Institutions	15	7.1	174	82.1	23	10.8
Housing Cooperatives	4	1.9	173	81.6	35	16.5
Private Companies	5	2.4	60	28.3	147	69.3
Natural Persons	92	43.4	115	54.2	5	2.4
Condominiums	2	0.9	178	84.0	32	15.1

	under -0.001 %		-0.001 < x < 0.001		over +0.001 %	
	Count	Percent	Count	Percent	Count	Percent
Public Institutions	89	42.0	29	13.7	94	44.3
Housing Cooperatives	32	15.1	87	41.0	93	43.9
Private Companies	15	7.1	4	1.9	193	91.0
Natural Persons	186	87.7	5	2.4	21	9.9
Condominiums	28	13.2	25	11.8	159	75.0

Table 17: Distribution for change of share in Housing Stock between 2010 and 2024 for each ownership category across statistical zones.

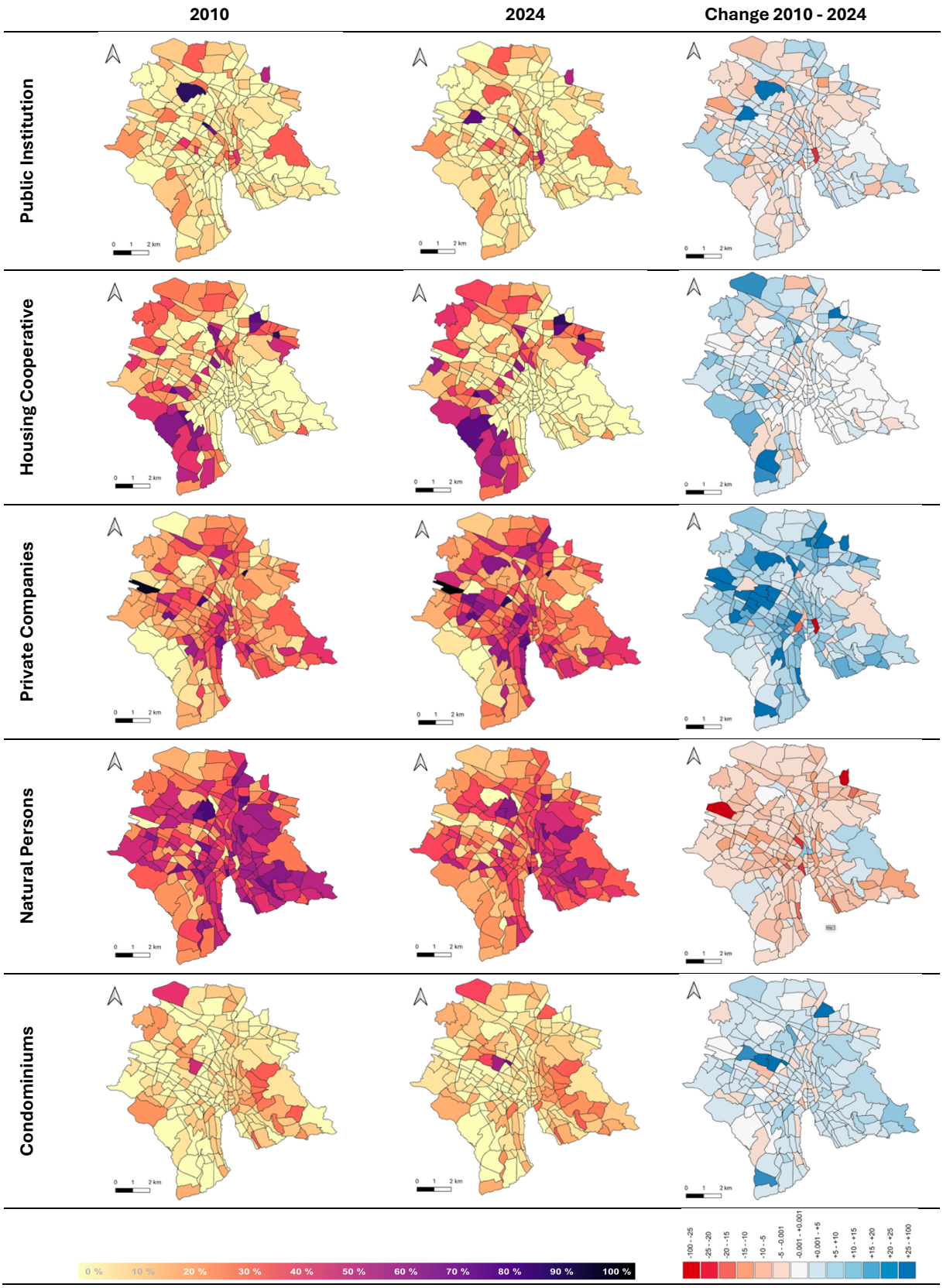

Figure 30: Share of Housing Stock in 2010 and 2024 as well as change of share in Housing Stock between 2010 and 2024 for each ownership category across statistical zones

11.3 Socio-Economic Variables

11.3.1 Variables

	Mean	St. Dev	Min	1.Quantile	Median	3.Quantile	Max
Single Parents	13.3%	4.8%	0.0%	10.0%	13.4%	15.8%	30.4%
Women	49.4%	3.2%	33.4%	47.9%	50.0%	51.4%	56.9%
Age over 60	18.8%	6.2%	0.2%	14.1%	18.7%	23.2%	37.9%
Nationality Not EU Europa	3.3%	1.5%	0.7%	2.3%	3.0%	3.9%	11.1%
Nationality Latin America, Asia & Africa	6.2%	4.2%	0.0%	3.3%	5.1%	7.5%	31.8%
Household Equivalent Income [CHF]	59'100	14'880	29'170	48'020	57'090	69'330	111'800

Table 18: Basic statistics for share of socio-economic variables across statistical zones.

11.3.2 Model chose

	OLS	SLM	SEM	SAC
Single Parent				
BIC	580.71	577.50	578.54	582.85
AIC	560.57	554.01	555.04	556.00
Age over 60				
BIC	560.41	533.01	533.44	537.73
AIC	540.27	509.51	509.94	510.88
Women				
BIC	573.59	539.28	542.05	544.43
AIC	553.45	515.79	518.56	517.58
Nationality Not EU Europe				
BIC	610.46	598.81	600.89	602.47
AIC	590.32	575.31	577.40	575.62
Nationality Latin America, Asia & Africa				
BIC	591.49	540.09	531.52	529.00
AIC	571.35	516.6	508.02	502.15
Household Equivalent Income				
BIC	476.16	447.44	457.81	446.45
AIC	456.11	424.08	434.45	419.75

Table 19: Model comparison of spatial regression specifications (OLS, SLM, SEM and SAC) using AIC and BIC.

11.4 Additional Data

11.4.1 Owner-occupied housing stock

City of Zurich	**7.9**
District 1	**4.8**
Rathaus	4.7
Hochschulen	4.9
Lindenhof	4.9
City	4.9
District 2	**9.0**
Wollishofen	9.1
Leimbach	9.9
Enge	8.3
District 3	**4.3**
Alt-Wiedikon	6.7
Friesenberg	4.2
Sihlfeld	2.3
District 4	**1.8**
Werd	2.2
Langstrasse	2.0
Hard	1.4

District 5	**10.2**
Gewerbeschule	2.5
Escher Wyss	23.0
District 6	**9.2**
Unterstrass	7.3
Oberstrass	13.4
District 7	**16.7**
Fluntern	21.8
Hottingen	14.5
Hirslanden	11.1
Witikon	19.2
District 8	**7.8**
Seefeld	3.9
Mühlebach	8.0
Weinegg	12.7

District 9	**6.0**
Albisrieden	8.4
Altstetten	4.5
District 10	**10.8**
Höngg	13.8
Wipkingen	6.8
District 11	**8.5**
Affoltern	9.2
Oerlikon	7.3
Seebach	9.1
District 12	**4.0**
Saatlen	4.5
Schwamendingen-Mitte	4.9
Hirzenbach	2.9

Table 20: Share of Owner-occupied Housing Stock in 2024 across city, districts and neighbourhoods.

11.4.2 Construction Activities

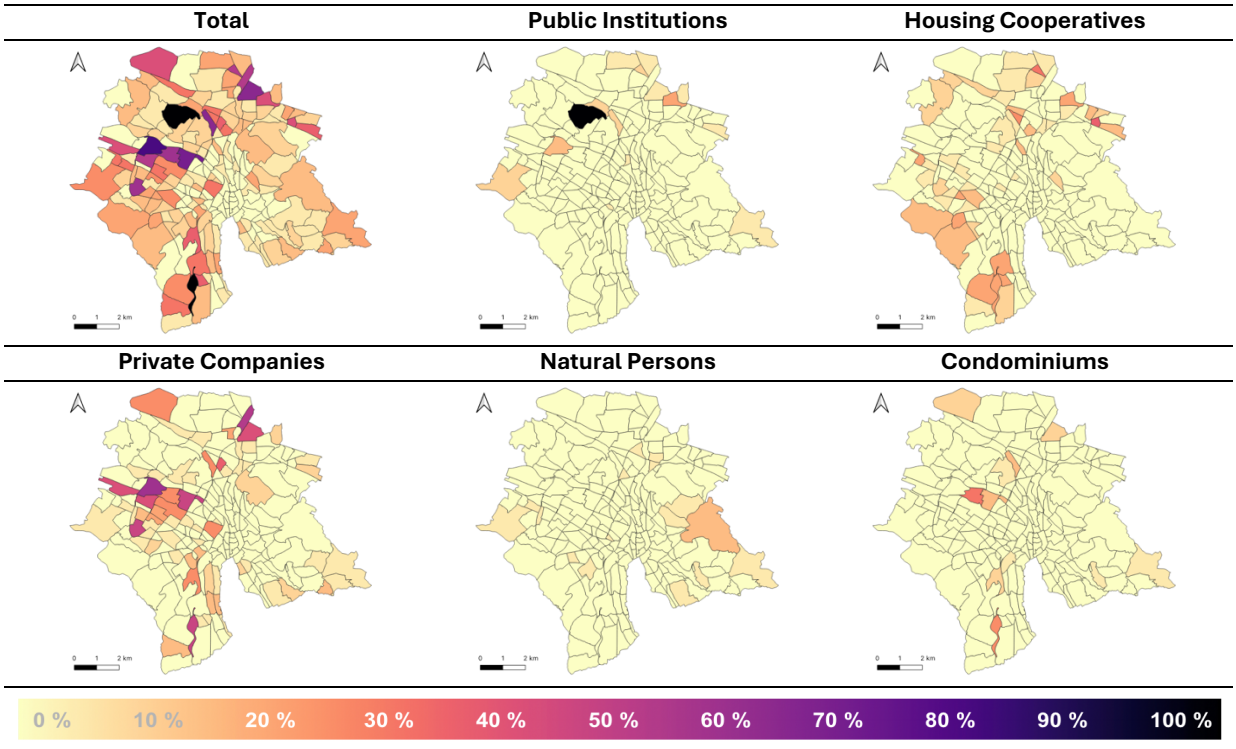

Figure 31: Share of Construction Activities in total between 2010 and 2024 per ownership category across statistical zones.

Personal Declaration

I hereby declare that the submitted thesis is the result of my own, independent work. All external sources are explicitly acknowledged in the thesis. I used DeepL Translator (DeepL SE 2025) and ChatGPT (OpenAI 2025) as a tool for translation help and for language refinement. At no point did they generate research findings or replaced my own critical thinking and academic responsibility. The content, argumentation, and conclusion of this thesis remain entirely my own.

Leah Heuri Zürich, 28. September 2025