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Matthieu Solignac

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Matthieu SOLIGNAC*

Immigrant Emigration: An Overlooked Dimension of Geographical Mobility

The composition of a country's population and its geographical distribution are shaped by the geographical movements of its residents, both natives and immigrants. The term “immigrants” refers here to individuals born outside their country of residence and who do not have the nationality of that country at birth. Given their more recent roots in the country, they may be more likely than natives to move again, either internally or to a different country. The very specificity of their geographical mobility lies in its dual national and international scope. Paradoxically, despite this propensity to move, the image of immigrants in receiving countries is not always associated with residential mobility and emigration. The concentration and spatial segregation of immigrants observed at the aggregate level have all too easily given the impression of residential immobility. Yet they tell us nothing about individual residential dynamics.

Immigrant departures from a country are practically always overlooked in general population studies (Beauchemin, 2015a; Dustmann and Görlach, 2016). While this can be explained by a lack of appropriate data, the effect on the results obtained may be considerable. If only the trajectories of individuals still present at the end of the observation period are recorded, then analysis is limited to this specific group, directly selected in terms of its international (non-) mobility behaviour. By omitting all individuals who left during the period, these studies provide only a truncated view of changes in immigrants' situations in the receiving country. Hence the need to develop a specific and systematic approach to follow all individual residential trajectories, applicable to both immigrants and native-born residents.

This article aims to retrace the geographical mobility trajectories of immigrants living in metropolitan France (mainland France and Corsica). We

* Université de Bordeaux, CNRS, Comptrasec, UMR 5114, F-33608 Pessac, France; Institut national d'études démographiques (INED), F-75020 Paris, France; University of Pennsylvania, Population Studies Center, Philadelphia, PA, 19104, United States

Correspondence: Matthieu Solignac, Université de Bordeaux, Comptrasec, 16 avenue Léon Duguît CS50057, 33608 Pessac Cedex, France; email: matthieu.solignac@u-bordeaux.fr

will focus on estimating the intercensal rate of departure from municipalities, i.e. the proportion of individuals who leave their municipality of residence between two consecutive censuses.⁽¹⁾ Unlike earlier analyses of intercensal mobility based on individuals present in France at the end of the study period (Baccaïni, 2007; Courgeau and Lelièvre, 2004; Debrand and Taffin, 2005; Donzeau and Pan Ké Shon, 2009; Rathelot and Safi, 2014), the proposed approach views the question from an original angle – that of the place of departure. While studies of residential change are almost exclusively centred around the place of arrival, our approach looks at the issue in the reverse direction by analysing all outflows from French municipalities, be they to another part of France or to a foreign country. It considers the trajectories of all individuals observed at a given moment, whatever their destination, thus providing a framework for comparing the mobility of immigrants and natives without introducing bias through an arbitrary restriction of destinations.

Our study is based on an analysis of the Permanent Demographic Sample (Échantillon démographique permanent, EDP) of the National Institute of Statistics and Economic Studies (Institut national de la statistique et des études économiques, INSEE), a data source that has already been used to analyse residential mobility (Courgeau et al., 1998; Rathelot and Safi, 2014). The EDP panel provides regularly updated census and vital statistics data on a large sample of individuals resident in France, including their place of residence at each census and their date of death when applicable. The association of the EDP with the full population censuses conducted from 1968 to 1999 provides a unique record of departures from France: the absence of an individual from the full census signifies that he or she is no longer in the country. By virtue of the fundamental equation of demography, if the absence is not due to death, it must correspond to a departure abroad (i.e. emigration). The EDP thus enables us to study both internal and international mobility over a 30-year period with a sample that remains representative of the current population of metropolitan France. Regarding other initiatives to create integrated sets of linkable data files from censuses, notably in the United States (Grusky et al., 2015; Alexander et al., 2015), the EDP differs in terms of the more recent period covered, the duration of follow-up, and the quality of the data linkage procedures.

Our research contributes to the study of residential mobility in several ways. First, in statistical terms, it develops an approach that extends beyond the dichotomy of internal versus international mobility to permit a true comparison of native and immigrant mobility. Second, it contributes in methodological terms by comparing different sources of mobility data and revealing the shortcomings of the retrospective information habitually used in this field. Last, it highlights the scale of immigrant and native mobility

(1) By this we mean that in the second census they are no longer observed in their initial municipality of residence after moving away. We do not deal with cases of multiple moves or with the timing of moves during the intercensal period. On these points see, for example, Royer (2009).

between 1968 and 1999, and of departures from the territory of metropolitan France. By providing an original measure of emigration based exclusively on records of individual movements, this study fills a knowledge gap in French demographic statistics. Like the estimates of emigration proposed by Brutel (2015) using data from the new annual census survey, it sheds light on one of the “mysteries of the French population” (*mystères de la population française*) (Le Bras, 2007).

This article is organized as follows. Section I describes the specific features of immigrant geographic mobility and the importance of understanding its scale. The second section develops the theoretical framework for measuring the proportion of individuals who leave their municipality of residence between two full censuses. Section III presents the EDP and the data analysis methods used. The fourth and final section presents the results of this analysis, highlighting the scale of immigrant emigration from France.

I. Importance of measuring immigrant mobility in receiving countries

1. “Looking beyond immigration to understand international migration”

Immigrants are distinguished from other residents of a country based on a criterion of geographical mobility between the country of birth and the country of current residence. Someone who was born abroad with a foreign nationality is presumed to have migrated. From the viewpoint of the receiving country, this distinctive characteristic is permanent because it persists so long as the individual remains on national territory.⁽²⁾ The specific dynamic of the immigrant population group is thus based on mobility. Geographical mobility is the exclusive criterion for belonging to this group, and death or international migration for leaving it. Studying the immigrant population thus involves analysing a subset of individuals selected by specific movements away from the countries of origin, but also away from the receiving country. The interest of analysing the mobility of immigrants thus extends beyond their entry into the receiving country; immigrant departures must also be studied. In this respect, immigration should be examined as an integral part of the complex pattern of international migration pathways and trajectories (Beauchemin, 2015a; Willekens et al., 2016; Wimmer and Glick-Schiller, 2003).

Yet the study of international migration cannot be disconnected from internal migration, notably that within the receiving country. Following on from Pryor (1981), the need to analyse internal and international migration jointly was reiterated by King and Skeldon (2012) and by Ellis (2012). From

(2) Unlike foreigner status, which is based on current nationality and disappears after naturalization.

the viewpoint of the receiving country, international migration may contribute to either a reduction or an increase in internal migration. The arrival of immigrants may prolong an existing pattern of internal migration by replacing rural exodus. Immigrant settlement may also contribute to mechanisms of spatial segregation (Frey, 1995) by causing inhabitants to move away or by modifying inflows. The geographical mobility of immigrants is central to the methodological debate on how best to measure immigrant integration⁽³⁾ and the effects of immigration.⁽⁴⁾ When analysing the situation of immigrants, it is therefore important to look at their movements after entering the receiving country, whether within its borders or to a foreign destination.

2. Trajectories marked by frequent emigration

While it is possible to observe a person initially present on a territory, this may no longer be the case when he or she moves away. Immigrants differ from natives in terms of the scale of this phenomenon at the national level. Having migrated to a foreign country, immigrants are more likely to emigrate again (Sjaastad, 1962).⁽⁵⁾ Remigration (return as well as onward migration) occurs on a far from negligible scale. The order of magnitude generally considered for a country such as the United States is one return migration per three to five immigrants arriving in the decade (Borjas and Bratsberg, 1996). Estimated immigrant departure levels in Europe are even higher. In a review of the results found in the literature,⁽⁶⁾ Dustmann and Görlach (2016) found that ten years after their arrival, almost half of all immigrants had left Europe compared with 20% in countries such as the United States, Canada, Australia, or New Zealand.

However, studies covering all immigrant trajectories in a receiving country are often limited to a particular immigrant group. Those by Massey (1987), Suzuki (1995), Lindstrom (1996), or Sanderson (2009) focus exclusively on immigrants from one or two specific countries or from a region within these countries in the case of multisite surveys, such as the Latin American Migration Project for the United States and the Migration Between Africa and Europe Project for six European countries (Migrations entre l'Afrique et l'Europe, or MAFE) (Beauchemin, 2015b). When other countries of origin are included, the analyses are generally limited to cohorts of immigrants arriving at specific periods (Borjas and Bratsberg, 1996; Bijwaard et al., 2014).⁽⁷⁾ Generalizing the

(3) Researchers regularly highlight the risk that results will be incorrectly interpreted due to selective emigration of immigrants (Borjas, 2014; Dustmann and Görlach, 2016; Jasso and Rosenzweig, 1988).

(4) For a recent literature review on this question, see, for example, OECD (2016).

(5) Be it simply because they have already paid off some of the costs of migrating and because their experience of the country of origin facilitates return migration.

(6) For a literature review, see also Mezger Kveder (2013).

(7) The numerous studies by the German Socio-Economic Panel primarily concern immigrants of five nationalities present in West Germany in 1984 under the "guest worker" programme (Constant and Massey, 2003), with the later addition of samples of immigrants selected retrospectively by their date of arrival in Germany (Yahirun, 2014).

approach to cover all immigrants present in a receiving country at a given time often produces no more than approximate macro-level estimates.⁽⁸⁾ Researchers have rarely been able to estimate immigrant emigration flows by following individual trajectories (Van Hook et al., 2006). But in these rare cases, macro-level hypotheses and data are frequently used to make up for gaps in the data, notably on mortality. Systematically tracking the mobility of a representative population sample and repeating this procedure regularly to take account of new immigrant arrivals involve the use of individual-level administrative data that are difficult to access and whose use is strictly controlled. In the United States, for example, which has no population register, individual record linkage from one census to the next limits the scope of study to the first half of the twentieth century (Abramitzky et al., 2014). Lubotsky's (2007) study of the second half of the twentieth century, based on US social security data, remains an exception.

3. The case of France

Residential moves by immigrants, either within the country or towards a foreign destination, are generally overlooked in studies of geographical mobility in France. To begin with, despite a few exceptions such as Debrand and Taffin (2005) and Rathelot and Safi (2014), studies of residential mobility in the general population (Baccaïni, 2007; Courgeau and Lelièvre, 2004) rarely distinguish between natives and immigrants, except to exclude immigrants from the analysis. Moreover, these studies are based on retrospective reporting of places of residence, thus omitting all individuals who left the country during the observation period. Including when panel data are used (Jourdan, 2014; Rathelot and Safi, 2014), only individuals still present at the end of the period are considered.

Emigration from France is largely ignored (Caron, 2016). Absent from the OECD annual reports (Dumont and Spielvogel, 2008; OECD, 2016b), general estimates of the phenomenon are rare, outdated, and highly approximate (Courgeau, 1968; Kayser, 1972; Tugault, 1971; Zamora and Lebon, 1985). The handful of more recent measures automatically excludes most immigrants by counting only individuals born in France enumerated in foreign censuses or French nationals recorded in the consular registers (Bono and Wasmer, 2014; García-Peñalosa and Wasmer, 2016). Yet this lack of data does not mean that all immigrants stay in France after entering the country. For one thing, a share of them have only temporary residence permits which are not renewed after expiry. Analysis of residence permit statistics suggests that a large share of foreigners living legally in France subsequently leave the country (d'Albis and Boubtane, 2015). For another, many immigrants express a desire to return home (Dos Santos and Wolff, 2010), and this wish may be realized.

(8) Fluctuations in the size of the immigrant groups from one period to the next may be linked to variations over time in the accuracy of reported age and date of entry.

In a notable exception, a recent INSEE publication put forward an indirect estimate of emigration flows, for both immigrants and natives, between 2006 and 2013 (Brutel, 2015). However, the study is based on the calculation of an overall residual net balance, assuming that mortality levels are similar among both immigrants and natives.⁽⁹⁾ Over the same period, Arbel and Costemalle (2016) produced estimates using both the annual census survey and data on residence permits. Adding departures from France, acquisitions of French nationality, and deaths, they obtained a proportion of two-thirds at the end of eight years after arrival in France. But emigration has never yet been measured at the individual level in the general population. And studies based on a representative population sample, with a longitudinal perspective that does not exclude trajectories of departure from the country, have never been conducted for France.⁽¹⁰⁾

II. Modelling geographical mobility

Geographical mobility can be modelled as follows. Let $c_t(i)$ be a random variable that takes the value 1 for the presence in the country of an individual i at time t , and 0 for his or her absence. Let $l_t(i)$ and $l_{t+1}(i)$ be the respective observed locations of the individual i at the times t and $t+1$. The mobility of the individual between the dates t and $t+1$ corresponds to a change of location such that $l_t(i) \neq l_{t+1}(i)$. For simplicity, indexing by i will be implicit in what follows and likewise the condition of being present at the initial period. Mean mobility between t and $t+1$, measured by the expectation $E(l_t(i) \neq l_{t+1}(i) | c_t(i) = 1)$, will thus be denoted $E(l_t \neq l_{t+1})$.⁽¹¹⁾ Mean mobility is estimated by the proportion of mobile individuals among the initial population (Equation 1a), who may or may not be observed in the country at the end of the period (Equation 1b).⁽¹²⁾ Given the fundamental equation of population dynamics, only two phenomena can explain these disappearances: deaths in the country (denoted $d_{t+1} = 1$) and departures from the country (denoted $e_{t+1} = 1$). The proportion of mobile individuals is thus the sum of three elements (Equation 1c):⁽¹³⁾ the mobility contribution of individuals who have remained in the territory in question along with that of individuals preceding their death⁽¹⁴⁾ and that of individuals

(9) Which is not true; see Guillot et al. (2018) on measuring the variation of mortality differentials by age among natives and foreign-born.

(10) Note the study by Louise Caron (2018), which follows on from the present article since its last revision in 2017.

(11) Likewise, $P(c_t = 1 \cap c_{t+1} = 1)$ will be denoted $P(c_{t+1} = 1)$.

(12) According to the formula of total probabilities with $P(c_{t+1} = 1) + P(c_{t+1} = 0) = 1$.

(13) ($d_{t+1} = 1$) and ($e_{t+1} = 1$) partitioning ($c_{t+1} = 0$), we have:

$$P(l_t \neq l_{t+1} \cap c_{t+1} = 0) = P(l_t \neq l_{t+1} \cap (d_{t+1} = 1 \cup e_{t+1} = 1)) = P(l_t \neq l_{t+1} \cap d_{t+1} = 1) + P(l_t \neq l_{t+1} \cap e_{t+1} = 1)$$

(14) l_{t+1} is thus considered to be the municipality of residence on the date of death. The place of death cannot be used as the majority of deaths occur in a hospital, not necessarily in the municipality of residence.

who have emigrated. The proportion of mobile individuals in each group weighted by the share of the group (Equation 1d)⁽¹⁵⁾ reveals the isolated proportion of emigrants, all members of this group being mobile ($P(l_t \neq l_{t+1} | e_{t+1} = 1) = 1$). This proportion can be expressed as the residual share of attrition after deaths have been taken into account (Equation 1e).

$$E(l_t \neq l_{t+1}) = P(l_t \neq l_{t+1}) \quad [1a]$$

$$= P(l_t \neq l_{t+1} \cap c_{t+1} = 1) + P(l_t \neq l_{t+1} \cap c_{t+1} = 0) \quad [1b]$$

$$= P(l_t \neq l_{t+1} \cap c_{t+1} = 1) + P(l_t \neq l_{t+1} \cap d_{t+1} = 1) + P(l_t \neq l_{t+1} \cap e_{t+1} = 1) \quad [1c]$$

$$= P(l_t \neq l_{t+1} | c_{t+1} = 1)P(c_{t+1} = 1) + P(l_t \neq l_{t+1} | d_{t+1} = 1)P(d_{t+1} = 1) + P(e_{t+1} = 1) \quad [1d]$$

$$= P(l_t \neq l_{t+1} | c_{t+1} = 1)(1 - P(c_{t+1} = 0)) + P(l_t \neq l_{t+1} | d_{t+1} = 1)P(d_{t+1} = 1) + P(c_{t+1} = 0) - P(d_{t+1} = 1) \quad [1e]$$

This decomposition reveals the various components of the proportion of individuals who leave their place of residence between two dates. The share of mobile individuals among those observed on the two dates (i.e. $P(l_t \neq l_{t+1} | c_{t+1} = 1)$) is just one component among others, obtained upon condition that the individuals observed initially have not left the country or died during the observation period. As it applies solely to a subgroup of individuals whose specificity only becomes apparent at the end of the period in question, this measure cannot be used meaningfully for prospective purposes. A rigorous analysis cannot reasonably overlook the effects of emigration and mortality, two concurrent demographic events, especially when seeking to measure immigrant mobility.⁽¹⁶⁾ All components of the mobility rate must therefore be estimated.

III. Data

1. General presentation of the Permanent Demographic Sample

The EDP is a longitudinal administrative database created by INSEE that collates data from censuses and civil records.⁽¹⁷⁾ It is representative of the population living in metropolitan France at the time of each census. Between 1967 and 2003, all people born in the first four days of October, representing around 1.1% of the total population, were systematically included in the EDP panel. The census records and vital statistics data collected successively for each individual in the sample are linked so that their personal trajectory can be followed over time. These data are collected both on preset dates (censuses)

(15) Application of Bayes' theorem.

(16) The estimate is biased ($P(l_t \neq l_{t+1} \cap c_{t+1} = 1) \neq P(l_t \neq l_{t+1})$) as long as individuals disappear between two periods ($P(c_{t+1} = 0) \neq 0$) and have a mobility behaviour that differs with respect to those who remain.

(17) For an overview of the database, see Couet (2006) and Solignac (2015). For a more detailed analysis, see Jugnot (2014).

and whenever new demographic events are registered. In its 2003 version, the EDP contains information from five full censuses (1968, 1975, 1982, 1990, and 1999) and from civil records established between 1967 and 2003. Following the 1999 census, almost a million individuals who had lived in France were referenced in the EDP.

The EDP follows individual trajectories over a long period, making it possible to study all kinds of geographical mobility. Its key advantage lies in its association with the censuses that, until 1999, provided exhaustive data covering the entire territory of metropolitan France. While individual changes of residence are a major source of attrition in multiround surveys, the EDP draws its data from regular censuses of all individuals present in the country; their trajectories can thus be recorded over time, whatever their internal mobility behaviour. Moreover, measurement of departures from the country is not distorted by the high levels of under-reporting – linked to the absence of incentives to report a departure or, in some cases, the fear of losing certain advantages – that affect national population registers (Poulain and Herm, 2013). By systematically tracking the presence of individuals in France and their deaths, it provides the opportunity to identify those who left the country. In addition, continuously including individuals based on their date of birth prevents distortion of the sample over time by making it possible to include newly arrived immigrants.

2. An alternative to the poor reliability of retrospective reporting

The EDP can be used to analyse residential mobility based on multiple observations in successive censuses rather than on retrospective reporting by the individuals concerned. While this latter approach is practically always applied in the literature via the variable of the respondent's place of residence on 1 January of the year preceding the census, the data obtained this way are of problematic quality and even raise questions about this method's validity for studying immigrant mobility. In a project conducted by INSEE, a high non-response rate to this question among immigrants, reaching up to 60% among recent arrivals, was observed by Rouault and Thave (1997). This comes on top of the more general problem of unreliable retrospective reporting of mobility (Poulain et al., 1991) and of place of residence on 1 January (Courgeau et al., 1998) encountered in the general population.

By making it possible to compare the reported past place of residence and that actually observed at each census, the EDP provides clear evidence of this poor reliability. Among immigrants who moved to a different municipality of residence between censuses, one-fifth are nonetheless retrospectively recorded as being immobile over this period.⁽¹⁸⁾ This is partly explained by the hot-deck procedure (Baccaini, 1999) used to correct for non-response in the census,

(18) For further details, see the working paper associated with this article (Solignac, 2016).

which does not directly take account of immigrants' specific mobility behaviour; it too frequently presumes that the large numbers of non-respondent immigrants have not moved between censuses. These problems of bias linked to imputation procedures are frequent in studies of both residential mobility (Kaplan and Schulhofer-Wohl, 2012) and of immigrants (Borjas, 2014), although paradoxically, given their effect on the results, they are rarely taken into account. In this respect, using EDP data on place of residence observed in censuses is a notable step forward.

3. Analysis variables

Presence in two consecutive censuses and the reported current municipality of residence are used to measure the proportion of individuals living in a different French municipality at the time of the second census.⁽¹⁹⁾ Cases of attrition not associated with a death in France serve to identify presumed emigrants among the individuals present at the initial census. Geographical mobility is measured with constant municipal boundaries (1999). A change of district (*arrondissement*) in Paris is counted as a case of mobility, while in Lyon and Marseille it is not.⁽²⁰⁾ The intercensal intervals increased from seven to nine years between 1968 and 1999, but this change does not adversely affect an analysis that focuses on the relative differences in mobility observed at each period rather than on trends in mobility levels. Information collected at each census is available for individuals in the EDP. Their date of death is indicated if it occurred in France.

4. Limitations of the EDP

The EDP provides a direct record of the mobility and deaths of individuals, but only within metropolitan France.⁽²¹⁾ Cases of emigration are detected indirectly among the cases of attrition as the individuals who did not die on French territory. The quality of the follow-up data obtained thus depends on the exhaustive nature of the censuses and of death registration in France. The compulsory administrative nature of these enumeration operations and the infrastructure set in place to implement them ensure that data-collection rates are extremely high, far exceeding those achieved in other types of surveys.⁽²²⁾

(19) Multiple changes of municipality during the intercensal period and cases of residential moves between municipalities prior to emigration are not counted as we are not interested in the total number of movements during the period (cf. note 1).

(20) Notably due to the absence of *arrondissement*-level residential data for Marseille in 1982.

(21) This geographical delimitation of mortality follow-up guarantees that the events "disappearance through death" ($d_{t+1} = 1$) and "disappearance through emigration" ($e_{t+1} = 1$) are disjoint, making it possible to move from Equation 1b to 1c. This distinction is established on the basis of the registration, or not, of the disappearance as a death in the French civil records. The rare cases of death abroad registered in the French civil records (0.3% of all deaths) are thus considered as disappearances through death.

(22) Note that this source does not exclude undocumented immigrants, who represent a very small proportion of the immigrant population in France, estimated at between 6% and 10%, versus 25% in the United States (Héran, 2015).

The results of the 1990 post-census survey estimate an overall omission rate of 2% for the census (INSEE, 1995). It is below 4% for foreigners, while for naturalized French citizens the rate is similar to that of native-born French nationals (1.5%). The census and mortality data are retrieved and recorded in the EDP using record linkage procedures that identify individuals via their complete personal details. While automatic record linkage fails more often for immigrants, case-by-case processing of ambiguous cases (Jugnot, 2014) limits the final overall failure rate to about 1% (Couet, 2006). These linkage failures and their mistaken identification as cases of emigration represent a negligible quantity in relation to the scale of the results in this article.⁽²³⁾ Far from being a method chosen by default, measuring attrition in administrative panel data is even used, for that matter, in countries with population registers to correct for large-scale under-reporting of international departures (Bijwaard et al., 2014; Larramona, 2013).

The selection criterion of the EDP sample, based on day of birth, automatically excludes individuals who do not supply this information. The phenomenon's scale was around 6.7% for immigrants versus 1.1% for natives (Rouault and Thave, 1997), pushed upward by the particular case of Moroccan immigrants (one-third of whom gave no precise day of birth). However, comparison of census data with those of the EDP reveals no other major distortions of the sample (Rouault and Thave, 1997). Above all, this representativeness bias as such does not affect the quality of individual follow-up in the EDP. It simply excludes a proportion of individuals from this follow-up, limiting the generalization of the results obtained for the most affected subgroup.⁽²⁴⁾

The EDP's general structure has remained constant, with systematic monitoring of the presence of individuals on French territory from one census to the next between 1968 and 1999.⁽²⁵⁾ Occasional restrictions in new entries to the EDP have not affected the variables used in this analysis. However, between 1968 and 1999, immigrant deaths were registered continuously for only half of the sample of individuals born after 1891, those born on 1 or 4 October. While an individual's state of health may orient his or her residential choices, any changes of address preceding death are not recorded in the EDP. The importance of this component in total mobility depends on age. While it is negligible up to a relatively advanced age due to the low frequency of premature deaths, it increases in old age.

(23) We can verify that in more than 80% of cases, the absence of an immigrant in a census is confirmed in the following census (despite cases of temporary departure from France), whereas less than 4% of immigrants experience a vital event registered in the civil records between two consecutive absences from the census.

(24) Compared with the total non-response rates of one-off surveys, which often reach 40%, the scale of this distortion remains limited.

(25) It is difficult to extend the analysis beyond 1999 because a new census method was introduced, along with a new method for identifying individuals that precluded the follow-up of a large proportion of individuals born abroad (Jugnot, 2014).

5. Study samples

The analysis of mobility developed in this article exploits the systematic dimension of individual follow-up in the EDP. Only the size of the study sample is affected, with mobility rates being measured on the half-sample comprising individuals born on 1 and 4 October (that is, all individuals covered by continuous registration of dates of death). The same imperative of obtaining exhaustive data on deaths restricts the analysis to individuals born from 1891 onwards. The results are presented for a single age interval: 1 to 77 years in the initial census. This choice is justified by a concern for comparability of results between censuses and the desire to obtain samples that are large enough for analysis by single year of age. There are very few infants among immigrants who, by definition, are not in France at the time of their birth. Excluding those aged over 77 also ensures that the uncertainty associated with mobility between municipalities preceding death remains within reasonable limits.⁽²⁶⁾

Immigrants (people born outside France with foreign nationality) are distinguished from natives (defined as individuals born in metropolitan France). Individuals from the French overseas territories and those born abroad with French nationality are excluded from our analysis to focus on the case of immigrants by comparison with natives in metropolitan France. This also makes it easier to equate departures from metropolitan France with emigration as habitually defined (i.e. departure from the national territory), given that the people most likely to go to the French overseas territories – not included in the EDP – rather than to a foreign country are excluded from the analysis.

IV. Results

1. Immigrants more mobile than natives at all ages

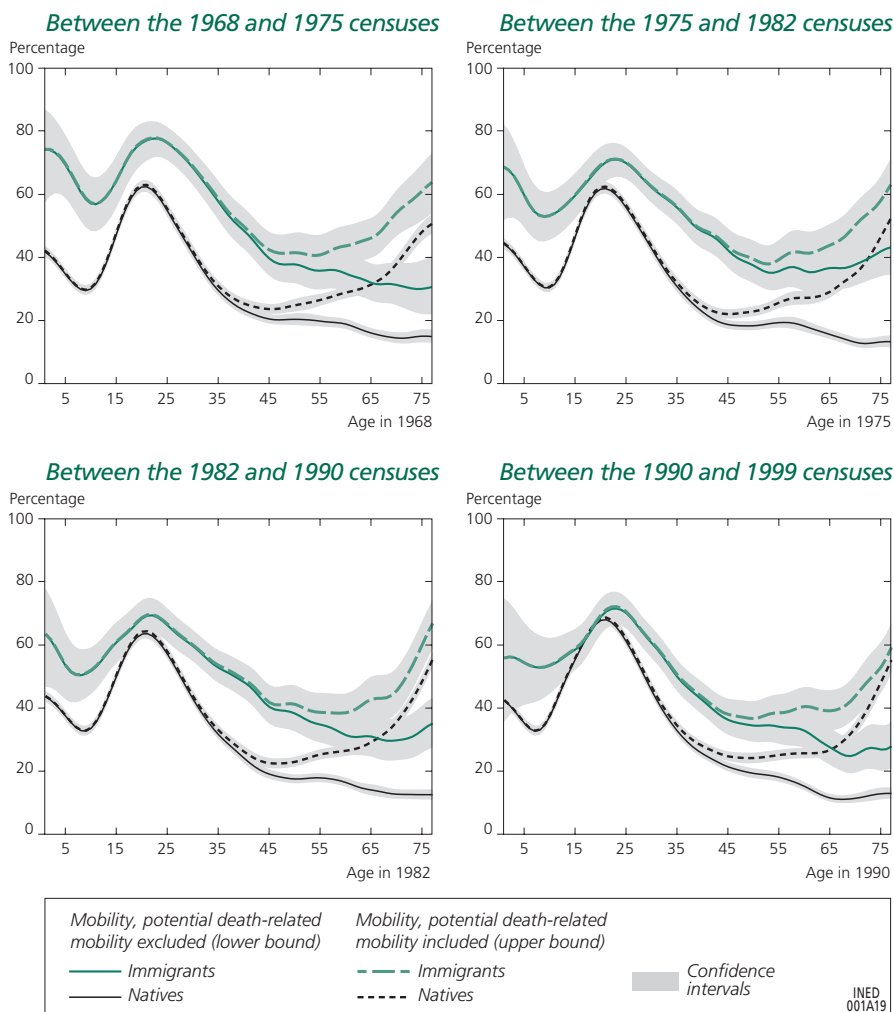
The proportion of individuals leaving their municipality of residence between two censuses can be calculated as the sum of the contribution of three components of the initial population (Equation 1e): individuals living in a different municipality at the second census; those who have left the country; and those who died in France after moving to another municipality. The EDP enables us to measure the contribution of the first two components, but it contains no information on departures from a municipality preceding a death. The scale of these departures can nonetheless be evaluated using two extreme configurations (Horowitz and Manski, 1998) – the lower bound being the case where all individuals who died stayed in the same municipality between the reference census and their death, and the upper bound being the case where all individuals who died left their municipality before their death. The interval

(26) The results obtained at each census after 1968 for the oldest ages are available in the working paper associated with this article (Solignac, 2016).

thus obtained, added to the two other components, provides an estimate of the proportion of intercensal departures from municipalities, the size of that interval depending on the proportion of deaths.

Figure 1 shows the result obtained for the four intercensal periods. Using the two approaches described above, the proportion of mobile individuals is calculated at each age for immigrants and natives aged 1 to 77 years at the

Figure 1. Proportion of immigrants and natives having left their municipality of residence between two population censuses



Notes: The proportions are calculated for each age reached in the year of the initial census. The continuous and dotted lines are obtained using the kernel method (Gaussian kernel, window size 2). The shaded zones correspond to the confidence intervals (at the 5% level) measured at each age.

Coverage: The analysis concerns individuals born on 1 or 4 October, aged 1 to 77 in the year of the initial census.

Source: EDP (INSEE).

initial census. This mode of representation takes account of the substantial variability in mobility at different ages and of the growing scale of potential death-related mobility at advanced ages (upper bound).⁽²⁷⁾ Immigrants and natives have very similar age-specific mobility profiles. High mobility in infancy, associated with parental mobility, decreases in childhood, reaching a local minimum at around age 10 before rising again to a peak at around age 20. The intercensal mobility rate of individuals aged 10 in the 1975 census corresponds to their mobility between ages 10 and 17 years, the age reached in the year of the 1982 census.⁽²⁸⁾ Mobility thus starts increasing for the cohorts who reach school-leaving age between two censuses. In more general terms, this increase corresponds to the process of departure from the parental home, be it to enter the labour market, pursue higher education, or set up home with a partner. From age 45, the two mobility measures used, which up to this point are indistinguishable for each group, start to diverge in response to increasing mortality. While the lower bound continues to decrease with age, the number of deaths is now large enough to raise the upper bound. The decrease in the natives' lower bound levels off for individuals aged around 50 at the initial census, reflecting the transition to retirement of individuals in this age group. At the oldest ages, residential moves due to loss of autonomy also contribute to the slowing of the mobility decline. For immigrants, the lower bound of mobility increases more markedly beyond age 70, while remaining limited in scale. Potential returns to the country of origin when nearing death are reduced in number.

Immigrants have much higher mobility rates than natives in all intercensal periods. Up to age 60, the lower bound of immigrant mobility is systematically higher than the upper bound of native mobility. Among individuals aged 10 in 1975, 52% of immigrants versus 28% of natives leave their municipality before the next census. The faster increase in native mobility narrows this gap to 4 percentage points at age 20, when the share of mobile natives reaches its peak (64%). For immigrants, the peak is reached at age 22, and it is 10 points higher than that of natives. Mobility rates decrease above these ages, but the gap widens again, in both absolute and relative terms. Between ages 36 and 45, the proportion of mobile immigrants is double that of natives; the lower-bound mobility rates of immigrants fall from 56% to 43% and that of natives from 27% to 19%. The upper-bound mobility rates remain very similar, with immigrant rates falling from 56% to 44% and those of natives from 28% to 22%.

Beyond age 60, potential death-related mobility increases in scale. The 5% confidence intervals of the total mobility of immigrants and natives are no longer necessarily separate. Depending on whether intermunicipal mobility

(27) This mode of representation ensures the comparability of immigrants and natives despite their different age compositions.

(28) Likewise, the mobility of individuals aged 20 at the 1975 census corresponds to their mobility between ages 20 and 27.

or immobility is attributed to all deceased individuals, mobility rates diverge. The upper bound of native mobility moves closer to the lower bound of immigrant mobility then crosses it. For the period 1975–1982, the crossing point occurs for individuals aged 74 in the initial census. But even at the most advanced ages, the level of the estimated lower bound of mobility for immigrants remains well above the value of that obtained for natives: beyond age 70, it is three times higher at each age between 1975 and 1982. The upper bounds assimilating all deaths to a case of mobility tend to converge under the effect of the mortality differential between immigrants and natives in France,⁽²⁹⁾ but they only reach equivalent levels beyond age 85, observed only for the periods 1982–1990 and 1990–1999.

As the intercensal intervals vary in duration, care must be taken when comparing changes in mobility levels across different periods. While the intervals increase in length from seven to eight and then nine years, the proportion of mobile immigrants decreases, and that of natives remains stable.⁽³⁰⁾ The mobility gap between immigrants and natives aged 20–50 becomes narrower, decreasing from over 20 points to 15 points in successive intercensal periods.

Immigrant mobility is higher than that of natives at all ages. This systematic mobility difference is large, despite the very broad hypotheses used to define the bounds of the intervals. Possible cases of incomplete follow-up of individuals in the EDP cannot alone explain the scale of the immigrant–native mobility differentials. Even using extreme hypotheses, immigrant mobility remains above that of natives. If only cases of absence in two consecutive censuses are considered as emigration, or if the native mortality rate is applied to immigrants of the same age, the general pattern remains unchanged, testifying to the robustness of this result.⁽³¹⁾

2. Original findings

A reversal of the mobility hierarchy in favour of immigrants

This evidence of greater mobility among immigrants than natives reveals the scale of under-estimation in traditional approaches to intercensal residential mobility. When calculated as the ratio between individuals who have moved to a different municipality in the intercensal period to those who have been present at both censuses, the observed mobility rate (necessarily internal) is systematically higher for natives than for immigrants (Table 1, first row). Initially very similar between 1968 and 1975, at around 30%, their rates move in opposite directions between 1990 and 1999, reaching 33% and 27%,

(29) On lower mortality observed among immigrants in receiving countries including France (a phenomenon known in the literature as the “migrant mortality advantage”), see Boulogne et al. (2012) and Guillot et al. (2018).

(30) However, the last intercensal period is marked by a much higher native mobility peak than in earlier periods, with a mobility level that equals that of immigrants between ages 17 and 21.

(31) These results can be consulted in the working paper associated with this article (Solignac, 2016).

respectively. Immigrants thus appear to be less mobile than natives, contrary to the results obtained up to now.⁽³²⁾

The originality of the approach in this article is that, first of all, it takes the initial population as its reference. The proportion of individuals who have moved to a different municipality is considered in relation to a broader reference base than is the case in the traditional retrospective approach, which explains why a lower observed mobility rate is obtained for an identical group of mobile individuals (Table 1, row (1)). This rate is around 10 percentage points lower for immigrants, versus 3 points lower for natives, over the entire observation period. The mobility rate observed for immigrants is thus well below that of natives but not due to a higher propensity to remain immobile – while immobility increases from 45% to 50% over the study period, it remains 10 points below that of natives. Quite the reverse, it is explained by their more frequent departure abroad (Table 1, row (3)).

Table 1. Rate of intercensal departure from French municipalities and retrospectively observed mobility

Censuses (%)	1968–1975		1975–1982		1982–1990		1990–1999	
	Immigrants	Natives	Immigrants	Natives	Immigrants	Natives	Immigrants	Natives
Retrospective approach (present at both censuses)								
Observed mobility	30.0	30.2	26.9	30.4	27.9	32.3	27.4	33.4
Observed immobility	70.0	69.8	73.1	69.6	72.1	67.7	72.6	66.6
N	10,788	190,580	12,486	204,157	13,735	211,941	15,076	223,626
Longitudinal approach (present at initial census)								
Observed mobility (1)	19.1	27.1	17.3	27.4	18.8	29.2	19.0	30.2
Observed immobility	44.6	62.8	46.9	62.6	48.4	61.2	50.2	60.2
Attrition	36.3	10.1	37.8	10.1	32.8	9.7	30.9	9.6
<i>of which deaths (2)</i>	5.2	4.4	2.7	4.4	3.6	4.8	3.9	4.7
<i>of which emigration (3)</i>	31.1	5.7	33.1	5.7	29.2	4.9	27.0	4.9
Departure from municipality								
lower bound (1) + (3)	50.2	32.9	50.4	33.1	48.0	34.0	46.0	35.1
upper bound (1) + (2) + (3)	55.4	37.2	53.1	37.5	51.6	38.8	49.8	39.8
N	16,947	212,018	19,446	227,027	20,440	234,580	21,802	247,301
Coverage: The analysis concerns individuals born on 1 or 4 October, aged 1 to 77 in the year of the initial census.								
Source: EDP (INSEE).								

The sum of observed mobility and emigration provides the lower bound of departures from municipalities, while the upper bound also includes deaths. The mean amplitude of the interval defined by these two bounds, which corresponds to the proportion of deaths, remains very limited, at around 5 percentage points. Because the gap does not widen until the oldest ages

(32) This is calculated here using the place of residence reported at each census and not the response to the retrospective question whose limitations are detailed above (see Section III.2). The aim is to compare retrospective and longitudinal panel approaches based on the same sources.

(Figure 1), only a very limited share of all individuals are affected. Even imagining totally different behaviours between immigrants and natives just before their death, adding 5 percentage points of mobility to natives would still not be nearly enough to cancel out the mean mobility difference with respect to immigrants. Initially 50% higher than that of natives, immigrant mobility decreases while that of natives increases, though to a lesser extent and under the potential effect of the lengthening of intercensal periods. But the difference in favour of immigrants is still 10 points in 1990–1999, representing 25% to 30% higher mobility than that of natives, depending on the bound used.⁽³³⁾

Revealing the scale of emigration

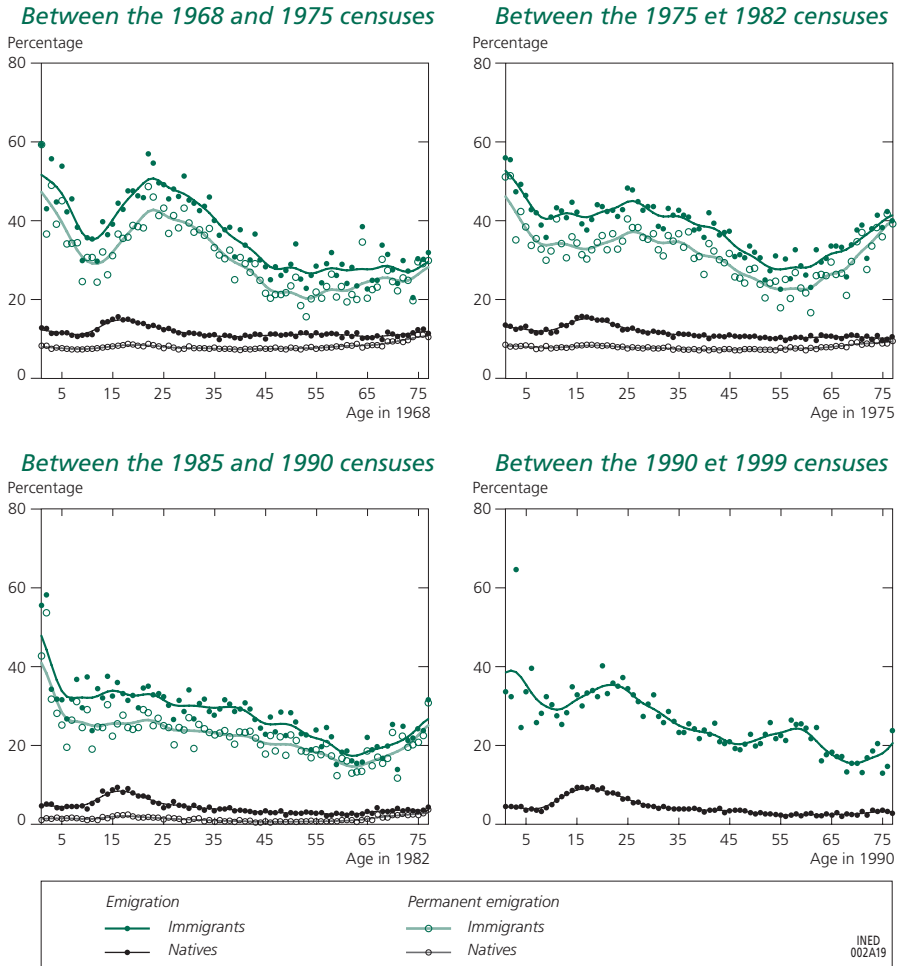
One-third of immigrants disappear from one census to the next, compared with 10% of natives (Table 1, attrition row), even though from 1975 the proportion of immigrant deaths is below that observed for natives (Table 1, row (2)). The share of deaths in this attrition rises from 44% to 49% for natives between 1968 and 1999 but remains below 15% for immigrants. Attrition not due to death, presumed to be emigration, thus stands at between 27% and 33% for immigrants versus around 5% for natives (Table 1, row (3)). This signifies that between one-quarter and one-third of immigrants aged 1 to 77 observed in a census have left metropolitan France by the time of the next census seven to nine years later. In numerical terms, these intercensal departures correspond to emigration flows of around 1 million immigrants and 2.4 million natives.⁽³⁴⁾

This difference between immigrants and natives in the propensity to leave France is observed at all ages (Figure 2). Despite variations, the proportion of immigrant departures remains above 20%, while that of natives never exceeds 10% and generally reaches only half this level. The 10% level is only reached by individuals aged 15 to 18 at the initial census and corresponds to their mobility between these ages and their ages at the following census (22 to 27 years). This peak corresponds to a time when these young people have reached the age of legal majority and when higher education programmes provide them with opportunities for international mobility. However, most of these departures are temporary. The proportion of natives still absent at the following census does not exceed 2.5%. Among immigrants, the majority of international departures at each age appear to be permanent. In three-quarters of cases, this is confirmed in the following census. These departures are not limited to people of retirement age but are observed at equivalent or higher levels throughout the life course.

(33) These orders of magnitude remain the same when men and women are analysed separately. For native men and women, there is a large overlap between the mobility intervals defined by the bounds, evidencing their similar levels of mobility. They are separate for immigrant men and women, as men emigrate more frequently (Solignac, 2016).

(34) The study sample in Table 1 includes half the individuals in the EDP, which is itself a sample of around 1.1% of the population of metropolitan France (see Section III).

Figure 2. Proportion of immigrants and natives having emigrated between one census and the next



Notes: The dots correspond to the values obtained at each age, with the full dots representing the proportion of individuals who have emigrated between two censuses, and the empty dots the proportion of individuals who have emigrated and who are still absent at the following census. The continuous and dotted lines are obtained using the kernel method (Gaussian kernel, window size 2).

Coverage: The analysis concerns individuals born on 1 or 4 October, aged 1 to 77 in the year of the initial census.
Source: EDP (INSEE).

Emigration that decreases with length of stay in France

The proportion of immigrants who leave their municipality of residence between two censuses also varies considerably by their time since arrival in France and their region of birth (Southern Europe or North Africa).⁽³⁵⁾

(35) The period of arrival is deduced from the first observation of individuals in a census. Immigrants from Southern Europe are those from Italy, Spain, and Portugal; immigrants from North Africa are those from Algeria, Morocco, and Tunisia.

Table 2 shows this heterogeneity with a constant age structure.⁽³⁶⁾ We see that mobility decreases systematically with time since arrival in metropolitan France. Between 1982 and 1990, the mobility of immigrants who arrived before 1968 is only half that of immigrants who arrived over the period 1975–1982. At each period, around two-thirds of immigrants who arrived during the previous intercensal period are mobile, and half leave the country. This proportion remains stable. It is slightly higher for immigrants from North Africa than for those from Southern Europe.

Table 2. Rates of departures from municipalities and intercensal emigration rates by immigrants’ period of arrival and region of origin, calculated for a standardized age structure

Censuses (%)	1975–1982		1982–1990		1990–1999	
	Mobility	of which emigration	Mobility	of which emigration	Mobility	of which emigration
Immigrants (<i>Ref.</i>)	50.4	33.1	48.0	29.2	46.0	27.0
Natives	30.6	5.3	31.1	4.5	32.4	4.6
Immigrants						
by period of arrival						
before 1968	39.5	20.5	33.9	14.5	28.8	11.9
1968–1975	65.5	50.3	43.9	25.4	37.0	18.6
1975–1982			67.4	49.9	43.2	20.0
1982–1990					66.8	50.4
From Southern Europe						
by period of arrival						
before 1968	47.4	31.1	43.9	25.7	42.2	22.4
1968–1975	38.0	20.2	32.6	13.8	27.6	11.5
1975–1982	62.2	48.3	42.8	25.3	37.5	18.3
1982–1990			67.5	53.5	42.3	19.6
					65.6	50.6
From North Africa						
by period of arrival						
before 1968	60.4	44.4	53.2	38.8	47.2	31.7
1968–1975	47.3	30.6	39.8	23.1	33.2	16.0
1975–1982	72.2	57.0	47.5	31.0	36.8	21.5
1982–1990			67.9	56.1	43.2	27.1
					66.5	52.4
<p>Note: The measure used is that of the lower bound (excluding potential death-related mobility). In each column, age structure standardized by taking the age structure of all immigrants in the year of the initial census as reference after creating 16 five-year age groups, excepting the first (1–4) and last (75–77).</p> <p>Coverage: The analysis concerns individuals born on 1 or 4 October, aged 1 to 77 in the year of the initial census.</p> <p>Source: EDP (INSEE).</p>						

This observation is verified even when immigrants are analysed separately by region of birth. Immigrants from Southern Europe and North Africa alone account for almost two-thirds of the immigrants in France between 1968 and

(36) We saw previously that the proportions of mobile individuals vary substantially with age. To avoid composition effects due to group-specific age structures and thereby facilitate comparisons, the differences in age structure were neutralized by calculating overall proportions for a common age structure (that of immigrants overall in each initial census).

1990. The mean mobility of these two immigrant groups decreases sharply over the period, notably due to a decrease of around 10 percentage points in cases of emigration between the periods 1975–1982 and 1990–1999.

Conclusion

This study brings to light the particularities of immigrant mobility in France and the need to develop a corresponding analytical framework. The traditional method founded on retrospective census-based information is not fit for purpose, notably in the case of immigrants. First, the quality of this information is highly questionable, given the scale of non-response and the data adjustment methods used. Second, a considerable proportion of immigrants disappears from one census to the next, so this information is not even available in many cases. Yet the majority of these disappearances are due precisely to the geographical mobility of immigrants leaving France. This study proposes an original, alternative framework for comparing the mobility of immigrants and natives in receiving countries. Using administrative panel data associated with full censuses and vital statistics data, it is based on an analysis of the proportion of individuals who leave their municipality of residence between two censuses. The EDP provides reliable follow-up data on individuals living in metropolitan France and on their departures from the country. Data quality is equivalent, or even superior, to that currently observed in the international literature on this question. Robustness tests show that sound conclusions can be obtained despite the approximations inherent to all studies of immigration. The estimates of mobility and, above all, of emigration provided here are based exclusively on individual trajectories, without recourse to external assumptions, while remaining representative of current flows. Herein lies their originality.

Between 1968 and 1999, immigrant mobility is found to be between 30% and 50% greater than that of natives. The smaller proportion of immigrants moving from one French municipality to another between two censuses is more than offset by the scale of flows towards other destinations. From one census to the next, between a quarter and a third of initially observed immigrants leave the country; this represents around one million individuals over seven to nine years. If those leaving have particular characteristics, these departures may affect the results of studies on immigrant integration. The consequences of immigrant emigration thus extend far beyond the limited framework of residential mobility.

This work will be extended to analyse the specific profile of immigrants leaving the country and to identify the determinants of this mobility.⁽³⁷⁾ It would also be interesting to consider more systematically the impact of selective

(37) Initial findings, which could not be included here for the sake of concision, are presented in the working paper associated with this article (Solignac, 2016).

immigrant population renewal by taking account not only of departures but also of arrivals in metropolitan France. A study of this kind has been conducted using EDP data to explore trends in immigrant homeownership (Gobillon and Solignac, 2019). Likewise, individual trajectories and the geographical spaces in which they occur could also be explored more systematically. It is difficult to extend the analysis beyond 1999 because a new census method was introduced after that year; moreover, a proportion of the individuals born abroad were no longer followed continuously (Jugnot, 2014). However, thanks to record linkage between the EDP and new databases, it should also be possible to apply the analytical framework developed here for the period since 1999. This study provides new scope to explore the specific patterns of immigrants' geographical mobility, at both national and local levels.

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Matthieu SOLIGNAC • IMMIGRANT EMIGRATION: AN OVERLOOKED DIMENSION OF GEOGRAPHICAL MOBILITY

This article analyses the geographical mobility of immigrants with respect to natives, taking account of departures from the receiving country. While the residential mobility of most natives is confined within national borders, a large proportion of immigrants return to their country of birth or depart to another international destination. However, as retrospective methods are generally applied to study residential mobility, and suitable data on departures from the national territory are lacking, these emigration flows are often overlooked. Adopting a novel approach, this study analyses rates of departure from French municipalities, for whatever destination. Based entirely on the follow-up of individual movements, this approach moves beyond the dichotomy between internal and international migration to provide an overall measure of mobility, including emigration. Using a large set of administrative panel data representative of the general population, drawn from full censuses and civil records, this study was able to systematically follow all individual trajectories on the territory of metropolitan France between 1968 and 1999 while remaining representative of the population as a whole. Levels of immigrant mobility prove to be much higher than those habitually measured using retrospective methods. They are 30–50% higher than those of natives. Between one-quarter and one-third of immigrants observed in a given census have left France within seven to nine years.

Matthieu SOLIGNAC • L'ÉMIGRATION DES IMMIGRÉS, UNE DIMENSION OUBLIÉE DE LA MOBILITÉ GÉOGRAPHIQUE

Cet article analyse la mobilité géographique des immigrés par rapport à celle des natifs en tenant compte des départs du pays d'accueil. Alors que la mobilité résidentielle de la plupart des natifs s'effectue au sein du territoire national, une proportion importante d'immigrés le quitte pour leur pays de naissance ou un pays tiers. Mais ces flux d'émigration sont souvent occultés, tant par l'approche rétrospective habituellement adoptée pour l'étude de la mobilité résidentielle, qu'en raison du manque de données adaptées pour mesurer les sorties du territoire. Ce travail se distingue en proposant une analyse du taux de départ des communes françaises, quelle que soit la destination. Dépassant la dichotomie entre migration interne et migration internationale, cette approche intégralement fondée sur un suivi individuel offre une mesure générale de la mobilité incluant l'émigration. Ce travail est mené à partir de l'exploitation d'un large panel administratif constitué de recensements exhaustifs et de l'état civil. Représentatif de la population, il permet un suivi systématique des trajectoires individuelles sur le territoire métropolitain français entre 1968 et 1999, tout en demeurant représentatif de l'ensemble de la population. La mobilité des immigrés se révèle nettement plus élevée que celle habituellement mesurée de façon rétrospective : elle est de 30 % à 50 % supérieure à celle des natifs. Un quart à un tiers des immigrés observés à un recensement donné ont quitté le territoire français au bout de 7 à 9 ans.

Matthieu SOLIGNAC • LA EMIGRACIÓN DE LOS INMIGRADOS, UNA DIMENSIÓN OLVIDADA DE LA MOVILIDAD GEOGRÁFICA

Este artículo analiza la movilidad geográfica de los inmigrados comparada a la de los nativos, teniendo en cuenta las salidas del país de acogida. Mientras que la movilidad residencial de la mayor parte de los nativos se efectúa dentro del territorio nacional, una parte importante de los inmigrados lo abandonan para volver al país de origen o ir a otro país. Pero estos flujos están frecuentemente ocultados tanto por el enfoque retrospectivo adoptado habitualmente en el estudio de la movilidad residencial, que a causa de la falta de datos apropiados para estudiar las salidas de territorio. Este trabajo se distingue proponiendo un análisis de las tasas de salida de los municipios franceses, cualquiera que sea el destino. Sobrepasando la dicotomía entre migración interna y migración internacional, este enfoque, fundado integralmente en un seguimiento individual, ofrece una medida general de la movilidad, incluida la emigración. Este trabajo ha sido posible gracias a la explotación de un amplio panel administrativo constituido de censos exhaustivos y de los registros de estado civil. Representativo del conjunto de la población, este panel permite un seguimiento sistemático de las trayectorias individuales sobre el territorio metropolitano francés entre 1968 y 1999. La movilidad de los inmigrados aparece netamente más importante que la habitualmente medida de manera retrospectiva, y sobrepasa de 30% a 50% la de los nativos. Entre un cuarto y un tercio de los inmigrados observados en un censo dado han abandonado el territorio francés entre 7 y 9 años más tarde.

Keywords: geographic mobility, internal migration, immigrant, emigration, onward migration, remigration, census data, panel

Translated by Catriona Dutreuilh

