# Internal Migration and Longevity

Jiaxin Shi[1] and Jason Fletcher
University of Wisconsin-Madison

## Abstract

Most research on migrant health and longevity focuses on international migrants, leaving a gap in our understanding of the differences between internal migrants and nonmigrants. Using 15 million Social Security Administration death records for cohorts born between 1910 and 1930, we examine the longevity of internal migrants in the United States. Our findings reveal that, migrants live longer than nonmigrants in place of destination across most US states and counties. Migrants also live longer than stayers in their place of birth, but the migrant advantage is less when compared to origin stayers than when compared to destination stayers. On average, migrants tend to move to healthier places where the local nonmigrant population has higher longevity than in their origin places, but the difference is small in magnitude. We also evidence of place effects from both the origin and destination, but compared to selection and mobility effects, place effects are less important in explaining migrant advantage in longevity. Additionally, cross-state movers exhibit greater longevity than those who move within the same state across county lines, and relatedly, migrants who moved longer distance have longer lives. Lastly, we find that, without internal migration, the geographic disparities in longevity would have been smaller than commonly observed.

## Introduction

In many countries, migrants tend to be healthier and have lower mortality rates than nonmigrants. This finding has led to a lot of research on migrant health in the past decades. Migration and population health are related to each other in complex ways. First, migrants may be intrinsically different from nonmigrants; for instance, healthier individuals are more capable to move, or they have some traits that make them healthier and more mobile at the same time (Furuya et al., 2023; Palloni and Morenoff, 2006). Second, the change in the environment between origin and destination can have a direct effect on migrant health. Third, the process of moving itself can impact one's health due to costs such as financial costs for moving and loss of social network. Fourth, migrants in the destination can also influence local nonmigrants' health.

Thus far, the vast majority of research on migrant longevity has focused on international migrants. Despite the fact that internal migration has replaced fertility and mortality to become the most important feature of contemporary population change (Bernard, 2017), its connection with mortality is unclear. In this study, we provide the first assessment of internal migration and longevity in the United States. Unlike previous research that has often used a period perspective (Fletcher et al., 2023), we study migration longevity from a cohort perspective. We have five main aims. First, we provide a descriptive account of the extent of internal migration from the end-of-life perspective. Second, we examine whether there is a migrant advantage in longevity and the geographic heterogeneity. Third, we investigate whether migrants move from a less healthy place to a healthier place. Fourth, we indirectly examine the effects of place on migrant longevity by associating their longevity with the average longevity of stayers and movers in origin and destination locations. Fifth, we consider the implications of internal migration for understanding geographic disparities in mortality. In this extended abstract, we present findings related to the second to fourth aims.

[1] Address correspondence to Jiaxin Shi, Email: jiaxin.shi@wisc.edu

## Data and Methods

We use the Berkeley Unified Numident Mortality Database (BUNMD), a harmonized version of the death records from the Social Security Administration (Breen and Goldstein, 2022), together with the BUNMD Supplemental Geography File for information on birth and death counties (Goldstein et al., 2023). The BUNMD contains birth year, age at death, sex, race, and father's and mother's first and last names. We infer siblings by exact matching based on father's and mother's first and last names. The BUNMD covers deaths between 1988 and 2005, and has a coverage rate of over 95% for most of the ages above 65 (Breen and Goldstein, 2022). We select US-born individuals who were born between 1910 and 1930. The choice of the birth cohorts was made to make sure there are enough deaths above age 65. Birth year fixed-effects are included in linear models predicting age at death (in months) to account for differences in death windows.

## Preliminary findings

Figure 1 shows that on average migrants live longer than stayers in both in destination counties and birth counties, with a greater advantage in the former. We also find large differences across counties.

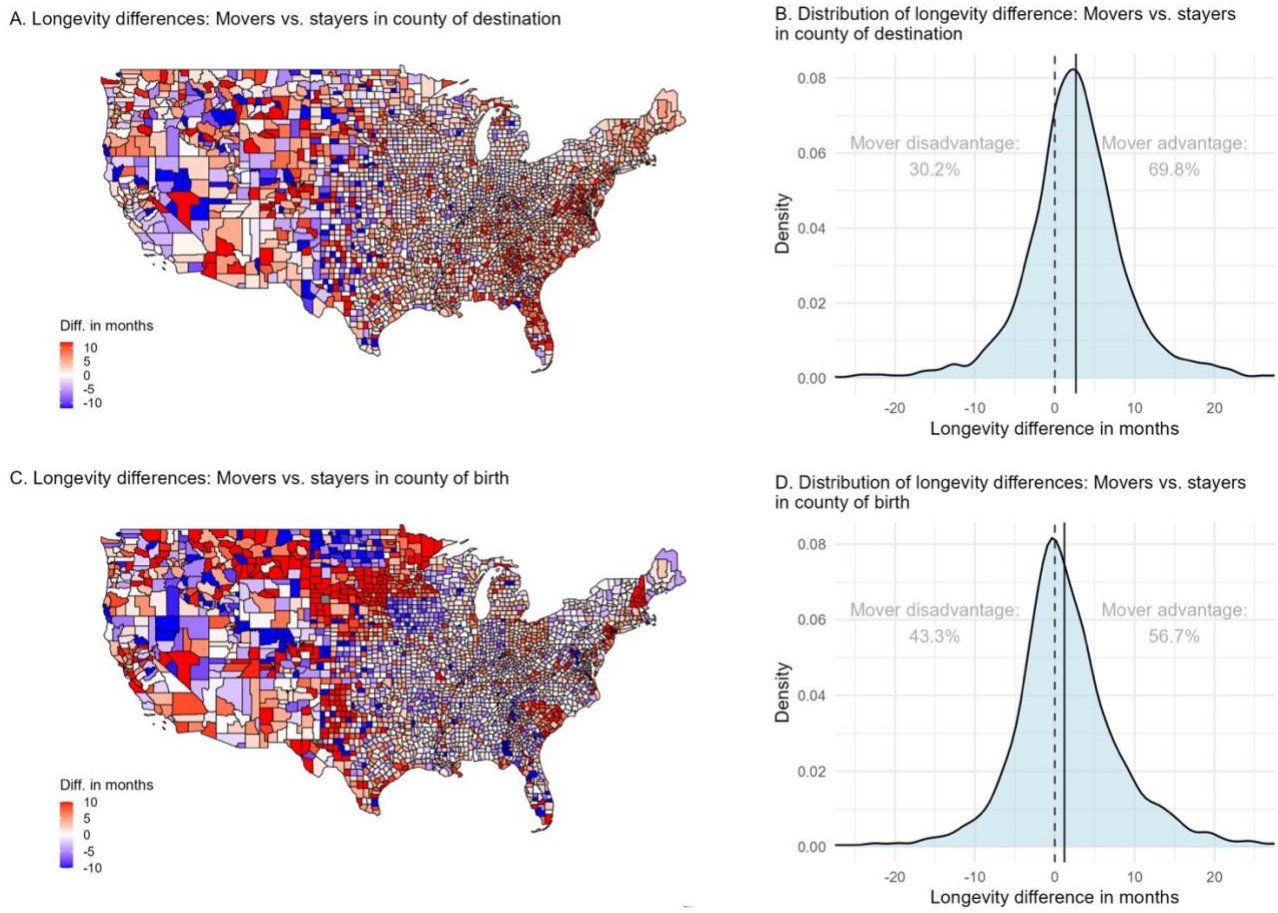



**Figure 1**: Longevity differences between movers and stayers in county of birth and county of destination, cohorts born 1910~1930, weighted by sex and birth year, and county population (county population weights used only for the distributions in Panels B and D). The solid vertical lines in Panels B and D show the means of the distributions.

Panel A in Table 1 shows that movers live longer than stayers, which cannot be explained by place effects and effects related to family level influences as indicated by sibling fixed effects models. State movers have a larger advantage than county movers. Panel B also suggests a larger migrant advantage associated with longer moving distance

**Table 1**. Longevity of migrants vs. stayers, 1910~1930 cohorts.

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 |
| **A. Using mover dummies** | | | | | | | | |
| Ref. County stayers | | | | | | | | |
| County movers | 2.124*** | 2.922*** | 1.931*** | 3.059*** | 2.589*** | 3.324*** | 2.198*** | 3.669*** |
| | (0.063) | (0.064) | (0.069) | (0.274) | (0.060) | (0.061) | (0.066) | (0.241) |
| State movers | 3.227*** | 3.759*** | 3.405*** | 4.334*** | 2.788*** | 4.040*** | 3.524*** | 5.326*** |
| | (0.057) | (0.066) | (0.069) | (0.297) | (0.055) | (0.063) | (0.067) | (0.262) |
| Birth state FE | | Yes | | | | Yes | | |
| Death state FE | | Yes | | | | Yes | | |
| Birth county FE | | | Yes | Yes | | | Yes | Yes |
| Death county FE | | | Yes | Yes | | | Yes | Yes |
| Sibling FE | | | | Yes | | | | Yes |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 7,226,904 | 7,226,904 | 7,226,904 | 980,293 | 7,481,215 | 7,481,215 | 7,481,215 | 1,215,989 |
| R-squared | 0.399 | 0.403 | 0.408 | 0.694 | 0.452 | 0.456 | 0.460 | 0.714 |
| **B. Using moving distance (in 100 miles)** | | | | | | | | |
| Distance | 0.726*** | 0.639*** | 0.641*** | 0.722*** | 0.531*** | 0.624*** | 0.617*** | 0.862*** |
| | (0.012) | (0.015) | (0.016) | (0.068) | (0.012) | (0.015) | (0.015) | (0.062) |
| Distance squared | -0.033*** | -0.021*** | -0.021*** | -0.022*** | -0.029*** | -0.020*** | -0.019*** | -0.025*** |
| | (0.001) | (0.001) | (0.001) | (0.003) | (0.001) | (0.001) | (0.001) | (0.003) |
| Birth state FE | | Yes | | | | Yes | | |
| Death state FE | | Yes | | | | Yes | | |
| Birth county FE | | | Yes | Yes | | | Yes | Yes |
| Death county FE | | | Yes | Yes | | | Yes | Yes |
| Sibling FE | | | | Yes | | | | Yes |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 7,193,128 | 7,193,128 | 7,193,128 | 976,139 | 7,451,812 | 7,451,812 | 7,451,812 | 1,211,877 |
| R-squared | 0.399 | 0.403 | 0.408 | 0.694 | 0.452 | 0.456 | 0.460 | 0.715 |

*Notes*: Panel B excludes Alaska and Hawaii.

Are migrants moving to healthier places? We measure the health of places by the average longevity of stayers. Positive change in stayer longevity moving from one place to another indicates moving to a healthier place. Figure 4 suggests that almost equal number of individuals move to healthier and less healthy places. At the county level, the average change is positive for both within-state county movers and interstate movers. For interstate movers, on average they move to a less healthy state but healthier county. The magnitude of these changes is rather small.

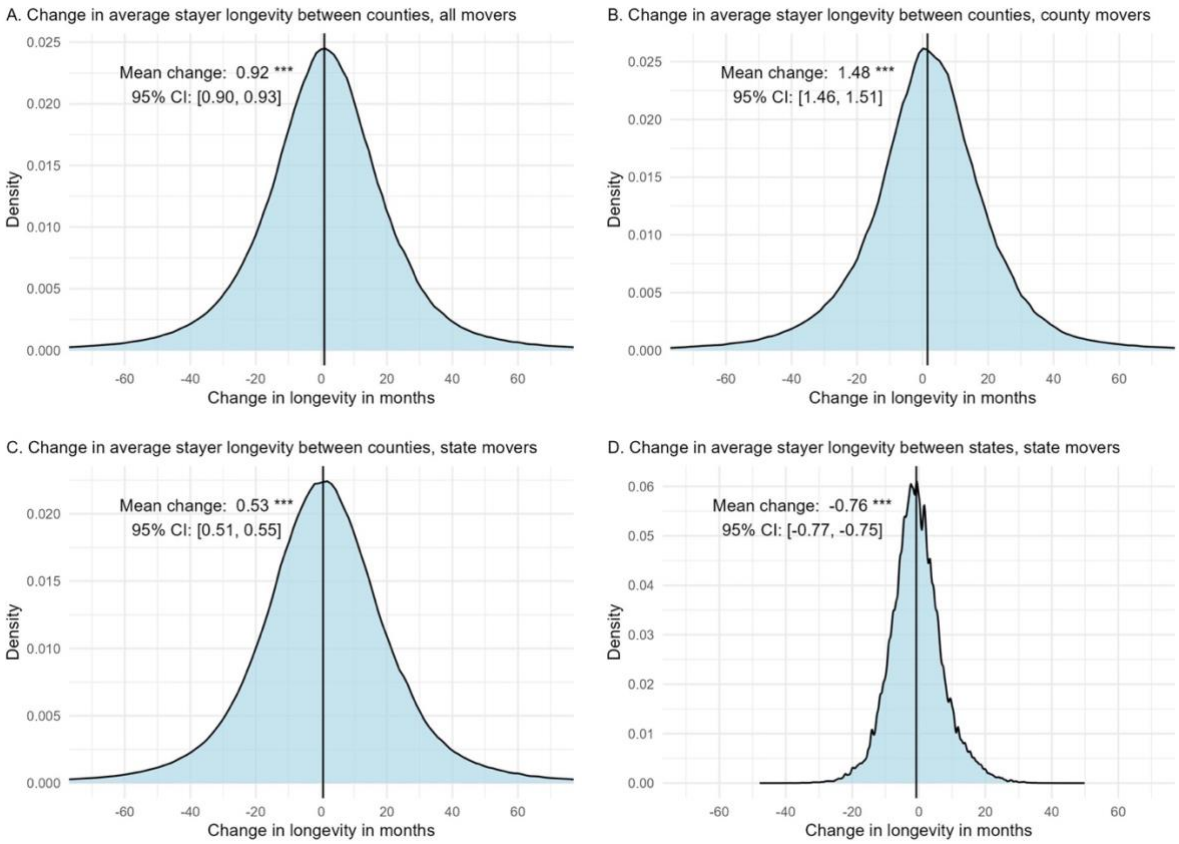



**Figure 4**: Change in average stayer longevity between origin and destination locations, cohorts born 1910~1930. Panels A~C compare stayers in counties of birth and destination. Panel B compares stayers in states of birth and destination for cross-state movers.

Table 2 shows results from models predicting mover longevity using average longevity of stayers in birth county and death county, movers from birth county, and movers to death county. We find overall positive effects of stayer longevity in birth and death places, indicating early life place effects as well as destination effects, with the latter being larger than the former. The longevity of out-migrants from birth county and in-migrants from death county also predicts mover lifespan. This suggests greater similarity in longevity between focal migrant and other migrants. This similarity indicates not only place effects but also potential selection effects related to in and out migration decisions. The results are robust when using sibling fixed effects on a subset of the sample in which at least one sibling can be found in the sample.

**Table 2**. Longevity differences between county and state movers, 1920 cohort.

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| **A. All movers** | | | | | | |
| Birth county stayers | 0.027*** | 0.001 | -0.005 | 0.037*** | 0.013*** | 0.007 |
| | (0.002) | (0.002) | (0.008) | (0.002) | (0.002) | (0.007) |
| Birth county out-migrants | | 0.137*** | -0.017 | | 0.084*** | -0.002 |
| | | (0.004) | (0.016) | | (0.004) | (0.015) |
| Death county stayers | 0.168*** | 0.069*** | 0.071*** | 0.160*** | 0.068*** | 0.049*** |
| | (0.002) | (0.002) | (0.008) | (0.002) | (0.002) | (0.007) |
| Death county in-migrants | | 0.528*** | 0.412*** | | 0.538*** | 0.472*** |
| | | (0.003) | (0.013) | | (0.003) | (0.012) |
| Observations | 4,953,984 | 4,953,984 | 517,417 | 5,184,596 | 5,184,596 | 661,150 |
| R-squared | 0.395 | 0.399 | 0.690 | 0.451 | 0.455 | 0.712 |
| B. Within-state cross-county movers | | | | | | |
| Birth county stayers | 0.086*** | 0.050*** | -0.004 | 0.087*** | 0.053*** | 0.009 |
| | (0.003) | (0.003) | (0.015) | (0.003) | (0.003) | (0.012) |
| Birth county out-migrants | | 0.120*** | -0.003 | | 0.113*** | -0.026 |
| | | (0.004) | (0.020) | | (0.004) | (0.018) |
| Death county stayers | 0.219*** | 0.145*** | 0.083** | 0.199*** | 0.128*** | 0.085*** |
| | (0.003) | (0.003) | (0.017) | (0.003) | (0.003) | (0.014) |
| Death county in-migrants | | 0.254*** | 0.089** | | 0.279*** | 0.191*** |
| | | (0.004) | (0.020) | | (0.004) | (0.018) |
| Observations | 1,973,195 | 1,973,195 | 210,242 | 2,154,772 | 2,154,772 | 280,533 |
| R-squared | 0.396 | 0.398 | 0.804 | 0.454 | 0.456 | 0.810 |
| C. Cross-state movers, county-level predictors | | | | | | |
| Birth county stayers | -0.020*** | -0.017*** | -0.014 | -0.004 | -0.004 | 0.005 |
| | (0.002) | (0.002) | (0.012) | (0.002) | (0.002) | (0.010) |
| Birth county out-migrants | | 0.113*** | 0.004 | | 0.061*** | -0.004 |
| | | (0.004) | (0.019) | | (0.004) | (0.017) |
| Death county stayers | 0.137*** | 0.074*** | 0.076*** | 0.134*** | 0.076*** | 0.053*** |
| | (0.002) | (0.002) | (0.011) | (0.002) | (0.002) | (0.010) |
| Death county in-migrants | | 0.421*** | 0.342*** | | 0.410*** | 0.339*** |
| | | (0.003) | (0.016) | | (0.003) | (0.014) |
| Observations | 2,980,789 | 2,980,789 | 307,175 | 3,029,824 | 3,029,824 | 380,617 |
| R-squared | 0.395 | 0.399 | 0.765 | 0.450 | 0.453 | 0.782 |
| D. Cross-state movers, state-level predictors | | | | | | |
| Birth state stayers | 0.083*** | 0.031*** | -0.044 | 0.030*** | 0.029*** | 0.091† |
| | (0.007) | (0.007) | (0.060) | (0.007) | (0.007) | (0.054) |
| Birth state out-migrants | | 0.562*** | 0.044 | | 0.445*** | 0.139 |
| | | (0.009) | (0.094) | | (0.012) | (0.104) |
| Death state stayers | 0.560*** | 0.051*** | 0.106† | 0.886*** | 0.181*** | 0.232** |
| | (0.007) | (0.008) | (0.049) | (0.008) | (0.011) | (0.058) |
| Death state in-migrants | | 0.839*** | 0.802*** | | 0.797*** | 0.737*** |
| | | (0.007) | (0.043) | | (0.010) | (0.051) |
| Observations | 2,980,789 | 2,980,789 | 307,175 | 3,029,824 | 3,029,824 | 380,617 |
| R-squared | 0.395 | 0.399 | 0.765 | 0.451 | 0.453 | 0.783 |
| Sibling FE | | | Yes | | | Yes |
| Birth year FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Note*: All models control for race.

## Summary and outlook

The findings presented above confirms with an overall migrant advantage in longevity in the context of internal migration. However, we also find large differences across place, with some places having a migrant disadvantage in longevity. Although the average migrant moves to a healthier place, but the population-level change is small in magnitude, and only slightly more people move to healthier places as compared to people who move to less healthy place. We find evidence for place effects, in particular, effects of place of destination. However, these effects cannot fully explain migrant-nonmigrant differences in longevity, and the mobility effect combined with selection mechanisms play a large role in explaining migrant advantage.

As a next step, we will examine heterogeneity based on race and place of birth and death. We will further include place-based measures such as GDP per capita to further explain the place effects. Lastly, we will use other mortality datasets from the CenSoc project (Goldstein et al., 2023), which can be linked the 1940 full-count census. These datasets are smaller in the size but linkage to the censuses will allow us to adjust for a large set of confounders including socioeconomic status. We plan to present these additional results at the NBER conference.

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