An economic analysis on Roma integration

by

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Acknowledgments

Declarations

I confirm that the thesis submitted is the outcome of the work that I have undertaken during my research programme and is all my own work. I declare that no material contained in the thesis has been submitted for a degree at another university.

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Abstract

This dissertation aims to shed some light on the impact that changes in the socioeconomic environment can have on poor and marginalised ethnic minorities in developed countries. In chapter 1, I review the literature on the relation between the environment and the socioeconomic inclusion of immigrants and minority groups and provide an overview of the situation of the Roma in Europe and Spain. I hypothesise about how studying the integration of the Roma in Europe could help in gaining some insight into the study of the integration of minorities. I present my research project in Chapter 2 and a summary of some of the field work studies I conducted prior to starting the design of my research project in the Appendix. In chapters 3 and 4, I present the two papers I have written based on this research.

In Chapter 3, I estimate the impact on children of a radical change in their socioeconomic environment, from marginalized slum settlements to normalized housing. I test the hypothesis that a child that is resettled from the slum at an early age will have better education and life outcomes than a child that is exposed to slum life in his childhood. I exploit the variation in "exposure to slum life" of Spanish Roma children aged 7 to 14 whose families were resettled from slum settlements to flats in a major European city (Madrid) over the span of 10 years. I make use of family fixed effects equations to correct for any potential family unobservables that could bias my results. I find that being resettled from the slum before age 6 has a positive and significant impact on the probability that a child aged 7 to 14 will not have repeated grade at school. I find no significant impact of the program on children's integration and aspiration outcomes.

In Chapter 4, I evaluate the impact of moving out of the slums for selected labour outcomes of Spanish Roma families resettled at different points in time into integrated flats in the Region of Madrid. I find that moving away from the slums and into integrated flats is positively correlated with a higher integration into the labour market of both male and female adults heads of household, as measured by the probability of having worked in a skilled job (apprenticeship) and in the formal economy and not having received the minimum income subsidy. The main reason why I cannot interpret these relations causally is the potential self-selection of families into the years in which they were resettled by the program, which would generate an omitted variable bias problem. I provide bounds to my estimates following Krauth (2011) to argue that this omitted variable bias could be very small and it could still be possible that leaving the slum earlier has a positive impact on the families.

Abbreviations

Decade Decade of Roma Inclusion 2005–2015

ERRC European Roma Rights Centre

FRA European Union Agency for Fundamental Rights

FSG Fundación Secretariado Gitano

IRIS Instituto de Realojamiento e Integración Social

OSF Open Society Foundations

Chapter 1

Literature review

1.1 Introduction

In this chapter I review the literature that studies the relation between neighbourhoods and integration, in particular the literature that studies the relation between the environment (community, housing, schools) and the socioeconomic inclusion of immigrants and minority groups. I present and discuss the literature on housing and immigration, including studies on how age at exposure to the new environment influences individual socioeconomic outcomes. I also present a summary of relevant related literature on networks, given the importance of networks for the integration of minorities and immigrants. Last, I present the literature and available information on the Roma in Europe and in Spain, and hypothesise about how studying the integration of the Roma in Europe may help us gain additional insights into the study of the integration of minorities.

1.2 Mainstreaming and integration

The belief that a better socioeconomic environment has a positive impact on an individual's life outcomes is well grounded, and the positive correlation between better neighbourhood characteristics and better individual educational, social, and economic outcomes is extensively documented, but research on the causality relation between environment and life outcomes is inconclusive.

The literature studying the phenomenon of mainstreaming and integration of minority groups can be divided into two main branches: The study of the social and economic inclusion of native poor or disadvantaged minorities and the study of the integration of immigrants. Although immigrants and disadvantaged minorities are different and can respond differently to similar mainstreaming policies or contexts, understanding the channels and mechanisms behind the integration or lack of integration of each of these groups can bring interesting insights into the importance of each of these possible channels.

The study of the integration of native minorities through residential changes (neighbourhood effects) is usually based on the evaluation of public housing programs. Most work on this area generally supports the conclusion that changes in the neighbourhood and community do not have a significant impact on individual outcomes of children and adults. In addition, a few papers that study variations in the educational outcomes of disadvantaged children give some evidence that the key environmental variation may not be neighbourhoods or communities but school quality. On the other hand, many key works in the immigration literature arrive at the opposite conclusion, that neighbourhood characteristics have an impact on individual outcomes. However, when this immigration literature makes key distinctions among immigrants (such as age at arrival or socioeconomic networks), it often reaches different conclusions.

Housing

The impact of spatial segregation of racial and ethnic groups has been studied extensively. Cutler and Glaeser (1997) is a seminal paper in this area: The authors provide clear evidence of the positive correlation between more segregation of blacks in the U.S. and their worse life outcomes. A number of other studies support this argument in favour of a positive correlation between neighbourhood quality during childhood and better social , economic, and education outcomes (see for example Brooks-Gunn et al. (1993); Levitt and Venkatesh (2001); Galster et al. (2007)), but only in the recent decades has there been progress in assessing the causality relation between environment and life outcomes, and most of it comes from housing studies. One of the most important research projects on this field is the evaluation of the MTO (Moving to Opportunities) program in the U.S.A., an experimental housing mobility program that was designed as a random

assignment program with the objective of studying the impact of neighbourhood effects on poor families receiving public housing assistance (the program provided the families with assistance to move from poor to better-off neighbourhoods). The program has been operating in five U.S. cities since 1994: Baltimore, Boston, Chicago, Los Angeles, and New York, and has been extensively evaluated by researchers both in the short- and long- term –see for example: Katz et al. (2001) (short-run), Sanbonmatsu et al. (2006) (medium-run for children outcomes), Kling et al. (2007) (medium-run for adult outcomes), Gennetian et al. (2012) (long-run for youth outcomes), or Sanbonmatsu et al. (2012) (long-run for adult outcomes). Most studies on the MTO program conclude that the program had almost no economic impact on the families and little impact in most key areas, both in the short-, medium-, and long-term. For example, Sanbonmatsu et al. (2006) study the impact of the program in the medium run on children educational outcomes and find no significant or large impact of the program, and Gennetian et al. (2012) arrive to the same conclusion in their evaluation of the long-run impact of the program. In both studies the authors test whether younger children benefit more from the program than older ones, and find no evidence of this too: The children that participated in the program did not improve their educational outcomes, on average, regardless of the age at which they entered the program –these results hold even for children that entered the program at preschool age.

Most studies on the impact of rehousing programs on children educational outcomes arrive at the same conclusion as the MTO series of papers: There is no impact. Jacob (2004) makes use of a quasi-random natural experiment that occurred in Chicago, when some houses where demolished and families were provided with vouchers that allowed them to move out of public housing complexes; they find no significant short- or medium-run impact (1 to 5 years after the move) of moving out of the complexes on educational achievement outcomes. Another example is Gibbons et al. (2010), who study the impact of neighbourhood changes on children ages 11 to 16 and conclude that they have no effect on educational outcomes. However, a few papers give evidence in favour of the contrary conclusion (moving to better neighbourhoods has a positive impact); e.g., Galster et al. (2007), analysing data from England. Levitt and Venkatesh (2001) also provide evidence on the idea that living in bad neighbourhoods leads to worse outcomes; their study is conducted using ethnographic methods, and they conclude that the long-run labour outcomes of children living in a project in Chicago is

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negatively influenced by their residential environment. Aaronson (1998) also presents evidence in favour of the importance of neighbourhoods, using a siblings comparisons approach to the analysis of neighbourhood effects. According to Aaronson (1998), the instrumental variables that had been used in previous studies to correct the self-selection problem (families choose where to move to) were not credible enough. Aaronson (1998) uses family fixed effects to study the educational outcomes of siblings (separated by at least 3 years) and concludes that the impact of neighbourhoods may exist even when family-specific unobservables are controlled for. The number of studies that analyse the long-run impact of residential mobility due to public policy programs is smaller, but some relevant papers on the area provide evidence consistent with the MTO results; for example, Oreopoulos (2003) studies the long-run impact on labour outcomes of living in poor neighbourhoods during childhood and finds no impact on the neighbourhood for the children that were placed in better environments through a housing program in Toronto (the placement of families into different neighbourhoods was arguably a random process in this program).

Immigration

The impact of neighbourhoods on an individual's economic and social outcomes has also been analysed extensively in the immigration literature. A large number of studies based on immigrants show that the quality and characteristics of the neighbourhood matter, and that a good quality environment can have positive impacts on an individual. For example, Gould et al. (2011) evaluate the long-run impact of early childhood environment on a large number of social and economic outcomes and show that a better quality in a child's environment leads to better future outcomes for her and better educational outcomes for her children. This conclusion differs from those obtained in most long-run and short-run studies on residential changes and housing programs (Oreopoulos, 2003; Katz et al., 2001; Jacob, 2004), who generally conclude that changes in the environment do not lead to changes in the socioeconomic outcomes of individuals. However, the results obtained on the immigrant literature are specially conditioned on the type of immigrants. Two key characteristics have been analysed extensively in the literature: The age at arrival of young immigrants and the structure of their networks. I now discuss how age at arrival can affect immigrant outcomes. I will discuss how

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networks can impact socioeconomic outcomes in the next section.

Several studies analyse how age at immigration impacts the social and economic integration of immigrants. In terms of educational achievement, there is a large amount of evidence showing that, among young immigrants, late-arrivers perform worse in educational outcomes. This evidence is largely consistent across studies, despite the variety of data and countries studied, the educational outcomes measured and differences in key assumptions, such as age of entry cut-offs and covariates.

A large number of studies have focused on the impact of age at immigration on the number of years of education, dropouts or school completion for young immigrants. Chiswick and DebBurman (2004), Gonzalez (2003), Perreira et al. (2006) and Heckman (2001) all find that a later age at arrival is negatively correlated with the number of years of schooling for immigrants that arrived in the U.S. as children. Perreira et al. (2006) use a sample of 18 to 26 year old immigrants in the U.S. and present evidence on the negative correlation between arriving after age 5 and high school completion. Heckman (2001) studies school enrolment of children aged 15 to 17 years old and finds a negative correlation between age at entry and school enrolment. Gonzalez (2003) studies immigrants that arrived in the U.S. before age 19 and finds a negative correlation between years of schooling and age at entry. Last, Chiswick and DebBurman (2004) obtain a slightly different result, finding evidence that teenage immigrants (13 to 19 years old) have the lowest number of years of schooling, as compared to both pre-teen immigrants and post-teen immigrants (their sample consists of adults aged 25-65); however, this result does not contradict the idea of a late age at arrival affecting the educational development of children when they arrive by school age.

Research conducted with data from European countries arrives at similar conclusions. Bratsberg et al. (2011) (Norway) find there is a positive relation between early arrival and secondary school completion for immigrant children in Norway; they find a particularly steep gradient after age seven. Cohen-Goldner and Epstein (2014) study the case of immigrants in Israel arriving from the former Soviet Union and find a negative relation between age at arrival and the share of high school dropouts among immigrant children. Schaafsma and Sweetman (2001) present evidence from Canada. They find that child immigrants that arrive at ages 15-18 obtain less years of education than those that arrive at an earlier age, and this has an impact on their earnings too. They hypothesise that acculturation may be the reason behind these differences.

In addition to this research on school dropouts and years of education, there is also research on the impact of age at arrival on test scores. Böhlmark (2008, 2009) study the impact of age at arrival of immigrant children on test scores taken at age 16 in Sweden, finding that the impact is strong and significant for children that arrive at age 9 and after. Böhlmark (2008) also finds some small impact starting from age 7. Cortes (2006) reports evidence that age of entry is negatively correlated with test scores for children in eight and ninth grade (ages 13 to 14) in schools in San Diego and Miami: The test score gap between first- and second-generation immigrant children decreases the longer first-generation immigrant children reside in the US; moreover, immigrant children with more than ten years of US residence perform as well as their second-generation counterparts. Turning to younger children, Ohinata and van Ours (2012) evaluate the test scores of maths and science for immigrant children ages 9 and 10 in The Netherlands. They conclude that age at immigration matters for children with both parents non-native: The children that arrive at age 5 or older have lower scores than those who entered between ages 0 and 4.

The results obtained in Ohinata and van Ours (2012) support the theories of early childhood development. There is ample evidence from neurobiology studies of the importance of the early childhood environment (Walker et al., 2011). In particular, childhood environment during the early stages of a child development (0 to 5 years old) is the crucial and most important stage of development in a child and person (Cunha and Heckman, 2007) and is the principal factor affecting a person's development: Once we control for family characteristics, it explains most of the social and economic outcomes of a child's adult life (Heckman, 2007). Turning to very young children, Dobbie and Fryer Jr (2011) find no cognitive difference between black and white babies until they reach age 2. Another important and related idea is the importance of parents. Aslund et al. (2012) find that factors long before school starts matter; importantly, they find that parental time spent in the host country prior to the subject's birth matters for the outcomes of children of immigrants.

Some studies report exceptions or limitations to this generalised finding of age at arrival having a negative impact on education outcomes. For example, Glick and White (2003) find no evidence that age at immigration has an impact on test scores or high school dropouts of 10th graders in the U.S., once they control for all relevant covariates. Also, although Böhlmark (2009) finds an impact of age at entry on test scores at age 16,

he does not find that age at arrival of immigrant children has an impact on education completion measured at age 30. Stiefel, Schwartz, and Conger (2010) hypothesise that the relationship between age at arrival and educational outcomes is not linear: They compare immigrant children that arrive at different stages (elementary school, middle school, and high school) and conclude that, if an optimal age of entry should be derived from their analysis, it would be late rather than early. This idea is also supported by the theoretical model presented in Cohen-Goldner and Epstein (2014). They argue that immigrants arriving after they have completed their education in their home countries, or at least their high school education, may have an advantage over immigrants arriving in their teens.

The impact of age at arrival on adult outcomes has also been studied. Schaafsma and Sweetman (2001) present evidence from Canada on earnings, and find that earnings of child immigrants that arrive at ages 15-18 are lowest than for child immigrants that arrive before age 15; they hypothesise that this effect is mainly due to their worse educational outcomes.

A small number of studies have focused on social outcomes. Bleakley and Chin (2010) and Corak and Tienda (2012) (U.S. data) and Aslund et al. (2012) (Swedish data) all conclude that the age at immigration impacts social integration measures such as residential segregation or marriage outcomes. Bleakley and Chin (2010) argue that the impact on adult social outcomes is mainly due to language acquisition, and find that arriving in the U.S. after age 8 leads to worse language proficiency and therefore to less assimilation (as measured for example by higher inter-marriage rates; i.e., marriage outside of their own nationality and ethnicity). Corak and Tienda (2012) find the cut-off age at 8 years old, although they argue that the effect on social outcomes is due to the impact of age at arrival on the education attained. On the other hand, Aslund, Böhlmark, and Skans (2012) find evidence of an increased slope with age but no evidence of a specific critical age.

Language is also an important barrier to the integration of immigrants. Corak (2011) presents Canadian 2006 Census data and finds that the negative impact of holding a high school diploma for immigrants starts from age 9, but only for immigrants arriving from non-English or non-French speaking countries. Corak and Tienda (2012) find a similar result using U.S. 2000 Census data. Bleakley and Chin (2004) and Bleakley and Chin (2010) take one step further and show that immigrants differ in their social

integration into the U.S. depending on their ability to speak English fluently. They study long-run outcomes of children of immigrants from non-English speaking countries and find that those that arrive at a younger age, and can therefore speak very good English, integrate more than those that arrive later in all areas they study: labour and education outcomes (Bleakley and Chin, 2004) and social outcomes such as marriage, divorce, fertility and ethnic enclave residency (Bleakley and Chin, 2010).

Another important factor to take into account when studying the integration of immigrants is whether they live in enclaves. Living in enclaves can affect the costs and benefits of integrating into mainstream society, and a large number of studies show that living in enclaves can affect behaviours. However, the evidence on how enclaves affect outcomes is not conclusive, and a possible reason for this is that there are more important factors affecting the choices that immigrants make. For example, Edin et al. (2003) study the economic consequence of living in enclaves in Sweden. They conclude that living in enclaves improves labour market outcomes for less skilled immigrants, increasing their earnings gain. They also find evidence that suggests that members of high-income ethnic groups gain more from living in enclaves than members of low-income ethnic groups. However, these conclusions are not consistent across studies. For example, Grönqvist (2006) studies the long-term impact of living in an ethnic enclave for immigrant children and does not find evidence that enclaves affect earnings; however, he finds that enclaves affect education outcomes: the size of the enclave negatively affects the probability of graduating from higher education. On the other hand, Cortes (2006) compares eight and ninth grade immigrant children living in enclaves to immigrant children not living in enclaves and concludes that they do not perform any differently on their reading and maths tests. The fact that the evidence on the impact of living in enclaves is mixed suggests that the most important factors driving behaviour could be different from the location, although probably related or influenced by it. Different factors of key relevance could be missing, in particular related to the actual peer effects that are most relevant. A similar conclusion is obtained in other studies both with immigrants and natives :The residency factor may not be the most important one, and what matters most is who individuals really interact with. For example, Gould et al. (2004) conclude that, in the case of immigrant children, what matters most for their education outcomes is not the residential neighbourhood but the school to which they go to, and this idea is also supported by Dobbie and Fryer Jr (2011) for the case of

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non-immigrant minority children in the US. The network literature provides a convincing answer to these arguments, by focussing on the idea that what matters most are the social and economic networks of an individual.

1.3   The role of socioeconomic networks

Socioeconomic networks influence and shape many of the beliefs, decisions and behaviours of their individual members. Networks are a source for learning, for transmitting information about jobs or new technologies, a channel for informal insurance and risk sharing, and an influence on our personal decisions on education, career, political inclinations, interests or behaviours (Jackson, 2011).

Networks are particularly important for the more disadvantaged and poor, since they can provide emotional, financial and practical support in times of difficulties. Munshi (2014) discusses three key roles of social networks in developing countries, which are also key for poor and marginalised individuals living in developed countries. First, networks support business activity. Second, networks help individuals to find and secure jobs for their members. Third, networks provide social insurance for their members; these informal mutual insurance arrangements are particularly important for the poor, who have difficult access to formal insurance and loans. Munshi and Rosenzweig (2006) also provide an interesting insight into the importance of networks for individual educational and occupational decisions of the poor. They study the school choices made by children in Mumbai, which can be either in English (for white collar jobs) or in the local language (for working class jobs), and find that the increase in returns to white-collar jobs, which meant an increase in returns to English schooling, positively affected lower-caste girls to switch to English schools, while it did not affect lower-caste boys. Munshi and Rosenzweig (2006) show that this is due to the fact that lower-caste girls did not benefit from labour networks, whereas lower-caste boys did, and these networks channelled them into working class jobs (local language schools).

One network property that is important for economic outcomes, and very specially for economic outcomes of the poor, is "clustering", which can be measured as the frequency with which two friends of a given person are friends with each other (Jackson, 2014). This property is related to theories of social capital (Coleman, 1990; Putnam, 2000). Coleman (1990) suggested that network closure can affect outcomes:

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Networks with higher closure generate high trust between friends and allow for greater sanctions, which facilitate and increase incentives for cooperation, improving welfare. Putnam (2000) argued that community size and pro-social behaviours (informal help, volunteering) are often negatively correlated. Barnhardt et al. (2014) provide an example of the importance of network closure for the poor, and how limiting the possibility of contact with one's network (by moving to a new residency away from one's network) can affect the outcomes of network members. They evaluate a housing lottery in a large Indian city to move from a slum to housing on the city's periphery and find that, fourteen years after housing assignment, the movers report increased isolation from their networks (family and caste) and therefore lower access to informal insurance; in particular, relative to non-movers, movers are significantly less likely to know someone they can rely on for borrowing needs and report fewer informal transfers in the event of shocks. On the other hand, Bulte and Falco (2011) explore how living in close contact to one's network can have some negative effects. They study whether traditional sharing norms in kinship networks affect consumption and accumulation decisions of poor black households in KwaZulu-Natal, South Africa, and find some evidence that households could be trying to evade their network's "sharing obligations" by accumulating durables that are non-shareable at the expense of durables that may be shared and by reducing savings in liquid assets.

Social networks have an important impact on economic outcomes (Granovetter, 2005; Burchardi and Hassan, 2013), and particularly in the labour market, where networks play a substantial role regardless of the skill level, location, or population of workers (Jackson, 2011). There are strong theoretical foundations and increasing empirical evidence of the existence of robust and strong correlations in wages, employment, unemployment duration and welfare dependency of individuals within a network (Calvó-Armengol and Jackson, 2004, 2007; Kramarz and Skans, 2014; Bayer et al., 2008; Galeotti and Merlino, 2014; Bertrand et al., 2000), although the empirical evidence supporting these relations is still limited given the challenges of measuring network structures. The impact of networks is however dependent on networks' characteristics and on the position of an individual within that network. For example, Ioannides and Loury (2004) review the literature on the impact of networks on job information and conclude that the observed heterogeneity in the impact of networks suggests that networks are very sensitive to parameter values.

The role of socioeconomic networks has been particularly studied in the context of immigrants, for whom the quality of networks can be particularly important. According to Lazear (1999), a key characteristic determining the socioeconomic integration of immigrants is the quality of their network, because network quality determines the value of assimilation and is therefore a main factor defining the incentives to assimilate. A number of studies confirm the importance of neighbourhood quality and density of the members of one's own nationality or group (Patel and Vella, 2013; Munshi, 2003; Kahanec and Mendola, 2008; Beaman, 2012; Aslund et al., 2011). For example, Aslund et al. (2011) explore the impact of networks on education outcomes. They test and confirm the hypothesis that a principal factor in an immigrant child's educational outcomes is the ratio of highly educated adults of his own ethnicity residing in his neighbourhood.

In terms of labour outcomes, Patel and Vella (2013) study the relationship between the occupational choice of recently arrived immigrants in the U.S. and find that new arrivals tend to choose the same occupations as their compatriots, and that individuals who choose the most common occupation of their compatriots also benefit from positive and larger wage effects. Munshi (2003) finds similar results. He studies job networks among Mexican immigrants in the U.S., defining network size as the proportion of the sampled individuals of a particular origin-community in Mexico that are in the U.S. in a particular year, and finds that an individual is more likely to be employed and hold a higher paying non-agricultural job when his network is exogenously larger. Kahanec and Mendola (2008) also study the importance of networks for integration in the labour market and find that network structures matter and both weak ties and strong ties affect the probability that an individual will be self-employed (strong ties: family and members of own ethnicity) or have a paid employment (weak ties: natives in the new country)[1]. The quality of networks is measured differently in Beaman (2012), where the key networks are also made of own nationals in the immigrant country of origin, but the differences arise from distinguishing between tenured and new immigrants, both the size of the tenured networks and the number of new immigrants arriving at a similar time matter.

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[1]Weak social ties (going to clubs, doing voluntary work) facilitate job opportunities, whereas strong social ties (contact with family) facilitate self-employment opportunities. These conclusions support the ideas on weak and strong ties originally proposed by Granovetter (2005).

1.4 The Roma

The Roma in Europe

The Roma arrived in Europe from Asia between the 9th and 15th centuries. There is consensus among scholars that they originate from India, a claim supported by evidence of significant similarities in language (approximately 70% of the basic vocabulary of Romani is related to other Indic (Indo-European) languages, Hübschmannová (2002)) and other anthropological characteristics Carrasco-Pons and Bereményi (2011). The exact timing of the arrival of the Roma in Europe is debated: a growing number of historians claim that they arrived in the 14th and 15th centuries (Samer, 2003), but there is support for the hypothesis that their arrival began in the 9th century, or even earlier (old Macedonian legends place them in Macedonia in the 4th century B.C., and there are references to them in records from the current Slovak Republic in the 12th century (Crowe, 1994)). Estimates indicate that between 6.8 and 8.7 million Roma live in Europe (FRA, 2012).

The Roma are not a single group but diverse and varied communities: Transnational, transcultural, and, some anthropologists argue, "multiethnic"[2]. Apart from the differences between Roma groups, the Roma in Central and Eastern Europe are distinct from the Roma in western Europe in another important aspect: The political context experienced, i.e., socialism in Central and Eastern Europe. Socialism temporarily disguised the Roma disadvantage, but this disadvantage has become an acute problem in recent decades.

Despite these differences, the Roma (a large proportion of the members of all Roma communities) have commonalities: poverty, marginalization, low education levels, low participation in the formal economy, high dependency on the welfare state, and the continuation of all these problems through generations (Ringold et al., 2005). Another important feature that all Roma groups have in common is their self-definition as a distinctive identity (a particular Roma group, e.g. *gitanos*, in the case of Spain) as opposed to mainstream society (the non-Roma, e.g. *payos* in Spain). This resistance to integrate with the majority is a key factor in their socio-cultural survival, especially

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[2]The term "Roma" is originally the name given to the different Romani communities in Central and Eastern Europe, but I will follow the most extended use of the term "Roma" nowadays, as a synonym for Romani, i.e., including all Romani in Europe (Marushiakova and Popov, 2001).

in economically marginalized contexts (Barth, 1998): *[For the Roma, the] definition of their norms, beliefs, and social practices as opposed to mainstream society (...) confers a self-protection sense of identity and belonging before the perceived and experienced hostility of the mainstream* (Carrasco-Pons and Bereményi, 2011).

The Roma are the main poverty risk group in many Central and Eastern European countries, but data on them is scarce (McDonald and Negrin, 2010; Mathernova et al., 2012; Kahanec, 2009) and there are only a few cross-country studies presenting comparable data across countries[3]. UNDP has compiled the results from the most updated studies on the Roma[4]. According to this set of studies, about 90% of Roma surveyed live in households below national poverty lines, and 40% live in households where somebody went to bed hungry at least once in the last month. As for their labour market situation, less than one third of Roma have paid employment and their participation in the informal sector is on average four or more times more common than for non Roma. As for education, these studies indicate that only one out of two Roma children surveyed attend pre-school or kindergarten, only 15% of young Roma adults complete upper-secondary education, and Roma enrolment in primary education is rarely above 50%. From the housing evaluations reported by UNDP, they conclude that Roma communities often live in substandard housing; for example, about 45% percent of Roma live in households that lack at least one of the following basic housing amenities: indoor kitchen, indoor toilet, indoor shower or bath and electricity. With respect to health, one third of Roma respondents aged 35 to 54 reported health problems limiting their daily activities, 66% of Roma said they could not afford prescription drugs compared to 29 percent of the majority population, and15% of Roma children under the age of 14 are not vaccinated compared to four percent of children from non Roma households. Last, from

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[3]Some relevant cross-country studies are: Revenga et al. (2002) (Hungary, Bulgaria, Romania), one of the first studies on the Roma of this kind, and recent work and surveys conducted by the World Bank (de Laat and Bodewig, 2011) in Bulgaria, Czech Republic, Romania and Serbia, by UNDP, the World Bank, and the European Commission in 12 countries of Central and Southeastern Europe (survey results published in 2011), and by the European Union Agency for Fundamental Rights and UNDP in the following countries: Bulgaria, Czech Republic, France, Greece, Hungary, Italy, Poland, Portugal, Romania, Slovakia and Spain (FRA, 2012). In addition, all countries member of the Decade of Roma Inclusion 2005-2015 are compiling their own statistics on the Roma –see the decade national plans of each of the members at: `http://www.romadecade.org/decade-participiants-decade-countries`. An overview of these data collected by the different Decade countries is presented in McDonald and Negrin (2010).

[4]See `http://europeandcis.undp.org/data/show/D69F01FE-F203-1EE9-B45121B12A557E1B`

the data collected to measure discrimination, the studies presented by UNDP conclude that about half of the Roma surveyed said that had they experienced discrimination in the past year because they are Roma.

With respect to the integration of the Roma, there is agreement among policy makers and Roma experts that improving the housing conditions of the Roma is a key and necessary first step towards promoting Roma integration (FRA, 2010; ERRC, 2010). However, lack of data on the Roma means there is limited work on the impact of integrating the Roma –one exception is de Laat and Bodewig (2011), who calculate the positive economic benefits of integrating the Roma in terms of their impact on the national economies. Still, the difficulties of Roma integration can be inferred from other studies on integration of minorities and immigrants into European countries (Liebig and Widmaier, 2009; Kahanec et al., 2010; Kahanec and Zimmermann, 2010). A study by the OECD, Liebig and Widmaier (2009), concludes that in most OECD European countries[5] immigrants and the children of immigrants are worse off in educational outcomes and labour outcomes than non immigrants, and these gaps are not closed after various generations (as it happens in non-European OECD countries –e.g., USA or Canada). Kahanec, Zaiceva, and Zimmermann (2010) study the labour market integration of ethnic minorities in Europe, Roma included, and arrive to similar conclusions.

The Roma in Spain

The *gitanos*[6] or Spanish Roma arrived in Spain through the Pyrenees in the 15th century and were discriminated against as foreign, suspicious, and undesired since their arrival, as also happened in other western European countries in which they settled at that time (Leblon, 2001). The majority of the population accused the Roma of thieves, witchcraft and non-religious behaviours, increasingly so as the 16th century advanced (San Román, 1997).

Currently, the *gitanos* constitute the largest most excluded and disadvantaged ethnic minority in Spain (Laparra et al., 2007b). It is estimated that there are between 570,000 and 1,100,000 *gitanos* living in Spain (Laparra et al., 2007a), and around 10% of them are residents in the *Comunidad Autónoma de Madrid* or Region of Madrid.

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[5]An important exception is the UK (see also: Dustmann and Theodoropoulos (2010); Dustmann et al. (2010)).

[6]The precise name for the Spanish Roma is *gitanos calé* (San Román, 1997).

Their social and economic position is relatively good when compared to the Roma in Central and Eastern Europe, and Spain is frequently portrayed as a model of integration for the Roma; still, the gap between the Roma and other natives in Spain is large, and the social and economic inclusion of the Roma is not yet a reality in the country (Mirga, 2012). The largest economic improvements have occurred during the last few decades, and they have also been accompanied by important advances in their social integration, as both scholars and policy experts agree (San Román, 1997; Nogués-Sáez, 2010; Martín-Tejedor, 2001).

Roma inclusion in Spain has improved considerably in the last decades, as can be demonstrated by observing the evolution of their housing situation: According to a study conducted by Fundación Secretariado Gitano (FSG, 2007), the majority of Spanish Roma currently residing in Madrid live in flats. However, this was not the situation observed two decades ago: In 1991, only 36% of the Roma lived in flats (or houses), and most of those not living in settlements were living in public housing. This suggests[7] that most of the Roma living in flats had been rehoused by CPM (IRIS predecessor) or similar housing programs[8]. Fundación Secretariado Gitano conducted a second and comparable study in 2007 and concluded that by the year 2007 only 13% of Madrid's Spanish Roma were still living in settlements. They report that only 2.1% of those *gitanos* living in flats in Madrid in 2007 had acquired their flat from the free property market (purchase or rental), and 80.6% of them reported that they lived in social housing properties.

There is limited data on basic socio-economic indicators for the Spanish Roma, but a few studies provide approximate information (with varying degrees of quality[9]) –See MHSPE (2012) for a description of data on the Roma and sources. In Table 1.1, I have compiled a summary of basic data on the *gitanos* using information from different sources, among them: MHSPE (2012), Laparra et al. (2007a), Laparra et al. (2007b) ,and NSI (III Quarter 2011).

As Table 1.1 reports, 77.1% of the Roma in Spain are below 60% of the relative

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[7]The numbers provided in this study are estimates, but they are the best approximation we have to the situation of the Roma in Madrid at the beginning of the 1990s.

[8]The Region of Madrid and the municipality of Madrid have housing programs for low-income individuals, and the Roma can also have access to them. IRIS and CPM are distinct to any other program in that they exclusively target/targeted people living in settlements.

[9]The motive for this lack of data are the strict regulations in the Spanish data protection laws regarding the collection of ethnic data.

Table 1.1: Comparison of socio-economic indicators for the Spanish Roma

	Population living in Spain		
Indicators	Total	Roma	Immigrants
Education			
Percentage illiterate	2.2	8.7	–
Poverty indicators			
Percentage below 60% of the poverty rate median in Spain	16.9	77.1	29.6
Percentage below 30% of the poverty rate median in Spain	3.4	37.5	4.3
Labour			
Percentage of workforce working as employees	83.6	37.6	–
Family size			
Number of children per family	0.8	2.7	–

Notes: The statistics shown in the table are the best available approximation to the current situation of the *gitanos* (MHSPE, 2012). However, it must be noted that they have been obtained from different studies and do not correspond to the same or equivalent samples, and differ both in time range (between 2007 and 2011) and location of the sample (different cities). These studies also vary in their methods for data collection and analysis (details on the studies, data sources, sample and methodology, are provided in MHSPE (2012)).

poverty rate median in Spain (in contrast with 16.9% of the total population and 29.6% of immigrants) and 37.5% of the *gitanos* are below 30% of the relative poverty median (only 3.4% of the total Spanish population and 4.3% of non-nationals are below this 30% median)[10]. The Roma marry younger and have larger families. The latest estimates produced indicate that on average one third of the *gitanos* are younger than 15 years old, and Roma families have 2.7 children on average (the average Spanish family has 0.8 children)[11]. In terms of literacy rates, 8.7% of the Spanish Roma are illiterate, in contrast to 2.2% of the total Spanish population. The Roma work mainly in the informal economy, and thus estimates on unemployment rates are not reliable. A better approximation of the differences between Spanish Roma and non-Roma workers comes from estimates of the percentage of the Spanish workforce working as employees: 83.6% of the total Spanish workforce and 37.6% of the total Spanish Roma workforce. All these statistics are summarized in Table 1.1. It is important to note that these statistics are not directly comparable among them (they come from different studies with different methodologies for data collection and analysis); also, the data presented in each statistic

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[10]This data comes from a survey conducted by Foessa in 2007 (see Laparra et al. (2007a)).

[11]Estimates calculated from data collected in 2007.

has been collected at different points in time (between 2007 and 2011) and from different populations (different cities and samples). Still, these studies were designed with the objective of collecting basic and representative information on the Spanish Roma population in Spain, and they are the best approximation available to the current situation of the *gitanos* (MHSPE, 2012)[12].

The study of the Spanish Roma, and the study of their integration into mainstream, has been mainly the territory of anthropologists[13]. San Román (1997) evaluates the evolution of the Roma cultural and social norms since the 1970s. Other studies on the Roma living in slums or the evolution of the slums in Madrid, which had a majority of Roma people until recently, are Alonso (2005) (evolution of the slums in Madrid) and Buezas (1988), who studies the aspirations of the Roma in terms of integration with the mainstream society, finding a large gap between reality and aspirations. In addition, some scholars have studied the programs that the community of Madrid has been implementing on the Roma –see Nogués-Sáez (2010) (history and evolution of housing programs for Roma in Madrid) or Gamella and Pernas (2007) (IRIS program).

With respect to the education situation of the Roma, different studies provide an analysis or overview of its evolution or current situation, based on qualitative interviews. The most relevant work to us is Pernas (2005), which conducts a qualitative evaluation of the education situation of Roma children living in slums and rehoused in flats by subsidized housing programs (IRIS). They discuss the problem of low education levels in both context, and conclude that marginalization and poverty in slums lead to early school dropouts and early marriage, but they also talk about the contradictions faced by families rehoused in flats, not yet integrated to their new environment, and how this can lead them to hold on to their traditions (early marriage, early school dropouts). The authors agree with most scholars that the problem of the Roma education is one of both traditions and social norms and poverty and marginalization. Other studies focused on the education of Roma children are FSG (2010) and Santiago and Maya (2012). FSG (2010) provide an overview of the situation of Roma children in Primary School, presenting both qualitative and quantitative results, and Santiago and Maya

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[12]A large number of Spanish Roma have lived in slums but have been moving out of the slums through the last decades (Alonso, 2005; Nogués-Sáez, 2010). We will discuss the specific data we have for the families living in slums in Santiago (2015c).

[13]Exceptions to this are some recent experimental studies on inequality aversion in Roma communities (Cobo-Reyes et al., 2006; Branyas-Garza et al., 2005).

(2012) evaluate the problem of segregation of Roma children in schools and discuss its importance and possible ways forward[14] in four different Spanish cities, including a few districts in Madrid.

1.5 Discussion

It is believed that the socioeconomic environment in which an individual lives is important for his life's outcomes, and numerous studies investigating racial and ethnic groups find a clear relation between spacial segregation and negative individual outcomes. In particular, there are numerous well-documented studies on the analysis of how changes in residential location from poor ghettoised neighbourhoods to better neighbourhoods can affect an individual's socio-economic outcomes in all areas of life, such as labour, education or health (Cutler and Glaeser, 1997; Brooks-Gunn et al., 1993; Galster et al., 2007). A seminal paper on the negative effects of living in ghettos is Cutler and Glaeser (1997). They compare blacks living in the U.S. in more segregated versus less segregated environments and find significant differences in education, employment and single parenthood. However, finding a causality relation between environment and individual outcomes is empirically complicated because individuals and families generally sort themselves into neighbourhoods. The literature that studies neighbourhood effects is dedicated to this investigation. It usually analyses one of these two groups of individuals: Marginalised minorities or the poorest among natives in developed countries, and immigrants in their host countries. The benchmark studies on the field –those that are as close as possible to natural experiments or lotteries – tend to arrive to opposite conclusions depending on whether the population of study is poor natives or immigrants.

Some of the principal benchmark studies on the area of neighbourhood effects have been conducted in the U.S.A., evaluating the Moving to Opportunities program and its socio-economic impact on adults and children rehoused by the program both in the short-term (Kling et al. (2007), Kling et al. (2005), Duncan et al. (2008)) and in the long-term (Gennetian et al. (2012). The MTO studies generally conclude that residential changes have little or no effect on children and adults in general, except for

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[14]According to the authors, this is the first study on this issue in Spain.

an improvement in health outcomes when moving to better neighbourhoods. Similarly, Jacob (2004) also evaluates the impact of residential changes (caused by public housing demolitions in Chicago) on children education outcomes and finds a zero effect. Evaluations of the impact of residential changes from poor to richer neighbourhoods on labour outcomes are less frequent because they require long-term data; one such evaluation is Oreopoulos (2003), which finds also no effect of a rehousing program in Toronto on the labour market outcomes of its participants. Goujard (2010) finds that the relocation of welfare participants to less poor areas in Paris has some positive impact on their probability of obtaining a job, but this positive impact is driven by unstable jobs that do not allow the individuals to exit the welfare program.

Together with the neighbourhood effects literature on changes in residential areas through housing programs, the other main branch of the literature that studies neighbourhood effects is the literature on immigrants, especially the literature on resettlement programs of evacuated immigrants. The studies in this latter category are in general more supportive of the idea that changes in the environment have lasting effects in the social or economic outcomes of the individuals (Gould et al. (2004), Gould et al. (2011)). Gould et al. (2004) find that a high-quality elementary school has positive effects on future education outcomes; Gould et al. (2011) focus on long-run effects and find that children that were resettled to more modern environments were more likely to obtain higher education or marry older.

In sum, we could conclude that the literature that analyses the immigrant population suggests the opposite conclusion to the literature that studies housing programs for disadvantaged natives, and that this presents an important empirical puzzle and challenge. However, arriving at this conclusion is not clear because the two populations are very different and the immigrant population is heterogeneous. When this heterogeneity is taken into account, key characteristics that differentiate immigrants affect the outcomes observed greatly.

There are a number of reasons why studies on neighbourhood effects with immigrants can arrive to different conclusions from studies with native disadvantaged minorities. First, there are different mechanisms through which a change in the socioeconomic environment can impact an individual's social and economic outcomes, and it could be that these mechanisms differ in their intensity or are different for both types of populations, native minorities and immigrants, since the two populations differ greatly

and the immigrant population is particularly heterogeneous. Manski (1993) proposed three different mechanisms through which the socioeconomic environment can impact an individual's social and economic outcomes. He argued that a change in environment produces changes in an individual's peers and social networks, and this potential change of social groups can alter his behaviour because individuals tend to behave similarly to the individuals belonging to their social group, mainly for three reasons: An individual's behaviour is influenced by the average behaviour of the group (endogenous effects), by the average characteristics of the group (contextual effects), and by the factors he is exposed to, which are similar for the group members and can also be due to non-random group selection (correlated effects). A similar idea is also proposed by Akerlof and Kranton (2000), who argue that an individual can change his identity and preferences when there are changes in his social group. Moreover, in the particular case of labour choices, another important mechanism that can affect change is the information effects of changing neighbourhoods and peers (Granovetter, 2005). The change in neighbourhood can also affect an individual because it may be that the new residency allows him to stop being discriminated against on the basis of where he is living (Kain, 1968). Also, the new location may provide the individual with a different set of local goods, that can either be better or worse than those he had previously (access to schools, hospitals, transport). Last, the individual may feel more or less discrimination from their neighbours in the new place of residency, which can also impact his behaviours and actions. Understanding how these different mechanisms affect immigrants and natives could be an important first step to understanding how neighbourhoods can affect individuals with different characteristics, and which individual characteristics are the most determinant for being positively affected by housing changes.

An important reason why immigrants and natives could be affected differently by neighbourhood changes is that they are very different populations. It could be argued that immigrants tend to be a more heterogeneous group than the poor participating in social housing programs in developed countries. Immigrants arrive from different countries with different societies and cultures that may or may not be similar to the host country. They can even face a language barrier if their mother tongue is different from the one in their new country, and this can have an important impact on their economic and social integration, as Bleakley and Chin (2004) and Bleakley and Chin (2010) show. Immigrants self-select themselves into migrating, and are therefore a very

particular group of individuals; also, some countries now select the number and type of immigrants they allow in, through point systems or other methods. Immigrants can also have very different motivations for moving into the new country; for example, Cortes (2004) investigates how the different time horizons of immigrants and refugees (refugees cannot return) affect their economic outcomes and finds that, in the long-run, refugees earn more, work more and have improved their language skills more, a result in part attributed to having accumulated higher rates of human capital. As for poor natives, their starting point is very different from that of immigrants. Some authors argue that welfare dependency can be a drag to their economic integration. Dahl et al. (2014) find strong evidence for a causal link across generations in the transmission of welfare dependency: the receipt of a welfare program by one generation causes increased participation in the next generation.

Another plausible motive why the immigration and housing literatures generally reach different conclusions regarding the impact of neighbourhood changes could be that they study different types of neighbourhood changes. In particular, it could be argued that housing programs such as MTO do not generate as much neighbourhood variation as other immigration programs do. In Santiago (2015a) and Santiago (2015b), I evaluate a housing program for Roma slum dwellers in Madrid that provides a very dramatic change in neighbourhood quality. The fact that the results obtained in this evaluation suggest that some changes may be taking place for both adults and children provides some arguments in favour of the hypothesis that one important reason why a large number of studies that make use of public housing programs tend to find more limited impact than studies with immigrants is the fact that the residential variation is less dramatically different in those housing programs than it is in some resettlement programs for immigrants.

Another key difference between immigrants and ethnic minorities is how their identity interacts with their decisions. Assimilation requires making a choice of adjusting to a new identity, at least in part, and immigrants and ethnic minorities have different costs and benefits when making these adjustments. The importance of identity in economics, and particularly on the study of poverty, is now largely recognized (Barrett, 2005). The concept was pioneered by Akerlof and Kranton (2000). Akerlof and Kranton (2010) argue that identity can affect decision making in most areas of life; for example, it can have a large impact on education outcomes of children (Akerlof

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and Kranton, 2002). Austen-Smith and Fryer (2005) and Fryer Jr. and Torelli (2010) provide arguments that support the ideas proposed by Akerlof and Kranton (2000) in their analysis of a phenomenon called "acting white". Austen-Smith and Fryer (2005) argue that individuals face a tension between signalling their type to the outside labour market and signalling their type to their peer group: signals that induce high wages can be signals that induce peer rejection. The identity choices that immigrants and ethnic minorities have are different, and so are their costs and benefits. It could also be argued that differences in costs and benefits from integrating are much larger across immigrants than across ethnic minorities, and this would yield different outcomes when comparing results observed in both populations, and a larger variety of results when looking at immigrants. Some evidence of this is suggested by Constant (2014), who reviews the literature on how ethnic identity affects labour outcomes of individuals.

One important example of how the costs and benefits of integration can vary largely in the immigrant population is provided by studies analysing the importance for immigrants of living in enclaves. The evidence on how enclaves affect outcomes is not conclusive (Edin et al., 2003; Grönqvist, 2006; Cortes, 2006), and this suggests again that immigrants differ greatly from one another and have differing costs and benefits to integration. However, there is one specific classification of immigrants that is proving convincing in defining their characteristics and how they affect their integration: their networks' structures. The analysis of networks also provides some answers to the question of how natives are affected by residential changes.

The networks literature focusses on the idea that a key factor affecting the socioeconomic outcomes and integration of individuals is their socioeconomic network. The networks that immigrants and natives have are very different, and so is the effect of networks on them. Immigrants arriving in a country may have strong networks in it, and this will affect their integration (Patel and Vella, 2013; Munshi, 2003; Kahanec and Mendola, 2008; Beaman, 2012; Aslund et al., 2011). On the other hand, natives that are living in public housing and move from one residency to another are in a very different situation: In many cases, the move will lead to changes in the networks they originally had. Evidence of this is provided by Barnhardt et al. (2014), who find that individuals that changed residences through a housing program in India lost the strength of their original networks and had to create new ones –and this was detrimental to them. Understanding how networks interact with an individual decision making could shed light

on the understanding of why immigrants and natives react differently to neighbourhood effects.

One possible way to shed some light on how immigrants and natives differ when changing neighbourhoods is by studying particular minority groups. One of these minorities are the Roma in Europe. The Roma are a particularly interesting group to study because they are a minority that has been trapped in poverty for generations and is facing very important obstacles to integration; according to Kahanec and Zimmermann (2010), they are one of the minorities that is having more barriers to integration in Europe. A large number of factors are hypothesized to be causing this: Social norms (San Román, 1997), education (FSG, 2010; Pernas, 2005) and segregation at schools (Santiago and Maya, 2012), jobs, housing problems (FRA, 2010; ERRC, 2010) and their impact on aspirations (Buezas, 1988; Pernas, 2005), exclusion, stigmatization and discrimination (Nogués-Sáez, 2010; Kahanec et al., 2010), welfare dependency –the so-called "dependency trap" (Ringold et al., 2005; Ivanov et al., 2002). Most experts agree that it is the combination of all these factors that makes the integration of Roma people particularly difficult; they argue that the combination of poverty, marginalization and the Roma social norms are the main obstacle impeding their social and economic inclusion.

Even though the causes for the lack of integration of the Roma are multiple, there is general consensus that a possible bottleneck that could start helping the Roma improve their situation is helping them move out of the slums and into normalised housing and neighbourhoods. Most experts agree that living in segregated and marginalized settlements is a key factor that is keeping the Roma out of mainstream society (ERRC, 2010). Moving out of the slums and into normalised housing could modify their social norms by offering them new alternatives and altering their relation to the group they belong to (family, clan, slum neighbourhood), something that is particularly influential for the Roma (San Román, 1997). It could also have an important impact on their chosen identity (Akerlof and Kranton, 2000). It is for these reasons that studying the impact of a program that resettles Roma from slums into public housing could shed some light on some of the key differences between immigrants and marginalised minorities, in particular the roles that identity and networks' changes play in their social and economic outcomes.

Last, studying specific housing programs for the poor in developed countries is of interest because each housing program has its own peculiarities, and it is particularly

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interesting to investigate if the results obtained in a large number of studies in the US –especially in the benchmark studies conducted on the Moving To Opportunities program (MTO)–are observed in other contexts, given that research conducted on the MTO program concludes that changes in the neighbourhood and community do not have a significant impact on children and adults in general. If housing programs different to MTO and other reference studies in the US and Canada (Jacob, 2004; Oreopoulos, 2003) suggest that changes in neighbourhoods do have some impact on individuals, as it happens in some key works in the immigration literature (Gould et al., 2004, 2011), this could potentially help to understand why these differences are observed when studying immigrants and non-immigrants, and which of the different hypotheses discussed here may be a potential reason for these differences observed.

Chapter 2

Context, program, data and field work

2.1   Introduction

In this chapter we present a detailed description of our research context and IRIS housing program. We also show the data collected and discuss our main hypothesis and conclusions from the preliminary field work and statistics derived from our data. The analysis of this data will be presented in chapter 3 and chapter 4.

2.2   Research context

The Spanish Roma or *gitanos*[1] constitute the largest most excluded and disadvantaged ethnic minority in Spain (Laparra et al., 2007b). It is estimated that there are between 570,000 and 1,100,000 *gitanos* living in Spain (Laparra et al., 2007a), and around 10% of them are residents in the Region of Madrid[2].

Data on basic socio-economic indicators for the Spanish Roma can only be inferred approximately based on different studies with varying degrees of quality[3]. The

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[1] Anthropologists distinguish different Spanish Roma groups residing in Spain, and the literature discusses and argues different possible classifications and terminologies –see San Román (1997). I control for these distinctions in my analysis, but have chosen to use the term *gitanos* and Spanish Roma indistinctly for all the Roma born in Spain that are Spanish nationals and/or are not recent immigrants, which is the way they are addressed as as a group. I exclude from my work all the Roma that have recently arrived from other European countries (such as Romania), which are different from the Spanish Roma and are not the objective of our study.

[2] *Comunidad Autónoma de Madrid.*

[3] See MHSPE (2012) for a description of data on the Roma and sources.

Table 2.1: Comparison of socio-economic indicators for the Spanish Roma

	Population living in Spain		
Indicators	Total	Roma	Immigrants
Education			
Percentage illiterate	2.2	8.7	–
Poverty indicators			
Percentage below 60% of the poverty rate median in Spain	16.9	77.1	29.6
Percentage below 30% of the poverty rate median in Spain	3.4	37.5	4.3
Labour			
Percentage of workforce working as employees	83.6	37.6	–
Family size			
Number of children per family	0.8	2.7	–

Notes: The statistics shown in the table are the best available approximation to the current situation of the *gitanos* (MHSPE, 2012). However, it must be noted that they have been obtained from different studies and do not correspond to the same or equivalent samples, and differ both in time range (between 2007 and 2011) and location of the sample (different cities). These studies also vary in their methods for data collection and analysis (details on the studies, data sources, sample and methodology, are provided in MHSPE (2012)).

motive for this lack of data are the strict regulations in the Spanish data protection laws regarding the collection of ethnic data. Still, compiling the numbers provided by different studies we can obtain a fairly reasonable picture of the situation of the *gitanos*, as shown in Table 2.1.

According to a survey conducted in 2007[4], 77.1% of the Roma in Spain are below 60% of the relative poverty rate median in Spain (in contrast with 16.9% of the total population and 29.6% of immigrants) and 37.5% of the *gitanos* are below 30% of the relative poverty median (only 3.4% of the total Spanish population and 4.3% of non-nationals are below the 30%). The Roma marry younger and have larger families. The latest estimates produced indicate that on average one third of the *gitanos* are younger than 15 years old and Roma families have 2.7 children on average (the average Spanish family has 0.8 children)[5]. In terms of literacy rates, 8.7% of the Spanish Roma are illiterate, in contrast with 2.2% of the total Spanish population. The Roma work mainly in the informal economy, and thus estimates on unemployment rates are not reliable. A better approximation of the differences between Spanish Roma and non-Roma

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[4]*Survey Foessa 2007*, see Laparra et al. (2007a)

[5]Estimates calculated from data collected in 2007.

workers comes from estimates of the percentage of the Spanish workforce working as employees: 83.6% of the total Spanish workforce and 37.6% of the total Spanish Roma workforce. All these statistics are summarized in Table 2.1. It is important to note that they are not comparable: They come from different studies, with different methodologies for data collection and analysis. Also, the data presented in each statistic has been collected at different points in time (between 2007 and 2011) and from different populations (different representative cities). Still, the studies were designed with the objective of collecting basic information on the total Spanish Roma population in Spain, and they are the best approximation available to the current situation of the *gitanos* (MHSPE, 2012).

Data for the Roma in Madrid and, more specifically, for the Roma living in settlements, is even scarcer (mostly collected for the purpose of creating censuses). IRIS collects some basic data when they start to work in a slum. In Table 2.2, we show statistics on illiteracy rates and declared monthly income that have been collected by IRIS staff in the slums. It is important to note that this data comes from different slums, depending on the year for which it is recorded, and that it includes all people living in the slum that provided IRIS with this information. The population for each year is not comparable. The majority of these people are Spanish Roma, but in the later years (2010 and 2011) there is an increasing percentage of people from other ethnicities or origin (especially immigrants). For example, one of the slums included in the data shown (corresponding to the years 2010 and 2011), Ventorro, has a population composition that is different from that of the other slums and has better educated individuals[6]. Also the slum of Santa Catalina was considerably richer on average than the rest, which does not translate in the collected data on *Monthly income declared* but is probably driving part of the differences in the illiteracy rate for 2010 too.

The data shown in Table 2.2 suggests that illiteracy rates for the Roma slum-dwellers have decreased considerably. This trend is also observed in the Roma population in general (see MHSPE (2012)), so despite the limited reliability of the indicators presented in Table 2.2 (for the reasons stated above) we can presume that the trend in illiteracy rates is downwards also for the ever diminishing numbers of *gitanos* living in slums.

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[6]The families living in this slum have not been rehoused by IRIS yet, and are therefore not included in our sample.

Table 2.2: Evolution of literacy and poverty in the slums

Slums data from IRIS records (individuals ages 17 and above)					
	2003	2006	2008	2010	2011
Illiteracy rate					
Illiterate	0.62	0.30	0.22	0.15	0.17
Monthly income declared					
Below 601 €	0.66	0.68	0.75	0.61	0.61
Below 1081 €	0.94	0.96	0.95	0.89	0.90
Item response	*(0.34)*	*(0.54)*	*(0.72)*	*(0.46)*	*(0.38)*

Notes: Entries in the table correspond to the means of the relevant variables and were calculated adding up the average values for the slums for which data was collected on the particular year; in 2003, information was collected for the slums: El Cristo, Pitis, Huertos, San Fermín, Santa Catalina, Trigales, Barranquillas, and Salobral; in 2006, data was gathered from: Santa Catalina, Trigales, Barranquillas, Salobral, and Ventorro; in 2008, from Santa Catalina and Ventorro; in 2010 and 2011, from Santa Catalina, Ventorro, Gallinero, Antonio Cabezón, Manuel Villarta, Bajo Gran Vía, Las Castellanas, and San Nicasio. The variable *Illiterate* uses the sample of individuals age 17 and above. *Monthly income declared* refers to total family income and the item response rates are provided in parenthesis in the last row of the table.

In Table 2.2 we also show data for reported income. We can conclude from the data that they declare a below the minimum income salary. Although the figure is not reliable (the families reported this information to IRIS with no proof and they also have an incentive to report low incomes), it is credible and reinforces the outcomes presented in Table 2.1 for the total Spanish Roma population.

Our study focuses on the Roma that are participating in IRIS housing program, which correspond to 12-18% of the total number of Spanish Roma living in Madrid, according to IRIS estimates (IRIS, 2010). All these families come from settlements and can be fairly considered representative of the Roma in Madrid, bar the exceptional better off (which are generally low low-middle class at most) because the majority of people living in settlements in Spain used to be *gitanos* and a large number of them lived in settlements (as we will argue in detail in section 2.3). This trend has only changed recently, when most *gitanos* are living in flats (the majority in public housing). At present date, very few *gitanos* still live in slums in Madrid and there is only one large settlement in the Region, Cañada Real[7], and the largest population currently living in

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[7]This settlement has around 11,000 people (IRIS sources) and different areas with different poverty

this settlement are immigrants.

2.3   Description of IRIS Housing Program

Program overview and timeline

IRIS rehousing program for slum-dwellers is a program run by the government of the Region of Madrid or *Community of Madrid* [8]. The program provides affordable housing (subsidized rental flats for life) and social work support to individuals living in slum settlements or slum-like public housing complexes. It is currently offering its services to 2,254 families (8,972 individuals)[9], that have been rehoused from settlements in the Region of Madrid between the years 1987 and 2011[10]. These families are mostly Spanish Roma –more than 90%, according to IRIS (IRIS, 2010).

In the remaining of this section we describe IRIS program in its context. We first provide an overview of the program results and the context in which it operates: The slums it has resettled (timeline and a discussion of the differences across the slums, especially across those from which we have drawn our sample), the characteristics and location of the flats in which families are rehoused, the conditions for obtaining access

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levels and urban constructions (from decent areas with better quality houses to extremely bad slums). The worst part of the settlement is a slum nearby called *El Gallinero* (400 people, approximately). The majority of families living in *El Gallinero* are Roma from Romania, which are not the subject of our study.

[8]IRIS –the *Instituto de Realojamiento e Integración Social* (*Institute of Rehousing and Social integration*)– is the public institution in charge of the Region of Madrid's resettlement program. It is part of the *Department of the Environment, Housing and Urban Planning* at the government of the Region of Madrid. The Region of Madrid or *Community of Madrid*, officially known as the *Autonomous Community of Madrid* or *Comunidad Autónoma de Madrid* (Region of Madrid), is one of the nineteen *Comunidades Autónomas* or "Regions" that conform Spain. The Region of Madrid consists of 179 municipalities (*municipios*), one of them the municipality or city of Madrid.

[9]Numbers refer to December 2011, the time in which we compiled our data on program beneficiaries.

[10]IRIS program was created in 1998, but it was the successor of a previous housing program that had been running in Madrid since 1987, and so IRIS program is currently in charge of families that have been resettled from slums between 1987 and 2011. For the purpose of our work, we will refer to both programs IRIS and its predecessor as IRIS.We take this approach for two reasons: First, IRIS is now in charge of most of the families that were rehoused by that previous program. Second, we will sometimes present statistics of all the families rehoused by both programs (all families rehoused from 1987 to 2011), but we will mostly focus on those rehoused after 1999 because we have more data on them and because our study focusses only on families rehoused by IRIS (our sample consists on families rehoused after the year 2000).

Figure 2.1: Number of families living in slums and rehoused by IRIS (1999-2011)
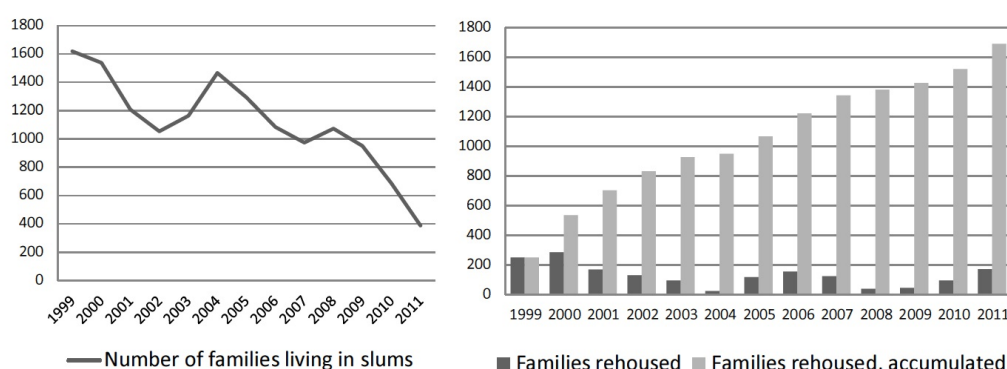
Notes: The figure on the left presents the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. The figure on the right presents the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). Data entries are provided in **??**.

to these flats, and the allocation procedures. We then discuss in detail how the Roma participating in this program are representative of the Spanish Roma (section 2.3).

Census of slum dwellers and resettlement operations (1999-2011)   The number of families censused in slums in the Madrid Region each year from 1999 to 2011[11] is shown in Figure 2.1 (figure on the left). The corresponding values are presented in Table 2.3, column 2. This data is collected by IRIS yearly. According to this data, the number of slum dwellings has decreased and almost disappeared in the Region. In 2011 there only remained around 400 registered slum dwellings in the Region of Madrid, down from the 1,600 households living in slums registered in IRIS records in 1999[12].

The most salient peak in the graph showing slum-dwelling counts is observed in the years 2003-2004. This considerable increase in the number of individuals living in slums is due to the magnet effect that the intervention of IRIS in the slum Salobral provoked: In 2001, IRIS started to resettle the families in Salobral, but they were fi-

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[11]As explained above, we focus mainly on families rehoused after 1999 (our sample is drawn from this subpopulation).

[12]The only slums not included in these counts are the slum Gallinero and the settlement Cañada Real (according to the head of the censuses department at IRIS). We present a discussion of these diminishing numbers in section 2.3.

Table 2.3: Number of families living in slums and rehoused by IRIS, 1999-2011

| Year | Number of families | | |
	Living in slums (census)	Rehoused by IRIS (Yearly)	Rehoused by IRIS (Accumulated)
1999	1618	249	249
2000	1537	285	534
2001	1207	168	702
2002	1054	130	832
2003	1164	94	926
2004	1466	23	949
2005	1292	117	1066
2006	1084	155	1221
2007	974	123	1344
2008	1073	38	1382
2009	950	45	1427
2010	685	94	1521
2011	388	170	1691

Notes: Entries in column 2 present the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. Entries in columns 3 and 4 represent the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). The data is presented in Figure 2.1.

nancially constrained by the fact that they were completing the resettlement of families from another large slum (Pozo del Huevo) –and also had a smaller budget for that year– and they slowed down the operation in Salobral. This created a magnet effect and IRIS temporarily had to halt the resettlement of Salobral. They started the second round in 2006 (we have distinguished these two phases as Salobral-I and Salobral-II in our survey data)[13] and completed the operation in 2007.

We present the number of slum-dweller families that have been rehoused by IRIS from 1999 to 2011 in Figure 2.1 (figure on the right) and Table 2.3 (columns 3 and 4) . We extend this dataset in Table A.4 in the Appendix to show the total number of families that have been rehoused by IRIS (or its predecesor[14]) from 1987 to 2011. The number of families rehoused by year varies, depending both on demand and supply and on budget availability. As the data in Table A.4 shows, 75% of the families were rehoused after 1998. The most intense rehousing period was between 1999-2001, in which 25% of the total number of households were rehoused (536 families). In the periods 2000-2005 and 2005-2010, a similar number of families were relocated per period.

Slums

Description of the slums

There are a total of 101 slums registered in IRIS records. They vary greatly in size, from only 1 household to a large settlement of 300-500 families[15]. We have chosen to classify as *slum* any settlement that IRIS has intervened in to conduct resettlement operations. This includes both temporary housing and a single family living in a slum-dwelling in a street (we will discuss the main differences of each category below).

Most slums in which IRIS intervened were small in size and the majority were located in the municipality of Madrid (Madrid city), although a number of the settlements were at different places across the Region of Madrid. Table A.3 in the Appendix

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[13]The condition imposed of proof of residence before 12/31/2004 was created for this second round, to eliminate a large part of the new comers. IRIS has been very careful since then with imposing proof of residence conditions, and the cut 12/31/2004 has been generally maintained for the resettlement operations that followed Salobral. This benefits our analysis, ensuring better comparability of the families.

[14]Some of these families were rehoused by IRIS antecedent, the CPM.

[15]We have given a code number to each of these 101 slums and their location (area in the Region of Madrid, municipality, and district) to refer to them in the figures presented in this chapter. The codes are listed in section A in the Appendix.

presents a list of the 101 slums and details of their location (district, municipality, and area in the Region of Madrid) and the number of families that were rehoused by IRIS from each slum. We summarize this information in Figure 2.2.

Figure 2.2: Slums and slums locations: Number of families resettled from each
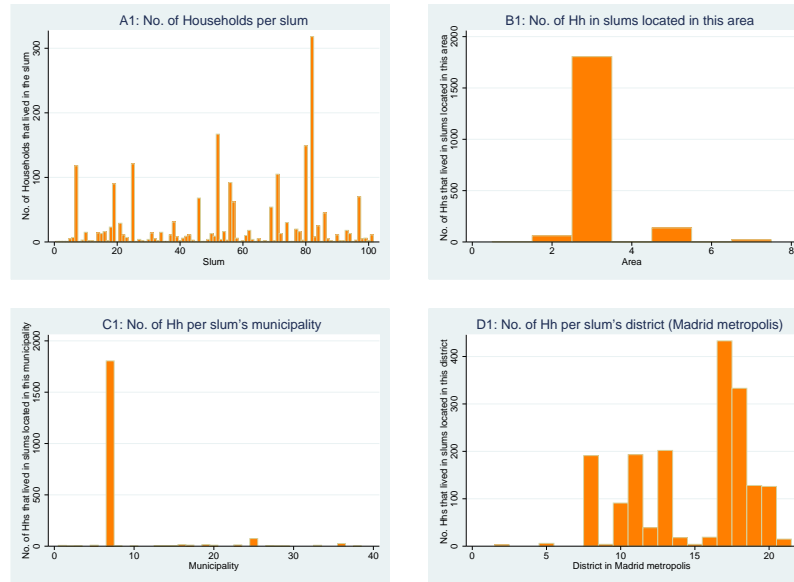
Notes: The four panels present the number of households that IRIS has resettled classified according to the slum in which the families resided. *Panel A1* classifies the households according to the slum in which they were living; *panel B1*) classifies the households according to the area in the Region of Madrid in which the slum was located; *Panel C1* classifies the households according to the municipality in the Region of Madrid in which the slum was located, and *panel D1* classifies the households according to the district in the municipality of Madrid in which the slum was located. Data are from IRIS Administrative records (retrieved in May 2010). The codes used for each slum, area, municipality, and district are listed in section A in the Appendix.

Population size of the slums   Figure 2.2 shows the number of households per slum (*panel A1*) and per slums located in each area in Madrid Region (*panel B1*), in each municipality in Madrid Region (*panel C1*), and in each district in Madrid municipality (*panel D1*)[16]. It is important to note that we are measuring *population size of the slum* not as the actual number of individuals or families living in the slum but as the *number of individuals or families that IRIS rehoused from that slum* (we lack information on

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[16]See section A for a list of the codes assigned to each slum, area, municipality, and district in autorefssize.

the actual numbers[17]). According to this measure of the population size, the number of households varies greatly in the different slums (see *panel A1*). More than 80 of the 101 slums resettled by IRIS had less than 35 families. The greatest slum in size was Salobral[18] (*code 82* in *panel A1*). IRIS rehoused 318 families from this slum, accounting for 15% of the total number of rehoused families. A very small minority of slums account for around 5-8% of the total population rehoused and the majority of settlements do not represent more than 1-2% of the total number of families rehoused.

Location of the slums   The majority of households (more than 90%) come from slums that were located in the municipality of Madrid or Madrid city (*code 3* for Area, *code 7* for Municipality). Almost all the rest of the families come from slums that were either in the South or in the East of Madrid city, according to our Areas classification (both South and East are relatively close to the city). A few settlements were in municipalities located in the Southwest in smaller towns or big villages. Of this latter group, as we can see on *panel C1*, the majority were in the Southwest municipality of Móstoles (*code 25*), which is a residence area similar to the South of Madrid city.

The distribution of the slums located in Madrid city is also skewed towards the South. The majority of the families were concentrated in the central South or Southern districts of the city (poorer than the north) and only around 10% of the families were in settlements located in the Northern district of Fuencarral - El Pardo (*code 8*), in poorer areas with no constructions or poor neighbourhoods too.

Resettlement procedures, timeline and duration

The number of families resettled every year varies –see Table 2.3. In Table 2.4 we present the timeline of the resettlement operations of some of the largest slums that were "cleared" between the years 1999 and 2011. Most of these slums have a clearly defined beginning and end,the only exception being the slum Salobral (labelled *S* in Table 2.4), which was "cleared" in two rounds[19]: First, during 2001-2002; second, in the years 2006-2007 –as we discussed above, the resettlement operations of Salobral

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[17]Except for the slum Salobral (details further below).

[18]Salobral was the greatest slum in Europe at the time.

[19]We take this into account in our analysis.

Table 2.4: Resettlement timeline for main slums, 1999-2011

Year	J	C	R	PH	CL	S	PC	V	C	M	SC	Others	Number of Families
1999	X	X	X									X	249
2000		X	X	X	X							X	285
2001				X	X	X						X	168
2002				X	X	X						X	130
2003					X							X	94
2004												X	23
2005							X	X				X	117
2006						X	X					X	155
2007						X	X					X	123
2008									X			X	38
2009									X			X	45
2010										X	X	X	94
2011										X	X	X	170
Number of Families	58	106	173	117	157	319	49	70	79	66	99	398	1691

Notes: This table presents the resettlement years for each of the main slums resettled between 1999 and 2011. Entries marked with an X refer to years in which IRIS was conducting resettlement operations in the slum (families were being rehoused). The second title row corresponds to the main slums, each letter representing a different slum: Jauja (J), Celsa (C), Rosilla (R), Pozo del Huevo (PH), Cerro de las Liebres (CL), Salobral (S), Plata y Castañar (PC), Vereda Pan y Agua (V), Cañaveral (C), Mimbreras (M), Santa Catalina (SC). Data are from IRIS Annual Reports (1999 to 2011).

had to be halted temporarily; since people expected the operations to continue, new families moved into the slum to settle in it.

There are two potential sources of family "self-selection" bias related to the slums resettlement procedure: The timing of the clearance years chosen for each slum, and the timing of the rehousing year chosen for each family within a slum[20]. We will discuss these issues in turn.

Decision on the resettlement timing for the slums   The decision of intervening in a particular slum (the decision on when to "clear" a slum) is, according to IRIS staff, first political and then budget-dependent. We will first describe the process of resettling the families from a slum and then discuss the different arguments for the selection of which slums to clear first.

We first start describing the process of resettling families from a slum. As we discussed and can observe in the slums resettlement timeline shown in Table 2.4, once a slum is selected for clearance and resettlement, IRIS will start the resettlement operations until all eligible families have been rehoused. There are small groups of families that are evacuated independently (we treat them as small slums, as is done in IRIS registries too), but the majority of the families follow the normal procedures that we have just explained.

The key question then is how does IRIS decide which slums are resettled when. In particular, what matters most to us is whether the choice of which slums are resettled first can be reasonably argued to be independent of the family characteristics of the slum-dwellers. In order for this independence to be credible, we need two things: First, the decision to resettle a slum is not based on how much the people in the slum need it (poverty, extreme marginalization, bad location, dangerous place to live in); second, the decision to live in a particular slum instead of another is not a choice made by the individuals due to characteristics of the slum (better access to schools, for example) or due to the fact that they know it is going to be resettled. According to IRIS staff, "these two things are true facts": The decisions on which slums to clear first are independent of the characteristics of the population living in the slums and there is no self-selection of the families into the slums. We will now discuss the arguments that support these

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[20]An additional self-selection bias could arise if the families had a choice of the destination location, which we will discuss when we present data on the location of the destination flats.

claims.

The first issue we need to understand is what are the real motives of the government of the Region of Madrid for choosing which slums to clear first. The popular belief with these clearance operations is that they are all motivated by the needs of constructors (construct flats, offices, etc.). IRIS staff claims this is true, and even the politically accepted version is related to maintaining the city clear of slums: The governments of the Region and the municipalities do not want slums on view. From our interviews with staff and other experts on the issue, we can conclude the following: First, the timing of the clearance operations is a political decision that has to be proposed, discussed, agreed, and signed, by both the government of the Region of Madrid and the government of the municipality/municipalities where the slum is located. Second, the reasons are mixed. According to IRIS staff, they are mainly due to urbanism motives (construction in the area) and the desire to take a settlement out of the public view or to control a settlement when it is starting to create problems (crime, drugs). Another motive is the limitation of the budget: The clearance process is sometimes halted when there are not enough funds[21].

In sum, the arguments offered suggest that the decisions of when to resettle each slum are mainly driven by political needs and decisions and by the government's budget allocations to IRIS.

Next, we will describe what we know about how families choose to settle down in a particular slum. According to IRIS, the decision is only based on one thing: "having friends or family living there"; i.e., word of mouth. We asked a number of families about this and they all gave us the same answer: "We had relatives in the slum". This suggests that each slum had different "types" of people, and thus does not allow us to consider all families similar on average, despite the fact that the conclusion from our qualitative work is that they are: The families are all Roma, poor, living in very marginalized locations, and the main differences between the families are income (how well the father is doing in the informal economy) and the following observable characteristics (that we have collected in our survey): How educated the parents are, and the family ancestors[22]. The difference that concerns us slightly more is the influence of drug trafficking, which

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[21]For example, the slum Salobral started its clearance in 2001, but the process stopped due to financial constraints: Another slum was being resettled at that time too. The operation did not resume until 2005.

[22]Origin plays a key role in the social and economic integration of the families. Also, the families with ancestors from regions different than Castilla and Madrid (Central Spain) are poorer on average.

created a dangerous and ghetto-style environment in some slums. However, we have limited our sample to exclude families that had lived in the worst slums (rehoused before 2000), although some of the slums in our dataset had some drug problems.

The weakest point in our argument in favour of the similarity on average of the different individuals living in the different slums is that it could be possible for families to self-select by moving to a particular slum when they know that it has been chosen for resettlement. In general this has not happened because IRIS requirements are strict on the proof of residence and the time the family must have had to be settled in the slum in order to qualify for IRIS Housing Program[23]. Another argument against the similarity of families living in the different slums is that, even if they started being similar, maybe living in a particular slum has affected them. We cannot argue against this convincingly apart from making use of the fact that we have excluded from the sample the most differentiated slums (those most affected by drugs).

Decision on the resettlement timing for each family According to the Head of Housing at IRIS, no family is given any preference over others and the resettlement operations are conducted in an orderly and systematic manner, as initially planned and independently of the families' needs or preferences. Still, some factors influence the availability of flats and exceptions can be sometimes be made, as we explain now.

Once a large slum is chosen to be cleared, IRIS divides the slum into areas to organize the order of the clearance process. In principle, a plan is set on what areas will be cleared first according to how it is best to dismantle the settlement (the slum dwelling is destroyed with a bulldozer at the same time that the family is given the keys to their new house). The plan is followed rigorously on most occasions[24]; we have proof of this for the second intervention in the slum Salobral, because the planning and clearance operations were recorded in written text for this case, and we have verified and confirmed that the described procedures were applied. This recorded plan for the second clearance operation of the slum of Salobral is shown in Figure 2.3: The numbers inside yellow

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[23]There could be exceptions to this, although IRIS staff claims that this is not the case. The only known exception is the slum Salobral ,which saw its population increase considerably after clearance stopped for a few years.

[24]One exception could happen if a family takes longer than others in getting all the papers ready (proof of residency, etc.). This does not usually happen because a long time passes between the moment IRIS announces they will start resettling families and the day they start doing it (also, IRIS staff is present in the slums daily/weekly and helps the families with this paper work).

Figure 2.3: Clearance plan of the slum Salobral
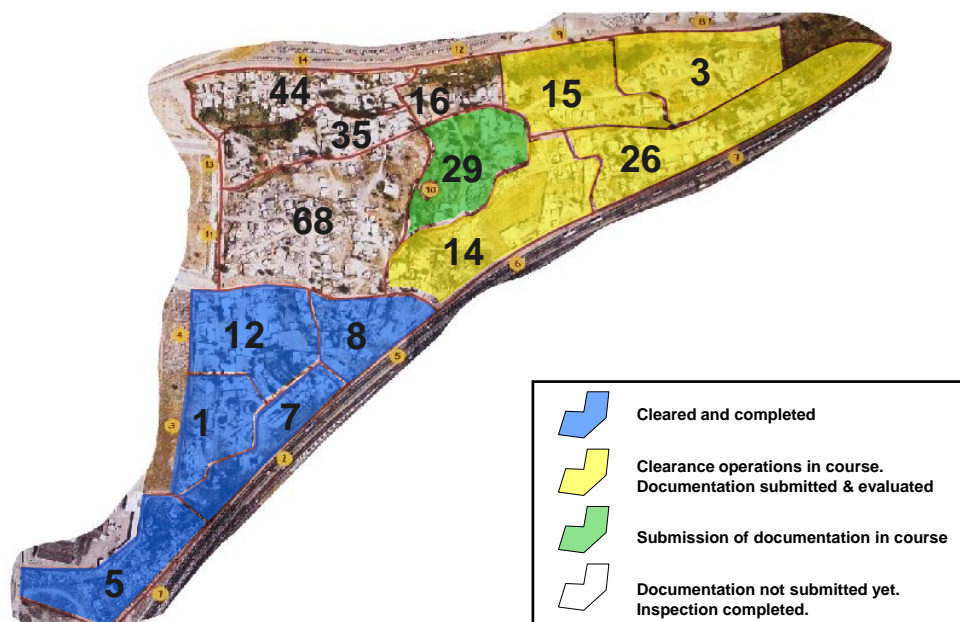
Notes: The figure shows the clearance status of the slum Salobral on February 2007. The numbers shown in yellow circles correspond to the order in which the slum was cleared. Number 1 corresponds to "sector 5" (number 5) and is located at the entrance to the slum.

circles in Figure 2.3 correspond to the order in which the areas (slum dwellings) were cleared; the entrance to the slum was beside number 1, which corresponds to sector number 5 (the larger number). The figure corresponds to the status of the clearance process on February 2007, around the middle of the operation (this clearance operation was completed between 2006 and 2007); the sectors in blue are "cleared and completed", the ones in yellow are "in course", the ones in green are " currently submitting the required documentation", and the ones not marked have not yet been requested to submit the documentation.

The only other additional factor that can determine the timing for a family to leave the slum first is the supply of flats. This can be a constraint in some cases, although the only valid limitation for IRIS to assign a flat to a family is number of rooms needed and flat floor; for example, if a family needs a large flat (large families) or if it needs

a flat on the first floor (an elderly that has problems taking the stairs), then IRIS may have to delay/bring forward the rehousing date for that family if it does not have any flat with the required characteristics at the present moment. According to the Head of Housing at IRIS, this happens on very few occasions. Despite these arguments, it could still possible that a family with "certain characteristics" was actually given preference, even though IRIS claims that this is almost never the case ("because favouritisms lead to problems"). However, this is not a serious problem for us because, even if there was some preference given to some families over others in a particular slum, this would only affect whether a family is rehoused on week 1 versus week 2, and not the year in which it was rehoused (with the exception of families rehoused between December and January).

Characteristics of the slums

The families rehoused at different points in time come from different settlements (see Table 2.4). It is thus important to understand if there are differences between the families living in slums resettled in the first years (starting from 1999) and those living in slums resettled afterwards.

In order to understand the potential differences between the 101 slums, we first conducted interviews with experts from IRIS and other experts on the Roma[25]. The purpose of these interviews was to gather information and material to classify the slums into different groups according to key observable differences. We also wanted to understand how to best frame our sample and calculate our sample size.

All the people we interviewed stated that there were no observable differences between the Roma living in one or other slum ("They are all poor and marginal; differences are mostly observable between individuals, not between slums: some families are a little richer, some a little poorer, and a very small number were (usually minor) drug dealers"). IRIS experts however agreed on two key differences: The families coming

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[25]We interviewed members of staff that have worked at IRIS for more than 10 years and have expertise in the program participants and their lives and experiences both in and out of the slums. We also gathered information from interviews with the NGO Fundación Secretariado Gitano and from other Roma sources and we conducted qualitative comparisons of different Spanish Roma, both living in slums and living in IRIS flats. We interviewed the head of a housing program similar to IRIS program, staff at the NGO Fundación Secretariado Gitano, and Roma from different social groups (richer than the average Roma participating in IRIS program).

from some of the slums that had been "dismantled" before 2003 (approx.) were in a "worse situation" than those rehoused afterwards. They described "being in a worse situation" as being less educated and showing more marginal behaviour and more difficulty and willingness to integrate. They attribute this observable difference to two possible motives: First, the time trend (the Spanish economy grew rapidly during the 1990s and 2000s); second, drugs. The really bad slums were those in which drugs were infiltrated during the 1980s and 1990s. Some Roma clans took up the business and brought drugs into the slums, and this complicated life in the slums and affected all people living in these slums (violence, drug addiction, fear). In particular, some of the key problematic slums were those from which families were resettled during the years 1998-2000: Rosilla (R), Cerro de las Liebres (CL), and Celsa (C)[26].

The other main difference between the Roma is the origin of their ancestors (the Spanish region or area from which they originated), which divides them into mainly four groups (in IRIS population): Castellanos (three regions in the centre of Spain: the two Castillas and Madrid), Extremeños (South-West region limiting with Portugal), Gallegos (North-West region limiting with Portugal), and Portuguese. This categorization is agreed by anthropologists (San Román (1997), Gamella and Pernas (2007)) and is also observed and was mentioned by experts from IRIS.

Despite the results from the qualitative interviews, we decided to collect information on a few indicators on characteristics that we considered relevant for our study. These indicators are: if the slum had access to potable water and had legal access to electricity, if the slum was in Madrid city, if the slum had been existing for more than 10 years (to ensure comparability), if there were serious drug problems in the slum, if the slum had easy access to a nearby town (walking distance), if it had easy access to a nearby school (walking distance), and if the slum was originally a constructed public housing (more details on this distinction will follow). We collected this information from different experts at IRIS for all the slums that are part of our survey data. We present these indicators for each slum in Table 2.6 and summarize them in Table 2.5. We do not present the indicators *the slum had access to potable water* and *the slum had legal access to electricity* because none of the slums had these features (except those that were constructed public housing). All the slums in this list were created more than 10 years ago (the motive for the 87% value shown in Table 2.5 is that we could not

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[26]Letters in parenthesis refer to the codes used in Table 2.4.

Table 2.5: Slums characteristics. Slums in the survey data

Characteristics	Slums		Families	
	Total	Percentage	Total	Percentage
Slum in Madrid city	21	0.68	481	0.89
Old settlement	27	0.87	478	0.88
Drug problems	6	0.19	26	0.05
Town access	16	0.52	257	0.47
School access	11	0.35	73	0.13
Construction building	6	0.19	450	0.83

Notes: Data entries in this table summarize the results shown in Table 2.6. The information used to compile the values of the variables shown in this table was obtained from interviews with IRIS staff. (See Table 2.6 for more details on the variables.)

confirm this information for a few minor slums that were small settlements with one or two families, but IRIS staff said the settlements should have existed for more than 10 years).

As can be seen in Table 2.6, the majority of slums were located in Madrid city (in marginal outskirts of the city). This does not imply that the settlements were in good locations: The majority of them were situated in areas that were isolated (in the middle of a road or highway, for example). The *easy access to towns and schools* indicators do not mean they were fully integrated in a town, only that it was possible to access a town and a school either because they were at walking distance or because there was a bus line or school bus connecting the settlement to a town or school.

Table 2.6: Slums characteristics in detail. Slums in the survey data

| Resettlement start date | Slum | Type | Population | Slums characteristics | | | |
				'Old' Settlement	Drug problems	Town access	School access
1989	Rancho Cordobes	Construction	20	X		X	X
1995	Av Guadalajara	Construction	118	X	X	X	X
1997	Focos	Settlement	31	X	X	X	X
1997	Mimbreras	Settlement	92	X			
1999	Manoteras	Settlement	16	X		X	X
2000	Canyada Real	Settlement	23	X			X
2000	Carcavas	Settlement	121	X			
2000	Collado Villalba	Settlement	1	X			
2000	Mica	Settlement	62	X		X	X
2000	Rodriguez Jaen	Settlement	3	NA		X	X
2000	Rosilla	Construction	149	X	X	X	
2001	Barranquillas	Settlement	15	X	X		
2001	Pozo del Huevo	Settlement	105	X		X	
2001	Quinta	Construction		X	X		
2001	Rio Guadarrama	Settlement	16	X			
2001	Salobral -I	Settlement	83	X			
2002	Mendez Alvaro	Settlement	3	NA		X	X
2002	Montecillo	Settlement	10	X			
2002	Puerta de Hierro	Settlement	1	NA			
2003	Ezequiel Penyalver	Settlement	11	NA			
2003	Liebres	Construction	167	X		X	
2004	Celsa	Settlement	11	X	X	X	X
2004	Logronyo	Settlement	4	X		X	
2005	Camino del Vertedero	Settlement	14	X			X
2005	Cristo	Settlement	14	X		X	
2005	Vereda Pan y Agua	Settlement	70	X			
2006	Plata y Castanyar	Construction	54	X		X	X
2006	Salobral -II	Settlement	236	X			
2008	Canaveral	Settlement	90	X		X	
2010	Santa Catalina	Settlement	45	X		X	

Notes: This table presents some selected observable characteristics of the slums from which the families in our survey data originate. Column 1 presents the starting date of the resettlement operation for the slum indicated in column 2. Column 3 indicates the type of construction. Column 4 presents the variable *Population*, and refers to the total number of households that IRIS rehoused from that particular slum (the data for this variable is from IRIS Administrative records, as retrieved in May 2010). The variables presented in columns 5 to 8 are all indicators that take on values 0 or 1: *'Old' settlement* (the settlement was created more than 10 years ago), *Drug problems* (there were serious drug problems in the slum: drug trafficking, drug dealers), *Town access* (there was easy access to a town (walking distance or bus route), *School access* (there was easy access to school from the slum (walking distance or bus route). The information used to compile the values of all the variables except *Population* was obtained from interviews with IRIS staff. The average values for each of the variables in this table are presented in Table 2.5.

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Flats and location preferences

IRIS rehouses the families in flats that are located across the Region of Madrid, with the objective of "integrating" them and avoiding creating ghettos. Figure 2.4 shows the distribution of the families that have been rehoused by IRIS[27] since 1987. The figure on the left corresponds to the Region of Madrid and the figure on the right corresponds to the municipality or city of Madrid.

The areas with more families rehoused are the ones in the South (South of the municipality and South of the Region). There are three motives for this bias towards the South: First, the majority of slums were located in the South, as we discussed in section 2.3. Second, IRIS negotiates with each municipality in Madrid the total amount of families that it can place in that municipality (quotas are established, and the numbers permitted by the southern locations are higher also because they have a higher percentage of population). Third, flat prices are cheaper in the South, and IRIS buys the flats it rents (and has budget limitations).

More than half of the families (1,307 out of 2,144) are rehoused outside of the city of Madrid, but the majority of these families rehoused outside of the city are located in towns close to the city of Madrid or in towns that have good transport connections to the city of Madrid –see Figure 2.4[28]. The differences observed in percentages for the different years depend on the number of families rehoused that year, on IRIS budget allocations for buying flats, and on the quotas that IRIS negotiates with the municipalities regarding the number of families they can rehouse in each of them.

In addition to the maps on the distribution of all families across Madrid (Figure 2.4), we show the distribution of families that originated from the slum Salobral in Figure 2.6, which further support the arguments stated above.

The placement of a particular family in one or other area could be argued to be similar to quasi-random, although it is not a lottery process. The procedure for assigning a flat to a family is standard for all families: Once the family has been selected to participate in the program (all requirements have been met), the heads of the household are asked to list four choices of districts in Madrid city and four choices of municipalities in the Region of Madrid. IRIS collects this information for all the families that they will

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[27]And its predecessor institution.

[28]The numbers and percentage of families rehoused in Madrid city versus outside of the city since 1987 are shown in Table A.4 in Appendix A.

Figure 2.4: Destination of families –location of flats.
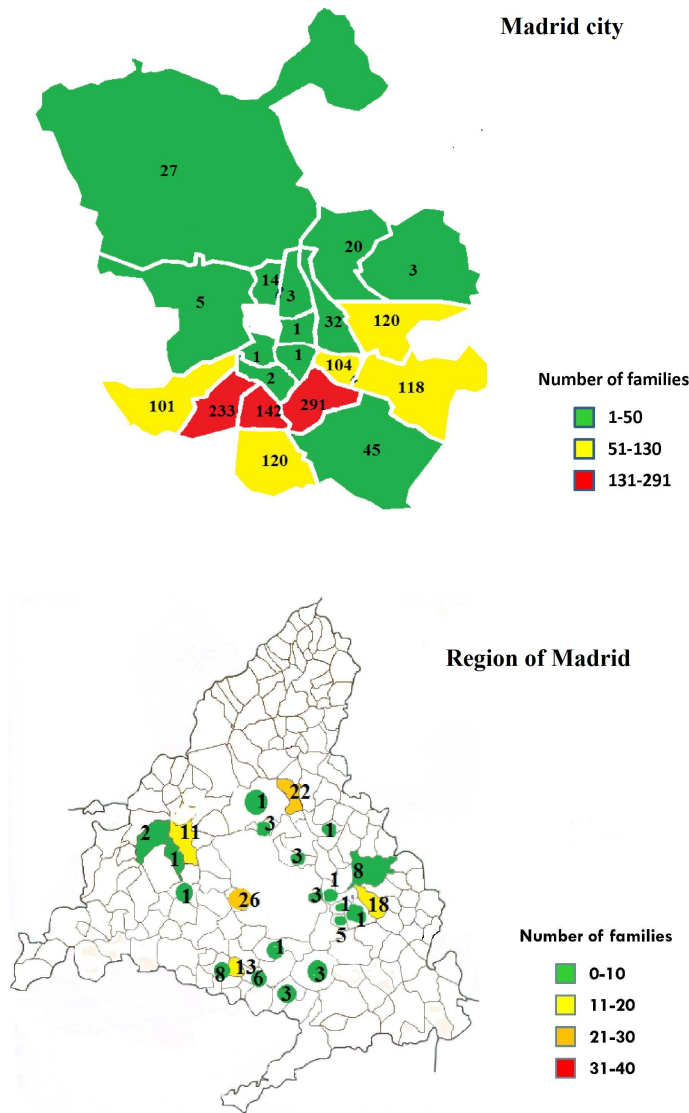
Notes: Number of families rehoused in the Municipality of Madrid or Madrid city (figure on the top) and Number of families rehoused in the Community of Madrid or Madrid Region (figure on the bottom). Data are from IRIS administrative records, as retrieved in May 2010.

be rehousing one month before the resettlement for those families is due. After having received this information, IRIS will offer each family two choices of location (one in Madrid city and the other outside of Madrid city) and the families will choose the one

Figure 2.5: Percentage of families rehoused in flats located in Madrid city
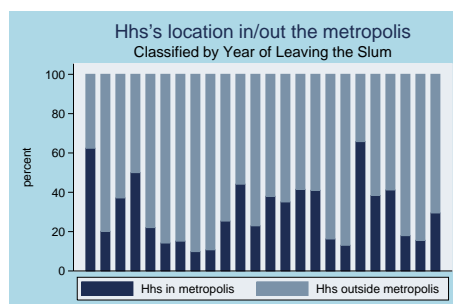
Notes: This figure shows the percentage of families participating in IRIS housing program that live in flats that are located in Madrid city, according to the year in which the family was rehoused (1987-2010). Data are from IRIS administrative records, as retrieved in May 2010.

they prefer from those two options, and sign the contract afterwards. According to the Head of Housing at IRIS, this allocation is random ("it is like a lottery for the families") because the locations and flats that IRIS is able to offer to each family are *completely independent of the family characteristics and preferences*. Various arguments support this statement: First, the person selecting the placement has not met the family and has limited information about them (number of family members and sometimes comments from the staff on the field –that she will not take into account); second, IRIS has a limited supply of flats and only assigns flats to families once a group of families is ready for being rehoused and a date for the clearance operations has been agreed[29]. The supply of a particular type of flat is even smaller (e.g., flat with 4 rooms for a family of 5). Also, the demands of locations of the families are usually similar: Most families from a particular slum prefer staying close to the slum (in the same area) or tend to request the same locations ("someone decides it is a nice place or someone else is going there and they all want to go there too"). Since IRIS does not want to give preference to a family over the others (they do not make exceptions to this rule, according to the Head of Housing), in the end even if they have the exact matching for a particular family this will not mean they will offer it to them (because it would be unfair to the others). So the final decision, done by the Head of Housing, is as close to independent from the family characteristics and preferences as it would be if it had been made by a lottery allocation.

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[29]This process is complicated because it requires cooperation with other public bodies, such as the police and the teams from the Housing Department that will contract a crane operator to destroy the slum dwelling on the day the family leaves.

Figure 2.6: Destination of families from the slum Salobral (location of destination flats).
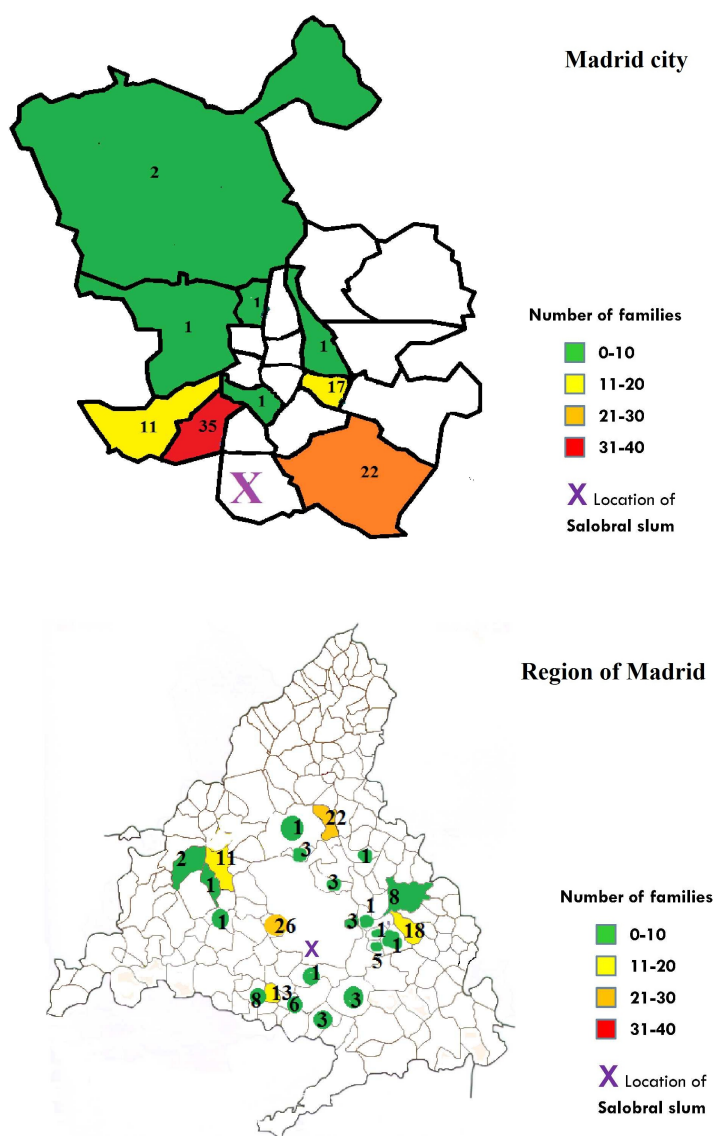
Notes: . Number of families rehoused in the Municipality of Madrid or Madrid city (figure on the top) and Number of families rehoused in the Community of Madrid or Madrid Region (figure on the bottom). The maps present the number of families rehoused from the slum Salobral during the second clearance intervention in the slums (years 2006-2007). Data are from the Salobral records, produced in 2007.

We argue the case for this by presenting the correlations between the location of the

slum of origin and the location of the destination flat for all the families rehoused since 1987 (Figure 2.7). As can be seen in the figures, the location of the flat is not (strongly) correlated with the location of the slum[30].

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[30]The codes for areas, municipalities, and districts presented in Figure 2.7 are listed in the Appendix, section A.

Figure 2.7: Slum of origin and destination flat: Correlations
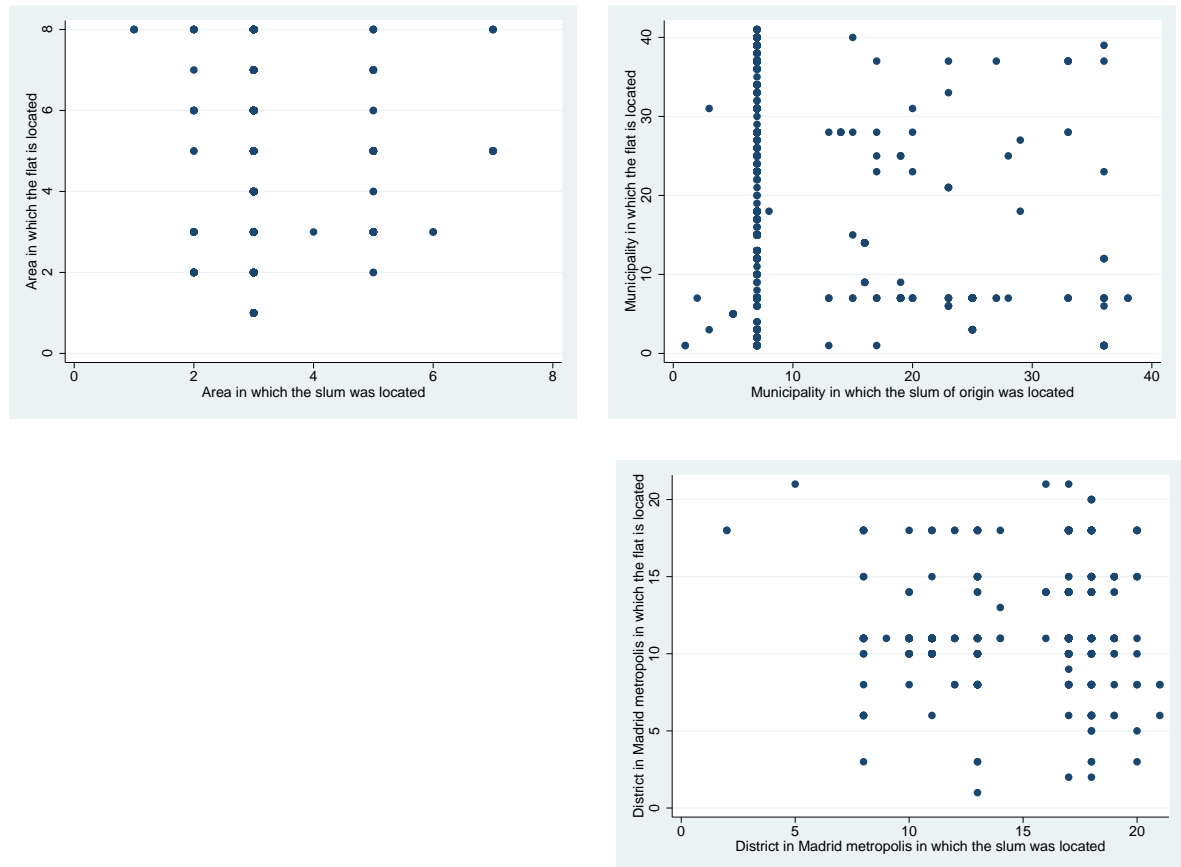
Notes: The figures show the distribution of the location of the flats in which IRIS families live (y-axis) in relation to the location of the slums from which the families came (x-axis). The figure on the top left shows the relation between the area in which the slum was located (x-axis) and the area in which the flat is located (y-axis). The figure on the top right shows the relation between the municipality in which the slum was located (x-axis) and the municipality in which the flat is located (y-axis). The figure on the bottom right shows the relation between the district in which the slum was located (x-axis) and the district in which the flat is located (y-axis). This latter figure refers only to families that came from slums that were in the municipality of Madrid and were rehoused in flats that were also in the municipality of Madrid. Data are from IRIS administrative records, as retrieved in May 2010.

The Spanish Roma in Madrid and IRIS housing program

Approximately 2,000 Spanish Roma families are participating in IRIS housing program [31]. This corresponds to around 12-18% of the total number of Spanish Roma currently residing in the Region of Madrid (IRIS, 2010). In what follows, we will argue that these families could be considered representative of the majority of Spanish Roma living in Madrid.

The families participating in IRIS program have been rehoused by IRIS or its predecessor[32] between the years 1987 to 2011 (Table A.4 in Appendix A provides the timeline of these resettlement operations). At the time in which our data was collected, there only remained around 400 registered slum dwellings in the Region of Madrid, down from the 1,600 households living in slums registered in IRIS records in 1999 (as shown in Table 2.3)[33]. Assuming then that IRIS/CPM is close to completing its mission of providing housing to the Spanish (Roma) living in slums in Madrid as of today, two related questions arise: First, did they rehouse all the population that lived in slums, or did other housing programs collaborate with IRIS? Second, who are the other Roma that have not been rehoused by IRIS/CPM? We can answer these questions with supporting evidence from a study conducted by Fundación Secretariado Gitano (FSG, 2007), the largest Roma NGO in Spain.

According to this study (FSG, 2007), the majority of Spanish Roma currently residing in Madrid live in flats. However, this was not the situation observed two decades ago: In 1991, only 36% of the Roma lived in flats (or houses), and most of those not living in settlements were living in public housing. This suggests[34] that most of the

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[31]The number of families participating in IRIS program as of December 2011 was 2,254 (8,972 individuals); IRIS estimates that 90% of them are Roma.

[32]IRIS was founded in 1998 to substitute and improve on a previous public institution in Madrid that existed from 1987 to 1998 and had a similar mission. This institution was called *Consorcio para el Realojamiento de la Población Marginada de Madrid* (CPM) – the *Consortium for Rehousing the Marginal Population in Madrid*. IRIS became in charge of a large part of the families that had been rehoused by the CPM (but not all) and eventually rehoused some of them due to the slum-like conditions of some of the ghettos that the housing provided by the CPM had created (we distinguish these differences in our analysis). We will treat both institutions (IRIS and CPM) as one and only refer to the distinctions between them when of interest for our study. For an historical overview of slums and resettlement policies in Madrid, see Alonso (2005); for a detailed discussion on the differences between IRIS program and its predecessor, see Nogués-Sáez (2010).

[33]These counts exclude the settlement Cañada Real, which is increasingly growing but has a minority of Spanish Roma.

[34]The numbers provided in this study are estimates, but they are the best approximation we have to

Roma living in flats had been rehoused by CPM (IRIS predecessor) or similar housing programs[35]. Fundación Secretariado Gitano conducted a second and comparable study in 2007 and concluded that by the year 2007 only 13% of Madrid's Spanish Roma were still living in settlements. They report that only 2.1% of those *gitanos* living in flats in Madrid in 2007 had acquired their flat from the free property market (purchase or rental), and 80.6% of them reported that they lived in social housing properties.

In order to be able to claim that IRIS Roma represent the Spanish Roma in Madrid except for that 2.1% minority that are living in properties that are not public housing, we still need to argue that the Roma participating in IRIS program are not different from those that received public housing through other means. We have no evidence to prove this. We collected information interviewing staff at IRIS and the head of the Empresa Municipal de la Vivienda (EMV) social program in the municipality of Madrid, the other program in Madrid that also provides housing to people living in slums[36]. According to these sources, once the Region of Madrid or the municipality of Madrid decided to clear a slum located in the municipality of Madrid, they either decided to rehouse the population through IRIS or through EMV. The decision was based mainly on political motives, and on very few occasions the population from a slum was divided between the two institutions. The responsibility of continuing the work with the population that CPM rehoused between 1987 and 1998 was also split between IRIS and EMV (IRIS only inherited part of the families rehoused by CPM). We have not obtained any information on how these decisions to split the population were made, but all sources interviewed insist that it was not related to individual characteristics or slums characteristics, and that the decisions were driven mainly by political or economic decisions (the Region of Madrid and the municipality of Madrid both have their own governments). As for the Roma rehoused by other housing programs different from IRIS and EMV, they went through a lottery like the rest of the low-income population. In principle, all the Roma can apply to this lottery and IRIS and different NGOs advice and help the families to do so. There could be some self-selection issues here, but it was

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the situation of the Roma in Madrid at the beginning of the 1990s.

[35]The Region of Madrid and the municipality of Madrid have housing programs for low-income individuals, and the Roma can also have access to them. IRIS and CPM are distinct to any other program in that they exclusively target/targeted people living in settlements.

[36]EMV depends on the government of the municipality of Madrid and IRIS depends on the government of the Region of Madrid.

not possible for us to gather any information apart from the one we have just described.

If we accept the arguments proposed above, then we can fairly assume that the Roma living in the slums in which IRIS works are representative of a large part of the Roma in Madrid (all except a small minority). The next question to ask then is if all the Roma living in a slum that IRIS is in charge of resettling are offered the possibility of participating in IRIS program (or are "cleared" from the slum with no housing offer). We first present the requirements and conditions for participating and staying in the program. Then, we show and discuss information we have collected from the slum Salobral.

Requirements to participate in IRIS program   The program is offered to families living in settlements that the Region of Madrid has agreed to "clear" (negotiations take place between the municipality in which the slum is located and the Region of Madrid). Not all families living in a settlement can participate in IRIS program. The basic requirements for being eligible for the program are[37]: Proof of residence, declared income of less than 22,365€, no properties, not having had rejected another offer of public housing in the Region of Madrid, and being older than 25 years old[38]. Proof of residence has varied during the years, but for the latest resettlement operations –the ones concerning the majority of the sample in our study– IRIS has been requesting proof of residence by 31 December 2004.

We have obtained information from the second rehousing operation of the slum Salobral: 236 families were eligible for the program and 234 families were not eligible. This means that 50% of the families were "cleared" from the slum with no right to a house. However, the majority of families not eligible were so because of income or residency motives: They had not been residents of the Community of Madrid for 2 years (12 families), they had other properties (65 families), they did not have proof of residence before 12/31/2004 (75 families), their income was higher than the threshold (5 families), or they were younger than 25 and had no children (18 families). According to IRIS staff, the number of families that do not fulfil the requirements to participate in the program has been high in the last 5-8 years (starting with the resettlement of Salobral),

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[37]As of December 2012.

[38]The age constraint is relaxed for couples older than 18 years old if they have children and live in their own dwelling, separated from their parents.

but the majority of them are rejected for the same motives as the families rejected in Salobral: Mainly, having another property or not having proof or residency. According to IRIS staff, in the past most families in a slum were rehoused (the requirements and conditions started becoming strict in 2004). We have not obtained any data to confirm these statements.

Permanence in IRIS program According to IRIS sources, more than 99% of the families that are offered a flat from IRIS accept it. The fact that this number of families is very small is important for our study because it was not possible for us to track or gather information on those that had not accepted the offer. However, if we had had information on them, it could have been possible for us to do an analysis on assignment to the relocation rather than actual relocation, which would have made "not taking the program" an outcome. This would have alleviated any concern regarding the fact that we don't have any information on the 1% of families that do not accept IRIS offer of a flat. In what follows, we will discuss if they all stay in the program.

Figure 2.8 shows the percentage of families that have stayed in the program, have been expelled, and have left[39]. The two graphs presented in Figure 2.9 show the total number of families that left the program (figure on the left) and the total number of families that were expelled from the program (figure on the right); the families are grouped according to the year in which they were rehoused by the program. The data shown in these three figures is presented in Table 2.7 and corresponds to the 2,144 households that were offered a flat by IRIS/CPM between 1987 and 2010 and that are registered in IRIS administrative records (as retrieved in May 2010). The majority of the families (90.9%) have stayed in the flat; 1.4% of them decided to leave the flat (voluntarily or involuntarily –death), and 7.7% of them were expelled by IRIS due to a long and considerable delay on their payments of the flat's rent.

The number of families that have left the flat by their own choice (or because of death) is not a serious concern for our evaluation because it is a very small percentage of the total number of families that participate in the program –only 1.4% of the families have left by their own choice. However, as in the case of families that did not accept IRIS offer, if we had had information on these families, it could have been possible for us to do an analysis on assignment to the relocation rather than actual relocation,

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[39]Data comes from IRIS Administrative Records, as retrieved in May 2010.

Figure 2.8: Families permanence in IRIS program
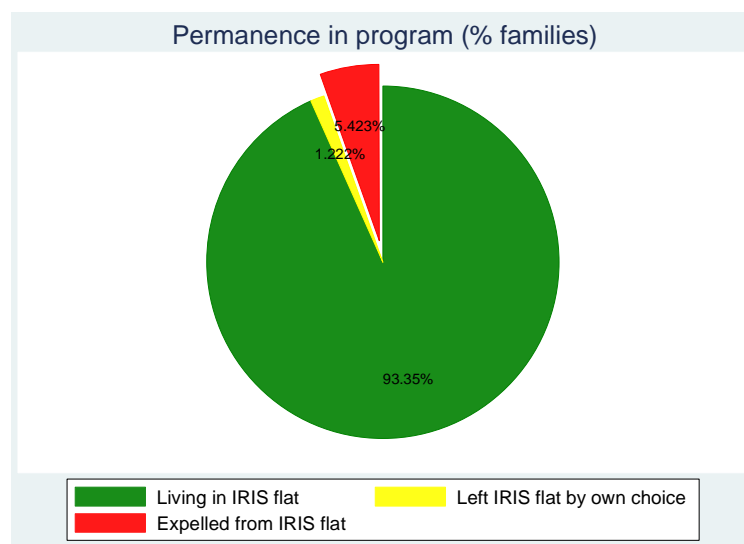
Notes: The figure shows the percentage of families that have remained in the program (green), have been expelled from the program (red), or have left the program by own choice (yellow). The data is from IRIS administrative records, as retrieved in May 2010. We present the data from these figures in Table 2.7.

Figure 2.9: Families that have left IRIS program (expelled or own choice), by rehousing year
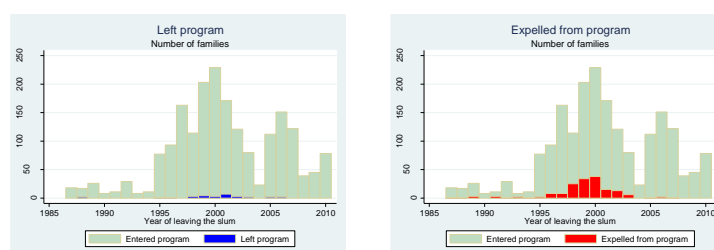
Notes: The figure on the left shows the total number of families that left the program and the figure on the right shows the total number of families that were expelled from the program. The families are grouped according to the year in which they were rehoused by the program. The data is from IRIS administrative records, as retrieved in May 2010. We present the data from these figures in Table 2.7.

Table 2.7: Families Permanence in IRIS Program, by rehousing year

| | Stayed | | Left | | Expelled | | |
Year	Total	%	Total	%	Total	%	Total
1987	18	94.74	0	0.00	1	5.26	19
1988	17	85.00	2	10.00	1	5.00	20
1989	26	89.66	0	0.00	3	10.34	29
1990	8	100.00	0	0.00	0	0.00	8
1991	11	78.57	0	0.00	3	21.43	14
1992	29	96.67	0	0.00	1	3.33	30
1993	8	80.00	0	0.00	2	20.00	10
1994	11	91.67	0	0.00	1	8.33	12
1995	77	96.25	1	1.25	2	2.50	80
1996	93	91.18	1	0.98	8	7.84	102
1997	163	95.32	0	0.00	8	4.68	171
1998	114	80.28	3	2.11	25	17.61	142
1999	203	84.23	4	1.66	34	14.11	241
2000	229	84.81	3	1.11	38	14.07	270
2001	171	88.60	7	3.63	15	7.77	193
2002	121	88.32	3	2.19	13	9.49	137
2003	80	90.91	2	2.27	6	6.82	88
2004	23	100.00	0	0.00	0	0.00	23
2005	112	97.39	2	1.74	1	0.87	115
2006	151	97.42	2	1.29	2	1.29	155
2007	122	99.19	0	0.00	1	0.81	123
2008	39	100.00	0	0.00	0	0.00	39
2009	45	100.00	0	0.00	0	0.00	45
2010	78	100.00	0	0.00	0	0.00	78

Notes: Data entries in columns 2 and 3 show the total number of families that have stayed in IRIS program. Data entries in columns 4 and 5 present the number of families that left the program. Data entries in columns 6 and 7 present the number of families that have been expelled from the program. The families are classified according to the year in which they were rehoused (column 1). The data is from IRIS administrative records, as retrieved in May 2010. Data shown in boxes corresponds to years from which the highest percent of families were expelled from the program. We present this data in Figure 2.8 and Figure 2.9.

and this would have again helped us to alleviate any concern related to the potential self-selection of families into the program.

The number of families expelled needs some further exploration: They represent 7.7% of the total population, and the majority of them were resettled by IRIS between the years 1998-2000 (see Table 2.7). The only legal reason for which IRIS can expel a family is because of long overdue accumulated debts. IRIS allows for some delay on the payment, and sues and expels a family only if they cross a certain threshold of accumulated debt. This suggests that the families expelled could actually be the poorest ones[40]. We asked IRIS staff if they supported this claim and a large number of them said they do not because they argue that the conditions became stricter only after 2005 and used to be very relaxed before. They also argue that they always try to make exceptions for "good families" and only expel the "bad ones" (drugs, violence) making use of the debts motive, though they say that these exceptional treatment for "good families" is no longer possible to hold for IRIS.

We can look at the data in Table 2.7 to try to verify these claims and our own intuition. Most of the expelled families were rehoused between the years 1998-2000 and the groups of families rehoused on the years 1989, 1991, 1993, 1998, 1999, and 2000 are the ones with the highest percentage of expelled families. It would be interesting to try to disentangle which of the two possible motives for being expelled occurred: It could either be that they were much poorer than average and accumulated extremely high debts with IRIS, or that they were delinquents that also accumulated enough debts with IRIS to give IRIS an excuse to sue and expel them, as IRIS staff claims is the usual motive for expelling a family. In order to understand the relevance of these two possibilities, we grouped the families by their slum of origin. Table 2.8 shows the percentage of families expelled from each slum. The data suggests that the main reason for the high ratio of expelled families does not lie on whether they came from more or less "complicated" slums. For example, IRIS resettled families from the slums of Rosilla and Celsa (which had serious drug problems) between 1998-2000, but when we

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[40]IRIS offers a very low monthly rent (63,78 to 198,33 €, depending on house size and location) guaranteed for life. Rental rights can be inherited but the property cannot be bought. The contract ends (court-eviction) if the family incurs in very high level of indebtedness to IRIS for a prolonged period of time or if there is official proof of no occupation of the property. Before suing the family, IRIS negotiates with them and usually gives them some extra time. This could suggest that only the poorest families with no resources and no support from relatives or friends are expelled.

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look at the percentage of families expelled that were original from these settlements, we can arrive to no clear conclusions: The data does not show greater numbers of expelled families from these slums, despite the claims made by IRIS staff.

In sum, we observe in the data that families rehoused before 2000 have been expelled relatively more often than families rehoused after 2000. According to IRIS staff, the motive for this is that they were more complicated (drugs, poorer and more marginal in general); however, we cannot rule out that a motive could be money: They have been in the flats for longer and have had more time to accumulate large sums of debts. It is not possible for us to know which of these motives has more weight, and this would have complicated our understanding of the possible bias in our estimations. This is one of the principal arguments why we chose to select our sample starting from the families rehoused in 2001.

Other relevant features of IRIS program   An important issue to clarify in relation to our research objectives is that evaluating the impact of IRIS program does not equate to evaluating the impact of housing alone. IRIS housing program includes a social support scheme, which runs from the time the families are in the slums to 3 more years since they moment they move into the flat (more if necessary). There are potential ways of disentangling the impact of these the two features of IRIS program (separate the impact of *housing alone* from the impact of and *housing plus social support*), but we encountered constraints (political and financial) when we tried to gather the additional data to investigate this. We now provide an overview of this social support that the families receive, since the impact of the program as we are measuring it is both affected by its housing component and its social support component.

The social support that the families receive is provided through the allocation of a *family social educator/worker* to each family. This family social educator is responsible for ensuring that the family adapts well to the new environment and social conditions. He is in charge of supporting the family if they need help in any aspect of their integration process, from organization and adaptation to their new house and community (e.g., financial planning, bills payments, residential or school applications), to job training courses, help with job search and applications, follow up of children's school attendance and difficulties, or personal counselling and support for the family members, especially female empowerment. In sum, the role of the *family social worker/educator*

Table 2.8: Percentage of families expelled, by slum of origin

Slum from which the families originated	Number of families		
	Expelled	Total	% Expelled
Av Guadalajara	5	118	4
Barranquillas	2	15	13
Camino del Vertedero	1	14	7
Campo Hermoso	1	16	6
Canada Real	2	23	9
Canaveral	1	90	1
Carabanchel	14	29	48
Celsa	6	121	5
Collado Villalba	1	1	100
Cristobal Colon	1	5	20
Ctra Inta	1	15	7
Focos	1	31	3
Forjas	6	8	75
Fuenlabrada	1	6	17
Getafe	3	11	27
Hortaleza	1	3	33
Jauja	2	68	3
Latina	8	13	62
Leganes	3	9	33
Liebres	16	167	10
Manoteras	3	16	19
Mica	3	92	3
Mimbreras	3	62	5
Moratalaz	4	18	22
Mostoles	2	4	50
Parla	2	5	40
Puente de Vallecas	10	30	33
Rancho Cordobes	4	20	20
Rosilla	7	149	5
Salobral	11	318	3
San Blas	2	8	25
San Fermin	12	25	48
Torrejon	3	11	27
Usera	7	18	39
Vicalvaro	1	5	20
Villa de Vallecas	1	6	17
Villaverde	7	11	64
Total	158	2,054	8

 Notes: Column 2 presents the number of families that were expelled from IRIS program, classified by the slum from which the families originated (column 1). Column 3 shows the number of families that were rehoused from each slum. Column 4 presents the percentage of families that were rehoused from each slum. The data is from IRIS administrative records, as retrieved in May 2010. The rows in boxes correspond to years from which at least 50% of the families were expelled from the program.

is that of a personal advisor or "family coach" that can become an important support for the families if problems arise.

The social support received by each family varies according to the "integration stage" (IRIS classification) at which the family is. The first stage is *slum intervention*. In this phase, which can last from 6 months to more than a year, IRIS intervenes in the slum providing social services. A 1 or 2 days module for preparation of living in the new flat and community is also provided. The second stage, the *integration process*, starts once the family moves to the flat and lasts 36 months –more if needed. It is divided into 3 distinct stages: *Arrival* and accommodation in the flat (3 months), *adaptation* (24 months), and *integration* (9 months). After this period, the family is either discharged from the social program or continues in it if more intensive support is needed. A detailed description of the procedures in each of these stages is provided in IRIS (2010).

2.4   The survey and the data

Our research objective when going to the field was to study the changes observed in families that had been rehoused from the slums. We interviewed many families and staff working at IRIS, as well as experts on the Roma from different academic fields and organizations. The results from our qualitative work led us to create a small short survey to collect data from a sample of families rehoused by IRIS. Our survey covered all key topics we were interested in observing: Education, labour, integration, female autonomy, social integration, and aspirations. The survey was conducted together with IRIS, and merging efforts required arriving to some compromises, but it also allowed us to direct our data collection in the best direction, and to have access to a population that would have been impossible to find otherwise, and also extremely difficult to interview[41].

The sample was selected from a sub-population of the entire universe of families that were participating in IRIS Housing Program at the time in which the survey started (January 2012). By request of IRIS, we eliminated from our initial list the families that

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[41]Our research was conducted in partnership with IRIS and funded by the Open Society Foundations and the Decade of Roma Inclusion 2005-2015. Data collection and survey design were discussed and implemented with IRIS.

were in the process of being expelled from IRIS program[42] for high levels of indebtednesses to IRIS. This cut the total number of families in our initial list from 2,207 to 2,116 families.

We chose to limit our sampling frame to families that had been rehoused from 2001 to 2011 to ensure the families had similar characteristics (age structure and slums with similar features) and a higher probability of having children at school age. The second restriction we imposed was that families had to have at least one child from age 1 to 18. Our final sampling frame included some families that do not fulfil one or both of these requirements, for reasons we explain now.

IRIS Administrative data included records of the resettlement date and origin of the families, but these records were not always valid for our purposes[43]. Thus, we created a new dataset correcting IRIS administrative data with notes that had been separately collected for each household. We checked all the discrepancies observed in both sources of information. In some cases, none of the two sources provided the correct information (we only learned this while conducting the surveys). This explains why our sample contains families that had been rehoused before 2001, despite our intention of screening them out.

In order to restrict our sampling frame to families with children of school age, we partnered with the Department of Education of the Region of Madrid[44]. The Data Protection Agency of the Region of Madrid imposed some restrictions on this data sharing, so we proceeded as follows: We gave to the Department of Education a list with the D.N.I.s (National Identity Numbers) of the head of household and partner of each household in IRIS Program, and they returned to us our list indicating which of the D.N.I.s provided by IRIS were also in their dataset; i.e., corresponded to parents or tutors of children enrolled in school in the last 3 years[45]. We then checked this data against IRIS records on children, to ensure that no household registered in IRIS Administrative

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[42]They were in court or in the process of being taken to court.

[43]This happened in the case of families that had been rehoused twice. The first time, they were resettled from a slum to a public housing by IRIS predecessor. The second time, they were rehoused by IRIS from that public housing to another public housing. IRIS Administrative data was incorrect in these cases, because it provided either the original resettlement date and slum or the rehousing date and no information on the slum of origin.

[44]IRIS did not have accurate records of this information for a significant subgroup of families.

[45]In some cases the children's tutors were not their parents but their grandparents, step-parents, aunt, or an external tutor, but we were not able to detect this at this stage.

data as "with children" was out of the list of families selected by the Department of Education. The limitations described explain why some of the households in our sample do not have children of school age (those families were tutors of some child instead of her parents). When this happened (not often), most of the interviewers conducted the survey[46].

We chose a random sample from this sampling frame stratifying by the year in which the families had been rehoused. We selected families that had been resettled between 2001 and 2011, were not in the process of being expelled from the program, and had children at school age (according to our sources). For each of the years 2001 to 2006, we randomly selected 60% of the families that had been rehoused on that year; for each of the years 2007 to 2010, we randomly chose 90% of the families that had been rehoused in each of those years; for the year 2011 we chose 40 families (we knew that the other families that had been rehoused that year were non-Roma). In total we selected 671 families to be interviewed[47].

After having chosen the 671 families, we screened out those that were non-Roma (42 families). These checks were conducted by phone interviews to the families. The total number of families we finally interviewed was 543 families (144 interviews were not conducted). The main reasons for eliminating a family in the preliminary screening were: The family was not Roma (42 families), the children were not at school age (15 interviews[48]), or the family was not reached after up to 3 attempts (17 families). A total of 17 families were not reached after 3 attempts, and only 3 refused to answer the survey. Still, and additional 61 families were not interviewed and the motive was not reported by the interviewer. Replacements were selected for the families that could not be reached but only 16 new additional surveys were conducted in the end. Table 2.10 shows details on the interview status of each of the 671 families in our sample.

The objective of the survey was to collect information on basic socio-economic indicators in order to assess the impact of IRIS Housing Program on the well being of the participant families. Our focus was the children (second generations), but we gathered

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[46]The choice of conducting the survey or not was made by the interviewers, and most chose to do them even if there were no children at school age in the family. When the interviewers decided to not do the survey, they requested a replacement and the family was replaced by another family with similar characteristics (same resettlement year and similar flat location) but with children of school age.

[47]Numbers are shown in Table 2.9.

[48]In some cases, the interviewer proceeded even if there were no children of school age in the household.

Table 2.9: Selection of the Sample

| Family Resettlement Year | Number of families | | | |
	Population[1]	Sampling Frame	Selected Sample	Sample[2]
1987	19			
1988	18			
1989	27			
1990	6			
1991	14			1
1992	23			2
1993	9			
1994	9			
1995	78			2
1996	100			1
1997	139			3
1998	129			1
1999	235			4
2000	260			8
2001	188	177	106	88
2002	134	103	62	49
2003	88	78	47	39
2004	23	18	11	7
2005	115	112	67	53
2006	155	155	96	85
2007	123	113	102	86
2008	39	39	37	30
2009	45	45	40	35
2010	78	70	63	26
2011	62	60	40	23
Total	2116	971	671	543

Notes: Data from IRIS Administrative records, retrieved on 8th January 2011.

[1] Includes all families that were benefiting from IRIS housing program at the time the survey started, January 2012, with the exception of families that were in the process of being expelled from the program.

[2] Differences in family records and the year of resettlement reported by the families explain why 22 families in our sample were resettled before 2001.

Table 2.10: Interview status

	Families	
Interview status	Total	Percentage
Sample selected	671	100
A. Eliminated in preliminary screening		
Motive: Children are old	15	2.24
Motive: Not wanting to disturb (father had just died)	1	0.15
Motive: To be expelled	2	0.30
Motive: Family on bad terms with IRIS	3	0.45
Motive: Non-Roma	42	6.26
Total eliminated in preliminary screening	*63*	*9.39*
B. Refused or not reached		
Refused	3	0.45
Unavailable/not reached	17	2.53
Total refused or not reached	*20*	*2.98*
C. No motive reported		
Interview not conducted	61	9.09
Total no motive reported	61	9.09
D. Total interviews not conducted (A+B+C)	144	21.46
E. Total replacements conducted	16	2.38
Total interviewed (Sample selected-D+E)	543	80.92

Notes: Interview status of the 671 families selected for our survey.

information on the following key areas: Employment, education, health, and marriage and fertility choices of the second generations. Extensive preliminary field work was conducted by the researcher to inform the decision on which outcomes and group ages to focus on. Interviews were conducted with around 25 different social workers and educators at IRIS, with Roma families living in slums and living in IRIS housing, with staff at the NGO *Fundación Secretariado Gitano* (FSG), and with Roma families of different socio-economic status from our target population. The outcomes obtained from this field work were the basis for our survey and sample selection strategies.

The conclusions obtained from the qualitative surveys were in general not supportive of the idea that IRIS program was having any impact on the participating families. In terms of employment and education outcomes, no changes were observed: Low educational achievement and high proportion of individuals unemployed and/or working on the informal economy were a stable pattern observed. According to most people interviewed, not much changed in the lives of the families when moving from the slums to the flats, except improvements in health due to better housing conditions, easier access to public services, and an overall improvement in feelings of safety. The families living in flats felt more integrated and more at ease when interacting with non-Roma people, but when asked, both individuals in slums and individuals in flats gave the same answers in terms of the problems they saw as most aggravating for them: education, employment, and early marriages. We finally decided to focus on measuring outcomes for children for two reasons: First, there is a better identification strategy for children; second, change (escaping from a poverty trap) is a slow process and usually starts happening in the second and third generations.

The survey was designed with the purpose of gathering data on measurable observable outcomes in a simple and quick way. Covering all key topics was prioritized over focusing in one single group age or topic. The survey questions were written so as to be compatible with IRIS own data records and preferred indicators. We conducted a pilot survey in one of the areas of the Region of Madrid to test the draft questionnaire on December 2011. Meetings were organized with the teams involved in the data collection process and the interviewers were instructed on the scope and objectives of each question. The final survey was discussed in detail by the researcher with each of the 34 interviewers.

The interviews were conducted in the least disruptive way possible, and the an-

swers provided were those stated by the families. Making the families feel at ease was prioritized, and a great part of the interviews were conducted during normal scheduled visits to the families. Permission was requested beforehand on all occasions. The interviews were done in person, most of them in the flats – a few of them were conducted at IRIS offices. The surveys were responded by the mother (female head of household). The father (male head of household) and children replied or were present on some occasions.

The surveys were conducted between January and March 2012 by IRIS staff, usually in teams of two people. The total number of interviewers was 34 individuals, all of them IRIS staff (social workers and social educators). The interviews were scheduled with the families by phone first and conducted when possible (they coincided with normal visit times only in the cases in which this was possible and convenient for both the families and IRIS). The interviewers were divided into 5 sectors, covering all municipalities of the Region of Madrid in which IRIS works[49]. The number of surveys conducted per interviewer differs: 9 interviewers conducted between 3 and 10 interviews, 12 conducted between 11 and 20, 9 between 21 and 30, and 4 conducted between 31 and 41 interviews. All interviewers reported their name in the survey, except in 33 of the surveys.

The interviews proceeded as follows: First, the interviewers called the families or visited them to check that they were Roma and to ask them if they would like to do a survey for a research study; second, the survey was conducted. In the case of families that were participating in IRIS Social Program, one of the interviewers was always the family social worker/social educator.

The survey was limited to two pages and 30 minutes. The survey questions were succinct. The surveys covered short questions to gather basic information on indicators, measuring results on the following areas: Education, employment and welfare dependency, marriage and fertility, and integration and aspirations outcomes.

2.4.1 Overview and family background characteristics

We surveyed 543 households. Out of these 543 families, we only have accurate information on the resettlement date for 531 of them, so we have limited our sample to

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[49]See section 2.3 in chapter 2 for details on the distribution of the families across the Region of Madrid.

these 531 families. In total, we have a sample of 531 families with 860 children ages 4 to 12, 202 children ages 17 to 20 (97 males and 101 females), and 139 children ages 21 to 26 (54 males and 85 females).

20 of the 531 families in our sample were rehoused before 2001 (between the years 1991 and 2000)[50]. We have excluded these 20 families from our descriptive statistics showing parents' outcomes and family and slums' descriptive statistics –tables 2.11 and 2.12–, but we do not exclude them in our analysis of children outcomes (chapter 3).

We first present the background data for the 511 families in our sample that were rehoused between the years 2001 and 2011 (1 to 11 years before the year in which we implemented our survey). We have divided the sample in two groups of similar size: Families rehoused 1 to 6 years before our survey took place (rehoused between 2006 and 2011) and families rehoused 7 to 11 years before 2012 (rehoused between 2001 and 2005). Comparing these two groups allows us to have a first intuitive overview of possible time patterns observed in the families rehoused by IRIS.

We present the family background characteristics in Panel A of Table 2.11. Since we do not have a baseline data or information from the time in which the families lived in the slum, some variables are measured in retrospect (we discuss each in turn).

The heads of household (parents) were on average 28 (females) and 29 years old (males) at the time they were resettled from the slums by IRIS. We measured the educational level of the parents by asking them if they could read and write[51]. On average, 61% of the fathers and 49% of the mothers can read and write and we observe no significant differences in the two groups in which we have divided the sample.

The families resettled on or before 2005 have an average of 3.6 children, while families rehoused after 2005 have an average of 3 children. This difference is statistically significant and captures two facts: First, the families rehoused after 2006 are younger on average than those rehoused before 2006, and thus had less children on av-

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[50]We selected a sample of families that had been rehoused from 2001 to 2011 according to IRIS records, but after collecting the data from the families we noticed that 20 of the families that we interviewed had stated that they had been rehoused before 2001. We checked this information in different paper records held at IRIS and did not arrive to any conclusion, so we kept as valid the years that the families had said in the interviews (and the social workers had confirmed with them). There were 12 additional families for which we were not able to obtain accurate information on the date in which they had left the slum (they only provided information on the slum name and it was not compatible with IRIS administrative records), so we recorded the date as missing.

[51]We collected an additional measure of education but we consider this literacy indicator to be more reliable.

Table 2.11: Descriptive statistics of background characteristics for families rehoused from 1 to 11 years ago

| | Number of years out of the slum | | | | |
| | 1-6 | | 7-11 | | |
	mean	sd	mean	sd	diff
Panel A. Family characteristics					
Mother age at resettlement year	27.880	6.662	27.485	6.499	0.394
Father age at resettlement year	28.739	6.388	28.732	7.144	0.00765
Number of children	3.624	0.100	3.057	0.064	0.567***
Mother literate	0.493	0.501	0.498	0.501	-0.00502
Father literate	0.635	0.482	0.594	0.492	0.0401
Ancestors Extremeños	0.536	0.500	0.321	0.468	0.215***
Ancestors Gallegos	0.007	0.084	0.008	0.092	-0.00130
Ancestors Portugueses	0.004	0.060	0.114	0.318	-0.110***
Ancestors Castellanos	0.214	0.411	0.321	0.468	-0.106***
Evangelical church members	0.664	0.473	0.674	0.470	-0.00944
Evangelical church daily attendance	0.407	0.492	0.428	0.496	-0.0208
Parent/s lived in a flat before 14	0.509	0.501	0.412	0.493	0.0971**
Panel B. Environment characteristics					
No other Roma in building	0.934	0.248	0.818	0.387	0.116***
Slum was in Madrid city	0.996	0.060	0.784	0.412	0.212***
Slum had drug problems	0.000	0.000	0.080	0.272	-0.0798***
Slum had easy town access	0.395	0.490	0.538	0.500	-0.143***
Slum had easy school access	0.085	0.280	0.168	0.375	-0.0827***
Slum was public housing	0.078	0.269	0.256	0.438	-0.178***
Number of IRIS households in slum	114.897	68.544	49.697	55.445	65.20***
Flat in Madrid city	0.697	0.460	0.457	0.499	0.239***
Number of IRIS households in area	34.911	24.508	28.328	21.049	6.583***

Notes: Variables at the household level. The sample consists of 511 families, all of them rehoused by IRIS between 2001 and 2011 (11 to 1 years ago from the time the survey was conducted). All variables are indicators that assume values 1 or 0 with the exception of the variables that correspond to the age of the parents (*panel A*) and the variables number of households in the slum or area (*panel B*) . Standard deviations are presented beside the mean: * significant at 10%, ** significant at 5%, *** significant at 1% . Data are from our survey, conducted between January and March 2012.

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erage at the time of the survey. Second, the number of children per family is decreasing for "IRIS families": Their fertility rates are higher than the average Spanish family, but the trend is downwards too. The average family in our survey has 3.3 children, a number higher than the average Spanish Roma family –2.7 children in 2007– and the average Spanish family –0.8 in 2007[52].

We also measured two key indicators that differentiate the Spanish Roma: The origin of their ancestors and their involvement in the Evangelical church. In our survey, we asked about the origin of the parents of the head of household and partner. We constructed indicators for each possible ancestors origin and then aggregated the indicators of mothers and fathers to create a single family indicator. The family indicator presented (for example, the indicator *Ancestors Castellanos*), takes the value 1 if one (or both) of the two parents has both parents from the same origin (Gallegos, in our example). If both parents have a mixed origin (his and her parents originate from different groups), then all the indicators take the value 0. As can be seen in Table 2.11, a large number of the children had at least two grandparents Extremeños (43% of the families reported that at least one of the 2 parents had both parents from Extremeño origin) and very few of them have Gallegos or Portugueses ancestors. High levels of participation in the Evangelical church were also observed: 42% of the families stated that they attended the Evangelical church service daily[53]. We observe no differences in membership in the Evangelical church or in our daily attendance indicator, but there are differences in the two groups respect to the origin of their ancestors: The data suggests that there has been an increase in the number of families rehoused by IRIS that originate from Extremadura (ancestors Extremeños) and a decrease in those originating from Castilla (ancestors Castellanos) or Portugal (ancestors Portugueses).

Another important family background characteristic is the exposure of the parents to slums during their childhood. We created an indicator variable *Parent/s lived in a flat before 14* that takes the value 1 if at least one of the parents has lived in a flat before

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[52]These data correspond to the last estimates produced comparing Roma and non-Roma individuals (Laparra et al., 2007b).

[53]We asked in our survey if the parents went to the Evangelical church and how often they did. The indicator we report *Evangelical church daily attendance* takes the value 1 if either the mother of the father said they go to the Evangelical church daily, and 0 otherwise. –Attendance to this church is done usually by the entire family, and is considered by anthropologists and experts the main vehicle through which Roma values, traditions, and social norms are being kept and redefined in the last decade. (The introduction of the Evangelical church is relatively new for the Roma community).

age 14 (owned by his/her parents) and 0 otherwise. The data shows that the fraction of parents that have lived in a flat and have been rehoused in the last 6 years is larger than the fraction of parents that have been rehoused more than 6 years ago. This characteristic of the parents could be important, influencing their ability and "readiness" to integrate and their values towards the education and integration of their children[54].

Panel B in Table 2.11 presents the environment characteristics of the families. We collected information from the slums of origin of all the families in our sample[55]: Whether it was in the city of Madrid, if it had easy town access and school access (walking distance or bus route), and if it was originally a slum or a public housing. As Table 2.11 shows, very few of the individuals in our sample lived in slums with drug problems (4.6% of the households). Most of the slums did not have easy school access (87% of the families lived in slums with no easy access to a school). The slums were all similar in some important characteristics that we do not show in this table: No access to drinkable water and electricity and having been created more than 10 years ago. However, when we compare the families rehoused in the last years to the ones rehoused before, the data shows that they come from different environment backgrounds: A larger percentage of the families rehoused in the last years come from slums that are in the municipality of Madrid, that have no drug problems, that were more marginalized (less easy to access a nearby town or a school), and that were not originally public housing. A larger proportion of the families rehoused in the last years have also been rehoused in flats in Madrid city. Also, the percentage of households living in buildings in which they are the only Roma family is smaller for the families recently rehoused. All of these differences are statistically significant.

2.4.2 Parents outcomes

We next describe the outcome variables for measuring the impact on the parents and present means comparisons for the two groups into which we are dividing our sample: families rehoused in the last 6 years and families rehoused between 7 and 11 years ago.

We collected data on three key areas that could potentially be affected by the pro-

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[54]Some interviews I conducted on the field suggest this is a plausible hypothesis.

[55]See Table 2.6 in chapter 2.

gram: Labour outcomes, poverty and welfare dependency, and integration measures[56]. We present the data in Table 2.12.

Table 2.12: Descriptive statistics of parents outcomes

| | Number of years out of the slum | | | | |
| | 1-6 | | 7-11 | | |
	mean	sd	mean	sd	diff
Panel A. Father labour outcomes					
A1. Father labour outcomes, December 2011					
I. Employment status (current)					
Unemployed	0.025	0.156	0.069	0.254	-0.0438**
Works in the formal economy	0.075	0.264	0.111	0.315	-0.0361
Has a vendor license	0.026	0.160	0.025	0.158	0.000820
Self-employed, formal job	0.037	0.190	0.048	0.214	-0.0101
Employee, formal job	0.037	0.190	0.063	0.244	-0.0260
Self-employed, informal job	0.904	0.295	0.836	0.371	0.0682**
Employee, informal job	0.017	0.128	0.016	0.125	0.000794
II. Job classification (current)					
Scrap, cardboard, appliances dealer	0.842	0.366	0.720	0.450	0.122***
Street vendor	0.150	0.358	0.159	0.366	-0.00873
Skilled worker	0.054	0.227	0.101	0.302	-0.0464*
A2. Father labour outcomes, years 2006-2011					
III. Employment status (2006-11)					
Unemployed	0.068	0.252	0.106	0.309	-0.0386
Works in the formal economy	0.252	0.435	0.406	0.492	-0.154***
Self-employed, formal job	0.075	0.265	0.088	0.284	-0.0128
Employee, formal job	0.190	0.393	0.329	0.471	-0.138***
Self-employed, informal job	0.970	0.170	0.942	0.235	0.0287
Employee, informal job	0.044	0.205	0.039	0.194	0.00463
IV. Job classification (2006-2011)					
Scrap, cardboard, appliances dealer	0.930	0.256	0.913	0.282	0.0164
Street vendor	0.272	0.446	0.258	0.439	0.0133
Skilled worker	0.242	0.429	0.391	0.489	-0.149***

(Continued)

[56]We have treated literacy rates as a background characteristic because it seems a reasonable assumption given the average age at which the parents arrive in the flat (28 years old). We also asked to IRIS social educators if they knew of parents that had learnt to read and write after moving into their new house and none could recall any case in which this had happened. We observed the same in our preliminary interviews to the families.

Table 2.12 (Continued)

| | Number of years out of the slum | | | | |
| | 1-6 | | 7-11 | | |
	mean	sd	mean	sd	diff
Panel B. Mother labour outcomes					
B1. Mother labour outcomes, December 2011					
I. Employment status (current)					
Unemployed	0.942	0.235	0.901	0.299	0.0410*
Works in the formal economy	0.044	0.205	0.108	0.311	-0.0641***
Has a vendor license	0.017	0.130	0.029	0.169	-0.0119
Self-employed, formal job	0.029	0.168	0.065	0.246	-0.0356*
Employee, formal job	0.015	0.120	0.043	0.204	-0.0286*
Self-employed, informal job	0.189	0.392	0.181	0.386	0.00806
Employee, informal job	0.007	0.085	0.009	0.093	-0.00135
II. Job classification (current)					
Scrap, cardboard, appliances dealer	0.127	0.334	0.078	0.268	0.0497*
Street vendor	0.080	0.272	0.116	0.321	-0.0364
Skilled worker	0.011	0.104	0.047	0.213	-0.0365**
Domestic cleaner, carer	0.033	0.178	0.056	0.230	-0.0233
B2. Mother labour outcomes, years 2006-2011					
III. Employment status (2006-11)					
Unemployed	0.975	0.156	0.974	0.158	0.000532
Works in the formal economy	0.107	0.310	0.237	0.426	-0.129***
Self-employed, formal job	0.059	0.237	0.110	0.313	-0.0502**
Employee, formal job	0.048	0.215	0.133	0.340	-0.0844***
Self-employed, informal job	0.349	0.478	0.325	0.469	0.0247
Employee, informal job	0.019	0.136	0.022	0.147	-0.00347
IV. Job classification (2006-2011)					
Scrap, cardboard, appliances dealer	0.228	0.420	0.154	0.362	0.0738**
Street vendor	0.164	0.371	0.207	0.406	-0.0429
Skilled worker	0.056	0.230	0.146	0.354	-0.0903***
Domestic cleaner, carer	0.063	0.244	0.092	0.290	-0.0289
Panel C. Welfare dependency and Poverty					
Receives Minimum Income Subsidy (RMI)	0.788	0.410	0.743	0.438	0.0452
Has received Minimum Income Subsidy (RMI)	0.883	0.323	0.807	0.396	0.0758**
Family among poorest	0.182	0.387	0.156	0.363	0.0266
Family among richest	0.109	0.313	0.160	0.368	-0.0507*
Panel D. Measures of Integration and other outcomes					
Mother has driving license	0.096	0.295	0.195	0.397	-0.0989***

(Continued)

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Table 2.12 (Continued)

| | Number of years out of the slum | | | | |
| | 1-6 | | 7-11 | | |
	mean	sd	mean	sd	diff
Father has driving license	0.892	0.311	0.867	0.340	0.0253
Mother meets relatives often	0.397	0.490	0.427	0.496	-0.0303
Father meets relatives often	0.467	0.500	0.518	0.501	-0.0511
Flat very well kept	0.262	0.440	0.242	0.429	0.0194
Flat very clean	0.301	0.459	0.248	0.433	0.0529

Notes: Variables at the household level. The sample consists of 511 families, all of them rehoused by IRIS between 2001 and 2011 (11 to 1 years ago from the time the survey was conducted).All variables are indicators that assume a 1 or 0 value. Standard deviations are reported next to the means. t-tests under the null of equality of means: * significant at 10%, ** significant at 5%, *** significant at 1%.

The majority of the Roma work in the informal economy, as we saw in chapter 2[57], and all the social educators and social workers at IRIS that we interviewed agree that most of the families participating in IRIS program worked on the informal economy. They also claimed that they observe almost no changes in the families (when they move out of the slums) in terms of labour outcomes. We designed our survey questionnaire to try to elicit detailed information that would help us understand if there had been any changes in labour outcomes for both the parents and the older children in the family. Given the situation of the Spanish economy at the time of our survey (January 2012 - March 2012), we decided to ask both about the present and the past work lives of the fathers and mothers. The data we collected shows interesting patterns that do not confirm the belief that "nothing is changing". We describe our descriptive statistics in what follows. We present the data dividing our sample in two groups, as we have done when presenting the family background characteristics: Families rehoused from 1 to 6 years ago and families rehoused from 7 to 11 years ago.

Father's labour outcomes In Panel A in Table 2.12 we present the labour outcomes for the male head of household (father) and in Panel B we present the labour outcomes

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[57]See Table 2.1.

for the female head of household (mother)[58]. We collected information on all the jobs they had held both during December 2011[59] and during the years 2006 to 2011. All the variables are indicators that take on values 1 or 0. We will now highlight some interesting features we observe in the data.

In Section A2 in Panel A we present the father's situation in the labour market during the period January 2006 - December 2011. The differences in formal economy outcomes in the two groups are starking. The data shows that the group of fathers that left the slum more than 7 years ago have a much higher probability of having had a formal job during that period. The difference in means is large and significant: 41% of the fathers that left the slum more than 7 years ago have reported having worked in the formal economy, whereas only 25% of the fathers that left the slum between 1 to 6 years ago have reported having had a job in the formal economy. As we can see in Table 2.12, this difference is due mainly to having obtained formal jobs as employees (rather than as self-employed): 33% of the fathers that are "early leavers" of the slum have worked as employees in formal jobs, and only 19% of the fathers that are "late leavers" of the slum have. We also see that the percentage of fathers having worked as skilled workers is higher for the "early leavers" group. All these differences are large and statistically significant at the 10% level. When we compare this to the data collected for December 2011, we see that the proportion of "early leavers" working as skilled workers is higher: 10% of them versus 5% of the "late leavers". The percentage of "late leavers" working in informal jobs is higher and the percentage of "early leavers" that declared being unemployed is higher. The outcomes observed in December 2011 suggest that the families that have been rehoused earlier tend to favour, achieve, and become accustomed to working in the formal economy.

Mother's labour outcomes   We present the outcomes for the mothers in Panel B. In Section B2 we classify the jobs that the mothers have done during the period 2006-2011 and present means comparisons of these outcomes for the "early leavers" and

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[58]It is important to clarify how we have measured the variable *Unemployed*. We have coded it as 1 when the person has stated that he/she is not working. In the case of men, the unemployed are those men (fathers or adult children) that reported not having any job (formal or informal). In the case of women, we categorized as unemployed also the women (mothers or adult children) that have reported being only housewives but have coded as jobs all the jobs that they have done both independently or to support their husbands in their jobs (e.g., temporarily or occasionally going with their husband to collect scrap.)

[59]We chose December 2011 because the surveys were conducted between January and March 2012.

"late leavers". As we can see, we observe a pattern similar to that of the fathers: A significantly larger proportion of the mothers that are "early leavers" work on the formal economy, as compared to the "late leavers". The difference is of 13 percentage points: 24% compared to 11%. The percentage of women that have declared having worked on a skilled job is also significantly different in the two groups: 15% for the "early leavers" and only 6% for the "late leavers". The situation of the mothers in December 2011 (Section B1) also supports the evidence of a move towards formal jobs for the mothers rehoused earlier: 11% were working in the formal economy, as compared to 6% of the "late leavers", and 5% had skilled jobs, compared to only 1% of the "late leavers". We observe the same pattern that we observe in the data shown in Section B2: the larger percentage of women working in formal jobs is driven both by a larger percentage of women working as employees in formal jobs and a larger percentage of women working as self-employed in formal jobs. These differences in the two groups of mothers suggest changes in female autonomy that we have also observed in an additional indicator: Having a driving license.

Welfare and poverty outcomes   In Panel C we provide measures of welfare dependency and poverty. The variable *Receives Minimum Income Subsidy (RMI)* refers to whether the family reported having received the R.M.I. in December 2011. The variable *Has received Minimum Income Subsidy (RMI)* refers to whether the family reported having received the R.M.I. at least once during the period January 2006 to December 2011. The variables *Family among poorest* and *Family among richest* are subjective measures. We asked the interviewers to rate the relative poverty of the family interviewed on a scale from 1 to 3 as compared to other families participating in IRIS housing program. *Family among poorest* corresponds to families that were classified as 1 in that scale and *Family among richest* corresponds to families that were classified as 3 in that scale. We chose a subjective relative measure because we consider that the evaluation of the interviewers is reliable (given their extensive experience in working with these families) and the best accurate measure we could obtain given the survey length and time limitations[60]. Comparing the two groups in which we have divided the

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[60]Most family social workers/educators at IRIS are currently working with 30-70 families and have experience with many other families both in the settlements and in IRIS flats, so their subjective opinion can be considered an accurate reliable approximation. We discuss this approach with IRIS staff during our pilot and we concluded that the best and simplest way to collect information on the poverty level was

sample, we see that the families that were rehoused at a later time are more dependent on the minimum income subsidy. The proportion of families that had received it during the period 2006-2011 was significantly higher for the group of families rehoused from 1 to 6 years ago (88%) than for those rehoused before (81%). This difference is statistically significant at the 5% level. We also observe that there are more "richer than average" families in the group of families rehoused earlier. These measures on welfare and poverty cannot be argued to be clear outcomes of the program, but the correlations are compelling and support the evidence observed on the labour outcomes.

Measures of integration and other outcomes   We collected information on a few outcomes that could provide us some first orientation about how well the families are integrating into their new social environment and how well they are adapting to their new house. One key indicator is *Mother has a driving license*. Women obtaining driving licenses is an important change for Roma women living in slums, where it was not seen as appropriate that women should drive a car. The differences in the two groups in which we have divided the sample are large and significant: 19% of the women rehoused between 7 and 11 years ago versus 10% of women rehoused between 1 and 6 years ago. If we add to this that the women living in slums had a larger need for driving a car than those living in flats (in terms of mobility: access to a town, the children's school, or the market), this result suggest some interesting improvements in female autonomy for the women living out of the slums. We also collected this information (has a driving license) for the fathers and, as we hypothesized, no significant differences were observed for them. This result observed for men highlights the relevance of the differences observed in the women.

We collected other information that could give us some indication of potential integration into the new environment, in particular: How often the parents meet their relatives (we constructed an indicator *Mother/Father meets relatives often* that takes the value 1 if they met them on at least 5 days during the week previous to the week in which they were surveyed and 0 otherwise) and how well they were taking care of the flat (*Flat very well kept* and *Flat very clean*, both subjective relative measures that were done by the interviewers by ranking the family against all the other families in the program in a 1 to 4 scale). During our qualitative interviews and pilot we noticed that these outcomes

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by asking it directly to the interviewers in a question with a scale from 1 to 3.

could be an indicator of how well the family was embracing their new life, community, and way of life. We find no difference in our means comparisons of the two groups in which we have divided the sample.

To sum it up, we conclude that the means comparisons of the two groups into which we have divided the sample suggest that the parents that were rehoused earlier are participating significantly more in the formal economy, both men and women, and are less dependent on welfare benefits. The women also have a higher probability of being working (in the formal economy) and of having a driving license, two outcomes that are indicative of higher female autonomy for Roma women.

2.4.3   Younger children outcomes, ages 4 to 14

We have collected data on education, integration, and aspiration outcomes for all the children of these families ages 4 to 14. We first present the measurement of the variables and then describe the data that we will present in Tables 2.13 and 2.14. The information was provided by the mothers alone in most cases.

We measure educational outcomes with the following variables: For the group of children ages 4 to 6, we measure their preschool enrolment with the variable *Enrolled in Preschool*, which takes value 1 if the child was enrolled in school at the time of the survey and 0 otherwise. For all children ages 7 to 14, we use three different variables to measure their education outcomes: *Has never repeated* (the child has never repeated grade at school), *Has never repeated and not in special education* (in addition to not having repeated grade at school, the child has not been assigned to a special education group or class for disadvantaged children –this is the best possible outcome), and *Has repeated and in special education* (the child has repeated at least one year at school and is assigned to a special education group or class –this is the worst possible outcome). All these variables are indicators that take value 1 or 0. These measures are obtained from what the parents reported in the interviews.

We also provide some simple measures of integration and aspiration outcomes. We measure integration by asking the mother about the 5 best friends of each of their children. The interviewers asked the mother to think of each child's 5 best friends and then asked her how many of them were a relative or non-Roma. We create 2 outcome variables: *Best friends include relatives* (if one or more of the child's best friends are a

relative) and *Best friends include non-Roma* (if one or more of the child's best friends are non-Roma). To measure aspirations, we asked the parents what kind of job they wanted their children to have. We create 2 outcome variables: *Skilled worker (no university degree)* and *Skilled worker with university degree*, which took value 1 if the mother mentioned a job that was in this category. Although the way in which we measured integration and aspirations is simple our objective in including this questions was to obtain some intuition about what could be driving possible changes in behaviour in the children's education or future labour choices.

We present the outcomes observed for the younger children in the families, ages 4 to 12[61] in Table 2.13. We separate the sample in two groups with the purpose of comparing their means: Children that never lived in the slum and children that lived in the slum (the family moved out of the slum after the child was born). We choose this threshold because it allows us to have two groups of similar size for all our cohort groups between the ages 4 to 12.

The data for the children ages 13 to 14 is presented in Table 2.14. We have divided this sample in two groups using a different threshold than the one used for children ages 4 to 12: in this case, we make the cut in whether the child left the slum before or after age 5. The reason why we are choosing a different threshold is that this allows us to divide the sample into two groups of similar size (maintaining the previous threshold would have reduced one of the two groups to almost no data points).

We present the background characteristics of these children (family and environment) in Block 1 in Table 2.13 for the children ages 4 to 12 and in Block 1 in Table 2.14 for the children ages 13 to 14[62]. The outcome variables are shown in Block 2 (Education outcomes) and Block 3 (Integration and aspiration outcomes) in both tables. We separate the sample into males and females for all age groups except the children in Preschool age (Panel A, Block 1, Table 2.13).

In order to compare educational outcomes (Block 2 in Table 2.13), we have divided the children by group ages: 4 to 6, 7 to 8, 9 to 12, and 13 to 14 . We have made these separations for the following reasons: The first group are children at Preschool age. The second group are children in their two first years of compulsory school (Primary 1 and Primary 2), when it is very infrequent for children to repeat grade (but some

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[61]We define age as the age they have in 2012.

[62]For details on these variables, we refer the reader to our discussions on Table 2.11.

may do). The third and fourth groups are children between 9 and 12 years old (starting from Primary 3) and 13 and 14 years old, old of them in school years in which it is possible to repeat grade at school[63]. We do not make these same divisions when comparing integration and aspiration outcomes: We present the selected outcomes for all children ages 7 to 12 in Block 3 in Table 2.13 and for all children ages 13 to 14 in Block 3 in Table 2.14 (where we make a different division in the sample, as we explained above).

Table 2.13: Descriptive statistics for children aged 4-12

| | Age at which child left the slum | | | | |
| | Never lived in the slum | | Lived in the slum | | |
	mean	sd	mean	sd	diff
Block 1. Background characteristics					
Panel A. Family characteristics					
Mother age at resettlement year	24.136	5.092	26.549	5.601	-2.413***
Father age at resettlement year	25.283	5.381	27.667	5.480	-2.384***
Mother literate	0.557	0.497	0.535	0.499	0.0226
Father literate	0.609	0.489	0.659	0.475	-0.0496
Ancestors Extremeños	0.347	0.477	0.434	0.496	-0.0877**
Ancestors Gallegos	0.006	0.079	0.006	0.075	0.000574
Ancestors Portugueses	0.077	0.268	0.026	0.160	0.0512***
Ancestors Castellanos	0.347	0.477	0.260	0.439	0.0864***
Evangelical church members	0.652	0.477	0.638	0.481	0.0143
Evangelical church daily attendance	0.410	0.493	0.392	0.489	0.0178
Parent/s lived in a flat before 14	0.426	0.495	0.528	0.500	-0.102***
Panel B. Environment characteristics					
No other Roma in building	0.838	0.369	0.900	0.301	-0.0621***
Slum was in Madrid city	0.864	0.343	0.932	0.252	-0.0679***
Slum had drug problems	0.065	0.247	0.007	0.086	0.0574***
Slum had easy town access	0.491	0.501	0.474	0.500	0.0169
Slum had easy school access	0.167	0.373	0.101	0.301	0.0659***
Slum was public housing	0.222	0.416	0.127	0.333	0.0954***
Number of IRIS households in slum	73.336	71.299	90.349	68.703	-17.01***
Flat in Madrid city	0.530	0.500	0.635	0.482	-0.105***

(Continued)

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[63]There are limits to the number of years one can repeat, but we focus on measuring only if the child has ever repeated grade at school.

Table 2.13 (Continued)

| | Age at which child left the slum | | | | |
| | Never lived in the slum | | Lived in the slum | | |
	mean	sd	mean	sd	diff
Number of IRIS households in area	31.435	22.473	33.369	23.669	-1.934
Block 2. Education outcomes					
Panel A. Children ages 4-6					
Enrolled in Preschool	0.907	0.292	0.952	0.215	-0.0455
Panel B. Children ages 7-8					
I. Males (N=109)					
Has never repeated and not in special education	0.313	0.471	0.416	0.496	-0.103
Has never repeated	0.906	0.296	0.922	0.270	-0.0158
Has repeated and in special education	0.094	0.296	0.065	0.248	0.0288
II. Females (N=102)					
Has never repeated and not in special education	0.432	0.502	0.492	0.504	-0.0599
Has never repeated	0.838	0.374	0.938	0.242	-0.101
Has repeated and in special education	0.081	0.277	0.046	0.211	0.0349
Panel C. Children ages 9-12					
I. Males (N=197)					
Has never repeated and not in special education	0.075	0.267	0.115	0.320	-0.0396
Has never repeated	0.500	0.506	0.350	0.479	0.150*
Has repeated and in special education	0.350	0.483	0.439	0.498	-0.0895
II. Females (N= 203)					
Has never repeated and not in special education	0.128	0.339	0.098	0.298	0.0306
Has never repeated	0.410	0.498	0.323	0.469	0.0871
Has repeated and in special education	0.410	0.498	0.463	0.500	-0.0532
Block 3. Integration and aspirations outcomes					
Panel A. Integration outcomes, children ages 7-12					
I. Males (N=306)					
Best friends include relatives	0.534	0.502	0.604	0.490	-0.0701
Best friends include non-Roma	0.959	0.200	0.918	0.275	0.0412
II. Females (N=307)					
Best friends include relatives	0.539	0.502	0.635	0.483	-0.0953
Best friends include non-Roma	1.000	0.000	0.948	0.223	0.0522**
Panel B. Aspirations outcomes, children ages 7-12					
I. Males (N=306)					
Skilled worker (no university degree)	0.750	0.436	0.665	0.473	0.0848

(Continued)

Table 2.13 (Continued)

| | Age at which child left the slum | | | | |
| | Never lived in the slum | | Lived in the slum | | |
	mean	sd	mean	sd	diff
Skilled worker with university degree	0.222	0.419	0.299	0.459	-0.0764
II. Females (N=307)					
Skilled worker (no university degree)	0.558	0.500	0.532	0.500	0.0269
Skilled worker with university degree	0.403	0.494	0.441	0.498	-0.0388

Notes: Sample size N=860. Standard deviations are reported next to the means. t-tests under the null of equality of means: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2.14: Descriptive statistics for children aged 13-14

| | Age at which child left the slum | | | | |
| | 0-5 | | 6-after | | |
	mean	sd	mean	sd	diff
Block 1. Background characteristics					
Panel A. Family characteristics					
Mother age at resettlement year	26.765	5.586	30.716	5.631	-3.951***
Father age at resettlement year	28.194	5.432	31.469	4.762	-3.275***
Mother literate	0.512	0.503	0.471	0.502	0.0419
Father literate	0.629	0.487	0.585	0.496	0.0432
Ancestors Extremeños	0.362	0.484	0.506	0.503	-0.143*
Ancestors Gallegos	0.000	0.000	0.012	0.108	-0.0118
Ancestors Portugueses	0.037	0.191	0.047	0.213	-0.00956
Ancestors Castellanos	0.400	0.493	0.212	0.411	0.188***
Evangelical church members	0.595	0.494	0.624	0.487	-0.0286
Evangelical church daily attendance	0.354	0.481	0.424	0.497	-0.0691
Parent/s lived in a flat before 14	0.469	0.502	0.424	0.497	0.0456
Panel B. Environment characteristics					
No other Roma in building	0.738	0.443	0.886	0.320	-0.149**
Slum was in Madrid city	0.873	0.335	0.940	0.239	-0.0663
Slum had drug problems	0.099	0.300	0.000	0.000	0.0988***
Slum had easy town access	0.617	0.489	0.506	0.503	0.111
Slum had easy school access	0.148	0.357	0.118	0.324	0.0305
Slum was public housing	0.235	0.426	0.118	0.324	0.117**

(Continued)

Table 2.14 (Continued)

| | Age at which child left the slum | | | | |
| | 0-5 | | 6-after | | |
	mean	sd	mean	sd	diff
Number of IRIS households in slum	60.469	66.333	92.271	66.842	-31.80***
Flat in Madrid city	0.543	0.501	0.720	0.452	-0.176**
Number of IRIS households in area	30.247	22.988	35.553	25.767	-5.306
Block 2. Education outcomes					
I. Males					
Has never repeated and not in special education	0.060	0.240	0.051	0.223	0.00872
Has never repeated	0.160	0.370	0.128	0.339	0.0318
Has repeated and in special education	0.600	0.495	0.744	0.442	-0.144
II. Females					
Has never repeated and not in special education	0.065	0.250	0.043	0.206	0.0210
Has never repeated	0.290	0.461	0.130	0.341	0.160*
Has repeated and in special education	0.548	0.506	0.717	0.455	-0.169
Block 3. Integration and aspirations outcomes					
Panel A. Integration outcomes					
I. Males					
Best friends include relatives	0.604	0.494	0.526	0.506	0.0779
Best friends include non-Roma	0.938	0.245	0.872	0.339	0.0657
II. Females					
Best friends include relatives	0.226	0.425	0.696	0.465	-0.470***
Best friends include non-Roma	0.935	0.250	0.826	0.383	0.109
Panel B. Aspirations outcomes					
I. Males					
Skilled worker (no university degree)	0.717	0.455	0.703	0.463	0.0147
Skilled worker with university degree	0.196	0.401	0.270	0.450	-0.0746
II. Females					
Skilled worker (no university degree)	0.633	0.490	0.674	0.474	-0.0411
Skilled worker with university degree	0.333	0.479	0.302	0.465	0.0310

Notes: Sample size is 166 (89 males and 77 females). Standard deviations are reported next to the means. t-tests under the null of equality of means: * significant at 10%, ** significant at 5%, *** significant at 1%.

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Education outcomes The education outcomes are shown in Block 2 of Table 2.13 and in Block 2 of Table 2.14.

The entries in Panel A, Block 2, Table 2.13 correspond to Preschool enrolment of children ages 4 to 6. More than 90% of the children are enrolled, and we observe no statistically significant difference between the two groups, but the percentage of children that the families reported as being enrolled in preschool is higher for the children born in the slum than for those born after the family had been resettled from the slum.

The entries in Panel B, Block 2, Table 2.13 correspond to children ages 7 to 8 (Primary 1 and 2) and the entries in Panel C, Block 2, Table 2.13 correspond to children ages 9 to 12. The data shows better outcomes (higher percentage of children has not repeated grade at school and less percentage has repeated and is in special education) for the children that never lived in the slum, both in the case of boys and girls. These results are not statistically significant.

We show the education outcomes of children ages 13 to 14 in Block 2, Table 2.14. For this age group, the children that left the slum at a younger age have better educational outcomes than those that left it after age 5, as measured by the three variables we have defined. In the case of females, 29% of the ones that left the slum before age 5 have never repeated a grade at school, while only 13% of the ones that stayed in the slum until age 5 have never repeated a grade at school. This difference is large and statistically significant. In the case of the boys, the difference is not significant and smaller: 16% of the children that left early versus 13% of those that left after age 5.

Measures of integration and aspiration outcomes Block 3 in Table 2.13 presents the integration outcomes of children ages 7 to 12. Comparing the means of the two groups in which the sample is divided, we see that a higher percentage of the children that lived in the slum for some time have relatives as best friends while a higher percentage of the children that never lived in the slum have non-Roma friends. The means differences are statistically significant for the girls. The number of children with non-Roma friends is high in all groups. The integration outcomes of children ages 13 to 14 are presented in Block 3 in Table 2.14. The interesting outcomes are observed in the females: The percentage of girls in this age group that stayed in the slum after age 5 have less non-Roma friends as their best friends and they also have a higher probability of having as best friends some relatives. The difference in means for this outcome is large and

significant: 70% versus 23%. These outcomes for girls are much more pronounced in the case of the girls age 13 to 14 than in the case of younger girls. This could suggest that the girls' autonomy increases when they move to the flats (it is usually around age 13 that the parents start controlling them more). This is in accordance with the results we observed for the mothers (increase in autonomy) and also with our observations on the field.

The aspiration outcomes are presented in Block 3 in Table 2.13 (children ages 7 to 12) and in Block 3 in Table 2.14 (children ages 13 to 14). We do not observe significant differences in the means comparisons for any of the groups.

2.4.4 Older children outcomes, ages 17 to 26

We now present the data for the older children. In Table 2.15 we show the descriptive statistics for children ages 17 to 20 and in Table 2.16 we show the descriptive statistics for children ages 21 to 26.

We collected data on education for all the children and on marriage and fertility for the women. We also collected data on labour outcomes and welfare dependency for the children ages 21 to 26. We first present these variables and then describe the data presented in Tables 2.15 and 2.16. As with the younger children, the questions were responded by the mothers alone in most cases. The sample size is small and the division in groups before age 15 and after age 14 is not a good threshold because 14 might be too late for some changes. Still, we observe interesting patterns in the data. Also, the estimates obtained for this age group can be a good comparison and supporting evidence to our arguments on the differences observed in changes in the parents and younger children.

We measure educational outcomes for these age groups with the following variables: *Can read and write*, *Attended school beyond Primary*, and *Age left school* (age at which the child left school). We further constructed the variables *Dropped out by age 13*, *14*, and *15* to compare drop-out rates at the different ages for both men and women. Additionally, we collected information on whether the child had obtained a driving license.

We collected data on marriage and fertility outcomes (for the girls) to create the following variables: *Married by age 15* and *by age 17*, and *Had a child by age 15* and

by age 17.

For all children ages 21 to 26, we collected the same information on jobs and welfare benefits that we collected for the parents. Additionally, we asked the families about whether their children age 21 and older lived in the flat or had moved to a slum or another flat.

We present the outcomes observed for the children ages 17 to 20 in Table 2.15. In this case, we divide the sample in children that left the slum before age 10 and children that left the slum at age 10 or later. As we argued for the younger children, the motive for choosing this threshold is that it allows us to have two groups of similar size. The data for the children ages 21 to 26 is presented in Table 2.16. We have divided this sample in two groups using as threshold age 15: Children that left the slum before age 15 and children that left it at age 15 or later (very few children left the slum before they were age 10).

We present the background characteristics (family and environment) for the children ages 17 to 21 in Table 2.15 in Panels A and B of Block 1 (males) and Block 2 (females). We present these data for the children ages 21 to 26 in Table 2.16 in Panels A and B of Block 1 (males) and Block 2 (females)[64]. The outcome variables for children ages 17 to 20 are shown in Table 2.15, Block 1, Panels C and D for males and in Block 2, Panels C to E for females. The outcome variables for children ages 21 to 26 are shown in Table 2.16, Block 2, Panels C to F for males and in Block 3, Panels C to G for females.

Table 2.15: Descriptive statistics for children aged 17-20

	Age at which child left the slum				
	0-9		10-later		
	mean	sd	mean	sd	diff
Block 1. Males, ages 17-20 (N=97)					
Panel A. Family characteristics					
Age of child	18.227	1.031	18.434	1.065	-0.207
Mother age at resettlement year	29.477	6.482	33.647	4.878	-4.170***
Father age at resettlement year	30.683	6.551	35.979	5.200	-5.296***

(Continued)

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[64]These are the same background variables used for the families and young children. For details, see Table 2.11.

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Table 2.15 (Continued)

| | Age at which child left the slum | | | | |
| | 0-9 | | 10-later | | |
	mean	sd	mean	sd	diff
Mother literate	0.419	0.499	0.358	0.484	0.0601
Father literate	0.634	0.488	0.625	0.489	0.00915
Ancestors Extremeños	0.349	0.482	0.585	0.497	-0.236**
Ancestors Gallegos	0.000	0.000	0.000	0.000	0
Ancestors Portugueses	0.023	0.152	0.019	0.137	0.00439
Ancestors Castellanos	0.395	0.495	0.189	0.395	0.207**
Evangelical church members	0.721	0.454	0.755	0.434	-0.0338
Evangelical church daily attendance	0.372	0.489	0.509	0.505	-0.137
Parent/s lived in a flat before 14	0.273	0.451	0.302	0.463	-0.0292
Panel B. Environment characteristics					
No other Roma in building	0.738	0.445	0.922	0.272	-0.183**
Slum was in Madrid city	0.952	0.216	0.943	0.233	0.00898
Slum had drug problems	0.205	0.408	0.000	0.000	0.205***
Slum had easy town access	0.659	0.479	0.396	0.494	0.263***
Slum had easy school access	0.227	0.424	0.132	0.342	0.0952
Slum was public housing	0.295	0.462	0.189	0.395	0.107
Number of IRIS households in slum	40.455	47.492	111.321	72.040	-70.87***
Flat in Madrid city	0.395	0.495	0.509	0.505	-0.114
Number of IRIS households in area	24.841	20.442	32.755	23.995	-7.914*
Panel C. Education outcomes					
Can read and write	0.868	0.343	0.915	0.282	-0.0465
Attended school beyond Primary	0.881	0.328	0.865	0.345	0.0156
Age left school	15.500	1.078	15.395	1.152	0.105
Dropped out by age 13	0.063	0.246	0.079	0.273	-0.0164
Dropped out by age 14	0.094	0.296	0.158	0.370	-0.0641
Dropped out by age 15	0.313	0.471	0.342	0.481	-0.0296
Panel D. Other outcomes					
Has a driving license	0.179	0.389	0.170	0.380	0.00927
Block 2. Females, ages 17-20 (N=101)					
Panel A. Family characteristics					
Age of child	18.056	1.071	18.213	1.062	-0.157

(Continued)

Table 2.15 (Continued)

| | Age at which child left the slum | | | | |
| | 0-9 | | 10-later | | |
	mean	sd	mean	sd	diff
Mother age at resettlement year	29.509	5.753	33.065	4.197	-3.556***
Father age at resettlement year	30.766	6.764	33.810	4.068	-3.044**
Mother literate	0.444	0.502	0.383	0.491	0.0615
Father literate	0.553	0.503	0.643	0.485	-0.0897
Ancestors Extremeños	0.278	0.452	0.340	0.479	-0.0626
Ancestors Gallegos	0.000	0.000	0.000	0.000	0
Ancestors Portugueses	0.056	0.231	0.000	0.000	0.0556
Ancestors Castellanos	0.370	0.487	0.362	0.486	0.00867
Evangelical church members	0.679	0.471	0.745	0.441	-0.0654
Evangelical church daily attendance	0.377	0.489	0.340	0.479	0.0369
Parent/s lived in a flat before 14	0.519	0.504	0.298	0.462	0.221**
Panel B. Environment characteristics					
No other Roma in building	0.808	0.398	0.804	0.401	0.00334
Slum was in Madrid city	0.904	0.298	0.889	0.318	0.0150
Slum had drug problems	0.130	0.339	0.000	0.000	0.130**
Slum had easy town access	0.556	0.502	0.383	0.491	0.173*
Slum had easy school access	0.204	0.407	0.128	0.337	0.0760
Slum was public housing	0.204	0.407	0.170	0.380	0.0335
Number of IRIS households in slum	43.889	55.840	90.043	75.773	-46.15***
Flat in Madrid city	0.648	0.482	0.553	0.503	0.0950
Number of IRIS households in area	30.519	24.577	28.979	22.194	1.540
Panel C. Education outcomes					
Can read and write	0.978	0.147	0.881	0.328	0.0973*
Attended school beyond Primary	0.712	0.457	0.791	0.412	-0.0792
Age left school	14.632	1.807	15.158	1.366	-0.526
Dropped out by age 13	0.263	0.446	0.158	0.370	0.105
Dropped out by age 14	0.395	0.495	0.263	0.446	0.132
Dropped out by age 15	0.500	0.507	0.342	0.481	0.158
Panel D. Marriage and fertility outcomes					
Married by age 15	0.382	0.493	0.172	0.384	0.210*
Married by age 17	0.618	0.493	0.414	0.501	0.204
Had a child by age 15	0.219	0.420	0.034	0.186	0.184**

(Continued)

Table 2.15 (Continued)

| | Age at which child left the slum | | | | |
| | 0-9 | | 10-later | | |
	mean	sd	mean	sd	diff
Had a child by age 17	0.594	0.499	0.207	0.412	0.387***
Panel E. Other outcomes					
Has a driving license	0.043	0.206	0.000	0.000	0.0435

Notes: Standard deviations are reported next to the means. t-tests under the null of equality of means: * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2.16: Descriptive statistics of children aged 21-26

| | Age at which child left the slum | | | | |
| | 0-14 | | 15-later | | |
	mean	sd	mean	sd	diff
Block 1. Males, ages 21-26 (N=54)					
Panel A. Family characteristics					
Age of child	22.880	1.616	23.414	1.763	-0.534
Mother age at resettlement year	34.875	4.675	38.462	2.437	-3.587***
Father age at resettlement year	35.429	4.501	39.917	3.933	-4.488***
Mother literate	0.304	0.470	0.310	0.471	-0.00600
Father literate	0.421	0.507	0.625	0.495	-0.204
Ancestors Extremeños	0.208	0.415	0.517	0.509	-0.309**
Ancestors Gallegos	0.000	0.000	0.000	0.000	0
Ancestors Portugueses	0.125	0.338	0.069	0.258	0.0560
Ancestors Castellanos	0.375	0.495	0.172	0.384	0.203*
Evangelical church members	0.708	0.464	0.690	0.471	0.0187
Evangelical church daily attendance	0.333	0.482	0.276	0.455	0.0575
Parent/s lived in a flat before 14	0.320	0.476	0.207	0.412	0.113
Panel B. Environment characteristics					
No other Roma in building	0.773	0.429	0.889	0.320	-0.116
Slum was in Madrid city	0.875	0.338	0.828	0.384	0.0474
Slum had drug problems	0.320	0.476	0.000	0.000	0.320***
Slum had easy town access	0.600	0.500	0.345	0.484	0.255*
Slum had easy school access	0.280	0.458	0.138	0.351	0.142

(Continued)

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Table 2.16 (Continued)

| | Age at which child left the slum | | | | |
| | 0-14 | | 15-later | | |
	mean	sd	mean	sd	diff
Slum was public housing	0.160	0.374	0.138	0.351	0.0221
Number of IRIS households in slum	33.800	46.007	100.379	74.188	-66.58***
Flat in Madrid city	0.480	0.510	0.483	0.509	-0.00276
Number of IRIS households in area	24.400	18.679	27.828	24.116	-3.428
Panel C. Education outcomes					
Can read and write	0.875	0.338	0.615	0.496	0.260**
Attended school beyond Primary	0.720	0.458	0.448	0.506	0.272**
Age left school	15.684	1.455	14.000	1.949	1.684***
Dropped out by age 13	0.105	0.315	0.429	0.507	-0.323**
Dropped out by age 14	0.105	0.315	0.524	0.512	-0.419***
Dropped out by age 15	0.211	0.419	0.667	0.483	-0.456***
Panel D. Labour outcomes					
D1. Labour outcomes, December 2011					
I. Employment status (current)					
Unemployed	0.053	0.229	0.133	0.352	-0.0807
Works in the formal economy	0.316	0.478	0.000	0.000	0.316**
Has a vendor license	0.000	0.000	0.000	0.000	0
Self-employed, formal job	0.211	0.419	0.000	0.000	0.211*
Employee, formal job	0.105	0.315	0.000	0.000	0.105
Self-employed, informal job	0.632	0.496	0.867	0.352	-0.235
Employee, informal job	0.000	0.000	0.000	0.000	0
II. Job classification (current)					
Scrap, cardboard, appliances dealer	0.579	0.507	0.800	0.414	-0.221
Street vendor	0.158	0.375	0.067	0.258	0.0912
Skilled worker	0.263	0.452	0.000	0.000	0.263**
D2. Labour outcomes, years 2006-2011					
III. Employment status (2006-11)					
Unemployed	0.118	0.332	0.182	0.395	-0.0642
Works in the formal economy	0.444	0.511	0.095	0.301	0.349**
Self-employed, formal job	0.222	0.428	0.000	0.000	0.222**
Employee, formal job	0.235	0.437	0.095	0.301	0.140
Self-employed, informal job	0.667	0.485	0.810	0.402	-0.143
Employee, informal job	0.000	0.000	0.048	0.218	-0.0476

(Continued)

Table 2.16 (Continued)

| | Age at which child left the slum | | | | |
| | 0-14 | | 15-later | | |
	mean	sd	mean	sd	diff
IV. Job classification (2006-2011)					
Scrap, cardboard, appliances dealer	0.632	0.496	0.762	0.436	-0.130
Street vendor	0.176	0.393	0.143	0.359	0.0336
Skilled worker	0.353	0.493	0.143	0.359	0.210
Panel E. Welfare dependency					
Receives Minimum Income Subsidy (RMI)	0.200	0.410	0.250	0.442	-0.0500
Has received Minimum Income Subsidy (RMI)	0.250	0.444	0.250	0.442	0
Panel F. Other outcomes					
Has a driving license	0.727	0.456	0.778	0.424	-0.0505
Lives in a slum/squat	0.000	0.000	0.167	0.389	-0.167
Lives in own flat	0.100	0.316	0.250	0.452	-0.150
Block 2. Females, ages 21-26 (N=85)					
Panel A. Family characteristics					
Age of child	22.840	1.503	23.886	1.711	-1.046***
Mother age at resettlement year	32.680	5.640	36.813	4.547	-4.133***
Father age at resettlement year	34.366	6.110	38.552	5.138	-4.186***
Mother literate	0.286	0.456	0.286	0.458	0
Father literate	0.658	0.481	0.586	0.501	0.0717
Ancestors Extremeños	0.306	0.466	0.457	0.505	-0.151
Ancestors Gallegos	0.041	0.200	0.000	0.000	0.0408
Ancestors Portugueses	0.041	0.200	0.086	0.284	-0.0449
Ancestors Castellanos	0.408	0.497	0.257	0.443	0.151
Evangelical church members	0.694	0.466	0.743	0.443	-0.0490
Evangelical church daily attendance	0.408	0.497	0.371	0.490	0.0367
Parent/s lived in a flat before 14	0.320	0.471	0.229	0.426	0.0914
Panel B. Environment characteristics					
No other Roma in building	0.750	0.438	0.882	0.327	-0.132
Slum was in Madrid city	0.938	0.245	0.886	0.323	0.0518
Slum had drug problems	0.160	0.370	0.057	0.236	0.103
Slum had easy town access	0.600	0.495	0.486	0.507	0.114
Slum had easy school access	0.240	0.431	0.171	0.382	0.0686

(Continued)

Table 2.16 (Continued)

| | Age at which child left the slum | | | | |
| | 0-14 | | 15-later | | |
	mean	sd	mean	sd	diff
Slum was public housing	0.200	0.404	0.114	0.323	0.0857
Number of IRIS households in slum	39.260	50.501	85.257	71.323	-46.00***
Flat in Madrid city	0.417	0.498	0.371	0.490	0.0452
Number of IRIS households in area	27.820	24.895	26.057	21.282	1.763
Panel C. Education outcomes					
Can read and write	0.867	0.344	0.800	0.406	0.0667
Attended school beyond Primary	0.580	0.499	0.571	0.502	0.00857
Age left school	14.564	1.789	13.935	2.632	0.629
Dropped out by age 13	0.256	0.442	0.387	0.495	-0.131
Dropped out by age 14	0.410	0.498	0.419	0.502	-0.00910
Dropped out by age 15	0.564	0.502	0.484	0.508	0.0802
Panel D. Labour outcomes					
D1. Labour outcomes, December 2011					
I. Employment status (current)					
Unemployed	0.667	0.479	0.864	0.351	-0.197
Works in the formal economy	0.030	0.174	0.091	0.294	-0.0606
Has a vendor license	0.000	0.000	0.045	0.213	-0.0455
Self-employed, formal job	0.000	0.000	0.091	0.294	-0.0909*
Employee, formal job	0.030	0.174	0.000	0.000	0.0303
Self-employed, informal job	0.303	0.467	0.045	0.213	0.258**
Employee, informal job	0.030	0.174	0.000	0.000	0.0303
II. Job classification (current)					
Scrap, cardboard, appliances dealer	0.182	0.392	0.045	0.213	0.136
Street vendor	0.061	0.242	0.045	0.213	0.0152
Skilled worker	0.121	0.331	0.000	0.000	0.121*
Domestic cleaner, carer	0.000	0.000	0.045	0.213	-0.0455
D2. Labour outcomes, years 2006-2011					
III. Employment status (2006-11)					
Unemployed	0.771	0.426	0.870	0.344	-0.0981
Works in the formal economy	0.091	0.292	0.211	0.419	-0.120
Self-employed, formal job	0.000	0.000	0.105	0.315	-0.105*
Employee, formal job	0.091	0.292	0.105	0.315	-0.0144
Self-employed, informal job	0.343	0.482	0.211	0.419	0.132

(Continued)

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Table 2.16 (Continued)

| | Age at which child left the slum | | | | |
| | 0-14 | | 15-later | | |
	mean	sd	mean	sd	diff
Employee, informal job	0.030	0.174	0.000	0.000	0.0303
IV. Job classification (2006-2011)					
Scrap, cardboard, appliances dealer	0.171	0.382	0.105	0.315	0.0662
Street vendor	0.121	0.331	0.105	0.315	0.0159
Skilled worker	0.212	0.415	0.211	0.419	0.00159
Domestic cleaner, carer	0.000	0.000	0.053	0.229	-0.0526
Panel E. Welfare dependency					
Receives Minimum Income Subsidy (RMI)	0.256	0.442	0.440	0.507	-0.184
Has received Minimum Income Subsidy (RMI)	0.436	0.502	0.520	0.510	-0.0841
Panel F. Marriage and fertility outcomes					
Married by age 15	0.400	0.496	0.222	0.424	0.178
Married by age 17	0.625	0.490	0.630	0.492	-0.00463
Had a child by age 15	0.150	0.362	0.100	0.305	0.0500
Had a child by age 17	0.400	0.496	0.333	0.479	0.0667
Panel G. Other outcomes					
Has a driving license	0.114	0.321	0.129	0.341	-0.0154
Lives in a slum/squat	0.211	0.419	0.200	0.414	0.0105
Lives in own flat	0.105	0.315	0.267	0.458	-0.161

Notes: Variables at the household level. All variables are indicators that assume a 1 or 0 value. Standard deviations are reported next to the means. t-tests under the null of equality of means: * significant at 10%, ** significant at 5%, *** significant at 1%.

Education outcomes   We first discuss the education outcomes of children ages 17 to 20 (Table 2.15, Block 1, Panel C for boys, and Table 2.15, Block 2, Panel C for girls).

The first measure of education that we present is *Can read and write*. We observe that the mean for the group of boys ages 17 to 20 that left the slum after age 9 is larger than the mean of those that left the slum by age 9, i.e., a larger percentage of the "late leavers" can read and write as compared to the "early leavers" and as reported by the mothers of the children. The result we observe for girls is the opposite: 98% of the

"early leavers" can read and write and only 88% of the "late leavers" can. The difference observed in means is only significant for girls.

We measure education outcomes in an alternative way, by asking the mother the last grade the child had attended (from which we constructed the variable *Attended school beyond Primary*) and the age at which she left school (*Age left school*). The results obtained in our means comparisons for these outcomes could be seen as a contradiction if we compare them to the outcomes in the variable *Can read and write*, although it is important to note that none of these results is statistically significant at the one percent level. The boys that are "early leavers" fare better when comparing the two groups in which we have divided the sample: A higher percentage of them attended school beyond Primary as compared to the "late leavers" and they left school slightly later; still, it is important to note that the differences are small (and not significant). The girls that are "early leavers" fare worse than the "late leavers" in these measures: They left school earlier on average and a larger percentage of them did not attend school beyond Primary (none of these differences is statistically significant).

In Table 2.16 we present the education outcomes for children ages 21 to 26 (Table 2.16, Block 1, Panel C for males and Table 2.16, Block 2, Panel C for females). For these cohorts, the group comparisons are between children that left the slum by age 14 and children that left the slum after age 14.

The education outcomes that we observe for males indicate that the boys that left the slum before age 15 did significantly better at school: Much larger percentages of them can read and write, attended school beyond Primary, and left school at a later age. For example, 72% of the "early leavers" attended school beyond Primary Education and onyt 45% of the "late leavers" did; "early leavers" left school on average at age 15.7 and "late leavers" left it at age 14 on average. All the differences in means are statistically significant.

In the case of girls, we also obtain better results for the girls that left the slum earlier (by age 14) in all the outcomes that we measure. The differences in means for both groups are not as large as the ones observed for boys, and they are not statistically significant. For example, the girls that left the slum before age 14 reported having left school at age 14.6 on average, while the girls that left the slum after age 14 left the school on average at age 13.9.

Labour and welfare outcomes We present the labour outcomes for children ages 21 to 26 in Table 2.15, Block 1, Panel D for males, and Table 2.15, Block 2, Panel D for females. We use the same variables that we used for analysing the labour outcomes of the parents, and the same criterion applies in the way we have codified and categorized the survey responses. We asked the mothers about the jobs that their children had held both during December 2011 and during the years 2006 to 2011. The sample size for this group age is small, but obtaining estimates on these outcomes is of interest and provides additional supporting evidence to our conclusions obtained from analysing changes observed in the parents. We will focus on describing the outcomes in which we can observe differences for both groups and those that we consider more relevant to highlight.

In Block 1, Panel D, Section D2 we present the son's situation in the labour market during the period January 2006 - December 2011. We observe a pattern similar to that observed in the fathers and mothers: The differences in formal economy outcomes in the two groups are starking. The data shows that the group of "early leavers" (left the slum by age 14) have a much higher probability of having had a formal job during the period 2006-2011: 44% of the "early leavers" have had a formal job, in contrast with only 9.5% of the "late leavers". 22% of the "early leavers". We observe the similar result for the job that the men had in December 2011 (Panel D, Section D1): 31% of the "early leavers" had a formal job in December 2011, while 0% of the "late leavers" had a formal job. These differences are driven both due to a larger proportion of men working in formal jobs as self-employed and to a larger proportion of men working in formal jobs as employees. The former difference is significant both for the month December 2011 and for the period 2006-2011.

We show the labour outcomes for the daughters, ages 21-26, in Table 2.15, Block 2, Panel D. In Section D2 we present their labour market outcomes for the period January 2006 - December 2011 and in Section D1 we show their situation in December 2011. We obtain a different result than that seen in the mothers, fathers, and sons: The girls that left earlier seem to be participating less in the formal economy on average. For example, 10% of the girls that left the slum after age 14 have had some job in the formal economy, while none of the ones that left the slum by age 14 have. The girls that left the slum earlier also have a higher probability of being working in the informal economy; for example, 30% of the "early leavers" worked in the informal economy during

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December 2011 (as reported by their mothers) and only 4.5% of the "late leavers" did. An interesting observation that we can make at this point is that we also observe that the "early leavers" have married younger and have had children at an earlier age. We describe this data next.

We collected data on welfare benefits for these cohorts –see Panel E, Block 1 (men) and Panel E, Block 2 (females). The variables presented are the same ones we presented for the parents: *Receives Minimum Income Subsidy (RMI)* refers to the situation in December 2011 and *Has received Minimum Income Subsidy (RMI)* refers to whether the child received the RMI at least once during the period 2006-2011. We observe no differences in the answers obtained for the two groups in which we have split the sample, both for men and women.

Marriage and fertility outcomes   The measures for marriage and fertility outcomes for the daughters ages 21 to 26 are reported in Table 2.16, Block 2, Panel F. The variables are the same ones that we provide for the daughters ages 17 to 20, and we obtain similar results: The girls that left the slum earlier married earlier and had children earlier, on average. For example, 40% of the "early leavers" had married by age 15 (only 22% of the "late leavers had"), although the difference in the two groups almost disappears after age 17: For both groups, more than 60% of the girls had married by age 17. The differences in neans for the fertility rates are less dramatic but still suggest the same behaviour: The girls that left the slums earlier had children at a younger age. Still, none of the differences in means that we present for the fertility and marriage outcomes is statistically significant.

Other outcomes   We collected information on other outcomes: If the child had a driving license and if he had moved out of the paternal home and lived in his own flat (public housing) or in a slum or squat. A larger percentage of the children that left the slum later have driving licenses and have left their parents home (to live either in public housing, a slum, or a squat), although none of the differences in means is statistically significant.

Chapter 3

Can leaving the slums have a positive impact on Roma children?

3.1 Introduction

Does a radical change in the socioeconomic environment of a child, from poor and marginalized to normalized and integrated, have an impact on her life and education outcomes? A better social and economic environment during childhood is highly correlated with better individual education and life outcomes (Brooks-Gunn et al., 1993; Cutler and Glaeser, 1997; Galster et al., 2007), but research on the causal link between socioeconomic environment and individual life outcomes is inconclusive: Research exploiting public housing programs generally concludes that changes in the neighbourhood do not have a significant impact on an individual's education, social and economic outcomes, while studies exploiting immigrants' resettlement programs generally conclude the opposite: being placed in better neighbourhoods can have a positive impact on a child's life outcomes.

In this paper, I provide a novel insight into this debate by evaluating the impact on Spanish Roma children of moving out of the slums and into integrated flats in the Region of Madrid. I test the hypothesis that a child that is resettled from the slums at an early age will have better life outcomes than a child that is exposed to slum life in his early childhood; in particular, I estimate the impact for Spanish Roma children aged 7 to 14 of being resettled from the slum before age 6 on selected education, integration and

aspirations outcomes. I find that the change in environment has a positive and significant impact on the probability that a child has not repeated grade at school and no significant impact on her integration and aspirations outcomes.

Estimating the impact of changes in the socioeconomic environment is complicated because individuals self-select into the neighbourhoods they live in. This self-selection is based on their individual characteristics, which are likely to influence outcomes and behaviours. These correlated effects bias the estimates of the effect of the neighbourhood or socioeconomic environment on individual outcomes, and thus the relation observed cannot be interpreted as causal. Researchers have used different econometric methods to overcome this challenge: Natural experiments, instrumental variables, fixed effects, or adding control variables. The problem with all these methods is that it is difficult to observe and control for all possible reasons why self-selection of individuals into different locations may occur; for example, even in the case of randomized control trials, individuals may be allowed some choice. This is the case in one of the benchmark residential mobility programs that has been studied extensively in the literature, the Moving to Opportunities program (MTO) in the U.S.: Although families did not choose whether they would be offered a voucher to move to better areas, those offered the voucher had the possibility of not moving, and among those that moved many chose to move to neighbourhoods that were highly segregated, if more affluent (Orr et al., 2003), made short-distance moves to still economically declining neighbourhoods, and continued sending their children to the same schools as before (Duncan and Zuberi, 2006). A good solution to the selection bias problem that can be implemented when estimating outcomes for young children is the use of family fixed effects (Aaronson, 1998). Since the children do not choose to move out of the slum and when to do so, comparisons of children within a family can lead to unbiased estimates of the impact of a change in neighbourhood, since comparisons within families eliminate the problem of family unobservables being correlated with the outcomes studied.

In order to conduct my research, I partnered and worked in collaboration with the Institute for Rehousing and Social Integration (IRIS)[1]. We surveyed a sample of 543 Roma families resettled by IRIS housing program from one to ten years before the survey took place (January 2012). I chose this sample randomly from the total universe of families participating in the program, which was 2,007 families at the time the survey

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[1]Instituto de Realojamiento e Integración Social.

started. In total, I collected data from 791 children aged 7 to 14, from 474 families.

To estimate whether being resettled from the slums at an early age can have an impact on the education, integration and aspiration outcomes of young Roma children, I make use of family fixed effects estimations. My empirical strategy relies on the fact that the children resettled by the resettlement program I evaluate do not choose to move out of the slum, or when to do so. Following the literature on early childhood development (Cunha and Heckman, 2007; Heckman, 2007), I divide the children in my sample in two groups depending on their level of exposure to life outside of the slums: Children resettled after age 5, i.e., that were living in the slum at the time they began school, and children resettled at age 5 or earlier (before they entered school or born outside the slum), but whose parents had also been relocated by the program 1 to 10 years before our survey took place. I present estimates of the impact of being resettled at age 5 or earlier on children's education, integration and aspiration outcomes. My estimates suggest a positive and significant impact of the change in environment in the probability that the child has not repeated grade at school and no significant impact on the integration and aspirations outcomes evaluated. To alleviate the concerns related to the cut-off point choice of age 5, I also present estimates of the impact of being resettled early using different measures for age at which the child left the slum. Last, I present my results by gender and discuss the robustness of my results to alternative definitions of the education outcome.

The results I present in this paper suggest that leaving the slums at an early age can have a positive effect on the education of Roma children. My results are interesting for a number of reasons. First, they could suggest that changes in neighbourhoods for poor and marginalised children from ethnic minorities in developed countries could have a positive impact on their education, contrary to what most research on the housing literature concludes on this topic. Second, this study is unique in that it is the first study to evaluate quantitatively how a resettlement program is affecting the lives of marginalised Roma children living in slums.

The remainder of the paper is structured as follows. Section 2 discusses the related literature. Section 3 provides an overview of the context and a description of IRIS housing program. Section 4 describes the data. Sections 5 and 6 discuss my empirical strategy and results. Section 7 presents robustness checks. Section 8 concludes.

3.2 Literature framework

The positive correlation between better neighbourhood characteristics and better education outcomes for children is extensively documented (Brooks-Gunn et al., 1993; Cutler and Glaeser, 1997; Galster et al., 2007). However, research on the causality relation between environment and children's education outcomes is inconclusive. The two main branches in the literature of neighbourhood effects that study this causal relation offer conflicting views: Most studies that exploit public housing programs in developed countries conclude that changes in the neighbourhood do not lead to changes in education outcomes; on the other hand, a large number of studies that exploit variations in neighbourhood quality for resettled immigrants conclude that a better environment can affect positively a child's education achievement.

Research on the causality relation between childhood environment and individual outcomes is complicated because families self-select into the neighbourhoods they live in. The housing literature has tried to overcome this self-selection bias by exploiting plausible random allocations of poor families into different public housing projects or flats, either through chance –demolition of buildings (Jacob, 2004) – or through lotteries, e.g. the Moving to Opportunities (MTO) housing program in the U.S. (Kling et al., 2007; Sanbonmatsu et al., 2006; Gennetian et al., 2012), where some families were given the option and support to move to better quality neighbourhoods.

MTO is a benchmark study on the area of neighbourhood effects. It is an experimental housing mobility program that was designed with the objective of studying the impact of neighbourhood effects on poor families receiving vouchers to move from poor to better-off neighbourhoods. Families, primarily female-headed minority households with children, living in high-poverty public housing projects were offered housing vouchers by lottery. The program has been operating in five U.S. cities since 1994: Baltimore, Boston, Chicago, Los Angeles, and New York, and has been extensively evaluated by researchers both in the short- and long- term –see for example: Katz et al. (2001) (short-run), Sanbonmatsu et al. (2006) (medium-run for children outcomes), Kling et al. (2007) (medium-run for adult outcomes), Gennetian et al. (2012) (long-run for youth outcomes), or Sanbonmatsu et al. (2012) (long-run for adult outcomes). The general conclusion from these studies is that residential changes have little or no effect on adults and children, except for an improvement in selected health outcomes

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when moving to better neighbourhoods. In particular, Kling et al. (2007), Sanbonmatsu et al. (2006) (medium-run) and Gennetian et al. (2012) (long-run) study the impact of the program on children's education outcomes and conclude that the program had no impact on children's education outcomes, on average. The authors also test whether younger children benefit more from the program than older ones and find no evidence of this too: The children that participated in the program did not improve their educational outcomes, on average, regardless of the age at which they entered the program –these results hold even for children that entered the program at preschool age.

Outside of the MTO literature, most studies of other housing programs have reached similar conclusions to those obtained from the MTO program: Residential quality variation does not have a significant impact on children's education outcomes. Jacob (2004) makes use of a quasi-random natural experiment in Chicago, where some projects were demolished and the families living in them were provided with vouchers that allowed them to move out of public housing complexes. Jacob (2004) finds no significant short- or medium-run impact (1 to 5 years after the move) of moving out of the complexes on educational achievement outcomes. Similarly, Gibbons et al. (2010) study the impact of neighbourhood changes on children ages 11 to 16 and conclude that they have no effect on educational outcomes. However, there are a few papers that provide some evidence in favour of the contrary conclusion (moving to better neighbourhoods has a positive impact); e.g., Galster et al. (2007), analysing data from England. Aaronson (1998) also obtains evidence in favour of the importance of neighbourhoods on children's educational outcomes, using a siblings comparisons approach to the analysis of neighbourhood effects. According to Aaronson (1998), the instrumental variables that had been used in previous studies to correct the self-selection problem (families choose where to move to) were not credible enough; instead, Aaronson (1998) uses family fixed effects to study the educational outcomes of siblings (separated by at least 3 years) and concludes that the impact of neighbourhoods may exist even when family-specific unobservables are controlled for.

The impact of neighbourhoods on children educational outcomes has also been analysed extensively in the immigration literature. Studies based on immigrants tend to provide more support of the idea that the environment matters for children's educational outcomes. Strong evidence of this is found in Gould et al. (2011), who estimate the effect of the early childhood environment in the long-run on a large array of social and

economic outcomes and find that it has an important impact on women and their children, but not on men. The authors exploit variation in the living conditions experienced by Yemenite children after being airlifted to Israel in 1949 and find that children placed in a more modern environment (better sanitary and infrastructure conditions) were more likely to obtain higher education and also marry at an older age, have fewer children, work at age 55, and be assimilated into Israeli society.

An important factor for immigrant children's educational attainment is the age at which they arrive to their host country. There is a large amount of evidence showing that, among young immigrants, late-arrivers perform worse in educational outcomes. This evidence is largely consistent across studies, despite the variety of data and countries studied, the educational outcomes measured and differences in key assumptions, such as age of entry cut-offs and covariates.

A large number of studies have focused on the impact of age at immigration on the number of years of education, dropouts or school completion for young immigrants. Chiswick and DebBurman (2004), Gonzalez (2003), Perreira et al. (2006) and Heckman (2001) all find that a later age at arrival is negatively correlated with the number of years of schooling for immigrants that arrived in the U.S. as children. Perreira et al. (2006) use a sample of 18 to 26 year old immigrants in the U.S. and present evidence on the negative correlation between arriving after age 5 and high school completion. Heckman (2001) studies school enrolment of children aged 15 to 17 years old and finds a negative correlation between age at entry and school enrolment. Gonzalez (2003) studies immigrants that arrived in the U.S. before age 19 and finds a negative correlation between years of schooling and age at entry. Last, Chiswick and DebBurman (2004) provide a slightly different result, finding evidence that teenage immigrants (13 to 19 years old) have the lowest number of years of schooling, as compared to both pre-teen immigrants and post-teen immigrants (their sample consists of adults aged 25-65); still, their conclusion does not contradict the idea of a late age at arrival affecting the educational development of children when they arrive in school age. The cut-off points used in these studies vary; for example, in Heckman (2001), age at entry is classified in two categories: 0 to 5 or 6 and older, while both Chiswick and DebBurman (2004) and Gonzalez (2003) categorise age at arrival in small intervals (from 0 to 4 (Chiswick and DebBurman, 2004) or 1 to 5 (Gonzalez, 2003) onwards) and also test their hypothesis for age at arrival in continuous form.

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Research conducted with data from European countries arrives at similar conclusions. Bratsberg et al. (2011) (Norway) find there is a positive relation between early arrival and secondary school completion for immigrant children in Norway; they find a particularly steep gradient after age seven. Cohen-Goldner and Epstein (2014) study the case of immigrants in Israel arriving from the former Soviet Union and find a negative relation between age at arrival and the share of high school dropouts among immigrant children. Schaafsma and Sweetman (2001) present evidence from Canada. They find that child immigrants that arrive at ages 15 to 18 obtain less years of education than those that arrive at an earlier age, and this has an impact on their earnings too. They hypothesise that acculturation may be the reason behind these differences.

There is also research on the impact of age at arrival on test scores of immigrant children. Böhlmark (2008, 2009) study the impact of age at arrival of immigrant children on test scores taken at age 16 in Sweden, finding that the impact is strong and significant for children that arrive at age 9 and after. Böhlmark (2008) also finds some small impact starting from age 7. Cortes (2006) reports evidence that age of entry is negatively correlated with test scores for children in eight and ninth grade (ages 13 to 14) in schools in San Diego and Miami: the younger a child has arrived in the U.S., the higher his test score gap with respect to second-generation immigrant children. Turning to younger children, Ohinata and van Ours (2012) evaluate the test scores of maths and science for immigrant children ages 9 and 10 in The Netherlands. They conclude that age at immigration matters for children with both parents non-native: The children that arrive at age 5 or older have lower scores than those who entered between ages 0 and 4.

Some studies find exceptions or limitations to this generalised finding of age at arrival having a negative impact on education outcomes. For example, Glick and White (2003) find no evidence that age at immigration has an impact on test scores or high school dropouts of 10th graders in the U.S., once they control for all relevant covariates. Also, although Böhlmark (2009) finds an impact of age at entry on test scores at age 16, he does not find that age at arrival of immigrant children has an impact on education completion measured at age 30. Stiefel, Schwartz, and Conger (2010) hypothesise that the relationship between age at arrival and educational outcomes is not linear: They compare immigrant children that arrive at different stages (elementary school, middle school, and high school) and conclude that, if an optimal age of entry should be derived from their analysis, it would be late rather than early. This idea is also supported by

the theoretical model presented in Cohen-Goldner and Epstein (2014), who argue that immigrants arriving after they have completed their education in their home countries, or at least their high school education, may have an advantage over immigrants arriving in their teens.

Last, the idea that age at arrival impacts educational outcomes of immigrant children, especially for those that arrive very young, is also strongly supported by theories of early childhood development. There is ample evidence from neurobiology studies of the importance of the early childhood environment (Walker et al., 2011). In particular, childhood environment during the early stages of a child development (0 to 5 years) is the crucial and most important stage of development in a child and person (Cunha and Heckman, 2007) and is the principal factor affecting a person's development: Once we control for family characteristics it explains most of the social and economic outcomes of a child's adult life (Heckman, 2007). Turning to very young children, Dobbie and Fryer Jr (2011) find no cognitive difference between black and white babies until they reach age 2.

3.3 Context and IRIS Housing Program

3.3.1 Context and historical background

The Spanish Roma or *gitanos* are the largest disadvantaged ethnic minority in Spain[2]. They have been socially and economically excluded and marginalized in most Spanish regions since their arrival in the Iberian peninsula in the fifteenth century[3]. This situation has been improving greatly since the 1990s, but the gap between the average Spanish Roma and the average Spanish non-Roma is large: In terms of education, 8.7% of the Spanish Roma are illiterate, in contrast to 2.2% of the total Spanish population. The differences in poverty rates are also considerable: 77.1% of the Roma are below 60% of the relative poverty rate median in Spain –in contrast to 16.9% of the total population and 29.6% of immigrants–, and 37.5% are below 30% of the relative poverty median– as compared to only 3.4% of the total population and 4.3% of immigrants. A

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[2]It is estimated that there are between 570,000 and 1,100,000 *gitanos* in Spain, and that 10% of them reside in the Region of Madrid (Laparra et al., 2007a).

[3]For an historical overview of the Roma in the Iberian peninsula, see Leblon (2001) and San Román (1997).

Table 3.1: Comparison of socio-economic indicators for the Spanish Roma

	Population living in Spain		
Indicators	Total	Roma	Immigrants
Education			
Percentage illiterate	2.2	8.7	–
Poverty indicators			
Percentage below 60% of the poverty rate median in Spain	16.9	77.1	29.6
Percentage below 30% of the poverty rate median in Spain	3.4	37.5	4.3
Labour			
Percentage of workforce working as employees	83.6	37.6	–
Family size			
Number of children per family	0.8	2.7	–

Notes: The statistics shown in the table are the best available approximation to the current situation of the *gitanos* (MHSPE, 2012). However, it must be noted that they have been obtained from different studies and do not correspond to the same or equivalent samples, and differ both in time range (between 2007 and 2011) and location of the sample (different cities). These studies also vary in their methods for data collection and analysis (details on the studies, data sources, sample and methodology, are provided in MHSPE (2012)).

key difference between Roma and non-Roma is labour market participation: The Roma work mainly in the informal economy, and only 37.6% of the total Roma workforce work as employees, a small number compared to the 83.6% of the total Spanish workforce that work as employees. The Roma marry much younger, usually to other Roma; they also have larger families on average: 2.7 children, in contrast to 0.8 children in an average Spanish family[4], and one third of the total population of Roma in Spain are younger than 15 years old[5].

The Spanish Roma used to be nomads, but most had become sedentary by the 1970s. From the 1950s through the 1970s, the Roma emigrated to the cities, which offered jobs and better prospects for their marginal activities: scrap metal, performances, begging (San Román, 1997). This is the period when they started creating settlements in the surrounding areas of the main cities. Each settlement was usually formed by one

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[4]These statistics represent the average at a point in time.

[5]The data described in this section is summarized in Table 3.1. The statistics presented are collected in Laparra et al. (2007a). It is important to note that the estimates presented in this table are not directly comparable, since they come from different studies, samples, locations, and years (between 2007 and 2011); still, they are the best approximation available to date to the situation of the *gitanos* in Spain (MHSPE, 2012).

or a very small number of clans. In 1971, almost all the Roma living in the outskirts of Madrid city were living in precarious conditions: Around 12,000 of them lived in slums (82.4%) and the rest lived in slum-like public buildings, with few exceptions[6]. The government of Madrid began clearing operations of these settlements during the 1970s. According to their records, they had largely succeeded by the mid-1980s[7]. However, new waves of Roma migrants arrived. These new Roma migrants were particularly marginal, poor, and socially excluded, and they settled nearby roads (Alonso, 2005)[8]; according to the 1986 census, they were in total 2,674 families settled in 61 settlements located in 18 districts in Madrid, mostly in the south. The average size of each of these settlements was 44 families (CPM, 1986; Nogués-Sáez, 2010). It was after this 1986 census that the authorities in the city of Madrid started a systematic process of resettlement of the families in these settlements. A special organism was created for this purpose: Consortium for the Marginalised Population (CPM)[9]. The task of this organism was later continued by Institute for Rehousing and Social Integration (IRIS)[10], created in 1998[11], and it can be argued that IRIS had almost completed resettling all Spanish Roma families living in slums by the beginning of 2012: At the time in which my data was collected, there only remained around 400 registered slum dwellings in the Region of Madrid, down from the 1,600 households living in slums registered in IRIS records in 1999[12] –see Table 3.3[13].

Data for the Roma in Madrid and, more specifically, for the Roma living in settlements, is very scarce (mostly collected for the purpose of creating censuses). IRIS collects some basic data when they start to work in a slum. In Table 3.2, I present

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[6]These statistics were produced by Asociación de Desarrollo Gitano (source: San Román (1997)).

[7]Some of these resettlements moved families to slum-like public buildings, but the city was "cleared" from slums.

[8]Nogués-Sáez (2010) provides a detailed description of the historical evolution of settlements and public housing policies in the Region of Madrid.

[9]Consorcio para la Población Marginada.

[10]Instituto de Realojamiento e Integración Social.

[11]For a detailed an historical overview of slums and resettlement policies in Madrid, see Alonso (2005); for a detailed discussion on the differences between IRIS program and its predecessor, see Nogués-Sáez (2010).

[12]These counts exclude the settlement Cañada Real, which is increasingly growing but has a minority of Spanish Roma.

[13]A survey conducted by FSG (2007) in the Region of Madrid reports that the number of *gitanos* living in slums decreased from 64% in 1991 to only 13% in 2007, and the majority of those families living in flats or houses reported to be benefiting from public housing. According to this survey, only 2.1% of the *gitanos* living in flats or houses in 2007 had acquired their property from the free property market (purchase or rental).

Table 3.2: Evolution of literacy and poverty in the slums

Slums data from IRIS records (individuals ages 17 and above)					
	2003	2006	2008	2010	2011
Illiteracy rate					
Illiterate	0.62	0.30	0.22	0.15	0.17
Monthly income declared					
Below 601 €	0.66	0.68	0.75	0.61	0.61
Below 1081 €	0.94	0.96	0.95	0.89	0.90
Item response	*(0.34)*	*(0.54)*	*(0.72)*	*(0.46)*	*(0.38)*

Notes: Entries in the table correspond to the means of the relevant variables and were calculated adding up the average values for the slums for which data was collected on the particular year; in 2003, information was collected for the slums: El Cristo, Pitis, Huertos, San Fermín, Santa Catalina, Trigales, Barranquillas, and Salobral; in 2006, data was gathered from: Santa Catalina, Trigales, Barranquillas, Salobral, and Ventorro; in 2008, from Santa Catalina and Ventorro; in 2010 and 2011, from Santa Catalina, Ventorro, Gallinero, Antonio Cabezón, Manuel Villarta, Bajo Gran Vía, Las Castellanas, and San Nicasio. The variable *Illiterate* uses the sample of individuals age 17 and above. *Monthly income declared* refers to total family income and the item response rates are provided in parenthesis in the last row of the table.

statistics on illiteracy rates and declared monthly income that have been collected by IRIS staff in the slums. It is important to note that this data comes from different slums, depending on the year for which it is recorded, and that it includes all people living in the slum that provided IRIS with this information.The population for each year is not comparable. The majority of these people are Spanish Roma, but in the later years (2010 and 2011) there is an increasing percentage of people from other ethnicities or origin, especially immigrants. For example, one of the slums included in the data shown (corresponding to the years 2010 and 2011), Ventorro, has a population composition that is very different from that of the other slums and has better educated individuals[14]. Also the slum of Santa Catalina was considerably richer than the rest, on average.

The data shown in Table 3.2 suggests that illiteracy rates for Roma slum-dwellers have decreased considerably. This trend is also observed in the Roma population in general (MHSPE, 2012), so despite the limited reliability of the indicators presented in Table 3.2 (for the reasons stated above) it is plausible to assume that the trend in illiteracy rates is downwards also for the Spanish Roma living in slums. In Table 3.2, I

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[14]The families living in this slum have not been rehoused by IRIS yet, and are not part of my sample.

also show data for reported income. Most families declare earning a salary that is below minimum income.

3.3.2 Description of IRIS housing program

I study the impact on Roma families of being resettled from the slums by IRIS housing program. In what follows, I summarise the main characteristics and features of this housing program[15].

In total, more than 2,000 Spanish Roma families were participating in IRIS housing program by the start of my survey [16], a number that corresponds to approximately 12-18% of the total number of Spanish Roma currently residing in the Region of Madrid, according to estimates by IRIS (2010). In Figure 3.1, I show the number of slum dwellings censused for the years 1999 to 2011 and the number of families rehoused by IRIS during that period. The graph on the left shows a decrease from more than 1,600 families living in slums in 1999 to less than 400 in 2011. The corresponding data is shown in Table 3.3.

IRIS housing program is offered to families living in settlements that the Region of Madrid has agreed to "clear" (negotiations take place between the municipality in which the slum is located and the Region of Madrid). Not all families living in a settlement can participate in IRIS program; the basic requirements for being eligible for the program are[17]: Proof of residence, declared income of less than 22,365€, no properties, not having had rejected another offer of public housing in the Region of Madrid, and being older than 25 years old[18]. Proof of residence has varied during the years, but for the latest resettlement operations –the ones concerning the majority of the sample in our study– IRIS has been requesting proof of residence by 31 December 2004. According to IRIS staff, a large number of families did not fulfil these requirements in the 5 to 8 years before our survey took place, but the majority of families that were rejected were

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[15]For a detailed description and discussion of IRIS housing program, see chapter 2 in Santiago (2015c).

[16]The participation in the program is for good: Subsidized rental housing with no time limitation, conditioned on paying the rent. The number of families participating in IRIS program as of December 2011 was 2,254 (8,972 individuals), and IRIS estimates that 90% of them are Roma.

[17]As of December 2012.
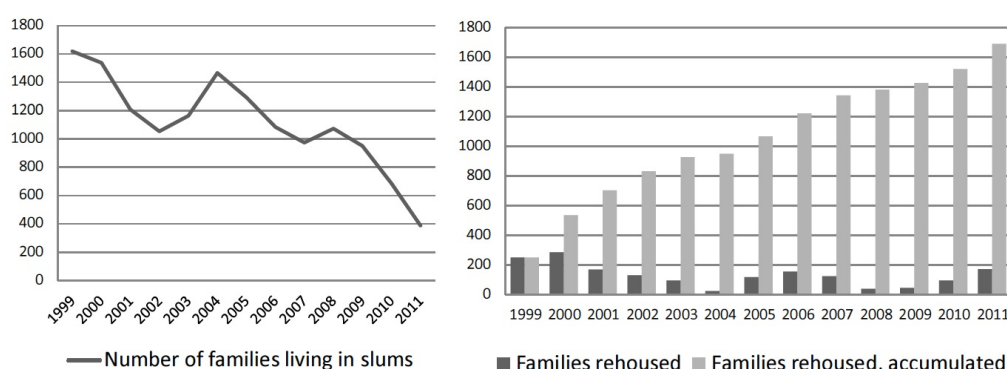
[18]The age constraint is relaxed for couples older than 18 years old if they have children and live in their own dwelling, separated from their parents.

Table 3.3: Number of families living in slums and rehoused by IRIS, 1999-2011

| Year | Number of families | | |
	Living in slums (census)	Rehoused by IRIS (Yearly)	Rehoused by IRIS (Accumulated)
1999	1618	249	249
2000	1537	285	534
2001	1207	168	702
2002	1054	130	832
2003	1164	94	926
2004	1466	23	949
2005	1292	117	1066
2006	1084	155	1221
2007	974	123	1344
2008	1073	38	1382
2009	950	45	1427
2010	685	94	1521
2011	388	170	1691

Notes: Entries in column 2 present the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. Entries in columns 3 and 4 represent the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). The data is presented in Figure 3.1.

Figure 3.1: Number of families living in slums and rehoused by IRIS (1999-2011)

Notes: The figure on the left presents the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. The figure on the right presents the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). Data entries are provided in Table 3.3.

rejected either because they had another property elsewhere or did not having proof of residency in the slum. In order to verify this claim made by IRIS, I collected information on a particular slum, Salobral. The data I collected supports the claim, for the case of Salobral[19]. Previous to the last 8 years before my survey, almost all families were accepted into the program.

Almost all families that are offered a house by IRIS accept it –99% of the families, according to IRIS sources. Also, very few families choose to leave the program. Figure 3.2 shows the percentage of families that have stayed in the program, have been expelled, and have quitted from it[20]. The majority of the families (90.9%) have stayed in the program, and only 1.4% of them chose to leave the flat (voluntarily or involuntarily, e.g., due to death). 7.7% of the families were expelled by IRIS due to a long and considerable delay on their payments of the flat's rent. The majority of the families expelled were resettled by IRIS between the years 1998 to 2000, so they do not concern my analysis because I construct my sample from families rehoused by IRIS between the years 2001 and 2011[21].

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[19]See Santiago (2015c)

[20]Data comes from IRIS Administrative Records, as retrieved in May 2010.

[21]See Table A.1 in the appendix. According to IRIS staff, the reason why most of the expelled fami-

Figure 3.2: Families permanence in IRIS program
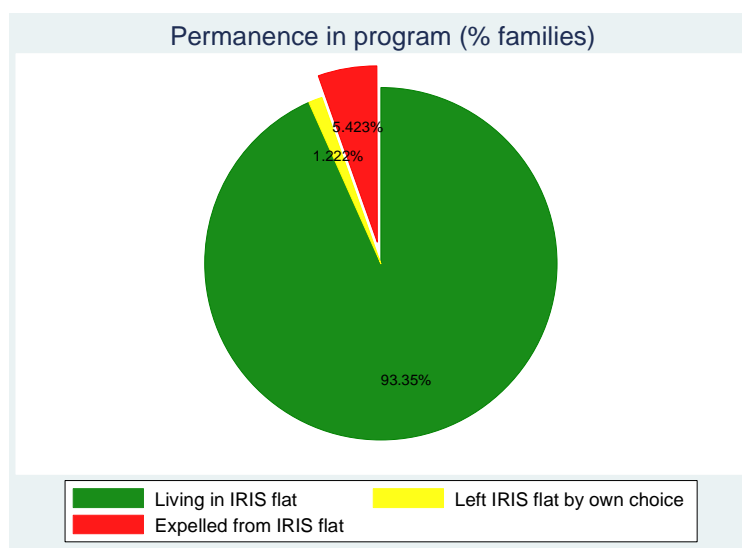
Notes: The figure shows the percentage of families that have remained in the program (green), have been expelled from the program (red), or have left the program by own choice (yellow). The data is from IRIS administrative records, as retrieved in May 2010. I present the data from these figures in **??**.

3.4 Survey and Data

Sample Selection

In this paper, I make use of a sample of 791 children aged 7 to 14 from 474 families that were rehoused by IRIS housing program between 1991 and 2011, from 10 to 1 years before my survey took place. This sample of children and families is a subsample of a larger sample of families rehoused by IRIS housing program that I selected in order to evaluate the impact of the program on these families and their family members. This larger sample consisted on 543 families, and was chosen from the entire universe of families that were participating in IRIS Housing Program at the time the survey started (January 2012). I will now describe how I chose this larger sample of families, from which I then selected the subsample I use in this paper by limiting the

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lies were those rehoused before 2000 was because they were were families with more complicated backgrounds: Drugs, poorer and more marginal in general. However, we cannot rule out that the reason is that they have had more time to accumulate debts with IRIS, and are therefore poorer. For a detailed discussion on this, see Santiago (2015c).

original sample to all families that had at least one child aged 7 to 14.

In order to study the impact of moving out of the slums for the Roma families resettled by IRIS housing program, I selected and surveyed 543 families that were participating in the program when the survey started (January 2012). I selected this sample from the total universe of families, which was 2,007 families at that time. First, I eliminated from my initial list of families those that were in the process of being expelled from IRIS housing program because of high levels of indebtednesses to IRIS, by request of IRIS[22]. This cut the total number of families in my initial list from 2,207 to 2,116. I chose to limit my sampling frame to families that had been rehoused by the program between 2001 and 2011, to ensure the families had similar characteristics (age structure and comparable slums) and a higher probability of having children at school age. The second restriction I imposed was that families had to have at least one child from age 1 to 18. My final sampling frame included some families that do not fulfil one or both of these requirements, for reasons I explain now.

IRIS administrative data included records of the resettlement date and origin of the families, but these records were not always valid for my purposes[23]. Thus, I created a new dataset correcting IRIS administrative data with notes that had been separately collected for each household. I checked all discrepancies observed in both sources of information. In some cases, none of the two sources provided the correct information (I only learned this while conducting the surveys). This explains why the sample I selected contains families that had been rehoused before 2001, despite my intention of screening them out.

In order to restrict my sampling frame to families with children of school age, IRIS and I partnered with the Department of Education of the Region of Madrid[24]. The Data Protection Agency of the Region of Madrid imposed some restrictions on this data sharing, so we proceeded as follows: We gave to the Department of Education a list

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[22]This families were in court or in the process of being taken to court. The only information I have of them is that they had accumulated a large amount of debt for a considerable number of months.

[23]This happened in the case of families that had been rehoused twice. The first time, they were resettled from a slum to a public housing by IRIS predecessor. The second time, they were rehoused by IRIS from that public housing to another public housing. IRIS Administrative data was incorrect in these cases, because it provided either the original resettlement date and slum or the rehousing date and no information on the slum of origin.

[24]IRIS did not have accurate records of this information for a significant subgroup of families, so relying on their records would have biased my sample.

Table 3.4: Selection of the Sample

| Family Resettlement Year | Number of families | | | |
	Population[1]	Sampling Frame	Selected Sample	Sample[2]
1987	19			
1988	18			
1989	27			
1990	6			
1991	14			1
1992	23			2
1993	9			
1994	9			
1995	78			2
1996	100			1
1997	139			3
1998	129			1
1999	235			4
2000	260			8
2001	188	177	106	88
2002	134	103	62	49
2003	88	78	47	39
2004	23	18	11	7
2005	115	112	67	53
2006	155	155	96	85
2007	123	113	102	86
2008	39	39	37	30
2009	45	45	40	35
2010	78	70	63	26
2011	62	60	40	23
Total	2116	971	671	543

Notes: Data from IRIS Administrative records, retrieved on 8th January 2011.

[1] Includes all families that were benefiting from IRIS housing program at the time the survey started, January 2012, with the exception of families that were in the process of being expelled from the program.

[2] Differences in family records and the year of resettlement reported by the families explain why 22 families in my sample were resettled before 2001.

with the National Identity Numbers (DNI)[25] of the head of household and partner of each household in IRIS Program, and the Department of Education returned to us our list indicating which of the D.N.I.s provided by IRIS were also in their dataset; i.e., corresponded to parents or tutors of children enrolled in school in the last 3 years[26]. We then checked this data against IRIS records on children, to ensure that no household registered in IRIS Administrative data as "with children" was out of the list of families selected by the Department of Education. The limitations described explain why some of the households in our sample do not have children of school age (those families were tutors of some child instead of her parents). When this happened (not often), most of the interviewers conducted the survey[27].

I chose a random sample from this sampling frame stratifying by the year in which the families had been rehoused. I selected families that had been resettled between 2001 and 2011, were not in the process of being expelled from the program, and had children at school age (according to our sources). For each of the years 2001 to 2006, I randomly selected 60% of the families that had been rehoused on that year; for each of the years 2007 to 2010, I randomly chose 90% of the families that had been rehoused in each of those years; for the year 2011 I chose 40 families (I knew that all other families that had been rehoused that year were non-Roma). In total I selected 671 families to be interviewed.

After having chosen the 671 families, we screened out those that were non-Roma (42 families). These checks were conducted by phone interviews to the families. The total number of families we finally interviewed was 543 families (144 interviews were not conducted). The main reasons for eliminating a family in the preliminary screening were: The family was not Roma (42 families), the children were not at school age (15 interviews[28]), or the family was not reached after up to 3 attempts (17 families). A total of 17 families were not reached after 3 attempts, and only 3 refused to answer the

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[25]Documento Nacional de Identidad.

[26]In some cases the children's tutors were not their parents but their grandparents, step-parents, aunt, or an external tutor, but we were not able to detect this at this stage.

[27]The choice of conducting the survey or not was made by the interviewers, and most chose to do them even if there were no children at school age in the family. When the interviewers decided to not do the survey, they requested a replacement and the family was replaced by another family with similar characteristics (same resettlement year and similar flat location) but with children of school age.

[28]In some cases, the interviewer proceeded even if there were no children of school age in the household.

Table 3.5: Interview status

Interview status	Families	
	Total	Percentage
Sample selected	671	100
A. Eliminated in preliminary screening		
Motive: All children are older than 18 years	15	2.24
Motive: Not wanting to disturb (father had just died)	1	0.15
Motive: To be expelled	2	0.30
Motive: Family on bad terms with IRIS	3	0.45
Motive: Non-Roma	42	6.26
Total eliminated in preliminary screening	*63*	*9.39*
B. Refused or not reached		
Refused	3	0.45
Unavailable/not reached	17	2.53
Total refused or not reached	*20*	*2.98*
C. No motive reported		
Interview not conducted	61	9.09
Total no motive reported	*61*	*9.09*
D. Total interviews not conducted (A+B+C)	144	21.46
E. Total replacements conducted	16	2.38
Total interviewed (Sample selected-D+E)	543	80.92

 Notes: This table presents the interview status of the 671 families selected for our sample. All these families were participating in IRIS housing program as of January 2012 and had been chosen randomly from a sampling frame of 971 families –see Table 3.4.

survey. Still, and additional 61 families were not interviewed and the motive was not reported by the interviewer. Replacements were selected for the families that could not be reached but only 16 new additional surveys were conducted in the end. Table 3.5 shows details on the interview status of each of the 671 families in our sample.

The survey and the data

The data used in this paper was collected from a survey instrument that I designed with the objective of collecting information on basic socioeconomic indicators to assess the impact of IRIS housing program on the well-being of the families participating in the program. I first present an overview of the survey design and data collection process and then proceed to describe the data used in this paper for my sample of children aged 7 to 14.

I conducted extensive preliminary field work to inform the decision on which outcomes and group ages to focus on. I conducted interviews with more than 25 social workers and educators at IRIS, with Roma families living in slums and living in flats from IRIS, with staff from the Roma NGO Fundación Secretariado Gitano (FSG), and with Roma families of different socioeconomic status and economically better-off than my target population. The outcomes obtained from this field work were the basis for my survey and sample selection strategies. The conclusions obtained from the qualitative surveys were in general not supportive of the idea that IRIS program was having any impact on the participating families. In terms of employment and education outcomes, no changes were observed: Low educational achievement and a high proportion of individuals unemployed and/or working on the informal economy were a constant pattern in most families I interviewed. According to most people I talked to, not much had changed in the lives of the families when moving from the slums to the flats, except improvements in health due to better housing conditions, easier access to public services, and an overall improvement in feelings of safety. The families living in flats felt more integrated and more at ease when interacting with non-Roma people, but, when asked, both individuals in slums and individuals in flats gave the same answers in terms of the problems they saw as most aggravating for them: low education levels, bad employment prospects, and early marriages.

I designed my survey with the purpose of gathering data on measurable observ-

able outcomes in a simple and quick way, given the time and space limitations I had. Covering all key topics was prioritized over focusing in one single group age or topic. The survey questions were written so as to be compatible with IRIS own data records and preferred indicators. I conducted the final pilot survey in one of the areas of the Region of Madrid to test the draft questionnaire on December 2011. Meetings were organized with the teams involved in the data collection process and the interviewers were instructed on the scope and objectives of each question. The final survey was limited to two pages and 30 minutes, and the questions were succinct. The surveys collected background information for all families and data covering the following topics: Labour and welfare dependency outcomes for the heads of household and children aged 21 and above, education outcomes for all children, marriage and fertility outcomes for children aged over 17, and some additional indicators on integration and aspiration outcomes for children aged 7 to 14. In this paper, I focus my analysis on the outcomes of children aged 7 and 14.

The interviews proceeded as follows: First, the interviewers called the families or visited them to check that they were Roma and to ask them if they would like to do a survey for a research study; second, the interviewers made an appointment with the families to conduct a face-to-face interview. In the case of families that were currently being visited by a social worker or educator from IRIS, one of the interviewers was always the family's assigned social worker or social educator. The interviews were conducted in the least disruptive way possible, and the answers provided were those stated by the families. Making the families feel at ease was prioritized, and a great part of the interviews were conducted during normal scheduled visits to the families. Permission was requested beforehand on all occasions. The interviews were done in person, most of them in the families' homes – a few of them were conducted at IRIS offices. The surveys were responded by the mother –female head of household–, but the father and children replied or were present on some occasions. Response rate was very high –only 3 families did not agree to do the survey.

The surveys were conducted in the months of January and February 2012 by IRIS staff, usually in teams of two people. In total, 34 interviewers participated in the survey. The interviewers were divided into 5 sectors, covering all municipalities of the Region of Madrid in which IRIS works[29]. The number of surveys conducted per enumerator

[29]In Santiago (2015c), I provide detailed information about the distribution of families across the

Table 3.6: Descriptive statistics, children aged 7 to 14

	Mean	Standard error
Panel A. Background characteristics		
Resettled before age 6	0.717	0.451
Age	10.261	2.280
Female	0.491	0.500
Panel B. Education outcomes		
Not repeated grade	0.468	0.499
Panel C. Integration outcomes		
One or more of her 5 best friends is non-Roma	0.933	0.251
One or more of her 5 best friends is a relative	0.587	0.493
Panel D. Aspirations outcomes		
The child wants to work in a traditional Roma job	0.021	0.145
The child wants to be a skilled worker –Apprenticeship	0.627	0.484
The child wants to be a skilled worker –University	0.338	0.473
The child wants to work in the formal economy	0.910	0.286
The child wants to work in the informal economy	0.084	0.278

Notes: Sample size is 784 children aged 7 to 14 (464 families) but varies by outcome variables in Panels B to D due to differences in number of missing values; sample size is: 777 children (463 families) for the education outcome *Not repeated grade* (Panel B); 772 and 773 children (461 and 460 families) for the two integration outcomes, respectively (Panel C), and 748 children (444 families) for all aspiration outcomes (Panel D). All variables are indicators that assume are 1 or 0 value, with the exception of the variable *Age* (row 1), that is continuous.

differs[30].

I collected data for 791 children aged 7 to 14 from 474 families rehoused by IRIS housing program between the years 1991 and 2011[31]. I present this data in Table 3.6. Panel A shows the descriptive statistics for background characteristics: The average age is 10 years old; 49% of the children in my sample are girls, and 28% of them left the slum after age 5 –their families were rehoused by the program when they were older than 5 years old. This latter number corresponds to 222 out of 791 children in my sample. Panels B, C, and D present the descriptive statistics for the outcome variables.

Region of Madrid.

[30]9 interviewers conducted between 3 and 10 interviews, 12 conducted between 11 and 20, 9 between 21 and 30, and 4 conducted between 31 and 41 interviews.

[31]This sample size varies by outcome variable, but not considerably: Sample size is: 777 for the education outcome capturing whether the child has not repeated grade; 772 and 773 for the two integration outcomes I present, respectively, and 748 for all aspiration outcomes presented.

In Panel B, I present data on education: the variable not repeated grade (at school), that takes value 1 if the grade the child is in is the one that corresponds to his age, and 0 otherwise. This education outcome was self-reported by the mother. In my sample, 47% of the children have not repeated grade. In Panels C and D, I show the integration and aspiration outcomes, respectively. I measured social integration by asking the mothers about each of their children's 5 best friends. The two indicators I present take value 1 when the mother stated that at least 1 of her child's best friend was a relative or non-Roma, respectively. 58% of the children had a relative as one of her best friends and 93% of the children had a non-Roma as one of his best friends, as reported by their mothers. I measured aspirations by asking the mother what job her child wanted to have when he grew up[32]. The majority of the children (91%) wanted a job in the formal economy, 63% wanted a job that required studying an apprenticeship and 34% wanted a job that required studying at university. I provide a detailed description of each of these education, integration and aspiration outcomes when I present my results in section 3.6.

3.5 The Empirical Strategy

The question I ask in this paper is whether being resettled from the slums at an early age can have an impact on the education, integration and aspiration outcomes of young Roma children. The following regression presents my empirical specification:

$$y_{ij} = \alpha + \beta a_{ij} + \boldsymbol{\gamma}' \boldsymbol{x}_{ij} + \boldsymbol{\rho}' \boldsymbol{z}_j + u_j + u_{ij}, \qquad (i = 1, ..., N)$$
$$(j = 1, ..., J) \qquad (3.1)$$

where i and j index individual and family, respectively. The dependent variable y_{ij} corresponds to the outcomes I want to study, e.g., *Not repeated grade* (the child has not repeated grade at school), which takes values 1 (has not repeated grade) or 0 (has repeated grade). The exogenous variable a_{ij} captures the age at which child i was resettled from the slum, and I define it as a dummy variable that takes value 1 if child i

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[32]In cases when the children responded to the survey, their replies were taken into account if confirmed by the mother.

in family j was resettled (left the slum) before age 6 and value 0 otherwise. The vectors $\boldsymbol{x_{ij}}$ and $\boldsymbol{z_j}$ include the confounding factors that I control for in the model: $\boldsymbol{x_{ij}}$ is a $k_1 \times 1$ vector of exogenous individual-specific variables (age, sex) and $\boldsymbol{z_j}$ is a $k_2 \times 1$ vector of family-specific variables that I assume constant across all children in the family: a dummy for parents' literacy (that takes value 1 if one or both parents can read and write), a set of dummies for slum of origin, and a set of dummies for ancestors' origin, where ancestors' origin is classified in the following categories: Castellanos[33], Gallegos, Extremeños, Portuguese, or of mixed origin. This classification is based on a broadly accepted classification of the Spanish Roma (San Román, 1997). The error term has two components: a family-specific error term u_j that includes omitted characteristics that are constant across family members, and a random error term u_{ij}, that is independently, identically distributed over i and j, with mean 0 and variance σ_u^2.

Estimating equation (3.1) using ordinary least squares (OLS) yields the impact of being resettled before age 6 conditioned on the covariates specified in the model. However, this estimate of a_{ij} is biased because a_{ij} could be correlated with unobserved family characteristics (u_j); for example, the preferences of the parents for their children's education and welfare may be correlated with the ages that their children had at the time they left the slum –one cannot rule out that the parents that care the most about their children's education may have made a larger effort to move to slums that they suspected could be dismantled when their children were very young, to ensure their children would live most of their childhood and life in a flat.

To eliminate the problem of unobserved family-specific variables, I estimate my regression using family fixed effects. In particular, given the assumption I impose in equation (3.1) on family-specific unobservables, u_j, staying constant for all children in a given family but exhibiting variation across families, we can take the deviation from the mean across individuals in a given family and obtain

$$y_{ij} - \bar{y}_j = \beta(a_{ij} - \bar{a}_j) + \boldsymbol{\gamma}'(\boldsymbol{x_{ij}} - \bar{\boldsymbol{x}}_j) + (u_{ij} - \bar{u}_j), \qquad (i = 1, ..., N)$$

$$(j = 1, ..., J) \qquad (3.2)$$

where $\bar{y}_j = (1/N)\sum_{i=1}^{N} y_{ij}, \quad \bar{a}_j = (1/N)\sum_{i=1}^{N} a_{ij}, \quad \bar{\boldsymbol{x}}_j = (1/N)\sum_{i=1}^{N} \boldsymbol{x_{ij}},$

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[33]This group includes ancestors born in Madrid.

and $\bar{u}_j = (1/N) \sum_{i=1}^{N} u_{ij}$. Taking deviations from the mean as in equation (3.2) eliminates the unobserved family effects. The error term $\epsilon_{ij} = (u_{ij} - \bar{u}_j)$ is now independently, identically distributed over i and j, with mean 0 and variance σ_ϵ^2, and the least-squares regression of equation (3.2) provides unbiased and consistent estimates of β and γ, which are the family fixed effects estimators of equation (3.1).

A key assumption I make in equation (3.1) is the functional form chosen for the dummy variable a_{ij}, which takes value 1 if the child was resettled (left the slum) before age 6. The decision to not treat age at resettlement as a continuous variable and to choose this cut-off point in particular is based on the early childhood development literature. Almond and Currie (2011) survey this literature; they define early childhood as starting at birth and ending at age five and claim that the work they review conclusively shows that events before five years old can have large long term impacts on adult outcomes; for example, Cunha and Heckman (2007) and Heckman (2007) argue that childhood environment is the principal factor affecting children outcomes and their future adult outcomes, and Dobbie and Fryer Jr (2011) provide strong evidence supporting the claim. A number of studies in the immigration literature have used similar cut-off points to the one I choose to evaluate how an immigrant child's age at arrival to a new country affects his life outcomes; for example, Ohinata and van Ours (2012) use a cut-off age of 5 to evaluate test scores of maths and science of immigrant children aged 9 and 10 in The Netherlands and conclude that children that arrive at age 5 or older have lower scores than those who arrived at an earlier age; Bratsberg, Raaum, and Red (2011) conclude that immigrant children that arrive in Norway at a later age have a smaller chance of completing secondary school, especially if they arrive after age 7. I thus choose the cut-off point at age 6. However, to alleviate the concern that this choice could be arbitrary, I provide my results for different cut-off points for the variable that captures whether the child was resettled at an early age, and for the variable age at resettlement expressed in continuous form (and continuous and squared). The results from these robustness checks are displayed and discussed in section 3.7.

The sample used to estimate my theoretical model in equation (3.1) by family fixed effects is smaller than the sample one can use to estimate the model using least squares. The transformations performed in order to estimate the model using family fixed effects can only be done in families that have more than one child ($I > 1$), i.e., the sample of children aged 7 to 14 is reduced to those whose families have more than one

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Table 3.7: Families with children aged 7 to 14. Sample size by family type

	Number of children	Number of families
Panel A. Families with children aged 7 to 14		
Total	784	464
Panel B. Families with only 1 child aged 7 to 14		
Total	229	229
Panel C. Families with more than 1 child aged 7 to 14		
Families with no variation in key dimension	365	156
Families with variation in key dimension	190	79

Notes: The key dimension variable in *Panel C* is the variable *Resettled before age 6*, which takes value 1 (*variation in key dimension*) if the family has children resettled before age 6 and children resettled when they were 6 years old or older, and takes value 0 othewise (*no variation in key dimension*). Total sample size is 784 children (464 families). I have excluded from the sample the 13 children (10 families) for which there is no information on the key dimension variable *Resettled before age 6*.

child in this group age. I show the number of families that fulfil this criteria in Panel C in Table 3.7. Column (2) in the table presents the total number of children aged 7 to 14 in my sample (Panel A), the total number of children aged 7 to 14 in the sample that belong to families that have only one child aged 7 to 14 (Panel B) and the total number of children aged 7 to 14 in families with more than one child in the age range 7 to 14 (Panel C). Column (3) in the table shows the number of families that correspond to each of these subsamples.

My theoretical model, equation (3.1), imposes one further restriction on the sample because I define age at resettlement as a dummy variable that takes value 1 if the child was resettled before age 6 or 0 if the child was resettled at or after age 6. This divides the families with more than one child aged 7 to 14 into two groups: Those that present variation in this key dimension (from all children aged 7 to 14 in the family, at least one was resettled before age 6 and one was resettled at or after age 6), and those families that do not present this variation. The children belonging to families that present variation in this key dimension are those that form part of my sample for estimating equation (3.1) by family fixed effects. The number of children and families that correspond to this sample are shown in Panel C in Table 3.7: In total, I have a sample of 190 children that correspond to 79 different families. Table 3.8 presents this information by type of outcome variable. The sample size for estimating equation

Table 3.8: Number of children by variable outcome and family type. Families with children aged 7 to 14

	Family type			
	All	Only 1 child	More than 1 child	
			No variation	Variation
Panel A. Education outcomes				
Not repeated grade	777	228	362	187
Panel B. Integration outcomes				
Has relatives as best friends	772	228	356	188
Has non-Roma as best friends	773	227	359	187
Panel C. Aspiration outcomes				
All "job wanted" outcome variables	748	213	357	178

Notes: Total sample size is 791 children (474 families) with children aged 7 to 14, as shown in Table 3.7. Each row represents a different outcome variable, presented in column 1. The sample size for each outcome variable varies depending on the number of missing values for that variable. Family types *Only 1 child* (column 3) and *More than 1 child* (columns 4 and 5) refer to the number of children aged 7 to 14 in the family. Columns 4 (*No variation*) and 5 (*Variation*) refer to variation in the key dimension variable described in Table 3.7: The variable *Resettled before age 6*, which takes value 1 (*variation in key dimension*) if the family has children resettled before age 6 and children resettled when they were 6 years old or older, and takes value 0 otherwise (*no variation in key dimension*). The "job wanted" outcome variables in *Panel C* are: *The child wants to work in a traditional Roma job*, *The child wants to be a skilled worker –Apprenticeship*, *The child wants to be a skilled worker –University*, *The child wants to work in the formal economy*, and *The child wants to work in the informal economy*.

(3.1) varies slightly for each outcome variables, once we discount missing values; as Table 3.8 shows, it varies from 187 children (for the education outcome) to 178 children (for the set of aspiration outcomes).

3.6   Empirical Results

The effect on educational outcomes

In Table 3.9, I present the estimated effects of being resettled from the slum before age 6 on the education outcome *Not repeated grade*, which takes value 1 if the child has not repeated grade at school and 0 otherwise. I show the coefficients from estimating equation (3.1) using family fixed effects and least squares.

Table 3.9: Impact on not repeating grade, children aged 7 to 14

	Family FE	OLS	
		Full sample	Siblings sample
	(1)	(2)	(3)
Resettled before age 6	0.133*	0.078	0.097
	(0.069)	(0.053)	(0.060)
Age	-0.107***	-0.110***	-0.110***
	(0.010)	(0.008)	(0.009)
Female	-0.047	0.015	-0.009
	(0.044)	(0.032)	(0.037)
N	777	757	531

 Notes: The dependent variable is *Not repeated grade*. Each of the columns (1) to (3) corresponds to a different estimation of equation (3.1) for the education outcome *Not repeated grade*. Column (1) presents the results from the family fixed effects estimation. Columns (2) and (3) correspond to the same regression specification estimated by OLS, where I use the following controls: a dummy for parents' literacy, a set of dummies for slum of origin, and a set of dummies for ancestors' origin; in column (2), I make use of the whole sample of children aged 7 to 14 (777 children) and in column (3) I only use the sample of children aged 7 to 14 that is relevant for the family fixed effects estimations presented in column (1), 187 children. Standard errors are shown in parentheses. Significance is reported at 10 percent (*), 5 percent (**), and 1 percent (***). All independent variables are indicators that assume a 1 or 0 value, with the exception of the variable *Age* (row 2), that is continuous. All regressions include a constant.

The main estimation, family fixed effects, is presented in column (1). The first row shows the impact on the outcome variable of being resettled before age 6. The estimates suggest that being resettled before age 6 increases the probability that a child will not have repeated grade at school by 13.3 percentage points on average, controlling for age and gender.

I also display the least square estimates from the main regression in columns (2) and (3), where in addition to the individual-specific controls used in column (1), I use the family-specific controls specified in equation (3.1): a dummy for parents' literacy, a set of dummies for slum of origin, and a set of dummies for ancestors' origin. Column (2) presents results from using the full sample of children aged 7 to 14 (791 children, 474 families), while column (3) presents results from using the same subsample of children used to estimate the equation by family fixed effects (190 children, 79 families)[34].

The family fixed effects and OLS estimates have the same sign, but the OLS estimates are smaller in size and not statistically significant. The use of family fixed effects allows one to overcome the selection bias of families that arises because family unobservable characteristics may be related to the age at which their children leave the slum; for example, families choose the slums they move to, which in turn determines the timing of their relocation. Controlling for the slum of origin in the least squares estimation is not sufficient because the slum of choice is only one possible family characteristic that could be correlated with the age at which children leave the slum. By using family fixed effects, I eliminate all possible family unobservable characteristics that could be correlated with the timing at which the families were resettled from the slum, and thus all possible family preferences that affect the age of their children at the time they were resettled, since I am only comparing variation within families.

An important concern in my model relates to the functional form of the variable that captures whether the child was resettled at an early age. I discuss this concern and provide alternative definitions for this variable in section 3.7. I then present my results by gender and discuss the robustness of my estimations to alternative definitions of the education outcome.

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[34]In Table 3.9, I name this subsample "siblings sample".

The effect on integration and aspiration outcomes

I estimate the impact of leaving the slum at a young age on a set of integration and aspiration outcomes for the same sample of children, aged 7 to 14. In Table 3.10, I present the results from estimating equation (3.1) using family fixed effects for this set of outcomes. As discussed above, I use the fixed effects estimator because it is robust to the omission of any relevant family-invariant regressor, and is thus my preferred estimator, given the concern about the non-random resettlement time-frame of the families rehoused by IRIS housing program. My results suggest that the program is having no effect on any of the integration and aspiration outcomes measured. I now present these measures of integration and aspirations and discuss their limitations and how they could be potentially affecting my results.

Integration outcomes

A main interest in my research was to evaluate the integration of children in non-Roma environments. Given the concerns that more traditional Roma families can have about their children receiving negative influences from non-Roma children, especially in the case of girls (Pernas, 2005), a good measure of integration of Roma children is whether they have some non-Roma friends among their closest friends.

In my survey, integration was evaluated using two different indicators: Whether the child had relatives as friends (at least 1 of his 5 best friends) and whether he had non-Roma as best friends (at least 1 of his 5 best friends). Being less attached to their relatives and having more non-Roma friends can be seen as an indication of changes in the children towards more integration (current and future) and of a lesser controlling attitude from the side of the parents on who their children go with. This is specially important in the case of girls when they are reaching puberty, as they become more subject to conservative family values and some parents can start controlling closely who their daughters interact with, even to the point of preferring them to withdraw from school. The definition of my integration outcomes requires that this outcomes take value 1 if at least 1 of his 5 best friends is a relative or at least 1 of his 5 best friends is non-Roma, respectively. This is a limitation because I cannot distinguish between children that have many non-Roma friends and children that only have one. The decision to collect the data using this limiting definition was based on serious concerns about

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measurement errors and survey length constraints[35]. The drawback of this simplified integration questions is that there is little variability in the data, since most children in the survey replied having at least one non-Roma friend (93%).

In Table 3.10, I present the results from estimating equation (3.1) using family fixed effects for my two integration outcomes. The results suggest that being resettled before age 6 has no significant impact on these integration outcomes. The signs of the effects are as expected: Being resettled earlier decreases the probability of having a Roma relative as best friend and increases the probability of having a non-Roma as best friend, but the magnitudes are small and non-significant.

As in the case of the education outcome, two important concerns about my results are the functional form of the variable capturing whether the child was resettled before age 6 and the potential heterogeneity by gender of the impact of being resettled. I present robustness checks to discuss these issues in section 3.7.

Aspiration outcomes

I evaluate the impact of being resettled at an early age on the children's aspirations about the type of jobs they would like to have when they grow older. The reason for focussing on aspirations about future jobs is that there is evidence from the literature that increasing perceived returns to education strengthens the incentives for schooling when the actual returns are underestimated (Jensen, 2010; Nguyen, 2008). The children that move out of the slums at an early age are exposed to a different environment that could potentially help them increase the perceived returns to education, i.e., their interest in having non-traditional Roma jobs. There are different ways in which this adjustment could happen, since the opposite effect could also be present: By moving out of the slums, children would re-evaluate not only the perceived returns to education but also the cost or difficulty of obtaining higher education degrees, and thus choose to prefer Roma traditional jobs that do not require a higher education degree. In support for this latter argument, Buezas (1988) interviewed Roma individuals living in slums in Madrid and concluded that they had very high aspirations for the education level they wanted to attain compared to the reality of what they actually attain; this suggests that providing these families with more information about education returns and require-

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[35]I concluded this after having tested different possible questions in the pilot survey.

Table 3.10: Impact on integration and aspiration outcomes, children aged 7 to 14

	Integration		Aspirations				
	1 *or more of her 5 best friends is:*		Job classification			Nature of the job	
			The child aspires to the following job:			*The child expects to work in:*	
				Skilled worker			
	A relative	Non-Roma	Traditional Roma job	Apprenticeship	University	Formal economy	Informal economy
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Resettled before age 6	-0.023	0.003	0.015	-0.088	0.059	0.005	-0.009
	(0.025)	(0.036)	(0.020)	(0.063)	(0.061)	(0.026)	(0.025)
Age	-0.011***	0.005	0.001	-0.005	-0.000	-0.002	0.001
	(0.004)	(0.005)	(0.003)	(0.009)	(0.009)	(0.004)	(0.004)
Female	-0.001	0.014	-0.034***	-0.150***	0.170***	-0.005	-0.002
	(0.016)	(0.023)	(0.013)	(0.040)	(0.038)	(0.016)	(0.016)
N	773	772	748	748	748	748	748

Notes: Each column presents the estimates of the family fixed effects model in (3.1) for a different outcome for the sample of children aged 7 to 14. The dependent variables shown are classified by topic. The integration outcomes are shown in columns (1) and (2), respectively; the aspiration outcomes are shown in columns (3) to (7). Standard errors are shown in parentheses. Significance is reported at 10 percent (*), 5 percent (**), and 1 percent (***). All independent variables are indicators that assume a 1 or 0 value, with the exception of the variable *Age* (row 2), that is continuous. All regressions include a constant. Total sample size is 777 children aged 7 to 14, and sample size for the family fixed effects estimations is 190 children aged 7 to 14 from 79 different families; however, sample size differs by outcome, as shown on the last row of the table.

ments could lower their aspirations about attaining high levels of education. Another channel in which aspirations of children could change would be through their parents, who could also be adjusting their perceived returns to education and non-Roma jobs when moving out of the slums, thus having a greater interest in supporting the education of their younger children –they would have had less years of non-slum exposure when their older children were at school age. Again, the direction of the parents' willingness to help their children obtain higher education is not clear, since they also have an interest in having their children help them in their own jobs, which are in many cases family businesses (for example, scrap metal collection). This latter channel would be similar to that suggested by Jensen and Miller (2011), who argue that parents' that want to keep some of their children in the farm, so they can help them, may limit their investment in those children's education. The data I have collected does not allow one to infer which of these possible channels are at work for these Roma families, but it allows us to have a first overview of the possible relation between leaving the slums early and job aspirations of the children.

I measured aspirations by asking the mother the following question in relation to each of her children aged 7 to 14: What does your child want to be when he/she grows up? As with all other children outcomes, the question was asked to the mothers to ensure comparability across families –in most cases, the children were not present when the survey was conducted. The mother was read a list of possible jobs and then we classified these jobs in different categories to create the dummy outcome variables presented in Table 3.10, measuring whether the child wants a traditional Roma job, wants to have a job that requires studying an apprenticeship, wants to have a job that requires going to University, wants to work in the formal economy, or wants to work in the informal economy.

I present my results in Table 3.10, columns (3) to (7). I find no evidence that being resettled from the slum before age 6 has an impact on children's aspirations about future jobs, since all my estimates are statistically insignificant. The sign of the estimates does not suggest any clear direction of a move towards non-traditional Roma jobs, and the lack of significance of my results suggests that it is not clear if this resettlement program is having any impact on the children's job aspirations, as I have measured them. However, my questions on aspirations are very simple, as was required by the time and space constraints I had when conducting the survey. A more detailed questionnaire

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to explore aspirations may have provided more interesting results, since my extensive qualitative interviews on the field suggested the families were experiencing changes in their ways of thinking and seeing education and jobs, thanks to their better integration into the mainstream society when moving out of the isolated and marginalised slums. Testing these issues in more detail was out of scope for my survey instrument, so these remain unresolved questions of great interest for future research.

The same concerns about my results in education and integration outcomes apply for these aspiration outcomes: The functional form of the variable of interest, being resettled before age 6, and the potential heterogeneity by gender of the impact of being resettled. I will discuss these issues in section 3.7.

3.7 Robustness checks

3.7.1 Non-linear effects of age at resettlement

A key concern in my model is the functional form chosen for the variable that captures age at resettlement, a dummy variable to indicate if the child was resettled before age 6. I explore the limitations imposed by this constraint by estimating my main equation (3.1) by family fixed effects for different functional forms of this age at resettlement variable. I present my results in Table 3.11.

Panel A in Table 3.11 shows the estimated effects of the program for moving out of the slums at an early age on grade repetition for children aged 7 to 14. Each column (1) to (3) corresponds to a different functional form of the age at resettlement variable. In columns (1) and (2) I use a dummy variable, as in my main model, but I modify the cut-off point to one age above and one age below my chosen cut-off age. The sign of the estimate is positive in both cases, as in my main result, and the cut-off point of age 5 is also statistically significant. Increasing the cut-off age to age 7 loses the statistical significance of my result. For the estimates shown in column (3), the variable age at resettlement takes a continuous form; in this later specification, the sign of my estimate is negative and not statistically significant[36]. This set of results suggests that there are non-linearities in the effect of age at resettlement that need to be included in the model. They also provide support to selecting as cut-off point the one I have chosen: age 6, a

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[36]Adding an extra variable: squared age at resettlement provides similar results.

Table 3.11: Non-linear effects of age at resettlement, children aged 7 to 14

	Age at resettlement specification		
	Cut-off at age 5 (1)	Cut-off at age 7 (2)	Continuous (3)
Panel A. Education outcomes			
Not repeated grade	0.129* (-0.072)	0.061 (-0.070)	-0.008 (-0.027)
Panel B. Integration outcomes			
Has relatives as best friends	0.0717* (-0.037)	0.007 (-0.036)	-0.017 (-0.014)
Has non-Roma as best friends	-0.024 (-0.026)	-0.022 (-0.025)	-0.002 (-0.010)
Panel C. Aspiration outcomes (job the child would like to have when grown up)			
C1. Job category			
Traditional Roma job	0.031 (-0.021)	0.022 (-0.020)	-0.001 (-0.008)
Skilled work: Apprenticeship	-0.137** (-0.066)	-0.073 (-0.063)	0.025 (-0.024)
Skilled work: University	0.090 (-0.064)	0.056 (-0.061)	-0.028 (-0.023)
C2. Job type (formal/informal)			
Job in the formal economy	-0.014 (-0.027)	0.030 (-0.026)	-0.006 (-0.010)
Job in the informal economy	0.009 (-0.026)	-0.016 (-0.025)	0.005 (-0.010)

Notes: Standard errors are shown in parentheses. Significance is reported at 10 percent (*), 5 percent (**), and 1 percent (***). All regressions include the control variables *age*, *female* and a constant. Sample size varies by outcome variable: *Has repeated grade*, 777 children; *Has relatives as best friends*, 773 children; *Has non-Roma as best friends*, 772 children, and all aspiration outcomes (*Panel C*) have a sample size of 748 children.

cut-off age that is consistent with the early development education literature (Almond and Currie, 2011) and related studies with immigrant children (Ohinata and van Ours, 2012; Bratsberg et al., 2011).

In Panels B and C in Table 3.11, I present the results from using these different functional forms on the estimation of the impact of being resettled at a young age on my integration and aspiration outcomes. Panel B in Table 3.11 displays the results for integration outcomes. The estimates obtained for these variables support the conclusion derived from estimating my main specification: There is no clear impact of being resettled at a young age on the integration outcomes measured (having relatives as best friends or having non-Roma friends as best friends). The reason for this lack of impact is probably due in large part to the fact that the variables are measured in a way that does not capture small differences in children's preferences for friendships, as discussed in section 3.6.

Panel C in Table 3.11 shows the results for aspiration outcomes. The signs for the variables that correspond to types of job (traditional Roma job, job that requires studying an apprenticeship, and job that requires a University degree) are the same as in my main specification when I modify the cut-off point, and they change in most cases when I use age at resettlement in continuous form. None of the estimates for the variable capturing if the child was resettled before age 6, in my main specification, are statistically significant, and these additional robustness checks confirm that one cannot conclude from this data that being resettled at a young age has any impact on the aspiration outcomes of young Roma children.

3.7.2 Gender differences

In Table 3.12, I explore the possibility of gender heterogeneity in my results. I estimate equation (3.1) separating the responses by gender for all the outcomes measured on education, integration and aspirations. None of the estimates for the variable capturing whether the child was resettled before age 6 are significant when I divide the sample into these two subsamples, males and females.

This lack of significance could be in part due to the reduction in sample size that is imposed by the division of the original sample, which is now limited to families with at least 2 females aged 7 to 14 and variation in the key dimension (as explained

Table 3.12: Gender differences in impact of being resettled, children aged 7 to 14

	All (1)	Females (2)	Males (3)
Panel A. Education outcomes			
Not repeated grade	0.137**	0.064	0.174
	(0.069)	(0.140)	(0.115)
Panel B. Integration outcomes			
Has relatives as best friends	0.002	-0.072	0.082
	(0.036)	(0.062)	(0.057)
Has non-Roma as best friends	-0.023	-0.002	-0.051
	(0.025)	(0.032)	(0.053)
Panel C. Aspiration outcomes (job the child would like to have when grown up)			
C1. Job category			
Traditional Roma job	0.017	0.030	0.016
	(0.020)	(0.028)	(0.027)
Skilled work: Apprenticeship	-0.077	-0.014	-0.095
	(0.065)	(0.101)	(0.082)
Skilled work: University	0.047	-0.032	0.079
	(0.063)	(0.096)	(0.086)
C2. Job type (formal/informal)			
Job in the formal economy	0.006	0.030	-0.031
	(0.026)	(0.031)	(0.049)
Job in the informal economy	-0.009	-0.030	0.031
	(0.025)	(0.031)	(0.049)

Notes: Standard errors are shown in parentheses. Significance is reported at 10 percent (*), 5 percent (**), and 1 percent (***). All regressions include the control variables *age*, *female* and a constant. Sample size varies by outcome variable: *Has repeated grade*, 777 children (382 females, 395 males); *Has relatives as best friends*, 773 children (382 females, 391 males); *Has non-Roma as best friends*, 772 children (381 females, 391 males), and all aspiration outcomes (*Panel C*) have a sample size of 748 children (372 females, 376 males).

in section 3.5), for the females subsample, and with at least 2 males aged 7 to 14 and with variation in the key dimension for the males subsample. This reduces the females sample to 72 girls aged 7 to 14 and the males sample to 62 boys aged 7 to 14.

3.7.3   Alternative definitions for the education outcome

I check the robustness of the results obtained for the impact of being resettled before age 6 on the probability of not having repeated grade by using two alternative outcome measures related to this outcome variable: The child has not repeated grade and is not in special education, and the child has repeated grade and is in special education.

The variable that indicates that the child has not repeated grade and is not in special education takes value 1 if the child has not repeated grade but is also not in special education, which is the special group class to which children with more difficulties are assigned. The sign of the estimate of the impact of being resettled before age 6 when estimating equation (3.1) for this outcome is positive, as in my main result, but the estimate loses statistical significance. Only 18% (141 children) of the children in the sample aged 7 to 14 have not repeated grade and school and are not in special education. The outcome has repeated grade and is in special education reflects the worst case scenario, children that have both repeated grade and are in the special education group at school. 38% of the children in my sample aged 7 to 14 are in this category –298 out of 784 children. I present the results from estimating equation (3.1) for this outcome in column (3) in Table 3.13. The estimate for the impact of being resettled before age 6 is negative but not significant. These two alternative education outcomes do not provide a strong support to the results obtained for my main education outcome, which was only weakly significant.

In sum, the different robustness checks shown in this section suggest that the results obtained in my main estimation for education, integration and aspiration outcomes are not robust to changes in definitions, functional forms or alternative samples.

3.8   Conclusion

I estimate the impact of a radical change of environment for Roma children aged 7 to 14 with very marginal backgrounds, who were resettled from slum settlements

Table 3.13: Impact on grade repetition, children aged 7 to 14

	Not repeated grade	Not repeated grade & not in special education	Repeated grade & in special education
	(1)	(2)	(3)
Resettled before age 6	0.133*	0.046	-0.045
	(0.069)	(0.065)	(0.069)
Age	-0.107***	-0.055***	0.104***
	(0.010)	(0.010)	(0.010)
Female	-0.047	-0.014	-0.026
	(0.044)	(0.041)	(0.044)

Notes: Standard errors are shown in parentheses. Significance is reported at 10 percent (*), 5 percent (**), and 1 percent (***). All regressions include the control variables *age*, *female* and a constant. Sample size used for the family fixed effects estimation is 187 children.

to flats integrated with the mainstream society in Madrid. In order to overcome any potential family self-selection bias, I make use of the differences in age at the time of the resettlement of the children from families rehoused by the program. My family fixed effects estimations suggest that being resettled before age 6 has a positive and significant impact in reducing the probability that the child will have repeated grade at school, and no significant impact on any of the measures of integration and aspiration I evaluate.

My findings provide some evidence that suggests that poor and marginalised Roma children may benefit from being resettled from slums in developed countries. My results are not strong and not robust, and are only present for the education outcome. Still, finding that this resettlement program could be having some positive impact on the education attainment of the children is an interesting result because it runs contrary to what most research on the housing literature suggests and is in line with the general conclusion obtained from research with immigrant population. An increasing number of studies on immigrants support the hypothesis that moving to better environments and doing so at an early age has a positive impact in a child's education and life outcomes, an idea that is also supported by the literature of early childhood development (Cunha and Heckman, 2007; Heckman, 2007), and this paper provides some empirical evidence supporting this hypothesis.

This paper contributes to the policy debate on the Roma, a minority group in many European countries that is under-researched, principally due to lack of data and

important legal and political impediments to obtaining it (McDonald and Negrin, 2010; Mathernova et al., 2012; Kahanec, 2009). I provide evidence on how moving out of a slum can positively affect (Roma) citizens in a (European) developed country, a topic that is little explored in the literature because of the political difficulties of implementing slum resettlement programs in rich countries (Collins and Shester, 2013). My study is also unique in that it is the first to evaluate quantitatively how a resettlement program is affecting the lives of marginalised Roma families living in slums. As such, it contributes directly to the debate on housing policies for the Roma both in a theoretical way and in a practical way, since IRIS housing program is considered a model housing program for the Roma that has brought the attention of different European governments as a potential best practice to learn from.

Chapter 4

Are Roma adults resettled from slums more likely to change their labour outcomes? Evidence from *gitanos* in Madrid

4.1 Introduction

The belief that a better socioeconomic environment has a positive impact on a individual's life outcomes is well grounded, and the positive correlation between better neighbourhood characteristics and better individual educational, social, and economic outcomes is extensively documented (Brooks-Gunn et al., 1993; Cutler and Glaeser, 1997; Galster et al., 2007). But research on the causality relation between environment and life outcomes is inconclusive, and the two main strands in the literature that study this phenomenon tend to reach contradicting conclusions. The literature studying the effects of the neighbourhood and community on various life outcomes of native populations –usually through the evaluation of public housing programs– generally supports the idea that changes in the socioeconomic environment do not have a significant impact on individual outcomes of children and adults (Katz et al., 2001; Kling et al., 2007; Gennetian et al., 2012; Ludwig et al., 2012; Jacob, 2004; Oreopoulos, 2003; Barnhardt et al., 2014). On the other hand, the literature that studies neighbourhood effects ex-

ploiting variations in neighbourhood quality for resettled immigrants generally offers the opposing view (Edin et al., 2003; Gould et al., 2004, 2011).

This paper contributes to this debate by presenting an analysis on how changes in the socioeconomic environment of a poor and socially excluded minority could affect their integration into the labour market and their welfare dependency. I evaluate the impact of moving out of the slums for Spanish Roma families resettled at different points in time into integrated flats in the Region of Madrid. Although I provide some evidence in favour of the argument that the resettlement program I evaluate was quasi-random and families did not choose when they would be resettled, this evidence is not strong enough to support this claim. Thus, I cannot argue that the relation observed is causal, so I present a number of robustness checks and provide bounds to my results to evaluate the importance of any potential selection bias that could be affecting my results. My results are interesting for a number of reasons. First, I observe positive significant correlations between the number of years a family has spent out of the slum and the probability that the heads of household will be in formal employment and doing skilled work; I also observe a positive significant correlation between the number of years a family has been living out of the slum and the probability that they will not be receiving the minimum income subsidy. These results suggest that changes in neighbourhoods for poor people in developed countries could have a positive impact on them, contrary to what most research on the housing literature concludes. Second, this study is unique in that it is the first study to evaluate quantitatively how a resettlement program is affecting the lives of marginalised Roma families living in slums.

Research on the effect of the socioeconomic environment on individual outcomes is complicated because families self-select into the neighbourhoods they live in. This self-selection is based on their individual characteristics, which are likely to influence outcomes and behaviours. These correlated effects could bias the estimates of the effect of the neighbourhood or socioeconomic environment on individual outcomes, and thus the relation observed cannot be interpreted as entirely causal. There are different econometric methods that can be used to overcome this challenge: Natural experiments, instrumental variables, fixed effects, or adding control variables. The problem with all these methods is that it is difficult to observe and control for all possible reasons why self-selection of families into different locations may occur; for example, even in the case of randomized control trials, families may be allowed some choice. This is the case

in one of the benchmark residential mobility programs that has been studied extensively in the literature, the Moving to Opportunities program (MTO) in the U.S.: Although families did not choose whether they would be offered a voucher to move to better areas, those offered the voucher had the possibility of not moving, and among those that moved many chose to move to neighbourhoods that were highly segregated, if more affluent (Orr et al., 2003), made short-distance moves to still economically declining neighbourhoods, and their children continued attending the same schools as previously (Duncan and Zuberi, 2006).

There are two important advantages of the resettlement program I evaluate that alleviate these concerns. First, this program provides a more dramatic change of neighbourhood than most residential mobility studies I am aware of: From a segregated and marginalised slum to a integrated housing complex in a more affluent neighbourhood in a developed country. In addition, the decision on when to resettle a family is not chosen by the families; still, I cannot argue that it is entirely independent of family characteristics. This potential selection of families into the years in which they were resettled from the slums would bias my estimates and would imply that my results cannot be interpreted as a causal relation. I try to overcome this problem in two different ways. First, I introduce additional control variables that could be causing this bias and show how the effect estimated changes when these controls are included; in particular, I explore two key possible sources of an omitted variable bias in my model: slum effects and destination area effects. Second, I present bounds on my estimates to evaluate the extent of the impact of any potential unobservables on the estimation results, following a method developed by Krauth (2011). Bounding an estimate is particularly useful when the assumptions needed to identify the effect are plausible but not necessarily exactly true. Given that the timing in which families are resettled from the slums is not their choice, but still could be correlated to individual or family characteristics (it is not "as good as random"), providing bounds to my main estimates allows me to evaluate how sensitive my results are to small or moderate deviations from the identifying assumptions.

In order to conduct my research, I partnered and worked in collaboration with the Institute for Rehousing and Social Integration (IRIS). We surveyed a sample of 543 Roma families resettled by IRIS between one and ten years before the survey took place (January 2012). I chose this sample randomly from the total universe of families participating in the program, which was 2,007 families at the time the survey started.

My results suggest that moving away from the slums and into integrated flats could be having a positive effect on the integration of male and female adults in the formal labour market. A male or female adult resettled from the slum one year earlier increases the probability of having worked in a skilled job (apprenticeship) and having worked in the formal economy and decreases the probability of having held a traditional Roma job and having worked in the informal economy. The probability that a family had been receiving the minimum income subsidy also decreases for every additional year that the family has been living out of the slum. However, an important concern in the main OLS regression used for this analysis is the potential selection bias that could be caused by a possible self-selection of families into slums, and thus into the years in which they were selected for being resettled. Additional concerns in my model are a potential selection of families into destination areas and the heterogeneity of destination areas, as well as cohort effects. I use different methods to discuss these concerns. First, I estimate my model using slum fixed effects and destination fixed effects. The results from these estimations are not statistically different from the results obtained in the main model. Second, I estimate the model using a different cohort, to explore the plausibility of having heterogeneous effects by cohort. The results obtained with this second sample are different from those using my main sample, although this could be partly due to the fact that this second sample is smaller and may be importantly biased. To further alleviate the concern of the potential selection of families into resettlement years being related to family unobservables, I construct informative bounds on the parameter estimate of interest, following Krauth (2011), to assess the sensitivity of the estimates to plausible deviations from the identifying assumptions in my model. My results suggest that selection on unobservables (relative to selection on observables) would need to be very high in order to explain away the effect of moving out of the slums. This implies that it is not unreasonable to interpret the results causally, notwithstanding small omitted variable effects. The omitted variable bias in my model could be very small and it could still be possible that leaving the slum earlier has a positive impact on the families.

The remainder of the paper proceeds as follows. Section 2 discusses the related literature. Section 3 describes the context and historical background of the Roma, and describes in detail the resettlement program for Roma in Madrid from which I collected data for this analysis. Section 4 describes the survey and data collection procedures, the sample, and the data. Section 5 describes the econometric specification and discusses

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the identification strategy and the credibility of the different assumptions made in the model. Section 6 presents the main empirical findings of the effect of being resettled by the program a year earlier on a variety of labour and welfare dependency outcomes for men and women. Section 7 discusses selection effects. Section 8 discusses cohort effects. Section 9 presents bounds to my main estimates. Section 10 concludes.

4.2   Literature Review

This paper contributes to the literature that evaluates how changes in the residential environment can affect individual outcomes. The main empirical evidence on this causal relation is based on public housing programs or immigrant resettlement programs.

In the housing literature, some of the principal benchmark studies on the area of neighbourhood effects have been conducted in the U.S., evaluating the Moving to Opportunities (MTO) program and its socioeconomic impact on adults and children. The MTO program is an experimental housing mobility program that was designed with the objective of studying the impact of neighbourhood effects on poor families receiving vouchers to move from poor to better-off neighbourhoods. Families, primarily female-headed minority households with children, living in high-poverty public housing projects were offered housing vouchers by lottery. The program has been operating in five U.S. cities since 1994: Baltimore, Boston, Chicago, Los Angeles, and New York, and has been extensively evaluated by researchers both in the short- and long- term –see for example: Katz et al. (2001) (short-run), Sanbonmatsu et al. (2006) (medium-run for children outcomes), Kling et al. (2007) (medium-run for adult outcomes), Gennetian et al. (2012) (long-run for youth outcomes), or Sanbonmatsu et al. (2012) (long-run for adult outcomes). The conclusion from these studies is that residential changes have little or no effect on adults and children, except for an improvement in some health outcomes when moving to better neighbourhoods. In particular, Kling et al. (2007) and Sanbonmatsu et al. (2012) evaluate the medium-run and long-run effect of the program on adult economic self-sufficiency and adult physical and mental health. Kling et al. (2007) find that, after four to seven years after the intervention, the program had no impact on adult economic self-sufficiency or physical health, but had substantial mental benefits for adults; Sanbonmatsu et al. (2012) evaluate the impact of the program 10 to

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15 years after the intervention and find that the program had very few detectable effects on adult economic self-sufficiency and substantial effects on both physical and mental health of adults.

Research based on other housing programs has generally reached similar conclusions on how residential changes from poor to more well-off neighbourhoods impact adult's labour outcomes. Oreopoulos (2003) evaluates a rehousing program in Toronto to examine the effect it had on labour market outcomes of adults who were assigned, when young, to substantially different public housing projects. He concludes that living in contrasting housing projects cannot explain the large variances in labour market outcomes observed (earnings, unemployment likelihood, and welfare participation). Goujard (2010) analyses the effect of a rehousing program for welfare recipients in Paris on their economic self-sufficiency. He also finds that the program had a limited impact on its participants; in particular, Goujard (2010) finds some evidence that the relocation of welfare participants to less poor areas in Paris had some positive impact on their probability of obtaining a job, but this positive impact was driven by unstable jobs that did not allow the individuals to exit the welfare program. In India, Barnhardt et al. (2014) evaluate a housing lottery in a large Indian city that provided its participants the opportunity to move out of a slum and into improved housing on the city's periphery. Fourteen years after housing assignment, relative to lottery losers, winners did not report any changes in family income or human capital.

The impact of neighbourhoods on an individual's economic and social outcomes has also been analysed extensively in the immigration literature. Studies based on immigrants tend to provide more support of the idea that the environment matters for an individual's life outcomes. Strong evidence of this is found in Gould et al. (2011), who estimate the effect of the early childhood environment in the long-run on a large array of social and economic outcomes and find that it has an important impact on women and their children, but not on men. The authors exploit variation in the living conditions experienced by Yemenite children after being airlifted to Israel in 1949 and find that children placed in a more modern environment (better sanitary and infrastructure conditions) were more likely to obtain higher education, marry at an older age, have fewer children, work at age 55, and be assimilated into Israeli society.

Research on how the environment affects immigrants tends to conclude that the socioeconomic integration of immigrants is especially conditioned by the characteris-

tics of the immigrants. For example, several studies analyse how age at immigration impacts the social and economic integration of immigrants. Schaafsma and Sweetman (2001) present evidence on earnings. They find that earnings of child immigrants in Canada that arrive at ages 15 to 18 are lower than for child immigrants that arrive before age 15; they hypothesise that this effect is mainly due to their worse educational outcomes. Bleakley and Chin (2010); Corak and Tienda (2012); Aslund et al. (2012) study social outcomes and conclude that age at immigration has an effect on social integration measures such as residential segregation or marriage outcomes. Research on how age at arrival affects the educational achievement of young immigrants is particularly rich, and there is a large amount of evidence showing that, among young immigrants, late-arrivers perform worse in educational outcomes. This evidence is largely consistent across studies, despite the variety of data and countries studied, the educational outcomes measured and differences in key assumptions, such as age of entry cut-offs and covariates. Chiswick and DebBurman (2004); Gonzalez (2003); Perreira et al. (2006); Heckman (2001); Bratsberg et al. (2011); Cohen-Goldner and Epstein (2014); Schaafsma and Sweetman (2001) support the idea that late-arrivers generally obtain less years of education than early-arrivers, while Böhlmark (2008, 2009); Cortes (2006); Ohinata and van Ours (2012) support the idea that late-arrivers perform worse in test scores. Another key characteristic that differentiates immigrants is language, and it also affects their social and economic integration (Bleakley and Chin, 2004, 2010; Corak and Tienda, 2012; Corak, 2011). Bleakley and Chin (2004) find a significant positive effect of English proficiency on wages among adults who immigrated to the United States as children.

There are a number of reasons why studies on neighbourhood effects with immigrants can arrive to different conclusions from studies with native disadvantaged minorities. First, there are different mechanisms through which a change in the socioeconomic environment can impact an individual's social and economic outcomes, and it could be that these mechanisms differ in their intensity or are different for both types of populations, native minorities and immigrants, since the two populations differ greatly and the immigrant population is particularly heterogeneous. Manski (1993) proposed three different mechanisms through which the socioeconomic environment can impact an individual's social and economic outcomes. He argued that a change in environment produces changes in an individual's peers and social networks, and this potential change of

social groups can alter his behaviour because individuals tend to behave similarly to the individuals belonging to their social group, mainly for three reasons: An individual's behaviour is influenced by the average behaviour of the group (endogenous effects), by the average characteristics of the group (contextual effects), and by the factors he is exposed to, which are similar for the group members and can also be due to non-random group selection (correlated effects). A similar idea is also proposed by Akerlof and Kranton (2000), who argue that an individual can change his identity and preferences when there are changes in his social group. Moreover, in the particular case of labour choices, another important mechanism that can affect change is the information effects of changing neighbourhoods and peers (Granovetter, 2005). The change in neighbourhood can also affect an individual because it may be that the new residency allows him to stop being discriminated against on the basis of where he is living (Kain, 1968). Also, the new location may provide the individual with a different set of local goods, that can either be better or worse than those he had previously (access to schools, hospitals, transport). Last, the individual may feel more or less discrimination from their neighbours in the new place of residency, which can also impact his behaviours and actions. Studying the Roma may help in particular in the understanding of two factors that affect the integration of minorities into the labour market: Changes in the environment, from living in a close-knit environment (slums, ghettos, enclaves) together with one's main network to moving away from this social group, and the influence of identities on the integration of individuals into the labour market. According to Kahanec and Zimmermann (2010), the Roma are one of the minorities that is facing more barriers to integration in Europe, making them a particularly interesting group to focus on for shedding some light on how different assimilation mechanisms impact ethnic minorities.

4.3   Context and IRIS Housing Program

4.3.1   Context and historical background

The Spanish Roma or *gitanos* are the largest disadvantaged ethnic minority in Spain[1]. They have been socially and economically excluded and marginalized in most

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[1]It is estimated that there are between 570,000 and 1,100,000 *gitanos* in Spain, and that 10% of them reside in the Region of Madrid (Laparra et al., 2007a).

Spanish regions since their arrival in the Iberian peninsula in the fifteenth century[2]. This situation has been improving greatly since the 1990s, but the gap between the average Spanish Roma and the average Spanish non-Roma is large: In terms of education, 8.7% of the Spanish Roma are illiterate, in contrast to 2.2% of the total Spanish population. The differences in poverty rates are also considerable: 77.1% of the Roma are below 60% of the relative poverty rate median in Spain –in contrast to 16.9% of the total population and 29.6% of immigrants–, and 37.5% are below 30% of the relative poverty median– as compared to only 3.4% of the total population and 4.3% of immigrants. A key difference between Roma and non-Roma is labour market participation: The Roma work mainly in the informal economy, and only 37.6% of the total Roma workforce work as employees, a small number compared to the 83.6% of the total Spanish workforce that work as employees. The Roma marry much younger, usually to other Roma; they also have larger families on average: 2.7 children, in contrast to 0.8 children in an average Spanish family[3], and one third of the total population of Roma in Spain are younger than 15 years old[4].

The Spanish Roma used to be nomads, but most had become sedentary by the 1970s. From the 1950s through the 1970s, the Roma emigrated to the cities, which offered jobs and better prospects for their marginal activities: scrap metal, street performances, begging (San Román, 1997). This is the period when they started creating settlements in the surrounding areas of the main cities. Each settlement was usually formed by one or a very small number of clans. In 1971, almost all the Roma living in the outskirts of Madrid city were living in precarious conditions: Around 12,000 of them lived in slums (82.4%) and the rest lived in slum-like public buildings, with few exceptions[5]. The government of Madrid began clearing operations of these settlements during the 1970s. According to their records, they had largely succeeded by the mid-1980s[6]. However, new waves of Roma migrants arrived. These new Roma migrants

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[2]For an historical overview of the Roma in the Iberian peninsula, see Leblon (2001) and San Román (1997).

[3]These statistics represent the average at a point in time.

[4]The data described in this section is summarized in Table 4.1. The statistics presented are collected in Laparra et al. (2007a). It is important to note that the estimates presented in this table are not directly comparable, since they come from different studies, samples, locations, and years (between 2007 and 2011); still, they are the best approximation available to date to the situation of the *gitanos* in Spain (MHSPE, 2012).

[5]These statistics were produced by Asociación de Desarrollo Gitano (source: San Román (1997)).

[6]Some of these resettlements moved families to slum-like public buildings, but the city was "cleared"

Table 4.1: Comparison of socio-economic indicators for the Spanish Roma

	Population living in Spain		
Indicators	Total	Roma	Immigrants
Education			
Percentage illiterate	2.2	8.7	–
Poverty indicators			
Percentage below 60% of the poverty rate median in Spain	16.9	77.1	29.6
Percentage below 30% of the poverty rate median in Spain	3.4	37.5	4.3
Labour			
Percentage of workforce working as employees	83.6	37.6	–
Family size			
Number of children per family	0.8	2.7	–

Notes: The statistics shown in the table are the best available approximation to the current situation of the *gitanos* (MHSPE, 2012). However, it must be noted that they have been obtained from different studies and do not correspond to the same or equivalent samples, and differ both in time range (between 2007 and 2011) and location of the sample (different cities). These studies also vary in their methods for data collection and analysis (details on the studies, data sources, sample and methodology, are provided in MHSPE (2012)).

were particularly marginal, poor, and socially excluded, and they settled nearby roads (Alonso, 2005)[7]; according to the 1986 census, they were in total 2,674 families settled in 61 settlements located in 18 districts in Madrid, mostly in the south. The average size of each of these settlements was 44 families (CPM, 1986; Nogués-Sáez, 2010). It was after this 1986 census that the authorities in the city of Madrid started a systematic process of resettlement of the families in these settlements. A special organisation was created for this purpose: Consortium for the Marginalised Population (CPM)[8]. The task of this organisation was later continued by Institute for Rehousing and Social Integration (IRIS)[9], created in 1998[10], which achieved near-complete resettlement of all Spanish Roma families living in slums by the beginning of 2012: At the time when my data was collected, there only remained around 400 registered slum dwellings in the

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from slums.

[7]Nogués-Sáez (2010) provides a detailed description of the historical evolution of settlements and public housing policies in the Region of Madrid.

[8]Consorcio para la Población Marginada.

[9]Instituto de Realojamiento e Integración Social.

[10]For a detailed an historical overview of slums and resettlement policies in Madrid, see Alonso (2005); for a detailed discussion on the differences between IRIS program and its predecessor, see Nogués-Sáez (2010).

Region of Madrid, down from the 1,600 households living in slums registered in IRIS records in 1999[11] –see Table 4.3[12].

Data for the Roma in Madrid and, more specifically, for the Roma living in settlements, is very scarce (mostly collected for the purpose of creating censuses). IRIS collects some basic data when they start to work in a slum. In Table 4.2, I present statistics on illiteracy rates and declared monthly income that have been collected by IRIS staff in the slums. It is important to note that this data comes from different slums, depending on the year for which it is recorded, and that it includes all people living in the slum that provided IRIS with this information.The population for each year is not comparable. The majority of these people are Spanish Roma, but in the later years (2010 and 2011) there is an increasing percentage of people from other ethnicities or origin, especially immigrants. For example, one of the slums included in the data shown (corresponding to the years 2010 and 2011), Ventorro, has a population composition that is very different from that of the other slums and has better educated individuals[13]. Also the slum of Santa Catalina was considerably richer than the rest, on average.

The data shown in Table 4.2 suggests that illiteracy rates for Roma slum-dwellers have decreased considerably. This trend is also observed in the Roma population in general (MHSPE, 2012), so despite the limited reliability of the indicators presented in Table 4.2 (for the reasons stated above) it is plausible to assume that the trend in illiteracy rates is downwards also for the Spanish Roma living in slums. In Table 4.2, I also show data for reported income. Most families declare earning a salary that is below minimum income.

4.3.2   Description of IRIS housing program

I study the impact on Roma families of being resettled from the slums by IRIS housing program. In what follows, I summarise the main characteristics and features of

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[11]These counts exclude the settlement Cañada Real, which is increasingly growing but has a minority of Spanish Roma.

[12]A survey conducted by FSG (2007) in the Region of Madrid reports that the share of *gitanos* living in slums decreased from 64% in 1991 to only 13% in 2007, and the majority of those families living in flats or houses reported to be benefiting from public housing. According to this survey, only 2.1% of the *gitanos* living in flats or houses in 2007 had acquired their property from the free property market (purchase or rental).

[13]The families living in this slum have not been rehoused by IRIS yet, and are not part of my sample.

Table 4.2: Evolution of literacy and poverty in the slums

Slums data from IRIS records (individuals ages 17 and above)					
	2003	2006	2008	2010	2011
Illiteracy rate					
Illiterate	0.62	0.30	0.22	0.15	0.17
Monthly income declared					
Below 601 €	0.66	0.68	0.75	0.61	0.61
Below 1081 €	0.94	0.96	0.95	0.89	0.90
Item response	*(0.34)*	*(0.54)*	*(0.72)*	*(0.46)*	*(0.38)*

Notes: Entries in the table correspond to the means of the relevant variables and were calculated adding up the average values for the slums for which data was collected on the particular year; in 2003, information was collected for the slums: El Cristo, Pitis, Huertos, San Fermín, Santa Catalina, Trigales, Barranquillas, and Salobral; in 2006, data was gathered from: Santa Catalina, Trigales, Barranquillas, Salobral, and Ventorro; in 2008, from Santa Catalina and Ventorro; in 2010 and 2011, from Santa Catalina, Ventorro, Gallinero, Antonio Cabezón, Manuel Villarta, Bajo Gran Vía, Las Castellanas, and San Nicasio. The variable *Illiterate* uses the sample of individuals age 17 and above. *Monthly income declared* refers to total family income and the item response rates are provided in parenthesis in the last row of the table.

this housing program[14].

In total, more than 2,000 Spanish Roma families were participating in IRIS housing program at the start of my survey [15], a number that corresponds to approximately 12-18% of the total number of Spanish Roma currently residing in the Region of Madrid, according to estimates by IRIS (2010). In Figure 4.1, I show the number of slum dwellings censused for the years 1999 to 2011 and the number of families rehoused by IRIS during that period. The graph on the left shows a decrease from more than 1,600 families living in slums in 1999 to less than 400 in 2011. The corresponding data is shown in Table 4.3.

IRIS housing program is offered to families living in settlements that the Region of Madrid has agreed to "clear" (negotiations take place between the municipality in which the slum is located and the Region of Madrid). Not all families living in a settlement can participate in IRIS program; the basic requirements for being eligible for the

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[14]For a detailed description and discussion of IRIS housing program, see Santiago (2015c).

[15]The participation in the program is for good: Subsidized rental housing with no time limitation, conditioned on paying the rent. The number of families participating in IRIS program as of December 2011 was 2,254 (8,972 individuals), and IRIS estimates that 90% of them are Roma.

Table 4.3: Number of families living in slums and rehoused by IRIS, 1999-2011

| Year | Number of families | | |
	Living in slums (census)	Rehoused by IRIS (Yearly)	Rehoused by IRIS (Accumulated)
1999	1618	249	249
2000	1537	285	534
2001	1207	168	702
2002	1054	130	832
2003	1164	94	926
2004	1466	23	949
2005	1292	117	1066
2006	1084	155	1221
2007	974	123	1344
2008	1073	38	1382
2009	950	45	1427
2010	685	94	1521
2011	388	170	1691

Notes: Entries in column 2 present the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. Entries in columns 3 and 4 represent the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). The data is presented in Figure 4.1.

Figure 4.1: Number of families living in slums and rehoused by IRIS (1999-2011)

Notes: The figure on the left presents the number of families censused in slum dwellings for the years 1999 to 2011, as recorded in the official censuses collected by IRIS for internal use. The figure on the right presents the number of families rehoused by IRIS each year, from 1999 to 2011. Data are from IRIS Administrative records, as published in IRIS Annual Reports (years 1999 to 2011). Data entries are provided in Table 4.3.

program are[16]: Proof of residence, declared income of less than 22,365€, no properties, not having had rejected another offer of public housing in the Region of Madrid, and being older than 25 years old[17]. Proof of residence has varied during the years, but for the latest resettlement operations –the ones concerning the majority of the sample in our study– IRIS has been requesting proof of residence by 31 December 2004. According to IRIS staff, a large number of families did not fulfil these requirements in the 5 to 8 years before our survey took place, but the majority of families that were rejected were rejected either because they had another property elsewhere or did not having proof of residency in the slum. In order to verify this claim made by IRIS, I collected information on a particular slum, Salobral. The data I collected supports the claim, for the case of Salobral[18]. Previous to the last 8 years before my survey, almost all families were accepted into the program.

Almost all families that are offered a house by IRIS accept it –99% of the families, according to IRIS sources. Also, very few families choose to leave the program.

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[16] As of December 2012.

[17] The age constraint is relaxed for couples older than 18 years old if they have children and live in their own dwelling, separated from their parents.

[18] See Santiago (2015c)

Figure 4.2: Families permanence in IRIS program
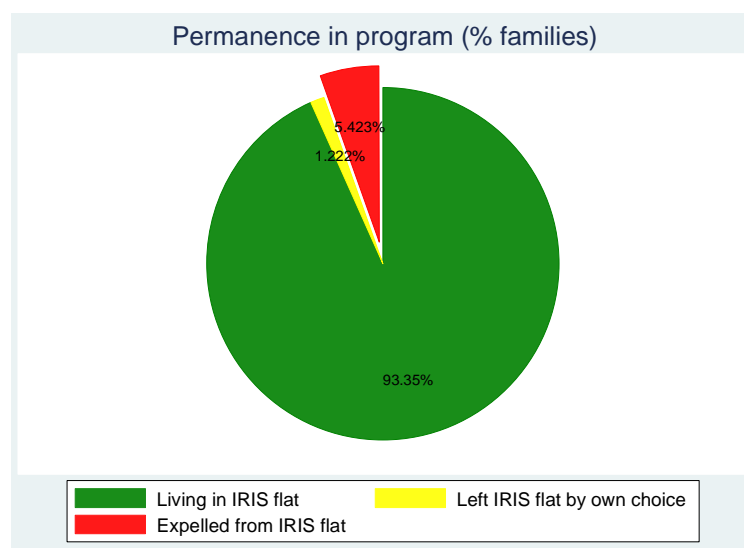
Permanence in program (% families)

5.423%

1.222%

93.35%

Living in IRIS flat   Left IRIS flat by own choice

Expelled from IRIS flat

Notes: The figure shows the percentage of families that have remained in the program (green), have been expelled from the program (red), or have left the program by own choice (yellow). The data is from IRIS administrative records, as retrieved in May 2010. I present the data from these figures in Table A.1.

Figure 4.2 shows the percentage of families that have stayed in the program, have been expelled, and have quitted from it[19]. The majority of the families (90.9%) have stayed in the program, and only 1.4% of them chose to leave the flat (voluntarily or involuntarily, e.g., due to death). 7.7% of the families were expelled by IRIS due to a long and considerable delay on their payments of the flat's rent. The majority of the families expelled were resettled by IRIS between the years 1998 to 2000, so they do not concern my analysis because I construct my sample from families rehoused by IRIS between the years 2001 and 2011[20].

IRIS rehouses the families in flats that are located across the Region of Madrid, with the objective of "integrating" them and avoiding creating ghettos. Figure 4.3 shows the distribution of the families that have been rehoused by IRIS[21] since 1987, and Fig-

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[19]Data comes from IRIS Administrative Records, as retrieved in May 2010.

[20]See Table A.1 in the appendix. According to IRIS staff, the reason why most of the expelled families were those rehoused before 2000 was because they were were families with more complicated backgrounds: Drugs, poorer and more marginal in general. However, we cannot rule out that the reason is that they have had more time to accumulate debts with IRIS, and are therefore poorer. For a detailed discussion on this, see Santiago (2015c).

[21]And its predecessor institution.

ure 4.4 shows the distribution of families that originated from a particular slum, Salobral. In both figures, the map on the left corresponds to the Region of Madrid and the map on the right corresponds to the municipality or city of Madrid.

More than half of the families (1,307 out of 2,144) are rehoused outside of the city of Madrid, but the majority of these families rehoused outside of the city are located in towns close to the city of Madrid or in towns that have good transport connections to the city of Madrid. The areas with more families rehoused are the ones in the South (South of the municipality and South of the Region). There are three motives for this bias towards the South: First, the majority of slums were located in the South; second, IRIS negotiates with each municipality in Madrid the total amount of families that it can place in that municipality (quotas are established, and the numbers permitted by the southern locations are higher partly because they have a higher percentage of population); third, flat prices are cheaper in the South, and IRIS buys the flats it rents (and has budget limitations).

The decision on the destination areas in which families will live is, according to IRIS staff, very close to as good as random. In what follows, I describe the procedures followed by IRIS to decide where to rehouse each family and discuss how close it could be argued that this leads to outcomes that could be similar to a random assignment.

The procedure for assigning a flat to a family is standard for all families: Once the family has been selected to participate in the program (all requirements have been met), the heads of the household are asked to list four choices of districts in Madrid city and four choices of municipalities in the Region of Madrid. IRIS collects this information for all the families that they will be rehousing one month before the resettlement for those families is due. After having received this information, IRIS will offer each family two choices of location (one in Madrid city and the other outside of Madrid city) and the families will choose the one they prefer from those two options, and sign the contract afterwards. The person in charge of making the relocation decision has very little information on the characteristics of the family and has a very small pool of flats available at the time in which each family is scheduled to be rehoused[22]. All these rea-

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[22]Since IRIS has a limited supply of flats and only assigns flats to families once a group of families is ready for being rehoused and a date for the clearance operations has been agreed. This process is complicated because it requires cooperation with other public bodies, such as the police and the teams from the Housing Department that will contract a crane operator to destroy the slum dwelling on the day the family leaves. The supply of a particular type of flat is even smaller (e.g., flat with 4 rooms for a family

Figure 4.3: Destination of families (location of flats). Number of families rehoused in the Municipality of Madrid or Madrid city (figure on the top) and Number of families rehoused in the Community of Madrid or Madrid Region (figure on the bottom).
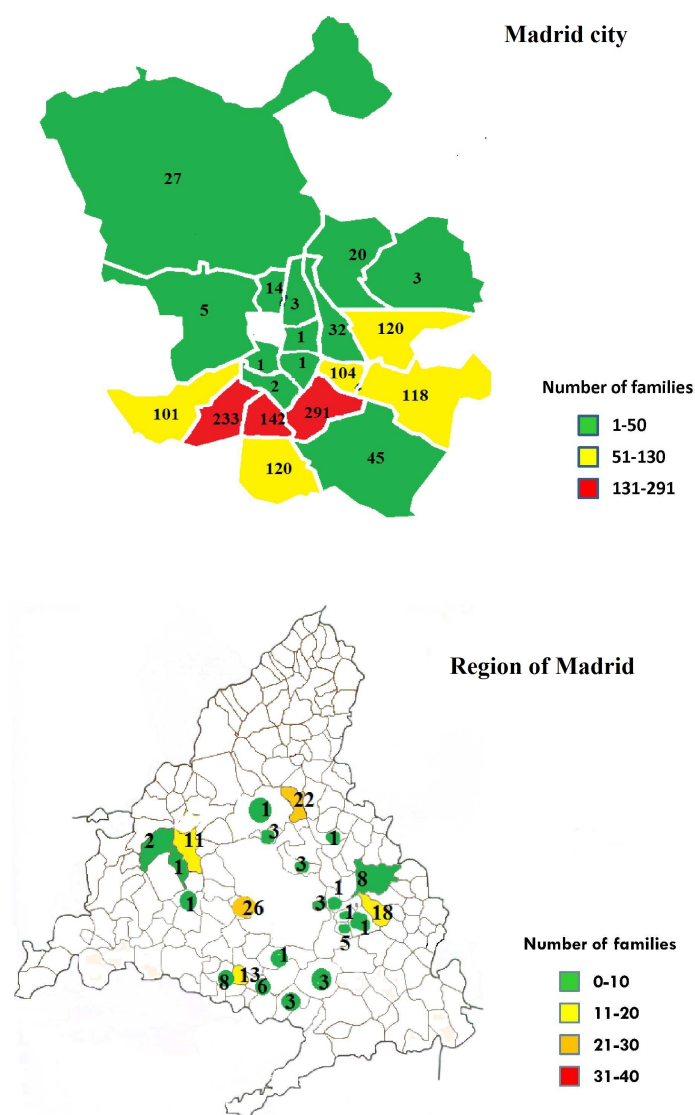
Notes: These maps present the number of families rehoused from 1987 to 2011 in each district in the municipality of Madrid or city of Madrid (figure on the top) and in each municipality in the Region of Madrid (figure on the bottom). Data are from IRIS administrative records, as retrieved in May 2010.

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of 5).Also, the demands of locations of the families are usually similar: Most families from a particular slum prefer staying close to the slum (in the same area) or tend to request the same locations ("someone decides it is a nice place or someone else is going there and they all want to go there too"). Since IRIS does not want to give preference to a family over the others (they do not make exceptions to this rule, according to the Head of Housing), in the end even if they have the exact matching for a particular family this will not mean they will offer it to them (because it would be unfair to the others).

Figure 4.4: Destination of families from the slum Salobral (location of destination flats): Number of families rehoused in the Municipality of Madrid or Madrid city (figure on the top), and number of families rehoused in the Community of Madrid or Madrid Region (figure on the bottom).
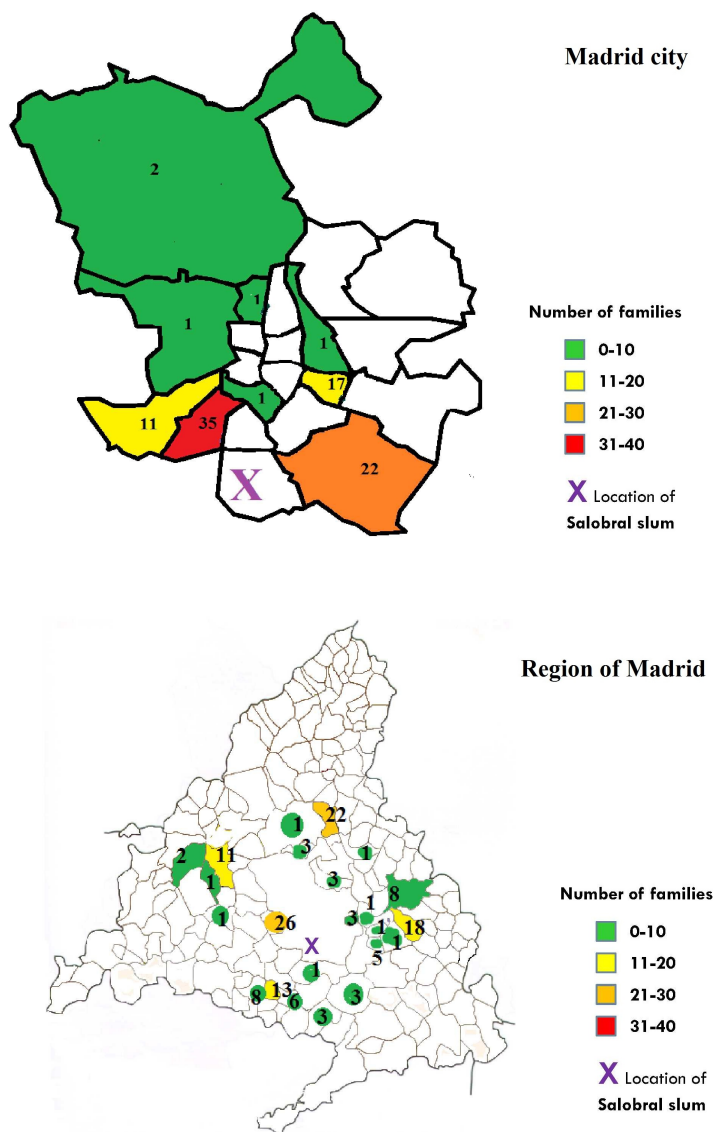
Notes: These maps present the number of families rehoused from the slum Salobral during the second clearance intervention in the slum (years 2006 and 2007). Data is from IRIS records, produced in 2007.

sons give some support to the idea that the offer given to the families is much closer to "as good as random" than in most housing programs; however, we need to be careful about making any interpretation that would rely on the randomness of this allocation, since families do have a final say in choosing which of the two locations they want: the flat in Madrid city or the one outside of Madrid city.

4.4 The Survey and Data

4.4.1 Sample Selection

I selected and surveyed 543 Roma families that were participating in IRIS housing program. I chose this sample from the total universe of families, which was 2,007 families at the time the survey started. I proceeded as follows: First, I eliminated from the initial list of families those that were in the process of being expelled from IRIS program because of high levels of indebtedness to IRIS, as was requested by IRIS[23] This cut the total number of families from 2,207 to 2,116. I then limited the sampling frame to families that had been rehoused by the program between 2001 and 2011 and that had at least one child aged 1 to 18 at the time of resettlement[24]. I imposed these two constraints to ensure the families were more homogeneous and to collect data on

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[23]These families were in court or in the process of being taken to court. The only information I had of them was that they had accumulated a large amount of debt for a considerable number of months.

[24]In order to restrict the sampling frame to families with children of school age, IRIS and I partnered with the Department of Education of the Region of Madrid, because IRIS did not have accurate records of this information for a significant subgroup of families, so relying on their records would have biased my sample. The Data Protection Agency of the Region of Madrid imposed some restrictions on this data sharing, so we proceeded as follows: We gave to the Department of Education a list with the National Identity Numbers (DNI or Documento Nacional de Identidad) of the head of household and partner of each household in IRIS Program, and they returned to us our list indicating which of the DNIs provided by IRIS were also in their dataset; i.e., corresponded to parents or tutors of children enrolled in school in the last 3 years. (In some cases the children's tutors were not their parents but their grandparents, step-parents, aunt, or an external tutor, but we were not able to detect this at this stage). I then checked this data against IRIS records on children, to ensure that no household registered in IRIS Administrative data as "with children" was out of the list of families selected by the Department of Education. All these limitations explain why some of the households in the sample do not have children of school age (those families were tutors of some child instead of her parents). When this happened (not often), most of the interviewers conducted the survey (the choice of conducting the survey or not was made by the interviewers). Those who decided to not do the survey to that family received a replacement family, which was a family with similar characteristics (same resettlement year and similar flat location) but with children of school age.

children, who were a primary objective in my research[25].

I chose a random sample from this sampling frame stratifying by the year in which the families had been resettled. For each of the years 2001 to 2006, I randomly selected 60% of the families that had been resettled on that year; for each of the years 2007 to 2010, I randomly chose 90% of the families that had been rehoused in each of those years; for 2011, I chose 40 families (all other families that had been rehoused that year were non-Roma). In total, I selected 671 families to be interviewed. Then, IRIS staff screened out those families that were non-Roma (42 families)[26]. Table 4.4 presents this data in detail.

The total number of families we finally interviewed was 543 families (144 interviews were not conducted). The main reasons for eliminating a family in the preliminary screening were: The family was not Roma (42 families), the children were not at school age (15 interviews[27]), or the family was not reached after up to 3 attempts (17 families). A total of 17 families were not reached after 3 attempts, and only 3 refused to answer the survey. Still, and additional 61 families were not interviewed and the motive was not reported by the interviewer. Replacements were selected for the families that could not be reached but only 16 new additional surveys were conducted in the end. Table 4.5 shows details on the interview status of each of the 671 families in our sample.

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[25]My final sampling frame included some families that did not fulfil one or both of these requirements. The reason for this is that IRIS Administrative data included records of the resettlement date and origin of the families, but these records were not always valid for my purposes.This happened in the case of families that had been rehoused twice: The first time, they had been resettled from a slum to a public housing by IRIS predecessor; the second time, they were rehoused by IRIS from that public housing to another public housing. IRIS records did not provide complete information on the original resettlement date and slum in these cases. In order to obtain this information, I collected information from paper registration sources that IRIS had collected separately for each household. I checked all discrepancies observed in both sources of information and completed the information available as best as possible. Despite these efforts, in some cases none of the two sources provided the correct information (we only learned this while conducting the surveys). This explains why the sample contains families that had been rehoused before 2001, despite my intention of screening them out.

[26]These checks were conducted by phone interviews to the families. The phone interviews had two purposes: Verify if the families were Roma and agree with the families on a suitable date to conduct the survey.

[27]In some cases, the interviewer proceeded even if there were no children of school age in the household.

Table 4.4: Selection of the Sample

Family Resettlement Year	Number of families			
	Population[1]	Sampling Frame	Selected Sample	Sample[2]
1987	19			
1988	18			
1989	27			
1990	6			
1991	14			1
1992	23			2
1993	9			
1994	9			
1995	78			2
1996	100			1
1997	139			3
1998	129			1
1999	235			4
2000	260			8
2001	188	177	106	88
2002	134	103	62	49
2003	88	78	47	39
2004	23	18	11	7
2005	115	112	67	53
2006	155	155	96	85
2007	123	113	102	86
2008	39	39	37	30
2009	45	45	40	35
2010	78	70	63	26
2011	62	60	40	23
Total	2116	971	671	543

Notes: Data from IRIS Administrative records, retrieved on 8th January 2011.

[1] Includes all families that were benefiting from IRIS housing program at the time the survey started, January 2012, with the exception of families that were in the process of being expelled from the program.

[2] Differences in family records and the year of resettlement reported by the families explain why 22 families in my sample were resettled before 2001.

Table 4.5: Interview status

	Families	
Interview status	Total	Percentage
Sample selected	671	100
A. Eliminated in preliminary screening		
Motive: Children are older than 18 years	15	2.24
Motive: Not wanting to disturb (family member had just died)	1	0.15
Motive: To be expelled	2	0.30
Motive: Family on bad terms with IRIS	3	0.45
Motive: Non-Roma	42	6.26
Total eliminated in preliminary screening	*63*	*9.39*
B. Refused or not reached		
Refused	3	0.45
Unavailable/not reached	17	2.53
Total refused or not reached	*20*	*2.98*
C. No motive reported		
Interview not conducted	61	9.09
Total no motive reported	61	9.09
D. Total interviews not conducted (A+B+C)	144	21.46
E. Total replacements conducted	16	2.38
Total interviewed (Sample selected-D+E)	543	80.92

Notes: This table presents the interview status of the 671 families selected for our sample. All these families were participating in IRIS housing program as of January 2012 and had been chosen randomly from a sampling frame of 971 families –see Table 4.4.

4.4.2 Survey Design and Data Collection

I conducted extensive preliminary field work to inform the decision on which outcomes and group ages to focus on. I conducted interviews with more than 25 social workers and educators at IRIS, with Roma families living in slums and living in flats from IRIS, with staff from the Roma NGO Fundación Secretariado Gitano (FSG), and with Roma families of different socioeconomic status and economically better-off than my target population. The outcomes obtained from this field work were the basis for my survey and sample selection strategies. The conclusions obtained from the qualitative surveys were in general not supportive of the idea that IRIS program was having any impact on the participating families. In terms of employment and education outcomes, no changes were observed: Low educational achievement and a high proportion of individuals unemployed and/or working on the informal economy were a constant pattern in most families I interviewed. According to most people I talked to, not much had changed in the lives of the families when moving from the slums to the flats, except improvements in health due to better housing conditions, easier access to public services, and an overall improvement in feelings of safety. The families living in flats felt more integrated and more at ease when interacting with non-Roma people, but, when asked, both individuals in slums and individuals in flats gave the same answers in terms of the problems they saw as most aggravating for them: low education levels, bad employment prospects, and early marriages.

I designed my survey with the purpose of gathering data on measurable observable outcomes in a simple and quick way, given the time and space limitations I had. Covering all key topics was prioritized over focusing in one single group age or topic. The survey questions were written so as to be compatible with IRIS own data records and preferred indicators. I conducted the final pilot survey in one of the areas of the Region of Madrid to test the draft questionnaire on December 2011. Meetings were organized with the teams involved in the data collection process and the interviewers were instructed on the scope and objectives of each question. The final survey was limited to two pages and 30 minutes, and the questions were succinct. The surveys collected background information for all families and data covering the following topics: Labour and welfare dependency outcomes for the heads of household and children aged 21 and above, education outcomes for all children, marriage and fertility outcomes for children

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aged over 17, and some additional indicators on integration and aspiration outcomes for children aged 7 to 14. In this paper, I focus our analysis on the outcomes of parents, and will also make use of data collected for children aged 21 and over.

The interviews proceeded as follows: First, the interviewers called the families or visited them to check that they were Roma and to ask them if they would like to do a survey for a research study; second, the interviewers made an appointment with the families to conduct a face-to-face interview. In the case of families that were currently being visited by a social worker or educator from IRIS, one of the interviewers was always the family's assigned social worker or social educator. The interviews were conducted in the least disruptive way possible, and the answers provided were those stated by the families. Making the families feel at ease was prioritized, and a great part of the interviews were conducted during normal scheduled visits to the families. Permission was requested beforehand on all occasions. The interviews were done in person, most of them in the families' homes – a few of them were conducted at IRIS offices. The surveys were responded by the mother –female head of household–, but the father and children replied or were present on some occasions. Response rate was very high –only 3 families did not agree to do the survey.

The surveys were conducted in the months of January and February 2012 by IRIS staff, usually in teams of two people. In total, 34 interviewers participated in the survey. The interviewers were divided into 5 sectors, covering all municipalities of the Region of Madrid in which IRIS works[28]. The number of surveys conducted per enumerator differs[29].

4.4.3   The Data

We surveyed 543 households in total, but out of these 543 families I only have accurate information on the resettlement date for 531 of them. 20 of these 531 families were resettled before 2001 –between the years 1991 and 2000[30]–, and I have excluded

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[28]In Santiago (2015c), I provide detailed information about the distribution of families across the Region of Madrid.

[29]9 interviewers conducted between 3 and 10 interviews, 12 conducted between 11 and 20, 9 between 21 and 30, and 4 conducted between 31 and 41 interviews.

[30]I selected a sample of families that had been rehoused from 2001 to 2011 according to IRIS records, but after collecting the data from the families I noticed that 20 of the families that we had interviewed had stated that they had been rehoused before 2001. I checked this information in different paper records

Table 4.6: Descriptive statistics of family background characteristics

	Mean	Standard deviation
Number of years out of slum	6.677	(3.00)
Age male	35.305	(7.20)
Age female	34.375	(7.02)
Father literate	0.617	(0.49)
Mother literate	0.494	(0.50)
Male ancestors Gallegos	0.311	(0.46)
Male ancestors Portugueses	0.533	(0.50)
Male ancestors Castellanos	0.013	(0.11)
Male ancestors Extremeños	0.083	(0.28)
Male ancestors mixed/other	0.060	(0.24)
Female ancestors Gallegos	0.328	(0.47)
Female ancestors Portugueses	0.503	(0.50)
Female ancestors Castellanos	0.008	(0.09)
Female ancestors Extremeños	0.076	(0.26)
Female ancestors mixed/other	0.085	(0.28)

Notes: The sample consists of families rehoused between 2001-2011 (1 to 11 years before the survey was conducted), 511 families in total. All variables are indicators that take 1 or 0 value, with the exception of the variables *Number of years out of slum*, *Age male* and *Age female*.

them from my main analysis too. Thus, the final sample consists of 511 families. Tables 4.6 and 4.7 present descriptive statistics for these families.

Table 4.6 presents family background characteristics of the sample of 511 families that were rehoused between the years 2001 and 2011 (1 to 11 years before the year in which we implemented the survey). The average number of years that a family had been living out of the slum is 6.7 years. The heads of household (parents) were on average 34 (females) and 35 years old (males) at the time of the survey. I measured their literacy by asking the female if she and her partner could read and write[31]. On average, 62% of males and 49% of females replied that they could both read and write. I also collected information on a key indicator that differentiates the Spanish Roma: The origin

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held at IRIS headquarters and did not arrive to any conclusion, so I treated as valid the years that the families had said in the interviews (and the social workers had confirmed with them). There were 12 additional families for which we were not able to obtain accurate information on the date in which they had left the slum (they only provided information on the slum name and it was not compatible with IRIS administrative records), so I recorded the date as missing.

[31] I collected an additional measure of education but I consider this literacy indicator to be more reliable.

of their ancestors. The survey asked about the origin of the parents of both the head of household and partner. I constructed indicators for each possible ancestors' origin. The ancestor indicator presented (for example, the indicator *Female ancestors Castellanos*), takes value 1 if the female head of household said that her two parents were from the same origin (Castellanos, in this case). If her ancestors were from different origins or an origin different from Gallegos, Portugueses, Castellanos or Extremeños, then the indicator *Mother ancestors mixed/other* takes value 1 and all other ancestors' indicators for the mother take value 0. A large number of individuals had Portuguese ancestors (around 50% of females and 53% of males), and the next largest origin of ancestors was Galicia (both parents from 33% of females and 31% of males were Gallegos). Very few females and males had a mixed or other origin (8.5% of females, 6% of males).

In Table 4.7 I show descriptive statistics for the male and female labour and welfare outcomes. Block A presents the labour outcomes for males (heads of household) and Block B presents the labour outcomes for females (heads of household). I collected information on all the jobs that both partners had held both during December 2011[32] and during the period 2006 to 2011[33]. I then constructed the job indicator variables using this information. Each of the labour variables shown in Table 4.7 takes value 1 if at least one of the jobs reported by the individual was a job in the relevant category; for example, if a male head of household stated a "traditional Roma job" as his only job or as one of his jobs during December 2011, the variable *"Traditional Roma job" in December 2011* takes value 1. *"Traditional Roma job"* includes the following jobs: Scrap metal, cardboard or kitchen appliances dealer and street vendor (fruits, vegetables, clothes); *Skilled job: Apprenticeship* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker or agricultural worker. The data shows that the majority of males had worked in the informal economy and in 'traditional Roma jobs'. In December 2011, 91% of the men had a 'traditional Roma job' and 89% had a job in the informal economy. The percentage of females that were working in December 2011 or had worked between 2006 is 2011 was low, but the majority of those that reported being at work in December 2011 were working in the informal economy –19%, compared to 7.2% working in a formal job.

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[32]I chose December 2011 because the surveys were conducted between January and March 2012.

[33]Given the situation of the Spanish economy at the time of our survey (January 2012 to March 2012), I decided to ask both about the present and the past work lives of the heads of household, to avoid losing information from individuals that had become unemployed as a consequence of the economic crisis.

Table 4.7: Descriptive statistics of male, female and family outcomes

	Mean	Standard deviation
Block A. Male labour outcomes		
'Traditional Roma job'		
In December 2011	0.906	(0.29)
During 2006-2011	0.917	(0.28)
Skilled job: Apprenticeship		
In December 2011	0.073	(0.26)
During 2006-2011	0.269	(0.44)
Job in the formal economy		
In December 2011	0.092	(0.29)
During 2006-2011	0.282	(0.45)
Job in the informal economy		
In December 2011	0.887	(0.32)
During 2006-2011	0.906	(0.29)
Block B. Female labour outcomes		
'Traditional Roma job'		
In December 2011	0.198	(0.40)
During 2006-2011	0.231	(0.42)
Skilled job: Apprenticeship		
In December 2011	0.028	(0.17)
During 2006-2011	0.076	(0.27)
Job in the formal economy		
In December 2011	0.072	(0.26)
During 2006-2011	0.123	(0.33)
Job in the informal economy		
In December 2011	0.192	(0.39)
During 2006-2011	0.229	(0.42)
Block C. Welfare dependency outcomes		
Minimum income subsidy (R.M.I.) received		
In December 2011	0.767	(0.42)
During 2006-2011	0.851	(0.36)

Notes: The sample consists of families rehoused between 2001-2011 (1 to 11 years before the survey was conducted): 511 families in total, with 507 female adults and 510 male adults (heads of household). All variables are indicators that assume are 1 or 0 value. The variable *'Traditional Roma job'* includes the following jobs: Scrap metal, cardboard or kitchen appliances dealer and street vendor (fruits, vegetables, clothes); the variable *Skilled job: Apprenticeship* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker or agricultural worker.

Block C in Table 4.7 presents a measure of welfare dependency: The percentage of families that were receiving the Minimum Income Subsidy (R.M.I.), a subsidy given to individuals or families that don't have enough monetary resources to cover their basic needs. The variable *Receives Minimum Income Subsidy (RMI)* refers to whether the family reported having received the R.M.I. in December 2011; the variable *Has received Minimum Income Subsidy (RMI)* refers to whether the family reported having received the R.M.I. at least once during the period January 2006 to December 2011. 77% of the families reported having received the RMI in December 2011, and 85% of the families reported having received it at least once in the period 2006-2011.

4.5   The Empirical Strategy

To identify the causal effect of having being resettled from the slum a year earlier on male and female's labour outcomes and on a family's welfare participation, I exploit IRIS resettlement program using a sample of families and individuals that were resettled by this program between the years 2001 and 2011.

I assume that this causal effect is constant and linear. Then, the basic regression model to study the impact of being resettled a year earlier on the outcome y observed in an individual (or family) is:

$$y = y(z) = \theta_0 z + u \tag{4.1}$$

where y corresponds to the outcomes studied, z is number of years that the individual (family) has been away from the slum –the number of years that have passed since the individual (family) was resettled by IRIS housing program–, and the unobserved random variable u represents the effect of all other factors. These other factors are not affected by z but may be correlated with it. The outcomes y include male's labour outcomes, female's labour outcomes, and measures of welfare dependency.

The variable z is defined as the number of years away from the slum, i.e., the number of years that have passed since the family was resettled through IRIS housing program. Since I conducted the survey in 2012, I define z as:

$$z = 2012 - r \tag{4.2}$$

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where r corresponds to the year in which the individual (family) was resettled from the slum and ranges from 2001 to 2011. Consequently, z takes values 1 to 11.

The control variables do not enter into the causal model in equation (4.1), but I introduce controls to aid in the estimation of θ_0. Let $u^p = \mathbf{x}\beta_0$ be the best linear predictor of u given $\mathbf{x}$ and let ν be the corresponding residual:

$$\nu = u - \mathbf{x}\beta_0 \tag{4.3}$$

Then, from equations (4.1) and (4.3), we obtain:

$$y = \theta_0 z + \mathbf{x}\beta_0 + \nu \quad \text{where } E(\mathbf{x}'\nu) = 0 \tag{4.4}$$

As in equation (4.1), y corresponds to the outcomes studied and z is the number of years that have passed since the individual (family) was resettled by IRIS housing program; $\mathbf{x}$ is a set of individual-level covariates (or family-level covariates).

In order to be able to estimate equation (4.4) by OLS to obtain unbiased estimates of θ_0, one would also need to assume that $\text{corr}(z, \nu) = 0$, i.e.,

$$E(z\nu) = 0 \tag{4.5}$$

This latter assumption is very strong for my model. It requires that IRIS resettlement program resettled families in a quasi-random manner, i.e., that families living in slums were randomly resettled from the slums in any of the possible years in which IRIS operated[34]. The information I collected on the field provides some arguments in favour of the argument that IRIS resettled the families in a manner that was "as good as random", but this information only consists on anecdotal evidence, and it is not sufficient for supporting the claim that families were resettled in a quasi-random manner.

The fact that we cannot assume that condition (4.5) holds means that we cannot interpret our results from estimating equation (4.4) as a causal relation, and that the OLS estimate of θ_0 in equation (4.4) is biased. I propose different solutions to this problem of omitted variable bias. First, I introduce additional control variables that could be causing this bias and show how the effect estimated changes when these controls are included; in particular, I explore two key possible sources of omitted variable bias in my model:

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[34]Another concern is that the choice of location for the destination flats is randomly chosen. This concern is a minor problem in my analysis. I discuss it in section 4.7.

slum effects and destination area effects. Second, I present bounds to the estimates of θ_0 in equation (4.4) to calculate the extent of the impact of any potential unobservables on the estimation of θ_0. In the remaining of this section I present the evidence supporting the claim that IRIS resettlement program resettles families in a manner that was similar to quasi-random.

A discussion of how IRIS housing program resettles families

The resettlement of families from slums into integrated flats was done slum by slum, as shown in Table 4.8. In order to be able to claim that the families were resettled in a way that was similar to quasi-random, one would need to prove three conditions: First, that IRIS chose randomly the order in which it cleared the slums. Second, that IRIS chose randomly the order in which it resettled the different families within each slum. Third, that families did not self-select themselves into the slums (choosing when to move into a slum and to which slum they would move into), since the slum they were living in determined the year in which they were rehoused by IRIS. I now discuss these three requirements and assess their feasibility.

What were the determinants of variation in the timing for resettling each slum?

In Table 4.8, I present the timeline of the resettlement operations of some of the largest slums that were "cleared" by IRIS between the years 1999 and 2011. Salobral is the only slum that was "cleared" in two separate resettlement operations[35]. I discussed the resettlement dates for each of these slums with IRIS staff to obtain information on how and why each of the slums had been "cleared" on those dates[36].

The political willingness to resettle the families from a particular slum was either driven by the needs of the population in the slum (poverty, extreme marginalization, drugs) or by the interest of construction plans in the area. However, once that willingness was formulated, the long process of actually signing the papers to start resettling the families from a slum and the actual resettlement of these families was driven by

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[35] Salobral is labelled *S* in Table 4.8. It was resettled first between 2001 to 2002 and then between 2006 to 2007. The resettlement operations of Salobral had to be halted temporarily and this created a magnet effect that then increased the delay even further because of the large magnitude of the settlement. I take this into account in my analysis.

[36] For a detailed description of the process, see Santiago (2015c).

Table 4.8: Resettlement timeline for main slums, 1999-2011

Year	J	C	R	PH	CL	S	PC	V	C	M	SC	Others	Number of Families
					Slum								
1999	X	X	X									X	249
2000		X	X	X	X							X	285
2001				X	X	X						X	168
2002				X	X	X						X	130
2003					X							X	94
2004												X	23
2005							X	X				X	117
2006						X	X					X	155
2007						X	X					X	123
2008									X			X	38
2009									X			X	45
2010										X	X	X	94
2011										X	X	X	170
Number of Families	58	106	173	117	157	319	49	70	79	66	99	398	1691

Notes: This table presents the resettlement years for each of the main slums resettled between 1999 and 2011. Entries marked with an X refer to years in which IRIS was conducting resettlement operations in the slum (families were being rehoused). The second title row corresponds to the main slums, each letter representing a different slum: Jauja (J), Celsa (C), Rosilla (R), Pozo del Huevo (PH), Cerro de las Liebres (CL), Salobral (S), Plata y Castañar (PC), Vereda Pan y Agua (V), Cañaveral (C), Mimbreras (M), Santa Catalina (SC). Data are from IRIS Annual Reports (1999 to 2011).

political and financial negotiations between the Region of Madrid and the different municipalities in the Region of Madrid and was also budget-dependent.

Once it was decided that it would be desirable to resettle the families from a particular slum, IRIS and the Region of Madrid would start a process of negotiations with the governments of the municipality or municipalities where the slum was located and the municipalities in which families would be rehoused. These negotiations could take from months to years, both for political and financial reasons. After the decision had been made and signed, budget limitations could require that the resettlement of the families was delayed for months or years, or that it was halted mid-way. For example, IRIS began resettling families from the slum Salobral in 2001, but the process stopped due to financial constraints[37] and the operation did not resume until 2005.

In sum, the final implementation of the agreement to resettle the families from a slum was mainly budget-dependent and politically driven. Still, the decision to include a slum in the list of candidates to be cleared was in part driven by the needs of its population, in part driven by construction needs. Therefore, one cannot conclude that the decision was completely independent from the characteristics of the families living in the slum, despite the evidence I have presented in support of this claim.

What were the determinants of variation in the timing for rehousing of each family within a slum?

Resettling families living in slums with very few residents was done in a short period of time, but resettling families living in larger slums could take more than one year, as can be seen in Table 4.8. For example, resettling the families from Santa Catalina took two years, from 2010 to 2011.

For the purpose of my analysis, the most important concern to address is how IRIS made the decision about the order in which it resettled the families from the larger slums. According to IRIS, the resettlement operations for large slums were conducted in an orderly and systematic manner that was planned a priori and was independent of families' needs or preferences, in most cases. I address these two claims in turn.

The families living in the slums were rehoused at the same time as their slum was dismantled; i.e., they moved into their new house on the same day in which the

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[37]Another slum was being resettled at that time too.

bulldozer destroyed their slum dwelling. The use of a bulldozer imposed the need for order in how the slum was dismantled, because it is not healthy and safe to be left living in a dwelling surrounded by destroyed dwellings. Thus, IRIS had to resettle the families in a systematic manner. To do so, IRIS first divided the slum into areas and then decided the order to follow to dismantle each of those areas, going from one to the next one located nearby it. The plan was followed rigorously on most occasions[38]. I have proof of how the second intervention in the slum Salobral proceeded[39], and it follows the procedure I have just described, as shown in Figure 4.5. The figure corresponds to the status of the clearance process on February 2007, around the middle of the operation (this clearance operation was completed between 2006 and 2007); the sectors in blue are "cleared and completed", the ones in yellow are "in course", the ones in green are " currently submitting the required documentation", and the ones not marked were areas were IRIS had not yet requested the families to submit their documentation. The numbers inside yellow circles in Figure 4.5 correspond to the order in which the areas (slum dwellings) were cleared. As can be seen, the first area to be cleared was sector number 5 (coloured in blue), which is marked with a number 1 (yellow circle) and was the sector that was closest to the entry to the slum.

No family was given any preference over others, in principle, since that would have created conflict between families or with IRIS. Still, exceptions could be made occasionally. For example, the supply of flats was sometimes a limitation, although the only times when this was a problem was when IRIS had to resettle a family that needed a certain number of rooms or a ground floor[40] and no flat with those characteristics was in their pool of flats. When this happened, IRIS had to delay the resettlement date for that family until they could find a suitable flat for them; however, this happened rarely. Another exception could occur if a family took longer than others in getting all the documentation ready (e.g., proof of residency), but this did not happen often because there was enough time between the moment IRIS announced they would start resettling families in a slum and the day they started doing it (also, IRIS staff was present in the slums daily or weekly and helped the families with this paper work). It could be possible that a family with "certain characteristics" was actually given preference.

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[38]I discuss possible exceptions next.

[39]Planning and clearance operations were recorded in written, and we have verified and confirmed that the described procedures were applied.

[40]This would be a requirement for families with elderly people that could not take the stairs.

Figure 4.5: Clearance plan of the slum Salobral
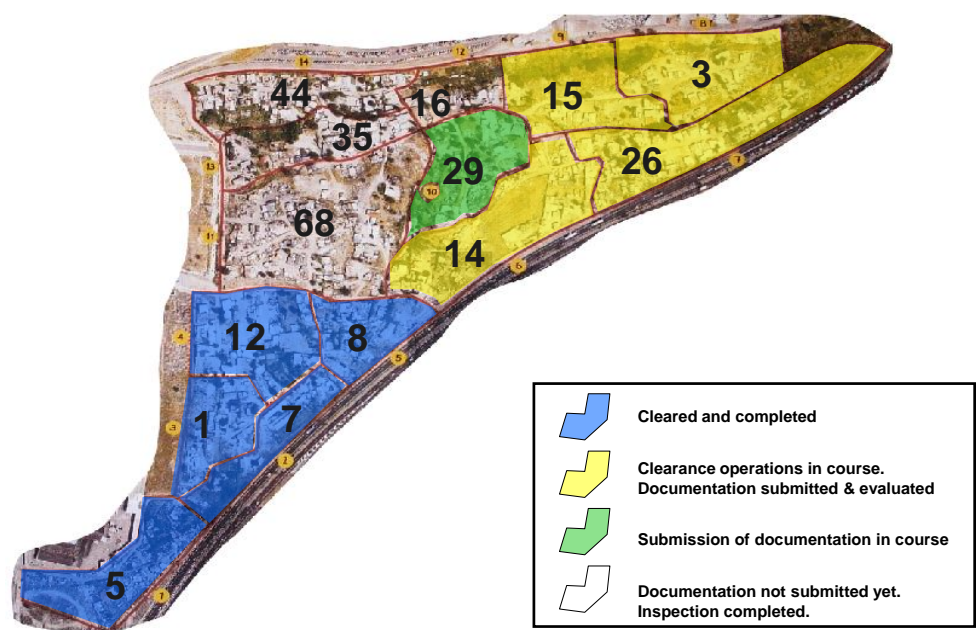
Notes: The figure shows the clearance status of the slum Salobral on February 2007. The numbers shown in yellow circles correspond to the order in which the slum was cleared. Number 1 corresponds to "sector 5" (number 5) and is located at the entrance to the slum.

Although IRIS claims that this was almost never the case ("because favouritisms lead to problems"), I cannot rule this possibility out. Nevertheless, all of the possible exceptions I have described would have probably delayed or advanced the resettlement date of a family by weeks, and not by years or even months, so this is not a serious concern for my analysis.

How did families choose to settle in a particular slum?

Another concern with the validity of my model in equation (4.4) is the potential self-selection of families into slums, which in turn determined the year in which each family was rehoused by the program. I cannot control for this potential self-selection in my model in equation (4.4), but I address this bias by providing bounds to my estimates (section 4.9) and by estimating my equation by slum fixed effects (section 4.7).

Anthropologists agree that the main motivation for a Roma to move to a slum is having members of his clan in it (San Román, 1997). This argument is supported by IRIS staff, as I confirmed during extensive interviews: The decision of moving to a slum is based mainly on having friends or family living in it. The families I interviewed in my qualitative interviews also confirmed this, "We had relatives in the slum". It could also be argued that it is possible that families self-selected into some particular slums when they knew that they had been chosen for resettlement. IRIS staff usually agrees in that this was not the case because IRIS required families to have been settled in the slum for some years before the resettlement decision had been proposed or made, and proof of residence must be provided in order to qualify for IRIS Housing Program. However, there could be exceptions to this; for example, the slum Salobral saw its population increase considerably after clearance stopped for a few years[41]. I therefore cannot rule out the self-selection of families into slums, and that different slums had different "types" of people.

Despite the concerns described, I argue that the basic model I present in equation (4.4) is a good starting point for my analysis, and it controls for the most important characteristic that differentiates Roma families according to anthropologists and other experts on the Roma: The origin of their ancestors. Most of the families rehoused by IRIS are poor and marginalized, with low educational levels and with very few economic

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[41]In my analysis, I control for this distinction by dividing the slum into two different "slums": Salobral I and Salobral II –see Table 4.8.

resources[42], and according to anthropologists, IRIS and Roma NGOs, the key defining characteristic that differentiates these families is not their clans (families) or the types of businesses they work in, but the origin of their ancestors[43]. Last, an additional problem with my estimation of equation (4.4) could occur if the location of the flats the families move into was not chosen randomly and there were important differences between the type of neighbourhoods the Roma families were resettled into. I address this concern in section 4.7.

4.6   Empirical Results

In this section I present my main results on how being resettled from the slum one additional year earlier affects an adult's labour outcomes, which corresponds to estimating equation (4.4) using the Ordinary Least Squares (OLS) estimator for the outcomes described in Table 4.7. Table 4.9 presents these results for male adults, Table 4.10 for female adults, and Table 4.11 for family welfare dependency outcomes.

Table 4.9 displays the results for male adults. Each column corresponds to a different labour outcome: Has held a traditional Roma job –columns (1) and (2)–, has worked as a skilled worker (apprenticeship) –columns (3) and (4)–, has worked in the formal economy –columns (5) and (6)–, and has worked in the informal economy – columns (7) and (8). Each of these outcomes is measured in two different ways, to capture both current job status (columns labelled *Dec 2011* correspond to "has held this job in December 2011", one month prior to my survey) and whether the individual has held that job at any time during the period 2006-2011 (columns labelled *2006/11*). The estimate of interest is displayed in the first row, *Number of years out of slum*. The following covariates are included as controls and presented in rows 2 and 3: Age and whether the father is literate. In addition, I control for origin of his ancestors using a set of dummy variables.

The results shown in Table 4.9 suggest that leaving the slum a year earlier affects

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[42]The difference that concerned me most was the influence of drug trafficking, which created a dangerous and ghetto-style environment in some slums. Those families were also richer. To avoid this problem, I limited my sample to exclude families that had lived in the most problematic slums (excluding all families rehoused before 2000), after discussions with IRIS staff.

[43]In the same way as country of origin is the main immigrant characteristic that is control for in similar studies with immigrant population.

Table 4.9: Impact on adult outcomes (I): Males

| | Job classification | | | | Nature of the job | | | |
| | 'Traditional Roma job' | | Skilled worker (Apprenticeship) | | Formal economy | | Informal economy | |
	Dec 2011 (1)	2006/11 (2)	Dec 2011 (3)	2006/11 (4)	Dec 2011 (5)	2006/11 (6)	Dec 2011 (7)	2006/11 (8)
Number of years out of slum	-0.009* (0.005)	-0.007 (0.005)	0.002 (0.005)	0.028*** (0.008)	0.008 (0.005)	0.029*** (0.008)	-0.011* (0.006)	-0.010** (0.005)
Age	0.004* (0.002)	0.003 (0.002)	-0.002 (0.002)	-0.002 (0.003)	-0.000 (0.002)	-0.000 (0.003)	0.003 (0.002)	0.002 (0.002)
Literate	-0.023 (0.029)	-0.037 (0.027)	0.045* (0.026)	0.091** (0.043)	0.048 (0.029)	0.096** (0.044)	-0.014 (0.032)	-0.064** (0.028)
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	419	450	419	444	419	444	419	450

Notes: OLS estimations. Total sample size is 507 male adults (heads of household). Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All dependent and independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable '*Traditional Roma job*' includes the following jobs: Scrap metal, cardboard, or kitchen appliances dealer, and street vendor (fruits, vegetables, clothes); the variable *Skilled job (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker. Each independent variable is measured in two different ways: "Current job (December 2011)" (labelled as *Dec 2011* –odd numbered columns) and "Job had at any point during the period 2006-2011" (labelled as *2006/11* –odd numbered columns).

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Table 4.10: Impact on adults outcomes (II): Females

	Job classification				Nature of the job			
	Traditional Roma job		Skilled worker (Apprenticeship)		Formal economy		Informal economy	
	Dec 2011	2006/11	Dec 2011	2006/11	Dec 2011	2006/11	Dec 2011	2006/11
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of years out of slum	0.003	0.002	0.006**	0.007*	0.009**	0.012**	0.003	0.004
	(0.006)	(0.007)	(0.003)	(0.004)	(0.004)	(0.005)	(0.006)	(0.007)
Age	0.005*	0.005*	0.001	0.003	0.001	0.002	0.005*	0.006*
	(0.003)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Literate	-0.011	0.010	0.020	0.040	0.035	0.063**	-0.015	0.006
	(0.037)	(0.039)	(0.015)	(0.025)	(0.024)	(0.030)	(0.037)	(0.039)
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	492	485	492	479	492	479	492	485

Notes: OLS estimations. Total sample size is 510 females (heads of household). Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All dependent and independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *'Traditional Roma job'* includes the following jobs: Scrap metal, cardboard, or kitchen appliances dealer, and street vendor (fruits, vegetables, clothes); the variable *Skilled job (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker. Each independent variable is measured in two different ways: "Current job (December 2011)" (labelled as *Dec 2011* –odd numbered columns) and "Job had at any point during the period 2006-2011" (labelled as *2006/11* –odd numbered columns).

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Table 4.11: Impact on adults outcomes (III): Welfare dependency

	Receive the minimum income subsidy (RMI)	
	Dec 2011	2006/11
	(1)	(2)
Number of years out of slum	-0.013*	-0.014**
	(0.007)	(0.006)
Age male head of household	-0.001	-0.003
	(0.007)	(0.006)
Age female head of household	-0.008	-0.005
	(0.007)	(0.006)
Male head of household literate	0.019	-0.009
	(0.045)	(0.038)
Female head of household literate	-0.029	-0.034
	(0.044)	(0.037)
Origin dummies of female head of household	Yes	Yes
Origin dummies of male head of household	Yes	Yes
N	454	457

Notes: OLS estimations. Total sample size is 511 families. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors of the father and the mother (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All dependent and independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variables age related: *Age male head of household* (row 2), *Age female head of household* (row 4) . Each independent variable is measured in two different ways: "Current job (December 2011)" (labelled as *Dec 2011* –odd numbered columns) and "Job had at any point during the period 2006-2011" (labelled as *2006/11* –odd numbered columns).

negatively the probability of having held a traditional job on the month previous to the survey, December 2011, and affects positively the probability of having worked in a skilled job (apprenticeship) during the period 2006-2011. More precisely, a male adult resettled from the slum one year earlier would decrease the probability of having held a traditional Roma job the month previous to the survey by 0.9 percentage points (weakly significant) and would increase the probability of having worked in a skilled job (apprenticeship) at some point during the 5 years previous to the survey by 2.8 percentage point –this latter result is strongly significant. The nature of the jobs held by male adults is also affected by the number of years they have been out of the slum: The probability that a male will have worked in the formal economy during the period 2006-2001 increases by 2.9 percentage points for every year he is out of the slum, all else constant. This result is strongly significant. Also, the probability that a male will have worked in the informal economy during the period 2006/2011 decreases by 1 percentage point for each additional year that he has been living out of the slum. This latter result also holds (weakly significantly) for the probability that he had been working in the informal economy the month previous to the survey. All in all, the patterns observed for these different outcomes suggest that moving away from the slums and into integrated flats has a positive effect on the integration of male adults in the formal labour market.

Table 4.10 reports the OLS estimates of the effect of being resettled out of the slum on female adults labour outcomes. Each column corresponds to a different outcome, identical to those described above (and presented in Table 4.9) for male adults. These estimates suggest that the impact of being resettled out of the slum for female adults affects positively female participation in the formal economy and in skilled work activities. An additional year of having lived away from the slum increases the probability that a woman has worked as a skilled worker in the period 2006/2011 by 0.7 percentage points and increases the probability that she has worked as a skilled worker in December 2011 by 0.6 percentage points. The probability that she has worked in the formal economy during 2006/2011 increases by 1.2 percentage points, and the probability that she was worked in the formal economy in December 2006 increases by 0.9 percentage points. All these results are statistically significant.

Table 4.11 presents the estimates for the welfare dependency outcomes, that capture whether the family has received the minimum income subsidy (R.M.I.) on the month previous to the survey or on any month during the 5 years previous to the survey.

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The probability that a family was receiving the minimum income subsidy in December 2011 decreases by 1.3 percentage points for every additional year that they have been living out of the slum, and the probability that they have ever received this subsidy between 2006 and 2011 decreases by 1.4 percentage points for every additional year that they have been living out of the slum. These results are in accordance with the increases observed in the participation in the formal economy of both males and females.

4.7 Selection effects

4.7.1 Controlling for origin slums

An important concern in equation (4.4) is selection effects due to the self-selection of families into slums. Selection bias occurs when a variable that is correlated with both the dependent and one or more of the included independent variables is omitted from a regression equation. In equation (4.4), a family characteristic that could be causing this problem is the slum from which the family originates. The slum in which a family lives determines the range of years in which it will be resettled by IRIS housing program. If there is family heterogeneity across slums (different slums attract different types of families or different slum locations affect individuals differently) and those differences have some influence in the decision by the government of Madrid on when to rehouse the families from a particular slum, then not including slum controls in our model will lead to an omitted variable bias of the OLS estimate of how the number of years out of the slum impact the outcomes studied.

The bias generated by not including these slum controls could be working in both directions; i.e., overestimating or underestimating my estimates. For example, if IRIS generally resettled first families living in slums that were located near wealthier or better located areas –for example because the government had some political interest in clearing the slum out of the public eye or on freeing that land for construction purposes–, it could be possible that those families had self-selected themselves into those slums and areas because they had an interest in working in formal jobs in nearby areas, and thus that those families had a higher probability of having had a formal job while living in the slum or had more interest in having one that families living in areas with bad connections to towns or the city of Madrid. If that was the case, then estimating equation

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(4.4) by OLS for the outcome that captures whether an individual has worked in the formal economy would yield a biased estimate, and one would expect this estimate to be overestimating the impact of being resettled by the program earlier. On the other hand, if IRIS resettled first families living in slums with very bad life conditions, which would generally be the ones were the poorest and most marginalised families lived in, then estimating our equation by OLS for the same outcome would yield a negative bias, leading one to interpret that being resettled earlier was having less impact on family outcomes than it actually had.

In addition, a possible self-selection bias could arise if families could have some information about the probability that a slum was going to be "dismantled". If that was the case, then families with more interest to integrate into mainstream jobs (for example, work on non-Roma jobs) would be moving into those slums, for example, thus biasing our results. As I discussed in section 4.3, the decision to resettle families from a slum was taken only after a long political process and after the families had moved in; however, it could be possible that in some cases families may have expected that a particular slum would be next on IRIS program list, as it happened in the second resettlement operations of the slum Salobral.

To control for these potential selection biases, I estimate equation (4.4) controlling for origin slums. Using slum fixed effects solves the selection bias problems described above and an additional potential problem: The possible existence of other unobserved heterogeneities across slums that could be affecting my results but are not correlated with any of the regressors in my equation. This latter type of omitted variable problem would not bias the estimates but would bias up their standard errors.

Tables 4.12, 4.13 and 4.14 present the estimation results using slum fixed effects for a selected number of outcomes. They also present OLS estimations of the basic model and an additional model that includes additional control variables for slums' characteristics. I display the results for male adults, female adults and family welfare dependency outcomes in Table 4.12, Table 4.13 and Table 4.14, respectively. The results presented in these tables correspond to the estimation of the following models: First, the main model defined in equation (4.4) and estimated by OLS, which I label *Main*. Second, the same main model with the following additional controls to capture slum characteristics: the slum was in Madrid city, the slum had drug problems, the slum had

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Table 4.12: Controlling for origin slums (I): Males

	Skilled worker (Apprenticeship)			Formal economy		
	Main	Basic controls	Slum FE	Main	Basic controls	Slum FE
	(1)	(2)	(3)	(4)	(5)	(6)
Number of years out of slum	0.028***	0.027***	0.034**	0.029***	0.030***	0.044***
	(0.008)	(0.008)	(0.015)	(0.008)	(0.008)	(0.016)
Age	-0.002	-0.003	-0.004	-0.000	0.000	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Literate	0.091**	0.071	0.061	0.096**	0.087*	0.081*
	(0.043)	(0.043)	(0.044)	(0.044)	(0.044)	(0.045)
Slum in Madrid city		-0.208**			-0.011	
		(0.094)			(0.097)	
Slum had drug problems		-0.260*			-0.207	
		(0.150)			(0.154)	
Slum had easy town access		-0.072			-0.040	
		(0.048)			(0.050)	
Prefabricated Housing (BTE)		0.066			0.056	
		(0.067)			(0.069)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	444	437	437	444	437	437

Notes: OLS estimations (columns (1), (2), (4) and (5)) and slum fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the male at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

Table 4.13: Controlling for origin slums (II): Females

	Skilled worker (Apprenticeship)			Formal economy		
	Main	Basic controls	Slum FE	Main	Basic controls	Slum FE
	(1)	(2)	(3)	(4)	(5)	(6)
Number of years out of slum	0.007*	0.009*	0.009	0.012**	0.014**	0.040***
	(0.004)	(0.005)	(0.009)	(0.005)	(0.006)	(0.011)
Age	0.003	0.003	0.003	0.002	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Literate	0.040	0.035	0.040	0.063**	0.057*	0.058*
	(0.025)	(0.025)	(0.027)	(0.030)	(0.031)	(0.031)
Slum in Madrid city		0.045			0.125**	
		(0.052)			(0.063)	
Slum had drug problems		-0.124			-0.030	
		(0.076)			(0.091)	
Slum had easy town access		-0.040			-0.059*	
		(0.029)			(0.035)	
Prefabricated Housing (BTE)		0.018			0.007	
		(0.039)			(0.047)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	479	472	472	479	472	472

Notes: OLS estimations (columns (1), (2), (4) and (5)) and slum fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the female at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprentice-ship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

Table 4.14: Controlling for origin slums (III): Welfare dependency

	RMI		
	Main	Basic controls	Slum FE
	(1)	(2)	(3)
Number of years out of slum	-0.014**	-0.016**	-0.029**
	(0.006)	(0.007)	(0.012)
Age male	-0.003	-0.003	-0.003
	(0.006)	(0.006)	(0.006)
Male literate	-0.009	-0.008	0.004
	(0.038)	(0.038)	(0.039)
Age female	-0.005	-0.004	-0.002
	(0.006)	(0.006)	(0.006)
Female literate	-0.034	-0.042	-0.035
	(0.037)	(0.038)	(0.038)
Slum in Madrid city		-0.050	
		(0.079)	
Slum had drug problems		0.153	
		(0.113)	
Slum had easy town access		0.036	
		(0.040)	
Prefabricated Housing (BTE)		-0.042	
		(0.054)	
Origin dummies	Yes	Yes	Yes
N	457	449	449

Notes: OLS estimations (columns (1), (2), (4) and (5)) and slum fixed effect estimations (columns (3) and (6)). The dependent variable takes value 1 if the family received the Minimum Income Subsidy (RMI) on any month during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variables *Age male* (row 2) and *Age female* (row 4).

easy access to town, and the slum was an old prefabricated building[44]. All these controls are dummy variables that take values 1 or 0. I estimate this second model (labelled *Basic controls*) by OLS. Third, I present the results for estimating my main model in equation (4.4) using slum fixed effects (labelled *Slum FE*).

Table 4.12 displays the results for male adults. I focus on two outcomes selected from those presented in Table 4.9: Whether the male adult has worked as a skilled worker (apprenticeship) in the period 2006 to 2011 and whether he has worked in the formal economy during that same period of time. The estimates from the main regression showed that the number of years an individual had been out of the slum had a positive and strongly significant impact on these two outcomes. These results do not vary considerably when I control for the set of slum characteristics described above: the direction and statistical significance of the estimate are the same, and the magnitude of the effect is almost identical. However, when I estimate my model using slum fixed effects –columns (3) and (6)–, the magnitude of the effect increases for both outcomes, and their corresponding standard errors increase too. In particular, a male adult resettled from the slum one year earlier would increase the probability of having worked in a skilled job (apprenticeship) at some point during the 5 years previous to the survey by 2.8 percentage point according to my main model estimated by OLS and would increase this probability by 3.4 percentage points according to the slum fixed effect model. For the outcome capturing whether he works in the formal economy, the increase would be of 2.9 percentage points in the main OLS model and of 4.4 percentage points in the slum fixed effect model.

In the case of female adults (Table 4.13), the impact of being resettled out of the slum affects positively and significantly female participation in skilled work activities and in the formal economy, according to my main OLS specification. An additional year of having lived away from the slum increases the probability that a woman has worked as a skilled worker in the period 2006/2011 by 0.7 percentage points and increases the probability that she has worked in the formal economy that period by 1.2 percentage points. When I estimate equation (4.4) using slum fixed effects, the magnitude of the impact on the outcome capturing whether she has worked as a skilled worker does not change, but the weakly statistical significance of the estimate disappears. In the case of the outcome capturing whether she has worked in the formal economy, the magnitude

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[44]I discuss the choice of these controls below.

of the impact increases considerably to 4 percentage points and the significance of this estimate is statistically strong, and higher than for the OLS estimate. As in the case of male outcomes, adding the basic controls for slums does not change the results from those in the main model considerably.

The probability that a family was receiving the minimum income between 2006 and 2011 decreases by 1.4 percentage points for every additional year that they have been living out of the slum according to my basic OLS estimates, as shown in Table 4.14. However, when I estimate this model using slum fixed effects the decrease is of 2.9 percentage points. Both results are statistically significant. Adding controls for slum characteristics does not change significantly the results from estimating the regression by OLS, as was the case for the labour outcomes displayed above.

The results obtained for all outcomes shown in tables 4.12, 4.13 and 4.14 suggest that my OLS estimates are underestimated: In all slum fixed effect estimations, the coefficients for the variable capturing the number of years an individual or family has been living out of the slum are larger than in the main OLS estimations. The coefficient estimates in the fixed effects models are also generally not less likely to be statistically significant in the fixed effect models than in the OLS models, despite the higher standard errors in the fixed effect models. The fact that the OLS estimates are biased downwards supports the idea that IRIS intervened first in slums that had worse living conditions and poorer and more marginalised people. However, some care in interpreting these results needs to be taken. First, the differences in the OLS and slum fixed effects estimates are not statistically significant, as is shown in Table 4.15. Second, there are also some important limitations to this interpretation; other potential factors could be explaining these results.

One thing to note first is that the second OLS specification that I present suggests that, in order to capture the heterogeneity across slums, slum controls are needed. This second OLS model includes some controls for slum characteristics that could be potentially important and could capture some of the reasons why not including slum controls could bias my results; however, the estimates I obtain in this specification do not differ considerably from those for my main OLS estimation, and the controls used are not statistically significant in general, except for the following characteristics: slum was in Madrid and slum had drug problems, which are significant for some outcomes. These are the best controls I could obtain for slum characteristics, and what my results

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suggest is that using slum characteristics as controls does not capture the heterogeneity across slums, so using slum fixed effects is necessary to control for this potential type of heterogeneity. The use of slum controls seems to be relevant for all outcomes presented in tables 4.12, 4.13 and 4.14, although it is noteworthy to point that the significance of these controls differs by outcome. An interesting fact observed is that only three slums are significant in the estimation of the impact of being resettled earlier on males outcomes, and only two slums are significant when estimating the impact on welfare dependency. The case for female outcomes is very different: 19 slums are significant when estimating the impact on working in the formal economy, while no slum is significant when estimating the impact of working as a skilled worker. This could be explained by the fact that women living in the same slum tended to behave similarly, or that there was a strong peer effect for women in terms of their participation in the formal economy.

An important limitation of the slum fixed effects model is that it eliminates all comparisons across slums; by using slum controls, I limit the comparison to within slums, thus eliminating the smallest slums from my sample and any medium size slum in which all families were resettled on the same year. The within slum comparison also reduces the range of the number of years an individual or family has been living out of the slum to a maximum difference between families of 3 years –the range of years families from each slum are resettled is shown in Table 4.3. These limitations make the slum fixed effect estimation less preferable than the basic OLS estimation, although of interest in the exploration of how selective sorting into slums could be affecting the results in equation (4.4). However, there is an even more serious problem when using slum controls: We need to be willing to believe that the order in which families within a slum are resettled is random and independent of family characteristics. I have discussed this issue in section 4.3, where I provided some support to the credibility of this randomness using as an example the case of one of the largest slums, Salobral, and citing anecdotal evidence. Despite all the arguments in support of this randomness, some care should be put in accepting its credibility. If, for example, IRIS would generally resettle first families that seemed easier to integrate and leave more complicated families for later, or if there was any selection of any sort when resettling families, for example based on the fact that the families that had the paper work ready first would be resettled first, then the selection of when to resettle families from a slum could be a more serious concern than the selection of when to resettle each slum. This could explain why the estimates in

Table 4.15: Comparison of estimates using 95% confidence intervals

	Main		Slum FE		Area FE	
Block A. Males						
Skilled worker	0.028***	[0.013, 0.043]	0.034**	[0.004, 0.065]	0.016*	[-0.000, 0.032]
Formal economy	0.029***	[0.014, 0.045]	0.044***	[0.013, 0.075]	0.022***	[0.006, 0.039]
Block B. Females						
Skilled worker	0.007*	[-0.001, 0.016]	0.006	[-0.003, 0.015]	0.004	[-0.006, 0.013]
Formal economy	0.012**	[0.002, 0.023]	0.012**	[0.002, 0.023]	0.013**	[0.002, 0.024]
Block C. Welfare dependency						
Welfare dependency	-0.014**	[-0.026, -0.002]	-0.012*	[-0.024, 0.001]	-0.012*	[-0.026, 0.001]

Notes: OLS estimations (columns (1) and (2)), slum fixed effect estimations (columns (3) and (4)), and destination area fixed effect estimations (columns (5) and (6)). Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). 95% confidence intervals are presented in squared brackets beside the main estimates. Both dependent variables take value 1 if a job with the corresponding characteristics was done by the male at any point during the period 2006 to 2011. All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

the slum fixed effects model are larger than those in the OLS model, and would suggest that selection effects in the fixed effects models are a more serious problem than in the OLS models. The fact that the OLS and slum fixed effects estimates are not statistically different alleviates these concerns.

4.7.2 Controlling for destination areas

In this subsection I discuss the effect of including controls for destination areas in equation (4.4). Controlling for destination areas could matter for two important reasons: to correct the potential selection bias created when omitting these controls, and to control for unobserved heterogeneity in destination areas.

The estimate of the impact of living in the slum for an additional year could be biased if the destination area of families was heterogeneous across years; for example, if IRIS rehoused families in better areas during the first years of the program and at some point began rehousing them in poorer neighbourhoods –for example, for financial

or political motives–, or if the quality of the areas in which families were rehoused was different across years or different for the different slums of origin, and thus the years in which families were resettled. If the destination areas of families were heterogeneous across years, and thus correlated with the number of years the family had been living out of the slum, and if they were also correlated with the outcomes under study –for example, if some areas provided easier access and opportunities to obtaining a formal job–, then the estimate of the number of years living in the slums would be biased, and estimating equation (4.4) using destination areas fixed effects would correct for this selection bias.

Omitting the controls for destination areas in equation (4.4) could also be a problem even if the destination areas were not correlated with the number of years the family had been living out of the slum. The problem would arise whenever the destination areas affect the outcomes under study; if that was the case, then the standard errors for the estimate for the number of years the individual or family had been living out of slum would be biased if one omits the controls for destination areas. There are two possible scenarios in which the destination areas could affect the outcomes under study: First, if families were sorted into destination areas in a non-random manner that was related to families' characteristics; second, if families were allocated to destination areas randomly but different destination areas affected families differently.

Two possible reasons could lead to families being sorted into destination areas according to their characteristics: If families chose their destination area or if IRIS chose the destination area of the families and based its decision on family characteristics. As I discussed in section 4.3[45], families show their preferences about the location of their future flat to IRIS by listing in their application their 3 preferred districts in Madrid city and their 3 preferred municipalities in Madrid Region, excluding the municipality of Madrid (Madrid city). IRIS does not necessarily take into account these preferences, since they are limited by the supply of flats they have at the time a family is rehoused, and will finally offer the families 2 options: One in Madrid city and another one in the Region of Madrid. This choice is given to the families some time before they are going to be resettled. Thus, the final decision on where families will live in is made by the families, but they will only choose between two places and, if they had a strong preference for living in Madrid city, which is the case in most occasions according to

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[45]More details on the process are provided in Santiago (2015c).

IRIS staff, they will actually have only one option: The district that IRIS has selected for them in Madrid city. It is in this sense that I argue that the families have very limited choice, and that IRIS does not base its decision on family characteristics –their final offer is mainly based on the available supply of flats at the time the family is going to be resettled. Nevertheless, despite the fact that this sorting of families is not completely random, it is much more constrained than it is in many housing programs evaluated in the literature, such as those based on housing vouchers that allow the families to choose the exact location and flat (this is the case for the MTO program in the US, a benchmark case in the field).

My previous discussion alleviates the concerns on the importance for my model of a possible sorting of families into destination areas. However, the fact that the placement is not perfectly random implies that we needs to be careful in interpreting my main OLS results, since there are many reasons why IRIS could end up allocating different families to different types of destinations. For example, it could be that IRIS placed families that were already working in the formal economy in locations were there were more formal jobs available, or that it allocated families working in the informal economy as close as possible to the slum, so they could stay close to the area where they were previously storing their material (for example, scrap metal). Another example could be placing families that had better chances of integrating well into mainstream and would not create conflict with their neighbours in wealthier areas or in areas with lower concentration of other Roma families. All of these family characteristics would be correlated with both the outcomes in equation (4.4) and also potentially with some of the regressors; for example, they could be correlated with the individuals ability to read and write, which could in turn be correlated with whether they work in skilled jobs, for example. Using destination area fixed effects allows us to control for all these potential omitted variable problems and to evaluate the importance of these concerns.

In sum, the arguments I have presented suggest that the destination selection effect should not be a significant concern in equation (4.4). However, even if this was the case, it could still be necessary to control for destination areas if the characteristics of the destination areas affected the individual outcomes studied, even if these characteristics were not correlated with any of the regressors in the model; for example, families placed in areas were there are more jobs could improve their possibilities of obtaining a formal job. Using destination areas fixed effects allows us to control for this potential

Table 4.16: Controlling for destination areas (I): Males

	Skilled worker (Apprenticeship)			Formal economy		
	Main	Basic controls	Area FE	Main	Basic controls	Area FE
	(1)	(2)	(3)	(4)	(5)	(6)
Number of years out of slum	0.028***	0.023***	0.016*	0.029***	0.027***	0.022***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Age	-0.002	-0.003	-0.002	-0.000	-0.000	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Literate	0.091**	0.069	0.079*	0.096**	0.082*	0.091**
	(0.043)	(0.043)	(0.045)	(0.044)	(0.044)	(0.046)
Flat in Madrid city		-0.209***			-0.125***	
		(0.043)			(0.045)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	444	437	437	444	437	437

Notes: OLS estimations (columns (1), (2), (4) and (5)) and destination area fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the male at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

unobserved heterogeneity in destination areas.

I present the results controlling for destination area fixed effects in tables 4.16, 4.17 and 4.18. The results presented in these tables correspond to the estimation of the following models: First, the main model defined in Equation 4.4 and estimated by OLS, which I label *Main*. Second, the same model with an additional control dummy variable that is a relevant feature of the destination area: whether the flat is in Madrid city or not; I estimate this second model (labelled *Basic controls*) by OLS. Third, I present the results for estimating equation (4.4) using destination areas fixed effects (labelled *Destination FE*). In this destination fixed effects model, I define destination area as the municipality or district in which the flat is located and introduce a set of dummy variables in our model to control for these destination areas. I display the results for male adults, female adults and family welfare dependency outcomes in Table 4.16,

Table 4.17: Controlling for destination areas (II): Females

	Skilled worker (Apprenticeship)			Formal economy		
	Main (1)	Basic controls (2)	Area FE (3)	Main (4)	Basic controls (5)	Area FE (6)
Number of years out of slum	0.007*	0.006	0.004	0.012**	0.012**	0.013**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)
Age	0.003	0.003	0.002	0.002	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Literate	0.040	0.039	0.034	0.063**	0.062**	0.052*
	(0.025)	(0.025)	(0.025)	(0.030)	(0.031)	(0.030)
Flat in Madrid city		-0.058**			-0.025	
		(0.026)			(0.031)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	479	472	472	479	472	472

Notes: OLS estimations (columns (1), (2), (4) and (5)) and destination area fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the female at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

Table 4.18: Controlling for destination areas (III): Welfare dependency

	RMI		
	Main	Basic controls	Area FE
	(1)	(2)	(3)
Number of years out of slum	-0.014**	-0.012*	-0.012*
	(0.006)	(0.006)	(0.007)
Age male	-0.003	-0.001	-0.003
	(0.006)	(0.006)	(0.006)
Male literate	-0.009	-0.004	-0.029
	(0.038)	(0.038)	(0.040)
Age female	-0.005	-0.005	-0.005
	(0.006)	(0.006)	(0.006)
Female literate	-0.034	-0.036	-0.040
	(0.037)	(0.037)	(0.038)
Flat in Madrid city		0.088**	
		(0.036)	
Origin dummies	Yes	Yes	Yes
N	457	450	450

Notes: OLS estimations (columns (1), (2), (4) and (5)) and destination area fixed effect estimations (columns (3) and (6)). The dependent variable takes value 1 if the family received the Minimum Income Subsidy (RMI) on any month during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variables *Age male* (row 2) and *Age female* (row 4).

Table 4.17 and Table 4.18, respectively.

The results for the selected male outcomes are presented in Table 4.16. I focus on the same outcomes presented for the slum fixed effects models: Whether the male adult has worked as a skilled worker (apprenticeship) in the period 2006 to 2011 and whether he has worked in the formal economy during that same period of time. The estimates from the main regression showed that the number of years an individual had been out of the slum had a positive and strongly significant impact on these two outcomes. The direction of these estimates for the effect on the outcomes of the number of years the male has been living out of the slum are robust to controlling for whether the flat is located in Madrid city –columns (2) and (4)– and to the addition of destination fixed effects –columns (3) and (6). The statistical significance of these estimates is maintained when adding destination area controls, although it is slightly lower for the outcome measuring the probability that the male has worked as a skilled worker (apprenticeship). For these two labour outcomes, the results from the fixed effect model suggest that my main regression overestimates the impact of the number of years an individual has been living out of the slum. A male adult resettled from the slum one year earlier would increase the probability of having worked in a skilled job (apprenticeship) at some point during the 5 years previous to the survey by 2.8 percentage point according to my model estimated by OLS, ceteris paribus, and would increase this probability by 1.6 percentage points according to the destination fixed effects model. The increase for the proability that the male has worked in the formal economy would be of 2.9 percentage points in the main OLS model and of 2.2 percentage points in the slum fixed effect model.

Table 4.17 presents the destination fixed effects results for female outcomes. According to the OLS estimates from equation (4.4), an additional year of having lived away from the slum increases the probability that a woman has worked as a skilled worker in the period 2006 to 2011 by 0.7 percentage points and increases the probability that she has worked in the formal economy during that period by 1.2 percentage points. When I estimate this equation using destination fixed effects, the impact of the number of years out of the slum is no longer significant for the outcome probability of having worked in a skilled occupation and it is still significant and almost identical in magnitude for the probability of having worked in the formal economy. Controlling for whether the flat was in Madrid city has a similar effect on the results: The estimate for the regressor *Number of years out of slum* looses it weak significance for the outcome *Skilled worker*

and does not change for the outcome *Formal economy*.

Last, Table 4.18 presents the results for the probability that a family was receiving the minimum income between 2006 and 2011. According to the results obtained from estimating Equation 4.4, this probability decreases by 1.4 percentage points for every additional year that the family has been living out of the slum. According to the destination fixed effects model, this probability decreases by 1.2 percentage points. The results obtained when adding the basic destination area control to the main model are identical to those obtained in the destination fixed effects specification. Statistical significance is slightly lower than in the main regression, but the impact is still significant.

Adding destination area controls to the model does not significantly change the results, providing some evidence in favour of my initial hypothesis that selection into destination areas was not an important issue in this housing program. As Table 4.15 shows, the differences between the estimates in the main OLS model and in the destination fixed effects models are not statistically significant for any of the outcomes presented in tables 4.16, 4.17 and 4.18. However, it is interesting to analyse the results obtained and explore potential reasons why the estimates for my female and welfare dependency outcomes do not vary considerably when adding destination fixed effects, whereas the estimates for male outcomes suggest that the basic OLS model could be overestimating the impact of an additional year living in the slum.

The OLS estimates for the number of years out of slum for male outcomes are larger than the destination fixed effects, which suggests that there is some potential selection into areas, but the results for females and welfare dependency outcomes show a very small change in these estimates when adding destination area fixed effects, supporting the idea that there is no selection bias into destination areas and that any potential heterogeneity across destination areas (municipalities and districts) is not affecting the results. I have provided arguments in favour of this later conclusion; also, the fact that the unit of measurement of destination areas is the municipality of district (very large) could be a reason why one could have expected that the destination fixed effects model would not capture heterogeneity across areas, even if it existed in this context. The reason why we observe differences in the case of the male outcomes, even if these differences are not statistically significant, could probably be related to the fact that families give a preference to the men's jobs –less women have jobs too, and it is frequent that they collaborate in their husband's business. If that was the case, then this could explain

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the results in part, since it could be possible that the number of years out of the slum was related to the slums in which families lived, as discussed in the previous subsection, and the location of the slums could be affecting the location of the destination flats, because families would always choose an area that was not far from the slum if that was in the interest of the man's business or job. However, this links seem very weak; together with the non significance of the differences observed in the OLS and destination fixed effects, they suggest that including destination fixed effects in my model is not necessary.

4.8 Cohort effects

An additional concern in my analysis is the potential heterogeneity effects due to cohort effects. To address this problem, one could divide the sample by small cohorts. However, because of data limitations due to the sample size, I explore cohort effects by comparing the results from the cohort of heads of households in my sample to another sample, the cohort of the older children in the families resettled by IRIS, which are a younger generation than the parents and range from ages 21 to 39. The mean age in this second cohort is 25 years old, compared to the mean age of the parents' generation, that is 35 years old. Table A.2 shows the full describe statistics for the younger cohort.

In tables 4.19, 4.20 and 4.21, I report the results for replicating my analysis using data for this second cohort. Due to sample size limitations, I do not divide this cohort by gender.

The results obtained for this younger cohort do not replicate those obtained for the cohort of parents: The impact of an additional year living outside of the slum does not significantly affect any of the labour outcomes measured (Table 4.19): Whether the individual works in a traditional Roma job, if he works as a skilled worker, or if he has had any job in the formal or informal economy. Estimating equation (4.4) for this sample using slum fixed effects seems to have a weakly significant impact in increasing the probability that an individual will have had a skilled job in the period 2006 to 2011 if he has been living out of the slum for one additional year; however, this impact is only weakly significant. Estimating equation (4.4) for this sample using destination fixed effects provides similar results to estimating it with no controls for slum or origin or destination area: Living out of the slum for one additional year has no significant impact in the selected outcomes shown in 4.21.

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Table 4.19: Impact on labour outcomes: Children aged 21 and over

	Job classification				Nature of the job			
	'Traditional Roma job'		Skilled worker (Apprenticeship)		Formal economy		Informal economy	
	Dec 2011	2006/11	Dec 2011	2006/11	Dec 2011	2006/11	Dec 2011	2006/11
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of years out of slum	0.019	0.016	0.003	0.022	-0.001	0.017	0.020	0.010
	(0.013)	(0.013)	(0.005)	(0.016)	(0.008)	(0.014)	(0.013)	(0.015)
Age	0.009	0.006	-0.013**	-0.001	-0.017***	-0.010	0.013	0.007
	(0.009)	(0.009)	(0.006)	(0.011)	(0.006)	(0.009)	(0.010)	(0.011)
Female	-0.588***	-0.569***	-0.076	-0.140*	-0.119*	-0.165*	-0.530***	-0.475***
	(0.085)	(0.086)	(0.059)	(0.080)	(0.065)	(0.087)	(0.092)	(0.099)
Literate	0.032	-0.013	0.064*	0.000	0.104**	0.024	0.007	-0.025
	(0.096)	(0.081)	(0.033)	(0.097)	(0.050)	(0.091)	(0.101)	(0.090)
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	105	113	105	107	105	108	105	112

Notes: OLS estimations. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castilian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All dependent and independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age father* (row 2). The variable *'Traditional Roma job'* includes the following jobs: Scrap metal, cardboard, or kitchen appliances dealer, and street vendor (fruits, vegetables, clothes); the variable *Skilled job (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker. Each independent variable is measured in two different ways: "Current job (December 2011)" (labelled as *Dec 2011* –odd numbered columns) and "Job had at any point during the period 2006-2011" (labelled as *2006/11* –odd numbered columns).

Table 4.20: Labour outcomes. Controlling for origin slums: Children aged 21 and over

	Skilled worker (Apprenticeship)			Formal economy		
	Main	Basic controls	Slum FE	Main	Basic controls	Slum FE
	(1)	(2)	(3)	(4)	(5)	(6)
Number of years out of slum	0.022	0.035*	0.042*	0.017	0.018	0.017
	(0.016)	(0.018)	(0.025)	(0.014)	(0.019)	(0.025)
Age	-0.001	0.007	0.018*	-0.010	-0.009	-0.003
	(0.011)	(0.010)	(0.009)	(0.009)	(0.012)	(0.013)
Female	-0.140*	-0.186**	-0.111	-0.165*	-0.156	-0.121
	(0.080)	(0.088)	(0.094)	(0.087)	(0.100)	(0.110)
Literate	0.000	0.002	-0.090	0.024	0.023	-0.012
	(0.097)	(0.107)	(0.097)	(0.091)	(0.107)	(0.107)
Slum in Madrid city		0.038			0.070	
		(0.168)			(0.154)	
Slum had drug problems		-0.341**			-0.120	
		(0.154)			(0.158)	
Slum had easy town access		0.136			0.057	
		(0.129)			(0.107)	
Prefabricated Housing (BTE)		-0.123			0.084	
		(0.142)			(0.150)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	107	104	104	108	105	105

 Notes: OLS estimations (columns (1), (2), (4) and (5)) and slum fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the male at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

Table 4.21: Labour outcomes. Controlling for destination areas: Children aged 21 and over

	Skilled worker (Apprenticeship)			Formal economy		
	Main	Basic controls	Area FE	Main	Basic controls	Area FE
	(1)	(2)	(3)	(4)	(5)	(6)
Number of years out of slum	0.022	0.029*	0.033	0.017	0.017	0.012
	(0.016)	(0.016)	(0.026)	(0.014)	(0.014)	(0.020)
Age	-0.001	-0.001	-0.000	-0.010	-0.008	0.002
	(0.011)	(0.011)	(0.012)	(0.009)	(0.010)	(0.013)
Female	-0.140*	-0.143*	-0.185*	-0.165*	-0.149*	-0.190*
	(0.080)	(0.075)	(0.093)	(0.087)	(0.087)	(0.112)
Literate	0.000	0.004	0.015	0.024	0.013	-0.041
	(0.097)	(0.102)	(0.107)	(0.091)	(0.095)	(0.092)
Flat in Madrid city		-0.218**			0.056	
		(0.105)			(0.096)	
Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	107	103	103	108	104	104

Notes: OLS estimations (columns (1), (2), (4) and (5)) and destination area fixed effect estimations (columns (3) and (6)). Both dependent variables take value 1 if a job with the corresponding characteristics was done by the male at any point during the period 2006 to 2011. Significance is reported at 10 percent (*), 5 percent (**) and 1 percent (***). All regressions include a set of dummies for origin of ancestors (Galician, Portuguese, Castillian, Extremeños) and a constant. The variable *Number of years out of slum* (row 1) refers to the number of years the family has been living out of the slum (2011 minus family year of resettlement), and takes values 1 to 11. All independent variables are indicators that assume are 1 or 0 value, with the exception of *Number of years out of slum* and the control variable *Age* (row 2). The variable *Skilled worker (Apprenticeship)* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

The results obtained for this second cohort suggest that there are heterogeneous effects. The fact that the results are different could be due to the fact that the sample size for this younger cohort is small; however, they could also suggest that the set of observables in our model do not fully weed out the impact of unobserved factors, thus suggesting that one should interpret our main results with caution and not interpret them causally.

4.9 Bounds

The main concern in my model is the potential selection of families into the years in which they were resettled from the slums. If the selection of families into resettlement years is related to some family unobservables, then my estimates will be biased and we cannot interpret the results as a causal relation. The estimations I have presented controlling for slum of origin and destination areas alleviate this concern partially, but the selection of families into resettlement years could be related to other family unobservables. A solution to this problem is to construct informative bounds on the parameter estimate of *number of years out of the slum* to assess the sensitivity of the estimate to plausible deviations from the identifying assumptions in the model. I construct these bounds based on a method developed by Krauth (2011).

Krauth (2011) proposes a simple approach for constructing bounds on parameter estimates for conducting sensitivity analysis in linear causal effects models. His method is similar in spirit to other papers that conduct sensitivity parameter analysis by characterising the unmeasurable deviation from conditional exogeneity in terms that are proportional to some related measurable quantity (Rosenbaum, 2002; Imbens, 2003; Altonji et al., 2005; Krauth, 2007; Conley et al., 2012; Kraay, 2012; Nevo and Rosen, 2012), but, unlike the methods developed in these other papers, the approach proposed by Krauth (2011) is applicable to a simple OLS model.

The main idea in the method developed by Krauth (2011) is to place restrictions on the correlation between the variable of interest and relevant unobserved variables relative to the correlation between the variable of interest and observed control variables; i.e., to model deviations from conditional exogeneity. In my particular case, equation (4.4), suppose that there could be unobserved exogenous variables that may be correlated with the variable of interest (*number of years out of the slum*), z, that is,

corr$(z, \nu) \neq 0$. Then, instead of imposing the assumption that this correlation is zero (conditional exogeneity), I impose a weaker relative correlation restriction, which can be expressed with the following condition:

$$\lambda_0 = \frac{\text{corr}(z, \nu)}{\text{corr}(z, \mathbf{x}\beta_0)} \in \Lambda \tag{4.6}$$

That is, I assume that the correlation of the variable of interest (z) with unobservables (ν) relative to its correlation with observables ($\mathbf{x}\beta_0$) can be restricted to lie within some known range (Λ); if this range is very narrow ($\Lambda = 0$), then we have conditional exogeneity; if it is very wide ($\Lambda = \mathbb{R}$), we have no restrictions on the model.

Allowing for different relative correlation restrictions (Λ) allows us to construct informative bounds on the parameter estimates and to assess the sensitivity of these estimates to plausible deviations from the assumption that the explanatory variable of interest, z, is not correlated with any relevant unobserved variable.

Table 4.22 presents the results from estimating the effect of *number of years out of the slum* on some selected outcomes under a series of relative correlation restrictions. The equation I estimate for each outcome variable y is equation (4.4), where the explanatory variable of interest z is *number of years out of the slum* and the set of control variables $\mathbf{x}$ are those included in this specification, equation (4.4). The bounds for the true effect –the point estimates of $\theta_L(\Lambda)$ and $\theta_H(\Lambda)$–, are reported in square brackets; the 95% confidence intervals for θ_0 are reported in parenthesis. These confidence intervals are calculated based on the method described in Imbens and Manski (2004). For the relative correlation restriction $\Lambda = (-\infty, 0.0]$, the function $\hat{\lambda}(\theta)$ does not exist at either $\hat{\theta}_H(\Lambda) = \hat{\theta}^*$ or $\hat{\theta}_L(\Lambda) = \hat{\theta}^*$ and so the confidence intervals reported are one-tailed confidence intervals for $\theta_L(\Lambda)$ or $\theta_H(\Lambda)$, respectively.

The outcomes presented in Table 4.22 are the same ones presented in my previous analysis of slum and destination area controls: For individual males and females, whether the male or female adult has worked as a skilled worker (apprenticeship) in the period 2006 to 2011 and whether he or she has worked in the formal economy during that same period of time; for the whole family, the welfare dependency outcome: whether the family was receiving the minimum income between 2006 and 2011.

The first row in Table 4.22 corresponds to the case of conditional exogeneity ($\Lambda = 0$), so it presents the same results shown in tables 4.9, 4.10 and 4.11 for each

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Table 4.22: Bounds on years-out-of-slum effect by outcome

| | Bounds on years out of slum effect by outcome $[\hat{\theta}_L(\Lambda), \hat{\theta}_H(\Lambda)]$ | | | | |
| | Father | | Mother | | Family |
Relative correlation restriction (Λ)	Skilled worker (Apprenticeship)	Formal economy	Skilled worker (Apprenticeship)	Formal economy	Received R.M.I.
$\{0.00\}$	0.03	0.03	0.01	0.01	-0.01
	(0.01, 0.04)	(0.02, 0.04)	(0.00, 0.02)	(0.00, 0.02)	(-0.03, 0.00)
$[0.00, 0.5]$	[0.03, 0.03]	[0.03, 0.03]	[0.00, 0.01]	[0.01, 0.02]	[-0.01, 0.00]
	(-0.01, 0.04)	(0.02, 0.08)	(-0.02, 0.01)	(0.00, 0.04)	(-0.02, 0.02)
$[0.00, 1.00]$	[0.02, 0.03]	[0.03, 0.06]	[-0.03, 0.01]	[0.01, 0.03]	[-0.01, 0.03]
	(-0.17, 0.04)	(0.02, 0.20)	(-0.04, 0.01)	(0.00, 0.08)	(-0.02, 0.07)
$[0.00, 2.00]$	[-0.15, 0.20]	[-0.17,0.23]	[-0.10, 0.11]	[-0.08, 0.12]	[-0.24, 0.22]
	(-0.31, 0.36)	(-0.32, 0.38)	(-0.17, 0.18)	(-0.23, 0.21)	(-0.49, 0.46)
$[0.00, 3.00]$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$
	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$
$[0.00, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$
	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$	$(-\infty, \infty)$
$(-\infty, 0.00]$	[0.03, 0.03]	[0.03, 0.03]	[0.01, 0.02]	[0.00, 0.01]	[-0.03, -0.01]
	$(0.01, \infty)$	$(-\infty, 0.04)$	$(0.00, \infty)$	$(-\infty, 0.02)$	$(-\infty, 0.00)$
Other parameter estimates:					
$\hat{\lambda}^*$	2.46	2.46	2.57	2.57	2.23
$\hat{\theta}^*$	0.03	0.03	0.02	0.00	-0.03
$\hat{\lambda}(0)$	1.24	1.10	0.36	4.81	0.45

Notes: Bounds on the effect of years out of slum on selected outcomes, given relative correlation restrictions. Bounds for the true effect are reported in square brackets, and 95% asymptotic confidence intervals are reported in parenthesis.

corresponding outcome. Bounds to increases in the relative correlation restriction from this benchmark case are reported in the following rows. For example, for the outcome for males *skilled worker (apprenticeship)*, the estimated effect of *number of years out of the slum* remains similar in magnitude if the correlation between the treatment and unobservables is as large as the correlation between the treatment and observables. This result is similar for all other outcomes presented in the table except the outcome *skilled worker (apprenticeship)* for females, for which the estimated effect of *number of years out of the slum* remains similar in magnitude only if the correlation between the treatment and unobservables is half as large as the correlation between the treatment and observables.

I also compute how large the omitted variable bias must be to overturn our results; i.e., to imply that a positive impact is zero or negative or that a negative impact is zero or positive; this cut-off value ($\hat{\lambda}(0)$) is presented in the last row in Table 4.22. For example, for the outcome for males *skilled worker (apprenticeship)*, a relative correlation greater than 1.24 (i.e., $\lambda > 1.24$) implies that the range of point estimates for z consistent with the data include zero. This means that, in order to interpret that my data demonstrates a positive causal relationship between *number of years out of the slum* and the males' probability of being a skilled worker (apprenticeship), I need to claim that the correlation between *number of years out of the slum* and unobserved factors affecting the probability that the male is a skilled worker (apprenticeship) is no greater than 1.24 times the correlation between *number of years out of the slum* and the observed factors that affect the probability that the male is a skilled worker (apprenticeship).

The outcome that measures the probability that the mother is working in the formal economy is the most robust one to increases in the potential omitted variable bias: In order to interpret a positive causal relationship between *number of years out of the slum* and this outcome, the correlation between *number of years out of the slum* and unobserved factors affecting the probability that the female is working in the formal economy needs to be no greater than 4.81 times the correlation between *number of years out of the slum* and the observed factors that affect the probability that a woman is working in the formal economy.

4.10 Conclusion

I evaluate the impact of moving out of the slums for selected labour outcomes for Spanish Roma families resettled at different points in time into integrated flats in the Region of Madrid. I find that moving away from the slums and into integrated flats is positively correlated with a higher integration into the labour market of both male and female adults, as measured by the probability of having worked in a skilled job (apprenticeship) and in the formal economy and not having received the minimum income subsidy. The main reason why I cannot interpret these relations causally is the potential self-selection of families into the years in which they were resettled by the program, which would generate an omitted variable bias problem in my model. However, I argue that this self-selection problem is not a major concern. I provide bounds to my estimates following Krauth (2011). This sensitivity analysis supports the claim that the omitted variable bias could be very small and it could still be possible that leaving the slum earlier has a positive impact on the labour outcomes of the families resettled by IRIS housing program.

My findings and analysis are important for a number of reasons. First, these results could suggest that changes in neighbourhoods for poor people in developed countries could have a positive impact on them, contrary to what most research on the housing literature suggests and in line with what most research with immigrant population concludes. Second, I contribute to the policy debate on the Roma, a minority group in many European countries that is under-researched, principally due to lack of data and important legal and political impediments to obtaining it (McDonald and Negrin, 2010; Mathernova et al., 2012; Kahanec, 2009); I also provide some evidence on how moves out of slums could positively affect citizens in developed countries, a topic that is also little explored in the literature because of the political difficulties of implementing slum resettlement programs in rich countries (Collins and Shester, 2013). This study is unique in that it is the first study to evaluate quantitatively how a resettlement program is affecting the lives of marginalised Roma families living in slums. As such, it contributes directly to the debate on housing policies for the Roma both in a theoretical way and in a practical way, since IRIS housing program is considered a model housing program for the Roma that has brought the attention of different European governments as a potential best practice to learn from. My findings suggest that further data collec-

tion and analysis of this population and program could be a promising and interesting path to pursue.

Appendix A

Additional tables

Table A.3: Slums: Location and Number of Families

Area	Municipality/District	Slum	Households	
			Total	**Percentage**
Central Mountain range	Escorial (El)	La Via	4	0.19
East of Metropolis	Alcala de Henares	Forjas	8	0.39
East of Metropolis	Coslada	Coslada	4	0.19
East of Metropolis	Mejorada del Campo	Presa	13	0.63
East of Metropolis	San Fernando de Henares	Carolinas	7	0.34
East of Metropolis	San Fernando de Henares	Castellanas	1	0.05
East of Metropolis	San Fernando de Henares	San Fernando de Henares	1	0.05
East of Metropolis	Torrejon de Ardoz	Ctra Inta	15	0.73
East of Metropolis	Torrejon de Ardoz	Torrejon	11	0.54
Metropolis	Arganzuela	Mendez Alvaro	3	0.15
Metropolis	Barajas	Ezequiel	11	0.54
Metropolis	Barajas	Logrono	4	0.19
Metropolis	Carabanchel	Mica	92	4.48
Metropolis	Carabanchel	Jauja	68	3.31
Metropolis	Carabanchel	Carabanchel	29	1.41
Metropolis	Carabanchel	Aguacate	1	0.05
Metropolis	Carabanchel	Algorta	1	0.05
Metropolis	Carabanchel	Eduardo Marquina	1	0.05
Metropolis	Carabanchel	Jose Lopez	1	0.05
Metropolis	Chamartin	Rodriguez Jaen	3	0.15
Metropolis	Chamartin	Cocheras	2	0.1

(Continued)

Table A.3 (Continued)

Area	Municipality/District	Slum	Households	
			Total	Percentage
Metropolis	Chamartin	Baeza	1	0.05
Metropolis	Ciudad Lineal	Ciudad Lineal	4	0.19
Metropolis	Fuencarral - El Pardo	Liebres	167	8.13
Metropolis	Fuencarral - El Pardo	Manoteras	16	0.78
Metropolis	Fuencarral - El Pardo	Baneza	3	0.15
Metropolis	Fuencarral - El Pardo	Cruz del Cura	2	0.1
Metropolis	Fuencarral - El Pardo	Fuencarral - El Pardo	2	0.1
Metropolis	Fuencarral - El Pardo	Pitis	1	0.05
Metropolis	Hortaleza	Carcavas	11	0.54
Metropolis	Hortaleza	Cristobal Colon	5	0.24
Metropolis	Hortaleza	Hortaleza	3	0.15
Metropolis	Latina	Mimbreras	62	3.02
Metropolis	Latina	Campamento	13	0.63
Metropolis	Latina	Latina	13	0.63
Metropolis	Latina	Censo	1	0.05
Metropolis	Latina	Julia Pando	1	0.05
Metropolis	Latina	Pilar	1	0.05
Metropolis	Moncloa - Aravaca	Villalpando Cementerio	2	0.1
Metropolis	Moncloa - Aravaca	Moncloa - Aravaca	1	0.05
Metropolis	Moncloa - Aravaca	Puerta de Hierro	1	0.05
Metropolis	Moratalaz	Moratalaz	18	0.88
Metropolis	Puente de Vallecas	Celsa	121	5.89
Metropolis	Puente de Vallecas	Santa Catalina	45	2.19
Metropolis	Puente de Vallecas	Puente de Vallecas	30	1.46
Metropolis	Puente de Vallecas	Sierra Elvira	2	0.1
Metropolis	Puente de Vallecas	Trigales	2	0.1
Metropolis	Puente de Vallecas	Bohonal	1	0.05
Metropolis	Puente de Vallecas	Puente Sierra Toledana	1	0.05
Metropolis	San Blas	Av Guadalajara	118	5.74
Metropolis	San Blas	San Blas	8	0.39
Metropolis	Usera	Rancho Cordobes	20	0.97
Metropolis	Usera	Usera	18	0.88
Metropolis	Usera	Torregrosa	1	0.05
Metropolis	Vicalvaro	Canaveral	90	4.38
Metropolis	Vicalvaro	Focos	31	1.51
Metropolis	Vicalvaro	Vicalvaro	5	0.24

Table A.3 (Continued)

Area	Municipality/District	Slum	Households	
			Total	**Percentage**
Metropolis	Vicalvaro	Berrocales	2	0.1
Metropolis	Villa de Vallecas	Rosilla	149	7.25
Metropolis	Villa de Vallecas	Pozo Huevo	105	5.11
Metropolis	Villa de Vallecas	Canada Real	23	1.12
Metropolis	Villa de Vallecas	Barranquillas	15	0.73
Metropolis	Villa de Vallecas	Camino del Vertedero	14	0.68
Metropolis	Villa de Vallecas	Cristo	14	0.68
Metropolis	Villa de Vallecas	Villa de Vallecas	6	0.29
Metropolis	Villa de Vallecas	Altamira Rio	5	0.24
Metropolis	Villa de Vallecas	Altamira	1	0.05
Metropolis	Villa de Vallecas	Puerto Arlaban	1	0.05
Metropolis	Villaverde	Salobral	318	15.48
Metropolis	Villaverde	Plata y Castanar	54	2.63
Metropolis	Villaverde	San Fermin	25	1.22
Metropolis	Villaverde	Uva Villaverde	13	0.63
Metropolis	Villaverde	Villaverde	11	0.54
Metropolis	Villaverde	Molino	6	0.29
Metropolis	Villaverde	Plata y Castanar Caravan Chabo	2	0.1
Metropolis	Villaverde	Alcocer	1	0.05
Metropolis	Villaverde	Ctra San Martin de la Vega	1	0.05
Metropolis	Villaverde	Olivos	1	0.05
Metropolis	Villaverde	Salamanca	1	0.05
North of Metropolis	Alcobendas	Val de las Fuentes	1	0.05
South of Metropolis	Alcorcon	Vaqueria Cisneros	3	0.15
South of Metropolis	Aranjuez	Montecillo	10	0.49
South of Metropolis	Fuenlabrada	Fuenlabrada	6	0.29
South of Metropolis	Getafe	Getafe	11	0.54
South of Metropolis	Humanes de Madrid	Campo Hermoso	16	0.78
South of Metropolis	Leganes	Leganes	9	0.44
South of Metropolis	Leganes	J de Mariana	1	0.05
South of Metropolis	Mostoles	Vereda Pan y Agua	70	3.41
South of Metropolis	Mostoles	Mostoles	4	0.19
South of Metropolis	Parla	Parla	5	0.24
South of Metropolis	Pinto	Pinto	2	0.1
Southeast	Torres de la Alameda	Torres Alameda	2	0.1
West of Metropolis	Boadilla del Monte	Boadilla	2	0.1

(Continued)

Table A.3 (Continued)

Area	Municipality/District	Slum	Households	
			Total	**Percentage**
West of Metropolis	Collado Villalba	Collado Villalba	1	0.05
West of Metropolis	Galapagar	Rio Guadarrama	16	0.78
West of Metropolis	Pozuelo de Alarcon	Montana	2	0.1
N.A.	N.A.	Gallegos	9	0.44
N.A.	N.A.	Ambroz	7	0.34
N.A.	N.A.	Sarasate	5	0.24
N.A.	N.A.	Canada Navallar	2	0.1
N.A.	N.A.	Caprichos	1	0.05
Total			2,054	100

Source: IRIS Administrative data 2010.

Table A.5: Flats distribution. Number of families per Area and Municipality/District

Area	Municipality/District	Households	
		Total	**Percentage**
Central Mountain range	Colmenarejo	1	0.05
East of Metropolis	Alcala de Henares	47	2.41
East of Metropolis	Arganda del Rey	12	0.62
East of Metropolis	Coslada	29	1.49
East of Metropolis	Mejorada del Campo	5	0.26
East of Metropolis	Rivas - VaciaMadrid	9	0.46
East of Metropolis	San Fernando de Henares	5	0.26
East of Metropolis	Torrejon de Ardoz	33	1.69
East of Metropolis	Velilla de San Antonio	1	0.05
Metropolis	Arganzuela	2	0.1
Metropolis	Barajas	3	0.15
Metropolis	Carabanchel	201	10.31
Metropolis	Centro	1	0.05
Metropolis	Chamartin	3	0.15
Metropolis	Ciudad Lineal	30	1.54
Metropolis	Fuencarral - El Pardo	19	0.97

(Continued)

Table A.5 (Continued)

Area	Municipality/District	Households	
		Total	**Percentage**
Metropolis	Hortaleza	21	1.08
Metropolis	Latina	97	4.98
Metropolis	Moncloa - Aravaca	4	0.21
Metropolis	Moratalaz	102	5.23
Metropolis	Puente de Vallecas	280	14.37
Metropolis	Retiro	1	0.05
Metropolis	Salamanca	1	0.05
Metropolis	San Blas	110	5.64
Metropolis	Tetuan	14	0.72
Metropolis	Usera	134	6.88
Metropolis	Vicalvaro	116	5.95
Metropolis	Villa de Vallecas	39	2
Metropolis	Villaverde	114	5.85
North of Metropolis	Alcobendas	20	1.03
North of Metropolis	Algete	3	0.15
North of Metropolis	Colmenar Viejo	11	0.56
North of Metropolis	San Agustin del Guadalix	1	0.05
North of Metropolis	San Sebastian de los Reyes	8	0.41
North of Metropolis	Tres Cantos	13	0.67
South of Metropolis	Alcorcon	55	2.82
South of Metropolis	Aranjuez	10	0.51
South of Metropolis	Ciempozuelos	3	0.15
South of Metropolis	Fuenlabrada	74	3.8
South of Metropolis	Getafe	55	2.82
South of Metropolis	Humanes de Madrid	7	0.36
South of Metropolis	Leganes	73	3.75
South of Metropolis	Mostoles	82	4.21
South of Metropolis	Parla	27	1.39
South of Metropolis	Pinto	11	0.56
South of Metropolis	San Martin de la Vega	2	0.1
South of Metropolis	Valdemoro	10	0.51
Southeast	Loeches	1	0.05
Southwest	Grinon	2	0.1
Southwest	Moraleja de Enmedio	1	0.05
Southwest	Navalcarnero	4	0.21
Southwest	Torrejon de la Calzada	1	0.05

Table A.5 (Continued)

Area	Municipality/District	Households	
		Total	**Percentage**
West of Metropolis	Boadilla del Monte	1	0.05
West of Metropolis	Collado Villalba	10	0.51
West of Metropolis	Galapagar	12	0.62
West of Metropolis	Majadahonda	2	0.1
West of Metropolis	Pozuelo de Alarcon	8	0.41
West of Metropolis	Rozas de Madrid, Las	1	0.05
West of Metropolis	Villanueva de la Canada	1	0.05
West of Metropolis	Villaviciosa de Odon	6	0.31
Total		1,949	100

Source: IRIS Administrative data 2010.

Table A.1: Families Permanence in IRIS Program, by rehousing year

Year	Stayed Total	%	Left Total	%	Expelled Total	%	Total
1987	18	94.74	0	0.00	1	5.26	19
1988	17	85.00	2	10.00	1	5.00	20
1989	26	89.66	0	0.00	3	10.34	29
1990	8	100.00	0	0.00	0	0.00	8
1991	11	78.57	0	0.00	3	21.43	14
1992	29	96.67	0	0.00	1	3.33	30
1993	8	80.00	0	0.00	2	20.00	10
1994	11	91.67	0	0.00	1	8.33	12
1995	77	96.25	1	1.25	2	2.50	80
1996	93	91.18	1	0.98	8	7.84	102
1997	163	95.32	0	0.00	8	4.68	171
1998	114	80.28	3	2.11	25	17.61	142
1999	203	84.23	4	1.66	34	14.11	241
2000	229	84.81	3	1.11	38	14.07	270
2001	171	88.60	7	3.63	15	7.77	193
2002	121	88.32	3	2.19	13	9.49	137
2003	80	90.91	2	2.27	6	6.82	88
2004	23	100.00	0	0.00	0	0.00	23
2005	112	97.39	2	1.74	1	0.87	115
2006	151	97.42	2	1.29	2	1.29	155
2007	122	99.19	0	0.00	1	0.81	123
2008	39	100.00	0	0.00	0	0.00	39
2009	45	100.00	0	0.00	0	0.00	45
2010	78	100.00	0	0.00	0	0.00	78

Notes: Data entries in columns 2 and 3 show the total number of families that have stayed in IRIS program. Data entries in columns 4 and 5 present the number of families that left the program. Data entries in columns 6 and 7 present the number of families that have been expelled from the program. The families are classified according to the year in which they were rehoused (column 1). The data is from IRIS administrative records, as retrieved in May 2010.

Table A.2: Descriptive statistics of children outcomes, children aged 21 and over

	Mean	Standard deviation
Block A. Controls		
Number of years out of slum	8.410	(2.90)
Age	25.018	(3.72)
Female	0.542	(0.50)
Literate	0.806	(0.40)
Ancestors Gallegos	0.305	(0.46)
Ancestors Portugueses	0.427	(0.50)
Ancestors Castellanos	0.012	(0.11)
Ancestors Extremeños	0.213	(0.41)
Ancestors mixed/other	0.043	(0.20)
Block B. Labour outcomes		
'Traditional Roma job'		
In December 2011	0.509	(0.50)
During 2006-2011	0.569	(0.50)
Skilled job: Apprenticeship		
In December 2011	0.083	(0.28)
During 2006-2011	0.227	(0.42)
Job in the formal economy		
In December 2011	0.093	(0.29)
During 2006-2011	0.180	(0.39)
Job in the informal economy		
In December 2011	0.509	(0.50)
During 2006-2011	0.583	(0.50)

Notes: The sample consists of children aged 21 and over with non-missing family re-settlement year, a total of 166 individuals, 90 females and 76 males. The number of observations varies by variable. All variables are indicators that assume are 1 or 0 value. The variable *'Traditional Roma job'* includes the following jobs: Scrap metal, cardboard, or kitchen appliances dealer, and street vendor (fruits, vegetables, clothes); the variable *Skilled job: Apprenticeship* includes skilled jobs that do not require university education, e.g.: hairdresser, construction worker, or agricultural worker.

Table A.4: Number of families rehoused by IRIS/CPM, 1987-2011

| | Number of families rehoused by IRIS/CPM | | | | | |
| | Rehoused in Madrid city | | Rehoused in rest of locations | | Total | |
Year	Total	%	Total	%	Total	%
1987	12	1.4	7	0.5	19	0.9
1988	6	0.7	14	1.1	20	0.9
1989	12	1.4	17	1.3	29	1.4
1990	4	0.5	4	0.3	8	0.4
1991	5	0.6	9	0.7	14	0.7
1992	5	0.6	25	1.9	30	1.4
1993	3	0.4	7	0.5	10	0.5
1994	2	0.2	10	0.8	12	0.6
1995	11	1.3	69	5.3	80	3.7
1996	31	3.7	71	5.4	102	4.8
1997	78	9.3	93	7.1	171	8.0
1998	50	6.0	92	7.0	142	6.6
1999	107	12.8	134	10.3	241	11.2
2000	113	13.5	157	12.0	270	12.6
2001	88	10.5	105	8.0	193	9.0
2002	62	7.4	75	5.7	137	6.4
2003	20	2.4	68	5.2	88	4.1
2004	3	0.4	20	1.5	23	1.1
2005	76	9.1	39	3.0	115	5.4
2006	61	7.3	94	7.2	155	7.2
2007	51	6.1	72	5.5	123	5.7
2008	7	0.8	32	2.4	39	1.8
2009	7	0.8	38	2.9	45	2.1
2010	23	2.7	55	4.2	78	3.6
Total	837	100.0	1307	100.0	2144	100.0

*E*ntries in columns 2 and 3 present the number of families rehoused by IRIS/CPM in flats located in the municipality or city of Madrid during the years 1987 to 2011. Entries in columns 4 and 5 show the number of families rehoused by IRIS/CPM in flats located in the Region of Madrid but outside of the municipality or city of Madrid, during the years 1987 to 2011. Columns 6 and 7 show the total number of families rehoused each year. Data are from IRIS Administrative data (retrieved in May 2010).

Legend for codes used in figures and tables

Codes for areas in the Region of Madrid

(1) Central Mountain range (2) East of Metropolis (3) Metropolis (4) North of Metropolis (5) South of Metropolis (6) Southeast (7) Southwest (8) West of Metropolis

Codes for municipalities in the Region of Madrid

(1) Alcala de Henares (2)Alcobendas (3) Alcorcon (4) Algete (5) Aranjuez (6) Arganda del Rey (7) Madrid (8) Boadilla del Monte (9) Ciempozuelos (10) Collado Villalba (11) Colmenar Viejo (12) Colmenarejo (13) Coslada (14) Escorial (El) (15) Fuenlabrada (16) Galapagar (17) Getafe (18) Grinon (19) Humanes de Madrid (20) Leganes (21) Loeches (22) Majadahonda (23) Mejorada del Campo (24) Moraleja de Enmedio (25) Mostoles (26) Navalcarnero (27) Parla (28) Pinto (29) Pozuelo de Alarcon (30) Rivas - VaciaMadrid (31) Rozas de Madrid, Las (32) San Agustin del Guadalix (33) San Fernando de Henares (34) San Martin de la Vega (35) San Sebastian de los Reyes (36) Torrejon de Ardoz (37) Torrejon de la Calzada (38) Torres de la Alameda (39) Tres Cantos (40) Valdemoro (41) Velilla de San Antonio (42) Villanueva de la Canada (43) Villaviciosa de Odon

Codes for districts in the municipality of Madrid

(1) Centro (2) Arganzuela (3) Retiro (4) Salamanca (5) Chamartin (6) Tetuan (7) Chamberi (8) Fuencarral - El Pardo (9) Moncloa - Aravaca (10) Latina (11) Carabanchel (12)Usera (13) Puente de Vallecas (14) Moratalaz (15) Ciudad Lineal (16) Hortaleza (17) Villaverde (18) Villa de Vallecas (19) Vicalvaro (20) San Blas (21) Barajas

Appendix B

Preliminary investigation

My research focuses on a particular population: Spanish gypsies originally from Madrid slums. These individuals form an extreme case of a poor and marginal social group caught in a poverty trap while living in a developed, rich economy with generous social welfare structures.

This particular gypsy society is clan-based, with patriarchal and hierarchical kinship structures. They have a very strong sense of their differentiated (gypsy) identity and are ruled by strict social norms and dysfunctional learned behaviours that are a mixture of gypsy laws and idiosyncratic norms developed during decades of life in closed and marginalized environments. These peculiarities take them apart from the rest of Spanish society, including other gypsies, and make this population an extraordinarily interesting case study.

Girls marry at 14, almost no children finish the compulsory Secondary Education (up to 16 years old), male chauvinism and gender violence are the norm and fertility control has only recently started to be considered -with women being in sole charge of it. Women's agency is strongly undermined in this society, and slum life for them means complete alienation from the world: having no access to cars, they cannot get out of the slum other than with their husbands or male relatives. Still, minor and slow changes are being observed in the attitudes of this population, and, as is usually the case, these changes are being driven by their women.

The Autonomous Region of Madrid[1] has been involved with this population

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[1] The Autonomous Region of Madrid (Comunidad Autónoma de Madrid) is one of the 19 "Comunidades Autónomas" of Spain. It consists of the city of Madrid and 178 other municipalities.

since 1986, offering to these individuals rented apartments across the region with the purpose of eradicating slums and ghettos (by slightly dispersing the clans' members). Their work has led to the disappearance of most slums in the region of Madrid, and at present day only two slums with Spanish gypsies remain: "Santa Catalina" and "El Ventorro". The current institution in charge of the rehousing of this population is IRIS (Instituto de Realojamiento y Reinserción Social) [2]. IRIS' task is to rehouse these families across the Autonomous Region of Madrid and to help them break the vicious circle in which they are trapped, by supporting them in their adaptation to their "new life" (administrative papers, empowerment, job training courses, help with job applications, follow up of children's school attendance,...). IRIS staff works with the families both before and after they have been moved out of the slum.

I have had the opportunity to learn about these gypsies' laws, norms and behaviours, stories, customs, clan relations and language both from themselves and from specialists that have been following these families for up to three generations. These specialists include anthropologists, sociologists, social workers and employment officers.

I have also been granted access to detailed and reliable information held by IRIS on social variables as private and difficult to obtain as domestic violence, problematic children and family pressures, clan fights, threats and killings, intra-group disputes and cases of exile from one's own clan.

I came to Madrid with the purpose of understanding how clan structures affected these people's individual decisions, and how relaxing the surveillance and peer pressure of kin members by re-housing clan members in different areas of Madrid could impact their autonomy and thus their economic and educational decisions.

In order to study this hypothesis, I worked together with 3 social workers at IRIS to construct the clan and family trees for the individuals living in three of the last existing slums in Madrid[3]. I then matched each of these clan members into the areas in which their IRIS rented flat is located[4]. I inquired about the profiles of each of these individuals, looking for changes that could guide me in understanding how the clan

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[2]IRIS is part of the Department of the Environment, Housing and Urban Planning at the Government of the Autonomous Region of Madrid.

[3]Salobral (dismantled completed in 2008), Cañaveral (dismantled completed in 2009) and Santa Catalina, which is in the process of being dismantled (expected completion date: May 2011).

[4]Except for those still living in the Santa Catalina slum.

dispersion could have an effect on the agents[5]. My conclusion was that the impact of dispersion on individual agency is enormous, but real concrete changes in economic and educational decisions are scarcely observed. Therefore, my initial hypothesis on the impact of clan dispersion on individual decisions cannot be tested; not because it does not affect the autonomy of an individual, but because there are many other factors constraining the materialization of non-attitude changes.

In fact, real concrete changes in economic and educational decisions are scarcely observed for all the IRIS population. This statement is confirmed by anthropologists, sociologists and all the staff at IRIS.

In my exploration of "possible changes" I searched both for changes in labor supply decisions and business investment choices and for changes in savings and investment household decisions. I also inquired about changes in educational and job training choices.

I discovered interesting facts related to within clans economic relations, similar to those observed amongst poor people elsewhere, especially those belonging to kinship groups (example: expenditures on funerals and weddings bring many families to run up huge debts and stop paying house rents and bills for months). Still, none of these economic relations are strong enough to have any influence on how these individuals decide on their family's savings, investments and labor supply choices. And none of these economic relations change when these gypsies move from the slum to the apartments. The weight of their identity is tremendous, and families remain stuck together, no matter how far apart their flats are.

Since my broad research interest is the study of the "how-to escape" the poverty trap and my field search was suggesting that these individuals observe "no changes", I directed the focus of my pilot stage towards two other objectives: Understanding men's relation towards work (they are the breadwinners), and understanding women as agents of change (they are the ones that are silently driving the change in this population).

As stated above, no significant differences are observed in the labour curricula of male slum dwellers and ex- slum dwellers, not even for second generations of gypsies rehoused 10 years ago. This lack of impact brings about the question of why this is case and what can be done about it.

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[5]To talk about each individual in the sample, I talked to each social worker in charge of at least one of the individuals in my sample. In effect, this meant talking to all of IRIS' social workers.

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In order to understand the labour choices and constraints faced by these men and the reasons why they do not change, it is first required to systematically record and analyze their labour situation. IRIS' reports are of no help on this: they collect information on declared jobs and occupations only occasionally. For example, Gamella et al. (2007) document the declared jobs from IRIS' reports for a random selection of 400 families rehoused in the years 1998-2007, and this information is missing for almost 70% of the individuals.

I set myself the challenge to get the most accurate information on this topic and decided to visit Employment Offices in the Autonomous Region of the Community of Madrid in areas in which gypsy populations reside. Again, the "no success for the gypsies" story emerged. Still, something very positive came out of this venture: Ms Rosa Fernández, an employment officer of an office linked to IRIS, put me on the trail of the existence of a very small dataset collected in 2008 in the Santa Catalina slum. 137 short surveys were conducted in the slum with the aim of investigating the labor situation of around half of its adult dwellers and their willingness and attitudes towards informal/formal work and job training courses. I am currently waiting for IRIS to procure me this data.

Given that tangible, observable changes are scarce, a key question then arises: Can we observe a willingness to change? As the field work proceeded, it became clear to me that men are the ones that are less willing to change; to put it in many experts' words: "They live in a very comfortable position" (theirs is a very male chauvinistic and hierarchical culture). I then became particularly interested in women, in their own poverty trap. They are the ones that are struggling and fighting, that are willing to overcome their society's negative aspects; they are the ones driving the small changes that can be observed, and, at the same time, they are the ones that seem more stuck in an identity and society that goes against them. All the slow and silent changes are being borne by them. But they are slow, and they are silent.

In what follows, I summarize what I have learnt from my field work and I propose various ways in which this research work could proceed. Basing a PhD thesis on this research is complicated, for a serious number of reasons. Still, I believe that the peculiarities of this population make research on them an enormous opportunity to shed light on the understanding of the ways in which a very close-knit and marginalized society can make the leap and escape from its poverty trap. My field work has led me

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to conclude what most of the experts working with this population claim: these gypsies will make it (will escape the trap). The current youngest gypsy couples are very possibly the last generation held back by an irreversible poverty trap state. Investigating in depth the adaptation to an economically developed society of such an extremely differentiated and marginalized community is of an extraordinary interest. On top of that, IRIS staff has given me the warmest of welcomes, and their experience, enthusiasm and desire in collaborating together cannot be praised and thanked enough.

B.1   Objective

My first field work goal was to understand this gypsy society: their basic daily life, their kinship social norms, their group relations and networks, their savings and investment behaviour and their educational choices, jobs and business structures. I obtained information on both gypsies still living in slums and gypsies already rehoused across the Madrid region, and I compared these "two types" of population to try to find key features that could be behind the potential changes that can ultimately allow for an escape from the poverty trap. I inquired about gypsies that had left the slum 1 week ago and about the sons and daughters of gypsies that had moved into apartments 10 or 20 years ago.

My focus was on finding "changes": what changes, who changes and why. I paid special attention to the possible effects of the dispersion of clan members that follows IRIS' rehousing policy, to men and their relation towards work and work formation and to women and their feelings and attitudes towards life and their female gypsy identity.

I started my field work concentrating on searching for observable changes on the following variables: savings, borrowings, investment household behaviour and labor and educational decisions. I found no evidence of changes in any of these variables. I asked all the social workers at IRIS to name me "exceptional" cases, insisting that what I meant by that was "individuals that had made even a very minor change in any of those variables". Few of the social workers could mention me more than 1 or 2 of such cases –and the success stories they described to me were far from being big leaps. I confirmed their assertions with my pilot survey work, and with various informal talks with academics and gypsies.

This lack of observable changes in those concrete variables directed my attention

towards focussing on understanding why it is the case that these individuals do not try to obtain better jobs, improve their businesses or attend job training courses: Why did not any one of them seem to be taking up the opportunities that were being offered to them (including free training job courses)? I also focussed my attention towards understanding how their identity and traditions were standing on their way and constraining their assimilation to the positive features of the wider society (most of them do not obtain the Secondary School title and women are in a very disadvantaged position relative to non-gypsy Spanish women).

In a nutshell, my conclusions are the following:

- This population has not experimented any significant progress in economic outcomes and has experimented limited success in children's educational outcomes

- Men do not change and "do not want to change"

- The key agent to study, focus on and empower are women

Research Objective

My research objective when approaching this population was to reply to the following research questions:

1. How does belonging to a marginalized and close-knit kin community affect the economic performance of an individual exposed to better economic opportunities in a wider but not always welcoming community? It is not clear whether kinship membership is then beneficial (it offers protection, for example through informal insurance mechanisms), or is a costly deterrent that constrains an individual from making choices he would have otherwise preferred (but are against the kin's social norms).

2. How does this effect differ in men and women? Given that the gypsy women from this community are completely cut-off from society while living in the slums, and that these communities have a strong macho culture and a patriarchal structure, how does this increase in freedom alter women's attitudes, empowerment and effective choices?

In order to understand these interactions between kinship membership and an individual's economic choices and outcomes, I had the opportunity of having access to a very particular population: marginalized slum dweller gypsies that IRIS is rehousing or has rehoused across the city of Madrid and surrounding towns. Due to their poverty, their condition of social exclusion and the isolated location of their small shanty towns, these Spanish gypsies have developed extremely rigorous social norms with almost perfect monitoring and enforcement in the slums. The public housing program that IRIS has been implementing in Madrid for more than 10 years breaks in an heterogeneous way the physical closeness among these kinsmen. This creates variations in the exposure of gypsies to non-gypsies and their own kinsmen, and thus relaxes in a heterogeneous way the possibilities of being supported by one's own people, but also the possibilities of being monitored by those same one's own people and of being exposed to and in interaction with a different type of society (the non-gypsy one). Exploiting this policy intervention, I was interested in addressing three main questions:

- Which are the mechanisms through which the social and economic structures of kinship groups affect the economic performance of kin members?

- How do kinships confront the exposure to a wider and economically developed society? Do kinships help or do they deter integration and thus become a constraint to welfare maximizing behaviour? Which are the mechanisms kin members use to foster or to draw back its members?

- Why, and at which cost, do some members break the kinship's ties?

My initial field work was directed towards adressing these three questions, both for men and for women. This initial goal was fine tuned as my field work proceeded, as I will explain in detail in the following sections.

B.2 Methodology

B.2.1 Field Work Objective

In order to analyze my research questions, I directed my pilot survey and informal talks on the field towards finding answers to the following concrete questions:

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1. What changes when moving from the slum to the apartment?

2. Does being rehoused far from one's clan have a significant impact on an individual?

3. How do those results differ by gender?

    My initial hypothesis was that we would be able to observe changes in:

- Clan relations (frequency of contacts, group pressure) and gypsy identity, and their resulting effects on

- Aspirations and ways to understand life, which ultimately can lead to an impact on

- Economic outcomes, such as: savings behaviour, borrowing and lending among clan or family members, investment decisions in the household, changes in the way of conducting family or group businesses, children's education, parent's job changes or job training decisions.

B.3   Organization

B.3.1   Block 1: IRIS and Academia

I started my field work by holding informal and in-depth talks with experts on this gypsy population. These conversations gave me an extraordinary insight and prepared me to meet the gypsy women. They also guided me in fine tuning the survey to "translate" it into gypsy jargon and in rewriting the questions in ways that made sense to the gypsies when addressing their experiences and their lifestyles. Once the survey was ready, I started interviewing gypsy women (Block 2) but continued meeting with social workers. Their continuous feedback on my comments and questions during the interview process and their help in interviewing the gypsy women have been incredibly valuable.

I talked with the following people (a generous minimum of one hour was allowed per person):

- IRIS staff:

  - IRIS Director General, Mr Francisco Javier Ramírez Caro

  - Key members of staff at IRIS: Ms María José González, Director of Social Area; Ms Marisa Gil, Director of Rehousing Decisions, and Mr Pedro Navarrete, Director of Slum and Social Housing

  - Social workers and other staff at IRIS headquarters. In particular, in-depth conversations were held with the 3 social workers in charge of following the debt accounts of the gypsy families and with the administrative official in charge of the data at IRIS

  - The 25 IRIS social workers, social educators and teachers that work on the field, either in the slums or visiting families that have already been rehoused

    * Each of these social workers is in continuous contact with an average of 20 gypsy families and responsible for 50 families approx.

    * These social workers are located in the 8 different centres that IRIS has across Madrid. Every centre is in charge of taking care of the "IRIS population" settled in its surrounding areas

    * Some of these social workers have 15-20 years of experience in working with these families for IRIS (or IRIS' precessor)

- Officials at 3 Employment Offices in Madrid city on areas where IRIS is located and to which "IRIS' gypsies" go; in particular, Ms Rosa Fernández

- Lawyer Mr Antonio Santiago, a former official Spanish gypsy representative at the EU with ample experience with "IRIS' gypsies"

- Anthropologist Professor Juan Gamella, who is a reknown specialist in Spanish gypsies with more than 20 years of experience on the topic. He lead and conducted the only existing academic study on "IRIS' gypsies" (Gamella et al., 2007)

- Sociologist Dr Luis Nogués, who worked at IRIS for 8 years and has been studying this population for more than 10 years, coauthoring the study by Gamella referred above

Results and Conclusions from Block 1:

- Obtained a good idea of a normal day in the life of these gypsies, both in the slums and in the apartments: their work habits and customs, their lifestyle and relations, the importance of the clan and its hierarchies, of social gatherings and of celebrations in their culture, their attitudes towards fecundity, marriage, money, non-gypsies, education, commitment (they dislike schedules), etc.

- Concluded the design of my Pilot Survey, putting it into wording and using concepts the gypsies would understand

- Constructed the entire genealogical tree of the clans living in Santa Catalina, Salobral and Cañaveral (my potential sample) and then mapped those individuals already rehoused to their final destinations

- Wrote down the "exceptional cases" that every social worker remembered: those individuals that had had any observable improvement in their economic, professional or educational outcomes. These cases were few in quantity: no social worker mentioned more than 2/3 examples, not even veterans with up to 20 years of experience. Quality cases were also few; for example, a very limited number of "IRIS' gypsies" have finished the compulsory Secondary Education, and only very few have taken up regular jobs

- Concluded that men do not change and that women are the driving motor of change, even if a slow and silent one. Therefore, I decided to interview women only for the Pilot Survey.

For a short time, I only implemented Block 1. The results obtained in that first phase of Block 1 guided me in the design and focusing of the rest of my field work. The rest of my field work was organized so as to simultaneously implement Blocks 1, 2, 3 and 4. I found this multi-targetting approach most useful for managing my time efficiently, since my work required me to move around the Madrid region in order to introduce myself to all the social workers and to meet with them and the different gypsy women.

B.3.2 Block 2: Pilot Survey

Once I considered that the Pilot Survey was ready to be taken to the field (after discussing it with a few social workers), I started interviewing the gypsy women. I only interviewed women because, as stated in 3.2.1., it is only women who are leading the changes observed.

In order to interview the women, I was accompanied by the IRIS social worker that was responsible for her family. The social workers stayed with me during the interview, which gave confidence to the women and ensured that their best effort was put in helping me, that they would not "lie" and that "translation" problems would be dealt with on the spot.

Meeting the women was complicated because they tend to attend to only half of the appointments organized by IRIS' workers, even when they are at their own place or when some grant or important help or job offer is at stake. IRIS staff helped me enormously in organizing these interviews, and tried their best to have enough backup plans to guarantee me productive days.

Procedure:

- Gypsies living in the Santa Catalina slum were interviewed both in the slum and at appointments made at IRIS' office in the Vallecas district of Madrid city

- Gypsies living in apartments were interviewed both at their flats and at appointments made at the 8 different IRIS Offices spread across the Madrid region

Subjects interviewed:

- Female household heads of 20 gypsy families *already rehoused* by IRIS

  - 8 of these households were considered "average", and these families had been rehoused in the last 3 years. 2 were separated from their extended family and other gypsies, 3 had key relatives living close to them and the other 3 had some gypsy neighbours (not related to them).

  - 6 of these households were considered "average", and these families had been rehoused more than 7 years ago. 1 was separated from their extended family and other gypsies, 4 had some relatives living close to them and 2 were living close to other gypsies (but not kinsmen).

- 3 of these household were selected by different IRIS social workers to give me examples of the "best profiles": either the woman, the children or the man were adapting particularly well to their new environment, and positive changes were observed in them.

- 3 of these households were selected by different IRIS social workers to give me examples of the "worst profiles": families that were about to be expelled from the house for "bad behaviour", or that were having tremendous debt problems, or whose children had moved back to the slums when married or were skipping attending Primary school

- Female household heads of 10 gypsy families at the slum of Santa Catalina, which are *about to be rehoused* in the coming months[6].

- Children and other women at the slum of Santa Catalina –These were relaxed individual or group conversations

B.3.3 Block 3: Focussing on Men and their relation towards Work

I dedicated some of my interviews' time to discuss both with gypsy women and social workers the possible reasons why men did not put any interest in finding "non-traditional gypsy jobs", in improving their businesses and economic situation or in taking job training courses.

As stated in Block 1, I visited 3 Employment Offices in search for answers to this question. It was then that I met Ms Rosa Fernández, who mentioned an existing dataset that was collected in the Santa Catalina slum in 2008. I am currently waiting for IRIS staff to send it to me.

B.3.4 Block 4: Informal Talks with Women

After concluding that "no changes" is the rule and that women hold the key to future changes (Block 1), I began to hold informal conversations about women with gypsy women both living in the slum of Santa Catalina and in apartments. We talked about

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[6]Part of these interviews where held in an IRIS office to ensure they could talk freely. This was a recommendation by IRIS staff members.

women and empowerment, about their children's education, about gender violence and about the reasons why they did not have regular jobs in spite of their enthusiasm in taking training courses. We talked about gypsy identity, and about their dreams for their daughters, about their loneliness in their flats and the advantages of having got rid of their mother-in-law (a married woman's worst enemy in these gypsies' society).

B.4 Data and Resources Available

IRIS has written a Contract to be signed between them and either CAGE or the Department of Economics at the University of Warwick. This contract is an extendable one-year agreement that aims to ensure that the Spanish law on data protection is respected. IRIS also states in it its compromise to collaborate and cooperate in my research work with them. The contract is a necessary requisite for them to allow me to see and make use of their data.

B.4.1 Data

- Dataset from the Santa Catalina slum on labor variables – pending (to be received shortly)

    - Small dataset: 137 individuals; still, the sample is homogeneous and this is the best data collected on IRIS gypsies that deals with their labor choices and aspirations

    - It focusses on the labor situation of these gypsies: their main occupation, whether they have taken training courses or are interested in taking them, etc.

- Data on **socioeconomic variables**:

    - These variables include: Educational attainments, man's occupation, welfare benefits, problems with paying the rents, problems with drugs, domestic violence, problematic children, children's problems/successes at school, children's marriages or abandonment of the house, pressures from relatives,

clan fights, threats and assasinations, within group disputes or problems, exile from one's own clan, areas of Madrid prohibited to certain clans (due to life threats by another clan), reasons for preferring to live in some locations vs. others; problems, fears, complaints, and relevant comments related to adapting to the new environment, etc. [7]

- – This data is held by:

    - ∗ IRIS –non-codified and not organized data (written documents, some are even hand written)

    - ∗ Professor Juan Gamella (anthropologist) –codified data (from 1986–2007)

- Data on **debts against IRIS**; i.e., data on all unpaid apartment rents and apartment community fees

- Possibility of conducting **surveys**:

    - – Social workers at IRIS would provide all their support and accompany the interviewer, as they have already done in the pilot phase

    - – Professor Juan Gamella and Dr Luis Nogués have suggested to collaborate with me, and this could include helping me in training the interviewers, which they propose to select from Dr Luis Nogués' MSc in Social Work students (Universidad Complutense de Madrid, Spain).

B.4.2 Other Resources

IRIS also offers the help and collaboration from its staff. Although no excessive commitment will be expected from IRIS staff to help in my research work, IRIS offers its collaboration by trying to adjust their staff's work to the interest of my research. For example, they offer the accompaniment of the social workers for the interviews, they have given me as much time as needed for conversations on their work and experience,

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[7]**Note**: This data is very rich and has unique and reliable information on variables difficult to obtain. The only problem is that it only concerns social variables (not economic ones), and that there are many missing variables for many individuals (the data was taken by different social workers at different moments in time).

they have sat down with me to talk about the different individuals I was requesting information about and to construct the genealogical trees of some clans, they have reorganized their work so as to help me in finding some concrete reports that I had requested, etc.

Having the support of IRIS staff is an enormous advantage for doing research on such a complicated population as these gypsies are. They have an enormous amount of experience with these gypsies, and this means that the replies in the questionnaires can be double checked. For example, on one interview the woman told me that her husband worked on the scrap business, but when we left the door the social worker told me to delete that: It was a lie, as he is a drug dealer and occasionally works with his father (a fruit vendor) in his work!

Also, being introduced to the gypsies by the social workers is possibly the only way to ensure that the gypsies will open the door to the interviewer. It is also the best way to have the gypsies replying to the questions with interest and effort, and to limit their willingness to lie. As one social worker posed it, "It is good that I am by your side when you interview them because they will then be extremely nice to you thinking that they are doing me a favour".

On another front, Professor Juan Gamella and Dr Luis Nogués propose collaborating with me to further the research on this population and exploit their data from IRIS' gypsies in a systematized manner. Apart from sharing knowledge and experience, this collaboration would include sharing their data and help training the interviewers.

B.4.3 Surveyed Data Summary

In this Section I summarize the most interesting facts that I have found in the different areas that I explored during my field work. I will discuss which areas I find more promising for future reseach on the next Section: Assesment, Conclusions and Research Directions.

B.4.4 Profile of the Population and Changes Observed

B.4.5 Profile

IRIS' gypsies are one of the poorest and most marginal Roma in Spain[8]. They have been living in slums and ghettos in Madrid for various generations and have developed strong kin relations and extreme customs. Their kinships are patriarchal and very hierarchical. Their entire extended family has the category of a nuclear family, i.e., they treat uncles and fathers almost alike.

B.5 Key changes observed in this population during the last two decades

One of the objectives of my field work was to reply to the question: "What changes when moving from the slum to the apartment?"

The observed changes that I report are based both on my conversations with social workers and academics and on my interviews and conversations with gypsies. Most of my conclusions from the field work are also supported by the results obtained in Gamella et al. (2007).

The **most outstanding changes observed** in this population during the last two decades are the following:

- The most significant change observed in adults is on fertility control: the average number of children has decreased from 7 to 3 in the last two decades. Other significant changes can be observed in health and lifestyle and in their declared expectations towards their children's future.

- In children, changes in education are significant. They all currently attend compulsory education (none of them did so 20 years ago), although only the younger generations can read and write. Absentism is extremely high, both in Primary and Secondary school, and completion of Secondary School (ages 14-16) is practically null.

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[8]They have origins mainly in Extremadura, one of the less developed regions in the country and predominantly agricultural.

- Another very interesting change is the recent trend in taking the children to Preschool Centres: in the last 4-5 years, gypsy women are increasingly taking their children to these centres (70%, according to subjective estimates by some IRIS social workers). This is a very positive change that IRIS workers consider key in a succesful integration of these children into the wider society.

In what follows, I summarize other interesting features and changes observed in this population.

B.5.1 Health and Lifestyle

The clearest and most positive change observed in this population is the decrease in fertility rates:

- In the 80s, they had an average of 7 children per family, as having many children increased the status and power of a man within his clan; now, they have an average of 3 children per family.

- Fertility control is being finally taken into consideration, although the responsability is in most cases solely on the woman's side.

    Moving from the slums to the apartments means:

- A dramatic improvement in living conditions, which clearly improves the individuals' physical and mental health

    - The slums lacked tap water, eletricity was unreliable (or close to inexistant and obtained by illegal hookups to neighbouring power lines), toilet facilities were very rarely at home, heating and air conditioning were not available, public transport was not accessible, mud and rats were part of the environment, etc.

- Lifestyle and customs change

    - Example: In the slums, they go around in pajamas and nightgowns and are always around friends and relatives; in the flats, they have to take more care of their personal appearance in front of others, and they are in continuous

contact with people they are unfamiliar with, including non-gypsy neigh-
bours

B.5.2 Emotional health

The move from the slum to the apartment implies:

- An improvement of their emotional health

    - Feeling more calm and relaxed due to the fact that there are less complica-
      tions (improvement in living conditions)

    - Women are liberated from having to live with their mother-in-laws, who
      have an overpowering role over them

- A worsening of their emotional health

    - The flat means a bran new life, and this involves learning to adapt to it,
      learning to live alone (without the supportive network of their relatives) and
      learning to deal with new and stressful responsabilities: house rent, bills,
      etc.

    - Feelings of helplessness, in particular in weaker and less prepared individ-
      uals. The flat separates them from the protective network they had from
      others, and they have to be confronted by themselves alone with all their
      deficiencies and inabilities to deal with their new life

    - Feelings of loneliness, which especially affect women (men still see each
      other in the bars, working on the street, etc.). These feelings usually improve
      with time, as they adapt to the new life and learn how to reach their relatives
      and make new acquaintances

B.5.3 Gypsy Identity and Aspirations

Identity:

- The gypsy identity represents a heavy burden that does not allow these individuals
  to integrate into the wider society. It particularly constrains women and children,

as they are the ones that lose the most from maintaining certain gypsy traditions (example: marrying very young and to another gypsy, usually chosen by the parents)

- Gypsy law and marginal established behaviours that they also see as part of the "gypsy law" and the "gypsy honour code" dominate their conducts, and no changes when moving from the slum to the apartment are observed in this respect. Examples:

    - It is not socially acceptable to work for a non-gypsy or to comply with a strict working timetable

    - Obligation to family and relatives comes first; e.g., generous contributions to funerals and weddings are a key priority, above paying bills or repaying debts

    - Honour issues lead for example to clan fights and threats that, as a result, bar entire families from stepping into certain areas of the city of Madrid

- They slightly redefine their identity to suit whatever is more convenient in every occasion, and they use their identity as an excuse for their behaviour

    - Example: Some claim they do not pay the bills because they are not used to it, "it is not part of our culture", but then they demand receiving welfare benefits and an apartment because "that's what the State has to do"

- They dislike being separated from their relatives but also dislike being close to other gypsies, which signals and proves that they want to get rid of certain norms and behaviours that they understand are constraining their possibilities

Aspirations:

Aspirations in terms of life improvement are all focussed on the future of their children. They do not wish or do not see the possibility of a better future for themselves, but most of them claim that they want a better life for their children. Still, they tend to draw back the very few children that show some signs of an interest in taking an "unusual path" for a gypsy. (See section on Children, 5.1.9).

B.5.4 Networks

These gypsies are organized in kins, which are in turn organized in clans.

- The kinships are patriarchal and hierarchical. They are very strongly structured and organized, especially in the slums.

    - The father bears power over his wife, his unmarried daughters and his sons and the women they marry. His sons have power over their sons. The figures of uncle and father are very similar in terms of authority over this third generation.

    - The more sons a man has, the stronger, more powerful and more respected he is. (This fact has been constraining the decrease in fertility rates among this population until very recently. The trend has only started changing in the last decade).

- Each kin belongs to a clan and each clan has its own social norms. Above them, there is a universal law for all gypsies: the gypsy law.

- The gypsy law (their honour code) is inviolable. If an individual violates it, this confronts entire clans and can lead to deaths or death threats that effectively ban entire families from stepping into one of the halves into which the river Manzanares divides the city of Madrid.

- Kins control the behaviour of their members in every aspect, as gypsies spend most of their time together. (Example: when one of them goes to hospital, the entire kin stays in or around the hospital for as long as possible; and the same thing happens when one of their members is being tried at a court of justice). Norm enforcement is almost perfect for gypsies living in slums.

The housing program of IRIS separates the clan members. Although kinsmen are less closely monitored outside the slum, the separating distance created by IRIS weakens their relationships only slightly, and in most cases only temporarily.

- Kin members feel very attached emotionally, and therefore do not want to break the ties with the others

- Kin members also depend on each other for their business and work networks. (Some gypsies have created new contacts after reallocation, but these new contacts are usually other gypsies)

- A few gypsies do try to separate themselves from the others (secretly asking IRIS to separate them from their relatives)

- A gypsy branch of the evangelical church in Spain is currently being the institution that is mostly helping to maintain their kinship links and distinguished culture and identity. Almost 90% of these gypsies attend this church, many of them staying there up to 2 hours per day.

    In the slum, individual decisions are strongly influenced by group decisions. This is a big change when moving to the flats, as these strong peer effects are diluted or dissappear. Still, gypsies tend to get together with other gypsies. And although some make friends with non-gypsies, their main supportive network continues being their family.

- An interesting observation from some IRIS members is that those gypsies that end up living in apartments in which they are the only gypsy family integrate and adapt better to the "new society" than those that end up living in apartments in which more gypsies are reallocated

B.5.5   Savings, Borrowing and Lending

- Around 70% of these families receive and depend on social benefits

- They are disorganized with their money. The only observed organized feature is a mental calculation and commitment they all try to implement: They use the social benefits received at their bank account to pay for the house rent and the house bills, and leave the money earned from the informal economy (and never put in a bank) for their living expenses

- They find it difficult to save, and never calculate the money that things cost. (Example: they buy the most expensive brand of yoghourts but then do not have money to pay the flat rent –50-60 EU per month)

- The change from slum to flat implies an increase in expenditures for the household, as they start having to pay the house rent and the house bills (electricity, water, gas)

- They spend all the money they can in improving and decorating the new flat, right when the arrive into it. It is easy to notice a family's economic situation by observing their flat's decoration: they like showing that they can afford big, expensive things; actually, they only invest and they only borrow money to pay for this showing off: big cars, huge TVs, golden chains... (This is of course limited to the very few richest families: those dealing with drugs or working in the gypsy mafia of the construction world)

- Their family is a priority: weddings, funerals, hospitals and relatives in prison go first; paying apartment bills goes last

- Most families have debts accumulated with IRIS (not paying the flat)

- They help each other with money when there is a need for it. They never leave a relative behind, but they only help under extreme circumstances (if a relative is about to be expelled from his flat due to his huge debts with IRIS)

- They borrow from banks only to buy cars

- They get credit cards from shops, buy furniture with them and then dissappear and do not pay the money

- Men are the breadwinners and control the money. They give women a part, so that she can be in charge of the basic household expenditures. But she does not see the rest of the family's income: men deal with their work and their money only with their male kinsmen

B.5.6   Jobs, Business

I have collected extensive information on the types of jobs that they do and the characteristics of each of them. Still, I want to cover the report of this topic once I have received the data from the Santa Catalina slum.

Some key points I have concluded from my field work are the following:

- They do not change when they move from the slum to the apartment

- Most of them work in the informal economy and earn very little money from this

- They do not take training courses to improve their job prospects

- Their extended family network is still their key source for employment and social support

My field work suggests that five key factors block their willingness or capability of making changes in their labor choices:

1. Lack of education and preparation (most of them cannot even read or write)

2. Their strong social identity, norms and family relations (it is not entirely socially acceptable for a gypsy to work for non-gypsies)

3. The mismatch between their labor market salary expectations and their preparation, which together with discrimination (more perceived than real) and fear of failure and exposure makes them be unwilling to even take free job training courses

4. The generous Spanish welfare state

5. The current economic crisis in Spain

The key problem is education. Lack of education is what drags them behind. And the current economic crisis is exposing this deficiency even more, as now it is almost impossible for someone with no qualifications to obtain a job in the formal sector.

B.5.7   Children

- All children go to Primary and Secondary school (until the age of 16), as this is compulsory and IRIS enforces it (it is a condition for living on an IRIS flat)

- Absentism is large, both in Primary and in Secondary school

- Almost no one obtains the Secondary School certificate

- The strong gypsy identity is an impediment that makes it difficult for gypsy children to integrate with non-gypsies

- Mothers are starting to take their children to kindergarden school (approx. 70% of the mothers do so, according to some social workers)

- Parents do not consider that education is important, and so do not serve as a role model for their children

- The new generations of parents have gone to school. This is a difference with the previous generation of parents, and it is a motive of hope for the next generations of children

- Marriage is very early, and this is especially problematic for girls: once they reach 13-14, parents do not want them to go in school (to avoid them from being in danger of meeting other kids or getting into drugs, they claim)

B.5.8 Women

Women are the ones that lose the most from being part of this extremely male chauvinistic society.

- Women are seen only as mothers

- Almost *all* of these women suffer gender violence. This is a dramatic situation. It is impossible to see changes in a woman's empowerment and thus development as long as this "family situation" is holding.

- The only women that have made "progress" in their lifes when moving to the flats are women that "got rid of their husband" (he abandoned her or she denounced gender violence). These are very few women (I heard of two and was able to interview one of them)

- One of the women I interviewed reported that "there is nothing better than having the husband in jail", and a couple of social workers confirmed me this is a generalized statement

- Very few girls manage to succesfully confront the gypsies' marriage traditions

- Men are very careful of controlling their women, and it is not socially acceptable for gypsy women to marry non-gypsies or to behave differently from what their traditions mandate them

- All the girls that have tried to make a difference in their lifes at school have been dragged back by their familiy (either their father or their mother). I was only told of one exceptional case.

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