Senior Migration, Local Economic Development and Spatial Inequality*

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Abstract

In the context of rapidly aging societies, both local and national governments increasingly implement policies to attract mobile pensioners to their jurisdictions. We document that migration flows upon retirement are predominantly from richer, more urban to poorer, more rural regions. In theory, the long-term local economic effects of senior in-migration are ambiguous, while empirically there is little existing evidence on whether attracting mobile seniors can be an effective tool to promote economic development among lagging regions. We combine a unique collection of microdata from France with a new empirical strategy to fill this gap. We find that senior inflows have significant positive effects on the local economy over the course of a decade, including increases in the working-age population, total employment, GDP, average incomes, fiscal revenues and house prices, that are accompanied by a fall in the share of manufacturing activity. Combining these estimates with observed region-to-region net migration flows, we find that mobile seniors have been a significant force for reducing the concentration of employment and production in space.

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1 Introduction

Populations in OECD countries are aging rapidly (OECD, 2024). As seniors also represent disproportionate shares of wealth and purchasing power, understanding the consequences of their behavior for economic outcomes is central. One overlooked characteristic of seniors is that their migration decisions follow different patterns than those of the working-age population. Because they no longer participate in the labor market, seniors can arbitrage spatial differentials in the cost of living and local amenities by migrating from on average richer, more urban to poorer, more rural regions. In this context, both local and national governments have increasingly implemented policies and publicity campaigns to attract mobile seniors to their jurisdictions.

In theory, the effects of senior in-migration on local economic outcomes are ambiguous in the medium to long-run. Seniors spend locally, but do not enter the labor force, akin to a tourism shock (Copeland, 1991). At the same time, senior spending patterns across sectors as well as their implications for local public finances may lead to different local economic effects compared to those found for tourism activity. On the empirical side, while there is a large existing literature on the implications of working-age migration for local labor markets,[1] there is little existing evidence on the local economic effects of senior immigration. This is due to challenges for both measurement and identification. We rarely have access to information on granular location-to-location migration inflows and outflows, broken up by age and retirement status of the migrants, that cover the population (rather than small samples), span a long historical panel of locations, and can be combined with data on a rich vector of local economic outcomes. Furthermore, migration flows of seniors are not exogenous and, as we document, tend to flow in the opposite direction of working-age migrants –toward initially less dense and poorer regions.

To fill this gap, we combine a unique collection of microdata from France with a new empirical strategy to estimate the local economic effects of senior migration inflows. We use these estimates to answer two main sets of questions: (i) Can policies that facilitate or incentivize senior mobility promote economic development in lagging regions?; and (ii) Have the observed migration patterns of seniors over the past decades been a force for the diffusion of economic activity in space, or have they reinforced its concentration?[2] We use historical census data covering the full population with individual-level information on age, retirement status, residence location, and mobility since the last census round. We measure retiree migration flows and a rich set of economic outcomes for roughly 3,400 French municipalities ("*cantons*") from 1962 to 2008.

We begin by documenting two facts about senior migration that motivate our empirical analysis. First, although migration rates typically decline with age over the adult life cycle, there is a sig-

[1] See e.g. Dustmann et al. (2016) for a recent review of this literature.

[2] We refer to retirees, pensioners and seniors interchangeably in the following.

nificant rise in the likelihood of moving, especially for cross-regional migration, as individuals approach the legal retirement age. This uptick in mobility upon retirement implies that regions with a larger cohort of individuals reaching retirement age tend to witness more retirees emigrating compared to other areas. Second, seniors on average move in the opposite direction of the working-age population. We document that migration flows after retirement are predominantly from richer, more urban to poorer, more rural regions. For instance, cantons in the bottom 10% of population density receive net pensioner migration inflows over the course of a decade representing 2.5% of their initial senior population, while over the same period cantons in the top 1% of the population density distribution lose 7.5% of their senior population through net outflows of retirees. This pattern has become more pronounced over time: cantons in the bottom fifty percent of population density only began to experience net positive migration inflows of retirees around the 1980s.

Next, we develop the identification strategy for estimating the effect of senior migration inflows on intercensal changes in local economic outcomes. A widely used approach in the existing literature on the labor market effects of immigration is to rely on economic shocks in origin regions that are connected through (past) migration flows to destinations (exposure weights) in a linear shift-share instrumental variable design ("SSIV") (see Monras, 2020; Derenoncourt, 2022, for recent examples). A common challenge with this approach is that it is sometimes hard to distinguish bilateral exposure through migration from other economic ties, such as exposure to shocks through trade and investment flows and spatially correlated shocks more generally. In our setting, we are able to propose a design that can, in principle, fully account for confounding bilateral exposure to economic shocks at the origin.

Instead of using labor market "push factors" at the origin, we exploit time variation in the predicted size of newly retired pensioner cohorts across origin regions. Predictions are based on the past population age distribution across origins that we combine with national age-by-sex mortality rates going forward in time. We combine these origin shocks with destination-level exposure weights using past retiree migration flows across French cantons. This allows us to present estimation results after conditioning on destination-level exposure –using the same bilateral exposure weights– to potentially confounding economic shocks across origin regions; such as initial levels or growth rates in GDP and population. To further limit concerns about spatially correlated shocks, our IV also excludes all retiree migration flows occurring within the same province (*departement*) of the destination canton. Following recent work on SSIV designs (e.g. Borusyak et al. (2022); Borusyak and Hull (2023)), we control for the destination-level sum of the exposure weights –measuring the past attractiveness of a destination canton to retirees from other provinces nationwide.[3] To address

[3]Using the terminology of Borusyak and Hull (2023), this is recentering the IV in the context of a linear SSIV

concerns about similar age structures between connected origin-destination pairs (and, thus, correlated retirement waves) we also control for the predicted local change in the destination's stock of retired people since the last census round.

Using this design, we find that senior immigration over the course of a decade leads to significant positive effects on the local economy relative to other regions. When using predicted pensioner inflows from our SSIV design as an instrument for the observed migration flows, we find that a 1% increase in the local pensioner stock due to immigration –i.e. number of retiree inflows divided by the pre-existing stock of local pensioners– increases total local employment by about 1.5% and the local population by 1.1%. These effects are in part driven by crowding-in effects of mobile pensioners on other residents. We find that the arrivals of new pensioners increase the total number of local seniors more than one for one by reducing the outflows of existing pensioners. A 1% increase in the stock of local seniors due to immigration leads to an overall change in the local stock of seniors of 1.1%, and a 0.3 percentage point increase in the stock of seniors relative to the initial local population. We also find a significant positive effect on the local working-age population: a 1% increase in the stock of local seniors due to immigration leads to a 0.7% increase in the local working-age population. In line with these significant knock-on effects, the share of the local population that is retired does not increase significantly over the course of a decade.

We then study the effects on the local economy that underlie these observed population and employment responses. We find that a 1% increase in the local stock of pensioners due to immigration increases local GDP by about 1% and GDP per capita by about 0.8% respectively. Using computations from historical tax records, we find that average incomes increase by about 1%. While we do not have information on the implied increase in local spending due to outlays by pensioners, the multiplier effect relative to the increase in the total local population and employment seems squarely in line with recent estimates of local fiscal multipliers, such as Nakamura and Steinsson (2014).

These significant economic gains in population, employment and local output per capita are accompanied by a significant decline in the employment share of manufacturing, which we estimate to decline by about 0.6 percentage points over the course of a decade due to a 1% increase in the stock of local pensioners from immigration. This suggests that regions attracting more mobile seniors specialize in private and public services relative to manufacturing. This result complements previous studies in the cross-section of countries showing that population aging in a given country is associated with a rise in the service share in that country's GDP (Siliverstovs et al., 2011; Cravino et al., 2022). We show that the growth in the local population of retirees causes a relative expansion of the service sector, even after controlling for local population aging.

design.

We also investigate how pensioners migration affects the local economy through demand for housing. We find that a 1% increase in the local stock of pensioners due to immigration increases local housing prices by on average 1%. Local fiscal revenues from property taxes increase by about 1.3% and land tax revenues increase by about 2.8% in our estimation. The price increases resulting from the boost to local housing demand may have redistributive effects for local incumbents, benefitting owners but increasing the cost of living for renters, similar to the effect of tourism in congested locations (Allen et al., 2020).

The validity of our SSIV design relies on the assumption that decadal shocks to senior outmigration across origins are not related to destination-level changes in economic outcomes through other channels than predicted inflows. To assess this assumption, we test whether lagged changes in economic outcomes across destination cantons correlate with future inflows of retirees predicted by the instrument. In contrast to the contemporaneous decadal changes discussed above, we find statistically insignificant point estimates that are close to zero (and with similar standard errors). We also document the main findings both before and after including a full set of local exposure-weighted control variables. Using the same lagged origin-destination exposure weights used in the SSIV, we condition on exposure to pre-existing economic levels or growth rates of origin-level economic outcomes (GDP and population), as well as exposure to France's main economic center (Ile de France). We also condition on predicted growth rates of the local pensioner stock (using a demographic model in addition to the pre-existing age-by-gender distribution) to address the concern of correlated aging dynamics between connected origins and destinations.

We then ask two additional questions. First, to what extent do changes in the local stock of pensioners affect local economies differently across percentiles of initial GDP per capita? It could be that seniors account for different shares of the local population across richer more urban versus poorer more rural communities. It could also be the case that the incidence of a given inflow shock differs as a function of the structure of the local economy that differs across the same dimension. To this end, we interact the inflow variable and its instrument with a variable that indicates the percentile (1-100) of cantons in the distribution of GDP per capita as of the past census round (before the shock). We find statistically significant, but relatively minor heterogeneity along this dimension: the positive effects are more muted among initially richer percentiles of cantons. Second, we split up the total measured inflows of retired migrants into flows from other parts of France versus inflows of retired people from countries outside of France. To instrument for both types of inflows, we create a second SSIV variable that follows the same structure as our main specification, but instead of using outflow shocks from other departments in France, we compute predicted inflows using 55 sending nations of retired migrants. We use their pre-existing bilateral flow matrix across cantons, combined with the total number of arrivals at the French border over a given census round.

What we find is foreign inflows of pensioners in the French context do not give rise to significant positive effects, and that the main results in our baseline specification are driven by inflows from domestic regions in France. This may be specific to the French context, as the majority of foreign inflows was dominated by former Northern African colonies, while cross-border inflows from other parts of Europe (e.g. the UK or other EU countries) only started to present a meaningful fraction of international inflows over recent decades.

In the final part of the paper, we then use these estimates to quantify the effect of the observed senior migration flows over recent decades on the concentration of economic activity in space. Our empirical design is based on comparing relative regional changes in economic outcomes due to variation in the arrival of mobile pensioners. We use this design to predict the implications of relative regional growth in total local employment or GDP as a function of initial percentiles of the regional distribution of GDP per capita across the roughly 3400 cantons in France. To this end, we estimate the heterogeneity of the effect of inflows, after replacing gross inflows with net flows –as we had shown, there is a slight crowding-in effect of additional inflows. We find that the net flows of pensioners that we measure in our historical database have been a significant force for the reduction in the concentration of economic activity in space over the past decades. For migration flows realized between 1999-2008, we find that regions below the median of intitial population density and GDP per capita benefited by around +2% in relative local employment and +1.5% in relative local GDP compared to a scenario with zero net flows of pensioners over this period.

Our paper relates and contributes to different strands of the literature. First, we contribute to two literatures that have been mostly separate to this point: the literature on the local labor market implications of immigration (Dustmann et al., 2016) on one side, and the recent literature on the local and country-level implications of population aging (Aiyar et al., 2016; Cravino et al., 2022; Hopenhayn et al., 2022; Maestas et al., 2023) on the other. The former focuses on labor supply shocks stemming from the immigration of workers.[4] The latter is mostly focused on the (negative) labor supply shock triggered by local aging (i.e., older workers exiting the local labor force). The notion that senior migration, conditional on local aging, could boost local economic activity has been an important motivation for a recent wave of policies aimed at attracting retirees (including through age-specific tax breaks in several EU countries), but in theory, the local economic implications of senior migration are ambiguous. Our paper presents the first evidence on these questions and our findings suggest that mobile seniors can bring a significant boost to the local economy, particularly among relatively rural and initially less developed regions –a force that is also projected to grow over time due to population aging.

[4] Berbée et al. (2022) have used inflows of refugees as a way to estimate the effects of local demand shocks from immigration. Dustmann et al. (2017) and Muñoz (2024) isolate the labor supply from labor demand components of immigration shocks by focusing on temporary migrants.

Our study also relates to a recent literature investigating the economic implications of tourism (Eilat and Einav, 2004; Sequeira and Macas, 2008; Faber and Gaubert, 2019; Fuchs et al., 2022). Tourists, like pensioners, spend in the local destination but do not participate in the labor market. As Faber and Gaubert (2019) have shown, this local spending 'windfall' can in theory have both positive and negative medium to long-term effects, both locally and in the aggregate. Mobile pensioners are similar in this respect, but they also differ from tourism in several important ways: seniors have different spending patterns than tourists; their mobility decision is permanent, not temporary, which could lead to endogenous local population adjustments; they enter the local housing market; they make significant use of local public services; and they potentially contribute to fiscal externalities through local tax payments.

Finally, we also contribute to the literature on the determinants of spatial disparities. While there has been a surge of research on the spatial sorting of *workers* (summarized by Diamond and Gaubert, 2022), the location choices of retirees have received much less attention in spatial models, with a few recent exceptions (see, for instance, Komissarova, 2022).[5] Our empirical findings show that mobile seniors have been a significant force for reducing the concentration of employment and production in space over the past decades.

The remainder of the paper proceeds as follows. Section 2 describes the empirical context of our study and the database that we have assembled to implement it. Section 3 uses the data to present a number of stylized facts about senior migration. Section 4 presents our empirical design. Section 5 presents the estimation results. Section 6 uses these estimates to quantify the implications of senior migration flows over the past decades on relative regional outcomes. Section 7 concludes.

2 Institutional context and data

2.1 Senior migration in France

We study the implications of senior migration patterns for local economic development and spatial inequalities within the largest aging economy in the world: Europe. The share of working age individuals in the EU is shrinking, while the number of older people has been growing steadily. This pattern is expected to continue in the next decade, as the so-called "baby-boom" generation completes its move into retirement. Currently, one in five Europeans is 65 years or older. By 2050, this proportion is projected to reach close to 30%.

Our empirical analysis focuses on France, where the data environment allows us to study this question over a long time period and at granular spatial scale. France is one of the largest European

[5] Komissarova (2022) builds a spatial equilibrium model to study the life cycle component of location choices for retirees. Bilal and Rossi-Hansberg (2021) also study inter-temporal trade-offs in migration decisions, although they focus on labor market participants.

economies and is characterized by the same demographic trends as Europe as a whole. In 2023, 26% of French individuals were aged 60 or more. The number of retirees in France has increased dramatically since the 1960s (the start of our analysis) in both absolute and relative terms. As showed in Figure 1, the number of people above 60 more than doubled over the period of analysis.

In addition to being an aging economy, France offers several advantages to study the question of senior migration. First, there are few institutional barriers to migration within the country, for seniors as well as working-age movers. No legal restrictions to mobility prevent households from migrating. Capital gains taxes on the sale of a primary residence are entirely tax-exempt, limiting any potential lock-in effect. The French health system is universal and administered at the national level: retirees can consume healthcare wherever they live without having to register or to switch insurance plans upon moving.[6] Eligibility and conditions for most social benefits are also administered by the central government, ensuring low-income seniors receive payments irrespective of their region of residence.[7] Finally, the various pension systems are administered by national authorities, and retirees receive their monthly pensions regardless of the region (or country) they choose to live in after retirement.

Second, French retirees draw their pensions annually from a defined-benefits, pay-as-you-go system, with income taxation only operating at the national level. This means that there is little uncertainty about the nominal value of the pensions seniors receive once they retire. This facilitates relocation decisions upon retirement, as well as the interpretation of our local economic effects. Third, there are binding statutory retirement age rules in France. Individuals need to reach a minimum statutory age to be allowed to draw their pension.[8] As a result, retirement decisions tend to be concentrated around the same age nationwide. This allows us to predict retirement events using an age cutoff, while we observe both retirement status and age in our dataset.

While this paper studies senior migration patterns in France, we note that the characteristics outlined above are shared by many other countries. In the U.S., individuals aged 65 or older can freely move across borders; primary residences are mostly exempt from capital gains taxation; Social Security benefits are not attached to a State of residence; and seniors are covered by a nationwide healthcare insurance plan (Medicare) and can access health services in any U.S. state. In Europe, most countries, like France, have universal healthcare systems with no restrictions for movers. In fact, even foreign EU citizens have free mobility across countries and are covered by the healthcare

[6] This is also true for working-age movers.

[7] One exception is the Personalized Autonomy Benefit (APA in French abbreviation), which is administered locally but funded by the central government.

[8] The statutory eligibility age (SEA, minimum claiming age) is binding for many French workers. Alternatively, as explained e.g. in Rabaté (2019), workers can draw a full pension at the full retirement age (FRA) if they worked for sufficiently many quarters.

system of their destination countries.[9] This implies that institutional barriers to the *international* migration of retirees are also low in Europe. Indeed, many EU countries such as Portugal, Italy, or Greece, have implemented specific tax schemes to attract foreign retirees to foster local economic development. Strong controversies exist regarding the net benefits of such policies. Our results directly contribute to these policy debates, as we provide the first causal evidence on the effect of senior migration inflows on local economies.

2.2 Data

We collect historical data at the local level to study the migration patterns of retirees and their effects on destination regions. Our primary units of observations are about 3,400 *cantons*, which correspond to historical boundaries of closely connected municipalities (“communes"), and are comparable in size to the smaller half of US counties.[10] We first assemble all waves of the restricted-use, full-count microdata from the Census starting in 1962. Census waves occurred in 1962, 1968, 1975, 1982, 1990, 1999, and 2008.[11] The census data provides us with individual-level information on precise residence location, age, marital status, occupation and housing status, and mobility since the last Census wave.

We use the individual-level full-count Census data to construct a matrix of bilateral migration flows by age since 1960 across all French cantons, since the Census asks a question about the residence location as of the prior Census as well as the current location.[12] We also use the data to construct local measures of employment in aggregate and separately by industry at the canton level.

In addition to cantons, our primary focus for the empirical analysis, we consider two supplemental geographic units. There are 95 French *departments* that are comparable to U.S. commuting zone. Each department encompasses, on average, 40 cantons. These departments are organized into 22 larger regions (that we call Census regions), comparable to U.S. states. We complement the Census-data with additional municipality-level historical outcomes assembled by Cagé and Piketty (2023), including measures of GDP, fiscal revenues, house prices and average municipal income per capita (historically apportioned from observed taxable property values and local taxable income

[9] This is because the coordination of social security systems is enshrined in EU law. If an EU citizen is eligible to social security in one country, this individual can use the healthcare system of another country, and cross-country transfers compensate the use of healthcare services by foreign residents.

[10] On average, there are 9 municipalities per canton. The average population of a canton in 2010 was 15,986 inhabitants.

[11] Starting after 2008, the French statistical agency switched to a rotating national census that does not provide information on migration flows for more than 1 year.

[12] Until 1999, the Census only requested information on the municipality of residence as of the prior Census wave; we must thus ignore multiple migration events that may have occurred during the inter-Census period. In 2008, the Census requests information on residence location five years earlier. To make these flows comparable to changes in local outcomes from one census round to another (from 1999 to 2008), we multiply the observed migration flows by a factor of 9/5 in the 2008 census.

measures). We aggregate those outcomes at the level of the canton. For all outcomes –based on Census data or additional datasets–, we compute intercensal changes in these outcomes as long-differences, which are our main dependent variables of interest in the regression analysis of the following section.

3 Stylized facts on senior migration patterns

This section uses the dataset described above to describe senior migration patterns in France. These facts motivate our empirical analysis and preview the spatial variation in senior migration flows we will exploit later in the paper.

Fact 1: Seniors migrate upon retirement In Figure 2, we start by plotting average migration rates by age, including around the time of retirement. The y-axis represents the percentage of individuals from the 2008 census who moved within the past five years, while the x-axis categorizes these individuals into age groups based on that year's census. In Panel A, we analyze all moves across French communes, while Panel B specifically focuses on moves across departments (i.e., excluding within-department moves).

There are two main insights from this figure. First, migration rates trend downwards with age, capturing the fact that older individuals are less mobile than their younger counterparts.[13] Second, there is a distinct uptick in migration rates coinciding with retirement, with the highest frequency of moves observed around the minimum legal retirement age of 60. We note that migration rates start to increase in the five years or so prior to the official retirement age.

This trend may be attributed to several factors, including the variability of retirement rules among individuals, or it could reflect individuals' anticipation of their retirement and their propensity to relocate during the years leading up to their exit from the workforce.[14] We also observe that this rise in migration rates around retirement is particularly pronounced when we focus on cross-department moves in Panel B, indicating that relocation events around retirement typically involve longer-distance moves than usual. On average, retirees move approximately 50 kilometers further than individuals of working age conditional on the decision to relocate.

Fact 2: Seniors move in the opposite direction of working-age migrants Next, we analyze the spatial distribution of senior migration flows. Figure 3, Panel A, shows the map of net mobility flows (inflows - outflows) of pensioners across French cantons during the last decade of our dataset (1999-2008). We define pensioners as retired individuals (as registered by the census) aged 55 and above. Migration flows of pensioners are very heterogeneously distributed in the French territory.

[13]This has been shown to be true in the U.S. too, see e.g. Molloy et al. (2011).

[14]The probability to retire starts to increase around 55 years old, with roughly 15% of individuals at age 55 being retired.

Urban centers, such as the Ile-de-France region around Paris, experience large net outflows of pensioners. In contrast, coastal areas in the West and the South experience positive and large inflows of pensioners. We also note that cantons located in the North and North-East of France loose a significant fraction of their senior population due to out-migration, while many cantons located in more central, rural areas, attracted significant numbers of retirees during this period. Panel B shows the analog figure for the net migration flows of working-age individuals.[15] Unlike retirees, working-age individuals tend to flow towards major urban centers (e.g., Toulouse, Lyon or Bordeaux) and to leave rural areas, especially cantons located in the center and south-west of France.

To better characterize which local areas attract mobile pensioners, we rank each French canton by population density or GDP per capita in a given census year. We then plot in Figure 4 net migration flows of pensioners by percentiles of population density (Panel A) and GDP per capita (Panel B). We normalize net migration flows of pensioners by the initial population of seniors in a canton, to capture the contribution of senior migration (inflows or outflows) to the growth in the local population of seniors. The figure reveals a stark negative gradient in senior migration patterns with respect to both the density and per capita GDP levels. Cantons in the bottom 10% of population density receive net pensioner migration flows representing 2.5% of their senior population, while cantons in the top 1% of the population distribution in France lose 7.5% of their senior population through outflows of retirees.

Figure 5 presents a comparison of regions that receive relatively more mobile pensioners or more mobile working-age individuals. We compute the proportion of incoming movers in each of three age categories—young-age (10 to 25), working-age (25 to 54), and seniors (55 and above)—for each canton in France. We then plot those fractions on the y-axis of Figure 5, while the x-axis denotes the population density in the destination canton. A clear decreasing pattern emerges when focusing on retirees: seniors account for a large share of movers in rural areas, but for a small share in the densest regions. By contrast, younger individuals represent a larger fraction of total inflows in urban areas.

Overall, Figures 4 and 5 show that migration flows after retirement are predominantly from richer, more urban to poorer, more rural regions. This is opposite to what is observed for migration flows of working age individuals. This distinctive pattern has also become more pronounced over time: cantons in the bottom fifty percent of population density received, on average, zero net inflows of pensioners between 1968 and 1975. The poorer and more rural regions in France at the time (i.e., the bottom ten percent) were even losing retirees due to out-migration during that initial period. This pattern started to reverse between 1982 and 1990. From 1982 onwards, cantons in the bottom

[15] We define working-age individuals as individuals in the 15-54 age bracket who are not retired.

fifty percent of population density began to experience net positive inflows of retirees. Since 1990, net inflows of retirees have become larger for the bottom ten percent of cantons than for cantons in the bottom 10-50% of density.

4 Empirical strategy

We set out to study the consequences of pensioner inflows on changes in local economic outcomes $y_{i,t}$ in canton i, from one Census wave to the next, $\Delta y_{i,t} = \frac{y_{it} - y_{i,t-k}}{y_{i,t-k}}$, with k indicating the number of years between censuses. Following from the discussion in Section 2 above, the baseline regression sample will be based on 5 intercensal changes between 1968-2008 for a balanced number of 3402 cantons in France.

Our independent variable of interest $\frac{\text{Inflows}_{i,t}}{\text{Seniors}_{i,t-k}}$ is the ratio of senior inflows into a canton during an intercensal period over the initial stock of seniors in the prior Census period (k years earlier). It measures the percentage growth in the local retiree population that can be assigned to in-migration flows over the period. By an accounting identity, this inflow can also be re-defined as a "shift-share" variable, combining outflows (emigrating seniors) in origin department d with observed bilateral migration shares:

$$\frac{\text{Inflows}_{i,t}}{\text{Seniors}_{i,t-k}} = \frac{1}{\text{Seniors}_{i,t-k}} \sum_d \frac{\text{Inflows}_{i,d,t}}{\text{Outflows}_{d,t}} \times \text{Outflows}_{d,t}$$

It can readily be seen from this equation that two main sources of endogeneity could arise if we were to estimate the effects of pensioners inflows using OLS. First, the share of migration flows from origin department d directed to destination i, $\frac{\text{Inflows}_{i,d,t}}{\text{Outflows}_{d,t}}$, could be correlated with unobserved determinants of local outcomes in i at time t. This would be the case if seniors in each origin d preferably migrate to, for example, lagging vs. dynamic regions. Second, the decisions to out-migrate from origin regions, that determine the magnitude of Outflows $_{d,t}$, could be correlated with variation in economic outcomes in the destination canton i –either because pull factors in the destination affect the migration choice at the origin; or because economic shocks at the origin are either correlated with or leading to changes in outcomes among destinations more connected through migration.

Shift-share instrumental variable We exploit the fact described above that there is a spike in long-distance migration that is concentrated around the time of the statutory retirement age. We combine time variation in the arrival of newly retired pensioner cohorts across origin departments in France (excluding the department of the destination canton i), with pre-determined bilateral senior migration linkages across locations.

To start with, we can write the SSIV variable as follows:

$$\frac{\text{PredictedInflows}_{i,t}}{\widehat{\text{Seniors}}_{i,t-k}} = \frac{1}{\widehat{\text{Seniors}}_{i,t-k}} \sum_{d \neq d_i} \frac{\text{Inflows}_{i,d,t-k}}{\text{Outflows}_{d,t-k}} \times \widehat{\text{Outflows}}_{d,t}$$

where $\widehat{\text{Outflows}}_{d,t} = \sum_{a=a_R-k}^{a_R} \text{Pop}_{d,a,t-k} \Pi_{l=a}^{a+k}(1-m_l)$ is the predicted number of people newly crossing the retirement age ($a_R = 60$) in each origin d between the two census rounds $t-k$ to t. To compute this, we roll forward the initial age distribution in each department after accounting for age-by-sex-specific nationwide mortality rates (m_l) that we obtain from France's statistical agency at the beginning of each census round.

$\widehat{\text{Seniors}}_{i,t-k} = \sum_{a=a_R-k}^{100} \text{Pop}_{d,a,t-2k} \Pi_{l=a}^{a+k}(1-m_l)$ is the predicted number of local seniors in the previous census period. This prediction is based at the age distribution two census periods before ($\text{Pop}_{d,a,t-2k}$) to predict the total number of retired people in department d at period $t-k$. This prediction breaks the otherwise mechanical correlation between the OLS variable $\frac{\text{Inflows}_{i,t}}{\text{Seniors}_{i,t-k}}$ and our instrument in the expression above.

We can now re-write this expression in a way that clarifies the origin-level shocks and the origin-destination-level exposure weights for identification:

$$\frac{\text{PredictedInflows}_{i,t}}{\widehat{\text{Seniors}}_{i,t-k}} = \sum_{d \neq d_i} \frac{\text{Inflows}_{i,d,t-k}}{\widehat{\text{Seniors}}_{i,t-k}} \times \frac{\widehat{\text{Outflows}}_{d,t}}{\text{Outflows}_{d,t-k}} \tag{1}$$

Identification here is based on the interaction between origin-level shocks, $\frac{\widehat{\text{Outflows}}_{d,t}}{\text{Outflows}_{d,t-k}}$, that are the predicted arrival rates of new senior migrants relative to the department's outflows between the last census round and the round before that one (from $t-2k$ to $t-k$), and destination-level exposure weights, $\frac{\text{Inflows}_{i,d,t-k}}{\widehat{\text{Seniors}}_{i,t-k}}$, that are the fraction of senior migration (from $t-2k$ to $t-k$) between the department and the canton destination over the canton's (predicted) senior population stock at the beginning of the last census.

Since some cantons in France may always be connected to large origin regions or may be particularly attractive for senior migrants across all origin department –such that the exposure weights do not sum to a constant that is equal across cantons in France–, we recenter the linear SSIV by controlling for the canton-level sum of the exposure weights: $\sum_{d \neq d_i} \frac{\text{Inflows}_{i,d,t-k}}{\widehat{\text{Seniors}}_{i,t-k}}$.

This recentering control is included in both first and second stages of the regressions. It conditions on past arrivals of retirees in canton i from departments outside the home department, and allows us to only use the 'innovation' relative to this expected local exposure for identification over time.

Threats to identification There are three main potential concerns that we address. The first is that demographic changes in aging at the origins that are connected most to a given destination canton may be correlated due to similar population structures across space. If that were true, then higher predicted inflows of seniors could be correlated to local aging in the destination canton (a negative labor supply shock that would confound our estimation). To address this we report first- and second-stage estimates both before and after including the predicted growth rate in the local stock of retired people –using the initial age distribution and age-by-sex national mortality rates: $\Delta \widehat{\text{Seniors}}_{i,t} = \frac{\widehat{\text{Seniors}}_{i,t} - \text{Seniors}_{i,t-k}}{\text{Seniors}_{i,t-k}}$.

Second, maybe it is the case that (i) changes in arrival of new mobile seniors across origin departments are correlated with department-level economic conditions, while (ii) it is also the case that being connected by past senior migration is correlated with canton-department connections through trade, investment or non-senior migration. In such a scenario, the senior migration shock at the origin could be related to other economic shocks that also affect connected destination cantons differently through other channels.

Fortunately, our empirical design allows us to condition on origin-level economic shocks that may affect destination cantons differently. In particular, following results in e.g. Borusyak et al. (2022) and Borusyak and Hull (2023), we condition on such origin-level confounders by applying the same bilateral matrix of exposure weights that we use in the SSIV in expression (1) above. What we can do is to report first-stage and second-stage estimation results both before and after we condition on destination-level exposure to either initial levels of economic outcomes or growth rates of economic outcomes across the origin departments.

We compute: $\sum_{d \neq d_i} \frac{\text{Inflows}_{i,d,t-k}}{\widehat{\text{Seniors}}_{i,t-k}} \times X_{dt}$, where X_{dt} are either initial log levels of total population and GDP or growth rates of population and GDP between census rounds. The identifying assumption is thus that a canton's exposure to predicted retirement shocks across $d \neq d_i$ affects canton i only through senior immigration, conditional on exposure to levels or changes in department-level economic conditions across origins. One of the major advantages of our empirical strategy is that we are thus able to condition on the origin-level economic shocks (that could affect cantons connected by migration differently) which have traditionally served as the 'push'-factors in SSIV designs for migration flows.

Third, one may be concerned about the highly concentrated nature of France's economic activity in space. In particular, the Ile-de-France region, a group of 8 departments, accounts for roughly one third of national GDP and one quarter of national employment. To the extent that this region explains the majority of migration inflows across a large number of connected cantons, and that our exposure-weighted controls for levels and changes in economic conditions may not fully capture violations of the exclusions restriction, we also include a control for each canton's (senior migration-weighted) exposure to the Ile-de-France region in each period –including a dummy variable in the X_{dt} in the expression just above. This control thus effectively conditions on regional variation in senior migration-weighted exposure to the main economic center of France.

Finally, while conditioning on the sum of exposure weights as discussed above is the correct way to re-center our linear SSIV, one may also like to condition on the sum of the past outflow share $\sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\text{Outflows }_{d,t-k}}$ in addition. We also include this as an additional control in first and second stages as part of the full set of controls.

First and second stage The first stage estimating equation regresses actual inflows on predicted inflows, recentering the SSIV by including the sum of exposure weights $\sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\widehat{\text{Seniors}}_{i,t-k}}$, plus a vector of additional controls that we include in the full specification that we simply denote $\text{Ctrls}_{i,t}$ here:

$$\text{(2)} \qquad \frac{\text{Inflows}_{i,t}}{\text{Seniors}_{i,t-k}} = \beta_1 \frac{\text{PredictedInflows}_{i,t}}{\widehat{\text{Seniors}}_{i,t-k}} + \beta_2 \sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\widehat{\text{Seniors }}_{i,t-k}}, + \beta_3 \text{Ctrls}_{i,t} + \alpha_{rt} + \epsilon_{it}$$

The vector $\text{Ctrls}_{i,t}$ includes the predicted change in the local stock of retirees, $\Delta \widehat{\text{Seniors}}_{i,t} = \frac{\widehat{\text{Seniors}}_{i,t} - \text{Seniors }_{i,t-k}}{\text{Seniors }_{i,t-k}}$, exposure-weighted economic levels or changes across origin regions or the Ile de France economic center, $\sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\widehat{\text{Seniors }}_{i,t-k}} \times X_{dt}$, as well as the sum of outflow shares across departments, $\sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\text{Outflows }_{d,t-k}}$.

All regressions include a set α_{rt} of region-by-Census wave fixed effects for 22 large Census regions. We cluster the standard errors at the level of cantons that we observe across 5 census rounds (covering migration flows and changes in local economic outcomes between 1968-2008).[16]

Turning to the reduced-form regressions, the left-hand side has growth rates of local economic outcomes, $\Delta y_{i,t} = \frac{y_{it} - y_{i,t-k}}{y_{i,t-k}}$, regressed on the predicted inflow exposure and the same set of controls.

$$\text{(3)} \qquad \Delta y_{i,t} = \gamma_1 \frac{\text{PredictedInflows }_{i,t}}{\widehat{\text{Seniors}}_{i,t-k}} + \gamma_2 \sum_{d \neq d_i} \frac{\text{Inflows }_{i,d,t-k}}{\widehat{\text{Seniors }}_{i,t-k}}, + \gamma_3 \text{Ctrls}_{i,t} + \alpha_{rt} + \epsilon_{it}$$

[16] Recent work by e.g. (Adao et al., 2019) has pointed out that region-level clustering may not properly account for the autocorrelation structure in SSIV designs. We are working on implementing those insights.

5 Results

This section reports estimation results and robustness checks of our empirical design described in equations 1-3 in the previous paragraphs.

First stage Table 1 starts by displaying the first stage results from our main shift-share instrument described in Equation 2. All specifications control for the sum of exposure weights, meaning we condition on variation in past senior inflows from other departments across cantons. Our IV approach consistently employs a conservative 'leave-one-out' methodology, where we exclude within-department moves when predicting pensioner inflows –even though these local moves are a significant fraction of actual pensioner inflows. In spite of this restrictive specification, predicted inflows of pensioners are strong predictors of actual exposure to senior migration inflows. Our instrument remains strong after we control for exposure-weighted economic shocks in sending regions, France's economic center of Ile-de-France, predicted population aging in the destination as well as the sum of outflow shares.

Panel A of Figure 6 summarizes graphically the first-stage relationship between predicted and observed pensioners inflows including the full set of controls, displaying a significant, positive, and seemingly linear relationship between the instrument and the variable of interest. Panel B of Figure 6 presents the reduced-form relationship between the growth rate of total local employment on the left-hand side and the IV specification in Equation 3 on the right-hand side.

Local employment and population Table 2 presents both OLS and IV results from regressing log changes in canton level employment and population outcomes on the inflows of newly in-migrating pensioners, before and after including the full set of canton-level controls. The IV estimates of the pensioner migration effects are positive and statistically significant for local employment growth and local population growth.

Two important facts can be noted from the table. First, the IV point estimates are positive and somewhat larger than the OLS estimates. This is consistent with the concern that retirees may elect to move to more rural areas with slower economic growth on average, a fact emphasized in the descriptive evidence shown in Figure 4. Not accounting for this source of endogeneity would lead us to underestimate the positive causal effects of pensioners migration flows on the local employment outcomes of destination regions. Second, the addition of our full set of controls in Column (3) leads to slightly larger point estimates of the senior migration effect on local employment. One possibility is that our instrument could be correlated with negative labor market shocks in sending regions that negatively affect destination regions through trade or investment linkages. In our preferred specification, a 1% increase in local pensioners due to senior migration increases local employment by 1.5% and total population by 1.1%.

Crowding-in effects on local population To better understand what is driving the effect on local total population and employment growth, Table 3 shows the effects of pensioner migration inflows on the local population segmented by age category. We estimate that a one percent increase in local pensioners due to immigration leads to a growth of the local number of pensioners of rouhgly 1.1%. This slightly more than one-for-one coefficient indicates that the arrival of new pensioners also increases the number of local pensioners, likely by reducing the outflows of existing pensioners. In line with this, we also find that net flows increase by slightly more than gross inflows in the same table.

One potential explanation is that retirees like to live near other retirees, either due to homophily (e.g. Diamond, 2016) –a taste for "retiree communities"–, or because age-specific amenities are endogenously formed in response to pensioner inflows.[17] In line with these findings, we also see that the number of pensioners as a fraction of the *initial* population increases by .35%.

We then turn to the effects of senior migration shocks on the number of working-age individuals. We find that a 1% increase in local pensioners resulting from senior migration leads to a 0.7% growth in the local working-age population. This crowding-in effect could be driven by increased demand for local non-tradable and labor-intensive services following the arrival of new retirees in a region, consistent with our finding of positive local employment gains in Table 2. The positive effect of senior migration flows on the working-age population growth is sufficiently large to compensate the direct population-aging effect of pensioners arrivals: we find no significant change in the ratio of pensioners to the local population in column (10).

Local economic effects Next, we investigate the local economic changes underlying the crowding-in effects on the local population. We start by studying local production. On the one hand, increasing the stock of out of the labor force individuals may reduce local production if pensioners crowd-out working-age individuals or if their demand changes the local economic structure of the region towards less productive sectors. On the other hand, more local spending without labor force participation acts as a local demand shock and could increase production and economic growth in the long-run. In terms of production, a 1 percent increase in local pensioners due to migration leads to a 1 percent increase in local GDP. The increase in local production is not merely a mechanical effect resulting from the increase in the size of the population described in Table 3 since GDP per capita increases by 0.7% and average local incomes by 1%.

Another channel through which mobility-induced shocks in the retiree population may impact destination regions is the housing market. If incoming pensioners consume local housing, they may boost demand and lead to higher local prices, depending on the local elasticity of housing supply. In Table 4, Column (1), we find that (instrumented) pensioner inflows increase local housing prices: a

[17] See Komissarova (2022) for a model of endogenous amenity formation in response to demographic composition.

one percent increase in local pensioners due to senior migration raises local housing prices by 1%. Higher real estate prices caused by senior migration may have ambiguous distributional effects between incumbent owners (who benefit from higher wealth) and renters (who suffer from an increase in the cost of living).

They also create positive fiscal externalities for destination regions. We find a 2.8% increase in the land tax revenues, and a 1.3% increase in property tax revenues. This finding is important since it highlights how the effect of pensioners inflows may substantially differ from the consequences of more transitory population mobility, such as tourism shocks. Newly arrived pensioners are likely to become homeowners in the destination region, and to pay local taxes in that region, unlike tourists.[18]

We turn to industry-specific employment effects of pensioner inflows. The arrival of mobile pensioners could shift local demand towards specific sectors, particularly if seniors exhibit distinct consumption baskets or have specialized needs. We find that 1% higher inflows of mobile pensioners decrease the manufacturing employment share by 0.6 percentage points. This outlines that regions that attract more mobile seniors are likely to specialize in services at the expense of the manufacturing sector.

Gross vs. net inflows As shown in Table 3, an exogenous increase in (gross) inflows has a slightly stronger effect on net inflows due to crowding-in effects among seniors. For the quantification in Section 6, it is thus important to not inflate the relative regional effect by applying point estimates for gross inflows to observed migration patterns in terms of regional net flows. To this end, Table 5 replicates the main results for outcomes observed over the full sample period after replacing gross inflows on the left-hand side with net flows.

The point estimates for growth rates of total employment, population, working-age population, GDP and GDP per capita are confirmed in sign and statistical significance. In line with the crowding-in effects discussed above, we find positive point estimates for net flows that are slightly smaller compared to gross inflow shocks. In our quantification below, we will take this into account in additional to the estimated heterogneity of the effect of pensioner inflows, to which we turn below in this section.

Robustness We present additional robustness checks for the main results presented in the paper. To address the concern that our SSIV could be correlated with canton-specific characteristics that had time-varying effects on local economic dynamism, we conduct a falsification test by regressing *past* changes in local economic outcomes on *future* predicted exposure to senior migration.

[18] Faber and Gaubert (2019) study the impacts of tourism attractiveness in Mexico but do not measure local housing price effects.

If our SSIV design is valid conditional on recentering controls, then there should be no correlation between instrumented contemporaneous pensioner inflows and past economic changes. To assess this in the data, we estimate the reduced-form specification in 3 on identical samples of cantons and census waves with either contemporaneous or lagged changes in local outcomes on the left-hand side. Because we lag intercensal growth rates on the left-hand side, the sample for both types of regressions now includes 4 intercensal changes between 1975-2008 for a balanced number of 3402 cantons in France. Table 6 presents the results.

For our main findings –effects on total employment, population, working-age population, GDP and GDP per capita (outcomes observed over the full sample period)– we report the reduced-form specification both contemporaneously as well as after replacing the left-hand side with the one census period-lagged growth rate. For example, we regress employment growth between 1990-1999 on predicted pensioner inflows (the IV) over the period 1999-2008. Reassuringly, none of the coefficients are statistically significant. The placebo coefficients are also closer to zero, and sometimes of opposite sign, than the effects of our instrument on contemporaneous intercensal changes in local economic outcomes. Like any tests for pre-trends, this exercise does not rule out the possibility that other *simultaneous* shocks contribute to the relationship between current local economic growth and increased retiree inflows, but it demonstrates that this relationship did not exist in decades preceding shocks in the arrival of new retirees.

Heterogeneous effects We now test potential heterogeneity in the local implications of retiree immigration. A first relevant question is whether initially poorer regions are affected differently compared to richer regions by the same inflows of pensioners. We thus run our baseline regression adding an interaction term between our main explanatory variable and a canton's percentile in the initial distribution of GDP per capita. In the IV regressions, we now instrument for both the main effect and the interaction term. The results are presented in Table 7.

We find that the effects of pensioner inflows are more pronounced among initially poorer regions. This means that lagging regions are more exposed to senior migration through two channels. First, as already discussed in Section 2, those regions are more exposed to senior migration because pensioners move to poorer, more rural regions upon retirement. Second, for a similar level of exposure to mobile pensioners, lagging regions experience stronger growth in employment, population and GDP.

One explanation for these findings could be that initially poorer regions have on average larger shares of pensioners as part of their local population compared to richer regions. While statistically significant, the interaction effects are relatively minor in terms of magnitudes: moving down the initial distribution of local GDP per capita by one percentile increases the local employment effect by about 0.004 percentage points (growth rate) and GDP by around 0.003 percentage points.

Relative to the average estimated effects (1.4 and 1% respectively), this degree of heterogeneity is relatively minor.

Table 8 reports the same results as the previous table, but replacing gross inflows with net flows as discussed for Table 3 above. Again, the results are confirmed, including for the interaction terms, but slightly smaller than for gross inflows. We will use the heterogeneous effects of net pensioner inflows displayed in Table 8 when evaluating the implications of our estimates for relative regional growth rates across cantons in France in Section 6.

A second relevant question is whether the impact of senior movers is driven predominantly by foreign or domestic migrants. In our baseline specification above, we project local outcomes onto total inflows, stemming from both domestic regions in France (departments) as well as cross-border senior migrants. To estimate the effect of domestic senior inflows and foreign senior inflows on total local employment separately, we build a second instrumental variable that follows the same structure as our main SSIV.

The instrument for foreign pensioner inflows is based on origin-level shocks at the level of 55 countries that report positive inflows of retired people during each of our census rounds. The origin-level shock in equation (1) is computed as the change in the total number of migrants from country c arriving at the French border over the period of the last intercensal period relative to the arrival of foreign senior migrants in the intercensal period before (replacing the final term in (1)). The exposure weights have the same denominator (the lagged predicted stock of pensioners in a destination canton), but the lagged bilateral inflow in the numerator of the weights is now in terms of the origin country c going to canton i (instead of the origin department within France as in the main SSIV).

Table 9 presents the IV regression results for both domestic inflows, foreign inflows and both variables jointly for growth in total local employment. We find that the pooled effects on local outcomes that we discussed above are mainly driven by pensioner arrivals from domestic origins. While the first stage relationship between predicted and actual foreign inflows is strong, we find no significant positive effect on local economic outcomes due to foreign pensioner arrivals. Domestic inflows have a slightly stronger average effect on local employment (+1.6%) compared to the pooled effect (+1.4%), while foreign inflows are insignificant and have a point estimate close to zero. There are several potential explanations. One is that foreign pensioners may spend less time, and thus local expenditure, in destination cantons in France compared to domestic movers. One could think of vacation homes versus primary residences.

A more likely explanation in our current setting is that French migration inflows were predominantly driven by immigration from former French colonies. All the way until the last two census rounds in our sample, immigration by migrants from former French colonies in Northern Africa were the dominant source of cross-border senior migration inflows, compared to immigration by pensioners from other European countries. The differences in income per capita across these two groups of countries (and also relative to France) could be important factors to explain the absence of local growth effects that we find in Table 9.[19]

6 Quantification

We have presented evidence suggesting that senior immigration leads to meaningful increases in local total employment, population and GDP over the course of a decade relative to regions with less senior inflows. We now use these estimated effects on relative regional outcomes over time to quantify the implications of the observed net migration flows of seniors in France over the most recent intercensal period 1999-2008.

More specifically, our goal is to isolate the contribution of senior migration patterns to the spatial distribution of total employment, population, and production across cantons. For each local economic outcome y, we compute this predicted contribution as follows:

$$\widehat{\left(\frac{\triangle y_{i,t}}{y_{i,t-k}} - \overline{\frac{\triangle y_{i,t}}{y_{i,t-k}}}^{t}\right)} = \left(\frac{\text{Netflows}_{i,t}}{\text{Seniors}_{i,t-k}} - \overline{\frac{\text{Netflows}_{i,t}}{\text{Seniors}_{i,t-k}}}^{t}\right) \times \hat{\beta_y}, \tag{4}$$

where $\hat{\beta}_y$ are the estimated effects of $\frac{\text{Netflows}_{i,t}}{\text{Seniors}_{i,t-k}}$ on outcomes $\frac{\triangle y_{i,t}}{y_{i,t-k}}$ from Table 8, taking account of the heterogeneity of the estimated effects as a function of initial percentiles of cantonal GDP per capita. Note that in this quantification exercise we remain agnostic on the aggregate implications of senior migration, and instead quantify the implications on relative regional economic outcomes that we then project on the initial distribution of regional GDP per capita.

Panel A of Figure 7, plots the predicted effects on relative local total employment and regional GDP growth across percentiles of cantons by initial GDP per capita over the period 1999-2008, the last intercensal period in our database. We find that the observed migration flows of retired seniors in France over that decade have led to a significant redistribution of economic activity from intially richer to poorer regions. Our findings indicate that mobile seniors have played a significant role in diminishing spatial disparities in economic activity over the past decades. The average predicted contribution to relative growth rates among cantons that are below the median GDP per capita as of 1999 was a 2% increase in local employment and a 1.5% increase in local GDP.

Panel B of Figure 7 presents the same counterfactuals, but now projected onto initial percentiles

[19] Breaking up foreign inflows by different groups of origin countries is work in progress.

of population density across cantons, going from more rural on the left to more urban on the right of the x-axes. The results are qualitatively very similar compared to the projection on intitial percentiles of GDP per capita. We find essentially the same results when computing the average contribution of the observed pensioner flows over this decade on relative employment growth and relative output growth among cantons below the median density in 1999 (2% and 1.5% repsectively).

What this simple quantification exercise suggests is that mobile pensioners have become a discernible force to slow the concentration of employment and production in space over recent decades.

7 Conclusion

The world is aging quickly and the fraction of retirees in both the total population and migration flows are expected to grow over the coming decades. At the same time, both local and national governments have been increasingly active in rolling out policy campaigns targeted at attracting mobile retirees to their jurisdictions. In this context, understanding the economic impact of mobile seniors on local economies has become a question of relevance for policy-making –perhaps especially so because the observed migration decisions of seniors are in the opposite direction of working-age migrants: toward more rural and initially poorer regions.

Two central questions that arise in this setting are (i) whether attracting mobile seniors or facilitating their migration can be a viable policy strategy to support local economic development among lagging regions, and (ii) whether the observed migration decisions of seniors have contributed to reducing or reinforcing the concentration of economic activity in space. In this paper, we set out to provide the first empirical evidence to inform these questions. To do so, we combine a unique collection of microdata from France with a new empirical strategy to estimate the local economic implications of senior immigration.

One of the main advantages of our approach relative to existing push- and pull-factor designs in the migration literature is that we can address the common concern that regions connected through migration may also be exposed bilaterally to origin/destination shocks through other economic linkages than migration. We hope this paper serves to draw attention to the local and aggregate implications of senior migration, a phenomenon that is only projected to grow in importance over the coming decades and across both advanced and emerging economies.

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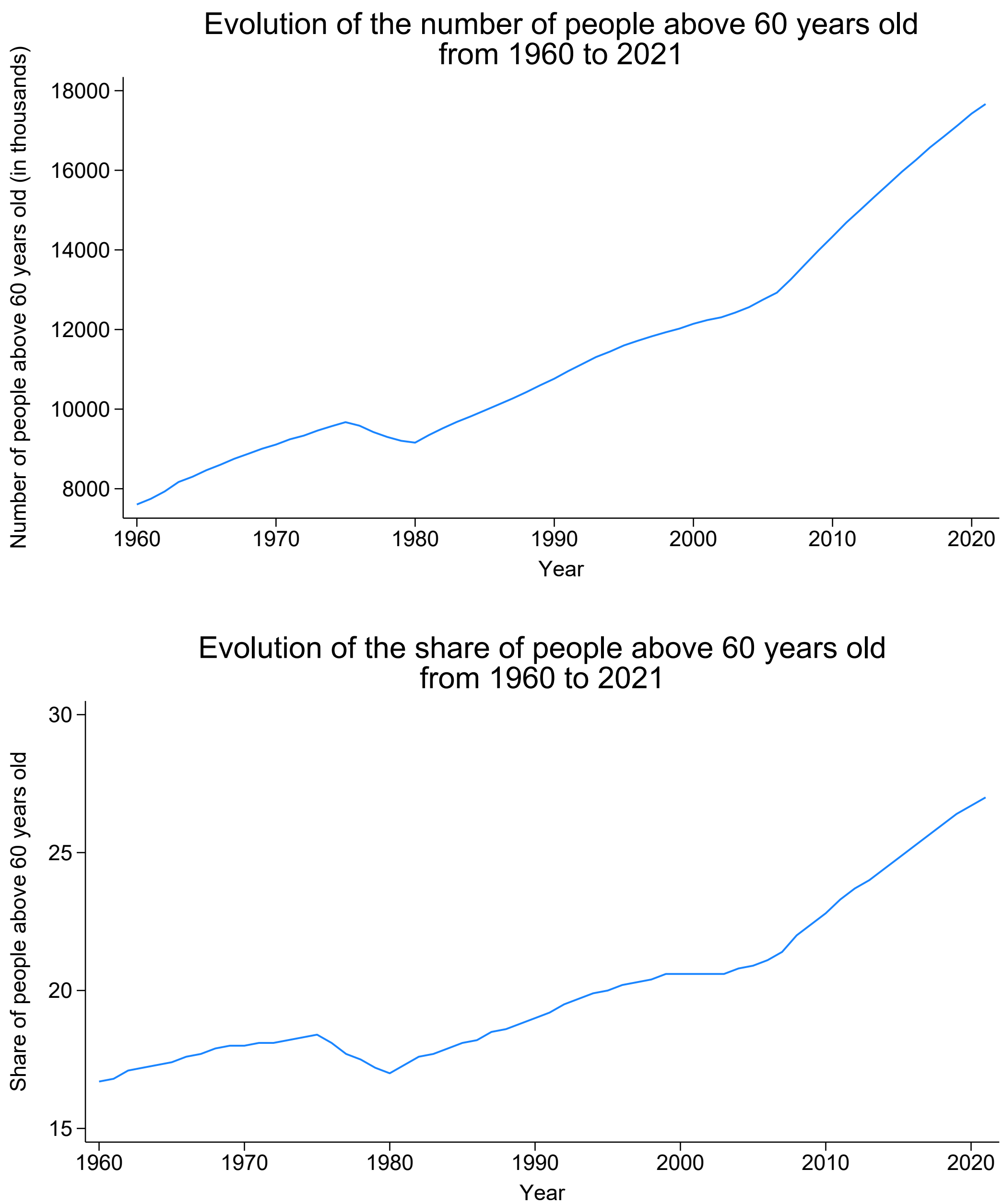
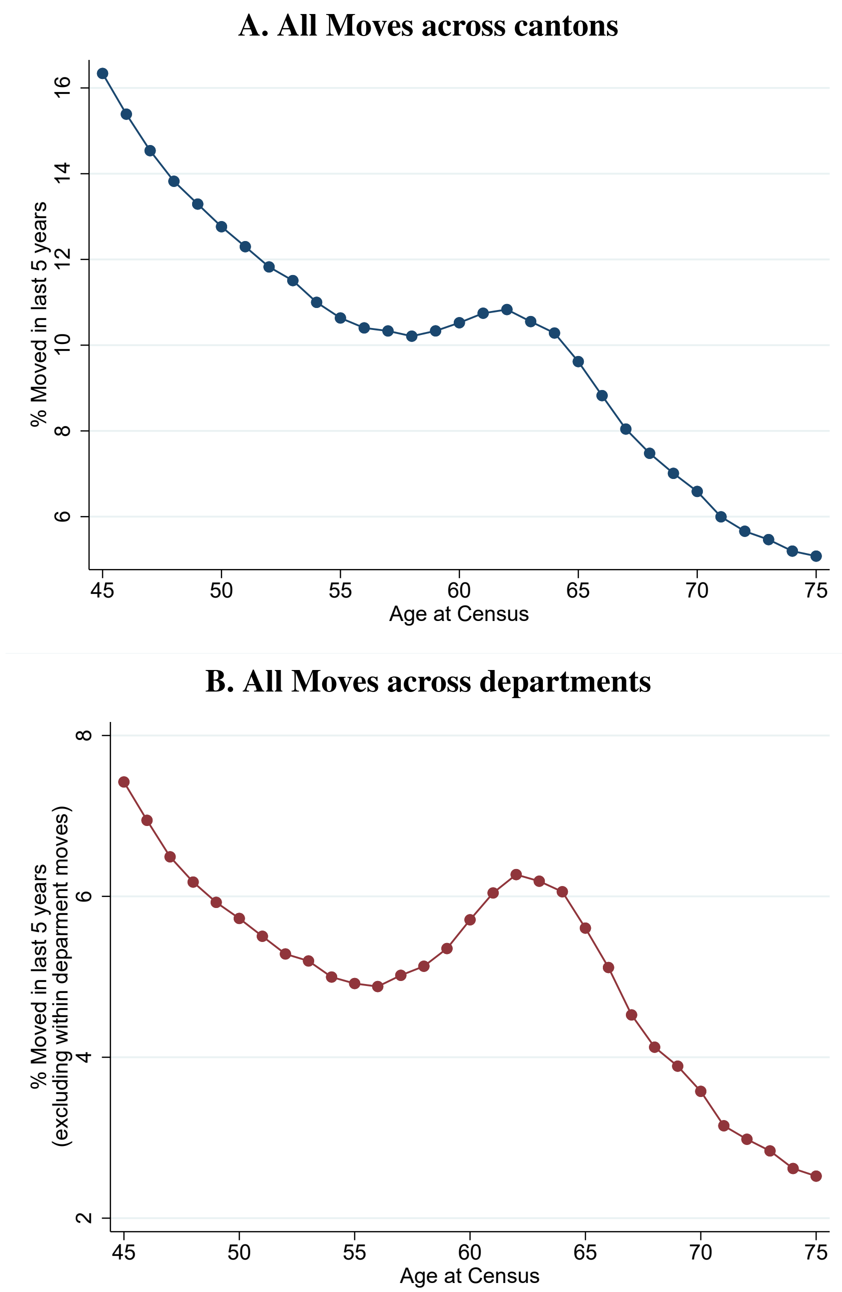
8 Figures and Tables

Figure 1: **Population aging in France**



Notes: This figure describes the evolution of the French population aged over 60 for the period 1960-2021. It is based on INSEE data. Panel A shows the total number of people over 60 living in mainland France from 1960 to 2021. Panel B shows the evolution of the share of the population over 60 living in mainland France for the period 1960-2021.

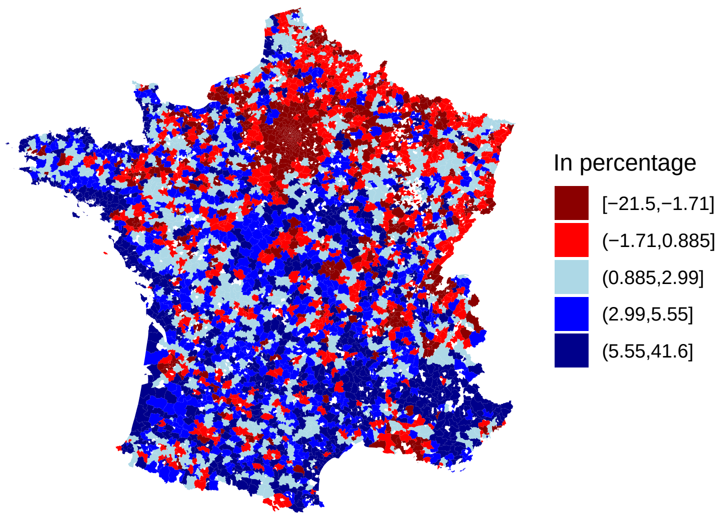
Figure 2: **Senior Migration around the time of retirement**



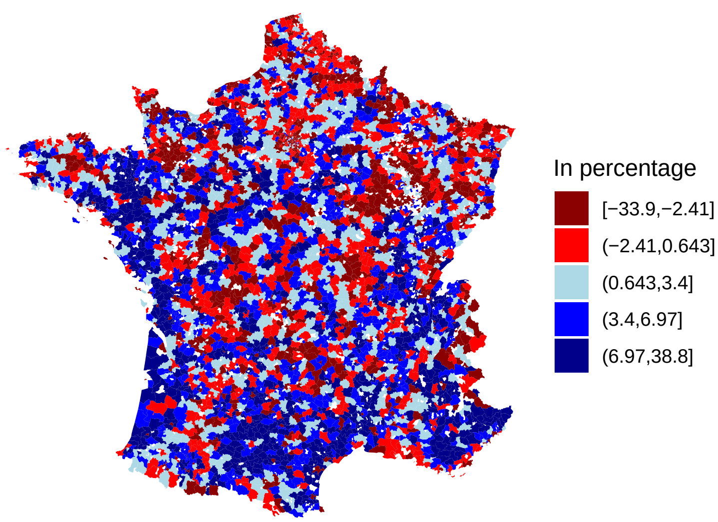
Notes: This figure shows migration rates by age from the population census in 2008. Panel A includes all moves across cantons (but not within), i.e. both moves between two cantons of different departments and moves between two cantons of the same department in the last 5 years. The percentage for each age was calculated as the ratio of the total number of moves in the last 5 years to the population of that age in 2008. Panel B presents the same statistics, except that this graph excludes within-department moves.

Figure 3: **Net migration flows in France**

A. Net flows of pensioners



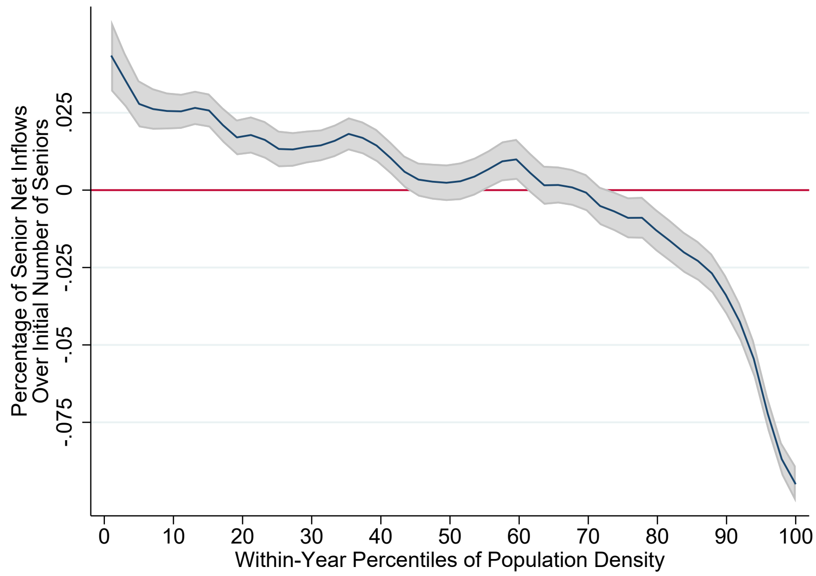
B. Net flows of working-age



Notes: This figure depicts the net migration flows in all French cantons in 2008. Panel A maps the net flows of pensioners (i.e. people aged 55 and over who are not working) over the initial population of pensioners in 1999. Panel B shows the same graph, but for the working age population. The statistic shown, calculated at the cantonal level, is the ratio of the difference between the inflows and outflows of the working-age population between 1999 and 2008 to the working-age population in 1999. All statistics have been multiplied by 100 to be interpreted as percentages.

Figure 4: **Seniors move to less dense and poorer regions**

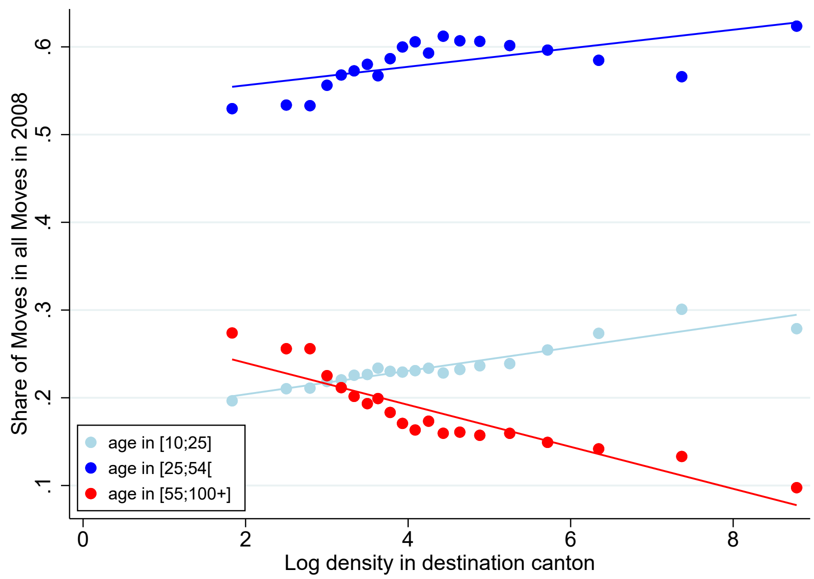
A. Net flows of pensioners by population density



B. Net flows of pensioners by GDP per capita

Notes: This figure plots net flows of pensioners as a function of percentile of initial regional density or GDP per capita. Panel A indicates the percentage of net inflows of pensioners 1999-2008 over the initial number of pensioners in 1999 for each percentile of population density at the canton level in 1999. The y-axis is the ratio of the total number of net inflows of seniors between 1999 and 2008 to the total number of seniors in 1999, multiplied by 100. The x-axis classifies the cantons according to their population density in 1999. Panel B shows the number of net flows of seniors between 1999 and 2008 over the number of seniors in 1999, multiplied by 100. The x-axis groups the cantons by GDP per capita percentile in 1999. Estimates are based on local polynomial regressions with 95% confidence intervals in shaded areas.

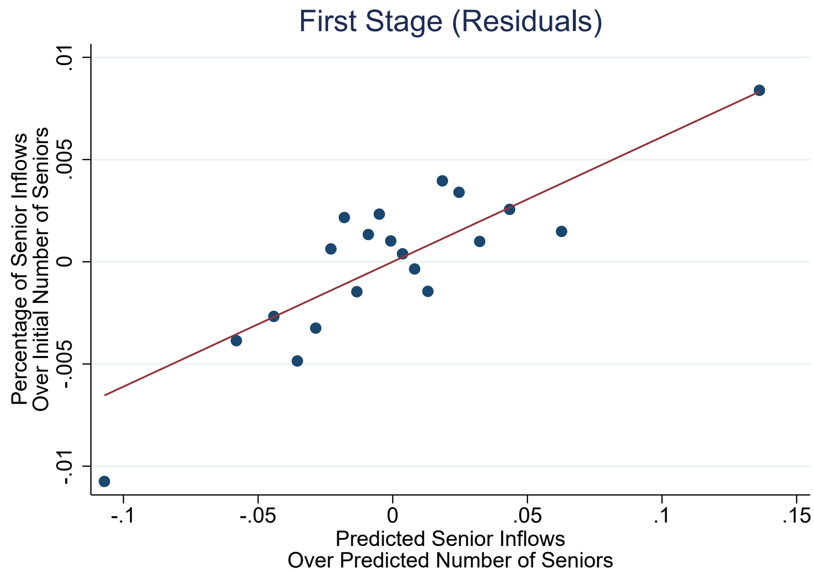
Figure 5: **Seniors move in opposite direction of working-age population**



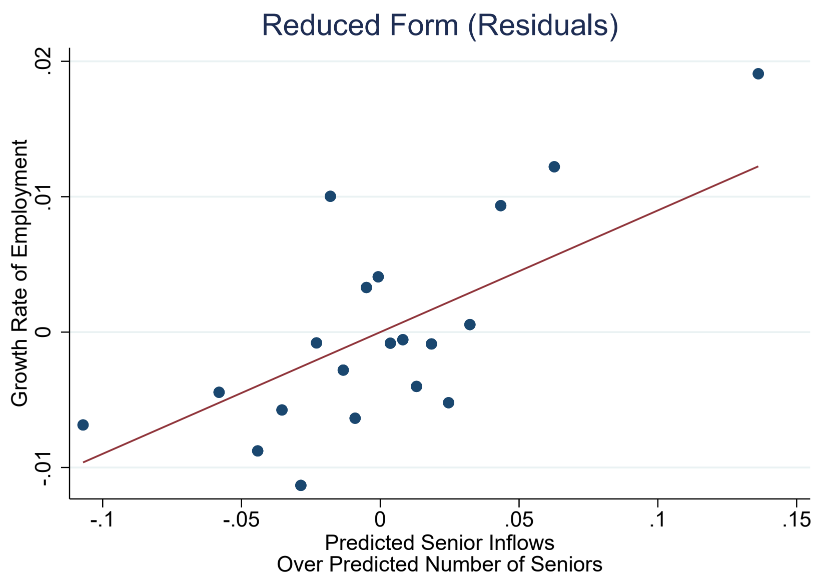
Notes: This graph displays the moves of three age categories by canton size. It calculates, for each canton, the share of moves in each of the three age categories among all moves in that destination canton in 2008.

Figure 6: **First-stage and reduced-form relationships**

A. 2SLS First stage

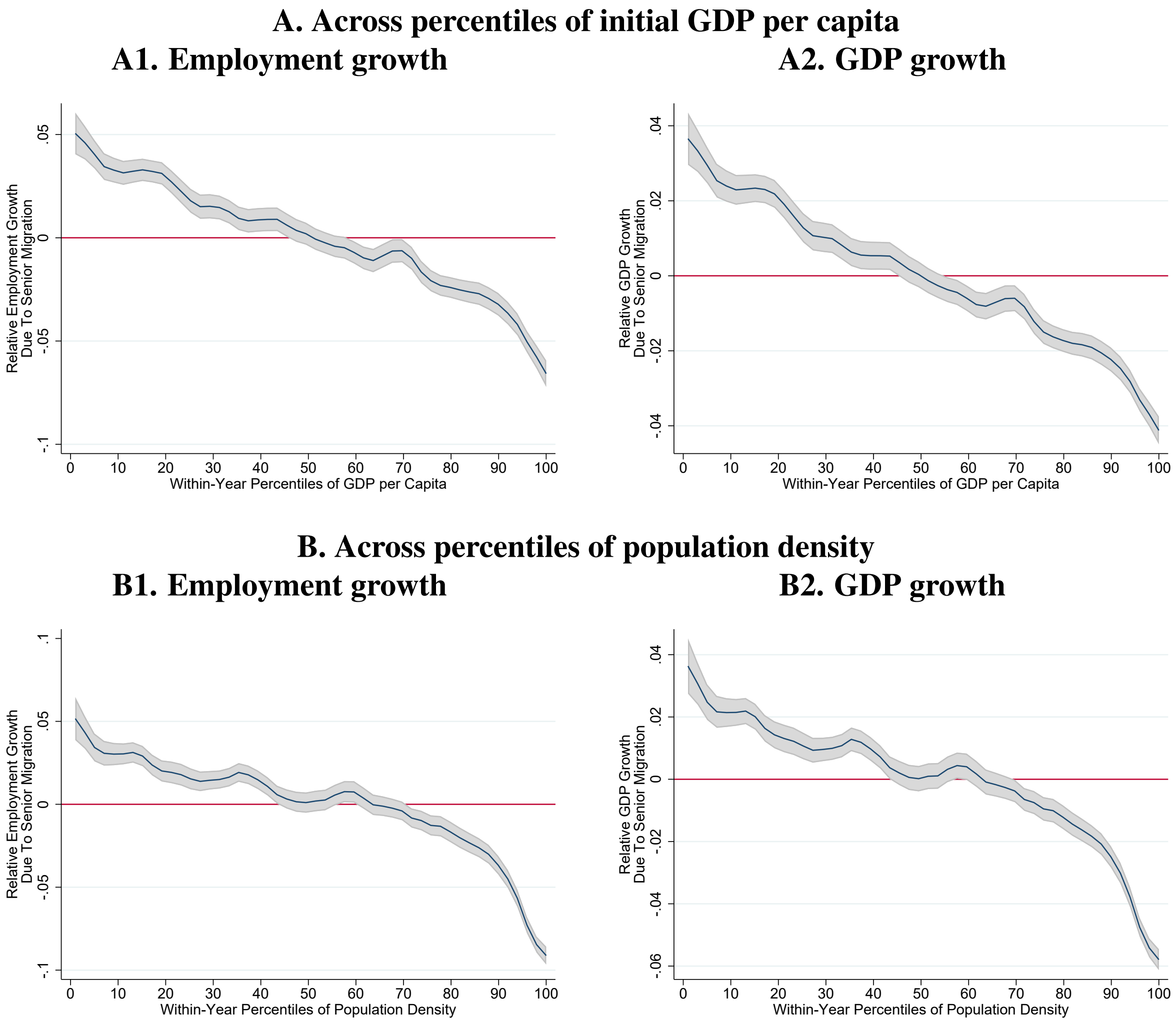


B. Reduced form



Notes: This figure presents binned scatter plots for the first-stage (Panel A) and the reduced-form (Panel B) regressions of our IV design. Both x and y-axes are residuals from regressions of the displayed variables on region-by-census round fixed effects and the full set of 'Ctrls' variables (including the sum of the exposure weights) discussed in Section 4. The sample includes 5 intercensal changes between 1968-2008 for a balanced number of 3402 cantons in France. The corresponding regression estimates are presented in Table 1 and Table 2. See Sections 4 and 5 for discussion.

Figure 7: **Implications of senior migration for relative employment and GDP**



Notes: The figure describes the implications of senior migration on relative employment and GDP growth across French cantons between 1999 and 2008. Estimates are based on observed net flows that we combine with the heterogeneous effects of net flows from in Table 8. The plotted functions are based on local polynomial regressions with 95% confidence intervals in shaded areas. See Section 6 for discussion.

Table 1: **First-stage regressions**

VARIABLES	(1) Inflows/Seniors_t-1 Sum Weights	(2) Inflows/Seniors_t-1 Sum Weights	(3) Inflows/Seniors_t-1 Ctrls
Pred Inflows/Pred Seniors_t-1	0.064***	0.039***	0.061***
	(0.006)	(0.007)	(0.012)
Sum of Weights	0.540***	0.578***	3.804***
	(0.031)	(0.041)	(0.812)
Pred G Seniors			0.107***
			(0.008)
Sum Outflow Shares			-8.775***
			(1.014)
Exposure to PopGrowth			1.266**
			(0.591)
Exposure to GDPGrowth			0.091
			(0.096)
Exposure to LogPop_t-1			-0.263***
			(0.069)
Exposure to LogGDP_t-1			0.009
			(0.058)
Exposure to Ile-de-France			0.421***
			(0.076)
Observations	17,010	17,010	17,010
R-squared	0.448	0.497	0.521
Year FE	✓	.	.
Region-Year FE	.	✓	✓
N cantons	3402	3402	3402

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: This table summarizes the first stage relationship described by Equation 2. Columns (2) and (3) include Census regions-year fixed effects. The last column includes controls for exposure-weighted economic and population growth and initia levels across all sending regions, as well as predicted local population aging and the sum of past outflow shares in the destination region. The sample includes 5 intercensal changes between 1968-2008 for a balanced number of 3402 cantons in France. Robust standard errors clustered at the level of cantons are in parentheses. See Sections 4 and 5 for discussion.

Table 2: **Implications of senior migration for local employment and population**

VARIABLES	(1) G Emp OLS No Ctrls	(2) G Emp IV Sum Weights	(3) G Emp IV Ctrls	(4) G Pop OLS No Ctrls	(5) G Pop IV Sum Weights	(6) G Pop IV Ctrls
Inflows/Seniors_t-1	1.169***	1.051***	1.472***	1.081***	0.899***	1.081***
	(0.110)	(0.363)	(0.430)	(0.112)	(0.310)	(0.353)
Observations	17,010	17,010	17,010	17,010	17,010	17,010
R-squared	0.311			0.286		
Region-Year FE	✓	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3402	3402
F-stat		27.80	24.83		27.80	24.83

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: G Emp and G GDP indicate intercensal growth rates of employment and GDP across cantons, respectively. 'No Ctrls' indicates no additional independent variables beyond those displayed. 'Sum Weights' indicates the inclusion of the canton-level sum of exposure weights. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. The sample includes 5 intercensal changes between 1968-2008 for a balanced number of 3402 cantons in France. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 3: **Implications of senior migration for local population structure**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	G Pop WA	G Pop WA	G Seniors	G Seniors	Netflows/Seniors_t-1	Netflows/Seniors_t-1	D Seniors/Pop_t-1	D Seniors/Pop_t-1	D (Seniors/Pop)	D (Seniors/Pop)
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
VARIABLES	No Ctrls	Ctrls	No Ctrls	Ctrls	No Ctrls	Ctrls	No Ctrls	Ctrls	No Ctrls	Ctrls
Inflows/Seniors_t-1	1.145***	0.720*	0.994***	1.142***	0.849***	1.052***	0.175***	0.287***	-0.031***	0.018
	(0.125)	(0.406)	(0.160)	(0.340)	(0.016)	(0.112)	(0.018)	(0.082)	(0.003)	(0.054)
Observations	17,010	17,010	17,010	17,010	17,010	17,010	17,010	17,010	17,010	17,010
R-squared	0.278		0.233		0.742		0.320		0.204	
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3402	3402	3402	3402	3402	3402
F-stat		24.83		24.83		24.83		24.83		24.83

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate and 'D' indicates changes (in percentage points given the dependent variables here). Pop WA stands for working-age population (ages 15-55). 'No Ctrls' indicates no additional independent variables beyond those displayed. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. The sample includes 5 intercensal changes between 1968-2008 for a balanced number of 3402 cantons in France. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 4: **Implications of senior migration for local economy**

VARIABLES	(1) G House Prices IV Ctrls	(2) G GDP IV Ctrls	(3) G GDPpc IV Ctrls	(4) G Avg Income IV Ctrls	(5) G LandTax Rev IV Ctrls	(6) G PropTax Rev IV Ctrls	(7) D Emp Manu Share IV Ctrls
Inflows/Seniors_t-1	1.013*	1.026***	0.766***	1.021*	2.772***	1.295*	-0.599***
	(0.555)	(0.297)	(0.275)	(0.525)	(1.037)	(0.746)	(0.170)
Observations	10,203	17,008	16,904	10,144	10,095	10,095	16,930
Region-Year FE	✓	✓	✓	✓	✓	✓	✓
N cantons	3401	3402	3382	3382	3365	3365	3402
F-stat	11.88	24.83	24.58	11.99	12.24	12.24	24.63

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate and 'D' indicates changes (in percentage points given the dependent variables here). 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. Differences in the number of observations are due to data availability for different outcomes. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 5: **Implications of senior migration: net inflows instead of gross inflows**

VARIABLES	(1) G Emp IV Ctrls	(2) G Pop IV Ctrls	(3) G Pop WA IV Ctrls	(4) G GDP IV Ctrls	(5) G GDPpc IV Ctrls
Netflows/Seniors_t-1	1.399***	1.028***	0.685*	0.975***	0.712***
	(0.414)	(0.342)	(0.391)	(0.285)	(0.257)
Observations	17,010	17,010	17,010	17,008	16,904
Region-Year FE	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3382
F-stat	25.62	25.62	25.62	25.63	26.32

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate. Net flows is the difference between inflows and outflows of pensioners. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. Differences in the number of observations are due to data availability for different outcomes. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 6: **Implications of senior migration: falsification tests**

VARIABLES	(1) G Emp Red Form Ctrls	(2) Lagged G Emp Red Form Ctrls	(3) G Pop Red Form Ctrls	(4) Lagged G Pop Red Form Ctrls	(5) G Pop WA Red Form Ctrls	(6) Lagged G Pop WA Red Form Ctrls	(7) G GDP Red Form Ctrls	(8) Lagged G GDP Red Form Ctrls	(9) G GDPpc Red Form Ctrls	(10) Lagged G GDPpc Red Form Ctrls
Pred Inflows/Pred Seniors_t-1	0.109***	-0.055	0.081***	-0.090	0.065**	-0.094	0.069***	0.033	0.058***	-0.009
	(0.027)	(0.081)	(0.023)	(0.082)	(0.027)	(0.093)	(0.020)	(0.020)	(0.017)	(0.013)
Observations	13,608	13,608	13,608	13,608	13,608	13,608	13,606	13,606	13,522	13,522
Region-Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3402	3402	3402	3402	3382	3382

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate (e.g., 1990-1999) and 'Lagged G' indicates the lagged intercensal growth rate (e.g., 1982-1990). The independent variable is the SSIV defined in euqation (1). 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. The sample includes 4 intercensal changes between 1975-2008 for a balanced number of 3402 cantons in France. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 7: **Heterogeneity across percentiles of initial GDP per capita**

VARIABLES	(1) G Emp IV Ctrls	(2) G Pop IV Ctrls	(3) G Pop WA IV Ctrls	(4) G GDP IV Ctrls	(5) G GDPpc IV Ctrls
Inflows/Seniors_t-1	1.315***	0.992**	0.632	0.959***	0.703**
	(0.472)	(0.402)	(0.475)	(0.323)	(0.315)
InflowsXPctileGDPcap	-0.003**	-0.003**	-0.004***	-0.004***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
PctileGDPcap	0.002***	0.002***	0.002***	0.002***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	17,010	17,010	17,010	17,008	16,904
Region-Year FE	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3382
F-stat	10.27	10.27	10.27	10.26	10.58

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. PCtileGDPcap are percentiles (1-100) of canton-level GDP per capita at the beginning of each intercensal change. The sample includes 5 intercensal changes between 1968-2008. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 8: **Heterogeneity: using net inflows instead of gross inflows**

VARIABLES	(1) G Emp IV Ctrls	(2) G Pop IV Ctrls	(3) G Pop WA IV Ctrls	(4) G GDP IV Ctrls	(5) G GDPpc IV Ctrls
Netflows/Seniors_t-1	1.255***	0.943**	0.579	0.900***	0.696**
	(0.466)	(0.398)	(0.467)	(0.315)	(0.318)
NetflowsXPctileGDPcap	-0.004***	-0.003***	-0.004***	-0.004***	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
PctileGDPcap	0.002***	0.001***	0.002***	0.002***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	17,010	17,010	17,010	17,008	16,904
Region-Year FE	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3382
F-stat	10.63	10.63	10.63	10.63	11.07

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate. Net flows is the difference between inflows and outflows of pensioners. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. PCtileGDPcap are percentiles (1-100) of canton-level GDP per capita at the beginning of each intercensal change. The sample includes 5 intercensal changes between 1968-2008. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.

Table 9: **Heterogeneity by origin of the inflow**

VARIABLES	(1) G Emp OLS No Ctrls	(2) G Emp IV Ctrls	(3) G Emp OLS No Ctrls	(4) G Emp IV Ctrls	(5) G Emp OLS No Ctrls	(6) G Emp IV Ctrls
Dom Inflows/Seniors_t-1	1.212***	1.648***			1.209***	1.437***
	(0.115)	(0.494)			(0.117)	(0.521)
Int Inflows/Seniors_t-1			1.295***	0.125	0.151	0.231
			(0.214)	(0.544)	(0.192)	(0.396)
Observations	17,010	17,010	17,010	17,010	17,010	17,010
R-squared	0.314		0.139		0.314	
Region-Year FE	✓	✓	✓	✓	✓	✓
N cantons	3402	3402	3402	3402	3402	3402
F-stat		20.70		280.8		8.882

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: 'G' indicates the intercensal growth rate. 'Ctrls' indicates the inclusion of the full vector of controls, as displayed in Table 1. Dom Inflows refers to pensioners arriving from other regions in France. Int Inflows refers to pensioners arriving from regions outside of France. The sample includes 5 intercensal changes between 1968-2008. Robust standard errors clustered at the level of cantons in parentheses. See Section 5 for discussion.