Local Fiscal Policy and Retiree Migration: Evidence from the Health and Retirement Study

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Abstract

Using the Health and Retirement Study (HRS) and town-level fiscal data, we examine whether moves by households near retirement age are motivated by local fiscal policy. We find some evidence that movers lower their fiscal burden. Households that move across states the first time after their children have reached adulthood reduce their property tax liability by an average of $115. However, we find a great deal of heterogeneity across different types of movers. While these findings suggest that some moves are, in part, fiscally motivated, the observed fiscal reward to moving is generally too small by itself to warrant the fixed costs of moving. It is clear that while fiscal policy may factor into the move decision, it is just one of many variables upon which location choice by retirees is based.

[1]This paper is Chapter 2 of my dissertation at the University of Michigan.

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The study of elderly residential location is likely to take on increasing importance in the upcoming decades, as the Baby Boom generation retires and makes decisions about how and where to spend its golden years. Much has been made of the impact that the aging Boomers will have on federal programs such Social Security and Medicare. However, in many cases, the impact of their retirement may be felt more profoundly at the state and local level. This generation of retirees will be healthier, wealthier, and as a consequence more mobile than past generations. Increased longevity, to the extent that it adds to the length of retirement, increases the incentive to migrate by allowing the costs of such a move to be spread over more years. The likely increase in mobility makes the impact of retiree migration an increasingly important topic of study.

Some have expressed concern that the growth of the elderly cohort will fuel increasing intergenerational conflict at the local level, as seniors wield their growing political power against local school budgets and other measures not in their own self-interest (Preston, 1984). Poterba (1998) worries that school spending may decline significantly by the year 2020, as a result of cohort growth and self-interested voting by retirees. This effect would be compounded in areas where retirees are particularly inclined to migrate (or remain). On the other hand, many states and municipalities view retirees as a net contributor to budgetary health. Retirees are thought to generate high levels of revenues relative to the demands they place on public services at the state and especially local level. Therefore, determining what motivates these movers is of policy relevance for those governments that might seek to maintain or augment their retiree population.

This study examines whether households near retirement age are responsive to local fiscal policy in their choice of residential location. We place particular focus on property tax liability, education expenditures, and non-education expenditures. Studies such as this have been

performed before, though these studies have been limited by high levels of individual and geographic aggregation and by a lack of detailed data on individual characteristics that might affect the move decision.

This paper introduces the Health and Retirement Study (HRS) as the premier data set with which to study retiree migration. The HRS is a longitudinal survey of individuals at or approaching retirement age. Individual level panel data allows us to control for personal and household characteristics that may allow us to overcome problems that unobserved individual heterogeneity has posed to some past studies of elderly migration. Currently five waves of data, from 1992 to 2000, on about 12,000 individuals born between 1931 and 1941 are available. Thus the survey follows households and individuals over an 8-year period that spans the prime retirement years. Past studies (e.g. Litwak and Longino, 1987) have hypothesized that migration of the "young" elderly is generally in response to local amenities and fiscal characteristics, whereas migration of the "old" elderly is more likely to be health related. Thus, the HRS provides the appropriate aged sample to test for fiscal sensitivity.

The paper makes a useful contribution to the literature on elderly migration by being the first national study to examine moves at the city or town level. Earlier studies of elderly migration have been done at the state and county level. Because HRS provides geographic identifiers of the census tract, ZIP-code, county and state of the household,[1] we can match individual observations to state and local fiscal and demographic characteristics. This provides two large improvements to the literature. The first is that we observe a larger set of moves. Estimates from the first five waves of the HRS suggest that, among retirement-age movers, the

[1] These data are not on public-use files, due to concerns about respondent privacy. They are available through "restricted" access at the Survey Research Center at the University of Michigan.

median distance moved is about 18 miles.[2] Only 24 percent of moves among retirement age individuals are out-of-state moves. A full 39 percent of movers stay within county. We argue that the motivation of long-distance movers may differ from that of short-distance movers, and that inclusion of short-distance movers may significantly change the estimates on the effect of local fiscal variables on the elderly migration decision.[3]

The second improvement from the local geographic identifiers is that we observe a greater share of the variation in fiscal variables. Studies at the county or state level may have failed to find effects of public spending or property taxes because of great within-state variation of such local characteristics as property tax rates and school spending. Given the local geographic identifiers, we are able to match households to town, municipality and county public spending. In addition, because the HRS asks household to report their property taxes, we are able to examine differences in tax liabilities using individual level data on property tax liability.

We find some evidence that moves by individuals near retirement age tend to be concentrated around certain "life events" such as attainment of empty nest status, retirement, marital change, or significant health declines. In a regression context, we compare levels and differences of the fiscal characteristics of non-movers and movers of various types and find some evidence that moves are fiscally motivated. We find evidence that the fiscal characteristics associated with households that move are often significantly different than those for households that have not moved. In addition, we find that changes in fiscal variables over a two-year period are often significantly different than changes for households that do not move. However, we

[2] Authors' tabulation of restricted HRS data on nautical miles moved between waves.

[3] We should note that this bias could go in either direction. It could be that state-to-state movers are motivated, on average, more by amenities (e.g. climate) than they are by fiscal concerns, and thus less sensitive to property taxes. In this case, omission of the local movers from the analysis would understate the role of a variable such as property taxes in the decision of the average mover. However, it could just as easily be suggested focusing on state-to-state movers may overstate the effect of variables such as property taxes on the decision of the average mover. For example, local movers may have chosen to stay in their area due to strong ties to their community of residence. If this psychic cost of moving is higher for those who move locally, they may be less sensitive to fiscal policy.

find a great deal of heterogeneity across different types of movers. For example, households that move across states the first time after their children have reached adulthood reduce their property tax liability by an average of $115. Other households that move across states increase their tax liability. The estimated fiscal changes associated with moving are generally insufficient to offset the large fixed costs of moving. This suggests that fiscal concerns are only part of the motivation behind elderly migration.

A Review of the Literature

Past research on elderly migration as a function of fiscal characteristics and amenities can be classified into two basic types of analysis. The first type is analysis of migration aggregates, such as flows and rates; the second is analysis of individual moves. Studies of migration aggregates analyze either migration rates or gross and net flows at either the state level (e.g. Conway and Houtenville, 1998, 2001; Bakija and Slemrod, 2002) or county level (Clark and Hunter, 1992; Duncombe et al., 2000). Bakija and Slemrod use estate tax filings over a 33-year period and find that high-income households tended to move to states with favorable tax systems. Conway and Houtenville (2001) estimate models of gross and net state-to-state migration flows between the years 1985 and 1990. They find some evidence that low income taxes, low welfare spending, and pension income exemptions increase net in-migration. Contrary to the predictions of theory, property taxes are found to have a positive effect on both in-migration and out-migration. They note that analysis of flows is subject to problems arising from unobserved heterogeneity—specifically that one characteristic might repel some elderly, while simultaneously attracting others.

Studies of migration aggregates done at the county level have had more success at isolating the effect of local variables such as property taxes. For example, Clark and Hunter

(1992) find the expected effect of higher property tax rates. Duncombe, et al (2000), look at migration flows at the county level and find the elderly responsive to recreational opportunities and hospital services, and in some cases to property taxes. According to Duncombe, certain types of migrants (by education, race, income, and gender) respond to certain types of taxes and spending. However, the results are inconsistent across groups. These studies are suggestive of the need for a lower level of geographic aggregation and more careful attention to individual heterogeneity when assessing the impact of local characteristics on the decision to move.

Studies of moves at the individual level form the other basic type of analysis of migration by the elderly. These include studies on the timing of moves in relation to the timing of retirement and health shocks (Henretta, 1986), as well as on the effect of local and individual characteristics on moves (Haas and Serow, 1993; Dresher, 1994). Dresher's treatment of individual moves using the PSID is the most thorough individual level analysis of elderly migration. Rather than focusing her analysis only on movers as studies of aggregate flows must generally do, she studies both movers and non-movers in a discrete choice framework. She estimates a conditional logit—employing McFadden's (1977) sampling-of-alternatives approach to limit the choice set—in order to assess the affect of various local amenities and fiscal characteristics on the move decision. In her analysis, which uses the county as the smallest geographic unit, she finds that the structure of state and local taxes does not affect locational choices of the elderly, but that overall government spending does matter. Her study, however, is limited by the small set of movers (N=91) contained in her sample.

Thus, the findings of the literature are mixed. While many find the expected effect of property taxes, some notable studies fail to find that property taxes matter in the migration decision (Dresher, 1994), or find that high property taxes actually increase in-migration (Conway

and Houtenville, 2001). Findings on education spending are also mixed, with both positive and negative coefficients on education spending detected. As we have noted, these mixed findings point to certain limitations of available datasets. These include the problem of unobserved heterogeneity in studies of flows and a low level of geographic precision. A low level of geographic precision may reduce the probability of finding evidence of fiscal sensitivity if more of the variation in policy is at the local level than at the state level.

Theoretical Framework

A model of location choice for retirement age individuals should take into account certain stylized facts. First, moves among individuals above the age of 35 tend to be infrequent. In 1992, when the HRS survey began, the median household had purchased its current residence in 1976. Only about 10% of the sample is observed to move in any given 2-year period of the survey. Second, numerous studies have suggested that households without children—especially elderly households—are resistant to high levels of school spending. Third, household demand for locational characteristics such as local public goods appears to change with changes in family structure, labor force status, and health status. We propose a simple model of location choice that seeks to capture these stylized facts.

The model we propose is one that is fairly standard in the literature (see, for instance, Conway and Houtenville, 2001; Duncombe et al, 1999). Individual households maximize utility by choice of a composite housing and consumption good and a level of unspent wealth intended for bequest. The maximization problem is subject to a budget constraint incorporating income, property, and other taxes. We can represent the resulting indirect utility function of household *i*, at location *j* as

(1) $V_{ij}(G_j, A_j, P_j, T_{ij}; X_i)$

where G is a vector of state and local fiscal characteristics for location j, A is a vector of amenities associated with location j, P is a vector of prices for housing and consumption, T is a vector of state and local taxes associated with household i in location j, and X is a vector of characteristics of household i, including income and wealth. X also includes indicators for demand shifters like children completing schooling, and the work, marital, and health status of household members that may have occurred since the household's last move.

Household i faces fixed costs of moving, C_i, as well as a variable cost of moving from location j to location k, $f(D_{ijk})$, which increases in the distance between the origin and destination.[4] A household selects the location that maximizes V_{ij}, and moves only if the best alternative location, k, satisfies the condition

(2) $V_{ik}(G_k, A_k, P_k, T_{ik}; X_i) - V_{ij}(G_j, A_j, P_j, T_{ij}; X_i) - C_i - f(D_{ijk}) \geq 0$.

This simple, one-period model has several basic implications. The presence of a fixed cost of moving—which is large for most movers—implies that moves will only occur when the benefits realized by the move are large. Additionally, long distance moves, being more costly than short distance moves, must generate larger utility gains than short distance moves. As a result, if household moves are motivated by fiscal considerations, we should expect to see large fiscal gains realized by movers. We should also observe that long-distance movers realize larger fiscal gains than short distance movers.

The model also suggests that differences in a household's characteristics, X, may affect the gross benefit V_{ik}-V_{ij} of a move and hence contribute to a decision to relocate. For example,

[4] Fixed costs of moving include pecuniary costs such as brokers fees, fixed movers fees, and time lost from work. Variable costs may include pecuniary costs and psychic costs that increase with distance from established social networks.

attainment of empty nest status should change the household's demand for spending on local public schools. Numerous studies have demonstrated that the elderly tend to oppose school spending. Vinovskis (1993) finds that the elderly tend to vote against education spending. Inman (1978) concluded that school districts on Long Island with higher proportion elderly spent less per pupil on education than other districts. Button (1992) finds that the aged in Florida tend to oppose school bond measures, but not other local tax issues. Therefore, we should expect that empty-nest households that have not yet adjusted their location have stronger fiscal incentive to move than other households. By the same logic, when these "unadjusted empty nesters" move, we should expect to see them realize greater fiscal gains than other movers.

Our focus in this paper is on local fiscal variables and whether they are important factors in a household's location decision. Therefore our empirical work is concentrated on three key local fiscal variables—property taxes, per pupil educational expenditures, and per capita non-educational expenditures. Rather than focus directly on the elasticity of moving with respect to changes in these fiscal variables, we test for whether moves yield fiscal gains. We expect to find that retirement-age movers decrease their property taxes, controlling for local public services. Movers should also decrease per pupil expenditures, though once property taxes are properly controlled this may not be the case. Controlling for property taxes, we would expect to see non-educational expenditures strictly rise among movers.[5] Empirical tests of the model's predictions are described in greater detail in the next section.

[5] Because non-educational expenditures may be partly financed by other types of taxes that we do not include in the analysis, we may not observe it increasing for movers.

Empirical Strategy

Data

To estimate the sensitivity of retirement age households to fiscal characteristics, we have assembled a data set with observations on households from the Health and Retirement Study for four two-year periods between 1992 and 2000. The HRS contains extensive data on income, wealth, work and health status, and other individual and household characteristics of both movers and non-movers of retirement age. Along with this rich set of individual and household characteristics, the survey codes geographic identifiers – ZIP-code, census tract, county and state codes – in each wave that allow identification of state and local amenities, and fiscal and demographic characteristics over time. Unlike many household panel surveys, the HRS does not drop households that move.[6]

Table 1 displays our sample restrictions and resulting sample size. The unit of observation is a household-year. The HRS interviewed 7,650 households in 1992. By 2000, it had collected 34,121 interviews among these households.[7] Of these, 32,920 had geographic identifiers adequate enough to allow us to identify whether the household had moved. For much of our empirical analysis we restrict the sample to include only households that are homeowners, leaving us with 26,015 household-years.

Table 2 presents summary statistics for the restricted sample for variables used in our analysis pooled across years.[8] On average, HRS homeowners pay about $1500 annually in

[6] In fact a great deal of effort is placed on retaining households that change residence, move into nursing homes, or dissolve. The reinterview rate is about 90 percent in each wave.

[7] If a household splits, due to divorce or separation, both household members are re-interviewed and from then on treated as two separate households. In the first-differences analyses that will follow, we treat households that split between *t* and *t-1* as two separate households for the *t* to *t-1* observation (but one household for the *t-2* to *t-1* observation).

[8] Summary statistics are relatively stable across waves with the following exceptions: average age increases, mean wealth increases, percent retired increases, mean income increases until 1998 and then decreases, and the percent married declines.

property taxes, and the mean home value is $133,000, and average household income is about $65,000. The HRS sample was constructed to range in age from 51 to 61 in 1992 (thus 59 to 69 in 2000), so it is not surprising that the average age is 59.7. For married couples, we use the age and race of the husband, but education is defined as the highest education of the two members.

Figure 1 illustrates the set of data we have merged to HRS respondents. Fiscal variables other than property tax data come from a variety of sources. Data on city and county revenues and expenditures come from the U.S. Census of Governments for 1987, 1992, and 1997. School district level data are from the U.S. Department of Education's National Center for Education Statistics (NCES), and are for years 1987, 1989, 1991, 1993, 1995, and 1997. Values are interpolated for intervening years. Households are assumed to respond to fiscal variables with a three-year lag. Variables denoting government expenditures are expressed in year 2000 dollars, using the Bureau of Economic Analysis "State and Local Government Consumption Expenditures and Gross Investment" deflator. Other dollar variables such as tax liability and income and wealth measures are expressed in year 2000 dollars using the Consumer Price Index for All Urban Consumers.

Tract level demographic data come from the U.S. Census of Population and Housing for 1990. In addition, some measures of local (city and county-level) amenities are included. These come from a variety of sources, including the 1994 City and County Data Book and the National Center for Education Statistics. Fiscal, demographic, and amenities variables are summarized in Table 2. There is no time series variation in the demographic and amenities variables, due to data frequency constraints.

Matching Households to Local Characteristics

As illustrated in Figure 1, households are matched to local fiscal and demographic characteristics and amenities by means of geographic identifiers in the restricted access component of the HRS. Using the census tract and ZIP-code provided for each respondent, we match respondents to fiscal data for the city, school district, and county in which they reside.[9]

Movers that cross geographic boundaries are identified using the geographic codes at each wave in the HRS. We define a move to occur if a household's state identifier changes, or if at least two of three local geographic identifiers change--tract, ZIP-code, and county.[10] Although this excludes moves that are within the same census tract and ZIP-code, (i.e. within neighborhood moves), we believe it captures all moves that are associated with significant changes in locational characteristics. The use of two geographic identifiers protects us against falsely coding moves due to ZIP-code changes by the U.S. Postal Service or noise in the HRS coding of census tracts. Our data set includes 1,356 household moves. Table 3a shows the distribution of moves over the eight-year period observed. The percent of interviewed respondents who move is approximately 7% per wave. Table 3c shows that there are few "chronic movers." The majority of households that move at all over the period observed, move only once.

[9] Some respondents do not live in an incorporated municipality or township. In such cases, they are assigned zero values for city-level fiscal variables.

[10] The HRS asks respondents directly whether they have moved since the previous wave. In the beginning of the survey, respondents are asked "When we last spoke with you, you were living at <address>. Are you still living there?" However, this measure is problematic due to variation in the survey instrument. Because households are contacted prior to the actual interview, to verify a time and place for the interview, for many cases, the address that appears in the interview is actually their new address.

Regression Specification

Unlike many papers which model the decision to move as a function of fiscal variables, we examine differences in fiscal variables by whether a household has moved.[11] We also identify differences across two groups that should have exogenous differences in tastes for local public goods – households whose children have reached adulthood and those who have children under age 18. This should allow us to divide the effects of moving into effects reflecting shifts in tastes for fiscal policy and other effects. Thus, to test for fiscal motivation of movers, we estimate a series of regressions on fiscal variables among home-owning households of the following form:

$$(3) \qquad G_{ijt} = \alpha_{ijt} + \beta_1 M_{ijt} + \beta_2 ENM_{ijt} + \beta_3 X_{it} + \beta_4 Z_{ijt} + \beta_5 A_{jt} + \sum_{t=1992}^{2000} \gamma_t Y_t + \sum_s \delta_s S_j + u_{it}$$

where *i* indexes households, *j* indexes a locality, and *t* denotes the time period. We follow households from 1992 to 2000 and we pool observations across the years. *Y* captures any time fixed effects, as a series of dummy variables each equal to one if the household observation is for that year. It should absorb any changes in national trends in fiscal variables over time and it should also capture some noise in the data due to changes in the HRS survey instrument over time. *S* is a series of dummy variables that absorb any state fixed effects.

G is one of the following fiscal variables: annual property tax liability (*PROPTAX*), annual per pupil education expenditure (*PPE*), or annual per-capita non-educational expenditure (*NONED*). Distributions of these variables are in Table 4. *PROPTAX* varies by household and is reported in each wave of the HRS. Households report the dollar amount they pay in taxes on

[11] Modeling the move decision involves both modeling the decision to move and the choice of where to move. Such a model involves consideration of the household's full choice set of destinations and is beyond the scope of this paper. The independence of irrelevant alternatives (IIA) assumption allows focusing on the characteristics of the selected location alone, as we do here.

an annual, monthly, or quarterly basis.[12] The median tax liability is about $1,000 and the resulting rate is about one percent, and the means for both illustrate the existence of high valued outliers. *PPE* is reported by the NCES. Its median value is about $5,400. *NONED* is calculated from data from the County level, Town level, and Municipality level Census of Governments. It is the sum of per capita spending at these levels of government on all non-education items: hospitals, health, transportation, libraries, police protection, fire protection, and public welfare. Its average is less than one fifth average *PPE*. Although *PPE* and *NONED* are observed at the household level and vary over time, they only vary at the city level. Therefore, in regressions of *PPE* and *NONED*, standard errors are adjusted to control for clustering of households by local geographic area. When analyzing property taxes, we estimate a median regression, also known as least absolute deviation (LAD) regression, to minimize the effect of outliers in property taxes on our estimates.

X is a vector of time-invariant household characteristics that may be correlated with a household's propensity to move and taste for fiscal policy, including race and education. *Z* is a vector of such household characteristics that are time-varying, including home value and income.[13] *A* is a vector of local amenities that may be affected by local taxes and spending and other local characteristics that might influence a household's decision to live there. Summary statistics of these variables are in Table 2.

The first set of regressions is run using *levels* of the key fiscal variables. ENM_{ijt} equals one if the household has been observed at any point at or prior to *t*, to have made a "post-empty

[12] For a handful of cases that do not report a property tax liability, we impute a tax rate and calculate the tax liability by multiplying the imputed rate by the value of the home. This imputation is done at the zip code level.
[13] It may be problematic to include home value in a regression of fiscal variables because of capitalization. However, because much of the variation in property taxes is due to home value, we feel it is important to control for it, especially among a group of households that is aging. We have estimated regressions with and without home value and since the results do not vary much, we generally report only our preferred specification with home value.

nest" move and zero otherwise. About 10 percent of the observations have made such a move. M_{ijt} equals the number of moves the household is observed to make between 1992 and *t* and its mean value is 0.14. β_1 is an estimate of the difference in the (mean or median) level of *G* (*PROPTAX*, *PPE* or *NONED*) due to a move. If movers are fiscally motivated, we expect this coefficient to be nonzero. β_2 is an estimate of the difference in the level of *G* between households who have moved and those that have not moved, since their children reached age 18. If empty nest households are sensitive to fiscal policy we expect β_2 to be negative for *PROPTAX* and *PPE*. The theory predicts that some changes in household characteristics will increase the net benefit of a move due to fiscal changes. For example, empty nest households benefit less from public schools. Thus, we expect the first move after one's children have left home to result in large fiscal changes. Since valuation of public schools should have declined, we expect lower levels of *PROPTAX* and *PPE*. Because this household change should not affect valuation of other public goods, we have no *a priori* hypothesis about the sign of β_2 for *NONED*.

To minimize the effects that unobserved individual heterogeneity u_i may have on the coefficients of interest, we estimate a second set of regressions that are the first-difference equivalent of (3). This specification removes the effect of any time invariant household characteristics on β_1 and β_2. Here the equation for $G_{it} - G_{it-1}$, the change in fiscal variable is:

$$(4)\quad G_{ijt} - G_{ijt-1} = (\alpha_{ijt} - \alpha_{ijt-1}) + \beta_1(M_{ijt} - M_{ijt-1}) + \beta_2(ENM_{ijt} - ENM_{ijt-1}) + \beta_4(Z_{ijt} - Z_{ijt-1}) + \sum_{t=1994}^{2000} (\gamma_t Y_t - \gamma_{t-1} Y_{t-1}) + (u_{it} - u_{it-1})$$

In this case, β_1 represents the change in *G* experienced by movers relative to non-movers between *t-1* and *t*. β_2 represents the additional change in *G* experienced by households making their first move since their children have reached adulthood. β_4 captures changes in *G* that may

be due to changes in home value or household income. If households are "downsizing" as they age, not controlling for changes in home value would cause a negative bias on β_1 and β_2.

In our analysis, we have chosen to focus exclusively on local fiscal variables. Past analyses have addressed state-level fiscal determinants of migration to a greater level of satisfaction than they have local-level fiscal determinants. Because the comparative advantage of our dataset lies with local fiscal variables, we choose to focus our analysis accordingly. The state fixed effects should capture any unobserved heterogeneity across states that may be correlated with our variables of interest. To test whether the fiscal changes associated with moving vary by the type of move – across state, across MSA, or within MSA, we estimate additional regressions of similar structure to those described above, where we differentiate between the three types of moves.

Results

Descriptive Statistics

Using the HRS sample, we find that a large fraction of moves are local. Table 3b presents moves according to two classifications of the degree of jurisdictional change. The first classifies movers as cross-state, cross-county (but within state), or within county. The second classifies movers as cross-state, cross-MSA (but within state), or within-MSA. We include both "within-county" and "within-MSA" as alternative classifications of "local" moves because past studies have focused on cross-county movers. However some may view the MSA as a more natural level at which to classify a local move. Most cross-county moves are within the same MSA, and hence do not involve the mover abandoning social networks or amenities to the extent that cross-MSA moves do. A cross-MSA move is much more likely to involve changes in

cultural and lifestyle amenities and social networks. Hence, if we wish to think of a "local" mover as one who maintains their current social and cultural routines while adjusting fiscal or other characteristics of their housing bundle, the MSA makes a more appropriate level of classification.

52% of the moves in our sample are within MSA, confirming our assertion that most moves are quite local.[14] Only 24% of moves cross state lines. 39% of moves are strictly within county. This underlines the fact that previous studies of migration, none of which probe moves below the state or county level, have omitted a significant fraction of movers who change fiscal jurisdiction.

We also find some evidence that the timing of moves is associated with major life events, such as changes in family structure, labor force status, or health status. Table 5 demonstrates that movers in the HRS are significantly more likely to have experienced some form of major life change in the past 4 years than non-movers. While 74% of non-movers report experiencing a change in family structure, labor force status, or health status within the past 4 years, 80% of movers report experiencing such a change.

The increased propensity to move following life changes likely indicates at least one of two effects. One effect is the increased benefit of a move due to a change in demand for housing characteristics resulting from the life change. The second possible effect is a decline in the fixed cost of moving due to increased mobility resulting from the life change. For example, when children move out of the home, a household is likely to demand a lower level of educational expenditure. At the same time, the household's mobility may be increased (moving costs lowered) by the absence of children.

[14] Some HRS respondents do not live in an MSA. For such households, we note whether they change their county of residence when they move. If they do not, they are counted as moving within MSA/County.

In Figure 2 we examine this question of move timing with respect to the attainment of empty-nest status in more detail. Data on the age of respondents' children are used to calculate the year when a household became an empty nest.[15] Data on the year the current house was purchased are used to assess the timing of a household's last move, whether it occurred during or prior to the survey period. Using these data, we can calculate the distribution of move timing with respect to the attainment of empty-nest status for all households that have had children at some point. Figure 2 presents the distribution of years between the youngest child moving out and the last move by the household observed in the survey. The distribution is bimodal, with peaks at 20 years before the attainment of empty nest status, and 7 years following the attainment of empty nest status. Following the peak at t=-20 years, the frequency of moves declines. The downward trend is not reversed until within a couple years of t=0, when the last child moves out. The frequency of moves then increases until t=7. This pattern is consistent with households timing their moves with respect to changes in family structure—choosing a new home during years of increased fertility and moving again after their children move away.

Property Taxes

Column 1 of Table 6 presents our first set of estimates of the effect of moving on property taxes by estimating the levels specification in equation 3. The estimated coefficient on *M* suggests that each move is associated with $58 lower property taxes, providing some evidence that households are sensitive to local fiscal policy when they move. However the estimated coefficient on *ENM* is positive and statistically significant. It suggests that controlling for the number of moves they have made, households that have moved since their children reached age 18 pay about $47 higher property taxes per year. To compare such "adjusted empty nesters" to

[15] We consider a household an "empty nest" if the respondent's children are all above age 18. Although some may still live at home, they are likely to have completed their local public schooling, which is what identifies the taste shift for the household.

non-movers, we add the coefficients on *M* and *ENM* to find they pay about $12 less than non-movers. Thus all moving households seem to pay lower taxes, but contrary to our hypothesis, those movers that we expected to have a lower demand for public schools actually pay higher property taxes than other movers.[16]

There is strong evidence that better educated, higher paid households pay higher property taxes, even after controlling for home value. The higher the median home value and income in the census tract, the greater the property tax paid. The greater the share of the population that is age 75 and older, the higher the taxes. Households in MSAs pay higher taxes, and a higher crime rate is associated with higher taxes, up to a crime rate of about 100 per 1000 residents.

The positive coefficient on *ENM* raises the possibility that we have not controlled sufficiently for heterogeneity across moving and non-moving households. As a result we shift from a pooled cross-section analysis of levels to a within-household analysis of differences in fiscal variables over time as specified in equation 4. The first column of Table 7a contains these results. As one would expect, increases in home value and median home value in the tract increase property taxes. Here β_1 captures the effect of a move on the change in property tax liability, relative to non-movers. In contrast to the results from the levels equation, the estimated β_1, $133, is now positive, suggesting that movers increase their property tax liability, even after controlling for home value. β_2, which now captures the change in liability associated with the first move after one's children have reached age 18, is estimated to be -$93, consistent with our hypothesis that movers whose valuation for the local public good has decreased should reduce their property tax burden by moving. However, to compare the change in property taxes

[16] When not controlling for home value the magnitude of both β_1 and β_2 are slightly higher, suggesting that each move may be associated with a smaller or lower valued home and that households who have made an empty nest move may be in higher valued homes. Controls for PPE and NONED do not change the original coefficients much.

associated with such a move relative to non-movers, we must add β_1 to β_2. This shows that empty-nest moves, like other moves, increase property tax liability, relative to non-movers.[17]

The change in signs on *M* and *ENM* from the levels specification to the first difference specification shows that unobserved household level heterogeneity may seriously bias results. The negative coefficient on number of moves in the levels specification combined with the positive coefficient in first differences, indicates that households who move tend to be from areas that had low taxes.

It seems odd that property taxes increase for movers relative to non-movers even when controlling for home value. This could be capturing the fact that some states have capped assessed values of homes at the value at the time of purchase. Holding home value constant, this necessarily results in increased tax liability upon moving. In this case, it may be appropriate to focus on β_2 alone, rather than $\beta_1 + \beta_2$ as a test for fiscal sensitivity when tastes shift.

Per Pupil and Non-Educational Expenditure

The second columns of Tables 6 and 2.7 display results for per pupil education expenditure (*PPE*). Given the effects of unobserved heterogeneity illustrated in the *PROPTAX* regressions, we focus on the first difference results here. The first-differences analysis in Column 2 of Table 7a suggests *PPE* decreases $194, on average, with every move, but there is no differential associated with the first empty-nest move. This result does not change when we exclude home value from the regression or add property taxes as an additional control (Table 7b).

Unlike school spending, other spending seems to increase with each move. These results in Column 3 of Table 7a show movers appear to move to areas with about $105 higher *NONED*

[17] In the first difference specification, the estimates are not sensitive to the inclusion of changes in home value, PPE, or NONED (see Table 7b).

than their origin. Like *PPE*, there is no differential associated with the first empty-nest move and the result does not change when we exclude home value from the regression or add property taxes as an additional control. These findings on *PPE* and *NONED* suggest that households in this age group are likely to substitute away from educational expenditures to other publicly provided goods when they move.

Local vs. Long Distance Moves

We noted above that past studies of elderly migration might suffer from sample selection bias, due to their exclusion of a large fraction of movers by move geography – 39 percent for the county-level studies and 76 percent for the state-level studies. To test whether fiscal motivation of movers differs by distance moved, we regress changes in the fiscal characteristics described above on three dummy variables of move type: across state, within state but across MSA (or across county if in a non-MSA area), and within MSA (or within county). These are coded as *M* and *ENM* in the analysis just presented in the context of equation 4, the first difference specification. The results in Table 8a suggest that there are differences in fiscal motivation across the different types of movers.

Changes in property taxes vary substantially by move type. When a move is not the first empty-nest move, it is always associated with an increase in property taxes, even when controlling for changes in home value. This increase ranges from $98 for across MSA movers, to $260 for across state movers. Again, it is useful to compare the effects for all movers to those households moving for the first time after their children have matured. Such moves are associated with a $385 reduction in property taxes, relative to all movers if the household has moved across state. This translates into a $115 reduction in property taxes relative to non-

movers. Empty nest moves that are more local are not associated with a differential change in property taxes relative to other movers.

The coefficients on the different types of moves in the *PPE* and *NONED* equations are also largest in magnitude for across state moves. Although the increase in *NONED* is statistically significant for all move types, the decrease in *PPE* is not estimated precisely enough to say whether there are significant differences by move type. These findings on PROPTAX, PPE, and NONED by move type are consistent with the theoretical prediction that costlier moves must generate greater gains for the move to occur.

Discussion

In this paper we combine a panel of household level data from the Health and Retirement Study with town, school district, and county fiscal data to test for evidence that residential choice among individuals near retirement age is sensitive to local fiscal variables. This unique dataset provides us with several advantages over past studies of elderly migration. It gives us the ability to observe a large number of household-level moves while controlling for fiscal variation at the very local level and heterogeneity among households. It also allows us to observe moves at the town level that have been omitted from past studies. Finally, the sample in the HRS is of an age more relevant to the testing of amenities models of migration than samples used in past tests of such models.

We find some evidence that households that move experience changes in fiscal characteristics. The first-difference estimates suggest some households moving for the first time after their children have reached age 18 lower property tax liabilities. This is consistent with the hypothesis that households reduce fiscal burden upon moving when their valuation for local public goods has declined. In addition we find evidence that some households that move live in

areas with lower per pupil expenditures than at their origin. The results across the three fiscal variables, property taxes, per pupil expenditures, and non-educational expenditure are quite different in levels and first-differences, suggesting that unobserved household level heterogeneity can seriously bias results. We also find strong evidence that movers who cross state lines lower their fiscal burden significantly more than short-distance movers.

Our findings, for the most part, are consistent with a simple amenities model of migration, in which households that attain empty nest status have a lower level of demand for educational services than households with children. These households should be expected to lower their fiscal burden when they move, and according to our findings they do. In a model with fixed and variable costs of moving, we should expect that longer distance moves are rewarded with greater fiscal gain. Our results from the type of mover (across state vs. local movers) regressions in Table 8 confirm this supposition. This suggests that, all else equal, estimates from studies of across state migration and fiscal policy likely overstate the effect of fiscal policy.

In future work with this dataset, we intend to directly model the move decision as a function of fiscal properties and amenities of alternative locations. We also intend to exploit the rich set of household level data in the HRS to further explore individual level determinants of the propensity to move. This dataset will lend itself to the study of such issues as the timing of moves with relation to life changes, the effect of family location on move decisions, and the effect of various interactions of state and local policy with household characteristics on elderly migration.

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Table 1: Sample Selection from Households HRS

Year	Interviewed	Reinterviewed	Complete Geography Data		Home Owner	
			Number	Percent of Interviewed HH	Number	Percent of those with Complete Data
1992	7,650		7597	99%	5807	76%
1994	6,979	91%	6883	99%	5442	79%
1996	6,730	96%	6376	95%	5172	81%
1998	6,497	97%	6168	95%	4728	77%
2000	6,265	96%	5896	94%	4866	83%
Total	34,121		32,920	96%	26,015	79%

Table 2: Summary Statistics for Analysis Sample of HRS Households

	Analysis Sample (n=26,015)	
	Mean	SD
Household Characteristics		
Annual Property Taxes	1,561	1,936
PPE	5,619	1,873
NONED	1,071	752
Moved between waves		
Number of Moves since 1992	0.14	0.40
Has Made Empty Nest Move	0.10	0.30
Age of Head	59.67	5.68
Household Income	65,154	140,027
Home Value	132,870	181,128
Hispanic	0.07	0.26
Non-White Race	0.18	0.39
Educ=HS Grad	0.51	0.50
Educ>HS Grad	0.30	0.46
Tract Characteristics		
Median Home Value	88,621	70,865
Share Under Age 18	0.26	0.06
Share Ages 18-54	0.52	0.07
Share Age 75 and Older	0.05	0.04
Share Educ<HS Grad	0.26	0.14
Share Educ=HS Grad	0.49	0.09
Median Commute Time	18.93	6.55
Poverty Rate	0.13	0.11
Median Income	31,892	14,278
In MSA?	0.73	0.44
Other Local Characteristics		
Town Population	251,763	956,815
Crimes per 1000 pop. In County	57.99	35.41
Violent Crimes per 1000 pop. In County	7.21	7.72
Retail Establishments per 1000 pop. In County	9.72	1.83

Table 3a: Number of Movers by HRS Year

	Ending Year				
	1994	1996	1998	2000	Total
Moved	308	391	341	316	1,356
Total	5,442	5,172	4,728	4,866	20,208
% Moved	5.7%	7.6%	7.2%	6.5%	6.7%

Table 3b: Distribution of Moves Across Distance, by HRS Year

	Ending Year				
	1994	1996	1998	2000	Total
Type by County & State					
Across State	24.7%	21.2%	22.6%	29.1%	24.2%
Across County	30.8%	39.4%	42.5%	35.1%	37.2%
Within County	44.5%	39.4%	34.9%	35.8%	38.6%
Type by MSA					
Across State	24.7%	21.2%	22.6%	29.1%	24.2%
Across MSA/County	19.2%	24.8%	25.5%	23.7%	23.5%
Within MSA/County	56.2%	54.0%	51.9%	47.2%	52.4%

Table 3c: Distribution of Moving Households by Total Number of Moves

	Ending Year				
Cumulative Moves	1992	1994	1996	1998	Total
1	100%	91%	81%	77%	84%
2	0%	9%	18%	20%	15%
3+	0%	0%	2%	3%	2%

Table 4: Detailed Distribution of Fiscal Variables

	Mean	Percentile				
		1%	25%	50%	75%	99%
PROPTAX	1,559	0	491	1,043	2,007	7,978
Tax Rate	0.046	0.000	0.006	0.011	0.016	0.083
PPE	5,619	0	4,730	5,412	6,362	11,164
NONED	1,065	115	557	889	1,393	3,259

Note: PROPTAX and the resulting tax rate are reported at the household level in each wave of HRS. PPE is town level per pupil spending reported by NCES and NONED is town level public spending by towns, municipalities, and towns, as reported to the Census of Governments

Table 5: Life Events and the Timing of Moves

Experienced In Past 4 Years:	Non-Mover	Mover	P-value on Difference
Health Decline	50.8%	54.1%	0.01
Marital Change	12.7%	23.6%	0.00
Retirement	31.7%	33.9%	0.06
Children Reached Adulthood	12.7%	14.4%	0.05
Any of Four Changes	73.9%	80.0%	0.00
Children or Retirement	42.8%	46.8%	0.00

Note: Among HRS households in 1996, 1998, and 2000. Life changes are coded based on the four years prior to the interview. A household is coded as moving if two of their geographic identifiers changes between waves.

Table 6: Regressions of Levels of Fiscal Variable on Having Moved Between Waves

	PROPTAX		PPE		NONED	
M: Number of Moves	-58.43	**	12.48		8.14	
	(17.08)		(35.69)		(20.52)	
ENM: Has Made Empty Nest Move	46.57	**	-77.86	*	-55.38	*
	(23.27)		(46.02)		(28.49)	
Age	0.05		-0.35		0.89	
	(0.7)		(1.56)		(0.92)	
Household Income	0.00084	**	-0.00003		0.00006	**
	(0)		(0)		(0)	
Home Value	0.00598	**	0.00000		-0.00003	
	(0)		(0)		(0)	
Hispanic	58.72	**	315.08	**	80.28	
	(16.92)		(75.56)		(56.43)	
Nonwhite	15.56		101.29	**	157.13	**
	(10.92)		(47.24)		(39.85)	
ED=HS Grad	32.27	**	5.24		27.98	
	(10.24)		(24.09)		(17.8)	
ED>HS Grad	141.86	**	14.29		40.86	*
	(11.78)		(28.09)		(22.03)	
Tract Median Home Value	0.00104	**	0.00454	**	0.00078	*
	(0)		(0)		(0)	
Tract: % Under 18	-8.93		-1028.14	*	-254.32	
	(105.9)		(599.3)		(335.54)	
Tract: % 18-54	-68.70		-890.31	*	120.80	
	(88.52)		(532.64)		(310.39)	
Tract: %75+	854.43	**	-940.49		680.92	
	(194.75)		(873.65)		(548.57)	
Tract: % ED<HS Grad	-4.11		228.64		5.21	
	(56.04)		(337.12)		(183.39)	
Tract: % ED=HS Grad	-385.34	**	-831.55		-235.77	
	(62.27)		(520.42)		(214.35)	
Tract: Median Commute	-0.89		1.27		-8.64	**
	(0.8)		(5.4)		(3.27)	
Tract: Poverty Rate	194.49	**	469.27		369.47	
	(71.52)		(455.39)		(246.19)	
Tract: Median Income	0.01	**	0.00		0.00	
	(0)		(0.01)		(0)	
In MSA	64.27	**	475.85	**	31.49	
	(14.5)		(144.49)		(86.54)	
Town Population	-0.00023	**	-0.00016	**	0.00024	**
	(0)		(0)		(0)	
Town Pop. Sq	36.26	**	-54.74		719.75	**
	(11.12)		(62.44)		(75.5)	
County: Crime/1000 Pop	4.60	**	14.45	*	-6.91	
	(0.82)		(8.15)		(5.09)	
County: Crime/1000 Pop Sq.	-0.02	**	-0.10	**	0.06	
	(0.01)		(0.05)		(0.04)	
County: Violent Crime/1000 Pop	2.52		12.60		28.90	**
	(2.4)		(27.84)		(12.61)	
County: Violent Crime/1000 Pop Sq.	0.11		0.73		-0.95	**
	(0.07)		(0.61)		(0.44)	
County: Retail Est./1000 Pop	-19.67	**	12.66		28.96	*
	(3.04)		(25.45)		(16.79)	
R-Sq	0.3734		0.7147		0.6343	

Notes: SE in parentheses. * denotes statistical significance at the 5% level and ** at the 10% level.

Regressions also contain state and year fixed effects.

Table 7a: Regressions of Changes in Fiscal Variable on Having Moved Between Waves

	PROPTAX		PPE		NONED	
ΔM : Moved	133.11	**	-193.50	**	105.23	**
	(12.26)		(87.99)		(31.74)	
ΔENM : Just Made Empty Nest Move	-92.86	**	-71.44		-46.76	
	(14.57)		(106.69)		(34.46)	
Change in:						
Household Income	-0.000001		-0.000008		-0.000005	
	(00)		(00)		(00)	
Home Value	0.000978	**	0.000084	**	0.000002	
	(00)		(00)		(00)	
Tract Median Home Value	0.000496	**	0.003651	**	-0.000052	
	(00)		(00)		(00)	
Tract: % Under 18	288.95	**	278.02		-450.37	*
	(99.69)		(1204.27)		(267.74)	
Tract: % 18-54	116.24		-1970.19	*	-303.48	
	(80.61)		(1110.65)		(240.74)	
Tract: %75+	289.69	*	-1765.07		123.86	
	(167.62)		(1757.08)		(441.63)	
Tract: % ED<HS Grad	12.83		65.12		-128.33	
	(63.72)		(1291.99)		(146.94)	
Tract: % ED=HS Grad	-81.40		-831.28		-173.76	
	(68.3)		(983.49)		(168.7)	
Tract: Median Commute	2.13	**	23.37		-6.94	**
	(0.85)		(15.53)		(2.4)	
Tract: Poverty Rate	82.08		-918.09		436.15	**
	(75.86)		(1257.12)		(185.78)	
Tract: Median Income	0.002794	**	-0.001647		-0.000373	
	(00)		(0.01)		(00)	
In MSA	61.43	**	262.73		138.98	**
	(21.2)		(244.33)		(59.51)	
Town Population	-0.000035	**	0.000105		0.000160	**
	(00)		(00)		(00)	
Town Pop. Sq	-9.00		177.65		666.90	**
	(10.38)		(180.84)		(53.25)	
County: Crime/1000 Pop	0.03		-12.26		-8.50	
	(1.03)		(11.21)		(5.27)	
County: Crime/1000 Pop Sq.	0.01		0.06		0.05	
	(0.01)		(0.09)		(0.03)	
County: Violent Crime/1000 Pop	-8.58	**	60.98	*	37.43	**
	(3.22)		(35.13)		(15.02)	
County: Violent Crime/1000 Pop Sq.	0.01		-1.08		-0.81	*
	(0.09)		(1.25)		(0.44)	
County: Retail Est./1000 Pop	4.08		62.46		13.52	
	(3.41)		(38.27)		(13.23)	
R Sq	0.0071		0.0778		0.3916	

Notes: SE in parentheses. * denotes statistical significance at the 5% level and ** at the 10% level.
Regressions also contain year fixed effects.

Table 7b: Regressions of Changes in Fiscal Variable on Having Moved Between Waves, Alternate Specifications

	PROPTAX		PPE		NONED	
No control for Home Value						
Δ*M* : Moved	138.48	**	-195.72	**	105.37	**
	(138.48)		(88.13)		(31.71)	
Δ*ENM* : Just Made Empty Nest Move	-95.19	**	-71.76		-46.87	
	(-95.19)		(106.39)		(34.43)	
R Sq	0.002		0.0769		0.3916	
Controlling for Home Value and PPE and NONED						
Δ*M* : Moved	133.00	**	-191.67	**	105.21	**
	(13.26)		(87.67)		(31.75)	
Δ*ENM* : Just Made Empty Nest Move	-95.00	**	-72.37		-46.75	
	(15.78)		(106.49)		(34.46)	
Δ Home Value	0.00	**	0.00	**	0.00	
	(0)		(0)		(0)	
Δ PPE in $1000	0.000843					
	(0)					
Δ NONED in $1000	-0.0057191					
	(0.01)					
Δ Property Taxes			-0.0075		0.0002	
			(0.01)		(0)	
R-sq	0.0071		0.0779		0.3916	

Notes: SE in parentheses. * denotes statistical significance at the 5% level and ** at the 10% level.
Regressions also contain year fixed effects, and the changes in the covariates as listed in 7a.

Table 8: Regressions of Changes in Fiscal Variable on Having Moved Between Waves By Move Type

	PROPTAX		PPE	NONED	
ΔM : Moved					
Across State	260.42	**	-415.39	169.58	**
	(28.19)		(257.61)	(85.91)	
Across MSA	97.92	**	-146.33	126.14	**
	(28.53)		(224.36)	(52.44)	
Within MSA	115.56	**	-124.20	80.79	*
	(16.87)		(100.44)	(46.04)	
ΔENM : Just Made Empty Nest Move					
Across State	-385.30	**	-409.49	-82.20	
	(32.18)		(303.8)	(101.83)	
Across MSA	-27.77		60.21	-1.19	
	(32.6)		(246.27)	(73.88)	
Within MSA	10.88		21.46	-54.71	
	(19.86)		(131.5)	(44.54)	
R Sq	0.0075		0.0798	0.3934	

Notes: SE in parentheses. * denotes statistical significance at the 5% level and ** at the 10% level.
Regressions also contain year fixed effects, and the changes in the covariates as listed in 7a.

Figure 1: Merging HRS to State and Local Data

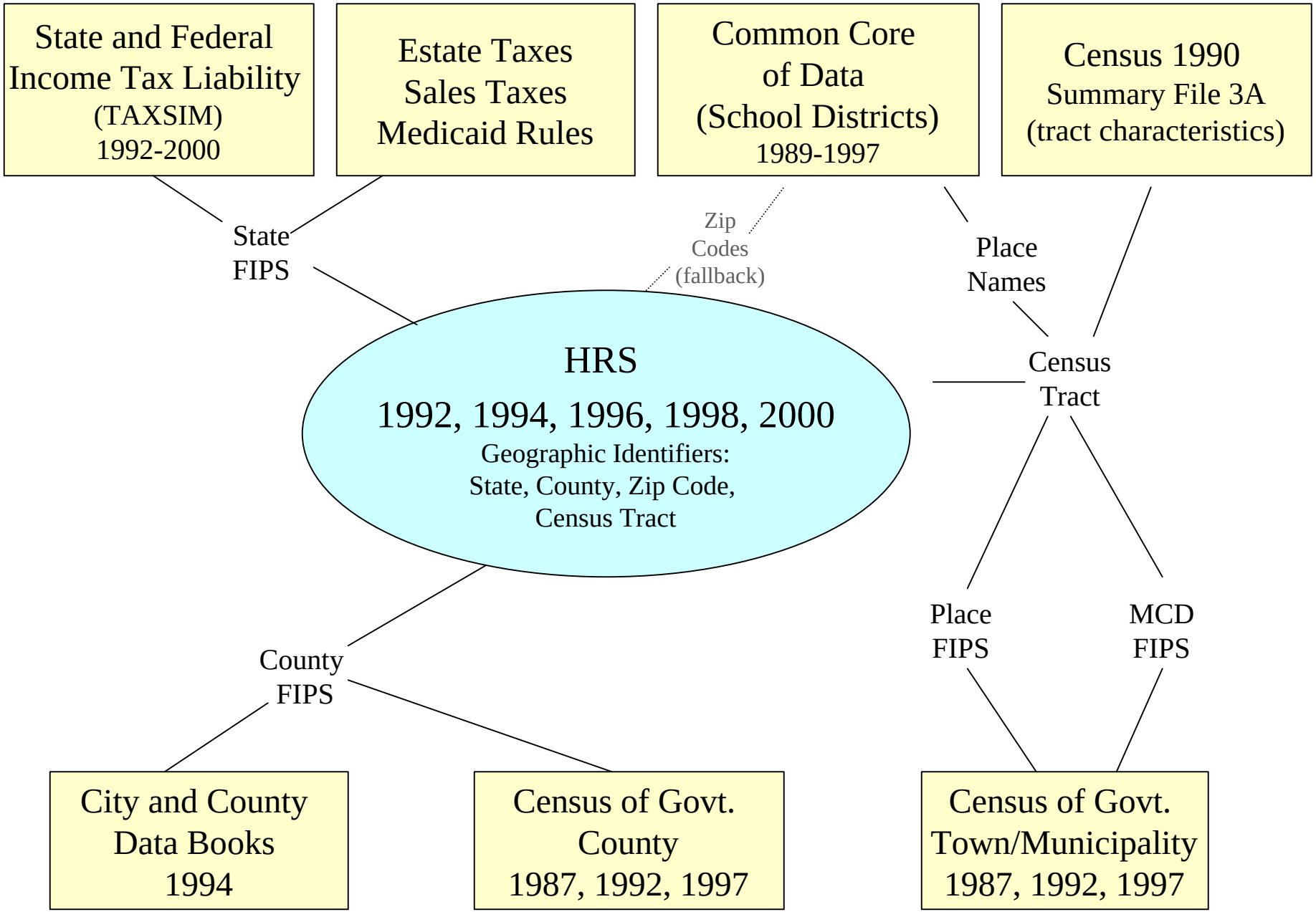

Figure 2: Timing of Residential Move and Children Reaching Adulthood.