



**PROCEEDINGS OF THE 2008 ANNUAL CONFERENCE OF  
THE HOUSING EDUCATION AND RESEARCH ASSOCIATION**

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**Becky L. Yust  
Editor**

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## American Association of Housing Educators/AAHE

## Housing Education and Research Association/HERA

### Conference Locations & Dates

|      |  |
|------|--|
| 1946 | Urbana, Illinois - April 1-4, 1946   |
| 1948 | West Lafayette, Indiana - October 17-19, 1948  |
| 1957 | Urbana, Illinois - October 9-12, 1957  |
| 1958 | Ames, Iowa - October 22-25, 1958   |
| 1959 | Stillwater, Oklahoma - October 7-10, 1959  |
| 1960 | Ithaca, New York - October 12-15, 1960   |
| 1961 | Manhattan, Kansas - October 11-14, 1961  |
| 1962 | Minneapolis, Minnesota - October 18-20, 1962   |
| 1963 | University Park, Pennsylvania - Oct. 30- Nov. 2, 1963                                    |
| 1964 | East Lansing, Michigan - October 14-17, 1964   |
| 1965 | Columbia, Missouri - November 3-6, 1965  |
| 1966 | <b>1<sup>st</sup> AAHE Conference</b> , Urbana-Champaign, Illinois - October 26-29, 1966 |
| 1967 | 2 <sup>nd</sup> Lafayette, Indiana - October 11-14, 1967                                 |
| 1968 | 3 <sup>rd</sup> Athens, Georgia - October 27-29, 1968                                    |
| 1969 | 4 <sup>th</sup> Davis, California - October 15-17, 1969                                  |
| 1970 | 5 <sup>th</sup> Lincoln, Nebraska - October 14-16, 1970                                  |
| 1971 | 6 <sup>th</sup> Blacksburg, Virginia - October 17-20, 1971                               |
| 1972 | 7 <sup>th</sup> Dallas, Texas - October 10-13, 1972                                      |
| 1973 | 8 <sup>th</sup> Madison, Wisconsin - October 10-13, 1973                                 |
| 1974 | 9 <sup>th</sup> Boston, Massachusetts - October 29- November 2, 1974                     |
| 1975 | 10 <sup>th</sup> Fort Collins, Colorado - October 7-11, 1975                             |
| 1976 | 11 <sup>th</sup> Columbus, Ohio - October 12-16, 1976                                    |
| 1977 | 12 <sup>th</sup> Tucson, Arizona   |
| 1978 | 13 <sup>th</sup> Minneapolis, Minnesota - October 11, 1978                               |
| 1979 | 14 <sup>th</sup> College Station, Texas - October 16-19, 1979                            |
| 1980 | 15 <sup>th</sup> University Park, Pennsylvania - October 6-8, 1980                       |
| 1981 | 16 <sup>th</sup> San Francisco, California - October 6-10, 1981                          |
| 1982 | 17 <sup>th</sup> Knoxville, Tennessee - August 10-12, 1982                               |
| 1983 | 18 <sup>th</sup> Lincoln, Nebraska - October 4-7, 1983                                   |
| 1984 | 19 <sup>th</sup> Washington, D.C. - August 8-10, 1984                                    |
| 1985 | 20 <sup>th</sup> Ames, Iowa - October 15-18, 1985  |
| 1986 | 21 <sup>st</sup> Santa Fe, New Mexico - October 14-17, 1986                              |
| 1987 | 22 <sup>nd</sup> Newport, Rhode Island - November 2-7, 1987                              |
| 1988 | 23 <sup>rd</sup> Corvallis, Oregon - October 11-14, 1988                                 |
| 1989 | 24 <sup>th</sup> Greensboro, North Carolina - October 24-27, 1989                        |
| 1990 | 25 <sup>th</sup> Columbia, Missouri - October 16-19, 1990                                |
| 1991 | 26 <sup>th</sup> Durham, New Hampshire - October 15-18, 1991                             |
| 1992 | 27 <sup>th</sup> Winnipeg, Manitoba Canada - September 16-19, 1992                       |
| 1993 | 28 <sup>th</sup> Columbus, Ohio - October 6-9, 1993                                      |
| 1994 | 29 <sup>th</sup> Atlanta, Georgia - October 18-21, 1994                                  |
| 1995 | 30 <sup>th</sup> Salt Lake City, Utah - October 11-14, 1995                              |
| 1996 | 31 <sup>st</sup> Kansas State University, Manhattan, Kansas - October 16-19, 1996        |
| 1997 | 32 <sup>nd</sup> New Orleans, Louisiana - October 22-25, 1997                            |
| 1998 | 33 <sup>rd</sup> International Housing Conference, Seoul South Korea - August 5-8, 1998  |

- 1999 34<sup>th</sup> Orlando, Florida - October 18-23, 1999
- 2000 35<sup>th</sup> Stone Mountain Georgia - November 15-18, 2000
- 2001 35<sup>th</sup> Big Sky, Montana - July 22-July 25, 2001
- 2002 36<sup>th</sup> Minneapolis, Minnesota - October 23-26, 2002
- 2003 **1st HERA Conference** - Washington, DC (held in conjunction with AAFCS) -  
June 28-30, 2003
- 2004 2<sup>nd</sup> Chicago, Illinois - October 20-23, 2004
- 2005 3<sup>rd</sup> Denver, Colorado - October 4-7, 2005
- 2006 4<sup>th</sup> Cornell University, Ithaca, New York - October 8-11, 2006
- 2007 5<sup>th</sup> Charlotte, North Carolina - October 23-26, 2007
- 2008 6<sup>th</sup> Indianapolis, Indiana - October 7-10, 2008



## **Refereed Abstracts – Oral Presentations**

## BIG FLIPPING SCHEMES IN SMALL CITIES? THE CASE OF MANSFIELD, OHIO

Katrin B. Anacker\*

At the beginning of the 2000s the Baltimore Sun reported on local real estate property flipping<sup>†</sup> in a series of newspaper articles (James, 2002; O'Donnell, 2000, 2001a-h). Over a three-year period, flippers had purchased dilapidated houses and had flipped them, first selling them back and forth among themselves and finally to unsuspecting buyers.

This case study focuses on real estate property flipping in Mansfield, Ohio, in Richland County. Richland County's Fair Housing/Community Development Officer believed that properties in low-income neighborhoods had been turning over too quickly and with more rapid price increases than the market warranted (see also Benson 2002a-d). He asked for assistance in determining whether flipping was occurring by pinpointing suspect properties. Archived deed transfers based on the county auditor's records served as a basis for the statistical analysis to determine whether flipping was happening.

The Ohio State University's Center for Urban and Regional Analysis (CURA) pinpointed potentially suspect parcels at the census tract level (Community Research Partners and Center for Urban and Regional Analysis, 2002). This study builds on CURA's report by asking the following research questions: first, is there unethical property flipping and if so, how can it be defined? Second, what factors are associated with neighborhoods affected by potential flipping activities? Third, what public policies can address property flipping?

In many flipping schemes, a homebuyer is stuck with a house for which the price paid exceeds fair value, and which may need costly repairs. Also, the buyer might not have an income sufficient to satisfy the inflated mortgage and property tax payments. In such cases, the buyer's credit rating is tarnished and his or her chance of buying another home in the future declines (U.S. Senate, 2000a).

Flipping schemes affect not only individual investors or homeowners, but also communities, typically challenged ones (U.S. Senate, 2001). Conceivably, homes on a block that have not yet been flipped could be affected by adjacent properties that have been flipped, because neighboring properties are often compared in real estate evaluation. When a property is appraised too highly, there is justification for inflating the values of adjacent properties. If several investors or homeowners default on their mortgages and their properties become vacant for some time, they may be boarded up.

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† Property flipping "[...] involves the purchase and quick resale of homes at a huge price mark-up, often accompanied by little (or only cosmetic) work to improve the properties, in order to create the false illusion of a robust real estate market through the use of phony paperwork and deceptive sales pitches" (U.S. Senate, 2001, 6; see also U.S. Senate, 2000a, 57, and U.S. Senate 2000b).

This provides a neighborhood eyesore at best, and an invitation for illegal activities in the neighborhood at worst (Squires, 1992, 2003).

To the author's knowledge there is, as of this writing, no significant academic literature on property flipping. Academic discussions in the context of neighborhood decline have focused on racial lending discrimination (Dedman 1988a-g), redlining (Guttentag & Wachter 1980), predatory lending (Immergluck & Wiles 1999), subprime/predatory lending (Engel & McCoy 2002) and foreclosure (Carr, 2007).

The Richland County Auditor's Office made available a comprehensive set of data on property transactions in Richland County between 1998 and 2001.\* The transaction database provided property addresses, prices and dates of sales, appraised land and building values, and land use codes. The data was reorganized so that there was one record per property, containing all of the transactions that took place during the four-year time period (N=4,845). Data from the U.S. Census were added to the data provided by Richland County's Auditor's Office. Information on phony paperwork and deceptive sales pitches would have made this data set ideal for a comprehensive discussion on property flipping, given the U.S. Senate's (2001) definition.

Potentially flipped properties were selected based on a methodology that factored in the time between transactions (the "quick resale" mentioned in the definition) and the appreciation between transactions (the "huge price mark-up" pointed out in the definition): (a) properties with ten percent or more annual appreciation between 1998 and 2001, (b) fewer than 180 days between transactions, and (c) three or more transactions between 1998 and 2001 (James Mitchell, Fair Housing/Community Development Officer Richland County, personal communication, 1 October 2001, and Roberta Garber, Executive Director Community Research Partners, personal communication, 1 October 2001).

Next, the annual appreciation rate, the number of days between transactions, and the number of transactions over the four-year time span from January 1998 to December 2001 were calculated. The chosen methodology, with the threshold of three turnovers within four years, left 100 transactions, whereas a potential threshold of four turnovers within four years would have left fewer than 30 transactions. Having fewer than 30 transactions in an analysis is not desirable from a statistical point of view, since characteristics of the normal distribution are violated (Daniel & Terrell, 1995).

The dependent variable is a ratio; thus, Poisson regressions were used. The regression model has properties as the dependent variable, expressed as a ratio of the number of properties filtered out by the methodology over the number of occupied housing units. Quantitative analyses are conducted for census block groups within the City of Mansfield. All independent variables were taken from the 2000 Census.

The dependent variable encompasses transactions from 1998 to 2001. This timing might induce simultaneity-equation bias in the coefficient estimates of some of

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\* Unfortunately, updates or additional data were not made available.

the neighborhood variables. In this case, the coefficient estimates would capture not only the impact of a neighborhood on potential flipping activity but also the impact of potential flipping on a neighborhood (Greene 2003).

Results indicate that neighborhoods in Mansfield that are affected by potential flipping activities are characterized by those housing-unit related and socioeconomic characteristics that are typically found in challenged neighborhoods, such as a high proportion of vacant housing units, low housing values, and a high proportion of racially and ethnically underrepresented groups, among others. While this finding is not surprising (see also U.S. Senate, 2001), it might nevertheless be useful for the public policy debate that should incorporate these findings.

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# **CREATIVITY CONCEPT OF INTERIOR DECORATION WITH PATCHWORK FOR THE IMPROVEMENT OF HOUSING CONDITIONS AND FAMILY SUSTENANCE IN ONDO STATE, NIGERIA**

Bridget I. Awosika \*

National economic downturn and poverty among most Nigerians have resulted in poor housing conditions. Many husbands stay away from homes on the excuse that the exterior and interior of homes are neither inviting nor comfortable to use. Despite the importance of housing/shelter as one of the four basic needs for survival, many families cannot afford to embellish their homes with decoration items that have aesthetic values which can give intellectual stimulation. People continue to thrive daily with the hustling of life without the opportunity of retiring into a home environment devoid of stress and tension because many dilapidated houses are still lived in by people irrespective of imminent environmental hazards presented by such structures. The inability of parents to provide adequate and comfortable shelter as posited by the International Organization Consumers' Union (IOCU, 1985), has led children into the 'street life syndrome' resulting in children loitering about during the day and retiring to the nearest friends/ homes to sleep.

The paper takes a cursory look into the housing conditions in nine cities in the state of Ondo. It was observed that many family members, especially men and children, tend to stay away from their own, usually in other people's homes, where they go after their daily engagements. While men stay away with their male friends in hotels and well furnished apartments leaving their wives at home, children join their friends whose homes are better furnished leaving their mothers to hold forth all alone at home. The scenarios above have threatened many families to the verge of collapse. The women and children who are the worst hit by the break-up of households do not have the financial means to provide adequate, functional and fascinating furnishing items/renovation for their homes. This phenomenon has resulted in majority of home interiors being sparsely furnished with poor quality or tattered old articles while the exteriors of homes suffer serious neglect with weeds taking over ornamental plantings and hedges.

## **Procedure**

Data were collected through a questionnaire from 540 family members; 60 in each of the nine urban areas used for the study. The subjects were chosen using the stratified random sampling using family economic strength used as controls for uniformity. The essence of the questionnaire was to confirm/debunk the suspicions on why some people don't stay at home with members of their families.

Articles for interior decoration—table covers, table mats, center-piece-rug, and a photograph album—were creatively produced from patchwork. The articles were given

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out to respondents to consider for aesthetic appeal, acceptability as gift items, cultural values, and acquisition for use as interior decoration. The responses were analyzed using descriptive statistics; the economic values of the articles made were also determined by comparing their production costs with the costs of similar items in the market and the correlation co-efficient was used to derive the significant level of the difference at the 0.05 level of significance

### **Findings**

The responses confirmed among others that:

- Many home interiors are mere empty spaces with little or no furnishings.
- Several home exteriors are devoid of ornamental plants, hedges, and/or trees which beautify and protect the home environment.
- Many people who have aesthetic values and appreciate good things cannot acquire what they desire due to economic disablement.
- Creative patchworks which are not expensive but functional and appealing will be acceptable to families as a way of solving some of the problems of housing.

### **Conclusions and Recommendations**

Recommendations on the acquisition and use of locally available but affordable articles that are functional for interior decorations were made. The acquisition of skills which could be put to use by family members to augment family income were made. The production of interior decoration articles from patchwork designs using traditional textiles such as “adire” tie/dye, batik, and “Ofi” a locally woven textile for interior decoration, to create aesthetic and intellectual stimulation were made. Interior decorators could integrate into the production of furnishing items locally available textiles and the patchwork techniques for creativity and cost effectiveness. If this is done, they would enjoy better patronage and improve their creativity/professional finesse.



## **OLDER FEMALE HOUSEHOLDERS: ECONOMIC WELL-BEING AND RESIDENTIAL SATISFACTION**

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Housing is a key determinant of quality of life (Campbell, Converse, & Rodgers, 1976). Housing and neighborhood conditions are linked with residential satisfaction; residential satisfaction, in turn, is identified as an important component of life satisfaction, quality of life, or psychological well being (McAuley & Offerle, 1983; Schwirian & Schwirian, 1993). As older adults experience physical limitations due to aging, the near environment becomes increasingly important psychologically (Cantor, 1975; Lawton & Nahemow, 1973).

The combination of objective and subjective factors within the residential environment that influence residential and life satisfaction among the elderly is historically a subject of research (Cantor, 1975; Galster, 1987; Galtser & Hesser, 1981; Lawton & Nahemow, 1973; McAuley & Offerle, 1983; Magaziner & Cadigan, 1989; Schwirian & Schwirian, 1993). This study examines the housing and neighborhood situations and satisfaction of older, single female householders in noninstitutional housing. Socio demographic characteristics, economic well-being, receipt of housing and income assistance, as well as housing and neighborhood characteristics are examined for a group of individuals often at-risk for housing problems.

### **Data and Methods**

Female household heads, without a spouse, aged 65 years and older, were selected from 1995 and 2005 national samples of the American Housing Survey. The data allowed for comparisons over a decade (see Tables 1 through 4). The purpose was to detect changes in economic well-being, demographics, and residential satisfaction. Because tenure status is an important indicator of housing adequacy, cost burden, and satisfaction, comparisons were also drawn between homeowners and renters.

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**Table 1. Socio demographic characteristics**

| Variable          |                    | 1995<br>Renters | 2005<br>Renters | 1995<br>Owners | 2005<br>Owners |
|-------------------|--------------------|-----------------|-----------------|----------------|----------------|
| Age               | 65-74 years        | 41.6 %          | 35.5 %          | 46.7 %         | 40.9 %         |
|                   | 75-84 years        | 40.5 %          | 38.1 %          | 40.0 %         | 41.9 %         |
|                   | 85+ years          | 17.8 %          | 26.4 %          | 13.2 %         | 17.2 %         |
| Live Alone        | Yes                | 84.7 %          | 86.5 %          | 72.1 %         | 76.7 %         |
|                   | No                 | 15.3 %          | 13.5 %          | 27.9 %         | 23.3 %         |
| Race/Ethnic       | White              | 80.9 %          | 80.5 %          | 89.2 %         | 86.9 %         |
|                   | Black              | 16.4 %          | 15.8 %          | 9.8 %          | 10.9 %         |
|                   | Native American    | 0.3 %           | 0.3 %           | 0.4 %          | 0.6 %          |
|                   | Asian              | 1.3 %           | 1.9 %           | 0.5 %          | 0.8 %          |
|                   | Hawaiian<br>Others | 1.0 %           | 1.2 %           | 0.1 %          | 0.7 %          |
| Hispanic          | Yes                | 5.9%            | 7.7 %           | 2.5 %          | 4.1 %          |
|                   | No                 | 94.1%           | 92.3 %          | 97.5 %         | 95.6 %         |
| Marital<br>Status | Widowed            | 68.8 %          | 70.7 %          | 84.3 %         | 80.9 %         |
|                   | Divorced           | 16.8 %          | 17.1 %          | 9.3 %          | 13.2 %         |
|                   | Separated          | 3.2 %           | 3.0 %           | 1.4 %          | 1.0 %          |
|                   | Never<br>married   | 11.2 %          | 9.2 %           | 5.0 %          | 4.8 %          |

**Table 2. Housing characteristics**

| Variable                |                          | 1995<br>Renters | 2005<br>Renters | 1995<br>Owners | 2005<br>Owners |
|-------------------------|--------------------------|-----------------|-----------------|----------------|----------------|
| Moved in                | Over 15 years            | 24.5 %          | 18.0 %          | 75.5 %         | 68.3 %         |
|                         | 11-15 years              | 13.4 %          | 10.3 %          | 5.6 %          | 8.3 %          |
|                         | 6-10 years ago           | 19.8 %          | 20.3 %          | 8.9 %          | 10.4 %         |
| Rooms                   | 1-3                      | 50.8 %          | 55.0 %          | 3.2 %          | 2.6 %          |
|                         | 4-5                      | 42.4 %          | 39.0 %          | 47.3 %         | 46.1 %         |
|                         | 6 +                      | 6.8 %           | 5.9 %           | 49.4 %         | 51.3 %         |
| Cost Burden             | Less than 35%            | 58.3 %          | 35.2 %          | 28.2 %         | 61.1 %         |
|                         | 35% or more              | 41.7 %          | 64.8 %          | 71.8 %         | 38.9 %         |
| Quality                 | Adequate                 | 93.1 %          | 90.7 %          | 92.7 %         | 95.3 %         |
|                         | Moderately<br>inadequate | 5.1%            | 6.6 %           | 4.9 %          | 3.2 %          |
|                         | Severely<br>inadequate   | 1.8 %           | 2.6 %           | 2.4 %          | 1.5 %          |
| Housing<br>Satisfaction | Mean: 10 point<br>scale  | 8.22            | 8.57            | 8.82           | 8.72           |
|                         | Low: 1-7                 | 23.4 %          | 18.3 %          | 15.1 %         | 16.2 %         |
|                         | Mid: 8-9                 | 31.9 %          | 39.2 %          | 34.0 %         | 40.2 %         |
|                         | High:                    | 44.7 %          | 42.5 %          | 51.0 %         | 43.6 %         |

**Table 3. Location**

| Variable                  |                      | 1995<br>Renters | 2005<br>Renters | 1995<br>Owners | 2005<br>Owners |
|---------------------------|----------------------|-----------------|-----------------|----------------|----------------|
| Neighborhood Satisfaction | Mean: 10 point scale | 8.23            | 8.57            | 8.75           | 8.51           |
|                           | Low: 1-7             | 26.3 %          | 18.7 %          | 19.2 %         | 19.9 %         |
|                           | Mid: 8-9             | 29.8 %          | 38.8 %          | 31.9 %         | 39.7 %         |
|                           | High: 10             | 43.9 %          | 42.5 %          | 48.9 %         | 40.4 %         |
| Place                     | Metro Central City   | 45.4 %          | 43.4 %          | 27.8 %         | 23.6 %         |
|                           | Metro Suburban       | 48.7 %          | 26.5 %          | 56.6 %         | 33.0 %         |
|                           | Non Metro            | 5.9 %           | 30.1            | 15.6 %         | 43.4 %         |
| Region                    | Northeast            | 29.4 %          | 28.3 %          | 20.9 %         | 19.6 %         |
|                           | Midwest              | 28.5 %          | 25.4 %          | 26.6 %         | 23.8 %         |
|                           | South                | 24.1 %          | 28.4 %          | 33.8 %         | 39.3 %         |
|                           | West                 | 17.9 %          | 17.8 %          | 20.9 %         | 17.3 %         |

**Table 4. Receipt of Public Assistance**

| Variable                           |  | 1995<br>Renters | 2005<br>Renters | 1995<br>Owners | 2005<br>Owners |
|------------------------------------|--|-----------------|-----------------|----------------|----------------|
| Assistance                         |  |                 |                 |                |                |
| None                               |  | 55.3 %          | 66.4 %          | 91.6 %         | 95.4%          |
| Income                             |  | 12.5 %          | 7.9 %           | 6.8 %          | 3.3 %          |
| Housing                            |  | 23.1 %          | 18.5 %          | 1.2 %          | 0.9%           |
| Both income and housing assistance |  | 9.1 %           | 7.2 %           | 0.4 %          | 0.4%           |

### Results and Implications

Older women were more likely to rent. Compared to owners, renters moved more recently, were more likely living alone, and had fewer rooms. Renters were more likely to be cost-burdened, had less adequate housing, and received assistance. Over the decade, the proportion of oldest women renting increased and overall the number of rooms in their housing was fewer. The proportion of Hispanic women and the proportion of divorced women owners increased. In 2005, a smaller proportion of older women lived in the suburbs; more lived in non-metro areas. Cost burdens increased for renters and decreased for homeowners; adequacy decreased for renters. Both renters and owners were less likely to receive income assistance, and a lower proportion of renters received housing assistance. A decrease in neighborhood satisfaction for owners and an increase for renters meant satisfaction converged. Interestingly, during a decade with decreasing assistance, as well as a decline in housing affordability and

adequacy, housing and neighborhood satisfaction increased for renters and decreased only slightly for owners. Additional research is needed to identify the critical housing and neighborhood factors including subjective measures that influence residential satisfaction and well being among older female householders (Golant, 1992; Hayden, 1979).

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# **MORTGAGE FRAUD: A RISK FACTOR ANALYSIS OF AFFECTED COMMUNITIES**

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## **Introduction**

Mortgage fraud is an increasing threat to American communities. There were 28,000 reported cases of mortgage fraud in 2006, but the number of actual cases could be much higher due to rapidly-inflating housing markets and inadequate attention from regulators and quality control experts (Sharick, Butts, Donahue, Larson, & Croft, 2007). Despite increasing interest in mortgage fraud by the housing sector, national media, and political leaders, academic scholars have remained largely silent on the issue. In this paper, we examine possible neighborhood characteristics that may serve as preliminary indicators for mortgage fraud.

## **Description of Mortgage Fraud**

“Mortgage fraud” is an umbrella term for a variety of real estate-related offenses. These can be divided into “fraud-for-property” and “fraud-for-profit” schemes. “Fraud-for-property” occurs when lenders and industry professionals help borrowers obtain loans through “low documentation” loans. While “fraud-for-property” does succeed in getting low- to moderate-income families into homeownership situations, it also places these families at risk despite theoretically giving them an opportunity to begin building wealth. Meanwhile, “fraud-for-profit” usually has less idealistic motives, and usually involve “cash-back-at-closing” deals, fraudulent flips, and double sales scams (Roberts & Dollar, 2007). The success of “fraud-for-profit” oftentimes involves an inflated appraisal, which ultimately convinces the bank to provide funds for a property whose actual value is below the stated value.

## **Mortgage Fraud Risk Factors**

Mortgage fraud activities result from a combination of factors, including unprepared baby boomers approaching retirement (Jackson, 2005); permissive federal housing policies (Shlay, 2006); the rise of Internet banking (Claessens, Glaessner, & Klingebiel, 2002); and industry dependence on mortgage brokers (Bajaj & Creswell, 2006). Certain properties are alleged to be more at risk than others to experience mortgage fraud (Bond, 2006). Mortgage fraud is alleged to occur both in low-income (Grauer, 2006) and high-income communities (Bajaj & Creswell, 2006). Regarding the housing economy, journalists claim that mortgage fraud occurs during housing recessions (Derus, 2006); overbuilt markets (Gillespie, 2006); and thriving markets (Patterson, 2006; Washington, 2006). Still, no discernible pattern exists that verifies conclusively under what conditions mortgage fraud most thrives.

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## Data and Research Methodology

Three states were chosen for analysis: Ohio, Georgia, and Missouri. Variables were introduced as possible indicators of mortgage fraud, including unemployment, poverty, vacancy rate, and median housing value. Also, a variable was introduced regarding “underserved area”, a status that HUD codified in 1992 and which means that these areas have not traditionally received mortgage credit. Since that time, however, HUD has required Fannie Mae and Freddie Mac to purchase a certain percentage of mortgages from these areas, and has encouraged more primary lending in underserved areas as well. Summary statistics determined patterns of association between neighborhood variables and mortgage fraud activities. Also, a multinomial logistic regression identified which neighborhood variables were most important in predicting mortgage fraud.

### Data Analysis

Several Census tracts had extreme mortgage fraud concentration. This reinforces media accounts that document the clustering behavior of fraud-affected properties (Creswell, 2007). Through odds ratio analysis, we also found that living in an “underserved area” makes you 138% more likely to have mortgage fraud within your neighborhood, when compared to an area that enjoys traditional access to mortgage credit. A comparative risk factor analysis was made between both fraud-affected and non-fraud neighborhoods (Table 1).

**Table 1. Mortgage Fraud Indicators – State-by-State Breakdown**

|                                | Unemployment<br>Rate | Poverty<br>Rate | Vacancy<br>Rate | Median<br>House<br>Price | Underserved<br>Status |
|--------------------------------|----------------------|-----------------|-----------------|--------------------------|-----------------------|
| <b>Ohio</b>                    |                      |                 |                 |                          |                       |
| Fraud Census Tracts            | 8.35%                | 20.42%          | 10.89%          | \$108,851                | N/A                   |
| Non-Fraud Census Tracts        | 6.59%                | 14.32%          | 7.69%           | \$192,496                | N/A                   |
| <b>Georgia (Atlanta metro)</b> |                      |                 |                 |                          |                       |
| Fraud Census Tracts            | 9.27%                | 16.31%          | 7.13%           | \$189,349                | 25.64%                |
| Non-Fraud Census Tracts        | 11.74%               | 22.68%          | 8.89%           | \$157,263                | 39.13%                |
| <b>Missouri</b>                |                      |                 |                 |                          |                       |
| Fraud Census Tracts            | 9.49%                | 20.80%          | 53.46%          | \$ 67,701                | 21.27%                |
| Non-Fraud Census Tracts        | 7.37%                | 12.82%          | 24.51%          | \$105,249                | 4.03%                 |

The Ohio and Missouri data suggest a very strong association with four of the five variables under analysis. In addition, neighborhood median house price for the properties in the affected Ohio and Missouri counties was significantly lower in fraud neighborhoods. The Georgia data show that unemployment, poverty, and vacancy rates are all *lower* in

this area's fraud-affected neighborhoods, when compared to those with no mortgage fraud. Also, the median house price in these fraud neighborhoods was, on average, *higher* than that from non-fraud neighborhoods, suggesting that mortgage fraud perpetrators in this region were more attracted to higher-priced neighborhoods.

Another layer of analysis took into consideration severity of mortgage fraud. In Table 2, fraud severity is measured by the number of frauds occurring within a Census tract. All told, there were 2,132 Census tracts within the study areas that had no mortgage fraud occurring within its boundaries, whereas 178 Census tracts were classified as moderate and 27 were considered problem tracts in terms of having a severe number of mortgage frauds. The national data showed that the more concentrated the problem of fraud became within a Census tract, the more likely indicators such as unemployment, poverty, and vacancy rate tended to increase as well. Regarding underserved areas, neighborhoods with moderate amounts of fraud seem to have the highest concentration of occurrences within traditionally underserved areas, with over 70 percent of the Census tracts with moderate fraud being classified as "underserved". It is not clear, however, whether the variables are indeed causes of fraud, or simply by-products of the crime.

**Table 2. Mortgage Fraud Indicators by Severity of Mortgage Fraud**

| <b>Census Tract</b>                 | <b>Underserved Areas</b> | <b>Unemployment Rate</b> | <b>Poverty Rate</b> | <b>Vacancy Rate</b> | <b>Median House Price</b> |
|-------------------------------------|--------------------------|--------------------------|---------------------|---------------------|---------------------------|
| No Fraud                            | 49.63%                   | 7.08%                    | 14.47%              | 11.73%              | \$115,920                 |
| Moderate Fraud<br>(1-8 occurrences) | 70.21%                   | 8.61%                    | 19.18%              | 20.69%              | \$112,618                 |
| Heavy Fraud<br>(over 8 occurrences) | 65.63%                   | 11.47%                   | 20.85%              | 47.16%              | \$100,944                 |

Finally, a logistic regression model determined which variables contributed most to the mortgage fraud phenomenon within affected neighborhoods. Owner-occupancy rate was added as a potential indicator variable, and a variable was also added showing the rise in house price between the last two Census periods, to determine whether strength of local housing market had an effect on mortgage fraud incidence rates. Finally, a ratio variable was incorporated to differentiate whether neighborhood home price deviated from that of the larger county. Results from the logistic regression are shown in Table 3.

Four of the five neighborhood variables showed significant association with fraud. Annual price change between the Census periods actually showed a negative association with mortgage fraud activity. This may be because rapid increases in home prices disguise the fact that fraud has actually occurred. Vacancy rate was positively associated with mortgage fraud, but some of the reasons for these vacancies may actually be *because of* the fraud situation itself, as neighbors escape a community that goes into decline due to fraud. Neighborhood owner occupancy rate also showed a positive association with fraud occurrence, although significance was only at the .10 level. The

house price level of the neighborhood relative to that of the metro level had no significant effect.

**Table 3. Logistic Regression Results, Neighborhood Associations with Mortgage Fraud**

| Variable                                    | Coefficient | Standard Error | Exp(B) | 95% Confidence Interval |             |
|---|-------------|----------------|--------|-------------------------|-------------|
|   |             |                |        | Lower Bound             | Upper Bound |
| Intercept                                   | 3.108***    | 0.506          |        |                         |             |
| Annual Price Change                         | 14.115***   | 4.73           | 1349   | 127                     | 14336426    |
| Vacancy Rate                                | -6.026***   | 1.659          | 0.002  | 0.0000935               | 0.062       |
| Owner Occupancy Rate                        | -1.147*     | 0.66           | 0.318  | 0.087                   | 1.157       |
| Ratio of Neighbourhood Price to Metro Price | -0.212      | 0.21           | 0.809  | 0.535                   | 1.222       |
| Underserved                                 | -1.836***   | 0.384          | 6.27   | 2.956                   | 13.296      |

NOTE: Dependent variable equals "fraud does not occur"

\* significant at or below .10

\*\* significant at or below .05

\*\*\* significant at or below .01

### Conclusions

Mortgage fraud will always rely on a confluence of events related to the supply of willing conspirators, the array of mortgage products involved, and the type and size of lending institution. Still, the environmental factors of neighborhoods that are targeted by criminals should not be downplayed. In order to maintain a workable collaboration, researchers and law enforcement personnel must continue to find out which environmental factors attract the original mortgage fraud activities in the first place.

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# THE EFFECTIVENESS OF UNIVERSAL DESIGN KITCHEN FEATURES FOR PEOPLE IN WHEELCHAIRS

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Universal design has been promoted as a design solution for housing that can be beneficial to persons of all ages and abilities. and incorporates the concepts of accessibility, adaptability, attractiveness, affordability, and safety (Null & Cherry, 1996). Universal design is often confused with barrier free design, compliance with accessibility guidelines, or design that is specifically for people with disabilities. In fact, universal features may or may not be appropriate for someone with a specific disability. It has been well documented that it is difficult to achieve universal usability, especially in kitchen design when the needs of a standing user are different from those of a seated one (Yearns, Patterson, & Bice, 2005; Story, Mueller, & Mace, 1998; Vanderheiden & Vanderheiden, 1992).

This study examined the features of the GE Real Life Design Kitchen (Peterson, 1995), currently located at the Center for Real Life Kitchen Design at Virginia Tech, and determined which universal design features were beneficial to users in wheelchairs. It also examined how the features were used by people in wheelchairs as they prepared a meal.

## Background

One of the first research experiments to address the space and design requirements for a kitchen designed for a person in a wheelchair was conducted by McCullough and Farnham in 1960. A series of tests and measurements were made and despite the wide range of individual measurements of the participants, the research showed “that there are certain general dimensions and planning guides which can provide comfortable, safe work areas for many wheelchair homemakers” (McCullough & Farnham, 1960, p.36). Recommendations were that the work counter height should be 30 to 31 inches above finished floor (AFF) and should include the sink and the cooktop at the work counter height. The document recommended a five foot clearance for ease of movement throughout, which is consistent with standard turn around clearances today.

Model kitchens became the footprint for designing accessible kitchens starting in the early 1970s. Sven-Olof Brattgard researched the activities of daily living among the severely disabled in Sweden and developed a prototype kitchen known as the “Fokus kitchen” (Raschko, 1991). The purpose of the Fokus kitchen was to provide access and flexibility to all users. The kitchen was extremely adjustable since cabinets and counters were placed on an adjustable wall track and console system. American appliance companies also developed actual model kitchens and produced pamphlets and brochures to promote kitchen design for people with disabilities. The American National

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Standards Institute ANSI A117 included guidelines for accessible kitchens for the first time in 1980. Other accessibility standards, such as the Uniform Federal Accessibility Standards in 1984 and the Fair Housing Accessibility Guidelines in 1991, also incorporated requirements for accessible kitchens (Beamish, et al., 2006)

In 1994, the National Kitchen and Bath Association (NKBA) began re-evaluating their kitchen planning guidelines and included several universal design concepts that should be incorporated into kitchen planning. The guidelines were then adopted and published in 1996. The GE Real Life Design Kitchen was developed in 1994 and debuted at the 1995 National Association of Home Builders Convention and the Kitchen and Bath Industry Show, allowing builders and kitchen designers to see and experience a universally designed kitchen based on the NKBA guidelines for accessible kitchens.

### **Methodology**

Nine participants, with various disabilities, who use a wheelchair on a daily basis, participated in the study. They were recruited through the university's Americans with Disabilities Services Director's office. The sample consisted of five male and four female participants with ages ranging from 28-58 years old. Each participant had varying levels of grip, strength, and memory as a result of their disability.

Two instruments were developed to measure universal design: the universal design evaluation form and the universal design decision tree. The universal design evaluation form's purpose was to collect anthropometric data and evaluate specific universal design features of the GE Real Life Design Kitchen. The participants performed 18 different tasks related to 18 different features of the kitchen. The participants evaluated the features and tasks based upon ease of use and visual appeal. The activities at each feature were videotaped, reviewed and evaluated by the researcher utilizing the universal design evaluation decision tree matrix (Steinfeld & Danford, 1999).

To assess how the participants actually used the kitchen features in preparing a meal, a cooking activity was undertaken. Each participant was given a set menu and asked to prepare a meal in the GE Real Life Design Kitchen. The cooking activity incorporated four different assessment instruments: diagram for kitchen set up, cooking activity menu, menu task matrix, and the behavioral map of cooking patterns. After the cooking activity, an additional assessment instrument was used in conducting the post-cooking interview which consisted of questions utilizing laddering and in-depth interviewing techniques. The cooking activity and the post-cooking interview were also videotaped and reviewed.

### **Results**

Seven universal design features in the GE Real Life Design Kitchen were identified as beneficial to the participants. They were:

- Microwave at counter height with clear floor space
- Adjustable sink
- Dishwasher adjacent to sink
- Pull-out cutting board near sink
- Roll-out shelf, tray, or drawer within close proximity to cooking and sink area
- Oven close to serving area, with clear knee space under serving area
- Cooktop controls easy to use and read and place at front of appliance.

The participants were very efficient and did not require much counter space in order to prepare a meal. Even though the participants had rated some universal design features high in the first part of the study, such as the microwave with clear floor space beneath it, they did not necessarily utilize them when preparing meals, especially if they were outside of the selected work area.

### Implications

The results of this study imply that not all universal design features recommended in kitchen design are beneficial to people in wheelchairs. However, many of the more successful features, such as pull-out shelves, trays, and drawers are consistent with previous recommendations for designs for people with disabilities. The results provide consumers, cabinet and appliance manufacturers, policy makers, and designers with valuable insight and information concerning the inclusion of universal design features in kitchens that accommodate the needs of all people, including the person in a wheelchair.

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## **ASSESSING THE DAMAGE: THE EFFECTS OF RISING FORECLOSURE RATES ON CONSUMER INVESTMENT IN OWNER-OCCUPIED HOUSING**

J. Michael Collins, Lee C. Sutton\*

In 2008 foreclosure filings on owner-occupied homes surpassed record levels. In order to respond, policymakers, community organizations, and consumer advocates need to understand how consumer attitudes are being shaped by events in the marketplace. Based on a survey of 190 owners and 231 renters in metropolitan Chicago conducted from March 24-26 2008, this analysis shows low-income consumers' perceptions of homeownership are affected by personal, and to a lesser extent neighborhood, foreclosure experiences.

There is little prior research on the effect of foreclosures on consumer perceptions. However, it seems likely that foreclosures may have spillover effects on neighborhoods by increasing the turnover of homes, creating vacant and under-maintained homes, lowering property re-sale values, and reducing the average length of tenure. Rohe and Stewart (1995) suggest these factors are all likely to be correlated with neighborhood decline. Indeed, Immergluck and Smith (2006) found a relationship between property values, criminal activity and foreclosures. Foreclosures are also likely to have psychological spillover effects, however, even among those not directly involved in a foreclosure. Västfjäll, Peters and Slovic (2008) suggest that major negative events (such as a natural disaster) may influence the judgments of individuals not directly affected by the event. One dated but relevant analysis of consumer enrollment in flood insurance (Attanasi and Karlinger 1979) suggests a combination of negative events and consumer characteristics can influence a decisions to hedge risks. Media coverage of the foreclosure 'crisis' seems likely to impact how risky homeownership is perceived by potential homebuyers. Lau (2006) found that the media's coverage of the SARS epidemic had a strong influence the public's perception of the issue. Kahneman and Tversky's (1979) prospect theory suggests as consumers focus on downside risks, such as foreclosure, they may seek to avoid potential losses more strongly than they used to seek out the gains of homeownership. Consumers typically offer poor estimates of the likelihood of low probability events, however (for examples, see Camerer and Kunreuther, 1989). According to one analysis by the Boston Federal Reserve Bank (Gerardi, Shapiro, and Willen, 2008) about 25 out of 100 subprime mortgages will enter default (not all will result in the loss of the home, however) at some point in the life of the loan.

The data for this analysis were collected using an online survey panel of consumers aged 18 to 65 with incomes under \$75,000 and with an intentional oversample of renters. The panel is made up of consumers in the Chicago, IL area recruited using incentive points that are redeemable for movies, music, magazines or

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gift cards (see: <http://www.zoompanel.com/>). These results were merged with zip code level foreclosure rates collected by Neighborhood Housing Services of Chicago.

Controlling for demographic characteristics (age, income, race, education), this analysis finds that neighborhood foreclosure rates have a modest effect on renters' perception of the probability that home values will decline in the next year, but not on their willingness to buy a home or their expected probabilities of, or worries about, foreclosure. Knowing someone who has been through a foreclosure plays a stronger role in influencing renter perceptions, including increasing worry that problems in the housing market will affect the consumer personally. Knowing someone in foreclosure also strongly increases expected probabilities of foreclosure and the likelihood that renters report being interested in obtaining homebuyer education or counseling before buying a home—potential evidence of increased risk-mitigation behavior. Credit history (missing a rent or a mortgage payment) is related to higher levels of worry about the housing market and greater expectations of decreasing home prices, but has no association with foreclosure expectations as might be expected among consumers more likely to be in the 'subprime' category. Lower income renters are less likely to view owning as a superior option to renting, and also have high expectations of foreclosure. White renters have lower expectations of foreclosure, are less worried about the spillover of the housing crisis on them personally, but more pessimistic about home values. Homeowners living in higher-foreclosure rate zip codes report a substantially lower willingness to invest improvements in owner-occupied housing.

Survey respondents report homeownership as being associated with several financial and social benefits, and most renters report being interested buying a home within three to five years. But fears of foreclosure remain high, with the average renter estimating 37 out of 100 people buying homes this year will lose their home to foreclosure. Expectations have a strong relationship with income, education and race, all suggesting higher risk assessments by those consumers more exposed to the risks of foreclosure. Overall expectations of foreclosure are remarkably high, especially among lower-income and potentially lower credit quality borrowers. While these expectations may have only recently been formed due to intense media coverage, even discounting a general upward bias in subjective expected probabilities, these results suggest subprime borrowers may not have been unaware of the risks of taking on a mortgage to buy a home.

This analysis provides several insights into how foreclosures influence consumer perceptions in housing markets and may be instructive for practitioners and public policy makers. More than 80 percent of respondents report worrying that problems in the housing and mortgage market will impact them personally, and three out of five call for a greater role of government in dealing with the issue. Almost half of renters report an interest in obtaining education or counseling before buying a home, which may suggest an increased demand for pre-purchase housing counseling services. To the extent disinvestment in the housing stock is a concern, public policy might create incentives for existing owners to maintain and improve homes in high foreclosure areas.

**Table 1. Regression Results: Coefficients and t-statistics, Chicago Default Perceptions Survey Conducted March 24-26 2008**

| Sample  | 1                                | 2   | 3   | 4   | 4  | 6  | 7   | 8   |
|---|----------------------------------|---|---|---|--|--|---|---|
|   | Renters:<br>ordered<br>probit    | Renters:<br>ordered<br>probit   | Renters:<br>ordered<br>probit   | Renters:<br>ordered<br>probit                                     | Renters:<br>ordered<br>probit  | Renters:<br>OLS  | Owners<br>and<br>Renters:<br>OLS  | Owners;<br>ordered<br>probit  |
| Dependent Variable:                                   | Better<br>to Own<br>than<br>Rent | How<br>Worried<br>Problems<br>in<br>Housing<br>Market<br>Will<br>Impact<br>You (1-4,<br>4=very) | How<br>likely to<br>buy a<br>home in<br>3 years<br>(1-10;<br>10=very) | How<br>likely to<br>seek<br>homebuy<br>er ed (1-<br>4,<br>4=very) | How likely<br>home<br>values will<br>decline in<br>next year<br>(1-5,<br>5=very) | Out of<br>100<br>buyers<br>this year,<br>how<br>many will<br>foreclose | Out of<br>100<br>buyers<br>this<br>year, how<br>many<br>will<br>foreclose | How likely<br>to do<br>\$5,000+<br>improvement<br>on home<br>(1-4,<br>4=very) |
| Zip Code Foreclosure<br>Rate Jan 2008                 | -0.038<br>(0.75)                 | 0.031<br>(0.77)   | 0.006<br>(0.10)   | 0.017<br>(0.37)   | <b>0.073*</b><br>(2.11)  | -0.47<br>(0.51)  | 0.289<br>(0.35)   | <b>-0.151**</b><br>(2.60)   |
| Knows Someone in<br>Foreclosure (0/1)                 | -0.276<br>(1.14)                 | 0.228<br>(1.09)   | 0.187<br>(0.69)   | <b>0.45*</b><br>(2.06)  | 0.096<br>(0.54)  | <b>8.911**</b><br>(2.17)   | <b>6.798**</b><br>(2.08)  | 0.249<br>(1.00)   |
| Missed rent or mortgage<br>payment in last year (0/1) | 0.4<br>(1.33)                    | <b>0.665 **</b><br>(2.58)   | -0.049<br>(0.14)  | -0.299<br>(1.08)  | <b>0.452+</b><br>(1.85)  | 3.775<br>(0.73)  | 6.868<br>(1.59)   | -0.273<br>(0.89)  |
| Income \$25k or less (0/1)                            | <b>-0.41*</b><br>(2.01)          | 0.182<br>(1.09)   | -0.061<br>(0.27)  | 0.029<br>(0.17)   | 0.03<br>(0.19)   | <b>9.83*</b><br>(2.61)   | <b>8.468*</b><br>(2.84)   | <b>-0.431+</b><br>(1.92)  |
| White Race (0/1)                                      | -0.294<br>(1.32)                 | <b>-0.347 *</b><br>(2.01)   | <b>-0.615 *</b><br>(2.47)   | 0.096<br>(0.55)   | <b>0.385*</b><br>(2.31)  | <b>-8.496**</b><br>(2.09)  | <b>-8.648**</b><br>(2.44)   | 0.001<br>(0.00)   |
| College Degree or higher<br>(0/1)                     | -0.288<br>(1.26)                 | -0.159<br>(0.90)  | <b>0.476 +</b><br>(1.84)  | 0.232<br>(1.32)   | 0.065<br>(0.37)  | <b>-10.19**</b><br>(2.55)  | <b>-9.908**</b><br>(3.32)   | <b>0.38*</b><br>(1.96)  |
| Age under 40 years (0/1)                              | 0.089<br>(0.84)                  | 0.118<br>(1.30)   | 0.521 **<br>(4.48)  | -0.091<br>(0.99)  | 0.023<br>(0.26)  | <b>4.139**</b><br>(2.07)   | 1.159<br>(0.77)   | 0.013<br>(0.13)   |
| City Resident (0/1)                                   | <b>-0.45*</b><br>(2.16)          | <b>-0.338 +</b><br>(1.96)   | <b>-0.708 **</b><br>(2.92)  | 0.24<br>(1.46)  | <b>-0.395*</b><br>(2.39)   | -4.583<br>(1.17)   | -2.078<br>(0.62)  | 0.262<br>(0.92)   |
| Home Owner (1) or<br>Renter (0)                       |                                  |   |   |   |  |  | -1.505<br>(0.45)  |   |
| Constant  | 0.35<br>(1.05)                   |   | 0.746*<br>(1.99)  |   |  | 36.934**<br>(6.31)   | 38.179*<br>(7.79)   |   |
| R-squared   |                                  |   |   |   |  | 0.116  | 0.125   |   |
| Number of observations                                | 182                              | 181   | 179   | 180   | 182  | 167  | 303   | 143   |

(+ p<0.10, \* p<0.05, \*\* p<0.01)



## THE ROAD TO HOMEOWNERSHIP: EXAMINING HOUSING HISTORIES AMONG RECENT LATINO IMMIGRANTS

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### Introduction

Recent research focuses on homeownership opportunities and acquisition among Latinos (*An Assessment of Hispanic Homeownership*, 2005; Cortes, Herbert & Wilson, 2007). The percentage of Hispanics owning their homes is rising. In 2000 the homeownership rate was 42% and by March 2005 the rate was 49.7% (cited in HAC, 2007). Much of this growth has come from immigrant households. "Hispanics have demonstrated a very strong preference for homeownership" (*An Assessment of Hispanic Homeownership*, 2005, p.5) even among undocumented residents (Parel & Associates, ND) and "Hispanic renters are much more likely to be actively saving to buy a home than either non-Hispanic white or non-Hispanic black renters" (James & Atilas, 2008, p.177).

The aim in this paper is to portray the housing experiences of 78 rural low-income Latinos. We compare the 23 who have achieved homeownership with those who have not. We investigate the challenges faced and the resources used to respond to local housing market conditions in rural settings. Qualitative and quantitative data from Iowa, Oregon, and California are used to better understand the means by which Latinos secure homeownership. These states represent a continuum of experience. Iowa and Oregon respondents are relatively new immigrants and California respondents include a mix of Latinos born in the United States and new immigrants. The study is part of a larger investigation conducted by 17 states (NC1011), *Rural Families Speak*, a multi-state research project aimed at assessing the circumstances of rural low-income families (Bauer, 2004).

### Method

Study participants were mothers, eighteen years or older, who had at least one child that was twelve years old or younger. They also had to be eligible for or receiving food stamps, or Women Infants and Children (WIC) Program transfers. Participants were recruited from a variety of human service agencies that work with eligible families.

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In this study we employ a mix of quantitative and qualitative data.

### ***Qualitative Analysis***

The first stage of the analysis involved an initial coding of the data to explore several over-arching housing themes, i.e. informal housing subsidies, housing quality, affordability, safety, and chronic mobility. Both a software package for analyzing qualitative responses (MAXQD2) and investigator analyses of transcripts were employed to analyze the data. Responses were re-examined using a 'tenure status' lens; that is, cases were sorted by owner-renter and then reread to discover similarities and differences in the experiences of families as they sought to secure housing.

### ***Quantitative Analysis***

Binary logistic regression analysis was used to identify factors associated with tenure status. Because the number of respondents is small, the number of predictor variables was kept to a minimum; i.e. years in the U.S; basic risk scores (composite measure of three variables - enough food, adequate/reliable child care and reliable transportation,  $\alpha=.35$ ); family health risk scores (an index of five family health risks concerning child and adults physical and emotional health status,  $\alpha=.47$ ); knowledge of community resources (22-item index asking whether a mother knows how to find services in the community, such as job training, childcare, or medical treatment,  $\alpha=.88$ ; (Richards, 1998)); life skills assessment score (25-item index detailing a range of skills from maintaining a checking account and credit cards to having a drivers' license,  $\alpha=.84$ ); number of children present in the household; and, average monthly household income.

Additional descriptive statistics and quantitative and qualitative analyses are available from the authors. Furthermore, in the interest of space considerations, findings reported in the results section are abbreviated.

## **Results**

To better understand the housing situations among owners and renters, mothers were interviewed about the adequacy of their housing and neighborhood including questions about the size, affordability, and overall quality of their family's homes; neighborhood safety; and their movement between housing units and locations within the U.S.

In previous research we identified several categories of risks that low-income Latinos face (i.e., basic risks; physical and emotional health risks) including housing risk factors. Here we examine the data to discover housing risk factors by tenure type as reported in Table 1. The focus of the presentation is the 23 households who have attained homeownership; 11 of 33 Californians; 12 of 28 lowans; and none of Oregon's 17 families were homeowners.

**Table 1. Housing Risk Factors**

| Housing Risk Factors   | Owners<br>(N=23) | Renters<br>(N=55) |
|--|------------------|-------------------|
| Does not have knowledge of how to apply for subsidized housing | 57% (13)         | 86% (47)          |
| Does not have knowledge of how to find temporary housing       | 70% (16)         | 80% (44)          |
| Was homelessness during the past two years                     | 4% (1)           | 10% (5)           |
| Has difficulty affording housing                               | 14% (3)          | 34% (17)          |
| Lives in housing that is of poor quality                       | 23% (5)          | 49% (25)          |
| Lives in housing that presents safety concerns                 | 0% (0)           | 4% (2)            |
| Chronic mobility   | 0% (0)           | 6% (3)            |
| <b>Total HOUSING RISK<sup>(3)</sup> (mean)</b>                 | <b>1.9</b>       | <b>3.8</b>        |

1. For simplicity in presenting the Table, participants whose housing status was categorized as 'other' were recoded as renters.

2. Rounded to the nearest percentage.

3. Cumulative housing risk includes 'being a renter.' Higher scores indicate higher housing risk.

Preliminary data suggest that nearly all families lived with relatives when they first arrived in the U.S. Furthermore, housing reciprocity endured after arrival when families moved from one state to another; families relied on their extended family networks to *get started*. Exchanges of basic necessities, including sharing housing and providing loans for food, utilities, child care, and transportation were commonly reported.

### **Transitioning to Homeownership**

Mothers indicated that homeownership was an important goal. Whether renters or owners, families sought to gradually improve their housing quality and aspired to own a home.

*Respondent (R): ... having our house ...improving our house...yes, we have (improved our house)... we want it to be better.*

*R: The most important things? ...we're progressing ...we're earning more money. For the future, so we could get a home... our own home.*

*Interviewer (I): Is your house adequate for your needs and your family's?*

*R: No...because it's not ours.*

A strong preference for owning was indicated and, when achieved, it was identified as among the most important things that had happened to them over the past few years.

*I: "When you look back over the past few years, what do you think are the most important things that have happened to you and your family?"*

*R: "Getting a house."*

For some, homeownership began with small homes that needed lots of renovation and remodeling to fit them to their families' needs.

*R: when we... bought this place (only this much was built) he (her husband) made improvements... and so it was cheap... and we made only three payments... ..*

*R: (it was) very small ... and he made it bigger. It was cheap because it had no electricity... no water... no utilities (and) it was only this one (room)... and the small one... and the other one... it was really two(rooms)*

*R: ... he made the bathroom... the kitchen... another two rooms*

*I: (So your husband) he's made improvements... good*

*R: (yes)... little by little*

The data revealed that families sought to gradually improve their housing quality, but doing so challenged their financial resources. Consequently, for some the first rung of the housing ladder was to buy a 'trailer.' Even though these respondents owned only the unit and not the land on which the home was situated, it was clear that this was viewed as an important first step.

Seven variables were examined in a binary regression model. Four significant variables were identified: basic risk index ( $p < .01$ ); life skills summary score ( $p < .01$ ); number of children ( $p < .01$ ); and average monthly household income ( $p < .07$ ). Those participants who indicated they did not have enough to eat and did not have reliable/adequate child care or transportation (higher basic risks) were less likely to be owners as were those with higher life skills assessment scores. Larger families that have more children were likely to be homeowners as were those with larger monthly household incomes. Not significant were variables measuring health risk, knowledge of community resources, and years in the United States.

## **Discussion and Conclusions**

Previous investigations emphasize the need for additional in-depth and comparative studies particularly among those immigrant families residing in small towns and rural settings (Dalla & Christensen, 2005; Greder, et al., 2008). Latinos continue to encounter serious housing insecurity and deprivation; yet, despite these experiences, most seek out and some attain homeownership. In this paper we examine some of the important factors associated with homeownership among 23 Latino owners. Qualitative and quantitative methodologies are employed.

Both native born and Latino immigrants were found to be committed to and confident that they will be able to become homeowners in the near future. Additional research, education, and policy initiatives are needed on a variety of fronts. For example, these data hint that home ownership may be instrumental in the acculturation process. Future research is needed to carefully examine the role of housing in asset accumulation and acculturation of immigrant families. Education and counseling is needed for immigrants to identify homeownership opportunities. Students and service providers preparing to work with immigrants would benefit from similar educational and training opportunities. The U.S. Department of Agriculture over the last decade has made considerable effort in trying to assess and understand household food needs (Nord, et al., 2005). Public policy must be developed that examines housing hardship and insecurity in similar ways. Understanding the strengths, challenges, and strategies employed by rural Latino immigrants in meeting their families' housing needs contributes to these future efforts.

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# DISENTANGLING THE DIFFERENCES BETWEEN ABUSIVE LENDING, PREDATORY LENDING AND MORTGAGE FRAUD AS DEFINED BY DIFFERENT STAKE HOLDERS

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As a term, predatory lending is frequently misunderstood because it has slightly different meanings and connotations, depending on the context in which it is used. It has long been noted that the term is so elusive that it may, itself, contribute to regulatory difficulties (Carr & Koluri, 2001; Goldstein, 1999). Descriptions of predatory lending are plentiful, but a precise definition that would inform regulators and consumer advocates is non-existent. The purpose of this study is to assess how regulators, industry professionals, and advocacy groups differentiate and or define abusive and predatory lending.

## Regulators

In 2000, HUD defined predatory lending as “[...] engaging in deception or fraud, manipulating the borrower through aggressive sales tactics, or taking unfair advantage of a borrower’s lack of understanding about loan terms” (U.S. Department of Housing 2000, 1). A different attempt to define predatory lending in layman’s terms was provided by HUD in a brochure published in 2003, *Don’t Be a Victim of Loan Fraud: Protect yourself from Predatory Lenders* (HUD-2003-01-H 2003). In this brochure, HUD basically equated predatory lending with loan fraud (U.S. Department of Housing, 2003).

In 2003, the Office of the Comptroller of the Currency (OCC) stated that federal laws and regulations that govern mortgage transactions do not contain a comprehensive definition of “predatory” or “abusive” practices (OCC, 2003a). However, the OCC asserted that a fundamental characteristic of predatory lending is the provision of credit to borrowers without regard for the borrower’s ability to repay the loan according to its terms.

The most comprehensive government document on predatory lending was published in 2004 by the United States General Accounting Office (GAO); yet, it did not provide a universally accepted definition of the term predatory lending, either. In this document, predatory lending was defined as “an umbrella term that is generally used to describe cases in which a broker or originating lender takes advantage of a borrower, often through deception, fraud, or manipulation, to make a loan that contains terms that are disadvantageous to the borrower” (U.S. General Accounting Office, 2004, 23).

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Throughout the report, the terms predatory lending and abusive lending are used interchangeably.

In 2007, Sheila C. Bair, chairman of the Federal Deposit Insurance Corporation (FDIC), recognized that there was no universally accepted definition of predatory lending. She added that determining whether a loan product was predatory involved looking at both the loan and the borrower -- and, typically, the whole course of the transaction. Instead of defining what predatory lending is, what this regulatory agency has done is identify the characteristics most often associated with predatory lending (Bair, 2007).

### **Consumer Advocacy Groups**

The Center for Responsible Lending (CRL) opposes all forms of predatory lending, including predatory mortgage lending, payday lending, title loans, and credit card abuses. The CRL webpage states that it is “a resource for predatory lending opponents.” With regard to predatory mortgage lending, CRL provides a list of common abuses in which seven signs of predatory lending are described, including excessive fees; abusive prepayment penalties; kickbacks to brokers in the form of yield spread premiums; loan flipping; unnecessary products; mandatory arbitration and steering and targeting (CRL, 2005). CRL maintains abusive lending occurs mostly in the subprime market.

ACORN (Association of Community Organizations for Reform Now) states that predatory lenders target low-income and minority homebuyers, capitalizing on buyers’ lack of understanding of the complicated transactions, or use outright deception to close loans that inevitably lead to a loss of equity or foreclosure (ACORN, 2003).

The National Council of La Raza (NCLR) has a strong position on predatory lending and its effect on Latinos and other minorities. In a 2005 report, they state that predatory loans include: high interest rates, packing of fees without the borrower’s awareness; mandatory arbitration clauses; asset-based lending; balloon payments and prepayment penalties (Bowdler, 2005).

### **Lenders**

The Mortgage Banker Association (MBA) defines predatory lending as:

intentionally placing consumers in loan products with significantly worse terms and/or higher costs than loans offered to similarly qualified consumers in the region for the primary purpose of enriching the originator and with little or no regard for the costs to the consumer (Mortgage Banker Association, 2007).

The National Association of Realtors (NAR) recognizes the lack of a single definition of predatory lending. Nevertheless, NAR has been concerned with the fact



that predatory lenders often take advantage of first time homebuyers and others who may be vulnerable. NAR provides examples of problems with predatory loans including high interest rates and fees; broken promises (bait and switch); loans that start low and go high; loan flipping and steering (NAR, 2007).

### Mortgage Fraud

One additional practice that has inaccurately been equated to predatory lending is mortgage fraud. The Federal Bureau of Investigation (FBI) stresses that actual fraud does not make a loan predatory, particularly when the act is perpetrated by an industry insider (Engel & McCoy, 2002). Mortgage fraud is defined as the intentional misstatement, misrepresentation, or omission of information by an applicant or other interested parties, relied on by a lender or underwriter to provide funding for, to purchase, or to insure a mortgage loan (FBI, 2007). Perpetrators of mortgage fraud are either “fraud for housing” borrowers, or “fraud for profit” insiders. Table 1 shows examples of practices considered abusive, illegal, or predatory. Figure 1 combines the basic notions found in the literature review and in our study’s results into a comprehensive view of the relationships among the different types of lending.

**TABLE 1. Description and Nature of Abusive, Illegal, and Predatory Practices and Tools to Correct Them.**

| Description of Practice   | Nature of Practice   | Government or Market Tool  |
|---|--|--|
| Credit life insurance is tied to the loan                             | Abusive  | S.2452 if passed <sup>a</sup>  |
| Use of teaser rates and no explanation of how much payment will go up | Abusive  | Truth in Lending Act (TILA) 15 USC 1635                                      |
| Targeting illiterate consumer/ naïve borrower                         | Abusive  | Consumer education to correct for information asymmetry                      |
| Targeting/ preying on borrowers; steering                             | Abusive  | Home Owner Protection Act (HOEPA) section 32 mortgages; Consumer Education   |
| Servicing abuses such as force-placed insurance                       | Abusive  | Real Estate Settlement and Procedures Act (RESPA) falls short in this regard |
| No APR is estimated in advance  | Illegal  | TILA, 15 USC 1630  |
| Not informed about right of recession period in case of refinances    | Illegal  | TILA 15 USC 1635   |
| No reference to its interest rate or loan character (fixed or ARM)    | Illegal  | TILA, 15 USC 1630  |
| No disclosure of APR, payment, and term information                   | Illegal  | TILA 15 USC. 1630  |
| No monthly payments estimates   | Abusive/illegal  | RESPA  |
| Excessive upfront fees  | Abusive/illegal  | HOEPA  |
| Negative amortization   | Abusive/ Illegal in non-traditional mortgages, if S. 2452 passed | S.2452 if passed   |
| Inflated appraisal of home  | Abusive/ Illegal if S.2452 passed                                | S.2452 if passed   |

|   |   |   |
|---|---|---|
| Charge high interest rates to borrower based on race or national origin | Abusive/Illegal practice                    | Fair Housing Law  |
| Abusive prepayment penalties on subprime and non-traditional mortgages  | Abusive/illegal if S.2452 passed            | Consumer education  |
| Bait and switch advertising in mortgage lending                         | Abusive/illegal                             | FTC, 16 C.F.R, 238  |
| ARM's without adequate disclosure                                       | Abusive/illegal                             | TILA for variable rate mortgages; Reg Z 226. 19(b); Also Subprime Mortgage Guidelines for Depository Institutions |
| No Good Faith Estimate of closing costs within 3 days of application    | Abusive/illegal                             | RESPA, 12 USC, Section 2603, 2604   |
| Closing is rushed, No HUD-1 settlement statement                        | Abusive/illegal                             | RESPA, 12 USC, 2603   |
| High rate, high fee loans on refinancing-equity strip                   | Abusive/illegal                             | HOEPA 1994  |
| Targeting members of protective classes                                 | Abusive/illegal                             | Fair Housing Act/ Equal Credit Opportunity Act  |
| Encourage borrower to lie about identity                                | Mortgage fraud within identity theft scheme | FBI- Mortgage fraud   |
| Equity theft  | Mortgage fraud                              | FBI- Mortgage fraud   |
| Inflated income of the borrower   | Mortgage fraud                              | FBI Mortgage Fraud  |
| False appraisals  | Mortgage fraud                              | FBI – Mortgage Fraud definition   |
| Encourage borrower to lie about income                                  | Mortgage fraud                              | FBI – Mortgage Fraud definition   |
| Lend more money than a borrower can afford                              | Predatory                                   | Non-traditional Mortgage Guidelines/ Interagency Subprime Guidelines applicable only for depository institutions  |
| No fiduciary duty   | Predatory/Illegal if S.2452 passed          | MINUTES <sup>b</sup> ; SBS Guidance 2006 <sup>c</sup> . Nothing for depository institutions                       |
| Targeting vulnerable borrowers to cash-out refinances                   | Predatory                                   | Home Equity Protection Act; Consumer education  |
| Stripping homeowners' home equity                                       | Predatory                                   | Home Equity Protection Act  |
| Kickback to brokers   | Predatory                                   | S.2452 if passed  |

<sup>a</sup>S. 2452 Homeownership and Preservation Act of 2007 introduced by Senator Dodd, December 12, 2007.

<sup>b</sup>MINUTES: Mortgage Industry National Uniform Testing and Education Standards.

<sup>c</sup>The State Bank Supervisors (SBS) has issued guidance on non-traditional mortgages for non-depository institutions which basically resembles the Federal Guidance

## Conclusions

It is concluded that there is not a universally accepted definition of predatory lending by policy makers, regulators or people involved in the mortgage business. Predatory lending has been equated to mortgage abuse, mortgage fraud, loans with hidden prepayment penalties or even the legally acceptable loans that simply offer higher interest rates, or any other unethical practices in a mortgage transaction. The often-repeated term “predatory lending” apparently carries a wide variety of meaning in the mortgage market, depending on the context in which it is used. However, without a clear definition of what predatory lending is, no one can quantify its true prevalence, and public policy can't assess what would be effective measures against it.

The researchers found that differences exist among what constitutes mortgage abuse, mortgage fraud and predatory lending. Apparently, targeting borrower

vulnerabilities, lending more than what borrowers can afford were both seen as specific predatory lending practices, whereas abusive lending could include the same business practices but not necessarily with a *specific target* or an *intention* to steal borrower's equity.

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## **SAFER HOMES THROUGH CONSUMER INVOLVEMENT IN STANDARDIZATION**

JoAnn M. Emmel, James McCabe\*

It would be safe to say that very few consumers realize the impact of standards on their everyday lives. Despite the fact that standards are a part of practically every aspect of what we do each day, people are many times unaware of the fact that the products or services they use are based on standards. These standards make products healthier and safer, as well protect the environment and save resources (ANSI, n.d.b). Standards also help save time and energy, contribute to technological progress, and improve competition, making products more economical to produce (National Council on Economic Education, 2008; IEC, 2002; Kantor, 2006; Turner, 2006).

Products and services for the home are among those influenced by standards. Without standards, building and furnishing a house would not be easy. What if standards did not exist for the distance between the 2 x 4 studs in the walls or for the electrical distribution system and receptacles in a house? What would it be like to shop for light bulbs if the bulb size and socket shape varied? Without standards, the outside surface temperature on gas ranges would not be limited, ladders would not be sturdy, and gas appliance emissions would not be controlled, just to name a few. Housing educators can become a part of this standardization process at a national as well as global level.

### **Establishing Standards**

Standards are documents prepared by, and that represent a consensus among, subject matter experts in a particular field. These standards may establish a standard way to construct items like standard sizes for light sockets, lumber sizes and electrical receptacles. A large number of standards, however, prescribe methods and materials for safer products and product use, as well as how products perform. More recently, standards have focused on environmental issues.

Most of the standards used for our products and services are voluntary standards, and these standards are the basis for codes used in building our homes. As new building materials and technologies evolve and new products are produced, there is a growing need for consumer involvement to assure that safe and environmentally appropriate products are produced.

Standards are developed under the auspices of a large number of recognized standards developing organizations (SDOs). At the national level many individuals are very familiar with organizations such as Underwriters Laboratories and the Canadian Standards Association, but numerous other SDOs are also involved. For close to 90 years, the American National Standards Institute (ANSI) has administered and

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coordinated the U.S. standards system, and a diverse body of stakeholders has collaborated to put the standards in place (ANSI, n.d.a). These stakeholders include representatives from industry, government, and academia, as well as consumers and consumer organizations. To date, over 10,000 standards have been approved by ANSI and many of these standards are associated with consumer products and services (ANSI, n.d.c).

In our current global market, standards are no longer considered solely on a national level. Globally accepted principles are becoming increasingly important in the development of products and services for the world economy. The International Organization for Standardization (ISO) has a membership of about 157 national standards institutes from countries of many sizes and economies in all regions of the world. ISO standards represent an international consensus for products and services, and ANSI is the U.S. member of ISO. The International Electrotechnical Commission (IEC) establishes global standardization of products and services related to electricity and electronics, and the U.S. National Committee (USNC) represents the U.S. on this commission.

### **Consumer Participation**

Consumer participation is not new to the standards development process with a number of SDOs having consumer representatives on their committees. Consumer representatives have helped guide the development of safe products and services, as well as test methods for quite some time. ANSI's Consumer Interest Forum (CIF) is comprised of consumer advocates, industry and government representatives and other stakeholders who are concerned about consumer products and services and interested in educating consumers regarding the actions of ANSI and the standards development community.

Consumer participation at the international level has ISO's Committee on Consumer Policy (COPOLCO) as a good model. Its membership includes some 103 national standards bodies from around the world and these countries are typically represented by national standards bodies and consumer organizations. The CIF represents the U.S., helping to identify areas of standardization of priority interest to consumers, promote consumer involvement in that work, and support proposals for new standards activity where a perceived need for consumer protection exists.

The IEC has just recently increased its efforts to include consumer representation in the standards development process. Although COPOLCO and the consumer groups participating in COPOLCO have worked on issues of interest to IEC, direct consumer representation in the work of the IEC is the goal. An important first step was the inclusion of an objective in the *IEC Masterplan* to reinforce consumer representation and participation at the national level wherever appropriate. In addition to the USNC, at least one other national committee, Canada's CNC, has established a consumer representative seat on their council. Hopefully this initiative will expand to other national committees around the globe (Emmel, 2008; Matthews, 2007).

Nationally and internationally, there is a need for more participation in the standards development process by consumer advocates and representatives who would become members of technical committees that develop standards for product design, development, and testing. There are also many challenges to address related to sustaining this consumer representation, including availability of funding and human resources, lack of awareness and understanding, and in some cases real or perceived impediments to effectively advocating the consumer perspective. Standards organizations are working to address these challenges and to working with consumer representatives who are willing to make the commitment to participate in the process. Members of HERA, with their broad expertise related to home products and services, are excellent candidates for these consumer representative positions. The standards organizations and the standardization process offer many opportunities for HERA members to guide the design and development of safe, healthy and environmentally sound products for national and world markets.

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## **4-HABITAT: SERVICE LEARNING RAISES YOUTH AWARENESS OF AFFORDABLE HOUSING NEEDS**

Lisa Hamilton-Hill\*

To raise youth awareness of the pressing need for affordable housing in the United States, University of Missouri Architectural Studies Extension, Missouri 4-H and Show-Me Central Habitat for Humanity have partnered in the 4-Habitat program to benefit a family chosen to purchase a Habitat for Humanity home. The program acts as a model for Extension and secondary housing educators nationwide.

The purpose of the 4-Habitat program is to allow youth to design and install interior furnishings, landscaping and energy efficiency improvements that benefit the selected family. In addition, nutritional meals and menus that can be created on a limited budget are included. Interaction between project participants and the family create a unique opportunity for empathetic learning as youth develop an understanding of what it means to afford housing in a climate of shrinking opportunities for low-income families and individuals.

First, youth volunteers were educated about poverty<sup>i</sup>. This was achieved through a series of activities that highlighted the difficulties of providing for a family with limited income and resources. Participants experienced simulations that led them through the process of making financial decisions on a limited income. Second, the selected family interacted directly with the youth to discuss their needs. Project volunteers considered the family's needs and limited income as crucial components to the environmental design concepts that they formed. Third, three youth teams were created to reinforce the fact that housing is not simply a structure in which inhabitants reside, but a *total environment* that affects their emotional, physical, and financial well-being<sup>ii</sup>. Habitat for Humanity homeowners typically receive a "vanilla box" interior that they are ultimately responsible for furnishing and decorating with their own funds. The 4-Habitat program aims to go well beyond the "vanilla box" and serves to educate homeowners and help provide interior environments in ways that will positively impact their lives. The teams worked in the areas of interior design (finishes and furnishings), landscaping and energy efficiency, and nutrition. Youth volunteers created a cohesive concept that met the family's needs in many aspects of their daily life. Fourth, direct financial education for the family was provided by an Extension specialist<sup>iii</sup>. In addition shared project decision making sensitized youth to financial and resource constraints that have an impact on providing a total environment that enhances quality of life.

Youth volunteers participated in a variety of onsite installations including interior painting, building furniture, creating personalized artwork, making a padded headboard, and hanging window treatments. In addition, youth learned about best practices in energy efficiency by installing weather stripping, wrapping a water heater and pipes, and installing outlet insulators. In the spring, the team returned to install mostly native

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plants and flowers and build and hang a trellis with trailing vines that serves as a device to shade the home's southern exposure.

All volunteers participated in a block party for the selected Habitat homeowners and their neighbors (also Habitat homeowners). Youth volunteers described the uses and benefits of various door prizes that were distributed. These included *HomeWorks* home maintenance binders, weatherization materials, compact fluorescent light bulbs, and pamphlets detailing energy efficient strategies. For those neighbors who could not attend the block party, bags were distributed that included information about Extension programming and 4-H activities, recipes, nutrition, and budget shopping information in a cookbook written by a youth volunteer, and a homemade soup mix for families to enjoy.

Program evaluation was conducted by an independent facilitator and note taker during separate focus groups for both the Habitat homeowners (n=2) and 4-H youth volunteers (n=11). Adult volunteers (n=10) and Habitat for Humanity staff (n=2) were given pen and paper surveys.

Key questions for the homeowners included:

- What skills ... did you learn from the 4-Habitat program?
- How can you use what you learned to help your family?
- Describe your experience ... did you feel like you were a part of the team?

Primary outcomes included positive benefits for the family in terms of educated decision making regarding housing maintenance, indoor environmental quality, energy-efficient practices, nutrition and financial matters, and how joint decision making can strengthen families. For example, the adult female responded that prior to 4-Habitat, she "did not know about energy efficiency and interior decorating." She also commented that before she and her husband worked with the 4-Habitat team they had struggled to make joint decisions, and that they had "become closer as a family" as a result of working as an integral part of the team to create design concepts. She and the adult male described team members as friends rather than "just volunteers." They struggled to find anything about that program that needed to be improved except to comment that if it were local it would have been "easier on the youth" in terms of travel.

Key questions for 4-H youth volunteers included:

- Have you learned anything about the low income population?
- What are some ways you could use what you learned ... to help low income people in your community?
- If you were in charge of 4-Habitat, what would you change to make it better for youth?

For youth volunteers, primary outcomes included sensitivity towards the population of low- and moderate-income earners as a whole, as well as the benefits of participating in service learning. Comments were made about how they realized that while low-income individuals might indeed be hard-working, they sometimes "needed a little help". They felt more connected to their communities by helping others who were

less fortunate, and that the 4-Habitat program should be offered at a club or local level so that it could reach more families. While youth volunteers were happy with the knowledge and expertise offered by adult volunteers, they sometimes experienced confusion about who ultimately made decisions. Youth also commented that they should have been able to work more as a group rather than communicating online.

Secondary outcomes included increased public awareness of the need for decent, affordable housing. Television viewers and program website visitors were informed about issues associated with the challenges of being a low-income homeowner. As the pilot develops, coordinators will seek to expand the evaluation of the program to include a quantifiable public survey.

Public awareness achieved through the distribution of a video put together by University of Missouri Cooperative Media group. The video was shown on "AGDAY", a syndicated show that airs on more than 200 markets across the country and on DirectTV and DISH Network, "This Week in Agriculture Business", a syndicated show airing on RFDTV on both DirectTV and DISH Network, 1 Illinois television station and 12 Missouri television stations. The piece aired on several newscasts such as morning and 5:00 P.M., 6:00 P.M. and 10:00 P.M. shows. It was also shown at the Missouri State Fair which resulted in indirect contact with members of the public.

Prior to the distribution of the Cooperative Media piece Columbia, MO television outlets also covered the story. In addition to news media, youth volunteers built a website that highlighted various activities throughout the program. The website will be maintained and updated as 4-Habitat programming progresses.

As the 4-Habitat program moves into its second year, coordinators continue to seek additional funding to formalize the 4-Habitat curriculum and to implement the program at a multi-state level, with the ultimate goal being to offer 4-Habitat as a part of 4-H national curricula. During the second year of programming youth volunteers will experience additional learning opportunities in the area of passive solar design and how these strategies can serve to alleviate the rising energy costs associated with homeownership, particularly important for low-income families.

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<sup>i</sup>Materials adapted from Building Strong Families: Challenges and Choices, a research-based, family strengthening program of MU Extension. <http://extension.missouri.edu/bsf/>.

<sup>ii</sup>Materials adapted from MU Extension programs listed at the Missouri Families website, <http://missourifamilies.org/>; Missouri Master Gardeners, <http://mg.missouri.edu/>; Mizzou Botanic Garden, <http://gardens.missouri.edu/>; and various MU Extension publications, <http://extension.missouri.edu/explore/>.

<sup>iii</sup>Financial counseling provided by MU Office for Financial Success, a service of the Personal Financial Planning Department, <http://pfp.missouri.edu/financial/>.

## **NATIVE – IMMIGRANT DIFFERENCES IN HOUSING AND FINANCIAL MARKET PARTICIPATION: A COMPARATIVE ANALYSIS**

Velma Zahirovic Herbert, Swarn Chatterjee\*

The economic assimilation of immigrants is a key concern for economists and policy makers. While economists focus almost exclusively on earnings assimilation, little is known about the differences in asset portfolio selection among native-born and immigrant households. This paper uses data from the National Longitudinal Survey, cohort 1979 (NLSY79) to examine the determinants of financial market participation and home ownership among native-born and immigrant households, using a two stage investment choice model. First stage determines the preference for stock market participation and home ownership among native-born and immigrant households. The second stage determines the amount of equity held in stocks and home by immigrants and natives.

Analyses of this paper demonstrate that while household income, wealth and educational attainment are positive predictors of financial market participation for the general population; income, wealth, job tenure and marital status are predictors of homeownership. In addition, financial market participation and stock equity holding are significantly higher for native-born households. The results indicate that although the immigrant are less likely to own homes; however, once homeownership is taken into account, immigrants are likely to hold a greater amount home equity than the natives. Additionally, a decomposition analysis of home equity holdings reveals that while age and net worth account for most of the difference in home equity owned, in favor of immigrants; income, educational attainment, marital status and job tenure favor greater home equity holdings for native-born Americans. However, financial market participation and stock equity holding are significantly higher for natives. Finally, whereas income, wealth and educational attainment are positive predictors of financial market participation; income, wealth, job tenure and marital status are predictors of homeownership in the general population.

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## RENTER TIME PREFERENCE AS A BARRIER TO HOMEOWNERSHIP

Russell N. James III\*

Much of the existing research literature related to increasing homeownership focuses on the impact of external barriers such as housing prices, down payments, and interest rates (Retsinas & Belsky, 2002). This paper takes a different approach by considering the possibility of a behavioral choice barrier among non-homeowners. Specifically, this study examines whether renters more heavily discount future costs and benefits than homeowners do.

Many components of the pathway to homeownership involve decisions to delay current consumption in exchange for future benefit. Typically, savings must take place in order to accumulate a sufficient down payment. In addition, initial monthly costs of homeownership may be higher than renting. Although homeownership normally provides lower ongoing costs in later years, as well as asset appreciation, these benefits arrive in the future. New homeowners also forego the relatively inexpensive mobility options of renters. Homeownership itself often requires time commitment for repairs, maintenance, and recordkeeping not encountered by renters. Thus, at multiple points in the process of creating and sustaining homeownership, individuals must exchange current costs for future benefits.

We first examine the possibility that renters may be employing a higher discount rate using data from the Survey of Consumer Finances (SCF). The 2004 SCF asks respondents "In planning (your/your family's) saving and spending, which of the time periods listed on this page is most important to [you/you and your (husband/wife/partner)]? (1) next few months, (2) next year, (3) next few years, (4) next 5-10 years, (5) longer than 10 years." The weighted descriptive statistics in columns (1) and (2) of Table 1 reflect the shorter self-reported financial planning time horizon of renters. However, this shortened time horizon may simply be the result of financial constraints or demographic characteristics. As shown in Table 1, renters have less income, less education, and fewer liquid assets than owners do.

A weighted cumulative logit analysis addresses the impact of these types of financial and demographic differences. After controlling for the financial and demographic variables, the odds of renters using a longer financial planning time horizon are about .59 times the odds of owners doing so. Thus, renter status is associated with a reduced likelihood of using a longer financial planning time horizon.

For an alternative view, the five financial time horizon categories are converted to a single time variable as follows: "next few months"=.25 years, "next year" =1 year, "next few years" =3 years, "next 5-10 years"=7.5 years, and "longer than 10 years"=15 years. Based on this conversion, renters employ an average financial time horizon more than two years shorter than owners do. Again, part of this shorter time horizon is likely

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**Table 1. Measures of Renter Time Discounting 2004 Survey of Consumer Finances and 2003-2004 Consumer Expenditure Survey (standard error) [odds ratio point estimates]**

|                       | (1)            | (2)              | (3)                                    | (4)   | (5)   | (6)                              |
|-----------------------|----------------|------------------|--|---|---|----------------------------------|
|                       | Renters        | Home owner       | OLS on financial time horizon in years | Cumulative logistic for longer financial time horizon | Tobit on % of savings in short-term investments | Probit on tobacco spending (CES) |
| n                     | 1122           | 3106             | 4228                                   | 4228  | 4228  | 14743                            |
| Renter                | 100%           | 0%               | -1.1228<br>(0.1928)***                 | -0.4224<br>(0.0772)***<br>[.589]                      | 8.912<br>(1.297)***                             | 0.118<br>(0.029)***              |
| Single female         | 41.4%          | 21.6%            | -0.5515<br>(0.2203)***                 | -0.2963<br>(0.0882)*** [0.682]                        | 10.191<br>(1.447)***                            | 0.057<br>(0.032)                 |
| Single male           | 33.3%          | 15.8%            | -0.2979<br>(0.2304)                    | -0.1149 (0.092)<br>[.842]                             | 4.761<br>(1.519)***                             | 0.288<br>(0.036)***              |
| Minor living in home  | 23.3%          | 22.1%            | -0.098<br>(0.2056)                     | -0.0449 (0.082)<br>[.900]                             | 2.182<br>(1.339)**                              | -0.139<br>(0.038)***             |
| Family size           | 2.38<br>(1.45) | 2.64<br>(1.39)   | -0.1742<br>(0.0732)*                   | -0.0786<br>(0.0293)** [.938]                          | 1.38<br>(0.503)**                               | 0.063<br>(0.013)***              |
| Liquid assets (\$10k) | 1.02<br>(9.01) | 8.46<br>(82.40)  | 0.0331<br>(0.0122)***                  | 0.0132 (0.0049)**<br>[1.01]                           | -0.02<br>(0.008)*                               | 0.001<br>(0.001)                 |
| Income (\$10k)        | 3.34<br>(5.88) | 8.78<br>(25.21)  | 0.0924<br>(0.0212)***                  | 0.0474<br>(0.0088)*** [1.06]                          | -0.062<br>(0.024)**                             | -0.004<br>(0.003)                |
| Years at current job  | 5.09<br>(6.56) | 11.47<br>(10.77) | 0.0111<br>(0.0091)                     | 0.0054 (0.0036)<br>[1.06]                             | -0.073<br>(0.055)                               |                                  |
| <High school grad     | 21.8%          | 11.8%            | -0.4928<br>(0.2448)***                 | -0.3523<br>(0.0979)*** [.667]                         | 12.241<br>(1.77)***                             | 0.030<br>(0.037)                 |
| High school           | 31.1%          | 26.5%            | reference                              | reference   | reference                                       | reference                        |
| Some college          | 25.3%          | 22.3%            | -0.063<br>(0.2118)                     | -0.0663 (0.0843)<br>[.985]                            | -5.254<br>(1.395)***                            | -0.158<br>(0.03)***              |
| Bachelor degree       | 15.1%          | 23.0%            | 0.7166<br>(0.2297)***                  | 0.2461 (0.0917)**<br>[1.440]                          | -13.108<br>(1.433)***                           | -0.572<br>(0.039)***             |
| Graduate education    | 6.8%           | 16.4%            | 0.8017<br>(0.2807)***                  | 0.2959 (0.1124)**<br>[1.685]                          | -20.399<br>(1.633)***                           | -0.788<br>(0.053)***             |
| White                 | 56.6%          | 80.9%            | 1.1472<br>(0.2448)***                  | 0.4367 (0.098)***<br>[1.553]                          | -10.643<br>(1.652)*                             | 0.188<br>(0.051)***              |

|                                 |                  |                  |                       |                             |                       |                       |
|---------------------------------|------------------|------------------|-----------------------|-----------------------------|-----------------------|-----------------------|
| Black                           | 23.0%            | 9.8%             | 0.6237<br>(0.2963)    | 0.2438 (0.1184)*<br>[1.180] | 4.842<br>(2.11)***    | -0.054<br>(0.062)     |
| Age                             | 41.78<br>(16.73) | 53.18<br>(16.18) | 0.1028<br>(0.0273)*** | 0.0369<br>(0.0109)***       | -1.192<br>(0.184)***  | 0.059<br>(0.004)***   |
| Age squared                     |                  |                  | -0.0013<br>(0.0003)** | -0.0004<br>(0.0001)***      | 0.008<br>(0.002)      | -0.0007<br>(0.000)*** |
| Intercept                       |                  |                  | 2.4729<br>(0.7923)**  | (5) -2.9656<br>(0.3211)***  | 107.828<br>(5.390)*** | 2.035<br>(0.122)***   |
| Financial Planning Time Horizon |                  |                  |                       | 1.4207<br>(0.3177)***       |                       |                       |
| Few months                      | 27.5%            | 14.8%            |                       | (3) -0.1041<br>(0.3168)     |                       |                       |
| Year                            | 17.8%            | 11.6%            |                       | (2) 0.6800<br>(0.3173)*     |                       |                       |
| Few years                       | 28.4%            | 27.9%            |                       |                             |                       |                       |
| 5-10 years                      | 18.9%            | 29.4%            |                       |                             |                       |                       |
| >10 years                       | 7.3%             | 16.3%            |                       |                             |                       |                       |
| Estimate                        | 3.47             | 5.50             |                       |                             |                       |                       |
| sd mean                         | (4.12)           | (4.98)           |                       |                             |                       |                       |
| years                           |                  |                  |                       |                             |                       |                       |

\* significant at .05 \*\* significant at .01 \*\*\* significant at .001

due to observable characteristics of renters such as lower income, less education, different household size, and the like. The ordinary least squares regression shown in column (3) controls for these types of intervening variables. The results indicate that after introducing these controls, renter status is still associated with a statistically significant decrease in the financial planning time horizon of about 1.1 years.

The previous analyses are based upon the self-reported financial planning time horizons of respondents. To extend this inquiry to actual investment behavior, respondent investments are categorized as either short-term/convenience (checking accounts and savings accounts) or longer-term (certificates of deposit, bonds, securities, and retirement plans). Column (5) employs a Tobit model where the dependent variable is the percentage of household liquid investments placed into short-term/convenience accounts (e.g, 20 = 20%). The results indicate that renters are significantly more likely to choose a higher proportion of short-term savings instruments, even when controlling for the total amount saved. Thus, actual renter investment behavior does match the self-reported perception of shorter financial planning time horizons.

Although the prior analyses control for observed indicators of financial constraint, they are still subject to the challenge that they could be reflecting unobserved financial constraints (such as high medical expenses or anticipated job or health instability).

Unobserved financial constraints could prevent homeownership, cause a shortened financial planning time horizon, and create a preference for short-term investments.

To address this possibility, we consider a consumption-based measure of time discounting. Given the documented long-term risks of tobacco consumption, the decision to consume is consistent with high discounting of future consequences. As Huston and Finke (2003, p. 145) explain, “those who smoke have revealed that they are willing to give up health and longevity in the future in order to engage in an activity that provides utility gains in the present.” Previous research has verified this connection between tobacco consumption and time discounting. Fuchs (1982) found a significant relationship between smoking and time preference. Later research has employed smoking as a proxy for high discounting of future utility (Munasinghe & Sherman, 2000).

In this paper, data on tobacco consumption come from the calendar year 2003 and 2004 U.S. Consumer Expenditure Survey (CE). The following analysis differentiates only between tobacco users and non-users, because the level of tobacco consumption among tobacco users may reflect financial circumstances more than time discounting. Results from the probit model in column (6) of table 1 reflect the significant, positive impact of renter status on the decision to consume tobacco. This result is particularly notable given the general finding that lower housing wealth is associated with decreased consumption in general (Tang, 2006).

Results from each analysis of consumption, investment, and self-reported financial planning time horizons all point to higher time discounting by renters. To the extent that the transition to homeownership involves decisions to delay current consumption in exchange for future benefits, such higher discounting will be a barrier.

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## RESIDENTIAL SATISFACTION OF ELDERLY RESIDENTS IN RENTED APARTMENT HOMES

Russell N. James III\*

This study examines the levels and determinants of residential satisfaction of elderly residents in apartment homes as compared with non-elderly residents in apartment homes and residents in owned or rented single-family homes. Residential satisfaction is measured here as the respondent's answer to the question in the American Housing Survey, "On a scale of 1 to 10, how would you rate your [house/apartment] as a place to live? 10 is best, 1 is worst"

Issues of residential satisfaction are particularly important for the elderly as significant dissatisfaction can create chronic stress with consequent mental and physical health results (Kahana & Kahana, 1996). As a group, the elderly are more susceptible to the effects of negative residential environment conditions (Lawton & Nahemow, 1973). Conversely, a favorable residential environment creates positive impacts upon the psychological well-being of elders (Jirovec, Jirovec, & Bosse, 1985).

One model that has been successfully employed to analyze several areas of human satisfaction is Rotter's (1966) "locus of control" approach. Under this model, the degree to which a person expects to control his environment (internalized locus of control) or be controlled by his environment (externalized locus of control) directly influences satisfaction. In general, an internalized locus of control is associated with greater satisfaction while an externalized locus of control generates lower satisfaction. Previous research has found this issue of perceived environmental control to be critical in such areas as job satisfaction (Spector, 1986) and satisfaction with one's political system (Frey & Stutzer, 2000). Further, a locus of control approach has also been used to explain the residential satisfaction of renters (James, 2007; LeBrassuer, Blackford, & Whissell, 1988).

The impact of different living environments on one's locus of control may be quite different depending upon one's age. During younger ages, homeownership provides a clear increase in the ability to control one's environment. Homeowners have greater rights to modify their homes, and hence, greater ability to control their living environment. However, this right to modification also carries with it the responsibility of home maintenance. The performance of maintenance, cleaning and yard work may become more difficult in later years. Even though a homeowner may hire others to perform certain tasks, the process of hiring and supervising independent contractors can be difficult and potentially risky as indicated by the many home maintenance frauds targeting the elderly. Thus, where the rights of homeownership may provide the opportunity for greater control over one's environment during younger ages, there is an increasing risk that in older age the obligations of homeownership may cause a feeling of being burdened by one's environment.

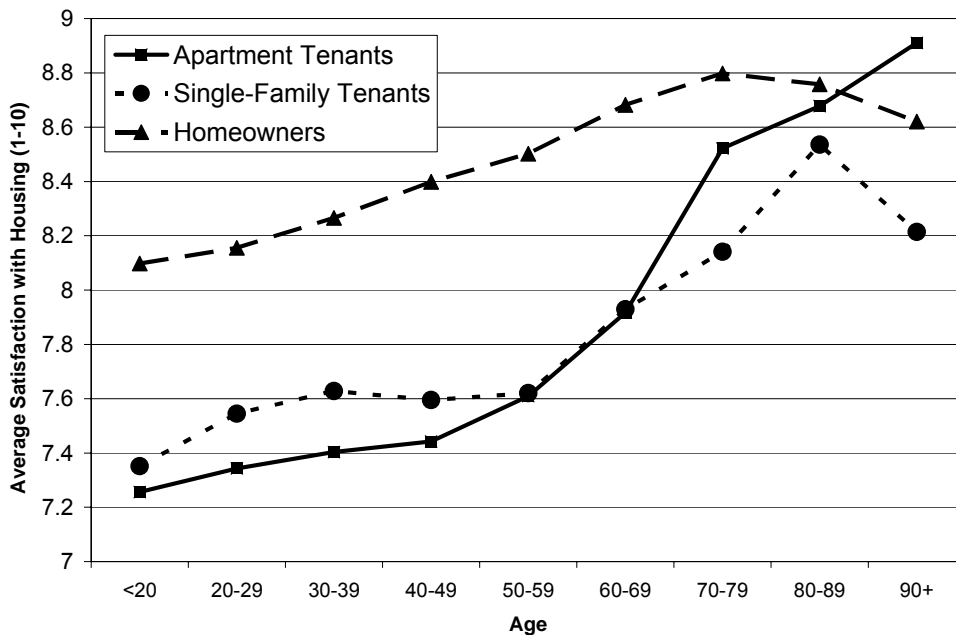
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Further, rented apartment housing also provides the opportunity for convenient community services, especially in larger buildings and age-restricted housing. As advanced age limits mobility options, the presence of nearby services becomes more important (McAndrew, 1993).

Data come from the national sample of the 2005 American Housing Survey (AHS) which excludes nursing homes or congregate housing for the elderly. Figure 1 displays the mean residential satisfaction score (on a scale from one to ten) of each age group in three different types of housing scenarios: apartment renters, single-family renters, and homeowners. Age groupings are based upon the age of the head of the household (reference person).



**Figure 1. Satisfaction with housing by age group and housing type 2005 American Housing Survey (41,198 households)**

While Figure 1 displays a simple relationship between age and residential satisfaction, it may be that the apparent increasing satisfaction of older apartment renters is due to intervening socio-demographic factors. A multivariate ordinary least squares regression with age interactions can control for these types of intervening socio-demographic characteristics. Table 1 displays the results of this regression.

The dramatic gap in housing satisfaction between apartment renters and homeowners begins to diminish when residents enter their 60s. At each subsequent age segment, the satisfaction gap becomes smaller until eventually, at the oldest ages, the residential satisfaction of apartment renters exceeds that of homeowners. Similarly, the higher residential satisfaction of renters in single-family housing compared to those in apartment housing seen in 20s, 30s and 40s age groups disappears in the 50s and 60s and is then surpassed by apartment renter residential satisfaction for all older age

groups. In both cases, the satisfaction of apartment renters increases with age at a much faster rate than for other types of housing. A multivariate regression confirmed this differential age-satisfaction trajectory in apartment rental housing even after controlling for intervening socio-demographic variables.

**Table 1. Age interaction of satisfaction in apartment housing reporting unstandardized coefficients and (standard errors).**

| Variable  | Coefficient (standard error)    |
|---|---------------------------------|
| Age   | 0.0115 (0.0007) <sup>***</sup>  |
| Apartment renter  | -1.0144 (0.0549) <sup>***</sup> |
| Single-family renter                                    | -0.4657 (0.0814) <sup>***</sup> |
| <u>AGE INTERACTIONS</u>                                 |                                 |
| Apartment renter * Age                                  | 0.0084 (0.0011) <sup>***</sup>  |
| Single-family renter * Age                              | -0.0027 (0.0018)                |
| <u>CONTROL VARIABLES</u>                                |                                 |
| Single male   | -0.3611 (0.0246) <sup>***</sup> |
| Single female   | -0.1253 (0.0216) <sup>***</sup> |
| No. of children   | -0.0507 (0.0083) <sup>***</sup> |
| No. of adults   | -0.0686 (0.0113) <sup>***</sup> |
| White race  | 0.123 (0.0213) <sup>***</sup>   |
| Annual Household income<br>(reported in \$10,000 units) | 0.0139 (0.0013) <sup>***</sup>  |
| <HS education   | -0.027 (0.0248)                 |
| Some college  | -0.0422 (0.021)                 |
| College graduate  | 0.0334 (0.0242)                 |
| Graduate school   | 0.0144 (0.0296)                 |
| Intercept   | 7.4668 (0.085) <sup>***</sup>   |
| R <sup>2</sup>  | 0.0912                          |
| F-value   | 275.60 <sup>***</sup>           |
| n   | 41,198                          |

\* p<.0.01, \*\*p<0.001, \*\*\*p<0.0001

<sup>a</sup>OLS regression on housing satisfaction level (1-10) in the 2005 American Housing Survey

Results from a stepwise selection cumulative logistic model reported in Table 2 suggest that perceived neighborhood quality and satisfaction with building maintenance are the most important environmental factors associated with elderly renter satisfaction among those examined. Further, these factors have a significantly greater impact on elderly renter satisfaction than on non-elderly renter satisfaction. The rating of neighborhood variable comes from the AHS question “How would you rate your neighborhood on a scale of 1-10? (10 is best, 1 is worst)” (U.S. Dept. Housing & Urban Development, 2004, p. 284). The AHS does not define the term “neighborhood” for respondents, allowing for personal interpretations of what area this term might include. Satisfaction with building maintenance comes from the AHS question, “On maintenance of the building, are you completely satisfied, partly satisfied, or dissatisfied?” This answer is transformed into a control variable for maintenance dissatisfaction where a

satisfied rating is scored as a zero, a partly satisfied rating is scored as a one, and a dissatisfied rating is scored as a two.

**Table 2. Satisfaction of elderly and non-elderly apartment tenants – Stepwise selection of cumulative logistic model (maximum likelihood analysis)**

| Variables                                   | Under 65 Age Group                |                                    | 65 & Over Age Group                |                                    |
|---|-----------------------------------|------------------------------------|------------------------------------|------------------------------------|
|   | Unstandardized Parameter Estimate | Odds Ratio (95% Confidence Limits) | Unstandardized Parameter Estimates | Odds Ratio (95% Confidence Limits) |
| Rating of neighborhood (1-10)               | 0.757***                          | 2.13 (2.06-2.20)                   | 1.155***                           | 3.17 (2.85-3.53)                   |
| Maintenance dissatisfaction                 | -0.890***                         | 0.41 (0.38-0.45)                   | -0.997***                          | 0.37 (0.28-0.50)                   |
| Total number of rooms                       | 0.110***                          | 1.12 (1.07-1.17)                   |                                    |                                    |
| Perimeter walls/fence                       | 0.345***                          | 1.41 (1.24-1.61)                   |                                    |                                    |
| Noise problems                              | -0.328***                         | 0.72 (0.65-0.80)                   |                                    |                                    |
| Owned by public housing authority           | 0.65***                           | 1.91 (1.52-2.40)                   |                                    |                                    |
| Annual household income (in \$10,000 units) | -0.039***                         | 0.96 (0.95-0.97)                   |                                    |                                    |
| Single male                                 | -0.319***                         | 0.73 (0.65-0.81)                   |                                    |                                    |
| Child in home                               | -0.224***                         | 0.80 (0.71-0.90)                   |                                    |                                    |
| Building stories                            | 0.031**                           | 1.03 (1.01-1.05)                   |                                    |                                    |
| Intercept 10                                | -8.020***                         |                                    | -10.676***                         |                                    |
| Intercept 9                                 | -7.055***                         |                                    | -9.593***                          |                                    |
| Intercept 8                                 | -5.216***                         |                                    | -7.523***                          |                                    |
| Intercept 7                                 | -3.761***                         |                                    | -6.281***                          |                                    |
| Wald Test                                   | 2600.64***                        |                                    | 500.75***                          |                                    |

\*p<0.01, \*\*p<0.001, \*\*\*p<0.0001

In each case, the issue of control over one's environment seems plausibly connected to the ultimate issue of residential satisfaction. Advanced age decreases the ability to manage residential maintenance, thus decreasing the satisfaction from residential environments that demand such maintenance (either through the responsibilities of homeownership or the realities of improper landlord maintenance).

Further, as age decreases mobility, it consequently increases the importance of neighborhood environment, including neighborhood quality and neighborhood services, as a major component of one's residential satisfaction.

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# **AN ASSESSMENT OF HOUSING AFFORDABILITY IN CACHE COUNTY, UTAH**

Melanie D. Jewkes, Lucy M. Delgadillo\*

## **Purpose of Study**

There is no one universally defined method to assess housing affordability (Belsky, Goodman & Drew, 2005; Bogdon & Can, 1997; Bourassa, 1996; Eakes, 2007; Hulchanski, 1995; Linneman & Megbolugbe, 1992; O'Dell, Smith & White, 2004; Robinson, Scobie & Hallinan, 2006; Stone, 1993; Stone, 2006; U.S. Department of HUD, 2006; Van Vliet, 1998). Consequently, in order to more fully address the issue of housing affordability, this study seeks to provide information on housing affordability measurements as applied to a local housing market. Because there is not one universally accepted measure, different players in the housing market use their own criteria. The purpose of this study is to describe how the different stakeholders assess housing affordability in a local market in order to describe the affordable/unaffordable housing markets in the county, and to demonstrate that different housing affordability measurements yield different results depending on the constituencies behind the measurement.

The three sources of measurements chosen for this study are based on the stakeholders represented by the measurement: the HUD ratio, representing the legislative standard; the National Association of Realtors (NAR) measure, representing the real estate industry and media; and the Housing Wage, representing the National Low Income Housing Coalition (NLIHC) consumer advocacy group. Each measure offers its own value for assessing the housing affordability of a local housing market.

## **Methodology**

Data are from the 2006 Federal Financial Institutions Examination Council (FFIEC) Census data, using census tracts as the unit of analysis. Each result produced by the measurements describes the profile of the local housing market according to its definition of housing affordability.

The HUD measure shows the percentage of owner-occupied households that have a cost burden. The NAR measure shows the percentage of income a family at the median income level has in order to afford a home at the median value. For renters, HUD shows the percentage of rental households with a cost burden. Lastly, the Housing Wage measure shows the percentage of households that can afford the Fair Market Rent (FMR) and the percentage of households paying below the FMR.

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## Results

Table 1 presents a summary of the results, with one column from each of the measures. Overall, the affordability indexes from HUD, NAR, and the housing wage show how housing markets in each census tract vary from each other and have unique characteristics. Overall, the results indicate that the majority of households, rental and owner, are not experiencing a housing affordability problem, as defined by these four measurements.

**Table 1. Comparison of Affordability Measurements by County Census Tracts**

| Census Tract | Households without cost burden (30% or below) (%) | NAR Index (%) | Rental Households Spending Less than 29.9% (%) | Rental Households that Can Afford FMR (%) | Rental Households Below FMR (%) |
|--------------|---|---------------|--|---|---------------------------------|
| 1.01         | 61.24   | 67.61         | 78.20  | 75.14                                     | 68.51                           |
| 1.02         | 70.11   | 93.27         | 77.50  | 78.18                                     | 89.09                           |
| 2.01         | 63.68   | 105.67        | 57.03  | 71.85                                     | 40.00                           |
| 2.02         | 61.73   | 88.93         | 50.93  | 50.30                                     | 79.88                           |
| 3.00         | 61.96   | 103.13        | 57.52  | 62.89                                     | 79.25                           |
| 4.01         | 45.04   | 83.07         | 72.18  | 73.65                                     | 43.68                           |
| 4.02         | 56.04   | 77.30         | 74.07  | 77.42                                     | 56.45                           |
| 4.03         | 66.50   | 132.70        | 75.42  | 90.14                                     | 54.93                           |
| 5.00         | 61.76   | 194.28        | 62.45  | 65.47                                     | 70.99                           |
| 6.00         | 37.81   | 161.68        | 67.93  | 65.64                                     | 75.55                           |
| 7.01         | 60.91   | 129.36        | 79.72  | 72.83                                     | 68.21                           |
| 8.00         | 25.50   | 181.68        | 58.26  | 50.95                                     | 80.83                           |
| 9.00         | 51.29   | 217.23        | 62.40  | 67.10                                     | 78.84                           |
| 10.00        | 47.47   | 212.79        | 61.46  | 60.80                                     | 74.48                           |
| 11.01        | 67.38   | 178.91        | 76.21  | 80.91                                     | 37.27                           |
| 11.02        | 68.63   | 129.85        | 63.95  | 69.79                                     | 59.38                           |
| 12.00        | 62.52   | 156.37        | 77.67  | 67.74                                     | 62.90                           |
| 13.00        | 67.03   | 174.79        | 77.91  | 81.46                                     | 67.42                           |
| 14.00        | 68.49   | 248.74        | 65.70  | 68.87                                     | 75.49                           |
| 15.00        | 45.67   | 185.50        | 51.28  | 66.67                                     | 57.78                           |

## Conclusions

### Market versus Individual Affordability

This study brings to attention the difference between “market affordability” and “individual household affordability.” The results show distinct housing markets from one

census tract to another, what the authors call “market affordability,” which is the general affordability of a given area.

“Individual affordability,” as named by authors, is assessed by housing counselors, educators, loan officers, and others in the housing industry that deal first-hand with an individual household’s financial situation. Individual affordability may be the best place to start for preventing the extreme result of housing unaffordability—that of foreclosure and homelessness.

## **Recommendations and Implications**

### ***Residual Income Approach***

The results show that while many households can afford the Fair Market Rent, they pay above it. That may be because of a larger average household size of 3.2 (U.S. Census bureau, 2000) in the county. Households of this size would fit more comfortably in an apartment or home larger than a two-bedroom apartment used in this study. Housing affordability measures taking into account household size ought to receive more thought and study (Kutty, 2006; Stone, 1993). Such measures use residual income as the determining factor of a housing cost burden (Kutty; Stone). The residual income approach may be a better way to assess individual homeowner and renter housing affordability, because it takes into account household size and geographic location. It could effectively be used in pre-purchase housing counseling sessions and in loan application processes. Other residual income approaches could model the U.S. Department of Veteran’s Affairs home loan program, which includes household size and geographical location to qualify veterans for a mortgage (U.S. Department of Veterans Affairs, 2008).

### ***Housing Affordability and Transportation***

This study showed areas in the county that are more affordable. These tend to be in the suburbs, farther from the center work place. This means a household may be able to purchase their first or buy more house, or be able to afford rent in these areas, but will then need to pay more additional transportation. One study (Brookings Institution, 2006) points out that with the increase in gasoline prices “the average household will increase its total transportation expenditures by 14%, or \$1,200 per year. This increase alone is 3% of the median income household’s annual earnings” (p. 2). This has implications for housing educators and counselors who can point out the effects of moving farther away from work, shopping, etc, whether buying or renting.

### ***First-Time Homebuyers Assistance***

Funding for down payment assistance programs for first-time homebuyers should continue to be available. However, it is also important to note that, although homeownership is part of the American Dream, there are some households who are not in a position to purchase a home. Nevertheless, as a positive researcher suggests, they

“may be capable of purchasing a house at a later date should they choose to save accordingly” (Bourassa, 1996, p. 1870). Housing educators, counselors, and other players in the housing industry should recognize this and make appropriate recommendations to clients.

### ***Preventing Housing Crisis***

In light of the current mortgage foreclosure crisis in the United States, more preventative measures could be taken to prevent foreclosure crises. Housing industry players and individual consumers need to take more responsibility in their role. Laws should be passed requiring complete disclosures, in layman’s terms, of what loan terms imply. Regulation should establish fiduciary duty between the lender and borrower to halt abuses in the lending market. The authors believe that establishing fiduciary duty would have more positive impacts on halting abuses in the lending market than the negative impacts currently happening or that could happen as a result of the regulation.

Housing education and counseling should continue to recruit and help consumers make the best decision between renting and buying based on the individual’s circumstances; and to teach housing principles that will empower both renters and buyers to make sound housing decisions. Qualifying ratios and other factors involved in the loan application process should be reviewed to determine if assessments show an accurate portrayal of housing affordability. Housing affordability measurements should continue to be studied, as new developments or clarification could lead to a better understanding of how to determine a household’s ability to afford a given mortgage or a given rent.

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# **SPACE MAKING: SPACE PLANNING CHARACTERISTICS OF KITCHEN AND DINING SPACES IN KOREAN MULTIFAMILY HOUSING**

Suk-Kyung Kim, Mira Ahn\*

## **Introduction**

Place-making is an architectural term that began to be used in the 1970s to describe the process of creating public spaces that will attract people (Bohl & Cusumano, 2002). In addition to designing public spaces, placemaking itself includes design activities that create attractive spaces for people. If this concept is narrowed down to the interior design discipline, the overall design activities for creating more attractive spaces to residents could be named as space making. Likewise, residential designers create residential spaces to make the spaces more comfortable and attractive to residents.

This study aimed to explore space making efforts in kitchen and dining spaces in contemporary multifamily housing in Korea. Thus, this study investigated space planning characteristics of contemporary kitchen and dining spaces in those housing to identify creative design solutions to make these spaces more attractive and convenient to residents.

Since the first modern multifamily housing appeared in the 1960s in Korea, kitchen and dining space designs have changed tremendously. In the early 1970s, dining space was not included in the kitchen area; the function of the kitchen was limited to cooking related activities. However, kitchen spaces in the 1980s and 1990s began to include dining spaces and created more dynamic spaces harmonized with the entire interior spaces (Yim & Kim, 2005). Literature indicated similar trends in other countries that contemporary kitchen spaces functioned as family gathering, communication, entertainment, and working spaces for family members (e.g. Emmel, Beamish, & Parrott, 2005; Grey, 1996).

## **Purpose of the Study**

This study aimed to explore the space planning characteristics of kitchen and dining spaces in contemporary Korean multifamily housing and to identify if contemporary kitchen and dining spaces in this housing are designed to accommodate designers' creative activities and residential needs

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## **Methods and Procedure**

Picture images and floor plans of kitchen and dining spaces in contemporary multifamily housing in Korea were the primary data to explore design and planning characteristics of these spaces. Data were collected from housing units on the market for sale in Korea in April, 2008. Web-based marketing catalogues from construction companies were utilized to acquire the floor plans and interior design images from homes for sale. A purposive sampling method was used and included the five long-standing major construction companies in the housing market in Korea. The five housing construction companies included Samsung, Hyundai, Daewoo, Posco, and Daelim. Each company has created its own multifamily housing brand and design concepts for their multifamily housing communities. The brand images and design concepts have been presented in designing various spaces from interior spaces to common spaces of communities. This study chose the subject communities that have more than 5 housing unit types, more than 300 households, high-rise multi-family housing, and general site amenities. Fifty to sixty units from each company were reviewed. More than 300 multi-family housing unit models were reviewed and finally 207 housing units were chosen from the communities and space planning information on their kitchens and dining spaces were analyzed. Information on the space planning characteristics of each unit in the study included the location of kitchen space, kitchen and dining space arrangement, size of these two spaces, and the ratio of these spaces to the interior space of each housing unit.

## **Summary of Findings**

The overall size of the 207 housing units ranged from 602 to 3,024 square feet. Only 14 were smaller than 1,000 square feet. The mean square footage of the units was 1631.4 square feet.

### ***Location of Kitchen and Dining Space***

In the past decades, kitchen spaces usually have been oriented to north and connected to a utility room or small verandas. Interior spaces facing to south or east have been the preferred spaces for living rooms and master bedrooms in typical Korean apartments. Even in late 1990s, as some studies showed, all kitchen spaces in apartment housing were located in houses facing north, northwest, or northeast (Yim & Kim, 1999). However, in this study approximately 32% of the kitchens were oriented to south, southeast or southwest, which was one of the major recent trends in kitchen and dining space design in multifamily housing in Korea (see Figure 1).

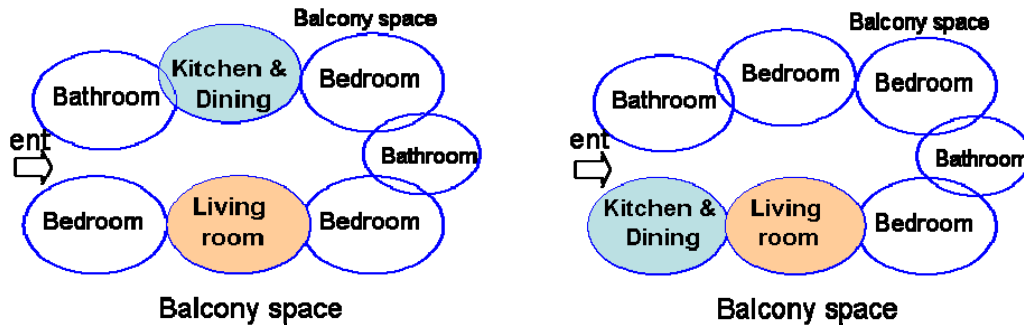


Figure 1. Kitchen and Dining Space: North-oriented (left) and South-oriented (right)

### ***Kitchen and Dining Space Arrangement***

Most of the kitchens included a dining space. Among the 207 kitchens, 192 included a dining table or an eating bar on a peninsula. Most of the floor plans (176 units, 85.5%) designed kitchen and dining spaces as one space, whereas the dining space was separated from the kitchen in larger housing units.

### ***Size of Kitchen and Dining Space***

The size of the kitchen and dining space varied from 68.72 to 547.11 square feet in total. The mean size of the kitchen space was 203.65 square feet. The ratio of this space to the interior space ranged from 11.8% to 21.1%, and the mean was 14.69% of the entire unit space. In the 1990s, the ratio of the kitchen and dining space to the entire interior space was 13% (Yim & Kim, 1998).

### ***Types of Kitchen***

Among the 207 kitchens, 37% were an L-type design, 14% were a broken U-type design, 10% were a U-type design with island, 10% were a double-I type design, and 10% were a U-type design. A total of 53 kitchens (26%) included an island combining with L-type or U-type. Most of the small and medium size-apartments had L-type kitchens, whereas large-size apartments had U-type designs, followed by L-type designs.

### ***Physical Openness to the Other Spaces***

Physical openness was examined to investigate whether the kitchen and dining spaces were open to the other spaces or not. Among the 207 units, 194 (93.7%) kitchen and dining spaces were open to the living room. The other 12 unit designs were semi-open kitchens that partly opened to the living rooms.

## Conclusion and Implications

Contemporary space planning of kitchen and dining spaces in Korean multifamily housing showed new kitchen space layouts that designed south-oriented kitchens, open floor plans, bigger kitchen and dining space size to accommodate various functions of these spaces, more diverse types of kitchens improving work efficiency, and visual and physical openness to the other spaces. Although almost 63% of the housing units still had kitchens facing north, a third of them had south-oriented kitchens indicating that kitchens may be a more important space in a house today.

In addition, the incorporation of dining spaces within the kitchens and creating a more open floor plan reflects the trend of making kitchen spaces more affordable to accommodate diverse family activities. The physical openness of the kitchen and dining spaces to the living rooms would provide visual openness to space users. The physical openness would also make them perceive these three spaces as a unified space and encourage their social interactions with their family members. The physical openness would encourage family members in the living room to communicate with the housewives in the kitchen.

Space planning characteristics from this study presented space-making efforts to design kitchen and dining spaces to be more functional, efficient, and affordable than in older housing. These efforts could also satisfy future residents' aesthetic needs. To continue further discussions on the effects of space making efforts, a post-occupancy evaluation study is suggested as a follow-up study. It would also be of interest to expand the study to do a cross-cultural analysis to compare space-making design efforts for kitchen and dining spaces between Korean culture and others.

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# THE WALKABLE ENVIRONMENT AND RESIDENTIAL SATISFACTION

Suk-Kyung Kim, Jaechoon Lee \*

## Introduction

New urbanism is the community design practice for building human-centered communities that make it possible for residents to live, work, shop, and play within a walkable distance of their residential areas (Heitmeyer & Kind, 2004). It denies automobile-oriented community planning or built-environment centered community planning. Since the Congress for the New Urbanism (CNU) was founded in 1993, the design and planning principles of new urbanism have been applied in numerous new community developments.

Though new urbanist community development started from mid-1980s, there has been limited number of studies exploring residents' opinions regarding these community design practices. Those studies have mostly focused on residents' sense of community in new urbanist communities (e.g. Kim & Kaplan, 2004; Plas & Lewis, 1996). It is hard to find out a previous study that explored the contribution of design characteristics of new urbanist communities toward residential satisfaction. This study explored how design characteristics of new urbanist communities influence residential satisfaction. Among the design and planning principles from the new urbanism, walkability in the community is one of the most essential characteristics. As one of the representative variables from the design characteristics of new urbanism, thus walkability was verified if it would contribute to residential satisfaction. This study explored correlations between residential satisfaction and wakability in the community.

Wakability has not been included in the previous residential satisfaction studies (e.g. Weidemann, Anderson, Butterfield, & O'Donnell, 1982) as an explanatory variable determining residential satisfaction. Thus, the result of this study could suggest walkability in a community as a new variable to measure residential satisfaction for future studies.

## Methods

To investigate residential satisfaction and to determine if a walkable environment contributes to residential satisfaction, this study selected two communities in Tallahassee, FL. These two communities had similar development histories, community size, community design, and demographic and housing characteristics. For the initial analysis, before the actual survey procedure, the housing prices of the two communities were investigated. Housing prices in the two communities ranged from \$100,000 to \$600,000, and the average housing prices were \$260,000 to \$280,000. These two

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communities primarily consisted of middle income families, but also provide a diverse range of housing prices.

The primary data collection method was a survey questionnaire sent to residents via mail. An index of residential satisfaction was developed based on the index from Weidemann, Anderson, Butterfield, and O'Donnell (1982) and Kim (1997) that would assess the design and planning implications in new urbanist communities.

To verify if walkability in the community would have stronger correlations with residential satisfactions than other variables, the questionnaire included eight more variables verified in the previous studies as the explanatory variables influencing residential satisfaction. Those variables were: 1) social space design encouraging residents to build up social networks, 2) respondents' social interactions, 3) children's social interactions with other children, 4) proximity to recreational spaces, 5) appearance of the house, 6) interior space, 7) safety from crime, and 8) social mix. Each question asked how satisfied the respondents were with each variable. The level of satisfaction was measured by Likert scales.

The sampling method employed a random sampling procedure. A total of 400 residents were randomly selected from the list of addresses obtained from a regional mailing service office in Tallahassee, FL. Survey questionnaires were sent out twice to the same addresses between August and December 2007. As of January 2008, 107 residents had responded to the survey questionnaire.

## **Findings and Discussions**

The two subject communities have about 950 households and 500 households, respectively. These two communities developed in the late 1980s and some houses were still under construction in December 2007. In addition to single family homes, each community has facilities such as natural parks, playgrounds for children, walking trails, a swimming pool, tennis courts, and a community center. One community had a golf course.

Sidewalk design in both communities basically consisted of continuous sidewalks from the individual houses to the community boundaries. Some sidewalks were disconnected from the others. The overall sidewalk conditions provided similar walking environments in both communities.

According to the results of the correlation coefficients using SPSS 16.0, among the eight variables, 'social space design encouraging residents to build up social networks' showed the highest correlation with the residents' overall satisfaction in their communities. 'Walkability in their communities' was the second highest variable correlated with overall residential satisfaction.



In addition to social space design and the walkable environment, respondents' social interactions with other residents and their children's social interactions with other children were closely correlated with residents' overall satisfaction in their communities.

The other variables such as the proximity to recreational spaces, appearance of their houses, interior design of their houses, and safety from crimes also had statistically significant correlations with residential satisfaction. But, the coefficients were comparably smaller. Table 1 shows Pearson's correlation coefficients between the variables and overall residential satisfactions. Social mix was negatively correlated with overall residential satisfaction but was not statistically significant.

**Table 1. Pearson's correlation coefficients**

| Evaluation Variable   | Overall Residential Satisfaction<br>(Pearson's Correlation) |
|---|---|
| Social spaces encouraging residents to build up social networks | .743**  |
| Walkability: Good walkable environment                          | .721**  |
| Social interactions   | .644**  |
| Children's social interactions with other children              | .585**  |
| Proximity to recreational spaces                                | .474**  |
| Appearance of the house   | .464**  |
| Interior space  | .412**  |
| Safety from crime   | .372**  |
| Social mix  | -0.034  |

\*\* Correlation is significant at the 0.01 level (2-tailed)

From the results, walkability in communities was verified to significantly contribute to residential satisfaction. It could be implied that residents consider the walking environments when they evaluate their community. In addition to the typical variables to measure residential satisfaction such as appearance of the house, interior space design, or safety from crime, walkability should be considered in residential satisfaction studies in the future. Community designers need to accommodate these satisfaction results by residents and should seriously consider the walking environment in their design as well as social spaces encouraging social interactions between residents and children.

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## **RESIDENTIAL ENERGY AUDITS: A TOOL FOR ENHANCING CONSUMER ENERGY EFFICIENCY AND CONSERVATION IMPROVEMENTS**

Sarah D. Kirby, Autumn Guin, Amy G. Chilcote\*

The Energy Information Administration (2008) projects that residential electricity costs will increase in 2008 by 5 percent in 2009 by 10 percent. Homeowners are looking for ways to reduce energy consumption and increase monetary savings. As a specific response to residential energy related issues, the E-Conservation Program was developed. The E-Conservation Program focuses on behaviors and technology to assist homeowners in reduction of energy consumption and related expenses. While the primary purpose is to provide monetary savings to consumers, a secondary purpose is to reduce environmental impacts through carbon dioxide reduction.

### **Methodology**

A residential energy audit is a home energy efficiency evaluation performed by a trained home energy rater. An energy audit is one tool to help homeowners identify home improvements that may increase efficiency, reduce energy consumption, and enhance comfort.

The E-Conservation program uses energy audits to help homeowners identify potential energy savings and improvements. Homeowners were offered subsidized home energy audits after attending an E-Conservation workshop. County extension agents, who conducted the workshops, agreed to monitor changes made by homeowners as a result of the audit. County agents obtained survey data twice per year on homeowners' increased efficiency, reduced energy consumption, and enhanced comfort. In order to be eligible for an audit:

Home criteria:

1. No larger than 2,000 square feet
2. One HVAC system
3. Age of home 5 or more years

Homeowner criteria:

1. Attend an E-Conservation workshop.
2. Agree to report changes at 6 and 12-month intervals.
3. Agree to pay \$100.00 after appointment with audit rater. The E-Conservation program subsidized the \$350 audit, with \$250 coming from the program.

Home Energy Rating System (HERS) certified raters performed the energy audit. Audits included a thorough examination of the home and a blower door test to identify air leakage. The examination included inspection of mechanical, heating and ventilation

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systems, insulation, and a walk through inspection of home appliances. Each homeowner was given a standardized report listing potential no/low cost improvements and higher cost improvements to make the home more energy efficient.

Measurement of audit program effectiveness includes: 1) the adoption of the retrofits, technologies and/or behaviors recommended, and 2) energy savings as a result of changes made.

## Results

For the 93 energy audits conducted, follow-up surveys are in various stages. The goal of the follow-up surveys is to track consumer experiences of positive changes in comfort, lowered energy consumption, and reduced energy spending. Currently, 6-month follow-ups of 72 homeowners, and 1-year follow-ups of 3 homeowners are complete. Table 1 lists characteristics of the homes and homeowners that have completed the 6-month follow-up.

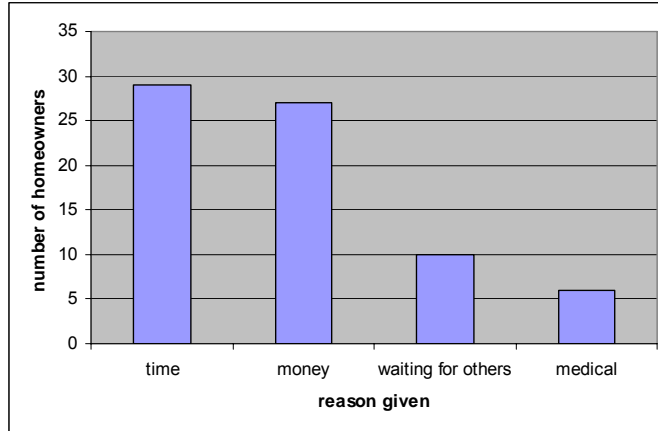
**Table 1. Characteristics of Participants' Homes**

| Characteristic                      | Number            |
|-------------------------------------|-------------------|
| Size of house (mean)                | 1,748 square feet |
| Age of homeowner (mean)             | 38 years          |
| 2005 Monthly utility (mean)         | \$137.14          |
| 2006 monthly utility (mean)         | \$146.56          |
| Energy sources (percent of houses): |                   |
| Electricity                         | 100%              |
| Propane                             | 31%               |
| Natural gas                         | 39%               |
| Fuel oil                            | 16%               |

Homes sizes varied, with the average home size slightly under 1750 square feet. The average age of the homes was 38 years. The average monthly utility costs for 2005 and 2006 was below \$150. All homes used electricity as a source of power. Homes did vary in their supplemental energy source, however. The most common additional source of fuel was natural gas, followed by propane. Fourteen percent of the homes were fueled by electricity alone.

Out of 72 homeowners, 3 made one low/no cost change, 21 made two to four changes, and 42 made five or more changes. Eighteen homeowners made one high cost change, twenty made two to four changes, and four made five or more changes. The median amount spent on low cost improvements was \$78.00 and included: changing thermostats, changing filters, cleaning refrigerator coils, installing compact fluorescent lighting, insulating hot water heaters, sealing air leaks, sealing duct leaks, insulating attic stairs, caulking, and weather stripping. Homeowners spent a median of \$450.00 on high cost improvements that included: purchasing Energy Star appliances

and HVAC equipment, contractor air sealing, contractor duct sealing, adding insulation to the attic, and closing crawl spaces. Homeowners were asked to provide reasons they were unable to make changes. Each homeowner was allowed to give as many reasons as they felt necessary.

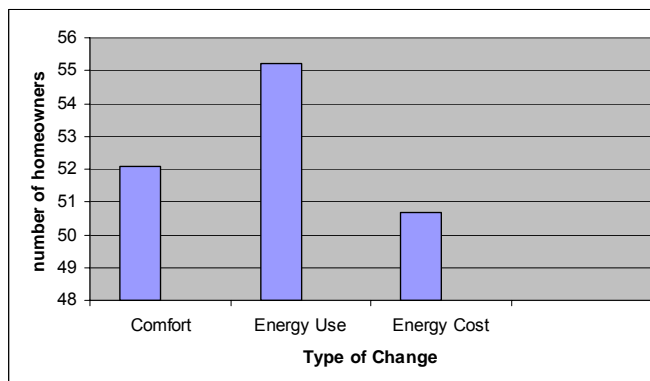


**Figure 1. Homeowner reasons for not making changes.**

Of the 72 households that completed the six-month follow-up, homeowner utility bills were compared with the previous year/same month. The average savings were:

- 4 kwh per day per homeowner
- 120 kwh per month per homeowner
- 3843 kwh per month for group
- 46,118 kwh per year for group
- 95,003 pounds of CO2 per year for group (Energy Star, 2007)

Homeowners indicated changes following the audit increased comfort, reduced energy use, and reduced energy costs (Figure 2).



**Figure 2. Homeowner perceptions after audit change.**

## **Conclusions and Implications**

Home energy audits provided incentives to homeowners to make energy-saving changes to their homes. As a result, homeowners reduced kilowatt usage, reduced monthly utility costs, increased comfort levels, and reduced carbon footprints.

Homeowners reported time and money were primary obstacles to implementing retrofit measures. Homeowners indicated providing a list of qualified contractors may make it easier to retrofit homes. As the focus on energy continues, it is important to develop the capacity of local contractors and trades to make energy efficiency repairs and improvements.

The Energy Star Change a Light, Change the World 2007 Campaign Facts and Assumptions Sheet provides factors to compute carbon emissions and average kWh costs. Using these factors, the 46,118 kWh per year saved for this group of 72 homeowners; at the average North Carolina electric rate of \$.0912 per kWh is the equivalent of \$4,206. Delivery of the program to 72 homeowners cost \$18000 at the rate of \$250 per homeowner paid by the North Carolina State Energy Office. If the rate of 4 kWh per homeowner per day remained stable over a 5-year period, this would provide savings of \$21,030. However, one year later, homeowners continue to make changes to reduce their energy consumption promising a return on investment of more than \$2 in energy savings for every \$1 spent within the first 10 years following the program.

Improvement costs were a concern for some of the homeowners. Future collaborations with local efficiency programs, community block grants and other funding agencies may assist homeowners, especially those with limited resources, in making energy efficiency improvements.

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# THE CONSUMER EDUCATION PROGRAM FOR RESIDENTIAL ENERGY EFFICIENCY

Joseph Laquatra, Mark Pierce, Nicholas Helmholdt\*

## Introduction

The U.S. residential sector is responsible for 21% of total energy consumption in the country (EIA, 2008). The potential for substantial decreases in this figure is not realized for various reasons, including a lack of knowledge about improving home energy efficiency among Americans (Tonn & Peretz, 2007) and the fact that Energy Star homes comprise just over 12% of new homes built in the United States (EPA, 2007).

This paper highlights a successful partnership between Cornell Cooperative Extension (CCE) and the New York State Energy Research and Development Authority (NYSERDA) in an ongoing statewide effort to transform markets for energy efficiency. The partnership demonstrates the ability of the Cooperative Extension Service to educate various market segments in local communities about residential energy efficiency. This partnership, known as the Consumer Education Program for Residential Energy Efficiency (CEPREE) – has been ongoing since 2003. During this time the program has been implemented in 43 counties in New York State and New York City. In the first four years of the program, 815,788 New Yorkers attended workshops on energy efficiency; 52 million potential media impressions were made on the topic; 3.6 million potential impressions were made through public exhibits; and Extension Educators implemented creative and effective community-based programs.

## Program Highlights

County Extension Educators have promoted residential energy efficiency issues through a number of channels including county fairs, workshops, meetings, and mass media campaigns. In addition, many Extension Educators have included residential energy information into their seminars on household finance. These methods are encouraged and supported by Cornell faculty.

At the beginning of each program year, Educators willing to participate in the program submit a short plan of work. These plans are reviewed by a NYSERDA project officer and Cornell faculty. When they are approved, Extension Educators receive mini-grants to support their program efforts. Grant amounts have varied between \$2,500 and \$3,000 per year. Educators are given wide latitude in use of these funds; creativity is encouraged and supported.

At the beginning of each program year, Educators participate in an inservice education program that covers new developments in energy efficiency and NYSERDA

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programs that offer financial incentives for consumers to improve levels of energy efficiency in their homes. Breakout sessions include one in which Educators meet in small groups and share their programming strategies.

Table 1 summarizes outreach efforts of extension educators over the first four years of the partnership. Because of differences in grant amounts to Cornell each year, the number of participating counties has varied.

**Table 1. CEPREE Outreach Efforts**

| Event/Impact  | Year         |              |            |             |
|---|--------------|--------------|------------|-------------|
|   | 2003         | 2004         | 2005       | 2006        |
| Participating counties                                | 24           | 30           | 34         | 30          |
| Presentations   | 261          | 485          | 402        | 393         |
| # reached via presentations                           | 5,174        | 14,780       | 11,312     | 17,289      |
| Public education events                               | 42           | 220          | 287        | 161         |
| Potential impressions from public education events    | 1.3 million* | 128,372      | 109,197    | 955,000     |
| County fair exhibits                                  | 7            | 26           | 30         | 24          |
| Potential impressions from Fair Exhibits              | *            | 2.1 million  | 2 million  | 1.2 million |
| Press Releases  | 145          | 159          | 241        | 93          |
| Potential impressions from press releases             | 19 million** | 14.9 million | 14 million | 3.8 million |
| Newsletter articles                                   | **           | 141          | 68         | 117         |
| Households receiving a copy of the newsletter article | **           | 176,384      | 56,059     | 133,700     |

\* In 2003 the number of potential impressions from public education exhibits included the county fair exhibits. They were not reported separately, as is currently the case.

\*\* Newsletter and press releases were not reported separately during the 2003 program year.

In 2005 Cornell funds were used to purchase two Energy Bikes. An Energy Bike is a stationary bicycle with a generator attached to the rear wheel. Attached to the generator is a panel with incandescent and compact fluorescent light bulbs, a hair dryer, a fan, and a small television. These electric devices are powered by the person on the bicycle (Figure 1). Extension Educators have noticed that the Energy Bike has been very effective at communicating a few key pieces of their message, especially with the different amounts of energy necessary to power the light bulbs. Bikers and onlookers can easily comprehend how harder pedaling translates into more lit bulbs. The incandescent bulbs take substantially more work to power up than the compact fluorescent bulbs. The Energy Bike has become a popular feature of county fairs held



each summer. It was also highlighted at grade schools across New York State and has been especially popular at Environmental Awareness Field day events.



**Figure 1. Energy Bike**

Fort Drum Military Base is located in Jefferson County, New York. In September 2006 an Educator in that county who is a CEPREE participant worked with the manager of residential buildings at the base to change 18,000 75-watt incandescent bulbs to 15-watt compact fluorescent bulbs. Data were collected for six months after the change-out. Reductions in electricity consumption and carbon dioxide emissions are shown in Tables 2 and 3.

**Table 2. Reduction in Electricity Consumption**

| Year        | October   | November  | December  | January   | February  | March     | Totals    |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 2006 - kWh  |           |           |           |           |           |           |           |
| Consumption | 1,485,607 | 1,691,928 | 1,617,589 | 1,580,479 | 1,439,291 | 1,451,180 | 9,266,074 |
| 2007 - kWh  |           |           |           |           |           |           |           |
| Consumption | 1,021,185 | 1,322,318 | 1,470,543 | 1,272,946 | 1,419,913 | 1,191,904 | 7,698,809 |

Total reduction in electricity consumption for six month period: 1,567,265 kWh.

**Table 3. Reduction in CO<sub>2</sub> Emissions\***

| Year                   | October   | November  | December  | January   | February  | March     | Totals    |
|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 2006 - CO <sub>2</sub> |           |           |           |           |           |           |           |
| Emissions (lbs.)       | 1,277,622 | 1,455,058 | 1,391,127 | 1,359,212 | 1,237,790 | 1,248,015 | 7,968,824 |
| 2007 - CO <sub>2</sub> |           |           |           |           |           |           |           |
| Emissions (lbs.)       | 878,219   | 1,137,193 | 1,264,667 | 1,094,734 | 1,221,125 | 1,025,037 | 6,620,976 |

\* Assumes an average of 0.86 lbs. CO<sub>2</sub> produced per kWh consumed (Source: U.S. Department of Energy, 2002).

Total reduction in carbon dioxide emissions for six month period: 1,347,848 lbs.

Other program activities include statewide Energy Town Meetings that are held through Cornell's wide area network; County Energy Forums that feature Cornell faculty and other speakers who address conservation, renewable energy systems, and alternative energy sources; 4-H community projects to raise awareness of energy efficiency; and others.

The Cooperative Extension Service (CES) throughout the United States is recognized as a credible, unbiased source of consumer information. With linkages to resources of the Land Grant Universities, CES is able to draw on timely research to develop effective educational programs. Energy efficiency is a topic with renewed importance as a program area.

Depending on the willingness of state energy offices to fund such programs, CEPREE could be replicated in other states and could lead to substantial gains in energy efficiency in the residential sector. Tonn and Peretz (2007) reported that state-level programs to promote energy efficiency can result in a 20 percent reduction in residential energy use. In light of increasing global demand for energy and rising prices, educating consumers about practical ways to lower energy use is an appropriate role for CES.

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# CHILDHOOD LEAD POISONING HAZARDS IN FLORIDA

Hyun-Jeong Lee, Susan W. Williams\*

## Background

Lead poisoning has been a threat to public health for more than 100 years. In the past, lead was used to make paint for easier application. The use of lead-based paint was banned in the United States in 1978, but residents of pre-1978 homes can absorb lead through peeling lead paint chips or air with lead dust when previous lead-based paint has not been completely abated. For these reasons, pre-1970 homes have been considered a primary source of lead exposure.

During the last couple of decades, the median blood lead concentration of children in the United States has dramatically declined due to removal of lead from gasoline (Rogan & Ware, 2003), and to an increase in public awareness. However, lead hazards of pre-1970 homes still exist and consumer products that contain lead have been continuously found and recalled.

This study oversees childhood lead poisoning risks in Florida based on state surveillance data and U.S. Census data. Implications for outreach education activities are also discussed.

## Health Impacts of Lead Poisoning

Lead poisoning has been proven to influence development of brain and nervous systems, to slow down physical growth, to cause behavior and learning problems, and can lead to death (U.S. Department of Housing And Urban Development (HUD), 2006; U.S. Environmental Protection Agency (EPA), 2008). Children under 72 months of age are at greater risks because the lead exposure can be detrimental to development of their body systems.

The Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) defined blood lead level (BLL) at or above 10 micrograms per one deciliter (10µg/dL) as a level of concern. BLL at or above 10µg/dL is called elevated BLL (EBLL). However, recent studies report that even a lower blood lead level can result in serious problems of children's brain development (Canfield, Henderson, Jr., Cory-Slechta, Cox, Jusko, Lanphear, 2003; Lang, 2007).

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## Lead Poisoning Hazards in Florida

Florida Childhood Lead Poisoning Prevention Program (FL CLPPP) in the Florida Department of Health indicates that Florida ranks eighth in the United States for number of estimated children with EBLLs (FL CLPPP, 2006). According to the FL CLPPP 2006 annual surveillance report (2008), more than 2,500 new cases with EBLLs were reported in Florida between 2002 and 2006 (Table 1). The number of new cases with EBLLs has gradually decreased from 2002 to 2005. However, the number increased again in 2006. Furthermore, the percentage of new cases with BLLs above 15µg/dL increased.

**Table 1. Reported new cases with elevated blood lead levels from 2002 to 2006**

| Blood lead level (µg/dL) | 2002           | 2003           | 2004           | 2005           | 2006           |
|--------------------------|----------------|----------------|----------------|----------------|----------------|
| 10 – 14                  | 517<br>(70.9%) | 446<br>(71.9%) | 346<br>(72.8%) | 226<br>(74.3%) | 273<br>(70.2%) |
| 15 or above              | 212<br>(29.1%) | 174<br>(28.1%) | 129<br>(27.2%) | 78<br>(25.7%)  | 116<br>(29.8%) |
| <b>Total</b>             | <b>729</b>     | <b>620</b>     | <b>475</b>     | <b>304</b>     | <b>389</b>     |

Source: 2006 Annual Surveillance Report (FL CLPPP, 2008)

Note. Numbers in parentheses are percents of total new cases in each year.

The report indicated that 152,700 children under 72 months of age took blood lead screening in 2006. Considering the estimated number of children under 72 months of age in Florida was 1,328,310 in the same year (2006 American Community Survey), the blood lead screening rate was only 11.5%. The low screening rates leads to the assumption that there could be additional children with EBLLs that have not been identified.

Among a total of 67 Florida counties, population in the eight counties that had the highest percentages of children with EBLLs of total children screened in the past represented over 55% of the total population and 52% of the total housing units in Florida in 2006. Special concern for these eight at-risk counties is mainly associated with poverty and foreign-born populations. Households with lower income levels tend to live in older housing units. FL CLPPP estimated that approximately 8% of children under 72 months of age living in poverty reside in high-risk housing units that were built before 1978 (FL CLPPP, 2006).

Over 20% of Florida residents and 28% of the residents of the eight at-risk counties are of Hispanic Origin, and Florida residents of Hispanic origin are more likely to be living in poverty than non-Hispanic population. Table 2 shows the percent of families with related children under 5 years of age below poverty level. The poverty rate for families of Hispanic origin with related children under 5 years of age in 2006 was greater than other families.

**Table 2. Families with related children under 5 years of age below poverty level in 2006** (% of total families with related children under 5 years of age)

|                     | Eight at-risk counties | Florida |
|---------------------|------------------------|---------|
| Hispanic origin     | 17.0%                  | 19.6%   |
| Non-Hispanic origin | 13.7%                  | 14.0%   |
| Total               | 14.8%                  | 15.5%   |

Source: 2006 American Community Survey

In 2006, 15% of Florida population and over 26% of total population in the eight Florida counties were foreign born. Several factors contribute to making this population at particularly high-risk for lead exposure, including exposure in the country of origin, poverty, severe malnourishment, and cultural practices. One of the eight at-risk counties has estimated that 50% of its new cases are Hispanic, 20% are Haitian and at least 25% are immigrants screened at the Refugee Health Assessment Center (FL CLPPP, 2006).

### Conclusion

Based on the state annual surveillance report and the U.S. Census data, the current situation of childhood lead poisoning in Florida is summarized as follows:

- Blood lead screening rate is very low (11.5%).
- The number of new cases with lead poisoning has decreased over years, but there still are many children with the potential of lead poisoning.
- Poverty and minority populations are major risk factors of potential childhood lead poisoning in Florida.

Thus, it is important to increase public awareness to prevent further lead poisoning in Florida through diverse outreach education activities. Households with poor economic conditions tend to show low education attainments and low literacy levels. Thus, in addition to the print materials and electronic formats (Internet, DVD or CD), media approaches need to be considered to reach the target population more effectively. Also, the information needs to be translated in different languages.

To meet the needs, a media campaign to increase public awareness on the childhood lead poisoning by faculty members of the University of Florida with grant fund from the U.S. Environmental Protection Agency and with partnership with the FL CLPPP. The media campaign included cable TV advertisements, radio public service announcements (PSAs) and posters in both English and Spanish in four Florida counties (Hillsborough, Holmes, Miami-Dade, Washington).

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# AN ELUSIVE CONCEPT: AGING IN PLACE

Megan Lee, Carmen Steggell, Toshiko Yamamoto\*

## Introduction

There is an increased need to create and enhance residential environments for aging adults due to the global demographic shift towards becoming an aging society. As the United States prepares for the increasing numbers of aging adults, many disciplines and practitioners want to contribute to understanding and facilitating *aging in place*. The phrase aging in place is widely used to describe a certain phenomenon, namely the desire to age in a familiar environment. The demographic shift and subsequent need to understand residential environments for aging adults have caused an influx of multidisciplinary involvement in addressing issues related to aging in place. The benefits of multidisciplinary attention to any social issue are necessary, especially when the scope of the issue is broad like aging in place. The disadvantages to multidisciplinary attention to social issues are often apparent in the diverse use of concepts and the lack of cumulative findings. Understanding aging in place in-depth and across varied uses will assist with future research regarding aging and residential environments.

## Purpose of the Research

This research asks the question, what is the current state of knowledge of aging in place as a concept? The purpose of this study is to clarify definitions of aging in place from the collective uses over time and across diverse disciplines. Concept analyses are done on concepts that are unclear (Pedersen, 2007) or widely used (Rodgers, 2000). When concept attributes are widely used, the complex meanings can be misrepresented or overlooked. The concept analysis will help identify the issues concerning aging in place and multidisciplinary use while highlighting the use of the term as a theoretical concept. Due to the concept's wide use across disciplines, it is imperative that housing researchers continue to maintain key involvement and management of the concept's use.

## Method

In order to capture the broadest possible uses of aging in place, four distinct electronic databases were selected which include (a) Academic Search Premier, (b) Ageline (AARP), (c) CSA Sociological Abstracts, and (d) Google Scholar. The selected databases provide citations from both ordinary and scholarly sources across a broad range of disciplines and time frames. The search criteria for "ag(e)ing in place," or "age in place" produced a sampling frame of 912 resources. After removing duplicate and unacceptable resources, 306 useable resources remained. After systematic sampling was completed with 20% of the sampling frame, the sample was 62 resources.

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The evolutionary concept analysis method (Rodgers, 2000) was used to systematically collect data. The evolutionary method of concept analysis collects data regarding the definitions, uses, attributes, antecedents, consequences, surrogate terms and related terms of a concept. Data analysis employed content analysis methods of manifest and latent coding. Frequencies, themes, and subcategories were identified during data analysis.

## Results

### **Definition of Aging in Place**

By combining the defining characteristics from the 44% of scholarly and non-scholarly resources that offered explicit definitions, the findings provide the following commonly used definition:

*Aging in place is aging in a familiar environment accompanied by appropriate services to accommodate changing needs in order to delay or avoid institutionalization or higher levels of care.*

### **Attributes of Aging in Place**

The findings indicate that AIP has a larger social significance than the commonly used definition. Two attributes themes were identified that expand the meaning of AIP. The first attribute theme of AIP is *A Paradigm Shift Towards an Evolving Social Movement of Aging and Place*. The most defining shift in contemporary aging and place was the structural focus to deinstitutionalize aging adults' residential environments. The second attribute theme of AIP is *The Balance of Innovative Parts that Support the Evolving Social Movement of AIP*. Three subthemes represent innovative ways of dealing with the complex issues related to AIP which include: *Top-Down Innovative Actions and Solutions, Collaboration of Multiple AIP Actors, Independence is Empowerment*.

### **Antecedents & Consequences**

There are two levels of the antecedent and consequence findings that illustrate both the common use and social movement use (Table 1).

**Table 1. Antecedent & Consequence**

|             | <b>Common Lexicon Use</b>                  | <b>Social Movement Use</b>                                     |
|-------------|--|--|
| Antecedent  | 1. Desire to age in a familiar environment | 2. Social and moral responsibility to protect aging population |
| Consequence | 1. Delay Institutionalization              | 2. Sweeping Cultural Change                                    |



### ***Derived Definition of Aging in Place***

The findings from the attributes, antecedents and consequences have stimulated a derived definition of AIP.

Aging in Place (AIP) is a contemporary social movement which promotes an independence and inalienable right of individuals aging in their desired environment while maintaining access to appropriate levels of care. A shared equal responsibility between aging individuals and AIP providers involves empowerment and comprehensive approaches crucial to quality of life which ensures the implementation of policy, service, program and product solutions fundamental to AIP. AIP solutions are developed from coordinated efforts using multidisciplinary avenues coupled with an innovative and complex balance of parts that facilitate the diversity and evolving needs of aging adults and the aging industry.

### **Conclusion**

The concept of AIP is the reflection of the evolving perceptions of aging and place. AIP is about allowing individuals to age in a desired environment. However, the current state of AIP indicates that the past, present and future of AIP is motivated by a larger social movement based on the collective concern to prevent aging in the wrong residential environment. Thus, to achieve the goal of AIP, collaborations of diverse teams are being formed and large scale solutions are being developed and implemented. With an increase in the aging population approaching, solutions must meet the needs of the masses, while simultaneously supporting individualized and changing needs. The future of AIP is in achieving balance of innovative solutions.

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## USING RESEARCH TECHNIQUES TO TEACH HOUSING THEORY

Jean Memken\*

A major challenge for every housing educator is to teach the theoretical constructs related to housing. Students typically understand housing as a product – a commodity that can be acquired through a number of ways, a consumer good to be used, and a basic necessity for every person. But many students have difficulty understanding housing as a process – a continual quest for achieving the “right” kind of housing based on family composition, status, and norms. This theoretical approach to housing is often too abstract for students to fully comprehend, and yet it is exceptionally important for them to understand if they hope to address the specific problems they will face as housing professionals in the real world. The purpose of this presentation is to show an example of how conducting research related to family systems functioning can help housing students better understand the theoretical constructs related to family housing decisions and behavior.

Family systems theory (Deacon and Firebaugh, 1981; Paolucci, Hall and Axinn, 1977; Rice and Tucker, 1986), the foundation of the study of family and consumer sciences, serves as a basis for this discussion of teaching theory to undergraduate housing students. Deacon and Firebaugh (1981) define a system as an integrated set of parts that work together to accomplish a goal. The family system includes all family members, and everything they bring to the family – their skills, intellect, and talents.

Theory, primarily systems theory, has been taught using a variety of interactive ways. Alexander (2000) used selected clips from popular movies to teach systems theory to healthcare professionals. Hannerness, Darling-Hammond, and Shulman (2001) taught theory through the use of writing cases related to teaching situations in the classroom for secondary education majors. Family mapping is a technique that has been used successfully to teach family systems concepts to college students in family life education courses (Wedemeyer & Grotevant, 1982). Sipe and Doherty (1993) proposed teaching graduate students in research methods classes the contextual problems of family systems research by having them interview researchers to better understand the conditions and decision-making process they go through to carry out an actual study.

Although there is no clear empirical support for the use of experiential learning activities in the classroom (Kluge, 2007), research has shown some advantages to this type of learning activity. Experiential experiences have been found to increase student motivation (Soslau & Yost, 2007), and undergraduate students have expressed a clear preference for experiential learning activities in the classroom (Hawtrey, 2007). Moreover, when experiential learning was combined with group interaction, a significantly greater learning of group concepts resulted (Pistole, Kinyon & Keith, 2008).

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Morris and Winter's model that describes housing adjustment behavior uses family systems theory as a basis for explaining the conditions, decisions and processes involved in the family dynamics of acquiring housing that meets the family's needs. In the Morris and Winter model, households compare their current housing condition with the cultural norms related to housing and also to their own family norms. When the housing is deemed deficient after this comparison, the household can make residential adaptations in the form of mobility or residential alterations, or they can make adaptations to the household by either changing the norms, the organization or the composition of the household to fit the current housing conditions (Morris and Winter, 1978).

Morris and Winter tested this model in a number of studies over a 40 year time span. Survey research was the means by which data were collected to determine a household's housing adjustment behavior as well as the household's demographic history (household composition, income, housing characteristics, and place of residence). By comparing a household's demographic history with their housing adjustment history, Morris and Winter, as well as many other researchers, showed that households adjusted their housing in response to a deficit as defined by current family and housing norms. They were able to illustrate the various components of their model through the quantitative data gathered in a variety of studies both in the United States and abroad.

Using a modified version of the actual data collection instrument used by Morris and Winter, the author assigned students to collect data from households they were familiar with and then use their data to describe the theory of housing adjustment. The modified data collection instrument included two charts – one tracing the history of the household and one gathering information about the various residences in which the household resided, including tenure, structure, space and neighborhood.

Most students used their own families for this assignment. After gathering the data, they were required to write a narrative using Morris and Winter's housing adjustment model to describe what their household had done in terms of acquiring housing and why they had made these particular housing decisions.

The results of this assignment were extremely positive as determined by the quality of student and their subsequent scores on a test related to this content. Students gave insightful descriptions of their household's housing adjustment behavior and showed a better understanding of the housing adjustment theory than before they completed this assignment. For example, one student wrote:

After our marriage in 2001, we considered the cultural norms of the traditional single family home and determined that we had a housing deficit. This deficit was both perceived and salient so we began looking for a single family dwelling. We found a single family home that was within our price range. Residential mobility occurred and we moved into the home in August 2001.

Another wrote:

Therefore, my older sisters had to share a bedroom, which was considered okay by our family norms, but not the cultural norms. This change was a normative family adaptation. Luckily, there have not been any normative housing deficits large enough to necessitate compositional adaptations within the household.

Not only did the students better understand housing adjustment theory, they had the opportunity to carry out some survey research methods and also apply critical thinking skills to the interpretation of their data.

Students in Family and Consumer Sciences programs, particularly in family resource management programs related to housing, need to not only learn problem solving for themselves, but how to help others solve problems. They need to apply the theories of real-life problems for themselves and for others. Using research as a means to teach housing adjustment theory is one way to help students understand the nature of housing as a process and give them an opportunity to apply theoretical constructs to real-life situations. Although more research is needed to truly understand the relationship between this pedagogy and actual learning, results from this classroom exercise support the notion that using research methods to teach theory allows students to engage in more sophisticated thinking and practices that will make them better problem solvers as they help people in their quest to find appropriate housing.

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# MASS CUSTOMIZATION OF HOMEBUILDING AS A STRATEGY FOR COMPETITIVE ADVANTAGE

Isabelina Nahmens\*

## Introduction and Research Objectives

In 2008, the housing industry faces another challenging year and the burden is on homebuilders to persuade consumers to consider the home buying opportunities in today's market. Builders are dealing with a buyer's market--high inventory, low consumer confidence in real estate, and a national credit crisis. Some strategies identified by builders to survive this market include reducing inventory (by leasing or eliminating spec homes) and reducing overhead cost. Furthermore, most of the builders interviewed in a recent study, agreed on the need of feedback from real estate agents on prospect buyers' needs and wants, and market trends (Nation's Building News, 2008).

In buyer's markets such as today's, homebuyers have the opportunity to choose and demand houses that reflect their personal and unique style; homes that are individually configured according to their needs and wants. Traditional offerings, designed for average requirements, create customer sacrifice gaps from the difference between a company's offering and what each customer truly desires (Pine & Gilmore, 1999). Builders know that homebuyers prefer to change standard floor plans, components, equipment, and finishes. However, builders cannot afford to sacrifice production efficiency by deviating from their standard models. Changes can disrupt the entire estimating, production, delivery, and management processes, making it even more difficult to manage homebuilding effectively in any market (NAHB, 2004). If builders comply with homebuyers' customizations requests, how is their productivity impacted? This research aims at informing this challenge by investigating the levels of customization and efficiencies of factory built homes, particularly HUD-code (Housing and Urban Development) and modular. A HUD-code home is built in the factory under a federal building code administered by the U.S. Department of Housing and Urban Development; whereas a modular home is built to local building codes similar to site built homes (e.g. stick build).

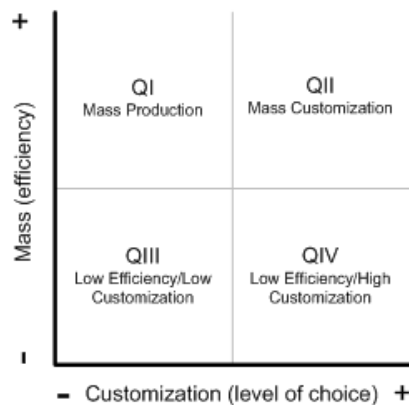
The literature has identified mass customization as a potential strategy to solve the issue of sacrificing efficiency for customization, by delivering to homebuyers exactly what they want, at reasonable prices and lead time. Customization in the housing industry context, might imply changes based on customer preferences of varying difficulty, ranging from dimensional changes (e.g., floor plan), to changes in features and/or finishes. Da Silveira et al. (2001) argue that mass customization can be a reality in today's world due to the availability of new flexible manufacturing and information technologies that enable production systems that deliver higher variety at lower cost.

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The concept of mass customization has been proposed as a potential strategy for competitive advantage; however, companywide implementation of mass customization is hindered by the lack of validated operational strategies to customize on a mass scale (Tseng & Piller, 2003).

This paper summarizes results of an industry-wide survey on the impact of product customization on plant production efficiency by characterizing how much product choice is currently being offered by U.S. factory built homebuilders and the impact of customization on plant production efficiency. Product choice has two main dimensions: the number of home models offered (variety- different floor plans) and the degree of customization permitted (e.g., dimensional changes, finishes). For instance, a plant might offer a large number of home models, but limit the degree of customization to a predetermined set of options (e.g. raw material or/and component substitution). Hence, this paper explores mass customization based on plant performance. A mass customization model is shown in Figure 1, which displays the relationship of efficiency (mass) and level of choice (customization). The ideal combination of customization and efficiency lies in quadrant QII (high efficiency and high customization).



**Figure 1. Mass Customization Model (Nahmens, 2007)**

### Methodology

The information was collected via a large scale survey of factory built homebuilders, primarily HUD-code and modular manufacturers. The survey was distributed to the participating plants and collected during Summer of 2005. The survey, developed by Manufactured Housing Research Alliance (MHRA) in collaboration with University of Central Florida researchers, included various measures of the level of choice offered and plant performance (MHRA, 2007). The level of product choice offered included product type (e.g. modular or HUD-code), product mix (e.g. models-floor plans produced), and degree of customization (e.g. none, minor, extensive, and custom). A broad range of plant characteristics and operational performance indicators were also documented for each participating plant. Then the data from the survey were processed and analyzed for: 1) descriptive characteristics including basic statistics of

the survey and, 2) analysis of the impact of customization on plant production efficiency. Since the data was not normally distributed, nonparametric statistical techniques were used, such as Spearman's correlation analysis to identify the magnitude and orientation of the relationship.

## Results and Conclusions

The target population for the survey were 150 factory built homebuilders (operating 275 plants) across the U.S., with a response rate of 51% (141 plants: 29 (21%) produced modular and 112(79%) produced HUD-code homes). A summary of product choice offered is displayed in Table 1.

**Table 1. Summary of Product Choice Offered**

|                                     | HUD-code plants | Modular plants  |
|-------------------------------------|-----------------|-----------------|
| Models offered in literature (avg.) | 92              | 82              |
| Models produced (avg.)              | 29              | 35              |
| Most common level of customization  | None (42%)      | None (7%)       |
|                                     | Minor (43%)     | Minor (45%)     |
|                                     | Extensive (15%) | Extensive (38%) |
|                                     | Custom (1%)     | Custom (10%)    |

A summary of participating plant performance on 10 basic operational performance measures is provided in Table 2.

**Table 2. Summary of Average Operational Performance**

| Operational Performance Metrics                          | HUD Code plants | Modular plants |
|--|-----------------|----------------|
| Plant size/current production (sqft/mod/week)            | 4,426           | 7,067          |
| Material inventory turns/year                            | 22              | 13             |
| Sales \$/module  | \$20,720        | \$26,054       |
| Labor cost (% of sales)                                  | 14%             | 17%            |
| Labor cost/module  | \$3,022         | \$4,340        |
| Current production (modules/week)                        | 33              | 17             |
| Capacity utilization (current production/plant capacity) | 70%             | 66%            |
| Backlog (% of annual production)                         | 7%              | 14%            |
| Customer Satisfaction                                    | 89%             | 90%            |
| Service cost/module                                      | \$815           | \$823          |

Table 3 summarizes finding from the analysis of the impact of customization on a plant's production efficiencies. Customization is significantly correlated with five operational performance measures for HUD-code plants. These relationships are positive, with the exception of customer satisfaction. Only plant size per current production has a significantly positive correlation with customization for modular plants.



In other words, plants that build more customized homes are less efficient in the use of their facilities.

**Table 3- Summary Table for Degree of Customization**

|          |                                      | Relationship<br>(Spearman's<br>Correlation) |
|----------|--------------------------------------|---|
| HUD-code | Sales per module                     | r=0.266,<br>p=0.007                         |
|          | Labor cost per module                | r=0.316,<br>p=0.001                         |
|          | Service cost per module              | r=0.410,<br>p=0.000                         |
|          | Labor cost (% of sales)              | r=0.252,<br>p=0.011                         |
|          | Customer Satisfaction                | r= -0.240,<br>p=0.036                       |
| Modul    | Plant size per current<br>production | r=0.375, p=0.050                            |

The results of the industry survey revealed that both HUD-code and modular homebuilding plants offer many more models in their marketing literature than they actually produced (Table 1). Typically, HUD-code plants offer more models than modular plants (an average of 92 models vs. 82 models for modular), yet their customer satisfaction ratings are significantly lower. While offering fewer models (unique floorplans), modular plants actually produce a higher proportion of these offerings models and provide more extensive customization. Perhaps the HUD-code industry strategy of offering a large number of models and limiting the degree of customization may not be the best approach to mass customization.

In general, operational performance was found to deteriorate with an increase in customization. Furthermore, HUD-code plants were observed to be less successful than modular plants in offering increased choice without deterioration in operational performance. These results revealed that plants offering increased product choice are likely to suffer poorer labor productivity, higher production costs, more quality issues, less satisfied homebuyers, and lower space efficiency. Therefore, industrialized housing manufacturers have not reached the ideal of mass customization (quadrant QII in the Mass Customization Model- Figure1) and are paying a price for offering more choices to their customers. In order for builders to use customization as a strategy to survive in this market, they need to truly reach the ideal of mass customization. Currently, there is evidence that some plants that are mitigating these inefficiencies, due to product customization, through the implementation of lean tools and practices (MHRA, 2007; Nahmens, 2007). Thus, offering product choice to satisfy homebuyers and maintaining

a competitive advantage remains a possible strategy if paired with other process improvement strategies.

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## EXPLORING SKILLED WORKFORCE SHORTAGE IN THE HOMEBUILDING INDUSTRY

Isabelina Nahmens, Marwa Hassan\*

The U.S. construction industry is currently facing a major challenge, the growing gap between demand and supply of skilled construction labor. Historically, the productive capacity of the U.S. construction industry has been constrained by labor shortage; nonetheless recently this gap has been widening resulting in the ongoing skilled labor crisis. In addition, the construction industry's need for skilled labor will increase by about 10% through the year 2016 (Bureau of Labor Statistics, 2008). Regrettably, both demographics (an aging skilled workforce) and a poor industry image (an emerging generation uninterested in construction skills) are working against the construction industry as it tries to address this need (Construction Users Roundtable, 2004). In particular three aspects of the current situation appear to underpin the apparent inability of the industry to provide a high quality and sustainable skills base workforce to safeguard its future growth and development (Chan and Dainty 2007). First, there is some ambiguity in terms of what the skills issues are that currently face the industry (i.e. it's unclear whether the present situation is rooted in a quantitative shortage or lack of high quality skills within the labor market). Second, the abdication of the responsibility for skills development by employers. And the third, lack of involvement of individual employees in solving the skills crisis. The objective of this research is to take the first steps in identifying issues currently faced by Louisiana's homebuilding industry. Particularly, this research entails an exploratory study on labor shortage.

While the recent economic and housing slowdown has lessened the immediate impact, labor shortages are still a problem for the construction industry. Furthermore, the type of skilled labor that the industry requires varies by trade. For example, the employment of heating, air-conditioning, and refrigeration mechanics and installers is projected to grow faster than the industry average because their specialized services will be in greater demand (Bureau of Labor Statistics, 2008). This need will be particularly evident in residential construction throughout the upcoming decade. For instance, the need for residential construction will remain in effect as our population grows and as migration trends continue, particularly in the South and West where the population is growing the fastest and reconstruction efforts (due to natural disasters) are underway (US Census Bureau News, 2007).

This paper summarizes the results of an exploratory study on labor shortage issues specific to Louisiana's homebuilding industry. This study entailed an assessment of the current labor issues. Data were collected using two approaches, interviews and an exploratory survey. Interviews were conducted with four local volunteered homebuilders to identify driving factors of the skilled labor shortage. Based on the interviews, the exploratory survey was developed. The survey was distributed to

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builders during a monthly meeting of the local Builders Association (e.g. Baton Rouge and New Orleans), summer of 2008 and it was completed by 33 members. Then the data from the survey were processed and analyzed for: 1) descriptive characteristics including basic statistics of the survey and, 2) analysis of the effect of individual homebuilder's characteristics and labor issues. Homebuilders' perceptions on labor skills might vary depending on the market segment in which they operate and their individual business strategies.

The interviews aided in the development of the survey by identifying common issues faced by local builders such as permitting losses, skilled labor shortage, and material backlog. In particular, skilled labor shortage was a common trend shared by most interviewees (3 out of 4 builders expressed that shortage of skilled labor was one of their top three problems). In this study *issues* were defined as any circumstance that was serious enough to affect project costs and schedule performance.

A summary of the demographics of the homebuilders that completed the survey is shown in Table 1. Among the surveyed builders, on average each built about seven homes in 2007, with the most being 30 homes. During this period, builders built more pre-sold homes (78%) than spec homes (22%). Half of the builders surveyed have been in business for more than 15 years in the state of Louisiana. More than half (59%) of these builders take between 3 to 6 months to complete a house and the tendency is to build houses for second time homebuyers (42%) or high end homes (36%).

Table 2. Summary of Builder's Demographics

|                            |                     |     |
|----------------------------|---------------------|-----|
| <b>Type Home</b>           | Starter homes       | 15% |
|                            | Move-Up homes       | 42% |
|                            | Luxury homes        | 36% |
|                            | Others              | 6%  |
| <b>Avg. Building time</b>  | Less than 3 months  | 3%  |
|                            | 3 to 6 months       | 59% |
|                            | 6 to 12 months      | 31% |
|                            | More than 12 months | 7%  |
| <b>Company in business</b> | Less than 5 years   | 25% |
|                            | 5 to 10 years       | 13% |
|                            | 10 to 15 years      | 13% |
|                            | More than 15 years  | 50% |

Figure 1 shows the different issues that homebuilders are currently encountering or experienced during 2007 and are serious enough to affect project costs and schedule performance. The most frequent cited issue affecting builders' performance was the rising cost of materials (24%), closely followed by a skilled labor shortage (21%). In addition, other issues pertaining to labor included shortage of labor (7%), shortage of legal workers (3%) and employee retention (2%). The list of specialty trade that builders are experiencing the greatest shortage in skilled labor is headed by plumbers (34%), followed by carpenters (14%), painters (9%) and bricklayers (9%). Almost one third of the surveyed builders are struggling to find certified plumbers- most plumbers are not certified based on the new regulations, as expressed by three of the builders interviewed. Similarly, the Bureau of Labor Statistics (2008) outlook report for plumbers,

estates that some builders reported difficulty finding workers with the right qualifications. This issue will remain relevant and may be magnified by the fact that many skilled plumbers currently working in the construction industry are expected to retire over the next 10 years (Bureau of Labor Statistics, 2008).

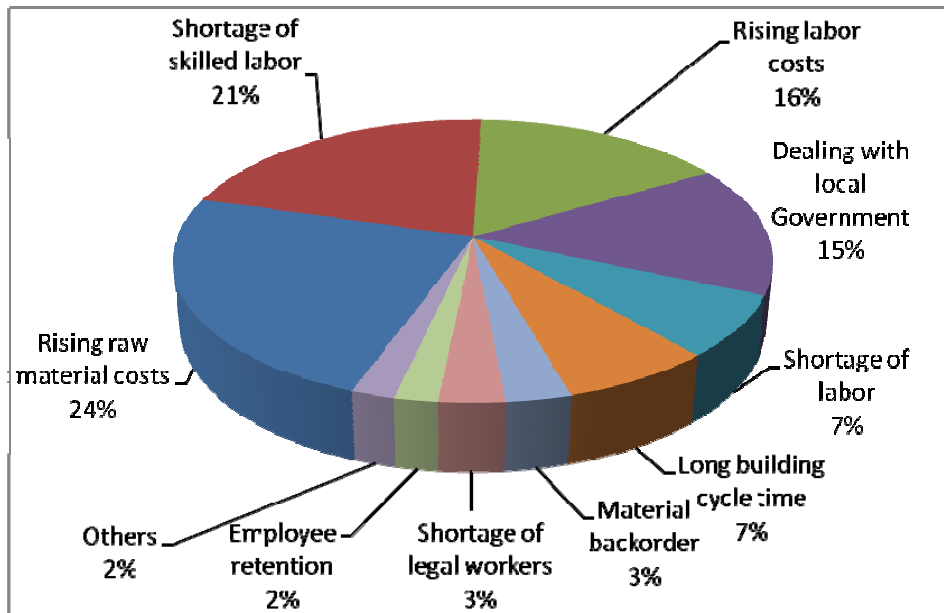


Figure 2. Builder's Current Issues

In order to retain and ensure qualified skilled labor for their projects some builders (36%) offer trade workers in-house training and development opportunities (32%) and some type of recognition for years of service (4%) (e.g. profit sharing). Builders also require that the subcontracted trade workers have the appropriate certification (50%) and training prequalification (19%), before using any subcontracted services.

In addition to citing the different types of issues affecting their business, homebuilders' were asked to specifically identify the top three issues by severity. These results supported the frequency citing. Results revealed that the top three issues affecting homebuilders surveyed are rising raw material cost (20%, n=19), shortage of skilled labor (19%, n=18) and raising labor cost (19%, n=18). This implies that not only is skilled labor shortage the second most frequent cited problem, it is also rated as the second most severe.

In general, results showed that perhaps the current issues that surveyed homebuilders are facing are mostly driven by global material's demand trends causing inflationary pressures, national trends of an aging skilled workforce, and local issues emerging from a stricter construction code. Shortage of skilled labor was found to be a common trend among builders, disregarding the type of home, production rate and time doing business. In particular plumbers, this might be a consequence of current economic environment, where builders are trying to survive by trying to reduce labor

costs by hiring plumbers under service contracts instead of employing a full time in-house plumber.

Over the past decade, all major players of the construction industry--construction owners, contractors, and labor--have been debating the issue of skilled labor shortages, but have never made a collaborated cohesive effort to improve the situation. Now companies are experiencing first hand significant problems in staffing construction projects, as is evident from escalating costs and schedule delays. This paper identifies current issues as a first step, but more research is needed to drill down into the driving factors of this issues. In order for these issues to be resolve, it is imperative that the construction industry as a whole addresses these issues by working in collaboration on remediating the driving factors as the first step toward expanding the skilled labor force to meet current and future needs.

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## **AT THE CROSSROADS: ADOPTION OF RESIDENTIAL ENERGY EFFICIENT PRACTICES**

Shirley Niemeyer<sup>\*</sup>

This research paper focuses on existing household energy use and efficiency choices, barriers to adopting energy efficient practices and technology, attitudes and beliefs about energy issues, and intentions to use energy more efficiently.

### **Rationale**

Residential housing production and energy use contribute to carbon dioxide (CO<sub>2</sub>) production, greenhouse gases, and other pollutants and to environmental degradation. Recent warming appears to be linked to burning oil, coal and gas for energy used in vehicles, businesses and homes and the increased CO<sub>2</sub> atmospheric levels. CO<sub>2</sub> concentrations are 20% higher than 130,000 years ago (Barnola, Raynaud, Korotkevich, & Lorius, 1987).

“Energy used in U.S. homes accounts for about 20% of the CO<sub>2</sub> emissions, a major contributor to global warming” [U.S. Department. of Energy (DOE), 2006]. Reducing CO<sub>2</sub> emissions is a key strategy for slowing global warming according to the U.S. DOE. “Long-term trends in residential CO<sub>2</sub> emissions are strongly influenced by living space attributes, building shell and appliance efficiency choices and by demographics.” (U.S. DOE, 2005a, pg. 21).

World energy consumption is expected to increase 59% over the 1999 level by 2020 (U.S. DOE, 2005). Supply and demand and other factors have affected energy costs. This rise in energy prices has affected households’ spending.

“The average household’s annual spending on energy goods and services rose by about \$1,700 between 2003 and 2006 while savings rate dropped sharply. Real household income has grown less rapidly in the past few years than it would have if energy prices had not risen substantially. The shift in energy prices is likely to keep the level of GDP over the next 10 years lower than it would have been otherwise. The U.S. standard of living will be depressed. Residents will have to exchange more of their production for oil. . . . and that adverse change in the ‘terms of trade’ will affect the U.S. standard of living for many years.” (U.S. Congressional Budget Office, 2006, *p VII- VIII*).

Thus, identifying energy efficiency and cost barriers being felt by Nebraska householders will increase understanding of the impacts of rising energy prices.

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## **Purpose**

The purpose of this research is to identify constraining variables that may impinge on adopting energy efficient practices, materials, equipment and technology in households, and to uncover relationships of attitudes, beliefs, knowledge, and other resource constraints to existing housing adaptations and adjustments for energy efficiency.

## **Objectives**

The objectives are to:

1. Identify constraints that may impinge on or contribute to making energy efficient changes in residential households. Constraint variables include knowledge of existing energy efficient practices and technology; economic constraints (household income, cost as a problem, financial need, existing energy costs); obstacles to making changes (lack of information, assistance, time, cooperation, and trained persons, and condition of home) and demographic variables (age, education, income, gender, urban/rural).
2. Identify adaptations made to the existing structure, equipment and appliances, and technology for energy efficiency and intentions to make future adaptations.
3. Identify practices used to reduce energy use.
4. Analyze relationships among the variables and identify any predictive variables to existing conditions and intentions.

## **Methodology and Procedures**

Based on previous research and literature review (Yust, Guerin, & Coopet, 2002; Niemeyer, 1982), a survey instrument was developed and reviewed by survey design staff and energy and housing professionals. The survey was piloted, revised and mailed to a random sample of 800 Nebraska (NE) households.

A modified Total Design Method (Dillman, 1978; Salant & Dillman, 1994) was used to provide accuracy in responses and higher return rates. Experian<sup>®</sup> provided the random stratified sample.

This initial analysis includes summary or descriptive statistics, correlations, coefficient alpha to compute scale internal consistency and factor analysis. Correlations, curvilinear relationships and cell frequencies are examined. Multiple regression will be used to uncover relationships among the variables after this initial analysis.

## **Results and Conclusions**

Of the 800 mailed surveys, 229 were useable (29% return rate). Eighteen households had moved leaving no forwarding address; 10 surveys were incomplete; 2



returned due to eyesight limitations, 1 survey was omitted as the respondent was under age 19, and 2 were deceased.

The respondents have a mean age of 58.35 years; and on average have some college, trade school or an associate degree education. About half are males and half females.

The initial analysis indicates that the research provides information about constraining factors that impact the existing energy efficiency of households. Respondents (n = 220) report that the mean costs for fuels (gas, electricity, etc) excluding transportation fuel was about \$2000 to \$2499 in the past 12 months, and on average, the energy utility cost for their home are somewhat of a problem (mean = 2.90, n = 223). When asked to identify barriers or obstacles to making changes in their homes energy efficiency, respondents are more likely to report the obstacles are home in bad condition, need others to cooperate, lack of trained persons to do the work, and that their wasn't any need to make the home more efficient. Respondents are somewhat satisfied with the energy efficiency of their housing (mean = 4.2; n = 225; range of 1, extremely dissatisfied to 6, extremely satisfied).

Participants were asked questions to assess the participants felt responsibility related to energy and the environment. The participants agree or strongly agree that "we need to put more effort into developing renewable energy sources (e.g. solar, wind)," "we should save energy to help preserve our natural environment," "people in our community need to do their share in reducing energy use," "and "I believe it is important to do my share in reducing use of energy resources."

Respondents (n = 211), reporting their current practices to reduce energy use, are least likely to check for leaks into the attic from the living space. Respondents are most likely to turn off lights; repair any leaking water pipes, faucets or hoses; use fans to supplement summer cooling, and to adjust the thermostat to reduce energy use.

Respondents report being more knowledgeable about compact fluorescent lamps, caulking, weatherstripping, high performance windows and low-cost methods to reduce energy use. They report having less knowledge about small residential wind generator systems, solar photovoltaic panels, solar hot water systems, and air-to-air heat exchangers or heat recovery ventilators.

Although the respondents report feeling responsibility for reducing energy use, conserving existing fossil fuels, and indicate it is important for the community and themselves to do their part in reducing energy resource use, and report using some energy saving practices and measures, it appears that additional reduction in energy use is possible. Reducing obstacles such as training professionals to do the work may increase the energy efficiency of homes and households in this study. Limitations of this paper include the sample may not represent the general population. Additional analysis is needed to examine the interrelationships among and to discover if the non-

respondents differ in responses. A longitudinal study is needed to compare planned changes in energy practices and whether the participants did make the changes.

### Implications

This research is of value to existing policy makers, community decision makers, households, and educators. Educators' role may be in facilitating educating professionals to reduce the limitation of available persons to do the work and to address the other knowledge barriers and in informing policy.

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## **BROAD-BASED STATE COLLABORATION ADDRESSES ENERGY EFFICIENT STRATEGIES FOR LOW-INCOME HOUSEHOLDS**

Shirley Niemeyer\*

The purpose of this paper is to identify some of the challenges of rising energy costs as it impacts low-income households, ascertain existing and emerging strategies to address energy costs, and to illustrate one state's attempt to address the problem through a collaborative network.

### **Challenges**

World energy consumption is expected to increase 59% over 1999s level by 2020 [U.S. Department of Energy (DOE), EIA, 2005]. Supply and demand and other factors have affected energy costs. This rise in energy prices has affected households' spending and particularly low-income households and those on a fixed income.

"The average U.S. household's annual spending on energy goods and services rose by about \$1,700 between 2003 and mid-2006. Real household income has grown less rapidly in the past few years than it would have if energy prices had not risen substantially." "The shift in energy prices is likely to keep the level of GDP over the next 10 years lower than it would have been otherwise. . . . the standard of living will be depressed. Residents will have to exchange more of their production for a barrel of oil" Source: Peterson, 2006, pp. 7.

Low-income households in particular are feeling the energy price increases. Yearly home energy costs average 4.6% for median -income households. However, low-income households average about 19.5% and "sometimes approach 70 percent of monthly income during the winter months" [National Energy Assistance Director's Association (NEADA), 2002, pg.4]. Households on fixed incomes and in minimum wage jobs have difficulties making choices about what to pay. At times, it is a choice between heating or cooling, food, or health care.

Energy efficiency in housing and equipment, practices, and policy to address energy costs are at a crossroads, and particularly in addressing the needs of low-income households. Existing government programs have fallen short in meeting the needs of low-income households. In 2000-01, the Federal Low Income Home Energy Assistance Program (LIHEAP), along with leveraged state funds, funded only 17% of eligible households and seniors (NEADA, 2002). Many households receiving assistance have incomes of less that \$9000 a year. In addition, changes in the energy efficient housing stock and building and remodeling practices have, in many cases, not kept up with or

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taken advantage of the available innovations and technology that provide more energy and resource efficient homes, equipment and appliances.

### **Choices and Roles**

With increasing energy costs, other assistance sources are emerging including state appropriations, legislative actions, and private sector donations. Corporations, faith-based and non-profit organizations, and individuals have increased available funding in some states. Some educational institutions and utility companies are expanding their energy education programs. However, if the energy needs of low-income households are to be met, expanding existing strategies must be considered.

Energy issues and problems are complex. In addressing these issues, the input of multiple governmental, utility, educational and research, public and private entities, and consumers is needed in both formal and informal avenues.

### **Example of a Grass Roots Organization Addressing the Challenges**

In 2005, a unique cooperative effort began to formulate between a Nebraska gas and an electric utility to assist low-income households in their community meet their energy needs. A partnership was also being created with another utility company and the University of Nebraska - Lincoln. These initial efforts and others led to a statewide Nebraska Energy Assistance Network (NEAN) of public utilities, human service and government agencies that now includes 27 partners. NEAN's mission is to assist householders with their energy needs through education, advocacy and partnerships. Purposes include educating households that are low-income and/or elderly to use energy efficiently, assisting in meeting basic energy needs, providing links with financial assistance and resources, and serving as a voice to identify and address energy needs.

The majority of the funding to date has been provided from the Omaha Public Power District and the Nebraska Public Power District. A grant from the NE Environmental Trust through UNL, membership dues and contributions from other utility companies provide additional funds.

### **Outcomes**

This network currently includes 14 public utility companies including gas and electric wholesalers and retailers, and government and education entities including the NE Energy Office, Head Start, Health and Human Services and the University of Nebraska - Lincoln Extension. Other coalition members include four Community Action Agencies, non-profits (Red Cross, Salvation Army, United Way, and Catholic Social Services) and regulatory entities (NE Public Service Commission).

The network has obtained grant funding for three projects including Using Energy Wisely forums-statewide (2006) targeting the elderly, an Energy Burden Study, and Energy Forums for at-risk low income families (2007-2009). The coalition has initiated a

shared system of utility data gathering to track disconnects and late payments to provide the necessary data to inform policy and to encourage program support.

In 2006-07, the NEAN education committee and members provided 25 educational forums targeting seniors at senior centers in 25 different cities across NE. These programs reached over 800 with 528 returned useable surveys. Participants were asked to complete a pre- and post-survey about current energy practices and issues in order to receive their energy kit (nine weatherization and other items). A follow-up phone survey, conducted by the Center for Public Affairs Research (Deichert, UNO, 2006-07), assessed actual changes in practices and use of kit contents. Results indicated that participants (40% to 80%) used seven kit items and fewer (20% to 30%) had used the other two items. Results also indicated practice changes. This methodology (Deichert\*) helps us to measure the objectives and goals of each of the seven modules and overall goal and objectives. The evaluation questions are matched to each module objectives. The 2006-07 successful educational programs for older persons are evidence of NEAN members' abilities.

NEAN and Head Start also developed a partnership to provide energy education and energy-saver kits to 1000 Head Start families. The education committee trained 46 Head Start staff involved in energy education during in-home visits. Curriculum includes teaching guides, activity sheets, evaluations, kits, handouts, and a video to address seven modules. The Extension Housing Specialist has had an active role in writing the curriculum collaboratively with the education committee.

Some clientele speak and read predominately Spanish. A grant from the NE Environmental Trust assisted the purchase *Home Energy Savers* publications in Spanish and to covert kit content lists and directions to Spanish.

### **Implications**

Because of the broad representation in NEAN and broad application of the curriculum to one-on-one, group use, use with adult and youth learners, in schools etc., this program has great potential for statewide, regional or national application. We also were careful that the video and curriculum would be useful to many diverse audiences, income levels and climate zones.

This effort holds promise in education of and in providing information and data to policy makers and low and moderate income households. Although unique to the state, the role of extension in providing leadership or partnering in forming collaborative efforts and in education and research is important in addressing increasing energy costs and the affordability of energy utilities in low and moderate income households.

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## THE CALIFORNIA 1350 CHALLENGE: IMPROVING INDOOR ENVIRONMENTAL QUALITY (IEQ) USING CUTTING EDGE HEALTHY BUILDING SPECIFICATIONS

Roberta Null, Constance Barker, Joy Potthoff, Arlena Hines\*

Indoor Environmental Quality (IEQ) is an important and growing parameter in design decisions of all kinds. Americans spend 90% of time indoors and indoor levels of pollutants are reported to be from 2 to 5 times higher than those outdoors. One in five schools in the United States has reported unsatisfactory air quality. And, high numbers of Americans of all ages suffer from lung and breathing problems, including 20 million Americans, of which 6 million are children, who have been diagnosed with asthma.

California1350 (<http://www.ciwmb.ca.gov/greenbuilding/Specs/Section01350/>) is a Special Environmental Requirements standard specification developed by the State of California to address the impact of building materials on indoor environmental quality and health in buildings, as well as other environmental performance issues. It is becoming a major driver for better products and healthier buildings in California.

Key elements affecting indoor environmental quality include specifications for screening building materials (primarily major interior finishes) based on:

- **emissions** testing protocol (standardized chamber testing for 80 chemicals, coupled with modeling of the planned building to predict the concentration of each of the chemicals in the finished building's indoor environment), **hazardous content** screening, and
- avoiding **mold and mildew** from construction practices.

These specifications bring current research to bear on the impact of product emissions on chronic health problems. They are customized to the individual building project and the equation for modeling the concentration is not complex to apply. CRI, SCS and the State of California have established modeling scenarios to allow testing of materials for a generic classroom or office building, allowing pre-screening of materials without new modeling for every project. As research improves and the impact of more chemicals is better understood, they are being added to the CA state lists and reflected in the results without requiring further update of the specification.

Section 01350 language is forming the basis for health related areas of many Green and healthy specifications, including:

- Scientific Certification Systems Indoor Air Quality Performance Environmental Certification Program SCS-EC10-2004, their EPP carpet

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specification and the Resilient Floor Covering Institute FloorScore  
([www.scscertified.com/iaq](http://www.scscertified.com/iaq))

- The Carpet & Rug Institute's new Green Label *Plus* Carpet Testing Program ([www.carpet-rug.com](http://www.carpet-rug.com))
- The Green Guide for Health Care ([www.gghc.org](http://www.gghc.org))
- Collaborative for High Performance Schools Best Practices ([www.CHPS.net](http://www.CHPS.net))
- Institute for Market Transformation to Sustainability (MTS) Textile and Flooring standards <http://MTS.sustainableproducts.com>.

Because it is being so widely utilized, many manufacturers are reformulating products to bring emission levels below 1350 mandates. As 1350 and other specifications incorporating it are adopted by major buyers, such as educational institutions and healthcare organizations, this market transformation will undoubtedly accelerate. Application of some version of the specification to residential building is undoubtedly coming, particularly as regards disability access and universal design. It has already been included in the US Access Boards IEQ recommendations ([ieq.nibs.org](http://ieq.nibs.org)).

In this presentation we will highlight IEQ facts, their relevance to housing design, and ways this specification might be of use in the future. Much remains to be explored to provide the building and design communities with confidence that materials specified in buildings, and especially in housing (where many people spend the majority of their indoor time) will not contribute to health problems and /or create access barriers for people with breathing based disabilities. California 1350 is an important new tool that can assist us in moving towards healthier and more fully accessible buildings and homes.

# FEASIBILITY MODEL FOR RENEWABLE ENERGY SELECTION IN THE HOUSING INDUSTRY

Angelica Ospina, Debbie Philips, Daniel Castro<sup>\*</sup>

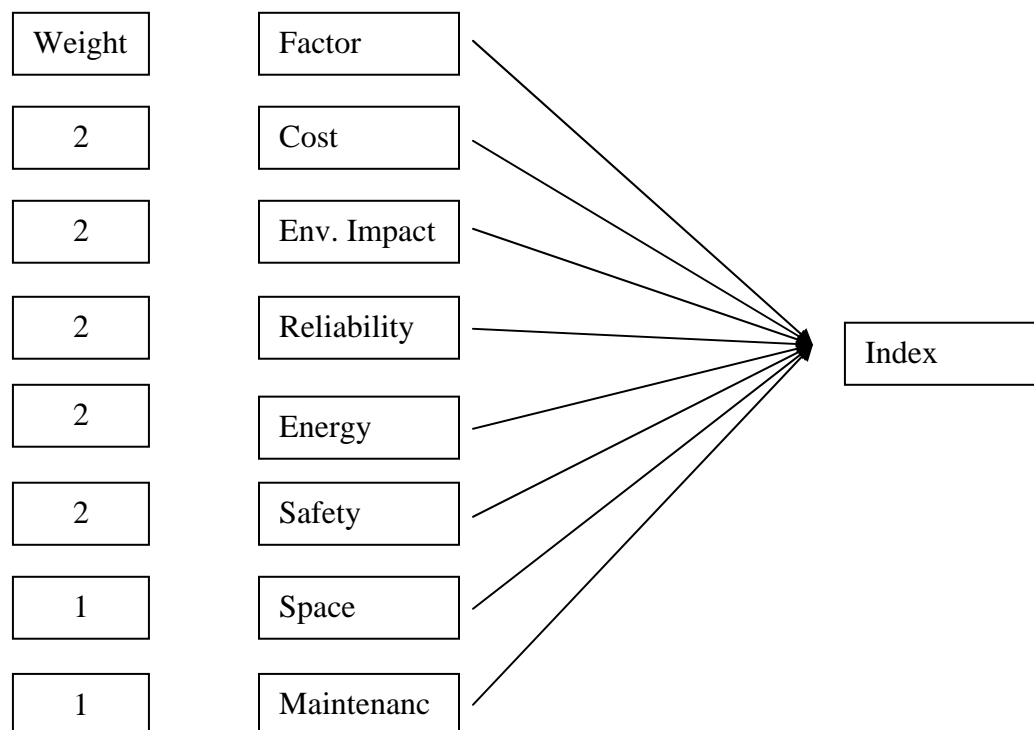
Currently, the housing sector is facing significant challenges, such as pollution prevention and energy efficiency. The motivations for the reduction of energy use and the implementation of energy-efficiency upgrades, especially in the residential housing sector, include increasing operating costs, the forced reduction on nonrenewable energy sources, the decline of peak demand for power production, and the decrease of greenhouse gas production and global warming. Presently, due to new threats and challenges, other factors can be added to this list of motivations, such as uncertainties due to accidental power plant shutdown or fuel flexibility.

This abstract presents a framework to assess the feasibility of renewable energy in terms other than exclusively financial, taking into consideration not only sustainable parameters but also the factors that influence the users' decision making process of adopting an alternative energy. The framework is based on an index developed to compare different sources of energy focused on the residential market in the Midwest region of the United States. The index uses a multi-criteria analysis, which allows social and environmental issues to be measured in non monetary terms (Ding, 2005; Joubert and Leiman, 1997; Nikkamp *et al.*, 1990; Mirasgedis and Diakoulaki, 1997), within the index each parameter is measured in the appropriate unit and then is standardized to a dimensionless unit that can be added. The index includes the sustainable criteria: cost, environmental impact and energy consumption; these criteria were found in literature (Ding, 2004; Ding, 2005), and the factors that influence the users' decision making process of adopting an alternative energy: cost, reliability, environmental impact, safety, space, and maintenance; these factors and their weights were found through a survey conducted to a sample (N=76) of adopters of alternative energies, and were validated with a larger random sample (N=294) of energy users in nine counties.

The cost is calculated as the lifecycle cost of the system. The environmental impact is measured through a lifecycle assessment. The energy consumption is calculated in terms of the embodied energy in Mega Joules and the operational energy as the efficiency of the system. The maintenance is evaluated as the number of times the system is going to need maintenance per year from the final user's point of view. The safety of the system is calculated through a rating according to an analysis of safety implications to the final user. The reliability of the system is measured as hours per year that the system will be down from the final user's point of view. The space of the system is measured as volume occupied by the system on site.

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The index was used to compare both a traditional grid-based system and a renewable source of energy based on fuel cells. According to the index, the renewable energy system has a slightly better rating than the grid system; although both numbers are very similar, the factors rated very differently.

Emerging renewable energy sources need further development, in terms of cost reduction and in maintenance requirements to be competitive with the grid system. The model discussed includes the sustainable performance of the system, but also the factors that influence the user's decision-making process to adopt a renewable energy. The latter have not be taken into consideration in the assessment of renewable energy technologies for housing. The factors considered will make a significant difference if any kind of distributed power is intended to take place. The framework takes a general perspective, considering important factors for the final user such as environmental, energy consumption, reliability, maintenance, and space.

| <b>Factor</b>        | <b>Fuel Cell</b> | <b>Grid System</b> |
|----------------------|------------------|--------------------|
| Cost                 | 1.00             | 0.43               |
| Environmental Impact | 0.0045           | 1.00               |
| Energy Consumption   | 0.44             | 1.00               |
| Reliability          | 0.10             | 1.00               |
| Maintenance          | 1.00             | 0.00               |
| Space                | 1.00             | 0.00               |
| Safety               | 1.00             | 0.33               |
| <b>Total</b>         | <b>7.09</b>      | <b>7.52</b>        |

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# HOME REMODELING: LEARNING FROM THE “DREAM KITCHEN PROJECTS”

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## Introduction

In the early 21st century, a strong U.S. economy brought a great amount of activities in the home construction and remodeling industries and an increase in home price appreciation, which conveyed consumers' interest in remodeling homes, such as adding desired design features. The home improvement rate rose almost 24% from 2001 through 2005 (Joint Center for Housing Studies of Harvard University, 2006) and many used the equity in their home to finance the improvements.

The kitchen is among the most popular home improvement projects. The considerable supply of housing built in the 1960s, 1970s and 1980s is becoming perceived as in need of renovation as kitchens quickly become outdated with respect to technologies and materials. In today's society, the kitchen serves as the hub of home activities, which is closely related to quality and space norms. As explained by the Theory of Housing Adjustment and Adaptation (Morris & Winter, 1978), building a house with a new kitchen or remodeling an existing kitchen would be considered as an opportunity to respond to normative deficits related to space and quality.

However, consumers need sufficient product and process information when remodeling their kitchens. The purpose of this study was to reveal information on the kitchen remodeling process and insight into kitchen remodeling trends. The research objective was to identify: 1) main reasons for remodeling or building the kitchen, 2) product types and reasons for their selection, and 3) satisfaction levels with the remodeling process and product choices.

## Methodology and Procedures

In May of 2005, a survey of participants in the past 13 *Explore Your Dream Kitchen* workshops, held from 2000 to 2004, was conducted by the faculty of the Center for Real Life Kitchen Design at Virginia Tech. Questionnaires were mailed to the 192 participants and 112 responded (58%). Of those, 72 respondents had engaged in a building (15, 21%) or remodeling (55, 76%) project since participating in the workshop and served as the sample analyzed for this research. The Statistical Package for Social Science (SPSS, ver.15) was used in data analysis. Descriptive statistics were employed to analyze estimated remodeling cost, remodeling reasons, professional assistance, choice of design features, product choices and selection reasons, and satisfaction with the remodeling process and product choice.

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## Results

The study sample was predominantly female (79%) and middle aged, with 70% over age 45 and 46% over age 55. Eighty-nine percent lived in couple households, and only 32% had children living at home. Sixty-seven percent reported annual household incomes over \$100,000. Over half of the respondents lived in suburban communities and 48% had lived in their homes less than 10 years at the time of the survey. Forty-two percent of the homes were built between 1970 and 1990, and 65% of the homes had a self-reported market value of over \$400,000.

The top reason for building homes was due to *retirement* (40%). There were many reasons for remodeling including *outdated cabinets* (76%) and *appliances* (69%), *poor layout of their existing kitchens* (64%), *lack of countertop space* (64%) and *storage* (55%), *changes in their family situation or lifestyle* (16%) and *changes in household activities* (9%). The most common kitchen remodeling price range was \$40,000 to \$49,000 (22%), followed by \$50,000 to \$69,000 (18%).

Over half of all respondents (54%) consulted contractors for their project, followed by builders (44%) and kitchen designers (21%). The most frequent design features of kitchen projects were categorized as *space aspects* (e.g., large drawers in base cabinets [78%] or pantry storage [78%]) and *universal design aspects* (e.g., controls located at the front or side of cooktop [68%] or 42"-48" work aisle [53%]).

When selecting kitchen products, including cabinets, countertops, primary sinks and faucets, lighting, or flooring, a majority of the respondents considered *appearance* as a top reason (76% to 90%) consistently more frequently than *durability* (34% to 79%) or *cost* (23% to 39%). Responses on product choices gave some insight into the current popularity and trends in kitchen products on the market:

- Cabinets: 42% chose semi-custom and 35% chose custom cabinetry. Raised panel doors were the most popular (43%) and a third (35%) had at least some glass doors. Wood was the overwhelming (86%) material choice.
- Countertops: 43% chose granite and 26% chose solid surface.
- Primary sinks and faucets: The most popular sink choices were a two-bowl sink (64%), stainless steel (67%), and under counter mounted (63%). A single control faucet was chosen by 75%, and material choices included chrome (28%), nickel (28%), or stainless steel (25%).
- Flooring: Hardwood was the choice of 38% while 17% chose ceramic tile.
- Lighting: The most popular lighting choices were incandescent (56%), halogen (44%), and fluorescent (31%). These were installed in multiple locations, with the most popular being recessed in the ceiling (74%) and under the cabinet (67%).
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When queried about their satisfaction with the remodeling process (1=very dissatisfied to 5=very satisfied), the highest satisfaction was given to *quality of material use* (M = 4.58), *layout of work enters* (M = 4.47), and *cost of kitchen* in relation to

benefits gained (M = 4.47); the lowest was to *time* (M = 3.37) and *mess* (M = 3.11). In relation to satisfaction levels with product choice, respondents reported a high level of satisfaction (M= 4.43 to 4.59).

### **Conclusions and Implications**

This study explored today's kitchen remodeling and trends, which can be explained by the Theory of Housing Adjustment and Adaptation (Morris & Winter, 1978). Normative deficits in kitchens inspire consumers to build or remodel homes and engage in several layers of decision making including product selection. The satisfaction with their projects indicates that the selections bring their homes into a normative form.

The above average income and home values of study participants, coupled with participation in an intensive kitchen design workshop, suggest consumers who are more thorough in the decision process and more likely to consult professional remodeling assistance. With the results of this study, professionals including kitchen designers (CKDs), contractors, or builders can further meet consumers' criteria. Kitchen related manufacturers can also benefit, knowing consumers' preferences on kitchen products, especially, the value of quality.

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# PERCEPTIONS AND EXPERIENCE WITH COMMUNICATIONS TECHNOLOGIES BY OLDER ADULTS AND INFORMAL CAREGIVERS

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## BACKGROUND

With the aging of the baby boom generation, there will soon be a major increase in the population of older adults requiring care and assistance with daily living. Support for daily living and health care provision at home may be less disruptive for the older adult, and older adults have been shown to have improved quality of life when they are able to live safely in their own homes (Fogel, 1992). Informal family caregivers most often provide the needed care (Grant et al., 2004), and frequently experience a great deal of stress while juggling multiple roles in addition to caregiving. Further, existing homes do not easily accommodate the changing needs of older adults. Research in the new field of *gerontechnology* has illustrated that technologies that facilitate communications with caregivers may allow elders to remain independent in their own homes (Cohen-Mansfield & Biddison, 2007). However, we know little about how specific technologies affect residents or their care-givers. This paper is part of an extensive exploration of older adult/caregiver dyad's acceptance and use of monitoring and communications technologies. The purpose of this paper is to explore older adult and informal caregiver dyads' perceptions and experience with two widely available communication technologies: a simplified e-mail program and an interactive web camera.

## METHOD

### *Data Collection and Analysis*

The study utilized a four-phase approach: pre-test questionnaire, hands-on technology trial, post test questionnaire, and a semi-structured interview. The trial with two communications technologies will be reported in this paper: (1) *Coglink*, a simplified e-mail program, and (2) an interactive web camera.

Analysis of the questionnaires was quantitative. The sample was too small to make generalizations to the population; however, trends and patterns were identified. The interview data were analyzed using qualitative methods to provide a greater depth of understanding.

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## ***Description of the Sample***

**Older Adults.** Fourteen older adults and their informal caregivers participated in the study. The older adults were white, non-Hispanic and ranged from 71 to 93 years of age; 64% were female. The majority (79%) were widowed and lived alone (57%). All were cognitively intact, and the majority (86%) reported fair to good health. The older adults were unusually well educated (28% had professional or graduate degrees; 64% had some college or a college degree) and 59% had annual household incomes above \$25,000.

**Caregivers.** All of the informal caregivers were white, non-Hispanic females and ranged in age from 44 to 89. Half were the daughters of the older adult; others were spouses (21%), friends or neighbors (21%), and siblings (7%). Most were employed (62%) and married or living with a partner (72%). Caregivers' education and income levels were also higher than the general population: 53% had professional or graduate degrees and an additional 32% had a college degree or some college, and 62% had annual household incomes over \$50,000. Time spent in caregiving was variable: 43% of the caregivers spent 1 to 5 hours per week, 28% spent 6 to 15 hours per week, and 14% spent 16 to 20 hours a week. The reported physical burden of caregiving was low, with 79% reporting none at all. However, 86% reported feeling a little or a moderate amount of emotional strain.

## **RESULTS**

A primary purpose of this research was to evaluate perceptions and use of e-mail and a web cam by older adults and their informal caregivers. Consistent with our earlier work (Steggell, Hooker, Brandt, & Lee, 2007; Mahmood, Steggell, Yamamoto, & Lee, 2007), we found that both older adults and caregivers were generally open to learning about gerontechnologies and adopting those that met their needs.

### ***E-Mail***

The use of computers by older adults is relatively low, but is rapidly increasing (Bucur & Kwon, 1999). Older adults use them in ways similar to the rest of the population (Opalinski, 2001). In this study, the participants who used a computer at all, did so frequently. The majority of the older adults (OA) had access to a computer at home (57%) and used it several times a week or daily. The 43% who had no computer access were very uncomfortable about using one (36%). Among caregivers (CG) in the study, 93% had access to a computer and used it frequently.

For this study, participants used an uncomplicated e-mail program with no hidden windows or pop-up screens (*Coglink*). Although the software was designed for ease of use, no modification to the computer, keyboard, or mouse was offered to the participants. The OAs who were not familiar with computers were challenged by the keyboard and mouse, but had no problem understanding the program. OAs felt that e-mail was important for people who live alone (71%), felt it would increase connections to

family and friends (63%), and expected that it would make them feel more secure in their homes (57%).

The majority of CGs (84%) felt that using e-mail with their OA would ease their caregiving responsibilities and was important to have (86%). In discussing the experience, those CGs and OAs who already used e-mail thought the simplified program lacked important features.

### ***Interactive Web Camera***

Prior to the study, participants were already aware of some types of electronic communications devices (OA=71%, CG=71%) and some had used one (OA used=21%; CG=71%). However, the web cam was a new experience for the majority (OAs=79%; CG=79%).

Slightly over half of the OAs thought a web cam would be useful (66%) and 43% had confidence in their ability to use it. Eighty six percent of CGs thought using a web cam with their OA would make them feel more secure and 71% thought it would ease their caregiving responsibilities. In discussion, the overwhelming response was positive on all aspects of the web cam.

## **CONCLUSION AND IMPLICATIONS**

Overall, results of this study are consistent with previous research (Cohen-Mansfield & Biddison, 2007; Mahmood et al., 2007; Steggell et al., 2007) in that older adults and caregivers recognize the potential of gerontechnologies. In this paper, space limitations restrict reporting more detailed results. However, it is important to note that the older adults and their caregivers in this study perceived important applications and benefits of the communications technologies presented. Findings of the study add to the critical groundwork needed in design and adoption of technologies to support aging in place.

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## LEAVE IT AT THE DOOR

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The concept of a “healthy home” is not new, but consumers seem to be listening now and taking action. More consumers are seeking ways to improve their health while reducing their consumption of renewable resources. Their increased interest is reflected in the growing use of green or eco-friendly products in home construction and maintenance. The Environmental Protection Agency (EPA) has even created the Energy Star® Indoor Air Package for those who are willing to pay more for a home with improved indoor air quality and energy efficiency.

Despite so much attention being given to building and cleaning one’s home with green products to maintain a healthy home, people seldom think about the dirt, pollen, lead dust and pesticide residue they bring into their homes each day. It is estimated that 30-40% of house dust is from outdoor soils (Fergusson & Kim, 1991). Many of these contaminants enter our homes on the bottom of our shoes (Nishioka, Burkholder, Brinkman, Gordon, & Lewis, 1996). Once inside, the contaminants are deposited on the hard-surface floors and carpets upon which infants crawl and children play. Several studies suggest that the greatest number of environmental exposures and risks for young children occur inside the home (Lewis, Fortmann, & Camann 1994; Platts-Mills, Vervloet, Thomas, Aalberse, & Chapman, 1997; Pope, Patterson, & Burge, 1993; Wallace, 1987, 1991).

House dust has been found to be a major source of lead, pesticides and allergens for toddlers (Lewis, et al., 1994; Platts-Mills, et al., 1997). It can also be a problem for the 22 million people with asthma (EPA, 2007). Reducing exposure to asthma and allergy triggers can reduce health care and related costs by decreasing doctor and hospital visits, and lost work days.

In 1991 EPA conducted a “doormat” study where researchers measured the amount of lead dust in homes. Researchers found that in homes where there was a doormat at the entrance or where shoes weren’t worn there was a reduction of about 60% of lead dust and other chemicals in the home (Roberts & Ott, 2007). The EPA recommends using a doormat to reduce childhood lead exposure from the dust and soil tracked-in on shoes (EPA, 2000).

When shoes are worn inside, carpeting acts like a doormat, scraping debris and dirt from shoes with every step taken. Not only are contaminants left behind, the wear and tear on carpeting and cleaning frequency is increased. A simple solution is to remove one’s shoes at the door and wear socks or slippers in the house. This can decrease dust, pollen and other contaminants inside the home, while increasing the life of the carpeting. Removing one’s shoes at the door, or designating shoes for indoor use

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only, are cultural rituals and practices generally based on religious beliefs or household belief systems. They are performed in countries throughout the world, including Japan, countries that self-identify as Islamic, Eastern European countries and some Scandinavian countries. This program heightens awareness of this ritual, making it easier to reach groups of recent immigrants who may have brought these practices with them.

*Leave It At The Door* was designed as an inexpensive and effective way to improve the indoor environment by using a doormat and leaving shoes at the door. The objectives are to: (1) increase awareness of the transfer of contaminants from one's shoes to the indoor environment; (2) decrease risk of exposure to contaminants among high risk populations; and (3) reduce asthma and allergy triggers inside the home.

This one-hour interactive program is comprised of a Power Point presentation, demonstrations and activities. A demonstration using artificial sweetener illustrates how little lead dust it takes to contaminate an area. To illustrate tracking, an activity using "artificial dust," different types of flooring and doormats is used. The primary target audiences are individuals and families at risk from exposure to lead dust, pesticides and pollens; agricultural workers; and environmentally conscious individuals and families. The program includes an evaluation tool to assess the knowledge gained and potential behavior changes. Resources, including a design for creating a shoe rack, are included to encourage consumers to just leave it at the door.

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# COMMUNICATION TECHNOLOGY AND AGING IN PLACE

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## Introduction

The 2000 Census projected an unprecedented increase in the 65-and-over population in the next quarter century as the baby boomer generation ages. More than 90% of the current 65-and-over population would like to achieve *aging in place*, referring to living in one's own dwelling for the rest of their life (AARP, 2006). Two out of five older adults, age 65 and over, are expected to live until 90 years of age (AARP, 2005). About 30% of that population lives alone. Especially for older adults who live alone, maintaining an optimal level of social interaction is an important factor that influences their well-being and abilities to stay at home as long as they want (Holland, & Holland, 2005; Sabia, 2008). Improving older adults' well-being is particularly timely as this may lead to a reduction in the health care costs generated by the aging adult population. There is some evidence that technological advancements could help older adults to continue interacting with friends and family members even when difficulties in mobility become serious, allowing them to age in place (Croghan et al., 2007; Holland, & Holland, 2005; Savolainen, Hanson, Magnusson, & Gustavsson, 2008). Although some communication technologies are designed specifically for use by older adult populations, there has been little empirical research that focuses on older adult users' points of view on expected usefulness of communication technology to achieve aging in place.

## Purposes and Objectives

The purpose of this study is to examine older adults' perceptions of the use of interactive video communication technology (IVC), using the theoretical framework of selective optimization with compensation (Baltes, 1987; Baltes & Baltes, 1990), as well as their perceived usefulness of such technology for achieving optimal levels of social interaction and successful aging in place. It has been believed that ubiquitous technologies, including IVC, might be helpful for older adults to maintain their social interactions (Holland, & Holland, 2005; Wright, 2000). The use of IVC could provide older adults with instrumental and emotional support, and safe and independent living in their own dwellings. The main research question is whether older adults perceive IVC as a useful aid to maintain their desirable level of social interactions and to continue living in their own homes. Although similar hypotheses have been developed and examined by researchers and other related professionals, the foci of those studies were more likely to be on development of technology products and/or education, as well as older adults' actual usages of products (Andersson, Hanson, & Magnusson, 2002; Czaja, et al., 2006; de Klerk, Huijsman, & McDonnell, 1997; Delahaye, & Ehrich, 2008; Dulude, 2002; Gagliardi, Mazzarini, Papa, Giuli, & Marcellini, 2008; Gitlin, 1995, 1998;

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Gitlin, Schemm, Landsberg, & Burgh, 1996; Harke, Prohaska, & Furner, 1998; Jenko, Guna, Kos, Pustisek, & Bester, 2007; Kim, 2008; Tzung-Cheng, Yeh-Liang, An, Trevor, & Chang-Huei, 2007; Waterworth & Waterworth, 2006). Older adults' perceptions of the use of a particular communication technology, such as IVC, have not been extensively addressed. Understanding users' points of view is important since older adult users' perceptions significantly influence their abilities to achieve aging in place. This study utilizes in-depth interviews, pays careful attention to users' perceptions, and examines how older adults interpret the use of communication technology and why they react in certain ways. Findings of this study will help improve future research related to older adults' perceptions and usages of communication technology in order to achieve successful aging in place.

### **Methods and Procedures**

Participants in this study were 18 cognitively intact older adults (4 males and 14 females; 17 Whites and 1 Asian), ages between 75 and 88, who live alone in their own homes. They were in general highly educated and well functioning. In order to gain understanding of complex perceptions among this diverse population, a mixed method approach was used. Data collection occurred in three phases: (a) first home visit (home-observation), (b) seven-day diary and questionnaire completed by the participant, and (c) second home visit (in-depth interview). The diary and questionnaire were used as a foundation for the in-depth interviews. This triangulation helps the researchers to compare information from different sources, increase reliability and validity of the data analyses, and in turn, create strong arguments.

Data collection began with a home observation, and explanations of the questionnaire and the seven-day social interaction diary. The questionnaire includes items about current use of common home technology, such as a telephone and microwave, attitudes toward using those technological devices, and demographic information. The home observation was a check-list type assessment of the physical attributes of the house, completed by the researcher during the first visit. On the seven-day diary form, participants were asked to report their formal and informal social interactions. The diary helped to remind participants of the quality and quantity of their current social interactions. The primary data were collected through in-depth interviews in the second home visits. Participants were presented with two short video vignettes depicting IVC for distance communication and emergency response. Questions and discussions followed. Each participant was invited to discuss his/her perceptions about possible usefulness of the IVC technology to facilitate positive social interactions. Also, they were asked to talk about their perceptions of whether the IVC technology could influence their abilities to obtain aging in place.

### **Preliminary Analysis and Implications**

This study is in the phase of transcribing the interviews, synthesizing the quantitative data (questionnaire, home observation, and diary), and analyzing the all combined data. Although analysis is not completed, some trends can be noted. When



defining successful aging in place, all participants emphasized their desire to stay in their own homes, and to not move to residential facilities. Furthermore, all of them highlighted the importance of social interactions and mobility.

Preliminary analysis suggests that most participants did not perceive the use of IVC as being particularly useful at their current level of functioning; however, in general, they had a positive perception regarding IVC. In addition, many participants stated that they see the usefulness of such technology for people (other people or themselves in the future) who have limited mobility and more health problems.

Based on the preliminary analysis, it seems that the majority of participants expressed a need-based perception of the use of IVC. The preliminary findings seem to confirm that the main premises of Baltes' SOC theory apply to this study. Some aspects of consumer behavior theories can be employed to gain a better understanding of these preferences and perceptions. This study will contribute to the development of future research related to older adults' perceptions of communication technology and the use of such technology devices to improve their quality of life in a safe and independent living environment.

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## HOMEOWNERSHIP AMONG EMERGING MARKETS: THE STORIES BEHIND THE NUMBERS

Becky L. Yust, Marilyn Bruin, Sarah Belleful, Bernice Dodor\*

The Emerging Markets Homeownership Initiative (EMHI) was launched in 2004 as a collaborative effort to increase the number of homeowners among households of color in Minnesota. The Federal Reserve Bank, Fannie Mae State Partnership Office, and the State Housing Finance Agency convened a broad and diverse group to develop a plan to increase the number of emerging market homeowners by 40,000 households by 2012. These households represent African Americans and recent African immigrants, Asian and Pacific Islanders, Latinos and American Indians.

The initiative arose from the persistent homeownership gap between Caucasian households and households of color, even when controlling for income. At the time EMHI was conceived, the state had an overall homeownership rate of 77% (2003), among the highest in the U.S., but, the homeownership rate of minority households was only 46%, a gap of more than 30 percentage points. Traditional means of reaching minority households in this state were not effective in reducing this gap.

In order to “close the gap,” EMHI developed a business plan to effect changes throughout the housing industry. Strategies address guidance, outreach and support for realtors, home loan originators, businesses, government agencies, schools, homebuyers, faith-based and community organizations, and service providers. A call for proposals was issued to invite groups to submit applications for pilot programs that would demonstrate efforts to increase homeownership of emerging market households and to insure that they are sustainable.

The purpose of this research was to understand the journeys that the households served by the pilot projects experienced in their quest for homeownership. Participants of four pilot projects were included in this study. One project was an urban neighborhood non-profit organization serving African-American households. They build new homes and sell them through a contract-for-deed and then work with the homeowners to be financially stable before they convert the financing to a conventional mortgage. An outreach counselor meets regularly with the heads of households to work on their budgeting skills and in managing their expenses. A second organization was an urban community land trust. Potential homeowners are approved and then have a set period of time to find a home to purchase utilizing the land trust instruments of financing and grants. A third organization was a rural city office of housing and community development whose staff conduct pre-purchase classes and work with households to obtain first-time homebuyer financing. A significant number of the households that have been helped are Somali immigrants. The fourth organization was

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a program team of bankers, extension educators, and city staff in a rural area of the state that focus on reaching Latinos to attend pre-purchase homebuyer classes.

We provided text of a letter for each pilot organization to send letters to all of their participants inviting them to be interviewed. The participants were directed to call the researchers to schedule an appointment. Each household received a \$25 gift card for a major retailer. Approximately 60 households received letters of invitation; 21 heads of households contacted us to be interviewed.

We conducted a focused in-person interview with each head of household at a location convenient to the participant. The interviews lasted about one hour and included questions concerning the process of becoming a homeowner, the biggest struggle, the greatest benefit, past experiences of working toward homeownership, how the program helped them, how their households have been affected, additional activities in which they have participated, and if there were other services the program could have provided. The research team recorded responses in writing and later word-processed them.

## **Results**

Results of the interviews illustrated strategies households employed to achieve homeownership and the elements that were successful; the barriers experienced and by whom; and impacts on their lives and the well-being of the households. Unanticipated issues such as financial literacy, immigration raids, the foreclosure crisis, and personal coaching and support needs were discussed.

### ***Struggles to Achieving Homeownership***

Participants encountered financial stability as the greatest struggle for them. Additionally, the process and duration to become a homeowner was frustrating, and once a homeowner, home maintenance was greater than expected. Comments included:

- *Getting credit straight – toughest...everything needs to be perfect...not good at budgeting...work two jobs as a nurse.*
- *Not having enough money to keep credit straight.*
- *Shoveling snow when I want to go to bed. Mowing the yard and gardening.*
- *Struggle just because I worry about something going wrong and it costing too much to fix.*
- *Understanding the process; working with builders, paperwork. Will need to stay in house for nine years to not have to pay back grant.*

### ***Benefits of Achieving Homeownership***

In spite of the struggles, achieving homeownership was very beneficial to all the participants although some were still anxious about their financial future. Home

ownership motivated them to do more in other parts of their lives, achieve recognition, build equity, and provide security and space for family. Participants described benefits as:

- *I am pushed to achieve more. Stability...I didn't want my daughter to see life I had...Mom never had a job, was on welfare and abused drugs.*
- *Peace and quiet. I don't worry about the neighbors. In the apartment there was vandalism and drugs. ...the house is brand new...close to church...allows each of my sons to have their own room.*
- *At my age, I never thought I'd ever own a house again. Provides a level of security.*
- *Secure place for kids and me to call home.*
- *Not living next door to somebody.*
- *Being able to say ...owns a house...my Mom says I am doing better than they had at her age.*

The participants reported that owning a home also improved their children's behavior, friendships, and academic performance as reported by their parents:

- *Kids are very happy. Have friends over. Proud to bring their friends home.*
- *Kids have changed. They are doing better in school. Son had outbursts before, but now having less outbursts.*
- *The kids are happy to have a yard. Closer to school.*

And, other participants mentioned that being a home owner motivated them to learn to take care of their homes. For example, a participant shared, "Good to learn how to care for a house...feel like an adult."

## **Conclusions**

Results of the research will help to inform the development of future EMHI projects. Based on the information provided by the participants, the organizations were viewed as instrumental in helping them to be homeowners. The help provided ranged from attending pre-purchase classes offered by the organization to multi-thousand dollar grants to make improvements on the homes they bought. Overall, the staff members were trusted by the participants and were seen as important sources of support on which they could call in the future.

## **Acknowledgement**

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## FACTORS TO IDENTIFY OLDER ADULTS INTERESTED IN MODIFYING THEIR HOMES TO AGE IN PLACE

Susan Zavotka, Margaret Teaford\*

The overwhelming majority of older adults want to remain in their long time homes and “age-in-place” (American Association of Retired Persons, 2000). Reasons include attachment to home, location, and being close to family members (Hartje, 2004). But many homes are over 50 years old, are located in suburbs, and cannot easily support an aging population (Newman, 2003). These houses often lack universal design features such as full first floor baths and bedrooms and safety features such as grab bars and stair rails that would allow them to live independently. Furthermore, older adults often seem reticent to make the appropriate changes to their homes due to negative perceptions of aging (Miller & Olson, 2006). The purpose of this study was to determine 1) how well current housing occupied by older adults meets the standards that would allow them to age and place, and 2) which older adults currently aging in place would be most likely to make changes to their homes.

Researchers conducted interviews and universal design home assessments with older homeowners living in the Columbus, Ohio area. The sample consisted of volunteers from local area churches, senior and recreational centers, and other senior associations. Interviews with residents included information about their perceived health and functional status, use of adaptive equipment, services they were receiving, and interest in making changes to their home. The universal design home assessment included evaluation of the entrances, kitchen, laundry, bathrooms, and the general living area. Homes were assessed in three domains 1) accessibility (first floor access, width of doorways), safety (grab bars, hand rails), and convenience (lever handles, easy reach storage).

The sample consisted of 61 homeowners who ranged in age from 65 to 91 years old (median age = 77.6). All but one was Caucasian, 55% were female, and the majority had several chronic health problems. The educational level was high with 70% having at least a Bachelor’s degree. The average age of their homes was 45.1 years and residents had been living in these homes for an average of 24.5 years.

Based on an adaption of a rating system developed by Andes and Beamish (2005) each home was assigned a total universal design score and subtotal scores for safety, accessibility, and convenience. For the 61 houses assessed, total universal design housing assessment scores ranged from 10 to 63 out of a possible score of 100. The average score was 40.5. Comparative analysis did not indicate significant correlations between the housing assessment score and the resident’s age, functional ability, or reported health issues. However there were significant correlations between

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the assessment score and the age of house ( $r = -.357$ ,  $p < .006$ ) and structure type ( $r = .190$ ,  $p < .05$ ).

Cluster analysis was used to determine particular sets of characteristics that might predict who was more likely to make universal design changes to their home. The results indicated four significantly different groups.

1) Healthy, high functioning older adults with no interest in making changes to their home. This group reported the lowest use of adaptive equipment and services. They reported no need for home modifications (mean age 77 years).

2) Not healthy, low functioning, older adults with no interest in making changes to their home. This group reported the worst health and the lowest home assessment scores, felt the most restricted in use of their home, and were more likely to use services and adaptive equipment. They also had the oldest mean age (82 years).

3) Not healthy, but fairly high functioning older adults with interest in changes to their home. This group had significantly higher home assessment scores than the other clusters. They reported significantly higher incomes, a fairly high use of services but low use of adaptive equipment (mean age 79 years)

4) Fairly healthy but low functioning older adults with interest in making changes to their home. This group reported a fairly high use of services, but low use of adaptive equipment. While they reported the least restrictive use of their home, they also were most desirous of modifications. Their mean assessment score was the second highest of the clusters. This group had the youngest mean age (75 years).

Results of this study indicate that the majority of older adults were living in houses that would not support their desire to age in place. Determining who might be more likely to make home modifications is rather complex. In this study, those least likely to make changes were the oldest individuals with the lowest home assessment scores and lowest functional abilities. They had chosen services and adaptive equipment to supplement their needs rather than home modifications. The two groups most interested in making changes were those in the marginal functional range. They either reported poor health, but higher functional ability and had already made home modifications; or they were younger, low functioning and currently used adaptive equipment. In both cases, these individuals were already aware of the positive effects of modifying their surroundings. The most difficult individuals to assess are those who are still healthy and functioning well. They currently see no need to change their housing and may be difficult to convince that there is a need.

If educators and policy makers must make decisions regarding the most efficient use of time and money, it might be prudent to target those individuals who are most likely to make changes. This study would indicate that those individuals who either have

higher incomes and better health or those who are already using services but not adaptive equipment might be most open to education about universal design. While older, lower income individuals may have the need for home modifications, the effectiveness of universal design education might be limited.

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## **EMPLOYMENT CHANGE AND HOUSING**

Ann Ziebarth, Elizabeth Davis\*

### **Purpose and Importance of the Study**

The purpose of this project was to identify the effect of changing employment on housing development in rural areas. Building on previous research examining rural employment growth and commuting patterns, we examined the potential impact of additional workers on housing (See for example, Davis & Bachewe 2004, Foulkes & Newbold 2005, McGranahan & Beale 2002, McGranahan 1999, Renkow & Hoover 2000, and Yeo & Holland 2004).

While all economic development regions in Minnesota experienced employment growth between 1990 and 2000, the percentage of individuals living and working in the same county declined. Previous research indicated that 60% of the employment growth in the state's metropolitan counties resulted from workers living outside the county and commuting in for jobs (Davis & Bachewe 2004). Alternatively, in nonmetropolitan counties, 56.5% of the growth was the result of increases in the local county labor force size. The increased local labor force can occur in a number of ways: unemployed workers entering the workforce, multiple job holding that double-counts workers, and workers moving into the county. The growth in the local labor force, as opposed to increased in-commuting, suggests that employment growth in non-metropolitan counties may have a greater impact on local housing needs than in metropolitan counties. Examining employment and housing change we sought to determine how employment change affects housing for nonmetropolitan counties.

### **Methodology**

The analyses used data from the 1990 and 2000 decennial Census.<sup>†</sup> Limiting our analysis to 66 non-metropolitan counties in Minnesota, a county typology was developed based on changes in employment, labor force, and commuting patterns. We began by categorizing non-metropolitan counties in terms of the percentage change in jobs. Next we examined the change in the number of housing units and in the vacancy rates. Using the findings from this analysis of employment and housing, we developed a set of explanatory scenarios. These scenarios were then used to develop a framework for understanding the links between employment and housing. Applying the scenario framework, a second set of typologies was developed and the non-metropolitan counties were sorted accordingly and reanalyzed.

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<sup>†</sup> Access to extensive data on commuting across county lines has been limited to the decennial Census until very recently, but the recent data cannot be used for longer-term comparisons.

## Findings/Conclusions

Linking employment changes with housing did not result in clear findings. Typically economically successful counties that experienced a job growth rate of 20% or more had large increases in worker in-commuting and larger population growth than in other categories. And, as expected, they experienced a larger increase in the number of housing units as well as a decrease in the housing vacancy rate. However, one county that experienced a net gain of 1,234 homes, also faced a 53.1% vacancy rate. Increases in median house values, median rents, and median incomes remained similar to counties in other job growth categories.

Some moderate job growth counties experienced population growth, while others had a decline in population. In counties with stable employment, all but two experienced population declines. A comparison of the two counties with stable employment and population increases found that both counties experienced considerable additional housing development (666 more homes in County A and 552 in County B). However the vacancy rate in County A was 21.5% and County B the vacancy rate was 7.6%. Among counties experiencing a decline in both jobs and population, one county had a slight decrease in the number of housing units yet median house values jumped 126%.

Focusing on an employment typology of counties left more questions than answers. The outcomes for housing with regard to job change did not provide a consistent pattern. Attempting to explain these confusing results, we next considered a set of scenarios as a basis for understanding the link between employment and housing. The new explanatory scenarios included six categories as follows:

1. Increased jobs accompanied by an increase in both population and housing. This is the standard economic development assumption that employment will attract workers and housing development will be the logical market response.
2. Increase in housing and population with little job increase. This would occur if the county attracted retirees or development of second homes.
3. Increased housing, population and out-commuting. Here the county would be experiencing the development of 'bedroom communities' where people were moving for more desirable or more affordable housing and then driving to jobs elsewhere.
4. Small population or housing increases with an increase in jobs. In this case, the county would attract workers from other counties. It may also indicate a need for additional housing and/or a lag in housing development.
5. Stable population and housing with a decrease in jobs. Here one would expect a corresponding increase in out-commuting.
6. Declining population and fewer housing units or increased vacancy rates accompanied by decreased jobs.

Sorting the non-metropolitan counties into these six categories was informative. Sixteen counties were economic "winners" successfully increasing the number of housing units, growing population and increasing employment. In these counties both

in-commuting and out-commuting increased substantially. No counties clearly fell into Category 2 Second Home/Retirement and only one county was classified as Category 3 Bedroom Community Development. Interestingly, the largest number of counties fell into Category 4 Employment Growth Alone. It is hypothesized that these counties may be experiencing a lag in housing development or may be located along major transportation routes making commuting more feasible. Fourteen counties were clearly “losing” counties experiencing declines in population, housing, and jobs.

A successful community development strategy is one in which a net increase in housing units indicates a greater potential for economic multiplier effects than job growth alone. Looking at the top ten counties in terms of percentage change in housing units between 1990 and 2000, we find the change in housing units varied from 13.7% to 21.8%. Seven of the ten counties fell into Category 1 with increased housing accompanied by an increase in jobs and population. The remaining counties had slightly lower population increases with employment demand met by increased in-commuting. These counties appear to be prime candidates for workforce housing development.

Finally, based on the available data, there is no clear linkage between changes in jobs and changes in housing units. Traditional economic development assumptions that housing development will naturally occur where employment increases was not substantiated.

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## **Refereed Abstracts – Poster Presentations**

# CHANGES IN HOME MODIFICATIONS AMONG OLDER ADULTS IN THE UNITED STATES

Amanda L. Anglyn, Yoko Mimura, Anne L. Sweaney\*

Home modifications can help growing numbers of elders in the United States maintain their independence within their home. Features such as no-step entry, lever handles, and elevated toilet seats make the home more accessible and safer for residents who have disabilities associated with aging. Using the *Health and Retirement Study (HRS)*, this study explored if age of the residents was associated with an increase in home modification as an option to help older Americans age in place, and if more of the houses with older persons had home modifications added in recent years (2004) than in the past (1996). The results of these studies can be used to educate consumers about the value and safety of adapting our living spaces.

## Background and Significance

The theoretical bases of the study are the competence and environmental press model (Lawton & Nahemow, 1973) and human capital theory (Becker, 1975). Universal design, which appeals to everyone (Null & Cherry, 1996) provides the underpinning for the study. Being newer residents of a home has been associated with the incidence of more universal design features (Nunn, 2003), and both age and the condition of the current residence has been associated with the decision and ability to have modifications (Nunn, 2003; Pynoos & Nishita, 2003). Kutty (1999) found home modification to be income inelastic among the households of older persons, that is, when there was an increase in income, the incidence of modification did not increase by as much as the percentage of increase in income.

Previous studies found that personal characteristics associated with the demand for home modifications were age (Nunn, 2003) and educational attainment of the residents (Kutty, 1999). Houses of older persons were more likely to have had more universal design features (Nunn, 2003). Kutty (1999) found an increase in the years of education was associated with increased demand for home modification.

## Research Objectives

The first objective of this study was to investigate if homes of older old adults (71 years old and older) were more likely to have had modifications added recently than those of younger old adults (50 to 70 years of age in 1996; 55 to 70 years of age in 2004), controlling for housing, household, and personal characteristics. The second objective was to investigate if homes of both younger old adults and older old adults

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were more likely to have had modifications added more recently (in 2004) than in an earlier year (1996), controlling for the aforementioned characteristics.

The housing characteristics controlled were whether the principal householder owned the current home or not and condition of current home. Household characteristics included were income, total number of residents, and region of residence. Personal characteristics of the householder that were controlled were gender, race, and educational attainment

### **Data and Sample**

The data for this study came from the *Health and Retirement Study (HRS)* by the Institute for Social Research (ISR) at the University of Michigan. The *HRS* began as a national panel study of 22,000 Americans who were 50 years of age and older as of 1992 (Institute for Social Research, 2008). In order to compare changes over time, data were examined from two separate time periods, 1996 and 2004.

The unit of observation for this study was the household, while the personal characteristics are those of the person who was assigned the smallest 'person identification number' by the ISR. Households with no responses to the home modification items were excluded from the sample. There are 6,597 observations from the 1996 survey and 8,029 from the 2004 survey.

The main variables of interest were presence of recent home modifications and age of the oldest person in the household. Home modifications are additions that make it easier and safer for older or disabled persons to live in the residence. The *HRS* asked whether a home modification was added in the last two years, to which the respondents chose "yes" or "no" in 1996, and "yes," "already accessible," or "no" in 2004. Sample characteristics are presented in Table 1.

### **Procedures**

The home modifications from both survey years was treated as a dichotomous variable ("yes/already accessible" or "no") in three multivariate logistic regression models. The dependent variable in each model was the presence of home modification. The proportions of the households that had added a modification two years prior to the survey time were 10.17% in 1996 and 15.23% in 2004. The first model examined the home modifications in 1996 and the second examined it in 2004. The last model compared the two years by pooling the observations and treated them as independent.

**Table 1. Sample description (1996 and 2004)**

| Variables  | Observation year |                 |
|--|------------------|-----------------|
|  | 1996             | 2005            |
| Observation year                                   |                  |                 |
| 1996   | 100%             | 0%              |
| 2004   | 0%               | 100%            |
| Age of the oldest resident***                      |                  |                 |
| <55  | 4.65%            | 0%              |
| 55 – 70  | 92.27%           | 31.29%          |
| >70  | 3.08%            | 68.70%          |
| <i>Housing characteristics</i>                     |                  |                 |
| Home ownership***                                  |                  |                 |
| Own  | 70.92%           | 68.18%          |
| Do not own   | 19.08%           | 22.95%          |
| Unknown status                                     | 10.00%           | 8.87%           |
| Home condition                                     |                  |                 |
| Excellent  | 27.25%           | 26.29%          |
| Very good  | 34.13%           | 33.49%          |
| Good   | 26.42%           | 27.84%          |
| Fair or poor                                       | 12.20%           | 12.38%          |
| <i>Household characteristics</i>                   |                  |                 |
| Household income (in 2004 \$)***                   | 62,505 (92,371)  | 41,841 (75,543) |
| Number of residents***                             | 2.44 (1.38)      | 1.94 (1.08)     |
| Region of residence***                             |                  |                 |
| Midwest  | 23.22%           | 22.09%          |
| Northeast  | 16.55%           | 14.68%          |
| South  | 41.63%           | 36.02%          |
| West   | 15.78%           | 15.81%          |
| Other  | 2.82%            | 11.40%          |
| <i>Personal characteristics of the householder</i> |                  |                 |
| Gender***  |                  |                 |
| Female   | 50.15%           | 54.50%          |
| Male   | 49.85%           | 45.50%          |
| Race***  |                  |                 |
| Non-White  | 21.87%           | 18.11%          |
| White  | 78.13%           | 81.89%          |
| Education***                                       |                  |                 |
| < high school                                      | 25.84%           | 29.59%          |
| high school graduate                               | 18.08%           | 16.80%          |
| College degree                                     | 56.08%           | 53.61%          |
| <i>N</i>   | 6,597            | 8,029           |

Note: Means and standard deviations are presented for two continuous variables, and column percents are presented for categorical variables. T-test compared group means for continuous variables, and Chi-square test compared it for categorical variables. \*\*\* $p < 0.0001$

## Results

While older old adult households were more likely to have added a modification in recent years than the younger old adult households, age was not significant in the 1996 data model. However, for the 2004 data model, age of the oldest member of the household was significant. Homes with older old persons had higher odds of adding modifications in the recent years than those with younger old persons. The result of the final model that included 1996 and 2004 observations shows that the “year” variable was significant, indicating that more of the older old persons’ households had added modifications in 2004 than in 1996. Table 2 shows the results of the last model.

**Table 2. Odds ratio estimates of recent home modification (1996 and 2004)**

| Variables  | Point Estimate | 95% Wald confidence limits |       |
|--|----------------|----------------------------|-------|
| Intercept  | 0.111***       |                            |       |
| 2004 (vs 1996)                                     | 1.164*         | 1.011                      | 1.341 |
| Age of the oldest resident (baseline: 55 – 70)     |                |                            |       |
| <55  | 0.961          | 0.652                      | 1.418 |
| >70  | 1.447***       | 1.261                      | 1.661 |
| <i>Housing characteristics</i>                     |                |                            |       |
| Home ownership (baseline: own)                     |                |                            |       |
| Unknown status                                     | 1.226*         | 1.034                      | 1.454 |
| Do not own   | 1.636***       | 1.451                      | 1.844 |
| Home condition (baseline: very good)               |                |                            |       |
| Excellent  | 1.331***       | 1.177                      | 1.504 |
| Good   | 1.004          | 0.883                      | 1.142 |
| Fair or poor                                       | 0.626***       | 0.517                      | 0.759 |
| <i>Household characteristics</i>                   |                |                            |       |
| Household income (natural log)                     | 0.980          | 0.939                      | 1.022 |
| Number of residents                                | 0.978          | 0.937                      | 1.021 |
| Region of residence (baseline: South)              |                |                            |       |
| Midwest  | 1.180*         | 1.036                      | 1.343 |
| Northeast  | 1.084          | 0.935                      | 1.258 |
| West   | 0.958          | 0.823                      | 1.116 |
| Other  | 1.247*         | 1.032                      | 1.506 |
| <i>Personal characteristics of the householder</i> |                |                            |       |
| Female   | 1.135*         | 1.023                      | 1.259 |
| Non-White  | 0.983          | 0.860                      | 1.123 |
| Education (baseline: high school graduate)         |                |                            |       |
| < high school                                      | 0.977          | 0.866                      | 1.103 |
| College degree                                     | 1.007          | 0.875                      | 1.159 |
| Log-likelihood ratio                               | 10,986.281     | (df = 18)                  |       |
| N  | 14,618         |                            |       |

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.0001$



## Implications

In summary, homes of older old adults (71 years of age and older) were more likely to have added modifications recently than those of younger old adults (70 years of age and younger), and homes of old adults were more likely to have added modifications recently. Adding home modifications helps older persons navigate their physical space and provide a safer environment. The finding about the current trend may be attributed to increased awareness of the value of modifications or desire to remain in their homes longer. This is very important because older adults are becoming more aware of what can help them age in place in their present community.

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## FINANCIAL EDUCATION SEMINARS FOR CONSUMERS: AN EMPIRICAL INVESTIGATION OF THEIR PERCEIVED EFFECTIVENESS

Swarn Chatterjee, Leslie Green Pimentel, Pamela Turner\*

Seminars related to consumer financial education, include several educational and counseling based activities. The consumer credit counseling companies often use these seminars as tools for informing consumers about their financial responsibilities and the need to pay-off their debt or save for retirement. Most of these programs focus on informing low income and minority households about sustainable wealth accumulation opportunities. However, there exists very little empirical evidence on the effectiveness and efficacy of these programs. The purpose of this study is to fill in this void through an empirical research model that evaluates various aspects of the counseling process.

For the purpose of this study, we use a proprietary dataset provided by the Consumer Credit Counseling Services<sup>†</sup> to investigate the perceived effectiveness of different educational activities within the financial education program. The empirical model of this paper attempts to investigate the respondents' overall perceived financial knowledge increases from attending a seminar session.

The two hypotheses of this paper are as follows: Hypothesis 1: Attending this seminar will increase the knowledge of lower income households and minorities, who do not often have access to reliable financial education. Hypothesis 2: Attending this seminar will increase the likelihood of planning for one's future including homeownership and gaining further financial knowledge. This paper uses the probit estimation technique to examine the factors that may increase the likelihood of gaining greater financial knowledge, planning for homeownership and gaining further financial counseling among the respondents.

### Dependent variables

The three dependent binary variables used in these analyses are:

*Financial knowledge.* The variable was coded as '1' if the respondents were in the highest quartile of their reported financial knowledge score and 0 if otherwise.

*Plan home purchase.* The variable was coded as '1' if respondents wanted to plan on purchasing a home upon attending the financial education session and '0' if otherwise.

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\* Swarn Chatterjee, Assistant Professor, Leslie Green Pimentel, Graduate student, and Pamela Turner, Assistant Professor and Extension Housing Specialist, all of the University of Georgia

<sup>†</sup> We thank the Consumer Credit Counseling Services of Atlanta, Ga for providing us with this dataset

*Plan to get more counseling.* The coding was '1' if the respondents wanted greater financial counseling and '0' if otherwise.

### *Independent variables*

*Age.* The respondents in the survey were asked to identify themselves as belonging to the 18-24, 25-34, 35-44, 45-54 or 55 plus age groups. Each age group was dummy coded as being '1' if the respondent belonged to the particular age group and '0' if otherwise.

*Gender.* Gender was coded as '1' if female and '0' if male

*Race.* Whites were used as the reference group in the estimation models of this study. The Whites were compared against, Blacks, Hispanics, Asians and other races. For the purpose of this study each race variable was binary coded as '1' or '0'

*Marital status.* Marital status variables comprise of single, married, divorced, widowed or partnered. Each coded as '1' if yes and '0' otherwise.

*Educational Attainment.* The educational attainment variable comprised of the following binary coded variables: elementary, HS/GED, college, bachelor, masters and doctorate.

*Employment status.* Employment status is a binary variable, coded as '1' if employed and '0' if otherwise.

*Financial Situation.* If the respondents reported scores in the top half of being financially prepared prior to coming to the seminar, they were coded as '1' and as '0' if otherwise.

## **Results**

The results reveal that respondents between 25 and 44 years of age; women as opposed to men; minorities as opposed to the reference group of White respondents; those who were employed; have higher income; and felt in control of their financial situation prior to coming to the seminar, perceived greater overall benefit from attending the seminar. While, the likelihood of planning for a home purchase was higher among respondents with ages between 18 and 44; it was also higher among Blacks, Hispanics and other minorities when compared with the reference group of White respondents; among those who were employed and for those who reported being in control of their financial situation prior to attending the seminar. Also, respondents with income below \$60,000 were more likely to plan for purchasing a home, when compared with the reference group of respondents with income of higher than \$60,000. The likelihood of getting more financial counseling also increased with being employed and for those respondents who reported being in control of their financial situations. Additionally, younger respondents below age 44 when compared to the reference group of 54 or

higher; Blacks, Hispanics and other minorities and those who had income of less than \$60,000 were also likely to plan on getting more financial counseling sessions.

The results therefore indicate that the financial counseling seminars conducted by the consumer credit counseling were perceived to be more beneficial, by the groups of younger respondents, lower to moderate income earners; minority households; employed respondents and among those who had greater confidence in handling their financial situations.

## **ON THE MOVE: FREQUENT RELOCATION AND FAMILY CONNECTION**

Jessica Lloyd, Cynthia Hokey, Kathleen Parrott\*

According to the US Census Bureau (2001), nearly 12 million children changed residence in 1999 - 2000. Yet, frequent relocation is often examined in terms of its outward effects on a child's social or academic progress. How are internal family dynamics affected by relocation? Do children who move frequently prior to the age of 18 feel less connected to their homes and families? Do they call, email, or visit home less often? Sadly, these questions remain unanswered in the existing body of literature.

This quantitative study explores the relationship between frequent relocation and family connection during the transition to college. Contact methods: email, phone, or US mail were explored. The results of this study suggest that frequent relocation had no negative effects on parent-child connection as measured by the frequency of contact and self-reported closeness during the transition to college life.

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\* Jessica Lloyd, Doctoral Candidate, Cynthia Hokey, Doctoral Student, and Kathleen Parrott, Professor; all are in the Department of Apparel, Housing and Resource Management, Virginia Tech.

# **RISKY BUSINESS: EXPLORING THE ROLE OF CONSUMER CONFIDENCE IN MORTGAGE PRODUCT CHOICE**

Gina Gould Peek<sup>\*</sup>

## **Purpose of the Research**

The United States is facing a mortgage crisis with spillover effects into other markets. Foreclosure rates are increasing at increasing rates, and some giants of Wall Street, such as Bear Stearns, have stumbled or fallen. Unarguably, not just one factor has caused current shaky economic conditions. We may trace the roots of today's problems to the U.S. housing market's risky mortgages. How was it that consumers chose riskier mortgage products in such high numbers? Were choices made out of inexperience or were choices made out of confidence acquired via previous homeownership experience?

The purpose of this study was to examine the effect of previous mortgage experience on holding more sophisticated and therefore riskier mortgage products. The key hypothesis is that if consumers have had prior mortgage experience, they may feel more savvy and confident about selecting newer, more sophisticated mortgage products. Increased levels of confidence may lead to riskier choices.

Little literature exists specifically about the relationship between consumer confidence and mortgage product choice. Extant literature may focus on relationships including but not limited to the effect of demographic factors, such as income, on mortgage product choice. This effort is unique in that no other works use nationally-representative datasets and econometric techniques to examine the effects of consumer confidence on choosing higher risk mortgage products.

## **Research Objectives**

The research objective is to examine the effect of confidence (as measured by previous experience) on taking riskier mortgage products (as measured by adjustable rate mortgages).

## **Methodology**

This paper uses the 2005 wave of the American Housing Survey (AHS) (N = 69,020). For the purposes of this paper, the data have been restricted to respondents who own their homes (N = 34,248). By restricting the data, the estimations are not clouded by responses associated with renters. The variables chosen for estimations are shown in Table 1.

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<sup>\*</sup> Gina Gould Peek, graduate student, University of Georgia

**Table 1. Variable Descriptions**

| Variable Name  | Measurement   |
|--|---|
| <b>Dependant Variable:</b>   |   |
| adjustable rate mortgage   | Dummy variable equal to one if first mortgage changes due to interest rate    |
| <b>Key Independent Variable:</b>   |   |
| experience   | Dummy variable equal to one if respondent has prior experience as a homeowner |
| <b>Other Independent Variables:</b>  |   |
| ammort   | Ordinal variable for amount of 1st mortgage when acquired                     |
| hsgrad   | Dummy variable equal to one if respondent is a high school graduate           |
| collgrad   | Dummy variable equal to one if respondent is a college graduate               |
| collpost   | Dummy variable equal to one if respondent has some post-college education     |
| cost_ratio   | Ordinal variable for monthly payment for first mortgage divided by income     |
| intw   | Ordinal variable for interest rate of first mortgage (whole number)           |
| mortin   | Dummy variable equal to one if type of first mortgage is FHA                  |
| regnortheast   | Dummy variable equal to one if Census Region is Northeast                     |
| regmidwest   | Dummy variable equal to one if Census Region is Midwest                       |
| regsouth   | Dummy variable equal to one if Census Region is South                         |
| regwest  | Dummy variable equal to one if Census Region is West                          |
| Value  | Ordinal variable for current market value of unit                             |
| Yrmor  | Ordinal variable for year first mortgage obtained                             |
| zinc2  | Ordinal variable for household income   |
| <b>Reference Categories:</b>   |   |
| <ul style="list-style-type: none"> <li>• Education: hsgrad</li> <li>• Census Region: regnortheast</li> </ul> |   |

### Procedures

The dependant variable (adjustable rate mortgage [ARM]) is binomial. Therefore, logistic regression is an appropriate means of answering the research question. Essentially, logistic regression will estimate the change in probability of adjustable rate mortgage given previous experience.

### **Simple Model Logistic Regression**

Simple logistic regression is used to show the importance of controlling for a variety of factors. This simple model illustrates the relationship between the probability of choosing an adjustable rate mortgage and previous experience as a homeowner.

Model 1. Simple Logistic Regression

$$\Pr(\text{ARM}_i = 1) = F(\beta_o + \beta_1 \text{prevexp}_i)$$

### **Full Model Logistic Regression**

The following model uses the same logistic estimation techniques to estimate the change in probability of adjustable rate mortgage given previous experience and includes control variables.

Model 2. Full Model Logistic Regression

$$\Pr(\text{ARM}_i = 1 | x_1, x_2, \dots, x_k) = F(\beta_o + \beta_1 \text{prevexp}_i + \beta_2 X_2 + \beta_k X_k)$$

### **Results**

Estimations revealed several statistically significant variables (see Table 2). Tests for multicollinearity did not reveal any significant correlation between independent variables. Holding all else equal, interpretation of the key independent coefficient is as follows. The odds of having an adjustable rate mortgage is 24.1 percent higher for those with prior homeownership experience (*experience*) relative to those who have no prior experience. Additionally, an increase in interest rate of first mortgage (*intw*) is estimated to decrease the probability of choosing an adjustable rate mortgage.

### **Implications**

The results support the key hypothesis that if consumers have had prior mortgage experience, they may feel more confident about selecting newer, more sophisticated mortgage products. Indeed, increased levels of confidence may lead to riskier choices. Therefore, to help reduce the sense of security that may be falsely associated with prior experience, homebuyer education should be mandatory for all homeowners. While mandated homebuyer education might not be feasible for all, at minimum, it should be recommended by key players in the housing market. If homebuyer education were a mandatory part of sales transactions, risk may be reduced by increasing human capital such that consumers may make better informed decisions based on education, rather than prior levels of confidence.



**Table 2. Logistic Regression Model Results for Dependant Variable of Adjustable Rate Mortgage**

| Independent Variables | Model 1:<br>Simple Model Logistic<br>Regression Results<br>N = 29,171 |               | Model 2:<br>Full Model Logistic<br>Regression Results<br>N = 7,218 |            |
|-----------------------|---|---------------|--|------------|
|                       | Coefficient<br>(Standard Error)                                       | Odds<br>Ratio | Coefficient<br>(Standard Error)                                    | Odds Ratio |
| Experience            | .0893<br>(.063)   | 1.093         | .1080<br>(.052)*   | 1.241      |
| Ammort                | ---   | ---           | .0000<br>(.000)**  | 1.000      |
| Collgrad              | ---   | ---           | -.1531<br>(.121)   | .858       |
| Collpost              | ---   | ---           | -.1307<br>(.147)   | .877       |
| cost_ratio            | ---   | ---           | -.0025<br>(.006)   | .998       |
| intw                  | ---   | ---           | -.1531<br>(.043)**   | .858       |
| mortin                | ---   | ---           | .2128<br>(.118)  | 1.530      |
| regmidwest            | ---   | ---           | .3820<br>(.166)*   | 1.465      |
| regsouth              | ---   | ---           | .3671<br>(.165)*   | 1.444      |
| regwest               | ---   | ---           | .5298<br>(.162)**  | 1.699      |
| value                 | ---   | ---           | .0000<br>(.000)  | 1.000      |
| yrmor                 | ---   | ---           | .0260<br>(.015)  | 1.026      |
| zinc2                 | ---   | ---           | .0000<br>(.000)  | 1.000      |

\*statistically significant at  $\alpha = .05$

\*\*statistically significant at  $\alpha = .01$

# EXPLORATORY STUDY ON THE EFFECT OF HOUSING TENURE AND SELF REPORTED HEALTH AMONG OLDER ADULTS

Leslie Green Pimentel\*

## Purpose of Research

The presence of housing debt has been shown to have an effect on the well-being of the owner. Homeowners who experience problems paying their mortgage have suffered a decrease in their well-being and an increase in stress, manifested physically and mentally (Nettleton & Burrows, 1998; 2000). Additionally it has been found that those who own with no mortgage exhibit less psychological distress than those with a mortgage (Cairney & Boyle, 2004).

A new trend is being noted among near retirees; they have less equity going into retirement relative to prior generations. In 1983, the Survey of Consumer Finances revealed that 43% of near retirees (55-64 years old) held a mortgage and in 2004 that number increased to 64% (as cited in Masnick, Zhu, & Belsky, 2006). In 2000, the Health and Retirement Study indicated that 60% of persons over age 65 and still holding a mortgage owed over \$100,000 (Lee, Lown, & Sharpe, 2007). Such debt obligations and the consequences of late or non-payment could be devastating to older households as they enter a stage of life where income decreases and expenses are likely to increase.

The purpose of this research was to examine the effect of housing debt on self reported health<sup>†</sup> among older adults, specifically, the probability of respondents having good health. Health and Retirement Study (HRS) data from 2006 were used to analyze this relationship.

## Research Objectives

There is limited research examining the relationship of mortgage debt among older persons and their health. This research is a preliminary study to see if a relationship exists between housing tenure (mortgagee versus own with no mortgage) and the probability of having good health among older adults. The research questions addressed are as follows:

1. What are the demographic and financial profiles of mortgagees in the HRS of those who are aged 55 and older?
2. What is the effect of housing tenure on the probability of having good health of those who are aged 55 and older?

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\* Leslie Green Pimentel, graduate student, University of Georgia

† Self reported health has been shown to be reliable in prior research (as cited in Lyons & Yilmazer, 2005)

## Methodology

The HRS is a longitudinal survey of older Americans and is appropriate to answer the research questions as it contains detailed information regarding respondents' health as well as their mortgage\*. The sample consisted of 4,734 persons aged 55 and older who either own their home outright or have a mortgage on their primary residence. The dependent variable was self reported health. This variable was dichotomized and coded as "1" if health was reported as excellent, very good, or good, and "0" if health was reported as fair or poor. The primary independent variable of interest was housing tenure and consisted of those who own with no mortgage and mortgagees ("1" if respondent has a first mortgage, second mortgage, or a loan on a home equity line of credit; "0" if own with no mortgage) own with no mortgage being the reference group. Other independent variables included: 1) race (dummy variables of white – reference group, black, Hispanic), 2) marital status (dummy variables of married – reference group, not married), 3) employment status (dummy variables of employed – reference group, unemployed), 4) education (dummy variables of less than high school – reference group, high school graduate, college), 5) gender (dummy variable of male – reference group, female), 6) total income (log income), 7) total assets (log assets), and 8) whether or not the respondent smokes ("1" if yes, "0" otherwise). Data were analyzed using descriptive statistics and a logit model. Independent variables were checked for multicollinearity, no significant correlations were found. Two logit models were analyzed:

$$\text{Model 1: } \ln[\text{Pr}(\text{health}=1)/\text{Pr}(\text{health}=0)] = \beta_0 + \beta_1\text{mortgage} + \varepsilon$$

$$\text{Model 2: } \ln[\text{Pr}(\text{health}=1)/\text{Pr}(\text{health}=0)] = \beta_0 + \beta_1\text{mortgage} + \beta_2\text{hispanic} + \beta_3\text{black} + \beta_4\text{notmarried} + \beta_5\text{unemployed} + \beta_6\text{hsgrad} + \beta_7\text{college} + \beta_8\text{smoke} + \beta_9\text{male} + \beta_{10}\text{logincome} + \beta_{11}\text{logassets} + \varepsilon$$

## Results

The majority of respondents were white, married, unemployed, had at least some college education, and did not smoke. The median income was \$36,800 and median assets, which includes primary residence, was \$270,000. The average mortgage amount was \$93,011 (median was \$66,000), average second mortgage debt amount was \$39,553 (median was \$30,000), and average loan on a home equity line of credit was \$45,615 (median was \$18,000). These figures imply that only a few households reported very large amounts of mortgage debt.

There is evidence that among this age group housing tenure may have an effect on self reported health. Model 1 indicated a negative and significant ( $p = .0027$ ) association between the probability of reporting good health and having a mortgage.

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\* The mortgage variables allow mortgages beyond the initial mortgage to be considered such as a second mortgage or home equity line of credit and also include the values of these mortgages. The HRS also contains detailed information regarding the respondents' health; this information may be utilized in expansions on this exploratory study.

The odds ratio was 0.867, thus the odds of reporting good health was 13.3% lower for those with a mortgage than those who own their home with no mortgage. For model 2, a negative and significant association between having a mortgage and the probability of good health was also found ( $p = 0.015$ ). The odds ratio for the mortgage variable was 0.846, only slightly lower than in model 1. The results for the other significant explanatory variables followed the expectations for this sample of homeowners aged 55 and older (see Table 1).

**Table 1. Logistic Regression Results**

| Variable                           | Model 1 (N=8447)          |            | Model 2 (N=4734)          |            |
|------------------------------------|---------------------------|------------|---------------------------|------------|
|                                    | Parameter estimate (S.E.) | Odds ratio | Parameter estimate (S.E.) | Odds ratio |
| Housing tenure: (no mortgage)      |                           |            |                           |            |
| Mortgage                           | -0.1422 (0.0474)**        | 0.867      | -0.1677 (0.0689)*         | 0.846      |
| Race: (White)                      |                           |            |                           |            |
| Hispanic                           | -                         | -          | -0.5230 (0.1296)***       | 0.593      |
| Black                              | -                         | -          | -0.3770 (0.0982)***       | 0.686      |
| Marital status: (married)          |                           |            |                           |            |
| Not married                        | -                         | -          | 0.1353 (0.775)            | 1.145      |
| Employment status: (employed)      |                           |            |                           |            |
| Unemployed                         | -                         | -          | -0.2275 (0.0907)*         | 0.797      |
| Education: (less than high school) |                           |            |                           |            |
| High school graduate               | -                         | -          | 0.5371 (0.0835)***        | 1.711      |
| College                            | -                         | -          | 0.6759 (0.0864)***        | 1.966      |
| Smoke                              | -                         | -          | -0.5852 (0.0833)***       | 0.557      |
| Gender: (female)                   |                           |            |                           |            |
| Male                               | -                         | -          | -0.0179 (0.0679)          | 0.982      |
| Log income                         | -                         | -          | 0.2360 (0.0430)***        | 1.266      |
| Log assets                         | -                         | -          | 0.1024 (0.0182)***        | 1.108      |
| Intercept                          | 0.6548 (0.0285)***        | -          | -3.2263 (0.4803)          | -          |
| Likelihood Ratio                   | 8.9552**                  |            | 469.1324***               |            |

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Note: Reference categories are in parentheses

## Conclusions and Implications

This exploratory study shows statistical significance in the relationship between housing tenure and health, however, it does not control for reverse causality. Homeowners could very well be drawing on their home equity to maintain their health. Older households are entering the stage in their lives where income decreases and living expenses are expected to increase, thus it is important to at least acknowledge that a relationship may exist between housing tenure and health. Many homeowners may feel their equity is a major part of their financial savings plan. However, drawing upon home equity has the potential to lead to negative consequences such as default.

While some may have adequate equity to cure a default, this would take away from a potential bequest, which is also important to some individuals.

A better understanding of this topic could assist financial planners and educators in their endeavors to help prepare clientele. Because the possibility of reverse causality is high, the next stage of this exploratory study is to run a two stage probit model (Lyons & Yilmazer, 2005) or, to examine the effect of housing tenure on health longitudinally.

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## THE DETERMINANTS OF THE AMOUNT OF HOME EQUITY OVER THE LIFE CYCLE

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Home equity accounts for a large proportion of a household's wealth. As people age, the amount of home equity should increase. This study developed a model to assess the determinants of home equity over the life cycle using the life cycle hypothesis and the theory of planned behavior as a theoretical framework (Ajzen, 1991).

According to theory of planned behavior, there are three factors that will influence a person's intentions. The first factor is the attitude toward a specific behavior, the second factor is the subjective norms, and the third factor is perceived behavior control. The relationship between attitude toward a specific behavior and a person's intention to perform the behavior is obvious. Those who have positive attitude toward an action will be more likely to have the intention to perform the behavior, and this higher intention should lead to the actual behavior. Subjective norms are important because how others think will be an influential standard for individual behavior. The third factor is perceived behavioral control. This means that if a person does not have confidence in their ability to perform some behavior, they will be less likely to form an intention to do it. The behavior factors form the intention toward a specific behavior, and then, the intention influences the specific behavior.

The empirical model was: Home equity = f (Attitude, Subjective Norms, Perceived Control, Past behavior) where attitude was measured by attitude toward risk in saving and investing; subjective norms were measured by age, ethnicity, marital status; perceived control was measured by education and health, and past behavior was measured by paying bills on time, how they usually spend their income, and the length of their planning horizon.

The measure of home equity and one of the independent variable: net worth, were adapted from the program provided by Federal Reserve Board on the website in order to have equal measurement across different studies. Home equity was the total value of the home minus the debt still owed. Data on 2,930 homeowners from the 2004 Survey of Consumer Finances were examined using OLS regression. Constructs that were examined included measures of attitude, subjective norms, perceived control, and past behavior.

It was hypothesized that the more favorable one's attitude toward risk, the amount of home equity would be larger. Also, it was hypothesized that the amount of home equity would increase as the household head aged, that households headed by a white person would have more home equity than others, education, health and income would be positively related to home equity, those who work full-time would have larger

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amount of home equity, and married households would have more home equity than singles. In regard to past behavior, it was hypothesized that those who always pay off their bills and those who hold a negative attitude toward credit would have more home equity, compared to those who have a hard time paying their bills and those who have positive attitude toward credit, respectively.

The hypotheses regarding to attitude toward risk and credit seem inconsistent. However, risk and credit are not similar concepts. Attitude toward risk represents one's willingness to endure risk when managing their assets, while attitude toward credit represents one's opinion on whether borrowing money would be acceptable.

Attitudinal variables include attitude toward risk and attitude toward credit. Attitude toward risk is measured by the question "Which of the following statements comes closest to describing the amount of financial risk that you are willing to take when you save or make investments?" The participant could choose from willing to take substantial financial risks, above average financial risks, average financial risks, to not willing to take any financial risks. Credit attitude was measured by the question "In general, do you think it is a good idea or a bad idea for people to buy things on the installment plan?" The participants could choose from good idea, good in some ways, bad in others, to bad idea.

The variables related to subjective norms are age, marital status, and race. Age was measured by the question "How old are you?" Marital status was measured by the question "Are you currently married or living with a partner, separated, divorced, widowed, or never been married?" Race was measured by the question "Which of these categories do you feel best describe you: white, black or African-American, Hispanic or Latino, Asian, American Indian or Alaska Native, Hawaiian Native or other Pacific Islander, or another race?"

Perceived control variables are net worth, education, work status, and health. Education variable was the highest level of education of the participant. Work status was the current work status of the participant. As to health variable, the question asked was "Would you say your health is excellent, good, fair, or poor?"

The descriptive statistics for the sample were: mean age of the head of household, 49.56 years; average years of education, 13.27; average household size, 2.39 individuals; and average years worked full time, 13.47. The average amount of home equity for the total sample was \$170,669. The average amount of home equity by age was: for households with heads younger than 40, \$76,039; heads aged 40 to 65, \$191,188; and for heads aged 65 and over, \$208,574 (see Table 1).

All of the variables except attitude toward credit and work status were significantly related to the amount of home equity for the total sample (see Table 2). Attitude toward use of credit was not related to home equity; apparently credit use is an accepted practice for most households. The work status variable was not consistent with the hypothesis. Those who work part-time have larger amount of home equity. The

result is reasonable if we consider that all part-time workers studied here were the ones who have a house. The characteristics of these part-time workers are different from those who do not have a house at all. They might be working part-time because they have less financial burden than those who have to work full-time.

To understand the importance of the different variables over the life cycle, separate analyses were conducted for the three age groups (see Table 3-6). For households headed by a person younger than 40, income was significantly related to the amount of home equity. For households with a head between 40 and 65, income and education were positively related to the amount of home equity. Also, for this age group, those who worked full time had less home equity than those who worked part-time. For households headed by a person aged 65 and over, income and health were significantly related to the amount of home equity.

The results show the importance of examining the determinants of the amount of home equity for different age groups. The results suggest that younger households with more income will accumulate home equity, that households in the middle years (40 to 65) will accumulate home equity depending on their education and income. The most important finding in this study is that, for older households, income is important and health becomes important. Specifically, excellent health has a positive effect on the amount of home equity, which implies that health status is important in relationship to a person's sense of control in managing their finances and taking care of their home.

Educators can encourage younger households to improve their human capital by obtaining as much education as possible. This should enable them to earn a higher salary over their life time. Educators should also encourage younger households to use credit responsibly. Educators and health providers should continue to encourage the maintenance of a healthy life style throughout one's life. Policy makers should support legislation to enforce responsible lending practices by mortgage lenders and to continue to provide educational programs for homebuyers. Financial advisors should help clients plan to pay off their homes before retirement.

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Table 1. Weighted Descriptive Statistics of Households Who Own a Home in the 2004 SCF (N = 2,958)

| Variables   | Mean    | Median  | SD        | Frequency (%) |
|---|---------|---------|-----------|---------------|
| <b>Dependent Variable</b>                                 |         |         |           |               |
| Home equity   | 168,374 | 95,000  | 321,897   |               |
| <b>Independent Variables</b>                              |         |         |           |               |
| <b>Attitudinal Variables</b>                              |         |         |           |               |
| Attitude toward risk                                      |         |         |           |               |
| Not willing to take any risk (reference group)            |         |         |           | 34.70         |
| Willing to take average risk                              |         |         |           | 43.75         |
| Willing to take above-average risk                        |         |         |           | 21.56         |
| Attitude towards use of credit                            |         |         |           |               |
| Negative attitude towards use of credit (reference group) |         |         |           | 32.16         |
| Neutral attitude towards use of credit                    |         |         |           | 37.38         |
| Positive attitude towards use of credit                   |         |         |           | 30.46         |
| <b>Subjective Norms</b>                                   |         |         |           |               |
| Age   |         |         |           |               |
| 40 or younger (reference group)                           |         |         |           | 24.30         |
| 40 to 65  |         |         |           | 52.03         |
| Older than 65   |         |         |           | 23.67         |
| Race  |         |         |           |               |
| Nonwhite (reference group)                                |         |         |           | 18.82         |
| White   |         |         |           | 81.18         |
| Marital Status  |         |         |           |               |
| Without a partner (reference group)                       |         |         |           | 31.56         |
| With a partner  |         |         |           | 68.44         |
| <b>Perceived Control</b>                                  |         |         |           |               |
| Net worth   | 638,692 | 198,000 | 3,056,776 |               |
| Education   |         |         |           |               |
| Less than high school (reference group)                   |         |         |           | 11.98         |
| High school   |         |         |           | 26.87         |
| Some college  |         |         |           | 22.49         |
| College graduated   |         |         |           | 38.65         |
| Work status   |         |         |           |               |
| Part-time (reference group)                               |         |         |           | 7.59          |
| Full-time   |         |         |           | 64.92         |
| No work   |         |         |           | 27.49         |
| Health  |         |         |           |               |
| Fair or bad (reference group)                             |         |         |           | 19.81         |
| Good  |         |         |           | 49.80         |
| Excellent   |         |         |           | 30.39         |

Table 2. Ordinary Least Square Regression on Home Equity of Households Who Own a Home in the 2004 SCF (N = 2,958)

| Variables                        | Estimate | Standard Error | P-value    |
|----------------------------------|----------|----------------|------------|
| Intercept                        | -230,289 | 170,641        | 0.18       |
| Average risk                     | 116,331  | 73,874         | 0.12       |
| Above-average risk               | 183,954  | 83,091         | *0.03      |
| Neutral attitude towards credit  | -11,033  | 64,496         | 0.86       |
| Positive attitude towards credit | -12,225  | 67,661         | 0.86       |
| 40 to 65                         | 306,413  | 73,961         | ****<.0001 |
| Older than 65                    | 222,219  | 102,835        | *0.03      |
| White                            | 171,566  | 80,744         | *0.03      |
| With a partner                   | 140,981  | 66,991         | *0.04      |
| Net worth (in millions)          | 19,062   | 573            | ****<.0001 |
| High school                      | -103,689 | 117,751        | 0.38       |
| Some college                     | -55,295  | 122,531        | 0.65       |
| College graduated                | 256,119  | 114,997        | *0.03      |
| Full-time                        | -221,972 | 99,753         | *0.03      |
| No work                          | -76,867  | 109,256        | 0.48       |
| Good health                      | 153,829  | 84,574         | 0.07       |
| Excellent health                 | 293,340  | 90,339         | **0.00     |

Footnotes:

(1)R-squared = 0.34

(\*) p <.05

(\*\*) p <.01

(\*\*\*) p <.001

Table 3. Ordinary Least Squares Regression on Home Equity of Households Who Own a Home and the Household Head is 40 or Younger in the 2004 SCF (N = 451)

| Variables                        | Estimate | Standard Error | P-value    |
|----------------------------------|----------|----------------|------------|
| Intercept                        | 189,707  | 437,485        | 0.66       |
| Average risk                     | 167,527  | 174,194        | 0.34       |
| Above-average risk               | 67,145   | 192,411        | 0.73       |
| Neutral attitude towards credit  | -315,416 | 153,772        | *0.04      |
| Positive attitude towards credit | -300,967 | 154,556        | *0.05      |
| White                            | 42,847   | 164,830        | 0.80       |
| With a partner                   | 122,244  | 152,277        | 0.42       |
| Net worth (in millions)          | 15,847   | 2,277          | ****<.0001 |
| High school                      | -271,199 | 269,975        | 0.32       |
| Some college                     | -23,199  | 277,902        | 0.93       |
| College graduated                | -224,907 | 273,222        | 0.41       |
| Full-time                        | 173,185  | 365,238        | 0.64       |
| No work                          | 172,856  | 454,018        | 0.70       |
| Good health                      | -124,065 | 213,207        | 0.56       |
| Excellent health                 | 88,410   | 224,837        | 0.69       |

Footnotes:

(1)R-squared = 0.13

(\*) p < .05

(\*\*) p < .01

(\*\*\*) p < .001

Table 4. Ordinary Least Squares Regression on Home Equity of Households Who Own a Home and the Household Head is 41 to 65 Years Old in the 2004 SCF (N = 1,810)

| Variables                        | Estimate | Standard Error | P-value    |
|----------------------------------|----------|----------------|------------|
| Intercept                        | 73,213   | 201,624        | 0.72       |
| Average risk                     | 58,057   | 90,407         | 0.52       |
| Above-average risk               | 192,409  | 98,124         | 0.05       |
| Neutral attitude towards credit  | 142,332  | 75,490         | 0.06       |
| Positive attitude towards credit | 79,255   | 78,966         | 0.32       |
| White                            | 148,419  | 92,459         | 0.11       |
| With a partner                   | 94,521   | 81,579         | 0.25       |
| Net worth (in millions)          | 26,312   | 792            | ****<.0001 |
| High school                      | -16,833  | 160,966        | 0.92       |
| Some college                     | -62,864  | 162,471        | 0.70       |
| College graduated                | 412,109  | 153,968        | **<.01     |
| Full-time                        | -409,340 | 119,827        | ***<.001   |
| No work                          | -114,298 | 145,960        | 0.43       |
| Good health                      | 150,894  | 106,276        | 0.16       |
| Excellent health                 | 192,301  | 110,098        | 0.08       |

Footnotes:

(1)R-squared = 0.44

(\*) p < .05

(\*\*) p < .01

(\*\*\*) p < .001

Table 5. Ordinary Least Squares Regression on Home Equity of Households Who Own a Home and the Household Head is Older Than 65 in the 2004 SCF (N = 630)

| Variables                        | Estimate | Standard Error | P-value      |
|----------------------------------|----------|----------------|--------------|
| Intercept                        | 13,993   | 347,536        | 0.97         |
| Average risk                     | 183,230  | 172,028        | 0.29         |
| Above-average risk               | -11,645  | 226,126        | 0.96         |
| Neutral attitude towards credit  | -116,319 | 166,954        | 0.49         |
| Positive attitude towards credit | 83,752   | 181,835        | 0.65         |
| White                            | 205,019  | 260,567        | 0.43         |
| With a partner                   | 141,924  | 163,075        | 0.38         |
| Net worth (in millions)          | 12,325   | 995            | **** < .0001 |
| High school                      | -98,477  | 235,965        | 0.68         |
| Some college                     | 6,505    | 273,464        | 0.98         |
| College graduated                | 179,775  | 238,244        | 0.45         |
| Full-time                        | 260,959  | 225,759        | 0.25         |
| No work                          | -170,035 | 197,164        | 0.39         |
| Good health                      | 227,556  | 178,029        | 0.20         |
| Excellent health                 | 544,114  | 216,443        | *0.01        |

Footnotes:

(1) R-squared = 0.29

(\*) p < .05

(\*\*) p < .01

(\*\*\*) p < .001

Table 6. Comparing Determinants of Home Equity between Three Age Groups of Households Who Own a Home in the 2004 SCF

| Variables               | 40 or Younger | 41 to 65 | Over 65 | Whole |
|-------------------------|---------------|----------|---------|-------|
| Average risk            |               |          |         |       |
| Above-average risk      |               |          |         | +     |
| Neutral towards credit  | _*            |          |         |       |
| Positive towards credit | _*            |          |         |       |
| White                   |               |          |         | +     |
| With a partner          |               |          |         | +     |
| Net worth (in millions) | ++++          | ++++     | ++++    | ++++  |
| High school             |               |          |         |       |
| Some college            |               |          |         |       |
| College graduated       |               | ***      |         | +     |
| Full-time               |               | ***      |         | _*    |
| No work                 |               |          |         |       |
| Good health             |               |          |         |       |
| Excellent health        |               |          | +       | ***   |
| 40 to 65                |               |          |         | ++++  |
| Older than 65           |               |          |         | +     |