Loss of Age-Restricted Status and Property Values: Youngtown Arizona

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Abstract   This study finds evidence of a large premium in Youngtown
                  Arizona house prices that persisted over time and could be
                  attributed to the town's age-restricted status. Age restrictions
                  may act as a signal that the community provides facilities and
                  services that meet the needs of the senior population and the
                  assurance that those facilities and services will be available in
                  the future. This assurance reduces uncertainty for future owners
                  and it is the reduced uncertainty that is capitalized into house
                  prices. The loss of the age restriction resulted in the elimination
                  of the premium over approximately twelve to eighteen months.

Introduction

While the majority of seniors prefer mixed communities, a significant percentage of them have chosen to live in age-restricted projects or communities. Data from the *American Housing Survey* indicate that approximately 27% of households with one or more occupants age 55 or older live in age-restricted communities, which represents almost 10% of total occupied units.[1] A comparable percentage is reported in *Housing America's Seniors* but it is based on those age 60 or older.[2] The same report cites Census Bureau projections that the elderly population, defined as those 65 years of age or older, is expected to double between 2000 and 2030. With the aging population in the United States, issues associated with housing for the elderly will become increasingly important to policymakers and create opportunities for the private sector. The housing needs of seniors range from active adult communities for independent living to projects that provide specialized care to the frail elderly. A large segment of the senior market is represented by those able to maintain an independent lifestyle and it is those households who are the focus of this research.

While a relatively small percentage of seniors choose age-restricted housing, the number of age-restricted projects or communities is likely to increase simply because of changing demographics. For this reason it is important to study age-restricted housing to gain a better understanding of why some seniors are attracted to it. There is evidence that age-restricted housing sells at a premium to comparable but non-age-restricted units but those studies made a limited effort to

explain the premiums and they used condominium (Allen, 1997) and manufactured housing data (Guntermann and Moon, 2002). This will be the first study to use single-family data, which represents a much larger segment of the housing market, to examine age restrictions and house prices. In addition to testing for price effects, this paper will discuss possible reasons why some seniors select age-restricted housing and provide an interpretation of the empirical results that is consistent with a theoretical model on deed restrictions and uncertainty developed by Hughes and Turnbull (1996).

The purpose of this paper is two-fold. The first is to examine the long-term relationship between age restrictions and house prices in a local housing market. The benefits to seniors of being able to live with those who are at a similar stage in the lifecycle and share similar preferences comes at the cost of excluding younger households from a portion of the market. If a price premium were to be detected in an age-restricted community, this would be evidence that age restrictions offer something of lasting value to seniors. Those benefits theoretically could be compared to the costs, if any, that are imposed on excluded households. A regression model is used to test whether such a long-term price effect can be detected. The second purpose is to examine the short-term response of the market to the loss of age-restricted status and efforts to reinstate it. A second regression model is estimated with time-related dummy variables to test for short-term price effects.

The paper is organized as follows. The economics of age restrictions is presented along with a discussion of previous empirical research in this area. The next section provides background information on Youngtown Arizona and events related to the loss of its age restriction. The methodology and data used in the empirical analysis are explained after that. Finally, the paper presents the results and interpretations along with concluding comments.

Age Restriction

Age restriction can be viewed as one form of housing discrimination because households that cannot satisfy the minimum age requirement are prohibited from buying into an age-restricted area. The traditional criteria in either the private (deed restrictions) or public form (overlay zoning) is that at least one person in a household must be 55 years of age or older and those younger than a certain age (typically 16–18 years) may not reside in the unit more than a certain number of days per year. Some age-restricted projects provide relatively few amenities oriented to seniors but most projects have a fairly extensive array of facilities or services for the elderly.

The motivation behind those seniors who select age-restricted housing is undoubtedly complex. The elderly face special challenges and are more likely to find support groups in age-restricted projects or communities because their

neighbors are in a similar situation. Recreation centers become an important focal point for social activities. Transportation for shopping and medical care often is available, either formally or informally. Familiarity with neighbors and their daily routine allows the elderly to keep track of each other. Because safety is a major concern, residents are more aware when strangers are in the neighborhood than in mixed-age neighborhoods where one or both adults are likely to work and be less familiar to their neighbors.

There may also be an economic component to the decision to reside in an age-restricted project. Yards and homes tend to be well maintained in age-restricted subdivisions because home equities are likely to represent a significant portion of household wealth (Guntermann, 2002). Maintaining that wealth for later stages in the lifecycle that may involve institutional care is a priority, especially for lower and moderate-income households.[3] To the extent that some seniors believe that property values will be maintained, if not enhanced, compared to similar structures in non age-restricted communities, they may be attracted to such areas partly for financial reasons.

While many of the attributes associated with age-restricted projects are equally valued by both elderly and other households, seniors had the political influence to gain an exemption from Title VII of the Fair Housing Act, as amended in 1988. The 1988 Act required the Department of Housing and Urban Development to publish regulations defining and listing the "significant facilities and services" that projects had to provide before they could be granted an exemption from Title VII. Various iterations of proposed regulations left the legal status of age restrictions unclear.[4] The Housing for Older Persons Act of 1995 removed any uncertainty about the legality of age restrictions at the federal level because it states that a project can be age-restricted essentially by electing age-restricted status and filing the necessary paperwork with the Federal Housing Administration. The 1995 Act also had the effect of removing any doubt about the legality of local and county age restriction ordinances. Under the 1995 Act, one or more persons who are 55 or older must occupy at least 80% of the housing units before a project can be approved as age-restricted. Once a project is granted age-restricted status, subsequent purchasers must satisfy the age requirement. In theory, these projects ultimately could become exclusively age-restricted.

Allen (1997) was the first to present empirical evidence of an age-related price effect in the Broward County, Florida condominium market. He used data from 1995 to 1996 for age-restricted and comparable but non-age-restricted projects and found a positive price effect (14%) in the age-restricted projects. However, the short-term nature of his database leaves open the possibility that his results were caused by a temporary imbalance in the housing market. His interpretation of the results is that age restriction "results in a net increase in total demand" for the housing units.[5]

Guntermann and Moon (2002) discuss a model by Hughes and Turnbull (1996) that can be extended to age restrictions and provides a theoretical explanation for

why property values might reflect an age restriction premium. According to Hughes and Turnbull, private covenants can reduce uncertainty about future negative externalities and, hence, the reduced uncertainty can be capitalized into house prices. An age restriction is somewhat different from most private covenants because it applies to the occupants of the property rather than in some way restricting the use of the property. However, to the extent that some elderly are attracted to age-restricted projects or communities because of the facilities and services that they offer, an age restriction can help to ensure that future owners will have similar preferences. The presence of non-elderly households, whose interests often differ from the elderly, reduces the likelihood that various age-restricted attributes would continue to be provided or be provided at the same level. In this sense, the presence of non-elderly households would represent a negative externality. Eliminating the externality through an age restriction would reduce uncertainty about the future character of the project and this reduced uncertainty could be capitalized into property values.

Guntermann and Moon published evidence in support of the Hughes and Turnbull uncertainty thesis in 2002. Their study used manufactured housing data from Mesa, Arizona, and found a price premium in age-restricted subdivisions for most years from 1984 through 2000, after controlling for quality differences in amenities and housing unit characteristics across subdivisions. The premium ranged from 10% to 32% and averaged 17% for those years that showed statistically significant premiums.[6] Since the premium could be detected for many years and under different market conditions, this finding was strong evidence that an age restriction, which is the label for senior-oriented facilities and service, has considerable value. One interpretation of those results is that age-restricted status is a valuable component of the housing bundle such as physical attributes or proximity to certain amenities. A similar finding of an age restriction premium using single-family housing data would be potentially more important since it would apply to the largest segment of the housing market.

There is also empirical evidence that governmental interference with the housing market can have unintended consequences. In an attempt to ensure an adequate supply of housing for seniors, a suburban area of San Diego required that a minimum percentage of houses in new subdivisions had to be reserved for the elderly. Do and Grudnitski (1997) presented evidence of negative price effects in the affected area of San Diego from 1990 to 1993 because of the oversupply of restricted housing that resulted from the law, apparently because the government was unresponsive to changed market conditions.

Youngtown

The first master-planned retirement community in the nation is Youngtown Arizona, which dates to 1954. It occupies 320 acres in the northwestern portion of the Phoenix metropolitan area next to Sun City and has approximately 2,700

residents. The original intent of the developer was to create a town for "seniors only." However, legal provisions to ensure adult-only status were not included in the deed restrictions nor were they part of the city charter when Youngtown was incorporated. Municipalities were given the authority to "... establish age-specific community zoning districts ..." in 1971 [A.R.S. 9-462.01(A) (11)]. In 1986, Youngtown amended its zoning ordinance to provide for 55 "age-specific" Overlay Zoning Districts (Youngtown, Section 4-3-101(c) 2), which required that at least one person per dwelling unit must be 50 years of age or older and prohibited permanent occupancy by anyone younger than 18 years of age for more than 90 days per year. In 1989, the minimum age was raised to 55.

The 1986 ordinance was not challenged until December 1996 when the town council turned down a request to extend the length of time a 16 year old would be allowed to live with his grandparents. That action immediately led to an investigation into the Youngtown ordinance by the Arizona Attorney General's office. The investigation concluded in October 1997 that Youngtown had not complied with the county enabling statutes when it created the overlay zoning districts. Specifically, Youngtown did not have consent from all property owners and several of the homes were rented to families with minor children before the ordinance was adopted. This made the ordinance "... void since inception" and unenforceable.[7] As part of the settlement, Youngtown agreed to repeal its age restriction ordinance, which occurred in May 1998.

Even after the repeal, strong sentiment remained in Youngtown favoring the age restriction. By complying with federal and state laws, subdivisions or entire communities can elect age-restricted status at any time and a grass-roots effort was initiated to make Youngtown age-restricted. In October 1998, the town council passed a new ordinance and sent it to state and federal agencies for review and approval. The new ordinance would have created age-restricted districts containing eight or more contiguous lots. Petition drives and other actions creating such districts began immediately after passage of the ordinance and several petitions were filed with the town council in February 1999. Maps of the proposed districts were sent to the city attorney as well as to federal and state agencies for preliminary review. All three reviews were negative because of the gerrymandered, non-contiguous nature of the proposed districts. The Youngtown Council rejected the proposed districts in May 1999, which effectively ended all organized efforts to establish an age restriction in Youngtown. The dates associated with these various actions are summarized in Exhibit 1, where the more important dates have been assigned event numbers.

Methodology and Data

The empirical analysis estimates two models that examine both long- and short-term issues related to age restriction. The long-term presence or absence of age-related effects in house prices can be determined using dummy variables in models

Exhibit 1 | Notable Dates Associated with the Loss of Age-Restricted Status in Youngtown Arizona

Date	Action	Event
December 1996	Town Council votes to deny a request to extend the time a teenager may live with grandparents	
January 1997	Arizona Attorney General's office announces it will investigate age restriction in Youngtown	
October 1997	Attorney General rules that the age restriction ordinance in Youngtown is invalid and unenforceable	1
April 1998	Town Council agrees to rescind its age restriction ordinance	
May 1998	Age restriction ordinance is repealed	
October 1998	Town Council approves a new age restriction ordinance with districts of eight or more houses and sends it to the state and federal governments for approval	
February 1999	Petitions to create age-restricted districts are filed with the Town Council and forwarded to federal and state authorities for review	2
May 1999	Proposed districts are rejected by the state and federal governments and the town council	3

Source: Office of the Arizona Attorney General; Youngtown city attorney and *The Arizona Republic,* various issues.

estimated with pooled cross-sectional data covering multi-year periods. Short-term actions associated with changes in age-restricted status can be associated with specific points in time. For this reason, consideration was given to using ''Event'' methodology from finance to test the effects of those actions on house prices. However, event methodology regresses one or more variables representing the event of interest against the market to see if an abnormal return can be detected. It is not practical to use event methodology in this case, so dummy variables associated with short periods of time will be used to test hypotheses in the ''Event'' model. Price is the dependent variable in a standard hedonic model and either Youngtown dummy variables (long-term) or interaction variables (short-term) tied to one or more events of interest are included in the respective models.

The models are estimated using data from Youngtown, El Mirage, which is to the west, and selected parts of Sun City and Peoria. These areas are both comparable and superior to Youngtown in important demographic measures and include both age-restricted and non-age-restricted areas (Exhibit 2). House values and median household income tend to be similar in both Youngtown and El Mirage but El

Exhibit 2 | Demographic Data for Youngtown and Selected Census Tracts in Comparison Cities

City	Census Tract	Population	Total Housing Units	Median Household Income ($)	Median Age	Median House Value ($)	Age Restricted
Youngtown	716.00	2,351	1,619	15,929	66.8	44,700	Yes
El Mirage	609.00	4,652	1,279	18,721	23.7	43,700	No
Sun City	717.00	3,697	2,820	23,004	74.3	56,700	Yes
	718.01	4,818	3,421	20,813	74.2	60,100	
	718.02	3,613	2,584	21,779	74.0	64,200	
Peoria	719.06	3,568	1,251	33,602	28.3	77,900	No
	719.08	3,856	1,831	21,360	30.0	64,700	
	719.09	1,370	824	20,362	63.2	50,000	
	927.07	3,032	1,782	31,750	44.7	77,400	
	927.09	2,952	977	38,243	26.9	79,200	

Source: 1990 Census of Population and Housing, Population and Housing characteristics for Census Tracts and Block Numbering Areas, Phoenix, AZ MSA, Tables 1, 9, and 19, U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census.

Mirage is not age-restricted and the median age of its residents is much younger than Youngtown. The older parts of Sun City, immediately east of Youngtown, have somewhat higher median household incomes and considerably higher housing values than are found in Youngtown. In contrast to Youngtown, Sun City is much larger and age-related covenants were included in its CC&Rs when development began in the early 1960s. Hence, both El Mirage and Sun City can serve as control areas for the events that affected Youngtown. The portions of Peoria used in this study are to the south and east of Youngtown and include census tracts with a range of median ages, household incomes and housing values. No part of Peoria is age-restricted.

The first empirical question is whether an age restriction premium can be detected in a traditional, single-family housing market that has been age-restricted since its inception. If such a premium can be measured, that would suggest that the facilities and services associated with an age restriction are valuable parts of the housing bundle. Model 1 will test for a long-term price effect using data from Youngtown and El Mirage. If such a premium can be measured, it would follow that the loss of the age restriction should lead to the elimination of much, if not all, of the premium over time. To test for both the presence and absence of an age restriction premium at different times, Model 1 will be estimated using data for three different time periods.

A standard set of house characteristics variables are included in Model 1, along with the Youngtown dummy variable and "*Permits*" and "*All Cash*" variables. Exhibit 3 contains definitions for all variables used in both models. Beginning in 1999, El Mirage began to develop rapidly (Exhibit 4). A *Permits* variable is included to control for factors associated with growth that might not be reflected in the property characteristics variables. In addition, a dummy variable, *All Cash*, was included to test if there is a discount associated with a 100% equity purchase. Real estate contracts typically are conditional on the purchaser qualifying for mortgage financing. As part of the loan package, an appraisal also is required to establish market value. The delays and uncertainty associated with the approval process give cash purchasers an advantage that might be reflected in a lower purchase price vis-à-vis purchasers using debt financing. In addition, "all cash" purchases are more likely to occur with seniors, as can be seen in the data for Sun City and Youngtown in Exhibit 5, which contains the descriptive statistics for the entire database and each individual city. Model 1 is estimated in log-linear form so that the coefficients can be interpreted as elasticities or percentages, which is intuitively appealing.

$$
\begin{aligned}
\ln \{price\} = {} & \ln \{time\} + \ln \{size\} + \ln \{age\} \\
& + \ln \{baths\} + carport + garage + allcash \\
& + extwall + permits + youngtown. \qquad (1)
\end{aligned}
$$

Exhibit 3 | Variable Descriptions

Variable	Description
Time	The time, in months, from January 1, 1992 to the date of sale
Size	The size, in square feet, of the house
Age	The age, in years, of the house
Baths	The number of bathrooms
Carport	A dummy variable equal to 1 if the house has a carport and 0 otherwise
Garage	A dummy variable equal to 1 if the house has a garage and 0 otherwise
All Cash	A dummy variable equal to 1 if the purchase was made in cash only and 0 otherwise
Ext Wall	A dummy variable equal to 0 if the house is made from frame or block and 1 otherwise
Permits	The number of new house construction permits issued in the zip code of the house during the quarter in which the transaction took place
Youngtown	A dummy variable equal to 1 if the transaction was within Youngtown and 0 otherwise
El Mirage	A dummy variable equal to 1 if the transaction was within El Mirage and 0 otherwise
Sun City	A dummy variable equal to 1 if the transaction was within Sun City and 0 otherwise
E1YT~E3SC	Event dummy variables

The loss of the age restriction does not mean that the facilities and services associated with it would instantly be eliminated but rather that the quality of those services and their future availability would be in question. For this reason, the second empirical issue involves the short-term market response to the loss of the age restriction and efforts to reinstate it. Model 2 investigates this short-term adjustment process using several dummy variables associated with various events and data for all four cities. Dummy variables are also included for Youngtown, El Mirage and Sun City based on variations in household income, median age and other factors that were not identified in Exhibit 2 but that could affect price. Of primary interest are the interaction variables created for three of the events in Exhibit 1 and the city dummy variables. For example, *E1YT* is the variable associated with Event 1 for Youngtown. The same convention is used to create the other interaction variables. Peoria is omitted both as a city dummy variable and also as the interaction variable. Equation 2 is also estimated in log-linear form so that the coefficients for the event variables can be interpreted as percentages.

Exhibit 4 | Housing Permits, Sales and Median Price Western Suburbs, Phoenix Metropolitan Area

City	1995	1996	1997	1998	1999	2000	2001
El Mirage							
Permits	11	7	22	10	878	1,894	2,154
Sales	16	17	31	31	380	1,306	1,789
Price ($)	40,750	40,087	55,200	49,000	83,416	93,006	106,351
Peoria							
Permits	1,325	1,722	1,931	3,290	2,794	2,726	1,750
Sales	2,229	3,183	3,243	5,106	4,941	5,097	5,129
Price ($)	100,351	107,288	110,890	114,993	123,006	134,355	145,000
Sun City							
Permits	0	0	0	0	0	0	0
Sales	1,153	1,233	1,269	1,430	1,515	1,320	1,490
Price ($)	88,000	90,000	94,500	98,000	102,000	102,500	100,000
Youngtown							
Permits	7	4	1	0	0	1	0
Sales	99	101	90	90	135	144	136
Price ($)	45,000	47,500	55,000	59,400	65,000	71,900	80,489

Source: Phoenix Metropolitan Housing Study, Arizona Real Estate Center, College of Business, Arizona State University, various issues.

Exhibit 5 | Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Panel A: All Data					
Price	8,049	77,858	25,529	20,000	259,000
Size	8,049	1,332	330	519	3,316
Baths	8,049	1.79	0.58	1	4.7
Time	8,049	63.50	34.38	1	118
Age	8,049	23.87	13.10	1	51
Carport	8,049	0.52	0.50	0	1
Garage	8,049	0.44	0.50	0	1
All Cash	8,049	0.23	0.42	0	1
Permits	8,049	37.23	110.00	0	859
Panel B: Youngtown					
Price	885	57,221	19,050	20,000	175,000
Size	885	1,057	267	702	3,183
Baths	885	1.29	0.44	1	2.67
Time	885	64.39	34.37	1	118
Age	885	36.85	7.48	1	46
Carport	885	0.71	0.45	0	1
Garage	885	0.15	0.35	0	1
All Cash	885	0.25	0.43	0	1
Permits	885	1.63	1.74	0	5
Panel C: El Mirage					
Price	360	57,456	23,836	20,000	154,525
Size	360	1,176	319.47	519	3,086
Baths	360	1.38	0.49	1	3.33
Time	360	74.53	33.83	2	118
Age	360	25.29	15.31	0	51
Carport	360	0.46	0.50	0	1
Garage	360	0.14	0.35	0	1
All Cash	360	0.12	0.33	0	1
Permits	360	264.20	366.79	2	859

Exhibit 5 | (continued)

Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Panel D: Sun City					
Price	3,808	72,514	21,795	20,000	259,000
Size	3,808	1,321	316	891	3,316
Baths	3,808	1.64	0.53	1	4.67
Time	3,808	57.08	34.20	1	118
Age	3,808	31.67	5.85	9	42
Carport	3,808	0.77	0.42	0	1
Garage	3,808	0.22	0.42	0	1
All Cash	3,808	0.37	0.48	0	1
Permits	3,808	0.45	0.93	0	3
Panel E: Peoria					
Price	2,996	93,192	22,915	20,000	197,500
Size	2,996	1,448	307	525	2,891
Baths	2,996	2.19	0.43	1	4.00
Time	2,996	70.09	33.05	1	118
Age	2,996	9.96	7.24	1	50
Carport	2,996	0.16	0.36	0	1
Garage	2,996	0.83	0.38	0	1
All Cash	2,996	0.06	0.24	0	1
Permits	2,996	67.23	85.11	0	480

Note: A variable is included in the regression model for exterior wall (*EXTWALL*). The dominant materials are either frame or block, which were not statistically significant in the model. The included variable is defined as other, unspecified wall types in the assessor's data. Its descriptive statistics have no clear interpretation so are omitted.

$$
\begin{aligned}
\ln \{price\} = {} & \ln \{time\} + \ln \{size\} + \ln \{age\} \\
& + \ln \{baths\} + carport + garage \\
& + allcash + extwall + permits + youngtown \\
& + elmirage + suncity + E1YT + E1EM \\
& + E1SC + E2TY + E2EM + E2SC \\
& + E3YT + E3EM + E3SC. \qquad\qquad (2)
\end{aligned}
$$

The three events tested in Equation 2 are those most likely to be associated with short-term price effects in the Youngtown market. While the December 1996 or January 1997 actions are noteworthy, at those times there was virtually no concern on the part of property owners or purchasers that Youngtown's age restriction ordinance was invalid. However, the October 1997 ruling by the attorney general's office was a great shock to Youngtown residents, a concern to seniors in other age-restricted projects and a major news story in the Phoenix metropolitan area. Since the attorney general's ruling was completely unanticipated, the *E1YT* variable would be expected to have a negative sign.

Similarly, the emotion associated with an age restriction in Youngtown suggests that the subsequent efforts to implement a new ordinance might be reflected in house prices because residents pressured the town council for a new ordinance and initiated the petition drive to implement it. In October 1998, the town council approved a new age restriction ordinance allowing for districts with eight or more houses. However, the ordinance could not go into effect until the state and federal governments had approved it. A more significant event occurred in February 1999 when petitions for the proposed districts were filed with the town council, signaling the start of the legal process to create new districts. However, because the ordinance and proposed districts had to be approved, the uncertainty that was associated with the effort to restore the age restriction makes it hard to anticipate whether this event variable would be significant or what sign to expect. The Event 2 variable is included in Model 2 simply because age restriction was such an emotional issue in Youngtown. In May 1999, the proposed districts were reviewed negatively and the town council rejected them, effectively ending all efforts to implement age restrictions in Youngtown. Hence, the coefficient for Event 3 would be expected to have a negative sign.

The date associated with each transaction in the database is the recording date and not the contract date. Ideally, event variables used in real estate studies would test for price effects related to contract dates because the use of recording dates introduces uncertainty into the specification of the event variable. In most cases, closings occur during the month the contract is signed or the following month. However, financing or other delays (sale of another house) can lengthen the closing process. In addition, if the housing market is active, the actual recording

of the deed may not occur for several additional weeks or longer. Since the length of the recording process is variable, it is difficult to associate specific event dates with a priori time periods over which price effects, if any, might be measured. After preliminary testing, it was determined that four month event periods captured any price effects associated with specific event dates. This appears to be reasonable given the normal lag and variability in the contract-to-closing process. Hence, the duration of each event variable is four months, based on recording dates, and begins with the event month.

Transaction data were gathered for Youngtown and its surrounding area. Specifically, 8,572 single-family house transactions from the ten census tracts in Exhibit 2 were gathered from January 1992 through February 2003. Marketron, Inc., which provides data to various clients, begins with transactions data gathered by the assessor's office. Each sale contains a fairly comprehensive set of property characteristics, including the month and year when the sale was recorded, size, year built, baths, exterior wall construction and garages and carports. In addition to verifying the assessor's data using its own database, Marketron, Inc. adds additional property and financing information associated with each transaction. The assessor's data included a field for lot size but this information was missing for most observations. The zoning classification, which could have been used as a proxy for lot size, also was unavailable so a land variable could not be included in the model.[8] To minimize the possibility that manufactured housing sales are inadvertently part of the database, transactions at prices below $20,000 are not included in the database.

Results

The results for both models are presented in Exhibit 6. Model 1A was estimated to determine if an age restriction premium was reflected in house prices prior to the loss of the age restriction. For this test, data were used from January 1992 through December 1995, which is prior to the controversy that led to the loss of the age restriction. The results for Model 1A find evidence of a premium in the single-family housing market, a premium that is both statistically and economically significant. The coefficient on the Youngtown dummy variable in Model 1A (0.164) is both positive and statistically significant. It is interpreted as the age restriction premium relative to the control city, El Mirage, and works out to almost 18% ($e^{.164} - 1$). This is consistent with the premium found by Allen (14%) for Florida condominium projects using short-term data and by Guntermann and Moon (17%) using long-term (1983–2000) manufactured housing data in Arizona.

It is apparent that age restrictions are reflected in house prices after controlling for property characteristics and other differences across these two communities and that the premium can be quite large. The fact that the premium persists for years suggests that age-restricted status has value much the same as other property

Exhibit 6 | Regression Results

| Variable | Age Restriction Model (1) | | | Event Model (2) |
	A Jan. 1992–Dec. 1996	B April 2000–Feb. 2003	C Oct. 2000–Feb. 2003	Jan. 1992–Oct. 2001
Intercept	7.115 (16.9)	8.203 (4.2)	15.494 (4.2)	6.570 (81.5)
Lntime	0.098 (8.3)	0.012 (0.0)	−1.407 (−1.9)	0.145 (64.1)
Lnsize	0.410 (7.1)	0.404 (5.0)	0.326 (2.8)	0.565 (47.1)
Lnage	−0.021 (−0.7)	0.038 (−1.4)	0.031 (0.9)	−0.061 (−15.7)
Lnbaths	0.197 (5.1)	0.086 (1.3)	0.075 (0.9)	0.092 (10.8)
Carport	0.016 (0.6)	0.033 (0.8)	0.038 (0.7)	0.053 (4.9)
Garage	0.102 (2.5)	0.203 (3.0)	0.155 (1.6)	0.141 (12.3)
All Cash	−0.077 (−3.7)	−0.331 (−6.4)	−0.356 (−4.5)	−0.048 (−9.9)
Ext Wall	0.038 (3.1)	0.009 (−0.6)	0.020 (−1.1)	−0.010 (−4.4)
Permits	−0.000 (−1.0)	0.000 (0.1)	0.000 (0.8)	0.000 (3.4)
Youngtown	0.164 (5.9)	0.136 (2.5)	0.031 (0.4)	−0.071 (−8.1)
El Mirage				−0.259 (−20.1)

Exhibit 6 | (continued)

Regression Results

| Variable | Age Restriction Model (1) | | | Event Model (2) |
	A Jan. 1992–Dec. 1996	B April 2000–Feb. 2003	C Oct. 2000–Feb. 2003	Jan. 1992–Oct. 2001
Sun City				0.042 (6.2)
E1YT				−0.068 (−1.7)
E1EM				−0.025 (0.5)
E1SC				0.003 (0.2)
E2YT				0.055 (2.0)
E2EM				0.054 (1.1)
E2SC				0.006 (0.4)
E3YT				0.102 (3.6)
E3EM				0.019 (0.4)
E3SC				−0.014 (−0.8)
Observations	522	183	93	8,049
Adjusted R^2	0.44	0.53	0.60	0.78
F-Statistic	41.36	21.48	12.30	933.50

Notes: The dependent variable is *Log of Price*. *t*-ratios are in parentheses.

characteristics or attributes. While only some seniors desire to live in age-restricted projects or communities, those who do are willing to pay a premium for the ability to do so. The designation "Age Restricted" or "Seniors Only" may act as a signal to assure prospective purchasers that the project's bundle of attributes, especially those that are important to the elderly, will continue to be available to them and will not be diluted or lost because families or other households are prohibited from moving into the project. This assurance is consistent with the thesis proposed by Hughes and Turnbull (1996) that reduced uncertainty resulting from deed restrictions could be capitalized into house prices.

Most of the variables in Model 1 were included to control for property characteristics and other sources of variation in price beyond age-restricted status. The signs and magnitude of these coefficients are reasonable and as expected. The coefficient for time, 0.098, converts to an annual increase in house prices of slightly over 10% for this time period. House prices were relatively low in the early 1990s because of the recession and slow growth in the Phoenix economy. The 10% rate of price increase through the end of 1996 is reasonable given the more rapid growth that occurred during these years. The coefficient for "All Cash" purchases, -0.077, reflects approximately a 7% discount for buyers who do not use debt financing. The insignificance of the "*Permits*" variable indicates that the property characteristics and other variables adequately control for differences between the two cities.

Model 2 has been estimated to measure the short-term response of Youngtown prices to the loss of the age restriction and subsequent actions to resurrect it. Data for all four cities were included when estimating Model 2 and those results are also reported in Exhibit 6. The coefficients for the Youngtown, El Mirage and Sun City dummy variables are all statistically significant, which suggests that there are important differences across these cities relative to the omitted city, Peoria. The property characteristics variables are all statistically significant and have the anticipated signs, much like the results for Model 1.

The Event 1 variables reflect house prices for the four months (October 1997– January 1998) after the ruling that the Youngtown ordinance was invalid and unenforceable. The coefficient for Youngtown (*E1YT*) is negative and statistically significant. This is not surprising because house prices in Youngtown apparently reflected a long-term age restriction premium and the loss of the age restriction, which introduced considerable uncertainty into the Youngtown market, came as a complete surprise. Neither the El Mirage (*E1EM*) nor the Sun City (*E1SC*) coefficients are significant for this time period. Since the coefficient for the Sun City Event 1 variable is not significant, there apparently was no concern that the Youngtown opinion would impact the Sun City market. In addition to a zoning overlay from the county, an age restriction was incorporated into the private covenants at the time Sun City was developed.

The coefficients for Events 2 and 3 (*E2YT* and *E3YT*) are both positive and statistically significant, in contrast to the coefficients for El Mirage or Sun City,

neither of which is significant. Event 2 was the effort to restore the age restriction in Youngtown beginning in February 1999, while Event 3 was the period after the proposed districts were rejected (May 1999). These results indicate that house prices were higher in Youngtown relative to the other three cities during these two periods in 1999, after controlling for other factors. However, the positive sign of the coefficient for Event 3 (0.102) seems inconsistent with that for Event 1 (-0.068) because May–August 1999 (Event 3) is the period when the effort to revive the age restriction finally ended. While the sign for Event 3 may be unexpected in terms of the effort to revive the age restriction, the signs for Events 2 and 3 are consistent with the market's adjustment to the loss of the age restriction, which did not occur immediately.

Given the magnitude of the age restriction premium that was detected in Model 1A, it might be expected that it would take time for the premium to be eliminated. The coefficients on the Youngtown variables in Models 1B and 1C reflect the adjustment process. April 2000 is one year after the end of the effort to revive an age restriction ordinance in Youngtown. If house prices have fully adjusted to the loss of the age restriction, the Youngtown dummy variable in Model 1 should change from a positive and significant coefficient to statistically insignificant. Model 1B was estimated with data beginning in April 2000 and continuing through February 2003. It can be seen that the Youngtown coefficient is smaller but that it is still positive and statistically significant compared to El Mirage. It would appear that for at least eight months after the loss of the age restriction (allowing for the recording lag), Youngtown prices still reflected at least part of the age restriction premium. Model 1 was estimated a third time using data that begins in October 2000, eighteen months after the rejection of the proposed ordinance and those results are presented as Model 1C. The Youngtown coefficient is no longer statistically significant. However, it apparently took at least one year, and possibly closer to 18 months, for the housing market to adjust fully to the loss of the age restriction.

The results from Model 2 for Events 2 and 3 can now be interpreted from the perspective of the market adjustment to the loss of the age restriction. The October 1997 ruling that stripped Youngtown of its age restriction (Event 1) opened that market to families and others who previously had been excluded from it. The increase in sales volume in Youngtown beginning in 1999 (Exhibit 4) reflects this increased accessibility. The relatively small size of houses in Youngtown made it attractive to moderate income households, in essence putting Youngtown in competition with the starter home market. It is likely that the positive coefficients for the two 1999 event variables reflect increased accessibility to the Youngtown market rather than anything related to the age restriction.[9] While the intent for Model 2 was to test for any short-term price effects associated with the age restriction, the two 1999 test periods occur at a time when the Youngtown housing market was still adjusting to the loss of the age restriction. The coefficients for Events 2 and 3 probably reflect the adjustment to the loss of the age restriction rather than anything related to its restoration.

The facilities and services available in Youngtown prior to the loss of the age restriction were essentially unchanged after the age restriction became unenforceable. Since the premium was completely eliminated within approximately three years after the ordinance was ruled unenforceable, it would appear that it was not just the facilities and services for the elderly that led to the premium but the certainty that those facilities and services would be available in the future. With the loss of the age restriction, family and other households began to move into Youngtown. To the extent that non-elderly households would be perceived as a negative externality in this situation, there would have been increased uncertainty about the future availability and quality of those facilities and services. Non-elderly households require a somewhat different mix of public services, raising the possibility that the quality or availability of services, etc. for the elderly could be reduced in the future. It would appear that the certainty associated with an age restriction is capitalized into value rather than the availability of facilities and services for the elderly.

Conclusion

This study finds evidence of a large (18%) age restriction premium in house prices in Youngtown Arizona compared to a comparable but non-age-restricted city. These results are consistent with other studies in condominium and manufactured housing markets where significant age restriction premiums were found. The persistence of a premium over long periods of time suggests that age-restricted status can be a valuable component of the housing bundle, much like physical characteristics or location. The elderly often have special needs and age restrictions provide an assurance that the services and facilities to satisfy those needs will be available in the future. Reduced uncertainty associated with deed restrictions can be capitalized into house prices. One explanation for the persistence of an age restriction premium is that the reduced uncertainty about the future availability of important services and facilities has been capitalized into house prices.

After the Youngtown ordinance was ruled invalid in late 1997, a negative price effect (approximately 7%) could be detected in the data for a short period of time. This is not surprising given the existence of an age restriction premium and because the ruling was completely unanticipated by Youngtown residents. The loss of Youngtown's age restriction opened the housing market to families and others who previously had been excluded from it, which is reflected in increased sales activity after efforts failed to reinstate the restriction. Since Youngtown house prices contained a large price premium, it took from twelve to eighteen months for prices to adjust to the loss of the age restriction and higher prices could be detected during this adjustment period relative to several control cities.

Endnotes

[1] U. S. Bureau of the Census. *American Housing Survey for the United States: 2001*, U.S. Government Printing Office, Washington, DC, 2002, Table 2-8.

[2] Robert Schafer, *Housing America's Seniors*, Joint Center for Housing Studies, Harvard University, 2000, p. 1.

[3] U. S. Bureau of the Census, Current Population Reports, Special Studies, P23–190, *65+ in the United States.* U. S. Government Printing Office, Washington, D.C., 1996, pp 4–24. The importance of house equity to seniors is explored more fully as it relates to age restrictions in Mobile Homes, Affordability and the Housing for Older Persons Act of 1995, *Journal of Housing for the Elderly*, 2002, 16; 1–2.

[4] Allen (1997) contains a more complete discussion of the various events that followed passage of the 1988 amendment.

[5] Allen, pages 339 and 345.

[6] Two models were estimated using either amenity-specific variables or subdivision dummy variables to control for differences in amenity levels and quality across subdivisions. For the model using subdivision dummy variables, age restriction premiums ranged from 13% to 40% and averaged 22%.

[7] Conciliation Agreement, *Naab v. Youngtown*, State of Arizona, Office of the Attorney General, Civil Rights Section, FHA No. 97-4016, approved April 9, 1998.

[8] Similarly, the only census tracts where houses might have a significant percentage of swimming pools were in Peoria but much of the pool information was missing, making it impossible to include a pool dummy variable in the hedonic model. While it is not known what effect, if any, the lack of a pool variable may have on the results, the coefficients for the age-related event variables are likely to understate the effect of the loss of the age restriction on price.

[9] By December 1998, newspaper articles began appearing that described sharp increases in property values in Youngtown. These articles, which appeared occasionally through mid-2001, often focused on families moving into Youngtown and its transition to a "kid friendly" community. This anecdotal evidence of change in Youngtown is consistent with the results reported here.

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U. S. Bureau of the Census. *American Housing Survey for the United States: 2001*, U.S. Government Printing Office, Washington, DC, 2002, Table 2-8.

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