The Compact City: A Dead-end for Urban Sustainability?

An analysis of the Compact City's Desirability Dimension

A Case Study of Geneva

Aude Matthey-Doret

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LUCSUS
Lund University Centre for Sustainability Studies

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Supervisor: Maryam Nastar, LUCSUS, Lund University

Abstract

The compact city model emerged as a sustainable response against the dominant trend of urban sprawl. However, the compact city model is not without controversy. Many scholars have questioned the veracity, feasibility and desirability of the compact city through three sets of critiques. Results from the desirability dimension have led to criticism of the model for running counter to the residential aspirations of its urban dwellers and for undermining social equity.

In discussing urban sustainability and urban form, I position my research in line with the Right to the City's critical approach towards urbanisation processes. In addition, I follow a demographic and residential approach to the compact city, informed by the literature on reurbanisation, to gain insight into the demographic changes and residential attractiveness of central cities.

This research analyses the desirability dimension of the compact city model by examining the case of Geneva along two main research axes; first by analysing compact city planning and its implications for social equity based on urban planning document analysis and expert interviews. Secondly by assessing the compact city's desirability dimension among new urban dwellers based on a web-based survey and household interviews. This thesis is therefore carried out within a mixed methods research strategy, which combines qualitative and quantitative methods applied to the case study of Geneva.

Findings reveal a compact city planning which comes with social costs in the form of housing affordability issues and gentrification processes. Driven by the rules of the free market, the housing market pressured by an increased demand stemming from new immigrants – predominantly more-affluent residents, the "new middle class" − leads to increased housing prices which participate to broader housing affordability issues. Findings also show, on the one hand, a compact city model closely associated to Ley's (1996) "new middle class" attracted by the urban advantages of proximity and accessibility and for whom the compact city is found desirable. While, on the other hand, conventional families tend to leave the compact city.

Compact city planning falls short at conciliating the three imperatives for a sustainable urban development, and at meeting the social needs of all its inhabitants. Subsequently, new approaches which integrate the interconnections between the urban form and the social are required.

Keywords: Compact city; Urban sustainability; Desirability; Residential preferences; Reurbanisation; Gentrification

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List of Abbreviations[1]

ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
LDTR	Loi sur les démolitions, transformations, rénovations de maisons d'habitation − *Law on demolition, transformation and renovation of housings*
PDCn	Plan Directeur Cantonal − *Canton Master Plan (published by « Etat de Genève »)*
PDCom	Plan Directeur Communal − *City Master Plan (published by « Ville de Genève »)*

[1] Own translation of abbreviations.

1. Introduction

Ever since the United Nation Conference on Environment and Development in Rio de Janeiro in 1992, sustainability and the implementation of sustainable development in all aspects of society has been on the international agenda − issues of housing included. Debates on the environmental sustainability of urban housing have never been so valid considering that urbanity has become daily life for the majority of the world population (UN, 2014).

Concerns regarding urban sustainability cover two domains: the technical aspects and spatial dimensions of housing (Rérat, 2012). The latter is addressed by the compact city model that stands as a sustainable alternative to urban sprawl. Sprawled urban morphology has become the dominant urbanisation trend since the Second Wold War (EEA, 2006) and is strongly criticised from an environmental perspective for its high level of land use and for the car dependency it generates (Newman & Kenworthy, 1999; Kahn, 2000; Squires, 2002; Cieslewicz, 2002). As a primary response to the sprawled or dispersed city model, the promotion of urban development within existing cities through densification and regeneration projects has become the watchword among practitioners and policy-makers.

However, the compact city model is not without controversy. Many scholars have questioned the veracity, feasibility and desirability of the compact city model through three sets of critiques, raised first by Breheny in 1997 and researched by many since then (Frey, 1999; Jenks et al., 1996; Holden, 2004; Dubois & Van Criekingen, 2006; Tallon, 2010). While the first two critiques concern environmental and technical imperatives, the third questions the social implications of urban densification and allows for a qualitative evaluation of the compact city model against the residential preferences of urban dwellers.

Research on the desirability dimension have led to criticism of the compact city model for disregarding the residential aspirations of urban dwellers (Gordon & Richardson, 1997; Breheny, 1997) and for undermining social equity, e.g., by a lack of affordable housing (Burton, 2000).

Informed by the literature on reurbanisation on the changing sociodemographic landscape of core cities, the question that arises then is whether the compact city model is in line with the residential aspirations of all population groups or whether certain are excluded from core city life.

The desirability dimension will therefore be the focus of my research, as it broadens the discussion on urban sustainability and urban form to include social equity concerns, the third pillar for sustainable development (WCED, 1987).

1.2. Research Aim and Questions

My research aims at investigating the desirability dimension of the compact city model by examining the case of Geneva[2] along two main research axes: First by analysing compact city planning and its implications for social equity, and second by assessing the compact city's desirability dimension among new urban dwellers who have made the choice to settle in Geneva since January 2011.

To reach my research aim, I follow a demographic and residential approach to the compact city, informed by the literature on reurbanisation to gain insight into the demographic changes and residential attractiveness of central cities. In addition, I position my research in line with the Right to the City's critical approach towards urbanisation (as explained in the theoretical section, chapter three).

Given the above objectives, the following research questions will structure this research:

RQ1: How is the compact city model implemented in Geneva?

- **1A:** What are the context-specific factors for urban planning?
- **1B:** What are the social implications of the compact city model?
- **1C:** What are the limitations to the implementation of a socially inclusive compact city model?
- **1D:** Which opportunities for change can be derived for Geneva's compact city planning strategy?

RQ2: How desirable is the compact city from the perspective of new urban dwellers?

- **2A:** To what extent does the sociodemographic profile of new urban dwellers reflect features of the second demographic transition?
- **2B:** To what extent are new urban dwellers residential preferences in line with compact city's features?
- **2C:** What are the dominant residential behaviours driving the reurbanisation process?

RQ3: How sustainable is the compact city model in the context of urban planning?

[2] By Geneva, I refer to the city of Geneva (municipality), not to be confused with the Canton of Geneva (federal state).

2. Literature Review: Compact City

2.1. The Compact City: Urban Form and Sustainability

For approximately two decades, there has been an international debate how to achieve a sustainable urban form (Frey, 1999; Jenks, Burton, & Williams, 1996). It arose from a worldwide agreement among policy-makers and practitioners that the 1990s urban structure characterized by a zoning of different land use, undermines urban sustainability (Frey, 1999; Williams, Burton & Jenks, 2000). At that time, the debate was considerably shaped by the publication of the *Green paper on the Urban Environment*[3] (CEC, 1990) which advocated for abandoning modernist planning and a return to the traditional city – the "compact city" which had preceded the post-war urban sprawl (Frey, 1999; Kiang Heng, & Choo Malone-Lee, 2010).

The discussion on urban sustainability has often been reduced to the relationship between urban density, form and sustainability (Kiang Heng, & Choo Malone-Lee, 2010) and its influence on individual transport behaviour, resource efficiency, social equity, accessibility and economic viability (Williams, 1999), as well as on health risks and vulnerability to extreme events, especially in informal urban settlements (UN Habitat, 2011). The discussion was based on the premise that sustainable cities could be achieved through improved form and structure (Jenks et al., 1996; Breheny, 1992); "if cities can be designed and managed in such a way that resource use and pollution are reduced, then a major contribution to the global problem can be achieved" (Breheny, 1992, 2).

Since the 1990s, the compact city model has progressively been adopted within the urban planning strategies of most capitalist societies. The compact city model became a guiding principle for urban development within the European Union's strategies for sustainable urban environment since 1999 with *the European Spatial Development Perspective* (CEC, 1999), which advices Member States to pursue the concept of the compact city to ensure a better control over urban sprawl (CEC, 1999, 22). This was followed by the 2005 *Thematic Strategy on the Urban Environment* (CEC, 2005), the 2007 *Leipzig Charter on Sustainable European Cities* (CEC, 2007); the 2008 *Marseille Statement* (CEC, 2008) and the 2010 *Toledo Declaration* (CEC, 2010). It has also been adopted at the international level, with the UN Habitat advocating for high density urban growth for a sustainable urban planning (UN Habitat, 2014).

[3] A *Green Paper* is an EU-published document "to stimulate discussion on given topics at European level" (EU, 2015).

2.2. The Compact City: Key characteristics

Scholars have identified different key components for urban compaction. This revealed the heterogeneity and adaptability of the concept and its plural interpretations, as well as opening a debate about the compact city (section 2.3).

From their plural interpretations, a shared vision of the compact city emerges with key characteristics frequently mentioned, as developed below.

Churchman (1999) argues that the current vision of the compact city is based on the process of intensification within the city's boundaries through increased residential density, centralisation and mixed land use, while limiting development beyond the city limits. Burton (2002) outlines high density, mixed use and intensification as the three components of the compact city, while Neuman (2005) proposes a review of the urban design variables for compact city with fourteen key characteristics compared to the sprawl city (Table 1).

More recently, the OECD (2012) distilled the compact city down to three components, dense and proximate development patterns, urban areas linked by public transport, and accessibility to local services and jobs. Furthermore, the UN Habitat has recommended five principles including high density (at least 15,000 inhab. per km^2), mixed land-use, social mix, limited land-use specialisation, and an efficient street network (UN Habitat, 2014).

Table 1. Characteristics of the compact city versus the dispersed city. The table shows the 14 characteristics of the compact versus the 10 characteristics of the sprawled city. Source: Neuman, 2005; Burchell et al., 1998, in Neuman, 2005, 14-15.

Compact City	Sprawled City
High residential and employment densities	Low residential density
Mixture of land uses	Spatial segregation of different types of land uses through zoning
Fine grain of land uses (proximity of varied uses and small relative size of land parcels)	Widespread commercial strip development along major roadways
Increased social and economic interactions	Major reliance on a filtering process to provide housing for low-income households
Contiguous development (some parcels or structures may be vacant or abandoned or surface parking)	Leapfrog development
Contained urban development, demarcated by legible limits	Unlimited outward extension of new development
Multimodal transportation	All transportation dominated by privately owned motor vehicles
Sufficient government fiscal capacity to finance urban facilities and infrastructure	Great variances in the fiscal capacity of local governments
Unitary control of planning of land development, or closely coordinated control	Fragmentation of governance authority of land uses among many local governments
	No centralized ownership of land or planning of land development
Urban infrastructure, especially sewerage and water mains	
High degrees of accessibility: local/regional	
High degrees of street connectivity (internal/external), including sidewalks and bicycle lanes	
High degree of impervious surface coverage	
Low open-space ratio	

Based on the number of its varying interpretations, the compact city can be understood as an umbrella concept combining ideas of *urban containment* since it strives for the preservation of the surrounding greenbelt from urban expansion, of *high density*, since it advocates for the concentration of the built environment, amenities and people with an efficient and *mixed land-use*, of *proximity and accessibility* since the compact city is closely related to mobility with a strong focus on *public transportation* and reduced need for car travels, and of *social equity* as it aims at creating attractive, socially mixed and fair and liveable urban communities.

The so-called compact city can be achieved through a process of urban intensification, "[…] the re-use of brownfield land, more intensive use of urban buildings, sub-divisions and conversions of existing development and an increase in the density of population in urban areas (i.e., re-urbanisation)" (Burton, 2000, 1969) and take multiple forms, e.g., monocentric or polycentric, depending on the context and the policy intervention at stake, e.g., Urban Growth Boundaries (Figure 1).

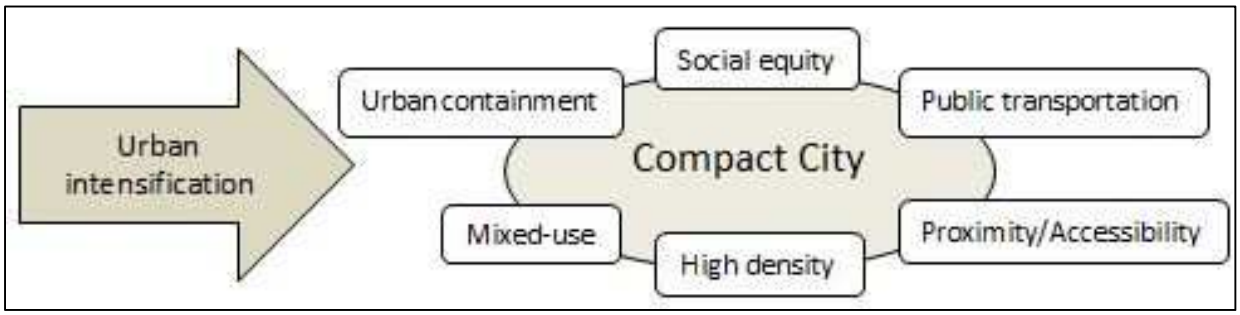

Figure 1. Conceptualisation of the Compact City. Source: Own illustration.

2.3. The Debate: Compact versus Sprawled City

The compact city as an urban model for sustainability is not without shortcomings and its sustainability claims have been questioned. The argument that urban form itself can render a city more or less sustainable has been criticized as being too simplistic (Jenks et al., 1996; Williams, 1999 & Van Der Waals, 2000) and not sufficiently verified (Lin & Yang, 2006; Neuman, 2005).

The review by Westerink et al., (2012) presents an overview of the characteristics and sustainability claims of the compact city versus the dispersed city based on social, environmental and economic variables (Appendix I). Although the compact city seems to perform well in regards to environmental criteria, which is also controversial (section 2.3.2.), it comes with social costs.

This line of argument can be summarized as follows: the compact city is unfeasible, its environmental benefits unlikely, its social costs undesirable and some greenfield development inevitable (Breheny, 1996, summarized in Westerink et al., 2012).

2.3.1. The veracity, feasibility and desirability of the compact city

Breheny (1997) suggests three tests for the compact city: veracity, feasibility and acceptability[4].

The *veracity test* − Does the compact city deliver the environmental advantages it claims to? − has been well documented. It includes the conservation of the surrounding greenbelt as a result from urban containment, in turn leading to the revitalisation and regeneration of urban areas, reduced dependence on car travel as a result of shorter commuting distances, thus reducing greenhouse gas emissions and air pollution, enhanced affordable public transportation, energy efficiency from lower heating costs, more efficient utility and infrastructure provisio, as well as a high quality of life and with a more vibrant and safe environment, potential social mix and social equity from increased population density (Owen & Rickaby, 1992; Newman & Kenworthy, 1989; Elkin, McLaren, & Hillman, 1992; Thomas & Cousins, 1996).

However, the relation between urban form, energy consumption and transport has been found to be inconclusive: "Preliminary evidence testing the compact city vis-à-vis sustainability suggests that the relation between compactness and sustainability can be negatively correlated, weakly related, or correlated in limited ways" (Neuman, 2005, 1). Williams et al., (2000) as well as Hall (2001) found that the link between urban form and transportation is inconclusive or contradictory (Crane, 2000), while Melia, Parkhurst & Barton (2011) reveal the "paradox of intensification": Urban intensification policies could help reducing individual car use, but would lead to greater traffic concentration and consequent worsening of the local environment.

The *feasibility test* is also debated: Can urban compaction be delivered? Can urban sprawl trends be reversed by urban intensification policies?

There are, according to Breheny (1997), serious doubts about the ability of planning policies to direct private development project towards existing urban areas – where there is often local opposition – while greenfield sites seem to attract developers' interests (Breheny, 1997, In Williams, 1999, 172). Such policies have even been criticised for being undemocratic (Sieverts, 2003), i.e., disregarding people's residential aspiration.

The *desirability test* − Beside the question whether or not the compact city can be achieved, the question is whether it should be achieved?

For the compact city to be desirable, urban compaction and dense urban living must be in line with dwellers' residential preferences. Yet, studies have found that people's residential aspirations rather tend towards the very opposite of the compact city (Howley, 2009; Howley et al., 2009; McCulloch,

[4] I use the term "desirability", also used in the literature, instead of "acceptability" to place emphasis on urban dwellers' residential desires, preferences and attitudes.

2012), although for some specific population groups, urban characteristics of centrality and proximity are found attractive, as suggested by the literature on reurbanisation (see section 3.1.).

Moreover, the compact city is criticised for its social implications. The densification and regeneration of central areas tend to attract new inhabitants who display a higher socioeconomic status at the expense of other social groups (Bromley, Tallon, & Roberts, 2007; Howley, 2009; Rérat, 2012). The social dimension of urban changes, in addition, involves the risk of initiating or reinforcing gentrification processes, which could lead to various forms of displacements and social polarisation (Davidson & Lees, 2005, 2010).

In fewer words, the compact city's desirability dimension can be summarised as follow: To be seen as desirable, the compact city must be compatible with present and prospective urban dwellers' residential aspiration.

The desirability dimension of the compact city therefore opens up the debate to social sustainability criteria, which have often been left out behind environmental concerns of mobility and energy efficiency. This is the dimension I investigate in the context of Geneva, by looking at both the social implications of compact city planning and at the socio-demographic profile of recent inhabitants of Geneva and their residential preferences towards dense urban living.

3. Theoretical Background

In order to validate the compact city as a sustainable urban form – social sustainability criteria included – the compact city must be attractive for all population groups. It therefore requires investigation on which groups participate and benefit from the compact city and which are left out of the equation. Therefore, the following sections look into the theories of reurbanisation and individual residential behaviour, as well as the Right to the City. These will guide this research.

3.1. Theoretical Perspectives on Urban Compaction

The compact city's desirability dimension is analysed through the lenses of reurbanisation and individual residential behaviour. Combined these two dimensions provide insights into the demographic dynamics of core cities, e.g., the sociodemographic profile; residential attitude towards dense urban living and residential mobility behaviour of those who moved back to central cities. Taking these theoretical perspectives on urban compaction informs on the degree of residential attractiveness and desirability of the compact city according to different population groups.

3.1.1. Reurbanisation of central cities

The recent growth of cities characterised by a trend of recentralisation and repopulation is a process that has spread since the 1990s, especially in Europe (Cheshire, 2006; Champion, 2001) after a loss of population in the 1970s and 1980s. Such demographic turnaround has taken place in cities where regeneration projects have been undertaken (Tallon, & Bromley, 2004) and government policies implemented to promote city-centre living (Bromley et al., 2007).

Defining reurbanisation is not an easy task as the concept has been undertheorised (Buzar, Ogden, & Hall, 2005) and different interpretations coexist. Rérat (2011) aggregated the different definitions of reurbanisation into four groups.

First, reurbanisation can be explained as a quantitative phenomenon, a demographic revival of cities after a period of decline (Nyström, 1992). Reurbanisation has also been interpreted as the last stage of the cyclical "stages of urban development" model (Berg & Klaassen, 1987), which implies a return of population away from the suburbs to the central city (Figure 2).

Van den Berg's model is interesting in regards to the compact city's claimed ability to restrain urban sprawl, as it suggests that reurbanisation – a relative and then absolute growth of the core city compared to its suburbs – implies the end of urban sprawl, though very little evidence support this claim (Champion, 2001; Storper & Manville, 2006; Fishman, 2005). The growth of core cities doesn't

take place to the detriment of the suburbs because the core city and its suburbs don't function as a closed system or functional urban region:

> On the one hand, there are a widespread signs of renewed growth or reduced decline for larger metropolitan areas […] and for urban cores and their inner areas. On the other, however, there appears to be *no evidence* of suburban ring area losing out to core areas.
> (Champion, 2001, 156, accentuation added).

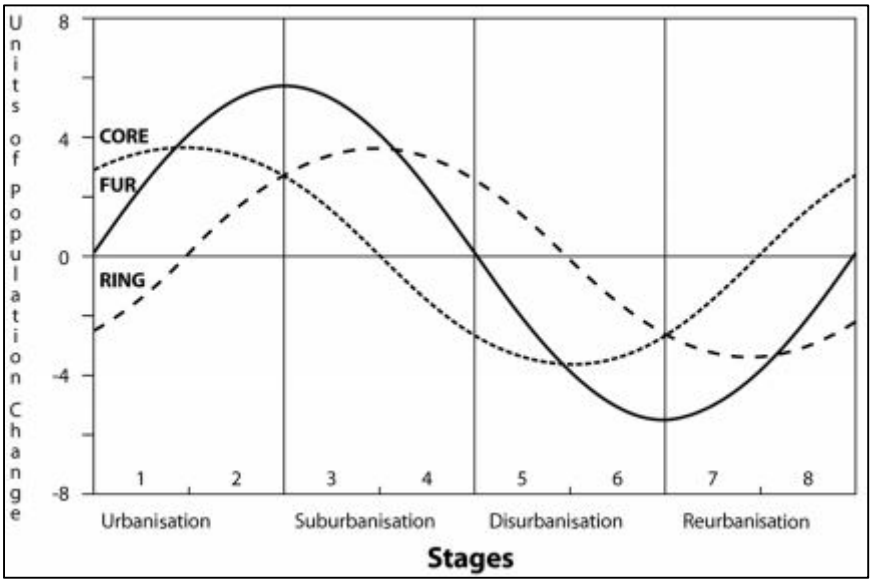

Figure 2. The "Stages of Urban Development" model by Van den Berg. The figure shows the demographic evolution of the core city, the ring and functional urban region (FUR) in the stages of urban development. Source: adapted from van den Berg, Drewett, Klaassen, Rossi,Vijverberg, 1982.

Reurbanisation also designates regeneration projects at the scale of the neighbourhood, which don't necessarily imply demographic growth, but often generate social impacts, e.g., new-build gentrification[5] (Davidson & Lees, 2010; van Criekingen, 2010). On this point, the literature on reurbanisation draws closer to gentrification theories: For some scholars, reurbanisation and gentrification are synonymous terms, but the use of the term "reurbanisation" is criticised for removing the critical perspective or the "social class meaning" from gentrification research (Davidson and Lees, 2010; Van Criekingen, 2009; Slater, 2006). For others, the two are qualitatively distinct processes, assuming that reurbanisation mobilises a broader range of the population and throughout a larger territory, the whole inner-city (Buzar et al., 2007b, Haase et al., 2010).

The two approaches to the changing sociodemographic landscape of central cities are acknowledged

[5] New built gentrification extends the classic definition of gentrification − the physical and social transformation of the existing housing stock in inner-city neighbourhoods (Lees et al., 2008) − to new development (Davidson & Lees, 2005; Rérat et al., 2010).

in this research: While my thesis is informed by the literature on reurbanisation − as explained below − findings will also be discussed in relation to gentrification theory.

Reurbanisation can also be approached as a qualitative process of repopulating cities with a variety of residential sociodemographic profiles (Buzar, Ray, & Ogden, 2007a; Buzar et al., 2007b; Haase et al., 2010; Kabisch, Haase, & Haase, 2010). This is the definition I adopt for my research and develop below to investigate the demographic dimension of the compact city of Geneva and assess its desirability performance among new urban dwellers.

To sum up, the concept of reurbanisation on the one hand questions the feasibility of the compact city model to mitigate urban sprawl and, on the other hand, taking a qualitative perspective, it requires investigation on who is driving the reurbanisation process and participating in the urban renaissance of core cities.

3.1.2. Individual residential behaviour

Reurbanisation can be seen as a sociodemographic change of the inner-city driven by both demographic changes and multiple migration flows. The literature suggests a population growth of central cities shaped by specific population groups who reflect the demographic features of the second demographic transition (Buzar & Ogden, 2007a; Buzar et al., 2005; Buzar et al., 2007b; Rérat, 2011). The second demographic transition is characterized by new family relations, declining and postponement of marriage, declining fertility rates, population ageing, postponement of child-bearing, rising divorce rates, increasing proportions of children born out of wedlock, and by growing number of smaller and non-conventional households (Bongaarts, 2002; Friedlander, Okun, & Segal, 1999; Hall, 1986; Lesthaeghe, 1995)[6].

Evidence suggests that the renewed attractiveness of central cities, i.e., capacity to attract certain population groups, specifically concerns international migrants, young professional, elderly people and non-family households, e.g., flat-shares, singles and childless couples, while traditional families display an out-migration flow (Ogden, & Hall, 2000; Bromley, Tallon, & Thomas, 2005; Buzar et al., 2007b; Buzar, & Ogden, 2007a; Rérat, 2008; Rérat, 2012). These diverse residential behaviours drive the reurbanisation of core cities and in turn shape the inner-city areas into a "splintered" urban form (Buzard et al., 2007b p. 666) by diversifying and redensifying its social landscape. Vulnerable population categories are overrepresented in cities, a phenomenon called the "A-Stadt" (Frey, 1996)

[6] The second demographic transition is related to the wider socio, economic and institutional changes linked to postmaterialism and postmodernism (Inglehart, 1997; Soja, 2001; Van de Kaa, 2001).

along with the overrepresentation of population groups displaying a higher socioeconomic profile (Da Cunha & Both, 2004; Rérat, 2005).

It should, however, be noted that while reurbanisation and household change are mostly investigated at the scale of the city-centre (inner-city districts) (Bromley et al., 2007; Buzar & Ogden, 2007a; Kabisch et al., 2010; Buzar et al, 2007b; Haase et al., 2010), studies also focus on the scale of the entire city (central city or core city) in France (Ogden & Hall, 2000; 2004) and Switzerland (Rérat, Piguet, Söderström, Besson, 2008; Rérat, 2011; Rérat, 2012) with the same observations; a change in the urban sociodemographic landscape of core cities.

To sum up, approached from a demographic perspective, the compact city is not a mere urban form driven by urban intensification policies, it also reflects new population dynamics and sociodemographic changes (Figure 3). The compact city can therefore be associated to reurbanisation processes driven by in-migration flows of international migrants and "postmodern" households related to the second demographic transition – young adults, small and mono-parental households, and flat-shares − while "traditional" households tend to display an out-migration flow – families with children. This suggests that the compact city is desirable only to specific population strata whose residential aspirations are in line with the urban characteristics of proximity and density and who have the financial means to choose where to live.

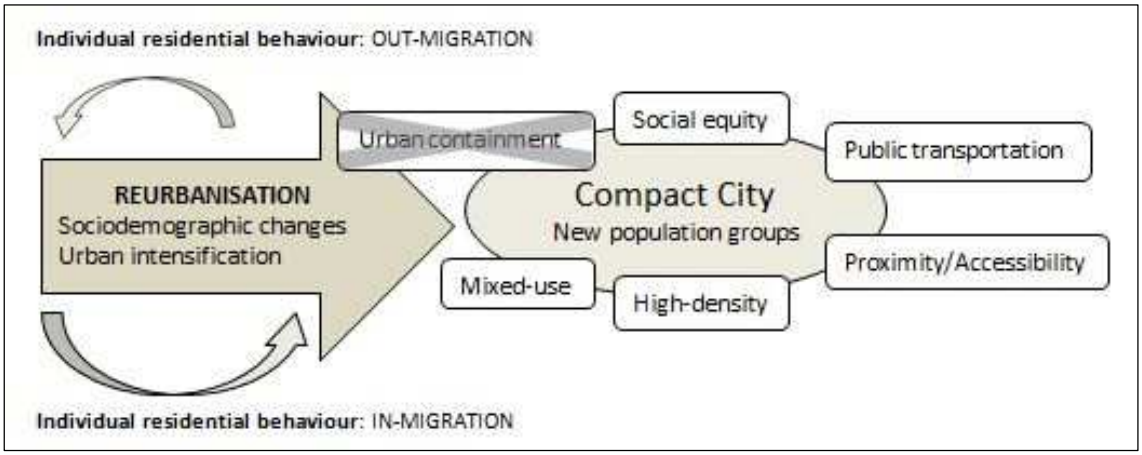

Figure 3. Conceptualisation of the dynamic relationship between the process of reurbanisation, individual residential behaviour and the compact city. The compact city defined by its key components isn't the result of a causal relation but reflects sociodemographic changes and individual residential behaviour of people moving to core cities. Urban containment is crossed out as the compact city doesn't exclude urban sprawl trend from happening, on the contrary these are two complementary processes, as explained above. Source: Own illustration.

3.2. Critical Urban Theory and the Right to the City

The Right to the City is part of a broader framework − Critical Urban Theory − that involves the critique of ideology and the critique of power, inequality, injustice and exploitation within and among cities (Brenner, 2012). Critical Urban Theory was consolidated in the late 1960s and early 1970s with contributions from the "leftists" or radical scholars, such as Lefebvre, Harvey, Castells and Marcuse influenced by Marx's work and the Frankfurt School. Critical Urban Theory is essential for other critical approaches such as the Right to the City, as it "charts the path" towards alternative forms of urbanisation away from the "hypercommodification" of urban life and "accumulation by dispossession" (Harvey, 1976, 314; Harvey, 2008, 34) and towards "[…] more democratic, socially just and sustainable form of urbanization" (Brenner, 2012, 11).

The concept of the Right to the City comes from a French Marxist sociologist Henri Lefebvre's book − *Le droit à la Ville*[7] − published in 1968. Lefebvre's concept of the Right to the City emerged out of his observation of the urbanisation process during the 1960s in France fuelled by Keynesianism and Fordism. Lefebvre's call for the Right to the City is a critique directed against the alienation of daily life, the modernisation of cities, the destruction of cities' specific qualities and against the exclusion of people from urban life. It is a struggle for a different city: "[…] the right not to be displaced into a space produced for the specific purpose of discrimination" (Schmid, 2012, 42-43). The Right to the City consists of a "cry and a demand" (Lefebvre, 1996, 158). It is a cry out of necessity from the ones deprived of the most basic rights and a demand from those who are discontented with and alienated by urban life (Marcuse, 2012).

The Right to the City doesn't represent a goal in itself, but should be understood as an ongoing process (Purcell, 2013). This movement is a perpetual struggle to move away from the 1970s industrial city towards the urban society, from the "habitat" towards the "inhabiter"[8], from the industrial city shaped by capitalist accumulation towards an urban society designed for the development of human potential. It asks for a "real" urban democratic awakening (Purcell, 2013) in which citizens actively engage in the production of space and take responsibility for the management of their own affairs. "It is the right to produce urban space so that it meets the needs of inhabitants" (p. 103).

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[7] The Right to the City, in English.

[8] In his book "La révolution urbaine" (1970), Lefebvre distinguishes between the "industrial city" and the "urban society" and respectively between the "habitat", a sterile and homogenous urban space organized for the production of standardized commodities and the "inhabiter" an active and vibrant urban space designed for the inhabitants' collective engagement in their cities' management.

To sum up, the Right to the City consists of a moral claim based on fundamentals of justice. It refers to a totality, a multitude of rights incorporated together to empower those who inhabit the city, the "citadins", the ones experiencing urban space, but yet disenfranchised of its production (Lefebvre, 1991, in Purcell, 2002).

I position my research in line with the Right to the City movement in order to unveil the social impacts of the compact city presented in the previous section. In this context, my understanding of the Right to the City goes beyond the ratification of the *World Charter for the Right to the City* (HIC, 2005) to include local activist movements that "seek to create *the* right to a (more open, genuinely democratic) city through social and political agency" (Mayer, 2012, 64). Following Lefebvre's claim, for the compact city to be a more democratic, socially just and sustainable urban form, it should aim at meeting the social needs of all those who *inhabit* it (Lefebvre, 1996).

Given the multiple context-specific expressions of the compact city model, it is important to delimit what my research will be focused on. Looking at the compact city's desirability dimension from a demographic and residential perspective, my thesis is only focused on the new inhabitants who have recently made the choice to settle in or move within Geneva – the core city. This approach provides a way to grasp the compact city's renewed attractiveness for different population groups. However, the environmental performance and the technical feasibility of the compact city, the two other dimensions questioned by Breheny won't be covered. Neither will be the difference between physical density, perceived density and crowding (see Churchman, 1999).

4. Methodology: Mixed Methods Research

This chapter outlines the methodology used to investigate my research questions and reach my thesis aim. To answer my research questions, I relied on a case study design applied to Geneva, by adopting a mixed methods research strategy.

4.1. Epistemological and Ontological Perspective

My thesis draws on epistemological and ontological perspectives stemming from Critical Realism, the "third" research paradigm besides Positivism and Interpretivism.

In contrast to the two philosophical positions, critical realism challenges conceptions of both natural and social sciences and "proposes a way of combining a modified naturalism with a recognition of the necessity of interpretive understanding of meaning in social life" (Sayer, 2000, 3). Ontologically, Critical Realism acknowledges the existence of an independent reality − the way things are − but a reality that goes beyond any knowledge claims about it (Carolan, 2005). Epistemologically, Critical Realism assumes the fallible nature of knowledge, that there is no "one-to-one correlation between knowledge claims and reality" (Carolan, 2005, 396). Hence it requires identifying the underlying structures and "generative mechanisms" (Bhaskar, 1978) that entail the phenomenon of interest – the desirability of the compact city – at the light of reurbanisation and the Right to the City, as well as the context in which these causal mechanisms operate – the city of Geneva.

Drawing on Critical Realism is beneficial to my research as the identification of underlying structures and causal mechanisms, besides the production of knowledge, offers the possibility for change "that can transform the status quo" (Bryman, 2012, 29) for the benefits of all, in line with the Right to the City's claim.

4.2. Research Design: Case Study

Case studies allow for an intensive examination of a phenomenon in a specific setting to then engage in a theoretical analysis (Bryman, 2012).

I chose Geneva as a case as it displays all the features of interest. On the one hand, the compact city model is recognised as the guiding principle for the sustainable urban development of Geneva in the City Master Plan (PDCom), while the city faces the impacts of densification, e.g., competition for land, housing shortage and lack of affordable housings, traffic congestion, and air pollution. On the other hand, Geneva has experienced the greatest demographic growth and production of housings compared to other Municipalities in the canton (OCSTAT, 2015a, 2014a). For these reasons Geneva

can be considered a "typical case" (Yin, 2009) as it provides a suitable setting to examine inhabitants' preferences towards dense urban living in a context of a city with a growing population.

4.3. Research Strategy: Mixed Methods Research

The case study of Geneva is carried out within a mixed methods research strategy that combines qualitative and quantitative methods, using respectively semi-structured interviews and a web-based survey. Despite the embedded method argument (Bryman, 2012) according to which each research method is rooted in particular and incompatible epistemological and ontological commitment – Gage's "paradigm wars" (Gage, 1989) – mixed methods research is conducted "for the broad purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie, & Turner, 2007, 123).

In my research, the main rationale for conducting mixed method research was in terms of "triangulation" and "completeness" (Bryman, 2012). On the one hand, semi-structured interviews allowed inhabitants' preferences for dense urban living and experts' perspectives towards compact city planning to be captured with the use of open questions, while the survey gave access to systematic information about the sociodemographic profile and residential mobility patterns of my target group with the use of coded and closed questions − *completeness*. On the other hand, the use of two data collection and analysis techniques (Table 2) allowed for the crosschecking of findings obtained from quantitative and qualitative research strategies (Deacon, Bryman, & Fenton, 1998). In this context, the semi-structured interviews with households verified and enhanced the quantitative data, and therefore made the survey results more robust −*triangulation*.

4.4. Data Collection and Analysis

Table 2 gives an overview of the data collection and analysis techniques used.

Table 2. Data collection and analysis: Overview. Source: Own illustration.

Target group	Sample size *Sampling approach*	Data collection technique	Research method *Data analysis technique*
Inhabitants who moved to or changed residency within Geneva since January 2011	5 Households *Purposive sampling*	Semi-structured interviews	Qualitative method *Thematic analysis*
Unit of analysis: households	16 respondents *Snowball sampling*	Self-completion online survey	Quantitative method *SPSS*
Professionals working at the City and Canton administration and representative of local inhabitants' association	6 respondents *Purposive sampling*	Semi-structured interviews	Qualitative method *Thematic analysis*

4.4.1. Self-completion questionnaire

The online self-completion survey ran from the 14th of December 2014 until the 28th of February 2015. The questionnaire contains twenty-two questions and starts with a filter question in order to select my target group (appendix IV). The survey had the format of a website; the web address was sent to potential respondents via emails. I used a non-probability sampling technique – *snowball sampling* – to reach my target group. This sampling technique fits well in my research as the sampling frame[9] was unknown to me, neither were their email addresses to administer the questionnaire. As Bryman (2012) explains, in the case that "no accessible sampling frame for the population from which the sample is to be taken" is available or too difficult to create, "a snowball sampling approach is the only feasible one" (p. 203).

In total, 34 persons completed the questionnaire for a final sample size of 16 respondents. The data were analysed using a computer software SPSS, for the analysis of quantitative data.

In the analysis process, raw data from the survey were recoded into a suitable form for the analysis. It involved reducing the number of categories of ordinal variable to avoid empty categories. It concerned data of age; education; income; profession; and household size[10]. Moreover, in order to facilitate international comparison and avoid error in the translation from French to English, data related to the current profession were collected on the basis of the ten categories proposed by the International Standard Classification of Occupations of 1988 (ISCO-88) (ILO, 2004). For the purpose of my research, the following categories were added to the ten ISCO-88 categories: student; housewife/househusband; unemployed; retired; other. For the same reason, data related to the highest educational level completed were collected on the basis of the fourteen categories of the Swiss educational system and then transposed into the nine ISCED categories of the International Standard Classification of Education (UNESCO, 2012).

4.4.2. Interviews

Five face-to-face interviews were conducted between the 11th and 13th of February 2015 with households who had recently settled in Geneva. Each interview lasted about 15 minutes (Appendix III).

The selection of interviewees followed a purposive sampling approach in order to ensure the relevance of those sampled to my research questions (Bryman, 2012). Three residential buildings

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[9] A sampling frame is defined as "the listing of all units in the population from which a sample is taken" (Bryman, 2012, 715).

[10] For detailed information on data recoding, see Appendix VIa.

were selected out of a list of all residential buildings built after January 2011 and located in Geneva (Figure 4 & 5) as sampling points within which five households were randomly approached and interviewed. The residential buildings selected are located in three different central neighbourhoods, Sécheron-Prieuré; Délice-Grottes; and St-Gervais-Navigation (Appendix IIIb), in order to minimize sampling point effects (Schnell, & Kreuter, 2005). The three neighbourhoods were chosen as they are all classified as "very dense central neighbourhoods" zone in the City Master Plan (PDCom, 2009, 54-55).

The choice of January 2011 as the date to delimit the population of interest – the *newcomers*– was justified by the data available for the accommodations buildings in Geneva (SITG, 2013). The most recent data available concerned accommodations buildings built between 2011 and 2015. To be consistent, the same interval was used to sample the survey participants.

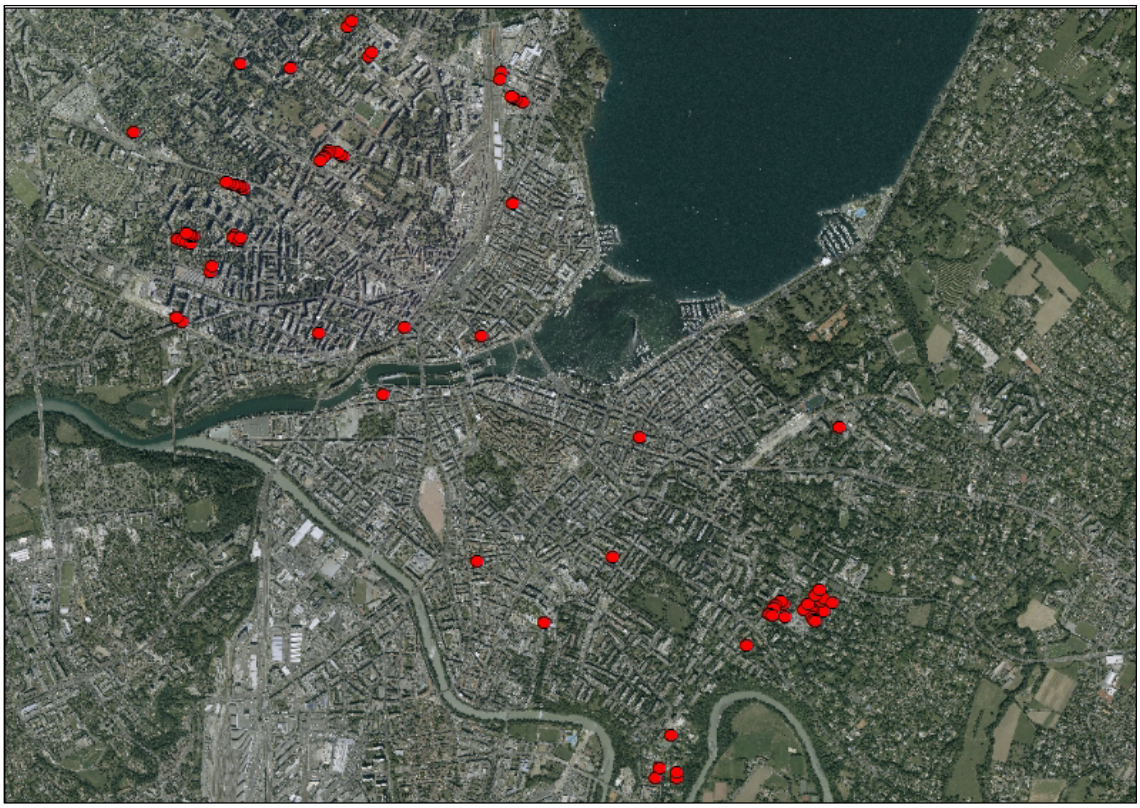

Figure 4. New residential buildings built in Geneva since January 2011. Source: Own illustration based on SITG, December 2013.

Figure 5. Residential buildings selected (in green) to conduct the semi-structured interviews with households. Source: Own illustration based on SITG, December 2013.

In addition, I interviewed five experts: four professionals working at the City administration and one working at the Canton administration, as well as a representative of the local association for the interest of the neighbourhood's inhabitants named "Les Pâquis", between the 29th of January and the 4th of March 2015. Each interview lasted about 60 minutes (Appendix III).

All interviews were face to face semi-structured interviews as this approach offers enough flexibility to unveil interviewees' understanding of and attitudes towards the issues at stake (Bryman, 2012). They followed an interview guide in French (Appendix II). I undertook a partial transcription of the audio records to only select sections relevant to the research questions or theory (Emerson, Fretz, & Shaw 1995); interviews were translated to English by myself. The data collected were interpreted using a thematic analysis approach in order to gain direct information from the interviews. The data derived from the interviews were ordered and synthetised into a matrix to reveal underlying themes and categories (Bryman, 2012).

4.4.3. Secondary data sources

Official documents were used to complement the data collected from the semi-structured interviews and the survey. I relied mostly on statistical public data published by the Geneva Statistical Office (OCSTAT), as well as the City Master Plan 2020 (PDCom 2020), Canton Master Plan Geneva 2030 (PDCn 2030) and the Strategic Plan for the Sustainable Development of the City of Geneva 2011-2014 (Ville de Genève, 2010).

4.5. Ethical Considerations and Limitation

Regarding my research design the main ethical considerations were related to the conduct of interviews as well as the limitation of the methodology and the implication for external validity.

So as to follow the four ethical principles stated by Diener & Crandall (1978) in the conduct of interviews – "harm to participants"; "lack of informed consent"; "invasion of privacy"; and "deception" – all interviews started with an introductory statement about the rationale of my research. Moreover, in order to minimise interviewer effects, such as the *social desirability effect* (Bryman, 2012), specific attention was put on avoiding sensitive questions and confusing or ambiguous terms, as well as assuring the anonymity (Krumpal, 2013). In addition, the interviews, with participants' consent, were recorded, so as not to distort interviewees' answers and introduce error in the analysis.

The limitations of both sampling strategies and data collection techniques have to be acknowledged when drawing conclusions from the results. Purposive and snowball sampling are both non-probability sampling strategies, which do not allow for generalisation. Neither does snowball sampling provide a representative sample of the population. The use of a web-based survey also implies a biased sample of the population, as internet users tend to be better educated, wealthier and younger (Couper, 2000). Despite the above-mentioned shortcomings, these two sampling approaches were chosen because of time and resource constraints along with the difficulty of conducting a probability sampling. In addition, the combination of the two methods could provide a more comprehensive and nuanced account of the phenomenon than a mono-method research would (Bryman, 2012).

5. Case Study

Before presenting the results, this section gives a brief profile of Geneva to situate the case study within its broader geographical context, the canton and the France-Vaud-Geneva agglomeration.

5.1. Geneva – A Compact City within a Diffuse Agglomeration

Geneva, Switzerland's second biggest city behind Zürich is located at the South-western corner of Switzerland at the end of the Lake Leman and is surrounded by France. The city is located at the crossroads of two larger territorial entities, the Canton of Geneva[11] (composed of 45 municipalities) and the France-Vaud-Geneva agglomeration, which includes 212 municipalities (Appendix Va & Vb). In comparison to its surroundings, Geneva represents a small geographical entity of about 16 km^2 and was home to 95,160 inhabitants at the end of 2013. In comparison to the canton, it concentrates 41% of the population, 47% of residential accommodations and more than half of the jobs, on only 1/15 of the surface with a residential density six times as high (Table 3). With this specific territorial configuration, Geneva displays the highest density of Switzerland, up to 12,336 inhabitants per km^2, which ranks the Municipality among the densest cities in Europe (PDCom, 2009).

Already densely built as the historical central city of the canton, Geneva is also the most active Municipality in the production of housings and in parallel the most attractive in regards to its demographic dynamics. Since 2000, the majority of the canton's new dwellings built per year have been located in Geneva (OCSTAT, 2015a), while the city has experienced the highest demographic growth of all municipalities since 1989 (OCSTAT, 2014a).

The discrepancy between the production of housing and the population increase (Figure 6) result in a housing shortage crisis, alike the cantonal situation that is characterised by a low vacancy rate of 0.39% and consequent high rent prices.

[11] In Switzerland, the 26 federal states are called *Canton*.

Table 3. City, Canton and France-Vaud-Geneva agglomeration: Overview. This table shows the population, surface area, density, accommodation and jobs of the City of Geneva, the Canton and the France-Vaud-Geneva agglomeration in 2013. Source: adapted from OCSTAT, 2014b, c; website of the agglomeration, 2014.

	France-Vaud-Geneva agglomeration	Canton of Geneva	City of Geneva
Population	946,000	476,006	195,160
relative of the agglo			*20.6%*
relative of the canton			*41.0%*
Surface area (km²)	2,000	245.66	15.82
relative of the agglo			*0.8%*
relative of the canton			*6.5%*
Density (inhab./km²)	473	1,938	12,336
relative of the agglo			*2608.0%*
relative of the canton			*636.5%*
Accommodations	373,000 (a)	223,548	105,962
relative of the agglo			*28.4%*
relative of the canton			*47.4%*
Jobs	451,000	355,689 (b)	186,634 (b)
relative of the agglo			*41.4%*
relative of the canton			*52.5%*

(a) Accommodations within the France-Vaud agglomeration in 2005, last numbers available. Source: Comité regional franco-genevois, 2007.

(b) Jobs in the city and canton of Geneva in 2012, last numbers available (temporary results). Source: OCSTAT, 2014d.

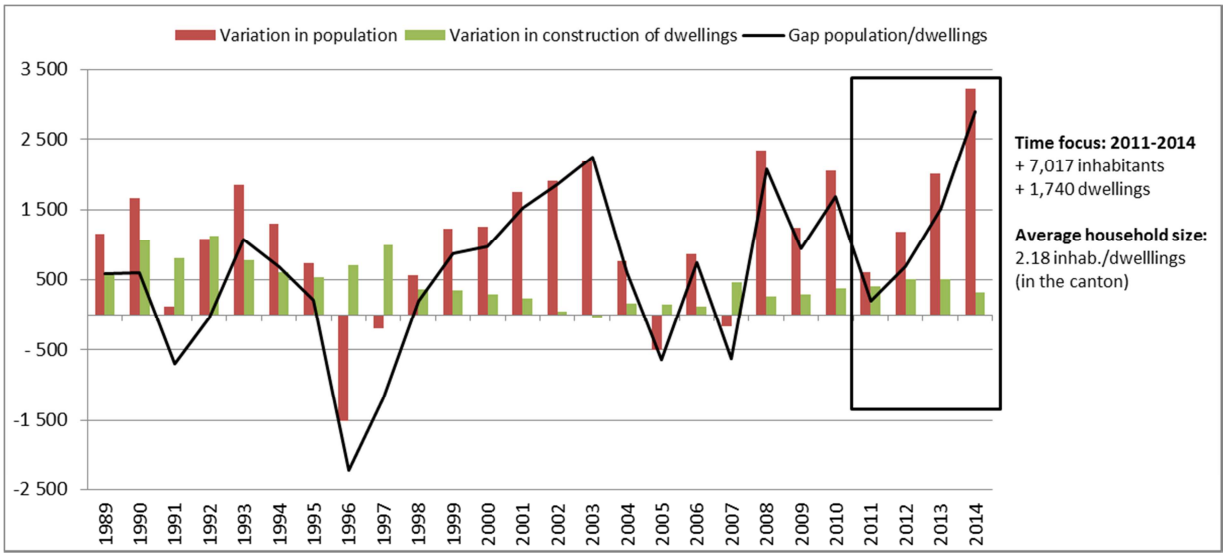

Figure 6. Annual variation of population and construction of dwellings, and gap between these two variations, since 1989, in the city of Geneva (in absolute number). Source: Own illustration, based on OCSTAT, 2014a, 2015b.

6. Result and Analysis

The results are presented around the two main research axes; compact city planning and its implications, based on urban planning document analysis and expert interviews (section 6.1) and the desirability dimension of the compact city model, based on the web-based survey and household interviews (section 6.2).

6.1. Compact city planning implications in Geneva

The following elements for Geneva compact city planning strategy were reported and thereafter classified into context-specific factor, compact city impacts, limitations and envisioned opportunities. The investigation of the compact city model within its broader political and administrative context allows for the social implications to be identified and for potential opportunities of change to be assessed.

6.1.1. Context-specific factors

Compact city planning doesn't operate in a vacuum and should therefore be contextualised, as context-specific factors constrain how compact city planning is prescribed in Geneva and the outcomes it generates at different levels.

First of all, urban planning is the task of the Canton, which acts as the legislative body, while the Municipality, closer to the population, works within the cantonal guidelines with a more qualitative approach to the territory.

The City's PDCom 2020 is therefore drafted in line with the Canton's PDCn 2015 (and thereafter PDCn 2030) and within the broader Charter for the France-Vaud-Geneva Agglomeration 2030 (signed in 2007 and modified in 2012). Planning documents at the regional, cantonal and city level furthermore follow general guidelines provided by the Federal Law on Land-Use planning (LAT)[12]. The Municipality is however, in charge of its Land Use Policy Plan (PUS), a planning tool which regulates applications for authorisations to build, so as to foster the production of housing, enhance the quality of life, and maintain local retailers on its territory. Decisions taken by the Municipality are thereafter endorsed by the Canton.

[12] The LAT aims (among others) at orienting urbanisation development within existing urban fabric while preserving the liveability of the urban environment (Art. 1 al. 2 let. a^{bis}) and at creating a compact built environment (Art. 1 al. 2 let. b). Source: Loi sur l'aménagement du territoire du 22 juin 1979 [RS 700].

Moreover, the Municipality has little direct control over land management as it possesses few properties due to a lack of proactive measures to acquire more land in the previous years (CA2[13]). Only 800 residential and public buildings and 5,300 accommodations, 5% of the total accommodations stock, belong to the City's real estate stock (PDCom, 2009, 65). The great majority of the real-estate market is in the hand of private stakeholders, with whom the City negotiate to influence both projects and characteristics of dwellings, e.g., a certain stock of social housing accommodations (Rérat, Söderström, Piguet, & Besson, 2009).

Unlike many other European cities, Geneva doesn't have brownfield sites for urban reconversion projects (CA4). Compact city planning doesn't take place on vacant industrial wastelands, which could be converted into new urban districts, but within an already densely built city, with three types of strategies[14] (Figure 7). These strategies are: (1) the densification of development zones situated at the periphery of the city and characterised by private individual housings; (2) by urban regeneration projects in areas planned to be transformed in the long term – these areas are not vacant brownfields, but zones allocated to jobs (and sometimes housing) and designed to change profile in the future; (3) and by a qualitative approach to densification to enhance the liveability of central and already very compact neighbourhoods. The latter is notably reflected by measures to improve the quality of public and green spaces, to favour the installation of local public infrastructures, and to maintain a certain social mix. This attitude towards central districts reveals the Municipality's awareness of the adverse consequences resulting from over-densification and the need to find the right balance between liveability and urban densification (PDCom, 2009, 52).

[13] Interviewees are referred to anonymously according to their position as followed: CA refers to city administration, CnA to canton administration, LA to local association, and I to inhabitants. See the list of interviewees, Appendix IIIa.

[14] For details on urban densification projects, see the map in Appendix Vc.

Figure 7. Compact city planning in the city of Geneva: three strategies and their potential for urban densification in terms of annual construction of dwellings.
In light grey, central districts approaching saturation level with limited future potential for densification;
In yellow, development zones with a high potential for densification projects but hard to implement due to the multitude of landowners and land plots;
And in dark grey, urban regeneration areas with high capacity for large scale development projects in the long term. Source: adapted from OCSTAT, in PDCom, 2009, 51.

Due to the specific political setting and distribution of responsibilities, compact city planning in Geneva is strongly influenced by both the Canton and the Agglomeration, while the City intervenes through negotiations and notifications. The specific context of housing shortage crisis, local authorities' limited range of action and absence of urban wasteland, altogether with its international attractiveness, increases the competition over land and the need for housing.

6.1.2. Social impacts

The outcomes are evaluated against two out of the eight political priorities stated in the PDCom and identified as relevant to my research to evaluate the overall social implications of compact city planning. These two priorities are: an inhabited city and an inclusive city.

An Inhabited City

In a context of housing shortage crisis, the production of dwellings for all is stated as a top priority for the Municipality in the PDCom, with an objective of 3,600 dwellings built by 2020 (~360 dwellings per year). This objective is currently reached, with 1,545 new dwellings built since the PDCom was brought into force in 2010 (PDCom Monitoring Report, 2014).

Behind this objective, other aspects less visible in the planning document, related to the production of housing are worth mentioning: “uplifting projects”, lack of public equipment, and issue of empty accommodations.

Project of “uplifting” existing buildings by adding extra floors, a major planning tool for *redensifying the city within the city*, has been strongly criticised for piling up dwellings and people in central, already very dense, districts. Furthermore, it has been blamed for not respecting the buildings’ dimensions agreed upon by the Municipality, the Canton and public associations and registered in the law on construction and diverse installations (LCI). As a matter of fact, derogations are allowed by the law (art. 11), and tend to become the rule. Most of the Municipality’s negative notifications are ignored by the Canton. Between 2008 and 2011, out of the 60 authorisations for uplifting buildings in the city, 40 were derogations (Barthassat, 2012). Besides compromising the quality of life and the urbanistic harmony, it is criticised for being financially inaccessible for the great majority: “this is not at all a measure to solve the housing shortage crisis and even less the issue of social housings, as it is still very expensive” (CA4).

Figure 8. “Uplifted” buildings in Geneva. Left: Rue de l’Athénée; Right: Rue du Stand. Source: DVK Architectes.

Behind the quantitative target for housing production, qualitative accompanying measures, such as social, cultural and sportive equipment, fall short of demand and are often overlooked by housing projects generating added value and, as a result, pushed away from central districts. As reported by an interviewee: “the problem is not the densification in itself but how it is qualitatively implemented and accompanied; housing is surely important, but collective infrastructures should also be accounted for”(CA1).

In addition, while housing is a top priority, the number of empty accommodations increased by 13.6% since 2010 (the same year the PDCom came into force) and amounts now to 351 dwellings (OCSTAT, 2014e). Although, in absolute number, it only accounts for less than 0.5% of the total stock, it still equals the annual housings construction objective set by the Municipality. These apartments

awaiting renovation or destruction, off the housing market, represent an "abandoned" stock, which contribute to the housing shortage crisis and speculation.

A solidary city

In order to maintain social mix and house the people living in social insecurity – bearing in mind that Geneva has recorded one of the lowest municipal median income in 2011 in the canton (OCSTAT, 2015d) and the canton registered on of the highest unemployment rate of Switzerland with 5.5% against the national rate of 3.2% in 2014[15] (OCSTAT, 2015c) − the City set up the objective of building 1,000 low-rent dwellings by 2020 (~100 per year). This objective is currently reached with 698 subsidised housings built since 2010 (PDCom Monitoring Report, 2014). This is an important objective for the Municipality considering that rents as practiced in the private estate market exceed the budget capacity of most of the population. This is especially true since the subsidised housing stock almost halved in the last twenty years, as most of the subsidised dwellings built in the 1980s have been now leaving the subsidised scheme of a 25 year-period (PDCom, 2009, 25-26). As reported by an interviewee: "There is a strong political will to push low-rent housings forward. Our magistrates negotiate with private promoters to ensure a minimum of 60% of social housing in each operation, sometimes pushing for 80 to 85%" (CA4).

Despite political goodwill to strengthen low rent housings and maintain a diverse city, latent mechanisms undermine this objective, such as recurring violations of the law on demolition, transformation and renovation of housings (LDTR), increased social gap, and gentrification processes.

First of all, as reported by an interviewee and confirmed by an audit report published in 2003 (CEPP, 2003), the LDTR is very often violated by property owners. The consequences are that much renovation work is undertaken without cantonal authorisations, rents are raised during the "rent freeze period"[16] or laddered, voluntary control by the authorities during this period are missing, and property owners are very rarely sanctioned (CEPP, 2003). The situation has most probably not improved since 2003, when it was reported, considering the saturated housing market which favours rent increase. On top of that, the cantonal control hasn't been reinforced as reported in the PDCom and confirmed by an interviewee:

> The cantonal service of control used to have enough employees, but since it has been cut to the bone, there is no more control after renovation works. […] it is left to us to write to the Canton

[15] Since 2008, municipal unemployment rate are not recorded anymore, due to their unsignificant value (OCSTAT, 2010).

[16] The "rent freeze period" lasts between three to five years after the end of renovation projects (CEPP, 2003).

and ask for inspection visits to be carried on; We [members of the local association] are currently doing their task (LA).

In addition, rents keep increasing; in the best case the LDTR only slows the process down, but does not reverse it (CA3). This is particularly true for rent increase after a change of tenants (Figure 9).

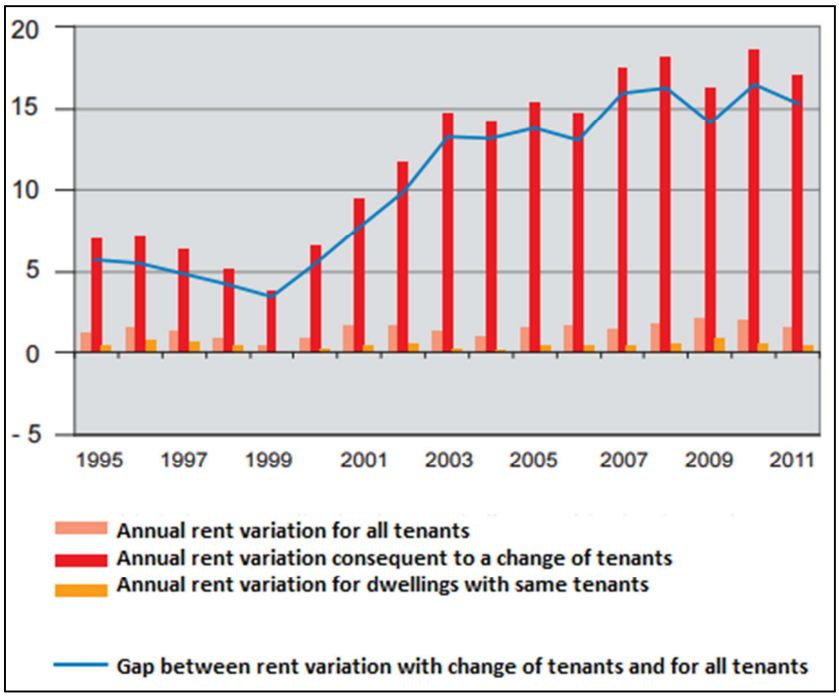

Figure 9. Annual rent variation (in %) for used and market rate dwellings since 1995 in the canton. Source: adapted from OCSTAT, 2011.

In parallel, the inequality gap increases every year (CA3, 4). Gentrification processes, though difficult to measure, have been identified, with the example of the Pâquis, a very central and popular district, where luxurious uplifting and transformation projects have been realised and more are in the planning process; “we [inhabitants of the Pâquis] are at the heart of the transformation of the city, we are losing this popular district, even the middle-class is pushed away” (LA).

The analysis reveals that despite the Municipality’s goodwill to enhance the quality of life − while contributing to the future development of the agglomeration − the policy of *building the city within the city* in Geneva is not socially neutral. Quantitative objectives in terms of production of dwellings are on the way to be met by 2020, but accompanied by housing affordability issues, gentrification, lack of public equipment, and financially exclusive uplifting apartments.

In views of these elements, the next two sections identify the limitations and opportunities of change for Geneva compact city planning.

6.1.3. Limitations to a socially inclusive compact city

Three main elements have been identified as limitations: lack of resources, urban saturation, and weak political representativeness of cities at the Cantonal Parliament.

First of all, the Municipality alone doesn't have the resources (in terms of public budget; authority and vacant land for construction) to curb the housing shortage crisis by itself. Although, the City contributes widely to the production of housing within its urban development's capacity, it is not sufficient to absorb the future development of the agglomeration – bearing in mind an expected growth of 200,000 inhabitants and 100,000 extra jobs in the agglomeration by 2030 (PDCn 2030; CA4). This is not only emphasised by the PDCom (p. 22) but reported by all interviewees, who acknowledge the political will of the City towards housing while pointing out the striking gap between urban and rural Municipalities of the Canton. This gap is visually reflected in the territory at the cantonal level by an asymmetric development between the lake's shores. While the right shore (western sector) concentrates the majority of industrial activities; transport infrastructures (train station, airport, highway), jobs and future development zones as prescribed by the PDCn[17], the left shore (eastern sector), which concentrates the wealthiest municipalities, is almost "untouchable" (CnA) and remains mostly residential, with an important stock of private individual houses.

Therefore, while cities (Geneva ahead) contribute largely to the development of the agglomeration, rural municipalities take advantage of what the agglomeration can offer while strongly refusing development projects within their territory: "We won't solve the cantonal housing shortage crisis by over-densifying urban municipalities in disregards of any territorial equity principles, but by mobilising the development capacities of all other municipalities of the canton" (PDCom, 2009, p. 21). In other words:

> It is not up to Geneva to do all the job by itself, while rural and wealthier municipalities don't contribute at all […] social mix and social equity should be conceived at a larger scale, at the scale of the 45 municipalities of the canton altogether (CA1).

Issues of geographical scale and differential political willingness of municipal governments are also closely linked to issues of density saturation level for Geneva in particular, and for other urban municipalities, such as Bernex, whose population is planned to double by 2030 (CnA). "Where is the limit to the compact city model? […]" Geneva can't grow "ad vitam aeternam" within its boundaries without impacting on the quality of life of its inhabitants" (CA4). Moreover, construction of dwellings implies extra burden on public services, such as collective space; schools; nurseries, etc.

[17] Most of the major development projects inscribed in the PDCn 2030 are located on the right shore. See appendix Va.

In addition, the issue of political representativeness of urban Municipalities at the Cantonal Parliament has been raised (CA4). Considering the demographic weight of the twelve urban Municipalities (82% of the total population of the canton), cities aren't well-represented at the Cantonal Parliament against the 33 rural Municipalities. As a result, neither are specific urban issues linked to densification in the decision-making processes: "The issue with the Cantonal Parliament is that most of the deputies don't live in cities, while the majority of their decisions concern urban spaces" (CA4).

6.1.4. Potential opportunities for change

Two main opportunities to overcome the above-mentioned limitations emerged out of the interviews. First, compact city planning should be implemented throughout the canton and overcome municipal frontiers and political divide, i.e., distribute the burden of the core city (Geneva) and other urban Municipalities more equitably (CA1; CA2; CnA). If the agglomeration is to welcome an extra 200,000 inhabitants by 2030 (+20%), all municipalities should contribute to the effort of housing and as a result, lower the development gap between the lake's shores. Secondly, urban Municipalities should be given enough seats to defend their specific concerns at the Cantonal Parliament (CA4). While the first objective seems very unlikely to happen in the near future considering the future development of the canton as planned in the PDCn 2030, the second was partially addressed in March 2015 with the creation of a "Union of Geneva Urban Municipalities". Although this association, which includes six cities (Carouge, Genève, Lancy, Meyrin, Onex and Vernier) doesn't have an official role at the Cantonal Parliament, it works as a cooperative platform for sharing ideas and coordinating projects on issues specifically met by urban municipalities.

Now that Geneva's compact city model has been reviewed, its impacts revealed, limitations acknowledged and potential opportunities for pushing compact city planning forward formulated, the question remains whether such urban planning model is found desirable by Geneva's inhabitants. In line with the concept of reurbanisation, the next section will identify the specific population groups recently populating the city, their preferences towards compact city living, and their residential mobility behaviour.

6.2. The Desirability Dimension: Residential Perspectives

The data obtained from the web-based survey (N=16) and the five semi-structured interviews conducted with households are analysed to measure the desirability dimension of Geneva among new population groups who have made the choice to move in or change residency within a compact urban area, Geneva. Using quantitative and qualitative data, the following sub-sections examine the

sociodemographic profile, residential preferences regarding dense urban living and residential mobility patterns of this residential population. The aim of this section is to identify the residential incentives behind the in-migration flows to Geneva since January 2011, so as to assess the qualitative nature of the reurbanisation process and the attractiveness of Geneva.

6.2.1. Sociodemographic profile

Results reveal that recent urban dwellers are predominantly young intellectuals occupying managerial and executive positions, therefore affluent, and living in small and non-traditional household' structures[18].

Looking at the respondents' age, young adult is the most represented category in the sample (37.5%), followed by adults between 30 and 60 years old (25%). The elderly are the least represented with only one respondent (6.3%) (Appendix VIb.1).

Respondents displaying a higher socio-professional status represent the highest share of the sample referring to their professional occupation and academic background. Respectively, SPC+ account for 37.5% of the sample, followed by employees (25%), and students (18.75%), while 75% of respondents possess a university degree, e.g., tertiary education. Workers and housewives/husbands are not represented, while unemployed or retired people are only represented by one respondent, which corresponds to the low share of 60 years old and older people. Likewise, people with primary or secondary education level only account for less than one fifth of the total sample (18.9%) (Appendix VIb.2-3).

The income distribution (Appendix VIb.4) reflects the general high social status of the respondents, with respectively about 87% and 38% of the sample above the median annual gross income per household in Geneva of 48,472CHF for singles and 111,716CHF for married couples, registered in 2011 (OCSTAT, 2015d). The representativeness of lower income categories can be explained by the share of students, unemployed/retired people, and other as shown in Appendix VIb.3.

Results concerning the household's composition and size (Appendix VIb.5-6) reveal a predominance of non-traditional and small households. Only one respondent is registered has a married couple with children while more than half of the sample is represented by single households and flat-shares. Looking at the household's size, 75% of them don't exceed three-to-four persons, although 12.5% are large households of six and more members.

[18] For detailed statistical data from the survey, see Appendix VIb.

An inconsistency in the data should however be notified; the number of single household (household composition) of five doesn't match up with the number of one person household (household size) of four. This inconsistency could be explained by someone living alone consequent to a divorce and sharing the custody of his children.

6.2.2. Residential preferences

The overall benefit of urban living in core cities has been separately assessed according to three sets of variables: convenience; lifestyle; and stylishness factors (Appendix VIb.7). Respondents were asked how they feel about each variable along a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), in the context of Geneva. The list of variables chosen to assess the benefits and limitations of urban living was built accordingly to the results obtained in other studies (Howley, 2009; Bromley et al., 2007; Tallon & Bromley, 2004).

Overall, convenient and lifestyle/leisure factors are perceived as key benefits of urban living compared to stylishness factors according to their respective mean value. Factors of proximity (to facilities and work/education) and commuting are the items most strongly agreed with across the three categories of urban living benefits, with a mean value of 4.38. Urban lifestyle items, such as proximity to cafés (4.25) and restaurants (4.06); and the diversified nightlife and cultural opportunities (4.0) are also found to be important factors contributing to the benefits of urban living. On the other hand, with a mean value in the average (2.56 and 2.25), the stylishness items don't convince. The same is true for aspects of slow-modes of transport and greater job opportunities with a mean value of respectively 3.31 and 3.13.

Results related to the perceived limitations of urban living (Appendix VIb.8) show that out of the list of variables, the great majority of them don't seem convincing in the case of Geneva, which reflects a rather good quality of life. More precisely, lack of affordable housing, traffic congestion and fewer parking lots are the three items most agreed with, with a mean value of 3.64. Conversely, increased crime is largely found irrelevant, with a mean value of 1.86.

The results from the survey are completed and confirmed by the qualitative data collected from the interviews. The thematic analysis of the interviews allows for a qualitative evaluation of Geneva's desirable and undesirable features in regards to its compact urban environment (Appendix VIIa).

The thematic analysis of the interviews reveals that the attractiveness of a compact and dense urban environment, such as Geneva, is expressed in terms of proximity and quality of life, while the limitations mainly stem from traffic externalities and lack of public spaces. Aspects of proximity to services and facilities were recognised by all interviewees as one of the main advantages, while only

one respondent (I2) mentioned the proximity to parks and the vibrant social life of its neighbourhood. Proximity is often mentioned in relation to the accessibility and connection to the public transportation network, to the greater opportunities for walking and biking and to the lessened need for car trips. Conversely car traffic is also recognised as one of the main disadvantage in terms of traffic congestion and noise pollution (atmospheric pollution wasn't mentioned), and is indirectly related to the lack of pedestrian zones resulting from the dominance of cars in the public space. These results are to a certain extent consistent with the quantitative data of the survey (see Appendix VIb.7-8).

Moreover, some tensions arise between the different features of the compact city as identified in the interviews (Figure 10). A healthy trade-off or balance between what the compact city can offer in terms of proximity and quality of life and what it generates in terms of traffic congestion and lack of public space seems to be needed so as to improve the compact city's desirability performance among its inhabitants.

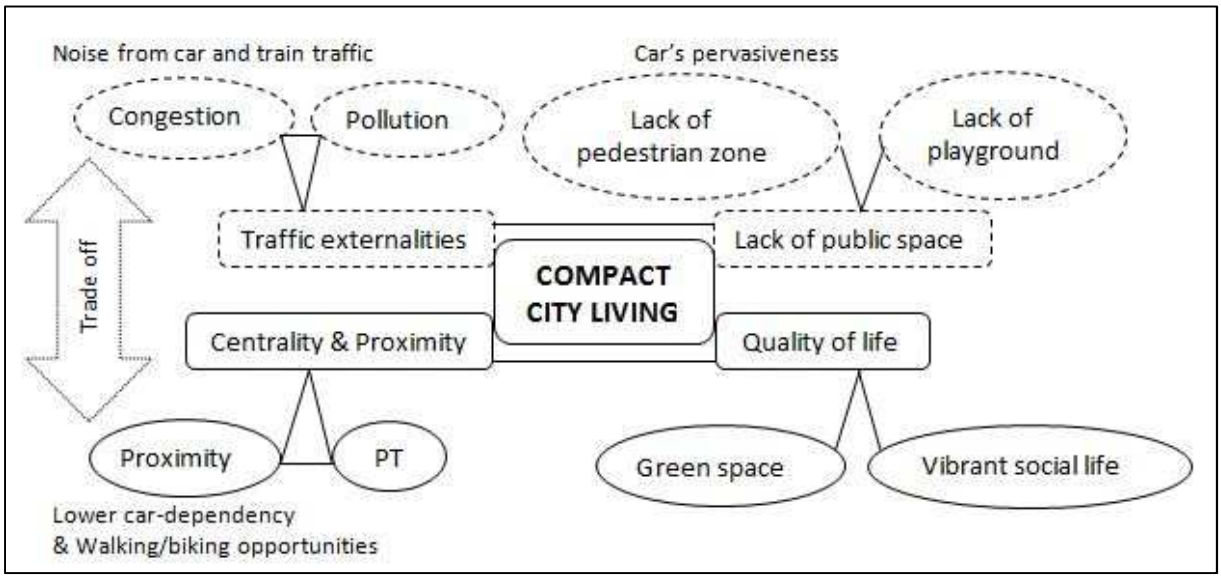

Figure 10. The compact city's conflicting outcomes as reported in the interviews. The desirable features are represented in continuous boxes while the undesirable outcomes are in dotted boxes. Own illustration.

The results reveal strong aspirations for urban living features which are in line with what the compact city can offer, in terms of both, ideal location and ideal type of housing (Appendix VIb.9-10). 75% of respondents strive to live in inner city's areas and 81% wish to live in an apartment in a residential building.

Moreover, respondents are in general satisfied with both the quality of their housing accommodations and the quality of the built environment of their neighbourhood, with respectively 87.5% and 75.1% of people satisfied or very satisfied with their current residential situation

(Appendix VIb.11-12). This seems to demonstrate that compact city living in Geneva is not a burden but an active and desired choice.

6.2.3. Residential mobility patterns

Predominantly, recent urban dwellers come from Geneva itself and from European countries motivated by a broad range of reasons, specifically to get more space and move closer to the city-centre. The majority of them are very likely to change accommodations in the coming five to ten years mostly to move abroad, get more space and move to a cheaper area.

Considering their previous locations (Appendix VIb.13), 25% of the sample came from Geneva itself and 25% from European countries, followed by six other municipalities in the canton, of which only two are rural municipalities. Each municipality accounts for 6.3 % of the sample, except of Carouge, with 12%.

The results reveal movement of "stay-in-the-city" from former inhabitants of Geneva and intra-urban movements within the canton and from European countries (potentially from cities, though not assessed in the survey); more than a "back-to-the-city" movement from the suburbs to the centre, as it could have been assumed according to Van den Berg's model.

The reasons most frequently mentioned for their decision to settle in Geneva (Appendix VIb.14) are aspects related to convenience, such as getting more space and moving closer to the city-centre which account for 13.6% of all responses and related to personal life-cycle stages such as leaving the parents' place (13.6%), getting more space for a new child (9.1%) and as a result of a change of job or work place (9.1%). Aspects of getting more space and change of job or work place are also one of the main reasons behind their future intention to relocate which account for respectively 16.1% and 9.7% of all responses (Appendix VIb.15). Moving abroad is the main driver of future residential mobility with 19.4% of all responses, which might reflect the high share of European migrants in the sample.

Reasons linked to life-cycle stages and quality of life also emerged as the main drivers for residential mobility patterns in the interviews (Appendix VIIb). Worth noticing are the *imposed* or *forced* mobility driven by the necessity to find a new accommodation as a result of increased rent or end of a sublease, mentioned by two interviewees (I1; I4), which reflects the broader issue of housing affordability. Interestingly, some respondents (I2: I3; I5) presented their aspirations to move to more peripheral neighbourhoods or urban municipalities, such as Carouge; Meyrin, Vernier or Grand-Saconnex, so as to benefit from a more peaceful and open/green urban environment, while benefiting from a public transportation network so as not to be completely dependent on the car.

Looking at their future residential intentions (Figure 11), 43.8% of respondents are very likely to change residence in the coming five years and up to 56.3% are very likely to move in the coming ten years, while conversely only one respondent is very unlikely to move within the same time span (Appendix VIb.16-17). Results reveal a very mobile population group, with little personal attachment to Geneva.

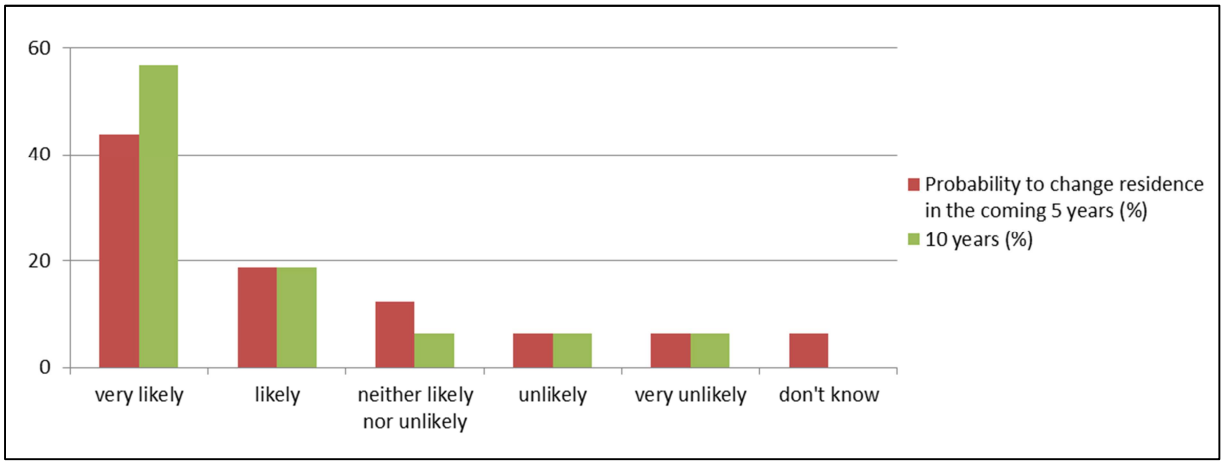

Figure 11. Future intentions to move residence in the coming five to ten years. Source: Own illustration, based on the survey data.

The findings obtained from semi-structured interviews, web-based survey, and planning document analysis are discussed in the light of the theory in the next chapter.

7. Discussion

My thesis started from the assumption introduced by Breheny (1996) that the compact city comes with undesirable social costs and that it runs counter to the residential aspirations of urban dwellers, as revealed in the literature review. The second assertion of this statement was thereafter revised at the light of reurbanisation theory to include the changing sociodemographic landscape of core cities. It is therefore assumed that the compact city model, first, comes with social costs (see section 7.1), and second, is found desirable, but only by specific population groups who reflect features of the second demographic transition, and who have the financial means to choose where to live (see section 7.2).

The following sections discuss the main findings structured around the three research axes to verify the above hypotheses. Subsequently, coming back to Critical Realism, findings are discussed in the light of the Right to the City and Reurbanisation theory to reveal underlying structures and generative mechanisms behind the observable events of the empirical domain.

7.1. How is the compact city model implemented in Geneva?

Findings reveal that compact city planning in Geneva comes with social costs. Despite the Municipality's good intentions and commitment towards planning for a densely built and inclusive city, results suggest that the former comes at the expense of the latter. Self-proclaimed quantitative objectives in terms of production of housings are currently met, but are insufficient to absorb the rising demand stemming from an increased population (see Figure 6). It results in a housing shortage situation characterised by housing affordability issues and gentrification processes.

Social implications (RQ 1B), as measured against two assessment criteria, mostly concerns the housing market. Lack of regulation, with recurrent violations of the LDTR, subsequent continuous rent increase, financially inaccessible "uplifting" dwellings and gentrification processes altogether result in a lack of affordable housing and increased social inequalities.

However, assuming a causal relation between compact city and poor housing affordability would be too simplistic. Referring to Burton (2000), compactness is not the most determinant variable of affordability, but the demand is. Affordability issues and compact city appear as two sides of the same coin and determined by the rules of the free market: the higher the demand for housing, the more expensive the land and consequently housing, which result in higher density settlements. That is how "higher densities may not *cause* the increase in house prices: high densities may be the *result* of higher land values" (Burton, 2000, 1986, accentuation added).

Moreover, issues of affordability are also determined by the regional context, this is where context specific factors come into play (RQ 1A). Burton found out that affordability is most significantly influenced by the proportion of affluent households and local authority tenants[19]: "[…] the cost of the cheapest housing is greater where there is a high proportion of middle-class residents and a low proportion of local authority tenants […]" (Burton, 2000, 1986). This assertion reveals that first, the demographic composition of the population is not socially neutral and can further exacerbate housing affordability issues and initiate or reinforce gentrification processes. If urban regeneration and densification policies imply incoming higher-income groups back to the city (section 7.2), new built gentrification processes can be expected, especially if the social dimension of urban change is not accounted for (Rérat, 2012). And second, the presence of publicly-owned housing, i.e., social housing, is therefore necessary to alleviate the adverse effects of the housing market for low-income groups.

Well-aware of this, the Municipality runs a proactive policy to maintain low-rent dwellings in the city and tackle the housing market externalities. 95% of its housing stock is dedicated to low-rent dwellings and ambitious annual objectives for the production of new subsidised dwellings are currently met, but are still insufficient to absorb the demand and compensate for social housing leaving the subsidised scheme. However, the Municipality is not alone to blame referring to the limitations to a socially inclusive compact city model (RQ 1C). Rural Municipalities are very reluctant to "sacrifice" their rural identity and individual house zones in favour of a more compact urban development.

Drawing on the Right to the City and Critical Urban Theory, compact city planning is realised at the expense of social equity because it remains embedded in the overall neoliberal planning paradigm and Geneva makes no exception. The urban development of the agglomeration has been criticised for being drafted within a dominant "liberal-productivist" paradigm, which by over-densifying the centre undermines the quality of life and reinforce the disequilibrium between a centre monopolised by highly qualified jobs, while housing and less profitable activities are pushed to the periphery (Genève 500 mètres de ville en plus, 2013).

Densification policies as a tool for urban sustainability are therefore criticised for focusing exclusively on the urban form while side lining the social dimension –*sustainability-as-density*, and for generating gentrification processes – *densification-to-gentrification* (Quastel, Lynch, & Moos, 2012).

[19] In the UK, local authority house constitute a stock of social housing owned and built by local authorities for low-income population. Source: https://www.gov.uk/definitions-of-general-housing-terms#social-and-affordable-housing.

First, densification policies, by merely emphasising on the urban form without paying attention to the interconnections with the social has proven to be ineffective at delivering what the compact city claims (Quastel et al., 2012): a vibrant and socially equitable city. And second, the line between densification and gentrification is thin. From a critical perspective, densification has become one more consensual term (along with reurbanisation) added to the list of *alliterative garble* to disguised gentrification processes and neoliberal planning under the shield of a class-neutral concept (Slater, 2006, 2012).

In uncovering the mechanisms behind the compact city model, this research suggests that as long as the housing market remains driven by the rules of the free market, any attempts to alleviate increasing rents and gentrification processes are doomed to fail, and densification policies will inevitably generate undesirable social costs. If Burton's analysis holds in the case of Geneva: that the need for high residential density reflect a great demand for housing, which in turn lead to increased land and housing value; then the situation is very unlikely to improve considering the international attractiveness of Geneva, thus rising housing demand, and a long-lasting saturated housing market ruled by the free market.

7.2. How desirable is the compact city model from the perspective of new urban dwellers?

Findings reveal that the desirability dimension of Geneva's compact city − investigated through the lens of reurbanisation − can be associated with broader demographic and household changes connected to the second demographic transition.

The profile of recent urban dwellers (RQ 2A) reveals a residential group which can be associated to Ley's (1996) "gentrifiers" or "new middle class", whose growing importance is underpinned by the role of the second demographic transition (Van Criekingen, 2010). The "new middle class" was found to be associated to the "urban renaissance" or renewed attractiveness of inner-city area by driving the reurbanisation processes and the demand side of gentrification (Ley, 1996).

In the case of Geneva, since 2011, recent urban dwellers or "urbanites" − city-minded groups of residents (Haase et al., 2010) – have been mostly represented by young affluent professional, of higher socio-professional status, and in possession of a university degree. They predominantly live in non-traditional– single household and flat-shares; and small household structure – three-to-four person households. This upward residential shift which could be associated to new-built gentrification processes, as presented in 7.1, is accompanied, to a lesser extent, by "traditional households", i.e., married couple with children, along with household displaying a lower socioeconomic status and academic background.

The desirability of dense urban living as assessed through the lens of reurbanisation provides insights on the distinction between "urban seeking" groups, for whom the compact city model is desirable and attractive, and conversely "urban fleeing" groups who decide to move out to the suburbs (Hamnett, 1991; Butler, 1997). While the former was identified by the survey, as presented above, the latter was not directly approached. However, the literature indicates that families with children predominantly display an outmigration flow (Ogden, & Hall, 2000; Bromley et al., 2005; Buzar et al., 2007b; Buzar, & Ogden, 2007a; Rérat, 2008; Rérat, 2012). This trend is confirmed by the last Federal Census 2000 (OFS, RFP in Rérat, 2008) in the case of Geneva alike Swiss core cities, which displays a negative migration balance for couples with children of −10.71% between 1995 and 2000, below the Swiss average of −8.63%, a trend assumed to be still actual regarding their low representation in the survey. However, this binary distinction between "urbanites" and "suburbanites" is rather simplistic and the question raised by Hamnett in 1991 remains: "[…] why some people do one thing, and some do another" (p. 180). This requires investigation as to what are the residential motivations and preferences underpinning "urban seeking" groups' decision to settle in core cities, dimensions covered by RQ 2B.

Their motivations to move in Geneva are underpinned by practical and utilitarian logic, which stresses the convenience and lifestyle dimension of urban life, e.g., proximity and accessibility to services, work, cafés and restaurants, and therefore fewer time spent on commuting, along with personal reasons linked to life-cycle stages. Traffic externalities and lack of public space are the main perceived limitations of urban life. This suggests that, as long as the perceived advantages of urban life overcome its downsides, the compact city model might still be found attractive and desirable by former and future residents of Geneva, at least for Ley's "new middle class" (1996).

Reurbanisation as observed through the demographic profiles of newcomers reveals a movement predominantly driven by members of Ley's "new middle class" (1996) (RQ 2C). The reurbanisation process of Geneva can therefore be described as a process of rejuvenation (young adults under 29 years old although accompanied by middle-age households), internationalisation (European migrants, but paralleled by former inhabitants of Geneva), and diversification (variety of household types and socioeconomic status), which results in what Buzard et al. name a "splintered" urban form (Buzard, et al., 2007b). The reurbanisation of Geneva however doesn't imply a "back to the city" movement from the suburbs to the centre as assumed by Van den Berg's model. Instead it shows movement of "stay-in-the-city" from former inhabitants of Geneva and intra-urban movements within the canton and from European countries.

In uncovering the demographic dynamics behind the reurbanisation process, this research suggests that the desirability of Geneva is associated to the city-mindedness of members of Ley's "new middle

class" (Ley, 1996), whose residential preferences in terms of both location – central district of a city – and type of accommodation – residential building– are in line with what a compact city environment can provide. Although Geneva's compact city model is found desirable and attractive by outsiders (+4,068 in-migrants in 2014), the city fails at keeping its former inhabitants (-1,654 inhabitants in 2014) from leaving the city in destination of Nyon or the French part of the agglomeration (OCSTAT, 2015e; PDCom, 2009), often in search of a more affordable housing.

7.3. How sustainable is the compact city model for urban planning?

In investigating the compact city's social impacts and desirability dimension, this research sought to introduce qualitative and social sustainability criteria, along with the inhabitants' perspective at the centre stage of a debate that has often been exclusively framed in terms of technical and environmental imperatives. This research is an attempt to bridge academic disciplines' divides, e.g., *interdisciplinary*, as well as engaging with stakeholders from outside academia (civil society and practitioners), e.g., *transdisciplinary*, while combining *top-down* and *bottom-up* approaches to the compact city model, in line with sustainability science research agenda (Jerneck et al., 2011; Brandt, et al., 2013; Magee et al., 2013).

At the light of the results and driving mechanisms, the question about the compact city's contribution to urban sustainability and more broadly to the field of sustainability science can be addressed.

Regarding the social pillar of sustainable development, the compact city fails at living up to the promises of delivering a socially mix and equitable city. Promoting densification policies bears the risks of initiating or reinforcing gentrification processes by increasing central cities' attractiveness for "new middle class" dwellers (Ley, 1996), therefore increasing housing demand, which in turn might lead to increased land and housing value. It results in a housing affordability crisis which severely impacts the least-well off. Locked up in this worsening dynamic driven by the rules a free housing market, the compact city might be reduced to a mere "dead-end" for urban sustainability.

The compact city vis-à-vis environmental and economic sustainability, respectively the *environmental veracity* and *technical feasibility,* the two remaining tests for the compact city (Breheny, 1997) also reveal flaws. Although the compact city aims for a reduced dependence on motorised transport as a result of mixed-use, it may, on the contrary, imply an increase in traffic congestion and air pollution and thus reduced quality of life, i.e., the paradox of intensification (Melia et al., 2011). In addition, dwellers not experiencing the unity of time, place and work would still depend on the car for work (Siverts, 2003). Furthermore, the compact city model might not even be technically and economically

feasible from the point of view of the housing market's supply side more attracted by greenfield site development projects (Breheny, 1997).

Compact city planning therefore falls short at conciliating the three imperatives for a sustainable urban development; if the compact city delivers high environmental performance, which has been shown to be debatable, it surely undermines social sustainability. That is how the compact city, by merely focusing on the urban form without broader consideration for urban system as an interconnected whole – a potential entry point for sustainability scientist and for further critical research − will be insufficient at delivering a sustainable city. Research on urban sustainability should therefore not only be concerned on whether the urban form *per se* is sustainable, but whether the *process* is (Neuman, 2000): "[…] the question that should be asked is whether the process of building cities and the process of living, consuming, and producing in cities are sustainable" (p. 22).

8. Conclusion

Achieving a sustainable city through improved urban form is the central rationale underpinning the compact city model. Drawing on Breheny's critical stand towards the compact city, my thesis started from the assumption that the compact city comes with undesirable social costs and that the desirability dimension "[…] may be the point on which the whole issue turns" (Howley, 2009, 792), as dwellers' residential aspirations may be at variance with the compact city agenda.

Informed by the literature on reurbanisation and the Right to the City, and supported by data obtained from semi-structured interviews, a web-based survey, and planning document analysis, this thesis highlights Geneva's compact city planning, its social impacts and desirability dimension among recent urban dwellers.

Findings reveal a compact city planning, which comes with social costs in the form of housing affordability issues and gentrification processes. Driven by the rules of the free market, the housing market pressured by an increased demand stemming from new immigrants – predominantly more-affluent residents − leads to increased housing prices which participate to broader housing affordability issues. Findings also show, on the one hand, a compact city model closely associated to Ley's "new middle class" attracted by the urban advantages of proximity and accessibility and for whom the compact city is found desirable. While, on the other hand, conventional families tend to leave the compact city.

That is how housing affordability issues and gentrification, as observed in Geneva, may not be directly attributable to the compact city model *per se*, but to its attractiveness for "new-middle" class dwellers whose predominance is underpinned by the second demographic transition, at the detriment of families with children (Ley, 1996; Van Criekingen, 2010).

8.1. Broader Implications and Further Research

The compact city might be a necessary condition for a sustainable city, as urban sprawl is probably not a sustainable direction for urban development, "[…] but striving for compaction is not an easy road neither" (Westerlink et al., 2013, 493). And findings have shown that the compact city model is insufficient to achieve a "[…] more democratic, socially just and sustainable form of urbanization" (Brenner, 2012, 11).

By approaching the compact city through the lenses of reurbanisation, the case of Geneva reveals demographic dynamics associated to the second demographic transition, a trend happening throughout Europe (Lesthaeghe, 1995). That is how the case of Geneva could provide some insights to other European cities striving for a sustainable compact development, although as my analysis was

restricted to a single case study based on a limited numbers of interviews and small survey sample, the results can't be generalised.

Further critical research are therefore required to shed light on the sustainability trade-off of the compact city in order to better conciliate the environmental objectives of the compact city with social equity and justice concerns. Moreover, further research are needed to identify ways to integrate reurbanisation and gentrification literature together, in order to gain a more comprehensive and nuanced understanding of contemporary urban changes.

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10. Appendices

Appendix I. Sustainability claims of the compact city versus the dispersed city

Appendix I.
Compact city versus dispersed city. Overview of the characteristics and sustainability claims of the compact city and the dispersed city. Source: Westerink et al., 2012.

Sustainability aspect	Indicator	Compact city	Dispersed city
Social	Housing type	High density, multi-storey housing. Mostly apartments. Less private ownership. Lack of affordable housing (Burton, 2001)	Urban sprawl, single houses. Mainly private house ownership
	Quality of life	Vicinity of services, education, cultural activities, work, countryside. Less travelling time (Howley, 2009)	Sense of freedom, ownership, quietness, suburbia, security/safety is important. People are happier at lower densities (Bramley et al., 2009)
	Social justice (equity)	Houses with gardens are expensive. High-density areas generally have low-income population. However, buying a car is not needed	House with a garden feasible for many. Most people prefer to live low-density (Burton, 2001; Gordon & Richardson, 1997). However, a car is indispensable (Burton, 2001)
	Home-grown food	Community allotment gardens	Opportunities in one's own garden (Troy, 1996)
	Sense of community	More sense of community, if shared facilities can be achieved (Johnson, 1996; Ravetz, 1999). Reduced social segregation (Burton, 2001)	Low sense of community (Bramley et al., 2009); individualism and isolation. However, gardens are source of interaction (Bramley et al., 2009)

Continued

Appendix I. Continued

Sustainability aspect	Indicator	Compact city	Dispersed city
	Safety	More violence (Burton, 2001)	Low sense of community may lead to feelings of unsafety (building fences)
	Children's play	Public playgrounds	In the garden and on the street. Larger public playgrounds
	Recreational and leisure	(Small to large) urban parks, sports grounds, cemeteries, allotments and countryside	Private garden and for that reason less travel for leisure (Holden & Norland, 2005) (large) urban parks are not always provided for, sports grounds, cemeteries
	Countryside	Close for more urbanites (Aalbers et al., 2009)	Far away for many urbanites
	Urban-rural relations	City depends on countryside for recreational space	Rural communities are annexed by the city
Environment	Exhaust emissions	Lower total emission levels (Martins et al., 2008), but higher concentration of fine dust and more people exposed (Schweitzer & Zhou, 2010)	Higher total emission levels, but lower concentration of fine dust (De Ridder et al., 2008)
	Noise	More nuisance (Van Der Waals, 2000)	Less nuisance
	Energy	Lower energy use per household (Holden, 2004)	Higher energy use per household (Ewing & Rong, 2008), but more possibilities for solar energy (Owens, 1986)

(Continued)

Appendix I. Continued

Sustainability aspect	Indicator	Compact city	Dispersed city
	Urban heat island effect	High density has lower urban heat island effect in warm climates (Elnahas, 2003; Emmanuel & Fernando, 2007).	Higher (Brian & Rodgers, 2001), but vegetation can mitigate
	Water management	More complex because of high proportion of sealed surface (Troy, 1996) and higher concentration of pollutants	More space for water storage and infiltration, higher water consumption (irrigation of gardens)
	Green space	Emphasis on public green space	Emphasis on private green space
	Green space at risk	Urban green space at risk from construction	Peri-urban green space at risk from urbanization and commercial use of the area
Economic	Infrastructure	Efficient in roads, sewage system and other services	More infrastructure needed. Suburb-to-suburb transportation through highways (Gordon & Richardson, 1997)
	Transport	Emphasis on public transport (Burton, 2001), cycling and walking, but cars congest streets (Williams et al., 1996)	Emphasis on private car use. “A car is freedom” (e.g. (Knight, 1996)
	Solution to traffic jam	Efficient and finely mazed public transport system	Extensive road network. Suburbanization shifts traffic away from core areas (Gordon & Richardson, 1997)

(Continued)

Appendix I. Continued

Sustainability aspect	Indicator	Compact city	Dispersed city
	Construction costs and house prices	High (Howley, 2009)	Lower
	Economic activity	High densities foster urban production and enterprise investment (Lin & Yang, 2006)	More space for initiative
Resilience	Land consumption	Efficient. More emphasis on multifunctional and efficient land use	Consuming
	Flood risk management	High vulnerability due to concentration	Lower vulnerability
	Shrinkage	Easier to adapt to shrinkage	More difficult to adapt to shrinkage
	Future options	More flexibility with respect to land-use pattern (Van Der Waals, 2000)	Less flexibility

Appendix II. Interview Guides

1.	Questions for the inhabitants
1.1.	Attitude towards dense urban living
1.	What are the benefits and disadvantages of living in the city-centre of Geneva?
2.	How satisfied are you with your current housing situation (the quality of your accommodation and neighbourhood)? In what ways or not? What could be improved?
3.	Was it a personal choice to live in the city-centre to enjoy a dense and vibrant urban environment or was it the result of a lack of alternatives somewhere else?
4.	With the long-lasting housing shortage situation in Geneva: Are you in favour of densification policies, e.g., densification of individual houses zones; adding levels to buildings, brownfields development etc., or has the city-centre reached its saturation level?
1.2.	Participation
1.	Do you wish to be more engaged in the urban planning of your neighbourhood? In what ways (or not)? Would you be in favour of implementing a local participatory government project in your neighbourhood?
1.3.	Residential mobility behaviour
1.	Where did you live before moving into your current housing accommodation?
2.	What were the reasons to move from your previous residence?
3.	How likely are you to move residence within 5 to 10 years? What would be the reasons for you to move residence in the coming 5 to 10 years?
4.	What type of area do you think you will be living in the future?
1.4.	Socio-demographic profile
1.	What is your age?
2.	What is your current profession?
3.	What is the highest level of education that you have completed?
4.	What is your household composition and size?
5.	What is the annual gross income in your household?

Continued

2. Questions for the professional in "Community Action Programme"	
2.1. Quality of life and Desirability of compact city development	
1.	Trade-off between urban density and urban liveability: Geneva is the densest commune of the agglomeration, what is your professional perspective on the benefits and disadvantages (environmental and social) of a highly dense urban environment (e.g., crowdedness; competition for land; increased rent, greenfield development, lack of green/public space, air/noise pollution…)?
2.	In general, residential preferences tends towards the very opposite of dense urban living: Is the urban planning/development of the city of Geneva in line with its inhabitants' residential preferences? In what ways (or not)?
3.	Has the long-lasting housing shortage situation promoted a debate in which quantity (in terms of accommodations) overcomes consideration of quality (of the urban environment and public space)? Or is there the possibility that it might become a risk in the future?
4.	In central neighbourhoods, the Master plan promotes a qualitative approach to density (increase the liveability) to overcome adverse consequences of very dense urban areas. Has it been efficient in promoting a social mix, to maintain a balanced equilibrium between accommodations/workplaces and to local services?
2.2. Participation	
1.	Are public consultations (regarding neighbourhood master plans for instance) an effective approach to increase civil society's participation in urban planning? In what ways (or not)?
2.	Is the local participatory government projecting a successful participatory tool to increase social cohesion and community spirits? In what ways (or not)? Is it a successful tool to increase the participation from marginalized population groups?
2.3. Master plan GE - Priority n°3: An Inclusive City	
1.	Is the objective of 1,000 social housing accommodations by 2020 (~1/4 of the total accommodations' target for 2020) feasible, and is the objective high enough considering that half of the beneficiaries of social subsidies live in the city of Geneva (compared to the rest of the canton)?

Continued

2.	Densification and social inclusiveness: From your professional perspective, would you say that the city of Geneva is becoming socially selective and mostly designed for middle to upper classes (e.g., looking at two opposite examples of urban regeneration projects, Artamis and Allée Pic-Pic)?
3.	Is the objective of improved social equity and increased affordable housing in conflict with Geneva's image of a major economic, touristic and international city?
4.	Would you recommend community-owned housings and social housing as part of the solution to ensure a social mix in the city-centre?
5.	Is the objective of 1,000 social housing accommodations by 2020 (~1/4 of the total accommodations' target for 2020) feasible, and is the objective high enough considering that half of the beneficiaries of social subsidies live in the city of Geneva (compared to the rest of the canton)?

3. Questions for the professional in "Agenda 21. Geneva – Sustainable City"	
3.1. Quality of life and Desirability of compact city development	
1.	Trade-off between urban density and urban liveability: Geneva is the densest commune of the agglomeration, what is your professional perspective on the benefits and disadvantages (environmental and social) of a highly dense urban environment (e.g., crowdedness; competition for land; increased rent, greenfield development, lack of green/public space, air/noise pollution…)?
2.	Has the long-lasting housing shortage situation promoted a debate in which quantity (in terms of accommodations) overcomes consideration of quality (of the urban environment and public space)? Or is there the possibility that it might become a risk in the future?
3.2. Participation	
1.	Is the programme "the City is to You" an effective approach to increase civil society's participation in the management, animation of their neighbourhood and to reclaim/occupy public space? In what ways (or not)? Is it a successful tool to increase the participation from marginalized population groups?

Continued

3.3.	Geneva – Sustainable City
1.	Would you recommend the compact city model as an effective approach to solve housing shortage in Geneva?
2.	How efficient the current city planning is dealing with the trade-offs of the compact city model?
3.	In general, would you support the “compact city model” as a guiding principle for a sustainable urban environment?
4.	What are the strengths and weaknesses of the “Strategic Plan for the Sustainable Development of the City of Geneva: 2011-2014”? What could be improved for the PSDD 2015-2018?

4.	**Questions for the representative of the local association “Bien vivre au Pâquis”**
4.1.	Quality of life and Desirability of compact city development
1.	Trade-off between urban density and urban liveability: “Les Pâquis” is one of the densest neighbourhood in the city of Geneva with a sensitive socioeconomic profile. What is your perspective on the benefits and disadvantages (environmental and social) of a highly dense urban environment (e.g., crowdedness; competition for land; increased rent, greenfield development, lack of green/public space, air/noise pollution…)?
2.	From your perspective, has “les Pâquis” reached its saturation level in terms of urban density?
3.	According to you, has it been a choice from the “original” inhabitants to live in “Les Pâquis” to enjoy its central and dense urban characteristics or has it become a burden?
4.	Densification and social inclusiveness: From your professional perspective, would you say that the city of Geneva (and/or ”Les Pâquis”) is becoming socially selective and mostly designed for middle to upper classes (e.g., looking at two opposite examples of urban regeneration projects, Artamis and Allée Pic-Pic)?
4.2.	Participation
1.	Is the local participatory government project a successful participatory tools to increase social cohesion and community spirits? In what ways (or not)? Is it a successful tool to increase the participation from marginalized population groups?

Continued

5.	**Questions for the professional in Public Space and Territory at the Canton and for the professionals at the Social Unit and Urbanism Service at the City Administration**
5.1.	Quality of life and Desirability of compact city development
1.	Trade-off between urban density and urban liveability: Geneva is the densest commune of the agglomeration, what is your professional perspective on the benefits and disadvantages (environmental and social) of a highly dense urban environment (e.g., crowdedness; competition for land; increased rent, greenfield development, lack of green/public space, air/noise pollution…)?
2.	Has the long-lasting housing shortage situation promoted a debate in which quantity (in terms of accommodations) overcomes consideration of quality (of the urban environment and public space)? Or is there the possibility that it might become a risk in the future?
5.2.	Participation
1.	Are public consultations (regarding neighbourhood master plans for instance) an effective approach to increase civil society's participation in urban planning? In what ways (or not)?
2.	Is the local participatory government projecting a successful participatory tool to increase social cohesion and community spirits? In what ways (or not)? Is it a successful tool to increase the participation from marginalized population groups?
5.3.	Master plan GE - Priority n°3: an Inclusive City
1.	Is the objective of 1,000 social housing accommodations by 2020 (~1/4 of the total accommodations' target for 2020) feasible, and is the objective high enough considering that half of the beneficiaries of social subsidies live in the city of Geneva (compared to the rest of the canton)?
2.	Densification and social inclusiveness: From your professional perspective, would you say that the city of Geneva is becoming socially selective and mostly designed for middle to upper classes (e.g., looking at two opposite examples of urban regeneration projects, Artamis and Allée Pic-Pic)?
3.	Is the objective of improved social equity and increased affordable housing in conflict with Geneva's image of a major economic, touristic and international city?
5.3.	Master plan GE - Priority n°2 : An Inhabited City
1.	3,600 housing accommodations built by 2020 at a rhythm of 360 accommodations/year: Do you think it is feasible on the long run, regarding the already dense/compact urban area local opposition?

Continued

2.	Would you recommend the compact city model as an effective approach to solve housing shortage in Geneva?
3.	How efficient the current city planning is dealing with the trade-offs of the compact city model?
4.	In general, would you support the “compact city model” as a guiding principle for a sustainable urban environment?
5.	How do you envision Geneva (the city, the canton and the agglomeration) in 2030?
5.5.	City-Canton dynamics
1.	The City of Geneva has very limited competences in regards to urban and housing planning compared to the canton. The way roles and responsibilities are distributed, Is it strength or a burden for the urban development of Geneva?
2.	Housing market in Geneva: property speculation; violation of the LDTR (law on construction, demolition renovation); accommodations under-occupied, low vacancy rate, low residential mobility…. What solution do you advocate for the housing crisis in Geneva?
3.	The City of Geneva is the commune that builds the more, displays the highest urban density throughout the canton and has very limited public budget. How do you explain this imbalance between the city and the other communes?

Appendix III. Conduct of semi-structured interviews

Appendix IIIa.
List of interviewees.

Group	Position	Date	Length (min)	Recorded
City Administration (CA1)	Department of Social Cohesion and Solidarity Professional in "Community Action Programme"	January 29th, 2015	65	YES
City Administration (CA2)	Department of Finances and Housing Professional at the "Agenda 21 Delegation"	February 09th, 2015	53	YES
Local association (LA)	Collectif "Bien vivre aux Pâquis" Representative of this "Umbrella Association for the interests of the inhabitants of Les Pâquis"	February 10th, 2015	47	YES
City Administration (CA3)	Department of Social Cohesion and Solidarity Professional at the Social Service (professional urbanist)	February 12th, 2015	90	NO
City Administration (CA4)	Department of Construction and Planning Professional at the Urbanism Service	February 27th, 2015	50	YES
Canton Administration (CnA)	Department of Environment, Transports and Agriculture Professional at the Public Space and Territory Unit	March 4th, 2015	71	YES
Inhabitant (I1)	Household Building:4 rue Rousseau	February 11th, 2015	15	NO
Inhabitant (I2)	Household Building:4 rue Rousseau	February 11th, 2015	50	NO
Inhabitant (I3)	Household Building: 36 rue Malatrex	February 13th, 2015	20	NO
Inhabitant (I4)	Household Building: 19 av. de France	February 13th, 2015	15	NO
Inhabitant (I5)	Household Building: 19b av. de France	February 13th, 2015	10	NO

Appendix IIIb.
The three neighbourhoods where interviews with households were conducted. Demographic profile in 2013. Source: OCSTAT, 2014b

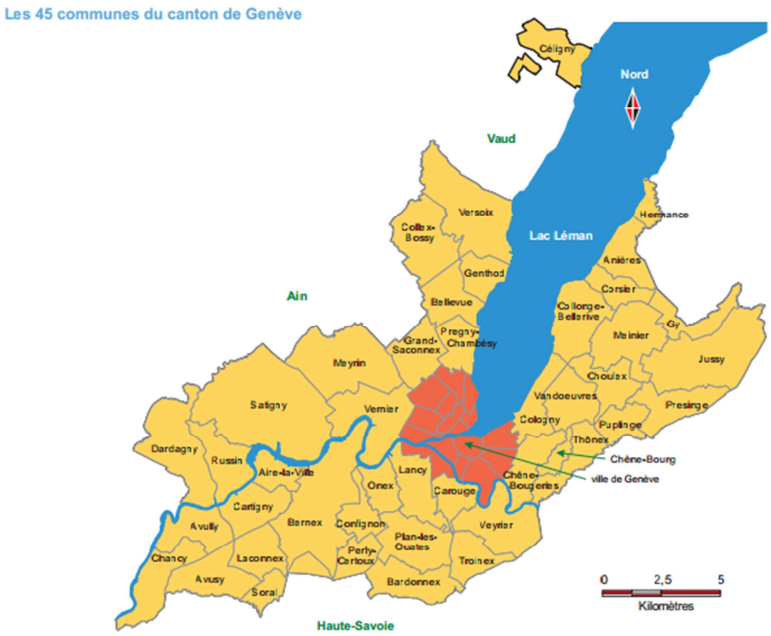
	Population	Surface area (km^2)	Density (inhab./km^2)
St-Gervais-Chantepoulet *Address: 4 rue Rousseau*	4,550	0.47	9,681
Délice-Grottes *Address: 36 rue Malatrex*	13,921	0.68	20,472
Sécheron-Prieuré *Address: 19A&B av. de France*	6,907	0.74	9,334

Appendix IV. Online self-completion survey, snapshot of the English version

Attitude towards City Centre Living

The first page of this survey (1/4) looks at your attitude towards urban living compared to other communes within the Municipality of Geneva.

- In this survey, the city centre refers to the administrative City of Geneva
- Check out the administrative map of Geneva:



1) Since the 1st of January 2011, did you move to the city of Geneva or change residence within the city of Geneva? • Have a look at the map above, to check out the administrative boundaries of the City of Geneva	
Yes	
No	

2) The advantages of urban living often refer to factors of convenience; lifestyle and stylishness.

Regarding the convenience variable, tell me whether you strongly agree; agree; neither agree nor disagree; disagree or strongly disagree, with the following statements:

- The city of Geneva is a more convenient place to live in, compared to other communes in the Municipality, because it offers the following advantages ...

	1 Strongly Disagree	2 Disagree	3 Neither Disagree nor agree	4 Agree	5 Strongly Agree
Proximity to facilities and services					

Proximity to the work place/educational institutions					
Proximity to friends and relatives					
Better access to public transportation					
Fewer time spent on commuting					
Greater opportunities for walking and cycling					
Greater employment opportunities					

3) The advantages of urban living often refer to factors of convenience; lifestyle and stylishness

Regarding the lifestyle variable, tell whether you strongly agree, agree, neither agree nor disagree, disagree or strongly disagree with the following statements:

- The city of Geneva is a more attractive place to live in, compared to other communes in the Municipality, because it offers the following advantages ...

	1 Strongly Disagree	2 Disagree	3 Neither Disagree nor agree	4 Agree	5 Strongly Agree
Diversified nightlife options					
Diversified cultural activities					
Proximity to cafés					
Proximity to restaurants					

4) The advantages of urban living often refer to factors of convenience; lifestyle and stylishness

Regarding the stylishness variable, tell me whether you strongly agree, agree, neither agree nor disagree, disagree, strongly disagree with the following statements:

- The city of Geneva is a more stylish place to live in, compared to other communes in the Municipality, because it displays the following characteristics ...

	1 Strongly Disagree	2 Disagree	3 Neither Disagree nor agree	4 Agree	5 Strongly Agree
Higher quality built environment					
Higher quality housing accommodation					
Aesthetic and modern architecture					

5) The disadvantages with urban living

Tell me whether you strongly agree, agree, neither agree nor disagree, disagree or strongly disagree with the following statements:

- The city of Geneva is less attractive compared to other communes of the Municipality, because of the following factors ...

	1 Strongly Disagree	2 Disagree	3 Neither Disagree nor agree	4 Agree	5 Strongly Agree
Poor access to green spaces					
Reduced domestic living space					
Increased crime					
Less affordable housing					
Lack of open public spaces					
Feeling of crowdedness					
Traffic congestion					
Air pollution					
Noise pollution					
Poor quality housing accommodation					
Poor quality built environment					
Unsuitable place to bring up children					
Lack of community spirit					
Lack of tranquillity					
Fewer parking lot					

Residential Preferences

The second page of this survey (2/4) looks at your residential preferences in terms of location and types of accommodation.

6) In general, where would your ideal residential place to live in be located?

Choose ONE out of the following answer options.

Neighbourhood in the city-centre of a city (>10,000 inhabitants)	
Neighbourhood in the periurban residential area of a city (>10,000 inhabitants)	
Neighbourhood in a town (	
Village in the countryside	
Other country	
Other	

7) What would be your ideal type of housing accommodation?

Choose ONE out of the following answer options.

Individual house	
Semi-detached house	
Accommodation in a community-owned building	
Accommodation in a private building	
Other	

8) Overall satisfaction with your current housing situation

Tell me how satisfied you are with the following dimensions...

Very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied or don't know.

	1 Very Unsatisfied	2 Unsatisfied	3 Neither unsatisfied nor satisfied	4 Satisfied	5 Very Satisfied
The quality of the built environment within the neighbourhood I live in					
The quality of my housing accommodation					

Residential Mobility Behaviour

The third page of this survey (3/4) looks at your residential mobility patterns; your past, current and future residential mobility plans.

9) Where did you live before moving into your current housing accommodation?

Choose out of the Drop down list, the area where your last residential accommodation was located between: a commune within the Municipality of Geneva, Other canton in Switzerland, in Europe or Other.

Aire-la-Ville	
Anières	
Avully	
Avusy	
Bardonnex	
Bellevue	
Bernex	
Carouge	
Cartigny	
Céligny	
Chancy	
Chêne-Bougeries	
Chêne-Bourg	
Choulex	
Collex-Bossy	
Collonge-Bellerive	
Cologny	
Confignon	
Corsier	
Dardagny	
Genève Ville	
Genthod	
Grand-Saconnex	
Gy	

Hermance	
Jussy	
Laconnex	
Lancy	
Meinier	
Meyrin	
Onex	
Perly-Certoux	
Plan-les-Ouates	
Pregny-Chambésy	
Presinge	
Puplinge	
Russin	
Satigny	
Soral	
Thônex	
Troinex	
Vandoeuvres	
Vernier	
Versoix	
Veyrier	
Other canton of Switzerland	
Europe	
Other	

10) What were the reasons to move from your previous residence? Choose from list below the reasons that motivated your change of residence. You may choose MORE than 1 answer.	
To get more space	
To get more space for a new child	
To move to a house	
To move to a place with a garden	
To move to a more suitable area to start a family	
Consequent to a change of job or work place	
To move out from the city centre	
To move to a more peaceful area	
To move abroad	
To move to a less expensive area	
To move closer to family	
To move to a nicer neighbourhood	
To move to a safer area	
To start of a new relationship	
Consequent to a divorce or separation	
To leave the parents' place	
To start or end a colocation	
Consequent to the departure of the children now adults	
Consequent to the death of a partner	
Other	
To move closer to the city centre	
11) Your future residential plans Tell me how likely you are to move residence within 5 to 10 years.	

Very likely, likely, neither likely nor unlikely, unlikely, very unlikely, or don't know.

	1 Very Unlikely	2 Unlikely	3 Neither unlikely nor likely	4 Likely	5 Very Likely	6 Don't know
Moving residence in the next 5 years						
Moving residence in the next 10 years						

12) What would be the reasons for you to move residence in the coming five to ten years?

Choose from list below the reasons that could motivate you to move residence. You may choose MORE than 1 answer.

To get more space	
To move to a house	
To move to a place with a garden	
To move to a more suitable area to start a family	
Consequent to a change of job or work place	
To move out from the city centre	
To move to a more peaceful area	
To move abroad	
To move to a less expensive area	
To move closer to family	
To move to a nicer neighbourhood	
To move to a safer area	
To start a new relationship	
To get more space for a new child	
Consequent to a divorce or separation	
To leave the parents' place	
To start or end a colocation	

Consequent to the departure of the children now adults	
Other	
To move closer to the city centre	
Consequent to the death of a partner	
13) What type of area do you think you will be living in the future? Choose ONE out of the following answer options.	
Village in the countryside	
Town (< 10,000 inhabitants)	
Periurban neighbourhood of a city	
Neighbourhood in the city centre of a city (	
Abroad	
Don't know	

Demographic profile

The last page of this survey (4/4) is here to record your socioeconomic profile for the research.

14) What is your age?	
Under 20 years old	
20-29 years old	
30-39 years old	
40-49 years old	
50-59 years old	
60-69 years old	
70 years old or older	
15) What is your gender?	
Male	
Female	

16) What is your current profession? Choose from the list below the category that corresponds to your current profession. You may choose TWO answers.	
Legislators, senior officials and managers	
Professionals	
Technicians and associate professionals	
Clerks	
Service workers and shop and market sales workers	
Skilled agricultural and fishery workers	
Craft and related trades workers	
Plant and machine operators and assemblers	
Elementary occupations	
Armed forces	
Unemployed	
Housewife / House-husband	
Student	
Retired	
Other	
17) What is the highest level of education that you have completed?	
Doctorat	
Master, licence, diplôme postgrade	
Bachelor, demi-licence	
Ecole professionnelle supérieure (3 ans); HES	
Formation professionnelle supérieure (2 ans); ES	
Maturité professionnelle ou spécialisée	

Maturité gymnasiale (Collège, Ecole de commerce)	
Formation professionnelle élémentaire ou initiale	
Ecole de culture générale ou équivalent	
Préapprentissage, formation générale (1 ans)	
Ecole obligatoire	
Jusqu'à maximum 7 ans d'école obligatoire	
Aucune formation achevée	
Autre	
18) Household composition Choose from the list below ONE category which best describe your current household structure.	
Flat-shares	
Person living alone	
One-parent household	
Childless unmarried couple	
Childless married couple	
Married couple with children	
Unmarried couple with children	
19) Size of the household How many members compose your household, you included?	
1	
2	
3	
4	
5	
6	

More than 6	

20) Where do you currently live?

Select out of the list the statistical sector where you currently live.

- Have a look at the map:

Eaux-Vives - Lac	
Bouchet - Moillebeau	
St-Jean - Aïre	
Champel - Roseraie	
St-Gervais - Chantepoulet	
Sécheron - Prieuré	
ONU - Rigot	
Délices - Grottes	
Cluse - Philosophes	
Grand-Pré - Vermont	

Florissant - Malagnou	
Jonction - Plainpalais	
Pâquis - Navigation	
Charmilles - Châtelaine	
Bâtie - Acacias	
Cité-Centre	
21) What is the total annual gross income in your household?	
1 - 15,000	
15,001 - 20,000	
20,001 - 25,000	
25,001 - 30,000	
30,001 - 35,000	
35,001 - 40,000	
40,001 - 50,000	
50,001 - 60,000	
60,001 - 70,000	
70,001 - 80,000	
80,001 - 90,000	
90,001 - 100,000	
100,001 - 125,000	
125,001 - 150,000	
150,001 - 175,000	
175,001 - 200,000	
200,001 - 300,000	

300,001 - 400,000	
400,001 - 500,000	
500,001 - 1,000,000	
More than 1,000,000	
22) Do you own a car in your household?	
No	
Yes	
If YES, please specify how many.	

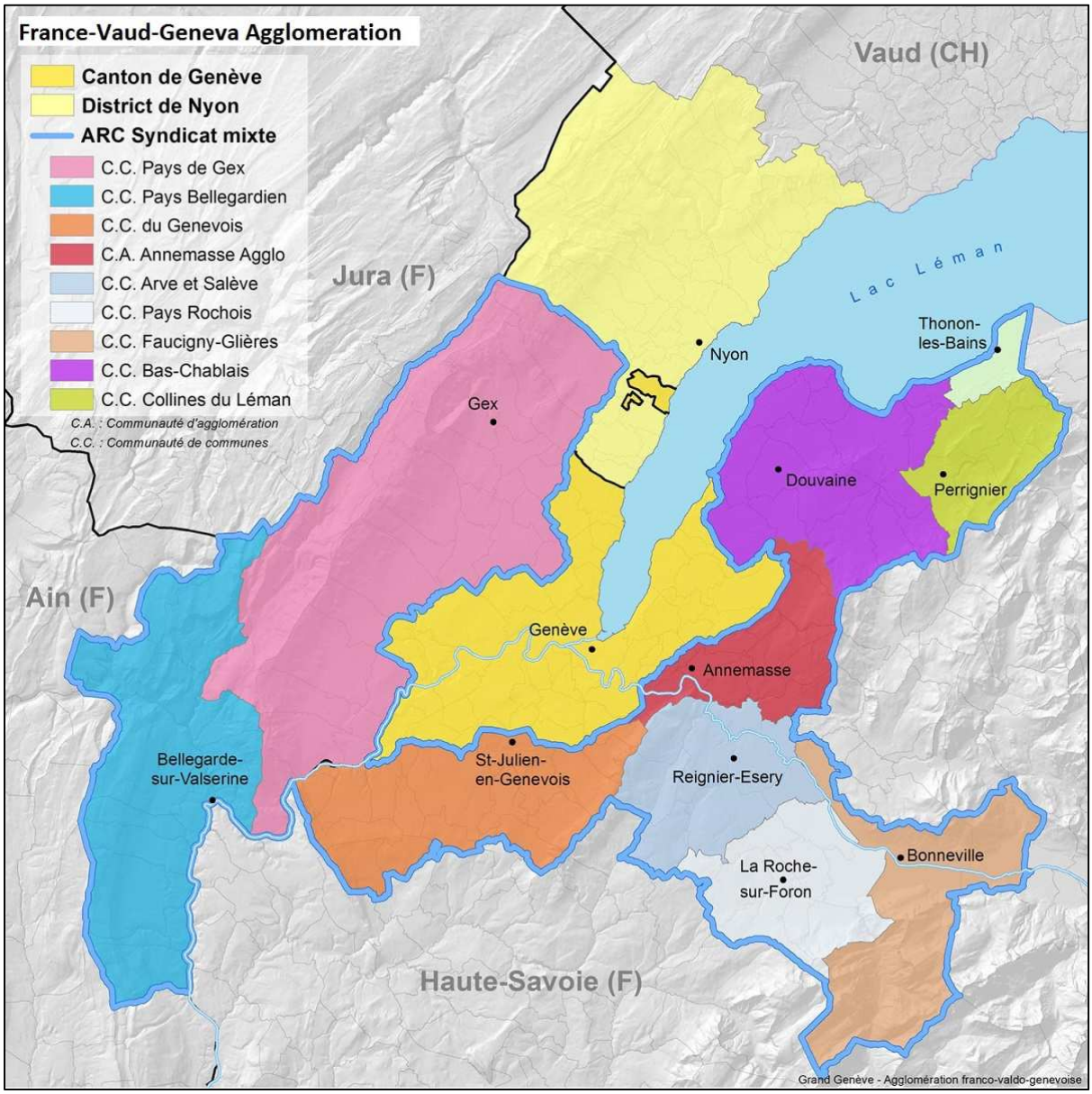
Note: survey written in French launched between December 22nd, 2014 and February 28th, 2015)

Appendix V. The city of Geneva

Appendix Va.
Map of the city of Geneva

Source: Etat de Genève, Retrieved from http://etat.geneve.ch/geodata/SIAMEN/ImagesDSOPB/.

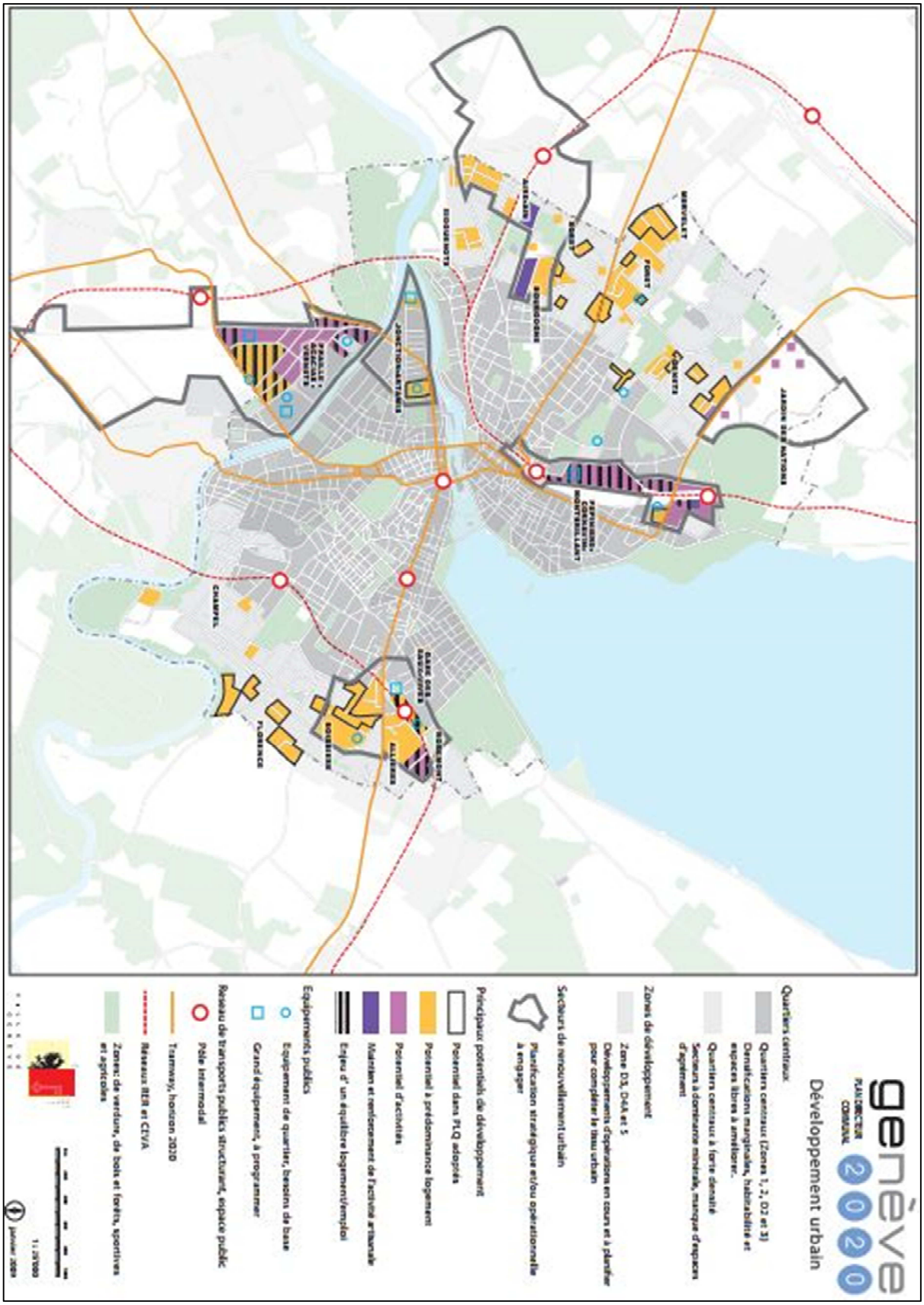
Appendix Vb.
Map of the France-Vaud-Geneva Agglomeration



Source: Grand Genève, Agglomération Franco-Valdo-Genevoise. Website: http://www.grand-geneve.org/grand-geneve/le-territoire/les-212-communes.

Appendix Vc.

Map of urban development projects in Geneva by 2020



Source: City Master Plan, 2009, 54-55.

Appendix VI. Statistical data from the survey

Appendix VIa. Recoding of raw data

VIa.1 Recoding of the variable “Age”

```
RECODE Age (1,2=1) (3=2) (4,5=3) (6,7=4) INTO Agegp.
VALUE LABELS Agegp
1 "under 29 years old"
2 "30-39 years old"
3 "40-59 years old"
4 "60 years old and older".
FORMATS Agegp (F1).
FREQUENCIES Agegp.
```

VIa.2 Recoding of the variable “Education”

```
RECODE Educat (11,12,13,14=1) (10=2) (5,6,7,8,9=3) (1,2,3,4=4) INTO Educatgp.
VALUE LABELS Educatgp
1 "ISCED 0-1"
2 "ISCED 2"
3 "ISCED 3-4"
4 "ISCED 5-6".
FORMATS Educatgp (F1).
FREQUENCIES Educatgp.
```

VIa.3 Recoding of the variable “Income”

```
RECODE Income (1,2,3=1) (4,5,6,7=2) (8,9=3) (10,11=4), (12=5) (13=6) (14=7) (15=8) (16=9) (17,18,19,20,21=10) INTO Incomegp.
VALUE LABELS Incomegp
1 "0-25,000"
2 "25,001-50,000"
3 "50,001-70,000"
4 "70,001-90,000"
5 "90,001-100,000"
6 "100,001-125,000"
7 "125,001-150,000"
8 "150,001-175,000"
9 "175,001-200,000"
10 "200,000 and more".
FORMATS Incomegp (F1).
FREQUENCIES Incomegp.
```

VIa.4 Recoding of the variable “Household size”

```
1  RECODE HouSize (1=1) (2=2) (3,4=3) (5=4) (6-7=5)  INTO HouSizegp.
2  VALUE LABELS HouSizegp
3  1 "single"
4  2 "two persons"
5  3 "three-four persons"
6  4 "five persons"
7  5 "six persons and more".
8  FORMATS HouSizegp (F1).
9  FREQUENCIES HouSizegp.
```

VIa.5 Recoding of the variable “Current profession”

```
1  RECODE Job_tot (1,2=1) (3,4,5=2) (6,7,8,9,10=3) (11,14=4) (12=5) (13=6) (15=7) INTO Jobgp.
2  VALUE LABELS Jobgp
3  1 "SPC+"
4  2 "employee"
5  3 "worker"
6  4 "unemployed/retired"
7  5 "housewife/househusband"
8  6 "student"
9  7 "other".
10 FORMATS Jobgp (F1).
11 FREQUENCIES Jobgp.
```

Appendix VIb: Statistical analysis of the survey

VIb.1 Age

Appendix VIb.1
Age of the respondent

		Frequency	Percent
Valid	under 29 years old	6	37.5
	30-39 years old	4	25.0
	40-59 years old	4	25.0
	60 years old and older	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.2 Profession

Appendix VIb.2
Current profession

		Frequency	Percent
Valid	SPC+	6	37.5
	employee	4	25
	student	3	18.75
	other	2	12.5
	unemployed/retired	1	6.25
Total		16	100.0

N=16, Missing=1
NB: Total frequency of 16 as respondents could choose more than one option.

VIb.3 Education

Appendix VIb.3
Highest level of education completed

		Frequency	Percent
Valid	up to primary education	1	6.3
	lower secondary education	1	6.3
	upper and post- secondary education	1	6.3
	tertiary education	12	75.0
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.4 Income

Appendix VIb.4
Annual gross income in the household

		Frequency	Percent
Valid	0-25,000	1	6.3
	25,001-50,000	4	25.0
	50,001-70,000	1	6.3
	70,001-90,000	1	6.3
	90,001-100,000	2	12.5
	100,001-125,000	2	12.5
	125,001-150,000	1	6.3
	150,001-175,000	1	6.3
	175,001-200,000	1	6.3
	200,000 and more	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.5 Household's composition

Appendix VIb.5
Household's composition

		Frequency	Percent
Valid	person living alone	5	31.3
	flat-shares	4	25.0
	unmarried couple with children	3	18.8
	childless unmarried couple	2	12.5
	married couple with children	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.6 Household's size

Appendix VIb.6
Household's size

		Frequency	Percent
Valid	single	4	25.0
	two persons	4	25.0
	Three-four persons	4	25.0
	five persons	1	6.3
	six persons and more	2	12.5
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.7-8 Benefits and limitations of urban living

Appendix VIb.7

Benefits of urban living regarding convenience, lifestyle and stylishness factors in the city of Geneva

		Mean	N
CONVENIENCE	proximity to facilities/services	4.38	16
	proximity to work/educational institution	4.38	16
	fewer time spent on commuting	4.38	16
	better access to PT	4.19	16
	proximity to friends/relatives	4.00	16
	greater opportunities for walking/biking	3.31	16
	greater employment opportunities	3.13	16
LIFESTYLE	proximity to cafés	4.25	16
	proximity to restaurants	4.06	16
	diversified nightlife options	4.00	16
	diversified cultural activities	4.00	16
STYLISHNESS	higher quality of the built environment	2.56	16
	aesthetic and modern architecture	2.56	16
	higher quality of housing accommodation	2.25	16

N=16, Missing=0.

Appendix VIb.8
Limitations of urban living in the city of Geneva

	Mean	N
less affordable housing	3.64	14
traffic congestion	3.64	14
fewer parking lot	3.64	14
noise pollution	3.57	14
air pollution	3.36	14
reduced domestic living space	3.14	14
poor quality of the built environment	3.00	14
poor quality housing accommodation	2.86	14
lack of open public space	2.79	14
feeling of crowdedness	2.79	14
lack of community spirit	2.79	14
lack of tranquillity	2.71	14
unsuitable place to bring up children	2.57	14
poor access to green space	2.50	14
increased crime	1.86	14

N=16, Missing=2

VIb.9-10 Residential preferences

Appendix VIb.9
Ideal residential place to live

		Frequency	Percent
Valid	neighbourhood in the city-centre of a city (>10,000 inh.)	12	75.0
	neighbourhood in the periurban residential area of a city (>10,000 inh.)	2	12.5
	neighbourhood in a town (<10,000 inh.)	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

Appendix VIb.10
Ideal type of housing accommodation

		Frequency	Percent
Valid	accommodation in a community-owned building	8	50.0
	accommodation in a private building	5	31.3
	individual house	1	6.3
	semi-detached house	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.11-12 Satisfaction with current housing situation

Appendix VIb.11
Satisfaction with the quality of my housing accommodation

		Frequency	Percent
Valid	very satisfied	6	37.5
	satisfied	8	50.0
	neither satisfied nor unsatisfied	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

Appendix VIb.12
Satisfaction with the quality of the built environment of my neighbourhood

		Frequency	Percent
Valid	very satisfied	3	18.8
	satisfied	9	56.3
	neither satisfied nor unsatisfied	2	12.5
	unsatisfied	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.13 Previous residential location

Appendix VIb.13
Previous residential location

		Frequency	Percent
Valid	Genève Ville	4	25.0
	Europe	4	25.0
	Carouge	2	12.5
	Bernex	1	6.3
	Chêne-Bougeries	1	6.3
	Cologny	1	6.3
	Lancy	1	6.3
	Vernier	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

VIb.14-15 Residential behaviour

Appendix VIb.14
Reasons to move in

		Frequency	Percent
Valid	get more space	3	13.6
	closer to the city-centre	3	13.6
	leave the parents' place	3	13.6
	other	3	13.6
	get more space for a new child	2	9.1
	change of job/work place	2	9.1
	peaceful area	1	4.5
	move abroad	1	4.5
	safer area	1	4.5
	new relationship	1	4.5
	divorce/separation	1	4.5
	start/end a colocation	1	4.5
Total		22	100.0

N=16, Missing=1
NB: Total frequency of 22, as respondents could choose more than one option.

Appendix VIb.15
Reasons to move out

		Frequency	Percent
Valid	move abroad	6	19.4
	get more space	5	16.1
	less expensive area	4	12.9
	change of job/work place	3	9.7
	get more space for a new child	2	6.5
	space with a garden	2	6.5
	more suitable area to start a family	2	6.5
	new relationship	2	6.5
	peaceful area	1	3.2
	nicer neighbourhood	1	3.2
	divorce/separation	1	3.2
	start/end a colocation	1	3.2
	death of a partner	1	3.2
Total		31	100.0

N=16, Missing=1
NB: Total frequency of 31, as respondents could choose more than one option.

VIb.16-17 Future residential plans

Appendix VIb.16
Probability to move residence in the coming five years

		Frequency	Percent
Valid	very likely	7	43.8
	likely	3	18.8
	neither likely nor unlikely	2	12.5
	unlikely	1	6.3
	very unlikely	1	6.3
	don't know	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

Appendix VIb.17
Probability to move residence in the coming ten years

		Frequency	Percent
Valid	very likely	9	56.3
	likely	3	18.8
	neither likely nor unlikely	1	6.3
	unlikely	1	6.3
	very unlikely	1	6.3
	Total	15	93.8
Missing	System	1	6.3
Total		16	100.0

Appendix VII. Thematic analysis of interviews with households

Appendix VIIa.
The compact city's desirability dimension from the perspective of new urban dwellers.

THEME	Categories	Sub-categories	Definition/Explanation
DESIRABLE FEATURES	Centrality & Proximity	Proximity to relatives	Being closer to the family
		Public transportation infrastructures	Very dense and efficient public transportation network compared to the periphery
		Proximity to services/facilities	Everything is close-by and can be accessed by foot or bike, lower car dependency
	Quality of life	Green spaces	There are many close urban parks and green spaces
		Vibrant social life	The neighbourhood offers a vibrant and liveable social environment
UNDESIRABLE FEATURES	Traffic externalities	Traffic congestion	The daily commuting traffic makes the usage of the car very difficult
		Noise pollution	Noise coming from the car traffic and from the train (depending on the localisation)
	Lack of public space	Lack of pedestrian zones	The car is omnipresent. People should re-appropriate public space
		Lack of playground for the kids	There are not enough places for kids to play close to the accommodations

Appendix VIIb.
Residential mobility patterns as reported in the interviews

THEME	Categories	Sub-categories	Definition/Explanation
REASONS TO MOVE IN	Life-cycle stages	More space for the children	The need to move to a bigger accommodation for the children
		Start a new relationship	To move in together
	Imposed	Cheaper accommodation	The need to move to a cheaper accommodation after an increased rent
		Necessity	The need to move to a new accommodation at the end of a sublease contract
REASONS TO MOVE OUT	Life-cycle stages	To start a family	Find the best compromise between tranquillity, and more public and green spaces (e.g., to start a family) while not being dependent from the car.
	Quality of life	More peaceful area	
		More green spaces and public spaces	