SPECIAL REPORT

What Happens to Household Formation in a Recession?

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RESEARCH INSTITUTE for HOUSING AMERICA

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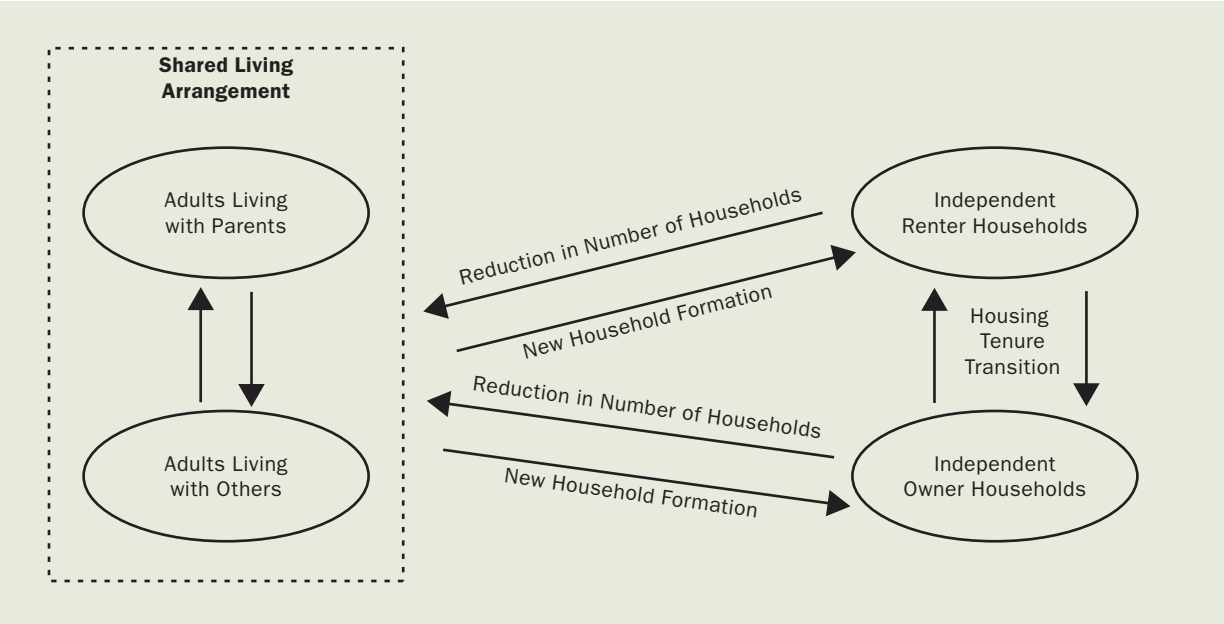
Executive Summary

The present economic downturn has been, by many measures, the most severe since the Great Depression. The housing market has been buffeted by large declines in real house prices, caused in part by the collapse of the housing finance system and by continued job losses. While the difficulties in the housing market are nationwide, some areas (Arizona, Florida, Nevada and California) have experienced much steeper declines in home prices and overall housing market activity. The national homeownership rate has declined from a peak above 69 percent to just over 67 percent, with homeownership rates for some minority groups falling by an even greater extent. At the same time, homeowner vacancy rates have increased markedly over the past few years and rental vacancy rates have also drifted upwards. This naturally begs the question: Where have these households gone?

Illustration of the Process of Household Formation and Housing Tenure Choice



One possibility is that households who have lost their homes have moved in with other households, or that households that might have formed during normal economic times have decided to delay their entry into the housing market. This study provides a comprehensive analysis of the role of the economic cycle, labor market and housing conditions on household formation.

New households can be formed either when children move out of their parents' homes, when couples separate or when unrelated individuals choose to live singly after previously sharing a residence. The number of households can decline if two households combine, either through marriage or by sharing a residence to reduce housing costs. In the current environment, household formation rates may well be depressed both because fewer young people are heading out on their own, and because established households are combining to lower costs, or due to the loss of homes through foreclosure. In order to better understand the factors that lead households to establish their independence and to comprehend the role of the present economic environment, I use the following three-step approach:

- **Development of a Behavioral Model:** The first step is to determine the economic and demographic factors that influence young people to form new renter or new owner households. In order to do this, I use the Panel Study of Income Dynamics (PSID), which follows a large number of households over a long period of time, 1968–2007. Using these data, I determine which factors have influenced young people to form new rental and new owner households over time.
    - Not surprisingly, the decision to form a household is influenced by economic conditions. During recessions, young adults delay entry into the housing market and remain living with their parents. Other people may choose to share housing costs by combining households, leading to an increase in overcrowded dwellings.
    - I find that declines in employment and increases in the unemployment rate during periods of recession reduce household formation rates. Specifically, a national recession suppresses the formation of new renter households, while higher unemployment rates suppress the formation of both new renter and owner households.
- **Simulation:** Using this behavioral model, I then simulate the likely impact of the current recession on household formation rates.
    - Simulations suggest that these declines are quantitatively important. For example, in a recession, the likelihood that a young adult will form an independent household falls by up to 4 percentage points, depending on the age of the person and severity of the changes in unemployment rates. By way of comparison, if an individual is unemployed, the likelihood of him leaving the parental home is up to 10 percentage points lower.
- **Detailed Analysis of the Current Environment:** Finally, I utilize the American Community Survey (ACS) to compare 80 metropolitan areas in 2005 and 2008 with respect to rates of mobility, overcrowding, homeownership and household formation. With this much larger

data set, I am able to highlight additional detail regarding the current environment that is not available in the PSID. In particular, I focus on the differences in patterns of household formation between immigrants and native-born households. I also closely examine the tenure choices of households that move. Given the analysis above, we would expect headship rates to have fallen and the rate of overcrowding to have risen, but an indeterminate impact on homeownership rates due to the fact that they are influenced by the relative speed at which the headship rates of potential owners and renters are depressed.

- Headship rates, a measure of the ratio of independent households to population, have declined across metro areas and across both native-born and immigrant households. The impacts of the recession have been smaller in the smaller metros. These declines have been greater among native-born households, although the rates for immigrant households have fallen as well, albeit from a lower starting point.

- The recession has caused a dramatic, almost five-fold, increase in the rates of overcrowding, particularly in the "emerging gateway" metro areas and particularly among native-born households. This clearly indicates that many families are doubling up in response to the downturn.

- Overall, homeownership rates declined slightly for native-born households in these metropolitan areas and increased slightly for immigrants in the same areas. Both groups experienced slight declines in the large immigrant gateways, but immigrants actually increased their homeownership rates from 2005 to 2008 in the emerging gateways and in the smaller metropolitan areas. This suggests that as owners lost their homes, they were not being replaced by new owners. In fact, because new rental household formation has also been reduced by the recession, the decline in homeownership rates was less than it might have been.

The model estimated in the PSID, using data covering 6 recessions, predicts that rental household formation likely fell by 2–4 percentage points due to the current recession and that the formation of owner households likely fell by about 1 percentage point. Confirming these predictions, data from the ACS shows that formation of native-born households in a sample of 80 of the largest metropolitan areas has fallen by about 3 percentage points overall and by nearly 4 percentage points in the largest immigrant gateway metropolitan areas. This translates into a reduction of nearly 1.2 million households nationwide during a period where the population in these metropolitans grew by 3.4 million.

Current economic forecasts, including those from the Mortgage Bankers Association, suggest that unemployment is expected to fall very slowly over the next two years. Additionally, many households have lost substantial portions of their wealth through this recession, which will make it more difficult for members to venture out on their own or come up with a down payment for a home purchase. While the recession is likely over, the model developed in this paper suggests that normal rates of household

formation will not return until unemployment levels return to close to normal rates. Current economic forecasts suggest that unemployment rates should fall by a little more than 2 percentage points by the end of 2012. If this is correct, then the model suggests household formation should increase by about 2 percentage points from current levels by 2012, as people find jobs and recession-induced anxieties abate. That would imply that by 2012, normal rates of household formation should reappear (roughly 1–1.5 million new households per year), but it will take even longer before the U.S. completely recovers from the deficit in household formation caused by the severe recession.

These results have important implications for both public policy and housing industry professionals. First, the clear implication is that there is no demographic silver bullet that will solve the supply overhang we are seeing in many housing markets around the country. Second, in this recession, the homeownership rate declined due to people losing their homes, but part of the decline was mitigated by the simultaneous drop in formation of renter households caused by the recession. Finally, mobility rates have declined, and households that have moved have been more likely to rent than to buy. It is clear that we will need this trend to reverse before the housing market can stabilize.

Conceptual Overview and Review of the Literature

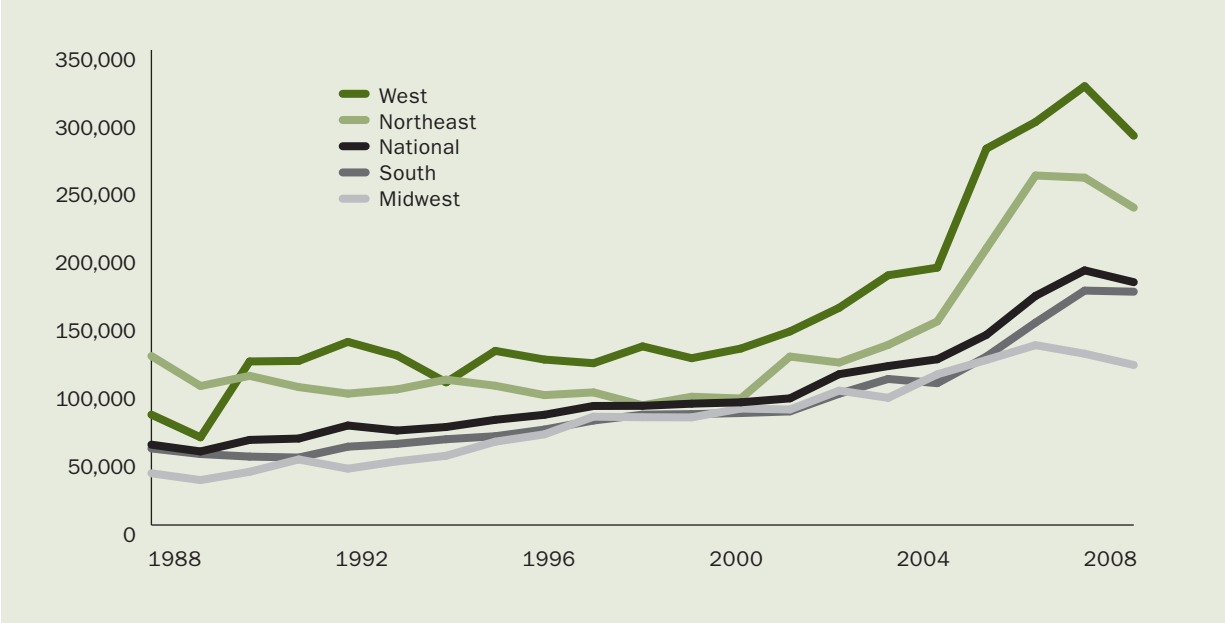
The present economic downturn has been, by many measures, the most severe since the Great Depression. The housing market has been buffeted by large declines in real house prices, caused in part by the collapse of the housing finance system and by continued job losses. Data from the Census show a dramatic decline in building permits over the past three years (Figure 1). Permits have fallen from nearly 1.8 million in 2005 to 600,000 in 2008. Completions have fallen as well, with declines in the latest year at 35 percent. While the difficulties in the housing market are nationwide, some areas (Arizona, Florida and California) have experienced declines in building permits of more than 70 percent.

Figure 1
Building Permits and Changes in Housing Units, 1980–2008

Source: Current Population Survey / Housing Vacancies and Homeownership

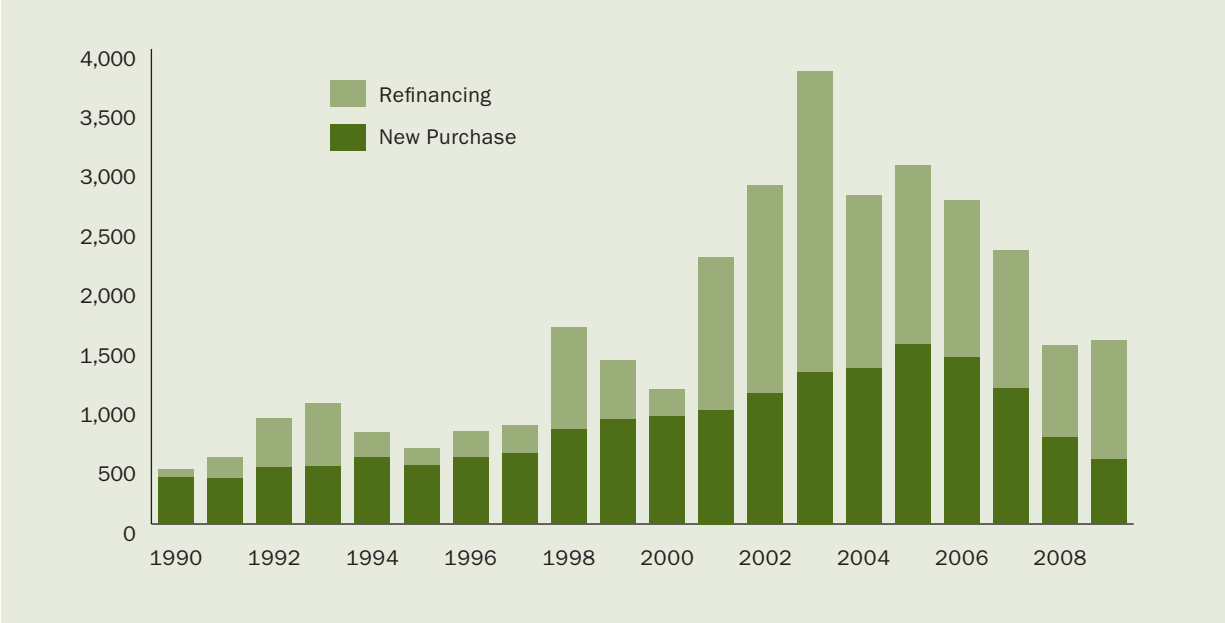
In corresponding fashion, house prices and mortgage originations have dramatically fallen. As Figure 2 notes, the regions with the largest run-ups in prices have also seen the greatest declines. Mortgage originations (Figure 3) have fallen by about two-thirds from their peak in 2004 and refinance activity has also fallen since 2006. This period has been marked by increases in defaults, foreclosures and

Figure 2
Median Sales House Prices, 1988–2008



Source: Current Population Survey / Housing Vacancies and Homeownership

Figure 3
Mortgage Origination of 1–4 Family Units, 1990–2009



Source: Mortgage Bankers Association. Estimates for 2008 only include Q1–Q3.

falling homeownership rates. As shown in Figure 4, national homeownership rates peaked at around 69 percent, and have fallen back a bit to 67.2 percent. With elevated foreclosure rates, there has been a corresponding increase in the homeowner vacancy rate from a long-term average of about 1.7 percent to 2.7 percent in the past 3 years. Within the overall homeownership rate, Figure 5 shows that the current recession has lowered the rates of African-American homeownership the most (49.1 percentage points to 47.4 percentage points), while rates for Latino homeownership have fallen less than 1 percentage point.

Figure 4
Homeownership and Homeowner Vacancy Rates, 1980–2008

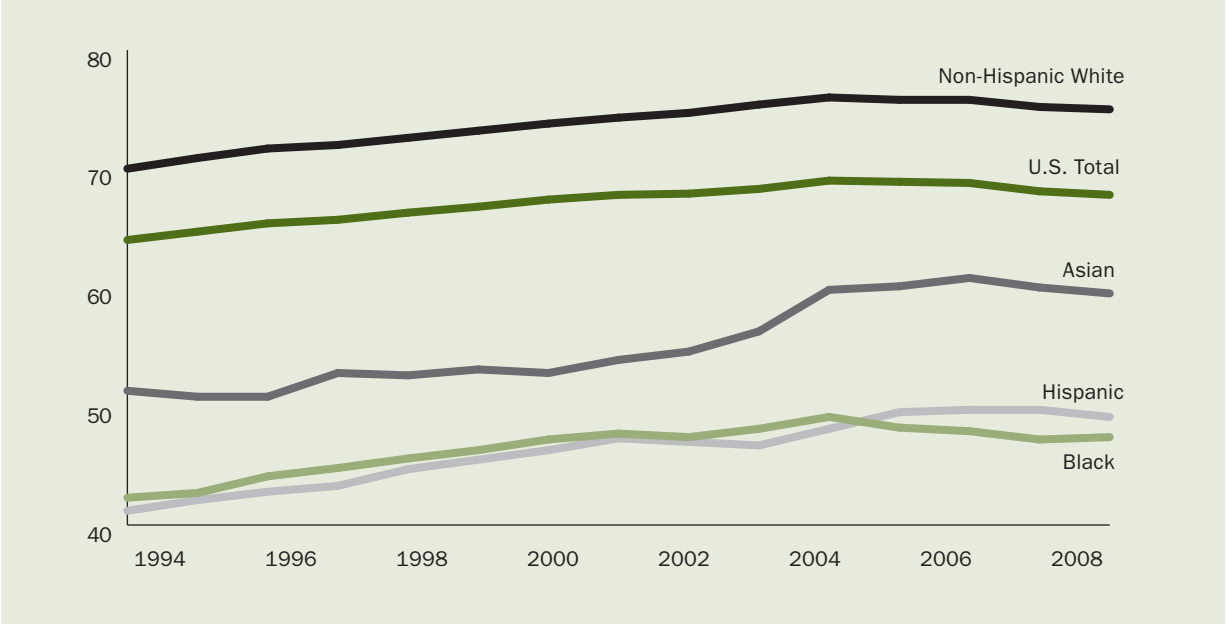
Source: Current Population Survey / Housing Vacancies and Homeownership

Falling homeownership rates and rising homeowner vacancies raise questions concerning where these households are going. One possibility is that these households have entered the rental market. However, Figure 6 demonstrates that there certainly has been no decline in vacancy rates over the 2006–2008 period. Further, rental prices have not changed in a way that suggests much higher rental demand. This could be due to the fact that there is more supply on the market, but that is an unlikely explanation because of the decline in building permits. On the other hand, it could be that people who have lost their homes have moved in with other households, or that people that may have formed households during normal economic times, have decided to delay their entry into the housing market.

Understanding the process by which independent households form is critical in understanding housing outcomes. Much of housing policy has focused on homeownership rates based on the belief that owning one's home generates positive effects on the well being of residents and their children, and generates positive spillovers for the neighborhood (e.g., Rohe and Stewart, 1996; Green and White,

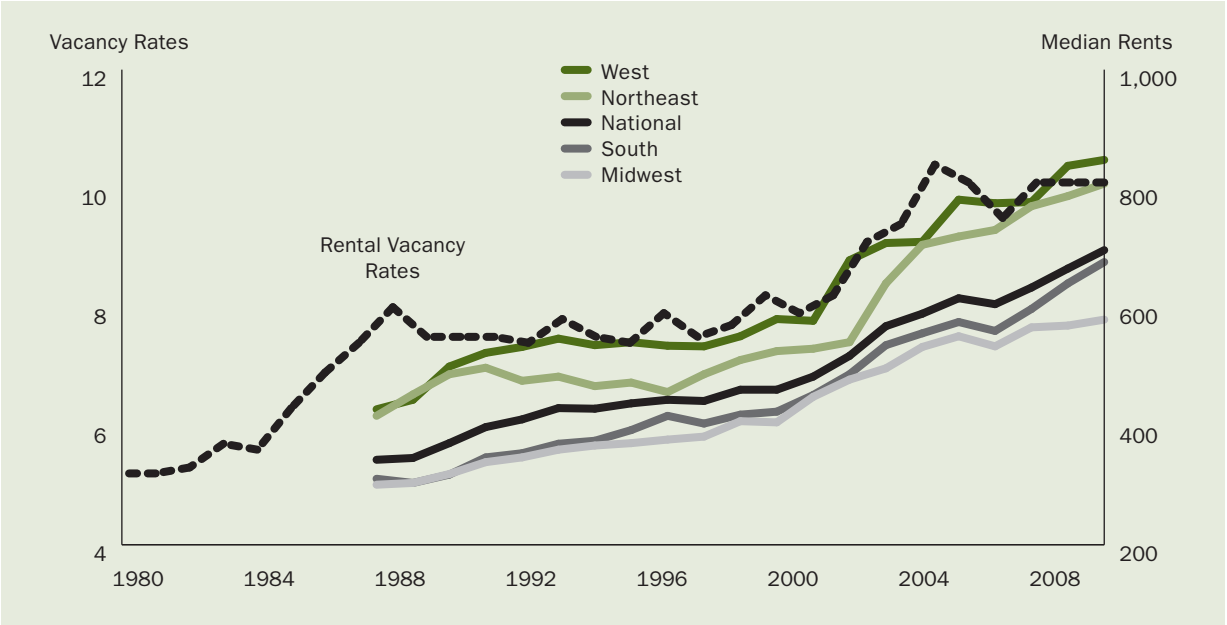
1997; Haurin, Parcel, and Haurin, 2002). Further, most of the literature on the determinants of owning one's home focuses on the transitions of independent renter households becoming owner households. What is not commonly discussed is how the homeownership rate depends not only on transitions from renting to owning or owning to renting, but also on the number of people who form

Figure 5
Homeownership Rates by Race, 1988–2008



Source: Current Population Survey / Housing Vacancies and Homeownership

Figure 6
Rental Vacancy Rates and Median Rents by Region, 1980–2008

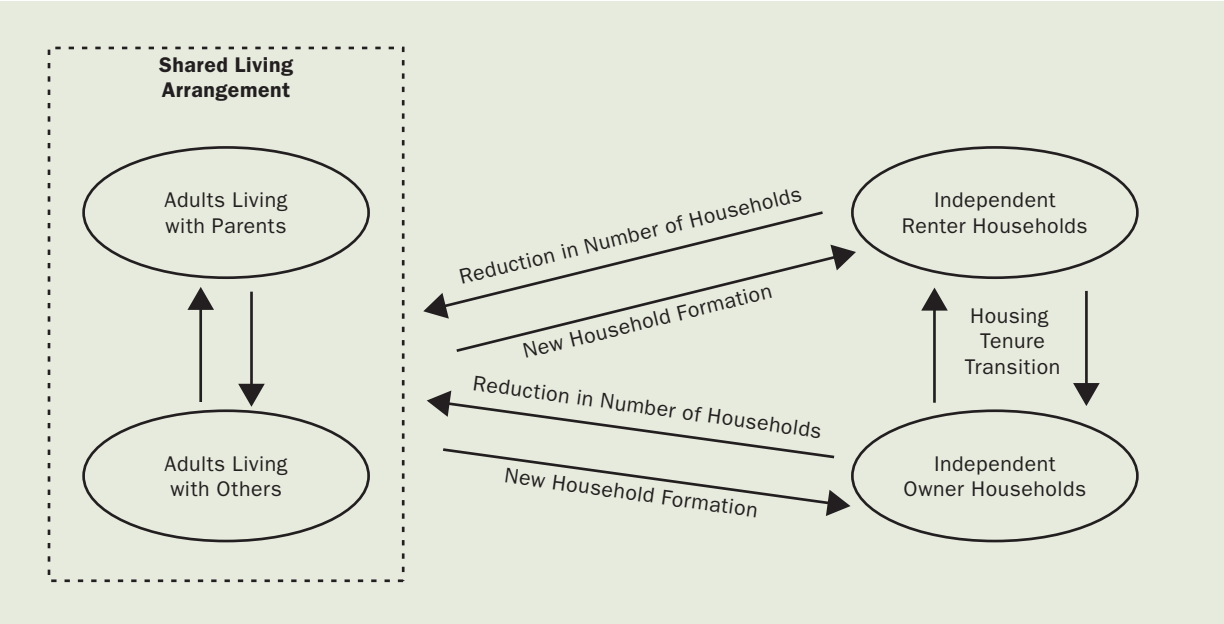


Source: Current Population Survey / Housing Vacancies and Homeownership

independent households (Haurin and Rosenthal, 2008). Thus, homeownership rates can increase simply by the depression of renter households in the market (Myers and Yu, 2009).[1]

In order to understand how economic conditions influence the housing demand of both renters and owners, I first identify the influences on household formation. Figure 7 depicts how independent households can form and the various ways that households can make tenure transitions. New households can be formed either when children move out of their parents' homes, when couples separate or when unrelated individuals choose to live singly after previously sharing a residence. The number of households can decline if two households combine, either through marriage or by sharing a residence to reduce housing costs. Unfortunately, there is very little research on the relationship between household formation and housing demand as measured either by homeownership or changes in demand for multifamily housing. The most recent literature related to household formation has focused on how changing household formation rates could influence homeownership rates over time. Both Haurin and Rosenthal (2008) and Myers and Yu (2009) note that the increase in homeownership rates in the 1990s and the early part of the present decade could be due to reduced formation rates among households. Both of these papers are forced to rely on cross-sectional data and are therefore not able to explicitly account for the economic and housing conditions that are likely to influence the decision to form an independent household.

Figure 7
Illustration of the Process of Household Formation and Housing Tenure Choice



The broad literature on household formation is summarized well in Billari and Liefbroer (2007).[2] While I control for individual demographic transitions, parental income and parental wealth, this analysis focuses attention on the role of economic and housing conditions. Based on the literature, we would expect that housing demand will be lower in recessions and therefore people will be less likely to form independent households during times of economic decline. If an individual is unemployed,

we would expect him to be much less likely to form an independent household. We would also expect the risk of being unemployed, as captured by regional unemployment rates, to lower housing demand. However, the literature does not give guidance as to whether adverse economic conditions are more likely to harm the demand for rental housing or owner-occupied housing. Because younger adults are more likely to rent before owning, we might expect a larger depressive effect on the demand for rental housing in an economic downturn. Finally, we would expect higher single-family house prices to reduce the demand for owner-occupied housing as well as higher rents to reduce the number of individuals who would become renters.

In order to conduct this study, I utilize two datasets. First, I use individual geo-coded data from the PSID from 1968–2007, covering various economic cycles. The data also allow us to control for household and individual resources and demographic characteristics, as the previous literature has shown these to be important. I am also able to append local Census data in order to estimate the role of local neighborhood conditions. Further, we distinguish between households that become renter households and households that become owner households to test if economic variables influence these decisions differently.

Finally, this study focuses on the most recent recession to document changes in housing outcomes for households across the U.S. Data from the ACS from 2005 and 2008 are used to demonstrate how household formation rates, overcrowding rates and homeownership rates of households have changed during the current recession.[3] These data are also advantageous because they allow the researcher to compare how immigrants are faring in the current recession, unlike the PSID, which has very few immigrants in its sample.

Notes

1. This is implicitly true because the homeownership rate is equal to the number of owner households divided by the number of renter plus owner households. Therefore the homeownership rate can increase if there are fewer renter households.

2. Billari and Liefbroer state, "The first class of determinants deals with young adults' involvement in parallel events, such as getting a job, going to college, and marriage, that trigger the decision to leave home (Goldscheider and Goldscheider 1993). Often, leaving home and these triggering events even occur simultaneously, like when one leaves home to start living with a partner (Billari, Philipov, and Baizán 2001; De Jong Gierveld, Liefbroer, and Beekink 1991; Mulder and Wagner 1993). The second class of determinants relates to the opportunities and constraints that either facilitate or impede the decision to leave the parental home, like housing market conditions (Jones 1995; Mulder and Clark 2000; Whittington and Peters 1996), economic conditions (Aassve et al. 2002; Avery, Goldscheider, and Speare 1992; Ermisch and Di Salvo 1997; Johnson and DaVanzo 1998), and the circumstances within the parental home (De Jong, Gierveld et al. 1991; Goldscheider and DaVanzo 1989; Goldscheider and Goldscheider 1998; Murphy and Wang 1998; Whittington and Peters 1996). The final class of determinants deals with the propensity to leave home and focuses on the impact of cultural factors, like attitudes (Goldscheider and Goldscheider 1989, 1993) and value orientations (Surkyn and Lesthaeghe 2004)."

3. Headship rates are the number of heads of households divided by the number of individuals. Overcrowding is defined as having more than one person per room.

Data

In the majority of this study on household formation, I utilize the geo-coded version of the PSID as collected by the Survey Research Center at the University of Michigan. The PSID is a longitudinal data set beginning in 1968 with approximately 4,800 families that provides detailed family histories, including housing tenure choice. In addition to families in the original sample in the 1968 PSID data, the panel contains sample families that split from the original 1968 families in later years and Latino sample families that are recently added. While the PSID is a representative sample of U.S. individuals (men, women and children) and the family units in which they reside, it over-samples low income and non-white families. To account for the over-sampling, the models are estimated using sample weights.

In this study, I use the individual as the unit of analysis. Because the PSID data exist at both the individual and family levels, a unique ID is assigned for each family unit and the family is observed over the years. The Family Identification Mapping System (FIMS) is used to merge data of parents with their young adult children. The FIMS provides identification codes for each of the family members by type of relationship (e.g. biological parent, non-biological parent, biological grandparent, full sibling, half-sibling). This FIMS ensures that our linking of families to their children is straightforward and accurate.

Because children are able to be linked to their parents, both demographic characteristics for the parents and the young adult are used in the analysis. The variables that the literature suggests are important include the parents' marital status, father's education, parental income and housing tenure status. Because of the longitudinal nature of the data, I use a permanent income measure as the variable indicating the income of the parental household, using a 5-year moving average. Although not tested in the literature to date, I also include a measure of whether a parent is disabled, as one might expect a child to stay at home to help a disabled parent.

For a portion of the time series, the PSID also provides detailed wealth information, which is important in understanding the timing of housing tenure choices. The PSID wealth data have been found to

be of high quality and to correspond well with other established wealth data such as the Survey of Consumer Finance and the Health Retirement Study (Juster, Stafford and Smith, 1999). Housing wealth is equal to the home equity reported in this wealth data, while financial wealth is measured as the sum of shares of stock in publicly held corporations, mutual funds or investment trusts, including stocks in IRAs, checking and savings accounts, etc. While housing wealth is available for the entire sample period using self-reported housing value and principal remaining, financial wealth can only be calculated after 1984. In addition, the PSID wealth supplements are in 5-year intervals for the period 1984–1999, and then every other year after 1999. Thus, the financial wealth data is excluded from the analysis before 1984, and after 1984, I impute financial wealth by using a linear trend for those years that the data do not exist.

Next, we include the individual demographic variables of the young adult, which have been found to be important in the literature. Among these variables are age, education, gender, race, whether the young adult is a student and a measure of the young adult's physical limitations. Mulder and Clark (2000) noted that age can have very different impacts for female and male young adults so we include interaction terms. In addition, we include whether or not the individual was unemployed.[4]

Finally, this analysis includes various measures of the economic cycle and neighborhood characteristics that are added to the PSID due to the geo-codes. With respect to the economic cycle, I first include a categorical variable that indicates whether a particular year is a recession year as indicated by the National Bureau of Economic Research (NBER). Unemployment rates, average wages and GDP growth rates by state are obtained from diverse sources including the NBER and U.S. Bureau of Labor Statistics (BLS). While there are a number of census tract variables available to describe the neighborhood housing market in which a household currently resides, I include two measures, median rent and Housing Price Index (HPI), that have been important in various studies. The complete list of variables and their summary statistics are presented in Table 1. While many of the variables are similar across the various study periods, the economic environment was clearly stronger in the post-1984 period. In addition, Table 2 shows the relative rates of people leaving home during recession years and non-recession years. Other than the recession of 1980–1982, there is not a strong pattern of household formation rates in the raw data. However, the regression analysis will determine if recession years predict lower household formation.

Notes

4. In some of the years (1968–1993), I am also able to include a variable that indicates the income level of the individual young adult. These results are not shown, but as expected, the income level of the young adult is an important predictor of household formation. Instead of income, I include unemployment status because that is available in all years.

Table 1

Summary Statistics

	Whole Sample (Children who have not established independence from their parents)		Sub-sample (Year >= 1984)	
	Mean	**S.D.**	**Mean**	**S.D.**
Individual Demographic Characteristics				
Female	0.403	0.491	0.433	0.495
Non-white	0.527	0.499	0.524	0.499
Education Dummies (less than high school = 0)				
College degree	0.197	0.398	0.210	0.408
Some College	0.295	0.456	0.319	0.466
High School	0.367	0.482	0.370	0.483
Age Dummies (18-20 = 0)				
21-24	0.320	0.466	0.340	0.474
25-29	0.099	0.298	0.130	0.336
30-35	0.033	0.179	0.050	0.219
Female* Age Dummies (18-20 = 0)				
Female & 21-24	0.124	0.330	0.143	0.350
Female & 25-29	0.035	0.185	0.048	0.215
Female & 30-35	0.012	0.107	0.018	0.131
Student	0.227	0.419	0.285	0.452
Missing School Information	0.068	0.252	0.016	0.127
Health (Poor or Disabled)	0.014	0.116	0.012	0.111
Missing Health Information	0.331	0.470	0.316	0.465
Individual Economic Characteristics				
Unemployed	0.290	0.454	0.263	0.440
Family Demographic Characteristics				
Father's Education Dummies (less than high school = 0)				
College degree	0.140	0.347	0.165	0.371
Some College	0.164	0.371	0.198	0.398
High School	0.328	0.470	0.355	0.479
Family Size	4.568	2.212	4.114	1.808
Family Structure (two-parent family = 0)				
One Parent, Widowed	0.094	0.292	0.089	0.285
One Parent, Others	0.254	0.435	0.279	0.449
Parental Health (Poor or Disabled)	0.281	0.449	0.292	0.455
Family Economic Characteristics				
Parent's Family Income / 10,000	6.637	6.256	7.024	7.075
Family Tenure / House Value Dummies (Rent = 0)				
Own, House Value Lower 33%	0.183	0.387	0.207	0.405
Own, House Value Middle 33%	0.187	0.390	0.222	0.415
Own, House Value Upper 33%	0.214	0.410	0.249	0.432
Parent's Housing Wealth / 10,000			9.974	38.275

Continues on following page.

Table 1

Summary Statistics (Continued)

	Whole Sample (Children who have not established independence from their parents)		Sub-sample (Year >= 1984)	
	Mean	**S.D.**	**Mean**	**S.D.**
Parent's Financial Wealth / 10,000			3.997	41.687
Parent's Income* Age Dummies (18-20 = 0)				
21-24* Parent's Income / 10,000	2.243	4.875	2.490	5.410
25-29* Parent's Income / 10,000	0.653	2.607	0.851	3.038
30-35* Parent's Income / 10,000	0.175	1.176	0.253	1.413
Member of Low-Income Sample	0.512	0.500	0.526	0.499
Family Locational Characteristics				
City size (> = 500,000 = 0)				
100,000-499,999	0.238	0.426	0.238	0.426
50,000-99,999	0.112	0.315	0.115	0.318
25,000-49,999	0.075	0.263	0.087	0.282
10,000-24,999	0.096	0.294	0.116	0.320
Under 10,000	0.139	0.346	0.153	0.360
Region (Midwest = 0)				
Northeast	0.169	0.375	0.167	0.373
South	0.461	0.498	0.465	0.499
West	0.141	0.348	0.135	0.341
Economic Characteristics				
If Recession Year	0.162	0.368	0.138	0.345
State Real GDP Growth Rate	0.024	0.036	0.023	0.034
State Unemployment Rate	6.340	1.922	6.433	2.069
State Average Real Wage / 1,000	38.616	5.995	38.674	6.231
Housing Market Characteristics				
Ln (Tract Median Rent)	6.291	0.417	6.269	0.454
MSA HPI			104.267	41.148

Table 2

Rate of Splitting from Parents by Year

Year*	Whole Sample (Children who have not established independence from their parents)	Number of Persons Who Leave Home	Proportion
1968	845	67	7.93%
1969	**1,032**	**125**	**12.12%**
1970	**1,165**	**142**	**12.16%**
1971	1,273	173	13.62%
1972	1,406	208	14.80%
1973	**1,494**	**241**	**16.14%**
1974	**1,527**	**213**	**13.96%**
1975	**1,566**	**200**	**12.76%**
1976	1,632	186	11.42%
1977	1,660	188	11.33%
1978	1,703	240	14.10%
1979	1,700	228	13.39%
1980	**1,713**	**184**	**10.74%**
1981	**1,716**	**165**	**9.61%**
1982	**1,764**	**187**	**10.59%**
1983	1,775	167	9.40%
1984	1,765	218	12.38%
1985	1,723	164	9.55%
1986	1,608	174	10.81%
1987	1,510	177	11.71%
1988	1,480	146	9.85%
1989	1,441	154	10.71%
1990	**1,912**	**145**	**7.60%**
1991	**1,911**	**160**	**8.36%**
1992	2,026	147	7.26%
1993	2,158	159	7.39%
1994	2,180	141	6.49%
1995	2,055	164	7.96%
1996	1,593	130	8.16%
1997	1,318	160	12.15%
1998			
1999	1,565	207	13.23%
2000			
2001	**1,786**	**247**	**13.83%**

Continues on following page.

Table 2

Rate of Splitting from Parents by Year (Continued)

Year*	Whole Sample (Children who have not established independence from their parents)	Number of Persons Who Leave Home	Proportion
2002			
2003	1,965	301	15.32%
2004			
2005	1,999	319	15.96%
2006			
2007	**1,917**	**—**	**N/A**

* Highlighted in **bold** if the year is in recession (according to NBER definition).

Note 1: Between 1992 and 1995, Latino sample was added to the main sample. So, there was a large increase in the number of the sample.

Note 2: Since 1997, PSID has changed into a biennial survey.

Results

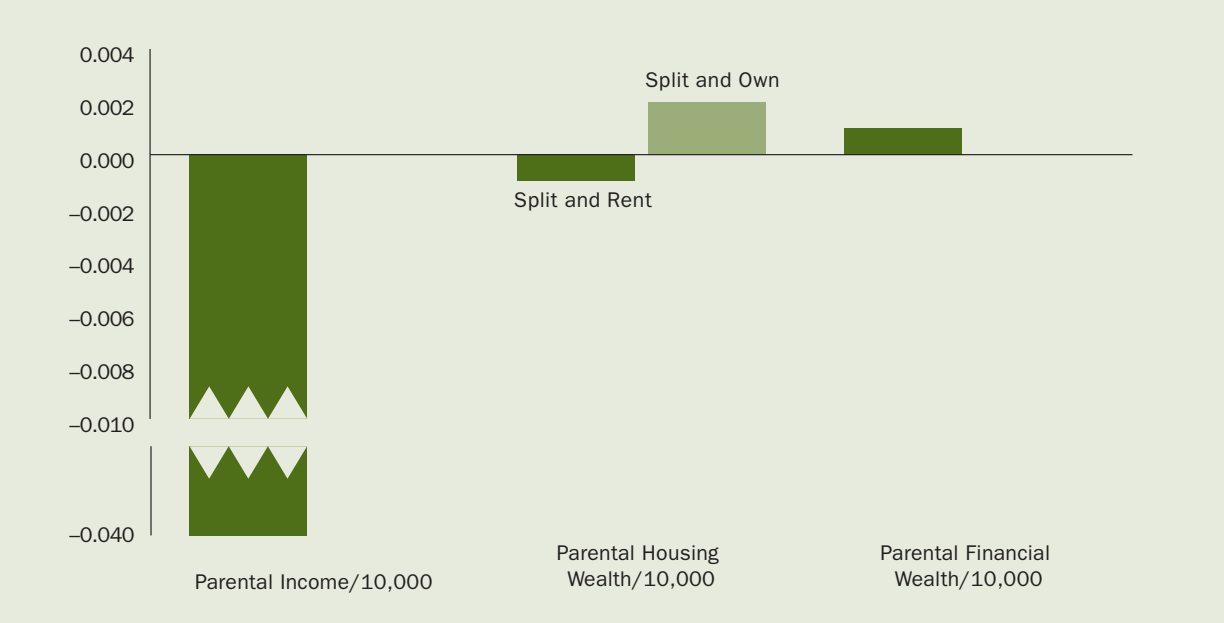
To analyze the impact of both economic conditions and demographic characteristics, this study uses a multinomial logit modeling framework (see Myers and Yu, 2009, for a similar modeling strategy). The model allows us to consider three choices for individuals who are presently not living independently: they may continue to live with someone else (usually their parents), they may form an independent household as a renter or they may form an independent household as a homeowner.[5] I conducted the analysis in two different sample periods because the wealth data and house price data are both available after 1984. Overall, the results across sample periods are similar, but the post-1984 estimates are measured less precisely.

While the full model results are displayed in Appendix 1, I highlight some of the variables that are of particular interest to this study in Figure 8. The results are consistent with the literature.

Figure 8
Selected Coefficients of Personal Characteristics from the Multinomial Logit Model (Whole Sample)

Source: Author's own calculations.

Figure 9
Coefficients of Economic Variables from the Multinomial Logit Model (Whole Sample)



Source: Author's own calculations.

Beginning with individual characteristics, females and non-minorities are more likely to form new households. However, the propensity to become renter households versus owner households is much different for minorities (Figure 8). Minorities are much less likely to form owner households than renter households. Females are also less likely to form owner households, but the differences are much less stark. Figure 8 also demonstrates that being unemployed depresses formation of both types of households fairly equally. Other model results (Appendix 1) are worth mentioning. More highly educated young adults are more likely to leave home, as would be expected. The results also show that conditional on education, young adults that are older are less likely to leave home.

With respect to parental variables, Figure 9 demonstrates that the impact of parental resources on household formation is mixed. (Full model results are presented in Appendix 2.) Theoretically, it is ambiguous whether higher parental income and wealth impact the household formation rates of children. On one hand, more parental resources may enable students to go to college or may pay the transaction costs of children establishing their own residences (De Jong, Gierveld, Liefbroer, and Beekink, 1991). On the other hand, children are more able to remain residentially and financially dependent on their parents if their parents have more resources (Whittington and Peters, 1996). The results suggest that children whose parents have higher incomes are more likely to remain at home, conditional on other factors, with this effect largest for youths forming rental households. I find the opposite results for parents with higher levels of financial wealth. Children with wealthier parents are more likely to form rental households. At the same time, children whose parents have more housing wealth are more likely to become new homeowners. This suggests that parental wealth is more important in helping children

Figure 10

Selected Coefficients of Family Economic Characteristics from the Multinomial Logit Model (Post-1984 Sample)

Source: Author's own calculations.

with the upfront costs of establishing a household, but it is not clear why parental income does not have a similar effect.

Finally, this study is concerned with how the economic cycle impacts household formation. Figure 10 displays the coefficient estimates on economic and housing conditions. I find that increases in state unemployment rates depress both rental and owner household formation rates. Higher state unemployment rates have the largest impact on an individual's decision to form an owner household. However, conditional on the state's unemployment rate, being in a recession also lowers the rates of rental household formation. The results suggest that there may be additional psychological impacts of being in a recession that go beyond the risk of job loss and that the rental market appears to be the most sensitive to these impacts. In addition, while I find no statistical impact of higher house prices on household formation, I find that higher median rents in the census tract of residence lowers the rates of rental household formation significantly.

Notes

5. It is important to note that there are other transitions that this analysis does not capture that were illustrated in Figure 7. Specifically, this analysis does not measure the transitions from renter to owner status or owner to rental status among currently independent households. It also does not measure the factors that cause households to move between types of shared living or to move back in with someone else. There were not enough households in this latter category to obtain statistically precise results on the economic factors that might lead individuals to transition into some sort of shared living arrangement.

Simulations

In order to determine the quantitative implications of these estimates, the data are simulated to calculate the effect on household formation rates from changes in economic and demographic variables. In the first four rows of Table 3, changes in the economic and housing conditions of the country are simulated by age group. As expected, compared to the base case outlined in the table, young adults are less likely to become new renters during a recession year. The simulations suggest that the probability of leaving home is reduced by 1 to 3 percentage points during a recession, the impact varying with the age of the individual.

Table 3
Simulation

	Age 18–20		Age 21–24		Age 25–29		Age 30–35	
	Split and Own	Split and Rent	Split and Own	Split and Rent	Split and Own	Split and Rent	Split and Own	Split and Rent
Base Case*	0.022	0.177	0.046	0.235	0.050	0.174	0.025	0.117
Non-White = 1	**0.008**	**0.144**	**0.017**	**0.198**	**0.019**	**0.144**	**0.009**	**0.094**
Female = 1	**0.032**	**0.299**	**0.050**	**0.306**	**0.056**	**0.231**	**0.009**	**0.231**
Unemployed = 1	**0.012**	**0.089**	**0.026**	**0.125**	**0.027**	**0.089**	**0.013**	**0.057**
Parental Income = $97,647	0.020	**0.156**	0.044	**0.210**	0.047	**0.154**	0.023	**0.103**
Parental Housing Wealth = $291,114	**0.036**	**0.178**	**0.070**	**0.229**	**0.079**	**0.164**	**0.040**	**0.116**
Parental Financial Wealth = $248,403	0.025	**0.206**	0.048	**0.266**	0.055	**0.193**	0.028	**0.135**
Recession = 1	0.023	**0.159**	0.050	**0.213**	0.053	**0.156**	0.026	**0.105**
State Unemoloyment Rate = 8.837%	**0.019**	**0.167**	**0.040**	**0.224**	**0.043**	**0.165**	**0.021**	**0.111**
Tract Median Rent = $819	0.020	**0.170**	0.043	**0.227**	0.046	**0.167**	0.023	**0.112**

*Base Case: Female = 0, Non-White = 0, Education = College, Unemployed = 0; Parental Income = $66,368, Parental Tenure / House Value = Rent, Parental Housing Wealth = $99,739, Parental Financial Wealth = $39,968 ; Recession = 0, State Unemployment Rate = 6.34%, Tract Median Rent = $540

Note: Results are placed in **bold** if they are statistically significant in the multinomial logit model. All simulation results are based on the whole sample, except those for parental housing and financial wealth that are only available for the post-1984 sample.

Increasing the unemployment rate by about 2 percentage points has a similarly negative impact on people becoming renters, reducing the probability of them establishing their own households by about 1 percentage point across age groups. There is a similar impact on the probability of people becoming new homeowners when unemployment rates are higher. Consistently, the effects are largest for the age ranges 21–24 and 25–29. Finally, I find moderate effects of increasing rents by $200. When rents are higher, renter household formation is depressed by about 1 percentage point across age groups.

By way of comparison, the estimates are also used to simulate changes in individual characteristics of young adults. The effect of an individual being unemployed is much larger than the general effects of higher unemployment rates, as one would expect. If an individual is unemployed, the probability of him establishing a new renter household falls from 5 to 12 percentage points, with the biggest impacts in the age 21–24 category. The effects are smaller for forming owner households, but the rate still falls by about 50 percent if an individual is unemployed.

Females are more likely to form rental households (10–15 percentage points higher) across all age ranges. They are also more likely to be part of an owner household (1 percentage point) from ages 18–29, but are less likely to become owners if still living at home at age 30. Finally, non-white individuals are less likely to become owners or renters. The predicted reduction in the probability for non-white individuals becoming owner households (up to 6 percentage points) is larger than the predicted reduction in them becoming renter households (up to 3.5 percentage points).

The impacts of major changes in parental income and wealth are not large. As evidenced in Table 3, individuals whose parents have incomes $30,000 more than the average are about 1–2 percentage points less likely to form a rental household. At the same time, individuals whose parents have wealth $200,000 above the mean are 2–3 percentage points more likely to form new renter households. Similarly, individuals whose parents have housing wealth $200,000 above the mean are 1.5–4 percentage points more likely to form owner households.

In sum, personal characteristics are the most important determinant of household formation. However, economic conditions play a significant role. Given the fact that the present recession includes unemployment rate increases of almost 6 percentage points in most places and large declines in parental financial and housing wealth, the model predicts that household formation would fall substantially.

Metropolitan Level Trends from the Recent Recession

The behavioral models estimated using data from the PSID suggest that the recent recession depressed household formation due to the reduction in economic activity, increases in unemployment rates and declines in income and wealth. This recession, while impacting all members of society, may have effects that are disparate in different segments of the population. In particular, this study places special focus on differences between immigrant and native-born households using a sample of 80 metropolitan areas in the ACS. In the data, I focus on three housing-related outcomes: headship rates, the rate of overcrowding and homeownership rates. Given the analysis above, I would expect headship rates to have fallen and the rate of overcrowding to have risen, but that there would be an indeterminate impact on homeownership rates due to the fact that these are influenced by the relative speed at which the headship rates of potential owners and renters are depressed.

Because these data allow a special focus on immigrants, I follow the taxonomy described in Painter and Yu (2009), separating metropolitan areas into three categories: established gateways, emerging gateways and smaller metropolitan areas.[6,7,8] As discussed in Painter and Yu (2009), these areas differ by both the newness and the size of the immigrant population in the metropolitan areas. It is not clear how immigrants might be differentially affected by residence in these different metropolitan areas. On the one hand, immigrants in smaller metros face lower housing costs and are less likely to be facing dramatic declines in prices that would lead to foreclosure. On the other hand, immigrants are less likely to have support mechanisms in place to help buffer the negative events associated with the current economic recession.

Table 4 presents the changes in headship rates for both native-born and immigrant households from 2005 until 2008, which give a snapshot of headship rates before and during the current recession.[9] In general, headship rates are lower for immigrant households than for native-born households, but the declines have been largest for native-born households. In established gateways, declines have been largest, which is not surprising given the increases in unemployment in places like Florida and California. However, the declines in headship rates for native-born households (–3.03 percentage

Table 4
Headship Rates

	2005	2008	Difference
Native-born Households	47.72%	44.69%	–3.03%
Established Gateways	45.19%	41.22%	–3.97%
Emerging Gateways	49.10%	45.82%	–3.28%
Small Metros	48.82%	46.89%	–1.93%
Immigrants	44.60%	42.33%	–2.27%
Established Gateways	44.51%	41.84%	–2.67%
Emerging Gateways	45.01%	42.71%	–2.30%
Small Metros	44.10%	43.43%	–0.67%

points) have been larger than the declines for immigrant households (–2.27 percentage points) in these established gateways. Interestingly, the declines were more dramatic in the emerging gateways for both native-born households (–3.97 percentage points) and immigrants (–2.67 percentage points).

The impacts of the recession have been less in the smaller metros. The biggest surprise is that once again, the declines in headship rates were larger for native-born households (–1.93 percentage points) than for immigrant households (–0.67 percentage points). This suggests that weaker immigrant networks in the smaller metropolitan areas are not disproportionately harming immigrants.

Next, I examine the changes in overcrowding rates in Table 5. Again, a household is considered overcrowded if there is more than one person per room in that household. Presumably, if household formation rates have declined, then overcrowding rates should increase. In all metropolitan areas that were sampled in this study, the rates of overcrowding for immigrant households were dramatically higher (14.63 percent versus 2.21 percent) than for native-born households in 2005. Interestingly, the recession has caused a dramatic increase in the rates of overcrowding for native-borns (9.83 percent in

Table 5
Overcrowding Rates

	2005	2008	Difference
Native-born Households	2.21%	9.83%	7.61%
Established Gateways	3.11%	9.66%	6.55%
Emerging Gateways	1.82%	10.57%	8.74%
Small Metros	1.81%	9.26%	7.45%
Immigrants	14.63%	17.35%	2.72%
Established Gateways	16.04%	18.75%	2.71%
Emerging Gateways	12.04%	15.40%	3.36%
Small Metros	14.35%	16.14%	1.79%

2008) and only a small increase in overcrowding for immigrants (17.35 percent in 2008).[10] Mirroring the results for headship rates, the largest increases in overcrowding were in the emerging gateways and the smallest were in the smaller metropolitan areas. Once again, the increase in overcrowding for immigrants was least in the areas with the smallest immigrant networks.

In order to connect these changes in headship rates to broader measures of housing outcomes, I next present homeownership rates (Table 6) in 2005 and 2008. Depending on where households that lost their homes via foreclosure have moved and whether rental or owner household formation was most depressed will determine the direction of homeownership rates in the recent recession. Overall, homeownership rates have declined slightly for native-born households in these metropolitan areas and increased slightly for immigrants in the same areas. Both groups experienced slight declines in the large immigrant gateways, but immigrants actually increased their homeownership from 2005 to 2008 in the emerging gateways and in the smaller metropolitan areas. Overall, this suggests that as homeowners lost their homes, they were not being replaced by new owners. In fact, because new rental household formations have also been reduced by the recession, the decline in homeownership rates was less than it might have been.

Table 6 also displays the homeownership rates of households that had moved in 2005 and 2008. These numbers suggest that movers were much less likely to become homeowners in 2008 than in 2005. The declines in homeownership rates among movers were highest in the gateway metropolitan areas,

Table 6
Homeownership Rates

	2005	2008	Difference
All Households			
Native-born Households	63.83%	63.47%	-0.36%
Established Gateways	59.95%	59.11%	-0.84%
Emerging Gateways	64.31%	64.28%	-0.02%
Small Metros	66.74%	66.37%	-0.37%
Immigrants	50.03%	50.63%	0.60%
Established Gateways	47.58%	47.26%	-0.33%
Emerging Gateways	53.30%	54.93%	1.62%
Small Metros	53.09%	54.42%	1.32%
Homeownership among Movers			
Native-born Households	31.15%	24.62%	-6.53%
Established Gateways	31.66%	22.15%	-9.50%
Emerging Gateways	31.03%	24.47%	-6.56%
Small Metros	30.93%	26.41%	-4.53%
Immigrants	29.35%	20.47%	-8.87%
Established Gateways	29.89%	18.56%	-11.33%
Emerging Gateways	29.50%	22.06%	-7.44%
Small Metros	27.45%	22.08%	-5.37%

and lowest in the smaller metropolitan areas. This might suggest that households who had lost their homes via foreclosure were disproportionately represented in the mover population, but the data do not provide such details.

In sum, the data from the ACS confirm the predictions of the model. Household formation has fallen for all groups and there has been significant variation across metropolitan areas. The smallest declines were in the smallest metropolitan areas. The most surprising finding was that immigrants did not disproportionately suffer in the recession. Instead, immigrants experienced lower declines in household formation and experienced the least severe impacts in the smaller metropolitan areas that had the fewest immigrants. Finally, because homeownership rates are dependent on the rates of household formation and on economic activity, it is hard to predict how movements in homeownership will progress without consideration of household formation. In this recession, homeownership rates likely declined due to people losing their homes, but part of the decline was mitigated by the drop in formation of renter households caused by the recession.

Notes

6. These established gateway metropolitan areas are usually defined as the New York CMSA, Chicago CMSA, Miami CMSA, Los Angeles CMSA, San Francisco CMSA and San Diego MSA because they have the largest numbers of settled immigrants and continue to receive the largest numbers of new immigrants.

7. Emerging gateways include Atlanta MSA, Boston-Worcester-Lawrence CMSA, Dallas-Fort Worth CMSA, Denver-Boulder-Greeley CMSA, Houston-Galveston-Brazoria CMSA, Las Vegas MSA, Orlando MSA, Philadelphia-Wilmington-Atlantic City CMSA, Phoenix-Mesa MSA, Sacramento-Yolo CMSA, Seattle-Tacoma-Bremerton CMSA, Tampa-St. Petersburg-Clearwater MSA, Washington-Baltimore CMSA, and West Palm Beach-Boca Raton MSA (Frey, 2002a; Singer, 2004; Painter and Yu, 2008).

8. Finally, a set of 60 smaller metropolitan areas from the top 200 metropolitan areas in population are selected based on the criteria outlined in Painter and Yu (2009). These smaller areas have less robust immigrant networks, and as Painter and Yu (2009) find, immigrants have lower homeownership rates in these areas when compared to similar native-born households.

9. Headship rates are the number of heads of households divided by the number of individuals. Overcrowding is defined as having more than one person per room.

10. On the surface it may seem odd that a decline in headship rates of 3 percentage points could increase the rates of overcrowding by 8 percentage points. This is because the definition of overcrowding is based on the number of people per room. It can be the case that if the decrease in the number of households was among the sample of households that were most at risk of living in overcrowded conditions, then this is exactly what would happen. Given the sample of households who lost their home because of defaults on subprime mortgages, then this is definitely plausible.

Discussion and Concluding Comments

The estimates and simulations suggest that economic conditions are a significant predictor of household formation rates. The behavioral model estimated in the PSID, using data covering six recessions, predicts that the formation of rental households should fall by 2–4 percentage points due to the current recession, and that the formation of owner households should fall by about 1 percentage point. Confirming these predictions, data from the ACS show that household formation among native-born households has fallen by about 3 percentage points overall, and by nearly 4 percentage points among immigrant households in the largest gateway metropolitan areas.

The model also demonstrates that individual characteristics such as employment and demographic characteristics are important predictors of household formation. Not having a job leads to a reduction of more than 10 percentage points in renter household formation and a reduction of about 2 percentage points in owner household formation. I also find that women and non-minorities have significantly higher probabilities of establishing independent households. Finally, parental resources play a mixed role. Higher financial and housing wealth increase the probability of a young adult establishing a renter and owner household respectively, but higher income of parents reduces the likelihood that a new renter household will form.

The data from the ACS also revealed some surprises concerning the impacts of the recession on native-born and immigrant households. The biggest surprise is that immigrants, despite having lower than average income, have been harmed less by the present recession, as measured by changes in housing outcomes and headship rates. Finally, there were dramatic changes in the overcrowding rates of native-borns during the period 2005–2008. This is likely due to a combination of decreased renter household formation and, potentially, due to an increase in families doubling up after families have lost homes due to foreclosure.

It is important to remember that this analysis did not capture all household transitions that were illustrated in Figure 7, and therefore future research continues to be necessary to understand the

factors that cause individuals to move both to and from shared living arrangements to independence. Specifically, this analysis does not measure the transitions from renter to owner status or owner to renter status among currently independent households. It also does not measure the factors that cause individuals to move between types of shared living or to move back in with someone else. There were not enough households in this latter category to obtain statistically precise results on the economic factors that might lead individuals to transition into some sort of shared living arrangement. Moreover, the analysis which focused on the recent recession used a sample of metropolitan areas, and therefore does not capture how the recession effects rural areas differently than these metropolitan areas. Finally, due to data limitations, my analysis had to focus on household formation as of 2008. Clearly, given the depth of the downturn in 2009, and the ongoing weakness in the job market through the beginning of this year, this study gives no reason to expect that household formation has picked up at all.

Despite these caveats, these results have important implications for both public policy and housing industry professionals. First, the results suggest that rental demand is dramatically affected in a recession. This is evidenced by both the reduction in overall headship rates and by the only slight reduction in homeownership rates from 2005–2008. Second, while overall homeownership rates have not moved much, there are signs in the data that they are moving in the wrong direction. The rates of homeownership among movers fell, which suggests that movers are more likely to become renters than owners. In addition, since normal rental household formation has fallen, these numbers are particularly concerning.

Current economic forecasts, including those from the Mortgage Bankers Association, suggest that unemployment is expected to fall very slowly over the next two years. Additionally, many households have lost substantial portions of their wealth through this recession, which will make it more difficult for them to venture out on their own, or to come up with a down payment for a home purchase. While the recession is likely over, the model developed in this paper suggests that normal rates of household formation will not return until unemployment levels return to close to normal rates. Current economic forecasts suggest that unemployment rates should fall by a little more than 2 percentage points by the end of 2012. If this is correct, then the model suggests that household formation should increase by about 2 percentage points from current levels by 2012, as people find jobs and recession-induced anxieties abate. That would imply that by 2012, normal rates of household formation should reappear (roughly 1–1.5 million new households per year), but it will take even longer before the U.S. completely recovers from the deficit in household formation caused by the severe recession. The clear implication is that there is no demographic silver bullet that will solve the supply overhang we are seeing in many housing markets around the country.

Finally, it will be important to observe a turnaround in homeownership rates before the housing market is likely to stabilize. This is because increases in initial household formation will disproportionately come from renters, which may cause homeownership to fall further. In addition, former homeowners

who lost their homes due to foreclosure have had their credit damaged and will likely take time to repair their scores and secure a down payment. Once both of these classes of renters make the transition to homeownership then we would expect the housing market to stabilize.

Appendix 1

Appendix 1

Results of Multinomial Logit Analysis (For Whole Sample with Weights)

(Children who have not established independence from their parents)

	All Individual and Family Variables				+ Macro Economic Variables + Median Rent			
	Renters		Owners		Renters		Owners	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Individual Demographic Characteristics								
Female	0.706	0.063 [c]	0.572	0.142 [c]	0.718	0.065 [c]	0.586	0.144 [c]
Non-white	–0.265	0.064 [c]	–1.100	0.142 [c]	–0.266	0.065 [c]	–1.062	0.145 [c]
Education Dummies (less than high school = 0)								
College degree	0.099	0.125	0.444	0.263 [a]	0.099	0.124	0.253	0.259
Some College	0.162	0.121	0.538	0.248 [b]	0.135	0.121	0.383	0.248
High School	0.010	0.117	0.548	0.240 [b]	–0.002	0.119	0.432	0.242 [a]
Age Dummies (18–20 = 0)								
21–24	0.261	0.099 [c]	0.713	0.195 [c]	0.262	0.099 [c]	0.787	0.197 [c]
25–29	–0.045	0.145	0.689	0.239 [c]	–0.031	0.144	0.815	0.239 [c]
30–35	–0.510	0.358	–0.148	0.398	–0.485	0.352	0.031	0.384
Female* Age Dummies (18–20 = 0)								
Female & 21–24	–0.405	0.091 [c]	–0.241	0.191	–0.403	0.092 [c]	–0.213	0.193
Female & 25–29	–0.331	0.149 [b]	–0.346	0.274	–0.349	0.150 [b]	–0.392	0.277
Female & 30–35	0.108	0.334	–1.398	0.586 [b]	0.070	0.334	–1.448	0.608 [b]
Student	–3.771	0.172 [c]	–3.296	0.324 [c]	–3.758	0.172 [c]	–3.187	0.322 [c]
Missing School Information	0.192	0.147	0.613	0.328 [b]	0.137	0.147	0.341	0.319
Health (Poor or Disabled)	–0.032	0.231	–0.310	0.592	–0.090	0.240	–0.340	0.595
Missing Health Information	0.080	0.057	0.181	0.122	0.051	0.049	–0.133	0.102
Individual Economic Characteristics								
Unemployed	–0.851	0.053 [c]	–0.820	0.124 [c]	–0.805	0.054 [c]	–0.749	0.126 [c]
Family Demographic Characteristics								
Father's Education Dummies (less than high school = 0)								
College degree	0.147	0.078 [a]	–0.415	0.163 [b]	0.159	0.077 [b]	–0.295	0.163 [a]
Some College	0.081	0.073	–0.277	0.149 [a]	0.094	0.073	–0.121	0.145
High School	–0.050	0.058	–0.234	0.115 [b]	–0.056	0.059	–0.184	0.114
Family Size	0.007	0.012	0.059	0.025 [c]	0.000	0.012	0.047	0.025 [a]
Family structure (two-parent family = 0)								
One Parent, Widowed	–0.182	0.087 [b]	–0.113	0.179	–0.183	0.087 [b]	–0.206	0.185
One Parent, Others	0.083	0.067	0.066	0.150	0.067	0.068	0.128	0.152
Parental Health (Poor or Disabled)	–0.022	0.052	0.090	0.103	–0.010	0.052	0.104	0.103
Family Economic Characteristics								
Parent's Family Income / 10,000	–0.053	0.010 [c]	–0.034	0.020 [a]	–0.051	0.010 [c]	–0.028	0.020
Family Tenure / House Value Dummies (Rent = 0)								
Own, House Value Lower 33%	–0.057	0.070	0.332	0.150 [b]	–0.089	0.072	0.332	0.153 [b]
Own, House Value Middle 33%	–0.078	0.068	0.475	0.153 [c]	–0.095	0.069	0.448	0.154 [c]
Own, House Value Upper 33%	–0.030	0.072	0.326	0.165 [b]	–0.031	0.073	0.277	0.168 [a]

Continues on following page.

Appendix 1

Results of Multinomial Logit Analysis (For Whole Sample with Weights) (Continued)

(Children who have not established independence from their parents)

	All Individual and Family Variables				+ Macro Economic Variables + Median Rent			
	Renters		Owners		Renters		Owners	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Family Economic Characteristics (Continued)								
Parent's Income* Age Dummies (18–20 = 0)								
21–24*Parent's Income / 10,000	0.055	0.010 [c]	0.034	0.020 [a]	0.055	0.010 [c]	0.031	0.020
25–29*Parent's Income / 10,000	0.049	0.014 [c]	0.060	0.022 [c]	0.050	0.014 [c]	0.057	0.022 [c]
30–35*Parent's Income / 10,000	–0.010	0.049	0.135	0.041 [c]	–0.006	0.049	0.134	0.040 [c]
Member of Low-Income Sample	–0.080	0.059	–0.174	0.118	–0.072	0.059	–0.252	0.118 [b]
Family Locational Characteristics								
City size (> = 500,000 = 0)								
100,000–499,999	0.151	0.062 [b]	0.427	0.153 [c]	0.137	0.064 [b]	0.444	0.153 [c]
50,000–99,999	0.080	0.075	0.564	0.172 [c]	0.060	0.079	0.586	0.177 [c]
25,000–49,999	0.040	0.081	0.369	0.180 [b]	0.035	0.083	0.396	0.181 [b]
10,000–24,999	–0.039	0.080	0.449	0.177 [b]	–0.054	0.084	0.483	0.184 [c]
Under 10,000	0.030	0.078	0.853	0.158 [c]	–0.008	0.084	0.843	0.168 [c]
Region (Midwest = 0)								
Northeast	–0.325	0.060 [c]	–0.395	0.136 [c]	–0.296	0.062 [c]	–0.468	0.138 [c]
South	–0.107	0.058 [a]	0.194	0.109 [a]	–0.099	0.063	0.188	0.114 *
West	0.033	0.066	–0.179	0.142	0.083	0.069	–0.099	0.148
Economic Characteristics								
Year Dummies (68–74 = 0)								
75–79	–0.100	0.067	–0.136	0.152				
80–84	–0.143	0.079 [a]	–0.365	0.175 [b]				
85–89	0.070	0.078	0.010	0.162				
90–94	0.063	0.090	0.263	0.185				
95–99	0.023	0.132	0.760	0.238 [c]				
00–07	0.121	0.088	0.703	0.176 [c]				
If Recession Year					–0.129	0.066 [b]	0.052	0.138
State Real GDP Growth Rate					–0.300	0.685	0.218	1.432
State Unemployment Rate					–0.033	0.012 [c]	–0.076	0.029 [c]
State Average Real Wage / 1,000					–0.002	0.005	0.011	0.011
Housing Market Characteristics								
Ln (Tract Median Rent)					–0.132	0.069 [a]	–0.195	0.131
MSA HPI								
Pseudo R2		12.40				12.28		

a. P < 0.10
b. P < 0.05
c. P < 0.01

Note: Educational dummies represent the final degree of individuals.

Appendix 2

Appendix 2

Results of Multinomial Logit Analysis (For Year >= 1984 with Weights)

(Children who have not established independence from their parents)

	All Individual and Family Variables				+ Macro Economic Variables + Median Rent			
	Renters		Owners		Renters		Owners	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Individual Demographic Characteristics								
Female	0.690	0.090 [c]	0.460	0.194 [b]	0.531	0.149 [c]	0.869	0.396 [b]
Non-white	–0.308	0.081 [c]	–1.184	0.177 [c]	–0.535	0.139 [c]	–1.149	0.294 [c]
Education Dummies (less than high school = 0)								
College degree	0.226	0.133 [a]	0.396	0.271	0.096	0.211	0.401	0.450
Some College	0.167	0.128	0.467	0.253 [a]	0.020	0.202	0.421	0.432
High School	–0.090	0.124	0.285	0.247	–0.119	0.197	0.250	0.431
Age Dummies (18–20 = 0)								
21–24	0.250	0.121 [b]	0.727	0.231 [c]	0.392	0.209 [a]	1.468	0.413 [c]
25–29	–0.082	0.167	0.767	0.273 [c]	0.338	0.297	1.629	0.492 [c]
30–35	–0.512	0.361	–0.016	0.404	–0.788	0.684	–3.725	1.253 [c]
Female* Age Dummies (18–20 = 0)								
Female & 21–24	–0.405	0.121 [c]	0.034	0.246	–0.236	0.197	–0.500	0.463
Female & 25–29	–0.212	0.175	–0.298	0.320	–0.323	0.298	–1.199	0.570 [b]
Female & 30–35	0.002	0.348	–1.381	0.645 [b]	0.871	0.605	0.300	0.963
Student	–4.207	0.212 [c]	–3.518	0.383 [c]	–4.014	0.318 [c]	–2.938	0.525 [c]
Missing School Information	0.349	0.218	0.333	0.485	0.714	0.380 [a]	0.886	0.798
Health (Poor or Disabled)	–0.285	0.313	–0.688	0.829	–0.702	0.478	–1.305	1.084
Missing Health Information	–0.102	0.074	–0.278	0.153 [a]	–0.240	0.137 [a]	0.230	0.257
Individual Economic Characteristics								
Unemployed	–0.486	0.066 [c]	–0.477	0.147 [c]	–0.400	0.105 [c]	–0.396	0.219 [a]
Family Demographic Characteristics								
Father's Education Dummies (less than high school = 0)								
College degree	0.227	0.100 [b]	–0.174	0.198	0.212	0.176	–0.062	0.315
Some College	0.092	0.094	–0.103	0.179	0.211	0.153	–0.200	0.300
High School	–0.066	0.080	–0.162	0.148	–0.145	0.138	–0.012	0.242
Family Size	0.014	0.018	0.083	0.035 [b]	0.017	0.028	0.038	0.053
Family structure (two–parent family = 0)								
One Parent, Widowed	–0.084	0.119	–0.121	0.233	0.124	0.213	0.046	0.403
One Parent, Others	0.062	0.082	0.090	0.174	–0.075	0.126	0.632	0.250 [c]
Parental Health (Poor or Disabled)	–0.008	0.064	0.140	0.120	–0.161	0.106	0.113	0.197
Family Economic Characteristics								
Parent's Family Income / 10,000	–0.039	0.012 [c]	–0.033	0.022	–0.029	0.018	–0.011	0.036
Family Tenure / House Value Dummies (Rent = 0)								
Own, House Value Lower 33%	–0.091	0.091	0.363	0.182 [b]	–0.261	0.143 [a]	0.790	0.299 [c]
Own, House Value Middle 33%	–0.123	0.084	0.341	0.183 [a]	–0.325	0.132 [b]	0.994	0.306 [c]
Own, House Value Upper 33%	–0.082	0.092	0.190	0.200	–0.290	0.159 [a]	0.602	0.365 [a]

Continues on following page.

Appendix 2

Results of Multinomial Logit Analysis (For Year >= 1984 with Weights) (Continued)

(Children who have not established independence from their parents)

	All Individual and Family Variables				+ Macro Economic Variables + Median Rent			
	Renters		Owners		Renters		Owners	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Family Economic Characteristics (Continued)								
Parent's Housing Wealth / 10,000	–0.001	0.001 [b]	0.002	0.001 [b]	–0.001	0.002	0.001	0.003
Parent's Financial Wealth / 10,000	0.001	0.000 [b]	0.001	0.001	0.001	0.002	0.002	0.004
Parent's Income* Age Dummies (18–20 = 0)								
21–24* Parent's Income / 10,000	0.045	0.012 [c]	0.021	0.021	0.028	0.019	0.000	0.037
25–29* Parent's Income / 10,000	0.037	0.016 [c]	0.055	0.023 [b]	–0.010	0.031	0.068	0.047
30–35* Parent's Income / 10,000	–0.009	0.048	0.124	0.040 [c]	–0.041	0.096	0.382	0.093 [c]
Member of Low-Income Sample	–0.060	0.076	–0.173	0.146	0.100	0.129	0.077	0.256
Family Locational Characteristics								
City size (> = 500,000 = 0)								
100,000–499,999	0.112	0.086	0.346	0.196 [a]	–0.168	0.162	0.143	0.383
50,000–99,999	0.038	0.104	0.488	0.230 [b]	–0.327	0.194 [a]	0.420	0.432
25,000–49,999	0.011	0.105	0.290	0.222	–0.363	0.197 [a]	0.228	0.432
10,000–24,999	–0.037	0.106	0.484	0.217 [b]	–0.480	0.196 [b]	0.467	0.399
Under 10,000	–0.025	0.109	0.819	0.206 [c]	–0.472	0.242 [a]	1.177	0.442 [c]
Region (Midwest = 0)								
Northeast	–0.203	0.083 [b]	–0.565	0.176 [c]	–0.113	0.168	–0.231	0.334
South	–0.074	0.078	0.077	0.136	0.068	0.124	–0.091	0.237
West	0.148	0.089 [a]	–0.149	0.177	0.090	0.152	–0.047	0.292
Economic Characteristics								
Year Dummies (68–74 = 0)								
75–79								
80–84								
85–89								
90–94								
95–99								
00–07								
If Recession Year	–0.103	0.091	0.212	0.171	–0.091	0.153	0.250	0.287
State Real GDP Growth Rate	0.707	0.978	1.251	1.957	–1.897	1.760	3.735	3.435
State Unemployment Rate	–0.008	0.015	–0.058	0.035 [a]	–0.006	0.029	–0.099	0.064
State Average Real Wage / 1,000	–0.008	0.007	0.017	0.012	0.015	0.013	–0.031	0.028
Housing Market Characteristics								
Ln (Tract Median Rent)	–0.100	0.082	–0.137	0.150	–0.011	0.144	0.077	0.316
MSA HPI					–0.001	0.002	0.005	0.003
Pseudo R2								

a. P < 0.10
b. P < 0.05
c. P < 0.01

Note: Educational dummies represent the final degree of individuals.

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