

## ARE PROFILES OF 'MOBILE HOME' RESIDENTS IN GEORGIA CHANGING? EVIDENCE FROM 1980, 1990, AND 2000 U.S. CENSUS DATA

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### Abstract

*This study used U.S. Census data to perform a comparative assessment of socio-demographic profiles between residents of mobile or manufactured homes and site-built construction. It also provides a comparison between the two types of residents for the time period 1980 to 2000 in the state of Georgia. Particularly, mobile and manufactured home residents are compared to those in single- and multifamily site-built homes. Results suggest that, increasingly, lower-income households, including Hispanic households, are living in mobile and manufactured homes as opposed to comparable single-family site-built homes. In addition, an increasing number of larger households, households headed by African Americans, and households headed by older individuals are living in mobile and manufactured homes relative to multifamily site-built homes.*

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### Introduction

Much like the nation as a whole, Georgia is experiencing an affordable housing crisis. In 1999, 35.4% of renter households in Georgia were cost burdened, meaning they spent 30% or more of their monthly income toward rent (U.S. Bureau of the Census, 2000c). In 1999, 24.6% of Georgia households paying mortgages on owner-occupied housing were cost burdened (U.S. Bureau of the Census, 2000d). Overall, rates of being cost burdened were

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much higher among lower-income than among higher-income Georgians, as shown in Table 1.

**Table 1. Rates of Being Cost Burdened by Income Group and Tenure, 1999**

Income Range	Percent of Renter Households that were Cost Burdened	Percent of Owner Households that were Cost Burdened
Less than \$10,000	66.1	65.9
\$10,000 to \$19,999	67.4	50.1
\$20,000 to \$34,999	38.0	41.7
\$35,000 to \$49,999	N/A	24.8
\$35,000 or More	4.7	N/A
\$50,000 to \$74,999	N/A	10.8
\$75,000 or More	N/A	3.4

Sources: U.S. Bureau of the Census (2000c, 2000e)

Manufactured housing can offer a feasible approach to increasing the supply of housing that is affordable to low- and middle-income households. As the cost of traditional site-built housing rises, manufactured housing remains an affordable option to help more Americans realize their dream of homeownership without a heavy financial burden. The results of a hedonic price comparison of manufactured homes and comparable site-built homes indicated that, on average nationally, manufactured home prices were less than one third of site-built home prices, *ceteris paribus* (Vanderford, Mimura, & Sweaney, 2005).

To clarify, the terms manufactured housing and mobile homes, although often used interchangeably, actually refer to two different examples of factory-built housing. Manufactured housing refers to homes built after June 1976 in accordance with the stringent Housing and Urban Development (HUD) Manufactured Housing Construction and Safety Standards Code, which is why they are often referred to as HUD-Code homes (Apgar, Calder, Collins, & Duda, 2002; Suchman, 1995). A manufactured home under the HUD Code is defined as a movable dwelling, eight feet (approximately 2 m 44 cm) or more wide and 40 feet (approximately 12 m 19 cm) or more long, that is designed to be towed on its own chassis, has transportation gear integral to the unit in place when it leaves the factory, and does not need a permanent foundation (Georgia Department of Community Affairs, 2002). All other forms of factory-

built (or industrialized) housing, such as modular and panelized housing, are built according to state and local building codes and are not considered to be manufactured houses or mobile homes (Apgar et al., 2002).

Although by definition, only those homes built before June 1976 are officially mobile homes, many people still use the term to refer to manufactured homes (Apgar et al., 2002). When possible, manufactured and mobile homes are distinguished in the literature review that follows, as well as in some of the descriptive data analysis. However, both types of housing were grouped into one category and called mobile homes for the regression analysis; this decision is explained later.

Despite cost advantages, the modern manufactured housing industry faces challenges. Primarily, many people have negative perceptions of mobile and manufactured homes and their residents. While not based on fact, such negative perception may prevent some homebuyers from choosing manufactured housing. Though much maligned the quality, safety, and size of today's manufactured housing units have improved markedly over recent decades, making stereotypes inappropriate for modern HUD-Code manufactured homes (Apgar et al., 2002). While structural characteristics have allowed modern manufactured homes to appear more like site-built homes, preliminary evidence indicates that the characteristics of residents are also changing. Despite these changes, financing in the manufactured home market had not advanced and had many downsides when compared to site-built home financing (Buchholz, 2005). The lack of changes in the area of financing may continue to turn some segments of the population away from manufactured housing. Therefore, this research examined changes in the demographic and economic profiles of the residents of mobile/manufactured and site-built (both single- and multi-family) homes in Georgia between 1980 and 2000.

## **Review of Literature**

According to the 2000 Census, at the turn of the century there were approximately 8.8 million mobile or manufactured homes in the United States, which represented 7.6% of the total housing stock (U.S. Bureau of the Census, 2000a). Over 500,000 more manufactured homes had been placed by

the end of 2003 (U.S. Bureau of the Census, 2004c). The South is the largest regional market for manufactured housing, partially because of favorable zoning laws (Jovan & Joseph, 1997) and relatively large populations of lower-income households, immigrants, and retired persons (Apgar et al., 2002). The South contains 55% of all manufactured housing in the United States (Apgar et al., 2002). In Georgia, 12% of the housing stock was comprised of mobile or manufactured homes in 2000 (U.S. Bureau of the Census, 2000a). Four of the 10 counties in the nation with the highest concentrations of manufactured housing in 2000 were in Georgia (Nitscheke, 2004). Further, manufactured housing is more popular in rural areas than in urban areas. Nationally, a majority of this type of housing is located in non-metropolitan areas (Housing Assistance Council, 2000), whereas mobile and manufactured housing comprised 18% of all housing units in 2000 (Nitscheke, 2004).

### **Costs of Manufactured and Site-Built Homes**

The many benefits of factory construction such as speed, protection from weather and theft/vandalism, ability to order supplies in bulk have made manufactured housing substantially less expensive than site-built housing (U.S. Department of Housing and Urban Development, 2001). In 2003, the average sales price, including installation but excluding land, of new multi-section manufactured homes was \$59,800. The average price of a new multi-section manufactured home in Georgia that year was even lower—\$55,700 (U.S. Bureau of the Census, 2004a). Comparatively, the average sales price for new single-family homes in 2003 was \$246,300 across the U.S. and \$208,900 in the South (U.S. Bureau of the Census, 2004b). A study comparing home prices between HUD-Code homes and comparable site-built homes in areas located outside of Metropolitan Statistical Areas (MSAs) found that, *ceteris paribus*, manufactured homes were nearly 70% less expensive than site-built homes (Vanderford et al., 2005).

Because of its lower cost, manufactured housing offers the potential of homeownership to more Americans. In a country where there is a shortage of affordable housing, manufactured housing has been one of the most prevalent types of housing affordable to low- and middle-income Americans in many areas of the country. In 1999, only 44% of all owner-occupied housing units were considered affordable to households earning at or below 80% of the area

median income. Two-thirds of all such affordable homes added to the housing stock between 1997 and 1999 were manufactured homes. Manufactured housing has been particularly important in contributing to homeownership among households with very low incomes (less than 50% of the area median income). Between 1993 and 1999, 23% of the growth in homeownership among very-low-income households came from manufactured housing. Among those very-low-income households, Southern households and rural households experienced even greater growth in homeownership due to manufactured housing—30% and 35% of the total growth, respectively. And for rural, Southern, very-low-income households, manufactured housing accounted for 63% of the growth in homeownership between 1993 and 1999 (Apgar et al., 2002).

### ***Perceptions of Residents of Mobile and Manufactured Homes***

Research has indicated that perceptions of residents of manufactured homes tend to be different than reality. Using two surveys in non-metropolitan counties of Virginia, Beamish, Goss, Atilis, & Kim (2001) compared perceptions of single-section and double-section manufactured home residents to the actual characteristics of the residents. Residents of single-section housing were more educated, had higher incomes, were more likely to be White and married, were more likely to own both their home and their land, and were less likely to live in a mobile home park than the characteristics perceived by manufactured housing residents and by other community members. Similarly, residents of double-section manufactured homes had higher education levels, were more likely to be married, and were less likely to live in a mobile home park than what was perceived.

The aforementioned study (Beamish et al., 2001) also compared perceptions expressed by manufactured home residents with those expressed by other community members. In general, residents of other types of housing had very different views of manufactured homes than did people who lived in manufactured housing. Respondents who did not live in manufactured homes were less likely than manufactured home residents to perceive single-section and double-section manufactured home residents as middle class, local, and socially well behaved. Regarding education and housing tenure, manufactured housing residents had more accurate impressions of double-section residents than did

other community members. The authors concluded that the inaccurate views that community members held about manufactured housing residents were likely to be based on images associated with older trailers and mobile homes.

Negative stereotypes of mobile home residents may result in some homebuyers not choosing modern manufactured housing, either because they misunderstand the housing or because the lack of general acceptance limits its availability in their area. Negative perceptions have led many elected officials and housing policymakers to restrict manufactured housing by means of zoning and other regulations (U.S. Department of Housing and Urban Development, 2005). In fact, the federal government does not limit local governments' abilities to regulate where manufactured homes may be placed (Georgia Department of Community Affairs, 2002). Such restrictions make it more difficult for potential customers to purchase manufactured housing and live where they would like. Beamish et al. (2001) suggested that much of the responsibility of advocating for manufactured housing as a viable form of affordable housing lies with state and local governments. Providing consumers, policymakers, and elected officials with updated facts about current manufactured housing and its residents could help increase the acceptance and availability of manufactured housing in Georgia.

### ***Residents of Mobile, Manufactured, and Site-Built Homes***

Over 18 million Americans, including nearly one million Georgians, lived in mobile or manufactured homes in 2000 (U.S. Bureau of the Census, 2000b). The stereotypical mobile or manufactured homeowner is a first-time homebuyer, a retired individual or couple, or a low-income family. In the late 1990s, the majority of manufactured homes were purchased by consumers with lower-than-average incomes living in the South and Southwest regions of the United States (Jovan & Joseph, 1997). Increasingly, however, as manufactured housing quality has improved, manufactured homes have been purchased by a wider range of individuals than in the earlier years of the industry (Apgar et al., 2002).

The profile of a typical manufactured homeowner appears to be growing more similar to that of homeowners in general; nonetheless, differences still exist. Purchasers of manufactured housing are usually younger (first-time homebuyers) or older (retirees) than purchasers of site-built housing. Among manufactured home buyers in 1998 and 1999, 12% were under 25

and 13% were over 64; the comparable figures for site-built home buyers were five percent and seven percent, respectively (Apgar et al., 2002). More non-Whites are purchasing manufactured housing than ever before. In fact, recently, ownership of manufactured homes has grown faster among African Americans and Hispanics than among Whites. Currently, distributions of African Americans, Hispanics, and Whites differ little across manufactured and site-built homeowners (Apgar et al., 2002).

According to a study conducted by Foremost Insurance Group (2002), characteristics of manufactured home owners were very different from people's stereotypes of that group and were more similar to characteristics of site-built home residents. In 2002, the median household income among manufactured home residents was just under \$29,000. Furthermore, 55% of householders were employed full-time, and 30% were retired. Seventeen percent of householders had less than a high school diploma, and 18% had a college degree. The most common household configuration was a household of two members, and over half (56%) of the householders were married.

### **Summary**

In summary, mobile and manufactured homes are relatively more popular in the South, including Georgia, than in other regions of the country (Apgar et al., 2002; Jovan & Joseph, 1997; U.S. Bureau of the Census, 2000a). They are far less expensive than otherwise equivalent single-family site-built homes (U.S. Bureau of the Census, 2004a; U.S. Bureau of the Census, 2004b; Vanderford et al., 2005). As modern manufactured homes become more common, residents appear to become more similar to residents of site-built homes; however, negative stereotypes of mobile and manufactured home residents are still pervasive (Apgar et al., 2002; Beamish et al., 2001; Foremost Insurance Group, 2002).

### **Data and Sample**

The data for this study were obtained from the 5% Public Use Micro Data (PUMS) from the 1980, 1990, and 2000 United States Censuses. The PUMS is a nationally representative dataset based on the decennial Census; it contains comprehensive information about housing units and the persons living in each unit. Each housing unit from each Census year was counted as an observation.

**Table 2. Characteristics of the Sample, by Census Year and House Structure Type****Panel A: 1980 Census**

Variable	Mobile	Manufactured	Site-Built	
			Multifamily	Single-Family
Percent of housing stock***	7.13	0.54	24.05	68.29
Year built***				
Before 1940	1.62	0.00	12.34	16.60
1940-1949	1.18	0.00	9.47	11.25
1950-1959	3.81	0.00	14.93	18.77
1960-1969	25.16	0.00	28.48	24.59
1970-1979	68.23	0.00	32.08	25.56
1980	0.00	100.00	2.70	3.24
Has phone (vs. not)***	71.98	75.85	83.28	91.90
On 10+ acres (vs. fewer)***	12.28	11.38	4.11	10.56
Number of bedrooms	2.31a b c (0.66)	2.42a d e (0.65)	1.94b d f (0.87)	2.86c e f (0.80)
Owner (vs. renter)***	76.10	90.62	14.12	82.30
Non-MSA (vs. MSA)***	35.86	32.73	10.01	23.00
Poverty status***				
Poor	19.55	13.17	25.86	13.88
Near poor	30.99	25.35	23.49	19.69
Not poor	49.46	61.48	50.65	66.42
Household type***				
Married couple	66.63	76.65	35.08	71.54
Single-female householder	20.21	15.37	43.76	20.96
Single-male householder	13.16	7.98	21.16	7.50
Number of persons	2.88b c (1.49)	3.03d (1.43)	2.36b d f (1.53)	3.01c f (1.57)
Race***				
African American	15.02	14.77	36.96	19.80
White	84.11	83.83	61.69	79.70
Other	0.87	1.40	1.35	0.51
Hispanic (vs. not)***	0.75	1.20	1.54	0.74
HS edu. or more (vs. less)***	49.31	60.68	65.79	57.20
Disabled (vs. not)***	16.94	10.58	16.94	19.51
Age	39.37a b c (16.26)	34.25a d e (13.68)	40.65b d f (18.07)	48.48c e f (16.20)
Sample size	6,670	501	22,508	63,920

**Table 2. (cont.)**  
**Panel B: 1990 Census**

Variable	Mobile	Manufactured	Site-Built	
			Multifamily	Single-Family
Percent of housing stock***	6.01	6.05	20.30	67.64
Year built***				
Before 1940	3.61	0.00	6.14	9.34
1940-1949	2.59	0.00	5.51	7.47
1950-1959	5.31	0.00	8.78	14.48
1960-1969	22.33	0.00	16.40	18.97
1970-1979	66.15	0.00	24.79	23.24
1980-1989	0.00	89.17	35.40	23.56
1990	0.00	10.83	2.98	2.93
Has phone (vs. not)***	75.39	81.81	88.24	95.46
On 10+ acres (vs. fewer)***	10.34	9.87	0.47	8.95
Number of bedrooms	2.35a b c (2.93)	2.51a d e (2.73)	1.84b d f (3.81)	3.03c e f (3.38)
Owner (vs. renter)***	75.56	83.88	12.98	85.99
Non-MSA (vs. MSA)***	37.94	35.90	9.14	19.85
Poverty status***				
Poor	25.37	14.35	23.95	10.12
Near poor	29.82	26.49	20.04	15.59
Not poor	44.80	59.16	56.01	74.29
Household type***				
Married couple	52.27	65.47	28.05	67.95
Single-female householder	28.46	19.24	47.30	22.45
Single-male householder	19.28	15.29	24.65	9.61
Number of persons	2.66a b c (6.16)	2.88a d (5.84)	2.18b d f (6.29)	2.83c f (6.21)
Race***				
African American	19.42	15.90	38.78	19.97
White	79.43	83.11	58.37	78.96
Other	1.15	1.00	2.85	1.07
Hispanic (vs. not)***	4.40	3.43	5.88	3.79
HS edu. or more (vs. less)***	47.52	61.11	75.78	72.02
Disabled (vs. not)***	21.87	13.17	13.80	15.83
Age	44.87a b c (68.79)	38.39a d e (60.04)	39.80b d f (80.92)	49.47c e f (69.36)
Sample size	7,213	7,258	24,352	81,157

**Table 2. (cont.)****Panel C: 2000 Census**

Variable	Mobile	Manufactured	Site-Built	
			Multifamily	Single-Family
Percent of housing stock***	3.73	9.63	20.31	66.32
Year built***				
Before 1940	3.63	0.00	4.99	6.84
1940-1949	2.24	0.00	3.47	5.11
1950-1959	5.19	0.00	6.87	10.40
1960-1969	21.45	0.00	12.51	13.53
1970-1979	67.49	0.00	21.71	17.58
1980-1989	0.00	41.27	26.93	19.11
1990-1999	0.00	50.80	20.88	23.78
2000	0.00	7.92	2.67	3.65
Has phone (vs. not)***	84.56	91.98	96.13	98.22
On 10+ acres (vs. fewer)***	5.50	6.73	0.28	5.07
Number of bedrooms	2.32a b c (3.20)	2.65a d e (3.10)	1.77b d f (4.08)	3.12c e f (3.73)
Owner (vs. renter)***	59.91	79.44	12.73	86.12
Non-MSA (vs. MSA)***	55.98	59.53	13.50	26.29
Poverty status***				
Poor	25.89	17.04	21.52	8.19
Near poor	30.87	25.36	20.63	13.42
Not poor	43.24	57.61	57.85	78.39
Household type***				
Married couple	43.32	55.80	26.15	64.20
Single-female householder	30.49	25.51	46.32	23.79
Single-male householder	26.19	18.69	27.53	12.01
Number of persons	2.56a b c (6.05)	2.85a d e (6.15)	2.24b d f (6.96)	2.77c e f (6.44)
Race***				
African American	19.82	20.64	42.34	22.36
White	74.29	76.03	49.41	74.25
Other	5.89	3.33	8.25	3.39
Hispanic (vs. not)***	7.07	3.61	6.57	2.15
HS edu. or more (vs. less)***	50.69	64.94	80.41	81.81
Disabled (vs. not)***	38.81	29.87	25.69	24.28
Age	47.37a b c (69.62)	42.84a d e (61.89)	39.98b d f (79.33)	49.77c e f (69.69)
Sample size	5,607	14,463	30,496	99,582

*Note.* The values are means for continuous variables. Figures in parentheses below the means are standard deviations. For dichotomous and other categorical variables, the values are column percentages, except for the Percent of housing stock variable, which is reported in row percentages. Due to data limitations, the 1980 data were not weighted, while the 1990 and 2000 data were weighted. \*  $p < 0.05$ .; \*\*  $p < 0.01$ .; \*\*\*  $p < 0.001$ .; a-f Pair comparisons significant at  $p < 0.001$ .

The study sample included 363,727 owned or rented occupied housing units in Georgia. Of these, about 11% were mobile or manufactured homes, 21% were multifamily site-built homes, and about 67% were single-family site-built homes. These percentages do not add to 100% due to rounding.

As explained earlier, the term manufactured housing officially refers to homes built after June 1976 according to the HUD Code, whereas the term mobile home refers to factory-built homes built before the implementation of the HUD Code. The Census data refer to both types of homes as mobile homes and do not allow us to distinguish between them clearly. The Census variable indicating when each home was built is recorded in decades; therefore, mobile homes built between 1970 and 1979 could not be broken into separate groups of those built before and after June 1976. As a result, for the descriptive analysis, all such homes built during the 1970s were considered to be true mobile homes rather than manufactured homes. Homes classified in the Census data as mobile homes that were built after 1979 are truly manufactured homes and are referred to as such in the descriptive analysis.

Table 2 describes the sample by Census year and house structure type. Overall, mobile and manufactured homes represented an increasing percentage of owned and rented housing units in Georgia, from about 8% in 1980, to 12% in 1990, and to 13% in 2000. Included in Table 2 are several variables that do not describe resident characteristics but are important control variables in the multivariate analysis. For each house structure type, percentages are given for four characteristics: houses with a phone, houses located on 10 or more acres of land, houses that were owner-occupied, and houses that were located outside a Metropolitan Statistical Area (MSA). In addition, the mean number of bedrooms is given for each house structure type. The remaining variables in Table 2 describe characteristics of the residents. In all three years, the means of the continuous variables and the distributions of the categorical variables were statistically significantly different across the housing types. Please note, however, that chi-square tests for categorical variables can only test whether or not the overall distributions between a variable's categories are different among all four housing types. The information in Panel C of Table 2 allows us to determine which of the other housing types had residents that were most similar to residents of manufactured housing in the year 2000.

In some ways, manufactured housing residents appeared more like single-family site-built home residents than residents of either pre-HUD-Code mobile homes or multifamily site-built homes in 2000. For example, a majority of households living in manufactured and single-family site-built homes were married-couple households, the mean number of persons per household was higher than in the other two housing types, and their householders were less likely to be Hispanic than were householders of either mobile homes or multifamily site-built homes. This study did not combine race and Hispanic ethnicity; Hispanic persons may be of any race. Regarding race, householders residing in manufactured homes were similar to both those residing in single-family site-built homes and those residing in mobile homes, which had approximately the same percentage of White householders. In addition, the percentage of African American householders in each of those three housing types was roughly half of what it was in multifamily site-built homes.

Regarding race, it should be noted that its classification changed significantly between the 1990 and 2000 Censuses. Consequently, race is not a consistent concept across the Census years in this study. In earlier years, each respondent chose one racial identification. In 2000, selection of multiple racial identities became a possibility. In this study, for 1980 and 1990 data, individuals were coded as "White" or "Black" if they selected such categories, and they were coded as "other" if they selected any other category. For 2000, individuals were coded as "White" or "Black" if they reported "White alone" or "Black or African American alone," respectively. Those who gave any other response, including multi-racial identifications, were recoded as persons of "other" race.

With respect to some other variables, in the year 2000, residents of manufactured homes differed from residents of single-family site-built homes and were more similar to residents of one or both of the other housing types. For example, the percentage of manufactured housing residents that were poor was roughly twice the percentage of single-family site-built home residents that were poor and was closer to the percentage of poor multifamily site-built home residents. The educational attainment of the householders was different. Householders of mobile and manufactured housing were less likely to have at least a high school diploma than were householders in site-built homes. The

mean age among manufactured housing householders was closest to the mean age among multifamily site-built home householders. Finally, the percentage of disabled householders in manufactured homes was greater than that in site-built homes but less than that in mobile homes.

How have residents of mobile and manufactured homes changed over time? Descriptive statistics that address this question are presented in Table 3, where mobile and manufactured homes have been combined into a single group. Some noticeable changes over the Census years were found in household type and householders' race, ethnicity, educational attainment, disability status, and age. The proportions of both single-male-headed and single-female-headed households increased. Additionally, mobile and manufactured homes were increasingly occupied by households headed by racial and ethnic minorities.

**Table 3. Characteristics of Mobile/Manufactured Home Residents, by Census Year**

Variable	Census Year		
	1980	1990	2000
Poverty status			
Poor	19.10	19.72	19.49
Near poor	30.60	28.11	26.88
Not poor	50.30	52.17	53.63
Household type			
Married couple	67.33	59.04	52.34
Single-female householder	19.87	23.73	26.89
Single-male householder	12.80	17.23	20.77
Number of persons	2.89 (1.49)*	2.77 (6.02)	2.77 (6.27)
Race			
African American	14.82	16.71	20.34
White	83.61	78.83	73.60
Other	1.56	4.46	6.06
Hispanic (vs. not)	0.78	3.90	4.57
HS edu. or more (vs. less)	50.10	54.49	61.00
Disabled (vs. not)	16.50	17.41	32.34
Age	39.01 (16.15)	41.55 (65.96)	44.09 (64.69)
Sample size	7,171	14,471	20,070

*Note.* The values are means for continuous variables. \*Figures in parentheses below the means are standard deviations. For dichotomous and other categorical variables, the values are column percentages.

## Research Methods

To answer the question, “Are characteristics of mobile or manufactured home residents changing in Georgia?” this study utilized two logistic regression models. In each model, the response variable was the housing structure type, the main explanatory variables were household characteristics, and additional variables were controlled. The three housing structure types were 1) mobile home, 2) single-family site-built home, and 3) multifamily site-built home. Multifamily site-built homes included duplexes, multiplexes, town homes, apartments, and condominiums. Both pre-HUD-Code mobile homes and true manufactured housing were included in the mobile home category and referred to as such hereafter. As already explained, no distinction could be made about whether or not homes built in the 1970s were built before June 1976. In addition, we believed that splitting the two types of homes would not answer the question driving this research. Mobile and manufactured homes are seen by most people as being members of the same class of housing; manufactured homes are really just modern mobile homes. We were interested in determining how characteristics of residents of that general type of housing have changed over the years. The logistic regression analysis allowed an assessment of how the residents of mobile and manufactured homes were different from residents of both types of site-built housing, as well as how the differences changed since 1980—the baseline year.

The three categories of main explanatory variables were household income status, characteristics of householders, and household size. The three income status groups were poor, near poor, and non-poor, according to the federal poverty thresholds of the corresponding year. Six variables measured the characteristics of the householders. They were marital status and gender (i.e., household type) in three categories, race, Hispanic ethnicity, whether or not the individual at least completed high school, whether or not the individual had a disability, and age. Although a majority of Hispanic householders were White, some were of other races. Household size was the total number of people reported to live in the house.

Characteristics of the houses and some other variables were used as control variables. The housing variables controlled were whether or not a telephone was available, whether or not the home was situated on 10 acres

or more of land, the number of bedrooms, and housing tenure (owned or rented). The other variables controlled were metropolitan or non-metropolitan location, the year of the Census (1980, 1990, and 2000, where 1980 is the baseline), and a series of interaction terms between the Census year and the household characteristics. The interaction terms provided information as to whether mobile home residents' characteristics were different from those of the other housing types and whether the differences changed over the two-decade time period.

## Results

The results of two logistic regression models are shown in Table 4—one assessing the odds that a home was a mobile home as opposed to a single-family site-built home and the other assessing the odds that a home was a mobile home as opposed to a multifamily site-built home. The results described below focus only on the explanatory variables that were significant at a p-value of 0.0001 or less, due to the relatively large sample size for this study. Significant results are discussed in terms of odds ratios, which are shown in Table 5. Results related to control variables are shown in Table 4, but they are not discussed.

Some explanation of the odds ratios is needed, as the interaction terms complicate their interpretation. As usual, odds ratios for the main effects were calculated as the exponentials of the parameter estimates; they represent the odds ratios in 1980. For 1980, odds ratios were left blank in Table 5 when there was no significant difference in the odds for the two groups being compared. Odds ratios for 1990 and 2000 were calculated by exponentiating the sum of the parameter estimates for both the main effect and the interaction effect. For example, for the model comparing mobile home owners to single-family site-built home owners, the odds ratio for African American versus White in 1990 was calculated as  $\exp(-0.8315 + 0.3065) = 0.59$ . Odds ratios for 1990 and 2000 were left blank when they were not significantly different from those of the previous Census year.

The first model attempted to answer: Did households with different characteristics begin to reside in mobile homes, as opposed to single-family site-built homes, in Georgia between 1980 and 2000? Comparisons related to

**Table 4. Parameter Estimates from Two Logistic Regression Models**

Variable	Mobile/manufactured homes, compared to single-family site- built homes		Mobile/manufactured homes, compared to multifamily site- built homes	
	Parameter Estimate	Standard Error	Parameter Estimates	Standard Error
Main effects				
Intercept	-0.3446*	0.0502	-2.0602*	0.070v1
Year (baseline: 1980)				
1990	0.7099*	0.0550	0.6429*	0.0841
2000	0.7480*	0.0529	0.5607*	0.0809
Has phone (vs. not)	-0.8132*	0.0201	-1.1684*	0.0276
On 10+ acres (vs. fewer)	0.0817	0.0213	1.4078*	0.0510
Number of bedrooms	-0.7075*	0.0085	0.4179*	0.0127
Owner (vs. renter)	0.5829*	0.0162	3.0837*	0.0216
Non-MSA (vs. MSA)	0.7976*	0.0121	1.5205*	0.0206
Poverty status (baseline: Not poor)				
Poor	0.4092*	0.0421	0.5005*	0.0562
Near poor	0.5390*	0.0334	0.6301*	0.0475
Household type (baseline: Married couple)				
Single-female householder	0.1283	0.0393	-0.6516*	0.0503
Single-male householder	0.1753	0.0477	-0.4347*	0.0598
Number of persons	-0.0460*	0.0108	-0.1385*	0.0151
Race (baseline: White)				
African American	-0.8315*	0.0399	-1.5000*	0.0508
Other	0.4066	0.1641	-0.2750	0.1942
Hispanic (vs. not)	-0.7898	0.2256	-0.6903	0.2646
HS edu. or more (vs. less)	-0.5092*	0.0312	-0.8818*	0.0445
Disabled (vs. not)	0.1045	0.0404	0.0568	0.0583
Age	-0.5134*	0.0107	-0.4068*	0.0140
Interaction terms				
1990 x Poor	0.1271	0.0523	-0.1654	0.0719
1990 x Near poor	0.0604	0.0419	0.0741	0.0620
1990 x Single-female head	-0.0210	0.0482	-0.2716*	0.0646
1990 x Single-male head	0.0238	0.0579	-0.0143	0.0759
1990 x Number of persons	0.0124	0.0136	0.1815*	0.0198

**Table 4. Parameter Estimates from Two Logistic Regression Models** *cont.*

Variable	Mobile/manufactured homes, compared to single-family site- built homes		Mobile/manufactured homes, compared to multifamily site- built homes	
	Parameter Estimate	Standard Error	Parameter Estimates	Standard Error
1990 x African American	0.3065*	0.0485	0.5099*	0.0643
1990 x Other	-0.6069	0.2090	-0.6883	0.2533
1990 x Hispanic	0.8398	0.2647	1.1347	0.3173
1990 x HS edu. or more	-0.1628*	0.0387	-0.1608	0.0574
1990 x Disabled	0.0961	0.0499	0.1110	0.0752
1990 x Age	0.0272	0.0130	0.1940*	0.0174
2000 x Poor	0.2314*	0.0494	0.0379	0.0675
2000 x Near poor	0.0958	0.0398	0.0951	0.0590
2000 x Single-female head	0.0330	0.0455	-0.1077	0.0616
2000 x Single-male head	0.1678	0.0542	0.2456	0.0717
2000 x Number of persons	0.0883*	0.0128	0.2816*	0.0185
2000 x African American	0.5238*	0.0453	0.6174*	0.0601
2000 x Other	-0.9392*	0.1790	-1.1118*	0.2145
2000 x Hispanic	1.1162*	0.2419	1.0376	0.2855
2000 x HS edu. or more	-0.2461*	0.0371	-0.1265	0.0552
2000 x Disabled	0.1085	0.0450	0.1645	0.0664
2000 x Age	0.1451*	0.0123	0.2837*	0.0165
Model Log Likelihood Ratio	194,657.15*		79,509.22*	

Note. The Age variable in the logistic models is defined as (age – sample mean age)/10, where the sample-mean age was 48.89.

\*  $p < 0.0001$

the poverty status, the number of persons in the household, and race, ethnicity, educational level, and age of the householder all showed changes over the two decades. These changes are discussed in the following paragraphs.

Compared to non-poor households, households in poverty and those near poverty had higher odds of living in mobile homes as opposed to single-family site-built homes in all three Census years. Furthermore, poor households' relative odds of living in mobile homes increased significantly between 1980 and 2000. In 1980 and 1990, the odds that a poor household lived in a mobile home were 1.51 times the odds that a non-poor household lived in a mobile home; whereas, in 2000, the same ratio of odds was 1.90. Households near poverty had odds of living in mobile homes, as opposed to

**Table 5. Odds Ratios from two Logistic Regression Models**

Variable	Mobile/manufactured homes, compared to single-family site-built homes			Mobile/manufactured homes, compared to multifamily site-built homes		
	1980	1990	2000	1980	1990	2000
Poverty status (baseline: Not poor)						
Poor	1.51		1.90	1.65		
Near poor	1.71			1.88		
Household type (baseline: Married couple)						
Single-female householder				0.52	0.40	
Single-male householder				0.65		
Number of persons	0.96		1.04	0.87	1.04	1.15
Race (baseline: White)						
African American	0.44	0.59	0.74	0.22	0.37	0.41
Other			0.59			0.25
Hispanic (vs. not)			1.39			
HS edu. or more (vs. less)	0.60	0.51	0.47	0.41		
Disabled (vs. not)						
Age	0.60		0.69	0.67	0.81	0.88

single-family site-built homes, that were about 1.71 times the odds for non-poor households over all three Census years.

Distinct changes occurred in the relative odds of living in mobile homes in relation to race and ethnicity. Although White householders had greater odds than African American householders of living in mobile homes, as opposed to single-family site-built homes, African American householders' relative odds increased across the two decades. Specifically, in 1980, the odds that African American householders resided in mobile homes, as opposed to single-family site-built homes, were 44% of White householders' odds. This odds ratio increased to 0.59 in 1990 and to 0.74 in 2000. Additionally, in 1980 and 1990, Hispanics and non-Hispanics did not have different odds of living in mobile homes, as opposed to single-family site-built homes. In 2000, however, the odds that a Hispanic householder resided in a mobile home, as opposed to a single-family site-built home, were 1.39 times the odds for a non-Hispanic householder.

Larger households and older householders also had increasing relative odds of living in mobile homes, as opposed to single-family site-built homes, between 1980 and 2000. In both 1980 and 1990, larger households had slightly lower odds of living in mobile homes. In 2000, however, larger households had slightly higher odds of living in mobile homes. Given two householders that were 10 years apart in age, the older householder had odds 60% as great as the odds of the younger householder of living in a mobile home in 1980 and in 1990. In 2000, this odds ratio was 0.69. Our literature review suggested testing for possible curvilinearity of the age effect. However, results of the model with age and age squared produced unrealistic results; therefore, only the linear effect of age was assessed in the model that is presented.

Finally, compared to householders with less education, those with a high school diploma or more education had lower odds of living in a mobile home, as opposed to a single-family site-built home, and their relative odds actually diminished over the two decades. In 1980, the odds that a householder with a high school diploma or more education resided in a mobile home were 60% of the odds of householders with less education. This odds ratio decreased to 0.51 in 1990 and to 0.47 in 2000.

The second model addressed the question: In Georgia, how did the characteristics of mobile home residents change, relative to the characteristics of the residents of multifamily site-built homes? Regarding poverty status and education, differences in the odds of living in mobile homes existed in 1980, but those differences did not change by 2000. Poor households and near poor households had higher odds of living in mobile homes than did non-poor households; householders with more education had lower odds of living in mobile homes than did householders with less education. Comparisons related to the household type, the number of persons in the household, and the race and age of the householder all changed over the two decades. These changes are interpreted in the following paragraphs.

Compared to households headed by married couples, households headed by single individuals had lower odds of living in mobile homes, as opposed to multifamily site-built homes, in all three Census years. In 1980, the odds that a single-female-headed household lived in a mobile home, as opposed to a multifamily site-built home, were 52% of the odds of households

headed by married couples. By 1990, this figure had decreased to 0.40. Compared to married-couple households, single-male-headed households also had lower odds of living in mobile homes, as opposed to multifamily site-built homes. In all three Census years, their relative odds of living in mobile homes were about 65% of the odds of married-couple households.

Larger households, African American householders, and older householders all exhibited increasing relative odds of living in mobile homes, as opposed to multifamily site-built homes. In 1980, larger households had lower odds of living in mobile homes than did smaller households, but in 1990 and 2000, the situation reversed and larger households had higher odds. African American householders' relative odds of living in mobile homes, as opposed to multifamily site-built homes, were lower than White householders' odds, but the gap closed somewhat over time. In 1980, the odds that African American householders were living in mobile homes were 22% of the odds that White householders were. This odds ratio increased to 0.37 in 1990 and to 0.41 in 2000. Finally, older householders had lower odds of living in mobile homes than did younger householders, but the age impact became smaller over time. In 1980, the odds that a given household was living in a mobile home were 67% of the odds of a household with a householder who was 10 years younger. This figure increased to 0.81 in 1990 and to 0.88 in 2000.

In summary, characteristics of residents of mobile homes in Georgia changed between 1980 and 2000. Compared to comparable single-family site-built homes, mobile homes became more common among Georgian households that were poor and larger in size, and among householders who were African American, Hispanic, older, or had less than a high school education. Compared to comparable multifamily site-built homes, mobile homes became more common among larger Georgian households, African American householders, and older householders. Living in mobile homes became less common among single-female-headed households.

## **Discussion**

Results from this study of mobile and manufactured home residents in Georgia substantiate claims that characteristics of residents of the housing type are changing. In particular, mobile and manufactured homes have grown

in popularity among both African Americans and Hispanics. In addition, mobile and manufactured homes have become more common among larger households. Both of these trends may be the result of greater flexibility in home size, design, and amenities, as well as changes in the economy.

Other changes in characteristics of residents of mobile and manufactured homes over the past 20 years reinforce stereotypes. The housing type became more common among poor households and less common among householders with at least a high school education. These changes should be considered from two perspectives to get a full understanding of what may lie behind them. First, the model of housing adjustment proposed by Morris & Winter (1978) would suggest that these households may be choosing mobile or manufactured homes over other types of housing because of the constraints that they face in terms of income and earnings potential. A second important consideration in understanding these changes in residents is the state of financing in the manufactured home industry.

Although the manufactured housing industry has made great gains in the areas of quality, safety, size, and amenities, financing has not advanced as well. Most manufactured homes are still titled, purchased, and financed as personal property (Buchholz, 2005), which is not as beneficial to the consumer as mortgage financing. Among new manufactured homes purchased in Georgia in 2003, only 33% were titled as real property (U.S. Bureau of the Census, 2004d). In the past, consumers have not been given many financing choices and have been often encouraged to use the dealer's sub-prime loan options. However, with the changes taking place in the financing arena, more consumers are encouraged to apply for traditional home mortgages. In general, households with few other options (i.e., those with limited incomes) will be most willing to use such financing terms, and householders with lower educational levels will be less able to understand the potentially dire consequences of such financing. Broad changes in the population of households living in manufactured housing will only occur with reform of manufactured home financing.

Two limitations of the study need to be mentioned. The major limitation of this study is our inability to distinguish between mobile homes and manufactured homes among those built in 1970s. Another limitation is

the inability to differentiate the homes permanently affixed to a foundation and those that were not, when such variation makes differences in financing option and tax obligation.

Lastly, although value and quality of modern manufactured homes have improved dramatically over products from earlier decades, many consumers still have dated perceptions of this form of shelter. It is possible that, given complete and accurate information about manufactured housing, more households—as well as a more varied range of households—would choose to live in such homes. It is also possible that community planners would be more open to allowing manufactured homes in their communities if they knew more about the quality of the homes being manufactured today. Such expanded availability might also increase the number and variety of households living in manufactured homes in the U.S.

In order to inform consumers about the quality of the current manufactured housing products on the market, we suggest the creation of some demonstration projects. Projects would allow consumers and local and state policy makers to actually experience the state of the art manufactured housing of today. This form of shelter will be able to benefit a growing need for workforce housing in today's American society.

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