Social housing location and labor market outcomes

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Abstract

I investigate the effects of neighborhood on the labor market outcomes of poor households. I construct a longitudinal data set from the administrative records of welfare recipients in the city of Paris from 2001 to 2007. I observe the relocation of welfare recipients through the selection process of social housing applicants. The institutional process acts as a conditional randomization device across residential areas in Paris. I measure the impact of location characteristics on future labor market outcomes. I find that -(i) successful applicants tend to relocate in the vicinity of their initial neighborhoods; -(ii) the quality of neighborhood matters for the job finding rate of poor households; -(iii) such effect is stronger for households with children and single women; -(iv) most of the positive effect is driven by unstable jobs that do not allow the individuals to exit the welfare program. These estimates outline that neighborhoods have weak short- and medium-run effects on the economic self-sufficiency of poor households.

Keywords: Social housing, neighborhood effects.
JEL Classification: J01, J68, H23, R38

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1 Introduction

Economists and policymakers have shown increasing interest in the importance of neighborhood effects in a variety of contexts, including schooling, labor market outcomes and crime[1]. There is now a large and expanding literature investigating the impact of the characteristics of ones neighborhood on individual outcomes. A pervasive problem in the literature on neighborhood and peer effects is identification. Households may choose their location according to partly unobservable characteristics related to educational and labor market outcomes. Thus the measured effects are likely to be biased (Oreopoulos, 2008).

This paper examines the impact of neighborhood quality on welfare recipients' labor market outcomes in Paris between 2001 and 2007. I take advantage of the quasi-random assignment of households to social housing units through a known administrative process. In Paris, social housing applicants are allocated on the basis of their preferences among twenty large areas, the *arrondissements*, together with several observable variables. I present evidence that conditional on these observable characteristics and the preferred *arrondissements*, new social housing tenants are randomly assigned to neighborhoods. I use the variation in neighborhood quality obtained through this natural experiment to compare the medium-run labor market outcomes of tenants allocated to different social housing units.

The effect of social housing location on the labor market outcomes of its tenants is of interest for several reasons. From a policy perspective, considerable effort has been made to improve the location of the public housing units (see Currie, 2006, for the USA, Cheshire et al., 2008, for the UK and Laferrère and le Blanc, 2006, for France). These mixed communities' policies are based on the underlying belief that peer effects or the proximity to jobs could influence the labor market outcomes of social housing tenants. The relocation of welfare recipients to social housing units may allow households to move to lower-poverty areas. This could impact their labor market outcomes through four main mechanisms. First, peers and social networks may influence the individual outcomes on the labor market through contagion effects (Akerlof and Kranton, 2000, Crane, 1991) or informational effects (Granovetter, 2005, Montgomery, 1991). Second, the new location may avoid the discrimination against the initial neighborhood of residence (Kain, 1968, Zenou, 2002). Third, some local public goods such as local unemployment agencies or greater access to social services (e.g. pre-school childcare) and transport networks may have positive impacts on welfare recipients' labor market outcomes. Fourth, for new social housing tenants, the move itself may have an adverse impact due to the mobility costs or if the new households have characteristics that are not adapted to their new neighborhoods or suffer from higher level of discrimination.

In order to investigate the extent of these neighborhood effects, I combine information about welfare recipients' residential location and employment with information on neighborhood characteristics. As I do not observe the households' applications to social housing, I identify the timing of their moves from private accommodation to the social sector. To the extent that the allocation to a particular social housing unit is unrelated to unobservable household char-

[1]See among recent examples: Oreopoulos, 2003, Kling et al., 2007, Currie et al., 2010, Kling et al., 2005, the review of Oreopoulos, 2008, and references therein.

acteristics, one can use the natural experiment created by the application process to measure the impact of neighborhood on the labor market outcomes of welfare recipients. I find that welfare recipients who obtain a social housing unit are located close to their previous neighborhoods. Welfare recipients that get allocated to better neighborhoods experience slightly higher job finding rates. My estimates indicate that a decrease of one standard-deviation of the allocated neighborhoods' unemployment rate (5 percentage points) increases the exit from welfare by around 1.5 percentage points after 18 months and that this increase in welfare exits is associated with an increase in the job finding rate by around 3 percentage points. These figures represent substantial effects for welfare recipients, whose baseline transition rates are fairly low. In particular, they represent an increase of 8% and 17% in their average exit rate from welfare and in their job finding rate, respectively. However, there is no significant improvement in wages or in the long-term exits from the welfare program. The main neighborhood effects seem to be driven by an increase in the turn-over between the welfare program and temporary part-time contracts. Moreover, the impact of neighborhoods appears highly heterogeneous among individuals. Women experience significant positive impacts on their job finding rates. The welfare exits of women increases by around 3 percentage points after 18 months if the unemployment rate of their allocated neighborhoods decrease by one-standard-deviation. This effect is twice as large as the average effect in the population and I do not find any significant impacts of neighborhood characteristics on men labor market outcomes.

This paper builds on the existing studies of the impact of neighborhood on labor market outcomes. The main empirical evidence is based on the Moving To Opportunity program (MTO). The MTO program was authorized by the US congress in 1992 and took place between 1994 and 1998. The program randomly allocates housing vouchers to around $4,600$ volunteer poor households living in public housing projects. Households were divided into three groups. The experimental group was given vouchers only for relocation in census tracts with fewer than 10% of households below the poverty line, while the control group was not offered any voucher and a third group was offered vouchers without any constraints. Kling et al. (2007), Katz and Kling (2004) find no significant neighborhood effects of the MTO program on economic self-sufficiency or physical health but significant benefits on mental health. They also point out that female youths are more affected than men by neighborhood quality. Kling et al. (2005) investigate the impact of neighborhood on criminal behaviors and find also that female youth relocated to better neighborhoods tend to commit less violent crime and property crime while for males the reduction of crimes concerns only violent crimes in the short-run.

A second stream of the empirical literature uses social housing as a source of quasi-experimental variation in neighborhood quality. Jacob (2004) observes the consequences of the closure of high-rise public housing units in Chicago's low-income neighborhoods on children's outcomes. Households living in public housing projects set for demolition were offered housing vouchers to move. Children affected by the demolitions did not better than their peers on a wide variety of achievement measures. In France, Goux and Maurin (2007) use several the distribution of the dates of birth into the group of the individual's young close neighbors to predict the average rate of early school success of the neighbors of the individual, they find some evidence of strong positive peer effects. Their estimates suggest that a one standard deviation increase

in the proportion of young neighbors being held back at the age of 15 year old would raise the probability of being held back by 11% at the age of 16. Goux and Maurin (2007) also use the stock of social housing tenants in order to identify aggregated neighborhood and peer effects. The local share of high-school dropouts and the proportion of unemployed households appear strongly related to the probability of being held back a grade at the age of 16. On the contrary, Oreopoulos (2003) finds no relationship between childhood neighborhood quality and future earnings, unemployment likelihood or welfare participation in Toronto. He uses the allocation to public housing projects as a source of quasi experimental variation in childhood neighborhoods. He tracks children assigned to different neighborhoods, but he does not find any significant impact on long-run labor market outcomes for various metrics of neighborhood quality: local levels of parental education, share of single parents and welfare recipients.

My approach differs from that of these papers along two main dimensions. First, the results of my quasi-experimental identification strategy are complementary to the Gautreaux and Moving To Opportunity findings (Kling et al. 2007, Rosenbaum 1995). I study the impact of social housing location as opposed to the effect of housing vouchers. The social housing policy is likely to generate more important variation in neighborhood quality than housing vouchers. The location choices of the households have no impact on their budget constraints as the rent of social housing flats is regulated for the whole municipality. Moreover, households' location are not restrained by any possible discrimination in the private housing market. The natural experiment takes also place in a different part of the economic cycle as the MTO experiment. Second, as Oreopoulos (2003), I focus on neighborhood variation created by the location of social housing units and this strategy identifies the effect of social housing policies that aim at creating or maintaining mixed communities. However I do not focus on the childhood neighborhood, I investigate the neighborhood impacts on medium run labor market outcomes up to two years after the households moved in social housing.

The remainder of this paper is organized as follows. The next section describes the selection process of social housing applicants and the data. Section 3 discusses the empirical framework and econometric concerns. Section 4 describes the main results and discusses the heterogeneity of neighborhood effects across welfare recipients. Section 5 concludes.

2 Institutional background and summary statistics

2.1 Allocation to social housing units

The Parisian social housing system is based on rental units subsidized by low interests loans and tax deductions. The social housing stock represents 15.4% of the occupied housing stock in Paris (APUR, 2008). Housing units are owned by private local companies, *HLM*[2]. Despite their private status, these companies are closely monitored by the central government and the municipality, that sometimes contribute to rehabilitation, maintenance or demolition of buildings. Moreover, in Paris, the municipality is the main joint owner of the largest *HLM* companies.

[2] *Habitations à loyer modéré.* Several French administrative bodies use slightly different definitions of the social housing stock (Préfecture de Paris, 2007, CNIS, 2001 and Briant et al., 2010)

Project-based assistance is used by *HLM* companies to create new social units either through subsidized construction, rehabilitation or conversion of private buildings. The allocation process of the dwellings and social housing (voluntary) applicants is complex. As a results of their financing part in the different social projects, each financing institution gets some rights on the social housing stock (Laferrère and le Blanc, 2006). About the half of the Parisian social rented housing stock is allocated to working people by their firms through the private workers' housing scheme (1% *logement*). Concerning the other half of the social housing stock, the reservation rights are shared by two main administrative entities: the municipality and the *Préfecture* of Paris. The *Préfecture* of Paris proposes around 18% of the candidates and the municipality around 32% of the candidates. The two administrative entities partly use their nomination rights to provide affordable accommodations to civil servants[3].

The eligibility of the households to social housing in Paris is a function of the family structure and the total household income during the penultimate year. All the applicants for social housing have to submit a unique application form. This application form can be downloaded on municipality website and it is also available in each of the twenty *arrondissement* city halls. The applicants have to give information on: income, handicap, the healthfulness and crowding of the actual accommodation, age (a priority is given to young household) and actual rent. Households can rank their preferred locations at the *arrondissement* level[4]. Once the form is completed the household is registered on the waiting list. In 2005, there were around 100,000 applicants and 4,000 social dwellings were allocated.

As soon as a social unit becomes available, local commissions determine the nominated applicants. Commissions use only information from the application form. For each available dwelling, the commissions rank three eligible households and submit this list to the social landlord in charge of the dwelling. The first successful applicant is contacted by the social landlord who checks the eligibility of the applicant. If the social landlord agrees with the commission, the household can move in or refuse the dwelling to re-enter the waiting list[5]. In case of refusal by the first applicant, the second applicant is offered the dwelling and the first applicant goes down in the priority list[6].

The final neighborhood allocation is driven by the first two steps of this administrative process. Due to the scarcity of available lettings, the commissions have little control on the final location of the households. Moreover, welfare recipients meet always the income conditions, so that eligibility and allocation are determined by the family structure and the interplay of households' location choices and available dwellings. Most of the choices of the households correspond to their current locations or central *arrondissements*. Due to the length of the waiting

[3]The local administrative process of allocation is determined by law since 1986. The goal of the allocation process and the composition of the allocation commissions at the municipality level changed marginally in 1996 and 2005. Furthermore, for the municipality of Paris, one half of the available units are allocated by the central authority, while the other half is allocated through *arrondissement* authorities.

[4]The application form is reproduced in appendix, figure A1. The application form was changed in 2008. The default answer is now being indifferent between all the *arrondissements*.

[5]At this stage, a main reason for the landlords' refusals are potentially too high incomes for a particular type of public housing, but this does not apply to welfare recipients.

[6]Information leaflets associated to the application form explain that a non-motivated refusal would either downgrade the priority of the application or place the household in the last position of the waiting list.

list and the relative low rent of the social units[7], the compliance to the assigned social housing units is near perfect for low income households. Table 1 presents the rate of refusal of social housing units according to the French Housing Surveys in 1996 and 2002. In average, the rate of refusal of welfare recipients is 0% and around 2.6% for low-income households. Unfortunately, the sample sizes are small but this provides suggestive evidence that households' non compliance to the assigned social units is unlikely to be a severe source of bias.

The administrative process and the high demand of social dwellings help to identify the impact of location on labor market outcomes. Under perfect compliance to the administrative allocation process, the location choice of the households is fully determined by the characteristics in the application form. As the social housing stock is spatially unbalanced, this process generates large variation in the allocated neighborhoods. Most of the high-rise and medium-rise social housing developments conducted in the sixties and in the seventies were built in the periphery of the municipality to take advantage of affordable land prices and new public equipments. However, after the election of a new mayor, Bertrand Delanoë, in March 2001, the municipality accepted numerous financial efforts in order to create mixed-income neighborhoods and increase the social rented stock. The goal is to reach the 20% of public housing in every of the twenty *arrondissements* of Paris before 2020. The challenge is important as social housing units represented only 13.4% of the primary residences at the beginning of 2001. The municipality took two main actions. First, the agencies in charge of social housing in Paris have been mobilized to produce more new accommodations, using state or city properties. Second, an inclusionary zoning was partially implemented since 2001 and voted in 2006. Every new large housing project should present a level of 25% social housing units[8]. As a result of these policies, the number of social housing residences has increased by $13,079$ units between January 2001 and 2005 while the stock of public housing represented $167,393$ primary residences the 1^{st} January 2005 or 15.4% of all the dwellings (APUR 2008). Thus the supply of available social dwellings is driven by both significant inflows of new projects and the existing stock. This guaranties large variation in neighborhoods.

2.2 Data and summary statistics

To measure the impact of public housing location on the labor market outcomes of the poorest households in Paris, I combine a unique exhaustive French administrative data set which contains the variables used in the administrative process of social housing allocation and neighborhood level information.

The empirical analysis is based on *the welfare recipients of the French minimum income*, the *RMI*. The *RMI* was the French guaranteed minimum income until 2009 (Bourguignon, 2009). This welfare program is accessible to any individual aged 25 and over, provided that the sum

[7]The rent in the private sector is twice as high as in the public sector. In Paris, there are three rent levels according to the financing system of the housing unit. In 2006, they are 5.25 euros/m^2, 5.90 euros/m^2 and 8.85 euros/m^2 while the rent on the private sector is on average 20.70 euros/m^2 (commission of Parisian notaries). As a result, the supply of social dwellings is dried by a very low turnover rate (5% in Paris in 2006 against 10% at the national level, and 18% in the private sector).

[8]New housing projects including social housing can have higher density than private developements. Three historical areas are excluded of this new zoning regulation: the Sénat, Panthéon and Marais.

of all resources available to his or her household is below a threshold that depends on family composition. The administrative data is collected by the French Institute in charge of payment of welfare, family and housing benefits and its local agency (the *CNAF* and the *CAF* of Paris). The sample covers all the *RMI* recipients from June 2001 to December 2005 in the municipality of Paris. The employment history of this sample of households is observed until June 2007. The longitudinal data set is constructed using the cross-sectional administrative information on employment and welfare status collected every 6 months from June 2001 to December 2004 and every 3 months from December 2004 to June 2007.

Each observation corresponds to a household's situation either during a welfare spell or during the subsidies period when one member of the household finds a job, or is working in a subsidized job[9]. I observe the moves from private accommodation to social housing from cross-section to cross-section. As social housing benefits are paid directly to the social landlords, I define a move to the social housing sector as a change from a private sector dwelling to a dwelling rented by a social landlord. I identify social housing as the rental social units which give right to housing subsidies for the tenants and belong to or are administrated by social landlords. This definition does not include student halls, temporary accommodations for young and poor workers or elderly halls which have different allocation rules.

My explanatory variable of interest is the quality of neighborhoods. Each year the data are localized at the census tract level. I use two external measures of neighborhood quality: the unemployment rate from the 1999 census and the median income that are available at the census tract level from 2001 to 2005[10]. These measures of neighborhood quality includes all the households of the neighborhood. I decide first to focus on the unemployment rate in the census 1999. The quality of this indicator depends on the persistence of spatial inequalities over time in particular for the last cohorts of observations in 2004 and 2005.

Table 2 investigates the linear and rank correlations between the unemployment rate, the long-term unemployment in 1999 and the median taxable incomes in 2001 and 2005. The unemployment rate in 1999 is strongly linearly correlated with all these measures, the lowest linear correlations being of order 0.8. Comparing the linear correlations to the rank correlations (in backets), there is no evidence of non-linear relationships between the different measures of neighborhood quality[11]. There is also no significant changes in the correlations when I compare the income measures in 2001 and 2005. The correlation between the neighborhood unemployment rate in 1999 and the median income in 2001 is 0.77 and 0.76 when the median income is measured in 2005. These correlations suggest that the unemployment rate is a stable scalar index of neighborhood quality which is linearly related to the overall neighborhood quality. A similar method is used by Kling et al. (2007). They summarize the quality of neighborhoods using the poverty rate. Under a unique metric of neighborhood quality, a change in the value of this metric, the neighborhood unemployment rate, may imply a change of other non-orthogonal

[9]The subsidy period is known as *Intéressement*. Subsidized contracts include the part-time CI-RMA in the private sector and the CAV in the non-profit sector.

[10]Income data at the census tract level are not available before 2001. Income data in year n is coded at the census tract of residence on the 1^{st} January of year $n+1$.

[11]Other non-reported correlations with the neighborhood social housing share, the education of the neighbors or the quality of the housing stock present similar patterns.

neighborhood characteristics that may be important for the job search process of the individual such as job accessibility or the education of close neighbors. Thus the results can not be interpreted as the effect of the unemployment rate on labor market outcomes holding every other neighborhood characteristics constant. An alternative technique would be to create a weighted index of neighborhood quality but these metrics have two disadvantages. First, they have no clear scale. Second, they are not comparable over different studies. I prefer to introduce only the neighborhood unemployment rate as it is a directly interpretable indicator. However, this may cause a loss of power to discriminate "good" and "bad" neighborhoods if the underlying assumption of correlation of this indicator with an underlying linear neighborhood quality index is violated.

My potential control variables include virtually all the characteristics asked in the application form: age, number of children, marital status, past income level, some past labor market outcomes and the current housing rent[12]. However I do not observe the location preferences of the households and I do not know if the final allocation to a given *arrondissement* corresponds to the choice expressed in the application form. Alternatively I choose to control for the *arrondissement* of the social housing unit and the past location of the household.

Table 3 provides broad descriptive features of the data on welfare recipients. The first column presents the descriptive statistics for the whole sample while columns (2) and (3) focus on single women and single men. I observe $2,178$ adult individuals in $1,686$ households relocated to social housing units in 407 different census tracts over the period 2001 to 2005. Panel A presents the descriptive characteristics of these individuals. Single women are overrepresented among the individuals allocated to social housing units and represents nearly 37% of the sample. This is explained by the priority given to single family households in the social housing application process. 63% of the single women live with children and 21% of them have children of less than six years old. Couples with children represent also a large share of the sample. Overall 56% of the individuals live with children when they move to a social housing units. A large fraction of individuals are from Non-European countries (41%) while the fraction of European individuals is marginal (2%). New social tenants are in average 44.5 years old, single men being older than the other successful applicants by nearly two years. The past unemployment history of these households is important. The average duration of a welfare spell is 4.5 years at the time of entry into social housing. The inflows of social housing tenants are stable over the period 2001 to 2005, each cohort represents nearly 10% of my final sample.

Panel B of table 3 describes the observed past labor market outcomes before the allocation to a social housing unit. 10% of the new public tenants had some form of employment six months before their allocation to a social unit. A large part of them, 53%, did not have any taxable income in the penultimate year before the social housing allocation. Their average yearly income is low below $3,000$ euros. This matches the long duration of the welfare spells. Panel C presents the past housing conditions of the new social housing tenants. Only a small fraction of them paid some form of rent. The observed rents are low in average 370 euros per

[12]The quality of the current accommodation of the households is defined by several proxies rent and location - while the public housing application form contains more precise information on the current housing conditions of the applicants.

month and slightly higher for couple and single women than for single men.

Finally, Panel D of table 3 presents the variation in the explanatory variable of interest, the unemployment rate of the census tract in 1999. In average, welfare recipients are allocated to neighborhoods where the unemployment rate was 16% in 1999. This is substantially larger than the unemployment rate of the average Parisian census tract (12%). The standard deviation of the neighborhood metric is 0.05. The distribution of the unemployment rate within the allocated neighborhoods is nearly symmetric. The bottom 10^{th} percentile of the allocations corresponds to an unemployment rate of 9.5% while the 90^{th} percentile represents an unemployment rate of 23.4%. There is no noticeable difference between the neighborhoods allocated to single women, men and couples. The last two rows compare the variation within the *arrondissements* of allocation and within the households coming from the same and moving to the same *arrondissements*. Nearly 60% of the unemployment rate variation occurs within the *arrondissements* of allocation. Even controlling for both past and current *arrondissements*, the variation in the neighborhood quality is still substantial and represents more than 50% of the overall variation in local unemployment rates. This is partly due to the low mobility of the households between *arrondissements*. In my sample, 59% of the individuals get allocated a social unit in their current *arrondissement*. Interestingly, this proportion is smaller (32%) in the most deprived *arrondissements*, the 18, 19 and 20, which have the largest numbers of social housing units. This suggests that households' preferences play indeed a substantial role in the final allocation. As my metric of neighborhood quality is likely to be subject to some kind of measurement error, it is reassuring that my results will not be driven by small changes in neighborhood characteristics and attenuation bias when I control for the *arrondissements* of allocation.

I focus on three main labor market outcomes of the successful social housing applicants after their relocation to social housing units: the exit of welfare, the job finding rate and the wage of the individuals who find a job. The transitions from the minimum income program, *RMI*, to the program designed for new single parent of children of less than three years old (*API*), are aggregated into the same welfare spell. As the households receive some extra transfer when they find a job, I identify both their welfare exits and the timing of their job findings in their administrative records. Unfortunately, some individuals may quit the welfare programs for reasons not related to employment: change of household structure, geographic mobility or because they do not fill the required quarterly forms. I construct three main dependent variables: dummy variables for not receiving welfare benefits after n months, dummy variables for having found a job before n months and an earnings variable. The exit of welfare and the employment variables are defined 6, 12, 18 and 24 months after the relocation. The employment measure aggregates all the possible employment spells of the individuals[13]. I consider that this measure is subject to attrition when the individuals are not in any welfare program after n months but they did not benefit from any period of cumulative wage and welfare benefits. Finally, there is no direct measure of the wage in the dataset but it contains a variable for the monthly earnings. For the employed people, this is very close to their wages. When the individual are in couple, I know

[13]They are identified through different form of earnings top-ups and directly subsidised contracts (*Intéressement*, temporary job bonuses, RMA and CAV).

the identity of the individual working and I impute him the full amount of earnings. If the two adults of the same household are working at the same time, I impute half of the earnings to each of them (this occurs only for 3 households in my sample). I assume that the job finding hazard rate is constant and I convert this variable into an expected monthly wage when the individuals find a job by multiplying it by 2/3.

Table 4 presents the welfare exits and employment transitions after the allocation to a social housing unit for the different categories of welfare recipients. Panel A, after 24 months, 32% of the individuals did quit the welfare programs. This aggregates exits due to employment, geographic mobility, change of family structure and non reporting of their quarterly income to their local agencies. In panel B, the share of welfare recipients who took a job raises quickly after the allocation to social housing, 9% after 6 months, and doubles one year later to reach 18% after 18 months. Panel C displays the attrition rate for this measure. There is a substantial fraction of individuals who quits the welfare program without employment reasons. This attrition rate is probably overstated as a large fraction of these individuals receive again the minimum income program a few months later. This suggests that this number are mainly due to administrative reasons and the suspension of the eligibility to the benefits when the households do not fit their quarterly income forms.

Panel D of table 4 shows the wages of the individuals during their first employment spells at the time they enter the minimum income top-up program. The average earnings appear below the full-time minimum wage. This is consistent with part-time employment contracts concentrated around the minimum wage and corresponds to the large fraction of subsidized part-time contracts of the welfare recipients (Gurgand and Margolis, 2008).

3 Empirical strategy

3.1 Main specification

In order to identify the causal relationship between the quality of a neighborhood and job search outcomes of welfare recipients, I exploit the quasi-experimental variation created by the social housing allocation process. Once I control for the information in the public housing application forms, the allocation to a particular public housing unit is arguably exogenous with respect to the future labor market outcomes of the welfare recipients. This empirical strategy can be seen as a reduced form equation from the *linear-in-means* model of Manski (1993) under some additional assumptions.

My main specification relates the labor market outcomes Y_{ijt} of household i allocated to a social dwelling in neighborhood j at time t to the unemployment rate of this neighborhood, U_j, measured in 1999:

$$Y_{ijt} = \beta_1 + \gamma U_j + X_{ijt}\beta_2 + L_{ijt}\beta_3 + E_{ijt}\beta_4 + \varepsilon_{ijt} \ , \tag{1}$$

where γ is the parameter of interest. γ summarizes the reduced form effect of neighborhood characteristics on the labor market outcomes. It allows to test if labor market outcomes of new social housing tenants are influenced by the location of public housing units. X_{ijt}, L_{ijt}

and E_{ijt} denote three different categories of control variables that are needed to focus on quasi-experimental variation of U_j and consistently estimate γ. Specifically, X_{ijt} contains individuals characteristics, age at the time of entry into social housing, nationality of the head of the household (French, European, other and unknown nationalities), gender[14], marital status (in couple or not), number of children, the fact to have young children, a cubic in the monthly duration of the welfare spell age interacted with the year and semester of entry into social housing. These cohort controls are important as welfare recipients' employment is highly dependent on publicly subsidized jobs (Rioux, 2001, Gurgand and Margolis, 2008) and the supply of subsidized jobs is correlated with the national elections occurring in 2002. I include the interaction with the duration of the welfare spells as the eligibility to some subsidized contracts is conditional on the welfare duration. For example, a new subsidized private job program, the RMA, created in December 2003 was only available to welfare recipients who spent more than 24 months with the RMI. L_{ijt} contains information about the past and new *arrondissements* of residence of household i. In my most constrained specification, L_{ijt} is a set of 182 interacted dummy variables for the past and current *arrondissements* of location. Given these controls, the causal effect of neighborhood is identified by variation in neighborhood allocation between households from the same *arrondissement* moving to the same *arrondissement*. E_{ijt} is a vector of past employment, housing and income characteristics that may be used as additional controls. When the full set of controls is included all the information of the application form is taken into account.

Under my identification strategy, the unobserved factors affecting the labor market outcomes, ε_{ijt}, have to be unrelated to the allocated neighborhood characteristics conditional on my control variables:

$$E[\varepsilon_{ijt}|U_j, X_{ijt}, L_{ijt}, E_{ijt}] = E[\varepsilon_{ijt}|X_{ijt}, L_{ijt}, E_{ijt}] \ . \tag{2}$$

The variation of the local unemployment rate is as good as randomly assigned once I control for X_{ijt}, L_{ijt}, and E_{ijt}. This assumption is valid if I am able to control for all the characteristics that may influence the allocation of a public housing applicant to a particular neighborhood and there is perfect compliance to the administrative process. This type of assumption and reduced form strategy have been used in a wide variety of contexts to estimate the effect of peers or neighborhood: student achievement with respect to their college roommates (Sacerdote, 2001), immigrants' outcomes and first location (Edin et al., 2003) and the consequences of living in a poor neighborhood (Oreopoulos, 2003). To evaluate the robustness of my findings, I introduce sequentially these controls in my regressions. My baseline specification controls only for basic household characteristics, X_{ijt}. Then I introduce the *arrondissement* variables that may affect the selection process of social housing applicants, L_{ijt}. Finally, I also control for the observable past labor market outcomes and housing conditions, E_{ijt}. This last specification is close to a lag-dependent variable model.

[14]The gender of the spouse is unknown and coded as spouse of a male or spouse of a female. The rules to choose the household head are discussed in Jacquot (2001). In my sample, the women is the head of the household for nearly half of the couples.

3.2 Falsification exercise and robustness checks

My identifying assumption (2) could be violated in two main cases. First, the social housing commissions could allocate dwellings and households in the waiting list according to characteristics that are not presented in the application form and these characteristics may be correlated to unobserved determinants of labor market outcomes. Second, welfare recipients could manipulate the allocation process through strategic non compliance. If assumption (2) is not met, the coefficient γ in specification (1) does not consistently estimate the causal impact of social housing location on the labor market outcomes of welfare recipients. If (2) holds, I should not observe any specific relationship between past outcomes of the welfare recipients and the current quality of their allocated neighborhoods. Thus, I assess the relevance of this assumption by comparing some past outcomes of the new tenants to the quality of their allocated neighborhoods. Specifically, I regress previous labor market outcome such as past employment and earnings on all the right-hand side variables of equation (1). These variables are present in the application form. However, the fact that, conditional on households' characteristics, they are not correlated with the current local unemployment rate suggests that other unobservables driving labor market outcomes would also be uncorrelated with the allocated neighborhoods.

An additional concern arises from the fact that some labor market outcomes are not observed for the whole sample due to sample attrition. I only observe welfare recipients in Paris and I do not know the whole labor market history of each household during their employment or unemployment spells. Thus, welfare recipients moving to other cities disappear from the data set. This geographic mobility is unlikely to bias the main results because once a household has moved in a social housing dwelling, there is a very low turn-over of public accommodations in Paris (5% in 2006). However, changes in family structure and non response to the quarterly income inquiries also impact the eligibility to the minimum income program. If this sample attrition is correlated with unobservable determinants of labor market outcomes and the local unemployment rate, U_j, it may bias the estimates of the impact of neighborhood quality on labor market outcomes. The following assumption is required to rule out differential attrition rates by neighborhood quality:

$$E[\varepsilon_{ijt}.M_{ijt}(Y_{ijt})|U_j, X_{ijt}, L_{ijt}, E_{ijt}] = E[\varepsilon_{ijt}.M_{ijt}(Y_{ijt})|X_{ijt}, L_{ijt}, E_{ijt}] \ , \tag{3}$$

where $M_{ijt}(Y_{ijt})$ denotes a dummy variable taking value 1 if the information on Y_{ijt}, the labor market outcome is missing. I test the missing at random assumption (3) by estimating regression (1) with a new dependent variable $M_{ijt}(Y_{ijt})$. If, conditional on $X_{ijt}, L_{ijt}, E_{ijt}$, the characteristics of the neighborhood have no significant effect on the transitions out of the sample, the labor market outcomes estimates are not biased by selective sample attrition[15].

[15] DiNardo et al. (2006) detail the same issue for the MTO experiment.

4 Empirical results

4.1 Falsification exercise and quasi-random allocation to social housing

First, I directly assess the relevance of the identifying assumption (2). Table 4 presents the results of falsification tests for the new social housing tenants. Panel A displays the results of a linear probability model of the probability of having a positive previous taxable income in the penultimate year prior to the social housing allocation[16]. In column (1), I control only for observable households characteristics. The estimate indicates that a 5 percentage points increase in the unemployment rate of the allocated neighborhood (approximately one standard-deviation) is correlated with a decrease of the probability of having a positive income by 1.4 percentage points. However this point estimate is not significant at the 10% significance level. The negative association between the unemployment rate of the allocated neighborhoods and past income disappears once I control more precisely for the *arrondissements* of allocation in columns (2) and (3). In column (2), I control only for the *arrondissement* of the allocated social unit. The absolute value of the point estimate is divided by six while the standard-error increases by only one third. A 5 percentage points increase in the unemployment rate of the allocated neighborhood would is now associated with a 0.2 percentage points increase in the probability of having a positive income. When I introduce further control for both the past and current *arrondissements* of residence in column (3), the point estimate changes sign but remains of same magnitude in absolute value.

Panel B displays the results of the same falsification tests for the previous taxable income in the penultimate year prior to the social housing allocation. In all the specifications, the coefficient of the allocated unemployment rate indicates a weak relationship between this variable and the allocated unemployment rate. A 5 percentage points increase in the allocated unemployment rate is associated with an increase in previous income by 115 to 170 euros, less than 3% of the standard-deviation of this measure. Moreover these estimates are all insignificant at the 10%, and would indicate that households with higher income get allocated to neighborhoods with higher unemployment rate.

Finally, panel C presents the association between previous employment measured as the fact to receive some wage deduction six months before the allocation to social housing and the unemployment rate of the allocated neighborhoods. In column (1) when only the individual the individual controls are included, the estimate indicates that a one-standard deviation decrease in the local unemployment rate would imply an increase of 0.7 percentage points of the probability to have some form of employment. However, this positive correlation between the past employment status and the quality of the allocated neighborhood disappears once I control for the *arrondissements* of allocation in columns (2) and (3). The point estimates have the same magnitude in absolute value, but change of sign and remains non-significant at the 10% significance level. In summary, the impacts of the allocated unemployment rate on the past labor market outcomes are never economically or statistically significant. This is not the case when I estimate the same specifications for the new private tenants (estimates not reported). In the

[16]This corresponds to the last available yearly income tax form.

private rental sector, households tend to present past labor market outcomes that are directly correlated with the current quality of their neighborhoods.

4.2 Neighborhood effects on labor market outcomes

Table 6 shows the effects of public housing location described by the local unemployment rate at the census tract level on the welfare exits and employment 12 months, 18 months and 24 months after the initial relocation of the new social tenants[17].

Table 6 panel A presents the estimates of the impact of the local unemployment rate on the welfare exits. In column (1), a decrease of one standard deviation of the local unemployment rate (5%) increase the likelihood to find a job within 12 months by 0.3 percentage points. The included control have little impact on this point estimates. In all the specifications, the point estimates remain of same sign and magnitude. In column (4), when fixed effects for each pair of *arrondissements* are included, the estimated effect drops to 0.2%. All these impacts are non-significant at the 10% level. The point estimates at 18 months are much larger. In columns (6) to (8), they indicate that an increase of one standard-deviation of the neighborhood quality would increase the probability to exit the welfare programs by 1.6 percentage points. However, these estimates remain insignificant at the 10% level and the point estimates drops in magnitude when I consider the exits of welfare at 24 months in columns (9) to (12). This may correspond to the high turn-over of the welfare recipients between short-term part-time contracts and welfare spells or to short periods of administrative non-eligibility.

Panel B of table 6 investigates further the reasons of this time pattern. The dependent variable is now a dummy variable for being observed during an employment spell before leaving the welfare program. In this second panel, all the point estimates have the expected negative sign that indicates that lower local unemployment rates increase the likelihood of finding a job. The point estimates are all between 0.2 and 0.6 which indicate that a one standard deviation decrease in the local unemployment rate would increase the likelihood of finding a job by 1 to 3 percentage points. All the point estimates after 18 months are significant at the 5% level which would indicate that the observed increase in the welfare exits was indeed due to employment spells. Panel C examines the attrition of this measure. The dependent variable is a dummy variable taking value one when the individual left the welfare program without starting an employment spell beforehand. None of these estimates is significant at the 10% significance level.

Finally, Table 7 shows the estimated impact of neighborhood unemployment of the wages of the welfare recipients when they find a job. Much of the variation in the wage measure is driven by the difference between part-time and full-time jobs and my data do not allow distinguishing the effect of the working hours and the hourly wage. Panel A. displays the results from the regressions of the unemployment rate on the wage of the individuals (in level) for the individuals starting an employment spell. The estimates are small and insignificant at the 10% level. The largest point estimate in column (3) indicates that a one standard deviation

[17]The estimates after 6 are similar to the estimates after 12 months and not reported.

decrease in the neighborhood unemployment rate would imply a 50 euros increase (1/10 standard deviation of the earnings' measure). The panel B of table 6 controls for the self-selection of the new employees using a two-step selection model. I use the children variables as exclusion restriction in the selection equation. The estimates for the wage equation are even smaller while the standard-errors significantly increase. In the selection equation, as in table 6, a positive correlation appears between the probability to take a job and neighborhood quality. However these point estimates are insignificant at the 10% level when I control for the *arrondissements* of allocation.

These results are consistent with the MTO literature (Kling et al., 2007). However, the absence of clear effects for the whole sample could be due to two main reasons. First, if the neighborhood effects are heterogeneous across welfare recipients, it is possible to observe stronger results for some subgroups. I examine this possibility in the next sub-section. Second, as there is no clear difference in job accessibility inside Paris, this does not rule out the possibility that at another spatial scale the redevelopment of the public housing system could have a positive effect on the search outcomes of the welfare recipients. This could be the case at the scale of the Paris region if the spatial mismatch hypothesis of Kain (1968) holds. However, this partly rules out the assumption that relocation to better neighborhoods can improve the job related social networks of the welfare recipients (at least on the short and medium run) and the assumption that the residence in areas exposed to crime or in low-skilled minorities' neighborhoods inhibit the job access of welfare recipients.

4.3 Heterogeneous neighborhood effects by individual characteristics

While the quality of public housing location appears to have small positive effects on the job finding rate and welfare exits of welfare recipients, these low average impacts could be the result of heterogeneous treatment effects. Table 8 and Table 9 reproduce the results of Table 6 on the subsamples of women and single women.

For the whole sample of women in table 8, the impacts of the neighborhood unemployment rate on the exit of welfare is always negative and as in the whole population the effects become larger at 18 months and decrease in absolute value at 24 months (panel A). The point estimates at 12 and 18 months imply that a decrease of one standard-deviation if the allocated unemployment rate would raise the exits from welfare by 1.5 at 12 months to 3 percentage points after 18 months. Panel B of table 8 indicates that this increase in the exits from the welfare program is mostly due to employment spells which increase in the same proportion at 12 and 18 months. However, the estimates of panel B should be interpreted carefully. A large fraction of women is observed leaving the welfare programs without starting an employment spell and this proportion of women appear related to the quality of neighborhoods in panel C.

In table 9, the estimates for the subsample of single women have the same pattern. The sample size drops from $1,257$ to 815 observations and the standard-errors become more imprecise. The impact of neighborhood of welfare exits appear stronger at 12 months and decrease at 18 and 24 months. On the contrary, the estimate for the job finding rate of the welfare recipients are constant over time and indicate that a decrease of one standard-deviation of the

unemployment rate increase the overall transition to work by 0.5 percentage points in column (11) to 3.8 percentage points in column (4). This again indicates that the quality of neighborhood has a positive impact on the job finding rate of single women but that these effects are not strong enough to allow durable exits from the welfare programs.

Table 10 displays the estimates of neighborhood effect on the welfare exits and employment of men. The estimates have no well-defined sign as in the previous tables 8 and 9. Their absolute values is in average nearly twice below the corresponding estimates for women and all the point estimates are insignificant at the 10% level. Despite the large standard-errors, this provides suggestive evidence that neighborhood effects are very weak for men. The non-reported estimates for the smaller subsample of the 479 single men point out towards an even stronger negative answer. The estimate for the impact of the unemployment rate on welfare exits is positive and around 0.4 in all the specifications. Similarly, nearly all the point estimates for the effects of neighborhood on the probability to find a job have the opposite sign as those on the subsample of women and are positive.

Finally, Table 11 reports the estimates of the neighborhood effects on the welfare exits and employment of individuals below 40 years old[18].Younger welfare recipients may be more employable and concentrate most of the employment spells, thus the neighborhood effects should be easier to detect for this sub-population. In panel A, the estimates for the impact of the welfare exits are all negative as expected and larger than the corresponding estimates for the whole population reported in table 6 but they remain insignificant at the 10% significance level. In panel B, the estimated impact on the job finding rates are even larger than for the subsample of single women in table 9. They suggest that a one standard-deviation decrease in the allocated unemployment rate would increase the transitions to work by 4.4 percentage points 18 or 24 months after the allocation to social housing. As the average rate of transition to work is 24

4.4 Discussion

The allocated local unemployment rate impacts welfare recipients' employment and their temporary exits from the welfare program. These estimates are mainly driven by women and individuals below 40 years old. On the contrary, neighborhood quality has no positive impact on the employment probability of men and more particularly single men. The different estimates by gender are consistent with the MTO findings on crime and mental health Kling et al., 2005, 2007. Kling et al. develop three alternative explanations to the observed gender differences: peer sorting, if new male and female tenants tend to resort or not into the same type of peer groups in their new and old neighborhoods (Jencks and Mayer, 1990), search strategies, if females tend to rely more on interpersonal relationships for their job search than men, and comparative advantages, if females have human capital that made them more able to exploit the job opportunities in good neighborhoods. In absence of other external evidence, it is difficult to distinguish the role of these three factors in my results. The results for the welfare recipients below 40 year old suggest that the most employable individuals may be able to take advantage

[18]The results are not sensitive to this age cut-off. Additional results for different sub-sambles, individuals with and without children, long term and short-term welfare recipients or by age group, do not have a clear pattern.

of better location. Moreover, the time pattern of the estimates could also be consistent with this explanation. Once the individuals with adapted human capital have been able to find a job, the effect of better location on the job finding rate does not increase over time after one year spent in social housing.

5 Conclusion

This paper examines the effect of the location of public housing on the labor market outcomes of welfare recipients in Paris. Using the social housing allocation process as a quasi-natural experiment, I take into account the endogeneity of the location process and study an important policy: the location of public housing units. I find that welfare recipients allocated to better neighborhoods have slightly higher job finding rates, but I do not find any evidence that neighborhoods have any impact on the wages or strong effects on the long-term exits from the welfare program. The higher job finding rate is mostly driven by women and seems related to low paid and temporary employment contracts. These estimates shed some light on the impact of the redevelopment of the French social housing system taking place in wealthy neighborhoods due to a recent change in the French legislation. The results confirm the weak effect of location on the economic self-sufficiency of poor households obtained in the USA with the MTO experiment. They suggest that creating new social housing units to relocate welfare recipients into better neighborhoods will not improve their economic self-sufficiency[19].

However it is possible that the redevelopment of social housing units across cities may have an impact on the economic self-sufficiency of the welfare recipients if they are located in deprived cities where the job offers are scarce (Olof et al., 2010). The development of social housing units in better neighborhoods within Paris could be desirable for other reasons than economic self-sufficiency. Location could have higher impacts on children educational and long-term outcomes. For example, Goux and Maurin (2007) obtained complementary evidence that children educational outcomes are influenced by the outcomes of their close neighbors in France. New social housing buildings could also improve the quality and healthfulness of the lettings of the poor households or influence the criminal activity and exposure to crime. Finally, the effects of social housing developments on construction, overall neighborhood composition, housing prices and crime in a given neighborhood have received little attention. The potential detrimental or positive effects of public housing redevelopment on the existing neighborhood are mostly unknown. Recent US evidence (Baum-Snow and Marion, 2009) suggest that the impact in good neighborhoods is in general weak. Further research is needed to determine the overall efficiency of social housing policies.

[19]Welfare recipients represent only a small share of the social housing tenants.

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Table 1. Compliance to the social housing allocation among low-income applicants

	Welfare recipients (1)		Low income Households (2)	
	Non weighted	**Weighted**	**Non weighted**	**Weighted**
Refused a dwelling in:				
1996	0	0	0	0
2002	0	0	1	1,128
Applicants in:				
1996	3	2,665	29	27,136
2002	10	10,139	18	16,986
Refusal rate	0.00%	0.00%	2.10%	2.60%

Note: (1) Welfare recipients are households for whom at least one individual received the RMI during the last year. (2) Households whose income by OECD consumption unit is below the second national decile. Source: French Housing Surveys 1996 and 2002. Households who live in Paris and declare having applied to social housing.

Table 2. Linear and non-linear correlations between different metrics of neighborhood quality

	Unemploy-ment rate (1999)	**Long term Unemployment rate (1999)**	**Median Income by UC in 2001**	**Median Income by UC in 2005**
	(1)	**(2)**	**(3)**	**(4)**
	Correlation (Rank correlation)	**Correlation (Rank correlation)**	**Correlation (Rank correlation)**	**Correlation (Rank correlation)**
Unemployment rate in 1999	1.00 (1.00)			
Long term unemployment rate in 1999 (1)	0.83 (0.91)	1.00 (1.00)		
Median Income by UC in 2001 (2)	-0.77 (-0.81)	-0.76 (-0.79)	1.00 (1.00)	
Median Income by UC in 2005	-0.76 (-0.79)	-0.74 (-0.77)	0.99 (0.99)	1.00 (1.00)

Note: The computations are based on 968 census tracts for the 1999 census data and 915 census tract for the other indicators. (1) Long term unemployed workers have been unemployed for more than one year. (2) UC are Eurostat consumption units: the first adult (individual of more than 14 y.o.) has weight 1, other adults have weight 0.5 and children have weight 0.3. Source: French census in 1999, Taxable income at the census tract level in 2001 and 2005 (INSEE, DGI).

Table 3. Characteristics of the welfare recipients allocated to social housing

	Whole sample (1)	Single women (2)	Single men (3)
Variable	**Mean (s.d.)**	**Mean (s.d.)**	**Mean (s.d.)**
A. Individual characteristics			
Single female	0.37		1.00
Single male	0.22	1.00	
Head female	0.11		
Head Male	0.10		
French (1)	0.47	0.48	0.55
European	0.02	0.02	0.02
Non-European	0.41	0.39	0.29
Unknown nationality	0.11	0.10	0.14
Age	43.44	43.62	45.49
	(10.20)	(9.88)	(9.63)
RMI Months at the entry	54.56	54.06	56.59
into social housing	(45.25)	(46.32)	(46.84)
Children of less than 3 y.o.	0.13	0.02	0.00
Children of 3 to 6 y.o.	0.21	0.19	0.01
Children	0.56	0.63	0.05
Number of children	1.19	1.05	0.08
	(1.48)	(1.14)	(0.39)
Cohort 06/2001	0.10	0.10	0.10
Cohort 12/2001	0.09	0.09	0.09
Cohort 06/2002	0.10	0.11	0.10
Cohort 12/2002	0.12	0.12	0.10
Cohort 06/2003	0.11	0.11	0.11
Cohort 12/2003	0.10	0.11	0.09
Cohort 06/2004	0.13	0.12	0.15
Cohort 12/2004	0.11	0.10	0.14
Cohort 06/2005	0.15	0.13	0.14
Cohort 12/2005	0.10	0.10	0.10
B. Past labor market outcomes			
Employment at t-6 months	0.10	0.13	0.09
Income>0 in year t-2	0.47	0.43	0.43
Income of year t-2	2,943.49	2,137.17	2,494.91
(2005 euros)	(5,355.63)	(3,934.09)	(4,275.51)
C. Past housing conditions			
Monthly rent at t-6 months	371.07	357.17	260.09
if known and >0 (2005 euros)	(261.87)	(209.17)	(183.63)
Rent is 0 at t-6 months if known	0.55	0.53	0.63
Unknown rent at t-6 months	0.15	0.13	0.14
D. Neighborhood allocation			
Unemployment rate in 1999	0.16	0.16	0.16
	(0.05)	(0.05)	(0.06)
Variance intra arrondissement (2)	3.44	1.21	0.89
[share]	[0.58]	[0.59]	[0.62]
Variance intra pair of	3.16	1.04	0.81
arrondissements (3) [share]	[0.53]	[0.51]	[0.56]
# Observations	2,178	815	479
# Allocated census tracts	407	312	236

Note: (1) Nationality of the head of the household. (2) Arrondissement of the social unit. (3) Interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 4. Labor market outcomes of the welfare recipients: descriptive statistics

	Whole sample (1)	Single women (2)	Single men (3)
Variable	**Mean (s.d.)**	**Mean (s.d.)**	**Mean (s.d.)**
A. Exit of welfare (1) at:			
6 months	0.06	0.05	0.06
12 months	0.14	0.12	0.12
18 months	0.18	0.15	0.18
24 months	0.32	0.28	0.32
B. Employment (2) at:			
6 months	0.09	0.11	0.11
12 months	0.14	0.15	0.16
18 months	0.18	0.20	0.20
24 months	0.20	0.22	0.23
C. Attrition of the employment measure (3) at:			
6 months	0.06	0.05	0.06
12 months	0.11	0.09	0.10
18 months	0.14	0.11	0.14
24 months	0.24	0.20	0.23
# Observations	2,178	815	479
# Allocated census tracts	407	312	236
D. monthly wage during the first employment spell (4):			
Wage (2005 euros)	901.83 (584.49)	821.52 (534.17)	804.67 (576.66)
# Observations	240	106	53
# Allocated census tracts	149	83	47

Note: (1) This dummy variable takes value 1 if the individuals is no longer at RMI or API or in a related subsidized job. (2) The employment measure is cumulative and take into account any employment spell observed after the allocation to social housing. It is measured for the subsample (3) The attrition for the employment measure corresponds to the number of individuals who are not in welfare at n months but did not take a job before the end of their welfare spell. (4) The sample contains all the individuals who find employment after their allocations to social housing. The wage is computed from the quarterly income forms when the individual enters the top-up program associated with the guaranteed minimum income. All wages are converted in 2005 euros using the INSEE purchasing power time series. This average amount is close to the (net employee) full-time minimum wage (933 euros in 2005). Source: CNAF and CAF welfare recipients' registry 2001-2007.

Table 5. Falsification tests. Impact of the allocated neighborhoods on past labor market outcomes

Specification	(1)	(2)	(3)
A. Dependent variable: Having a positive income in year t-2			
Unemployment rate	-0.282	0.044	-0.058
	(0.212)	(0.309)	(0.312)
B. Dependent variable: Income in year t-2			
Unemployment rate	2,599.338	3,078.780	3,520.347
	(2,366.716)	(3,619.749)	(3,898.799)
C. Dependent variable: Employment 6 months before allocation			
Unemployment rate	-0.142	0.120	0.165
	(0.133)	(0.163)	(0.176)
Individual controls (1)	Yes	Yes	Yes
Arrondissements fixed effects (2)	No	Yes	Yes
Pair of arrondissements fixed effects (3)	No	No	Yes
# Observations	2,178	2,178	2,178
# Clusters	407	407	407

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 6. Impact of the allocated neighborhoods on welfare exits and employment, whole population

A.	**Welfare exit at 12 months**				**Welfare exit at 18 months**				**Welfare exit at 24 months**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Unemployment rate	-0.062	-0.098	-0.013	-0.044	-0.090	-0.336	-0.280	-0.325	0.031	-0.091	0.036	-0.014
	(0.167)	(0.203)	(0.210)	(0.199)	(0.205)	(0.238)	(0.251)	(0.244)	(0.230)	(0.290)	(0.292)	(0.292)
# Observations	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	1,851	1,851	1,851	1,851
# Clusters	407	407	407	407	407	407	407	407	381	381	381	381
B.	**Employment at 12 months**				**Employment at 18 months**				**Employment at 24 months**			
Unemployment rate	-0.233	-0.271	-0.304	-0.343	-0.379**	-0.486**	-0.511**	-0.595**	-0.246	-0.238	-0.166	-0.267
	(0.168)	(0.206)	(0.215)	(0.211)	(0.187)	(0.229)	(0.252)	(0.246)	(0.230)	(0.300)	(0.320)	(0.335)
# Observations	1,934	1,934	1,934	1,934	1,865	1,865	1,865	1,865	1,577	1,577	1,577	1,577
# Clusters	395	395	395	395	400	400	400	400	367	367	367	367
C.	**Attrition at 12 months**				**Attrition at 18 months**				**Attrition at 24 months**			
Unemployment rate	-0.034	-0.120	-0.049	-0.075	-0.021	-0.312	-0.288	-0.320	0.073	-0.147	-0.101	-0.131
	(0.156)	(0.181)	(0.189)	(0.182)	(0.175)	(0.216)	(0.230)	(0.226)	(0.180)	(0.237)	(0.232)	(0.232)
# Observations	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	1,851	1,851	1,851	1,851
# Clusters	407	407	407	407	407	407	407	407	381	381	381	381
Controls												
Individual controls (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation.
Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 7. Impact of the allocated neighborhoods on wages, whole population

A.	**OLS: wage of the 1st employment spell**			
	(1)	**(2)**	**(3)**	**(4)**
Unemployment rate	246.882	874.332	1,045.491	849.819
	(701.029)	(1,120.438)	(1,051.495)	(1,023.947)
# Observations	240	240	240	240
# Clusters	149	149	149	149
Controls				
Individual controls (1)	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes
B.	**Heckman: wage of the 1st employment spell**			
Wage equation				
Unemployment rate	-96.232	306.913	-482.009	
	(1,372.755)	(1,511.059)	(2,580.927)	
Selection equation (5)				
Unemployment rate	-1.296*	-0.775	-0.936	
	(0.749)	(0.975)	(0.997)	
# Observations	2,178	2,178	2,178	
# Clusters	407	407	407	
Controls				
Individual controls (1)	Yes	Yes	Yes	
Arrondts FE (2)	No	Yes	Yes	
Additional controls (4)	No	No	Yes	

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation. (5) I use the children variables as exclusion restriction: having children between 3 and 6 years old, number of children. The model is fitted by the two-step procedure. Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 8. Impact of the allocated neighborhoods on welfare exits and employment, women

A.	**Welfare exit at 12 months**				**Welfare exit at 18 months**				**Welfare exit at 24 months**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Unemployment rate	-0.215	-0.351	-0.317	-0.344	-0.255	-0.542*	-0.527*	-0.591**	-0.000	-0.230	-0.106	-0.157
	(0.179)	(0.245)	(0.277)	(0.259)	(0.215)	(0.281)	(0.308)	(0.284)	(0.217)	(0.278)	(0.312)	(0.307)
# Observations	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,151	1,151	1,151	1,151
# Clusters	363	363	363	363	363	363	363	363	349	349	349	349
B.	**Employment at 12 months**				**Employment at 18 months**				**Employment at 24 months**			
Unemployment rate	-0.477**	-0.497*	-0.426	-0.449*	-0.520**	-0.587*	-0.487	-0.508	-0.428	-0.363	-0.141	-0.165
	(0.210)	(0.270)	(0.281)	(0.265)	(0.233)	(0.299)	(0.332)	(0.322)	(0.262)	(0.336)	(0.363)	(0.362)
# Observations	1,227	1,227	1,227	1,227	1,217	1,217	1,217	1,217	1,079	1,079	1,079	1,079
# Clusters	362	362	362	362	361	361	361	361	338	338	338	338
C.	**Attrition at 12 months**				**Attrition at 18 months**				**Attrition at 24 months**			
Unemployment rate	-0.128	-0.309	-0.281	-0.287	-0.061	-0.419*	-0.458*	-0.493*	0.143	-0.166	-0.120	-0.148
	(0.175)	(0.223)	(0.251)	(0.243)	(0.178)	(0.246)	(0.277)	(0.265)	(0.182)	(0.264)	(0.285)	(0.284)
# Observations	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,257	1,151	1,151	1,151	1,151
# Clusters	363	363	363	363	363	363	363	363	349	349	349	349
Controls												
Individual controls (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation.
Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 9. Impact of the allocated neighborhoods on welfare exits and employment, single women

A.	**Welfare exit at 12 months**				**Welfare exit at 18 months**				**Welfare exit at 24 months**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Unemployment rate	-0.245	-0.477*	-0.484	-0.556*	-0.185	-0.394	-0.382	-0.500	0.288	-0.005	0.089	0.009
	(0.216)	(0.284)	(0.345)	(0.334)	(0.258)	(0.327)	(0.373)	(0.362)	(0.263)	(0.316)	(0.397)	(0.403)
# Observations	815	815	815	815	815	815	815	815	709	709	709	709
# Clusters	312	312	312	312	312	312	312	312	289	289	289	289
B.	**Employment at 12 months**				**Employment at 18 months**				**Employment at 24 months**			
Unemployment rate	-0.611**	-0.668**	-0.615*	-0.769**	-0.543*	-0.566	-0.386	-0.509	-0.408	-0.482	-0.112	-0.214
	(0.276)	(0.339)	(0.348)	(0.334)	(0.299)	(0.381)	(0.422)	(0.424)	(0.337)	(0.418)	(0.445)	(0.438)
# Observations	739	739	739	739	726	726	726	726	627	627	627	627
# Clusters	300	300	300	300	297	297	297	297	276	276	276	276
C.	**Attrition at 12 months**				**Attrition at 18 months**				**Attrition at 24 months**			
Unemployment rate	-0.204	-0.444*	-0.421	-0.456	-0.034	-0.297	-0.298	-0.395	0.142	-0.210	-0.092	-0.157
	(0.195)	(0.255)	(0.304)	(0.300)	(0.198)	(0.283)	(0.326)	(0.319)	(0.222)	(0.307)	(0.364)	(0.364)
# Observations	815	815	815	815	815	815	815	815	709	709	709	709
# Clusters	312	312	312	312	312	312	312	312	289	289	289	289
Controls												
Individual controls (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation.
Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 10. Impact of the allocated neighborhoods on welfare exits and employment, men

A.	**Welfare exit at 12 months**				**Welfare exit at 18 months**				**Welfare exit at 24 months**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Unemployment rate	0.072	0.153	0.230	0.227	0.084	-0.153	-0.107	-0.136	0.038	0.050	0.070	0.054
	(0.225)	(0.253)	(0.261)	(0.258)	(0.265)	(0.302)	(0.335)	(0.337)	(0.271)	(0.342)	(0.359)	(0.362)
# Observations	921	921	921	921	921	921	921	921	856	856	856	856
# Clusters	326	326	326	326	326	326	326	326	316	316	316	316
B.	**Employment at 12 months**				**Employment at 18 months**				**Employment at 24 months**			
Unemployment rate	0.053	-0.003	-0.090	-0.103	-0.157	-0.231	-0.313	-0.336	-0.133	-0.095	-0.030	-0.063
	(0.226)	(0.288)	(0.321)	(0.324)	(0.246)	(0.300)	(0.343)	(0.353)	(0.326)	(0.443)	(0.488)	(0.514)
# Observations	887	887	887	887	878	878	878	878	797	797	797	797
# Clusters	320	320	320	320	322	322	322	322	306	306	306	306
C.	**Attrition at 12 months**				**Attrition at 18 months**				**Attrition at 24 months**			
Unemployment rate	0.055	0.086	0.161	0.165	0.023	-0.225	-0.192	-0.216	0.111	-0.062	-0.092	-0.100
	(0.208)	(0.225)	(0.237)	(0.239)	(0.253)	(0.294)	(0.326)	(0.328)	(0.242)	(0.302)	(0.321)	(0.324)
# Observations	921	921	921	921	921	921	921	921	856	856	856	856
# Clusters	326	326	326	326	326	326	326	326	316	316	316	316
Controls												
Individual controls (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes

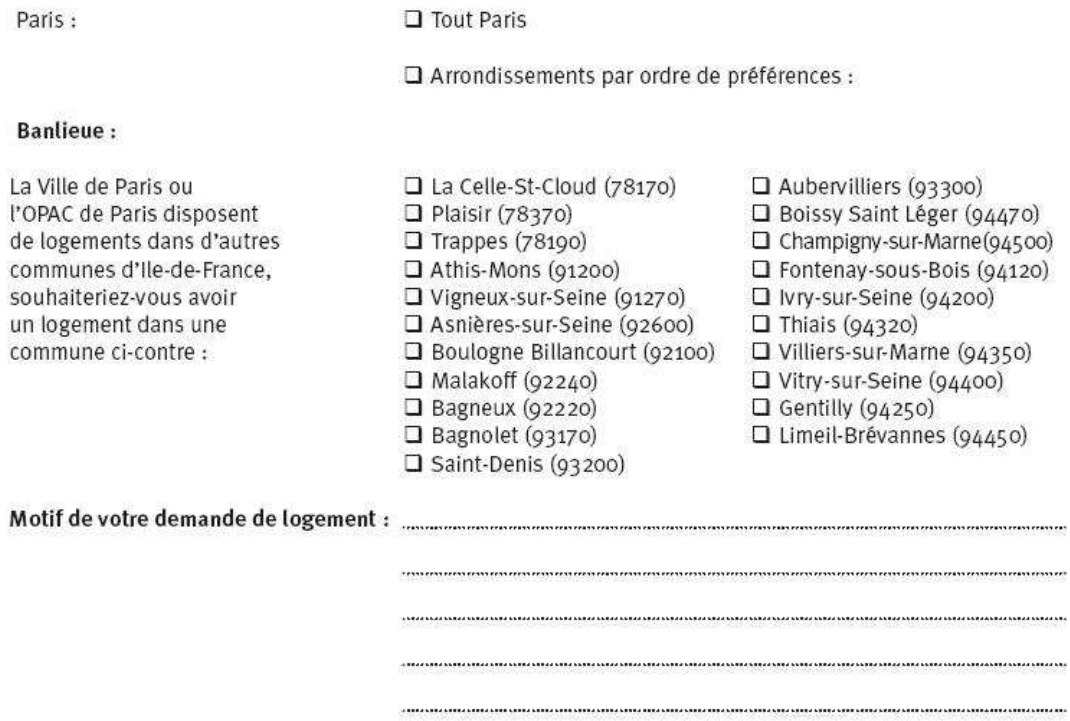
Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation.
Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Table 11. Impact of the allocated neighborhoods on welfare exits and employment, below 40 years old

A.	**Welfare exit at 12 months**				**Welfare exit at 18 months**				**Welfare exit at 24 months**			
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Unemployment rate	-0.402	-0.264	-0.124	-0.267	-0.283	-0.224	0.019	-0.086	-0.175	-0.305	-0.283	-0.372
	(0.310)	(0.350)	(0.390)	(0.375)	(0.331)	(0.353)	(0.401)	(0.401)	(0.344)	(0.406)	(0.481)	(0.483)
# Observations	834	834	834	834	834	834	834	834	706	706	706	706
# Clusters	294	294	294	294	294	294	294	294	267	267	267	267
B.	**Employment at 12 months**				**Employment at 18 months**				**Employment at 24 months**			
Unemployment rate	-0.334	-0.601	-0.613	-0.757*	-0.529	-0.826*	-0.770	-0.937*	-0.310	-0.713	-0.722	-0.881
	(0.312)	(0.382)	(0.447)	(0.416)	(0.359)	(0.448)	(0.560)	(0.531)	(0.404)	(0.532)	(0.653)	(0.622)
# Observations	728	728	728	728	711	711	711	711	599	599	599	599
# Clusters	279	279	279	279	278	278	278	278	247	247	247	247
C.	**Attrition at 12 months**				**Attrition at 18 months**				**Attrition at 24 months**			
Unemployment rate	-0.478*	-0.473*	-0.369	-0.460	-0.309	-0.344	-0.162	-0.218	-0.331	-0.514	-0.484	-0.523
	(0.271)	(0.281)	(0.321)	(0.317)	(0.282)	(0.276)	(0.346)	(0.350)	(0.262)	(0.325)	(0.394)	(0.400)
# Observations	834	834	834	834	834	834	834	834	706	706	706	706
# Clusters	294	294	294	294	294	294	294	294	267	267	267	267
Controls												
Individual controls (1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arrondts FE (2)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Pair of arrondts FE (3)	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Additional controls (4)	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes

Note: * significant at the 10% level, ** at 5%, *** at 1%. Standard-errors are clustered at the census tract level. (1) Individual controls include: age, age squarred, dummy variables for single women, single women with children, single men, male head of couple, female head of a couple, spouse of a male, spouse of a female, nationality of the household head (French, European, Non European), having children of less than 3 years old, having children between 3 and 6 years old, number of children and a full set of cohort (year interacted with semester) dummies interacted with a cubic in the previous duration of the welfare spell. (2) The arrondissements fixed effects are defined at the location of the allocated social dwelling. (3) A pair of arrondissement is defined as the interaction between the past arrondissement of residence and the arrondissement where the social housing unit is located. (4) Additional controls include: having a job six month before the allocation to social housing, income during the penultimate year, dummy for no income, dummy for unknown income, the rent six month before the allocation and dummies for not paying any rent and unknown rent six month before the allocation.
Source: CNAF and CAF welfare recipients' registry 2001-2007 and census in 1999.

Appendix figure A1. Application form



Paris :

❑ Tout Paris

❑ Arrondissements par ordre de préférences :

Banlieue :

La Ville de Paris ou l'OPAC de Paris disposent de logements dans d'autres communes d'Ile-de-France, souhaiteriez-vous avoir un logement dans une commune ci-contre :

❑ La Celle-St-Cloud (78170)
❑ Plaisir (78370)
❑ Trappes (78190)
❑ Athis-Mons (91200)
❑ Vigneux-sur-Seine (91270)
❑ Asnières-sur-Seine (92600)
❑ Boulogne Billancourt (92100)
❑ Malakoff (92240)
❑ Bagneux (92220)
❑ Bagnolet (93170)
❑ Saint-Denis (93200)
❑ Aubervilliers (93300)
❑ Boissy Saint Léger (94470)
❑ Champigny-sur-Marne(94500)
❑ Fontenay-sous-Bois (94120)
❑ Ivry-sur-Seine (94200)
❑ Thiais (94320)
❑ Villiers-sur-Marne (94350)
❑ Vitry-sur-Seine (94400)
❑ Gentilly (94250)
❑ Limeil-Brévannes (94450)

Motif de votre demande de logement : .....

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Source: Municipality of Paris.