

The Thinning Metropolis: The Role of Repeat Home Buyer Purchases in Decreasing Density*

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Introduction

Since the end of World War II American urban areas have suburbanized rapidly. During the early part of this process, the suburbanization trends were driven by the need for more housing as people moved to the cities, veterans returned from the war, and the economy turned to peacetime production. However, the American penchant for low density development has caused cities to expand in area far more quickly than they expand in population or households (Diamond and Noonan, 1996).

For example, Cincinnati (Ohio and Kentucky) increased its number of households by 53% between 1960 and 1990 but increased its area by 111% (OHRN, 1996). Dayton, Ohio grew by 64% in households, but 120% in area over the same time span. This was in a time period of declining household size, so the populations grew less than the number of households. Columbus went from a density of 5296 people per square mile in 1960 to 3315 in 1990 (Columbus Dispatch, 1998). In fact, projections for Ohio's cities indicate that all of them will have added significantly more new housing units than households in the nineties. Toledo saw 3.6 new units for every new household, Cleveland 5.2 and Youngstown, which lost population and households during the decade saw 7.3 new housing units built for every household lost. Youngstown is an extreme example, but declining densities, and more growth in land area than in population or households are typical for the US.

In order to understand this process of decreasing density we need to study the processes behind it. One of those processes is residential mobility. Housing makes up a large portion of any city's land area so the way we use housing will matter to the overall structure of the city. In addition, Americans are very mobile people and they use that mobility to achieve housing goals. They also use housing as an investment and to make statements about themselves (Adams, 1984)

There is a large literature examining a variety of hypotheses about the driving forces behind residential choice. The typical explanations cover a wide range of ground. For example, one of the most prominent is the "flight from blight" explanation. More specifically, this often refers to flight from judicially required school desegregation (e.g. Varady and Raffel, 1995). The general idea of moving from relatively poor service, high tax areas reflects the Tiebout hypothesis (1956) that households look for the particular jurisdiction that provides their preferred mix of services and taxes. Garreau (1991) coined the term "edge city" to describe suburban concentrations of employment opportunities. These concentrations may attract households toward the edge of the metropolitan area exerting a pull force on households. Spatial growth and lower density are considered a "natural" outcome of increasing incomes in some economic thought (Mieszkowski and Mills, 1993, for example). Of course, the basic need for different kinds of housing at different points in the life cycle has been a fundamental assumption at least as far back as Rossi's (1955) seminal study. Clearly these different points of view are not necessarily mutually exclusive. They may all play a role in explaining Americans' movement patterns and residential preferences.

Determining which ones dominate in different situations, however, is important to implementing policy to change the outcomes.

This paper focuses on the movement patterns of one group of households to shed light on the kinds of moves being made and the reasons behind those moves. That group is repeat homebuyers within one metropolitan area and one year.

Data

The data set for this research begins with deed transfer records for all properties in Franklin County, Ohio (the central county for the Columbus, Ohio MSA) in 1995. These deed records include a large number of property characteristics including exact address of the property and the names of the buyers and sellers. We selected the parcels containing noncommercial housing and matched the buyer and seller names to create a data set of people who had sold one home and bought another within Franklin County in 1995 (see Bier and Howe, 1998 for more details on the matching process). Bier and Howe estimate that this methodology finds 50 to 55% of all possible matches in the Ohio metropolitan areas where it has been used. In 1995 there were 2420 of these matched cases in Franklin County.

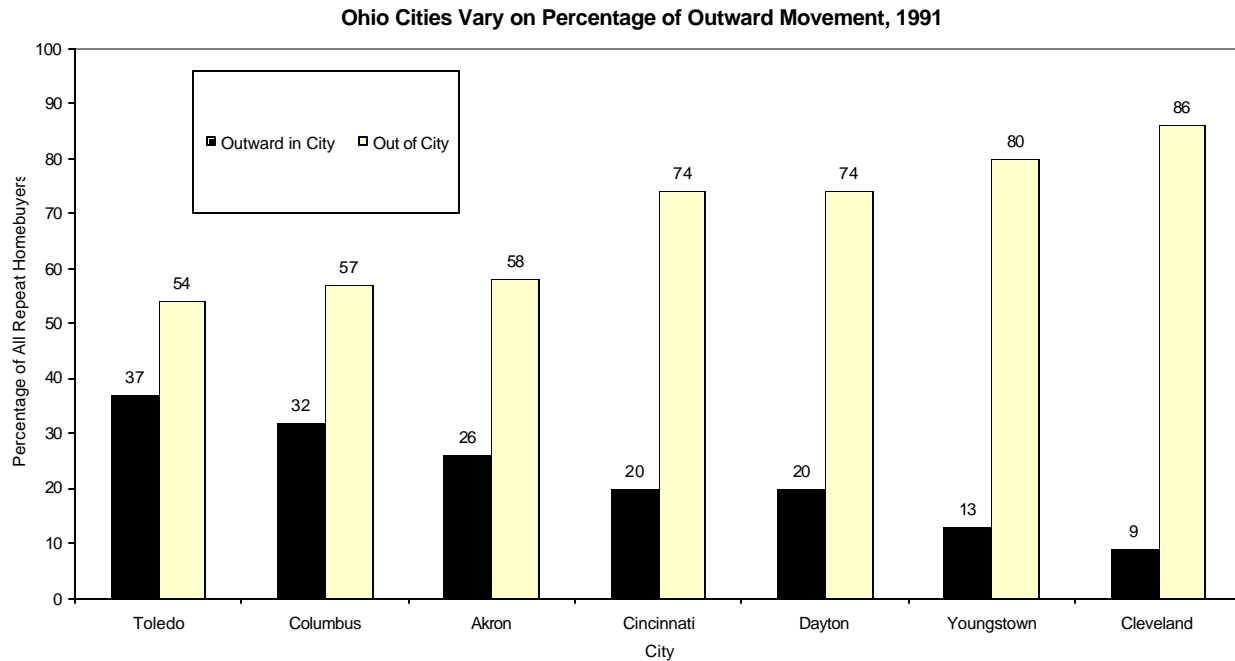
At first sight repeat homebuyers may seem to be too limited a population to matter in the study of the thinning metropolis. Although repeat homebuyers do not get a great deal of attention in the literature, this is an important group of people for several reasons. First, they make up the majority of homebuyers in any given year. According to the National Association of Realtors, for example, 58% of homebuyers in 1995 nationwide were repeat homebuyers. Homebuyers in general are important because the investment they make usually means they have taken care in choosing the home and neighborhood. Repeat homebuyers are especially interesting because they have more experience in the housing market than first time buyers. In addition, they are likely to have a better idea of their preferences and to have the resources to realize those preferences. Neighborhoods from which there is net out-movement of repeat homebuyers may be perceived as declining; neighborhoods with net in-movement have attractive characteristics that we need to understand. Much of the growth at the fringe of metropolitan areas has to do with developers and builders trying to attract repeat homebuyers, thus this submarket has important impacts on the decreasing density and increasing area of US urban places.

The matched repeat home buyer data have been examined by the Ohio Housing Research Network (OHRN) for the seven major metropolitan areas in Ohio (see Morrow-Jones, 1998; Bier and Howe, 1998; Howe, et al., 1998; and Aryeetey-Attoh, et al., 1998). Figure 1 illustrates one of the major findings of their studies; a result with significant implications for decreasing residential densities. The OHRN found that about 80% of all repeat homebuyers move up in price and that the majority of those move outward in direction (outward from the center of the city). The extent to which this outward movement results in losses of this population to the central city depends on the elasticity (Rusk, 1993) of that city. Figure 1 shows that the outward movement is consistent among all the cities, but that some (e.g., Cleveland and Youngstown) lose far more of their repeat homebuyers than others (e.g., Toledo and Columbus). In 1991 (the year of the data shown in this figure) all of the cities lost more than half of their repeat buyers.

The pattern of movement is telling, but understanding the reasons for the movement requires survey work. Consequently, using the Franklin County 1995 repeat buyer data set as the base, we designed a survey and mailed it to 1600 randomly selected households from this matched set. The survey included questions about household characteristics and about the reasons for the choices the household made. The "reason" questions were phrased as statements and the respondents were asked to rate the importance of that reason on a scale from 1 (very unimportant) to 7 (very important). These reasons for movement reflected the literature mentioned above, including life cycle and income explanations, flight from blight explanations, and the attraction factors associated with newer communities. It also used Brown and Moore's

(1972) division of the decision to move into two related choices: the decision to move and the decision about where to move

Figure 1



Source: Ohio Housing Research Network , 1994

. The categories of reasons in the survey include:

- life cycle reasons,
- push factors associated with:
 - the original house,
 - the original neighborhood (including services and taxes),
 - the school district
- pull factors associated with:
 - the new house,
 - the new neighborhood (including services and taxes),
 - and the new school district.

. The survey instrument was designed with the help of the Ohio State University Survey Research Center and they also handled the mailing of the instrument and collation of the data. The questionnaire and cover letter were mailed out to the 1600 households, followed about two weeks later by a postcard to those who had not yet returned the survey. About three weeks later a second copy of the survey and another cover letter were sent to those addresses from which no response had been received. The result was an excellent return rate. About 52% of those who received a survey returned it, that is, about 35% of the matched buyer-seller population are represented in the survey data.

We examined the geographic distribution of the returns against the geographic distribution (by school district) of the buyer-seller matched population and found no significant difference. The returns also have no significant difference in the average price of the home sold. They are slightly biased, however toward higher average prices in the home purchased.

Study Area

Columbus is the capital and largest city in Ohio (though it is not yet the largest metropolitan area). The metro area contains roughly 1.3 million inhabitants and has a diversified and quite healthy economy. Columbus has fared better economically than many of the other cities as the state has gone through de-industrialization. In addition, Columbus has had a conscious policy of annexation since the 1950s. It has controlled the activities of its surrounding suburbs through a monopoly on water and sewer extensions. Using this tool it has allowed many of the suburban jurisdictions to expand but has annexed aggressively itself and has kept annexation lanes open in all directions to allow continued spatial growth. Its land area grew 384.52% between 1950 and 1990 (OHRN, 1996).

A healthy tax base is one result of this annexation policy. Another, less obvious result has to do with the Columbus School District. In order to make annexation more palatable for those annexed, the City of Columbus did not require annexation to the school system along with annexation to the city. As a result about 40% of the area of the City of Columbus is not in the Columbus School District (see, Jacobs 1994 for an excellent discussion of the school issue in Columbus). One can live in the city of Columbus in a new house and suburban style subdivision and send one's children to suburban schools while paying lower taxes than those living in the suburbs. The city of Columbus' economic and population statistics look far superior to those of many other cities in Ohio (see Morrow-Jones and Bier, 1994, for a comparison to Cleveland) but those statistics are somewhat misleading because of the "suburban" part of Columbus. The older part of the city (basically the school district) has many problems similar to other older cities. Unfortunately, statistics for the whole city make it very easy for policy makers to ignore issues of decline and disinvestments in older areas.

This separation between the city and the school district became even more important when the Columbus School District received a court order to institute bussing for racial balance. The apparent impact of that order was to cause more outmigration of white households with children, increase the number of families interested in the parochial school system and destabilize neighborhoods that had been focused on their local school.

Because of the importance of public schools to property values in the US in general and the unusual geographic situation in Columbus, this study examines movement patterns by school district rather than by jurisdiction. There are 16 school districts in Franklin County including the Columbus City School District. In other research we have examined different disaggregations of those communities. For this paper we have simplified the districts into two categories: the central city district and all of the others.

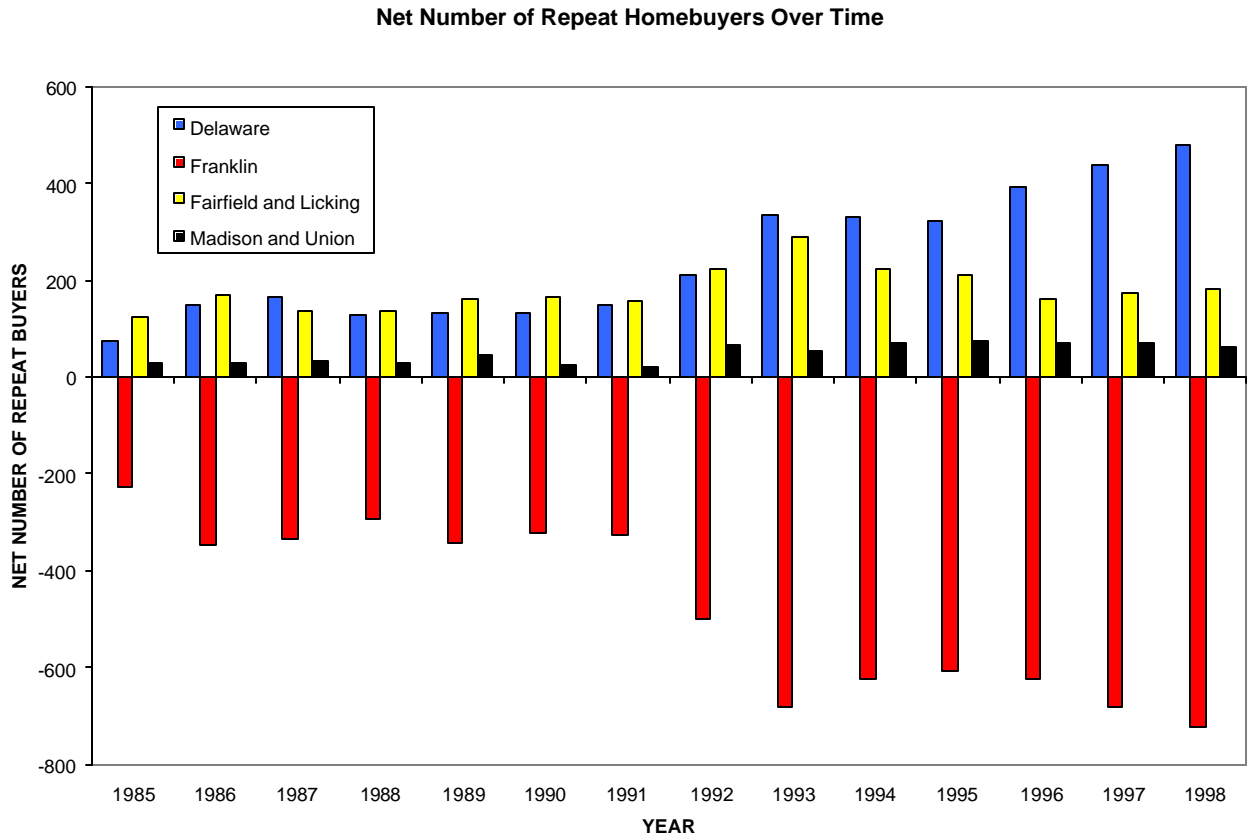
This simplified aggregation is useful, but the reader should be aware that it also hides some important differences between the suburbs. In other research (Zhuang, 2000; Morrow-Jones, 1999) it has been shown that several of the suburbs are more like the central city than they are like other suburbs. Their inclusion in the suburban category will tend to weaken the clarity of distinctions between the central city and the suburban school districts. In addition, using this simple division for this paper assumes that those who purchase in the suburban school districts are contributing to the decreasing density of the urban area and those who purchase in the central city school district are not. This is obviously an over simplification, but one that allows us to look at the differences in broad sets of reasons for people's location decisions.

Univariate Patterns

This section of the paper briefly examines the geographic pattern of movement first between counties in the larger metropolitan region over time and then between the central city and aggregated suburban school districts. We will also look briefly at many of the theoretically important reasons for movement one by one to see whether, on average, the central city and suburban districts differ in the factors that cause people to sell homes and to buy homes within their boundaries.

We begin by examining county level changes in the repeat home buyer moves over time for the 7 county central Ohio area. Figures 2 and 3 display the net movement patterns by counties for central Ohio between 1985 and 1998.

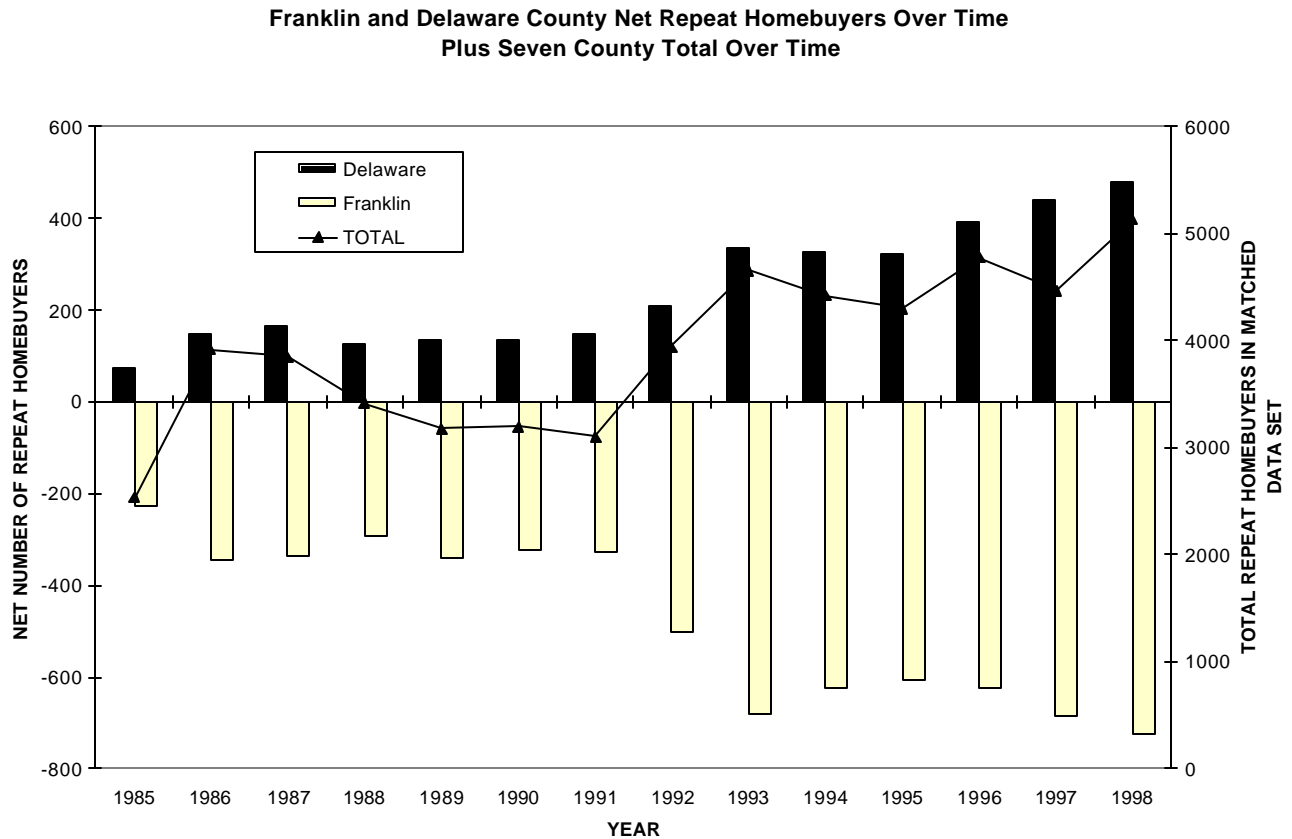
Figure 2



Franklin County lost on net throughout the time period, but the loss in the 1990s was larger than the loss in the 1980s. Delaware County (immediately to the north) has been the big gainer of the six outlying counties. The larger loss to Franklin County in the 1990s coincides with an increase in repeat homebuyer movement (Figure 3).

In order to be able to examine the characteristics of moving households and the reasons they give for moving, we focused only on moves within Franklin County in 1995 for the survey. Figure 4 shows the distribution of the entire 1995 matched data set (not just the returned surveys) by the school district in which households sold, the school districts within which they bought and the net result for the school districts. More units were sold in the suburbs than in the central city, but an even larger proportion were bought in the suburbs. On net, then, the suburban districts gained

Figure 3

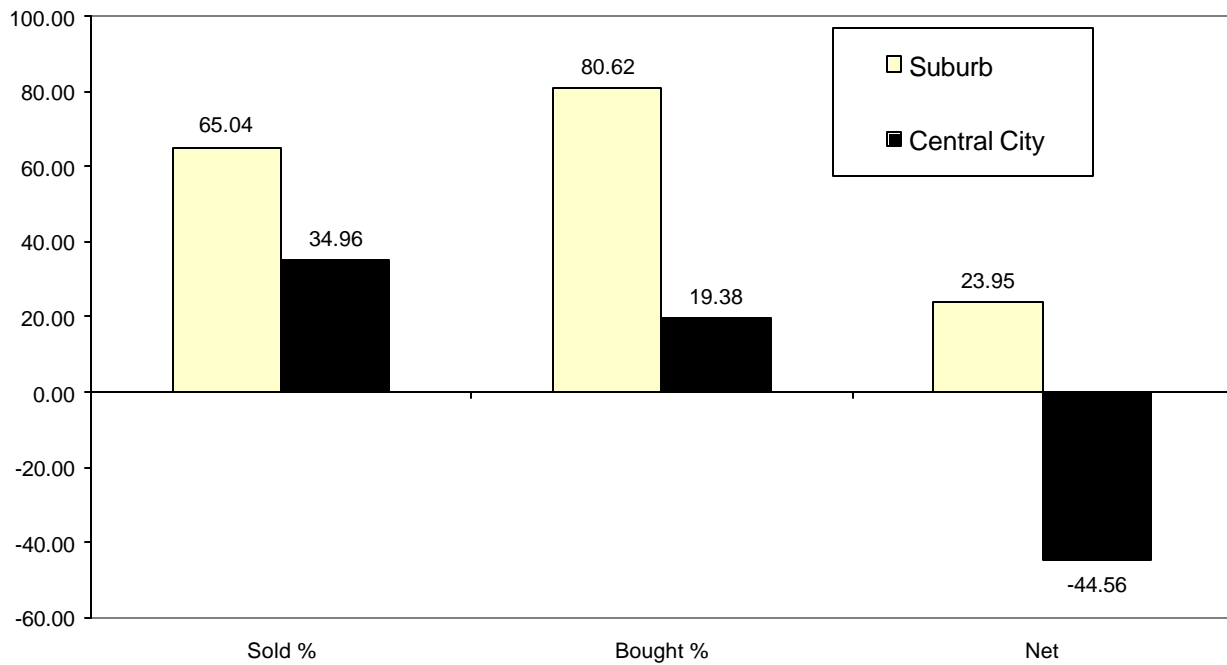


about 25% more of the repeat homebuyers than they started with and the Columbus School District lost about 45% of the number it started with. Note that this does not necessarily mean that the central city school district lost households or people, just that it lost on net in this group of repeat homebuyers.

Figure 5 a and b use bar graphs to compare the central city and suburban sellers (part a) and buyers (part b) as to the average level of importance of life cycle/ housing unit reasons for moving. Again, a response of 1 means very unimportant and 7 is very important. The average for almost all of these reasons for both suburbs and central city is below 4. Only the desire for a larger home achieved an average of 4 indicating that most of these reasons are not, on the average, very important to people. It is also very interesting to note that the central city and

Figure 4

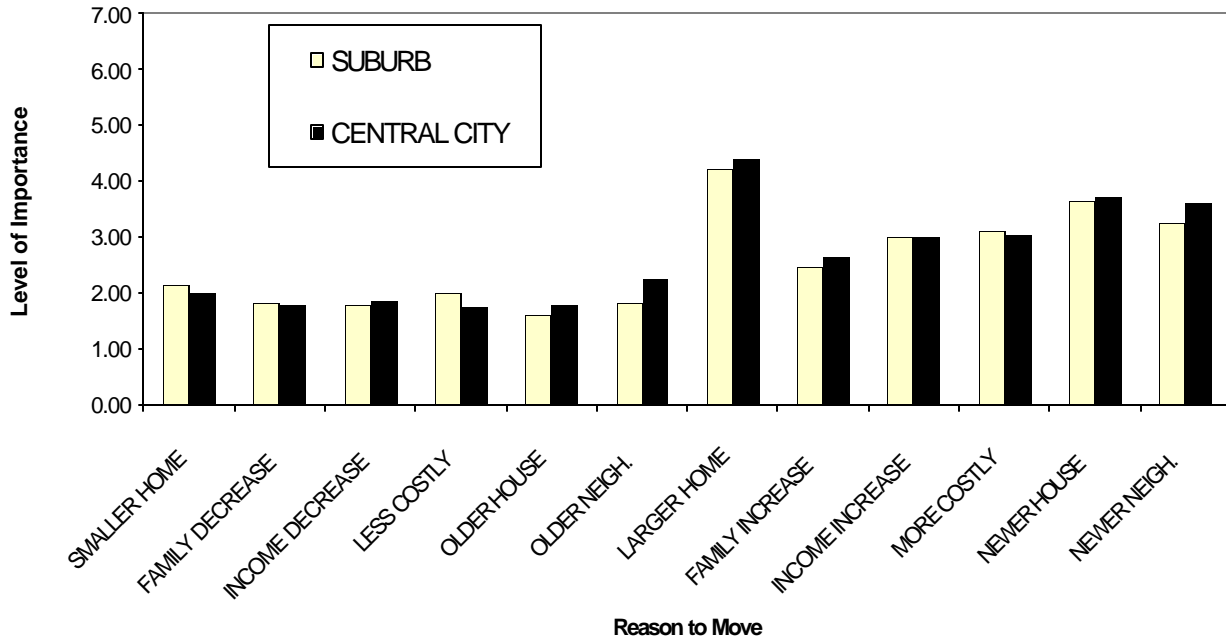
**Percentage Distribution of Sales and Purchases
(all repeat homebuyers)**



suburbs do not differ much in their ratings of these as reasons to sell a home. There is more apparent difference between them as reasons to buy a home, with the reasons consistent with downsizing (desire for a smaller home, decreased family size, etc.) more likely to be important for those buying in the central city school district.

Figure 5 a and b

Life Cycle Reasons to Move by Location Sold



Life Cycle Reasons to Move by Location Purchased

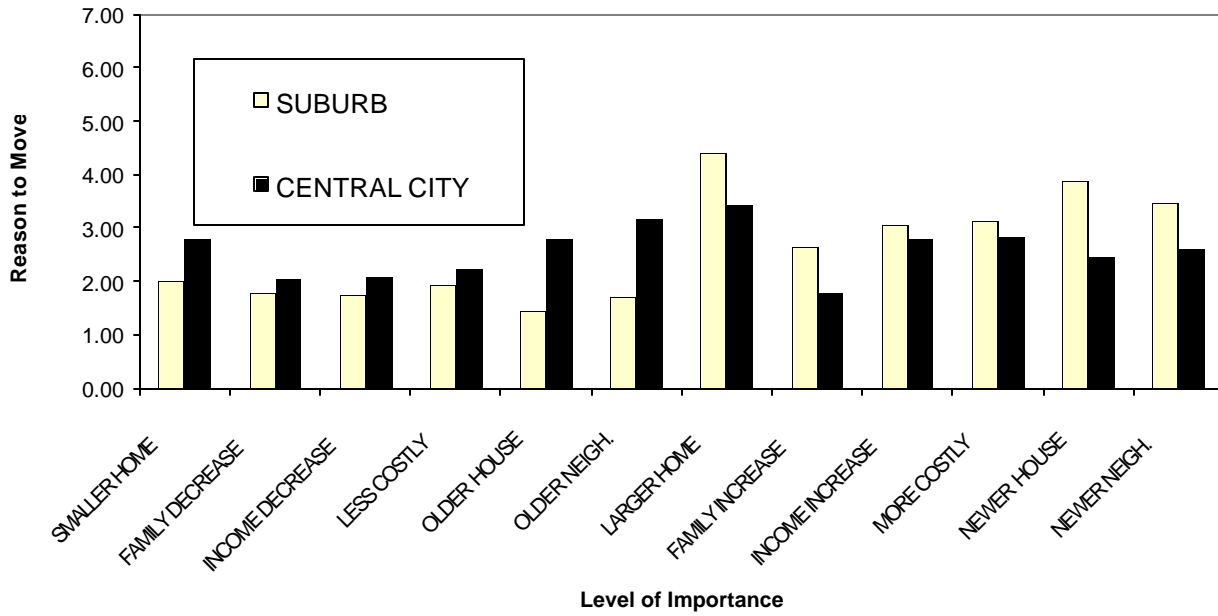


Figure 6 (parts a and b) is the analogous bar graph for the means of reasons associated with the neighborhood. The push factors associated with the neighborhood of origin appear to be the desire for better investment quality and the safety of the area. The various items appear to be more important as pull factors for both locations than as push factors (Figure 6b) with Safety, economic characteristics of the area, lower maintenance and good investment all rating an average above 4. Neighborhood characteristics do not appear to differentiate strongly between central city and suburbs as either push or pull factors.

Figure 6 a

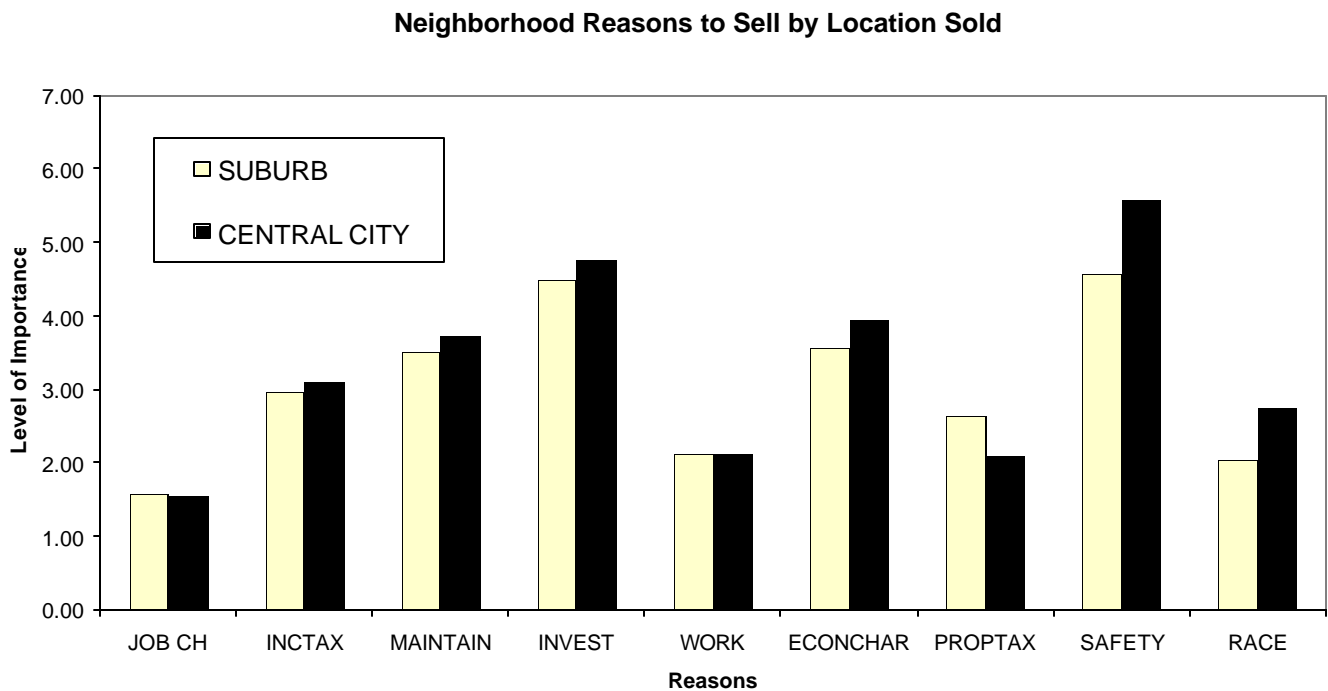


Figure 6b

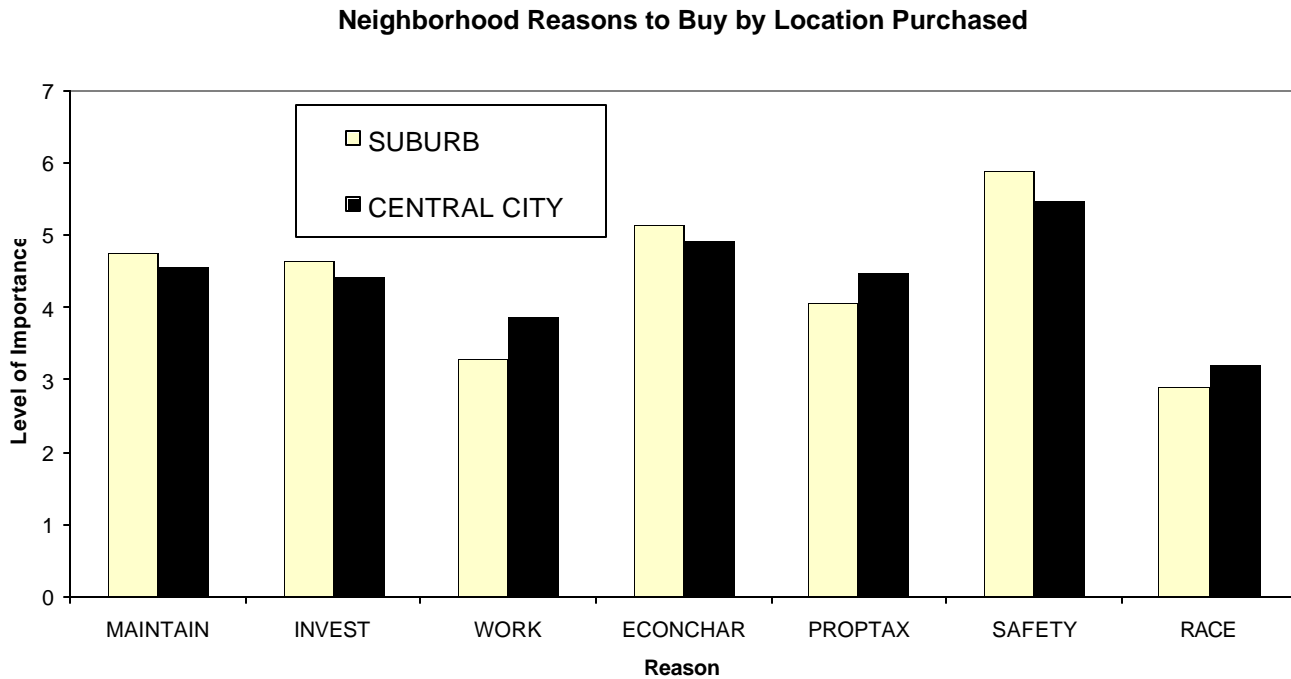


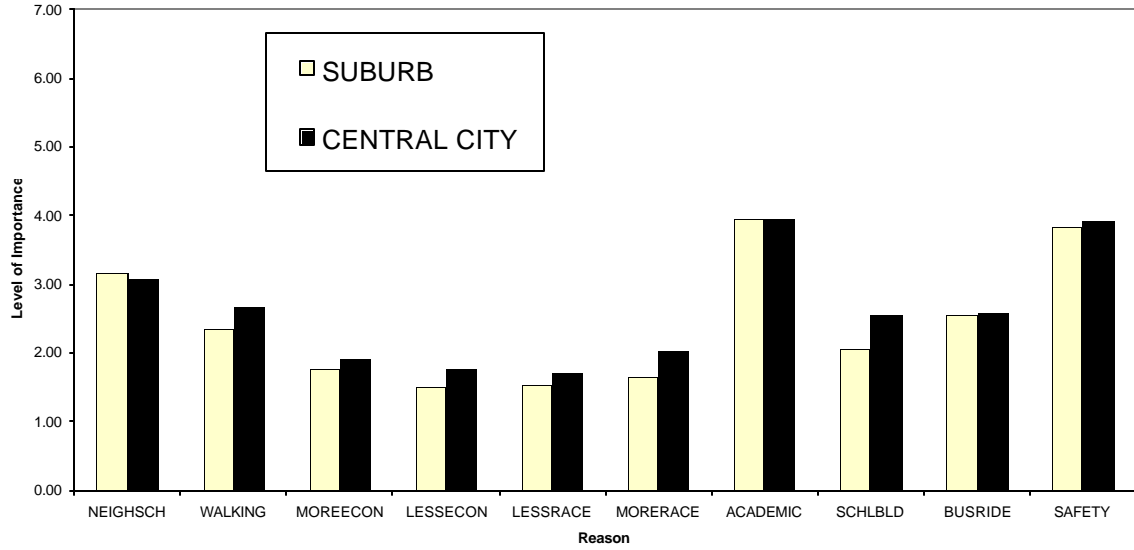
Figure 7 (a and b) shows where the differences really lie in this comparison. School related reasons are not especially important as push factors for either location (academic quality and safety in the schools are more important than others, but almost exactly the same between the two areas). As reasons to buy the new home, however, school-related factors differentiate strongly between the two groups. Those who purchased in the central city school district were far less interested in the quality of the schools than those who purchased in the suburbs.

As we would expect, those who buy homes in the central city school district are less likely to be married, much less likely to have children living at home, have an older age distribution and have a somewhat lower average income than those who buy in the suburbs.

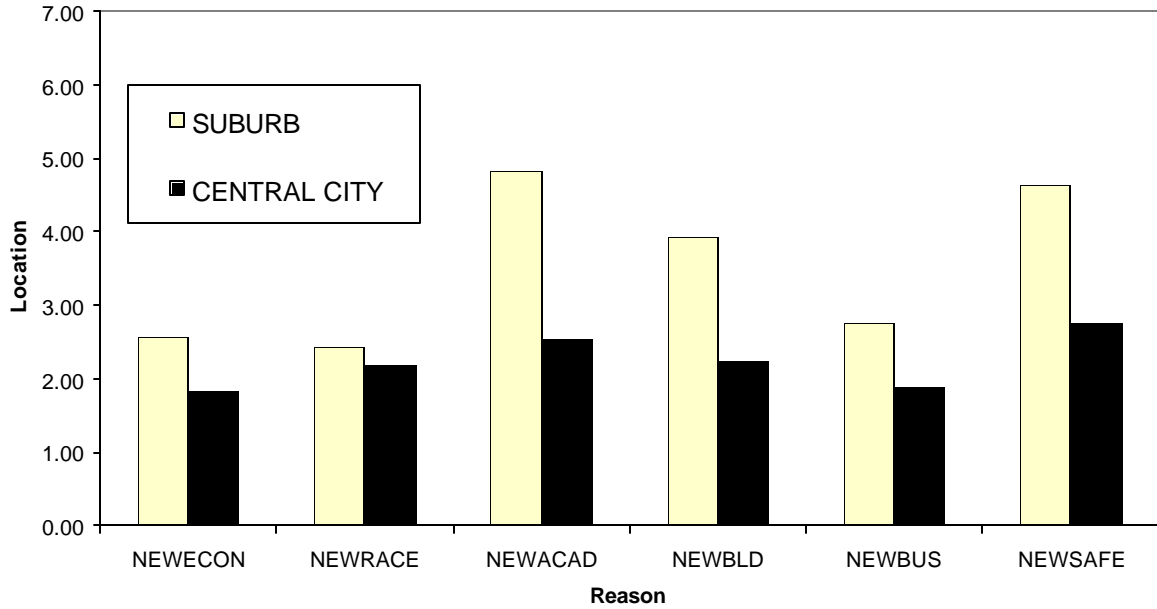
The interesting point about this set of univariate comparisons is that the life cycle and push (“flight from blight”) factors appear to play much the same role in the decision to sell one’s home whether the household sells in the central city or in the suburbs. The major difference comes in the role of schools as an attracting force in the suburbs – but not as a force driving people out of the central city.

Figure 7a and b

School-Related Reasons to Sell by Location Sold



School-Related Reasons to Buy by Location Purchased



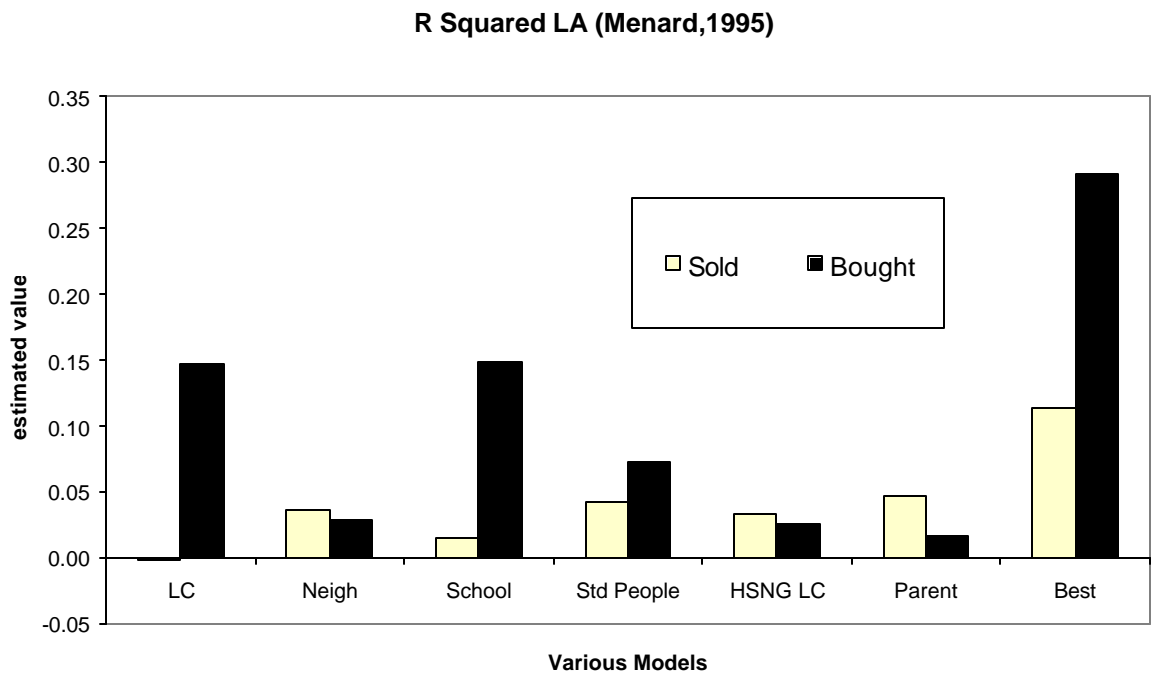
Multivariate Analysis

The univariate comparisons are interesting, but less informative than a multivariate analysis since people make decisions involving all the factors at once not one at a time. Consequently we turn next to an attempt to distinguish between the central city school district and the suburban districts as locations of the home sold and then of the home purchased. If the results suggested by the univariate statistics hold, we should have less success separating the two locations as places to sell a home than as places to buy a home and we should see school reasons as major distinguishing features of the location purchased.

We undertook two sets of logistic regression analyses, one set to differentiate city sellers from suburban sellers and the other to differentiate city buyers from suburban buyers. The dependent variable is the natural log of the odds of a city versus suburban location. In order to compare the results we used the R squared LA measure suggested by Menard (1995). It is defined as the proportion decrease in the absolute value of the log likelihood brought about by including all of the independent variables, adjusted for the number of independent variables. Obviously this measure varies from 0 to 1 and the higher the value the better the equation explains the dependent variable. Note that these results indicate how well the equation distinguishes between central city and suburban locations, not necessarily how strongly the set of variables relates to the move.

Figure 8 summarizes the R squared LA results for the series of different logistic regressions. In general, the equations are not very strong, but they are better at separating the locations bought

Figure 8



from each other than they are at separating the locations sold. Neighborhood reasons differ little from each other and the same is true for some of the household characteristic equations. Life Cycle and School-related reasons perform reasonably well in differentiating the locations purchased, but not the locations sold. Finally, all of the variables were used to create the highest R squared LA we could find in the results labeled "best" in Figure 8. These equations used all of the variables in the previous analyses and kept only those significantly different from 0 at the .05 level. Even in this case, however, it is much easier to distinguish between the locations bought than it is to distinguish between the locations sold.

This set of logistic regressions supports the notion that there is little difference in motivation between people who sell in the central city and those who sell in the suburbs. There is little difference in life cycle characteristics or in reasons for deciding to sell the house and move. There does not seem to be any support for the flight from blight hypothesis in these results. On the other hand, there are differences in the characteristics of the households, the reasons for moving and the reasons for choosing the new home and neighborhood between those who buy in the central city and those who buy in the suburbs. An examination of the "best" logistic regression sheds some light on the relationships of these variables to the location of the home purchased.

Table 1 compares the odds ratios for the independent variables in the best equation distinguishing between a sale location in the central city and a sale location in the suburbs (R squared LA was about 11%). The variables associated with selling in the suburbs are higher income, desire for a less expensive home, high property taxes as a reason to move, and desire for neighborhood schools. Those variables more associated with selling in the central city include older age at entry into parenthood, a decrease in household income, importance of the racial composition of the neighborhood as a reason to move, importance of safety of the neighborhood as a reason to move, desire for lower home maintenance, the quality of school buildings and desire for a school in walking distance.

TABLE 1

LOGISTIC REGRESSION COEFFICIENTS SEPARATING SALE LOCATION IN THE CENTRAL CITY FROM SALE LOCATION IN THE SUBURBS

<u>Variable</u>	<u>Odds Ratio</u>
INCOME	0.672
AGE OF PARENTHOOD	1.057
DECREASED INCOME	1.175
WANTED CHEAPER HOME	0.829
NEIGHBORHOOD RACE	1.166
NEIGHBORHOOD SAFETY	1.218
PROPERTY TAXES HIGH	0.736
LOWER MAINTENANCE	1.089
SCHOOL BUILDINGS	1.126
WALKING DISTANCE SCHOOL	1.153
NEIGHBORHOOD SCHOOLS	0.854

Suburban location = 0 and central city location = 1

Table 2 displays the same information for the best logistic regression to distinguish central city from suburbs as the location purchased (R squared LA was about 27% -- quite a bit better than for the equation to distinguish location sold). The variables associated with purchasing in the central city were desire for a more expensive home, desire for an older home, the property taxes, and the racial mix of the new school. The variables associated with purchasing in the suburbs were higher income, increased family size, longer duration of ownership, the desire for a newer home and the academic quality of the schools.

TABLE 2

**LOGISTIC REGRESSION COEFFICIENTS SEPARATING PURCHASE LOCATION
IN THE CENTRAL CITY FROM PURCHASE LOCATION IN THE SUBURBS**

<u>Variable</u>	<u>Odds Ratio</u>
INCOME	0.851
FAMILY SIZE INCREASED	0.848
DURATION OF OWNERSHIP	0.973
WANTED MORE EXPENSIVE HOME	1.143
WANTED NEWER HOME	0.795
WANTED OLDER HOME	1.491
PROPERTY TAXES	1.187
NEW SCHOOL ACADEMIC QUALITY	0.494
RACIAL COMPOSITION OF NEW SCHOOL	1.622

Suburban location = 0 and central city location = 1

Implications for the Thinning Metropolis

What do these results tell us about declining density in metropolitan areas and the chances for policy to affect the actions of homeowners that might lead to declining density?

First, it appears that the standard flight from blight arguments are not very important in general in the movement of Columbus' repeat homebuyers, nor very important as a method of distinguishing those who sell homes in the central city school district from those who sell in the suburban districts. People do not appear to be fleeing the Columbus schools, the Columbus housing market or Columbus neighborhoods. The much bigger difference comes in the decision to purchase. Here the Columbus School District is losing out to the suburbs and there are relatively clear differences in the reasons for purchase between the two locations. The Central city buyers are far less likely to have children in the schools (though they pay attention to the racial composition of the schools) and are concerned about the property taxes they pay (supporting the Tiebout hypothesis). They are more likely to want an older home, and surprisingly, a more expensive home. The last item may reflect purchases in gentrified neighborhoods such as German Village or in expensive high rise condominium housing. Suburban buyers are much more likely to have children and are very concerned about the academic quality of the schools in their decisions. They are likely to want a newer home, to have had a family increase and to have higher incomes.

If Columbus wants to attract people to the central city school district and thus retain density, it needs to consider several possible policy directions. First, the city of Columbus needs to recognize that it is too closely linked to the school district to ignore the outward movement from the district. The city should try to provide the home and neighborhood characteristics that people seem to want not just within the city, but within the Columbus School District parts of the city. It should advertise the extent to which it does provide those things. Columbus has a comparative advantage in property taxes and (especially in the school district) in the presence of older homes with architectural character. These homes come in a variety of price ranges, sizes, neighborhoods and conditions so that buyers can find anything from a cheap major renovation project to a pristine, stunningly rehabilitated home in a completely gentrified neighborhood. Diversity in the schools may be a strength that Columbus has not played to enough – especially in the magnet schools in the Columbus School District that could attract parents whose children have special skills or interests. The city should emphasize the urban amenities (e.g., restaurants, opera, museums and so on) available to those with higher incomes and convenient to those living in town. The central city may want to look for things to change as well. Schools are clearly important to those with children. Everyone wants a safe neighborhood. Everyone wants a good investment. Many people want a new home (and low maintenance), so efforts to build new units in town could be fruitful – and should be a mix of sizes, types and densities to broaden the potential market.

The results of this survey project indicate that we need to accept the idea that Americans are going to sell their homes and move. There does not seem to be any particular geographic difference in the reasons for these decisions. Apparently people are going to sell homes and there is not a lot of point in trying to alter that. The key is where those same households then choose to buy their next house. That is where policy can make a difference.

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