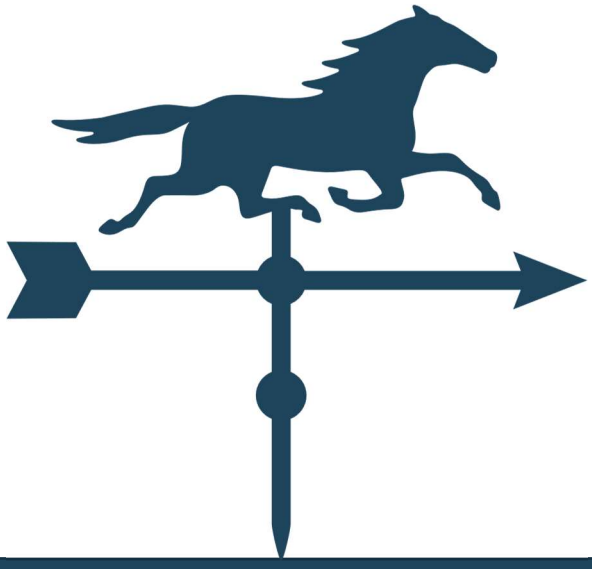
MIDDLEBURG COMMUNITIES

Understanding Rental Housing Demand

HOUSEHOLD FORMATION AND THE HEADSHIP RATE

March 23, 2023



Topics in this series:

- Population growth and migration
- The headship rate—that is, the number of households per adult
- Life-stage groups such as students, employed households without children, employed households with children, or retirees
- Income/wealth bands such as affluent, middle-market, workforce, or subsidized
- Tenure—that is, the rent/own decision

Understanding Rental Housing Demand: Household Formation and the Headship Rate

One of the most important contributors to superior performance in rental housing investment and development is superior understanding of supply and demand conditions in the rental housing market. In this demand-side report we focus on empirical research into the headship rate.

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Chief Economist

TERMINOLOGY: HOUSEHOLD FORMATION AND THE HEADSHIP RATE

A *household* is simply a group of people who share a housing unit; in fact, the number of households is defined to be equal to the number of occupied housing units. A household differs from a *family*, which is a group of people typically related to each other by birth, marriage, or adoption. A single person living alone is an example of a *nonfamily household*, but other nonfamily households are made up of people living together who are not related to each other, such as roommates.

Household formation simply means that an additional household is formed, and therefore an additional housing unit is occupied. A person who was living with their parents signs their own lease: that's an example of a household formation. A group of four students was living together, but two of them leave to share a less cramped apartment: that's an example of a household formation. (Two people who marry are forming a new household only if both of them were previously living in other households. If one of them was already living alone then their marriage leaves the number of households unchanged, while if both were living alone then their union actually reduces the number of households.)

The number of households divided by the total number of adults is known as the *headship rate*. (The terminology dates from a time when people typically thought in terms of a "head of household," but now we're likely to think of a couple as "co-heads of household.") For example if the headship rate were 0.50, then there would be an average of two adults per household. A headship rate much greater than 0.50 suggests many adults living alone (and/or many single parents), whereas a headship rate much less than 0.50 brings to mind group living and multigenerational households.

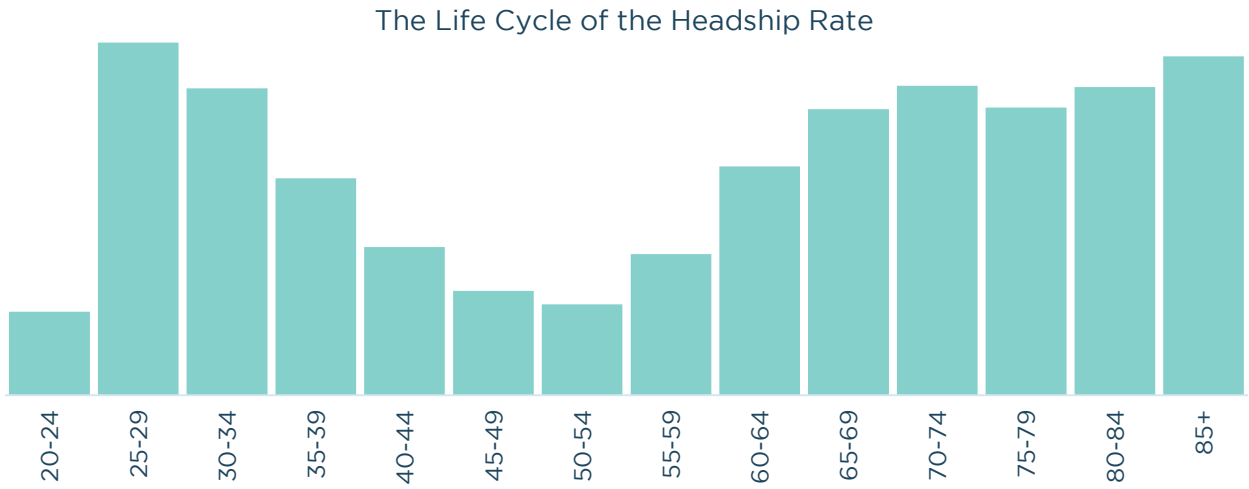
In short, household formation is a critical component of demand for housing simply because an increase in the number of households is exactly the same as an increase in the number of occupied housing units. And the key element in household formation—aside from population growth—is the headship rate.

DRIVERS OF THE HEADSHIP RATE

Deciding to form a household is a lifestyle choice: each adult chooses whether to live with any other adults, and with how many. As with many lifestyle choices, in making the household formation decision each individual will take into account both noneconomic attributes and their personal economic situation.

Age. The most straightforward driver of the headship rate is simply the age distribution of the adult population. The "life-cycle of the headship rate"[i] is quite pronounced:

- Adults in their early 20s are comparatively likely to share households with other adults, whether parents or roommates, so their headship rate is typically the lowest of any age group.
- Then there is a dramatic shift: adults in their late 20s have a strong preference to experience being single for the first time, so their headship rate is generally the highest of any age group.
- From their late 20s into their 40s or early 50s single adults tend to marry, reducing the headship rate by combining two households into one; some also have adult children living with them, increasing the denominator of the headship rate



(number of adults) without increasing the numerator (number of households).
- For adults past their early 50s, the headship rate tends to increase for three reasons: first, some married couples separate, forming two households from one and increasing the numerator; second, adult children formerly living with their parents may move out, also increasing the numerator; and third, the total number of adults declines as individuals die, reducing the denominator.

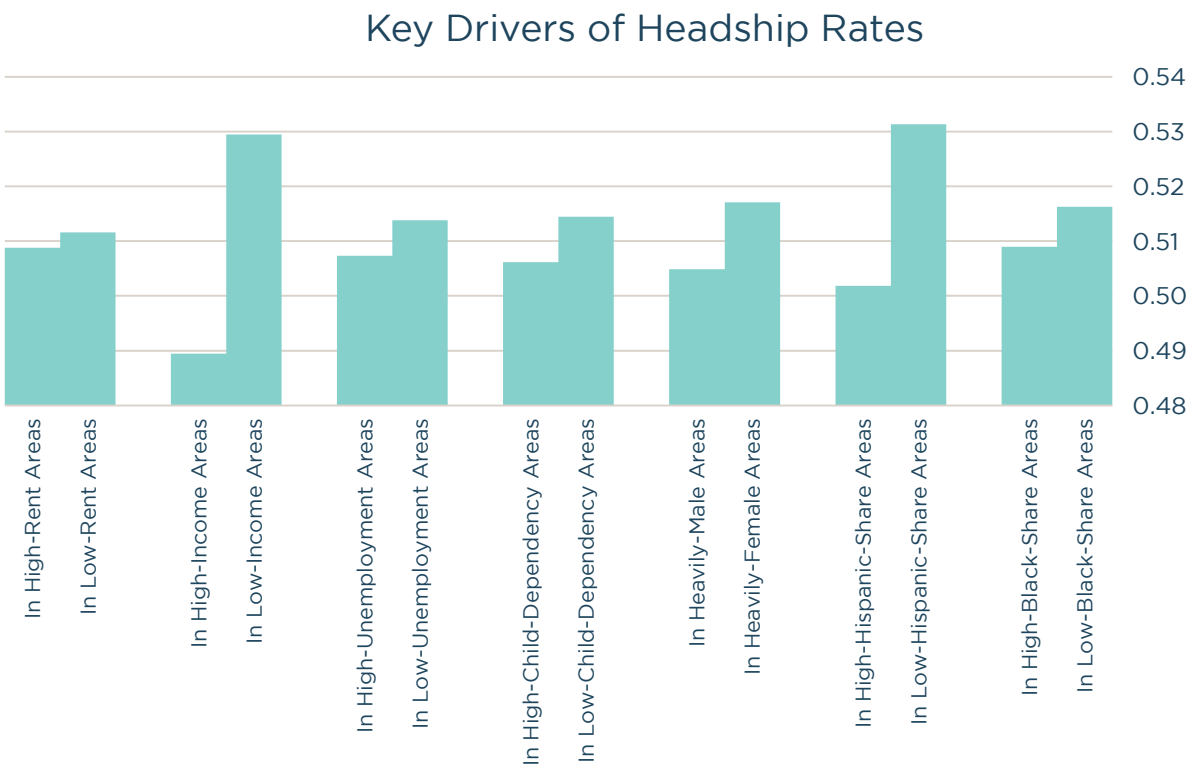
The life cycle of the headship rate has clear implications for the design and location of housing units:

- Adults in their early 20s tend to require units suitable for sharing by unrelated roommates (including purpose-designed student housing located near the colleges that many of them attend).
- Adults in their late 20s tend to require studios and other units appropriate for single households.
- From their early 30s into their 50s adults tend to require one-bedroom units appropriate for couples, as well as larger units for couples with children (including adult children).
- After their early 50s adults have a decreasing need for larger units but, as they age, an increasing need for certain amenities such as those provided in many purpose-designed senior housing or manufactured housing communities. Older adults, however, tend to prefer staying in their current housing unit rather than moving, so many households in these age groups inhabit larger housing units than their household size requires.

While the "life cycle of the headship rate" is both powerful and intuitive, a variety of other variables have a strong influence on household-formation behavior during different stages of each individual's life cycle.

Cost. Forming a new household is costly, just as sharing a household enables people to save money by dividing many fixed (or imperfectly variable) expenses among more payers. The most significant cost in forming a new household is, of course, the housing itself: for example, a two-bedroom housing unit is typically less expensive than two one-bedroom (or even studio) units as occupants can share the costs associated with access, kitchen facilities, living space, and some utilities.

It is important to remember that the largest jump in household formation comes as people graduate from their student years (age 20-24) to their independent-living years (age 25-29). Moreover, homeownership represents a substantially larger financial commitment to a particular housing unit, not only because of the down-payment and payment-to-income requirements to qualify for a mortgage but also because the one-time transaction costs of buying or selling a home are much greater than the one-time transaction costs of entering or leaving a lease contract. Because of this, adults forming new households generally elect to rent, making rental costs much more relevant to the household-formation decision than homeowership costs. In fact, the empirical



relationship between house prices and headship rates is ambiguous, largely because many adults elect not to purchase a house until their household income is larger, which often happens because they have joined with another adult in a semi-permanent two-adult, two-income household. In short, relative *rents* are powerful drivers of household formation behavior whereas relative *house prices* are not.

Data from the 2021 American Community Survey (detailed in the Appendix) suggests that, holding constant other drivers of household formation, the headship rate tends to be about 0.3 percentage points higher in an average area with low rents compared with the same area but with high rents: that is, the headship rate can be predicted at about 0.509 for a household with average attributes located in a high-rent area compared with 0.512 for a household with the same attributes located in a low-rent area.[ii] For metro areas across the U.S., that difference in headship rates would translate to about 280,000 occupied housing units.

<u>*Income*</u>. It would be natural to expect higher income to be associated with higher household formation, because higher income would make it easier for an adult to afford the higher costs of forming an independent household. The empirical relationship between household income and headship rates, however, is the opposite: a high household income tends to be associated with a two-earner household, whereas lower household incomes may reflect a greater share of single adults. As a result, headship rates (that is, households per adult) tend to be lower in areas with higher household incomes, and higher in areas with lower household incomes. And the effect is very, very strong: for

example, data from the 2021 American Community Survey suggests that the headship rate tends to be about 4.0 percentage points higher in an average census tract with relatively low median household income than in a census tract with the same attributes but relatively high median household income. That difference translates to about 4.0 million occupied housing units in metropolitan areas across the U.S.

Local-area economic conditions. Forming an independent household typically requires a commitment through at least the next 12 months, reflecting the typical term of a new rental housing lease contract. Because of that time commitment, individuals tend to live independently not as soon as they can afford to do so, but only when they are reasonably certain that they can expect to continue being able to afford it. As a result, the strength and stability of the local economy—especially the local job market—is likely to be an important determinant of household formation behavior.

We can use the average unemployment rate in each metropolitan area during a given year, relative to the average in other metro areas, to represent the strength and stability of the local economy in explaining headship rates. This analysis, applied to data from the 2021 American Community Survey, indicates that the headship rate tends to be about 0.6 percentage points higher in an average census tract located in a low-unemployment metro area compared with an otherwise identical census tract located in a high-unemployment metro area. Across the U.S. as a whole, that difference would translate into about 644,000 housing units.

Household composition: child dependency. Just as high rents and weak or uncertain economic conditions tend to lower the headship rate by making it more difficult for an adult to meet the costs of forming a new household, the presence of children likely represents a significant barrier for single-adult households. This is likely both because the presence of children in the household increases the size (and expense) of the required housing unit and because the other costs associated with children make it more difficult to afford independent (that is, single-adult) living.

Individuals tend to live independently not as soon as they can afford to do so, but only when they are reasonably certain that they can expect to continue being able to afford it.

For this reason, areas with higher child dependency ratios—the number of children per 100 working-age adults—tend to have lower headship rates and *vice versa*. In particular, the headship rate in an otherwise average census tract with a relatively low child dependency ratio would tend to be about 0.8 percentage points higher than in an otherwise identical tract with a relatively high child dependency ratio—a difference translating to about 827,000 additional occupied housing units.

Household composition: gender ratio. Men seem to have a higher propensity to live with other adults—thereby reducing the number of households per adult—

whereas women seem to have a higher propensity to live without other adults. There are several likely reasons for this:

- "Group housing" may include not merely housing units shared by a small group of friends but also larger arrangements such as barracks (common in the military and used to some extent in certain other industries) and even prisons, both of which tend to house male-dominated populations.
- The relatively high headship rate among the oldest households (late 60s or older) tends to reflect the death of one spouse, which is most commonly the male, leaving a single-female older household.

As a result, the headship rate tends to be higher in areas with a higher female-to-male ratio and lower in areas with a higher male-to-female ratio. In particular, the headship rate in an otherwise average but predominantly-female census tract would tend to be about 1.2 percentage points higher than in an identical but predominantly-male tract—a difference translating to about 1.2 million additional occupied housing units.

Ethnicity: Hispanic and Black households. A particularly strong explanatory variable in evaluating headship rates is the ethnicity of the householder: in particular, whether they identify themselves as Hispanic[iii] or not. The predicted headship rate for a census tract that has otherwise average attributes but a relatively high Hispanic population share is about 3.0 percentage points lower than an otherwise identical census tract with a relatively low Hispanic population share. That large difference translates into about 2.9 million additional occupied housing units. Similarly but less pronounced, the predicted headship rate for an average tract with a relatively high Black population share is about 0.7 percentage points lower than an otherwise identical tract with a relatively low Black share, translating to about 700,000 additional occupied housing units.

It is difficult to determine why, *after* having controlled for other attributes such as householder age, income, child dependency, gender, and housing costs, there should remain such a pronounced difference in headship rates between Black or (especially) Hispanic households and non-Hispanic, non-Black households. The explanation is relevant to making predictions regarding the likely role of household formation in determining future demand for housing. For example,

- García & Paciorek [2021][iv] suggested that the difference in headship rate between Hispanic and Black adults arises because Hispanics "are more likely to be married or in a partnership (and less likely to be single) than Blacks."
- Regarding the difference in headship rates between Hispanic and White adults, García & Paciorek share with many other researchers an "explanation" that amounts to no more than a restatement of the observation: Hispanics are "more likely to live with family than whites." If the lower headship rate among Hispanic adults reflects simple preference for larger-family living rather than any economic factors,

then for forecasting purposes it must be considered whether the general Hispanic population—of which recent immigrants account for a large share—are likely to retain that preference or whether they are likely to assimilate to the preference for more independent living seen among the non-Hispanic population.

- Garasky, Haurin & Haurin [2001][v] noted that "discrimination in the housing market could limit the residential choices of Black and possibly of Hispanic" individuals, leading to a reduced headship rate. If this were the correct explanation, then a provider of housing could gain increased market share by countering a more general local tendency to discriminate. It is difficult, however, to reconcile this explanation with the dramatically larger (4x) effect of Hispanic identity than of Black identity on the headship rate.

CHANGES OVER THE LAST DECADE

The foregoing discussion was based on a cross-sectional analysis of data collected during 2021. There is no doubt that *changes* in economic and housing-market conditions affect *changes* in headship status: for example, a weakening of the job market can induce adults to delay forming a new household, or induce adults currently living independently to start sharing housing (such as by moving back in with parents), thereby reducing the headship rate. Indeed, several researchers including Paciorek [2016][vi] have concluded that "the sharp decline in the headship rate from 2006 to 2010 is due in part to the rise in unemployment." Research on changes in the headship rate over time is, however, very difficult owing both to the complexity of the decisions involved and to the scarcity of longitudinal data.

We can develop some sense of changes over time by comparing headship rates predicted from our analysis with those predicted by the same analysis conducted at a different time. For example, comparing our analysis based on 2021 data from the American Community Survey with the same analysis applied to data from a decade earlier suggests several useful observations:

> The effect of relative rents in determining headship rates seems to have declined sharply over the past decade, whereas the effect of local economic conditions seems to have jumped.

Rent. The effect of relative rents seems to have changed in two ways between 2011 and 2021. Most importantly, the importance of cross-sectional relative rents in determining headship rates seems to have declined sharply: for example, if we applied the coefficients estimated from the 2011 analysis to the data from 2021, it would suggest that headship rates were about 0.5 percentage points higher in low-rent areas than in high-rent areas. That effect is 70% greater than the effect estimated from the 2021 analysis, and would translate to about 475,000 additional occupied housing

units instead of the 280,000 implied by the 2021 analysis.

A much smaller change is that the disparity between low-rent and high-rent areas became slightly greater: for example, the upper-quartile gross rent increased by 37% from 2011 to 2021 whereas the lower-quartile gross rent increased by just 28%. By itself, this change would have implied a slightly smaller difference in headship rates between high-rent and low-rent areas, translating to about 266,000 additional occupied housing units rather than the 280,000 implied by the 2021 data. Combining the two effects—changing sensitivities and changing data—suggests a 38% decline from 2011 to 2021 in the effect of relative rents on headship rates.

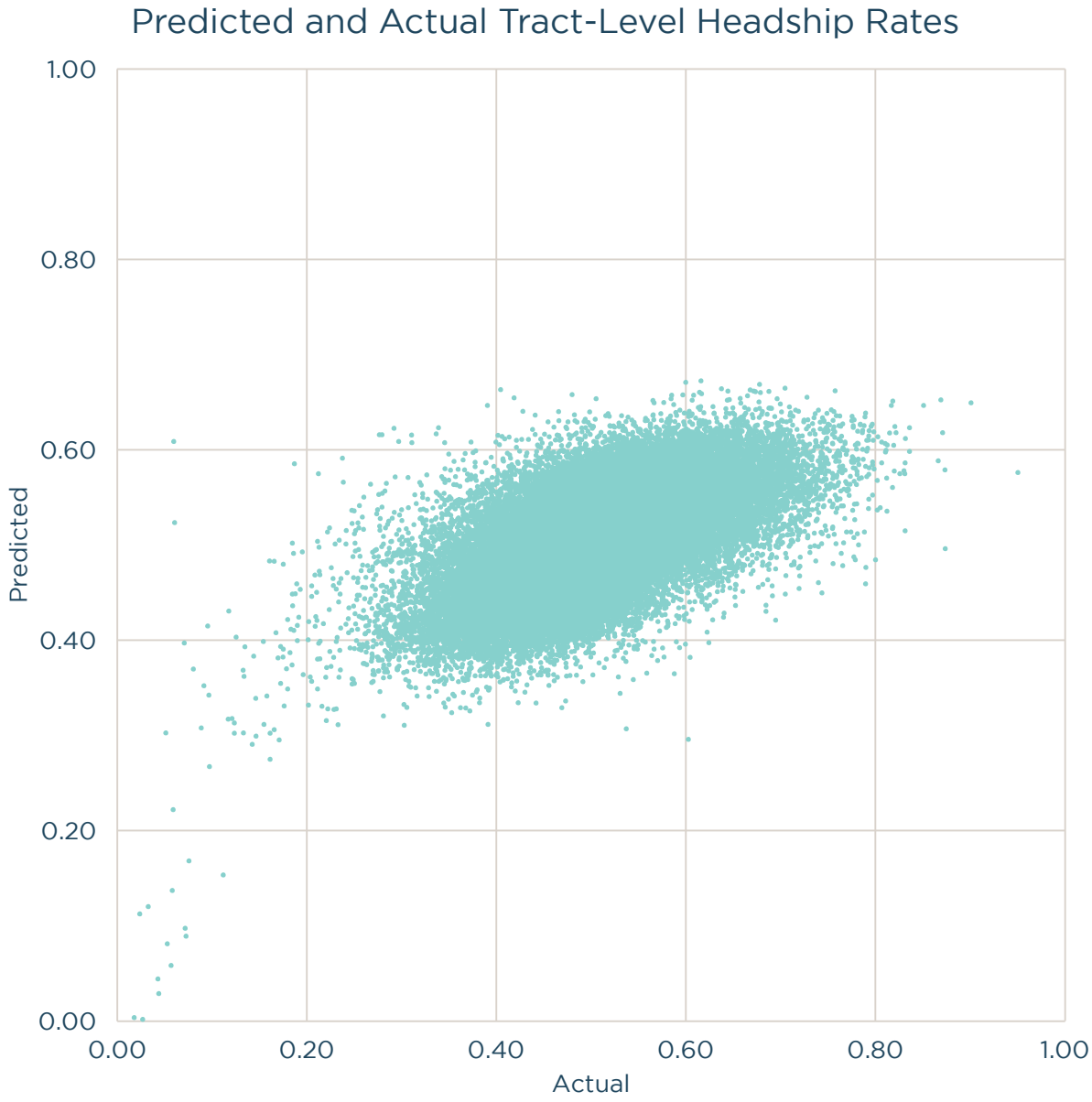
Income. As noted, higher household income is actually associated with lower headship rates, because higher household income generally reflects two-earner households whereas lower household income often reflects one-earner households. This very powerful effect grew slightly in importance between 2011 and 2021: if we applied the coefficients estimated from the 2011 analysis to the data from 2021, it would suggest that headship rates were about 3.8 percentage points higher in low-income areas than in high-income areas, compared with the 4.0 percentage-point difference implied by the 2021 analysis. Unlike with relative rents, though, there was essentially no difference between 2011 and 2021 in terms of the disparity between high-income and low-income areas. The combined effect of the change in the strength of the relationship and the change in the disparity suggests about a 5% increase from 2011 to 2021 in the effect of relative incomes on headship rates.

Local-area economic conditions. The effect of *relative* unemployment rates on relative headship rates increased by about one-third between 2011 and 2021. (It is important to recognize that we are estimating the effect of cross-sectional differences in unemployment rates at a given time—not the effect of changes in unemployment rates, which were substantially lower throughout the country in 2021 than in 2011.) If we applied the coefficient estimated from the 2011 analysis to the data from 2021, it would suggest that headship rates were about 0.5 percentage points higher in low-unemployment areas than in high-unemployment areas. This difference would represent about 479,000 additional occupied households, whereas the 2021 analysis suggested a difference of about 644,000. As with relative incomes, however, there was essentially no difference between 2011 and 2021 in terms of the disparity between high-income and low-income areas. Taken together, the effect of relative local unemployment rates on relative headship rates increased by about 36% from 2011 to 2021.

Household composition: child dependency. The strength of the relationship between child dependency and headship softened slightly between 2011 and 2021: the coefficient estimated from the 2011 analysis, applied to 2021 data, would have suggested a difference of about 879,000 occupied housing units between the upper- and lower-quartile values of the child dependency ratio, compared with

the 827,000 suggested by the 2021 analysis. On the other hand, the cross-sectional disparity in child dependency ratios grew slightly (even though the overall average value declined) from a difference of 15.2 between the upper- and lower-quartile values in 2011 to a difference of 16.2 in 2021. These two changes almost exactly cancelled each other out.

Household composition: gender ratio. As with rents, there were two differences between 2011 and 2021 in the effect of gender ratios on headship rates. First, the strength of the coefficient increased by 16 percent: applying the coefficient estimated from the 2011 analysis to the 2021 data would have translated to almost 1.1 million additional occupied housing units in predominantly-female areas than in predominantly-male areas, compared with more than 1.2 million



from the 2021 analysis. In addition, the disparity between more-male and more-female areas also grew by 16% from 2011 to 2021, with the upper-quartile value of the gender ratio increasing from 1.043 to 1.074 while the lower-quartile value increased only from .871 to .874. Taking these two changes together suggests that the effect of gender ratio on headship rates increased by about 35% from 2011 to 2021.

Ethnicity: Hispanic and Black households. Between 2011 and 2021 the coefficient representing the strength of the effect of Hispanic population share on headship rates softened only very slightly whereas the disparity between high-Hispanic-share and low-Hispanic-share areas increased appreciably, implying that the overall effect increased by about 13%. Given how strong the effect is, this 13% difference between 2011 and 2021 translates to about 335,000 additional occupied housing units in areas with low Hispanic population share (4% at the lower quartile) compared to areas with high Hispanic population share (25% at the upper quartile).

In contrast, between 2011 and 2021 the disparity between high-Black-share areas and low-Black-share areas increased only slightly but the coefficient representing the strength of the relationship increased by 29%, implying an overall increase of 33%. Given the much weaker relationship, this difference translates to about 548,000 additional occupied housing units in areas with low Black population share (17% at the upper quartile) compared to areas with high Black population share (1% at the lower quartile).

UNEXPLAINED VARIATION

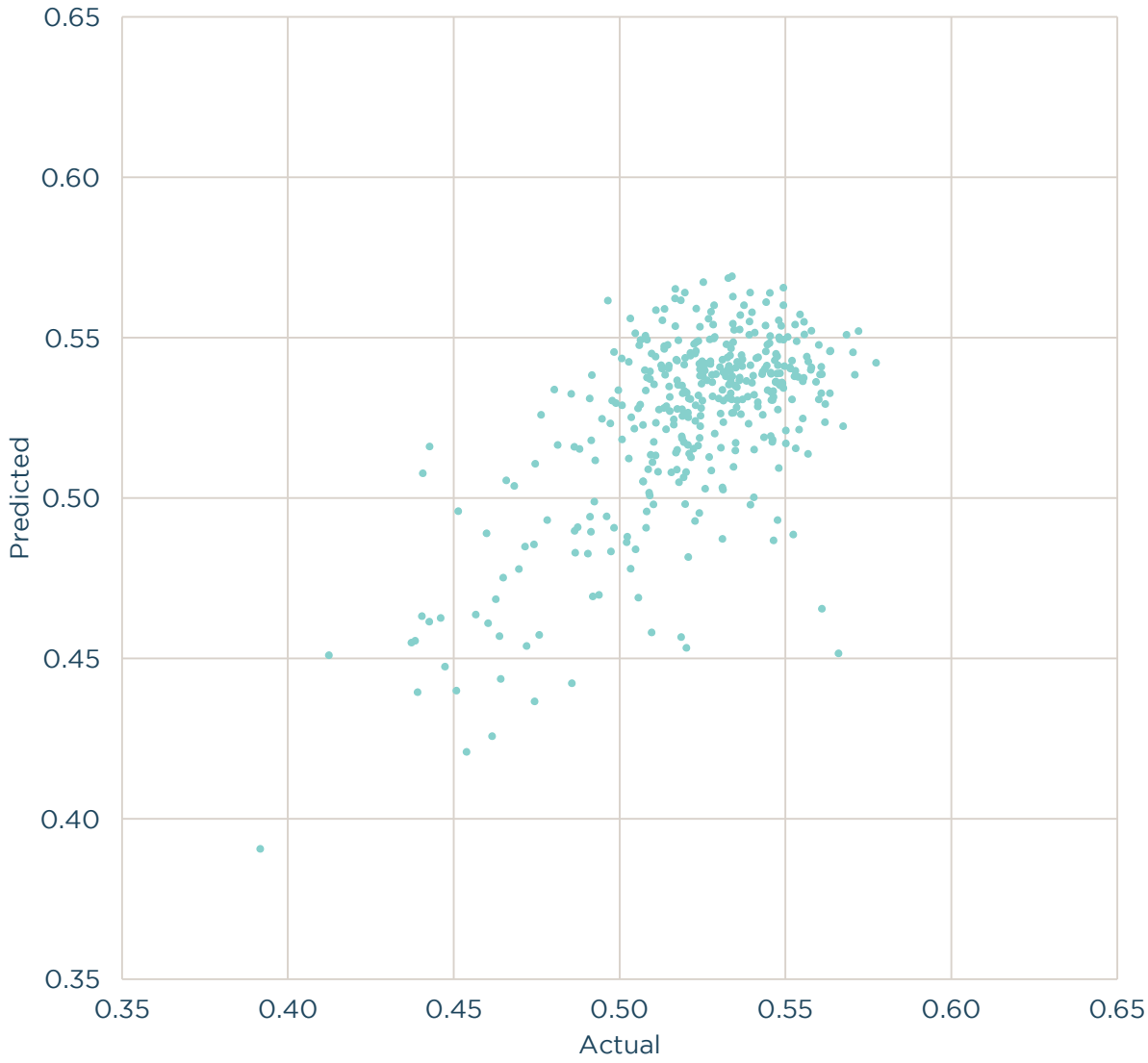
Numerous other variables likely affect the decisions that individuals make regarding whether to live independently (increasing the headship rate) or to share housing with other adults (reducing the headship rate). Some sense of the types of drivers likely to have been left out of this analysis can come from examining the average "unexplained" headship rates by metro area—that is, the difference between actual headship rates and the headship rates predicted from the cross-sectional analysis described above.

For example, the two metro areas with the largest positive average prediction error—meaning that actual headship rates were lower than predicted by the 2021 analysis—were Honolulu and Kahului, both in Hawaii, where actual headship rates averaged 44% while predicted headship rates averaged 52% (Honolulu) or 51% (Kahului). Both of those metro areas are notable for the share of their population that identifies as something other than White, Black, or Hispanic—primarily "Asian alone" (42% in Honolulu, 29% in Kahului) and "Native Hawaiian and Other Pacific Islander alone" (10% in Honolulu, 11% in Kahului). As is true with Hispanic populations in other parts of the country, the households identifying as Asian or Native Hawaiian in Hawaii may simply have a preference for larger-family living. (The alternative explanation advanced by Garasky, Haurin & Haurin [2001] of discrimination in housing markets seems less credible.) If so, then there seems little reason to expect assimilation to effect a change in this preference, as could happen with more recently arrived Hispanic households.

Most of the other metro areas with large positive average prediction errors are located in the Southeast, including Gadsden, Tuscaloosa, Dothan, and Anniston in Alabama, Morristown and Cleveland in Tennessee, Lakeland (and, somewhat less so, Orlando) in Florida, and Asheville in North Carolina. It is far less clear why populations in these metros should have a preference for larger-family living after having controlled for other factors.

In contrast, the three metro areas with the largest negative average prediction error—meaning that actual headship rates were higher than predicted by the 2021 analysis—were all in the Southwest: Odessa and Midland in Texas, along with Yuma in Arizona where the difference between actual and predicted headship rates ranged from 7% (52% actual *vs* 45% predicted inYuma) to 11% (57% actual *vs* 45% predicted in Odessa). These three metro areas are notable for the large

Metro-Level Average Predicted and Actual Tract-Level Headship Rates



share of workers employed in "Agriculture, forestry, fishing and hunting, and mining"—specifically oil and gas extraction in Odessa and Midland, and agriculture in Yuma. It is unclear why adults employed in those industries should have a *preference* for independent living after having controlled for factors such as ethnicity, gender ratio, and child dependency ratio, but group living in those industries could possibly provide the answer.

Most of the other metro areas with large negative average prediction errors—including the next five of Santa Fe and Las Cruces in New Mexico, Lubbock and Corpus Christi in Texas, and Pueblo in Colorado—are also located in the Southwest, but their employment concentrations are in different industries.

FORECASTING CHANGE

Most of the analysis presented thus far has been focused on explaining cross-sectional variations in headship rates—that is, differences in headship rates across census tracts in different parts of the country in 2021. For example, the importance of rents or local-area employment conditions were analyzed in *relative* terms—that is, using local-area rents or unemployment rates relative to the national average—rather than in absolute terms.

As noted, while *changes* in economic and housing-market conditions affect *changes* in headship status, forecasting changes in the headship rate is difficult given the complexity of the problem and the paucity of data suitable for characterizing individual household-formation decisions. Nevertheless, it is possible to make certain broad statements regarding likely changes in headship rates.

Rent. The empirical results from the analysis described above are entirely consistent with the idea that high rents—however "high" might be defined—present a barrier to household formation. Since rents on most properties are affected by market forces of supply relative to demand, it is straightforward to note that (other factors remaining constant) the headship rate is likely to increase in areas where increased supply is permitted to reduce relative rents. In contrast, where supply is more constrained—whether by natural factors (such as topography) or by regulatory processes—it is likely that headship rates will decline, at least in relative terms, as adults find themselves forced to consider sharing housing units.

Economic conditions. Similarly, the conclusions described above are consistent with the idea that weak economic conditions—regardless of how they are measured, and regardless of whether they are weak in absolute or merely relative terms—present another barrier to household formation. Importantly, it is likely not merely current but expected economic conditions that affect household-formation decisions—which suggests that a stable pattern of growth is likely more favorable to an increase in headship rate than a growth spurt that is expected to recede.

Income. In contrast, it was noted that the relationship found between income and headship rates is the opposite of what one might expect: if income enables people to

afford independent living then one would expect higher income to increase the headship rate, but the data show that higher *household* income is actually associated with *lower* headship rates because higher household income tends to reflect households of two earning adults living together. Nevertheless, the original expectation remains valid: any increase (net of inflation) in measured household income that arises from increased earnings at the individual level (rather than from increased pooling of earnings across multiple adults living together) is likely to increase the headship rate.

The U.S. Census Bureau forecasts a sharp decline in child dependency, implying an increase in the national headship rate.

Household composition: child dependency. The U.S. Census Bureau projected in 2020 that, from 2020 to 2060, the population age under 18 years would increase by 8.3% while the working-age population (age 18-64) would increase by 13.3%.[vii] This implies a sharp decline in the child dependency ratio, from 36.5 children per 100 working-age adults in 2020 to just 34.9 in 2060. As noted above, areas with higher child dependency ratios tend to have lower headship rates and *vice versa*, partly because it is easier for adults without children to find and afford an appropriate housing unit for independent (that is, single-adult) living. In fact, the projected decline in the nationwide child dependency ratio—holding other factors constant—implies an increase in the nationwide headship rate of 0.35 percentage points, which in 2021 would translate into 351,000 additional occupied housing units.

Ethnicity: Hispanic and Black households. The same U.S. Census Bureau report projects that, from 2016 to 2060, the Hispanic share of the U.S. population will increase from 18% to 27% while the Black share will increase from 13% to 15%. As noted, both Hispanic and Black households seem to have lower headship rates than the rest of the population (after controlling for other factors)—although, at least in the case of Hispanic households, it is possible that what seems to be a preference for larger-family living may dissipate if recent immigrants assimilate to the preference of other Americans for independent living. Assuming that the 2021 model coefficients remain valid, however, the projected increase in the Black population share suggests that the nationwide average headship rate would decline by about 0.2 percentage points (the equivalent of about 246,000 fewer occupied housing units in 2021) while the projected increase in the Hispanic population would have a much more significant effect, reducing the headship rate by 5.5 percentage points, the equivalent of 5.5 million occupied housing units in 2021.

Age. The Census Bureau also projects—as many others have also done—that the age distribution of the adult U.S. population will change substantially: for example, the population age 65 years and over is projected to increase by 68.9% from 2020 to 2060, several times the increases projected for the under-18 and working-age populations (8.3% and 13.3%

respectively). As noted above, average headship rates differ sharply for adults in different age groups—something that remains true after controlling for other forces driving household formation behavior. In particular, the population age 85 years has a higher headship rate than any age group aside from those age 25 to 29, while the "younger elderly" population—those age 65 to 84—have higher headship rates than those in the 45 to 59 age range.

This suggests that the national average headship rate is likely to increase as the population distribution broadly ages. However, it is likely that headship among the post-working population is strongly affected by at least two related factors that are not taken into account in the modeling described above: the prevalence of medical conditions that present a barrier to independent living, and the cost and availability of products or housing unit designs that help seniors overcome these barriers. For this reason, projecting the change in headship rates likely to be caused by the aging U.S. population seems too speculative.

SUMMARY: VARIATION IN HEADSHIP RATES AND IMPLICATIONS FOR HOUSING DEMAND

While this report has described changes over time in household formation behavior both by comparing 2011 with 2021 and by considering projected changes from 2020 to 2060, the primary focus has been on explaining cross-sectional variation in headship rates. Even though it employed a limited set of variables to describe the outcomes of a complex set of individual decisions, the empirical analysis is perhaps surprisingly successful, explaining more than 38 percent of the variation in headship rates across more than 64,000 census tracts. Some of the metro areas with the greatest *unexplained* variation have already been discussed, but a few other examples illustrate how successful the analysis is:

- Buffalo NY and Dayton OH have among the highest average headship rates in the nation at 0.564 households per adult. The empirical analysis yielded predictions for both metros of 0.546, just 1.8 percentage points below the actual average.
    - Several other Midwestern metro areas also had extraordinarily high average headship rates including Decatur IL, Carbondale IL, and Kokomo IN (all 0.57); the predicted average headship rates differed from the actual figures by between 0.018 and 0.025.
- El Centro and Merced, both in California, have among the lowest average headship rates in the nation at 0.39 and 0.44 respectively. In these cases the predictions from the empirical analysis matched the actual average headship rates almost exactly.
    - Several other metro areas also located in California also had extraordinarily low average headship rates including Stockton (0.45) and Oxnard, Riverside, Los Angeles, and San Jose (all 0.44); the predicted average headship rates differed from the actual figures by between 0.016 and 0.023.

- In many of the largest metro areas of the country—including Atlanta GA, Baltimore MD, Boston MA, Charlotte NC, Detroit MI, Las Vegas NV, Miami FL, Minneapolis MN, Philadelphia PA, Seattle WA, and St. Louis MO—the average headship rate predicted by the empirical analysis differed from the actual average by less than one-half percentage point.

While the metro areas with the largest positive or negative prediction errors suggest that important variables may need to be added to the analysis to predict headship rates more accurately, most of the metro areas with moderate prediction errors—say, in the 2% to 4% range--are not only small but also not especially dynamic in terms of likely growth in their employed population. The main purpose in developing a greater understanding of the forces that drive household formation through changes in headship rates is to identify local areas—not merely metro areas but locations within each metro area—that are likely to present the greatest opportunities for above-market returns. For that reason, we expect to continuing using the overall findings discussed in this report only as a springboard to greater accuracy in forecasting demand growth, with particular attention to areas with the most dynamic growth prospects.

APPENDIX: Empirical Analysis

Logit model: $ln\left[\frac{H_i}{1-H_i}\right] = \alpha + \beta^1 Rent_i + \beta^2 Income_i + \beta^3 Unemp_j + \beta^4 Gender_i + \beta^5 Child_i + \beta^6 Hispanic_i + \beta^7 Black_i + \beta^8 20\text{-}24_i + \beta^9 25\text{-}29_i + \beta^{10} 30\text{-}34_i + \beta^{11} 35\text{-}39_i + \beta^{12} 45\text{-}49_i + \beta^{13} 50\text{-}54_i + \beta^{14} 55\text{-}59_i + \beta^{15} 60\text{-}64_i + \beta^{16} 85plus_i + \varepsilon_i$ where:

H_i = headship rate in census tract i = number of households (DP04_0045E) in census tract i divided by 20+ population (S0101_C01_006E + … + S0101_C01_019E) in census tract i,

$Rent_i$ = natural logarithm of median gross rent (DP04_0134E) in census tract i, normalized as a Z-statistic,

$Income_i$ = natural logarithm of median household income (DP03_0062E) in census tract i, normalized as a Z-statistic,

$Unemp_j$ = average value of unemployment rate for metro area j during 2021 from U.S. Bureau of Labor Statistics Local Area Unemployment Statistics,

$Gender_i$ = sex ratio (males per 100 females, S0101_C01_033E) in census tract i,

$Child_i$ = child dependency ratio (children per 100 adults age 20-64, S0101_C01_036E) in census tract i,

$Hispanic_i$ = population Hispanic or Latino (B03002_012E) divided by total population (B03002_001E) in census tract i,

$Black_i$ = population Black or African American alone (B02001_003E) divided by total population (B03002_001E) in census tract i,

$20\text{-}24_i$ = population age 20 to 24 years (S0101_C01_006E) divided by 20+ population (S0101_C01_006E+…+S0101_C01_019E) in census tract i,

$25\text{-}29_i$, $30\text{-}34_i$, $35\text{-}39_i$, $45\text{-}49_i$, $50\text{-}54_i$, $55\text{-}59_i$, $60\text{-}64_i$, and $85plus_i$ defined analogously,

α, β^1, …, β^{16} are parameters estimated using Ordinary Least Squares, and

ε_i = disturbance term treated as if satisfying classical assumptions of normality and homoskedasticity.

Observations: 64,041 census tracts from U.S. Census Bureau 2021 American Community Survey remaining after filtering out 20,373 census tracts for any of the following reasons:

Not located in a county identified as part of a Metropolitan Statistical Area in U.S. Census Bureau Delineation Files as of March 2020, and/o

Missing data for median gross rent, median household income, child dependency ratio, and/or median value for owner-occupied units (DP04_0089E).

Descriptive statistics of sample observations:

Variable	Average	StDev	Minimum	Maximum
Headship Rate	0.510	0.077	0.018	0.950
Predicted Headship Rate	*0.510*	*0.048*	*0.002*	*0.673*
Median Gross Rent	$1,336	$556	$100[2]	$3,500[2]
Median Household Income	$77,020	$36,475	$7,832	$250,000[2]
Unemployment Rate	5.5%	1.5%	2.0%	17.4%
Gender Ratio	98.8	27.4	25.5	2,706
Child Dependency Ratio	36.7	14.0	0	258
Hispanic Share	19.1%	22.6%	0	100%
Black Share	14.3%	21.6%	0	100%
Age 20-24	8.6%	6.5%	0	97.7%
Age 25-29	9.6%	5.2%	0	51.8%
Age 30-34	9.4%	4.6%	0	39.1%
Age 35-39	9.0%	3.9%	0	46.2%
Age 40-44[1]	8.3%	3.7%	0	42.2%
Age 45-49	8.3%	3.5%	0	41.6%
Age 50-54	8.5%	3.4%	0	39.4%
Age 55-59	8.8%	3.4%	0	38.2%
Age 60-64	8.4%	3.5%	0	33.6%
Age 65-69[1]	7.0%	3.3%	0	35.1%
Age 70-74[1]	5.5%	3.1%	0	32.9%
Age 75-79[1]	3.6%	2.5%	0	35.9%
Age 80-84[1]	2.3%	2.0%	0	23.9%
Age 85+	2.5%	3.5%	0	43.8%

[1] Excluded from regression.
[2] Truncated value.

Regression model results:

	Coefficient	Standard Error	*t* Stat	*p*-value
Intercept	6.57E-01	1.3E-02	50.0	0
Rent	-7.85E-03	1.5E-03	-5.2	2.E-07
Income	-1.24E-01	1.8E-03	-70.2	0
Unemployment	-2.01E-02	1.1E-03	-17.9	4.E-71
Males per 100 females	-2.45E-03	3.7E-05	-65.8	0
Child dependency ratio	-2.05E-03	8.1E-05	-25.4	4.E-141
% Hispanic	-5.51E-01	5.7E-03	-97.2	0
% Black	-1.87E-01	5.6E-03	-33.4	1.E-242
20 to 24 years	-1.44E+00	2.0E-02	-72.3	0
25 to 29 years	5.26E-01	2.5E-02	21.4	1.E-101
30 to 34 years	5.46E-01	2.7E-02	20.5	2.E-93
35 to 39 years	2.63E-01	3.0E-02	8.8	1.E-18
45 to 49 years	-2.92E-01	3.3E-02	-8.9	6.E-19
50 to 54 years	-6.09E-01	3.3E-02	-18.3	3.E-74
55 to 59 years	-6.91E-01	3.4E-02	-20.6	1.E-93
60 to 64 years	-4.83E-01	3.6E-02	-13.2	6.E-40
85 years and over	3.10E-01	4.9E-02	6.4	2.E-10

Average actual and predicted headship rates, and prediction error, by metro area:

Metro	Act	Pred	Err		Metro	Act	Pred	Err
Honolulu HI	44.3%	51.6%	7.3%		Greensboro NC	53.1%	53.4%	0.26%
Kahului HI	44.1%	50.8%	6.7%		Atlanta GA	51.1%	51.3%	0.23%
Gadsden AL	49.6%	56.2%	6.5%		Glens Falls NY	53.3%	53.5%	0.23%
Farmington NM	48.0%	53.4%	5.3%		Little Rock AR	54.1%	54.4%	0.23%
Morristown TN	50.3%	55.6%	5.3%		Erie PA	54.2%	54.4%	0.20%
Lakeland FL	47.6%	52.6%	5.0%		Lewiston ME	54.8%	55.0%	0.19%
Beckley WV	51.7%	56.5%	4.8%		Lima OH	53.9%	54.1%	0.19%
Asheville NC	51.1%	55.9%	4.8%		Wausau WI	54.4%	54.6%	0.15%
Cape Girardeau MO-IL	49.8%	54.5%	4.7%		Columbia MO	53.6%	53.7%	0.13%
St. George UT	48.5%	53.2%	4.7%		Danville IL	54.8%	54.9%	0.12%
Cleveland TN	50.5%	55.1%	4.7%		Seattle WA	51.0%	51.1%	0.12%
Tuscaloosa AL	49.2%	53.8%	4.7%		Evansville IN-KY	55.3%	55.4%	0.12%
Dothan AL	51.7%	56.2%	4.5%		Charlotte- NC-SC	52.4%	52.6%	0.11%
Annistond AL	51.4%	55.9%	4.5%		York PA	52.3%	52.4%	0.11%
Provo UT	45.1%	49.6%	4.4%		Detroit MI	53.0%	53.1%	0.10%
Huntington WV-KY-OH	52.0%	56.4%	4.4%		Fresno CA	46.0%	46.1%	0.06%
Wheeling WV-OH	51.8%	56.2%	4.3%		Enid OK	53.6%	53.7%	0.06%
Augustay GA-SC	50.1%	54.4%	4.3%		Providence RI-MA	51.9%	51.9%	0.04%
Myrtle Beach SC-NC	50.6%	54.9%	4.3%		Merced CA	43.9%	43.9%	0.03%
Alexandria LA	50.8%	55.1%	4.3%		Fort Walton Beach FL	53.5%	53.5%	0.02%
Monroe LA	51.3%	55.5%	4.2%		Worcester MA-CT	50.9%	50.9%	0.02%
Homosassa Springs FL	52.5%	56.7%	4.2%		Salinas CA	44.7%	44.7%	0.00%
Sebastian FL	50.6%	54.8%	4.2%		Youngstown OH-PA	54.9%	54.9%	-0.01%
Daphne AL	50.8%	54.9%	4.1%		Kankakee IL	51.9%	51.9%	-0.03%
Winchester VA-WV	49.1%	53.1%	4.0%		Canton OH	55.1%	55.0%	-0.05%
Rome GA	50.3%	54.2%	4.0%		Springfield MO	55.6%	55.5%	-0.07%

Gainesville GA	46.6%	50.5%	4.0%		Burlington NC	53.5%	53.5%	-0.08%
Madera CA	41.2%	45.1%	3.9%		Athens GA	53.4%	53.3%	-0.09%
Florence SC	51.7%	55.4%	3.7%		Fayetteville NC	53.1%	53.0%	-0.10%
Logan UT-ID	47.5%	51.1%	3.6%		El Centro CA	39.2%	39.1%	-0.11%
Punta Gorda FL	52.3%	55.9%	3.6%		Grand Junction CO	53.3%	53.1%	-0.14%
Kingsport TN-VA	53.3%	56.9%	3.6%		Columbia SC	53.8%	53.6%	-0.18%
Orlandod FL	46.8%	50.4%	3.5%		Waco TX	50.7%	50.5%	-0.19%
Macon GA	51.0%	54.5%	3.5%		Vineland NJ	49.6%	49.4%	-0.19%
Charleston WV	53.4%	56.9%	3.5%		Las Vegas NV	49.1%	48.9%	-0.19%
Ogden UT	48.1%	51.7%	3.5%		Mankato MN	52.4%	52.2%	-0.20%
Pine Bluff AR	50.0%	53.4%	3.4%		Fairbanks AK	51.9%	51.7%	-0.21%
Ocala FL	51.4%	54.7%	3.4%		Boston MA-NH	50.7%	50.5%	-0.21%
Jefferson City MO	51.1%	54.4%	3.3%		Columbus OH	54.0%	53.8%	-0.23%
Hickory NC	51.5%	54.8%	3.3%		Lake Havasu City AZ	54.7%	54.5%	-0.23%
Decatur AL	51.3%	54.6%	3.3%		Baltimore MD	51.7%	51.5%	-0.24%
Auburn AL	49.8%	53.0%	3.3%		Philadelphia PA-NJ-DE-MD	51.7%	51.4%	-0.29%
Bowling Green KY	50.8%	54.0%	3.2%		Indianapolis IN	54.4%	54.1%	-0.31%
Florence AL	52.8%	56.0%	3.2%		Longview WA	53.4%	53.1%	-0.32%
Mobile AL	51.8%	54.9%	3.1%		Bismarck ND	54.8%	54.4%	-0.34%
Fort Myers FL	49.9%	53.0%	3.1%		Allentown PA-NJ	51.2%	50.8%	-0.35%
Bangor ME	52.8%	55.8%	3.0%		St. Louis MO-IL	54.4%	54.0%	-0.36%
Lake Charles LA	50.9%	53.9%	3.0%		Miami FL	48.7%	48.3%	-0.38%
Harrisonburg VA	49.5%	52.5%	3.0%		Appleton WI	54.3%	53.9%	-0.38%
Dalton GA	48.6%	51.6%	3.0%		Prescott Valley AZ	54.7%	54.3%	-0.39%
Hammond LA	50.8%	53.8%	2.9%		Watertown NY	54.0%	53.6%	-0.41%
Joplin MO	52.4%	55.3%	2.9%		Raleigh NC	52.1%	51.7%	-0.41%
East Stroudsburg PA	46.0%	48.9%	2.9%		Minneapolis- MN-WI	53.0%	52.6%	-0.42%
Grants Pass OR	52.7%	55.6%	2.9%		Binghamton NY	54.3%	53.9%	-0.44%
Williamsport PA	51.3%	54.1%	2.9%		Billings MT	55.3%	54.9%	-0.45%
Jonesboro AR	53.4%	56.3%	2.9%		Muncie IN	55.6%	55.1%	-0.48%
Elkhart-Goshen IN	50.1%	52.9%	2.8%		Memphis TN-MS-AR	53.5%	53.0%	-0.50%
Blacksburg VA	50.9%	53.7%	2.8%		Bellingham WA	52.4%	51.9%	-0.55%
Valdosta GA	51.3%	54.0%	2.7%		Bay City MI	55.8%	55.2%	-0.57%
Tyler TX	48.8%	51.5%	2.7%		Pittsfield MA	53.7%	53.1%	-0.63%
Bloomsburg PA	51.5%	54.1%	2.6%		South Bend IN-MI	54.8%	54.1%	-0.64%
Salt Lake City UT	49.1%	51.8%	2.6%		Dubuque IA	54.6%	53.9%	-0.66%
Sumter SC	51.7%	54.3%	2.6%		Manhattan KS	52.2%	51.5%	-0.69%
Gettysburg PA	49.7%	52.3%	2.6%		Bakersfield CA	46.4%	45.7%	-0.70%
Chattanooga TN-GA	52.8%	55.4%	2.6%		Cincinnati OH-KY-IN	54.6%	53.9%	-0.70%
Idaho Falls ID	50.8%	53.4%	2.6%		Jacksonville NC	53.5%	52.8%	-0.70%
Spartanburg SC	51.5%	54.0%	2.6%		Michigan City IN	53.9%	53.2%	-0.70%
St. Joseph MO-KS	52.2%	54.8%	2.6%		Naples FL	52.1%	51.4%	-0.72%
Texarkana TX-AR	51.7%	54.3%	2.5%		Reading PA	50.9%	50.2%	-0.73%
Brunswick GA	52.3%	54.9%	2.5%		Mount Vernon WA	52.4%	51.6%	-0.74%
Jackson TN	52.4%	54.9%	2.5%		Durham NC	53.4%	52.6%	-0.74%
Gainesville FL	51.0%	53.5%	2.5%		Virginia Beach VA-NC	53.1%	52.4%	-0.77%
Johnson City TN	53.9%	56.4%	2.5%		Chico CA	51.6%	50.8%	-0.77%
Albany OR	51.4%	53.8%	2.5%		Albany NY	53.4%	52.7%	-0.77%
Hattiesburg MS	52.1%	54.5%	2.4%		Santa Rosa CA	49.8%	49.1%	-0.77%
Houma LA	52.0%	54.4%	2.4%		Poughkeepsie NY	49.0%	48.3%	-0.79%
Coeur d'Alene ID	52.1%	54.4%	2.3%		Wenatchee WA	50.9%	50.1%	-0.84%
Port St. Lucie FL	50.6%	52.9%	2.3%		Oklahoma City OK	54.1%	53.2%	-0.85%
Birmingham AL	52.3%	54.6%	2.3%		Corvallis OR	51.7%	50.9%	-0.85%
San Jose CA	44.0%	46.3%	2.3%		Lexington KY	54.7%	53.9%	-0.86%
Altoona PA	53.8%	56.0%	2.3%		Akron OH	55.0%	54.1%	-0.86%
Baton Rouge LA	50.6%	52.8%	2.2%		Tallahassee FL	52.9%	52.0%	-0.87%
Morgantown WV	52.3%	54.5%	2.2%		Killeen TX	52.2%	51.3%	-0.88%
Staunton VA	52.7%	54.9%	2.2%		La Crosse WI-MN	55.2%	54.3%	-0.92%
Elizabethtown KY	52.0%	54.2%	2.2%		Flint MI	54.8%	53.9%	-0.96%

Kingston NY	50.4%	52.5%	2.2%		St. Cloud MN	53.7%	52.6%	-1.0%
Knoxville TN	52.9%	55.0%	2.1%		Peoria IL	55.1%	54.1%	-1.1%
Pocatello ID	52.8%	55.0%	2.1%		Huntsville AL	54.7%	53.6%	-1.1%
Lewiston ID-WA	53.6%	55.7%	2.1%		Visalia CA	45.1%	44.0%	-1.1%
Fort Smith AR-OK	53.4%	55.4%	2.0%		Goldsboro NC	54.7%	53.6%	-1.1%
Hinesville GA	51.5%	53.5%	2.0%		Janesville WI	54.5%	53.4%	-1.1%
Pensacola FL	51.7%	53.7%	1.9%		Cedar Rapids IA	55.2%	54.0%	-1.1%
Salem OR	49.3%	51.2%	1.9%		Wichita KS	54.2%	53.0%	-1.2%
Los Angeles CA	44.3%	46.1%	1.9%		Waterloo IA	54.8%	53.6%	-1.2%
The Villages FL	54.5%	56.4%	1.9%		Walla Walla WA	52.0%	50.8%	-1.2%
Weirton WV-OH	54.0%	55.8%	1.8%		Chicago IL-IN-WI	51.0%	49.8%	-1.2%
Sebring FL	53.5%	55.2%	1.8%		Pittsburgh PA	56.0%	54.8%	-1.2%
Montgomery AL	52.4%	54.2%	1.8%		Phoenix AZ	50.8%	49.6%	-1.2%
Clarksville TN-KY	52.5%	54.3%	1.8%		Fort Wayne IN	55.6%	54.4%	-1.2%
Riversideo CA	43.7%	45.5%	1.8%		Beaumont TX	51.9%	50.6%	-1.3%
Melbourne FL	51.8%	53.5%	1.8%		Des Moines IA	54.6%	53.3%	-1.3%
Longview TX	50.1%	51.8%	1.7%		Rochester NY	54.9%	53.6%	-1.3%
State College PA	50.4%	52.2%	1.7%		New Haven CT	51.8%	50.5%	-1.3%
Oxnard CA	43.8%	45.5%	1.7%		Wilmington NC	54.6%	53.3%	-1.3%
Parkersburg WV	54.4%	56.1%	1.7%		Sheboygan WI	54.8%	53.5%	-1.3%
Stockton CA	44.6%	46.3%	1.6%		Lansing MI	54.2%	52.8%	-1.3%
Redding CA	51.5%	53.1%	1.6%		Saginaw MI	54.9%	53.6%	-1.3%
Rapid City SD	53.6%	55.2%	1.6%		Niles MI	55.3%	54.0%	-1.3%
Jacksonville FL	51.9%	53.5%	1.6%		Kennewick WA	49.7%	48.3%	-1.4%
Hot Springs AR	54.9%	56.6%	1.6%		Colorado Springs CO	52.7%	51.3%	-1.4%
Medford OR	52.4%	54.0%	1.6%		Dallas TX	50.2%	48.8%	-1.4%
Lynchburg VA	52.6%	54.2%	1.6%		Duluth MN-WI	55.7%	54.3%	-1.4%
Shreveport LA	53.9%	55.5%	1.6%		Carson City NV	53.1%	51.6%	-1.5%
Dover DE	50.7%	52.3%	1.6%		Rochester MN	55.3%	53.8%	-1.5%
Sarasota FL	52.5%	54.1%	1.6%		Kansas City MO-KS	54.6%	53.1%	-1.5%
Terre Haute IN	53.2%	54.8%	1.6%		Harrisburg PA	54.6%	53.1%	-1.5%
Muskegon MI	51.2%	52.7%	1.6%		Lafayette IN	54.9%	53.4%	-1.5%
Cumberland MD-WV	52.7%	54.3%	1.5%		Omaha NE-IA	54.6%	53.0%	-1.6%
Yuba City CA	47.8%	49.3%	1.5%		Grand Island NE	53.9%	52.3%	-1.6%
Hilton Head Island SC	51.3%	52.8%	1.5%		San Luis Obispo CA	50.2%	48.6%	-1.6%
Boise City ID	51.4%	52.9%	1.5%		Green Bay WI	55.4%	53.8%	-1.6%
Roanoke VA	53.4%	54.9%	1.4%		Sioux Falls SD	55.8%	54.1%	-1.7%
Greenville SC	52.7%	54.2%	1.4%		Kalamazoo MI	54.3%	52.6%	-1.7%
Albany GA	52.6%	54.0%	1.4%		College Station TX	50.8%	49.1%	-1.7%
Daytona Beach FL	52.4%	53.8%	1.4%		Decatur IL	56.8%	55.1%	-1.8%
Nashville TN	52.0%	53.3%	1.4%		Buffalo NY	56.4%	54.6%	-1.8%
Charlottesville VA	51.9%	53.3%	1.4%		Dayton OH	56.3%	54.6%	-1.8%
San Francisco CA	47.2%	48.5%	1.3%		Topeka KS	55.8%	54.0%	-1.8%
Panama City FL	53.4%	54.7%	1.3%		Sioux City IA-NE-SD	53.5%	51.7%	-1.8%
Jackson MS	52.5%	53.8%	1.3%		Santa Barbara CA	47.2%	45.4%	-1.8%
Savannah GA	52.0%	53.3%	1.3%		Oshkosh WI	55.6%	53.7%	-1.8%
Lancaster PA	51.1%	52.3%	1.3%		Santa Cruz CA	47.6%	45.7%	-1.9%
Gulfport MS	53.1%	54.3%	1.2%		Davenport IA-IL	55.5%	53.6%	-1.9%
Twin Falls ID	51.5%	52.7%	1.2%		Reno NV	52.8%	50.9%	-1.9%
Owensboro KY	53.9%	55.1%	1.2%		Bloomington IN	56.1%	54.1%	-2.0%
New York NY-NJ-PA	47.4%	48.6%	1.1%		Carbondale IL	57.2%	55.2%	-2.0%
Lafayette LA	53.2%	54.4%	1.1%		Springfield MA	53.5%	51.5%	-2.0%
Spokane WA	53.3%	54.4%	1.1%		Champaign IL	54.8%	52.8%	-2.0%
Charleston SC	52.5%	53.6%	1.1%		Hanford CA	46.4%	44.4%	-2.1%
Johnstown PA	54.1%	55.2%	1.1%		Washington DC-VA-MD-WV	50.5%	48.4%	-2.1%
Great Falls MT	54.9%	56.0%	1.1%		Wichita Falls TX	55.2%	53.1%	-2.1%
Bend OR	52.8%	53.8%	1.1%		Atlantic City NJ	52.0%	49.8%	-2.2%
Lawton OK	53.0%	54.1%	1.1%		Toledo OH	56.0%	53.9%	-2.2%
Grand Rapids MI	51.7%	52.8%	1.0%		Cleveland OH	56.1%	53.9%	-2.2%

Vallejo CA	46.5%	47.5%	1.0%		Yakima WA	49.2%	46.9%	-2.3%
Eau Claire WI	52.6%	53.7%	1.0%		Denver CO	52.6%	50.3%	-2.3%
Tampa FL	52.1%	53.1%	1.0%		Casper WY	55.9%	53.6%	-2.3%
New Bern NC	54.4%	55.4%	0.97%		Bridgeport CT	49.4%	47.0%	-2.4%
New Orleans LA	52.9%	53.9%	0.95%		Iowa City IA	54.4%	51.9%	-2.5%
Sherman TX	52.1%	53.1%	0.95%		Fort Collins CO	53.4%	51.0%	-2.5%
Flagstaff AZ	50.3%	51.2%	0.94%		Kokomo IN	57.0%	54.5%	-2.5%
Fayetteville AR	51.9%	52.8%	0.88%		Houston TX	50.3%	47.8%	-2.5%
Hagerstown MD-WV	53.3%	54.1%	0.82%		Abilene TX	54.1%	51.5%	-2.6%
Eugene OR	52.8%	53.6%	0.82%		Ames IA	54.6%	51.9%	-2.6%
San Diego CA	47.0%	47.8%	0.82%		Norwich CT	53.1%	50.3%	-2.8%
Monroe MI	52.4%	53.2%	0.82%		Rockford IL	54.6%	51.8%	-2.8%
Lebanon PA	51.6%	52.4%	0.80%		Madison WI	56.1%	53.3%	-2.8%
Tulsa OK	53.1%	53.9%	0.78%		Hartford CT	53.1%	50.3%	-2.9%
Louisville KY-IN	53.7%	54.5%	0.78%		Ann Arbor MI	54.6%	51.7%	-2.9%
Utica NY	53.2%	54.0%	0.74%		Austin TX	52.4%	49.5%	-2.9%
Portland OR-WA	51.4%	52.1%	0.74%		Sierra Vista AZ	55.0%	52.1%	-2.9%
Missoula MT	54.8%	55.5%	0.73%		Milwaukeea WI	56.0%	53.1%	-2.9%
Bremerton WA	51.0%	51.7%	0.72%		Boulder CO	52.3%	49.3%	-3.0%
Modesto CA	45.7%	46.4%	0.69%		Lincoln NE	55.5%	52.5%	-3.0%
Battle Creek MI	53.5%	54.2%	0.69%		Fargo ND-MN	56.3%	53.3%	-3.1%
Olympia WA	51.9%	52.6%	0.66%		Grand Forks ND-MN	57.1%	53.8%	-3.3%
Manchester NH	51.6%	52.3%	0.65%		Cheyenne WY	56.2%	52.9%	-3.3%
Sacramento CA	49.2%	49.9%	0.64%		Bloomington IL	55.4%	52.1%	-3.3%
Chambersburg PA	53.3%	54.0%	0.62%		Laredo TX	45.4%	42.1%	-3.3%
Portland ME	53.7%	54.3%	0.61%		Racine WI	55.0%	51.7%	-3.3%
Warner Robins GA	52.3%	52.9%	0.59%		Springfield IL	57.7%	54.2%	-3.5%
Richmond VA	52.1%	52.7%	0.59%		McAllen TX	46.2%	42.6%	-3.6%
Columbus IN	53.2%	53.8%	0.58%		San Antonio TX	50.6%	46.9%	-3.7%
Napa CA	46.3%	46.8%	0.57%		Amarillo TX	55.3%	51.5%	-3.8%
Midland MI	53.5%	54.1%	0.55%		Brownsville TX	47.4%	43.7%	-3.8%
Burlington VT	52.0%	52.6%	0.55%		Ithaca NY	56.2%	52.4%	-3.8%
Rocky Mount NC	52.5%	53.0%	0.54%		Ocean City NJ	54.8%	50.9%	-3.9%
Columbus GA-AL	54.5%	55.0%	0.50%		Victoria TX	52.1%	48.2%	-3.9%
Elmira NY	54.9%	55.4%	0.49%		San Angelo TX	54.0%	50.0%	-4.0%
Salisbury MD-DE	52.1%	52.5%	0.44%		Tucson AZ	54.0%	49.8%	-4.2%
Fond du Lac WI	53.7%	54.1%	0.40%		Lawrence KS	55.7%	51.4%	-4.3%
Anchorage AK	50.9%	51.3%	0.40%		El Paso TX	48.6%	44.2%	-4.3%
Syracuse NY	53.4%	53.8%	0.39%		Albuquerque NM	53.1%	48.7%	-4.4%
Scranton PA	52.8%	53.2%	0.36%		Greenville NC	56.7%	52.2%	-4.5%
Greeley CO	48.7%	49.1%	0.35%		Corpus Christi TX	51.0%	45.8%	-5.2%
Barnstable Town MA	52.5%	52.8%	0.33%		Pueblo CO	54.8%	49.3%	-5.5%
Trenton NJ	48.6%	49.0%	0.32%		Lubbock TX	54.6%	48.7%	-6.0%
Jackson MI	54.5%	54.8%	0.32%		Las Cruces NM	51.9%	45.7%	-6.2%
Springfield OH	54.5%	54.8%	0.31%		Santa Fe NM	55.2%	48.9%	-6.4%
California MD	49.1%	49.4%	0.30%		Yuma AZ	52.0%	45.3%	-6.7%
Winston-Salem NC	53.4%	53.6%	0.29%		Midland TX	56.1%	46.5%	-9.6%
Mansfield OH	55.4%	55.7%	0.28%		Odessa TX	56.6%	45.2%	-11.5%

[i] The values depicted are from a logit regression based on 64,185 census tracts located in U.S. metropolitan areas from the 2021 American Community Survey, in which the log-odds ratio of the census tract headship rate is regressed on the share of the adult population in each age group. The heights of the bars are meaningless except to show the general pattern of headship rates by age without holding constant any other explanatory data.

[ii] Estimate based on the logit regression described in the Appendix, evaluated at the mean value of each explanatory variable except the rent variable, which is evaluated at the upper and lower quartiles. Other

comparisons are estimated in the same way, using the average across all census tracts for all variables except the variable under comparison, which is evaluated at the upper and lower quartiles.

[iii] For Census purposes, "ethnicity" differs from "race": for example, householders may identify themselves as white and Hispanic, white and non-Hispanic, Black and Hispanic, or Black and non-Hispanic, among other possibilities. Also, for Census purposes "Hispanic" is interchangeable with certain other descriptions such as "Latino," while "Black" is interchangeable with certain other descriptions such as "African American." The variable used to measure the Black population specifically counts people who identify themselves as "Black alone" (which may mean either "Black alone" and Hispanic or "Black alone" and non-Hispanic)—that is, people who identify themselves as Black *and* any other race would not be included in this count.

[iv] Daniel García and Andrew Paciorek, "An Early Evaluation of the Effects of the Pandemic on Living Arrangements and Household Formation," FEDS Notes, August 7, 2020.

[v] Steven Garasky, R. Jean Haurin and Donald R. Haurin, "Group Living Decisions as Youths Transition to Adulthood," *Journal of Population Economics* 14:329-349, June 2001.

[vi] Andrew Paciorek, "The Long and the Short of Household Formation," *Real Estate Economics* 44(1):7-40, Spring 2016.

[vii] Sandra Johnson, "A Changing Nation: Population Projections Under Alternative Immigration Scenarios: Population Estimates and Projections," Current Population Reports P25-1146, February 2020. Numbers cited are from the "main series."