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Public Housing and Residential Segregation of Immigrants in France, 1968-1999

Residential segregation does not simply reflect a desire on the part of social groups to live with persons from a similar background. It is also driven by the financial mechanisms of the housing rental market which exclude certain sub-populations from particular neighbourhoods, and by public housing policies which concentrate rent-controlled public housing projects in specific geographical locations and which define their allocation criteria. In the absence of segregation, the population would be randomly distributed, with identical spatial distributions of the various social groups. Divergences from this reference situation are observed at different geographical levels, across urban areas and across neighbourhoods within an urban area. In this article, Gregory VERDUGO *uses population census data to measure residential segregation in France by country of birth and its evolution between 1968 and 1999. Across urban areas, residential segregation has decreased, while across neighbourhoods it has tended to increase between immigrant groups defined by their continent or sub-continent of origin. The concentration of immigrant public housing participation in certain urban neighbourhoods is the main explanation for this trend.*

The riots of 2005 in France highlighted the housing conditions of many first- and second-generation immigrants in public housing suburbs. Following these events, social observers have been increasingly concerned about the consequences of segregation in France, arguing that the poorest part of the population, particularly some immigrant groups and their descendants, are becoming increasingly concentrated in public housing suburbs. However, as quantitative research on the evolution of segregation has been relatively rare until today, the impact of housing policies, particularly public housing, on segregation, remains unexplored. Public housing is a source of concern for

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immigration policymakers as the concentration of immigrants is very high in many suburban public housing developments in France, and in Europe more generally.

This paper describes the evolution of immigrant segregation in France over a period of 30 years from 1968 to 1999, the maximum time period for which census data at the individual level are available. The objective is to highlight the new and specific aspects of contemporary segregation of immigrants that have emerged since 1968, and to emphasize its links with the increase in public housing participation observed over the period.

The increase in public housing supply in France during the 1960s and 1970s was followed by a large increase in public housing participation by non-European immigrants after the 1980s. According to the 1999 census, while 15% of French natives lived in public housing in 1999, the participation rate was close to 50% for immigrants from the Maghreb. Public housing participation directly affects the locations of immigrants within and potentially across urban areas and thus influences different aspects of segregation.

This article examines two aspects of spatial segregation: first, between urban areas, and second, within these areas, at neighbourhood level. The evolution of immigrant distributions across urban areas can be compared to determine whether the concentration of immigrants increased or decreased over the study period. The segregation of immigrants within urban areas is studied using average neighbourhood characteristics (1999 IRIS census tracts[1]) and various dissimilarity indices between groups of immigrants in urban areas with more than 50,000 inhabitants. Dissimilarity indices can be interpreted as the percentage of a population group that would have to switch neighbourhoods in order to produce a distribution that matches that of the rest of the population across the geographical area under consideration.

The first section provides a review of the literature on segregation, with particular emphasis on France and Europe. The second section describes the data and the methods used in the article to measure segregation at different geographical levels. Given the potential influence of public housing on segregation, the third section studies the large increase in immigrants' public housing participation rate during the 1980s and the 1990s. Last, the fourth section documents differences in immigrant concentration across urban areas and at neighbourhood level within urban areas.

I. Literature on immigrant segregation

Following the approach of the Chicago School of sociology, there is a large body of evidence on recent and past segregation trends in the US and Canada

(1) Infra-communal census zones defined by INSEE, http://www.insee.fr/fr/methodes/default.asp?page=definitions/ilots-regr-pour-inf-stat.htm

relating to income groups (Jargowsky, 1996; Massey and Fischer, 2003; Fong and Shibuya, 2000), blacks and whites (Wilson, 1987; Farley and Frey, 1994; Cutler et al., 1999), and ethnic minorities (Frey and Farley, 1996; Cutler et al., 2008). However, there is surprisingly little quantitative evidence of segregation trends for continental Europe, particularly for France (Musterd, 2005).

However, several pioneering studies on immigrant segregation in France have been published recently. They focus on a restrictive set of urban areas and use a larger geographical level than the IRIS within cities to construct segregation indices, showing that each geographical level documents a different aspect of segregation (see, e.g., Safi, 2009).

Using data from successive censuses, Safi provided one of the first systematic studies of segregation in France between 1968 and 1999. However, she computes dissimilarity indices using municipalities instead of the census tracts traditionally used in studies outside France. As Safi recognizes, municipality sizes within French agglomerations are very diverse, making her results difficult to interpret and strongly dependent on the variation of political divisions across municipalities; moreover, she restricts her sample to include only the eight largest urban areas in France. She reports a large difference in segregation levels between European and non-European immigrants and a decrease in dissimilarity indices across most groups over the period.

Préteceille (2009) studies ethno-racial segregation between 1982 and 1999 in the Paris urban area. His study uses both Parisian *quartiers* (each with about 5,000 inhabitants) and municipalities around Paris to compute dissimilarity indices.

Other aspects of segregation have increasingly been explored, notably its temporary or permanent nature. Segregation is likely to be less of a problem if it is temporary and there is a lot of mobility between segregated and less segregated neighbourhoods. In a recent study, Pan Ké Shon (2010), using panel data, studied the mobility of immigrants between 1990 and 1999. His results indicate non-negligible mobility of immigrants from distressed neighbourhoods over time. However, he finds that non-European immigrants, particularly Africans, are more likely to stay in disadvantaged neighbourhoods than non-Africans.

Last, Fougère et al. (2011) analyse the differences in probability of public housing participation among different immigrant groups.

The relation between income and segregation has also been documented, but without systematically studying the role of public housing. One original study by Maurin (2004) examines changes in social class and income segregation across neighbourhoods, including from 20 to 30 closest neighbours, using data from the INSEE[(2)] Labour Force surveys. Préteceille (2003) investigates

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segregation with respect to socio-occupational status and unemployment in the Paris urban area.

For Europe, the impact of public housing on segregation has already been highlighted by Musterd and Deurloo (1997) for the Netherlands. They report moderate to average levels of segregation and underline how public housing seems to increase the clustering of non-European immigrant groups in the same neighbourhoods. They show, for example, that the patterns of concentration of Turks and Moroccans in Amsterdam are very similar. Musterd et al. (2008), using Swedish data, find large wage penalties for immigrants living in concentrated ethnic areas.

For the United Kingdom, Peach (1996) reports dissimilarity indices between ethnic groups for the Greater London area in 1991 at the ward level (about 10,000 inhabitants). His figures are typically much higher than those observed for France by Préteceille (2009) or Safi (2009). Most of the dissimilarity indices calculated by Peach for what he classified as "visible ethnic groups" are greater than 0.5. However, recent research by Peach (2009) documents a decrease in segregation in the United Kingdom between 1991 and 2005.

II. Data and methods

1. Data

The empirical analysis draws data from the 1968, 1975, 1982, 1990 and 1999 censuses. The census data for 1968 to 1990 used here are available from the Centre Maurice Halbwach. For the 1999 census data, we were able to use the original INSEE files obtained via its secure remote access centre. The census data include information on nationality and country of birth which can be used to distinguish immigrants and French natives.

"Public housing" is defined as dwellings belonging to rent-controlled housing authorities (*organismes HLM*), or other social housing providers, such as semi-public companies (*sociétés d'économie mixte*, SEM), and whose rents are fixed under French law. Censuses after 1982 indicate whether the dwelling occupied is classified as public housing (as defined by INSEE). The sampling rate for the individual files is particularly large, at 25% (20% in 1975), making it possible to study small sub-populations such as immigrants, at a relatively detailed geographical level without worrying too much about sampling errors, which often plague empirical work on immigration (Aydemir and Borjas, 2011).

In accordance with the recommendations of the French integration council (Haut conseil à l'intégration), an immigrant is defined as a foreign-born individual who is a non-citizen or a naturalized French citizen. The national origin of immigrants is determined using their country of birth. By convention, a household is defined as an immigrant household if the head of household is an immigrant. Immigrants are classified by regional origin (continent or sub-

continent, under the United Nations definition of a region) and national origin. For practical reasons, only the largest groups are described in this article, at regional level (Europe, Maghreb, rest of Africa, Asia) and national level (Algeria, Morocco and Tunisia for Maghreb; Italy, Spain and Portugal for Europe).

By contrast, French natives are defined as all persons living in France who were born in France (with foreign nationality, with French nationality at birth or naturalized French) or born abroad with French nationality.

Segregation indices are sensitive to differences in the geographical boundaries used to compute them, which determine the number of basic areas used for the computation and the mean number of individuals per area (Massey and Denton, 1988). For this study, we sought to construct comparable measures of segregation over time that are relatively unaffected by changes in geographical definitions. The impact of changes in geographical boundaries and across cities has been limited by using geographical definitions of urban areas that remain constant over time and by using census tracts of similar sizes.

The largest geographical entity used in this study is the "urban area". Urban areas are aggregations of contiguous municipalities with no discontinuities and are redefined by INSEE for each census.(3) One interesting characteristic of the French statistical system is that each municipality has had a unique administrative identifier since 1945, which enables similar urban areas to be matched over time. Municipalities included in urban areas under the 1999 census definitions are matched over time and aggregated into urban areas of constant size since 1968. This precaution ensures that results are not driven by a change in the boundaries of urban areas over time, a problem that is encountered in the US Census and in longitudinal studies more generally.

To keep the data comparable over time and across cities, we focus on urban areas of more than 50,000 inhabitants each year (but include municipalities of all sizes within these urban areas, whatever their size, making a total of between 100 and 120 urban areas). Excluding small urban areas does not affect the analysis of immigrant segregation since the vast majority of immigrants live in large urban areas. These urban areas included 63% of all immigrants in 1968 (57.6% and 78.8% of European and non-European immigrants, respectively), and 72% in 1999 (62% and 82%, respectively).

For confidentiality reasons, geographical information at the census-tract level is not available for the 1975, 1982 and 1990 census years, so segregation at this level is studied for the years 1968 and 1999 only. In particular, there is no information available on a geographical level equivalent to or smaller than a census tract in the 1982 and 1990 censuses. Alternative geographical boundaries available in these two years are not consistently defined across municipalities, and their sizes vary widely across locations.

(3) Urban areas typically aggregate many different municipalities. For example, the urban area of Paris comprises 396 municipalities, while that of Toulouse comprises 72.

To compute segregation indices at the city level, census tracts (*îlots*) are used. One of the problems with a longitudinal study of this kind is that the geographical definitions of census tracts and urban areas changed considerably between 1968 and 1999. There is large variance in the sizes of the equivalent of census tracts available in the 1968 census, while the 1999 census is based on homogeneous census tracts of around 2,500 inhabitants.(4) These discrepancies in the numbers of individuals in the basic geographical areas in 1968 might affect the comparisons of the results between 1968 and 1999. To overcome this problem, contiguous census blocks in 1968 were aggregated or disaggregated to create census tracts of approximately the same size as census tracts in 1999. Isolated and unmatched census tracts, which represent 1.7% of the population, were eliminated (details of this procedure are available on request). As a result, census tracts from both censuses used in the analysis have comparable sizes and distributions. The median and the mean population of a census tract in 1999 (1968) are, respectively, 2,488 (2,496) and 2,624 (2,703). The final sample comprises 12,400 census tracts for 1999 and 8,599 for 1968.

2. Measurement issues in spatial segregation

Spatial segregation has many aspects and can therefore be measured in different ways (Massey and Denton, 1988; Echenique and Fryer, 2007).

To approximate the level of segregation within an urban area, the most straightforward measure of ethnic concentration is the set of average characteristics of neighbourhoods. Average neighbourhood characteristics are a simple and intuitive indicator of segregation and can be calculated using different variables. They describe neighbourhoods as they are seen by each population group; if immigrants were randomly allocated across the population, the average characteristics of neighbourhoods would be identical for all groups. The average shares of immigrants from the same and from different national groups in the neighbourhood are computed to document the evolution of immigrant segregation across groups (Borjas, 1995).

However, the average characteristics of census tracts are not suitable for documenting spatial segregation between urban areas. Among other reasons, the average characteristics of neighbourhoods do not capture well the different distributions of different immigrant groups among neighbourhoods in an urban area. Several alternative measures of spatial segregation have been proposed in the literature, but the most popular is the dissimilarity index. The dissimilarity index provides results that are directly comparable with other studies and has

(4) In the French 1999 census, census tracts are called IRIS 2000. See Lipatz (2006) for a concise presentation of their characteristics. The study is restricted to residential census tracts (*IRIS d'habitation*) and excludes business or commercials census tracts (*IRIS d'activité*), which mostly consist of sparsely populated industrial or commercial areas and include just 0.7% of the population.

an intuitive interpretation. Formally, the dissimilarity index for a particular subgroup G of the population can be defined as

$$D_g = \frac{1}{2}\sum_k \left| \frac{G_k}{G} - \frac{N_k}{N} \right|$$

where k is an index indicating the relevant spatial unit dividing the population of interest; G is the total number of individuals from group G, and G_k is the number of individuals from group G living in unit k; N and N_k represent the rest of the population (total number and total in unit k). A common interpretation of the dissimilarity index is that it represents the share of members of group G (or rest of the population N) who would have to switch neighbourhoods to achieve an even distribution of the groups G and N across the geographical units. The dissimilarity index is thus equal to zero when two groups are evenly distributed across geographic units and is equal to one when no member of the group shares a unit in common with those outside the group.

This index is used to compare the distribution of each immigrant group with that of the rest of the population, or to compare immigrant groups with each other, either between census tracts within an urban area, or between urban areas. Dissimilarity indices at the census tract level indicate the degree of spatial segregation of a group across neighbourhoods with respect to the rest of the population. Following Frey and Farley (1994), unless otherwise indicated, the segregation of each minority group is reported in relation to the rest of the population. Such indices indicate the absolute segregation of each group with respect to the whole population, not just natives. Dissimilarity indices between groups of immigrants are also calculated. They indicate whether several groups tend to live together in the same neighbourhoods, and whether there is an increased tendency for them to do so.

For both reference years, the index is calculated using 114 matched urban areas with more than 50,000 inhabitants in 1999. Segregation indices for each group are computed using the weighted-average dissimilarity indices for the immigrant groups living in these urban areas. As emphasized before, dissimilarity indices are sensitive to the number of individuals used to compute them. When there are few individuals from a group in a city, segregation indices can be high even if the distribution of individuals across sectors is random (Massey and Denton, 1988). Therefore, high dissimilarity indices should be interpreted with caution when the group numbers are small. This will make little difference for large groups but might have a strong impact on small ones. For this reason, only urban areas in which the community size of the immigrant group is greater than 500 individuals (Cutler et al., 2008; Peach, 1996) are included in the calculation of the weighted average.[5] When the weighted-average dissimilarity between two immigrant groups is computed, the weights are the sum of the

(5) Including all urban areas slightly increases the observed dissimilarity indices for smaller groups of immigrants from sub-Saharan Africa and Asia but does not change the results qualitatively.

shares of the population of each group in the urban area, again using only urban areas in which more than 500 members of each group live.

III. Immigration and public housing in France

The public housing supply in France increased dramatically during the 1960s and 1970s.[6] Public housing relocated individuals living in cities to neighbourhoods where housing projects were located and thus is likely to have influenced the evolution of segregation since 1968. Its influence on non-European immigrants is potentially very large as rates of participation in public housing by these groups increased considerably during the period under study.

The year 1968 is an interesting benchmark as the stock of public housing units was considerably lower at that time. Unlike today, the participation rate of immigrants in public housing was probably negligible, as their access was severely restricted before the 1970s. Pinçon (1976) has shown that in 1968, only 5.5% of foreign workers in the Paris urban area lived in public housing versus 15.3% of natives. [7]

Originally, public housing construction was not designed to meet immigrants' needs, which explains their relatively lower participation rates in public housing during the 1960s and 1970s. Until the 1970s, housing policies for immigrants targeted single male migrants by providing housing in collective dormitories (*foyers Sonacotra*) (Weil, 2005, p. 51), making family reunification impossible. Until the mid 1970s, the national authorities considered the immigration of Maghrebis and other Africans to be temporary. The government explicitly sought to discourage reunification of these immigrants' families, and immigrants' access to housing projects was severely restricted. As a result, many lived in slums on the outskirts of French urban areas.[8] After 1970, the government decided to eliminate immigrant slums and public housing was progressively made available to immigrants during the 1970s as restrictions on immigration for family reunification were eased (Weil, 2005, p. 55).

After the 1970s, the share of immigrants in public housing increased rapidly. Table 1 shows the increase in non-European immigrants' rates of participation in public housing since 1982. During this period, the difference between participation rates of natives and of non-European immigrants increased

(6) See, e.g., Stebe (2007) for a concise presentation of the history of public housing in France.

(7) Schor (1996, p. 214) reports that there were quotas in the 1960s which limited the number of immigrants per project to 5%. Moreover, immigrants did not become eligible until they had been resident in France for 10 years. Weil (2005, p. 52) indicates that the government authorized partial access of immigrants to public housing only after 1970, and in the earliest studies of public housing inhabitants, such as Durif and Marchand (1975), the word "immigrant" is never mentioned.

(8) According to Lequin (2006, p. 410), there were 113 slums in the Paris region in 1970. The biggest was La Folie in Nanterre which had 23,000 residents, mostly immigrants from Algeria. See also Schor (1996, p. 214).

Table 1. Proportion of immigrant households living in public housing in 1982, 1990 and 1999, by origin

	1982 (%)	1990 (%)	1999 (%)	Difference with respect to natives in 1999		
Immigrants	23.7	27.3	32.8	Observed	Adjusted for household characteristics (model A)	Adjusted for household characteristics with municipality fixed effects (model B)
Natives	17.9	18.7	19.7			
Immigrants' origin						
Europe	*18.1*	*19.3*	19.7	0.0		
Italy	*14.2*	*14.4*	14.5	– 5.2	– 6.1	– 4.2
Spain	*22.0*	*22.8*	22.8	3.1	1.6	5.3
Portugal	*25.2*	*26.6*	25.1	5.4	– 4.1	– 5.9
Maghreb	34.2	*42.6*	47.9	28.2		
Algeria	35.2	*43.4*	50.4	30.7	26.4	21.4
Morocco	37.6	*42.8*	49.2	29.5	24.4	20.4
Tunisia	27.3	*37.8*	39.1	19.4	15.9	13.6
Africa (excluding Maghreb)	26.4	*32.3*	43.5	23.8		
Asia	25.9	*27.1*	31.7	12.0		
Turkey	*31.2*	*31.4*	46.4	26.7	17.6	13.1
Vietnam	*29.4*	*32.1*	32.0	12.3	12.5	7.3
Other countries	*17.3*	*19.6*	20.1	0.4		

Note: The last three columns of the table present the differences in the probability of public housing participation for immigrants and natives in 1999 in France, observed and estimated by linear regression. Model A includes controls for level of education (primary, secondary, high-school graduation, 2 years in higher education, 5 years in higher education) and the age of the household reference person (10 classes: under 25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65+), an indicator of being in a couple with children, interactions between education and age, between education and being in a couple with children. Model B also includes municipality fixed effects for 3,518 municipalities. The number of observations is 4,705,554 in both regressions. All parameters are significant at the 1% level with robust standard errors.
Sources: 1982, 1990 and 1999 censuses.

dramatically. For natives or immigrants from Europe they increased by one percentage point at most over the study period, while among non-European immigrants they increased by between 10 and 15 percentage points for nationalities from the Maghreb and the rest of Africa between 1982 and 1999. By 1999, the gap between the participation rates of Maghrebis and natives had increased to 28 percentage points.

The differences in participation rates across immigrant groups in 1999 are striking, particularly between Europeans (20%) and non-Europeans, among whom Maghrebis (48%) and other Africans (44%) have the highest rates. The average participation rate of immigrants from Asia is the lowest among non-Europeans but varies widely across groups: it is 46% for Turkish immigrants, a level comparable to that of Maghrebis and other Africans.

To understand how public housing affects segregation, it is important to know whether these large differences in participation rates between immigrant groups and between immigrants and natives are due simply to differences in household characteristics or to a special appeal of public housing for immigrants due to other factors. Public housing apartments were specifically built for large families and are more prevalent in some urban areas. Immigrant households might have different characteristics and distributions across cities than native households, which could explain these variations across groups.

To account for these differences, the gap in participation rates across immigrant groups and natives can be decomposed between a part explained by differences in household characteristics across groups and an unexplained part specific to each immigrant group. To do this, we estimate a linear model of the probability for a household of living in public housing in 1999 based on characteristics of the household and of the municipality. Individual covariates included in the regression are flexible controls for the educational level of the household reference person (five groups); age of the reference person (ten classes); being in a couple with children; and interactions between education and both of the latter covariates. To limit the potential problem of endogeneity, we do not use labour market status or number of children in the household, which may be influenced by the location of the public housing. Our regression results can thus be interpreted as comparisons founded on simple differences of age, educational level and life as a couple with children between immigrants and natives. For immigrant groups, the country of origin is included in the regression, making it possible to estimate differences in participation rates with respect to natives after accounting for the influence of other observable characteristics included in the model.

The results are presented in the final two columns of Table 1. Even after accounting for the other variables, the participation rates still differ greatly between European and non-European groups. Immigrants from Italy or Portugal have lower participation rates than natives with similar observable characteristics. For non-European immigrant groups, the differences in participation rates remain after controlling for immigrant characteristics. For example, differences in observable characteristics between native and immigrant households explain less than 5 percentage points of the 30-point gap between the participation rates of Algerians or Moroccans and that of natives.

One other reason for these differences could be that immigrants live in municipalities where the public housing supply is large, so both natives and immigrants living in these municipalities are more likely to live in public housing. Because there is a large disparity in the public housing supply across municipalities, differences in participation rates may simply reflect differences in location of natives and immigrants across municipalities.

To derive how much of these differences can be explained by differences in location across municipalities, the last column of Table 1 reports regression

results including fixed effects for each of the 3,518 municipalities included in the sample. Controlling for municipality fixed effects typically decreases country of origin fixed effects by 16-19% for most immigrant groups; i.e. by between 3 and 5 percentage points. This suggests that only a small part of the gap can be explained by the fact that these immigrants live in municipalities where the participation rates of both natives and immigrants are higher. Even when the differences in participation rates of inhabitants across municipalities are taken into account, the effect on the participation rate of being a non-European immigrant remains particularly large.

In short, only one-third of the 30-point gap in participation rates between non-European immigrants and natives can be explained by differences in observable characteristics across households, such as family type, educational level or location choice. Differences in rates of participation in public housing are thus particularly large for non-European immigrants, even after controlling for observable characteristics or municipality fixed effects.

IV. Geographical segregation of immigrants in France

1. Segregation between urban areas

In France, numerous articles have shown that immigrants tend to be concentrated in specific regions and urban areas, such as Paris, Marseille and Lyon (Desplanques and Tabard, 1991; Desplanques, 1996). Changes in the distribution of immigrants across urban areas over time can be studied to determine whether immigrants tend to "spread" across cities or whether they cluster in a small group of cities. We tracked these changes between 1968 and 1999 by computing dissimilarity indices using urban areas with more than 50,000 inhabitants as the basic geographic unit (Massey and Fischer, 2003).[9] Table 2 shows the evolution of dissimilarity indices between urban areas across groups of immigrants.

In general, we observe higher levels of segregation between urban areas for non-European immigrants, but the trends differ across countries and regions of origin. While segregation levels increased slightly for immigrants from Europe during the 1990s, the dissimilarity indices of Maghrebis across certain urban areas decreased from 0.27 to 0.19 between 1968 and 1990. Looking across national groups, notable differences are observed between countries of birth within a single regional group. Across Maghrebis, the indices decreased from 0.28 to 0.23 for Algerians and, quite similarly, from 0.27 to 0.20 for Moroccans. The concentration of Tunisians follows an atypical trend, with much higher dissimilarity indices that do not change much over the period

(9) The results are robust to the choice of the geographical unit used to construct the dissimilarity indices. Dissimilarity indices using regions (22 units), matched urban areas of different sizes (95 and 23 units) and unmatched urban areas produce results that are broadly similar to those presented here.

(from 0.40 to 0.35). For other Africans, concentration levels increased during the 1970s, from 0.28 in 1968 to 0.35 in 1982, and remained practically constant thereafter. For Asians, after a period of decrease during the 1970s and 1980s in which the dissimilarity index fell from 0.36 in 1968 to 0.27 in 1982, it increased again during the 1990s to reach 0.31 in 1999. The dissimilarity indices of Portuguese immigrants (0.31) remain relatively constant over the period.

Table 2. Dissimilarity indices across urban areas with more than 50,000 inhabitants

	1968	1975	1982	1990	1999
Europe	0.169	0.171	0.175	0.184	0.199
Public housing			0.172	0.186	0.200
Private housing			0.194	0.196	0.207
Portugal	0.356	0.310	0.309	0.307	0.317
Public housing			0.290	0.299	0.309
Private housing			0.329	0.322	0.325
Maghreb	0.267	0.219	0.204	0.194	0.192
Public housing			0.167	0.161	0.176
Private housing			0.254	0.256	0.245
Algeria	0.276	0.230	0.233	0.230	0.228
Public housing			0.214	0.218	0.225
Private housing			0.258	0.258	0.244
Morocco	0.274	0.198	0.181	0.186	0.201
Public housing			0.258	0.205	0.213
Private housing			0.233	0.244	0.247
Tunisia	0.398	0.370	0.362	0.359	0.355
Public housing			0.287	0.284	0.307
Private housing			0.400	0.403	0.394
Africa (excluding Maghreb)	0.281	0.341	0.354	0.341	0.351
Public housing			0.328	0.311	0.357
Private housing			0.372	0.370	0.370
Asia	0.361	0.312	0.272	0.292	0.310
Public housing			0.232	0.227	0.259
Private housing			0.337	0.352	0.361

Note: From 1982, the dissimilarity indices are calculated separately for immigrants living in public housing and those in private housing.
Sources: 1968, 1975, 1982 and 1999 censuses.

The most striking result from Table 2 is the large difference in concentration between public and private housing participants among non-European immigrant groups across urban areas, with a much lower concentration of immigrants in public housing. For Maghrebis, the dissimilarity index for immigrants in public housing in 1982 is 8 percentage points lower than for immigrants in private

housing (0.17 versus 0.25) and remains lower throughout the study period. Likewise, for immigrants from Asia, there is a difference of 10 percentage points between public and private housing participation (0.23 versus 0.34 in 1982). For Portuguese immigrants and European immigrants in general, differences in segregation levels between immigrants in public and private housing are much lower, particularly in the most recent period.

On the whole, the segregation of immigrants across urban areas decreased between 1968 and 1975. It has remained practically stable since then, at a lower level for immigrants living in public housing than for the others, and especially for non-European immigrants.

2. Neighbourhood-level segregation

During the period under study (see Section III), the public housing participation rates of non-European immigrants increased, and the geographical concentration of immigrants across certain urban areas was much lower for public housing participants. To investigate how these two phenomena are related to the evolution of immigrant segregation within cities we will compare dissimilarity indices and average neighbourhood characteristics across groups and urban areas between 1968 and 1999. Given that the characteristics of neighbourhoods with public housing might differ and that the location of public housing is likely to influence immigrants' location within cities, separate segregation indices for immigrants living in public and private housing are calculated for 1999.

Average neighbourhood characteristics

Table 3 shows the characteristics of average neighbourhoods for immigrants in 1968 and 1999 across regional and national origins. Within each panel, the first column indicates the share of the group in the French population, while the second column reports the group's public housing participation rate in 1999.

To account for a potential relationship between public housing participation and average segregation levels, neighbourhood characteristics are reported separately for immigrants in public and private housing in 1999. The first six lines report neighbourhood characteristics for immigrant groups by geographical region of origin, while other lines report these characteristics for the most common nationalities of immigrants in 1999.

If immigrants were randomly allocated across census tracts, the share of immigrants per tract would be equal to 10.1% in 1999 and 8.6% in 1968, or immigrants' actual share of the total population. However, in 1999, the average neighbourhoods of immigrants in public housing comprised about 18% immigrants per census tract in 1999, and 15% for those living in private housing. In 1968, the share of immigrants per tract was 14% for a share of the total population of below 9%.

Table 3. Average neighbourhood characteristics in 1968 and 1999 (urban areas with more than 50,000 inhabitants)

	1999						1968		
	Percentage of total population	Percentage in public housing	Public housing		Private housing		All types of housing		
			Percentage of immigrants (all origins)	Percentage of immigrants of same origin	Percentage of immigrants (all origins)	Percentage of immigrants of same origin	Percentage of total population	Percentage of immigrants (all origins)	Percentage of immigrants of same origin
All immigrants	10.12	32.8	18.2	18.2	14.6	14.6	8.63	14.1	14.1
Regional origin									
Europe	3.88	19.7	15.3	4.8	12.3	5.9	5.92	13.1	9.7
Outside Europe	6.24	43.1	19.1	15.3	16.7	11.7	2.71	16.1	8.5
Maghreb	3.33	47.9	18.7	9.2	16.3	6.8	1.85	17.3	8.1
Africa (excl. Maghreb)	1.08	43.5	19.5	4.0	17.2	3.0	0.31	15.0	3.1
Asia	1.50	31.7	20.0	5.0	17.8	5.3	0.42	12.7	2.2
National origin									
Europe									
Italy	0.77	14.5	14.7	1.9	11.5	2.3	1.94	13.9	10.3
Spain	0.58	22.8	15.0	1.3	11.3	1.6	1.49	12.8	9.3
Portugal	1.28	25.1	15.9	2.7	13.1	3.1	0.66	14.9	11.1
Maghreb									
Algeria	1.52	50.4	18.3	4.7	15.9	3.5	1.09	18.7	9.2
Morocco	1.24	49.2	19.1	5.2	16.6	3.9	0.34	16.4	7.8
Tunisia	0.57	39.1	18.7	2.3	16.6	2.1	0.42	14.3	5.4

Note: The first column gives the size of the population of the group, while the second column gives public housing participation rates in 1999. Other columns give average census tract characteristics in 1968 and in 1999.
Sources: 1968 and 1999 censuses.

Looking at the average immigrant share in the population per group of immigrants, the figures indicate a large dispersion across groups, particularly between European and non-European immigrants. On the whole, in 1968 and 1999 European immigrants lived in neighbourhoods with fewer immigrants than did non-European immigrants, particularly for those in private housing in 1999. In that year, most variations in average immigrant share resulted from differences between public housing participants and others. Public housing inhabitants live in neighbourhoods with very different average characteristics from the neighbourhoods of inhabitants of private housing. Immigrants from Asia, Maghreb and the rest of Africa in public housing lived in tracts of about 19-20% immigrants, versus 16-17% for similar immigrants in private housing. For immigrants as a whole, the average immigrant share is higher by 3 percentage points in public housing relative to private housing (18% vs. 15%). Moreover, European immigrants in public housing live in neighbourhoods with fewer immigrants. In practice, there are large differences in average neighbourhood characteristics between groups. This suggests that the distribution of immigrants from different groups across housing projects tends to differ, and that European immigrants live in housing projects with fewer immigrants on average.

Turning now to the share of immigrants from the same national group in the neighbourhood, the differences across groups are larger. For immigrants from southern Europe, the decrease in national concentration in 1999 with respect to 1968 is particularly large. In 1968, although Italian, Spanish and Portuguese immigrants each made up less than 2% of the French population, the typical immigrant from these countries lived in census tracts in which his or her own group made up about 10% of the population, which is one of the highest values across all nationalities and regional groups. However, in 1999, immigrants from southern Europe had the lowest level of segregation across all groups and lived in tracts with less than 2% immigrants of the same nationality. This figure is broadly similar for immigrants in public and in private housing.

More generally, for all groups of immigrants in private housing in 1999, the figures indicate a very low share of the population from the same national group compared with the figures for 1968.

While immigrants from Algeria and Morocco lived in tracts with between 8% and 9% of immigrants from the same country of origin in 1968, the shares of similar immigrants for these two groups were only 5% for public housing participants and between 3% and 4% for private housing in 1999. Simultaneously, the segregation of non-European immigrants per region of origin increased: in 1999, immigrants from Maghreb lived in census tracts with 9.2% immigrants from this region versus 8.1% in 1968. Similarly, the average non-European immigrant lived in tracts where non-European immigrants made up 8.5% of the population in 1968, but this value was 15.3% for those in public housing in 1999.

This evidence suggests that between 1968 and 1999, while the level of segregation by country of origin decreased for most groups of immigrants, even for immigrants living in public housing in 1999, the segregation by region of origin of non-European immigrants increased for participants in public housing. When ethnicity is measured using region of origin instead of country of origin, non-European immigrants in public housing in 1999 lived in tracts with above-average segregation levels. For immigrants in public housing, average neighbourhoods include more immigrants (of all origins) in 1999 than in 1968, while the share of immigrants from the same country of origin declined at neighbourhood level. Therefore, immigrants in public housing in 1999 lived in neighbourhoods that were more ethnically diverse than those in which similar immigrants lived in 1968.

As pointed out informally by other authors (e.g. Wacquant, 2007), these average segregation levels are relatively moderate compared with the US. As a comparison, Borjas (1995) reports that in 1970 the average Cuban or Mexican immigrant lived in a tract in which his or her own group made up about 22% of the population, while these groups' shares of the total population were 1.3% for Mexicans and 0.3% for Cubans. These results confirm not only that the contemporary levels of segregation appear to be lower, but also that mechanisms of segregation differ.(10)

Neighbourhood characteristics and length of stay in France

To explain the large differences across groups of immigrants, it is interesting to determine whether they reflect different average arrival times across groups. Immigrants might "assimilate" over time (Chiswick, 1978); for example, they become more fluent in French and more familiar with the host culture. As emphasized by Pan Ké Shon (2010), residential mobility in disadvantaged neighbourhoods in France is relatively high, so immigrants may move to less segregated neighbourhoods after an initial period in which they live in close contact with members of their group. The differences in segregation levels observed in the previous section might thus be explained by different average arrival dates across groups of immigrants. Because many European immigrants arrived in France earlier on average than non-European immigrants, they thus had more time to assimilate, and this might partly explain why lower levels of national segregation are observed for European immigrants in 1999.

Immigration from Asia and sub-Saharan Africa is relatively recent in France and very few immigrants from these areas entered France during the 1960s and 1970s, so neighbourhood characteristics by arrival time are compared using only cohorts of immigrants from Europe and Maghreb.

(10) Peach (1999) describes the differences between US and UK models and mechanisms of segregation. The mean size of a French census tract is only half that of an American tract. The smaller French census tract amplifies segregation levels in France with respect to the US.

Table 4 reports the average characteristics of the census tract in 1999 relative to decade of entry into France. Segregation decreased only mildly with time after arrival for immigrants living in private housing; the average share of immigrants of all origins in the neighbourhood is 18% for immigrants from the Maghreb who arrived during the 1990s, versus 15% for those who arrived during the 1960s. However, no comparable variation is observed for public housing participants; the average share of immigrants is 18.9% for those who arrived during the 1990s and 18.3% for those who arrived in the 1960s. Immigrants from Europe who arrived during the 1990s and resided in private housing lived in tracts where 13.6% of the population was comprised of immigrants in1999, while the same figure for Maghrebis is 18.0%. Segregation levels are always higher for Maghrebis than for Europeans; they live in neighbourhoods where the immigrant share is higher by between 3 to 4 percentage points. Public housing participation rates do not vary by arrival time for Maghrebis, while they tend to be higher for cohorts of European immigrants who entered France in the 1960s and 1970s.

This suggests that average segregation levels do not decline much with the length of stay in France for those living in public housing. More of the variation in segregation levels by region of origin comes from specific group differences than from differences in mean arrival year.

Table 4 : Average neighbourhood characteristics per arrival year in 1999 in urban areas with more than 50,000 inhabitants

Migratory origin	Percentage of total population	Percentage in public housing	Public housing		Private housing	
			Percentage of immigrants (all origins)	Percentage of immigrants of same origin	Percentage of immigrants (all origins)	Percentage of immigrants of same origin
Europe						
1990-1999	0.5	15.1	16.1	4.8	13.6	6.4
1980-1990	0.3	20.5	16.3	4.7	13.4	6.1
1970-1980	0.5	23.5	15.8	4.8	13.1	6.0
1960-1970	0.9	22.8	15.8	4.9	12.4	5.8
Maghreb						
1990-1999	0.4	47.7	18.9	9.3	18.0	7.8
1980-1990	0.6	52.7	19.4	9.7	17.8	7.7
1970-1980	0.7	55.3	18.9	9.2	16.5	6.8
1960-1970	0.6	47.1	18.3	9.0	15.0	5.9

Note: The table reports average census tract characteristics across groups of immigrants who entered France by decade of entry.
Source: 1999 census data.

Tract-level dissimilarity indices 1968-1999

Table 5 reports weighted average dissimilarity indices computed at the census-tract level in 1968 and 1999. Values above the diagonal report the index for 1968, while values below the diagonal report the index for 1999.

Between the two periods, the dissimilarity index of immigrants with respect to the population did not change much, increasing slightly from 0.23 in 1968 to 0.24 in 1999. This slight increase mainly reflects the increase in the share of non-European immigrants in France, who tend to be more segregated. When measured by region or nationality, spatial segregation at the census tract level decreased substantially for most groups. For immigrants from Maghreb, the index fell from 0.43 to 0.38 between 1968 and 1999, and for other Africans from 0.47 to 0.38. Per country of origin, the index decreased by 13 percentage points for Algerians, from 0.53 to 0.40, and by 11 percentage points for Moroccans, from 0.54 to 0.43. The segregation patterns of Tunisians are again atypical among immigrants from Maghreb: while the dissimilarity indices were lower in 1968 than for other non-European groups, they declined by only 1.6 percentage points over the period, to 0.41 in 1999. Compared to the US, these figures are strikingly low, as the weighted average dissimilarity indices of immigrants reported by Cutler et al. (2008, p. 481, Table 1) are 0.46 in 1970 and 0.56 in 2000.

Differences in segregation levels with respect to the population between European and non-European immigrants are large in both years. European immigrants have lower levels of segregation than do non-Europeans, except for immigrants from Portugal in 1968. From 1968 to 1999, the dissimilarity index of European immigrants decreased from 0.22 to 0.18, due mainly to a decrease in the high segregation levels of Portuguese immigrants in the 1960s, since the relatively moderate levels of Italian and Spanish immigrants did not change significantly. In 1968, the segregation level of Portuguese immigrants was equivalent to that of national groups from Maghreb.[11] It thus declined remarkably over the period, as the dissimilarity index of Portuguese immigrants in 1999 (0.30) is only slightly higher than those of Spaniards (0.28) and Italians (0.28).

To highlight the impact of public housing on segregation, the final two lines of both panels of Table 5 report separate dissimilarity indices for immigrants in public and private housing for each group in 1999. The differences between these two groups are strikingly large. Dissimilarity indices of individuals in private housing are usually just slightly higher than those computed for the whole population, while for immigrants in public housing they are much higher for most groups.

(11) The living conditions of Portuguese immigrants during the 1960s have been widely documented. Many Portuguese immigrants lived in ethnic slums around major French urban areas. See, e.g. Volovitch-Tavares (1995).

Table 5 : Weighted dissimilarity between groups in urban areas in 1968 (above diagonal) and 1999 (below diagonal)

	Europe	Maghreb	Africa (excl. Maghreb)	Asia	Immigrants	Population
Europe		0.414	0.414	0.427	0.339	0.220
Maghreb	0.385		0.513	0.551	0.406	0.430
Africa (excl. Maghreb)	0.435	0.311		0.529	0.457	0.472
Asia	0.413	0.360	0.364		0.418	0.399
Immigrants	0.344	0.303	0.291	0.313		0.230
Population	0.184	0.381	0.382	0.382	0.242	
Population/PrivH	0.243	0.365	0.397	0.402	0.252	
Population/PubH	0.492	0.580	0.592	0.634	0.546	

	Italy	Spain	Portugal	Algeria	Morocco	Tunisia	Immigrants	Population
Italy		0.369	0.542	0.517	0.586	0.496	0.300	0.266
Spain	0.386		0.546	0.548	0.570	0.484	0.300	0.309
Portugal	0.406	0.397		0.615	0.685	0.686	0.505	0.505
Algeria	0.484	0.465	0.450		0.580	0.576	0.485	0.532
Morocco	0.530	0.499	0.480	0.330		0.568	0.519	0.543
Tunisia	0.511	0.488	0.517	0.381	0.419		0.428	0.428
Immigrants	0.349	0.330	0.353	0.301	0.335	0.313		0.230
Population	0.278	0.284	0.298	0.404	0.433	0.412	0.242	
Population/PrivH	0.308	0.318	0.354	0.410	0.430	0.434	0.252	
Population/PubH	0.624	0.627	0.573	0.582	0.628	0.631	0.546	

Note: The table reports weighted average dissimilarity indices between immigrant groups in 1968 and in 1999. Each dissimilarity index is the weighted average of dissimilarity indices, matched over time, from French urban areas of more than 50,000 inhabitants in 1999. The column and line Population indicate dissimilarity indices with respect to the rest of the population. The lines Population/PrivH and Population/PubH indicate dissimilarity indices with respect to the rest of the population for members of immigrant groups living, respectively, in private and in public housing in 1999. The column and line Immigrants indicate dissimilarity indices with respect to all other immigrants.
Sources: 1968 and 1999 censuses.

Notable differences in dissimilarity indices are also observed across groups, confirming that public housing participants from each national group are not located in similar housing projects and that non-European immigrants tend to be more segregated. There is a difference of more than 10 percentage points between the dissimilarity index of European and non-European immigrants in public housing. For groups of non-European immigrants with very high rates of participation in public housing, dissimilarity indices are above 0.58 (0.58 for Maghrebis and 0.63 for Tunisians), for example. Their concentration across housing projects is larger than the concentration of European immigrants in public housing and they are more isolated from the rest of the population. These relatively high segregation levels are comparable to those of Mexicans, Indians or Vietnamese in the US in 2000, which are above 0.56 (Cutler et al., 2008).

Because immigrants in public housing tend to live in neighbourhoods with more immigrants from other groups, public housing participation might have changed the spatial distance between immigrant groups. To investigate this, the table also reports indices between specific groups to account for changes in spatial distance between 1968 and 1999.

In 1968, immigrants from Europe had the lowest dissimilarity index with respect to other immigrant groups. Note that, in 1968, no particular spatial proximity is observed between immigrants from Maghreb and other immigrant groups. The dissimilarity indices of Algerians with Moroccans (0.58) and Tunisians (0.58) are actually higher than that with Italians (0.52). However, for 1999, immigrants from different national groups within the Maghreb tend to share the same neighbourhoods: the indices of dissimilarity of Algerians with respect to Moroccans and Tunisians are, respectively, 0.33 and 0.38, versus more than 0.45 with respect to other groups. Across regional groups, immigrants from the Maghreb also have low dissimilarity indices with other non-European immigrant groups from Asia or Africa. These results confirm that, unlike in 1968, non-European immigrants in 1999 tended to inhabit the same neighbourhoods.

Conclusion

This paper explored the evolution of immigrant segregation in France between 1968 and 1999 and its relationship with public housing participation for non-European immigrants.

Segregation between census tracts in urban areas changed between 1968 and 1999, moving from segregation by national origin to segregation by regional origin (continent or sub-continent) for persons living in public housing, and for non-European immigrants in particular. Since 1968, the proportion of immigrants from the same country of origin has fallen at neighbourhood level, notably for European immigrants. However, for non-European immigrants in

public housing, this decrease has been offset by an increase at neighbourhood level in the share of non-Europeans, often from the same continent or sub-continent. Last, while segregation levels have fallen considerably for non-European immigrants in private housing, they have increased for those in public housing. Most of the differences in segregation level between Europeans and non-Europeans are not linked to differences in average arrival year of each group.

These conclusions are globally consistent with those of Safi (2009) based on differences in spatial distribution between municipalities. Her results also show a large gap between European and non-European immigrant segregation levels and a decrease in dissimilarity indices for most groups over the study period. Using neighbourhoods of 5,000 inhabitants, Préteceille (2009) obtains dissimilarity indices for the Paris urban area slightly below the values obtained in this article based on census tracts of 2,500 inhabitants.(12) Certain findings not presented here suggest that the segregation levels for non-European immigrants in Paris are lower than those of most other French cities. This difference may explain why the mean dissimilarity indices reported in this article are higher than those of Préteceille (2009).

Contemporary segregation in France is related to an increased number of nationalities across neighbourhoods. The implications of the increased national diversity at the neighbourhood level are widely discussed in today's academic literature because of the potential effects of neighbourhood characteristics on social cohesion and social capital (Forest and Kearn, 2001). For Europe, Amin (2002) discusses the evolution of inter-ethnic intolerance in Britain and the conditions under which ethnic mixture might work across British cities. In a much-cited paper, Putnam (2007) provides evidence of a relation at the neighbourhood level between an increase in ethnic diversity and the level of trust between inhabitants in the United States.

Several new aspects of the contemporary segregation patterns emphasized in this paper deserve further investigation. More research is needed to explore the relationships between segregation, neighbourhood characteristics and labour market integration, particularly in France where the unemployment rate of immigrants is particularly high.

Finally, the role of public housing in the evolution of segregation should be better understood. There are large differences in public housing participation rates across groups. Are they the result of discrimination in the private-sector housing market, as argued by Bouvard et al. (2009)? Further research on this topic might be helpful for the design of more effective housing policies.

(12) For example, for the Paris urban area, we calculated dissimilarity indices of 0.38 for Moroccans and 0.28 for Portuguese, compared with 0.33 and 0.19 obtained by Préteceille.

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Grégory VERDUGO • **PUBLIC HOUSING AND RESIDENTIAL SEGREGATION OF IMMIGRANTS IN FRANCE, 1968-1999**

This article studies uses census data to study the residential segregation of immigrants in France from 1968 to 1999 and its links with public housing, in urban areas of more than 50,000 inhabitants, and between these areas. During this period, European and non-European immigrant segregation followed diverging trends. At the macro-geographical level, the results indicate a decrease in the concentration of immigrants across urban areas, notably for non-European immigrants living in public housing. Within urban areas, national origin segregation was predominant until 1968 for all groups and declined afterward, particularly for European immigrants. For non-European immigrants in public housing, the decline in segregation by national origin has been counterbalanced by an increase in segregation by continent or sub-continent of origin. This can be partly explained by the clustering of immigrants of different national origins in the same public housing neighbourhoods. In 1999, immigrants in public housing experienced higher segregation levels than immigrants in private housing, particularly non-European immigrants. However, no relationship was found between differences in average arrival year and differences in segregation levels across immigrant groups.

Grégory VERDUGO • **LOGEMENT SOCIAL ET SÉGRÉGATION RÉSIDENTIELLE DES IMMIGRÉS EN FRANCE, 1968-1999**

Cet article analyse l'évolution de la ségrégation résidentielle des immigrés en France entre 1968 et 1999 et ses liens avec le logement social, dans les unités urbaines de plus de 50 000 habitants et entre ces unités, à l'aide de données issues des recensements. Durant cette période, la ségrégation des immigrés européens et celle des immigrés non européens ont suivi des tendances divergentes. Au niveau macrogéographique, les résultats indiquent une baisse de la concentration des immigrés dans certaines unités urbaines, notamment pour les immigrés non européens vivant en logement social. À l'intérieur des unités urbaines, une ségrégation par origine nationale prédominait en 1968 pour tous les groupes, avant de décliner par la suite, principalement pour les immigrés européens. Quant aux immigrés non européens vivant en logement social, la diminution de la ségrégation par origine nationale a été contrebalancée par une augmentation de la ségrégation par continent ou sous-continent d'origine. La concentration des immigrés de différentes origines nationales dans les logements sociaux de certains quartiers peut en partie l'expliquer. En 1999, les immigrés habitant des logements sociaux, particulièrement les non européens, connaissaient des niveaux de ségrégation plus élevés que ceux vivant en logement privé. Toutefois, les niveaux de ségrégation des différents groupes d'immigrés ne varient pas avec l'ancienneté moyenne de séjour en France.

Grégory VERDUGO • **ALOJAMIENTO SOCIAL Y SEGREGACIÓN RESIDENCIAL DE LOS INMIGRANTES EN FRANCIA, 1968-1999**

Utilizando los datos censales, este artículo analiza la evolución de la segregación residencial de los inmigrantes en Francia entre 1968 y 1999 y sus lazos con el alojamiento social, en las unidades urbanas de mas de 50 000 habitantes. Durante este periodo, la segregación de los inmigrantes europeos y la de los inmigrantes no europeos han seguido tendencias divergentes. A nivel macro geográfico, les resultados indican una disminución de la concentración en ciertas unidades urbanas, sobre todo para los inmigrantes no europeos que viven en alojamientos de carácter social. En el seno de las unidades urbanas, en 1968 predominaba una segregación por origen nacional en todos los grupos, segregación que ha disminuido después, en particular para los grupos europeos. Para los inmigrantes no europeos que viven en alojamientos sociales, la disminución de la segregación por origen nacional ha sido contrarrestada por un aumento de la segregación por continente o subcontinente de origen. Esta última puede explicarse en parte por la concentración de los inmigrantes de diferentes orígenes nacionales en los alojamientos sociales de ciertos barrios. En 1999, los inmigrantes que vivían en alojamientos sociales, particularmente los no europeos, conocían niveles de segregación más elevados que los que vivían en alojamientos del sector privado. Con todo, los niveles de segregación de los diferentes grupos de inmigrantes no varían con la duración media de la estancia en Francia.

Keywords: public housing, immigration, segregation, urban area, France.