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DIVERSITY AND LOCAL PUBLIC GOODS: A NATURAL EXPERIMENT WITH EXOGENOUS RESIDENTIAL ALLOCATION [i]

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ABSTRACT: This paper demonstrates the effects of ethnic diversity on social relationships and the quality of public spaces at a very finite neighborhood level. We use detailed block level data on diversity and housing quality from a representative survey on housing in France. We show how and to what extent diversity among adjacent neighborhoods can affect household well-being and the quality of local public goods, whereas the previous literature looks at aggregate indicators and outcomes. Our identification strategy relies on the exogeneity of public housing allocations with respect to ethnic characteristics in France, and thereby eliminates bias due to endogenous residential sorting. Diversity is shown to have a negative effect on local public goods, either due to vandalism and to the lack of social policing, or due to collective action failure for maintenance. However, we find that diversity has no robust effect on civil conflict at a local level and, if anything, is more related to social anomie. We test the exogeneity of residential allocation across public housing blocks with respect to ethnic characteristics. We also show that our results are not driven by potential biases from self-reported well-being and that they hold even with objective measures of housing quality.

JEL Codes: H10, H41

Keywords: Ethnic diversity, social housing, social capital

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1 Introduction

Recent research has drawn an ominous picture of the implications of cultural heterogeneity on social peace and economic growth. A large literature shows a negative relationship, though not always robust, between ethnic diversity and the quality of public goods (Alesina et al., 1999; Alesina and La Ferrara, 2000; Miguel, 2004; Miguel and Gugerty, 2005), welfare spending (Luttmer, 2001), civil conflict and trust (Fearon and Laitin, 2000; Putnam, 2007; Alesina and La Ferrara, 2002) and economic growth (Alesina, Baqir and Easterly, 1999). The leading explanation of why ethnic fragmentation affects those outcomes is the failure to overcome the free-rider problem in more diverse societies, which undermines collective action for public good provision, lobbying, or control over institutions. This paper contributes to this literature by looking at the effect of ethnic diversity on public goods and social relations within local communities at the housing block level, relying on a natural experiment to identify the causal effect of diversity on those outcomes.

Our first contribution is to deal with the issue of causality in the relationship between diversity and economic and social outcomes. The general concern in this literature is that the endogenous residential sorting of individuals on ethnic grounds biases the estimate of the impact of diversity. We address this issue by using a natural experiment in which households in France are allocated to public housing blocks without taking their ethnic origin or their preference for diversity into account. Due to a strongly republican ideology, the French public housing system allocates state planned moderate cost rental apartments (HLMs - *Habitations à Loyer Modéré*) to natives and immigrants without concern for their cultural and ethnic background, mixing people indiscriminately. Some HLM neighborhoods are consequently quite diverse, and others quite homogeneous. Furthermore, HLM inhabitants rarely move, as the rents are much lower than market rates, and movement between HLMs is quite difficult. Consequently, residents cannot choose whether to live near people like themselves. Rather, they accept their placement, whether next to co-ethnics or strangers. Methodologically, this means that we can take the degree of diversity in any one HLM as exogenous, connect the level of diversity with the housing situation, and examine whether greater heterogeneity leads to poorer provision of public goods or more troubled social relationships in French communities. We extensively document the actual process of allocation of households within the public housing sector. We show that legal rules prohibit housing allocation based on ethnic backgrounds and that in practice, the characteristics of the public housing sector make it very complicated to bypass the law. Then, we conduct a variety of formal statistical tests to verify the absence of self-sorting on ethnic characteristics.

Naturally, this paper is not the first one to try to overcome this identification issue. But previous attempts to establish causality rely mainly on instrumental variables.[1] However convincing the instruments might be, this strategy cannot overcome the concern as to whether the instruments fulfill the exclusion restriction and do not have a direct effect on public goods. For instance, Miguel

[1] In their seminal contribution to the literature, Alesina et al. (1999) provide a first attempt to deal with this endogeneity issue by collecting data at different levels of aggregation (cities, metropolitan areas and counties). Their assumption is that different levels of aggregation allow for the correction of the potential biases introduced by Tiebout sorting.

(2004) and Miguel and Gugerty (2005) use the pre-colonial patterns of settlement as instruments, assuming that these variables have no direct impact on present-day ethnic relations. More recently Glennerster et al. (2010) have also relied on historical data of fractionalization as an instrument. But since past settlement patterns are likely to have at least some direct impact on present-day ethnic relations, the exclusion restriction might still be violated. Using a natural experiment with exogenous allocation of ethnic groups is thus an alternative strategy to deal with these traditional caveats. The paper which is the closest to ours is Dahlberg et al. (2011), which uses a nation-wide policy intervention program that exogenously placed refugees coming to Sweden among the Swedish municipalities. However, their paper examines in-group bias in preferences for redistribution and not at the effect of diversity on public goods and social relationships.

The second contribution of our paper is to identify the effect of ethnic diversity on social relationships and the quality of public goods at a very local block level. We use micro data on housing conditions where the units of observation are public housing blocks made up of around twenty adjacent households. This is a key improvement for the analysis of how diversity shapes social relationships compared to the previous literature which is based on aggregated data at the county, regional or country levels. Diversity might matter for various reasons at different levels and the channels through which diversity operates is likely to depend on the size of the unit of observation. By focusing on the provision of public goods at an aggregate level, the previous literature is mainly interested in the effect of diversity on collective action through lobbying or patronage (see Alesina and La Ferrara (2005) for a survey). Instead, we analyze in this paper how diversity within a small community affects individual well-being and satisfaction with housing conditions. In addition, the Housing Survey reports specific information about the neglect and voluntary degradations of the public areas, the quality of the housing, and direct interpersonal conflicts. These data enable us to identify various effects of diversity on local public good outcomes, and to deeply explore the possible channels explaining this relationship.

When residents report that vandalism is rife in their housing unit, we interpret this as a result of the failure on the part of residents to develop norms that would punish miscreants. When residents report the breakdown and the poor quality of basic facilities (such as heating and soundproofing), we interpret this as a result of a diminished capacity for collective action for social improvement. Those goods are not directly degraded by diversity. But the irregularity of maintenance and the absence of repairs in more diverse blocks might be associated with lower ability for collective action. In this case, the result could be supported in equilibrium if the housing directorate reckons that it can neglect facilities in ethnically heterogeneous housing projects, knowing that it will not face collective action from its residents demanding better services. Finally, when residents report incidents of direct civil conflicts, we can interpret this as an effect of diversity on social relationships and the failure by the state to give proper police protection in certain neighborhoods.

Since we have a much more detailed level of analysis of diversity and public spaces than the previous literature, we do not have access to precise objective indicators. One might thus be worried that our analysis draws exclusively on subjective reports on the quality of public spaces rather than

on objective outcomes. While many earlier papers also rely on subjective assessment (Luttmer, 2001; Putnam, 2007 and Dahlberg et al., 2011 among others), the extent to which our results can be compared to those papers relying on objective outcomes (such as Alesina et al., 1999; Alesina and La Ferrara, 2000 or Miguel and Gugerty, 2004) depends on how closely subjective measures map into objective measures. We address this issue in several ways. First, we provide an indirect objective measure of the quality of public housing by using the number of repairs and improvements done. Second, we argue that objective indicators for outcomes such as violence tend to underestimate the victimization rate, since conflicts are not systematically reported to official authorities. Third, we conduct several tests to challenge the claim that self-reported perceptions are due to personal bias.

This paper primarily contributes to the literature on the effects of ethnic diversity on economic and social outcomes. In US cities, higher ethnic diversity has been found to be associated with lower social trust (Putnam, 2007; Alesina and La Ferrara, 2002), lower welfare spending (Luttmer, 2001), and poorer quality of public goods (Alesina et al., 1999; Alesina and La Ferrara, 2000). In Western Kenya, the greater the mixing of tribes, the less people have public spiritedness, and the lower the contributions to public goods (Miguel, 2004; Miguel and Gugerty, 2005). In cross-national surveys, diversity correlates with low growth in GDP and low quality of institutions (Easterly and Levine, 1997; Alesina et al., 2003). Alesina and Zhuravskaya (2011) show that islands of homogeneity amid a broadly diverse country do not decrease the negative effects of diversity on the quality of government.[2] These findings are depressing, in a normative sense, for those who herald gains from diversity (Page, 2007); and depressing, in an empirical sense, as in our globalized world, local cultural diversity is increasingly common (Dancygier, 2010). However, the robustness of the relationship and the channels at work remain to be determined. Putnam (2007) is careful to underline that his data allow him only to claim short run correlation between diversity and trust. Miguel (2004) finds no diversity impacts on local outcomes in Tanzania, a country in which the ruling authorities have sought to ameliorate ethnic cleavages by promoting a common language. Posner (2004) shows that changed electoral rules can create broader ethnic identities thereby reducing fragmentation. Dunning and Harrison (2010) show that inter-tribal polarization in Mali is reduced with cross-cutting cleavages. Finally, Glennerster, Miguel and Rothenberg (2010) argue that the presence of strong chiefs at the local level, although reinforcing the salience of ethnicity, translates into effective inter-ethnic cooperation.

Our paper is also incidentally related to empirical works examining neighborhood effects on social and economic outcomes. So far, the literature has mainly focused on the neighborhood effects on physical and mental health, economic self-sufficiency, risky and criminal behavior, or educational

[2]The magnitude of the relationship between those outcomes and ethnic diversity is substantial. Putnam (2007) finds that the difference between living in a highly homogeneous city (Bismarck, North Dakota) and the heterogeneous Los Angeles is as great as the difference between an area with a poverty rate of 7 percent and one with a poverty rate of 23 percent. Alesina et al. (1999) show that moving from complete homogeneity to complete heterogeneity is associated with a reduction in spending on roads by nine percentage points. Luttmer (2001) finds that interpersonal preferences based on negative exposure and racial group loyalty of recipients are associated with 33 percent of the cross-state variation in the support for welfare spending. Alesina et al. (2003) show that moving from perfect homogeneity to maximum heterogeneity would be associated with a reduction in a country's growth rate by two percentage points per year.

outcomes (see among many others Katz et al., 2001; Oreopoulos, 2003; Goux and Maurin, 2007 and Kling et al., 2007). In particular, Katz et al. (2001) and subsequent contributions use the Moving to Opportunity social experiment to estimate the externalities from neighbors. To avoid the problem of endogenous neighborhood selection, those authors use data from a randomized experiment in which some families living in high-poverty U.S. housing projects were offered housing vouchers to enable them to move to higher income areas. While our paper is not based on a randomized experiment, we also avoid the inferential issues of residential endogenous selection by using the exogenous spatial allocation of households with respect to ethnic characteristics. We enlarge the dimensions analyzed in this literature by looking at how immediate neighborhood diversity affects well-being and the quality of the local environment.

The remainder of this paper is organized as follows. Section 2 presents the data. Section 3 documents our identifying assumption on the absence of residential self-sorting in public housing. We conduct various tests to show that the spatial allocation of households across public housing blocks within localities is exogenous with respect to ethnic characteristics. Section 4 shows our main results. We document the effects of ethnic diversity on satisfaction, local public goods and social relationships. We discuss the various dimensions and channels through which diversity might matter for households' well-being at the finite local level. Section 5 provides tests of the validity of self-reported outcomes, and we perform a series of robustness checks on our results in section 6. Section 7 concludes.

2 Presentation of the data

2.1 Data sets

Our analysis is based on two representative French national surveys. First, we use the French Labor Force Survey (Enquête Emploi, INSEE, hereafter the LFS) to test our identification assumption that spatial allocation in the public housing market can be considered to a large extent as exogenous relative to ethnic characteristics. We use the continuous time version of the survey that covers the period 2003-2007. This version provides all the relevant information about ethnic background, economic characteristics and geographic location of individuals to test our identification strategy. These data are areolar: they are not drawn directly from a selection of homes, but from a selection of geographical areas (*aires*) made up of twenty adjacent households on average.[3] Over the 2003 to 2007 period, more than 10,000 different areas were sampled. All the households within a randomly selected area were surveyed and, within each household, all persons aged fifteen or over were interviewed. Using these data, we can work on real neighborhoods at a very small geographic level. Moreover, we have information on whether the respondent was living in a public housing unit, whether he or she has been living in his or her current public housing for at least one year or whether he or she has just moved into the neighborhood. These particular features enable us to compute the level of ethnic diversity prevailing within each public housing block and to test for the absence of

[3]INSEE has chosen this sampling strategy so as to reduce the travelling expenses of those who administer the survey.

self-sorting on ethnic background across public housing blocks.

Second, we use the French Housing Survey 2002 (*Enquête Logement*, INSEE, hereafter the HS), to estimate the relationship between ethnic diversity and the quality of public space within the housing block. We identify the causal effect of diversity and control for self-sorting by focusing on the public housing sector. The HS provides detailed information on the perception of the quality of local public spaces, ranging from vandalism in the common areas, to housing quality and conflicts in the neighborhood. The HS also reports detailed information about the ethnic, economic and social backgrounds of individuals within the neighborhood.[4] Yet, in this survey, the samples are not areolar, meaning that all the individuals living in a given geographical unit are not systematically surveyed and are randomly drawn instead. This feature implies that we have few observations within each geographical unit of interest, the *îlot*. It becomes consequently difficult to compute significant and relevant measures of diversity in one's neighborhood. We overcome this concern by using the 1999 French Population Census. Each HS sample is drawn from the most recent Census and the geographical units of the HS are a subsample of those of the Census. As the census provides variables such as birth country or nationality at birth, it allows us to compute representative fractionalization indices at the *îlot* level and then to match them with the corresponding *îlots* in the HS. In this paper, we compute fractionalization indices at the *îlot* level using the 1999 Population Census, and match them to the *îlots* of the 2002 HS. We work at one of the smallest geographical units, the *îlot*, which is comparable to a block. We will refer to "blocks" instead of *îlots* from now on. Table 16 in Appendix A presents descriptive statistics to provide a better idea of what constitutes a block in the 1999 population census.

2.2 Fractionalization indexes

We rely on the ethno-linguistic fractionalization (hereafter ELF) index used in the literature (e.g. Alesina et al., 2003) to construct our measure of ethnic diversity. This traditional measure of diversity reflects the probability that two randomly drawn individuals from a given population belong to different groups (previous studies looked at ethno-linguistic or religious groups). More formally, the basic fractionalization index is computed as one minus the Herfindahl index of ethno-linguistic group shares:

$$ELF_j = \sum_{i=1}^{i=N} s_{ij}\left(1 - s_{ij}\right) = 1 - \sum_{i=1}^{i=N} s_{ij}^2 \tag{1}$$

where s_{ij} is the share of group *i (i=1, ..., N)* in area *j*. If the population living in area j is fully homogeneous, ELF_j equals 0 and it converges to 1 as the population heterogeneity increases. Note that ELF_j can increase for two reasons: it will increase with the number of ethno-linguistic groups, and it will increase the more equal the size of the groups. As mentioned above, the Census data and the LFS provide information about the country of birth and the nationality at birth of individuals,

[4]Some of the key variables for our study are not public. The French Statistical Institute (INSEE) made their access possible as part of a convention between the INSEE and Sciences Po. We were required to make use of the "sensitive" data within the confines of the INSEE.

allowing us to construct two different measures of diversity. In the remainder of the paper, we focus on diversity as measured by nationality at birth, computed at the block level. The distribution of diversity in housing blocks is presented in Appendix A (Figure 1 and Table 17).[5] Unsurprisingly, given that immigrants and second generation French are more likely to be eligible for public housing dwellings on income criteria than native French, the public housing neighborhoods are characterized by higher levels of diversity than other neighborhoods.

2.3 Sample characteristics

We now document the characteristics of the 2002 Housing Survey we use in our analysis. Most of the variables we are interested in (those describing the quality of life within one's apartment, building or neighborhood) are given at the household level. The dataset contains 32,156 households, corresponding to 78,791 individuals. The HS reveals that 39.6 percent of the French households are renters while 56 percent are owners. Overall, 15.77 percent of the households live in public housing units, representing 39.8 percent of the tenants.

Table 1 shows the main socio-demographic characteristics of our sample. We compare households living in the public and in the private housing sectors. Foreigners (or immigrants) are overrepresented in the public housing population compared to the private housing population. Public housing neighborhoods are also characterized by a poorer socio-economic environment: the unemployment rate is around twice as high as in private housing blocks. Individuals living in public housing dwellings are less educated and earn lower incomes. Around one third of the adults have no diploma at all, and the share of individuals having achieved graduate studies is less than half the corresponding share in the private housing sector. Column 3 shows that the two populations are statistically significantly different with respect to most of their characteristics. Column 4 shows the characteristics in the private housing sector when we restrict to tenants. Still, the two populations are statistically significantly different (Column 5).

Table 2 documents the perception of housing conditions by native French and immigrants in the public housing sector. On average, natives have a much better opinion about the quality of their housing than Maghrebians or other Africans.[6] Table 2 shows that 13.8 percent of the native French are very satisfied with their housing conditions while this is the case for only 8.42 percent of the Maghrebians. Conversely, only 9.9 percent of the native French complain about insufficient housing conditions versus 18.21 percent of the Maghrebians. The last line of Table 2 reveals that the poorer housing conditions are associated with lower levels of income, a situation more salient for Maghrebian and African families. In particular, the households that are very satisfied with their housing conditions earn on average 13,300 Euros per year, while very unsatisfied households earn 10,127 Euros a year on average. From the last column, we observe that the average Maghrebian

[5] On the public housing graph, we see that 6 percent of public housing blocks are perfectly homogeneous. This high frequency is to a large extent explained by the fact that in many blocks we observe only very few inhabitants, thereby increasing the chance of getting a null ELF. We keep those blocks in our main analysis, but we checked that deleting them does not affect the results.

[6] We observe the same pattern when we look at the various subjective and objective measures of the quality of public housing

family earns even less than that (8,603 Euros).

3 The exogeneity of diversity in the public housing sector

The main identification issue raised by the estimation of the effect of ethnic diversity on the quality of public goods is that fractionalization presents a high risk of endogeneity. Individuals generally tend to self segregate: they prefer forming links with others like themselves, with whom they share common interests, and in particular people of the same ethnicity or the same social background.[7] If people can choose the area where they live, they would rather move into neighborhoods where people are similar to themselves. If individuals who are not constrained with respect to the location of their home choose to gather along ethnic lines, then the richest individuals will be able to move into the most homogeneous neighborhoods. Therefore, the level of diversity of the neighborhoods is probably endogenous and any estimates on the implications of diversity will be biased. In particular, if the wealthy families that live in diverse settings are those that have a taste for diversity, the true effect of diversity on social outcomes should be smaller in absolute terms.[8]

To identify the effect of ethnic diversity, one must therefore study individuals who are assigned to their place of residence without consideration of ethnic characteristics. The purpose of this section is to bring evidence that spatial allocation of households across public housing blocks in France can be considered as exogenous with respect to ethnic characteristics due to the French regulation. Naturally, the sample of households that apply to public housing dwellings is endogenous with respect to economic, social or cultural characteristics. But among the pool of selected households, we show that their spatial allocation across the public housing blocks of a given department is exogenous with respect to their ethnic characteristics.

3.1 An ethnically-blind allocation process built into law

We first document the actual process of allocation of households across public housing dwellings. This gives a legal basis to our identifying assumption of the absence of self-sorting on ethnic characteristics in the public housing sector.[9]

We start by describing the eligibility criteria to the public housing sector. In France, the only eligibility requirements are to be legally living in France (as a French citizen or migrant with a valid residence permit) and to be living under a certain threshold of income per unit of consumption. This income ceiling is usually rather high: in 2009, this threshold was between 36,748 and 50,999 Euros per year for a four-person family, depending on the region of residence (the upper figure is nearly 3,000 Euros higher than the average disposable income of four-person households in 2007). Using the 2002 Housing Survey data, Jacquot (2007) estimates that given their income, between two

[7] Race, or ethnicity, is the most salient characteristic along which homophilious relationship form.

[8] Combes, Decreuse, Schmutz and Trannoy (2010) use customer discrimination theory to show that owners will tend to discriminate against ethnic minorities when renting their apartment, bringing new evidence of why any causal claim of ethnic diversity on public goods in the private housing market would be biased.

[9] The process of allocation across public housing blocks in France is mainly inspired by theories from Le Corbusier (1887-1965). Le Corbusier insisted that France must avoid the homogeneous ghettoes of the urban landscapes elsewhere, and should therefore allocate housing blind to ethnicity, not permitting family networks to grow within housing establishments. These ideas were translated into state regulation (Bernardot, 2008).

thirds and four fifths of households living in Metropolitan France could apply for a public housing unit. As a consequence, the population eligible for public housing is about three times as large as the available space in vacant dwellings. This implies that other criteria must be taken into account in the distribution process. Hence, in addition to the income of the household, family situation and household size are taken into account to ensure a suitable match with the characteristics of vacant dwellings, as well as the emergency of the application. These are actually the main criteria used by the commission due to the boom in housing prices in the private sector during the mid-90s and the 2000s. In particular, five priority criteria are defined by law (Article L441-1 of law relative to construction and housing - *Code pour la Construction et l'Habitat*) at the national level to ensure that vacant housing will first be distributed to households with obvious social difficulties. Households satisfying these priority criteria are those in which there is a (mentally or physically) disabled person, those living in precarious or hazardous shelter due to financial constraints, those living in a temporary accommodation, individuals living in a precarious shelter who recently found a job after a long unemployment spell, and spouse-abused individuals.

To get on the queue for a housing unit, households submit a form revealing their identity and family situation, their employment status and the resources of the household, the reasons for applying to the public housing sector (currently or soon to be homeless, or reasons related to health situation, family situation, job situation, inappropriate current housing, unpleasant environment), the type of housing looked for, whether the applicant is disabled and whether this is the first application. It is important to stress the fact that the application form contains very limited information about the ethnicity of the applicant: he or she only needs to inform about his or her nationality, which is limited to three possible categories (French, European Union, or non European Union).

We now document the selection process of the applicants. The commissions of selection in charge of allocating households to vacant public housing dwellings are held at the department level (or at the city level in the case of Paris which is both a city and a department due to its size).[10] The composition of the commissions is regulated by law: it includes six members of the public housing offices board, a representative of associations for integration (appointed by the head of the department -*préfet*), mayors of the cities (or districts) in which vacant housings are to be attributed, as well as a representative of any association defending tenant rights. In addition, another department representative may attend the commission. For each vacant housing unit, at least three households must be considered by the commissioners, who finally decide which household will be allocated to which housing unit, according to the eligibility and priority criteria detailed above. Other criteria such as the number of children in the household are also taken into account in order to allocate suitable dwellings.[11]

[10] Metropolitan France is divided into 22 large administrative areas, called *régions* (regions henceforth), and into 96 smaller administrative areas, called *départements* (departments henceforth). Each department is hence a subdivision of a region, and several departments can belong to the same region. Each department is administered by an elected General Council (*Conseil Général*) and its President, whose main areas of responsibility include the management of a number of social and welfare programs, junior high schools (*collèges*), buildings and technical staff, local roads, schools, rural buses, and municipal infrastructure.

[11] Public housing allocation in Paris serves as a useful concrete example. We draw on the official audit of *Observatoire du Logement et de l'Habitat de Paris* (2011). Paris is a special case as it is, due to its size, a department as well as a city. The application form, the commission, and the allocation process thus take place in Paris, at the city level. As

With the allocation process regulated by legal rules at the national level, it seems unlikely that households can be allocated according to their origin. The main concern of the commissions is to favor socially endangered households, as shown by the priority criteria. Finally and most importantly perhaps, any decision based on the origin of an applicant, i.e. discriminating on this basis, is prohibited in France. Public housing offices are also regularly audited. If evidence of discrimination is detected, they are judged and punished accordingly. This is why the lawyers Rouquette and Lipietz (1991) stress that the rules of allocation of public housing units that prohibit "localism", and the high administrative barriers that effectively prohibit exchanges of lodgings except for changing spatial needs of families, make the allocation of public housing units largely exogenous with respect to the ethnic origins of the applicants.

Despite this legal process of allocation, one might still be worried about the possibility of self-sorting of households that refuse the residential allocation proposed by the commission. In theory, households can refuse up to three offers. However, self-sorting, especially on ethnic characteristics, seems unlikely to be a common practice. Residential mobility within the HLM sector is very low, due to the current strong shortage of supply of public housing dwellings. This makes it unlikely that the selected households could be really picky about the diversity of their neighborhood (see the study by Simon, 2003). In addition, rents are considerably lower in public housing than in private housing, increasing the opportunity cost of moving, so that the turnover is very low. More specifically, the mobility rate in the public housing sector is even lower than for recent owners. Using data from the 2002 Housing Survey, Debrand and Taffin (2005) give precise measures of the mobility rate: it amounts to 10.3 percent for new owners, to 15.9 percent for tenants in the private housing sector, but only to 9.9 percent for tenants in the public housing sector. While even 9.9 percent may seem high, we show in section 3.2.2 that when households move, they almost never achieve a placement in a less diverse setting in the public sector. Besides, the mobility rates seem to have become even lower in recent years due to the boom of prices in the private sector, as shown in the Parisian case in footnote 11. The authors also document an increase in the gap in the mobility rates between the private and the public rental markets: there is was 6 point difference in 2002, to be compared to a 0.8 point difference in 1984. As a consequence of the size of the eligible population and of the low turnover, the waiting periods are rather long: the 2002 Housing Survey documents that

of January 2010, there were 186,017 public housing dwellings in Paris. Public housing buildings are scattered across all Parisian areas, with a high concentration (69 percent) in six districts (the 13th, 14th, 15th, 18th, 19th and 20th *arrondissements*). Within Paris, 48.7 percent of households are under the income ceiling and could be theoretically eligible. In practice, only households with very modest incomes apply (71 percent have an income lower than the minimum ceiling for all France, equivalent to 2,345 euros per month for a household with two children). On the 31st of December 2010, there were 121,937 ongoing applications, to be compared to 12,500 public housing units allocated over the year 2010. The breakdown of the population that were granted a public housing unit in 2010 is the following. 67.7 percent came from precarious housing, 28.8 percent came from the private rental sector, and 2.3 percent came from the public housing sector. In the latter case, those are people who moved for larger space following an increase in their household size (only 12 percent of the public housing dwellings have more than three rooms). The mobility rate (defined as the ratio of new entrants over the total number of public housing dwellings) is particularly low: it reaches 5.5 percent in 2010. It is formally possible to indicate a precise neighborhood in the application form, but in practice, very few applicants (6.6 percent) do provide this information. More than half of the 121,937 applicants (52.9 percent) did not mention any particular area at all, probably due to the fear of being rejected on this ground. Among those who indicated an area of preference, 91.2 percent mentioned the area where they were already living.

over one third of the population applying for a public housing unit had been waiting for more than one year. A closer look at the distribution of waiting periods reveals a difference between natives and immigrants, but this difference is washed out once we control for household characteristics: the main determinant of a longer waiting period is household size. This is not surprising, as the public housing market in France is characterized by a shortage of large apartments. This is part of the explanation of the difference in waiting period between immigrants and native French, as the former tend to have more children than the latter, on average.

In a word, the public housing market is very tight, and highly regulated. This implies that households have very limited control over the time when they will be assigned a HLM dwelling and the precise place where it will be located. This is especially true at the block level, which is our level of analysis. This gives some initial support to our assumption that the distribution of households across public housing blocks is blind to ethnic characteristics and preferences of households.

3.2 Tests on the exogeneity of spatial allocation of households in public housings

In the remainder of this section, we provide more formal tests lending further confidence that the spatial allocation of households across public housing blocks of given localities is exogenous with respect to ethnic variables. We carry out a variety of formal tests to show that the absence of self-sorting on ethnic characteristics is verified on statistical grounds.[12]

3.2.1 Absence of self-sorting on ethnic backgrounds

Our first set of tests consists in showing that while households tend to self-segregate in the unconstrained private housing market, there is no such evidence in the public housing market. We test this using the LFS and focusing on individuals who recently moved into an area (within the previous year).

We first estimate the correlation between the hourly wages of the movers and the level of diversity of the area into which they just moved. Without prior beliefs over agents' preferences, if individuals have a taste for or against homogeneity, there should be a significant relationship between the level of ethnic diversity prevailing in their neighborhood and their wages when their choice is not constrained by legal rules. Indeed, in an unconstrained market (e.g. the private housing market), the richer the individual, the easier it should be for him or her to choose his or her neighborhood. Therefore, if the level of diversity of the area enters one's preferences, there should be a correlation between individual wealth and the level of diversity in the area. In the public housing market as well, some public housing units are more expensive than others, depending on the location and the date of

[12] Algan et al. (2011) conduct an alternative test of the exogenous allocation of households in the public housing sector. They regress households ethnic characteristics on fixed effects associated with the different public housings within each department. The test for exogeneity of diversity consists in performing standard F-test on the null hypothesis that the fixed effects are jointly not statistically different from zero. In the case of endogenous residential sorting in some public housings, the fixed effects associated with those blocks should be statistically significantly correlated with the household characteristics, and the F-test will be rejected. They find that in more than 85 percent of the departments the F-test reject the null-hypothesis of a correlation between ethnic characteristics of the households and the public housing fixed effects.

construction. The wealthiest inhabitants could thus have some control over the diversity of their neighborhood, in theory.

To test this, we compute the fractionalization index of the area to which a household recently moved taking into account only the neighbors who had been living there for more than one year. We thus calculate the fractionalization indices at stake prior to the move. For the private housing market, we compute the fractionalization index of the whole area, including both the population living in private and public housing dwellings within this area. We follow this strategy since there are a few areas with both public and private housing units in the LFS. It is reasonable to think that it is the level of diversity of the whole neighborhood that will matter in the mobility decision in the private market.[13] Regarding the public housing sector, we compute the level of diversity including residents of the public housing only, our identification assumption being that households do not have control over the level of diversity of their neighborhood *within* the public housing sector.

We run OLS estimates of the hourly wage of newly arrived individuals on the level of diversity of the area in which they just moved, controlling for the department of residence.[14] First, we focus on individuals having just moved into a private dwelling. We find a very strong negative relationship between income and diversity (the estimated coefficient is -0.14 and is significant at the 1 percent level).[15] Then we look at the sample of individuals having moved into a public housing dwelling within the past year. In this case, the simple OLS regression reveals that there is no significant correlation between the income of individuals moving into a public housing dwelling and pre-existing diversity of nationalities within the neighborhood.[16] These correlations show that while the wealthiest households tend to self-segregate in less diverse areas in the (unregulated) private housing market, it does not seem to be the case in the (regulated) public housing market. In other words, although diversity enters households' preferences as revealed by the private housing market result, the location in the public housing market seems to be unaffected by such preferences.

Our second test uses the same methodology and estimates the link between the nationality of individuals moving into a new area and the share of the area's "long term" population of the same nationality.[17] We expect a significant relationship in the private housing market where location choice is relatively unconstrained but not in the public housing sector. Table 3 reports the results from an OLS regression of individuals' origin (measured by nationality)[18] on the share of the population of his or her new neighborhood from each nationality, controlling for individual characteristics (quadratic function of age, gender, log of hourly wage, education, socio-professional category) and including department fixed effects. The coefficients reported in Table 3 are those associated with

[13] The results are unchanged if we consider only the population living in the private housing sector: the magnitude of the correlation decreases marginally, but remains statistically significant.

[14] If we reverse the dependent and the explanatory variables, the sign and significance level of the coefficient remains the same.

[15] This is powerful evidence of the bias introduced with endogenous sorting

[16] The results are not displayed but are available upon request.

[17] A similar test was proposed by Goux and Maurin (2007) to show that the educational achievement of the children of newcomers in public housing is uncorrelated with that of the current residents. Individuals do not self-select in public housing neighborhoods according to the educational achievement of the neighbors' children. By contrast, the authors find a strong self-selection on the educational characteristics in the private housing sector.

[18] We also performed the same test using the country of birth instead of the nationality, and we also tried alternative origin groups. The results remain qualitatively similar with these various specifications, and are available upon request.

the share of the area's population of the *same* origin as the individual.

In the private housing sector (Column 1), a significant relationship between one's nationality and the share of same-origin neighbors shows up for most of the nationality groups. By contrast, in the public housing sector (Column 2), there is no statistically significant relationship between the nationality of the individual and the share of the "long term" population in the area having the same nationality. The standard errors are quite large in the public housing sector due to a low number of observations, but the correlation is close to zero for households with African origins, and is around three times as low as in the private sector for households with Maghrebian origin. The only significant relationship shows up for immigrants from Europe, but they represent a marginal share of the whole immigrant population compared to immigrants from the Maghreb and Africa.

We conduct the same kind of test on other individual characteristics, and reach similar conclusions. We find that in the private sector, highly educated (respectively low skilled) individuals are very likely to move into neighborhoods with higher levels of highly educated (respectively low skilled) people. This is not surprising and illustrates self segregation along education level in the private sector. On the contrary, such segregation does not appear in the public housing sector. The only characteristic for which we find a positive correlation between the new and the old inhabitants in public housing blocks is the fact of being a factory worker. This is perhaps not too surprising either given that factory workers represent more than 30 percent of the public housing population, and due to the history of public housing, which was initially (and over several decades) dedicated to factory workers.

Finally, we also regress the probability of having moved in a new HLM dwelling in the past year (dummy equal to one in this case and to zero if the individual was already living in the same HLM apartment one year before) on individual characteristics (nationality, age, gender, wage, education, socio professional group), and the interaction of these characteristics with the ethnic diversity among the public housing population of the block.[19] As would be expected in the absence of sorting, the coefficients on the interaction terms are not significantly different from zero. The only exception is for the interaction of ELF with the dummy for African nationality, for which the coefficient is negative and significant at the 10 percent level.

3.2.2 Tests on the refusal rate of public housing offers

The previous tests point out the absence of self-selection along ethnic lines among the movers. But self-selection could occur prior to the move. In this case the sample of movers that we observe in the database would be biased. We address this issue by looking at households that have refused a public housing dwelling offer. Actually, a disturbing fact for our assumption is that a non-negligible share of households waiting to be allocated into a public housing unit report to have declined at least one offer. In the Housing Survey, 24.2 percent of households currently living in a public housing dwelling report to have rejected at least one proposal before finding their current place. Besides, 16.5 percent of the households that are still waiting for an offer at the time of the survey - whether they are already living in a public housing dwelling or not- have previously turned down at least one offer.

[19] The results are not displayed in the paper but are available from authors upon request.

An additional concern is that 47.9 percent of the households in public housing that had declined an offer at the time they were on the waiting list declared that one of the major reasons for this decision was they found the local environment unpleasant.[20] The corresponding figure for the households still waiting for an answer amounts to 57 percent. The answer "unpleasant local environment" is hard to interpret at this stage, since it could refer to diversity as well as the proximity to public transport and infrastructure, lack of green spaces and so on.

Yet, we show that even if households declined at least one offer, possibly due to the ethnic diversity of the neighborhood, they were still unable to choose the level of diversity of the area in wich they end up living, and would not be able to do so for any neighborhood to which they would receive an allocation in the future. To put it another way, although households may have a distaste for diversity, we find evidence that this is not taken into account in their allocation process by the attribution commissions. In principle, households can decline up to three offers. But due to the strong shortage of public housing dwellings, we find that households that have declined an offer in the past cannot self-select into less diverse neighborhoods in the future. We provide evidence of that fact in what follows.

First, if there were self-selection upon diversity, we should expect households that turned down proposals before being allocated to their current public housing dwelling to end up living in less diverse neighborhoods. To test this conjecture, we run OLS regressions of a variable indicating whether the household declined at least one offer (during the latest application process) on the level of diversity of the neighborhood in which it now lives.[21] Panel A-I of Table 4 shows various estimates of the effect of ethnic diversity on the probability of having turned down offers. Column 1 shows the correlation without any additional control variables. In Column 2, we control for household characteristics. We add up the characteristics of the housing project in Column 3. Column 4 finally includes neighborhood characteristics and department fixed effects since the allocation of a public housing dwelling takes place at the department level. In each specification, the coefficient on ELF is not significantly different from zero, showing that households having declined offers during their past allocation process do not end up living in neighborhoods with significantly different levels of diversity.

We explore further the validity of this conjecture by focusing on the reasons adumbrated by households for refusing an offer. If public housing residents were to sort themselves on the basis of their (dis)taste for diversity, those who declined "because of the local environment" should now live in significantly less diverse neighborhoods. We thus regress a dummy variable indicating whether an "unpleasant environment" was the reason why the household declined at least one offer (during the past application process) on the level of diversity of its current neighborhood. Panel A-II of Table 4 reports the estimates on the level of diversity, using the same specifications as above. Here again, none of the coefficients is significant. Instead, household characteristics such as the labor market status of the head of household and the size of the household are the only ones that matter in these

[20] The other possible answers were: inconvenient place, rent too expensive, low quality building, and apartment not corresponding to household needs.

[21] In this paper, we always rely on OLS estimations, even when the dependent variables are dummies. Using probit estimates does significantly affect our results.

regressions.

Alternatively, we perform these tests on the subsample of individuals currently waiting for an HLM offer. Panel B of Table 4 shows the regressions of the refusal dummy (B-I) and the "refusal due to unpleasant environment" dummy (B-II), for individuals who are currently applying for public housing on the diversity in their neighborhood. We still control for household, building and neighborhood characteristics. Once again, we find that the ethnic diversity of a block is uncorrelated with households wait-listed for an HLM assignment having turned down offers since the beginning of their request (B-I). This suggests that the current level of diversity in the block does not rush households out of the area, as their propensity to decline an offer is independent of the ELF in the current neighborhood. The high refusal rates of HLM offers do not therefore seem driven by a hope to reduce diversity by waiting.

Let us now focus on individuals who left their previous housing unit because they did not like the environment. In the Housing Survey, 5 percent of households that moved over the past four years mention an unpleasant environment as one of the main reason they moved. In this question, the phrase "unpleasant environment" explicitly refers to troubles such as "noise, lifestyle or insecurity". Again, this could be related to high levels of diversity. If this is true, and if households can actually select the block to which they move, then we expect that those households having moved because they disliked their environment ended up living in less diverse neighborhoods than the households that moved for a different reason.

We perform OLS regressions of a variable indicating whether the household left its previous housing due to an unpleasant environment, on the level of diversity of its current neighborhood. Table 5 shows the coefficients on diversity in the specification controlling for household, building and neighborhood characteristics, and including department fixed effects. Column 1 shows the results for households that moved within the private housing market. As expected, households that left their previous housing to escape from an unpleasant environment now live in blocks where the diversity is significantly lower. Column 2 shows that this result does not hold for households that moved within the public housing market. This result suggests once again that in the public housing sector, households do not have control over the diversity of the block to which they are allocated.

A potential concern with the previous result is due to the small sample of observations (only 627 in the public housing case), generating large standard errors. Therefore, we replicate this test on a larger subsample. Instead of focusing on households that have moved within a housing sector, we now concentrate on households having moved into each sector, no matter the sector in which they were living prior to their move.[22] As previously, we see that for households living in the private housing sector, the probability that they left their previous housing due to an unpleasant environment is negatively correlated with the diversity in the current neighborhood (Column 3). However, no such significant relationship shows up for households living in a public housing dwelling (Column 4), and the estimates are now more precise than in Column 2. We can infer from those tests that households tend to self-select in low-diversity neighborhoods in the private housing sector, but are

[22] To summarize, Columns 1 and 2 report the results for households moving from a housing dwelling in the private (1) and public (2) sectors into a housing dwelling in the same sectors. Columns 3 and 4 report the results for households moving from any housing sector into the private (3) and public (4) sectors.

unable to do so in the public housing sector.

3.3 Test on the distribution of ethnic groups shares across public housing blocks

We conclude this section with a test on the distribution of ethnic groups shares across public housing blocks within each department. As mentioned in section 3.1, the allocation of households across public housing blocks takes place at the department level. If the members of the commission follow the legal criteria and do not take into account the ethnic characteristics in the allocation process, we should find an equal distribution of households of a given nationality across the various public housing blocks within each department. For the sake of illustration, let us assume that 10 percent of Maghrebians live in the public housing sector in Paris. We should find the same share of 10 percent of Maghrebians within each Parisian housing block if the allocation was truly exogenous with respect to ethnic characteristics. Naturally, this equality of distribution of ethnic groups shares across housing blocks can hold only if we have a sufficiently large number of individuals within each housing block. Instead, in the 1999 Population Census database, we only observe an average of 18.4 different individuals out of the whole population living in each block (same average in the Labor Force Survey). This is due to the sampling strategy of the French National Institute of Statistics and Economics (INSEE) that interviews only a subsample of adjacent households from the overall block. With such a small sample size of observations at the block level, any analytical test of equality of distribution of ethnic groups shares across blocks would fail. We thus use Monte Carlo simulation to reproduce an artificially random distribution of the population. We randomly reallocate the public housing population across the different blocks within each department, and then compare this random distribution to the actual distribution.

Let us now describe more precisely this last test. Using the 1999 Census data, we pool the public housing population from each department, and reallocate it randomly across the different public housing blocks of the corresponding department, taking into account the demographic structure of each neighborhood. In order to avoid composition effects due to existing families, we also restrict our sample to household heads. We also restrict our sample to the neighborhoods where we observe at least five percent of Maghrebians to focus on areas where we have sufficient observations to perform this test. After simulating a random distribution of ethnic groups shares as explained above, we compare the actual and the simulated distributions of native French and Maghrebians shares across neighborhoods. We first run a simple t-test of equality of means. Then we conduct a Kolmogorov-Smirnov test, which is a more demanding test of equality of distributions.

Table 6 reports the percentage of departments for which the actual and simulated distributions of ethnic shares across neighborhoods are similar, i.e. those for which we cannot reject the null hypothesis at the 10% level. The labels in the first column indicate the ethnic group for which we compare the distributions of the shares across neighborhoods. The second column shows that there is no department for which we can reject the null hypothesis that the real and simulated distributions of the ethnic group shares have equal means. The Kolmogorov-Smirnov test results are displayed in the third column. According to this test, the actual and simulated distributions of native French

shares across HLM neighborhoods are similar in 98.61 percent of the departments. When we focus on Maghrebians shares, we find that the two distributions are alike in 98 percent of departments as well. All in all, those tests are in line with the idea that the distribution of the households eligible for public housing across the housing blocks can be considered as exogenous with respect to ethnic characteristics.

4 Results

4.1 Specification

This section estimates the impact of diversity on the quality of local public goods and social relationships. We identify the effect of diversity by using data from the public housing sector where households are exogenously allocated with respect to ethnic characteristics. Let j, k and l indicate respectively households, buildings and blocks. For each outcome, we estimate the following equation:

$$Y_{jkl} = \alpha + \beta ELF_l + \gamma X_j + \delta Z_k + \mu W_l + \varepsilon_{jkl} \tag{2}$$

where Y_{jkl} denotes the housing outcome we are interested in, as stated by household j in building k and block l, ELF_l is the level of ethnic diversity in the block, X_j is a vector of household characteristics, Z_k a vector of building characteristics and W_l a vector of socio-economic characteristics of the block. We also control for department fixed effects since the spatial allocation of households across public housings is decided at the department level. All results derive from OLS estimates, with robust standard errors clustered at the block level.[23]

The regressions presented in this section control for a large set of household characteristics: age, gender, level of education, labor market status and nationality[24] of the household head, as well as household size, and total household income per member. In addition, we can also control for building characteristics, such as the number of apartments in the housing project (in log), and its date of construction. Indeed, the size and the number of occupants might affect the ability of the households to coordinate for improving the commons or to enforce norms, while the age of the building might explain part of the degradations observed and tenant satisfaction.

An important issue in our regressions is whether the degree of fractionalization is picking up various dimensions of the environment where people are living, including the extent of inequality and the unemployment rate or the socio-economic background of the neighborhood (Alesina and La Ferrara, 2002). We therefore include a very detailed classification in 27 categories of the socio-economic environment of each neighborhood, constructed by Nicole Tabard (2002) from the INSEE. This classification characterizes each area according to the labor market status, the socio-professional category and the occupation of all the men in the area. We use the classification that was built using the 1999 census data. This variable is the most detailed one available in French national surveys

[23] We have also run logistic regressions on dummy outcomes, with similar results. To ease the interpretation of the coefficients, we will report the OLS estimates henceforth.

[24] We distinguish between the following categories for nationalities: French at birth, naturalized French, from other European countries, Maghrebian, Sub-Saharan African, Asian and all others.

to capture the socio-economic background of an area. We also include the unemployment rate computed at the block level using the 1999 Population Census data. Finally, we include department fixed effects, as specified above.

4.2 The effect of fractionalization on the opinion on housing conditions

Let us first examine the impact of diversity on the general satisfaction about housing conditions. From the HS, we use the question: "In general how do you judge the quality of your housing conditions?". The variable takes on values from 1, for very good, to 5 for very bad. Over the public housing population, the average of this variable is of 2.5, with a 0.98 standard deviation. This question on well-being related to housing conditions is rather general. We will detail the different dimensions that could affect this well-being in the following subsection.

Table 7 looks at the role of ethnic diversity on the satisfaction about housing conditions in the public housing sector. In the first specification (Column 1), we only control for household characteristics: gender, age, level of education, employment status and nationality of the head of household, along with the household size and its income (in log). Ethnic diversity is thus the only variable capturing a block level characteristic. The coefficient is statistically significant at the one percent level. Column 2 reports the estimates obtained when including controls for the building characteristics (number of apartments (in log) and date of construction). In Column 3, we also control for potentially confounding factors with ethnic diversity at the block level, namely the unemployment rate and the socio-economic background of the neighborhood (as given by the Tabard index). In this third specification, we include department fixed effects as well. As this is the most comprehensive specification, we will henceforth refer to it as our preferred specification.

In the first two specifications, the estimated effect of ethnic diversity is statistically significant at the 1 percent level, while it is significant at the 5 percent level in our preferred specification. According to this specification (Column 3), a one standard deviation increase in ethnic diversity generates an increase in the dissatisfaction with housing conditions that amounts to 6.7 percent of its standard deviation. To get a better sense of the magnitude of this effect, we can say that the increase in the dissatisfaction with housing conditions generated by a one standard deviation increase in block unemployment rate corresponds to 13.1 percent of its standard deviation. Thus the effect of diversity on satisfaction is as sizeable as half the effect of the local unemployment rate. Two other variables seem to be related to household satisfaction with housing conditions: members of larger households tend to be less satisfied with their housing condition, while those living in newer buildings (constructed after 1990) have a significantly better opinion on the subject than others. Finally, older and more educated individuals also complain less than others, but to a lesser extent.[25]

[25]The results reported in 7 also show that people of Asian nationalities tend to be more satisfied with their housing condition than native French. However, we do not give much credit to this figure given that we observe only 9 Asian individuals in the public housing sector in our dataset.

4.3 The various effects of diversity

4.3.1 Vandalism, Housing quality and Civil conflict

This section looks further at the various dimensions of the dissatisfaction with housing conditions that could be affected by ethnic fractionalization. The HS covers a large variety of questions on the quality of the housing environment. Table 8 reports descriptive statistics of the outcomes we look at. To organize the discussion about those questions, we distinguish three main dimensions: (a) voluntary degradations or vandalism, (b) poor quality of housing that is likely to be due to a lack of maintenance and repairs and (c) personal aggression and robberies to which we refer as civil conflicts. We have also run an exploratory factor analysis that yields similar, if not identical, categories. Appendix B reports the results obtained with the three indices resulting from the factor analysis.

The first dimension of housing quality refers to degradations of the common areas due to voluntary neglect. In this category, we include all the variables reporting deterioration in the common areas of the building. First, households are asked a general question on degradations: *"Were the common areas of your building (lobby, staircase, floors) vandalized or neglected (destruction, deterioration) over the last twelve months?"*. The answers are 1 for "Never", 2 for "Minor degradations" and 3 for "Major or very frequent degradations". Households are then asked to mention which kind of degradations they observed over the previous year. They can choose several possible answers from the following list: *graffiti or degradations of the walls (or on the floor), trash and litter on the floor, broken windows, broken doors, broken light bulbs, degradation of mail boxes, degradation of the entry phone or entry code, deterioration of the elevator*. For each outcome, the variable is coded as 1 in case of a degradation, and 0 otherwise. All those items refer more or less directly to a willful degradation. We will thus refer to this set of questions as the category *Vandalism*. We also include in this category a question about noise pollution:[26] *"How frequently are you disturbed by the noise in your housing during the day?", "During the night?"*. The answers are 1 for "Infrequently or never", 2 for "Rather frequently", and 3 for "Very frequently".

The second category we consider refers to goods that are not directly produced or altered by residents. But they might be related to diversity by the lack of maintenance and repairs by the HLM office to improve the housing quality. We will henceforth label this category *Poor Quality of Housing*. We include in this category variables corresponding to housing problems that can neither be caused nor solved by the tenants, but for which HLM offices are responsible. The households are first asked: *"How would you qualify the way the common areas of your building are maintained and taken care of (cleaning, maintenance of collective facilities: lighting, trash cans,...)?"*. The answer ranges from 1 for good, to 2 for average, and 3 for bad. More specific questions are also asked: *"How does the façade of your building look?"*,[27] *"What is the quality of the soundproofing of your housing?"*,[28] *"Was the elevator out of order during more than 24 hours over the past three*

[26] The underlying assumption is that the source of the noise in the hallways and apartments of the building is not due to poor soundproofing.

[27] There are five possible answers: 1=As new, 2=Good, 3=Average, 4=Dirty, 5= Bad, with cracks, 6=Very bad, the building threatens to collapse.

[28] The possible answers are: 1=Good, 2=Average, 3=Bad.

months?",[29] *"Did you experience toilet issues (leaks, flush breakdown, drainage problem) over the last three months?"*, or *"Did you experience coldness in your apartment during more than 24 hours over the past twelve months?"*. We also include more detailed questions concerning the origin of coldness: *"Did you experience coldness because of a bad insulation?"*, *"Did you experience coldness because the heating equipment broke down ?"* and *"Did you experience coldness because of a poor heating equipment?"*. For all the previous questions, the variable is 1 when the answer is "Yes" and 0 otherwise.

The last category of questions refers to personal aggressions and criminality. We will label this category *Civil Conflicts*. Three questions correspond to this category: *"Have you, or a member of your household, been a victim of or a witness to physical aggression in your neighborhood during the last twelve months?"*, *"Have you, or a member of your household, been a victim of or a witness to a robbery in your neighborhood during the last twelve months?"*, and *"Have you been victim of a burglary (or any attempt) over the past twelve months?"*. For these three questions, the variable equals 1 in case of the event, and zero otherwise.

4.3.2 Results

Table 9 shows the effect of ethnic fractionalization on the various outcomes corresponding to the three different dimensions: "Vandalism", "Quality of housing" and "Civil conflict".[30] For each outcome, we run three separate regressions according to equation 2, using various sets of control variables, as specified at the bottom of each column. More precisely, in Column 1, we report the results when we only control for households characteristics. In addition, we control for building characteristics in the regressions reported in Column 2. We control for these variables as they may explain a large part of the degradations observed in the housing projects. Finally, in Column 3 we report the estimates obtained when we also control for neighborhood characteristics and department fixed effects.

The first panel of Table 9 reports the effect of ethnic diversity on outcomes related to voluntary degradations and vandalism. We report the results in the public housing environment, with various sets of controls as detailed above. For all the outcomes considered, the estimated effect of ethnic diversity is always statistically significant at the 1 percent level,[31] and is sizeable. Let us for instance look at the results for graffiti in the full-specification (Column 3): a one standard deviation increase in ethnic diversity is associated with a rise by 5.6 percentage points in the probability of observing graffiti, which represents 12.8 percent of the total standard deviation of this outcome. The effect of ethnic diversity is comparable to the effect of local unemployment: a one standard deviation increase in block unemployment rate is associated with a rise by 4.56 percentage in the probability of observing graffiti. Regarding the deterioration of elevators, a one standard deviation increase in ethnic diversity induces a 4.9 percentage points increase in the probability of observing degradation

[29] On the contrary, the question mentioned in the *Vandalism* section refers to deterioration in the elevator rather than mechanical breakdown.

[30] The coefficient estimates for the control variables are not reported here but are very similar to those reported in Table 7 and are available upon request.

[31] The exception is for the indicator for broken doors and noise during the day, for which the effect of diversity is only significant at the 5% level in the full-specification (Column 3).

of the elevator, which represents 16.7 percent of the total standard deviation of this outcome. This effect is once again as sizeable as that of the local unemployment rate. Note also that the size of the building (i.e. the number of housings) has a strong positive impact on all the outcomes related to vandalism.

The second set of regressions in Table 9 shows the effect of diversity on the index on outcomes signaling poor quality of housing. The coefficient associated with ethnic diversity is not always significant, especially in the full-specification. However, more diverse neighborhood are characterized by a lower care of the commons by the persons in charge, a poorer condition of the façade, more frequent concerns with heating, more frequent elevator breakdowns and toilet issues. It is worth noting that the estimated effects of diversity are much lower than those found for outcomes associated with vandalism. Consider the outcome associated with the probability that the elevator is out of order. In the full specification, we find that when the ELF increases by one standard deviation, the probability that the elevator was out of order during at least 24 hours over the last three months rises by 1.9 percentage points. This corresponds to only 5.24% of the standard deviation of this outcome. If we now turn to heating issues, our results indicate that a one standard deviation increase in ethnic diversity is associated with a rise by 2.43 percentage points in the probability to have experienced insufficient heat in the apartment during more than 24 hours over the past year, which represents 6.41 percent of the total standard deviation of this outcome. The date of construction of the building is also an important explanatory variable for most of the outcomes related to general housing quality, as it accounts for the general state of capital equipment under the responsibility of the HLM office (heating, façade, soundproofing,...).[32] The fact of living in a building constructed after 1982 decreases significantly the probability of reporting that housing quality is poor.

The last panel of Table 9 reports the results for outcomes related to civil conflict, capturing direct aggression, robberies and burglaries. Remarkably, it shows that ethnic diversity does not have a significant impact on any of these outcome variables in our preferred specification. This finding is consistent with Fearon and Laitin (1996), who argue that despite inter-ethnic relations being generally more tense, in-group policing mechanisms typically keep violence off of the equilibrium path.

In sum, and taking advantage of data at a more micro level than has heretofore been available, we see that fractionalization operates with different degrees of impact for different sorts of public goods.[33] To be sure, results were not significant for all of the outcomes that we examine. But overall, the results are clear that fractionalization at the local level increases vandalism by a great deal, decreases building maintenance by a moderate (but overall significant) degree, and has no effect on security. These findings allow us (as we do in the next section) to propose the various channels through which fractionalization works in the provision of public goods.

[32] When we run the full specification regression without taking this variable into account, the coefficients on diversity are generally higher. For instance, it is twice as large in the regression of elevator breakdowns.

[33] Our findings are unchanged with regressions on aggregated indices obtained with a principal component analysis (see Appendix B), and with a mean effect analysis (see Appendix C).

4.3.3 Rationalization of the channels

To rationalize our findings, we propose different interpretations of the channels through which fractionalization affects local public goods. The category "Vandalism" refers to voluntary degradations of the common areas of the building, such as damaging common property, graffiti, or depositing trash on the floor. These are outcomes over which public housing residents have control and for which they can be held responsible.[34] The category "Quality of housing" include variables such as the condition of the outside walls, quality of soundproofing or coldness in the apartment. Those variables are more the responsibility of the public housing managers. Finally, the "Civil conflict" category represents outcomes that are less under the control of local authorities than of the state police. We find that both locally controlled outcomes are negatively affected by diversity, and we provide a different rationalization of the channels for each type.

Our interpretation for the results on "Vandalism" is that diversity prevents the creation of social norms to punish defectors, as the threat of social sanctions is lower across groups. This has been a standard result in the literature since the seminal work of Coleman (1988), and it helps explain why we observe more voluntary degradations with diversity. Supporting our intuition, many households living in the public housing sector report having "no relationship at all" with their neighbors. In addition, the more diverse the neighborhood, the more likely individuals are to report having bad relationship with their neighbors, which can be a barrier to the creation of social norms. Alternatively, homogeneity might induce higher levels of other-regardedness independent of sanctions, and this too would work to reduce vandalism in homogeneous blocks. The increase in graffiti in more diverse areas might also illustrate the need to mark one's territory in a context where several groups co-exist.

We understand the result on "Quality of housing" as the inability of more heterogeneous communities to undertake collective action that would pressure the public housing office into improving housing quality. This could be sustained (though we have no direct evidence to support this) by beliefs in the housing directorate that it need not maintain public goods to high standards in heterogeneous housing projects because the likelihood of collective action against it is minimal. In this sense, the resulting poor housing quality associated with ethnic diversity can be seen as an equilibrium in which the lack of expectations of collective action would fail to incentivize the housing directorate to make costly improvements.[35] Coming back to the results concerning heating issues displayed in Table 9, we can find some support for this assumption: we find that households living in more diverse neighborhoods not only report more heating failures, but also report that this is due to the poor quality of the heating equipment, an appliance typically under the control of the HLM office.[36]

[34] Given that residents need to enter a code in order to gain entry into their building, it is unlikely these degradations are coming from outsiders.

[35] The collective action could also influence mayor's office. But the political logic of the public housing support is beyond the scope of the paper

[36] Another possible reason for having experienced coldness in the apartment that the household can mention is to have restricted heating in order to save money. The results are not reported here, but we find no significant effect of diversity on this outcome, in any specification.

Finally, we can think of two possible interpretations of the absence of any diversity effect on aggressions and robberies. First, this could result from more physical security provided by the city and state police in more diverse neighborhoods. The second explanation would be that individuals living in the public housing sector in general experience social anomie. In fact, one third (32.7 percent) of the HLM population, irrespective of diversity, declares to have no relationship at all with individuals living in their same area. In addition, we find that individuals living in a more diverse neighborhood tend to report worse relationships with their neighbors. Even if this resentment implies more violence directed towards neighbors, this effect could be mitigated by reinforced police protection, which goes back to our first interpretation. Alternatively, individuals might channel their resentment into damaging common property rather than persons and private property, explaining the vandalism result.

To summarize, our interpretation is that diversity generates social anomie, i.e. the absence of common rules and social norms. As a consequence of anomie, there is (a) a failure to impose social sanctions and punish defectors, hence more vandalism, (b) a failure to generate collective action to pressure the HLM offices into improving housing quality, and (c) fewer opportunities for violent confrontation at all levels of diversity. We also interpret the lack of an effect of diversity on violence by security provided at a higher level of administration, not subject to the constraints of local diversity.

4.3.4 Interpretation of the channels based on Repairs

We bring additional evidence on the interpretation of the channels by looking at maintenance and repairs performed in the building. Note first that these outcomes add an objective dimension to the previous subjective questions. The variation in the effects of diversity on the number of repairs depending on the type of public good also helps us to tease out the different channels through which diversity operates.

The Housing Survey asks whether elevators, staircase, windows, heating equipment, security equipment, and so on, have been repaired or installed during the previous year. We build three measures of repairs, corresponding to our three general outcomes. We define a first variable tracking repairs concerning staircase, windows, doors and lights of the commons, i.e repairs related to voluntary degradations, or vandalism. A second variable indicates repairs such as façade, or interventions to improve, among other things, the heating system or insulation quality, i.e. repairs related to the general quality of housing. Finally, we build a third variable accounting for the installation of security equipment in the building, which can be related to conflicts outcomes. We then regress each of these three variables (as well as less aggregated indicators of repairs) on the level of diversity of the block, controlling for factors that could explain the number of repairs: the number of dwellings in the building, and its date of construction. Table 10 reports these OLS estimates.

Column 1 of Table 10 reveals a positive and statistically significant correlation between the probability of repairs inside the building (windows, doors, lights... in the common areas) and local diversity: the more the diversity, the more the work for repairing the effects of vandalism. In the

main regressions of the paper presented in section 4.3.2 (corresponding to the first set of regressions in Table 9), we found that voluntary degradations increase with diversity. This implies that the larger number of repairs results from greater need due to a lack of publicly spirited social norms rather than from greater responsiveness by the housing authorities to regular maintenance.

Then, Column 2 reveals a negative and statistically significant correlation between the number of substantial works in the building (façade, heating, insulation...) and local diversity: the more the diversity, the less the work for improving the general quality of housing. In the main regressions presented in section 4.3.2 (corresponding to the second set of regressions in Table 9), we found that more diversity implies a lower quality of housing. Thus, it seems that more diverse neighborhoods are deprived of such substantial work, although the inhabitants actually complain (individually to survey enumerators) about the quality of housing. This supports our intuition that tenants in more diverse neighborhoods are unable to engage in collective action to pressure the public housing offices into undertaking important works.

Finally Column 3 shows a positive and statistically significant correlation between the existence of security equipment and local diversity. In the main regressions presented in section 4.3.2 (corresponding to the third set of regressions in Table 9), we found no impact of diversity on aggression and robberies. The presence of security equipment in more diverse neighborhood might be part of the explanation of the absence of diversity effect on burglaries. In addition, it is supportive of our idea that vandalism in the common areas of the buildings is imputable to the tenants, who have access to the building.

5 Robustness checks on self-reported quality of public goods

One concern in the previous analysis is related to the subjective nature of the outcome variables used in our study. Self-reported perceptions might reflect personal bias rather than be correlated with objective measures of public good provision. Perhaps people are just happier when they are surrounded by people more like themselves, and this is reflected in their answer to the quality of housing. We conduct several tests challenging this alternative explanation of personal bias.

First, as mentioned in the previous section, the HS provides information about various types of repairs and work that have been done in the building or in the housing unit over the previous year. These variables present the advantage of being objective. The lower part of Table 10 reports simple correlations between the various outcomes and the associated repairs. We find that most of our subjective outcomes are strongly and positively correlated with the existence of repairs, i.e. objective outcomes, especially for the variables related to vandalism.[37] This is our initial evidence of the reliability of our subjective measures of housing quality and well-being.

We then conduct more formal tests. We replicate the regression on the dissatisfaction with housing conditions (section 4.2) including interaction terms between diversity and the various ethnic

[37] An exception is the condition of the outside walls, which is negatively correlated with the probability that façade work was done. This is not surprising as the assessment of the façade's condition is done at the time of the survey, while repairs concern the previous year.

groups. Those estimates reveal whether different groups react in different ways to the level of diversity of their neighborhood. Column 2 of Table 11 shows that there does not seem to be a different effect for the various groups, and the coefficient for diversity remains unchanged (see Column 1 for the baseline specification). Then we concentrate on actual differences between "pure French" households[38] and fully Maghrebian households' dissatisfaction with housing conditions. In particular, we interact the dummies of being in a fully native French household or being in a fully Maghrebian household with the ELF: none of the coefficients is significant (see Table 11, Column 3). Thus for any given level of diversity, there is no significant difference in the answers given by pure French and fully Maghrebian households. In other words, the idea that bad opinions of housing conditions are driven by average bad feelings due to being surrounded by foreigners can be rejected. Moreover, including these additional controls only slightly affects the magnitude of the ethnic diversity coefficient, and does not affect its direction or its significance.

An alternative test to show that subjective perceptions have an objective foundation is to look at how much within-housing project variation there is in perceptions. We regress self-reported perception on housing project fixed effects and individual characteristics. Once we control for housing project fixed effects, assuming there is no within-project variation in public goods, the remainder of the variation tells us if certain ethnic or socio-demographic groups are more likely to be positively or negatively biased. If perceptions have a high signal-to-noise ratio, there should be less within-project variation because perceptions would be a good signal of project level public goods. Table 12 shows the regressions of our main indicator of satisfaction about housing conditions on individual characteristics. Column 1 shows the within-housing project estimates, exploiting variation across public housing. Column 2 shows the between-housing project estimates by including housing project fixed effects. Column 1 shows that the only individual characteristics statistically significantly correlated with within-project variation in the perception of the environment are age and household size. Income, education or the country of origin of the households are uncorrelated with perceptions of the environment. We also compute the standard deviation in the perception of the quality of housing between public housing projects and within public housing projects. The standard deviation is almost twice as high across blocks (.801) than within blocks (.435), and this difference is statistically significant. In sum, low levels of within block variation on perceptions adds confidence that there is an objective foundation for tenants' subjective reports.

Finally, we also estimate the effect of diversity on the perception of the quality of public goods that are financed by the city, the department or the state rather than locally financed by the HLM offices. If there is a reporting bias in general, then, the effect on all types of public goods should be the same. If it is related to localized collective action failures, then the impact should only be on locally provided/maintained public goods. Thus this test provides both an additional robustness check on the channels through which diversity affects public goods and on the absence of a reporting bias. The local public goods we have focused on so far (except for individuals' protection) are provided or maintained by the private company that owns and manages the public housing building.

[38] Both children and parents were born French in France.

We now consider public goods that are managed at the city or department level. In the HS, three public goods enter this category. The first one is the perception of the quality of roads and streets with the following question: *"What is your opinion about the maintenance of the streets, roads and public spaces in the area?"*. The second question measures the access to public transportation: *"What is your opinion about the accessibility of your area by public transportation?"*. The third item measures the accessibility of the area by private transportation: *"What is your opinion about the accessibility of your area by private vehicles (parking, congestion)?"*. The answer ranges for all three questions from 1 for good, 2 for neither good nor bad to 3 for bad. Table 13 reports the OLS estimates, controlling for all the previous household and local characteristics in addition to department fixed effects. We find that ethnic fractionalization is neither correlated with the quality of public spaces and roads in the areas (Column 1), nor with public transportation (Column 2), nor with car parking and general congestion (Column 3). Again, our confidence that the subjective reports to enumerators on housing quality have an objective foundation is increased.

6 Further tests: Fractionalization and ethnic shares

The basic regressions measure ethnic diversity using a standard ELF, controlling for household, building and neighborhood characteristics. Yet, as suggested by Vigdor (2002), it might be important to control for ethnic group shares to get a more comprehensive set of covariates for diversity. Column 1 of Table 14 reports the results once we control for ethnic group shares.[39] The estimated impact of ELF is now even stronger than in the previous specifications, confirming the robustness of our result along this dimension.

Moreover, we run regressions replacing the fractionalization index by ethnic groups shares (Column 2 of Table 14), and by ethnic group shares and their square (Column 3 of Table 14), controlling for the usual individual and local characteristics. Only one group (Maghrebian) seems to have a significantly negative effect on the dissatisfaction with housing conditions: the higher the share of Magrhebians in a block (relative to the share of French), the more likely individuals are to complain about their housing conditions. However, this negative effect decreases with the share of Maghrebians. From this result, we infer that our measure of diversity reflects not only the actual ethnic composition of the neighborhood, but also that some ethnic groups might have different effects on self-reported perceptions of the quality of public spaces as they become a majority of the neighborhood population. However, this result does not call into question the effect of diversity per se on which we have already reported (Column 1 of Table 14).

Finally, we re-run our main regressions using an alternative fractionalization index, trying to encompass another dimension of diversity. More precisely, in order to account for communication issues potentially related to the diversity of origins, we compute an alternative fractionalization index based on a proxy for French speaking. We use information provided by the International Organisation of La Francophonie to group countries according to the share of the population that is

[39] In Table 14, we aggregate the various nationalities at birth into six different categories. The results are similar when we work with more detailed shares for all nationalities. The share of native French is the omitted category.

French speaking (in 2010). Their classification allows us to distinguish among six groups of countries: countries which are not members of the organisation,[40] countries in which French speakers represent less than 5 percent of the population, countries in which French speakers represent between 5 and 15 percent of the population, countries in which French speakers represent between 16 and 35 percent of the population, countries in which French speakers represent between 36 and 60 percent of the population, and countries in which French speakers represent more than 60 percent of the population.

We then assign one of the six French-speaking levels to each individual (from the 1999 census dataset), according to his or her nationality at birth. This sorting of individuals captures the probability that they actually speak French. Finally, we compute a standard ELF for each block (using the same methodology as for our main index of diversity) relying on the shares of the block population belonging to one of the six groups.

We replicate the regressions of the paper[41] using this alternative index instead of the one based on nationality at birth. The results are reported in Table 15. Each coefficient comes from a separate regression. The columns indicate the four dependent variables under study. Panel A and panel B respectively correspond to the measure of diversity used in each regression. Our results are unaffected when we use the new index based on French speaking origin. This is not very surprising given that the correlation between the two indices is very large (98.45 %).

7 Conclusion

This paper exploits French public housing policy as a natural experiment to identify the causal effect of diversity on well-being, social relationships and the quality of local public goods. We use the exogenous allocation of households within public housing with respect to ethnic characteristics in France to overcome the bias from endogenous residential sorting that reduces the confidence in previous empirical findings on fractionalization. The French Housing Survey provides in addition a unique micro level of analysis within housing blocks, allowing a detailed analysis of the channels through which diversity operates at the local level while the previous literature focused so far on aggregate outcomes and channels. We find that fractionalization has a negative impact on the norms that punish defectors, leading to higher vandalism in the housing commons. Fractionalization also undermines collective action for the improvement of the quality of housing. But in our context, fractionalization has no effect on civil conflicts, diversity being associated with social anomie within the housing blocks rather than violent confrontations among neighbors.

This natural experiment calls for future research on the specific role of national, local and informal institutions in mitigating or magnifying the effect of ethnic diversity on the provision of public goods. France is a country with a republican tradition that resolutely refuses to reify ethnic identification as a strategy to prevent the ethnification of everyday life. Yet we find a significant negative effect of diversity on local public goods in its public housing sector, comparable to the association found in the US localities where multiculturalist institutions regulate ethnic relations (Putnam, 2007) and

[40] For these countries, the organisation does not provide any data, but we can reasonably assume that the share of French speaking population in non-member countries is close to zero.

[41] We replicate the regression of the dissatisfaction with housing conditions (Columns 1) as well as of the three aggregate indices we obtained with the principal component analysis presented in Appendix B.

in cases where public institutions are weak (Alesina and La Ferrara, 2005). However, on issues of physical security in French public housing, the costs to ethnic diversity disappear. This may be due to the emergence of informal institutions (such as in-group policing as in Fearon and Laitin, 1996) or the supremacy of state-level institutions in which local diversity plays no role in the supply of order. In any event, the results raise a puzzle, to be addressed in future research, on the general power of institutional arguments in overcoming the negative implications of ethnic heterogeneity on the provision of public goods.

Table 1: Public Housing and Private Housing population characteristics (households heads, Housing Survey 2002)

	Public Housing (HLM) (1)	Private Housing (2)	p-val (1)/(2) (3)	Private Rental Housing market (4)	p-val (1)/(4) (5)
Birth Country					
France	78.63	88.34	0.000	86.16	0.000
Portugal	1.72	1.23	0.028	1.05	0.004
Spain	1.12	0.78	0.089	0.68	0.033
Italy	0.72	1.10	0.007	0.51	0.210
Other E.U. country	0.71	1.05	0.091	1.11	0.086
Turkey	1.24	0.30	0.000	0.51	0.000
Other European country	0.74	0.75	0.767	0.89	0.457
Maghreb	11.06	4.14	0.000	5.00	0.000
Other African country	2.66	1.06	0.000	2.17	0.327
Cambodia, Vietnam, Laos	0.69	0.41	0.016	0.51	0.227
Other countries	0.72	0.84	0.381	1.40	0.001
Nationality					
French at birth	82.07	91.53	0.000	88.98	0.000
French by acquisition	5.81	3.72	0.000	3.47	0.000
Portuguese	1.33	1.00	0.090	1.02	0.202
Spanish	0.62	0.31	0.004	0.44	0.265
Italian	0.47	0.43	0.865	0.20	0.012
Other E.U. nationality	0.21	0.63	0.002	0.68	0.00
Turkish	1.01	0.19	0.000	0.41	0.000
Other European nationality	0.33	0.32	0.959	0.53	0.157
Maghrebian	6.34	1.02	0.000	2.10	0.000
Other African nationality	1.50	0.38	0.000	1.03	0.096
Cambodian, Vietnamese, Laotian	0.17	0.07	0.004	0.14	0.354
Other nationalities	0.14	0.40	0.016	0.99	0.000
Employment status					
Employed	58.19	56.11	0.090	63.74	0.000
Unemployed	10.82	4.08	0.000	7.75	0.000
Inactive	30.99	39.81	0.000	28.51	0.004
Level of education (highest diploma obtained, individuals above 25 years old)					
No diploma	28.26	14.85	0.000	14.40	0.000
Lower education	50.62	48.33	0.009	37.38	0.000
Baccalaureate	9.37	12.44	0.000	16.26	0.000
Higher education	11.74	24.38	0.000	31.96	0.000
Socio professional group					
Farmer	0.18	1.96	0.000	0.67	0.000
Craftsman, Shopkeeper	1.50	5.03	0.000	3.99	0.000
Executive or other high position	3.64	13.03	0.000	14.14	0.000
Intermediate occupation	12.01	14.29	0.000	16.50	0.000
Employee	20.18	9.93	0.000	15.44	0.000
(Factory) Worker	31.10	16.02	0.000	20.35	0.000
Age (mean)	47.09	51.71	0.000	41.55	0.000
Annual income (mean)	12,226	18,041	0.000	15,902	0.000

Column 3 reports the p-value from a t-test for the null hypothesis that the mean of a given variable is the same for the public housing (Column 1) and private housing (Column 2) populations. Column 5 reports the p-value from a t-test for the null hypothesis that the mean of a given variable is the same for the public housing population (Column 1) and for the population of tenants in the private housing market (Column 4).

Table 2: Dissatisfaction with housing conditions by income level and ethnic origin in the Public Housing sector

	Dissatisfaction with Housing Conditions					**Mean Annual Income** (in euros)
	Very satisfying	Satisfying	Average	Insufficient	Very insufficient	
Ethnic origin						
French born	13.8	44.01	28.54	9.9	3.75	12,758
Naturalized French	10.68	43.51	29.01	13.8	2.99	10,459
Other European	10.71	39.58	31.21	13.14	5.35	12,292
Maghrebian	8.42	33.27	34.83	18.21	5.26	8,603
African	7.82	20.77	41.29	25.14	4.99	7,865
Asian	0.00	60.64	11.25	28.11	0.00	12,892
Mean Annual Income	13,300	12,856	11,842	10,288	10,127	

Table 3: Correlation between new inhabitants' nationality and share of the area population of the same nationality

	Private Housing (1)	Public Housing (2)
New inhabitant French at birth		
Share of block population French at birth	0.366 **	0.455
	(0.143)	(0.409)
New inhabitant naturalized French		
Share of block population naturalized French	0.116**	0.161
	(0.056)	(0.220)
New inhabitant European		
Share of block population European	0.322***	0.576**
	(0.101)	(0.242)
New inhabitant Maghrebian		
Share of block population Maghrebian	0.295***	0.113
	(0.099)	(0.352)
New inhabitant African (except for Maghreb)		
Share of block population African	0.214*	0.003
	(0.127)	(0.264)
New inhabitant Asian		
Share of block population Asian	0.231	0.622
	(0.222)	(0.520)

Each of the coefficients is estimated from a separate regression of individual's birth country on the share of each ethnic group in the block into which he or she has just settled. The reported coefficients are estimates for the share of the individual's own ethnic group. The coefficient for other ethnic groups' shares is available from authors upon request. Additional controls are a quadratic function of age, gender, hourly wage (in log), education, socio-professional category and department fixed effects. Regressions include 10,365 observations in the private housing sector and 895 observations in the public housing sector. Robust standard errors adjusted for block clustering are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Rejection of HLM offers and Ethnic diversity

Rows: Dependent Variables	Coefficient associated with Ethnic Diversity (1)	(2)	(3)	(4)
Panel A: Sample of households who currently live in public housing:				
I. Probability of having declined at least one HLM offer during the previous application process	0.058	0.069	0.017	0.123
	(0.058)	(0.063)	(0.067)	(0.0886)
N	1,779	1,779	1,748	1,744
R^2	0.001	0.021	0.023	0.089
II. Probability that the reason for having declined an HLM offer during the previous application was "unpleasant environment"	0.162	0.061	0.017	-0.0310
	(0.144)	(0.158)	(0.171)	(0.258)
N	417	417	415	414
R^2	0.003	0.035	0.050	0.308
Panel B: Sample of households who are currently applying to public housing:				
I. Probability of having declined at least one HLM offer during the current application process	-0.063	-0.043	-0.088	-0.116
	(0.057)	(0.064)	(0.071)	(0.103)
N	1,192	1,192	1,173	1,171
R^2	0.001	0.014	0.024	0.121
II. Probability that the reason for having declined an HLM offer during the current application was "unpleasant environment"	0.004	-0.007	-0.104	-0.122
	(0.194)	(0.237)	(0.250)	(0.506)
N	198	198	195	194
R^2	0.000	0.083	0.115	0.590

Each of the coefficients is estimated from a separate regression of each of the four dependent variables described in the first column on ethnic diversity. Column 1 does not include any control. Column 2 includes households characteristics (gender, age, education, employment status and nationality of the head of household, total income (in log) of the household per unit of consumption, and household size). Column 3 adds up the characteristics of the building (number of apartments (in log) and construction date). On top of that, column 4 includes neighborhood characteristics (socio-economic background (Tabard index), and local unemployment rate), as well as department fixed effects. In addition, a dummy variable indicating whether the household already lives in the public housing sector is included in specifications 2 to 4 of Panel B. The coefficients for all the controls are available from authors upon request. Robust standard errors adjusted for block clustering are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5: Do households having left their previous housing due to an "unpleasant environment" now live in less diverse neighborhoods?

Dependent Variable:	Main reason for leaving previous housing: unpleasant environment (noise, lifestyle or insecurity)			
	Households who moved **within** the		Households who moved **toward** the	
	Private Housing sector	Public Housing sector	Private Housing sector	Public Housing sector
	(1)	(2)	(3)	(4)
Ethnic Diversity	-0.073**	0.083	-0.061*	0.016
	(0.030)	(0.140)	(0.032)	(0.052)
Observations	5,955	627	6,560	1,793
R-squared	0.030	0.207	0.031	0.079

In each regression, we control for household characteristics (gender, age, education, income (in log), employment status, nationality, household size), building characteristics (number of apartments and construction date), neighborhood characteristics (socio-economic background (Tabard index), and local unemployment rate) and department fixed effects. The coefficients for all the controls are available from authors upon request.
Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Equality of distribution between the actual and simulated distributions of ethnic groups shares across public housing blocks: percentage of departments where equality is not rejected.

	t-tests	**K.S-test**
Native French	100%	98.61%
Maghrebi	100%	98.01%
Both groups	100%	97.22%

Table 7: Ethnic diversity and dissatisfaction with housing condition (To be continued)

Dependent Variable:	**Dissatisfaction with housing condition**		
	(1)	(2)	(3)
Ethnic Diversity	0.915***	0.611***	0.368**
	(0.090)	(0.095)	(0.129)
Household characteristics:			
Gender	-0.011	-0.011	-0.018
	(0.033)	(0.033)	(0.032)
Age	-0.006***	-0.006***	-0.005***
	(0.001)	(0.001)	(0.001)
Level of Education	-0.027***	-0.019**	-0.013*
	(0.007)	(0.007)	(0.007)
Income (log)	-0.115***	-0.091**	-0.043
	(0.031)	(0.031)	(0.031)
Household size	0.096***	0.104***	0.105***
	(0.012)	(0.012)	(0.013)
Employment status (ref: Employed)			
Unemployed	0.107*	0.082	0.056
	(0.055)	(0.054)	(0.055)
Inactive	-0.007	-0.014	-0.049
	(0.047)	(0.047)	(0.047)
Nationality (ref: French at birth)			
Naturalized French	-0.083	-0.090	-0.047
	(0.065)	(0.066)	(0.066)
European	0.027	0.032	0.040
	(0.093)	(0.089)	(0.089)
Maghrebian	-0.118*	-0.118*	-0.097
	(0.067)	(0.067)	(0.067)
African	0.114	0.097	0.109
	(0.138)	(0.139)	(0.143)
Asian	-0.600**	-0.645**	-0.623**
	(0.275)	(0.278)	(0.311)
Other nationality	0.560	0.441	0.557
	(0.614)	(0.610)	(0.633)

Each coefficient is estimated from a separate regression, according to equation 2. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Continued

Dependent Variable:	**Dissatisfaction with housing condition**		
	(1)	(2)	(3)
Building characteristics:			
Nb of dwellings (log)		0.021*	0.020
		(0.011)	(0.013)
Date of construction of the building (ref: before 1948)			
$1949 \leq t < 1974$		-0.013	0.017
		(0.071)	(0.077)
$1975 \leq t < 1981$		-0.147*	-0.094
		(0.075)	(0.081)
$1982 \leq t < 1989$		-0.205**	-0.109
		(0.077)	(0.082)
$1990 \leq t < 1998$		-0.519***	-0.423***
		(0.079)	(0.085)
$1999 \leq t$		-0.816***	-0.751***
		(0.175)	(0.166)
Neighborhood characteristics:			
Block unemployment rate			1.003***
			(0.176)
Socio-economic background (Tabard)	No	No	Yes
Department Fixed Effects	No	No	Yes
Intercept	3.499***	3.382***	4.377***
	(0.284)	(0.290)	(0.394)
R-squared	0.083	0.107	0.128
Observations	4464	4388	4379

Each coefficient is estimated from a separate regression, according to equation 2. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Descriptive statistics for each outcome in the public housing sector

	Mean	std dev	Values
1. Degradation of the common areas due to vandalism			
Damaging the premises	1.637	0.778	1 - 3
Graffiti	0.257	0.437	0 - 1
Garbage on the floor	0.188	0.391	0 - 1
Broken windows	0.136	0.343	0 - 1
Broken doors	0.127	0.333	0 - 1
Broken light bulbs	0.094	0.291	0 - 1
Broken mailboxes	0.154	0.361	0 - 1
Vandalism on the elevator	0.085	0.279	0 - 1
Noise in daytime	1.595	0.748	1 - 3
Noise in night time	1.374	0.627	1 - 3
2. Poor quality of housing due to low maintenance			
Care of the common areas	1.593	0.752	1 - 3
Condition of the outside walls	2.433	0.962	1 - 5
Cold in the apartment	0.175	0.380	0 - 1
Cold due to bad insulation	0.065	0.246	0 - 1
Cold due to breakdown in heating equipment	0.045	0.207	0 - 1
Cold due to poor equipment	0.059	0.236	0 - 1
Quality of soundproofing	1.981	0.823	1 - 3
Breakdown of the elevator	0.155	0.362	0 - 1
Toilet malfunction	0.153	0.360	0 - 1
3. Civil Conflict			
Robberies	0.095	0.293	0 - 1
Aggressions	0.081	0.273	0 - 1
Burglary (or attempt)	0.041	0.198	0 - 1

Depending on the questions, we have between 4,310 and 5,189 observations

Table 9: Diversity and Public goods: separate outcomes (public housing)

	Estimated Effect of Ethnic Diversity		
	(1)	(2)	(3)
1. Degradation of the common areas due to vandalism			
Damaging the premises	0.938***	0.813***	0.630***
	(0.096)	(0.099)	(0.127)
Graffiti	0.606***	0.383***	0.313***
	(0.048)	(0.053)	(0.063)
Garbage on the floor	0.531***	0.349***	0.298***
	(0.047)	(0.049)	(0.060)
Broken windows	0.365***	0.235***	0.200***
	(0.042)	(0.046)	(0.053)
Broken doors	0.316***	0.194***	0.151**
	(0.041)	(0.045)	(0.051)
Broken light bulbs	0.339***	0.265***	0.271***
	(0.037)	(0.040)	(0.048)
Broken mailboxes	0.451***	0.319***	0.330***
	(0.044)	(0.048)	(0.058)
Vandalism on the elevator	0.291***	0.174***	0.168***
	(0.039)	(0.041)	(0.047)
Noise in daytime	0.656***	0.406***	0.288**
	(0.076)	(0.082)	(0.106)
Noise in night time	0.610***	0.473***	0.313***
	(0.064)	(0.071)	(0.091)
2. Poor quality of housing due to low maintenance			
Care of the common areas	0.546***	0.487***	0.384**
	(0.087)	(0.093)	(0.121)
Condition of the outside walls	0.583***	0.469***	0.260*
	(0.103)	(0.109)	(0.145)
Cold in the apartment	0.224***	0.174***	0.136**
	(0.039)	(0.043)	(0.059)
Cold due to bad insulation	0.087**	0.059**	0.021
	(0.027)	(0.029)	(0.040)
Cold due to breakdown in	0.014	0.006	0.007
heating equipment	(0.025)	(0.028)	(0.037)
Cold due to poor equipment	0.107***	0.081**	0.084**
	(0.025)	(0.027)	(0.036)
Quality of soundproofing	0.816***	0.365***	0.021
	(0.079)	(0.082)	(0.110)
Breakdown of the elevator	0.366***	0.165***	0.106**
	(0.042)	(0.043)	(0.051)
Toilet malfunction	0.084**	0.078*	0.133**
	(0.037)	(0.041)	(0.051)
3. Civil Conflict			
Robberies	0.051*	0.059*	0.043
	(0.028)	(0.031)	(0.039)
Aggressions	0.057**	0.035	-0.024
	(0.026)	(0.027)	(0.038)
Burglary (or attempt)	0.023	0.016	-0.001
	(0.018)	(0.021)	(0.027)
Household characteristics	Yes	Yes	Yes
Building characteristics	No	Yes	Yes

Table 10: Type of repairs done

	Vandalism Work in the commons: staircase, doors, lights, glass	***Poor Housing Quality*** Major works: façade, heating, elevator, toilets	***Civil Conflicts*** Security Equipment: entry code, locks
	(1)	(2)	(3)
Ethnic Diversity	0.134**	-0.213***	0.141***
	(0.054)	(0.069)	(0.041)
R-squared	0.024	0.012	0.010
N	2220	2220	2220

	Correlation (in %) with perception of degradations		
1. *Vandalism*			
Damaging the premises	5.79***		
Graffiti	16.94***		
Garbage on the floor	14.35***		
Broken windows	11.86***		
Broken doors	13.74***		
Broken light bulbs	12.24***		
Broken mailboxes	13.10***		
Vandalism on the elevator	13.54***	12.72***	
2. *Poor Housing Quality*			
Condition of the outside walls		-3.46***	
Cold in the apartment		3.89***	
Cold due to bad insulation		1.29	
Cold due to breakdown in heating equipment		4.70***	
Cold due to poor equipment		0.012	
Breakdown of the elevator		-0.001	
Toilet malfunction		4.31***	
3. *Civil Conflict*			
Robberies			2.52***
Aggressions			4.15***
Burglary (or attempt)			2.35***

Robust standard errors adjusted for block clustering are in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Are results driven by some major ethnic groups disliking being around foreigners ? (to be continued)

	Dissatisfaction with Housing Conditions		
	(1)	(2)	(3)
Ethnic Diversity	0.368**	0.359**	0.313**
	(0.129)	(0.141)	(0.154)
Household characteristics:			
Gender	-0.018	-0.018	-0.018
	(0.032)	(0.033)	(0.032)
Age	-0.005***	-0.005***	-0.005***
	(0.001)	(0.001)	(0.001)
Education	-0.013*	-0.013*	-0.012*
	(0.007)	(0.007)	(0.007)
Income (log)	-0.043	-0.045	-0.038
	(0.031)	(0.031)	(0.031)
Household size	0.105***	0.105***	0.094***
	(0.013)	(0.013)	(0.015)
Employment status(ref: Employed)			
Unemployed	0.056	0.057	0.055
	(0.055)	(0.055)	(0.055)
Inactive	-0.049	-0.049	-0.051
	(0.047)	(0.047)	(0.047)
Nationality *(ref: French at birth)*			
Naturalized French	-0.047	-0.030	
	(0.066)	(0.144)	
European	0.040	0.043	
	(0.089)	(0.197)	
Maghrebian	-0.097	-0.095	
	(0.067)	(0.186)	
African	0.109	-0.239	
	(0.143)	(0.324)	
Asian	-0.623**	-0.150	
	(0.311)	(0.814)	
Other nationality	0.557	0.788	
	(0.633)	(1.203)	
Interaction terms: ELF * origin			
ELF * naturalized French		-0.052	
		(0.373)	
ELF * European		-0.007	
		(0.542)	
ELF * Maghrebian		-0.001	
		(0.401)	
ELF * African		0.894	
		(0.751)	
ELF * Asian		-1.123	
		(1.340)	
ELF * Other nationality		-1.136	
		(4.552)	

Each coefficient is estimated from a separate regression, according to equation 2. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Continued

Dependent Variable:	**Dissatisfaction with housing condition**		
	(1)	(2)	(3)
Major groups in HLM: Native French and Maghrebians			
Native French household			-0.043
			(0.056)
ELF * Native French household			0.027
			(0.169)
Maghrebian household			0.138
			(0.259)
ELF * Maghrebian household			-0.300
			(0.559)
Building characteristics:			
Nb of dwellings (log)	0.020	0.020	0.019
	(0.013)	(0.013)	(0.013)
Date of construction of the building (ref: before 1948)			
$1949 \leq t < 1974$	0.017	0.017	0.022
	(0.077)	(0.077)	(0.077)
$1975 \leq t < 1981$	-0.094	-0.094	-0.087
	(0.081)	(0.082)	(0.082)
$1982 \leq t < 1989$	-0.109	-0.109	-0.104
	(0.082)	(0.082)	(0.082)
$1990 \leq t < 1998$	-0.423***	-0.424***	-0.421***
	(0.085)	(0.086)	(0.086)
$1999 \leq t$	-0.751***	-0.753***	-0.748***
	(0.166)	(0.166)	(0.165)
Neighborhood characteristics:			
Block unemployment rate	1.003***	0.999***	0.995***
	(0.176)	(0.176)	(0.175)
Socio-economic background (Tabard)	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes
Intercept	3.991***	4.010***	4.004***
	(0.360)	(0.363)	(0.353)
R-squared	0.128	0.127	0.127
Observations	4379	4379	4379

Each coefficient is estimated from a separate regression, according to equation 2. Robust standard errors adjusted for block clustering are in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 12: Variation in Perception of Housing quality: Within and Between Public Housing Blocks

	Dissatisfaction with Housing conditions	
	Within correlation	Between correlation
Gender	0.01	-0.03
	(0.04)	(0.04)
Age	-0.00*	-0.01***
	(0.00)	(0.00)
Education	0.01	-0.03***
	(0.01)	(0.01)
Income (log)	-0.07*	-0.09**
	(0.04)	(0.04)
Unemployed	0.05	0.08
	(0.07)	(0.06)
Inactive	-0.08	0.02
	(0.06)	(0.06)
Household size	0.09***	0.13***
	(0.02)	(0.01)
Naturalized French	-0.11	-0.00
	(0.08)	(0.09)
European	-0.00	0.19*
	(0.11)	(0.11)
Maghrebian	-0.09	-0.01
	(0.09)	(0.08)
African	-0.05	0.44**
	(0.15)	(0.20)
Asian	-0.34	-0.56
	(0.52)	(0.53)
Other nationality	-0.11	0.14
	(0.79)	(0.53)
Building size (log)		0.05***
		(0.01)
Housing Project FE	Yes	No
R-squared	0.056	0.172
Observations	5105	5105

Robust standard errors adjusted for block clustering are in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Ethnic Diversity and Distant public goods

	Maintenance of streets	Accessibility to public transports	Accessibility to private transports
Ethnic Diversity	0.158	-0.050	0.142
	(0.096)	(0.134)	(0.102)
Gender	0.001	-0.036	0.015
	(0.022)	(0.028)	(0.024)
Age	-0.000	-0.002**	-0.003**
	(0.001)	(0.001)	(0.001)
Education	-0.004	0.001	0.006
	(0.005)	(0.006)	(0.005)
Income (log)	0.013	0.010	0.038*
	(0.024)	(0.030)	(0.023)
Unemployed	0.012	0.059	-0.027
	(0.036)	(0.041)	(0.037)
Inactive	0.039	0.104**	0.008
	(0.032)	(0.039)	(0.032)
Household size	0.018**	0.002	0.011
	(0.008)	(0.010)	(0.009)
Naturalized French	-0.096**	-0.009	0.030
	(0.045)	(0.055)	(0.048)
European	0.040	0.023	-0.099*
	(0.070)	(0.067)	(0.060)
Maghrebian	-0.057	-0.005	-0.069
	(0.045)	(0.051)	(0.046)
African	0.037	0.119	-0.032
	(0.095)	(0.097)	(0.101)
Asian	-0.105	-0.128	0.176
	(0.183)	(0.282)	(0.246)
Other nationality	-0.330***	0.112	-0.376***
	(0.073)	(0.343)	(0.083)
Block unemployment rate	0.386***	-0.102	-0.041
	(0.114)	(0.144)	(0.112)
Intercept	0.814**	4.365***	0.783***
	(0.276)	(0.471)	(0.233)
Department Fixed Effects	Yes	Yes	Yes
Socio economic backgrounds	Yes	Yes	Yes
R-squared	0.053	0.283	0.101
N	4451	4451	4451

Robust

standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 14: Ethnic Diversity and Dissatisfaction with Housing conditions – Robustness Checks (to be continued)

	Dissatisfaction with Housing Conditions		
	(1)	(2)	(3)
Ethnic Diversity	1.392**		
	(0.530)		
Household characteristics:			
Gender	-0.018	-0.019	-0.021
	(0.032)	(0.032)	(0.032)
Age	-0.005***	-0.005***	-0.005***
	(0.001)	(0.001)	(0.001)
Education	-0.013*	-0.014*	-0.014*
	(0.007)	(0.007)	(0.007)
Income (log)	-0.041	-0.041	-0.040
	(0.031)	(0.031)	(0.031)
Household size	0.105***	0.104***	0.105***
	(0.013)	(0.013)	(0.013)
Employment status (ref: Employed)			
Unemployed	0.050	0.059	0.051
	(0.055)	(0.055)	(0.055)
Inactive	-0.050	-0.049	-0.051
	(0.047)	(0.047)	(0.047)
***Nationality** (ref: French at birth)*			
Naturalized French	-0.044	-0.043	-0.036
	(0.066)	(0.066)	(0.066)
European	0.059	0.058	0.062
	(0.088)	(0.089)	(0.089)
Maghrebian	-0.107	-0.106	-0.108
	(0.068)	(0.068)	(0.068)
African	0.092	0.098	0.097
	(0.143)	(0.143)	(0.143)
Asian	-0.615*	-0.607*	-0.605*
	(0.316)	(0.318)	(0.315)
Other nationality	0.577	0.565	0.569
	(0.630)	(0.632)	(0.634)
Building characteristics:			
Nb of dwellings (log)	0.017	0.020	0.019
	(0.013)	(0.013)	(0.013)
Date of construction of the building (ref: before 1948)			
$1949 \leq t < 1974$	0.007	0.022	0.012
	(0.077)	(0.077)	(0.076)
$1975 \leq t < 1981$	-0.115	-0.101	-0.110
	(0.082)	(0.081)	(0.081)
$1982 \leq t < 1989$	-0.134	-0.122	-0.129
	(0.082)	(0.082)	(0.082)
$1990 \leq t < 1998$	-0.444***	-0.438***	-0.439***
	(0.085)	(0.086)	(0.085)
$1999 \leq t$	-0.769***	-0.770***	-0.751***
	(0.168)	(0.168)	(0.170)

Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 14: Continued

Dependent Variable:	**Dissatisfaction with housing condition**		
	(1)	(2)	(3)
Neighborhood characteristics:			
Block unemployment rate	0.909***	0.954***	0.911***
	(0.175)	(0.175)	(0.174)
Socio-economic background (Tabard)	Yes	Yes	Yes
Department Fixed Effects	Yes	Yes	Yes
Ethnic group shares:			
% European	-3.249**	-0.928*	-2.273**
	(1.007)	(0.493)	(0.961)
% Maghrebian	-1.092	0.633**	2.014***
	(0.707)	(0.277)	(0.521)
% African	-1.203	0.941	1.218
	(1.101)	(0.823)	(1.428)
% Asian	-2.186*	0.167	0.315
	(1.323)	(0.974)	(1.838)
% Other nationality	-1.488*	0.260	-0.263
	(0.855)	(0.501)	(0.864)
Squared ethnic group shares:			
(% European)^2			7.587*
			(4.332)
(% Maghrebian)^2			-3.767**
			(1.220)
(% African)^2			-4.225
			(7.839)
(% Asian)^2			-4.792
			(14.523)
(% Other nationality)^2			1.351
			(2.895)
Intercept	4.009***	4.071***	4.023***
	(0.361)	(0.362)	(0.363)
R-squared	0.131	0.129	0.131
Observations	4379	4379	4379

Robust standard errors adjusted for block clustering are in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: A proxy for language fractionalization

Dependent Variable:	Dissatisfaction with housing conditions (1)	Neglect of the commons (2)	Quality of housing (3)	Insecurity (4)
Panel A:				
Diversity based on nationality at birth	0.368***	1.532***	0.727***	0.0252
	(0.129)	(0.422)	(0.263)	(0.183)
Observations	4,379	1,693	3,797	4,379
R-squared	0.156	0.201	0.192	0.063
Panel B:				
Diversity based on share of the population speaking French in country of origin	0.366***	1.560***	0.741**	-0.0377
	(0.141)	(0.472)	(0.290)	(0.199)
Observations	4,365	1,689	3,788	4,365
R-squared	0.157	0.202	0.193	0.064

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Controls: head of household characteristics (gender, age, education, activity status, aggregated nationality), household characteristics (log of income, household size), building characteristics (date of construction, log number of housing units), socio-economic background of the neighborhood (unemployment rate, Nicole Tabbard classification), department fixed-effects. Each coefficient comes from a separate regression. The columns indicate the four dependent variables under study. Panel A and panel B respectively correspond to the measure of diversity used in each regression.

Appendix

A. Fractionalization index and French blocks

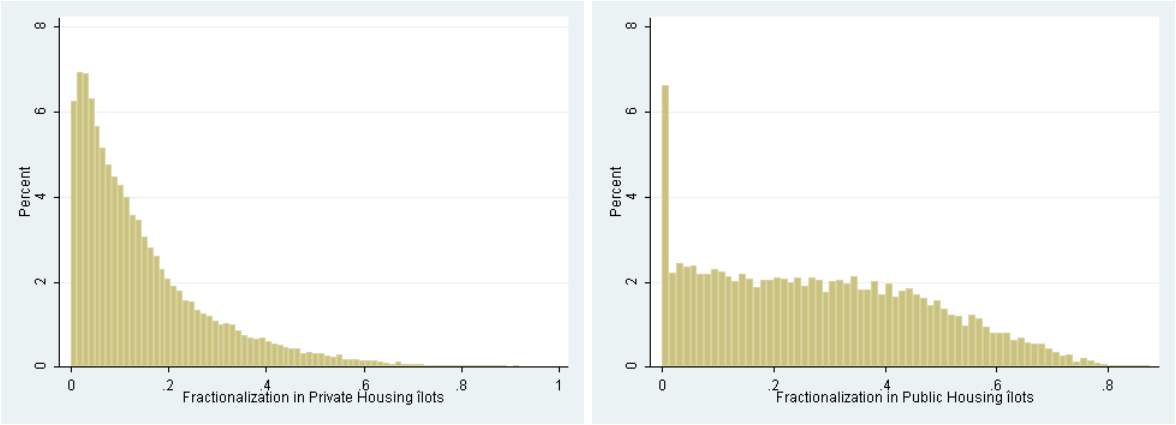
Table 16: Housing blocks in the Census 1999

	Number of blocks sampled per department		Number of individuals sampled per block	
	All France	HLM Population	All France	HLM Population
Mean	2,894.5	932.9	24.6	18.4
Median	2,236	740.5	15	8

Table 17: Fractionalization by nationality at birth in housing blocks

	1999 Census			2002 Housing Survey	
	Whole France	Private Housing	HLM Population	Whole France	HLM Population
Mean	16.65	14.29	27.68	16.23	25.33
Median	11.82	10.29	25.18	11.98	23.37
Std Dev	15.33	13.36	18.75	14.2	17.94
Minimum	0	0	0	0	0
Maximum	91.83	91.83	91.3	84.94	80.26
N	6,643,287	5,027,235	1,616,052	28,744	4,465

Figure 1: Fractionalization by nationality at birth within private and public housing blocks, Census 1999



B. Principal component analysis

To decompose the various effects of fractionalization, we alternatively run an exploratory analysis to extract the main dimensions with which the various questions reported in the HS correlate the most. We then interpret those factors as different dimensions of the quality of public spaces that could be affected by ethnic diversity. The principal component analysis lets the correlation patterns among the various questions emerge endogenously from the data, rather than grouping them in an arbitrary way. We select (following the Kaiser criterion) three main factors with eigenvalues higher than one that emerged from the principal component analysis of the relevant survey questions. Table 18 reports those three factors and the rotated matrix of correlations between those factors and each question. Three main patterns of correlation emerge that refer broadly speaking to three dimensions of the quality of the public space. Table 8 reports descriptive statistics of the various questions. For each variable, a lower value represents a better outcome (e.g. greater care of the commons, less graffiti, better soundproofing...).

We then create summary indices from the three groups of questions identified in the previous section. We run a principal component analysis on each group of questions, and take the first principal component of each. We refer to those indices as "Neglect of the public areas", "Quality of housing" and "Civil conflict". The higher the indices, the more unfavorable are the outcomes. We also check the robustness of the results by looking at alternative summary indices, taking the sum of the questions belonging to each group, or performing a mean effect analysis for each group. The estimates for these alternative indices are reported in Appendix C, yielding similar results.

Table 18: Principal component analysis

	Factor 1	Factor 2	Factor 3
Care of the commons	0.142	0.225	0.053
Voluntary degradations of the commons	0.675	0.172	0.091
Graffiti on the walls	0.209	-0.126	0.023
Trash in the commons	0.247	0.047	0.085
Broken doors in the commons	0.591	0.166	0.123
Broken lights in the commons	0.564	0.072	0.031
Degradation of mail boxes	0.528	0.130	0.034
Broken elevators	0.528	-0.031	-0.041
Quality of the building's façade	-0.038	0.239	-0.030
Problem with heating in the building	-0.007	0.336	0.029
Quality of soundproofing	0.042	0.703	0.004
Noise disturbance during the day in the housing	0.060	0.831	0.052
Noise disturbance at night in the housing	0.113	0.807	0.105
Victim or witness of aggression in the neighborhood	0.098	0.136	0.746
Victim or witness of robbery in the neighborhood	-0.006	0.028	0.810

Table 19 shows the effect of ethnic fractionalization on those three different dimensions: "Neglect of the public areas", "Quality of housing" and "Civil conflict".[42] For each index, we run separate regressions on ethnic diversity controlling for the usual household, building and neighborhood characteristics as specified at the bottom of each column in Table 19.

As can be surmised from an examination of three sets of regressions on Table 19, the results relying on categories derived from the principal component analysis rather than the categories that followed from the theoretical literature on public goods, and relying on identical model specifications, are basically similar. For the effect of ethnic diversity on the synthetic index Neglect of Public Areas (see the first panel of Table 19), the effect of ethnic diversity is always statistically significant at the 1 percent level, and is substantively sizeable. For the index of Poor Housing Quality, the coefficient associated with ethnic diversity is statistically significant at the 1 percent level for the first two specifications but only at the 5 percent level when all the controls are included. However, as with the results using the theoretically inferred categorization in the main body of the paper, its effect is much lower than for the index for voluntary degradations. For the index of Civil Conflict, the data here show that ethnic diversity does not have a statistically significant effect on civil conflicts in the public housing sector in our full specification, as is the case in our main results. In sum, categorization by principal components analysis yields quite similar results as to those reported with the theoretically derived categorization.

[42]The coefficient estimates for the control variables are not reported here but are very similar to those reported in Table 7. The full regression results are available upon request.

Table 19: Ethnic Diversity and Public Goods (public housing)

	Ethnic Diversity		
	(1)	(2)	(3)
Index for Neglect of Public Areas			
	1.791***	1.514***	1.532***
	(0.322)	(0.330)	(0.422)
Observations	1,700	1,693	1,693
R-squared	0.060	0.084	0.134
Index for Poor Quality of Housing			
	2.132***	1.382***	0.727**
	(0.187)	(0.200)	(0.263)
Observations	3,869	3,805	3,797
R-squared	0.092	0.128	0,161
Index for Civil Conflicts			
	0.330**	0.273*	0.025
	(0.129)	(0.139)	(0.183)
Observations	4,464	4,388	4,379
R-squared	0.014	0.014	0.033
Household characteristics	Yes	Yes	Yes
Building characteristics	No	Yes	Yes
Neighborhood characteristics	No	No	Yes
Department fixed effects	No	No	Yes

Each coefficient is estimated from a separate regression, according to equation 2. The four dependent variables considered include the answer to the general opinion / dissatisfaction question and the three indices that were derived from principal component analysis as described in section 4.2. Each index is regressed on either ethnic diversity, controlling for the usual household and neighborhood characteristics unless otherwise indicated. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

C. Alternative summary indices - Mean effect analysis

As a robustness check, we have also experimented with alternative indexes for measuring these three dimensions of housing conditions. We have first looked at basic indices defined as the sum of the outcome variables related to each dimension. For each of the three dimensions considered, we thus obtain a variable which increases with the number of adverse outcomes one faces. Table 20 reports the results of the regression of these three indices on ethnic diversity for our favorite specification. Our results are robust to these alternative indices: the effect of ethnic diversity is still strongly significant for the index of Housing Quality, and is even stronger for the index for Neglect of Public Areas. As noted previously, there is no effect of diversity on civil conflicts.

Table 20: Diversity and Public goods: sum of the various outcomes, Public Housing

	Ethnic Diversity
	(1)
1. Neglect of the Public Areas	
Sum of the outcome variables	2.321***
	(0.575)
2. Quality of Housing	
Sum of the outcome variables	1.511***
	(0.360)
3. Civil Conflict	
Sum of the outcome variables	0.029
	(0.059)
Socio-economic	
Background of area	Yes***
Department fixed effects	Yes***

Each coefficient is estimated from a separate regression, according to equation 2. The three dependent variables considered are the three indices reported in bold. Each index is regressed on either ethnic diversity, controlling for the usual household and neighborhood characteristics unless otherwise indicated. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

To be more thorough, we next perform a mean effect analysis. Following Kling, Liebman and Katz (2007), we construct summary indices aggregating information across the various related outcomes for each of the three dimensions studied above. To build the three summary indices, we first normalize each outcome using a pseudo-control group defined by individuals living in blocks characterized by a below-median fractionalization index, as in Glennerster, Miguel and Rothenberg (2010). Let Y_k be the k^{th} of K related outcomes. Each standardized outcome Y_k^* is obtained by subtracting the mean μ_k and dividing by the standard deviation σ_k of the outcome variable among the low diversity pseudo-control group: $Y_k^* = (Y_k - \mu_k)/\sigma_k$. We then average the related standardized outcomes to form the summary index : $Y^* = \sum_k Y_k^*/K$. Accordingly, our summary index for neglect of the commons averages nine standardized measures including graffiti, broken mailboxes, broken elevator, low care of the commons, voluntary degradations and garbage on the floor; the index for poor housing conditions averages five standardized measures of quality of apartment's soundproofing, of efficiency of the heating system, and of the general state of the outside walls; and finally the civil conflict indicator averages standardized measures of robbery and personal aggression.

Table 21 presents the raw and normalized components of the three broad summary indices. The first column displays the mean of each outcome among the low-diversity group. The normalized outcomes for this pseudo-control group are displayed in column 2, with mean equal to zero by construction. Column 3 reports the difference between the mean of each outcome among the households living in high diversity neighborhoods (a treated group of sorts) and that of the low diversity population. All but one of the differences are positive indicating that the average outcome is generally worse in more heterogeneous areas. Column 4 shows the difference between the normalized outcomes for treatment and control group, and allows for a more comprehensive reading. For instance, we

know from column 3 that the raw difference between care of the commons in low and high diversity areas is of 0.14. Column 4 now tells us that this difference is of 0.19 standard deviations, relative to the control group standard deviation.

Table 22 reports mean effect estimates from regressing the summary indices for negligence, quality of housing and civil conflicts on ethnic diversity and other variables, as in specification 2. The coefficient on ethnic diversity is the mean effect size. As expected, for the negligence index and the quality of housing index, mean effect estimates of ethnic diversity are strongly positive (column 1). Using summary indices also allows us to compare the mean effect of diversity on those two normalized outcomes: lines 1 and 2 of Table 22 tell us that ethnic diversity has a more adverse impact on the neglect of common areas than on the average quality of housing. This gives us an insight concerning the mechanisms at play: high levels of ethnic diversity are more likely to generate uncivic behaviors that could be avoided by higher quality social norms. By contrast, the mean effect estimate in the third line indicates that ethnic diversity plays no role on civil conflicts.

Table 21: Components of Summary Indices,Public Housing

	Low ELF		High ELF - low ELF	
	Raw (1)	Norm (2)	Raw (3)	Norm (4)
1. Neglect of the Public Areas				
Care of the commons	1.49	0	0.14	0.19
Damaging in the premises	1.45	0	0.25	0.36
Graffiti	0.63	0	0.03	0.07
Garbage on the floor	0.42	0	0.08	0.16
Broken glass	0.31	0	0.06	0.13
Broken doors	0.32	0	0.01	0.01
Broken light bulbs	0.18	0	0.07	0.18
Broken mailboxes	0.33	0	0.09	0.19
Broken elevators	0.14	0	0.1	0.28
2. Quality of Housing				
Condition of the outside walls	2.42	0	0.01	0.01
Quality of soundproofing	1.83	0	0.23	0.28
Noisy in daytime	1.48	0	0.16	0.22
Noisy in night time	1.27	0	0.15	0.27
Cold in the apartment	0.14	0	0.08	0.23
3. Civil Conflict				
Robberies	0.08	0	0.01	0.05
Aggressions	0.06	0	0.02	0.08

Table 22: Diversity and Public goods: mean effect estimates, Public Housing

	Ethnic Diversity
	(1)
1. Neglect of the Public Areas	
Mean effect estimate	0.545***
	(0.130)
2. Quality of Housing	
Mean effect estimate	0.467***
	(0.107)
3. Civil Conflict	
Mean effect estimate	0.050
	(0.112)
Socio-economic	
Background of area	Yes***
Department fixed effects	Yes***

Each coefficient is estimated from a separate regression, according to equation 2. The three dependent variables considered are the three summary indices indices reported in bold. Each index is regressed on either ethnic diversity, controlling for the usual household and neighborhood characteristics unless otherwise indicated. Robust standard errors adjusted for block clustering are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The broad picture drawn in the three previous sets of regressions is largely confirmed by the regressions of each separate normalized outcome. The corresponding mean effect estimates of ethnic diversity are presented in table 23. Although diversity has no significant impact on a few outcomes, such as broken glass or broken light bulbs in the commons, we still have a very strong negative effect of diversity on every other negligence or housing quality outcome in the public sector. As noted earlier, the mean effects estimates for negligence outcomes are on average larger than those for housing quality. The effect measured on broken light bulbs is the strongest, with a more than one standard deviation difference between low and high diversity neighborhoods, while the lowest is obtained for the quality of sound proofing, with a difference of about one third in terms of its standard deviation. Turning to civil conflicts, the mean effect estimates on robberies and direct aggressions are both insignificant in the public housing sector in our favorite specification.

Table 23: Ethnic diversity and disaggregated housing outcomes : mean effects analysis, Public Housing

	Ethnic diversity	
	(1)	(2)
1. Neglect of the Public Areas		
Care of the commons	0.752***	0.549***
	(0.124)	(0.164)
Damaging the premises	1.271***	1.019***
	(0.140)	(0.183)
Graffiti	0.387**	0.488**
	(0.151)	(0.216)
Garbage on the floor	0.668***	0.625***
	(0.162)	(0.227)
Broken glass	0.475***	0.368
	(0.182)	(0.238)
Broken doors	0.228	0.110
	(0.176)	(0.241)
Broken light bulbs	0.878***	1.049***
	(0.187)	(0.248)
Broken mailboxes	0.652***	0.927***
	(0.176)	(0.239)
Broken elevators	0.694***	0.656**
	(0.227)	(0.288)
2. Quality of Housing		
Condition of the outside walls	0.629***	0.414***
	(0.109)	(0.151)
Quality of soundproofing	0.963***	0.393***
	(0.099)	(0.138)
Noisy in daytime	0.935***	0.613***
	(0.110)	(0.148)
Noisy in night time	1.096***	0.676***
	(0.121)	(0.159)
Cold in the apartment	0.634***	0.418**
	(0.128)	(0.184)
3. Civil Conflict		
Robberies	0.207**	0.149
	(0.103)	(0.140)
Aggressions	0.231**	-0.0489
	(0.104)	(0.149)
Socio eco. background and department. fixed effects	No	Yes

Each entry is the coefficient estimate on ethnic diversity from a separate regression.

All the regressions include controls for household characteristics.

Robust standard errors adjusted for block clustering are in parentheses. The components of the three summary indices are the variables listed below each of them. Descriptive statistics for these outcomes are in Table 8.

*** p<0.01, ** p<0.05, * p<0.1

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