Segregation in Place: Aging, Age-Dependent Mobility, and Long-Term Racial Succession

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Abstract

Conventional studies focus on moving patterns to explain residential segregation. I argue that births and deaths substantially influence contemporary patterns of racial segregation though the influence of both has not been studied. Evidence suggests that integration largely comes about as Whites age in place as younger Blacks and Latinos move into neighborhoods around them. The result is age- and race-stratified neighborhoods that makes deaths more likely for Whites and births more likely for minorities. As a result, the proper way to estimate the influence of residential mobility on segregation compares segregation now to segregation that would have existed without any moves. To estimate how moves affect residential segregation, I simulate populations based on age, race, and gender specific mortality rates and age and race specific fertility rates to predict levels of segregation based only on births and deaths and attribute the remaining change to residential mobility. I address policy concerns related to this process including school segregation, racial inequality, and future prospects for long-term integration.

Keywords. Racial segregation; racial integration; residential mobility; fertility; mortality

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The long history of sociological research on racial residential segregation has almost exclusively thought of moving as the primary force that creates segregation. Park ([1925]1984) wrote about invasion/succession, Duncan (1957) about White flight, and Massey (1993) about discrimination that prevented Blacks from moving. The history of racial segregation can be explained, then, as the history of movements by racial groups.

We make the case that moves no longer exert such a strong direct influence on patterns of racial segregation. Contemporary patterns of moves need to consider the two other components of population change. Therefore, we disaggregate changes in racial segregation into the components of population change and estimate what neighborhood and metropolitan characteristics relate to migration based racial change compared to fertility or mortality based racial change.

BACKGROUND: STYLIZED NEIGHBORHOOD CHANGE

It makes intuitive sense to explain neighborhood change through moves of residents. Moving causes the most apparent and most rapid change to a neighborhood’s composition. And if many moves happen over a short period of time, they will have a profound impact on the population change in a neighborhood. White flight offers the quintessential form of this rapid migration based change. White residents fearful of Black neighbors moved out en masse, changing the composition of neighborhoods over the span of a few years.

As White’s racial attitudes thawed and fewer all-White enclaves existed to which they could flee, many more White residents remained in their neighborhoods as racially diverse neighbors moved in around them. Whites, it seems, accept racially diverse neighborhoods as long as the diversity comes to them. When life events lead Whites to move, however, they search in neighborhoods that are predominantly White (Krysan and Bader, 2007, Lewis et al., 2011). In other words, when Whites leave a neighborhood to take a new job or find more room for an expanding family, they do not aspire to live in neighborhoods as diverse as those that they left.

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Time marches on for the White residents who do stay in the neighborhood. They end up aging in place in their neighborhood. Every year they live in the neighborhood, their chances of disease and death increase. Eventually none will be able to outrun their ultimate fate and they end up passing away. The loss of the White resident to death affects the composition of the neighborhood just as much as the loss of a resident to a move.

As White residents live the end of their lives in the neighborhood, minority residents tend to start new lives there. Minority household fill the vacancies left by Whites who leave, whether they left by moving or dying. Peak rates of mobility and fertility tend to collide at the same point in the life course. Minorities tend to find integrated neighborhoods particularly attractive (Zubrinsky and Bobo, 1996, Charles, 2003), and move to the neighborhood and start their own families. Just as White deaths change the composition of the neighborhood, so do minority births. A baby’s entry into its family also marks its entry into the neighborhood. The neighborhood’s newest resident just increased the minority representation in the neighborhood. That baby’s younger siblings will do the same when they are born years down the line as well.

Even without a single move into or out of the neighborhood, this neighborhood’s racial composition will change. It might initially become more integrated as White deaths lower the White majority and minority births increase the representation of minority groups. But the demographic composition of the neighborhood foretells its future segregation. More Whites pass on from the mortal world and more minorities enter. This process gradually proceeds until the the neighborhood succeeds from being majority White to majority non-White.

In this neighborhood, racial transition would be the eventual outcome even if no one moved. It would, therefore, be incorrect to attribute the entire change over the period to mobility patterns. But this is implicitly what we do when we compare levels of segregation over successive decades. We confuse the improper counterfactual of no
change with the proper counterfactual of segregation levels *if no mobility occurred*. That is we incorrectly attribute the entire increase or decrease in segregation to rather than correctly estimate how much change would occur due to births and deaths and assign the remainder alone to residential mobility.

Empirical evidence supports the basic premises of the neighborhood that we styled above. Racial segregation has been declining, but mostly as a result of minorities moving to all-White enclaves (Logan and Zhang, 2010; Glaeser and Vigdor, 2012). At the same time, integrated communities frequently end up resegregating (Logan and Zhang, 2010). But unlike the time of White flight, resegregation takes decades to complete (Bader and Warkentien, forthcoming).

This process should also affect how we consider school policy. If the stylized facts we presented above do play out as we suspect that they do, then we would expect schools to be racially segregated even in racially integrated neighborhoods. It would be incorrect to attribute that change entirely to White parents fleeing schools with non-White students, though there is evidence suggesting that still happens (Goyette et al., 2012); rather, natural increase will increase the proportion of non-White children as the children of older White parents age out of the school system.

Therefore, we want to isolate the influence of migration on neighborhood change. We then estimate the neighborhood and metropolitan correlates of migration-related change. Finally, we estimate the influence of migration on levels of segregation in metropolitan areas throughout the nation.

**METHODS**

*Estimating Migration-Related Neighborhood Change*

To estimate the influence of migration on patterns of neighborhood change, we start with the demographic accounting equation that population change, $\Delta P_{t_0, t_1}^i$, in neighborhood $i$ between two time periods equals the difference of births during the period, $B_{(t_0, t_1)}^i$, and
deaths during the period, \( D_{(t_0, t_1)_i} \), plus or minus migration during the period, \( M_{(t_0, t_1)_i} \). That is,

\[
\Delta P_{t_0, t_1}_i = B_{(t_0, t_1)_i} - D_{(t_0, t_1)_i} \pm M_{(t_0, t_1)_i} \tag{1}
\]

We intend to estimate migration during the period, so we solve for \( M_{(t_0, t_1)_i} \):

\[
M_{(t_0, t_1)_i} = \Delta P_{t_0, t_1}_i - B_{(t_0, t_1)_i} + D_{(t_0, t_1)_i} \tag{2}
\]

In this equation, \( \Delta P_{t_0, t_1}_i \) is known based on the observed population change measured between decennial censuses. \( B_{(t_0, t_1)_i} \) and \( D_{(t_0, t_1)_i} \) can be estimated from life tables based on the age-by-race fertility rates of women and the age-by-race-by-sex death rates of the tract population. We will use metropolitan-specific birth and death rates and simulate the process using a Monte Carlo approach that samples from the distribution of residents in each age-race-sex category. This method follows a similar strategy to Finney (2013), except that we use simulations to estimate population change rather than a simple life table approach.

Each simulation \( j \) for neighborhood \( i \) provides an estimate of births and deaths, \( \hat{B}_{(t_0, t_1)_{ji}} \) and \( \hat{D}_{(t_0, t_1)_{ji}} \) respectively. We can then estimate the total migration as:

\[
\hat{M}_{(t_0, t_1)_{ji}} = \Delta P_{t_0, t_1}_i - \hat{B}_{(t_0, t_1)_{ji}} + \hat{D}_{(t_0, t_1)_{ji}} \tag{3}
\]

The proportion of neighborhood change attributable to migration can be estimated by dividing both sides of the equation by the observed population change:

\[
\frac{\hat{M}_{(t_0, t_1)_{ji}}}{\Delta P_{t_0, t_1}_i} = 1 - \frac{\hat{B}_{(t_0, t_1)_{ji}} + \hat{D}_{(t_0, t_1)_{ji}}}{\Delta P_{t_0, t_1}_i} \tag{4}
\]
In each simulation \( j \), we will estimate the net migration for each racial group in each neighborhood \( i \). Using these estimates, we can then model the neighborhood and metropolitan influences on net migration using a three level model of \( J \) simulations nested within \( N \) neighborhoods and \( K \) metropolitan areas. That is, we can model each of the \( J \) \( \hat{M}_{(t_0,t_1)ji} \)s in the first level of a model:

\[
\hat{M}_{(t_0,t_1)ji} = \beta_{0ik} + \epsilon_{jik}
\] (5)

We will then estimate \( \beta_{0ik} \) as a function of a vector of parameters, \( \gamma_{Wk} \), of neighborhood characteristics, \( W_{ik} \):

\[
\beta_{0ik} = \gamma_{00k} + \gamma_{W0k}^T W_{ik} + r_{ik}
\] (6)

We can also estimate the independent influence of each element in a vector of metropolitan characteristics, \( Z_k \), as a vector of parameters, \( \pi_Z \):

\[
\gamma_{0k} = \pi_{00} + \pi_{Z0k}^T Z_k + u_k
\] (7)

**Metropolitan Segregation Attributable to Migration**

We can take the estimates from the previous section and develop estimates of segregation attributable to migration as well. For each of \( J \) simulations of \( N \) tracts in a metropolitan area, we can derive an estimate of the population would have been without any migration. We can then calculate \( J \) values of the dissimilarity, isolation, and entropy indices based on the counterfactual population change of “no migration.” The difference between these estimates and the segregation indices calculated based on the measured population change between decennial censuses will provide the influence of neighborhood migration.
on metropolitan segregation.

CONCLUSION

In conclusion, these estimates will provide a sense of the amount of neighborhood change and metropolitan segregation due specifically to migration. We will use the proper counterfactual to estimate migration, the population change that would occur based on births and deaths. These estimates of migration related change have important implications for understanding racial segregation in the twenty-first century and policies meant to combat segregation.
REFERENCES


