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# Shrinkage and housing inequality: Policy responses to population decline and class change

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## ABSTRACT

Parkstad Limburg, located in the south of the Netherlands, represents a former industrial area facing structural shrinkage and economic decline in a relatively strongly regulated environment. Though regional policies were initially slow to fully recognize the reality of shrinkage, they are currently well under way. This article identifies to what extent housing policies aim to go beyond managing shrinkage and instead address housing needs of current residents to create equitable social outcomes. We subsequently investigate how specific housing interventions have impacted the region's changing class composition, using individual-level longitudinal register data from Statistics Netherlands. Our findings highlight increasing socioeconomic and sociospatial inequalities in the wake of shrinkage. Policies have a mixed influence on these dynamics, dampening certain inequalities but amplifying others. Our analyses underscore the limited effectiveness of policies in combating housing mismatch even in a strongly regulated market and indicate key trade-offs for regional governments in managing shrinkage.

Urban and regional shrinkage is a highly relevant topic for public policy, because studies have documented its widespread occurrence across the European Union and the United States (Beauregard, 2009; Wiechmann & Pallagst, 2012). Within dominant policy and planning paradigms based on continuous economic and population growth, shrinkage is understandably a cause for concern, and local and national policies thus play a key role in shaping future developments in shrinking regions. Yet, though there is a growing consensus that—rather than relying only on market mechanisms—government interventions are needed to solve problems of liveability and economic vitality in shrinking cities (Hackworth, 2014; Schilling & Logan, 2008), not much is known about the ways in which these interventions interact with economic and demographic developments (Haase, Rink, Grossman, Bernt, & Mykhnenko, 2014).

We investigate this interaction in the case of Parkstad Limburg, a former industrial region in the south of the Netherlands facing structural shrinkage and economic decline. We examine how local policies respond to population decline and socioeconomic change and assess the consequences for existing patterns of socioeconomic segregation and inequality, focusing in particular on the housing market position of low-income households. Our analyses focus specifically on housing, because it is in this field that policies have a direct impact on supply and thus on the affordability and accessibility of housing for different population groups. These policies may therefore be key in promoting equitable developments but may also aggravate inequalities. This article seeks to answer the following question: To what extent are housing policies in a shrinking urban context adequately fitting changing levels and types of housing demands and contributing to an inclusive housing market?

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Demographic decline in the Netherlands is less widespread and severe than in other European countries and the United States (Wolff & Wiechmann, 2017). In fact, Parkstad Limburg is the only Dutch urbanized region that is structurally shrinking. Consequently, growth ideas remain dominant in Dutch planning and policies (Haartsen & Venhorst, 2009). Nevertheless, local authorities increasingly tend to accept shrinkage and “plan for decline.” Moreover, the highly regulated Dutch housing market offers an opportunity to study the effectiveness of policies in halting a cycle of population loss and housing market mismatch, because policy interventions are likely to be more impactful in such contexts (cf. Couch & Cocks, 2013).

The article is structured as follows: We first provide a theoretical overview of the relation between shrinkage and changing housing needs and investigate the possibilities for local policymakers to steer these developments. Then, we look at housing market policies undertaken in the Parkstad region over the past 10 years (2006–2016) and confront these with data on population development and class change, as well as associated changes in housing needs. We consider both quantitative (reduction of the housing stock) and qualitative (type of housing) policy targets and assess these based on the extent to which they go beyond managing shrinkage and aim to address changing needs of the current population. Subsequently, we chart shrinkage trajectories, changes in class composition, and shifting patterns of sociospatial inequality between 1999 and 2015 and consider the impact of housing policies on these dynamics. Finally, we discuss the social implications of present policies—more specifically, in terms of consequences for the accessibility, affordability and suitability of housing for local residents in the future.

## Shrinkage, housing, and social justice

### *Institutional context*

Though the causes of shrinkage in any particular case are complex and diverse and may vary significantly between regions (Grossmann, Bontje, Haase, & Mykhnenko, 2013), shrinking areas have been described as being on the losing side of economic globalization. Production and consumption concentrate in well-connected and desirable places. As a result, regions that are considered peripheral and whose economy is dominated by “old” industries find themselves highly vulnerable to the up- and downswings of global capital (Martinez-Fernandez, Audirac, Fol, & Cunningham-Sabot, 2012). Far from the simple decline of population following deindustrialization, shrinkage constitutes “population loss, economic downturn, employment decline and social problems as symptoms of a structural crisis” (Martinez-Fernandez et al., 2012, p. 214). Those who remain are disproportionately among the most marginalized and vulnerable, including those with little education, the unemployed, and the elderly (Fol, 2012; Rousseau, 2009; Ubarevičienė & Van Ham, 2017).

National and regional governments are therefore incentivized to steer patterns and processes of growth and shrinkage to mitigate their adverse effects. At the same time, their ability to do so is fundamentally affected by the broader institutional context, including differences between welfare state regimes, tax systems, and the regulation of housing markets (Bontje & Musterd, 2012). The degree to which states regulate or facilitate market forces shapes regionally and systematically uneven developments (Brenner, Peck, & Theodore, 2010). Traditionally, highly liberal residual welfare states can be juxtaposed to regulated and redistributing social-democratic welfare states (cf. Esping-Andersen, 1990).

More liberal welfare states attribute a greater role to market forces, typically combined with a focus on local tax regimes. This is likely to amplify spatial unevenness between regions, forging pronounced differentiation between “winner” and “loser” areas. In such welfare regimes, it may be more difficult to counter negative developments such as housing dilapidation and the accumulation of social problems. Struggling municipalities may then become trapped in a negative spiral and be confronted with potential bankruptcy and the imposition of far-reaching fiscal emergency and austerity measures (Kirkpatrick & Smith, 2011; Peck & Whiteside, 2016).

Redistributive welfare states, on the other hand, are traditionally more characterized by politics of spatial Keynesianism or the spatial redistribution of resources (Brenner, 2004). For instance, the Dutch state dampens uneven developments between regions by centralized taxation regimes and the inter-municipal redistribution of wealth through the Municipal Fund. Such measures have guided cities and regions with an erstwhile one-sided industrial profile through deindustrialization while eschewing bankruptcy (Musterd & Nijman, 2016). Similarly, housing in the Netherlands is highly regulated due to the strong government intervention in the rental sector, fiscal support for homeownership, and land use regulation (Doling & Elsinga, 2012; Vermeulen & Rouwendal, 2007). Vermeulen and Rouwendal (2007) suggest that, rather than being a function of market demand, the elasticity of housing supply in such highly regulated contexts depends on the responsiveness of government institutions to price signals and estimates of housing need. In the case of shrinking regions, this suggests that (local) governments play a large role in steering the adaptation of the housing market.

Nevertheless, in the Netherlands as well as elsewhere in Europe, welfare arrangements have undergone substantial transformations in recent decades and are increasingly geared to enable market forces, rather than to keep them in check (Brenner et al., 2010; Harvey, 2005). An increasing reliance on market-based and financialized modes of governance has facilitated a move away from spatial redistribution toward uneven development (Brenner, 2004), not only between growing and declining regions but also within regions and cities (Hochstenbach, 2017; Van Loon & Aalbers, 2017).

### ***Local political strategies and regional inequality***

Recent studies in the field of housing economics (e.g., Ball, Meen, & Nygaard, 2010; Glaeser, Gyourko, Morales, & Nathanson, 2014) stress the importance of historical patterns of land development and local topography in shaping housing market dynamics and hence the socially and spatially uneven effects of population shrinkage (see also Meen & Nygaard, 2011). Such local specificities also matter for housing policies, which have to contend with the unequal distribution of different housing segments in relation to (changing) demands. Housing vacancies often concentrate in specific areas due to segmented housing markets and may be accompanied by a growth in demand elsewhere (Couch & Cocks, 2013). In such cases, market disequilibria are expected to persist, necessitating policy interventions to prevent large-scale abandonment and decline (Glock & Häussermann, 2004; Nevin, 2010). Depending on the type of interventions, policies can play an important role in either weakening or amplifying socioeconomic inequalities within shrinking regions. Additionally, the spatially selective nature of housing interventions (cf. Jones, 1997) influences sociospatial inequalities (Uitermark, Hochstenbach, & Groot, 2017). Housing interventions can aggravate spatial segregation and polarization between rich and poor by concentrating upgrading and renewal efforts in already well-performing areas. Alternatively, states can dampen spatial inequalities by going against market forces: investing in areas of decline.

Local strategies in response to urban-regional decline often amount to entrepreneurial policies that seek to restore relative attractiveness and economic competitiveness and aim to attract the middle classes and capital reinvestment (Boland, 2007; Fol, 2012). Conversely, in weak housing segments with no regeneration perspective, it may be difficult to finance demolition of vacant or low-demand housing (Haartsen & Venhorst, 2009). Such growth-oriented policies will therefore typically aggravate spatial inequalities between strong and weak or declining areas, because investments are disproportionately focused on those areas that are thought to have the most potential for regrowth while weaker areas are abandoned or demolished as local growth coalitions pursue narratives of “urban renaissance” (Hackworth, 2016, p. 2217). If these policies fail to kick off a return to growth, they are likely to result in a growing mismatch between the type of housing supply and demand, with vacant upmarket housing and a simultaneous lack of quality affordable housing as a result (Nevin, 2010).

An alternative is to pursue policies that accept and accommodate shrinking processes (e.g., Haase, Athanopoulou, & Rink, 2016; Hospers, 2014). A major challenge here is to balance acceptance of

shrinkage with measures that increase or maintain quality of life for the existing and expected future population (Hollander, Pallagst, Schwartz, & Popper, 2009; Hospers, 2014). Housing is a crucial dimension of such a balanced approach. Planning for decline will typically include efforts to reduce the number of dwellings, often through selective demolitions. When entire blocks or neighborhoods consist of housing not in demand, strategies like downsizing or rightsizing may be effective. Rightsizing implies a more comprehensive spatial (re)development strategy, including adapting infrastructure and services to cater to the needs of a structurally changed, often less wealthy population (Hummel, 2015). This would imply reducing the existing stock or taking low-demand housing segments out of the market completely. Another option is to consolidate housing to create greater density, which reduces infrastructural costs but also creates a more urban atmosphere, potentially increasing its attractiveness to those who are drawn to areas that are high-density, lively, and walkable (Schilling & Logan, 2008).

Similar to growth-oriented policies, a selective focus on demolishing inexpensive dwellings may result in constraining the housing opportunities of low-income residents, raising issues of social justice (Schilling & Logan, 2008). Though some shrinking and deindustrialized cities in the American Rust Belt have turned to demolition of low-quality housing as the main tool for urban regeneration, there is no evidence that this results in the stabilization of housing markets as is implied by rightsizing policies (Hackworth, 2016). Housing policies may thus have a major impact on different types of inequalities. Though policy interventions can contribute to equitable social outcomes in the wake of structural shrinkage, they can also aggravate inequalities.

### **Introduction to the case study**

Parkstad (literally “Park City”) Limburg is a partnership of eight municipalities in the Dutch province of Limburg in the southeast of the Netherlands, bordering Germany. The region is home to almost 250,000 inhabitants as of 2015, of which almost 90,000 live in the municipality of Heerlen. Known as the eastern mining region, the area was at the center of the Dutch coal mining industry until the closing of the mines starting in 1965. Though the advent of mining in the first half of the 20th century resulted in economic growth and the rapid expansion of formerly predominantly agricultural settlements, the switch to a postindustrial era has not been easy. Newly created jobs were not sufficient to offset the loss of employment caused by the mine closures, and the white-collar skills that these new jobs often required were available only to a limited extent among the existing population. Thus, a period of economic stagnation ensued (Knotter, 2012), which has since the late 1990s been accompanied by continuous population decline. Though from an international perspective this decline is relatively mild (Parkstad lost 8.2% of its population between 1999 and 2015), its prolonged character and structural nature coupled with the region’s economic vulnerability means that shrinkage in Parkstad is recognized as an acute policy problem by the national government.

As expected, one of the areas where the negative consequences of population decline are most visible is housing. Though actual vacancy rates are limited (estimated to be around 4.8% in 2008, whereas 2% is considered desirable), overcapacity of housing, a mismatch between supply and demand, and a lack of maintenance result in low and decreasing real estate values, in particular at the lower end of the owner-occupied housing market (asking price of up to €150,000). To be clear, these houses are generally in a good condition—although they do not always meet modern building standards, for example, with regard to insulation or amenities—but the oversupply of houses in this market segment means that they are unsellable even at low prices (Jonker-Verkaart & Lupi, 2017). As a consequence, homeowners may find themselves in a situation of negative equity and have trouble selling their houses. Given the region’s aging population, older residents in particular might want to move to more age-appropriate dwellings but find themselves unable to do so without incurring substantial financial losses. Moreover, the availability of inexpensive housing does not necessarily mean that households will not have trouble entering the housing market: many local residents do not qualify for a mortgage due to high unemployment rates and low average incomes. An estimated

three quarters of prospective buyers are unable to finance the average house in South Limburg (De Groot, Schilder, Daalhuizen, & Verwest, 2014).

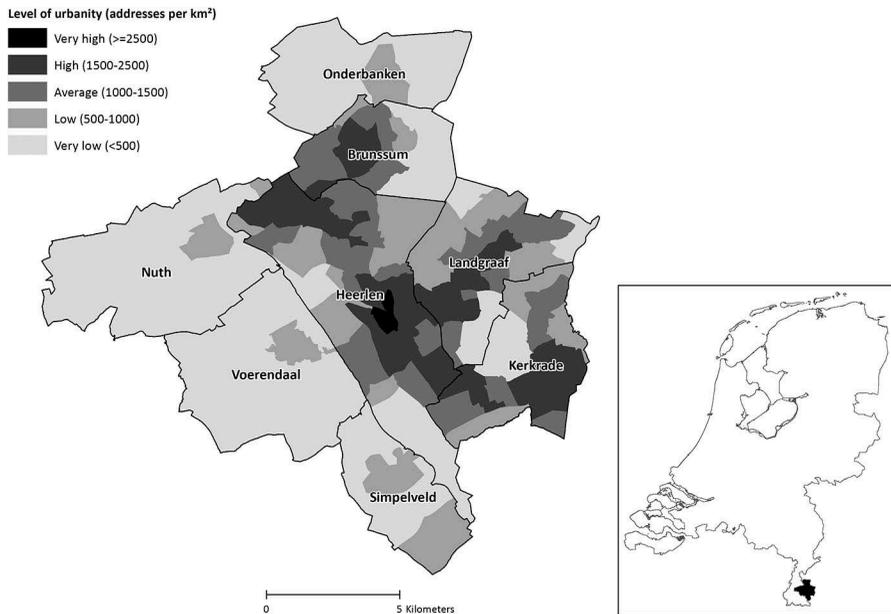
Though there is an oversupply of owner-occupied housing, there is a relative lack of both social rental and private rental housing, partly as a result of regional housing policies, as will be shown in the next sections. Consequently, for a region with a slack housing market, the social rental sector is relatively inaccessible; there are four low-income house seekers for each available social rental dwelling (in 2012; De Groot et al., 2014). This aligns with the findings of Hoekveld (2014), who found that South Limburg residents wanting to move within the region experienced more difficulties in finding a suitable dwelling in their preferred location than inhabitants of other Dutch regions. Thus, she concludes that access to housing opportunities within the region is spatially uneven, partly as a result of policies to manage shrinkage.

## Data and methods

The first empirical section of this article analyzes the main trends in regional housing policies over the period 2006–2016. It discusses the housing market issues identified in these policies and the quantitative and qualitative strategies for transformation that are adopted. The year 2006 is important because this was the first time that population shrinkage and associated housing market imbalances featured prominently on the local policy agenda. We analyze the three main policy documents on the Parkstad Limburg housing market published during this period (in 2006, 2012, and 2016), as well as one that deals with the larger South Limburg region (South Limburg Municipalities 2016). Furthermore, we cross-checked our findings with two local civil servants.

In the second part of this article's empirics, we draw on register data from the System of Social-Statistical Databases, available from Statistics Netherlands. These data cover the entire Dutch population and are individual-level, longitudinal, and geocoded. We track overall changes in population size and socioeconomic population composition for the Parkstad Limburg region for the period 2004–2015. Within the region, we also document the geography of population shrinkage and growth. Here, in order to match policy ambitions, we distinguish between areas of different density levels, ranging from highly urbanized to rural (see Figure 1). Spatial analyses are conducted at the neighborhood level, following the neighborhood classification of Statistics Netherlands. These neighborhoods are generally delineated by natural boundaries (e.g., waterways) or infrastructure such as major roads or railway lines. Parkstad Limburg consists of 189 neighborhood tracts with on average 1,123 adult residents in 2004 and 1,093 in 2015.

We subsequently use equivalized household income to analyze changes in socioeconomic population composition within Parkstad. Equivalized household income corrects for differences in household size and composition, which gives a more accurate representation of household socioeconomic status and purchasing power than total gross income. Income levels are classified relative to the entire Dutch population, constructing five income quintiles. Individuals in the bottom quintile belong to the 20% poorest Dutch households and those in the top quintile to the 20% richest. Local distributions and changes therein can therefore be compared to nationwide trends, where relative quintile-group sizes remain stable over time at 20%. These analyses only include households with at least one adult member (aged 18 or older) and for reasons of data availability focus on the 2004–2015 period. We also document shifting sociospatial inequalities within Parkstad, analyzing to what extent different income groups concentrate in different areas. The Index of Dissimilarity (ID, calculated on the basis of population distributions at the neighborhood level) is used to measure levels of spatial segregation between income groups. The ID ranges from 0 to 100, where 0 reflects an equal population distribution and 100 reflects complete separation. The ID is insensitive to differences in population group sizes and can therefore be compared over time and between groups. Though the ID is commonly used to gauge ethnic or racial segregation (Massey & Denton, 1988), a growing body of research utilizes the index to study patterns of spatial segregation between rich and poor (for comparative studies, see, for instance, Bischoff and Reardon, 2014, or Tammaru, Marcińczak, Van Ham, and Musterd, 2016). As an



**Figure 1.** The geography of density in Parkstad Limburg, based on the number of addresses per square kilometer (2013 density levels). Data: Kerncijfers Wijken en Buurten (Statistics Netherlands), own adaptation.

additional check, we also calculate the Theil index (see Conceição & Ferreira, 2000). This is an entropy measure capturing income inequality ranging from 0 to 100, where a score of 0 reflects a perfectly egalitarian distribution and a score of 100 reflects complete inequality. A major advantage of the Theil index is that it is decomposable, allowing us to determine to what extent inequalities exist both between and within neighborhoods. The between-neighborhoods component gives an indication of spatial separation. An advantage of the Theil index over the ID is that it uses continuous income data and therefore does not have to rely on categorizations.

Lastly, this article focuses on housing policy interventions, specifically the demolition and construction of dwellings. We determine the geography as well as the direct impact of these interventions on population distributions; that is, the extent to which demolitions and new constructions serve different income groups and alter the region's sociospatial makeup. We focus on developments in different segments of the region's housing stock. We define these segments on the basis of dwellings' real estate values and tenure (rent or owned). Per segment, we analyze changes in residents' socioeconomic profile. Although we are unfortunately unable to determine actual rent levels, most rental units in Parkstad Limburg are rent regulated. Real estate values and tenure are based on 2006 and 2014 observations for reasons of data availability.

### **“Learning to love existing real estate”: Housing policies in a shrinking region**

Although Parkstad has faced long-term and structural population decline since the late 1990s, it was only in 2006 that shrinkage became a central part of the policy agenda. Whereas before 2006, policymakers primarily tried to combat shrinkage, current policies can be described as “planning for decline” (Elzerman & Bontje, 2015, p. 92). The need to bring housing construction targets in line with falling demand formed the point of departure of the 2006–2010 Regional Housing Plan (Parkstad Limburg, 2006) as well as subsequent documents. As the first Dutch urban region to experience the spatial consequences of decline on a large scale, Parkstad explicitly aspires to a pioneering role within the Netherlands. Part of this role is the ambition to design business models

that can be implemented in a context of shrinkage, rather than merely adapting existing growth-oriented policies. This includes a shift from thinking only in terms of new developments to “learning to love existing real estate” (Parkstad Limburg, 2013, p. 9) and from focusing on attracting residents from outside the region to catering mainly to the needs of the existing population. In addition, the scaling-up of policymaking in the domain of housing including the setting of targets for demolition and construction, from the municipal to the regional level—namely, the Parkstad partnership and more recently the larger region of South Limburg—indicates an awareness that a fair distribution of the costs associated with shrinkage and avoiding mutual competition is desirable. The latter is increasingly considered a risk in urban governance in a context of shrinkage (Hospers, 2014) and is still considered a likely scenario among Parkstad municipalities, because the region forms a unified housing market (Hoekveld, 2014) whose small towns and villages nevertheless possess strong local identities and responsibilities.

Since 2006, housing policies have sought to achieve a quantitative reduction of housing units as well as a qualitative alignment of supply and demand. But until 2010, the ambition to restructure the housing market in line with population development mostly remained at the stage of good intentions. The 2006–2010 Regional Housing Plan still strived to realize a net result of 2,000 new dwellings (newly built housing units minus demolished units). An inventory of the existing plans of individual municipalities, however, showed that they had already provided plans for at least 10,000 new dwellings (Parkstad Limburg, 2006). Many of these plans had been approved before 2006—when policymakers fully realized the reality of shrinkage—and the profits resulting from land development were needed to prevent budget deficits. Moreover, it was expected that not all plans would be realized. The 2012 Regional Housing Plan concludes that though the Parkstad municipalities had succeeded in demolishing 101 owner-occupied and 1,311 rental units (between 2008 and 2011), during the same period 1,182 owner-occupied and 1,220 rental units were added to the housing stock, to a large extent because existing building permissions could not be altered or canceled. Consequently, an integrated, long-term approach was deemed necessary (Parkstad Limburg, 2012).

As a first step, stronger quantitative reduction targets were agreed upon: through 2020, a net reduction of 2,000 dwellings should be realized, amounting to the demolition of 3,750–4,000 houses between 2012 and 2020. Previous quantitative reductions in the housing stock were mostly realized in the social rental sector in close cooperation with local housing associations because reducing the privately owned housing stock is much more difficult. However, given that oversupply of housing is most prominent in this latter sector, selective demolitions are likely to result in growing market imbalance and a weakened housing market position of those residents who are dependent on social housing. This development has not gone unnoticed; a recent policy paper (Parkstad Limburg, 2016) notes that the region now has a lack of, in particular, inexpensive socially rented housing. This shortage of dwellings is caused by demolitions as well as increased demand due to the municipal obligation to house asylum seekers once they receive a residence permit (Parkstad Limburg, 2016).

In 2013, the province of Limburg issued a decree stating that new constructions have to be compensated for by the demolition of existing properties (or, in some cases, if a donation is made to a demolition fund) and can only proceed when certain qualitative location criteria are met. Consequently, development in promising locations goes hand in hand with the demolition of low-quality housing, located mostly in suburban neighborhoods. Although efforts were made to distribute demolitions and new constructions as evenly as possible across the Parkstad municipalities, this measure likely strengthens the existing intraregional differentiation in population development, due to differences between municipalities in terms of housing type, value and connectedness (Hoekveld, 2014). Underlying this choice is the desire to maximize the housing satisfaction of existing residents but also to attract and/or maintain what are seen as desirable population groups including students, highly educated knowledge workers, and those looking for rural peace and quiet in the vicinity of urban amenities, such as affluent retirees. Thus, the region strives to become greener and more urban (more “park” and more “city”), whereby Heerlen as the largest city should develop a more urban feel and the small villages offer a more rustic atmosphere. The importance attached to Heerlen as the (future) main urban center of the region is such

that the costly transformation of the area around the central train station into a vibrant part of the city center offering a variety of shops, apartments, and a hotel (to be called *Maankwartier* [Moon Quarter]) is exempted from the provincial decree and does not require a reduction of dwellings elsewhere (South Limburg Municipalities, 2016).

## Patterns of population decline and class change

### Toward socioeconomic polarization

Though Parkstad Limburg faces structural shrinkage, it is important to note that the speed and mechanisms of population decline have changed over time and differ between areas. The 2008 global financial crisis has slowed population decline due to residential moves, because decreasing house prices and a fallout of housing demand limited opportunities to sell and move elsewhere. Population decline continues but primarily due to natural change (deaths minus births). There is also a specific geography of decline: low-density areas experienced less population decline than the region as a whole, while a small, highly dense pocket in inner-city Heerlen ran counter to overall trends by recording population growth. Recent policies to promote both urban and rural living at the cost of in-between options thus seem to be congruent with already existing developments. Very high-density areas only make up a small share of the region, though, and population decline in high-density areas exceeds the regional average (Table 1).

In the wake of overall population decline, patterns of socioeconomic change reveal that, between 2004 and 2015, the bottom and top income categories increased in absolute size, albeit only modestly (Table 1). This suggests a gradual trend toward socioeconomic polarization. The accompanying relative growth in top- and bottom-quintile groups indicates that also in comparison to nationwide trends,<sup>1</sup> Parkstad Limburg is polarizing. Nevertheless, compared to the Netherlands overall, Parkstad Limburg still boasts relatively large shares of middle-income groups (Q2, Q3, and Q4) and relatively few low- or high-income households. The gradual trend toward economic polarization can be linked

**Table 1.** Spatial and socioeconomic distribution of total adult population in Parkstad Limburg in 2004 and 2015 and change over time.

|                               | 2004           |            | 2015           |            | Change        |             |
|-------------------------------|----------------|------------|----------------|------------|---------------|-------------|
|                               | N              | %          | N              | %          | N             | %           |
| <b>Urbanity/density level</b> |                |            |                |            |               |             |
| Very high                     | 4,548          | 2.1        | 4,685          | 2.3        | 137           | 3.0         |
| High                          | 93,459         | 44.0       | 90,203         | 43.7       | -3,256        | -3.5        |
| Average                       | 59,498         | 28.0       | 57,826         | 28.0       | -1,672        | -2.8        |
| Low                           | 35,616         | 16.8       | 34,88          | 16.9       | -736          | -2.1        |
| Very low                      | 19,138         | 9.0        | 18,998         | 9.2        | -140          | -0.7        |
| <i>Total Parkstad</i>         | <i>212,259</i> | <i>100</i> | <i>206,592</i> | <i>100</i> | <i>-5,667</i> | <i>-2.7</i> |
| <b>Income group</b>           |                |            |                |            |               |             |
| Q1 (poorest quintile)         | 34,200         | 16.1       | 34,225         | 16.6       | 25            | 0.1         |
| Q2                            | 47,436         | 22.3       | 45,798         | 22.2       | -1,638        | -3.5        |
| Q3                            | 48,915         | 23.0       | 47,331         | 22.9       | -1,584        | -3.2        |
| Q4                            | 45,058         | 21.2       | 43,914         | 21.3       | -1,144        | -2.5        |
| Q5 (richest quintile)         | 33,780         | 15.9       | 34,149         | 16.5       | 369           | 1.1         |
| Unknown                       | 2,870          | 1.4        | 1,175          | 0.6        | -1,695        | -59.1       |
| <i>Total Parkstad</i>         | <i>212,259</i> | <i>100</i> | <i>206,592</i> | <i>100</i> | <i>-5,667</i> | <i>-2.7</i> |
| <b>Main source of income</b>  |                |            |                |            |               |             |
| Employment                    | 104,207        | 49.3       | 98,897         | 47.9       | -5,310        | -5.1        |
| Benefits                      | 29,339         | 13.9       | 30,922         | 15.0       | 1,583         | 5.4         |
| Pension                       | 51,218         | 24.2       | 56,012         | 27.1       | 4,794         | 9.4         |
| Student bursary               | 8,110          | 3.8        | 10,649         | 5.2        | 2,539         | 31.3        |
| No income                     | 18,628         | 8.8        | 10,105         | 4.9        | -8,523        | -45.8       |
| <i>Total Parkstad</i>         | <i>211,502</i> | <i>100</i> | <i>206,585</i> | <i>100</i> | <i>-4,917</i> | <i>-2.3</i> |

Note. The total for main source of income is slightly lower due to a small number of missing values. Data from Statistics Netherlands (2018), own adaptation.

to changes in source of income. The number of employed residents decreased, whereas the number of benefit claimants increased. Furthermore, aging processes have led to a considerable increase in pensioners. The most notable decrease can be found among individuals with no income at all. These are generally part of single-earner, mostly male-breadwinner, families. This group’s decreasing size reflects a rise in single-person as well as dual-earner households, combined with a gradual aging out of this population.

**Increasing sociospatial inequality**

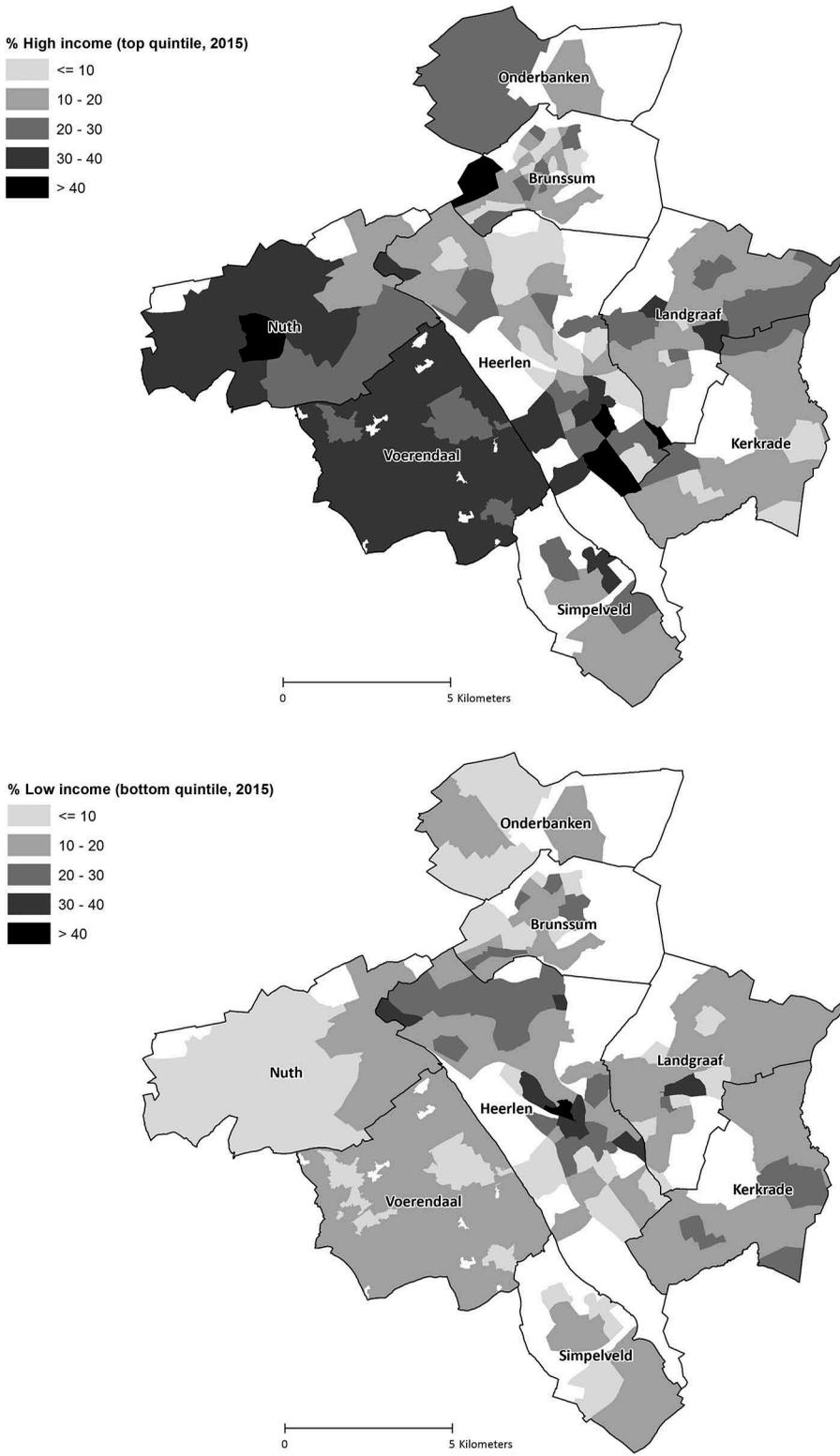
Trends toward greater socioeconomic polarization and inequality within Parkstad Limburg also have clear spatial dimensions and implications. Within the region, low-income residents are substantially overrepresented in high- and very high-density areas (Table 2), and between 2004 and 2015 their share has further increased there. In contrast, the already limited presence of poor groups in areas of very low density has further decreased. High-income residents, on the other hand, are strongly overrepresented in areas of low and very low density, and their share has increased at an above average rate. These uneven population distributions reflect the fact that low-density areas in Parkstad are marked by comparatively high real estate values and homeownership levels, whereas the opposite is true for higher density areas. Combined, these gradual spatial shifts have thus deepened already existing sociospatial divides. Relatively affluent low-density areas have strengthened their socioeconomic position, whereas concentrations of poor residents increased in high-density areas.

These dividing lines clearly crystallize at more fine-grained spatial scales (Figure 2). Shares of poor residents within the region are particularly high and increasing in Heerlen’s urban core, extending into the city’s northern parts. Affluent residents concentrate in the more rural areas in the west of the region, in the municipalities Nuth and Voerendaal, as well as in the southern parts of Heerlen. Simply put, the gap between already relatively affluent rural areas and poor urban neighborhoods is widening. This is also reflected in levels of spatial segregation in the region, as measured by the index of dissimilarity (Figure 3). Segregation between the poorest and richest income quintile groups increased from 34.4 in 2004 to 36.1 in 2015, a 5.1% increase.<sup>2</sup> The rich (top

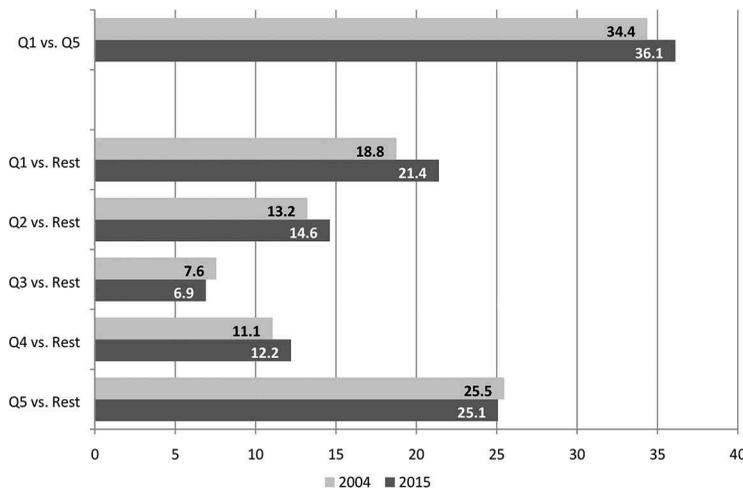
**Table 2.** Socioeconomic population composition (%) per density area in 2004 and 2015 and percentage point change between 2004 and 2015.

| Density        | 2004 Income groups (low to high)                  |      |      |      |      |         | Total %  | Total N |
|----------------|---|------|------|------|------|---------|----------|---------|
|                | Q1  | Q2   | Q3   | Q4   | Q5   | unknown |          |         |
| Very high      | 26.9  | 20.3 | 17.3 | 17.2 | 15.3 | 3.0     | 100      | 4,548   |
| High           | 17.9  | 24.0 | 23.2 | 20.0 | 13.8 | 1.1     | 100      | 93,459  |
| Average        | 16.3  | 22.6 | 23.4 | 21.5 | 14.8 | 1.3     | 100      | 59,498  |
| Low            | 13.2  | 20.9 | 23.9 | 23.0 | 17.8 | 1.3     | 100      | 35,616  |
| Very low       | 9.6   | 16.6 | 20.9 | 24.2 | 26.4 | 2.2     | 100      | 19,138  |
| Total Parkstad | 16.1  | 22.3 | 23.0 | 21.2 | 15.9 | 1.4     | 100      | 212,259 |
| Density        | 2015 Income groups (low to high)                  |      |      |      |      |         | Total %  | Total N |
|                | Q1  | Q2   | Q3   | Q4   | Q5   | unknown |          |         |
| Very high      | 29.0  | 21.0 | 18.2 | 16.7 | 14.2 | 0.9     | 100      | 4,685   |
| High           | 18.6  | 24.0 | 23.2 | 19.6 | 14.1 | 0.4     | 100      | 90,203  |
| Average        | 17.0  | 22.2 | 23.3 | 21.4 | 15.5 | 0.5     | 100      | 57,826  |
| Low            | 13.2  | 21.0 | 23.2 | 23.4 | 18.8 | 0.3     | 100      | 34,880  |
| Very low       | 8.6   | 15.5 | 20.8 | 25.8 | 27.7 | 1.6     | 100      | 18,998  |
| Total Parkstad | 16.6  | 22.2 | 22.9 | 21.3 | 16.5 | 0.6     | 100      | 206,592 |
| Density        | Percentage point change 2004–2015 (income groups) |      |      |      |      |         | Total pp | Total N |
|                | Q1  | Q2   | Q3   | Q4   | Q5   | unknown |          |         |
| Very high      | 2.0   | 0.7  | 0.9  | −0.5 | −1.1 | −2.1    | 0        | 137     |
| High           | 0.7   | 0.0  | 0.0  | −0.3 | 0.3  | −0.7    | 0        | −3,256  |
| Average        | 0.7   | −0.3 | 0.0  | −0.2 | 0.7  | −0.8    | 0        | −1,672  |
| Low            | 0.0   | 0.2  | −0.6 | 0.4  | 1.0  | −0.9    | 0        | −736    |
| Very low       | −1.0  | −1.1 | −0.1 | 1.6  | 1.3  | −0.6    | 0        | −140    |
| Total Parkstad | 0.5   | −0.2 | −0.1 | 0.0  | 0.6  | −0.8    | 0        | −5,667  |

Note. Data from Statistics Netherlands (2018), own adaptation. pp = percentage point.



**Figure 2.** Share of high-income residents (top map) and share of low-income residents (bottom map) per neighborhood in 2015. Data: SSD (Statistics Netherlands), own adaptation.



**Figure 3.** Dissimilarity index for income quintile groups in 2004 and 2015, in Parkstad Limburg. Data: SSD (Statistics Netherlands), own adaptation.

quintile) are most segregated from other residents, though slightly decreasing. Poor residents (bottom quintile) became substantially more segregated from other residents, as the index of dissimilarity increased from 18.8 to 21.4, a 14% increase. These analyses thus provide compelling evidence for sociospatial polarization in Parkstad Limburg.

An analysis of the Theil index confirms increasing spatial separation, with overall income inequality remaining stable. The index shows a small overall increase from 10.84 to 11.91 over the 2004–2015 period. The between-neighborhood contribution to this total score increased from 0.82 to 1.06, reflecting growing—though still modest—disparities between neighborhoods. Within-neighborhood inequality decreased from 10.02 to 9.85. Here, it should be noted that *between*-component contributions typically tend to be substantially lower than *within*-component contributions. In short, these results underpin the above analyses of the ID pointing toward increasing sociospatial separation.

### **The impact of housing interventions**

The question remains how regional (housing) policies figure into these patterns of increasing sociospatial inequality. To gain a sense of the socioeconomic and spatial impact of housing interventions, this section zooms in on the demolition of dwellings, as well as new constructions. As already elaborated upon in the policy analysis, for a prolonged period of time the number of newly built dwellings exceeded the number of demolitions, despite population losses. Indeed, over the period 2004–2015 we are able to determine a total of 6,235 new constructions, versus a total of 4,325 demolitions.<sup>3</sup> Only in the most recent years did the number of demolitions exceed that of new constructions.

These demolished and newly constructed dwellings cater(ed) to different types of residents. In 2004, prior to demolition, the soon-to-be-demolished dwellings were mainly home to low-income groups. Some 38.8% of those residents belonged to the bottom income quintile (compared to 16.1% for the total population). Relatedly, a relatively large share of those residents were dependent on benefits (30%). Demolitions thus selectively targeted dwellings of lower class groups, often inexpensive rental units. In contrast, new-build dwellings cater less to the poor (12.1% belong to the poorest quintile). Yet, overall, the socioeconomic status of new-build dwellings' residents is only slightly higher than the region's average: 18.7% of the residents in newly constructed dwellings belong to the top quintile (16.5% total population). Notably, pensioners make up 40.1% of the new residents. This reflects

**Table 3.** Number of demolitions and new constructions per area and the net influence of these interventions on the socio-economic population composition.

| Density   | Demolitions |     | New constructions |     | Net impact on different income groups |     |     |     |      |         |         |
|-----------|-------------|-----|-------------------|-----|---------------------------------------|-----|-----|-----|------|---------|---------|
|           | Abs.        | %   | Abs.              | %   | Q1                                    | Q2  | Q3  | Q4  | Q5   | Total % | Total N |
| Very high | 184         | 5.4 | 170               | 4.9 | -9.3                                  | 0.7 | 5.8 | 7.6 | 10.8 | 1.6     | 72      |
| High      | 2,713       | 4.8 | 3,463             | 6.1 | -4.6                                  | 1.2 | 3.0 | 3.8 | 5.3  | 1.7     | 1,556   |
| Average   | 754         | 2.2 | 1,237             | 3.7 | -1.8                                  | 0.7 | 2.0 | 3.4 | 5.0  | 1.8     | 1,069   |
| Low       | 577         | 3.0 | 1,110             | 5.7 | -0.9                                  | 2.6 | 3.4 | 3.5 | 4.3  | 2.8     | 994     |
| Very low  | 97          | 1.0 | 255               | 2.5 | -1.0                                  | 0.8 | 1.4 | 2.7 | 2.7  | 1.7     | 326     |
| Total     | 4,325       | 3.5 | 6,235             | 5.0 | -3.3                                  | 1.3 | 2.7 | 3.6 | 4.8  | 1.9     | 4,017   |

Note. Demolitions and new constructions are based on the number of households living in one of these dwellings (prior to demolition, or after construction). The percentage of demolitions and new constructions is relative to the total number of households in 2004 and 2015, respectively.

population aging and suggests that the new housing stock caters to their needs—including the construction of new (semi)dependent care homes. The newly constructed dwellings predominantly cater to residents who have already lived in the Parkstad region for a longer time. A total of 86.1% of the residents of new-build dwellings already lived in Parkstad Limburg in 2004, highlighting that only a modest share has gone to newcomers.

In sum, an overarching pattern of socioeconomic upgrading due to constructions and demolitions emerges, mainly due to the selective demolition of inexpensive dwellings housing low-income residents. The specific geography of these interventions makes it possible to gauge their relation to broader sociospatial inequalities. Demolitions concentrate in the (highly) urbanized areas of the region, where around 5% of the 2004 stock was demolished between 2004 and 2015 (Table 3). New constructions are more evenly distributed. In all areas, the combined impact of these housing interventions has been to increase the share of high-income residents at the cost of low-income residents, but the extent to which they have done so is spatially uneven.<sup>4</sup>

The impact of housing interventions on population composition is strongest in areas of high and very high density, whereas they are less present—though still there—in lower density areas. To give an example, the number of high-income (top quintile) inhabitants in very high-density areas increased by 10.8% compared to 2004 as a direct result of housing interventions, amounting to a net addition of 75 high-income inhabitants to a total of 663 high-income inhabitants already living there in 2004. Thus, the strongest upgrading through housing interventions has been achieved in those urbanized areas where patterns of socioeconomic downgrading have been most prominent (compare Table 3 with Table 2).

### Housing transformations

Selective housing interventions have thus dampened sociospatial inequalities by pursuing socioeconomic upgrading in a context of decline. Because this has been achieved by reducing the housing options for low-income groups, there may be important trade-offs concerning housing accessibility and affordability. It is therefore important to link the population changes detailed in the previous sections to overall housing market transformations. Between 2004 and 2015, the total number of owner-occupied dwellings increased in Parkstad Limburg, whereas the number of rental units, virtually all rent controlled, decreased (Table 4). Although increasing homeownership rates are in line with national trends, the absolute loss of rental units does set Parkstad apart from the rest of the country. This loss directly restricts the housing position of low-income groups dependent on affordable housing.

Within the owner-occupied sector, only the inexpensive housing segments increased in size (Table 4). Housing values in Parkstad are structurally below the national average, and this gap is increasing: in 2005, average house values in Parkstad stood at €169,000, 16% below the national average. By 2015, average house values were €161,000, 23% below nationwide values (Statistics

**Table 4.** Composition of the housing stock in Parkstad Limburg in 2004 and 2015, based on tenure and real estate values in Euros, and the share of low-income residents per housing segment.

|                |             | Housing stock |       |          |       | Low-income residents (%) |      |      |
|----------------|-------------|---------------|-------|----------|-------|--------------------------|------|------|
|                |             | 2004          |       | 2015     |       | 2004                     | 2015 | pp   |
|                |             | <i>N</i>      | %     | <i>N</i> | %     |                          |      |      |
| Owned          | <100K       | 3,478         | 5.7   | 5,946    | 9.1   | 20.5                     | 20.7 | 0.1  |
|                | 100K < 150K | 21,373        | 35.2  | 23,967   | 36.7  | 11.7                     | 9.9  | -1.8 |
|                | 150K < 300K | 31,459        | 51.9  | 30,628   | 47.0  | 7.6                      | 6.0  | -1.6 |
|                | ≥300K       | 4,341         | 7.2   | 4,685    | 7.2   | 9.2                      | 8.9  | -0.3 |
|                | Total       | 60,651        | 100.0 | 65,226   | 100.0 | 9.7                      | 8.8  | -1.0 |
| Rent           | <100K       | 22,465        | 44.2  | 27,740   | 57.4  | 29.8                     | 34.6 | 4.8  |
|                | 100K < 150K | 22,506        | 44.3  | 16,017   | 33.2  | 21.1                     | 21.8 | 0.7  |
|                | 150K < 300K | 5,441         | 10.7  | 4,203    | 8.7   | 14.8                     | 16.7 | 1.9  |
|                | ≥300K       | 436           | 0.9   | 338      | 0.7   | 30.5                     | 40.1 | 9.6  |
|                | Total       | 50,848        | 100.0 | 48,298   | 100.0 | 23.8                     | 28.4 | 4.7  |
| Total Parkstad |             | 111,499       |       | 113,524  |       | 16.1                     | 16.6 | 0.5  |

Note. Data from Statistics Netherlands (2018), own adaptation. Tenure and values based on 2006 and 2014 observation. pp = percentage point.

Netherlands, 2016). Low house prices may offer some low-income groups the opportunity to move into owner occupancy. But despite low prices, homeownership will stay out of reach for many residents because they do not qualify for a mortgage, especially because mortgage lending criteria have been tightened since the 2008 financial crisis (Ronald & Dol, 2011). This reflects the earlier noted oversupply of inexpensive owner-occupied units that are nevertheless inaccessible to large parts of the population (De Groot et al., 2014).

In fact, the share of low-income residents in homeownership has decreased over time, despite low prices (Table 4). Only in the most inexpensive owner-occupied segments, where house values are lower than €100,000, has the share of low-income residents remained stable. In contrast, concentrations of low-income residents in the shrinking rental sector are on the rise, especially in the least expensive part of the rental stock.<sup>5</sup> This is a direct consequence of selective demolitions. Although there is still a rather large supply of inexpensive rental units, these trends point toward a gradual residualization of social housing.

## Discussion: Regional housing policies and population change

Confronting key points from the policy analysis with actual patterns of population change in Parkstad Limburg, we have revealed interesting complementarities and contradictions between the two. Although since 2006, policies have focused on managing and guiding regional shrinkage, clear effects are yet to materialize. During the studied period 2004–2015, new housing constructions still outnumbered demolitions. Only in more recent years have constructions slowed down, not in the least due to the 2008 financial crisis. This apparent contradiction highlights the difficulties and time involved in moving from policy rhetoric to actual changes.

Another point of issue is what type of housing is demolished and built. Until now, predominantly inexpensive rental dwellings owned by housing associations and housing mainly low-income households have been demolished. Demolition ambitions for the near future are also likely to ultimately concentrate in the same inexpensive rental stock because it proves difficult to get individual homeowners on board. Yet, the analyses highlight that the number of low-income residents dependent on this type of housing has in fact grown, a trend that is expected to continue in the near future (Parkstad Limburg, 2016), and declining house prices in the owner-occupied sector do not enhance accessibility for low-income groups. Despite policies emphasizing the need for affordable housing, we find that selective demolition of inexpensive rental housing contributes to increasing poverty concentrations in the remaining and shrinking social rental sector.

This is not to say that current housing policies only focus on attracting affluent and highly educated newcomers. Despite policy rhetoric emphasizing the need to attract these groups, newly built housing mainly caters to long-term residents with a socioeconomic status similar to that of the region's overall population. Furthermore, and in line with policy intentions, new constructions house many pensioners—a rapidly growing group in need of tailor-made housing. In sum, notwithstanding exceptions, policy-induced class changes appear mostly driven by the selective demolition of inexpensive housing, rather than expensive new additions to the stock. However, it is questionable to what extent this is the result of careful planning rather than the region's limited attractiveness to higher status groups.

Spatially, policies focus on developing highly urban and rural places to live, whereas in-between areas are targeted for guided shrinkage. These policy ambitions are congruent with already existing intraregional differentiation in population development, because high-income groups increasingly concentrate in lower-density rural areas, whereas lower income groups do so in urban areas. Regional housing policies have dampened these sociospatial inequalities by pushing socioeconomic upgrading across the board but especially in urban areas with large and increasing poverty concentrations. A prime example in this regard is the current makeover of a large chunk of inner-city Heerlen (the Maankwartier) that includes the construction of owner-occupied and expensive rental housing.

## Conclusion

In this article, we have put forward an analysis of housing policies to manage shrinkage and assessed these from a social justice perspective by focusing on various aspects of inequality. In a context where growth thinking remains the dominant planning and policy paradigm, shrinking cities are thought to require a different approach in which population decline is not ignored or combated but accepted and perhaps even embraced as an opportunity for reinvention (Hollander et al., 2009). This implies that policies should focus on meeting the needs of current residents, rather than on attracting more “desirable” groups (Hospers, 2014).

However, in this article, we have shown that even when policies do not aim to restore the past but are realistically coping with decline, interventions may contribute to, or fail to mitigate, increasing inequalities. Though such inequalities have been primarily investigated in major urban or metropolitan contexts where they are connected to growing housing demand, intensified capital reinvestment, and new waves of liberal policy (Tamaru et al., 2016), in the vastly different context of shrinking regions we find a surge in inequalities as well. These follow from geographically, demographically, and socioeconomically differentiated shrinkage processes and may be weakened or amplified by policy choices at different bureaucratic levels.

Though there is increasing recognition of the need for government interventions in the housing market in shrinking cities to prevent segregation and the marginalization of low-income groups (Hackworth, 2016), our analyses show that policies reducing sociospatial inequalities need not go hand in hand with those reducing broader socioeconomic inequalities. Though housing interventions have dampened sociospatial polarization by concentrating upgrading efforts mostly in low-income areas, they have done so at the cost of reducing the housing opportunities available to poor residents, who are also more likely to continue living in shrinking regions. Even in the highly regulated and centralized context of the Netherlands—which provides relatively wide leeway to regional governments to steer developments in the housing market—it proves difficult to safeguard the accessibility, affordability, and suitability of housing for low-income residents in a context of shrinkage.

Our analyses therefore also show the difficulty of planning for decline. This is partly due to limitations imposed by existing construction plans, as well as broader financial constraints. Even within the Dutch context of relatively far-reaching redistribution of wealth between municipalities, lack of means to finance demolition gives local governments little space to redesign their city or region. In addition, some of the patterns and changes that are identified in this article, such as

increased sociospatial polarization, may be part of nationwide trends rather than being specific to the Parkstad region, which would make them difficult to counter through regional interventions alone. This suggests that for shrinkage to be seen as an opportunity, and in order to safeguard livability for those residents who remain, more fundamental political choices regarding who should be responsible for the financing of housing market restructuring and demolition are called for.

Overall, our findings point to the existence of key trade-offs in current shrinkage policies: facilitating shrinkage brings the quantitative housing stock more in line with existing demand but may at the same time particularly hit the housing opportunities of already struggling groups. Likewise, sociospatial inequalities may be countered but simultaneously exacerbate socioeconomic disparities if done through selective upgrading. Lastly, our findings suggest that policies are slow in transitioning from combating to managing shrinkage. Consequently, their full impact on inequality in the face of shrinkage has also yet to materialize.

## Notes

1. The quintile groups are relative, and thus comparable, to the entire Dutch population.
2. Although one should be careful in comparing segregation levels between different (types of) regions, especially internationally, these levels appear roughly similar to those found in many European capital cities (Tammaru et al., 2016).
3. Numbers of demolitions and new constructions are based on the number of households living in one of these dwellings (prior to demolition or after construction).
4. Importantly, it should be noted that these analyses have only measured the *direct* effects of interventions; potential indirect spillover effects and chain moves have not been captured. As discussed above, residents moving out of demolished dwellings primarily relocate within the region.
5. Their share also increased substantially in the most expensive parts of the rental stock, but this segment is very small.

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