

Revisiting the impact of urban shrinkage on residential segregation in European cities

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Abstract

A nascent body of scholarship suggests that the depopulation of urban areas may catalyse residential segregation between different population groups and spatial concentrations of vulnerable groups. Based on a systematic literature review, this article summarises peer-reviewed articles and case studies on the role of urban shrinkage in shaping residential segregation in the context of European cities, and highlights methodological shortcomings and empirical knowledge gaps, thereby contributing to our understanding of the mechanisms through which population dynamics influence urban inequalities and their relevance for planning and policy. In sum, studies verifying the frequently assumed positive relationship between urban population loss and widening segregation remain few and far between. Moreover, mismatches between spatial and temporal scales, in addition to the indicators and metrics used in past studies, have hampered not only comparisons of how these dynamics play out in different contexts, but also the integration of spatial justice perspectives into urban planning.

Keywords: demographic change; depopulation; residential segregation; socio-spatial inequalities; spatial justice; urban shrinkage

1 Introduction

Just as the dynamics that underlie the rise and fall of urban settlements have shifted throughout history, the mechanisms that determine the socio-spatial organisation of urban space have changed over time. While the history of socio-spatial divides in cities appears to be as old as cities themselves, it was not until the late 19th century that the term ‘segregation’ became widely used as a catch-all concept to

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describe uneven distributions of different social groups across a city. However, to the extent that the impetus for socio-spatial divisions within urban civilisations over space and time can be seen as generalisable, it is only in the remarkable variability of experiences. Over the millennia, the forces of segregation have included, among many others, the writ of monarchs, colonisation, the preferences of landowning elites, land-use regulations, zoning ordinances, racism and redlining, restrictive immigration policies, urban renewal projects and gated housing developments, as well as other significant constructions, such as city walls, checkpoints, railways, highways and even human-made water bodies (Nightingale, 2012).

Since the turn of the millennium, numerous large, growing cities – like Berlin, London and Paris, to name a few examples in Europe – have become synonymous with housing affordability crises and worsening socio-spatial inequalities as an ongoing influx of affluent households and a lack of affordable housing push out existing residents and preclude disadvantaged newcomers from entering the housing market. These developments have intensified debates surrounding housing policy and potential responses, including rent control and land-use reforms (Seymour et al., 2020). Meanwhile, various cities affected by urban depopulation – from Leipzig to Liverpool to Łódź – have been identified as hotspots of relatively accessible and low-cost housing at one time or another, based on the theory that as a city's population declines, the demand for housing also falls. However, while it is true that property values and rents occasionally stagnate or even decrease during or in the wake of urban population losses, the reality is that due to fixed costs, asking prices for market-active housing and rental properties rarely fall below the threshold needed to qualify as affordable housing. Accordingly, policymakers in shrinking cities are often preoccupied with strategies focused on balancing the local housing market through tactics such as demolition or renovation (Martinez-Fernandez et al., 2016). Additionally, the selective out-migration and population ageing typical of shrinking cities tend to result in an increase in the share of socio-economically vulnerable households, for whom even low-cost housing can remain out of reach (Großmann et al., 2015). Thus, while shrinking cities may have an above-average share of below-market rate housing, the overall share of rent-burdened households in such cities may nevertheless grow due to declining incomes.

Following the understanding that context-sensitive knowledge is key to the development of evidence-based policies and the shift towards a more resilient and sustainable urban future, a small but growing body of literature has sought to investigate the nexus between processes of urban shrinkage and residential segregation of affluence and poverty. The bulk of this research has taken the form of case studies set in the context of European cities, especially larger cities characterised by unprecedented rates of depopulation and growing socio-spatial disparities. This may be because even though European cities have traditionally been characterised by less pronounced socio-economic residential segregation compared to, for instance, American or Japanese cities, there are many recent signs that socio-spatial disparities are increasing across Europe (Musterd et al., 2017), particularly among the so-called post-socialist countries of Central and Eastern Europe (CEE), a region that has also

become the global epicentre of urban shrinkage (Wolff and Wiechmann, 2018). These developments have prompted calls for empirical research on urban depopulation in this region (Haase et al., 2016).

This article presents a review of this literature, and considers the dynamics and patterns of socio-spatial residential segregation, as well as the prospects for socially-equitable planning under conditions of urban population shrinkage in the context of European cities. In addition to giving an overview of the key concepts, theories, authors and findings, the strengths and weaknesses of this literature are summarised. Next, key methodological, conceptual and epistemological gaps are identified. Lastly, several avenues for future research that promise to provide new insights into the nexus between urban shrinkage and residential segregation are suggested. The aim is to synthesise the existing research, uncover shortcomings and gaps in the field, and propose novel lines of inquiry for further studies.

2 Conceptual background

Before diving into previous research on the link between urban shrinkage and residential segregation, it is important to first consider how these phenomena have been independently defined as objects of analysis in the broader literature.

2.1 Defining urban shrinkage

Beyond advancing a shared understanding of the concept, reviewing the defining features of urban shrinkage is valuable insofar as it serves to demonstrate what differentiates so-called ‘shrinking cities’ from other cities. Notwithstanding some key commonalities among existing efforts to define the phenomenon, there are several ways of understanding what constitutes urban shrinkage. While population decline is widely regarded as the central element, symptoms of shrinkage are as numerous as they are diverse. More precisely, urban shrinkage refers to a range of interconnected quantitative and qualitative changes occurring within a delimited urban area and over a specified period of time. Nonetheless, depopulation is widely regarded as the key quantitative indicator of shrinkage. Strictly speaking, a population shrinks either when the number of deaths exceeds births and this deficit cannot be offset by immigration, or, conversely, when net migration losses cannot be offset by natural population growth. However, the degree of depopulation that qualifies as urban shrinkage can vary. Under broad definitions, a shrinking city is any city where the peak population was recorded prior to the latest available figure, while under more stringent definitions, only those cities that meet a minimum threshold of population decline over a limited time period are classified as shrinking (Haase et al., 2014; Hartt, 2019; Wolff and Wiechmann, 2018).

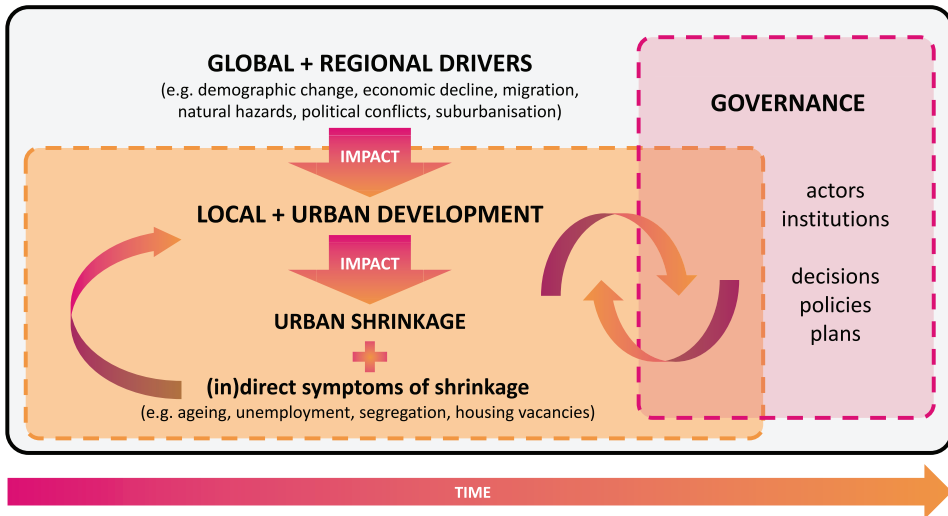
Declining fertility is a frequent cause of excess natural population losses and quantitative decreases in population. Concurrent with increasing life expectancy,

shrinking cities tend to exhibit faster rates of population ageing and higher concentrations of elderly residents than growing cities. In addition, shrinking cities typically experience increased rates of selective out-migration among higher-income and upwardly mobile households alongside increasing concentrations of socio-economically disadvantaged population groups (Galster, 2019; Martinez-Fernandez et al., 2016). The loss of jobs, particularly in the industrial or manufacturing sectors, is another common issue in shrinking cities (Wiechmann, 2008). Consequently, the average household income in these cities tends to decline over time (Hartt, 2019). Furthermore, especially in the context of western Europe, urban shrinkage often results in increases in vacant housing, industrial brownfields and otherwise un(der)utilised spaces. These demographic, economic and spatial changes can be caused or catalysed by critical events such as the introduction of disruptive political or economic reforms, environmental catastrophes, health crises or wars; but also by more gradual shifts in demographic dynamics, such as falling birth rates. Thus, natural population development can be both a cause and an effect of urban shrinkage (Martinez-Fernandez et al., 2016).

Beyond regional and global drivers, local governance arrangements as well as associated policy and planning strategies may influence the dynamics of urban shrinkage. However, in a neoliberal political climate that prioritises economic growth over social or environmental progress, shrinkage, along with its inherent fiscal pitfalls, may not be easily accepted by local decision-makers, let alone acknowledged (Bernt et al., 2014; Haase et al., 2014; Hospers, 2014). Shrinking cities that focus their efforts on bolstering economic development by means of conventional growth-oriented strategies, such as encouraging external investments or enacting tax breaks for the private sector, could ultimately exacerbate out-migration and socio-spatial inequalities, and thereby compromise their broader goals, like promoting social cohesion and life satisfaction (Fol, 2012; Maes et al., 2012). Alternatively, the conditions of shrinkage may present unique opportunities for cities to break free from contemporary trends of austerity urbanism and privatisation that tend to concentrate investments in prime areas at the expense of others. While emphasising the risks associated with top-down, centralised planning and triage measures for shrinking cities, many authors have argued that community self-determination and bottom-up planning are key to moving towards more holistic, sustainable and socially-equitable planning cultures (Berglund, 2020; Hollander and Németh, 2011; Pallagst et al., 2021).

Recognising the need to conceptualise urban shrinkage and to integrate it into broader theoretical debates in the fields of human geography, urban studies, urban and regional planning, and the social sciences at large, Haase et al. (2014) developed a heuristic model of urban shrinkage that incorporates the variety and interplay of the context-dependent mechanisms that underlie the phenomenon (Figure 1). While the model does not explain every case of urban shrinkage, it establishes a framework for facilitating more conceptually rigorous and context-sensitive empirical research on shrinkage, including on its causes, its consequences and the responses as well as the feedback loops and interrelations between these mechanisms.

Figure 1:
Heuristic model of urban shrinkage (adapted from Haase et al., 2014)



By developing a conceptualisation of shrinkage independent of local or national characteristics, while also highlighting the reality of a diverse world of shrinkage, the heuristic can be used to conduct further (comparative) studies of shrinkage across various scales and geographies, thereby decoupling the phenomenon from its earlier, more straightforward definition as an invariant process unshaped by (supra)local contexts. The heuristic also illustrates how the interrelated processes of shrinkage may be sufficient to trigger a vicious cycle in which depopulation leads to both urban decline – in the form of increasing vacancies, loss of amenities and loss of attractiveness – and residential segregation, which may, in turn, fuel further depopulation.

Where the heuristic falls short is in illustrating that urban shrinkage does not necessarily involve the entire area or population of a city, but may instead affect certain areas and groups in particular. Due to persistent disinvestment and urban decline, parts of a city that continuously depopulate year after year, or even decade after decade, are likely to be worse off than areas that are only briefly affected by depopulation. Out-migration driven by deindustrialisation and other forms of economic change, for instance, mainly occurs among young adults and other relatively mobile segments of the population, including recent graduates and new families. By contrast, population losses in cities that shrink due to political turmoil or violent conflicts tend to be driven by the out-migration of young men. In cities where shrinkage is triggered by environmental catastrophes or health crises, it is the most socio-economically vulnerable population groups who are most likely to experience disproportionate declines.

2.2 Defining residential segregation

Residential segregation refers to the differential distribution of social groups across (intra-urban) space. The literature has identified three quasi-universal types of residential segregation in contemporary cities:

- demographic segregation: spatial concentrations of similar age groups or household types;
- ethnic segregation: spatial concentrations of ethnic or racial (minority) groups; and
- socio-economic segregation: spatial concentrations of certain educational, occupational or income groups.

Broadly speaking, residential segregation results from at least two preconditions: heterogeneous population structures and differentiated housing market segments (Massey and Denton, 1988). Kovács (2020) described three additional factors that contribute significantly to residential segregation in cities: (1) income and wealth inequality, (2) the housing market and (3) ethno-religious differences. The influence of income inequality depends on the residents' purchasing power, which basically determines who gets to reside in certain neighbourhoods. The tendency of the wealthiest members of society to spatially distance themselves from the lower classes by seeking out 'higher-quality' (read: larger, detached) housing in 'nicer' environments is evident in capitalist societies around the world. Poorly functioning housing markets and imbalances in the housing stock can also shape segregation. Cities that permit or encourage newly-built homes in suburban areas are effectively opening a window of opportunity for the better-off strata to self-segregate. Ethnic or religious differences may also have an influence on segregation patterns insofar as there is a general tendency among people with similar backgrounds to live near one another (Tammaru et al., 2020). Clark (1991) noted that the logic behind the formation of tightly-knit ethno-religious communities can be pragmatic, as wider social networks have been shown to provide individuals with a stronger sense of safety, as well as improved access to shared services and facilities. Lastly, the socio-cultural context of cities – or, more specifically, how the most mobile population groups seek to separate themselves from others – plays a decisive role in shaping past and contemporary socio-spatial differences. While many authors have observed that affluent people tend to congregate in the most attractive neighbourhoods in cities around the world, the dynamics and levels of segregation can differ greatly across various socio-cultural contexts (Kovács, 2020).

It therefore appears that residential segregation is a complex process, the dynamics and intensity of which hinge on a myriad of factors, ranging from geographical and institutional to socio-economic and spatial characteristics. In addition to migration flows, the attitudes, behaviours, culture and economic and political institutions of urban settlements seem to affect patterns of residential segregation. While such factors may adequately explain differing intensities of segregation among cities and countries, to understand the dynamics and patterns of intra-urban residential

segregation – such as at the level of districts, neighbourhoods, blocks or even individual multi-household buildings – a more nuanced account of the role of context-specific causal mechanisms is needed. Accordingly, a context-sensitive perspective that thoroughly reflects on the history and the geography of cities, as well as on the relationships between formal and informal actors, is essential not only for understanding residential segregation, but also for developing context-specific measures to combat socio-spatial divides.

When examining shrinking cities, due consideration should be given to the effects of intermittent or continuous net migration losses and reduced housing demand. Moreover, it is important to recognise that conditions of shrinkage usually contribute to underinvestment in building and infrastructure maintenance, the proliferation of urban decay and relatively high levels of housing vacancy. Consequently, in shrinking cities, policies that aim to manage a surplus of low-cost housing are often prioritised over policies that seek to improve access to affordable housing in more sought-after neighbourhoods. As such conditions tend to cause property values and rents to stagnate or even fall, average incomes may decline as well. This is because more affluent and mobile households tend to comprise the bulk of out-migrants from shrinking cities, leaving behind larger shares of lower-income and minority households. Given that such population groups are generally less mobile, these dynamics can lead to growing concentrations of socio-economically vulnerable and otherwise marginalised households in the least attractive corners of a city (Großmann et al., 2013, 2015).

3 Methodology

To provide an in-depth overview of existing research on the role of urban shrinkage in residential segregation in the context of European cities, this study takes the form of a systematic literature review supplemented by narrative methods. In doing so, a contrast to non-European contexts is offered that may stimulate future comparative research, as well as theory-building. Systematic reviews follow a transparent and replicable process that aims to minimise bias by respecting clearly defined procedures and completing a reasonably comprehensive if not exhaustive search of the literature (Tranfield et al., 2003). In order to go beyond a quantitative description of the literature, a more nuanced narrative analysis of the most frequently cited works is performed. In this step, the resulting articles are broadly grouped into two different research foci: studies that investigate how shrinkage influences the dynamics and the processes of segregation in cities more generally, and studies that examine how shrinkage relates to and shapes intra-urban patterns of segregation. In addition to offering readers a comprehensive summary of the literature, this review seeks to provide a critical assessment of the strengths and weaknesses of previously used research designs and methods, which may, in turn, serve as a basis for the development of sharper and more insightful research questions or hypotheses (Yin, 2018).

The literature search was limited to peer-reviewed articles in English-language scientific journals that have an explicit focus on urban shrinkage as a factor contributing to residential segregation. Given that several essentially synonymous terms have been used to refer to the same concepts, different combinations of the following terms were searched for using Google Scholar, Scopus and Web of Science to obtain a sample of relevant articles: ‘depopulation’, ‘population decline’, ‘urban decline’, ‘urban shrinkage’, ‘(residential) segregation’, ‘differentiation’, ‘fragmentation’ and ‘polarisation’. As this review focuses on the results of leading and ground-breaking research, the search was limited to works published since 1990. Through the application of these methods in January 2022, nearly 100 articles were found across all search services. All of these articles were checked for any duplicated or misleading results, including texts with no relation to the topics, and these articles were manually removed. Subsequently, the abstracts were screened in order to determine which of these articles empirically investigated one or more cases of residential segregation in the context of urban depopulation in Europe. This procedure resulted in a final selection of 10 articles, which are explored in greater detail below.

4 Review of previous studies

Although previous research has shown that urban shrinkage is not inextricably linked to economic decline or to quality of life (Hartt, 2019; Hollander, 2011), the broader shrinking cities literature also regularly asserts that conditions of urban shrinkage may trigger or compound socio-spatial inequalities, including residential segregation. While empirical evidence for such claims remains scarce, it is noteworthy that two recurring observations made in many shrinking cities – namely, socially-selective (out)migration and the rise of un(der)utilised spaces – directly concern the two basic preconditions of residential segregation: that is, the socio-demographic fabric and the physical make-up of cities (Großmann et al., 2013). First, since urban shrinkage is typically of a selective nature, it contributes to changes in the socio-demographic composition of the population. This is in part because depopulation tends to magnify population ageing trends. While population ageing can occur in growing cities as well, shrinking cities appear to face an increased risk of population ageing, given that out-migration from shrinking cities is typically socially selective, with the youngest and most affluent population groups making up the bulk of out-migrants. Under conditions of economic decline or change, it is often a city’s most educated and experienced residents, as well as those in search of better employment or educational opportunities, who tend to leave for more prosperous areas. As a consequence, there is an added risk of socio-economically vulnerable groups becoming overrepresented in shrinking cities. Second, urban shrinkage alters physical spaces and structures by creating vacancies, abandoned buildings or brownfields. If such perforated spaces proliferate in certain areas, they may contribute to accelerated urban decay, declining property values, stigmatisation and, ultimately, further out-migration. While all

shrinking cities have their own specific characteristics, in many cases intra-urban patterns of depopulation and concentrations of lower-income households appear to go hand-in-hand. This dynamic is caused by both the generally lower levels of mobility among worse-off population groups in shrinking cities and the tendency for the least desirable areas of cities to serve as niches for the poor (Fol, 2012; Glock and Häussermann, 2004; Großmann et al., 2013, 2015; Petsimeris, 1998).

Bernt (2016) argued that residential segregation should not be regarded as a phenomenon inherent to shrinking cities, but that urban shrinkage should instead be understood as one of a number of contextual factors that influence the dynamics, levels and patterns of socio-spatial change and inequality. In other words, when examining the underlying relationships between conditions of urban shrinkage and residential segregation, factors such as depopulation or housing vacancies should be observed or analysed not in a vacuum, but alongside existing explanatory variables. Großmann et al. (2013) advised researchers to draw from secondary analysis of local statistical data (to describe 'large' processes and patterns), as well as from micro-scale quantitative research (to uncover social fragmentation patterns) and qualitative research (to understand the logics of residential mobility in the housing markets of shrinking cities). As well as acknowledging the importance of local housing markets and housing supply, the authors underscored the need for context-sensitive research by suggesting that researchers consider the role of local infrastructures and amenities, including how access to public transport, green space and essential businesses shape residential mobility and segregation patterns. Moreover, at the macro level, the authors noted that national regulatory and welfare systems merit attention.

Towards the realisation of these aims, at least two strands of empirically-driven case study research examining residential segregation in cities characterised by urban shrinkage have emerged since the turn of the millennium: one focusing on how conditions of and responses to shrinkage influence the general dynamics of segregation at the level of cities or regions, and one with a greater emphasis on how shrinkage shapes intra-urban levels and patterns of segregation (Table 1). While the two strands overlap somewhat, and both generally consider temporal aspects of the causal link between shrinkage and segregation, the latter more explicitly weighs spatial changes and inequalities within cities.

4.1 Dynamics of residential segregation in shrinking cities

The former strand – that is, those studies that aim to unearth and describe the causal mechanisms behind changing socio-spatial distributions and divisions across one or more selected lower level administrative units, such as municipalities or communes characterised by urban population decline – centres on the observation that cities facing (systemic) urban shrinkage appear to be at an additional disadvantage in fostering social integration and cohesion compared to growing cities (Cortese et al., 2014). This is because some of the key drivers of shrinkage, including deindustrialisation, neoliberalisation and growing exposure to forces of

Table 1:
Chronological list of case studies on the role of urban shrinkage in residential segregation in European cities, 1998–2020

Year	Author(s)	Title	Publication	Case(s)	Temporal scope	Type(s) of segregation	Methods	Empirical focus
1998	Pesimeris, P.	Urban decline and the new social and ethnic divisions in the core cities of the Italian industrial triangle	<i>Urban Studies</i>	Milan, Turin, Genoa (Italy)	1981–1991	Ethnic; Socio-economic	Multiple case study; Quantitative-learning	Patterns of segregation
2004	Glock, B., Häussermann, H.	New trends in urban development and public policy in eastern Germany: Dealing with the vacant housing problem at the local level	<i>International Journal of Urban and Regional Research</i>	Leipzig (Germany)	1989–2000	Socio-economic	Single case study (post-hoc); Qualitative-learning	Dynamics of segregation
2012	Fol, S.	Urban shrinkage and socio-spatial disparities: Are the remedies worse than the disease?	<i>Built Environment</i>	Roubaix, Saint-Denis, Saint-Étienne, Vierzion (France)	1960s–2000s	Socio-economic	Multiple case study (post-hoc); Quantitative-learning	Dynamics of segregation
2012	Maes, M., Loopmans, M., Kesteloot, C.	Urban shrinkage and everyday life in post-socialist cities: Living with diversity in Hrušov, Ostrava, Czech Republic	<i>Built Environment</i>	Ostrava (Czechia)	1990s–2000s	Ethnic; Socio-economic	Single case study; Qualitative-learning	Dynamics of segregation
2012	Haase, A., Grossmann, K., Steinführer, A.	Transitory urbanites: New actors of residential change in Polish and Czech inner cities	<i>Cities</i>	Łódź, Gdańsk (Poland); Brno, Ostrava (Czechia)	1980s–2000s	Demographic; Socio-economic	Multiple case study; Qualitative-learning	Dynamics of segregation
2013	Grossmann, K., Haase, A., Arndt, T., Cortese, C., Rumpel, P., Rink, D., Slach, O., Tichá, I., Violante, A.	How urban shrinkage impacts on patterns of socio-spatial segregation: The cases of Leipzig, Ostrava, and Genoa	<i>Urban Ills: Twenty First Century Complexities of Urban Living in Global Contexts</i>	Genoa (Italy); Leipzig (Germany); Ostrava (Czechia)	1990s–2000s	Demographic; Ethnic; Socio-economic	Multiple case study (post-hoc); Quantitative-learning	Patterns (and dynamics) of segregation

Continued

Table 1:
Continued

Year	Author(s)	Title	Publication	Case(s)	Temporal scope	Type(s) of segregation	Methods	Empirical focus
2014	Cortese, C., Haase, A., Grossmann, K., Tichá, I.	Governing social cohesion in shrinking cities: The cases of Ostrava, Genoa and Leipzig	<i>European Planning Studies</i>	Genoa (Italy); Leipzig (Germany); Ostrava (Czechia)	1990s–2000s	Demographic; Ethnic; Socio-economic	Multiple case study (post-hoc); Quantitative-learning	Dynamics of segregation
2015	Großmann, K., Arndt, T., Haase, A., Rink, D., Steinführer, A.	The influence of housing oversupply on residential segregation: Exploring the post-socialist city of Leipzig	<i>Urban Geography</i>	Leipzig (Germany)	1992–2011	Demographic; Ethnic; Socio-economic	Single case study; Quantitative-learning	Patterns of segregation
2019	Slach, O., Bosák, V., Krtička, L., Nováček, A., Rumpel, P.	Urban shrinkage and sustainability: Assessing the nexus between population density, urban structures and urban sustainability	<i>Sustainability</i>	Ostrava (Czechia)	1991–2011	Demographic; Socio-economic	Single case study; Quantitative-learning	Patterns of segregation
2020	Hoekstra, M.S., Hochstenbach, C., Bontje, M.A., Musterd, S.	Shrinkage and housing inequality: Policy responses to population decline and class change	<i>Journal of Urban Affairs</i>	Parkstad Limburg (Netherlands)	2004–2015	Socio-economic	Single case study; Quantitative-learning	Patterns of segregation

globalisation, are often accompanied by increasing levels of unemployment, selective out-migration, accelerated ageing, housing vacancies and the erosion of public infrastructure and urban amenities. At the same time, shrinking cities tend to struggle with a general lack of capacity and resources to respond to such pressures, let alone to worsening socio-spatial inequalities. In sum, this strand posits that urban shrinkage, particularly of the long-term variety, effectively alters the socio-demographic make-up and spatial fabric of cities, and thereby threatens to act as a catalyst of residential segregation (Großmann et al., 2013).

The influential work of Glock and Häussermann (2004) reviewed the social consequences of shrinkage and, referring to prior empirical research on the case of Leipzig, described how neighbourhoods affected by depopulation face an increased risk of becoming trapped in a vicious cycle of physical and social downgrading. The authors explained that despite the apparent advantages of shrinkage for existing tenants, such as stagnating or decreasing rents and increased housing market options, high vacancy rates may have negative consequences for social cohesion over time, as reduced demand for housing and services can fuel a self-perpetuating process of rising costs and decreasing efficiency. In the late 2000s, *Shrink Smart: The Governance of Shrinkage within a European Context*, a research project funded by the European Commission under the Seventh Framework Programme (FP7) of the European Union, further fleshed out the groundwork for several important initial findings regarding shrinkage and socio-spatial inequalities, especially concerning changing distributions of socio-economically vulnerable or otherwise marginalised groups with restricted access to housing, such as low-income households, minorities and the elderly. These findings were synthesised in separate works by Großmann et al. (2013) and Cortese et al. (2014), both of which reviewed several post-hoc hypotheses regarding the impact of urban shrinkage on socio-spatial inequalities in light of the experiences of the cities of Genoa, Leipzig and Ostrava, a group of large, post-socialist cities challenged by deindustrialisation, labour market mismatch, employment migration, declining fertility rates and suburbanisation. Großmann et al. (2013) observed that although the national contexts and the trajectories of shrinkage of these three cities differed, depopulation was an additional explanatory factor in the emergence of urban decay and increased levels of socio-spatial segregation in all of them, largely because depopulation tended to be socially selective, and thus reinforced the marginalisation of neighbourhoods and concentrations of disadvantaged groups. Cortese et al. (2014) additionally analysed and compared policy efforts to promote social cohesion, and found that although policymakers in all three cities had some awareness of the increased risk of worsening socio-spatial inequalities under conditions of shrinkage, the public policies they introduced to promote social cohesion were neither comprehensive nor prioritised. Indeed, the authors observed that socially-oriented policies largely remained in the shadow of other, seemingly more important concerns, including economic revitalisation, housing market stabilisation and urban redesign and renewal. However, the authors also acknowledged that all three cities arguably lacked the capacities to effectively

respond in the first place. Thus, it appears that social cohesion represents a specific challenge for shrinking cities.

In a similar vein, Fol (2012) reviewed past studies on socio-spatial change in several shrinking cities of France, and found that shrinkage, regardless of its cause(s), led to increasing socio-spatial disparities and the social exclusion of vulnerable social groups. In most of these shrinking cities, the cumulative effect of an exodus of better-off households, a depreciated real estate market and an increase in housing vacancies was to attract the most socio-economically vulnerable households to depopulating areas, especially those with increased availability of public housing or older, unrenovated apartments. For example, in medium-sized cities, such as in Roubaix and Saint-Denis, where shrinkage triggered by deindustrialisation had marked socio-spatial repercussions, the persistent out-migration of better-off households in search of an improved living environment resulted in increased concentrations of low-income and non-native groups in dilapidated buildings and large social housing estates in the city centre. Likewise, in smaller cities, such as Vierzon, which had in recent decades increasingly lagged behind its larger peers in terms of population growth, economic opportunities and information flows, low-income households were observed to concentrate in run-down parts of the old centre, as well as in peripherally-located social housing with an abundance of vacant apartments. Ultimately, it was the most vulnerable population groups who were most affected by shrinkage-related processes, such as rising unemployment and deteriorating living standards. Fol (2012) also noted that although municipalities and local actors may be best equipped to ensure socially-equitable outcomes for policy responses to the challenges of shrinkage, tensions between the pressure to respond to the needs of existing residents and the desire to attract new residents or businesses may fuel a worsening socio-spatial divide. Urban development policies promoted under the guise of social mixing may serve as a justification for planning strategies with an implicit aim of gentrifying certain areas of the city and attracting new middle-class residents that ultimately lead to the development of pockets of relative wealth, and thus exacerbate socio-spatial fragmentation. In the case of Saint-Étienne, the local discourse surrounding social mixing served as a justification for the implementation of 'soft gentrification' tactics in the city centre, which included new housing developments, public space redesign projects and a variety of cultural offerings. By drawing better-off residents to the area, these tactics initially worked to curb concentrations of socio-economically vulnerable groups in the city centre. However, the ensuing rise in property values sowed the seeds of new challenges for existing lower-income residents, ranging from rent gouging to involuntary displacement. Meanwhile, in Saint-Denis, increased concentrations of unemployed persons and accompanying social problems were observed in areas of the city that were excluded from a large-scale urban revitalisation project that aimed to both demolish the city's most degraded housing stock and upgrade its most valued buildings. Hence, Fol (2012) suggested that policy interventions aimed at improving the living conditions of marginalised areas and increasing housing choices for low-income households may be more effective at combating increasing socio-spatial disparities such as segregation than social mixing strategies based on

rightsizing or economic development. The author concluded by stating that while increasing socio-spatial disparities seem to be a common outcome of the processes of and the responses to shrinkage, further research distinguishing the spatial scales at which socio-spatial fragmentation occurs is necessary.

Towards that aim, [Maes et al. \(2012\)](#) considered the socio-spatial effects of shrinkage in the depopulating working-class neighbourhood of Hrušov in Ostrava, Czech Republic, arguing that in order to understand the effects of shrinkage on everyday life, it is essential to seriously consider the agency of individuals and households. Based on interviews with existing residents, the authors concluded that while shrinkage undoubtedly had negative effects on everyday life in certain neighbourhoods, these effects were especially severe in declining areas of post-socialist cities like Ostrava, where the transition to capitalism (and the widespread privatisation of housing) was an added obstacle to the development of socially-mixed neighbourhoods, and where instances of ‘planned shrinkage’ markedly altered the ways in which inhabitants lived. In Hrušov, the combined effect of institutional change and shrinkage led to concentrations of socio-economically vulnerable minorities, particularly the Roma. Here, the post-socialist transition led not only to a reduction in affordable housing, but also to the near complete withdrawal of social infrastructure and leisure facilities. The authors concluded that conditions of shrinkage and accompanying resource constraints represent considerable obstacles to socially-equitable urban development and the pursuit of social justice. [Maes et al. \(2012\)](#) observed that social mixing and social cohesion are especially challenging goals under conditions of urban shrinkage, given the financial and structural deficits it generally entails; in other words, that shrinking cities tend to lack the resources and capacities necessary to combat socio-spatial inequalities.

In another key work considering context-specific paths of socio-spatial change, [Haase et al. \(2012\)](#) coined the term ‘transitory urbanites’ to describe a new type of highly-mobile resident in formerly depopulating inner-city neighbourhoods of second-tier cities in Czechia and Poland. Specifically, the authors found that an increasing share of younger households – many of whom emotionally and pragmatically valued inner-city living in their current phase of life, but would consider relocating to peripherally-located neighbourhoods or even suburbia in the short to medium term – relocated to these areas beginning in the second decade of the region’s post-socialist transition. The authors noted that this socio-spatial shift would not have been possible without the highly-fragmented inner-city housing market structures specific to many post-socialist cities that emerged due to urban shrinkage and the dilapidation of older built-up neighbourhoods. Essentially, many young newcomers managed to take advantage of the particular housing market conditions by renting a newly-privatised apartment, be it from the legal tenant, a private housing company or a relative. Although their tenures were often temporary, the behaviours and residential preferences of these transitory urbanites nevertheless paved the way for future influxes newcomers of similar ages and social status to inner cities. Thus, these temporary residents may have contributed to processes of studentification or gentrification ([Haase et al., 2012](#)).

4.2 Patterns of residential segregation in shrinking cities

The latter strand of case study research focused on patterns of residential segregation in shrinking cities includes studies that apply descriptive statistical techniques to measure concentrations of marginalised population groups at the level of districts or neighbourhoods, and thereby help to identify which intra-urban areas are the least and the most exposed to socio-spatial inequalities. While the first of these studies employed more traditional descriptive measurements such as averages, shares, frequency tables or standard deviations, recent studies have used more complex datasets, more advanced statistical techniques, more granular qualitative analyses and more intuitive methods of data visualisation. The ground-breaking work of [Petsimeris \(1998\)](#) used the indices of segregation and dissimilarity as well as location quotients to examine the changing spatial arrangement of social and ethnic population groups in the metropolitan areas of Milan, Turin and Genoa: i.e., three cities that form the so-called 'industrial triangle' of Italy. Four types of residential areas shared by all three cities were distinguished: the historic centre, a peri-central belt, upper-class quarters and the outer city. Using census data on occupational status from 1981 and 1991, which represents a period at the tail end of a wave of widespread deindustrialisation and deurbanisation in Italy, a positive effect was observed between inner-city population decline and increasing levels of residential segregation, above all with regard to concentrations of working-class groups in peripherally-located neighbourhoods near industrial zones, but also to concentrations of professionals and business owners in historic city centres. The author attributed this effect to shifts in the absolute and relative shares of lower and higher socio-economic groups, as well as to generally higher levels of out-migration and intra-urban residential mobility among affluent households in all three cities.

Subsequently, [Großmann et al. \(2013\)](#) observed that conditions of urban shrinkage contributed to the formation of niches of lower-income households in areas of low-cost housing characterised by abandonment, vacancies and decay. The outflow of residents reduced public and private investment, which, in turn, exacerbated these problems. However, the affected social groups and patterns of socio-spatial differentiation differed across the cities in question: in Ostrava, the Roma population were increasingly excluded from the more desirable parts of the city; in Genoa, concentrations of low-income households increased in the shrunken areas of the historic city centre; and in Leipzig, the shares of unemployed persons and ethnic minorities living in older working-class neighbourhoods increased. These findings demonstrated that the impact of shrinkage on residential segregation was context- and path-dependent. Additionally, in Ostrava, small-scale instances of demographic and ethnic residential segregation were observed, with older, long-time residents and younger newcomers increasingly residing on different streets and in different buildings. In Genoa, a sort of vertical residential segregation was observed in the shrinking inner-city quarters that was characterised by higher-than-average concentrations of better-off households living on the upper floors of otherwise vacant buildings. Similar observations were made in the district of

Leipzig-Grünau, a large housing estate where depopulation alongside selective demolition and upgrading measures contributed to growing income disparities between neighbouring apartment buildings. However, these spatial divisions were so fine-grained that they remained undetected when calculating segregation indices at the level of districts or even neighbourhoods. [Großmann et al. \(2013\)](#) concluded that although the link between shrinkage and segregation appears to largely depend on the local context and the drivers and the scope of shrinkage, as well as on the scale at which the phenomena are analysed, there is strong evidence that urban shrinkage has a catalysing effect on the (rapid) emergence of pockets of poverty and affluence within specific types of residential areas.

[Großmann et al. \(2015\)](#) further investigated the influence of housing oversupply on socio-spatial change and differentiation in Leipzig; a case that provided the researchers with the rare chance to investigate the impact of a city-wide housing surplus on the dynamics and the patterns of residential segregation, as opposed to a glut of vacancies confined to a specific area. The authors found that as the city's population declined during the 1990s, levels of residential mobility peaked and certain districts experienced a thorough reshuffling of residents. Using several different index-based measurements of segregation covering the five dimensions of residential segregation described by [Massey and Denton \(1988\)](#): evenness, exposure, concentration, centralisation and clustering, the authors found that Leipzig's city-wide housing oversupply and falling property values opened up niches for socio-economically vulnerable and minority population groups, above all in substandard housing in less attractive neighbourhoods. The authors also utilised GIS to illustrate how unemployed and non-native residents became increasingly concentrated in unmodernised, large, peripherally-located housing estates and in select inner-city neighbourhoods characterised by decay, respectively. An analysis of the average ages of the residents showed that there was an influx of young people into inner-city districts, while outer core and suburban areas grew older. Given that spatial distributions of depopulation and vacancies strongly correlated with concentrations of vulnerable groups, it appears that urban shrinkage contributed to Leipzig's socio-spatial restructuring, and to the partial re-emergence of the city's pre-war patterns of residential segregation.

[Slach et al. \(2019\)](#) examined how urban shrinkage impacted social sustainability in Ostrava, a sprawling city that experienced a decline in population between 1991 and 2018 due to post-socialist economic reforms, deindustrialisation, out-migration, suburbanisation, environmental degradation, declining fertility rates and a reliance on pro-growth policy strategies focused on securing financial investments or fostering economic growth. The authors concluded that shrinkage deepened existing patterns of residential segregation, which were characterised by concentrations of higher- and lower-status households in more and less desirable inner-city locations, respectively. The areas with the most pronounced levels of social exclusion were mainly concentrated in inner-city neighbourhoods characterised by higher levels of abandonment or in more peripherally-located areas near brownfields. Interestingly, while cities in Central and Eastern Europe (CEE) like Ostrava have been particularly

prone to shrinkage since the turn of the millennium due to the region's post-socialist political and economic transition, unlike many shrinking cities in western Europe and America, most have not faced any major challenges related to housing vacancies, given the region's longstanding and widespread housing shortages dating from the era of state socialism. Accordingly, shrinking cities in CEE have generally not experienced the housing market imbalances or the demolition efforts that have occurred in the shrinking cities in the West. Nonetheless, the role of governmental and market actors in shaping socio-spatial change through public policies, urban planning and investment in Ostrava, as well as in many other shrinking cities, should not be ignored. It appears that at least during the initial years of Ostrava's post-socialist transition, governments saw unregulated markets as a mechanism of resource allocation that would facilitate prosperous, economically-efficient and socially-just societies. Since shrinkage was widely considered a temporary phenomenon stemming from the post-socialist transformation, the prevailing policy strategy remained focused on attracting external investment, with decision-makers assuming that economic growth would eventually translate into population growth.

[Hoekstra et al. \(2020\)](#) assessed the socio-spatial consequences of housing policies introduced to respond to depopulation in Parkstad Limburg, a region with approximately 250,000 inhabitants, including approximately 90,000 in the municipality of Heerlen. The analysis focused on changing patterns of socio-economic segregation and housing accessibility among lower-income households between 2004 and 2015. The authors drew on secondary statistics to track changes in the region's socio-economic composition, as well as to map its geography of population decline and growth. Additionally, they analysed levels and patterns of residential segregation across the region, employing both the index of dissimilarity and the Theil index. The latter offers two noteworthy advantages over the former: first, the Theil index allows for the measurement of spatial evenness both between and within intra-urban units; and, second, it utilises continuous data (in this case on income), and thus does not have to rely on categorical variables such as occupational status. Even though shrinkage is less common and less severe in the Netherlands than elsewhere in Europe and the United States, the authors posited that the case of Limburg nevertheless offers a unique opportunity to investigate the effectiveness of policies specifically designed to mitigate population decline and to balance a (highly-regulated) housing market. In order to analyse the effects of housing policy interventions on population distributions, [Hoekstra et al. \(2020\)](#) mapped the geography of housing construction and demolition over time, and examined how these efforts served different income groups, and thereby altered levels and patterns of segregation. The authors found that even though a decree was issued stating that new construction had to be compensated for by the demolition of existing properties, and efforts were made to distribute demolitions and new developments evenly across the region, the construction of new housing in promising locations tended to go hand-in-hand with the demolition of low-quality housing in less desirable areas. Combined with growing economic polarisation and the gradual ageing of the region's population, these policies appear to have contributed to a further deepening of

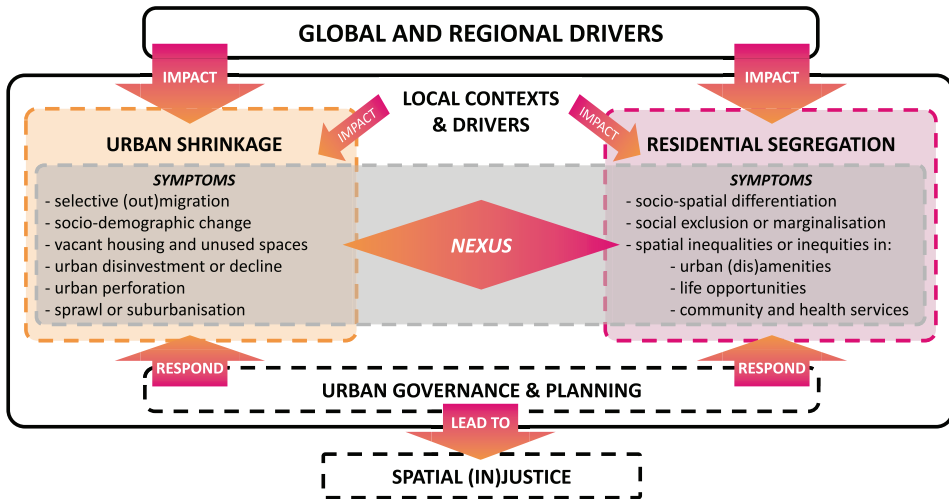
existing socio-spatial divides. These occurred as low-income households became substantially overrepresented in high-density areas, while the already large shares of better-off households in more sprawling areas became even larger relative to the shares of low-income households. Simply put, a widening spatial gap between poor households in inner-city neighbourhoods and relatively affluent households in suburban and rural areas was observed in the wake of shrinkage. Policy responses to depopulation had mixed effects on these dynamics; however, a tendency to focus efforts on the selective demolition of relatively inexpensive housing in high-density areas, while new housing construction mainly catered to middle-class households and was more evenly distributed across the region, disproportionately impacted low-income residents.

4.3 Summarising the state of the art

In order to illustrate the role of urban shrinkage in dynamics and patterns of residential segregation as described in the literature, Figure 2 presents a high-level overview of how various facets of these phenomena interlink with each other. For urban shrinkage, typical symptoms that have been identified as drivers of segregation are highlighted. Similarly, for residential segregation, a selection of symptoms that are particularly relevant from the perspective of shrinkage are listed, including city-wide socio-spatial unevenness, intra-urban spatial concentrations or clustering of certain population groups, as well as other patterns of intra-urban socio-spatial differentiation or inequalities. The diagram shows symptoms of shrinkage that have been identified as potential causal mechanisms of segregation. In addition, it indicates how local governance structures or urban planning responses to these symptoms may result in spatially-just or unjust outcomes (Berglund, 2020; Fol, 2012; Hoekstra et al., 2020).

Essentially, the socially-selective population losses and the altered housing market conditions typical of shrinking cities tend to lead to urban disinvestment and decline and to increasing perforation of the urban fabric, which may, in turn, trigger shifts in the city-wide extent or intra-urban patterns of residential segregation. Such shifts are especially likely to occur when there is a sudden, shock-like driver of shrinkage, such as a major political or economic change, the collapse of an industry, or even a natural catastrophe. Such events have been observed to result in both rapid and unexpected socio-spatial change (Großmann et al., 2015; Petsimeris, 1998). Thus, the dynamics of spatial inequalities and segregation under conditions of shrinkage differ from those typically observed under conditions of growth and ongoing housing shortages. Evidently, shrinkage can result in growing concentrations of disadvantaged households in the least attractive neighbourhoods with an oversupply of relatively cheap housing stock, in addition to a lack of public infrastructure or urban amenities. Continuing selective out- and in-migration alongside efforts to reuse or modernise certain properties or spaces may result in small-scale instances of segregation, such as at the level of neighbourhood blocks or even individual buildings.

Figure 2:
The nexus between urban shrinkage and residential segregation



However, the longevity of such developments – and whether these places eventually change due to, for example, reurbanisation or gentrification – depends largely on the local context, including on its housing market characteristics, future population trajectories, and urban policy and planning priorities. While context-sensitive policy and planning responses to shrinkage and segregation can facilitate equitable and just outcomes, the experiences of numerous cities indicate that non-strategic responses could make matters worse (Berglund, 2020; Fol, 2012; Pallagst et al., 2021).

4.4 Methodological shortcomings and knowledge gaps

Previous studies have improved our understanding of the general dynamics as well as the context-specific paths of residential segregation in a variety of shrinking cities around the world. At the same time, these studies raise a number of as yet unanswered questions about the causal nexus and the mechanisms at work between urban shrinkage and residential segregation. While their findings largely align with the theory that urban shrinkage, however defined, may act as a catalyst for residential segregation by age, ethnicity or socio-economic status, the scope of empirical evidence remains rather limited, and is predominantly based on the experiences of a handful of large capitals and metropolises. Indeed, with few exceptions (e.g., Fol, 2012; Hoekstra et al., 2020), the evidence for causal relationships between shrinkage and segregation in small- to medium-sized cities is largely anecdotal. Furthermore, the bulk of empirical studies, and thus the extent of our knowledge,

is based on the European context, where cities have traditionally been characterised by lower levels of ethnic and socio-economic residential segregation than is the case in, for example, the United States (Cassiers and Kesteloot, 2012). Thus, while urban shrinkage has become an increasingly widespread global phenomenon from a geographical perspective, empirical studies verifying that residential segregation worsened during or in the wake of shrinkage are few and, spatially speaking, far between. Consequently, there are significant blind spots in our knowledge of many regions around the world, and it therefore seems hazardous to make broad generalisations about the influence of urban shrinkage on dynamics or patterns of segregation.

There is also a need for more granular spatial analyses of patterns of residential segregation under conditions of shrinkage. Whereas regional and urban scale studies may help to identify local causes, trajectories or effects of shrinkage, intra-urban scale analyses allow for the identification and comparison of individual neighbourhoods, and are thus important for the development of a more granular understanding of the interplay between shrinkage and segregation. Additionally, as most past studies examined levels or patterns of segregation at a single point in time, longer-term perspectives on how shrinkage impacts segregation – and findings related to potential time-lag effects – are missing. While there may be little reason to doubt that urban shrinkage implies some degree of socio-spatial change, it is difficult to determine precisely to what degree or even whether the relationship is linear, exponential or neither based on the existing literature, which has, to be clear, centred on a few exemplary cases of shrinkage. To fill these gaps, researchers have increasingly called for more systematic comparative research of the socio-spatial effects of processes of and responses to shrinkage.

Although they are evolving, the statistical techniques employed by existing studies also leave some room for improvement. An important shortcoming of these studies is that they used different methods and indicators. While the studies reviewed above made much of the spatial context, because of data limitations, most focused on patterns of spatial evenness, and essentially brushed other dimensions of residential segregation – namely, exposure, concentration, centralisation and clustering – under the rug. In addition to using different statistical techniques to measure levels or patterns of spatial evenness, the few studies that explicitly analysed intra-urban patterns of segregation employed different spatial unit types and sizes. While some analyses were performed at the level of neighbourhoods or districts, others were conducted at a larger scale, such as boroughs or census tracts. Moreover, although the studies were predominantly concerned with spatial divisions along socio-economic lines, their definitions of disadvantaged and affluent groups differed. Aside from analysing education, income and employment status, these studies failed to consider other factors of potential interest, including levels of social and human capital.

There seems to be a lack of engagement with more critical approaches, such as the political economy perspective, and of studies that explicitly consider and compare context-specific pathways, dynamics and outcomes. In addition to a need for research on similarities and differences in levels and patterns of segregation

among various types of shrinking cities around the world, little attention has been given to the question of how governance frameworks and actor constellations shape the agency of decision-makers to respond to the socio-spatial challenges presented by shrinkage, especially with regard to housing vacancies. Lastly, the socio-spatial effects of place-based policy responses to shrinkage – including frequently endorsed ‘smart shrinkage’ strategies, such as rightsizing, greening and vacant property reuse – remain opaque. Future research could, for instance, investigate whether urban development scenarios such as uncontrolled (sub)urban sprawl or top-down demolition programs have resulted in new challenges for marginalised neighbourhoods that impede their sustainable development and hinder potential improvements in the quality of life for existing residents. Such research might have global relevance by providing lessons in the unintended consequences of implementing ‘quick fixes’ in response to fundamental change. In sum, the methods and the empirical results of past studies on socio-spatial change and residential segregation in shrinking cities do not lend themselves to future post-hoc, cross-sectional or comparative research. While these studies together represent a solid first cut at investigating the question of how urban population decline affects segregation, several promising angles of inquiry remain to be pursued.

5 Discussion

There is growing interest in the human geography and urban planning literature about the role of contextual factors in explaining socio-spatial change in (sub)urban environments. Recent observations from cities around the world have challenged the dominance of past notions of polarised or divided cities, and inspired a new body of research that acknowledges the limitations of broad generalisations or typologies by shedding new light on the complexity of contemporary socio-spatial processes, including residential segregation through systematic, context-sensitive analyses (Cassiers and Kesteloot, 2012; Fujita and Maloutas, 2012). The literature reviewed above shows that since out-migration from shrinking cities is almost always selective with respect to demographic, ethnic or socio-economic characteristics, urban shrinkage regularly coincides with socio-spatial change. Despite the apparent link between residential segregation and urban shrinkage, these two phenomena are typically investigated in silos and at different spatial and temporal scales. While increasing socio-spatial differentiation may be detected on the city scale using statistical techniques such as segregation indices, it appears that these shifts are most palpable for households residing in those parts of the city that are most affected by shrinkage (Großmann et al., 2013; Maes et al., 2012). Under these conditions, shrinking cities are confronted with a range of challenges related to urban development and social cohesion. At the local scale, these challenges are mainly related to processes of population ageing and so-called ‘brain drain’ – whereby ‘left behind’ residents of shrinking cities are disproportionately members of the most marginalised population groups, including the elderly, unemployed persons

and social assistance recipients (Fol, 2012) – and the resulting housing supply and labour market mismatches. Meanwhile, at the intra-urban scale, shrinking cities face specific dynamics concerning levels and patterns of residential segregation, especially with respect to the risk of socio-economically vulnerable households becoming increasingly concentrated in those corners of the city most affected by shrinkage.

Despite the common perception that shrinking cities contain abundant low-cost housing, property values and rents tend to remain inelastic in response to demographic decline due to fixed property costs and associated fees incurred by property owners and landlords. Moreover, landlords in shrinking cities may contribute to housing affordability and accessibility concerns by seeking rents above the levels necessary for adequate rates of return due to, for example, cautionary risk avoidance or exploitative business practices (Berglund, 2020; Desmond and Wilmers, 2019). Under these circumstances, the financial situations and the levels of residential mobility among socio-economically vulnerable segments of the population are likely to further deteriorate. Additionally, while the underlying relationship between conditions of urban shrinkage and localised patterns of residential segregation has attracted increasing attention in the literature, the breadth and the depth of the existing studies on this topic still pale in comparison to those of the studies on segregation in growing cities characterised by processes such as gentrification or studentification. Nonetheless, if recent publications and special issues on shrinking cities are any indication, the literature appears poised to further improve our knowledge of the socio-spatial effects of urban shrinkage (Berglund, 2020; Silverman, 2020).

This review has uncovered several promising avenues for advancing the emerging body of literature on socio-spatial change and residential segregation in shrinking contexts. While previous studies have focused on larger shrinking capitals and metropolitan areas in select regions, urban shrinkage is a worldwide phenomenon that affects cities of all different shapes and sizes (Martinez-Fernandez et al., 2016). As past studies are characterised by the inconsistent use of spatial scales and methods of analysis, it is difficult to compare results. From a temporal perspective, few studies have taken an explicitly long-term perspective on socio-spatial change. Fortunately, increasing access to time-series datasets on population dynamics and characteristics promises to aid future research of this nature. Moreover, there appear to be gaps in our understanding of legacy effects, such as inherited urban morphologies and patterns of segregation. Perhaps most importantly, we lack insight into the qualitative impacts of residential segregation during and in the wake of a period of urban shrinkage on different ‘left behind’ population groups, including into how such an environment affects life opportunities and quality of life. In this regard, comparative case studies examining the cumulative effects of shrinkage and segregation on underprivileged groups are especially welcome. For instance, in shrinking American cities, where leading drivers of urban depopulation include deindustrialisation, decentralisation of employment, suburbanisation and sprawl, ethnic and socio-economic residential segregation have often been conflated with the post-war hollowing out of inner cities driven by car-centric urban planning, ‘white flight’ and, more recently, recurring

waves of systematic mortgage foreclosures and home evictions that have gutted whole streets and neighbourhoods in many cities. Building on the work of [Watson et al. \(2006\)](#), which showed that longstanding underutilised structures in shrinking or stagnant cities may act as barriers to residential integration, the findings of [Silverman et al. \(2013\)](#) and [Bellman et al. \(2018\)](#) suggest that due to historic patterns of residential segregation by class and race in many American cities, a typical outcome of urban shrinkage is that lower-income residents are disproportionately walled off from the few remaining desirable parts of the city, and increasingly concentrated in marginalised niches or at the periphery. Similar spatially-inequitable outcomes were uncovered by [Seymour et al. \(2020\)](#), whose cross-correlation study of the housing affordability challenges facing shrinking cities in the US showed that, between 1980 and 2017, in places where housing costs stagnated or even declined during a period of urban shrinkage, housing remained unaffordable for many residents due to falling incomes. The authors also found that while the proportion of rent-burdened households increased in shrinking and growing American cities alike since the 1980s, these trends generally intensified at much greater rates in the former, in part due to their relatively high shares of socio-economically vulnerable residents. These recent works illustrate the great potential for future studies to leverage new indicators and metrics in order to paint a more holistic picture of the causal link between urban shrinkage and residential segregation across and between various contexts.

In sum, several critical questions regarding the nexus of urban shrinkage and residential segregation remain open, including that of how spatially-uneven distributions of selective out-migration, populating ageing, housing oversupply and other symptoms of shrinkage influence intra-urban patterns of segregation in the long run; how the type and the scope of shrinkage impact housing access among certain (underprivileged) population groups; and, perhaps most daunting, how the geography and morphology of a city – among other static and dynamic characteristics – jointly constrain or facilitate socio-spatial change and segregation during and in the wake of shrinkage. In order to answer these questions, it would be fruitful to reconsider the applicability of theories of residential segregation and neighbourhood change informed by observations from growing cities across a variety of shrinking cities and typologies of urban shrinkage. Researchers are, however, advised to exercise caution to avoid the fallacies of circular reasoning and causal oversimplification, as they otherwise risk inaccurately associating urban shrinkage with deepening residential segregation, whereas the relationship may work the other way around, or other variables may have greater explanatory force ([Großmann et al., 2013](#)). While not favouring any particular approach, it is important that researchers clarify their methodological choices and acknowledge any known limitations of their research design. Regardless of the approach used, taking a reflective stance on the decisions underlying the research is more relevant than ever in light of contemporary epistemological debates in the fields of human geography and spatial planning.

6 Conclusion

While it may be true that urban shrinkage cuts both ways, simultaneously imposing challenges as well as opening windows of opportunity for sustainable urban development and social cohesion, one caveat to this observation is that responses to shrinkage not grounded in principles of fairness and equity will likely result in socially-unjust outcomes (Berglund, 2020). Unfortunately, urban shrinkage has long presented a challenge to social justice. To paraphrase Hollander and Németh (2011), whereas at times of population growth and economic prosperity, it is often society's most vulnerable who are left without a seat at the table, and have little to no choice but to scramble for crumbs that fall to the floor; during periods of depopulation and economic struggle, there may be no crumbs left over, let alone a table to set. These constraints explain why governance of shrinkage is arguably more complicated than governance of growth, and why moving towards more holistic planning approaches that explicitly consider the complex interdependencies of population change, residential mobility and urban inequalities may be even more vital to the pursuit of social cohesion for shrinking cities than for their growing counterparts (Cortese et al., 2014; Rink et al., 2014).

The preceding literature review has uncovered several challenges facing empirical research on the effects of urban shrinkage on the dynamics and patterns of residential segregation. There is a conspicuous association between the spatiality of urban depopulation and segregation in many European cities, leading many observers to assume there is a causal link between these phenomena. Though few studies have comprehensively analysed this association, interest in the socio-spatial implications of urban shrinkage has surged in recent years. To date, however, existing studies on the interplay of urban shrinkage and residential segregation are limited to a few relatively well-known metropolises characterised by rather exemplary conditions of shrinkage. In other words, we lack empirical verification of a causal effect between shrinkage and segregation across a wide range of – for lack of a better term – ‘ordinary cities’; that is, small to medium-sized cities that are less well-connected to the global economy. Our ability to conceptualise and achieve a deeper understanding of the causal relationship between urban shrinkage and residential segregation is further hampered by our incomplete knowledge of how context-dependent factors – be they environmental, historical, political or social in nature – figure into the equation at various spatial scales. In addition to having to grapple with the confusion surrounding the supposed functional link between shrinkage and segregation, we are largely in the dark about how these phenomena relate temporally.

Our capacity to develop socially-equitable planning approaches to urban shrinkage and residential segregation is inhibited by these unknowns and other unknown unknowns. Consequently, shrinking cities risk pursuing responses to shrinkage that overlook its socio-spatial effects and the potential for context-insensitive planning to exacerbate residential segregation and social exclusion, especially in the most marginalised corners of a city (Cortese et al., 2014; Maes et al., 2012). While shedding light on these knowledge gaps would undoubtedly go a

long way towards improving our understanding of urban shrinkage, in reality, they represent only a few missing pieces of the puzzle of socio-spatial change. Nevertheless, recent research on poverty, evictions and the persistent housing accessibility and affordability challenges faced by socio-economically vulnerable residents highlight the importance of understanding these dynamics in order to mitigate urban inequalities, and to move towards the development of more spatially-just cities (Desmond and Gershenson, 2017).

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