

Gentrification Hotspots and Displacement in Berlin A Quantitative Analysis

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1 Introduction

"We will create more affordable apartments for all Berliners. To this end, we will increase the state-owned housing stock of Berlin to 300,000 units" (SPD election platform, 2011). The SPD embarked on the election campaign for the Berlin Senate with this campaign promise in 2011. It refers to a problem that has intensified in Berlin and elsewhere, namely an increasingly strained housing market.

Berlin's housing market is currently characterized by a surge in demand in all market segments and a significant shortage, especially in the lower rental price segment (IBB 2012, p. 15ff.). The result is declining vacancy rates, higher rents, and a tightened supply of affordable housing for lower-income households, especially in central locations (Krajewski 2013, p. 22). In addition, supplementary expenses (for utilities etc.) are rising and increasing the financial pressure on Berlin's renters (Fröhlich and Schönball 2012).

The reasons for these developments are many and diverse; both birth rates and net migration into Berlin are developing in a positive direction. As a result, the population is growing. It will increase by 254,000 by 2030 according to the median population projection, provided Berlin's economic development remains positive, the city consolidates its image as an attractive place to live and work, and new housing is provided through new construction (SenStadtUm 2012a; SenStadtUm 2012b). Another global cause for population growth in city centers is their increasing economic importance and, with respect to residential preferences, their high attractiveness for various population groups (Dangschat 1990, p. 69ff.; more extensively: Helbrecht 1996, p. 16ff.). The processes and developments mentioned do not, however, result in an even distribution of social groups in city centers, but rather their fragmentation along socioeconomic characteristics (Krajewski 2013, p. 21). There is a danger that this may bring about a segregation process that displaces people with a weaker socioeconomic status

from their previous places of residence, simultaneously excluding them from participation processes for spatial reasons and undermining the integrating function of the urban social mix; consequently, it must also be considered a process of exclusion (Häußermann et al. 2004, p. 33). Helbrecht (2009) calls this danger of social exclusion on the basis of spatial segregation processes a "city of enclaves."

At this point, the term gentrification is unavoidable. Gentrification has become a buzzword in discussions about substantial sociospatial changes within cities and urban neighborhoods. Besides its academic meaning there is now an emotional charge to the term. This is caused by concerns about rent increases induced by property value appreciation and residents' fear of displacement, investors' and speculators' expectations of higher returns, and politicians' hope of attracting residents with a stronger socioeconomic status to stabilize problem areas (Sumka 1976, p. 480f.). Especially fear of displacement motivates residents to resist and protest against planned gentrification projects, as expressed by the initiative "Mediaspree versenken!" ("Sink the Mediaspree project!" <http://www.ms-versenken.org/>) or the renters' group "I love Kotti" (see Scheer 2017 in this volume).

Much is known about the causes and driving forces of urban redevelopment and its actors; in contrast, the group of people displaced and negatively affected by this process, and the places to which they relocate, provide considerable potential for academic examination (see Helbrecht 2017 in this volume).

The goal of this chapter¹ is to study the places from which the displaced are driven out and the places to which they relocate. We carried out a comprehensive analysis that views the entire urban space of Berlin, using the work by Atkinson et al. (2011) for orientation in terms of methodology. A statistical secondary analysis and a migration analysis were performed in an attempt to answer the following research questions:

- In which areas of Berlin are the gentrification processes most intensive?
- Accordingly, what are potential places where displacement occurs?
- To which areas do the potentially displaced relocate, and can displacement to Berlin's urban fringe be proven?

1 We thank Felix Czarnetzki for his dedicated support in the conceptual phase and when reviewing and gathering data for the present work.

2 Clarification of Terms: Gentrification and Displacement

2.1 *Gentrification*

Many different, complementary, or partly contradictory definitions of gentrification, each with a particular focus depending on the research interest, are to be found in the literature (Friedrichs 1996, p. 13ff.). They range from very simple and stripped-down definitions naming just one key element to holistic definitions attempting to grasp gentrification in all its dimensions (Glatter 2007, p. 7).

This chapter considers gentrification to be a multidimensional, multistep process in which the value of urban neighborhoods is increased. Thus, it is in the category of the holistic definitions. The four dimensions are architectural, social, functional, and symbolic gentrification (Glatter 2007, p. 7; Krajewski 2013, p. 23). The aspect of social gentrification, to which other authors legitimately reduce the concept of gentrification, is ascribed an integral role here: the displacement of lower-status population groups by higher-status ones (Helbrecht 1996, p. 3; Friedrichs 1996, p. 14; Holm 2010, p. 7; Marcuse 1985, p. 198f.). Some authors use the neutral term 'exchange' in place of displacement and shed doubt on the notion that this aspect is an inherent element of gentrification (Glatter 2007, p. 8f.; Holm 2010, p. 7).

The designation of the four dimensions of gentrification was the first stage in an attempt to structure the various processes along the course of events that constitutes gentrification. Social gentrification subsumes the processes of exchanging residents and the resulting consequences regarding the social and demographic structure for the area in question. The architectural dimension includes the processes of renewal and increasing the value of the existing building stock through upgrading, the conversion of rental apartments to individually owned ones, and the improvement of the residential infrastructure. Functional gentrification refers to the changing structures of commercial activity within a neighborhood, especially the influx of high-quality service and retailing businesses, flagship stores, restaurants, and cultural institutions. Symbolic gentrification refers to the image generated and conveyed by political and business communities, residents, culture, tourism, and media (Krajewski 2013, p. 25; Holm 2010, p. 9).

The concept of a progression of phases was the second stage in attempting to structure the processes of gentrification. According to the highly simplified ideal type, the process of gentrification takes place in a double cycle of invasion and succession. In the first step, pioneers, usually students, artists, and people with a high amount of cultural capital, move into a residential area and displace some of the long-established population groups or move into vacant units. Gentrifiers follow in a second step, generally people with considerable economic capital,

and in turn displace longtime residents as well as pioneers (Helbrecht 1996, p. 5; Friedrichs 1996, p. 16; Holm 2010, p. 9ff.). The model has been criticized widely. The main arguments are directed toward the strict sequence of the phases as well as the insufficient description of the groups furthering the gentrification process, namely the pioneers and the gentrifiers (Helbrecht 1996, p. 5ff.; Friedrichs 1996, p. 16f.). However, no alternative has emerged that would better model gentrification in its chronological sequences with the actors involved. For this reason, we reverted to the model of the double invasion-succession cycle as an explicitly simplified representation of the gentrification process.

2.2 *Displacement*

The concept of displacement must be conceptualized in the context of gentrification. According to Grier and Grier (1978), displacement occurs "when any household is forced to move from its residence by conditions that affect the dwelling or its immediate surroundings, and that: 1) are beyond the household's reasonable ability to control or prevent; 2) occur despite the household's having met all previously imposed conditions of occupancy; and 3) make continued occupancy by that household impossible, hazardous, or unaffordable" (Grier and Grier 1978 as quoted in Marcuse 1985, p. 205).

Besides defining the concept of displacement, identifying the most vulnerable groups is also important. In their study on measuring gentrification and displacement in Melbourne and Sydney, Atkinson et al. (2011) describe groups they consider most vulnerable. These groups include households with just one employed person in unskilled employment, households of older retired persons, and unemployed persons under 65 (*ibid.*). This corresponds to the groups often mentioned in the academic literature as those displaced by gentrification, whereby they are often spoken of generally and with little differentiation as "lower-income groups" (Sumka 1976, p. 485), i.e., poorer households (Holm 2011, p. 18).

3 **Methodology**

The works by Atkinson (2000) and Atkinson et al. (2011) provided the key impulse for the methodology in our approach to answering our research questions. Atkinson et al. (2011) performed a two-step analysis to measure displacement. First, gentrification areas were defined, then the areas to which the displaced relocate were identified through migration analysis.

These two steps were adopted and modified here. The first step involved an analysis, supported by indicators and indices, of the urban area of Berlin, in

order to localize the areas with the most intensive gentrification. This was followed by the second step, a migration analysis of an area which the calculated indices showed to be particularly affected by gentrification and which was thus presumably also impacted by displacement.

We used Berlin's 60 prognosis areas as the spatial reference units. All parts of the city had to be included in the comparison to enable proper assessment of the extent of gentrification. For this reason, all 60 prognosis areas were examined (see Friedrichs 1996, p. 35).

3.1 Indicators and Construction of the Indices

Capturing the multidimensional concept of gentrification required consideration of more than one indicator in the study. The construction of multiple indices enables conflation and structured assessment of the indicators (Schnell et al. 1999, p. 160). For this reason, three additive indices that take account of the dimensions of gentrification were formed here.

In order to assess the gentrification processes, the selection of indicators integrates demographic and housing-sector aspects as well as socioeconomic ones (Friedrichs 1996, p. 21; Holm 2010, p. 62). The following indicators were used for this purpose:

1. Average volume of migration 2006 to 2009 (SenStadt 2006 and 2011a),
2. Percentage of the population resident for at least 5 years 2005 to 2010 (SenStadt 2011b),
3. Development of the 18-to-35 age group 2007 to 2011 (StatIS-BBB 2013),
4. Development of the 35-to-45 age group 2007 to 2011 (StatIS-BBB 2013),
5. Development of the number of long-term unemployed 2006 to 2009 (SenStadt 2007a and 2010),
6. Development of the percentage of foreign nationals 2006 to 2011 (Senstadt 2007b and StatIS-BBB 2013),
7. Development of purchasing power 2008 to 2011 (GSW Immobilien AG 2009, 2012),
8. Development of rents (excluding heating and utilities) for new rentals 2008 to 2011 (GSW Immobilien AG 2009, 2012),
9. Conversion of rental apartments to individually owned apartments 2005 to 2010 (SenStadt 2011b).

The percentage change compared with the relevant base year was calculated for each indicator and each prognosis area from the data gathered. The Berlin aver-

age was calculated from the percentage changes of all the prognosis areas in Berlin. When transforming the percentage changes into points, the Berlin average was assigned zero points, for orientation (Figure 1). Positive point values were assigned to signify the development of an indicator that implies gentrification.

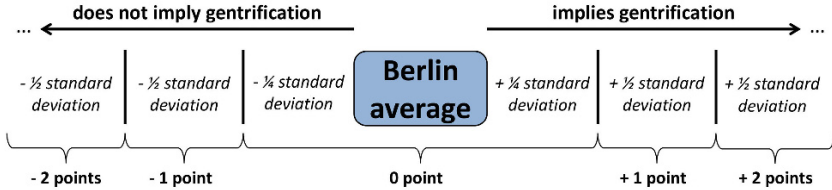


Figure 1: Method for assigning points (source: authors)

The indicators were synthesized to form three indices by adding the relevant points. The mobility index $I(M)$ was formed from indicators (1) and (2); the index for the change in population structure $I(B)$ from indicators (3) to (7); and the housing-sector index $I(W)$ from indicators (8) and (9) to enable observation of the changes separately. The indices were oriented toward the dimensions of gentrification mentioned in section 2.1. The two dimensions mentioned last, functional and symbolic gentrification, could not be examined in this way, however, because symbolic gentrification cannot be captured through secondary statistical analysis and small-scale data was not available for functional gentrification.

The results are shown in maps generated using ArcGIS software. The data for the basemaps were derived from the geo-database of the GIS server of the Geography Department of the Humboldt University of Berlin.

3.2 Migration Analysis

The migration analysis was conducted for the prognosis area Kreuzberg Ost using data from DEGEWO,² which owns housing in this area. The reasons for selecting this prognosis area lay in the results of the indices on gentrification as well as data availability.

The numbers of households moving into and out of the area were recorded. The destinations of the households moving out were identified and presented in maps. Studying this process at the level of postal codes permitted documentation of small-scale changes too.

2 DEGEWO is one of the leading housing companies in Berlin. We thank DEGEWO for providing us with the data and for processing it.

4 Assessment of the Indices

The thematic structuring of the indicators in three indices enabled differentiated observation and interpretation of the overlapping processes comprising the complex gentrification process.

4.1 Evaluation of the Mobility Index $I(M)$

The mobility index I(M), shown in Figure 2, is a measure of relocations within a prognosis area. The following indicators were used to calculate it:

1. Average mobility volume 2004 to 2009: Areas with the most registrations and deregistrations in the official population registry have the most points.
2. Percentage of the population resident for at least five years 2005 to 2010: Areas with the lowest percentages have the most points.

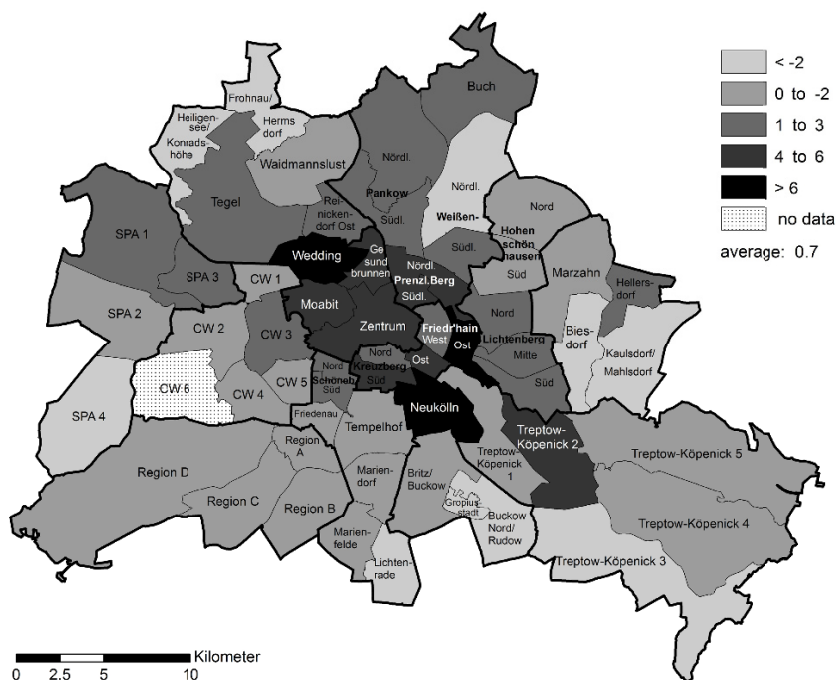


Figure 2: Mobility index I(M) (source: authors, on the basis of the authors' own calculations)

The areas with the highest I(M) values are Neukölln, Wedding, and Friedrichshain Ost. Zentrum, Kreuzberg Ost and Süd, Moabit, Gesundbrunnen, Nördlicher and Südlicher Prenzlauer Berg, as well as Treptow-Köpenick 2 also show high mobility. The prognosis areas of the third category, with an I(M) of one to three points, still have above-average mobility in relation to the average of 0.7 points. They include, among others, Kreuzberg Nord, Friedrichshain West, Schöneberg Nord and Süd, CW (Charlottenburg-Wilmersdorf) 3, Reinickendorf Ost, Pankow, and Lichtenberg.

The mobility index depicts a disparity between the center and the periphery in terms of population mobility, i.e., as a rule, mobility is higher in the center than at the urban edges. The reasons for this lie in the higher percentage of renters in central locations compared with owners (of houses) at the urban edge as well as in the demographic compositions of the prognosis areas.

Mobility is an important sign of changes in an area (Atkinson et al. 2011, p. 2), but says nothing about the direction of change. In the sense of revitalization and displacement, gentrification is linked most of all to increasing incomes and enhancing population status.

4.2 Evaluation of the Index for the Change in Population Structure $I(B)$

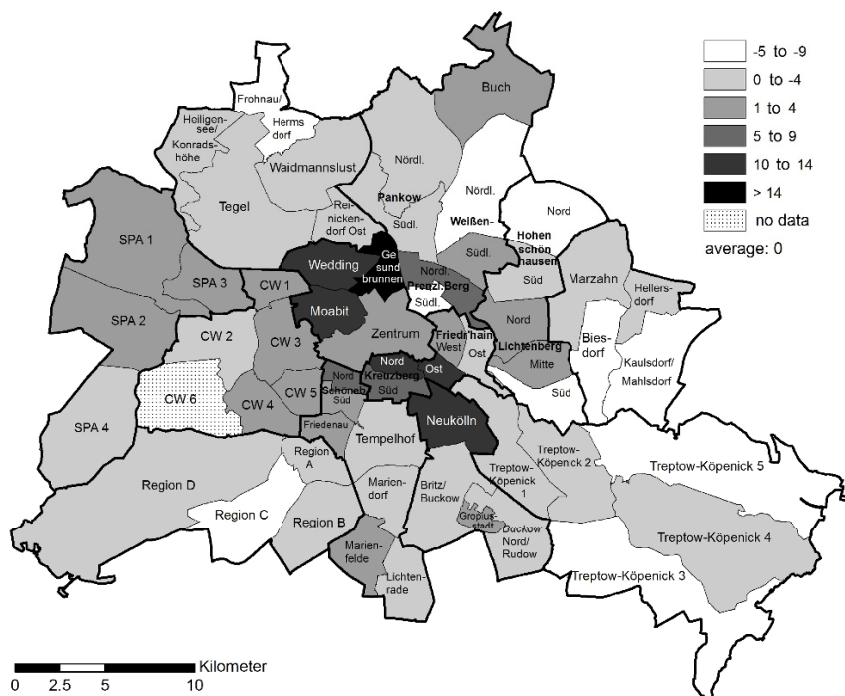


Figure 3: Index for the change in population structure $I(B)$ (source: authors, on the basis of the authors' own calculations)

The index for the change in population structure I(B) is a measure of the socioeconomic and demographic changes toward gentrification in the population of an area (Figure 3). It includes both changes from relocations into and out of an area and changes in the existing population (e.g., reductions in unemployment or increases in income).

The index was calculated using the following indicators:

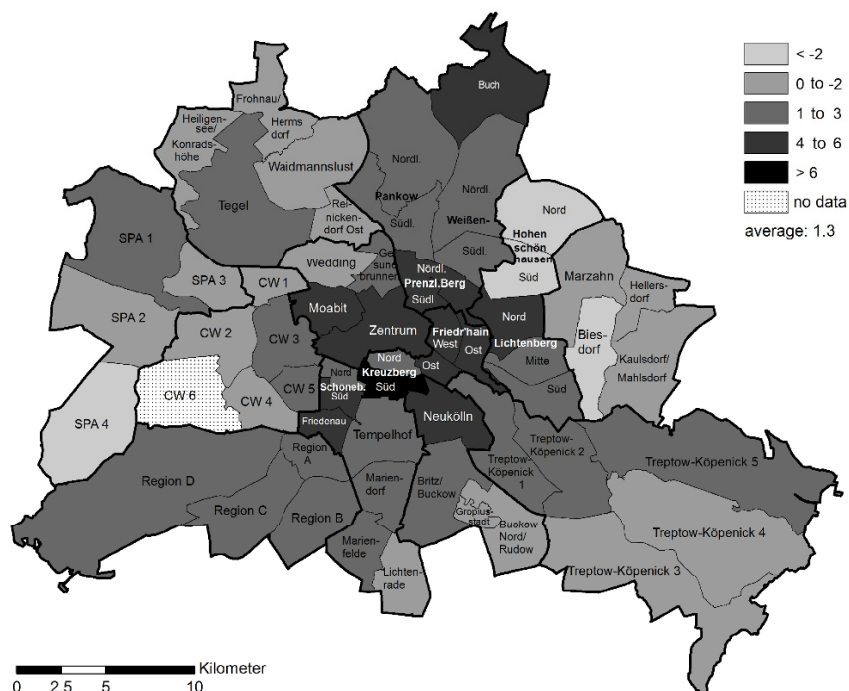
3. Development of the 18-to-35 age group 2007 to 2011: Areas with the highest increases of this age group's percentage have the most points.
4. Development of the 35-to-45 age group 2007 to 2011: Areas with the highest increases of this age group have the most points.

5. Development of the number of long-term unemployed 2006 to 2009: Areas with the greatest reductions have the most points.
6. Development of the percentage of foreign nationals 2006 to 2010: Areas with the greatest reductions have the highest number of points.
7. Development of purchasing power 2008 to 2011: Areas with the highest increases have the most points.

The area with the largest changes is Gesundbrunnen. The second category includes Kreuzberg Nord and Ost, Neukölln, Moabit, and Wedding, the third Nördlicher Prenzlauer Berg, Kreuzberg Süd, and Schöneberg Nord. In contrast, the changes in the population structures of Friedrichshain Ost and to a somewhat greater degree Südlicher Prenzlauer Berg are below-average or low.

4.3 Evaluation of the Housing-Sector Index $I(W)$

The housing-sector index $I(W)$ serves as a measure of changes in the situation in the housing sector (Figure 4). It shows on the one hand that conditions for private investments are improving, and on the other hand that conditions for low-income households are worsening precisely for this reason.



4.4 *Conclusions*

Table 1 shows the ranking of the prognosis areas for the three indices I(M), I(B), and I(W). Those prognosis areas were selected for in-depth analysis of spatially differentiated phases of gentrification between 2007 and 2011, the period under consideration, which display a high value (rank 1 to 8) for at least one of the three indices and which are located within or on the Berlin S-Bahn ring—in other words, in the area described by urban researchers as Berlin's "inner-city area."

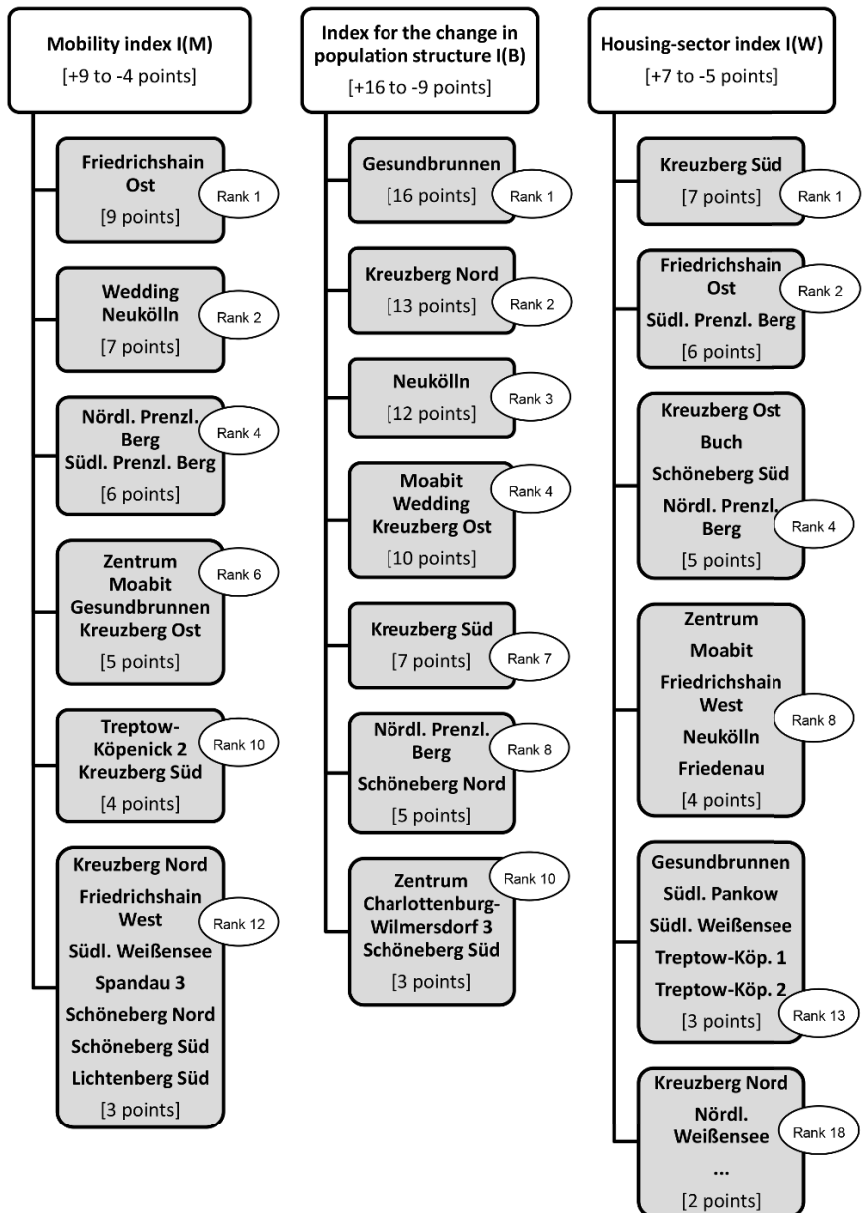


Table 1: Ranking of the indices I(M), I(B), and I(W) (source: authors)

These prognosis areas are shown in Table 2. The following groups were formed to differentiate the phases of gentrification:

a) Initial Phase of Gentrification: Early Pioneer Phase

This gentrification phase is characterized by a high I(B), a medium to low I(W), and a high to medium I(M). There is a large change in the population structure, strong to medium mobility, and the weakest change of underlying conditions in the housing sector observed in the areas in Table 2. This group of prognosis areas includes Gesundbrunnen, Kreuzberg Nord, Wedding, and Schöneberg Nord.

These areas are in an early gentrification phase which we call the early pioneer phase. It is probable that pioneers are moving in and displacing low-status households, whereby rent increases and conversions from rentals to individually owned units have not yet progressed much. This is surely still true, to a lesser degree, of Schöneberg Nord since the change in the population structure is not quite as strong there.

b) Middle Gentrification Phase: Pioneer to Gentrifier Phase

In this gentrification phase, I(B) and I(W) are high, and I(M) is high to medium. These areas are characterized by large changes in the population structure and the underlying conditions in the housing sector as well as strong to medium mobility. The large change in the population structure supports the notion of pioneers moving in, and the large change of I(W) toward rent increases and conversion of rental units to individually owned ones is an indication of gentrifier households with higher incomes moving in. In other words, the gentrification status in these areas extends from the pioneer phase to a beginning gentrifier phase during the period under examination from 2007 to 2011. An influx of pioneers and gentrifiers, displacing low-income and low-status households, is probable here. This is true of the prognosis areas Neukölln, Moabit, Kreuzberg Ost, Nördlicher Prenzlauer Berg, and Kreuzberg Süd. It is difficult to differentiate between these areas, but given the gradation of I(B), it can be concluded that Neukölln, Moabit, and Kreuzberg Ost are more in the pioneer phase, and Nördlicher Prenzlauer Berg and Kreuzberg Süd are more in the gentrifier phase.

Prognosis area	I(M) Mobility [+9 to -4 points] Points (rank)	I(B) Change in Population [+16 to -9 points] Points (rank)	I(W) Housing sector [+7 to -5 points] Points (rank)
Early pioneer phase			
Areas with	high to medium	high	medium to low
Gesundbrunnen	5 (6)	16 (1)	3 (13)
Kreuzberg Nord	3 (12)	13 (2)	2 (18)
Wedding	7 (2)	10 (4)	0 (37)
Schöneberg Nord	3 (12)	5 (8)	2 (18)
Pioneer to gentrification phase			
Areas with	high to medium	high	high
Neukölln	7 (2)	12 (3)	4 (8)
Moabit	5 (6)	10 (4)	4 (8)
Kreuzberg Ost	5 (6)	10 (4)	5 (4)
Nördlicher Prenzlauer Berg	6 (4)	5 (8)	5 (4)
Kreuzberg Süd	2 (10)	7 (7)	7 (1)
Gentrification phase to supergentrification			
Areas with	high	medium to low	high
Zentrum	5 (6)	3 (10)	4 (8)
Friedrichshain Ost	9 (1)	-3 (41)	6 (2)
Südlicher Prenzlauer Berg	6 (4)	-6 (58)	6 (2)
Cannot be clearly assigned to a category			
Areas with	medium	medium	high
Friedrichshain West	3 (12)	2 (13)	4 (8)
Schöneberg Süd	3 (12)	3 (10)	5 (4)

“high”: ranks 1 to 8; “medium”: ranks 9 to 20; “low”: ranks 21+

Table 2: Phases of gentrification in the prognosis areas, 2007 to 2011 (source: authors)

c) Later Gentrification Phase: Gentrifier Phase to Supergentrification

This gentrification phase displays medium to low I(B) and high I(W) as well as high I(M). Compared with the other groups, the changes to the population structure are smallest, despite high mobility, and the underlying conditions in the housing sector show large changes concerning rent increases and conversion of rental units to individually owned ones. This is true of the prognosis areas Zentrum, Friedrichshain Ost, and Südlicher Prenzlauer Berg.

In these areas, the gentrification status is partly in the gentrifier phase, and partly already in the phase of supergentrification (Lees 2003, as cited in Holm 2011, p. 218). In this late gentrification phase, middle- to high-income households are displaced by households with very high incomes and high status. This is true in particular of Friedrichshain Ost and Südlicher Prenzlauer Berg, which show the smallest changes in the population structure.

d) Prognosis Areas that Cannot Be Clearly Assigned to a Category

Friedrichshain West and Schöneberg Süd. These areas are characterized by a medium I(B), a high I(W), and a medium I(M). Such index values may mean a small amount of migration that does not imply large changes to the population structure as well as large rent increases and numerous conversions of rental units to individually owned ones. They cannot be assigned to a particular gentrification phase.

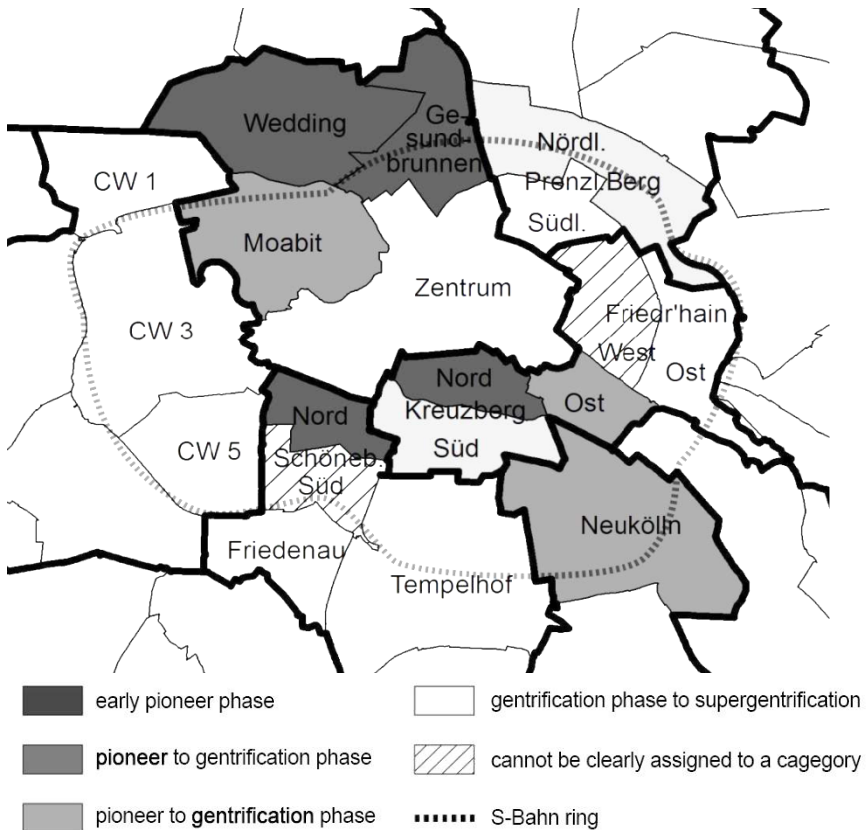


Figure 5: Gentrification phases 2007 to 2011 (source: authors)

The gentrification phases from 2007 to 2011 are summarized in Figure 5. It also becomes clear here that the three prognosis areas in Kreuzberg display different amounts of change, whereby the degree of gentrification increases from Kreuzberg Nord to Kreuzberg Ost to Kreuzberg Süd. Kreuzberg is also the object of more in-depth examinations in this volume.

Following Holm's analysis of gentrification in Berlin, the process occurs temporally in the form of waves and spatially clockwise, as a gentrification circle (Holm 2011, p. 215f.). Accordingly, the pioneer phase of gentrification began in Kreuzberg (1987), then shifted to Mitte (1992), Prenzlauer Berg (1997), Friedrichshain (2002), and Neukölln (2007), and took hold of previously

modernized Kreuzberg last (*ibid.*). In addition to these areas, we identified Moabit, Wedding, Gesundbrunnen, and Schöneberg Nord as impacted by gentrification during the period under examination from 2007 to 2011, thus going beyond the gentrification circle described by Holm. Accordingly, these areas must be included in the gentrification circle, which must be expanded to a gentrification spiral as shown in Figure 6.

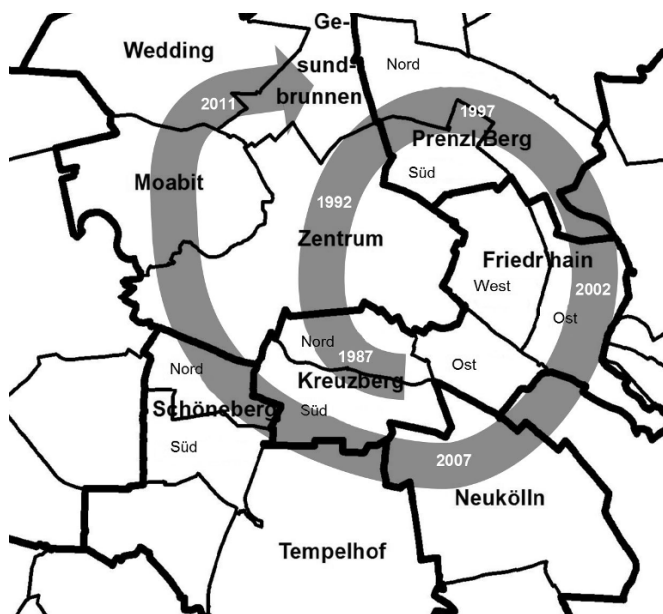


Figure 6: Berlin gentrification spiral (source: authors, changed following Holm 2011)

5 Migration Analysis

One area with high values for all three indices, in which gentrification and displacement are therefore likely, was studied in more detail. This enabled us to complement the findings from the area data with an analysis of the people moving in and out, and to pursue the question as to the destination of those displaced.

The analysis was based on data from the municipal housing company DEGEWO, which has 1,128 apartments in the prognosis area Kreuzberg Ost in the postal code area 10997 near Mariannenplatz. From 2006 to 2011, an average of 125 households per year moved in, and 110 households moved away; the

vacancy rate was reduced from 4.3 to 0.6%. It must be taken into account that DEGEWO as a municipal housing company must apply certain prescribed rules when renting out apartments and working with tenants e.g., those with *Wohnberechtigungsscheine* (documents certifying eligibility to rent subsidized rental units). Consequently, DEGEWO's rental strategy is different from those of private landlords. For example, rent increases for new rental contracts were significantly more moderate than those prevailing in the area: for new rentals in Kreuzberg Ost, DEGEWO charged €5.36 rent (excluding heating and utilities) per m² in 2008 and €5.77 in 2011; the average in the area was €6.25 in 2008 and €7.77 (ranging from €5.05 to €11.74) in 2011. However, there were also apartments in Kreuzberg Ost which were offered for rent at a lower price than DEGEWO apartments (GSW Immobilien AG 2009, 2012).

Since only a very small number of households moved from Kreuzberg Ost to other DEGEWO housing (just two households in 2011), we can assume that the destinations of those moving out were practically not influenced at all by the housing company.

5.1 Destination Areas of People moving out of DEGEWO Housing in Kreuzberg Ost, 2006 to 2011

From 2006 to 2011, a total of 660 households moved out of DEGEWO housing in Kreuzberg Ost. Averaged across these years, 90.9% of the households remained in Berlin, 5.2% moved to Germany's western *Länder*, 2.0% to Germany's eastern *Länder*, and 1.9% out of Germany.

The postal codes of the destination areas were available for those moving within Berlin. Figures 7 and 8 show the destination areas within Berlin, both at the level of prognosis areas and at the smaller-scale level of postal code areas.

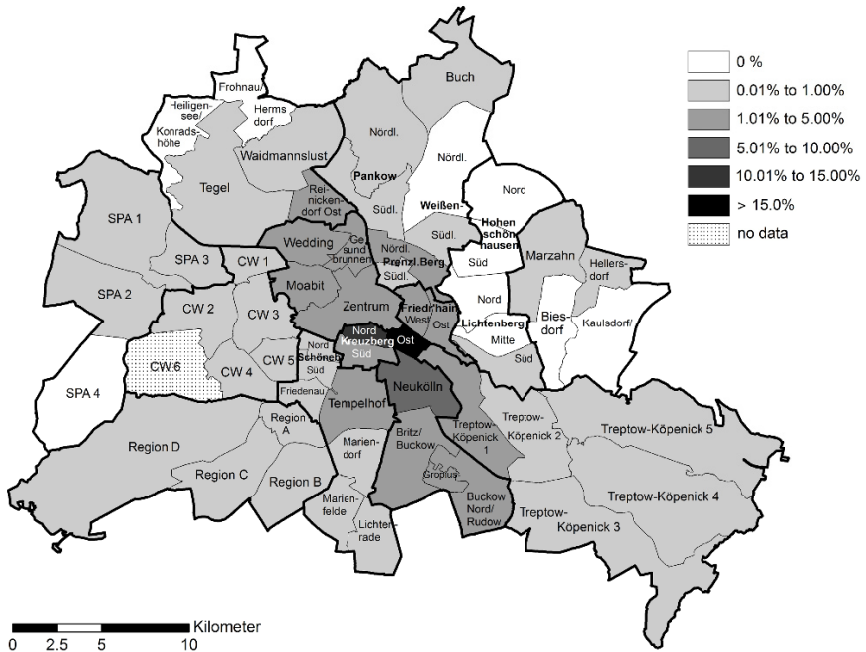


Figure 7: Destination areas of people moving out of DEGEWO housing in Kreuzberg Ost (2006 to 2011) in % (source: authors, with DEGEWO data)

The main destinations were the prognosis areas Kreuzberg Ost (38.4%), Kreuzberg Nord (14.5%), and Neukölln (8.9%). A total of 25.8% of those moving out relocated to the prognosis areas with 1.01 to 5.0% each; and a total of 12.4% to the prognosis areas with 0.01 to 1.0% each.

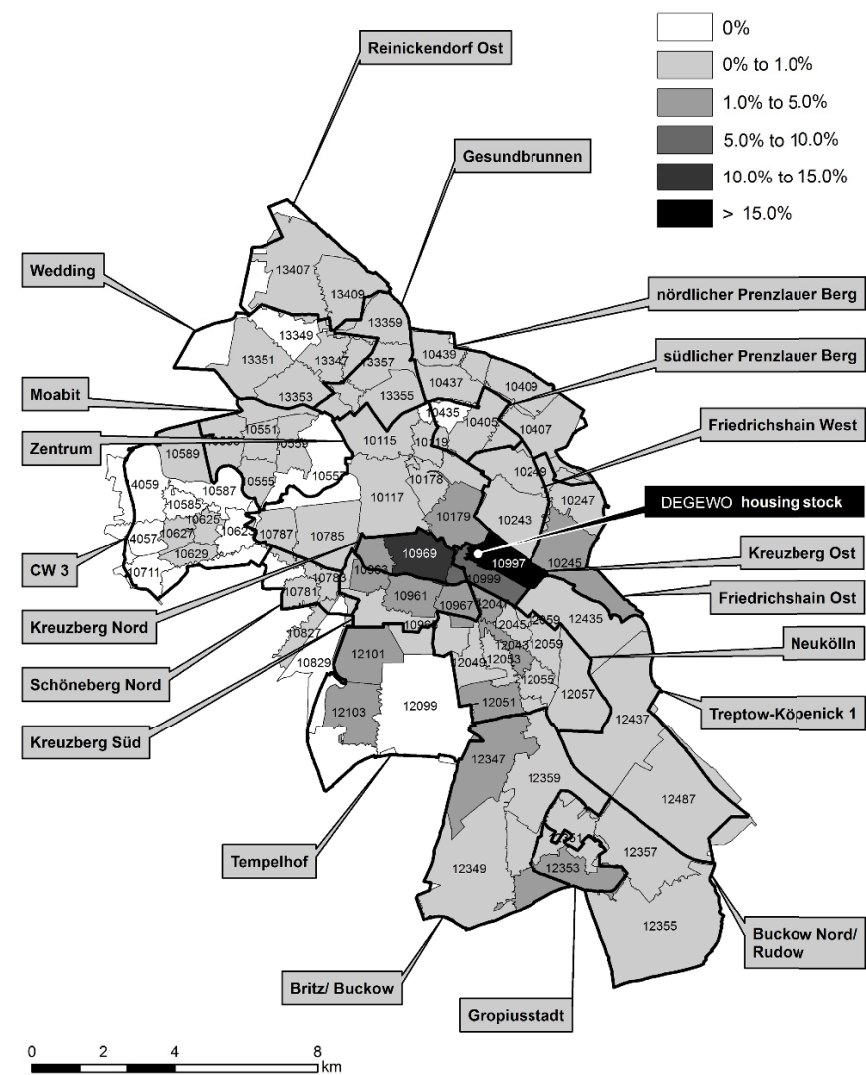


Figure 8: Destination areas of people moving out of DEGEWO housing in Kreuzberg Ost (2006 to 2011), in %, at the level of postal code areas (source: authors, with DEGEWO data)

The following percentages at the level of postal code areas emerge from the analysis of people moving out (Figure 8):

Kreuzberg Ost	postal code 10997	29.8%
	postal code 10999	8.6%
Kreuzberg Nord	postal code 10969	12.5%

This means that roughly 30% of the households moving out remained in the same postal code area. In Kreuzberg Nord, the preferred destination is the area with the postal code 10969. Apartments were offered for rent in this area in 2011 with an average rent (excluding heating and utilities) of €6.40 per m² (ranging from €4.82 to €10.36) (GSW Immobilien AG 2012).

In total, what emerges is that households that relocated—whether or not they were displaced—remained in the same or neighboring parts of the city. Reasonably priced rental offers obviously played a decisive role. It cannot be proven that moving to the urban edge was common, since only a total of 10.5% of the households moving out relocated to prognosis areas there. Of these, the prognosis areas Gropiusstadt (2.6%), Britz/Buckow (1.6%), and Buckow Nord/Rudow (1.3%) alone, which are at the urban edge of the district of Neukölln, comprised 5.5%. A total of 5% of the households moving out relocated to the other prognosis areas at the urban edge.

6 Interim Conclusion, Migration Analysis

The high number of households moving in and out of the DEGEWO apartments in Kreuzberg Ost confirms what emerged from the area data, namely the high mobility in the prognosis area Kreuzberg Ost.

Gentrification is described as a process "concerning an urban neighborhood" (Helbrecht 1996, p. 3), whereby the question as to the size of the "urban neighborhood" has not been answered to date. The example of the DEGEWO renters shows that more than 50% of the households moving out relocated to a new apartment not more than two kilometers away (Figures 7 and 8: Relocations within Kreuzberg Ost and to Kreuzberg Nord). Another 10% remain within just five kilometers (Figures 7 and 8: Relocations to Neukölln). More than 20% of those moving out even stay in their postal code areas (Figure 8). In other words, gentrification and displacement have occurred to a considerable degree at a small spatial scale. It is possible that even postal code areas are too large for examining these processes. When explaining the methodological problems of

previous displacement analyses, Holm (2010, p. 62) points out, among other things, that relocations to the immediate surroundings are not taken into account.

Atkinson defines gentrification areas in Melbourne and Sydney with a diameter of roughly five kilometers (Atkinson et al. 2011, p. 18f.). He studies the households moving out of these areas, but not those relocating within the "G locations." Yet depending on the household type (e.g., employed or unemployed renters, owner-occupiers), 40 to 60% move to neighboring areas, and 14 to 27% in Melbourne and 4 to 12% in Sydney move to the urban edge (*ibid.*, p. 30, 36).

Of the DEGEWO households moving away, only a small fraction totaling about 10% (60 of 600 households) moved to the 24 prognosis areas located at Berlin's urban edge. The only cluster (2.6%) was in the prognosis area Gropiusstadt, where these households obviously found a neighborhood similar to that in Kreuzberg Ost.

7 Conclusion and Outlook

Where in Berlin is the process of gentrification currently most intense? And to which areas are the displaced being displaced? To answer these questions, we analyzed the change processes from 2007 to 2011 on the basis of area data for all prognosis areas in Berlin. Each of the values for the changes in the indicators were related to the Berlin average, and three indices—for mobility, changes in population structure, and changes of the underlying conditions in the housing sector—were synthesized from the indicators. This enabled us to identify areas with above-average gentrification tendencies in various stages of the process of gentrification, which were thus the areas with the highest probability of displacement (Figure 5). They included the prognosis areas Neukölln, Kreuzberg Ost, and Kreuzberg Nord. The present analysis shows—for the first time for Berlin—that intense gentrification processes are taking place in Moabit, Wedding, Gesundbrunnen, and to a lesser degree in Schöneberg Nord. These areas go significantly beyond the gentrification circle described so far by Andrej Holm, which includes only neighborhoods in Mitte, Prenzlauer Berg, Friedrichshain, Northern Neukölln, and Kreuzberg in the spatial shifts of pioneer phases of gentrification in Berlin (Holm 2011, p. 214; Krajewski 2013, p. 25). Accordingly, we expanded Holm's gentrification circle to what we call a "Berlin gentrification spiral" (Figure 6). Further analyses are required for the prognosis areas Moabit, Wedding, Gesundbrunnen, and Schöneberg Nord to more precisely characterize the early pioneer phase of gentrification occurring there.

For a later gentrification phase characterized by the construction of luxury apartment complexes and the influx of more elite and globally networked individuals with very high incomes, we found high values for the housing-sector index, whereby the population structure no longer showed large changes. This was true of the areas Friedrichshain Ost, Südlicher Prenzlauer Berg, and Zentrum. Holm (2011, p. 218) described this gentrification phase for Mitte and Prenzlauer Berg as the phase of "supergentrification."

A clear differentiation emerged for the prognosis areas in Kreuzberg: the degree of gentrification increases from Kreuzberg Nord to Kreuzberg Ost to Kreuzberg Süd. The analysis of data from the 1990s for Berlin's districts showed both upgrading and downgrading occurring in Kreuzberg (Krätke and Borst 2000, p. 263). By now, significant gentrification is taking place here, the intensity of which differs between the three areas of Kreuzberg.

In a second empirical step, we conducted a differentiated migration analysis for the housing stock of the DEGEWO housing company in Kreuzberg Ost in an attempt to describe the gentrification process, which is discernable from the changes in the area data for the prognosis area Kreuzberg Ost overall, in more detail with respect to the spatial displacement processes it entails. The result is that more than 50% of those moving away relocated into a presumably cheaper or more fitting apartment no more than two kilometers away—that is, in the same or a neighboring part of the city. This means that gentrification and displacement are (still) to a considerable degree processes taking place at a small spatial scale. People want to remain in the surroundings they are accustomed to or to move to similar neighborhoods. Only a small percentage of households relocated to more distant places in Berlin. Direct displacement from central locations to the urban edges could not be proven on a wider scale. However, this cannot be ruled out in the future if rental and real estate prices continue to rise and the housing market in central locations is increasingly in the high-priced segment (on "bow waves" of gentrification in Berlin, see the contribution by Förste and Bernt 2017 in this volume).

The insight remains that, if displacement of low-status population to the urban edge occurs in the context of gentrification, then it must take place in multiple relocations. In other words, chains of relocations must be analyzed in order to study the phenomenon in more detail. The extent to which relocation behavior is specific to particular demographic and socioeconomic characteristics is examined in "Where Do They Go? Where Do They Want to Go? Displacement from Kreuzberg" (Koch et al. 2017 in this volume) through surveys of residents of Kreuzberg. It emerged that age, form of household, and educational level certainly would influence the choice of the location of residence in case of displacement.

Many Berlin neighborhoods are experiencing a rapid process of change. Suitable data is insufficient for proving, explaining, and guiding this process at a sufficiently small scale. For example, small-scale data on educational level and professional status of the population does not exist.

By conducting the area and migration analyses, we were able to identify areas with intensive gentrification and to describe the spatial behavior of relocating households. We were not able to differentiate between voluntary and forced relocations; the quantitative analysis reaches its limits here. An in-depth examination of displacement requires inclusion of aspects at the individual level as well. Not only are the changed conditions of the residence or the residential surroundings decisive, but the personal preferences of those on the demand and the supply sides also influence relocation decisions (Krätke and Borst 2000, p. 159). How does a household respond to the pressure arising from a gentrification process? Such questions can be answered only through the individual method on the basis of surveys. In the chapter "The State-Made Rental Gap" (Ertelt et al. 2017 in this volume), this topic is examined using buildings in subsidized rental housing in Kreuzberg and Neukölln where the effects of gentrification and displacement are particularly striking because of the discontinuation of follow-on financing for subsidized rental housing. "Basic financing" (*Grundförderung*) to subsidize loans for the construction of housing for low-income tenants was limited to a period of 15 years, with an additional 15 years of "follow-up financing" (*Anschlussförderung*) granted if certain criteria were fulfilled. In 2003 the Berlin Senate voted to phase out all follow-up financing.

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