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Can Public Housing Decrease Segregation? Lessons and Challenges From Non-European Immigration in France

Can Public Housing Decrease Segregation?

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Abstract Recent decades have seen a rapid increase in the share of non-European immigrants in public housing in Europe, which has led to concern regarding the rise of ghettos in large cities. Using French census data over three decades, we examine how this increase in public housing participation has affected segregation. While segregation levels have increased moderately, on average, the number of immigrant enclaves has grown. The growth of enclaves is being driven by the large increase in non-European immigrants in the census tracts where the largest housing projects are located, both in the housing projects and the surrounding nonpublic dwellings. As a result, contemporary differences in segregation levels across metropolitan areas are being shaped by the concentration of public housing within cities, in particular the share of non-European immigrants in large housing projects constructed before the 1980s. Nevertheless, the overall effect of public housing on segregation has been ambiguous. While large projects have increased segregation, the inflows of non-European immigrants into small projects have brought many immigrants into census tracts where they have previously been rare and, thus, diminished segregation levels.

Keywords Social housing · Public housing · Immigration · Segregation · France

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Introduction

The rise of non-European immigration in recent decades has greatly diversified the population in European countries (Koopmans et al. 2005). In 2010, the population born outside the European Union represented, on average, 8 % of the population in these countries (Vasileva 2011). In contrast with the intra-European migration that has long prevailed in Europe, non-European immigrants encounter substantial barriers in the labor markets that are associated with higher levels of residential segregation (see, e.g., Glitz 2014; Moraga et al. 2015; Musterd 2005; Préteceille 2009; Quillian and Lagrange 2016; Safi 2009; Tammaru et al. 2016). Furthermore, a large and increasing share of non-European immigrants live in public housing, the impact of which on segregation levels has been understudied.

In this study, we use restricted access census data over the last three decades in France to document how the growth of the non-European immigrant population in public housing has affected the immigrants' spatial segregation. France is an interesting country to study with regard to these questions because its non-European population is large, diverse, and growing rapidly. Between 1968 and 2012, the share of non-European immigrants in the population multiplied by four, at first fueled by immigration from Maghreb[1] and, increasingly since the 1980s, by immigration from sub-Saharan Africa and Asia.

Whereas explanations of residential segregation mainly focus on group differences in human capital, discrimination, and residential preferences (Crowder and Krysan 2016), the role of the structure of housing markets—in particular, large-scale public housing policies—in shaping residential options has received less attention. According to Table 1, in 2006, public housing accounted for more than 35 % of the total housing stock in the Netherlands, 25 % in Austria, 21 % in Denmark, and approximately 18 % in both England and France. Although they remain far from being the majority of inhabitants in most housing projects, immigrants have disproportionately settled into public housing in recent years. Table 1 shows that 60 % of immigrants in Denmark live in public housing, compared with 51 % in the Netherlands, 30 % in France, and 28 % in England. In France, as we document later, approximately 41 % of non-European immigrants lived in public housing in 2012, which was up from 30 % in 1982.

We conjecture that in the French and, more generally, the European context, the influence of public housing on residential segregation might be *a priori* ambiguous. Europe is characterized by a very large supply of public housing where a relatively diverse population resides. Although somewhat overrepresented in the largest projects, immigrants are otherwise present in all segments of the public housing sector. We hypothesize that an increase in the number of immigrants in small and dispersed housing projects might *decrease* segregation if these projects were located in more diverse neighborhoods. In contrast, a rising concentration of immigrants in the largest projects might *increase* segregation if it reinforced the homogeneity of the neighborhood. This would be more likely to happen if natives either leave or avoid the surrounding private housing dwellings in the neighborhood in response to inflows of immigrants in the projects.

[1] The Maghreb is a North African region that includes Algeria, Morocco, Tunisia, Libya, and Mauritania.

Table 1 Immigration and public housing in Europe (in percentage points)

	Share Foreign-born in Population	Share Public Rental Sector	Share Immigrants Living in Public Housing	Public Housing Residents Who Are Immigrants
Austria	14.7	25	20	6
Denmark	6.6	21	60	20
England	9.5	18	28	10
France	8.8	17	30	22
Germany	12.7	6	15	29
Netherlands	10.6	35	51	34

Notes: Column 1 shows the share of foreign-born in the population, except for France, where the share of immigrants is reported. Column 2 shows the share of the public housing sector with respect to other type of housing tenure (owner occupation and private rental). Column 3 shows the share of immigrants living in public housing. All figures are from 2006, except for Germany in columns 3 and 4, where the figures refer to 2012.

Source: Column 1 is from the International Migration Database (OECD 2018), except for France, where we use the French census data. Columns 2, 3, and 4 are from Whitehead and Scanlon (2007: Tables 1 and 11), except for data for Germany in columns 3 and 4, which are from German Socio-Economic Panel (SOEP) (2013); tabulations are from the authors.

We test these hypotheses using two different levels of aggregation. First, we investigate how the share of immigrants in housing projects of different sizes has shaped the dissimilarity and isolation indices of non-European immigrants at the metro area level. Consistent with our hypotheses, we find that the effect of public housing on segregation depends largely on the share of immigrants in the largest housing projects, even when differences in socioeconomic characteristics of non-European immigrants across cities are accounted for. Although the share of non-European immigrants in small projects does not affect segregation levels, a similar share in large projects is associated with dramatically higher segregation levels and, in particular, a high concentration of immigrants in enclaves.

Second, at the neighborhood level, we trace how inflows of immigrants across cities have affected the population within housing projects of different sizes and the population in private housing next to these projects. Because differences in immigrant inflows across cities might be driven to some extent by the local availability of public housing (Verdugo 2016), we use an instrumental variable based on ethnic networks to address the immigrants' endogeneity (Card 2001). We find that the increase in the share of non-European immigrants has been relatively evenly spread across public housing projects within the metro areas. In contrast, we find the progression of non-Europeans *in private housing* to be three times larger next to the largest projects than next to the smaller-scale projects. Overall, we interpret our findings as evidence that small-scale public housing projects have enabled non-European immigrants to enter neighborhoods where they were previously rare, thereby potentially decreasing segregation. At the same time, the disproportionate growth of the immigrant population both *within* large public housing projects as well as *around* them explains the rise of immigrant enclaves.

One important limitation of our study is that we cannot include second-generation immigrants in the analysis because they cannot be identified in the census data when they do not live with their parents. Also, the data do not contain any variable to measure

segregation along either racial or ethnic lines. In 2015, second-generation immigrants of non-European origin[2] accounted for 6 % of the population, compared with 5.3 % for the first generation (Brutel 2017). However, given that half of them live with their parents, the share of second-generation non-European immigrants that we cannot identify accounts for 3 % of the population. Clearly, excluding them from the analysis underestimates segregation indices along ethnic lines.

Theoretical Background

Three main theoretical models have been put forward to explain the residential segregation of immigrants and minorities: spatial assimilation, place stratification, and racial residential preferences (Charles 2003; Crowder and Krysan 2016). These models were developed and tested in the North American context (Crowder et al. 2012; Iceland and Scopilliti 2008; Iceland and Wilkes 2006; Logan and Alba 1993; Logan et al. 2002, 2004; South et al. 2008; Wagmiller et al. 2017); however, they have only recently been examined in Europe (Bolt et al. 2008; Friedrichs 1998; Glitz 2014; McAvay 2016; Musterd 2005; Musterd and Ostendorf 2009; Pan Ké Shon and Verdugo 2014, 2015; Peach 1996; Rathelot and Safi 2014; Schönwälder and Söhn 2009; Simpson and Finney 2009).

The spatial assimilation model (Alba and Logan 1993; Massey and Denton 1985) predicts that as immigrants and their descendants experience acculturation and upward socioeconomic mobility, they gradually move out of concentrated areas and into more diverse neighborhoods. Neighborhoods of high immigrant concentration—termed *immigrant enclaves*—are thus conceptualized as port-of-entry types of neighborhoods and transitory along immigrants' residential trajectories.

To explain the persistence of segregation, proponents of the place stratification model (Logan 1978; Logan and Molotch 1987) have emphasized the role of prejudice and discrimination (Massey and Denton 1985; Yinger 1995) as well as racial residential preferences (Boschman and van Ham 2015; Krysan and Farley 2002; Krysan et al. 2009). High and persistent levels of segregation may reflect discriminatory practices in the private housing market by real estate agents and landlords (Ross and Turner 2005). White tenants might also flee neighborhoods in response to immigrant concentration—a phenomenon called "white flight" (Bobo and Zubrinsky 1996; Hall and Crowder 2014)—or avoid moving into multiethnic neighborhoods—the so-called "white avoidance" (Andersson 2013; Bråmå 2006). Immigrants might also prefer neighborhoods with a higher share of coethnics (McAvay 2018; Rathelot and Safi 2014; Vigdor 2003), whereas natives might prefer living in homogenous neighborhoods that enable the reproduction of their institutional and cultural capital (Bacqué et al. 2015; Bridge 2006; Bridge et al. 2012; Butler and Robson 2001).

A notable difference between the United States and France is the high prevalence of public housing in the latter. Recent work suggests that the large public housing sector in France might distribute immigrants across a wider range of neighborhoods without concern for their origin (Algan et al. 2016; Kesteloot and Cortie 1998; Oberti and

[2] They are defined as having at least one immigrant parent from non-European origin.

Préteceille 2016; Quillian and Lagrange 2016), thereby potentially decreasing their segregation. However, prior research raises some doubts with respect to the desegregation potential of public housing in Europe. Musterd and Deurloo (1997) argued that ethnic segregation may develop within the public housing sector in Amsterdam and that as a result, its large public sector might not prevent the increase in segregation. In France, qualitative research finds evidence of discriminatory practices from public housing authorities in the allocation of immigrants across housing projects (Bourgeois 2013; Masclet 2006; Sala Pala 2005; Tissot 2006).

Even if one assumes that housing authorities' objectives are to diminish segregation, Schmutz (2013) theoretically demonstrated that their ability to do so is constrained by the responses of the inhabitants of private housing. A disproportionate increase in the share of immigrants who live in large housing projects may deter natives and attract immigrants in private housing in the neighborhood, which reinforces the homogeneity of the neighborhood and increases segregation. In contrast, the progression of immigration in small projects might not change the composition of private housing as long as the share of minorities remains small.

Based on this discussion, we draw two main hypotheses that we test empirically in the study. First, we examine the extent to which differences in segregation levels across French cities are related to differences in the share of non-European immigrants in housing projects of different sizes, accounting for differences in their socioeconomic characteristics. More precisely, we expect that

> *Hypothesis 1:* Although a larger proportion of non-European immigrants in large projects will increase segregation, their presence in small projects will either have no influence or decrease segregation.

Second, we examine *how* differences in the allocation of households across public housing projects and the responses of households in the private housing sector contribute to rising segregation and to the growth of enclaves. We expect

> *Hypothesis 2:* Census tracts with large housing projects attract higher inflows of non-European migrants not only in the public housing sector but also in the private housing sector.

Data and Methods

The empirical analysis exploits restricted-access data from the French Census over three decades using the 1982, 1990, 1999, and 2012 census years. We use individual files that contain information on location and nationality at the census block level (approximately 500 inhabitants) for each census year. We have access to 25 % sample extracts for almost all of the years. These large samples allow us to measure precisely the composition of the population across neighborhoods in both private and public sector housing. An *immigrant* is defined as a person who is born abroad without being of French nationality at birth; thus, this definition includes foreigners and naturalized immigrants. We classify immigrants using the country of birth and focus on non-Europeans because the segregation levels of European immigrants are low and

declining (Pan Ké Shon and Verdugo 2014; Préteceille 2009). Finally, although the census contains detailed information on labor force status and occupation, it does not include any measure of income.

Following Quillian and Lagrange (2016), we use metro areas as the local unit of analysis. Defined by the French statistical institute, they consist of a set of municipalities characterized by a continuous built-up area.[3] To ensure comparability over time, we fix the boundaries of metro areas using their definition in the 1999 census.

We measure segregation and change in neighborhood characteristics at the level of the French equivalent of the census tract, the *Ilots Regroupés pour l'Information Statistique* (IRIS). The IRIS is a sociospatial division that was introduced by the French statistical institute with the 1999 census. IRISs are half the size of average U.S. census tracts, and they delineate geographic areas with an average of 2,500 inhabitants, following natural boundaries such as major streets, railway lines, and watercourses. For the 1982 census, we use information at the census block level to recover the IRISs.[4] Pan Ké Shon and Verdugo (2015) demonstrate that using such pseudo–IRISs instead of actual IRISs has little effect on the measurement of segregation. For simplicity's sake, we refer to the IRIS as census tracts in the rest of the article.

Following Cutler et al. (2008) and several studies, we measure segregation at the census tract level through two standard indices—dissimilarity and isolation—which capture two crucial dimensions of segregation—evenness and exposure (Massey and Denton 1988). The formula of these indices is reproduced in the online appendix. The index of dissimilarity indicates the proportion of immigrants from a particular group who would need to change residence for each census tract to have the same percentage of their group as does the metropolitan area overall. The index of isolation follows Bell (1954) and measures how exposed immigrants from a group are to one other, rather than to other members.[5] The standard interpretation of this index is that it captures the probability that a randomly chosen immigrant in the census tract will next meet another (randomly chosen) immigrant from the same group.

One important difference between these indices is that the dissimilarity index is composition-invariant: it does not change when the proportion of natives or immigrants changes uniformly in all census tracts. In contrast, the isolation index cannot have a value lower than the share of the group in the population. As a result, longitudinal changes in isolation indices might be difficult to interpret when the share of the group in the population increases over time, which is what we observe for non-European immigrants. To address this issue, we report the adjusted isolation index Eta^2, proposed by Massey and Denton (1988) and White (1986), which normalizes the isolation index

[3] This corresponds to the definition of *unités urbaines*.

[4] We constructed pseudo–IRISs by aggregating contiguous census blocks to create a zone with a population of approximately 2,500 inhabitants. For the 1990 census, we use a correspondence table provided by the French statistical institute that aggregates census blocks into IRISs.

[5] The index is the weighted average of each immigrant proportion in the population of each census tract, weighted by the number of immigrants in each tract.

with the contemporary share of the group in the population. As for the dissimilarity index, this adjusted index is always between 0 and 1.[6]

Following Cutler et al. (2008), we calculate all indices of segregation with respect to all nongroup members, which includes not only natives but also other immigrant groups. Furthermore, we estimate the indices using only the population of heads of households[7] to avoid the risk that the segregation indices of immigrants might be lowered by the presence of the children of immigrants in the household. This implies that our indices are not influenced by second-generation immigrants who live with their parents and who account for 3 % of the population.

Basic Facts on Public Housing

Public or *social housing*, as it is called in Europe, is the provision by the state of housing at a price lower than the market rent through housing authorities, municipalities, or independent organizations, such as housing associations (Andrews et al. 2011).[8]

The first public housing programs followed the Great Depression in the United States (Stoloff 2004) and World War II in Europe (Harloe 1995:210). Their initial ambition was not only to eliminate urban slums but also to improve the housing conditions of a large share of the population. Over time, two main models emerged (Andrews et al. 2011). The first is a broad-based or universal model that characterizes some Scandinavian and northern European countries, such as France and the Netherlands. In that model, public housing aims to cover a large and diverse population, and a large supply ensures its accessibility (Scanlon et al. 2014). In a second targeted or residual model, public housing is also highly subsidized but strictly means-tested, small in scale, and often stigmatized. This residual model is common to welfare liberal regimes, such as Australia, the United States, and, increasingly, the United Kingdom (Scanlon et al. 2014).[9]

Because the scale and the composition of inhabitants differ widely, each model has quite different consequences for the segregation of immigrants and minorities. In the residual model, public housing rapidly concentrated impoverished minorities (see, e.g., Hunt 2009). However, with less than 1 % of households living in public housing in 2017 in the United States,[10] public housing has very little influence on average segregation in the United States compared with Europe.

[6] The adjusted isolation index Eta^2 is equal to 0 when the share of immigrants is similar in all census tracts *and* corresponds to their share in the population; it equals 1 when immigrants are found only in census tracts without any nonmembers.

[7] We categorize a household as immigrant if the head of household is an immigrant.

[8] In many countries, but not France, the private sector is increasingly involved in social housing through public and private partnership in development and ownership (Whitehead and Scanlon 2007:12–13).

[9] Kemeny's (1995, 2001, 2006) distinction between a dualist rental market and a unitary or integrated rental market is similar in many respects but places more emphasis on the degree of competition between the not-for-profit (public) system and the for-profit private market.

[10] According to figures from the U.S. Department of Housing and Urban Development. See https://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/programs/ph.

French Public Housing in Practice

The French public housing system distinguishes three categories of dwellings by the maximum household income at entry and the rent that has to be paid. The category depends on the construction date and the type of financial aid received from the central government during the construction, so it cannot be changed.[11] The eligibility thresholds are similar across France, except in the Paris region, where they are higher. Approximately 55 % of households are eligible for the standard public housing category that includes approximately 86 % of the dwelling stock (INSEE 2017:126).[12] When the high-threshold category (PLS/PLI) that accounts for 9 % of the stock is included, the share of eligible households increases to 72 %. A third category of low-income public housing (PLAI) accounts for 5 % of the stock, and approximately 23 % of low-income households are eligible.

To preserve the social mix, households are allowed to stay if their income increases and exceeds the initial threshold, but they have to pay a modest extra amount of rent. As a result, 30 % of public housing inhabitants have an income level above the median, and 10 % have an income level in the highest income quartile (Laferrère 2011:236).

Although it has been marginally reformed several times, the allocation process remains decentralized at the local level. Dwellings are managed by 1 of the 755 local housing authorities that are controlled by local government, either the municipality or the county. Eligible families can apply through any municipality, regardless of their current location. For immigrants, the only requirement is to be legally living in France (as a naturalized citizen or with a valid residence permit).[13] In the context of a chronic housing shortage in large metro areas, the number of applicants for public housing has been increasing constantly, with working class background, social networks, and housing difficulties being among the main drivers of demand (Dietrich-Ragon 2013).

Following their application, families are put on a waiting list. Their rank depends on their household characteristics, with priority given to households that have members who have disabilities or who are victims of conjugal violence. Housing authorities might not strictly follow the waiting list as they attempt to preserve the social mix across their projects (Simon 2003), which results in longer waiting times for immigrants (Bonnal et al. 2013). Because it is not possible to apply to a particular dwelling or housing project, offers of housing are often refused, and the rank in the waiting list is lost. In 2013, approximately 24 % of households who arrived in public housing in the previous four years had refused an offer previously (INSEE 2017:126). In approximately 50 % of cases, the refusal was motivated by the characteristics of the neighborhood.

[11] That categorization is not reported in the census data, but we have information on the construction year.

[12] The standard category (PLUS) includes all units constructed before 1977 and 74 % of units constructed after (Guillon 2017:11).

[13] This was not always the case: until the mid-1970s, immigrants were discriminated against to discourage family-based migration and to avoid their concentration in the housing projects (Schor 1996:214; Stébé 2013:106; Weil 2005).

Immigration and Public Housing

The objectives of diversity and social mix in the French public housing sector have been challenged by the increase in non-European immigration and their overrepresentation in the public housing sector. Panel A in Table 2 shows that although the share of immigrants has been stable until the 2000s,[14] non-Europeans have progressively become the majority of immigrants since 1982. Compared with natives, a similar share of non-European immigrants are university graduates, but a larger share did not graduate from high school (see online appendix, Table A1).

Panel B shows that in the last decades, non-European immigrants increasingly concentrated in public housing. While the proportion of native households that live in public housing remained at the 13 % level, the proportion for non-European immigrant households increased from 30 % to 41 % between 1982 and 2012. This increase was even larger for immigrants from Maghreb and sub-Saharan Africa: almost half lived in public housing in 2012, which is up from 33 % and 26 %, respectively, in 1982.

The data also suggest that public housing may not be just a temporary step in the residential trajectory of non-European immigrants. According to the 2012 census, the probability of residing in public housing does not diminish with the length of stay in the host country (online appendix, Table A1).[15]

However, even if immigrants are overrepresented, they remain far from the majority of the inhabitants in most housing projects (Musterd 2014). Table 1 shows that the share of immigrants among the population in public housing is less than 30 % in all the countries represented. In France, according to Panel C in Table 2, non-European immigrants accounted for only 18 % of heads of households in public housing, on average, in 2012.

How Concentrated Are Public Housing Units Across Neighborhoods?

The consequences of the inflows of non-European immigrants into public housing depend on the spatial distribution of public housing within metro areas. We show the indices of dissimilarity and isolation of households in public housing in Table 3. These indices have been estimated using all other households as a comparison group. Both the dissimilarity and isolation of public housing inhabitants declined—by 7 and 4 percentage points, respectively—which suggests that recent constructions contributed to decreasing the concentration.[16] Panel C shows large differences in the segregation of public housing inhabitants across metro areas. For example, the dissimilarity level of public housing inhabitants in Marseille was 61 % in 2012, which is 10 and 5 percentage points higher than in Lyon and Paris, respectively. However, with indices superior to 50 % for dissimilarity and 40 % for isolation, the segregation of public housing households remains important.

In Table 4, we classify census tracts in four groups using quartiles of the distribution of the share of inhabitants in public housing in the census tract. Throughout the article, we

[14] The stability of immigration is explained by the decrease in the population of older European immigrants who arrived before the 1930s that was compensated for by the increase of non-European immigration.

[15] These cross-sectional differences must be interpreted with caution because they also reflect differences in cohort characteristics (Borjas 1985) and are affected by return migration that changes the composition of cohorts over time (Dustmann 2003).

[16] With the exception of urban renewal programs, few public housing projects were demolished over that period.

Table 2 Immigration and public housing in France, 1982–2012 (in percentage points)

	1982	1990	1999	2012
A. Share of Immigrants in France				
Share of immigrants in the population	7.4	7.4	7.4	8.8
Share of immigrant households in the population	9.1	9.0	9.1	10.5
Share of non-European immigrant households in the population	3.4	3.9	4.7	6.4
B. Share of Households From the Group Living in Public Housing				
All households	13.4	14.5	16.0	14.5
Natives	12.7	13.5	14.7	12.7
Immigrants	20.8	24.1	28.9	30.3
Non-European immigrants	30.2	34.6	41.1	41.3
C. Share of the Group Among Households in Public Housing				
Immigrants	14.1	14.9	16.4	21.8
Non-European immigrants	7.8	9.4	12.0	18.0

Notes: Data are from authors' tabulations. We categorize a household as immigrant if the head of household is an immigrant. Panel A reports the share of each group in the population. Panel B reports the share of each member of the group that lives in public sector housing relative to private sector housing. Panel C shows the share of each group among all households living in public housing.

Sources: Authors' tabulations based on the 1982, 1990, 1999, and 2012 censuses.

Table 3 Extent of segregation among public housing projects (in percentage points)

	1982	1990	1999	2012
A. Dissimilarity Indices of Households in Public Housing				
France	57.4	58.8	54.1	50.6
Paris	60.7	63.4	59.2	55.8
Lyon	58.8	61.2	54.0	50.1
Marseille	68.8	68.2	61.9	60.7
Lille	55.5	56.3	52.1	48.7
B. Isolation Indices of Households in Public Housing				
France	47.2	50.9	49.3	44.7
Paris	48.9	54.6	54.6	50.6
Lyon	47.8	51.4	47.7	42.7
Marseille	51.4	53.1	49.5	47.6
Lille	49.9	50.9	49.1	45.1

Notes: The segregation indices are calculated using the distribution of households living in the public sector housing across census tracts. The dissimilarity indices compare the distribution of households in public housing relative to households in private sector housing (homeowner or private sector renting).

Sources: Authors' tabulations based on the 1982, 1990, 1999, and 2012 censuses.

Table 4 The distribution of households by the size of the housing projects in 2012 (in percentage points)

	Share Public Housing in the Census Tract in 2012			
	(0–5 %]	(5–16 %]	(16–37 %]	>37 %
A. Distribution of Households Living in Public Housing by Project Size				
All households	4.4	19.5	29.8	47.2
Immigrant households	2.2	12.1	24.7	61.0
Non-European immigrant households				
France	1.9	10.8	23.7	63.5
Paris	1.3	7.1	21.5	70.1
Lyon	1.7	13.2	29.3	55.8
Marseille	2.4	10.9	21.0	65.8
B. Construction Period of Public Housing by Project Size				
Share constructed before 1975	30.0	37.1	50.1	68.1
Share constructed before 1981	41.4	53.1	67.2	84.8

Notes: Panel A shows the distribution of households living in public housing according to the share of public housing inhabitants in the neighborhood. We categorize a household as non-European if the head of household is a non-European immigrant. Panel B shows the share of housing projects constructed before 1975 and before 1981 in each category of census tracts.

Source: Authors' tabulations based on the 2012 census.

define a *large* housing project as a project in the last quartile, where more than 37 % of the inhabitants in the census tracts live in public housing. Panel A in Table 4 shows that 63 % of non-European households in public housing live in a large project, compared with 47 % of households in the general population. Large disparities are also found in the share of the population in large projects across metro areas. In Paris, 70 % of non-European households in public housing are living in large housing projects, compared with only 56 % in Lyon.

Consistent with the decrease in public housing concentration observed in recent years, Panel B shows that approximately 80 % of large housing projects were constructed before 1981. On the other hand, only 41 % of small housing projects in census tracts where less than 5 % of households live in public housing were constructed before that date.

Patterns of Immigrant Segregation 1982 to 2012

Tables 5 and 6 present the evolution of the segregation of non-European immigrants in major French metro areas from 1982 to 2012, measured by dissimilarity and isolation indices of the group relative to other individuals—that is, including natives and immigrants from other groups. In the first rows, following Cutler et al. (2008), we report the average of the indices using the number of non-European immigrants per metro area as weights.[17] For comparison, the average dissimilarity level of European immigrants is reported in the second row. Clearly, the results in Table 5 indicate that non-European immigrants tend to be more segregated. In 2012, the average dissimilarity level was 34 % for non-Europeans, compared with only 17 % for European

[17] We include only metro areas with a population of non-European migrants larger than 500 individuals.

Table 5 Dissimilarity indices (in percentage points) across metro areas, 1982–2012

	1982	1990	1999	2012
A. Weighted Average by Group				
European immigrant households	19	19	18	17
Non-European immigrant households	33	33	34	34
B. Dissimilarity Indices of Non-European Immigrant Households Across Major Metro Areas				
Paris	31	30	32	33
Lyon	31	33	35	36
Marseille	35	33	36	40
Nice	21	22	26	33
Lille	42	42	43	41
Toulouse	31	32	32	30
Bordeaux	37	35	36	35
Nantes	43	45	41	38
Toulon	36	37	36	45
Douai	40	39	36	33
Strasbourg	32	35	39	35
Grenoble	31	32	34	33
Rouen	36	39	37	35
Montpellier	28	28	27	30
Nancy	36	40	37	35

Notes: Panel A shows the weighted average dissimilarity indices of European and non-European households across French metro areas using the population of the group in the metro area as weights. Only metro areas with more than 500 immigrants are included in the calculation. We categorize a household as non-European if the head of household is a non-European immigrant. The dissimilarity indices compare the distribution of non-European immigrant households relative to all other households (including natives and European immigrants).

Sources: Authors' calculations based on the 1982, 1990, 1999, and 2012 censuses.

immigrants. These levels are moderate with respect to the United States: Iceland and Scopilliti (2008) reported dissimilarity indices of 44 % for foreign-born people and of 60 % for foreign-born Hispanics with respect to white natives in 2000.[18]

An important result is that in spite of the growth of the non-European population and its inflows into public housing, the average dissimilarity indices increased by only 1 percentage point over this 30-year period. Panel B shows considerable disparities in segregation trends and levels across metro areas. In 2012, the dissimilarity indices were close to 33 % in Paris and Nice, but they were higher by 8 percentage points in Marseille and Lille. From 1982 to 2012, whereas the dissimilarity levels declined in Nantes and Douai by 5 and 7 percentage points, respectively, they increased by 5 percentage points in Lyon and Marseilles and by 12 percentage points in Nice (albeit from a low level in the latter case).

[18] A limitation of these comparisons is that the size of French census tracts is two times lower than the size of U.S. census tracts. Quillian and Lagrange (2016) demonstrated that as a consequence of these differences in scale, segregation measures are inflated in France in comparison with the United States. Another issue is that our dissimilarity indices are calculated using all nongroup members instead of white natives. Although we cannot use white natives as a comparison group, we calculated dissimilarity indices using native households and found that this only marginally changed the indices.

Table 6 Isolation indices across metro areas, 1982–2012 (in percentage points)

	Isolation Index				Adjusted Isolation Index Eta^2	
	1982	1990	1999	2012	1982	2012
A. Weighted Average by Group						
European immigrant household	10.0	8.8	7.5	7.1	1.9	1.2
Non-European immigrant households	11.5	13.0	16.0	20.7	5.3	9.3
B. Non-European Immigrant Households Across Major Metro Areas						
Paris	13.0	15.0	18.8	25.4	5.4	7.9
Lyon	10.2	12.5	15.4	19.3	4.2	8.2
Marseille	16.3	15.3	17.1	20.5	9.3	9.1
Nice	7.9	8.5	10.2	14.6	2.3	3.9
Lille	10.2	11.8	14.1	17.2	6.0	8.7
Toulouse	7.7	9.8	14.0	15.8	3.9	9.0
Bordeaux	5.0	5.9	8.2	11.2	2.5	4.5
Nantes	3.9	6.2	8.2	12.4	2.4	5.4
Toulon	13.0	12.0	11.0	12.8	8.5	6.5
Douai	6.2	6.2	5.8	6.1	3.4	2.8
Strasbourg	8.6	12.9	17.5	21.3	3.8	9.8
Grenoble	10.0	10.8	13.6	15.9	4.2	7.2
Rouen	5.3	8.1	10.5	14.3	2.7	6.5
Montpellier	9.1	11.6	15.3	20.1	3.3	7.7
Nancy	6.5	8.0	8.7	12.6	3.3	5.1

Notes: Panel A shows the weighted average isolation index of European and non-European immigrants across French metro areas. We consider all immigrants independently of their housing tenure. Only metro areas with more than 500 immigrants in the group are included in the calculation of the weighted average. The last two columns show the adjusted isolation index Eta^2. We categorize a household as non-European if the head of household is a non-European immigrant.

Sources: 1982, 1990, 1999, and 2012 censuses.

Table 6 further reports the isolation indices across metro areas. Reflecting the growth in the non-European population to some extent, the isolation indices increased in the last 30 years. In Paris and Lyon, the indices increased by 12 and 9 percentage points, respectively. In Montpellier, the index doubled. These levels are large, given that the share of non-European households in the French population was 6.4 % in 2012.

As discussed earlier, the unadjusted isolation indices are affected by the size of the group in the population. To account for the growth of the non-European immigrants in the population, the last two columns of Table 6 show the Eta^2 indices in 1982 and 2012 that adjust the isolation index using the proportions of non-European households in the metro area population. The results indicate that the increase in isolation cannot be totally explained by the increase in the proportion of the population with non-European origins. The adjusted isolation levels were between 3 % and 10 % in 2012, and they increased by 4 percentage points, on average, over the period. Such an increase is substantial but not massive.

Rise of Immigrant Enclaves

The finding that segregation has remained moderate in the last several decades might surprise the readers of ethnographic accounts of the formation of urban ghettos since the early 1990s (Delarue 1991; Dubet 1987; Lapeyronnie 2008; Lepoutre 2001). Most of these works described life in segregated housing projects as being plagued by poverty and as places where the majority of the population is of immigrant origin. Clearly, our figures indicate that such situations are far from representative of the census tracts where most immigrants live. However, the indices of dissimilarity and isolation are averages of very diverse census tracts that do not effectively capture what occurs at the tails of the distribution. As Bell and Machin (2013) demonstrated for the case of the United Kingdom and Préteceille (2009) showed for France, stable dissimilarity indices can hide an increase in the number of high immigrant census tracts if the growth of the latter is mitigated by the diffusion of immigration in tracts where they were previously rare.

Panel A of Table 7 shows the distribution of census tracts with varying proportions of immigrants in their population, and panel B shows the distribution of non-European immigrants across these types of tracts. The figures show considerable changes in the proportions of the census tracts with both very few and with many immigrants. First, the proportion of census tracts with less than 1 % of immigrants declined rapidly, which clearly contributed to decreasing the segregation levels. For 2012, it is basically impossible to find a census tract with either no or very few immigrants in the population. At the opposite tail of the distribution, the proportion of tracts where more than 30 % of household heads are immigrants—tracts that we refer to as "immigrant enclaves," following Wilson and Portes (1980) and Logan et al. (2002)—increased threefold (from 2.5 % to 7.9 % of all tracts). Furthermore, in 2012, approximately one-third of non-European households lived in these high immigrant census tracts, up from 11.7 % in 1982.

The enclaves not only have grown since the 1980s but also are quite different from the enclaves of 30 years earlier. First, the enclaves are increasingly tied to the presence of large housing projects. Among those who live in an immigrant enclave, the median proportion of inhabitants in public housing was 50 % in 2012, compared with 15 % in 1982. Second, a substantial fraction of enclaves is plagued by high unemployment rates. The unemployment rate of prime-age non-European heads of households in enclaves increased from 14 % to 24 %, on average, from 1982 to 2012.

How Do Variations in Metro Area Segregation Levels Relate to Public Housing?

In this section, we investigate the extent to which, relative to other factors, characteristics of public housing predict differences in metro area segregation levels of non-European immigrants. Disentangling the role of different factors is important because cities with a higher share of public housing might attract immigrants with lower socioeconomic status. If this is the case, higher segregation levels in these cities might largely reflect differences in the characteristics of immigrants and not the consequences of their concentration in public housing. Empirically, we use regression models at the metro area level, following Iceland and Scopilliti (2008) and Cutler et al. (2008), among others. We consider the following specification:

Table 7 Distribution of census tracts and non-European immigrant households by the share of immigrant households in the population

	Share of Immigrant Households in the Census Tract Population							
	00–01	02–05	06–10	11–15	16–20	21–25	26–30	>30
A. Distribution of census tracts								
1982	9.9	24.7	25.8	18.6	10.8	5.2	2.5	2.5
1990	9.2	26.2	26.2	18.2	10.1	5.2	2.4	2.6
1999	7.2	28.7	27.3	16.0	9.0	4.7	2.8	4.2
2012	4.7	29.8	26.1	14.6	8.8	4.9	3.3	7.9
B. Distribution of Non-European Immigrant Households Across Census Tracts								
1982	0.2	4.9	15.4	23.2	21.1	14.3	9.1	11.7
1990	0.2	5.2	15.9	22.3	20.3	14.2	8.4	13.3
1999	0.2	5.6	15.2	18.9	16.9	12.7	9.6	21.0
2012	0.1	4.8	13.1	15.2	14.3	11.0	9.1	32.5

Notes: Panel A shows the distribution of census tracts according to the share of immigrants in the population of the tract. In 1982, 2.5 % of the tracts comprised over 30 % immigrants, a percentage that increased to 7.9 % in 2012. Panel B shows the distribution of non-European immigrant households across these census tracts. In 1982, 11.7 % of non-European households lived in census tracts where over 30 % of residents were immigrants. This percentage increased to 32.5 % in 2012. We categorize a household as non-European if the head of household is a non-European immigrant. We consider all immigrants independently of their housing tenure.

Sources: 1982, 1990, 1999, and 2012 censuses.

$$S_{lt} = SPH_{lt}\beta_1 + \text{small}PH_{lt}\beta_2 + \text{large}PH_{lt}\beta_3 + \mathbf{X}_{lt}^{'}\gamma + \mathbf{Z}_{lt}^{'}\phi + u_{lt}, \qquad (1)$$

where S_{lt} is a segregation index—dissimilarity or isolation—for non-European immigrants in metro area l and census year t; SPH_{lt} is the same segregation index but estimated by comparing the distribution of households in public housing relative to those in the private sector housing; and the variables largePH_{lt} and smallPH_{lt} report the share of non-European immigrants that live in large and small housing projects in the metro area relative to their share in the private sector housing. As previously, large (small) housing projects are defined as housing projects that account for more (less) than 37 % of the census tract population. Differences between β_2 and β_3 capture the difference in the effect on segregation between the share of non-European immigrants in large versus small housing projects.

The vector $\mathbf{X}_{lt}$ accounts for the differences in the composition of non-European immigrants across metro areas and includes the share of managers, blue-collar workers, and unemployed workers among the heads of households of the group; the share of the group in the metro area population; the share of the group that arrived since the last census; and, after 1999, the average length of stay of the group in France. The vector $\mathbf{Z}_{lt}$ includes the metro areas' characteristics that have been shown to influence segregation in other studies (Pais et al. 2012). It contains the log of the population; the share of immigrants in the city; and the share of managers, blue-collar workers, and unemployed

among the city population. These variables capture the economic specialization and social composition of the population.

Note that although this model is useful to identify how different factors predict metro area segregation levels, it is mostly descriptive and does not provide a causal interpretation. In particular, reverse causality is possible in the sense that spatial segregation might influence economic assimilation (Gobillon et al. 2007).

In Table 8, we show cross-sectional estimates of the model using a sample of 192 metro areas with at least 500 non-European immigrants observed in the 2012 census. To save space, we report only the coefficients of variables associated with public housing, whereas the estimates for other covariates are displayed in the online appendix, Table A3. For each specification, we report results both with and without

Table 8 Metro area segregation, cross-section regressions, 2012 census

	Dependent Variable					
	A. Dissimilarity		B. Adjusted Isolation Index (Eta^2)		C. Share of Non-Europeans in Enclaves	
	(1)	(2)	(3)	(4)	(5)	(6)
Dissimilarity of Public Housing	0.168†	0.143*			0.487**	–0.101
	(0.096)	(0.059)			(0.184)	(0.212)
Adjusted Isolation of Public Housing (Eta^2)			0.086	0.041	–0.414†	0.259
			(0.069)	(0.044)	(0.240)	(0.248)
Share Non-European Immigrants in "Small" Housing Projects	0.015	0.036	0.014	–0.016	0.117	–0.004
	(0.078)	(0.070)	(0.047)	(0.039)	(0.146)	(0.161)
Share non-Europeans Immigrants in "Large" Housing Projects	0.163**	0.206**	0.050	0.077**	0.202*	0.246**
	(0.038)	(0.035)	(0.033)	(0.027)	(0.093)	(0.092)
Controls for:						
Characteristics of non-European immigrant households	No	Yes	No	Yes	No	Yes
Characteristics of metro area	No	Yes	No	Yes	No	Yes
Adjusted R^2	.34	.61	.36	.63	.85	.89
N	192	192	192	192	192	192

Notes: The table shows regression results of the dissimilarity index (columns 1–2), the adjusted isolation index (columns 3–4), and the share of non-European immigrants in enclaves (columns 5–6) on the indicated variables. To calculate the indices, we included all immigrants independently of their housing tenure. Enclaves are defined as a census tract where the share of immigrants in the population is superior to 30 %. The model is estimated on a cross-section of 192 metro areas with at least 500 non-European immigrants in 2012. The segregation indices are measured in 2012 for non-European immigrant households at the metro area level using all other households as a comparison group. The sample includes 192 metro areas. The share of non-European immigrants in large (small) projects is the share of non-European immigrant households in housing projects located in census tracts where the share of households in public housing is superior (inferior) to 37 %. Robust standard errors are displayed in parentheses.

Source: 2012 census.

$^{\dagger}p < .10$; *$p < .05$; **$p < .01$

controlling for group and metro area characteristics to assess how controlling for these factors affects the estimates of the effect of public housing on segregation.

Columns 1 and 2 show that for 2012, the dissimilarity of public housing and the share of non-European immigrants living in large projects are positively correlated with non-European immigrants' dissimilarity. In column 1, the coefficient indicates that an increase in the dissimilarity of public housing by 10 percentage points increases by 1.4 percentage points the dissimilarity of non-European immigrants. We also find that if all non-European immigrants lived in large housing projects, this would increase the dissimilarity index by 16 percentage points. In contrast, the effect of the share of non-European immigrants in small housing projects is small and not statistically significant. Column 2 shows that these results are unchanged when our extensive set of controls for group and cities' characteristics is included in the model. If anything, the coefficient of the share of non-European immigrants in large projects increases.

Columns 3 and 4 repeat the analysis using the adjusted isolation index (Eta^2) as a dependent variable. As for the dissimilarity index, the results indicate that a higher share of non-European immigrants in large housing projects is associated with higher isolation levels. In column 4, when additional controls are included, the effect of a higher share of non-European immigrants in large housing projects increases and becomes statistically significant. Overall, public housing dispersal and concentration, on the one hand, and group and city characteristics, on the other, each explain approximately one-third of the variance of dissimilarity and isolation indices across metro areas.

To assess which factors predict the prevalence of immigrant enclaves across cities, columns 5 and 6 show estimates of models in which the dependent variable is the proportion of non-European immigrants of the metro area who live in an immigrant enclave. As previously, enclaves are defined as a census tract where the share of immigrants in the population is greater than 30 %. Clearly, the share of non-European immigrants in large projects predicts well their share in enclaves. Interestingly, the adjusted R^2 does not increase much when additional controls are included in the model, whereas the coefficient of the effects of large housing projects increases. This suggests that the concentration of non-European immigrants in large housing projects explains most differences in the share of non-European immigrants in enclaves, but differences between either group or city characteristics have little predictive power.

In Table A2 in the online appendix, we check the robustness of these results by reestimating the model using first-difference regressions from 1982 to 2012. In this specification, each coefficient is identified using changes within metro areas over time instead of cross-sectional differences. Overall, the estimated effects of the share of non-European immigrants in large public housing on the different segregation indices are very similar.

Table A3 in the online appendix shows how the characteristics of the groups and metro areas relate to the differences in segregation levels. Consistent with assimilation theory, dissimilarity and isolation are higher when there are more blue-collar workers and unemployed persons in the group. Finally, dissimilarity levels tend to be larger in more populated metro areas. Some evidence also suggests that segregation levels were higher in 2012 in metro areas with a larger share of non-European immigrants who arrived in the last 10 years.

The Distribution of Immigrant Inflows Across Neighborhoods by Project Size

In this section, we turn to census tract–level data to understand what led large housing projects to have a disproportionate influence on metro area–level segregation. First, we test whether, following an increase in the number of non-European immigrants in the metro area, the proportion of non-European immigrants progresses more rapidly in large housing projects than in smaller ones, thus reinforcing their influence on segregation. Second, we investigate how the population in the private housing sector next to large projects changes in response to the same inflows.

Immigrant Inflows by Project Size

We begin by testing for differences in the progression of non-European immigration across housing projects when the share of non-European immigrants in the metro area population increases. As in Table 4, we classify housing projects into four groups using the quartiles q of the initial share of public housing across census tracts.[19] Using data from the 1990, 1999, and 2012 censuses that allow us to follow census tracts over time,[20] we estimate separately for each group of housing projects q the following model:

$$\Delta p_{nlt}^{PH} = \Delta p_{lt} \alpha_q^{PH} + e_{nlt}, \tag{2}$$

where $\Delta p_{nlt}^{PH} = \Delta\left(\frac{I_{nlt}^{PH}}{L_{nlt}^{PH}}\right)$ is the change in the share of non-European immigrants in public housing in the census tract n between two censuses (1990–1999 and 1999–2014) in metro areas l, with I_{nlt}^{PH} being the number of non-European immigrants in public housing in the census tract and L_{nlt}^{PH} being the total population in public housing in the tract. The term $\Delta p_{lt} = \Delta\left(\frac{I_{lt}}{L_{lt}}\right)$ refers to the change in the share of non-European immigrants in the metro area. Each parameter α_q^{PH} approximates an elasticity: these parameters indicate how for each quartile q of housing projects, the share of non-European immigrants in public housing increases when their share increases in the population of the metro area. If recently arrived non-European immigrants are more likely to live in public housing, these coefficients should be larger than 1. If, in addition, their share increases more rapidly in large projects, the coefficient of the fourth quartile should be larger than the coefficient of the first.

Reverse causality is an important issue. Inflows of immigrants in the metro area might not be exogenous. Because living in large housing projects might be associated with negative amenities, such as low-quality buildings, relatively affluent natives might have left large housing projects as better housing opportunities became available in the suburbs. As a result, metro area–level inflows of immigrants in a given city might be, to some extent, an endogenous response to the availability of public housing that natives left for other reasons (Verdugo 2016).

We address this issue with an instrumental variable strategy. As in Card (2001) and Cortes (2008), our instrument is based on ethnic networks. The idea that underlies this

[19] The distribution is taken conditionally on having some inhabitants in public housing.

[20] As discussed earlier, we cannot match census tracts from the 1982 census over time; thus, the sample is restricted to the period from 1990 to 2012.

widely used instrument is that the location choice of immigrants in their destination country depends to some extent on the preexisting presence of networks that are unrelated to unobserved city-specific factors that might bias our regressions.

Specifically, we predict $\hat{I}_{lct}$, the number of immigrants from country c in metro area l in 1990, 1999, and 2012, by multiplying the total number of immigrants I_{ct} from that country in year t with the proportion of immigrants of that nationality who were observed in the metro area in the 1968 census $\lambda_{cl,68} = I_{cl,68}/I_{c,68}$, which is the most distant distribution network available. Adding across the countries of origin, the predicted total number of immigrants in metro area k is then given by $\hat{I}_{it} = \sum_c \hat{I}_{ict} = \sum_c \lambda_{cl,68} I_{ict}$. Given the large sample size, we exploit the 54 different countries of birth that are available in the data. Because the endogenous variable is a percentage, our final instrument $\Delta\hat{p}_{lt}$ is defined by using changes in the number of predicted immigrants in the location divided by the initial population of the metro area L_{lt-1}; that is, $\Delta\hat{p}_{lt} = \frac{\hat{I}_{lt} - \hat{I}_{lt-1}}{L_{lt-1}}$.

Table 9 shows the regression results. To ensure representativeness, we weight each regression by the number of inhabitants in the census tract. Below each panel for the two-stage least squares (2SLS) estimates, the first-stage Fisher statistics indicate that our instrument is reasonably strong, with an F statistic greater than 10 in most of the specifications.

Because the coefficients are significantly greater than 1, both OLS and 2SLS estimates confirm that when the share of non-European households increases in the metro area, it changes disproportionately the population in the public sector relative to the private housing sector. The 2SLS estimates reported in column 1 in panel A indicate that a 1 percentage point increase in non-European immigration at the metro area level increases the share of non-European immigrants among public housing inhabitants by 2.1 percentage points, on average.

In columns 2–5, we test whether the share of non-European immigrants progresses more rapidly in large housing projects. Whereas the coefficient for the fourth quartile is 25 % larger than the first in the OLS estimates, we observe the reverse pattern in the 2SLS estimates. Because these differences are relatively small and the estimates are imprecise, we cannot reject the hypothesis of equality across the coefficients in the 2SLS models. Overall, within metro areas, we find no strong causal evidence of a much larger progression of non-European immigrants in large public housing projects. This implies that the influence of large projects on segregation is not driven by a disproportionate growth of the share of immigrants compared with that recorded in smaller projects within metro areas.

How Did the Composition of the Private Housing Sector Respond?

Next, we examine what happens in the private housing sector next to public housing projects of different sizes following an exogenous inflow of immigrants at the metro-area level. We consider the following model:

$$\Delta p_{nlt}^{PV} = \Delta p_{lt}\alpha_q + e_{nlt}, \tag{3}$$

which is similar to the model in the previous section except that the dependent variable $\Delta p_{nlt}^{PV} = \Delta\left(\frac{I_{nlt}^{PV}}{L_{nlt}^{PV}}\right)$ is the change in the share of non-European immigrants in *private sector housing*. As previously, we distinguish census tracts by the proportion of the

Table 9 The impact of metro area–level immigrant inflows on small and large housing projects: Dependent variable is the change in the share of non-European households in the census tract among public housing inhabitants

	Census Tracts				
	All Tracts With Public Housing	Q1: Share Public Housing in Tract (0–5 %]	Q2: Share Public Housing in Tract (5–16 %]	Q3: Share Public Housing in Tract (16–37 %]	Q4: Share Public Housing in Tract >37 %
	(1)	(2)	(3)	(4)	(5)
A. OLS Estimates					
Δ Share non-European immigrants in metro area	1.858**	1.622**	1.705**	1.886**	2.040**
	(0.073)	(0.151)	(0.094)	(0.072)	(0.087)
B. 2SLS Estimates					
Δ Share non-European immigrants in metro area	2.114**	2.301**	1.899**	1.976**	2.047**
	(0.164)	(0.441)	(0.120)	(0.091)	(0.110)
First-Stage Fisher	52	32	43	63	60
N	25,111	6,273	6,275	6,292	6,271

Notes: The table shows regression results where the dependent variable is the change in the share of non-European immigrants among public housing inhabitants in the census tract. The independent variable is the change in the share of non-European immigrants in the metro area. Within each panel, the model is estimated alternatively with OLS in panel A and with 2SLS in panel B using a shift-share instrument based on the distribution of immigrants in 1968. Column 1 reports estimates using all census tracts. Columns 2–5 report estimates of the model on different quartiles of the distribution of the share of public housing in the population across census tracts. Regressions are weighted by the number of inhabitants in the census tract. Standard errors, clustered at the metro area level within each panel, are shown in parentheses.

Sources: 1990, 1999, and 2012 censuses.

**$p < .01$

public housing sector by using the four quartiles q of the share of public housing in the tract. We also examine separately what occurs in neighborhoods with no public housing inhabitants (approximately 8 % of the census tracts).

Table 10 reports the results. We find that the share of non-European immigrants increased much more rapidly in the private sector housing of census tracts with large housing projects. A 1 percentage point increase in the immigrant share translates into a 1.5 percentage point increase in the share of non-European immigrants in the census tracts of the last quartile, where large housing projects are located. Although this is 30 % less than their progression in the public housing sector of the tracts, it is three times as large as their progression in census tracts either without or with few public housing units, with estimated coefficients of between 0.4–0.5.

Overall, these results indicate that an inflow of immigrants in the metro area is disproportionately directed to census tracts with the largest housing projects in *both* private and public sector housing. In contrast, census tracts with little public housing are much less affected by the growth of non-European immigration, except in the housing projects.

Conclusions

This study examines the role of public housing in the evolution of spatial segregation of non-European immigrants in France. With the important exception of Musterd and Deurloo (1997), prior research, which has mostly focused on the North American context, has paid little attention to this factor. Although public housing is one of many factors shaping segregation, we expected it to play an increasingly important and ambivalent role in France and, more generally, in Europe.

We find that in spite of the large increase in the share of non-European immigrants in public housing, their average segregation levels rose only moderately over the past three decades. However, this trend hides a lot of variability across cities and a substantial increase in the proportion of non-Europeans living in immigrant enclaves. Confirming our expectations, we find that the share of non-European immigrants living in large housing projects is strongly related to differences in segregation patterns across cities—both in terms of dissimilarity and isolation indices and in terms of enclave concentration.

Our neighborhood-level empirical analysis documents the ambiguous consequences of public housing on the dynamics of segregation. On the one hand, the progression of non-European immigrants in the largest public housing projects was reinforced by their disproportionate growth in the neighboring private sector housing. The growth of enclaves is explained by the large inflows in *both* public and private housing in neighborhoods that host the largest projects. On the other hand, the progression of non-European immigrants in small housing projects has had little effect on segregation because it is counterbalanced by their underrepresentation in the private housing sector in these tracts.

Finally, although prior qualitative studies have argued that non-European immigrants are disproportionately channeled to the largest projects (Bourgeois 2013; Masclet 2006; Sala Pala 2005; Tissot 2006), we find neither large nor significant differences in the share of non-European immigrant inflows entering small- and large-scale projects within a metropolitan area once the endogeneity of metro area–level immigrant inflows is taken into account.

Table 10 The impact of metro area–level immigrant inflows on private housing sector: Dependent variable is the change in the share of non-European households in the census tract among private housing inhabitants

	Census Tracts					
	All Tracts	Tracts With No Public Housing	Q1: Share Public Housing in Tract (0–5 %]	Q2: Share Public Housing in Tract (5–16 %]	Q3: Share Public Housing in Tract (16–37 %]	Q4: Share Public Housing in Tract >37 %
	(1)	(2)	(3)	(4)	(5)	(6)
OLS Estimates						
Δ Share non-European immigrants in metro area	0.924**	0.575**	0.530**	0.626**	0.863**	1.479*
	(0.026)	(0.045)	(0.048)	(0.019)	(0.023)	(0.107)
2SLS Estimates						
Δ Share non-European immigrants in metro area	0.922**	0.514**	0.442**	0.637**	0.922**	1.443**
	(0.021)	(0.077)	(0.021)	(0.019)	(0.045)	(0.094)
First-Stage Fisher	48	21	32	43	63	60
N	28,305	3,194	6,273	6,275	6,292	6,271

Notes: The table shows regression results where the dependent variable is the change in the share of non-European immigrants among private housing sector inhabitants in the census tract. The independent variable is the change in the share of non-European immigrants in the metro area. Within each panel, the model is estimated alternatively with OLS in panel A and with 2SLS in panel B using a shift-share instrument based on the distribution of immigrants in 1968. Column 1 reports estimates using all census tracts. Columns 2–6 report estimates of the model on different quartiles of the distribution of the share of public housing in the population across census tracts. Regressions are weighted by the number of inhabitants in the census tract. Standard errors, clustered at the metro area level within each panel, are shown in parentheses.

Source: 1990, 1999, and 2012 censuses.

*$p < .05$; **$p < .01$

Because we exploit cross-sectional census data, we cannot distinguish whether the decrease in the share of natives in the census tracts with large housing projects is driven more by white-flight (Bobo and Zubrinsky 1996; Boustan 2010; Hall and Crowder 2014) or ethnic avoidance (Andersson 2013; Bråmå 2006; Rathelot and Safi 2014). Further studies using longitudinal data might be able to disentangle these explanations.

Overall, we demonstrate that to understand contemporary segregation patterns in France—and, we argue, in Europe more broadly—researchers need to take into account the morphology of public housing needs. Our findings suggest that an increasing participation of non-European immigrants in public housing simultaneously drives processes of residential assimilation, as found by Pan Ké Shon and Verdugo (2014), and of enclave formation, as illustrated in ethnographic accounts (Delarue 1991; Dubet 1987; Lapeyronnie 2008; Lepoutre 2001).

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References

Alba, R. D., & Logan, J. R. (1993). Minority proximity to whites in suburbs: An individual-level analysis of segregation. *American Journal of Sociology, 98,* 1388–1427.

Algan, Y., Hémet, C., & Laitin, D. D. (2016). The social effects of ethnic diversity at the local level: A natural experiment with exogenous residential allocation. *Journal of Political Economy, 124,* 696–733.

Andersson, R. (2013). Reproducing and reshaping ethnic residential segregation in Stockholm: The role of selective migration moves. *Geografiska Annaler: Series B, Human Geography, 95,* 163–187.

Andrews, D., Sánchez, A. C., & Johansson, Å. (2011). *Housing markets and structural policies in OECD countries* (OECD Economics Department Working Papers No. 836). Paris, France: Organisation for Economic Co-operation and Development Publishing. Retrieved from http://www.oecd-ilibrary.org/economics/housing-markets-and-structural-policies-in-oecd-countries_5kgk8t2k9vf3-en

Bacqué, M., Bridge, G., Benson, M., Butler, T., Charmes, E., Fijalkow, Y., . . . Vermeersch, S. (2015). *The middle classes and the city: A study of Paris and London*. Basingstoke, UK: Palgrave Macmillan.

Bell, B., & Machin, S. (2013). Immigrant enclaves and crime. *Journal of Regional Science, 53,* 118–141.

Bell, W. (1954). A probability model for the measurement of ecological segregation. *Social Forces, 32,* 357–364.

Bobo, L., & Zubrinsky, C. L. (1996). Attitudes on residential integration: Perceived status differences, mere in-group preference, or racial prejudice? *Social Forces, 74,* 883–909.

Bolt, G., van Kempen, R., & van Ham, M. (2008). Minority ethnic groups in the Dutch housing market: Spatial segregation, relocation dynamics and housing policy. *Urban Studies, 45,* 1359–1384.

Bonnal, L., Boumahdi, R., & Favard, P. (2013). *Inégalités d'accès au logement social: Peut-on parler de discrimination*? [Inequalities of access to social housing: Is this discrimination?]. *Economie et Statistique, 464,* 15–33.

Borjas, G. J. (1985). Assimilation, changes in cohort quality, and the earnings of immigrants. *Journal of Labor Economics, 3,* 463–489.

Boschman, S., & van Ham, M. (2015). Neighbourhood selection of non-Western ethnic minorities: Testing the own-group effects hypothesis using a conditional logit model. *Environment and Planning A: Economy and Space, 47,* 1155–1174.

Bourgeois, M. (2013). *Choisir les locataires du parc social? Une approche ethnographique de la gestion des HLM* [Selecting tenants in social housing? An ethnographic study of the management of social housing (HLM)]. *Sociologie du Travail, 55,* 56–75.

Boustan, L. P. (2010). Was postwar suburbanization "white flight"? Evidence from the black migration. *Quarterly Journal of Economics, 125,* 417–443.

Bråmå, Å. (2006). "White flight"? The production and reproduction of immigrant concentration areas in Swedish cities, 1990–2000. *Urban Studies, 43,* 1127–1146.

Bridge, G. (2006). It's not just a question of taste: Gentrification, the neighbourhood, and cultural capital. *Environment and Planning A: Economy and Space, 38,* 1965–1978.

Bridge, G., Butler, T., & Lees, L. (2012). *Mixed communities: Gentrification by stealth?* Bristol, UK: Policy Press.

Brutel, C. (2017). *Etre né en France d'un parent immigré: Une population diverse reflétant l'histoire des flux migratoires* [Born in France to an immigrant parent: A diverse population that reflects the history of migratory flows] (Insee Première No. 1634). Paris, France: L'Institut National de la Statistique et des Études Économiques.

Butler, T., & Robson, G. (2001). Social capital, gentrification and neighbourhood change in London: A comparison of three south London neighbourhoods. *Urban Studies, 38,* 2145–2162.

Card, D. (2001). Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. *Journal of Labor Economics, 19,* 22–64.

Charles, C. Z. (2003). The dynamics of racial residential segregation. *Annual Review of Sociology, 29,* 167–207.

Cortes, P. (2008). The effect of low-skilled immigration on U.S. prices: Evidence from CPI data. *Journal of Political Economy, 116,* 381–422.

Crowder, K., & Krysan, M. (2016). Moving beyond the big three: A call for new approaches to studying racial residential segregation. *City & Community, 15,* 18–22.

Crowder, K., Pais, J., & South, S. J. (2012). Neighborhood diversity, metropolitan constraints, and household migration. *American Sociological Review, 77,* 325–353.

Cutler, D. M., Glaeser, E. L., & Vigdor, J. L. (2008). Is the melting pot still hot? Explaining the resurgence of immigrant segregation. *Review of Economics and Statistics, 90,* 478–497.

Delarue, J.-M. (1991). *Banlieues en difficultés: La relégation, Rapport au ministre d'etat, ministre de la ville et de l'aménagement du territoire* [Suburbs in difficulty: Relegation, report to the minister of state, minister of the city and spatial planning]. Paris, France: Syros.

Dietrich-Ragon, P. (2013). *Qui rêve du logement social*? [Who dreams of social housing?]. *Sociologie, 4*, 19–42.

Dubet, F. (1987). *La galère: jeunes en survie* [La galère: Young people in survival]. Paris, France: Fayard.

Dustmann, C. (2003). Return migration, wage differentials, and the optimal migration duration. *European Economic Review, 47,* 353–369.

Friedrichs, J. (1998). Ethnic segregation in Cologne, Germany, 1984–94. *Urban Studies, 35,* 1745–1763.

German Socio-Economic Panel (SOEP). (2013). *Data for the years 1984–2012, version 29*. https://doi.org/10.5684/soep.v29

Glitz, A. (2014). Ethnic segregation in Germany. *Labour Economics, 29,* 28–40.

Gobillon, L., Selod, H., & Zenou, Y. (2007). The mechanisms of spatial mismatch. *Urban Studies, 44,* 2401–2427.

Guillon, O. (2017). *Le parc locatif social au 1er Janvier 2017* [The social housing rental park as of 1st January 2017] (DataLab Essentiel publication). Paris, France: Ministère de la Transition Ecologique et Solidaire, Commissariat Général au Développement Durable.

Hall, M., & Crowder, K. (2014). Native out-migration and neighborhood immigration in new destinations. *Demography, 51,* 2179–2202.

Harloe, M. (1995). *The people's home? Social rented housing in Europe and America*. Oxford, UK: Blackwell.

Hunt, D. B. (2009). *Blueprint for disaster: The unraveling of Chicago public housing*. Chicago, IL: University of Chicago Press.

Iceland, J., & Scopilliti, M. (2008). Immigrant residential segregation in U.S. metropolitan areas, 1990–2000. *Demography, 45,* 79–94.

Iceland, J., & Wilkes, R. (2006). Does socioeconomic status matter? Race, class, and residential segregation. *Social Problems, 53,* 248–273.

INSEE. (2017). *Demandeurs de logements sociaux* [Social housing applicants]. In Institut National de la Statistique et des Études Économiques (Ed.), *Les conditions de logement en France* (Insee Référence, 2017 ed., *Emploi et salaires* ed.) [Housing conditions in France, Employment and wages edition] (pp. 126–127). Paris, France: Institut National de la Statistique et des Études Économiques.

Kemeny, J. (1995). *From public housing to the social market: Rental policy strategies in comparative perspective*. London, UK: Routledge.

Kemeny, J. (2001). Comparative housing and welfare: Theorising the relationship. *Journal of Housing and the Built Environment, 16,* 53–70.

Kemeny, J. (2006). Corporatism and housing regimes. *Housing, Theory and Society, 23,* 1–18.

Kesteloot, C., & Cortie, C. (1998). Housing Turks and Moroccans in Brussels and Amsterdam: The difference between private and public markets. *Urban Studies, 35,* 1835–1853.

Koopmans, R., Statham, P., Giugni, M., & Passy, F. (Eds.). (2005). *Contested citizenship: Immigration and cultural diversity in Europe*. Minneapolis: University of Minnesota Press.

Krysan, M., Couper, M. P., Farley, R., & Forman, T. A. (2009). Does race matter in neighborhood preferences? Results from a video experiment. *American Journal of Sociology, 115,* 527–559.

Krysan, M., & Farley, R. (2002). The residential preferences of blacks: Do they explain persistent segregation? *Social Forces, 80,* 937–980.

Laferrère, A. (2011). *Comment attribuer les HLM*? [How to allocate social housing?]. *Regards Croisés sur l'Économie, 9,* 231–243.

Lapeyronnie, D. (2008). *Ghetto urbain: Ségrégation, violence, pauvreté en France aujourd'hui* [Urban ghetto: Segregation, violence, poverty in France today]. Paris, France: Robert Laffont.

Lepoutre, D. (2001). *Coeur de banlieue: Codes, rites et langages* [Suburban heart: Codes, rites and languages]. Paris, France: Odile Jacob.

Logan, J. R. (1978). Growth, politics, and the stratification of places. *American Journal of Sociology, 84,* 404–416.

Logan, J. R., & Alba, R. D. (1993). Locational returns to human capital: Minority access to suburban community resources. *Demography, 30,* 243–268.

Logan, J. R., & Molotch, H. (1987). *Urban fortunes. The political economy of place*. Berkeley: University of California Press.

Logan, J. R., Stults, B. J., & Farley, R. (2004). Segregation of minorities in the metropolis: Two decades of change. *Demography, 41,* 1–22.

Logan, J. R., Zhang, W., & Alba, R. D. (2002). Immigrant enclaves and ethnic communities in New York and Los Angeles. *American Sociological Review, 67,* 299–322.

Masclet, O. (2006). Du « bastion » au « ghetto » [From the bastion to the ghetto]. *Actes de la Recherche en Sciences Sociales, 159*(4), 10–25.

Massey, D. S., & Denton, N. A. (1985). Spatial assimilation as a socioeconomic outcome. *American Sociological Review, 50,* 94–106.

Massey, D. S., & Denton, N. A. (1988). The dimensions of residential segregation. *Social Forces, 67,* 281–315.

McAvay, H. (2016). *Trajectoires socio-spatiales et statut d'occupation du logement des immigrés et de leurs descendants en France: Les facteurs individuels et contextuels* [Immigrants' spatial incorporation in France: Patterns and determinants of neighborhood and housing attainment] (Doctoral dissertation). Institut d'Études Politiques, Paris, France.

McAvay, H. (2018). The ethnoracial context of residential mobility in France: Neighbourhood out-migration and relocation. *Population, Space and Place, 24,* e2138. https://doi.org/10.1002/psp.2138

Moraga, J. F.-H., Ferrer, A., & Saitz, A. (2015). *Immigrant locations and native residential preferences in Spain: New ghettos?* (Working paper). Madrid, Spain: Institute for Economic Analysis, CSIC.

Musterd, S. (2005). Social and ethnic segregation in Europe: Levels, causes, and effects. *Journal of Urban Affairs, 27,* 331–348.

Musterd, S. (2014). Public housing for whom? Experiences in an era of mature neo-liberalism: The Netherlands and Amsterdam. *Housing Studies, 29,* 467–484.

Musterd, S., & Deurloo, R. (1997). Ethnic segregation and the role of public housing in Amsterdam. *Tijdschrift voor Economische en Sociale Geografie, 88,* 158–168.

Musterd, S., & Ostendorf, W. (2009). Residential segregation and integration in the Netherlands. *Journal of Ethnic and Migration Studies, 35,* 1515–1532.

Oberti, M., & Préteceille, E. (2016). *La ségrégation urbaine* [Urban segregation]. Paris, France: La Découverte. Retrieved from https://www.cairn.info/la-segregation-urbaine%2D%2D9782707164254.htm

OECD. (2018). *International Migration Database: OECD international migration statistics* [Database]. Retrieved from https://doi.org/10.1787/data-00342-en

Pais, J., South, S. J., & Crowder, K. (2012). Metropolitan heterogeneity and minority neighborhood attainment: Spatial assimilation or place stratification? *Social Problems, 59,* 258–281.

Pan Ké Shon, J.-L., & Verdugo, G. (2014). *Ségrégation et incorporation des immigrés en France: Ampleur et intensité entre 1968 et 2007* [Segregation and incorporation of immigrants in France: Magnitude and intensity between 1968 and 2007]. *Revue Française de Sociologie, 55,* 245–283.

Pan Ké Shon, J.-L., & Verdugo, G. (2015). Forty years of immigrant segregation in France, 1968–2007. How different is the new immigration? *Urban Studies, 52,* 823–840.

Peach, C. (1996). Does Britain have ghettos? *Transactions of the Institute of British Geographers, 21,* 216–235.

Préteceille, E. (2009). *La ségrégation ethno-raciale a-t-elle augmenté dans la métropole parisienne*? [Has ethno-racial segregation increased in the Paris metropolis?]. *Revue Française de Sociologie, 50,* 489–519.
Quillian, L., & Lagrange, H. (2016). Socioeconomic segregation in large cities in France and the United States. *Demography, 53,* 1051–1084.
Rathelot, R., & Safi, M. (2014). Local ethnic composition and natives' and immigrants' geographic mobility in France, 1982–1999. *American Sociological Review, 79,* 43–64.
Ross, S. L., & Turner, M. A. (2005). Housing discrimination in metropolitan America: Explaining changes between 1989 and 2000. *Social Problems, 52,* 152–180.
Safi, M. (2009). *La dimension spatiale de l'intégration: évolution de la ségrégation des populations immigrées en France entre 1968 et 1999* [The spatial dimension of integration: Evolution of the segregation of immigrant populations in France between 1968 and 1999]. *Revue Française de Sociologie, 50,* 521–552.
Sala Pala, V. (2005). *Le racisme institutionnel dans la politique du logement social* [Institutional racism in social housing policy]. *Sciences de la Société, 65,* 87–102.
Scanlon, K., Whitehead, C., & Arrigoitia, M. F. (2014). *Social housing in Europe*. Oxford, UK: John Wiley & Sons.
Schmutz, B. (2013). Public housing quotas and segregation. *Urban Public Economics Review, 18,* 68–94. Retrieved from http://www.redalyc.org/resumen.oa?id=50428804003
Schönwälder, K., & Söhn, J. (2009). Immigrant settlement structures in Germany: General patterns and urban levels of concentration of major groups. *Urban Studies, 46,* 1439–1460.
Schor, R. (1996). *Histoire de l'immigration en France: De la fin du XIXe siècle à nos jours* [History of immigration in France: From the end of the 19th century to today]. Paris, France: Armand Colin.
Simon, P. (2003). *Le logement social en France et la gestion des "populations à risques"* [Social housing in France and the management of "at-risk populations"]. *Hommes & Migrations, 1246,* 76–91.
Simpson, L., & Finney, N. (2009). Spatial patterns of internal migration: Evidence for ethnic groups in Britain. *Population, Space and Place, 15,* 37–56.
South, S. J., Crowder, K., & Pais, J. (2008). Inter-neighborhood migration and spatial assimilation in a multi-ethnic world: Comparing Latinos, black and Anglos. *Social Forces, 87,* 415–444.
Stébé, J.-M. (2013). *Le logement social en France* (6e éd.) [Social housing in France (6th ed.)]. Paris, France: Presses Universitaires de France.
Stoloff, J. A. (2004, August). *A brief history of public housing.* Paper presented at the annual meeting of the American Sociological Association, San Francisco, CA.
Tammaru, T., Musterd, S., van Ham, M., & Marcińczak, S. (2016). *A multi-factor approach to understanding socio-economic segregation in European capital cities*. In T. Tammaru, S. Marcińczak, M. van Ham, & S. Musterd (Eds.), *Socio-economic segregation in European capital cities: East meets west* (pp. 1–29). London, UK: Routledge.
Tissot, S. (2006). *Une « discrimination informelle »*? [Informal discrimination?]. *Actes de la Recherche en Sciences Sociales, 159*(4), 54–69.
Vasileva, K. (2011). *6.5 % of the EU population are foreigners and 9.4 % are born abroad* (Eurostat Statistics in Focus No. 34/2011). Luxembourg City, Luxembourg: Eurostat.
Verdugo, G. (2016). Public housing magnets: Public housing supply and immigrants' location choices. *Journal of Economic Geography, 16,* 237–265.
Vigdor, J. L. (2003). Residential segregation and preference misalignment. *Journal of Urban Economics, 54,* 587–609.
Wagmiller, R. L., Gage-Bouchard, E., & Karraker, A. (2017). Does black socioeconomic mobility explain recent progress toward black-white residential integration? *Demography, 54,* 1251–1275.
Weil, P. (2005). *La République et sa diversité: Migrations, intégration, discrimination* [The Republic and its diversity: Migration, integration, discrimination]. Paris, France: Le Seuil.
White, M. J. (1986). Segregation and diversity measures in population distribution. *Population Index, 52,* 198–221.
Whitehead, C., & Scanlon, K. (Eds.). (2007). *Social housing in Europe*. London, UK: London School of Economics and Political Science.
Wilson, K. L., & Portes, A. (1980). Immigrant enclaves: An analysis of the labor market experiences of Cubans in Miami. *American Journal of Sociology, 86,* 295–319.
Yinger, J. (1995). *Closed doors, opportunities lost: The continuing costs of housing discrimination*. New York, NY: Russell Sage Foundation.