# 7 Conclusion

## § 7.1 Background

Many European cities are faced with growing inequalities between different ethnic and income groups which is reflected in their distribution across the urban environment (Tammaru et al., 2016). Most cities are now characterized by distinctive spatial patterns where the rich tend to cluster together in high-quality neighborhoods in favorable locations, while the poor are overrepresented in disadvantaged neighborhoods dominated by social/public housing (Hulchanski, 2010; Van Eijk, 2010). In many cities, such spatial patterns of income inequality tend to show a strong overlap with ethnic inequality, illustrated by an overrepresentation of ethnic minorities in low-income concentration neighborhoods. However, spatial patterns of inequality can change over time as a result of processes of neighborhood change, which can significantly alter the urban geography of cities and regions. There has been a lack of longitudinal studies on neighborhood change and previous research has mainly focused on specific case-studies of gentrification and decline. As such, relatively little is known about the prevalence and rate of change across all neighborhoods in a city or larger urban region (Tunstall, 2016). The time-period, frequency, and composition of mechanisms that influence neighborhood trajectories may vary and neighborhood change can be non-linear, temporary, or long-lasting (cf. Galster, 2012).

This dissertation started from the idea that a longitudinal approach can be used as both a theoretical and methodological framework to analyze neighborhood change. A longitudinal approach will contribute to more insight into different pathways of neighborhood change over time and the role of various drivers of change. This dissertation sought to answer the following research questions: *(1) What trajectories of neighborhood change can be identified over time? (2) To what extent can neighborhood change be explained by population dynamics and housing stock characteristics?* To answer these questions, this dissertation analyzed the longer-term processes underpinning socioeconomic neighborhood change and the path-dependent role of the housing stock. It further examined how urban restructuring programs affected neighborhood change by shaping residential mobility through demolition and new construction. Focusing on ethnic neighborhood change, this dissertation examined changes in the

ethnic population composition over time through residential mobility and demographic change and its effects on ethnic segregation.

The analyses were based on Dutch population register data retrieved from the System of Social statistical Datasets (SSD) provided by Statistics Netherlands. The SSD contains individual-level geocoded data on the full Dutch population, in addition to housing stock characteristics. This dissertation analyzed neighborhood change on a relatively low spatial scale using 500 by 500 meter grids. Three out of four empirical chapters in this dissertation focused on the 1999 to 2013 period. One chapter used the last Dutch census of 1971 to provide a long-term perspective on neighborhood change. This dissertation employed innovative methodologies for the analysis of neighborhood change, viz. sequence analysis in combination with a tree-structured discrepancy analysis and Latent Class Growth Models (LCGMs). Both methods allows for the analysis of neighborhood trajectories and the classification of trends of neighborhood change.

## § 7.2 Summary of findings

This dissertation consisted of five chapters, one theoretical and four empirical chapters. These chapters are complete research papers, each with their own research question, theoretical framework, empirical analyses, results and discussion section. All papers have been published in peer-reviewed journals or are currently under review. The main findings from these chapters are summarized below. Section 7.3 then reflects upon this dissertation's main contributions to the literature and provides some suggestions for future research. The following section (7.4) discusses the limitations of this dissertation. Section 7.5 concludes with a discussion of the policy implications.

### § 7.2.1 The Global Financial Crisis and neighborhood decline

The Global Financial Crisis (GFC) and the subsequent recession has led to rising inequalities between the rich and the poor, particularly in terms of income and housing. Such macro-economic processes tend to have specific spatial outcomes, such as increased segregation, increased concentrations of poverty, and negative neighborhood effects (European Commission, 2010; Glaeser et al., 2009). It is well established that the GFC has had unequal effects across households, with vulnerable households being affected

the most, in terms of negative equity, unemployment, and declining incomes (Dreier et al., 2014; OECD, 2013a). It can therefore, be expected that the impacts of the GFC are most pronounced in disadvantaged neighborhoods, fuelling processes of neighborhood decline. An overwhelming amount of research has analyzed the effects of the GFC on the economy and/or the housing market, however, there have been few studies that have focused on how the GFC has affected the processes of neighborhood change.

Chapter 2 bridged two streams of literature by reviewing the literature on the consequences of the GFC and connecting it to the literature on neighborhood decline. This chapter hypothesized that the GFC will accelerate processes of neighborhood decline in disadvantaged neighborhoods and formulated ten ways in which different developments might affect neighborhood decline. The main goal of chapter 2 was to further the intellectual debate on neighborhood decline and to call for more research on the spatial consequences of the GFC and subsequent recession and government reforms, specifically on neighborhoods as an important territorial dimension of increasing inequality.

The GFC has had important consequences related to the availability of affordable housing in many countries. A growing number of disadvantaged households in need of affordable housing, in addition to stricter allocation of social housing to low-income households and limited production of new social housing, can lead to increased concentrations of poverty over time. Stricter rules on mortgage lending affects homeownership rates and is likely to lead to large differences in housing and neighborhood quality between renters and homeowners, giving rise to a spatial divide based on tenure (Forrest & Hirayama, 2015). Differences between generations in terms of housing opportunities are fuelled by the GFC, causing wealth and social class to become an increasingly stratifying factor over generations (Forrest & Hirayama, 2015; Hochstenbach & Boterman, 2017). In both cases, these developments can lead to increased socioeconomic segregation. Moreover, austerity programs and budget cuts imply that the involvement of governments and government-funded institutions in disadvantaged neighborhoods is decreasing, which can spur processes of neighborhood decline.

There is a need for more research on the long-term effects of the GFC, as a growing spatial gap between wealthy and disadvantaged neighborhoods, renters and homeowners, and privileged and less privileged families can be expected. Longitudinal research can provide insight in the ways in the GFC affected the urban geography and the extent to which the effects are temporary or long-lasting. A better understanding of how different mechanisms interact to influence neighborhood trajectories and spatial patterns of increasing inequality is necessary for effective policymaking in the aftermath of the GFC and the recession.

## § 7.2.2 The path-dependency of low-income neighborhoods

It is well-known that many large cities throughout Europe have experienced increased socio-spatial polarization over time (Tammaru et al., 2016). The literature suggests that the housing stock and the built environment of neighborhoods play an important role in processes of neighborhood change (e.g. Meen et al., 2013; Prak & Priemus, 1986). For example, gentrification has been related to the favorable location of neighborhoods and the architectural aesthetics of the housing stock which attracts higher income groups (e.g. Bridge, 2001; Zukin, 1982, 2010). Decline, on the other hand, is explained by the relative depreciation and declining quality of the housing stock (Prak & Priemus, 1986; Van Beckhoven et al., 2009). Few studies have however analyzed how the housing stock shapes neighborhood trajectories over time. Studies in this field are generally limited by (1) a short-time perspective, reducing neighborhood change to the difference between two relatively close together points in time, and; (2) a focus on specific case-studies of gentrification or decline. As a result, it is unclear to what extent neighborhoods with a similar housing stock experience similar processes of change over time – or to what extent processes of gentrification and decline are the exception to the rule. In addition, the question remains how these processes of neighborhood change affect other neighborhoods. Neighborhoods are part of a larger urban geography and processes of neighborhood change can spill over to other neighborhoods, for example through rising or declining house prices, or relative depreciation.

Chapter 3 presented a longitudinal approach for analyzing neighborhood change by focusing on detailed neighborhood trajectories. By analyzing the trajectories of low-income neighborhoods in the 31 largest cities in the Netherlands over the 1971 to 2013 period, chapter 3 investigated the relationship between the housing stock and spatial patterns over time. Using sequence analysis and a tree-structured discrepancy analysis, chapter 3 showed that neighborhoods exhibit a high degree of path-dependency. Neighborhoods with high shares of social housing in 1971 display a pattern of increased poverty concentration and neighborhood decline over time. A substantial increase in the share of owner-occupied housing in neighborhoods with a relatively high share of social housing contributes to more upward neighborhood trajectories.

Chapter 3 contributes to an understanding of longitudinal, contextualized patterns of neighborhood change. The results showed that neighborhoods with similar housing stock characteristics experience similar developments over time. The share of social housing in 1971 appears to be a crucial predictor of downward neighborhood trajectories. The results also illustrated how changes in one group of neighborhoods relate to the trajectories of other neighborhoods which suggests that processes of

stability, downgrading, and upgrading are not isolated processes but instead work together to shape the urban geography.

### § 7.2.3 The effects of physical restructuring on neighborhoods

In the decades before the GFC, many European governments implemented urban restructuring programs to regenerate disadvantaged neighborhoods. Urban restructuring aimed to break up concentrations of poverty by changing the spatial distribution of low-income residents through housing diversification (e.g. VROM, 1997). The demolition of social housing and the construction of more expensive owner-occupied or private-rented dwellings would stimulate the in-migration of middle- and high-class households, arguably leading to processes of neighborhood upgrading (Kleinhans, 2004). Many have however been critical about the effectiveness of urban restructuring programs in actually achieving neighborhood change (e.g. Lawless, 2011; Permentier et al., 2013; Tunstall, 2016; Wilson, 2013). The lack of evidence for the effects of urban restructuring on neighborhood change can be explained by three methodological limitations. First, urban restructuring programs consisted of several people- and area-based interventions that differed in size and scope between neighborhoods which makes it difficult to 'measure' urban restructuring. Second, urban restructuring programs generally targeted specific parts of neighborhoods while the rest of the neighborhood often remained unchanged. This implies that the effects of urban restructuring have to be large to change the trajectory of the entire neighborhood. Third, few studies have analyzed the effects of urban restructuring over longer periods of time, while the literature suggests that change takes time to take effect (e.g. Meen et al., 2013; Tunstall, 2016).

Chapter 4 overcame these limitations by focusing on the effects of demolition and new construction on a low spatial scale, i.e. 500 by 500 meter grids, over a 15-year period. Using propensity score matching, chapter 4 compared changes in the median neighborhood income between restructured neighborhoods, control neighborhoods, adjacent neighborhoods, and all other neighborhoods in the 31 largest Dutch cities between 1999 and 2013. Restructured neighborhoods have experienced the largest increase in the median neighborhood income as a result of attracting and maintaining higher income groups. Urban restructuring appears to have negative spillover effects in terms of an increased share of low-income households in adjacent and control neighborhoods.

The findings from chapter 4 shed new light on the effectiveness of urban restructuring programs to improve disadvantaged neighborhoods. Large changes to the housing stock

as a result of demolition and new construction can lead to neighborhood upgrading by changing the population composition of neighborhoods. Urban restructuring has been successful in breaking up concentrations of poverty by changing the spatial distribution of disadvantaged residents. However, urban restructuring has important consequences for the larger urban area as processes of displacement lead to a growing share of disadvantaged residents in other neighborhoods, potentially setting off new processes of neighborhood decline.

### § 7.2.4 Trajectories of ethnic neighborhood change

The share of ethnic minorities in many large European cities has increased over the past few decades and continues to grow (Vertovec, 2007) which raises questions about increased patterns of ethnic segregation. While some have argued that ethnic segregation decreases over time as a result of processes of spatial assimilation (e.g. Simpson & Finney, 2009), others have shown that ethnic segregation is persistent, illustrated by spatially segregated concentrations of ethnic minorities and natives (e.g. Johnston et al., 2016). Although it has long been assumed that residential mobility is the most important driver of ethnic segregation, a small body of research argues that the effects of residential mobility need to be understood in relation to demographic events (e.g. Bader & Warkentien, 2015; Simpson et al., 2008).

To understand patterns of ethnic segregation, many studies rely on classifying neighborhoods based on their ethnic population composition. A large body of research has used single-number indices to analyze ethnic segregation, reducing segregation to a static characteristic of neighborhoods and cities at a specific point in time (e.g. Duncan & Duncan, 1955; Massey & Denton, 1993, Peach, 1996). The use of indices fails to provide inside into contemporary patterns and varying degrees of population mix (Johnston et al., 2010; Poulsen et al., 2011). A different stream of research has therefore created typologies of neighborhoods based on the ethnic population composition (e.g. Johnston et al., 2010; Poulsen et al., 2001). However, these typologies are highly dependent on group sizes and tend to rely on arbitrary thresholds (Peach, 2009). Both approaches are limited in their ability to identify patterns of ethnic neighborhood change over time.

Chapter 5 used a LCGM to analyze trajectories of ethnic neighborhood change in the four largest cities in the Netherlands between 1999 and 2013. This approach allows for the identification of trends in the ethnic population composition over time by creating an empirical typology of ethnic neighborhood change. Despite a substantial growth in the ethnic population, chapter 5 found that neighborhoods show relative stability in

the ethnic population composition over a 15-year period. Although ethnic minorities are increasingly moving away from concentration neighborhoods, processes of natural growth play an important role in maintaining levels of ethnic segregation.

Chapter 5 found persistent patterns of ethnic segregation that are closely related to socioeconomic status. On the one end of the spectrum, there are 'White citadels' characterized by a native-majority population, high incomes, and high housing market values; on the other end, there are ethnic concentration neighborhoods characterized by multiple forms of disadvantage. Large-scale demolition and new construction as a result of urban restructuring has stimulated residential mobility out of disadvantaged neighborhoods, stimulating a trend towards ethnic deconcentration and increased spatial mixing, however, continuous high natural growth tends to slow this trend down. Chapter 5 contributes to an understanding of diverging processes of ethnic segregation over time and illustrates how residential mobility and demographic change reproduce the urban geography along ethnic and socioeconomic lines.

### § 7.2.5 Intergenerational continuity of ethnic segregation

Ethnic segregation appears to be a persistent feature of European cities. The literature argues that ethnic segregation will decrease over the course of generations. Once later generations are more socially and economically assimilated into society, they will arguably display the same residential mobility behavior as the native population (Massey, 1985). Studies indeed confirm that second generation ethnic minorities show more spatial dispersal and movement to more mixed neighborhoods (e.g. Bolt & Van Kempen, 2010a). The assumption of socio-spatial assimilation over the course of generations is implicitly captured in the official Dutch definition of ethnicity (Kooiman et al., 2012). Third generation ethnic minorities that are born in the Netherlands and whose parents are both born in the Netherlands, but with one or more grandparents from an immigrant background, are defined as native Dutch. It is assumed that these third-generation ethnic minorities are no longer socially, economically, and culturally different from the native Dutch.

The use of this definition has important empirical consequences. In the field of neighborhood change research, the use of this definition might lead to inaccurate conclusions about ethnic segregation. For example, when third generation ethnic minorities move into ethnic concentration neighborhoods, this will be interpreted as an inflow of natives, decreasing the share of ethnic minorities in a neighborhood. Similarly, childbirth among the second generation will also lead to a decreasing share of ethnic

minorities in a neighborhood, as their children are officially defined as native Dutch. In reality, third-generation ethnic minorities might still be very different from the native population in cultural, social, or economic terms, which might influence the residential preferences or behavior of other ethnic groups (cf. Schelling, 1971), and can thus play a role in processes of neighborhood change over time.

Chapter 6 analyzed intergenerational patterns of ethnic segregation by focusing on the residential patterns of third generation parental home-leavers in the 31 largest Dutch cities between 1999 and 2013. This chapter showed that third generation ethnic minorities continue to be overrepresented in ethnic concentration neighborhoods. An important explanation for this finding is the lower socioeconomic status of ethnic minorities compared to their native peers.

Chapter 6 sheds new light on intergenerational patterns of socio-spatial disadvantage which play a role in persistent ethnic segregation over time. The Dutch definition of ethnicity is problematic because it implies that later generations of ethnic minorities 'disappear' in official statistics, causing inequalities between individuals with a migrant background to be overlooked. This chapter also contributes to an understanding of how official definitions can have a major impact on statistical research and conclusions.

## § 7.3 Discussion of findings

This dissertation has adopted a longitudinal approach to analyze patterns of neighborhood change on a relatively low spatial scale. The findings from this dissertation contribute to the literature on neighborhood change in four ways. First, this dissertation has illustrated that neighborhoods remain relatively stable over time in their socioeconomic and ethnic status and that change takes several decades to take effect. Second, it highlighted the important role of the housing stock in shaping neighborhood trajectories. Third, this dissertation revealed the ways in which different population dynamics interact to inhibit or generate neighborhood change to reproduce socio-spatial inequalities. Fourth, the innovative methods that are explored in this dissertation contribute to broadening the scope of statistical methods for the longitudinal analysis of neighborhood change.

### § 7.3.1 Neighborhood stability and change

The main contribution of this dissertation to the literature on neighborhood change is the conclusion that neighborhoods tend to be relatively stable in their socioeconomic and ethnic status over time. This finding is in line with studies on the UK and Australia that have highlighted the temporal stability of neighborhoods (Meen et al., 2005; Meen et al., 2013; Tunstall, 2016). Neighborhood change appears to take several decades to take effect: this dissertation found relatively little neighborhood change over a 15-year period, but has shown large changes to the urban geography over 40 years (see also Hulchanski, 2010).

Three out of four chapters in this dissertation have analyzed neighborhood change over a 15-year period. This is a relatively short time span in this field of research, however, this dissertation required high-quality individual-level geocoded data which was mostly available from 1999 onwards. Chapter 3 overcame this limitation by using the last Dutch census of 1971 to provide a long-term perspective on neighborhood change. Research in this field ideally requires detailed individual-level geocoded data over several decades, however, there tends to be a trade-off between data quality and data availability. The growing availability of high-quality data from different sources over longer periods of time will be greatly beneficial for future neighborhood change research.

This dissertation challenges the dominant view that gentrification and decline are widespread processes that quickly transform neighborhoods and cities. This dissertation failed to identify extreme trajectories of gentrification or decline over a 15-year period, which implies that these processes are rather exceptional, only occurring in a limited number of neighborhoods (see also Cortright & Mahmoudi, 2014; Tunstall, 2016), and are generally slow processes that take decades to change the urban geography. These findings underline the importance of a longitudinal approach to identify different neighborhood pathways to understand how they shape the urban geography over longer periods of time.

### § 7.3.2 The role of the housing stock

This dissertation has highlighted the determining role of the housing stock in processes of neighborhood change. Neighborhoods tend to exhibit a high degree of path-dependency where initial advantages and disadvantages, in terms of location and housing quality, are reinforced over time (Meen et al., 2013). This dissertation has found that the share of

social housing in 1971 is an important determinant of future processes of neighborhood decline. Previous studies have also pointed to the relationship between (post-war) social housing and neighborhood decline (Prak & Priemus, 1986; Van Beckhoven et al., 2009).

Changes to the housing stock of neighborhoods have the ability to alter the trajectory of a neighborhood by stimulating selective residential mobility (Nygaard & Meen, 2011). This dissertation has shown how urban restructuring programs have changed the housing composition of disadvantaged neighborhoods. The demolition of social housing and new construction of owner-occupied or more expensive private-rented housing has led to processes of neighborhood upgrading by attracting and maintaining higher income groups. However, neighborhoods are part of a larger urban system and changes in one neighborhood are likely to affect other neighborhoods as well (Bråmå, 2013; Musterd & Ostendorf, 2005a). Urban restructuring programs tend to have negative spillover effects on other neighborhoods in terms of a growing share of low-income residents as a result of displacement. Future research should assess to what extent these negative spillover effects are temporary or leading to new processes of neighborhood decline over time.

### § 7.3.3 Population dynamics

This dissertation has illustrated how different population dynamics interact to maintain the status quo. Chapter 5 identified stable patterns of ethnic segregation over a 15-year period, while chapter 6 found that third generation ethnic minorities display high rates of residential mobility into ethnic concentration neighborhoods. The enduring existence of ethnic concentration neighborhoods appears to be related to the intergenerational persistence of disadvantaged socioeconomic status for members of ethnic minority groups. It is likely that this status limits residential opportunities, causing overrepresentation in disadvantaged neighborhoods. The extent to which ethnic segregation is the result of the residential 'choices' made by ethnic minority individuals preferring colocation with family and friends (Philips et al., 2007) is a question that this dissertation has not addressed. Future research should aim to provide more insight in the relative role of residential preferences and constraints in processes of ethnic segregation.

The findings from this dissertation suggest that urban restructuring programs have had a small deconcentrating effect by stimulating ethnic residential mobility out of concentration neighborhoods, however, this effect is impeded by natural growth. The relatively high fertility rate among ethnic minorities implies that they have a high rate of natural increase which is reflected spatially. While residential mobility has long been

seen as the most important driver of ethnic segregation, this dissertation has added to the small, but growing literature on the important role of demographic change (e.g. Bader & Warkentien, 2015; Simpson & Finney, 2009).

### § 7.3.4 Methodological contributions

This dissertation has explored innovative methods to analyze longitudinal neighborhood change. Many studies in this field have relied on percentile shifts or point-in-time measures to analyze change, or have focused on specific case-studies of gentrification and decline. These approaches provide little insight into different patterns of change which has led to an important gap in the literature. Two longitudinal methods have proven to be valuable methods for neighborhood change research.

Chapter 3 employed sequence analysis in combination with a tree-structured discrepancy analysis to analyze long-term neighborhood trajectories. Sequence analysis provides insight into detailed neighborhood pathways illustrating how neighborhoods move through different states over time (cf. Gabadinho et al., 2011). A tree-structured discrepancy analysis groups neighborhoods that experience similar trajectories together based on explanatory variables (cf. Studer, 2011). This dissertation has illustrated how variation in neighborhood pathways can be explained by the housing stock. This combination of methods allows for an approach that incorporates both long-term neighborhood change and a more detailed analysis of neighborhood trajectories, illustrating how differences between neighborhoods vary over time. One of the main contributions of the combination of sequence analysis and a tree-structured discrepancy analysis is the analysis of the relationship between trajectories and their contexts.

Chapter 5 used a Latent Class Growth Model (LCGM) to create an empirical typology of ethnic neighborhood change over time. LCGMs allow for the identification of trend over time by categorizing neighborhoods based on their unique growth trajectories of the ethnic population composition (cf. Nagin, 2005). The main contribution of LCGMs lies in the ability to identify trends over time, which provides insight into diverging patterns of change based on timing and pace. LCGMs are a promising method for neighborhood change research, especially in combination with the availability of high-quality annual data over longer periods of time.

## § 7.4 Challenges and limitations

This dissertation has analyzed longitudinal patterns of neighborhood change over a 15-year period on a low spatial scale, which is quite exceptional in this field of research. The analysis of various pathways of neighborhood change and their drivers, together with the use of innovative methodologies, is an important contribution to the field. However, this dissertation also faced a number of limitations that are discussed below.

### § 7.4.1 Gentrification

Although this dissertation has analyzed processes of neighborhood change, it has not specifically focused on processes of gentrification. While some refer to urban restructuring as a form of state-led gentrification (e.g. Uitermark & Bosker, 2014), this dissertation viewed gentrification as a more market-driven process of neighborhood change that occurs without direct government involvement. Gentrification can be characterized as a process where the advantages of the location, high-quality, and architectural aesthetics of the housing stock and built environment are reinforced over time, stimulating the in-migration of higher income groups and the out-migration of lower income groups, while urban restructuring is focused on improving disadvantaged neighborhoods through housing diversification. Although some of the mechanisms might be similar, processes of neighborhood upgrading as a result of urban restructuring programs are nowhere near as extreme as processes of gentrification in terms of rising neighborhood incomes, rising house prices, and large-scale selective mobility. The use of the term gentrification for different processes leads to an overestimation of the prevalence of gentrification, fuelling the view that gentrification is a widespread process that quickly changes neighborhoods and cities. Despite the bulk of studies on the topic, we have a limited understanding of the prevalence, extent, and rate of processes of gentrification across neighborhoods and cities. There is a need for more longitudinal research on neighborhood trajectories to get more insight in the extent of gentrification as a phenomenon and the share of all neighborhoods affected (see also Tunstall, 2016).

### § 7.4.2 Ethnic minorities

This dissertation has limited its focus on the four largest non-western migrant groups in the Netherlands for two reasons: (1) they have been at the heart of the debate on ethnic concentrations and ethnic disadvantage, and; (2) the four largest groups have the longest immigration history, producing a sizeable second generation and a growing third generation. As such, the four largest ethnic groups are interesting for research on ethnic neighborhood change, because processes of socio-spatial assimilation can be expected over the course of generations that can have important effects on the urban geography. However, the spatial distribution of the four largest ethnic groups is likely to be related to residential behavior and distribution of other non-western and western ethnic groups in the Netherlands. While many studies have analyzed ethnic segregation and the spatial concentration of ethnic minorities, relatively few studies have compared patterns of segregation across different ethnic groups. Future research would benefit from analyzing the residential patterns of different ethnic groups and the ways they interact to shape the urban geography along ethnic lines.

### § 7.4.3 Methodological limitations

This dissertation has explored two innovative methodologies for the analysis of longitudinal neighborhood change. While both methods have proven to be valuable tools for neighborhood change research, there are some limitations to them as well. Sequence analysis, in combination with a tree-structured discrepancy analysis, allows the analysis of neighborhood pathways and their contexts. In a stepwise approach, the tree-structured discrepancy analysis uses the most important predictor variable and its most important values to split the neighborhood sequences into two distinctly different groups. These two groups can then be seen as two groups of neighborhoods that follow different pathways over time, based on the differences in the level of the predictor variable. However, it is unclear to what extent these predictor variable levels are arbitrary cut-off points or if they can be interpreted as threshold values for processes of neighborhood change. This limitation reflects the nature of the modelling process and underlines the need to string theoretical reasoning beneath the models. In addition, the tree-structured discrepancy analysis currently only facilitates a split into two groups, however, it is likely that in reality more than two directions of neighborhood change can be identified. Fortunately, researchers are working on alternative algorithms that could facilitate more than two splits (Studer et al., 2010) which would make this new methodology highly suitable for neighborhood change research.

LCGMs allow for the identification of trends of neighborhood change based on similarities in timing and pace of change. However, model convergence and selection is a well-known issue with LGCMs and consequently, it is difficult to be certain about the 'true' number of trends over time which can be problematic in subsequent analyses (Warren et al., 2015). Ultimately, this limits the ability to use the identified neighborhood trends in further analyses on neighborhood outcomes. As a solution, researchers can use multiple indicators to determine the optimal number of groups (see also Jung & Wickrama, 2008; Nagin, 2005; Nylund et al., 2007). Researchers should however always be sensitive to the fact that the true number of groups is difficult to identify and use theory and prior research for model selection.

## § 7.5 Policy implications

This dissertation has focused on longitudinal patterns of neighborhood change and has found that neighborhoods are generally stable in their ethnic and socioeconomic status over time. This dissertation has argued that the housing stock plays a large role in maintaining relative stability and has shown how changes to the housing stock can stimulate processes of neighborhood change. Furthermore, this dissertation has illustrated how patterns of ethnic segregation remain stable over the course of generations and has analyzed the relative impact of residential mobility and demographic change. These findings have important societal implications and can contribute to effective policy making.

First and foremost, policy makers should be aware of the relative stability of neighborhoods over time. Without large-scale changes to the housing stock, neighborhood change takes time to take effect, often exceeding standard policy time. Moreover, although large-scale urban restructuring programs have been successful in upgrading disadvantaged neighborhoods, policy makers should keep in mind that these effects are very localized. While it is sometimes argued that urban restructuring has failed because it did not improve the socioeconomic position of individual households, this dissertation has illustrated that urban restructuring has had positive effects on the neighborhood level. Urban restructuring has contributed to breaking up concentrations of poverty by changing the spatial distribution of low-income residents, however, other neighborhoods have experienced an increase in the share of low-income households as a result of displacement. The Dutch policy of social mixing appears to have functioned as a buffer against new concentrations of poverty, maintaining relatively low levels of socioeconomic segregation (Musterd & Ostendorf, 2005b). However, this dissertation

has also argued that the GFC and subsequent austerity programs and budget cuts are likely to have specific spatial outcomes, affecting vulnerable neighborhoods and leading to new processes of neighborhood decline and socio-spatial segregation. The question remains to what extent the merits of urban restructuring and social mixing will be maintained over time.

The rise of neoliberalism since the late twentieth century as the dominant political and economic ideology has impacted social housing systems by introducing market forces to the provision of social housing (Taylor, 2017). This shift towards the marketization of social housing has been accelerated by the GFC. Some cities aim to stimulate processes of gentrification through the sales of social rented housing which reduces the size and quality of the social housing stock. It is, however, unclear to what extent the sales of social housing actually lead to gentrification or how they affect neighborhoods and cities. Reducing the size and quality of the housing stock can have important spatial consequences in terms of access to affordable housing and milking in the private rented sector (cf. Dol & Kleinhans, 2012; Aalbers, 2013). Policy makers should realize that reducing the social housing stock in large cities leads to exclusionary displacement (Marcuse, 1986), making (large parts of) cities inaccessible to low-income groups and having a major impact on the entire geography of cities and regions.

This dissertation has argued that enduring ethnic segregation can be explained by intergenerational ethnic disadvantage. The persistent existence of ethnic concentration neighborhoods seems to be the result of the relatively low socioeconomic status of ethnic minorities that are dependent on the availability of social housing. While urban restructuring programs seem to have stimulated ethnic residential mobility, high natural growth has contributed to the persistent existence of ethnic concentration neighborhoods. The question remains to what extent spatial patterns of ethnic disadvantage should be targeted by urban (re)development, or by investing in education and labor market participation. As studies have shown that socioeconomic mobility tends to lead to more residential opportunities and spatial dispersal (cf. Van Kempen & Bolt, 2010; Zorlu & Mulder, 2010), investing in socioeconomic opportunities appears to be key to combating spatial disadvantage.

This dissertation has highlighted how official definitions of ethnicity influence empirical conclusions. In the Netherlands, ethnic origin is defined on the basis of the country of birth of the parents. Although this is a relatively objective indicator, it tends to ignore other aspects of ethnic origin including visible minority status through skin color, as well as other invisible but clear markers such as language and culture. This dissertation has revealed that this definition only captures two generations, causing third generation ethnic minorities to disappear in official statistics. However, later generations of ethnic minorities might still be characterized by other aspects of ethnic origin which might play

an important role in group differences. As society is becoming increasingly ethnically diverse, policy makers should be aware that there are ethnic differences and group inequalities even though they might not be visible in official statistics.