

Manufactured Housing Appreciation: Stereotypes and Data

Abstract:

Consumers Union assessed the financial appreciation of manufactured-housing units, by examining the relative appreciation rates of manufactured housing and site-built housing, as well as the factors affecting the appreciation rate of manufactured housing. Our analysis includes an extensive literature review of previous work in the field, as well as primary research using data from the 1985–1999 American Housing Survey Panel and county appraisal data from several counties in Texas.

The stereotypes of manufactured housing are built upon very real differences in appreciation experienced by the people who own them. The large proportion of manufactured homes in rental parks contributes greatly to the lower appreciation experienced by manufactured home owners as a whole, as land ownership is an important driver of appreciation. High variation in the individual appreciation rates of manufactured homes also causes a higher proportion of manufactured homes, even packaged with land, to lose value over time.

Even so, average appreciation rates of manufactured homes packaged with owned land are statistically in line with the site built market, and there are few inherent reasons that a home built in a factory should perform differently than one built on site. Our analysis suggests that consumers can make decisions which can improve the appreciation of a manufactured home. Land ownership, location, purchase price and maintenance expenditures are among the factors that predict appreciation, and should be considered when attempting to increase appreciation in a particular unit.

**Consumers
Union**

Consumers Union Southwest Regional Office

April 2003

Director
Reggie James

Author
Kevin Jewell

Editor
Kathy Mitchell

This report was funded in part by a grant from the Ford Foundation.

Each year the Southwest Regional Office of Consumers Union issues reports on consumer issues of particular concern in Texas and the Southwestern United States. Topics include financial services, housing, health, utilities, and the environment. You may order copies of reports by calling the Southwest Regional Office at 512-477-4431 or writing us at 1300 Guadalupe, Suite 100, Austin, Texas 78701. Reports are also posted on our web site in html and pdf formats. Please go to www.consumersunion.org.

For internet versions of this report and more consumer information about manufactured housing, go to www.consumersunion.org/mh.

Consumers Union is a nonprofit membership organization chartered in 1936 under the laws of the state of New York to provide consumers with information, education, and counsel about goods, services, health, and personal finance; and to initiate and cooperate with individual and group efforts to maintain and enhance the quality of life for consumers. Consumers Union's income is solely derived from the sale of Consumer Reports, its other publications and from noncommercial contributions, grants and fees. In addition to reports on Consumers Union's own product testing, Consumer Reports, with approximately 4.6 million paid circulation, regularly carries articles on health, product safety, marketplace economics and legislative, judicial, and regulatory actions which affect consumer welfare. Consumers Union's publications carry no advertising and receive no commercial support. Consumers Union's Southwest Regional Office is dedicated to advocating the consumer interest, particularly of low-income consumers, and to promoting the growth of the public interest movement in the Southwest.

Appreciation in Manufactured Housing: Stereotypes and Data

Introduction

Already a leading alternative to conventional housing for low-income homebuyers, manufactured housing often qualifies for use in government programs as well as private-sector development. Public officials direct public funds into home-ownership programs both to provide shelter to participants and to help families create wealth in the form of equity in their homes. While the manufactured-housing industry has claimed that modern manufactured homes appreciate like site-built homes, and are therefore a good investment, housing advocates articulate numerous reservations based on historical experience.

As a step toward a more complete understanding of the equity-building opportunities in manufactured housing, Consumers Union assessed the financial appreciation of manufactured-housing units by examining the relative appreciation rates of manufactured housing and site-built housing, as well as the factors affecting the appreciation rate of manufactured housing. Our analysis includes an extensive literature review of previous work in the field, as well as primary research using data from the 1985–1999 American Housing Survey Panel and county appraisal data from three counties in Texas.

General Background

The American dream of home ownership shapes our public policy because home equity provides stability and paves the way to the middle class for low-income homeowners. Home-ownership rates are at an all-time high, due in part to the inclusion of manufactured housing. West Virginia boasts the highest home-ownership of any state in the nation based mainly on the fact that 17 percent of its housing units are manufactured homes.¹ Since the Nixon administration, manufactured homes have been included in national new-housing production figures.²

While many low-income housing advocates warn that manufactured housing is not a good long-term investment for low-income families, the industry has funded studies to convince the public and policymakers otherwise. These studies seek to prove that manufactured homes build equity just like conventional homes. If nonprofit developers and public-policy makers decide that they do, public and nonprofit funds aimed at building family wealth through home ownership can be expanded to manufactured-housing projects.

This report attempts to independently examine one factor leading to equity building: the financial appreciation of the home. Other factors, such as the cost of financing, security of tenancy, details of the purchase deal, and physical durability have or will be covered in other reports from Consumers Union. (See www.consumersunion.org/mh to view these reports.) All of these factors *interact* to effect the equity building opportunities for families purchasing manufactured housing.

The Appreciation Debate

Most people believe their home to be a safe investment. In fact, 83 percent of all adults told Fannie Mae in a 1995 survey that they thought owning a home is a good investment.³ Over the last 25 years, the Office of Federal Housing Enterprise Oversight (OFHEO) House Price Index (HPI), a national index of housing appreciation based on repeat sales of conventional homes, has only lost value in 7 quarters, and never on an annual basis. It has increased an average of 5.7 percent each year. Based on these odds, homebuyers leverage a small down payment and borrow to own a home. It's a good bet that they will come out ahead. As Alan Greenspan commented, "[W]hile home prices do on occasion decline, large declines are rare; the general experience of homeowners is a

modest, but persistent, rise in home values that is perceived to be largely permanent.”⁴ This rise in home values translates to equity for the homeowner.

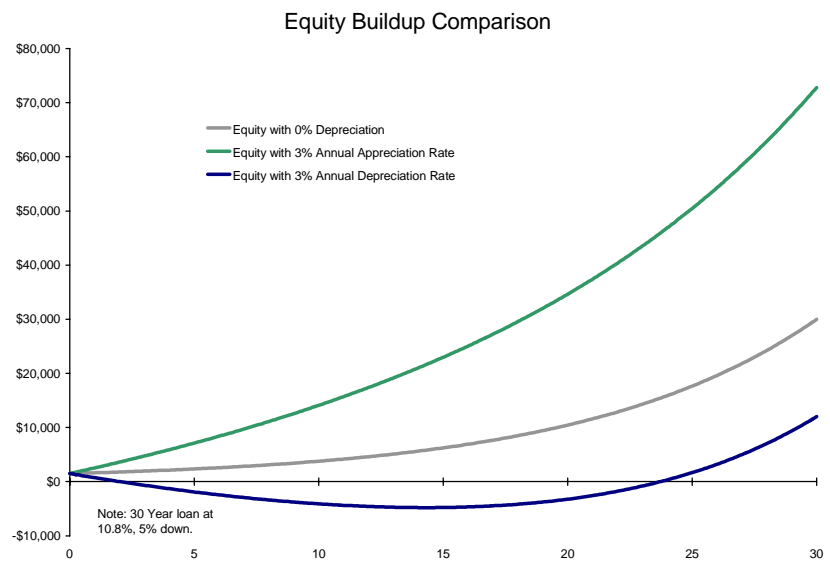
This confidence in appreciation has not transferred from the conventional home market to the manufactured home market. The topic is contentious. The *New York Times* states as a matter of fact that manufactured homes quickly lose their value.⁵ Yet pamphlets from a manufactured-home dealership in Oregon claimed their homes could increase in value by 10 percent a year for five years.⁶ The debate is heavy on opinion and short on data. The available studies are often taken out of context and boiled down into one line of ammunition for the debate. Anecdotal evidence about manufactured-housing appreciation abounds. Largely based on personal experience, the anecdotal evidence stereotypes (right or wrong) manufactured housing as a depreciating asset.

For example, a series of focus groups with consumers conducted by Michigan State University found that consumers were very concerned about the depreciation issue.⁷ The report indicated that most consumers had experienced or expected depreciation, but some had found their homes to hold value. One consumer said “The minute you buy a mobile home it [depreciates]. Like taking home a refrigerator. The minute it’s uncrated, the value just plummets.” However, a homeowner in an upscale park told researchers “The people who have moved out to another location have been selling their houses in our community for what they have in them.”

Consumer Reports[®], a publication of Consumers Union, conducted a national survey published in 1998 of the ownership experiences of 1,029 consumers who had purchased manufactured homes built since 1977. Two-thirds of the survey respondents estimated that their manufactured homes would sell for less than they had paid for them. Consumers Union later surveyed 122 Texas manufactured home owners who had purchased their manufactured homes new in 1999 or 2000. In that sample, only 25% thought their home was worth more than when they bought it – and only 22% of those who financed their home separately thought it was worth more than the loan balance.

Nancy Mitiguy works at a nonprofit housing agency, Gilman Housing Trust, in rural Vermont. Gilman operates a NeighborWorks[®] Homeownership CenterSM and a small individual development account (IDA) program. She told Consumers Union: “In our counseling work with prospective homeowners, we address the issue of depreciation of mobile homes. Time and again, we find young families who rush into home ownership and find out later, when they want to sell their home, that they cannot sell it for enough to cover their mortgage. ‘I wish I’d known’ is a common phrase.”

Consumers who have their home repossessed may have to pay thousands over the resale price to clear their note. An El Paso, Texas, woman had her home repossessed 13 months after her original purchase. GreenTree (now Conseco) charged her a \$10,800 deficiency balance on a \$32,600 home.⁸ A deficiency balance is the difference between the principal balance of the loan and the amount for which a lender is able to sell it (plus expenses). Lenders rarely recover the entire loan balance on resale- and their recovery rates have plummeted in the last few years. In 1998 manufactured-



housing lenders reported a 75 percent recovery rate.⁹ In 2000, investment bankers estimated that this had dropped to 40 to 50 percent.¹⁰ By January 2002, a major lender estimated as it left the market that it would get 20 cents on the dollar.¹¹ This rapid decline in recovery rates reflected a glut of repossessed manufactured homes for sale, damaged the resale value of used homes, and contributed to the steep depreciation encountered by the lenders.

Investors in the secondary market for securities backed by manufactured-home retail installment contracts are told point blank by lenders that manufactured homes depreciate. One SEC filing reads: *“Moreover, regardless of its location, manufactured housing generally depreciates in value. Consequently, the market value of the manufactured homes could be or become lower than the principal balances of the related Contracts.”*¹² Investors are concerned because depreciation leads to higher repossession rates as homeowners who find themselves underwater in a loan (owing more than the home is worth) simply walk away from the deal, leaving their home and credit behind. Newspaper classifieds are littered with ads for “abandoned” mobile homes. It is an unfortunate reality of our legal system that sophisticated institutional investors receive this disclaimer, but the individual homeowner investing in the American dream does not.

Deficiency balances and underwater loans in and of themselves are symptoms of, rather than proof of, depreciation. Factors other than depreciation of the home can lead to deficiency balances. A recent Consumers Union report on sales and lending practices in manufactured housing outlines many industry practices which lead to very high loan-to-value ratios.¹³ Fees, points and overpriced, unneeded add-ons (such as vacations, cash rebates and single-premium credit life) raise the loan balance without adding value to the home. This can contribute to a deficiency balance by removing equity and placing the loan underwater.

This is a tricky subject, because while not technically depreciation, these finance costs have all of the negative effects of depreciation. In many cases it is merely a matter of semantics whether a dealer buries extra profits in an inflated price of the home (which would lead to depreciation) or buries the profit in fees on the loan (which would equally eat into equity but not fall in our definition of depreciation). In the following analysis we avoid this question by focusing on consistent estimates of value, rather than transactions that may occur at inflated prices or contain transaction costs related solely to the sale. But to answer the larger policy question of equity building, we need to combine results regarding changes in value with information on sales practices which can inflate the purchase price for buyers.

Posing the Question

This debate is usually characterized as: “Do mobile homes appreciate or depreciate?”* We suggest that this asks the wrong question. A better question is “How do mobile homes appreciate relative to site-built housing?” Appreciation is the change in value of an asset. This change can be positive or negative. Framing the question as positive appreciation versus depreciation misses some of the point. With inflation, homes can nominally appreciate while still losing value in real dollars. Likewise, homes can depreciate while still building some equity for the homeowner. To shift attention away from nominal gains and toward the relative ability of the housing types to build equity, we will use the term appreciation in this report for both positive and negative changes in value. We will continue to occasionally use depreciation as shorthand for negative appreciation. The idea of depreciation is important when considering the plight of consumers who get “underwater” on their loans, owing more than the amount for which they can sell their homes.

Another important question is “Why do some manufactured homes appreciate more than others?” As both common sense and the literature review below make clear, there is variation in the appreciation of individual

* Although a technical difference is sometimes given between the terms *manufactured* and *mobile homes*, this report follows colloquial usage and uses them interchangeably.

housing units. For example, while the HPI rose 5.7 percent annually over the last quarter century, some homeowners did much better, perhaps seeing their home values double or triple in a few short years. This variation is found among manufactured homes as well. Regardless of the average appreciation found in manufactured housing, individual consumers and developers are most concerned with maximizing the appreciation and equity in their specific situation. Uncovering the factors that will allow consumers and developers to do so is an important part of our research.

Some Theory

Much of the existing literature on the appreciation question has sidestepped the theory in favor of empirical investigation. However, a theoretical model, even a simplistic one, is necessary to fully understand the data we encounter.

What causes a home to be worth more (or less) at one point in time versus another? Under classical economic theory, this valuation is a function of supply and demand. One way to think about a home purchase is to view it as the purchase of a bundle of goods. The physical home itself is a bundle- you get a bedroom, a garage, a certain number of bathrooms, etc, each of a certain level of quality. The bundle includes more than just the physical home; The purchase comes with financial responsibilities such as taxes, maintenance costs, and insurance. A conventional home also comes bundled with the land upon which it sits. In addition to dirt and space, this land carries with it characteristics derived from its specific location such as neighbors, access to schools, distance to services, zoning restrictions, and more. We can view the home's value at any given time as the value of all of these components combined.

The appreciation of the home is its change in value over time. The framework described allows for the value change to come from two sources: changes in the bundle of goods that is the home, and changes in the supply and demand of the bundled components.

The home itself changes with time – most obviously, it ages. This physical depreciation (wear and tear) is a factor that lowers the value of all homes. Other possible sources of change to the bundle of goods includes renovation and repair work performed on the home, changes in the neighborhood such as a new landfill or a new community pool, and higher or lower property taxes on the home.

The supply and demand for the bundle and its components change over time as well. New tastes and demographic shifts can change consumer demand for a good. For example, an aging population may increase demand for easily navigable ranch style homes, driving up their prices. Supply comes into play as well - over

Over time, a house represents a different bundle of goods...	
Time 1	Time 2
<i>Good condition</i>	<i>Fair condition</i>
¼ acres land	¼ acres land
3 years old	7 years old
3 bedroom	3 bedroom
2 car garage	2 car garage
<i>low taxes</i>	<i>high taxes</i>
Nice Neighbors	Nice neighbors
2 miles to services	1.5 miles to services (new services built)
etc.	etc.
...At the same time that varying demand and supply changes the market for possible components....	
Time 1	Time 2
Good condition = \$.40 per square foot	Good condition = \$.43 per square foot
Fair condition = \$.35 per square foot	Fair condition = \$.37 per square foot
¼ acres land = \$10,000	¼ acres land = 13,000
2 car garage = \$13,000	2 car garage = \$15,000
etc.	etc.
<i>Note: All numbers hypothetical</i>	

building in a market can damage values, while a housing shortage can drive up values. Some theorists posit that a large contribution to housing's overall record of positive appreciation comes from limitations to the supply of developable land coupled with an ever increasing demand from rising population levels.¹⁴ Slower productivity growth (limiting supply) in the new home construction industry relative to the rest of the economy has also been targeted as a primary driver of appreciation.¹⁵

If we adopt this theoretical framework, the final appreciation of a home is a combination of all of these factors – changes in the home such as physical deterioration, and all of the changes in supply and demand for the each of the components of the bundle, including the land and the amenities of its location. Transaction costs (such as realtor fees and financing costs) can be incorporated as factors affecting where supply and demand meet.

As we discover more about appreciation, perhaps finding that larger homes appreciate more than smaller homes, we need to keep this framework in the back of our mind as we try act on these results. Such a finding may mean that demand has risen for larger homes over our study period, driving up the value of that component. We can only rely on this past performance to predict the future if we assume that the demographics and tastes that drive demand will remain constant into the future. Another explanation, that larger homes may be built with better materials that resist physical deterioration, is also congruent with our model – but would perhaps have different implications for action.

We can use this model to form some hypotheses about how and why manufactured housing might appreciate differently from site built housing. These reasons might include the following.

- The wider variation in tie between land, location, and home leads to a wider range of what is included in the bundle of goods purchased with the home.
 - Sometimes the land is in the purchase bundle, and sometimes it is not. This is a large change in the bundle of goods.
 - Manufactured homes can be have a much looser tie to their location then a conventional home. On one end of the range, homes can have permanent physical and legal ties similar to site built housing. On the other, some homes on rented land have leases prohibiting them from being be sold in place and must move at each sale. In most cases, the home can be moved more easily than a conventional home. We might, therefore, expect the location specific aspects of the home purchase bundle to have a lower impact on the appreciation.
- Demand for manufactured homes may be segmented from demand for site built housing by stigma and target demographics. Mobile homes have a particular place in the American psyche, and this could impact demand among some social-economic clusters. If this is true, the manufactured housing market would react to different consumer pressures than conventional housing. For example if manufactured housing is purchased primarily by low income consumers, demand for housing among this population may be more sensitive to economic shifts – like some recessions – which disproportionately affect lower income workers.
- If the market is segmented, and manufactured housing construction productivity increases quicker than site built construction productivity, we would expect lower appreciation rates. Faster productivity means slower increases in the cost of a new home – and the cost to replace a used home with a new one can cap the appreciation of the home part of the purchase bundle.
- The different building process and materials used in constructing a manufactured home could lead to systematically different levels of durability and renewability. This in turn could lead to different rates of physical depreciation.
- The different sales and financing practices prevalent in the manufactured housing market could lead to systematically different transaction and financing costs for the homes type. For example, used manufactured homes are often subject to higher interest rates than new manufactured homes, while in the site built market interest rates are generally comparable. Our theory would predict this would reduce demand for used manufactured homes.

Literature Review: Work that has gone before

Previous Appreciation Studies from the Last Decade

Region	Funding	Data Sources	Technique	Date	Site-Built vs. MH	Factors Examined (and direction of effect)
Washington State	Washington Manufactured Housing Association	County Tax Records of Sales	Resale vs. Original Purchase Price	1991	n.a.	Park Placement (mixed) Multisection (+) Regions (mixed)
Michigan	DataComp, a MH Appraisal Company	Resale	Resale vs. Original Purchase Price	1991	n.a.	The general housing market (+), the community (+) purchase price (-), age (-), inflation (+), availability of community sites (mixed) cost of community sites (-) existence of an organized resale network (+)
Michigan	Michigan Department of Commerce	Sales data from Title Applications	Matched Buy-Sell comparison	1993	n.a.	Bought New (-) Bought Used (+) County (various)
California	The Home Team (development consultants)	Dataquick I.S. proprietary purchase price database	Resale vs. Original Purchase Price on infill lots	1993	n.a.	Location Visual and Architectural Compatibility (+)
Washington II	Washington MHA	Survey	Regress on annual prices of homes	1994	MH purchase prices rise faster than SFH	
National	HAC and HUD	AHS	Compare purchase price to current estimated values	1996	Site-built outperforms MH	Urban (+)
Texas Real Estate Center	Texas Real Estate Center	MLS	Comparison of average sales value in two periods	1999	Mixed	Size (+)
Fort Worth (Academic)	Unknown (published in <i>The Appraiser Journal</i>)	MLS	Sales price regression model	1999	Greater unexplained variability in mobile home prices than site built home prices.	n.a. (Studied price, not appreciation)
North Carolina	NC Manufactured Housing Institute	Tax Appraisal	Compare Appraised Values	1997	Real-property MH on fixed foundations comparable to site-built; personal-property MHs appreciated 2-5% less.	Personal Property (-) Real Property (perm attached to land) (+) Width (+) Age (-)
Alabama	AMHI, (further analysis of data later published in Southern Business Review by authors)	Tax Appraisal	Two year comparison of appraised values, using GIS	2000	Individually placed MH on private land appreciate at about the same rate as site-built housing in the same neighborhood. MH shown as slightly less in appendix of SBR article; significance not listed	"Clustering" (-) Individually Placed (+)
Alabama (same as above)	Unknown	Tax Appraisal	Two year comparison	2000	MH shown as slightly less in appendix; significance not listed	
Vermont	State of Vermont	Resale Values	Matched Buy-Sell comparison	1998 and 2000	n.a.	(CU reanalysis of combined data) Non-profit ownership (small +) Length of Ownership (-)
National	Neighborhood Reinvestment	NAHB, FHLMC	Replacement/ New Sale Values	2002	Productivity growth slightly higher in MH	Appreciation for site built and MH comes from land ownership

The debate over the appreciation of manufactured housing is not new. Over a quarter of a century ago, the Center of Auto Safety highlighted the steep depreciation found in the mobile home market at the time.¹⁶ Since then, the industry has made a coordinated push to improve the general image of manufactured housing and highlight the

improvements in the building processes since the introduction of the HUD-code building standard in 1976. We found thirteen studies on this topic from the last decade. These studies use a variety of methods. Some focus on the relative appreciation of manufactured housing versus site-built housing. Some track the change in value of the home itself, while others track the change in the combined value of the home and the land upon which it is sited. A few merely touch on the appreciation issue in the process of examining zoning impact. While we focus on the appreciation debate because of its impact on equity, local tax boards also pursue these issues to determine manufactured housing's impact on the local tax base.

We reviewed these studies in detail, attempting to get beyond understand the strengths and limitations of each. We even re-examined the primary data when it was available. A summary table is presented above, and detailed reviews discussing methodology and data sources are available in the appendix.

Many of the studies address the average person's belief that mobile homes depreciate, but they fail to address the difference in the spread between manufactured housing and conventional site built housing. For example, a study in Michigan reported that just over half of the homes studied sold for more than the purchase price, but the investigators did not report comparable numbers for the local conventional-housing market. Among studies that do compare manufactured housing and site-built housing, studies that looked at all manufactured housing or only personal-property manufactured housing found that manufactured housing did not perform as well as site-built housing. Two studies that focused only on real-property mobile homes on private land suggested that those mobile homes performed comparably to site-built housing in the area, while a third found results mixed by city and house size.

Almost all of the studies looked at some factors to explain differences in appreciation rates. The studies generally agreed that larger homes (either based on square footage or number of sections) appreciated better. Two studies suggested that older manufactured homes didn't perform as well as younger homes, but a study in Michigan found that homes purchased new performed worse than homes purchased used. One explanation consistent with that data is that homes experience a rapid drop in value once classified as used, but that the decline levels off with age.

The tenancy of the home matters as well. Personal-property homes (often placed in parks) performed much worse than real-property homes in a North Carolina study, while park placements compared to private land had mixed results in a Washington study. (Homes placed in parks appreciated slightly less than the overall average, but in 2 of the 5 counties reporting both types of units, parks placements outperformed private-land placements). Analysis of data from Vermont suggests that homes in parks owned by a nonprofit have a slight edge over those in for-profit parks.

Seven of the studies found differences in appreciation rates based on regional, city, or neighborhood factors. The Housing Assistance Council suggested that mobile homes in urban areas perform better than those in rural areas. An Alabama study suggested that clustered manufactured homes did not perform as well as those surrounded by site-built homes. In a similar vein, an article based on California data suggested that infill homes visually compatible with their neighborhoods appreciated more.

An oft-quoted article by a Michigan appraisal company specializing in manufactured housing outlined a framework for understanding manufactured housing appreciation that prioritized the following factors:

- The general housing market. A strong market helps manufactured-housing sales.
- The quality of the community in which the home is placed. Good community, good resale prices.
- Purchase price. Paying too much for a home hurts your return.
- Condition and age. After 10 years, condition has a bigger effect than age.
- Obsolescence (design changes on new homes). New features on new models hurt resale value of old homes.
- Inflation. High inflation can lead to nominal appreciation.

- Availability of community sites. Limited availability of new sites raise the value of homes already placed in a site.
- Cost of community sites. High site rent lowers the home's value.
- Existence of an organized resale network makes it easier to sell a home and stabilizes prices. It reduces transaction costs and increases the efficiency of the market.

Most recently, a report sponsored by Neighborhood Reinvestment weighed in on this debate, illustrating through data from Freddie Mac and NAHB that most of the equity in a site built home is built through ownership of the land, not the house.¹⁷ The data also showed the cost to replace a site built home grew slightly faster than the replacement cost for a manufactured home. A Wall Street Journal column in 2001 also concluded that most of the appreciation in a home is comes through ownership of the land, not the house.¹⁸

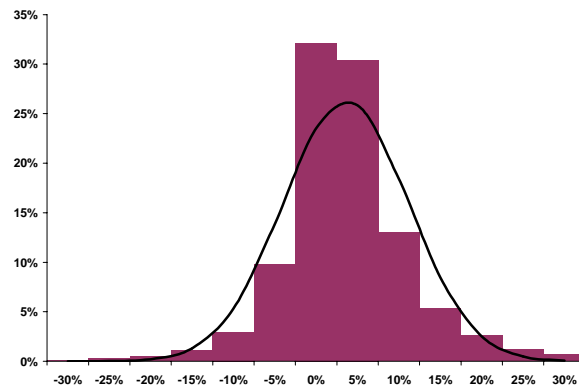
Insight from the American Housing Survey:

To further our understanding of this issue, Consumers Union examined data collected from 1985 to 1999 in the American Housing Survey. This biannual survey of 55,000 homes across America provides a rich database with which to explore manufactured housing. We used this data to compare the appreciation of site-built and manufactured housing, and to understand the factors contributing to an individual unit's appreciation. Technical readers should consult the appendix of this paper, where the methodology, data limitations, and theory is given a more rigorous treatment.

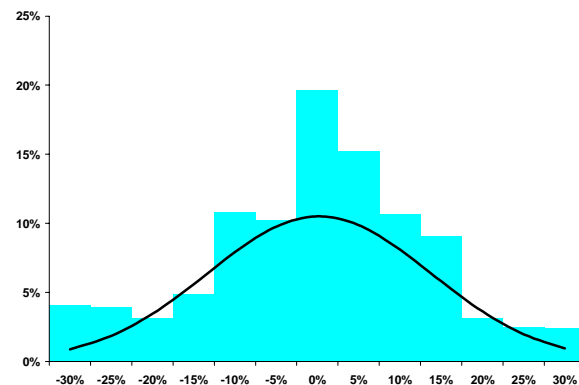
Highlights of the results include:

- 1) The impact of owning land. On the whole manufactured homes appreciated 6% less a year than site built homes, but those packaged with the land appreciated similarly to site built homes. On average manufactured homes on leased land depreciated.
- 2) Manufactured homes, both those on rented and owned land, had significantly less predictability and higher variation in the appreciation of the units.
- 3) The factors driving MH appreciation are structurally different then the factors driving site built appreciation.
- 4) Regression analysis identified many factors that predict the appreciation of an individual home.
 - Owning the lot leads to higher appreciation of the home itself.
 - Homes costing less at the beginning of the appreciation period will appreciate more, with the effect flattening out at larger values.
 - Larger homes appreciate more.
 - Intensive use and overcrowding lowers the appreciation of a home.
 - Investing one percent of the value of the home in maintenance yields a half percent improvement in the value.
 - Moving a home has a negative effect on its future appreciation.

The appreciation of site built homes have a tighter distribution around the mean....



....Than Manufactured Homes, which are less predictable.



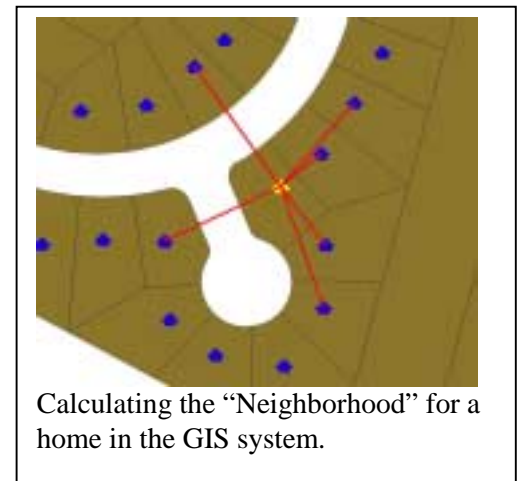
- Homes in an “Urban” census area do better than rural homes.
- The state of the regional (non-manufactured) housing market, is weakly (positively) correlated with the appreciation of a manufactured unit.
- There is also regional variation not explained by the regional housing market. Homes located in the Northeast and West Census regions performed significantly better than homes in the Mid-west and South.
- The fact that a home was built since 1980 (a proxy for 1976, the implementation of the HUD code) does not ensure higher appreciation. This coefficient, while positive, was not significant.
- Lot size was significant, with homes on larger lots performing better.
- For those homes located in parks, higher starting rent translated to higher appreciation.
- Lastly, appreciation since purchase is positively correlated with current period appreciation, so a unit that has depreciated in the past will continue to depreciate, even controlling for the other factors.

Insight from County Appraisal data

“Location, location, location” is the mantra of real estate professionals. While our AHS research was able to integrate some broad location factors, such as regional housing market, conventional real estate wisdom suggests that neighborhoods have a very large effect on housing value. To get at neighborhood factors, we examined home valuations in three counties in Texas using a GIS (Geographical Information System) to map the locations of the homes. This allowed us to determine the appreciation of an individual home in relation to other homes in its immediate vicinity. Some counties have additional data available, such as the location of schools and large employers. With this information we can explore the additional information about the impact of neighborhood location.

The analysis was performed on data from Denton, Bexar, and Travis counties in Texas. The time period studied varied by county, and ranged from 1990 to 2002. These three urban/suburban counties were undergoing high growth during most of the study. More information on the counties, as well as the study methodology and a description of the data, is available in the appendix.

It was clear across all three counties that manufactured homes on leased land appreciated significantly less than site built homes. The difference in appreciation rates between site built homes and manufactured homes without land average 8.7% across the counties. We found no consistently statistically significant difference between manufactured homes on land and site built homes. Across all counties, all types of manufactured homes showed higher variation in the distribution of appreciation rates than site built homes.



We used regression analysis to identify how various factors affected the appreciation of the homes within each county. Across counties, time periods, and ownership status of the land, the following factors consistently predicted appreciation:

- The appreciation of the neighborhood was a positive driver in all the regressions over all time periods and counties, and was significant in the majority of them.
- Ownership of the land improves appreciation of the home itself.
- The distance to an urban area had a positive and generally significant coefficient. This means that the farther the home was from the city, the more it appreciated. Since each of these counties contained a major population center, this may reflect the appreciation of high-growth suburban areas.

- In Travis county, (the only county with the data available), the farther the distance to the nearest school, the higher the appreciation, again indicating a strong effect due to rapid suburban development.
- Price per square foot seemed to be a better predictor of appreciation than overall price. Lower valued homes actually appreciated better than more expensive homes, with the effect leveling off (and reversing) at high values.
- Older homes tended to appreciate less, with the effect leveling off with age. (i.e. 20 year old homes perform similarly to 30 year old homes, but 3 year old homes perform better). Note that all of the homes studied are “used” so our data does not capture any drop in value at first sale that might exist.
- Homes identified as being in “poor condition” appreciated less. This variable was only available in Bexar county, and after accounting for this variable, the age of the home was not statistically significant.
- Homes in flood areas appreciated less.

The following factors were either inconsistent in effect across regressions or were not statistically significant.

- Size of home had mixed results, but larger homes tended to perform worse (contrary to the results of other studies).
- The effect of the number of manufactured homes in the neighborhood was not constant across regressions and was not consistently significant.
- The effect of the density of the neighborhood was generally not significant and varied across regressions.

Other interesting findings from the analysis:

- Despite the fact that manufactured homes on land tend to be on less expensive plots, the value of the land tends to be a higher percentage of the entire package.
- Manufactured homes tend to be clustered together near other manufactured homes, and tend to be farther from urban areas and other facilities.
- In Bexar county, where the condition of the home was reported, manufactured homes were much more likely to have a low condition score. Park homes were in better condition than units on owned land.
- In Travis county, the only county the data was available, manufactured housing units were 3 times more likely to be located in flood prone areas.
- In Denton county, where data was available for two separate time periods, manufactured homes on land under-performed the market during a slump, and out-performed it when the market was booming.

Discussion

Four major themes stand out from the collection of data contained in this report.

- Manufactured home owners have not historically seen the same appreciation opportunities in their home purchase as conventional home buyers.
- Much of this difference is attributable to the lower rate of land ownership among the manufactured home owners.
- There is lower predictability in appreciation for manufactured home owners than conventional home owners.
- We can explain some of the variation in appreciation within the manufactured home pool, and use this to make recommendations to maximize appreciation.

These themes are closely intertwined, all impacting the equity building opportunities in manufactured homes for families.

Our data indicates that manufactured home owners have not seen the same average appreciation rates as conventional home owners primarily because of the widespread use of rented land tenancy.

Land is a primary driver of value changes. In many markets, an ever increasing population looks to purchase a finite supply of developable land. To get in on the ground floor, you need a piece of the earth's surface. This partially explains our finding that land ownership boosts the overall appreciation of the housing bundle. However, the data shows that owning the land also increases the appreciation of the housing unit itself. This is most likely due to the increased stability of the tenancy and lower likelihood costs will be incurred to move the home upon sale. Homes on leased land are also subject to continuously increasing rents, which can erode the value of the location.

We are unable to see the direct effects of other hypothetical reasons why manufactured homes may appreciate at a lower average rate than site built homes, such as lower growth in replacement cost, faster physical depreciation, and more expensive remodeling. Neighborhood Reinvestment's study showed that replacement costs did change at a different rate (33.9% nominal change for manufactured housing, 35.6% nominal change for site built homes) from 1990 to 2000, but the difference is relatively small over that time period. In any case, the sum of these effects is not statistically significant across the data sets.¹⁹

Our data shows that the average appreciation rate of manufactured homes on owner owned land is not consistently statistically different than the appreciation rate of site built homes. Yet in three of four of the data series we analyzed, manufactured homes on owned land appreciated less than the site built homes. In our analysis of data from Bexar county, we looked at the appreciation of all site built homes and those site built homes near manufactured homes. There was a .4% difference between the appreciation rates, which was statistically significant. At the same time, a .6% difference between the site built homes near manufactured homes and manufactured homes and owner owned land was not significant. The test for significance of the difference of the mean appreciation rates rests on the dispersion of the appreciation rates. The appreciation rates for manufactured homes are more widely dispersed, widening the confidence band around the average. This higher level of "noise" destroys our ability to make fine distinctions between differences in appreciation rates. Thus, although the difference between the average appreciation of manufactured homes in parks and site built homes is large enough to be significant, we can't determine with this data if any small differences between the average appreciation of manufactured homes on owner owned land and site built homes exist.

This is not to say that manufactured homes on land appreciated the same as site built homes. Although the average appreciation rate may be similar, all of the data we examined leads us to conclude that manufactured homes had a much wider range of appreciation rates than site built homes. This difference is significant, and leads to greater risk for the purchaser. For example, in our analysis of Bexar county, where manufactured homes and site built homes had a similar average appreciation, 13.9% of manufactured homes lost value compared to only 5.7% of site built homes. When homes lose value, families lose their primary asset and can get locked in an underwater loan, keeping them from moving to follow new opportunities.

This wider variation might contribute to the stereotype of depreciating manufactured homes. Since a manufactured home is much more likely than a site built home to lose value, both in a park and out of a park, the public's belief in manufactured homes as a depreciating asset is reinforced.

Why is this variation higher? We have no single good answer. Our models based on American Housing Survey data were less successful predicting manufactured housing appreciation than appreciation of site built housing, so it is not just higher variation in the factors we treat as drivers of appreciation. A preliminary review of our data sets indicates some of the higher variation maybe due to a higher variation in the low income housing market in general, but other studies vary on whether this effect exists.²⁰ We can speculate that valuation in this market is less efficient than the conventional home market. Lower starting home values draw less attention from market facilitators like realtors, Multiple Listing Services and appraisers. Lack of these intermediaries means less market information and inefficient pricing. As one mobile-home broker posted to an Internet bulletin board: "Just because most mobiles don't appreciate, that doesn't mean you can't sell them for more than you paid."²¹ This is possible because it is very difficult for consumers to determine the market price for any given home. Estimating

appreciation in the low-cost market can also be more difficult due to fixed transaction costs. For a home costing a few thousand dollars, transaction costs can easily hide all of the gains or losses due to appreciation. If some respondents incorporate these costs while others do not, this would add more noise to the data and contribute to the observed variation.

Another hypothesis for the greater variation in returns for manufactured homes is that the manufactured housing market is “segmented” from the conventional housing market. Recall our AHS analysis found that not only did the manufactured housing market appreciate differently, but the drivers of that appreciation are different. It seems likely that demand for manufactured housing is somewhat independent of the conventional market. The analysis of appraisal data in Bexar county supports this – in one five year period manufactured homes on land appreciated much less than site built homes, while over the next seven years they out-performed the site built market.

We can hypothesize a few reasons for this segmentation. First, the very real effects of societal stigma – historical stereotypes of “trailer trash” make upper socioeconomic segments of the population uncomfortable with this product. A parallel effect is the continued emphasis of much of the industry’s marketing on selling to low-income home buyers. In so far as employment and income cycles may differ for the targeted population, (the so-called first-hired, first fired effect of marginal low income workers), demand for manufactured homes will differ from demand for higher priced conventional homes. Second, the legal status of manufactured homes as “personal property” rather than “real property” has led to a separate financing system with different underwriting. This financing, in turn, moves through different cycles of availability than traditional mortgage funding sources.

Despite the high variation in appreciation in manufactured housing, we were able to locate factors which correlated with high appreciation rates. Based on these findings, we’ve prepared a few recommendations we’ve drawn from this research on how to maximize the appreciation of an individual unit.

Recommendations

Recommendation: Own Land.

The loudest message from our research is that ownership of the land is vital to maximizing the appreciation possibilities of a consumer’s purchase. No positive appreciation should be expected if the land is placed on a rented lot.

Recommendation: If land ownership is not an option, rent and tenancy should be as stable as possible. Homes should be sold in place.

-rent-

The rent associated with a given manufactured home is just as much a part of the housing bundle as any other effect of its location. Unexpected increases in rent lower the value of the home, lowering the appreciation potential.

-tenancy-

If a consumer cannot sell a home in place, or has a tenuous right to keep the home in place, the cost of moving and potential damage from moving a home will subtract from the value of the home. These costs, which can run thousands of dollars, eat into appreciation. Our American Housing Survey study indicates that the damage sustained to a home will continue to eat into its appreciation potential after the move. The data indicates that manufactured homes truly are no longer mobile, and owners should not plan on moving them if they want to maximize their resale value.

Both rent and tenancy problems can be addressed through long term, transferable leases that spell out rent terms. Non-profit or co-operative ownership may also offer increased stability. Our research had limited data to evaluate

this hypothesis directly, but increased stability should mitigate some of the effects of tenancy. Anecdotal evidence from California indicates that homes in rent controlled parks are worth more.²² In this case, high resale values are driven by the fact that ownership in the home entitles the homeowner to below-market site rent.

Recommendation: Good location and neighborhoods.

Every one of our analyses found that the location of a home was a very important predictor of its appreciation. In this respect, manufactured homes are no different than site built homes. Again, the cost of moving a manufactured home makes its realistic mobility little more than a myth if a consumer wants to build equity in the home. A home may be bought off a retail lot as a commodity, but once it is installed, its new value will reflect that location.

We found that manufactured homes tended to be farther from services, more frequently located in flood plains, and generally in lower cost areas on the edge of cities. In our appraisal data, this served the sample of homes well, because the counties we studied were undergoing fast paced growth during most of our study and the edges of the counties jumped in value. However, in the early 90's real estate slump in Denton county the value of the land owned by manufactured homes owners dropped while the land under site built homes appreciated, albeit at a low rate. It may be that there is higher temporal variability in the low cost plots typically selected by manufactured home owners. In any case, it is clear that manufactured home placement is not immune from the inherently speculative nature of all decisions about neighborhood appreciation or decline.

Recommendation: Give the home site-built visual appeal and congruence with neighborhood styles.

The literature review provides some support for the theory that a manufactured home placed in a neighborhood will appreciate better if it fits in with the neighborhood. If the home avoids the stereotypical visual characteristics of manufactured housing, (i.e. the long thin box) it may avoid a loss of demand associated with the manufactured housing stigma. Larger multi-section homes are more likely to have a conventional look. All of the studies in the literature review found that larger manufactured homes had higher appreciation, although we did not find that effect in our review of appraisal data (which controlled for a host of other factors, such as price per square foot and neighborhood appreciation). Additional impetus for considering multi-section homes comes from other research suggesting that permanently installed multi-section manufactured homes are safer in high wind events.²³

Recommendation: Pay fair price – and it may be that shopping for a deal in used homes is worthwhile.

Although we did find that younger homes appreciated better than older homes, our study didn't look at the performance difference between new and used homes. All of the homes we studied were already "used" in some sense. Our analysis did not track the price paid for a home new off the lot, but rather the value of the home once it was installed. However, a studies from Michigan indicates that manufactured homes can take a drop in value after their first sale.²⁴ For consumers, this means that buying a late model used home in good condition may represent a good value.

One contributing factor to an initial drop can be inflated retailer mark-ups embedded in the price of a home. Consumers who pay too much for a any home will find it harder to sell it later for a higher price. Retailer mark-ups can be a quarter of the base price of the home.²⁵ Consumers should question what value they get from this middleman, and take steps to minimize costs that don't add value to the home. Buying direct from the last owner in a used transaction may reduce this overhead, as can buying direct from manufacturers when possible.

Get the appraised value of a transaction and an inspection of the home. This is even more important in the manufactured home market than the conventional market due to the wide range of appreciation rates and valuations for homes. Part of the attraction of the home-as-investment theory of asset building is that the home is

considered a low-risk investment that is easily understood and tangible to families, but the family must be able to determine the value of the purchase.

Recommendation: Improve demand for used homes by creating lending products to finance this market.

One contributing factor to any drop in value once a home has been “unwrapped” and used may be a shortage of financing for homes upon resale. Dealers and lenders report this problem. Limited access to resale home loans would reduce demand and damage the resale value for those consumers who bought their homes new and need to sell. We can help consumers sell their homes by encouraging financing for used home buyers, either through community lenders, credit unions, or other sources. Although our data did suggest that older homes have slightly lower appreciation rates than homes just a few years old, this effect disappeared once we accounted for the condition of the home. Thus, a fairly priced and inspected used home in good condition should not represent a higher collateral risk.

Because of the damage and costs of moving a manufactured home, homes that are moved to be resold will generally sell for a lower value than a home sold in place. The current dealership system used to resell many homes assumes that homes will be moved and resold off a dealer lot. Lenders (and consumers) that rely on the dealership sales process will see lower appreciation rates for their homes. Reducing use of this system and developing a market where homes are expected to be sold in place will increase resale values.

Recommendation: Budget money for repairs

Our American Housing Survey analysis shows the importance of spending money on repair and upkeep to maintaining the value of a home. A report from AARP shows that manufactured home owners can expect not-insignificant repair costs associated with their manufactured home purchase.²⁶ Regular maintenance is required as well. Budgeting these costs into a consumer’s purchase can insure families can afford to keep their homes in good shape, increasing the resale value. Our analysis of American Housing Survey data showed that residents spent on average 2% of the value of their home a year on maintenance.

Recommendation: Select durable homes

Our theory says that more durable manufactured homes will maintain their value longer. Our data could not elucidate this topic, but in one county we examined, the better the condition of a manufactured home, the higher its appreciation. A forthcoming tips brochure from CU will include a detailed checklist allowing consumers to compare the materials and construction processes used to build manufactured homes.

Recommendation: Consider all the aspects that lead to equity building, not just appreciation.

Perhaps most importantly, remember that appreciation is just one part of the equity building picture. Higher transaction and financing costs can also strip equity. Problems with stability of tenancy, durability of construction, used home financing, and fulfillment of warranty contracts can manifest themselves in lower appreciation rates for a housing unit. All of these factors impact the ability of families to build and use equity in a manufactured home.

I. Conclusions

Financial appreciation is only one part of the equity-building picture. Other factors, such as the financing, security of tenancy, details of the purchase deal, and physical depreciation interact with the financial appreciation to provide the final landscape of equity-building opportunities. Equity stripping through predatory asset-based lending shows how equity can be lost investing even in an appreciating asset. Nevertheless, even small differences in housing appreciation rates can lead to big differences in wealth over the life of a family. Our review

of the available data finds the stereotypes of manufactured housing are built upon very real differences in appreciation experienced by the people who own them. The large proportion of manufactured homes in rental parks contributes greatly to the lower appreciation experienced by manufactured home owners as a whole, as land ownership is an important driver of appreciation. High variation in the individual appreciation rates of manufactured homes also leads a higher proportion of manufactured homes, even packaged with land, to lose value over time.

Even so, average appreciation rates of manufactured homes packaged with owned land are statistically in line with the site built market, and there are few inherent reasons that a home built in a factory should perform differently than one built on site. Our analysis suggests that consumers can make decisions which can improve the appreciation of a manufactured home. Land ownership, location, purchase price and maintenance expenditures are among the factors that predict appreciation, and should be considered when attempting to increase appreciation in a particular unit. Consumers who place a quality home on their own land in a good neighborhood, budget money for repairs and maintenance, and shop carefully to pay a fair price have the best chances of building equity in their home.

Appendix A: Texas County Appraisal Data Study:

Methodology:

This study examines the change in value of manufactured homes over various time periods in three Texas counties. The analysis is based on data gathered by the counties for the purposes of assessing property taxes.

The advantage of using county appraisal data is its completeness and objectivity. The databases contain information about the location of the home, its age, size, tenancy, and more, as well as its value as appraised by the county appraiser. There has been concern expressed by the manufactured housing industry that many appraisers use depreciation tables rather than market analysis to value manufactured housing. To address this issue, we interviewed staff at the appraisal offices from which we obtained data to make certain they valued manufactured housing using the same techniques that they used for site built housing. Additionally, staff at the State Comptroller of Public Accounts released an analysis in 2001 comparing appraised and market values in 13 counties in Texas. This report found “Overall, this analysis shows that manufactured housing is appraised in a reasonably accurate and uniform manner by the CADs included in the analysis.”²⁷

The counties of Travis, Denton and Bexar were selected because of the availability of data. For each, we obtained valuation data for at least two points in time. Annual appreciation rates were then calculated for each housing unit that existed at the beginning and end of the time period. These homes were mapped (i.e. “geocoded” by address) using an ARCview GIS system. For all manufactured homes and a random sample of site built homes, we then calculated the distance to urban areas and the appreciation of the home’s neighborhood.[†]

In this study, a home’s “neighborhood” is its six closest neighbors. To reduce the computational complexity of calculating the distances between all the homes to identify the nearest six, the matrix was reduced by dividing the counties into sectors (for example, Denton county was divided into 4 sectors). While this causes a slight distortion for a few homes at the sector boundaries, we believe the effect is minimal. Even with the matrix reduction, calculating the neighborhoods clusters for the homes took several day’s computing power on a late model desktop computer.

Once the location variables were calculated, we evaluated the change in home values. The analysis compared the appreciation of the site built homes with the manufactured homes, and examined characteristics of the manufactured homes (such as location, age and size) which explained their appreciation. Because of differences in time frame and available data, each county was evaluated separately.

Results

Travis County:

Travis county, Texas incorporates the city of Austin, the state capitol of Texas. The high tech industry and government employment drive economic growth in this areas.²⁸ In the late 90s, the Austin – San Marcos MSA was the second fastest growing MSA in the country, and home prices were among the highest in Texas.²⁹ Austin allows manufactured home placement on private lots anywhere in the city (except flood zones).

The data used for Travis county came from two sources. The Travis County Appraisal District supplied valuation data. The City of Austin Planning, Environmental and Conservation Services Department provided GIS map layers. In 1995, Travis county appraisers reported 8,409 manufactured homes in the county. By 2001, this had exploded to 13,222 units, mostly due to a phenomenal growth in manufactured homes placed in parks. Travis county categorizes manufactured homes according

Appreciation Rate

We calculate the “appreciation rate” of a manufactured home by comparing the change in value of the home over time period and backing out the annual rate which would lead to the total change over the time period.

$$\text{Appreciation Rate} = \left(\frac{\text{Value}_{t2}}{\text{Value}_{t1}} \right)^{\left(\frac{1}{t2-t1} \right)} - 1$$

t1 = Starting Year

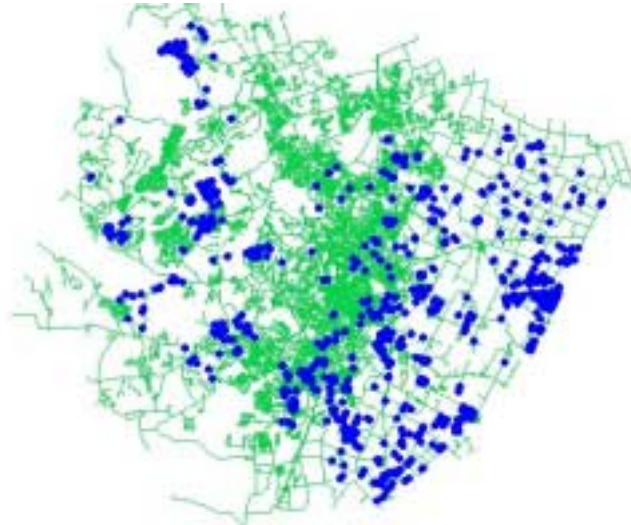
t2 = Ending Year

Value_t = Value of home at time period t.

[†] This calculation was performed using the “Nearest Features, with Distances and Bearings (v. 3.5) extension developed by Jeff Jenness of the US forest Service.

by whether or not the owner of the home matches the owner of the land. If it does, it is classified as a real property mobile home for tax purposes. If the owners are different, the home is classified a personal property home. Personal property manufactured homes increased by 87% over the six year period, while real property manufactured homes increased by 30%. Site built homes increased by 23% over the same time period.

We matched the 1995 and 2001 home tabulations to find units that existed and were valued at both points in time. Personal property mobile homes (i.e. park placements) matched very poorly. We were able to locate only 25% of the park homes from 1995 in 2001. Travis county often reassigns the identifying parcel number for mobile homes if it moves or the ownership changes. An in-depth analysis of a sample of unmatched homes found 2/3rds of the unmatched personal property mobile homes had changed owners or location.



Distribution of Manufactured Homes in Travis County

	1995 Units	2001 Units	Matched units	Percent Matched
Manufactured Homes on Leased Land	3,892	7,352	987	25%
Manufactured Homes on Owned Land	4,517	5,870	4,259	94%
All Manufactured Homes	8,409	13,222	5,246	62%
MH as Percent of housing stock	5.5%	7.0%	3.8%	
Site Built Homes	144,238	176,894	132,144	92%

This data was geocoded (i.e. mapped) using maps data from the City of Austin. Geocoding success was systematically different by data type, with manufactured homes mapping less successfully than other housing types (see chart). This problem occurred in all counties.

<u>Property Type</u>	<u>Geocoding Success Rate</u>
Manufactured Homes on Leased Land	50%
Manufactured Homes on Owned Land	72%
Site Built Homes	83%

Homes that changed size, year of construction, or for manufactured homes, HUD label, were removed from the sample. This removed many outliers in the data (i.e. homes which had undergone substantial renovations or in the case of manufactured homes, replacement). Despite these data difficulties, over 2,800 manufactured homes remained in the sample. The great majority of these were real property manufactured homes, giving us an opportunity to examine this type of home in detail. In our analysis we compared the manufactured homes with a random sample of 3,440 single family homes. A first level analysis is a comparison of the average appreciation rates for each of the type of home.

	<u>Manufactured Homes in Parks</u>	<u>Manufactured Homes on Owned Land</u>	<u>Manufactured Homes with Titles Canceled to Real Property</u>	<u>Site Built Homes</u>
N	439	2316	40	3440
Average Appreciation of Improvement	-3.5%	2.5%	3.0%	6.6%

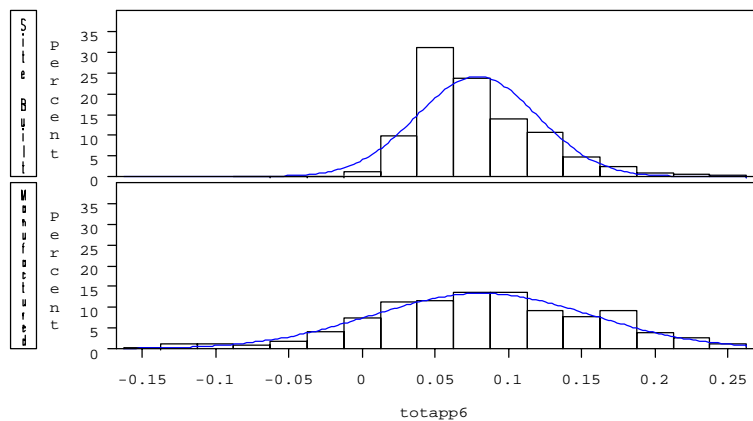
Average Appreciation of Land	n.a.	15.7%	16.2%	11.7%
Total	-3.5%	8.9%	7.8%	8.1%

Site built homes appreciate about twice as fast as manufactured homes on owned land, while manufactured homes in park depreciate. The land under manufactured homes appreciated more than the land under site built homes, bringing the total appreciation for manufactured homes and land above the appreciation for site built homes. Park placements depreciated. Setting aside the small group of homes legally attached to real estate, all differences in appreciation between housing types are significant at the 99% level. The sample of homes with their titles canceled to real property is not large enough to discern significant differences from the manufactured homes on land or from the total appreciation of site built homes.

We find, similarly to the data we examined from the American Housing Survey, that the appreciation rates of manufactured homes are much more widely distributed than the appreciation rates of site built homes.

In the graph, right, we see that although the average appreciation of manufactured homes, including land, is positive, 12% percent of the units experience depreciation. During this same high growth period in Travis county, less than one percent of the site built homes lost value.

Distribution of Appreciation rates of Manufactured and Site Built Homes and Their Land



Some Characteristics of the units:

Values in 1995	Manufactured Homes in Parks Mean	Manufactured Homes on Owned Land Mean	Manufactured Homes with Titles Canceled to Real Property Mean	Site Built Homes Mean
Home Value	11,725	12,693	20,078	85,843
Land Value	-	9,161	9,058	22,625
Total Value	11,725	21,854	29,136	108,468
Average percent improvement is of total value	100%	53%	66%	80%
Home Size (sqft)	994	1,092	1,237	1,712
age	19	23	17	28
Homestead Exemption	57%	57%	60%	70%

Manufactured homes tend to be less expensive, smaller and younger than conventional homes. Residents are less likely to file for a homestead exemption for property taxes, claiming the home as a primary residence. This may be because more units are rental or second homes, or because of confusion about the eligibility of manufactured homes for the exemption. On average, land comprises a much greater proportion of the total value of the land and home bundle in manufactured home purchases.

Clustering/distribution of units

	Manufactured Homes in Parks	Manufactured Homes on Owned Land	Manufactured Homes with Titles Canceled to Real Property	Site Built Homes
<u>Variable</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>
Distance to Nearest Large Employer (feet)	12,532	24,458	30,560	10,180
Distance to Nearest School (feet)	7,541	12,852	15,379	3,953
Located in Flood zone.	10%	14%	18%	4%
Any Manufactured Homes in Neighborhood	70%	93%	100%	3%
Number of Manufactured Homes in Neighborhood.	2.9	4.3	5.0	0.1
Distance to Nearest Neighbor (feet)	518	258	233	78

Despite the lack of zoning restrictions on manufactured homes, most of the units are located outside of the city center. Manufactured homes tend to be clustered together. Ninety-three percent of the real property manufactured homes in our sample have another manufactured home in their immediate neighborhoods (i.e. closest six homes). By contrast, only 3% of site built homes have a manufactured home in their immediate neighborhood. Forty-three percent of the real property manufactured homes have exclusively manufactured homes in their immediate neighborhood. Manufactured homes tend to be farther from a large employer, schools, and their nearest neighbor. Manufactured units are also several times more likely to be in a flood plain, even though the city of Austin prohibits the placement of manufactured units in flood areas. (Not all of Travis county is within the city limits, plus some may be grandfathered in from prior to the ban.)

Understanding the factors that support appreciation

Regression analysis helps us better understand the relationship between the explanatory variables and the appreciation of a manufactured housing unit. Separate models were constructed for manufactured homes on owned land and those on leased land. Following the information gained in the analysis of the American Housing Survey data that the drivers of manufactured housing were different than those of site built homes, site built housing was not included in the construction of the model. An exploratory look at the site built home sample provided evidence supporting the AHS study - parameters explaining the appreciation of site built homes are different from those for manufactured homes.

In preparation for the regression analysis, the neighborhood appreciation variable was orthogonalized to the other locational variables. This statistical technique breaks out the part of the neighborhood appreciation that is independent from the distance to schools, neighborhood density, and number of manufactured homes in the neighborhood. This allows easier interpretation of the results.

The first analysis looks at the combined appreciation of the land and the home for just those manufactured homes on owner owned land. This is followed by an analysis of the home alone, examining both the manufactured homes on owned and leased land.

Appreciation Rates Manufactured Homes: Land and Home together

N: 2355
 F: 133.66 <.0001
 R-Square 0.4259

Parameter Estimates

Variable	Parameter Estimate	Standard Error	Pr > t
Intercept			0.18689**
Orthogonalized Neighborhood Appreciation			0.20792**
Number of MH in Neighborhood			0.00639**

Distance to Neighbor (feet)	-0.00000433
Distance to School (feet)	8.842665E-7**
House Only Value 1995	0.00000166**
Total Square Footage	-0.00001959**
House Value as a percent of Total	-0.08904**
Improvement Price per Sq. Ft.	-0.00872**
Improvement Price per Sq. Ft. Squared	0.00007361**
Homestead Exemption Filed	0.00328
Title Legally cancelled	0.01568
Age of Home	-0.00058313
Located in Flood Zone	-0.01654**

Note: * indicates significance at 95%

** indicates significance at 99%

- The appreciation of the neighborhood correlates with the appreciation of the manufactured home with land, even after controlling for distance from schools, neighborhood density, and number of manufactured homes in neighborhood.
- Neighborhood density is not a significant factor for appreciation of the home/land bundle.
- Distance from schools is significant: The farther from a school, the higher the appreciation
- Higher valued manufactured homes appreciated more.
- Larger manufactured homes appreciated less.
- The higher value of the home relative the value of the land, the lower the appreciation of the total package.
- Homes costing less per square foot at the beginning of the appreciation period will appreciate more, with the effect flattening out and reversing at larger values (i.e. the cheapest and most expensive homes appreciate the most). There may be survivorship bias among the cheapest units: Units worth only a few thousand dollars that lose value are salvaged and disappear from the sample, leaving only those that maintain or increase in value.
- Claiming the home as a primary residence for tax purposes is not significant.
- The data indicates that legally binding the home to the land may increase its appreciation, but the effect is not significant. (note less than 2% of the sample met this criteria)
- Older homes appreciated less, controlling for the other factors in this regression. Our interim analysis shows that in general, older homes appreciate more, but once you control for the price, the effect reverses.
- Homes located in flood zones appreciate less.

Appreciation Rates Manufactured Homes not including lot.

N: 2794
Pr > F: <.0001
R-Square 0.3449

Parameter Estimates

Variable	Parameter Estimate
Intercept	0.21002**
Orthogonalized Neighborhood Appreciatio	0.02717
Number of MH in Neighborhood	0.00234**
Distance to Neighbor (feet)	0.00000746*
Distance to School (feet)	0.00000133**
House Only Value 1995	0.00000358**
Total Square Footage	-0.00004661**
Improvement Price per Sq. Ft.	-0.01856**
Improvement Price per Sq. Ft. Squared	0.00020353**
Homestead Exemption Filed	0.00242
Title Legally cancelled	0.02871*
Age of Home	-0.00282**
Located in Flood Zone -	0.00799
Manufactured Home on Leased Land	-0.05453**

Note: * indicates significance at 95%
** indicates significance at 99%

- Generally, the factors that explain the appreciation of the land and home package also explain the value of the home appraised by itself, although the specific parameters are different.
- The neighborhood is not significant in this regression, but the effect is positive. Other location and neighborhood variables such as neighbors and distance to nearest school are significant.
- Average distance to neighbors is now somewhat significant (at 95%), with higher distances translating to higher appreciation.
- Canceling the title of the home is also somewhat significant (at 95%), and those homes with canceled titles appreciated at 2.9 percentage points higher a year.
- Homes that are on rented land averaged an annual appreciation rate a full 5.4 percentage points lower than those on owned land.

Denton county

Denton County, Texas is located north of the Dallas-Ft. Worth Metroplex. From 1990 to 2000, the county's population grew by 47%, ending at 432,976. The city of Denton is the primary population center, with 80,537 residents in 2000.³⁰

The data used for Denton County came from the Denton County Appraisal District and the US. Census Bureau. We obtained the appraisal rolls for Denton county for 1990, 1995, and 2002. This allowed us to follow the appraised value of individual units over a 12 year period. The data was not as rich as that for Travis county, lacking information such as size and width of the homes. However, important variables such as value and location were available.

In 1990, Denton had 3,152 manufactured homes, comprising 4.6% of the appraisal roll. By 1995 this had increased to 5,513 homes, and in 2002 there were 10,852 homes, comprising 8.3% of



Denton County Manufactured Homes

the appraisal roll. Following the same methodology as used in Travis county, we mapped the units existing in 2002, and calculated additional variables such as distance to urban areas and neighborhood appreciation.

Because we had data for three points in time, 1990, 1995 and 2002, we were able look at appreciation at two points in time: the 1990-1995 time period, and the 1995-2002 time period. This is especially interesting because 1990-1995 included the tail end of a real estate slump in Texas, while the 1995-2002 period was characterized by higher growth.³¹ We found that manufactured homes perform very differently in the two time periods.

	Manufactured Homes on Leased Land	Manufactured Homes on Owned Land	Site Built Homes
<u>Variable</u>	<u>Mean Appreciation</u>	<u>Mean Appreciation</u>	<u>Mean Appreciation</u>
<u>1990-1995</u>			
N	595	1005	2637
Improvement	-4.6%	-2.5%	1.0%
Land	na	-2.7%	0.2%
Total	-4.6%	-2.5%	0.9%
<u>1995-2002</u>			
N	1941	1291	3258
Improvement	0.4%	9.2%	5.4%
Land	na	8.5%	4.4%
Total	0.4%	8.9%	5.1%
<u>1990-2002</u>			
N	595	1005	2637
Improvement	-1.2%	3.5%	3.6%
Land	na	3.2%	2.7%
Total	-1.2%	3.5%	3.4%

The results varied dramatically by time period. In the earlier time period, all types of manufactured housing depreciated, while site built homes appreciated at an anemic 0.9% annually. In the later time period, manufactured homes on owned land appreciated at a stunning 8.9%, while those site built homes lagged at a respectable 5.1%. These differences over the two time periods canceled each other out, so over the entire 12 year period, manufactured homes on owned land appreciate just about the same as site built homes. Manufactured homes in parks depreciated over the 12 year period, although they did just barely appreciate during the real estate boom.

Most of these differences are statistically significant. The difference in mean appreciation of manufactured housing with land and the site built housing over the period 1990-2002 is not significant. This is interesting, because this difference is very significant during the 1990-1995 and 1995-2002 time periods. However, the differences in these two periods offset each other. (As noted, manufactured housing under-performed site built housing in the earlier period and out-performed it in the later period.)

Not only is there a great variation in the average appreciation of manufactured home between the two time periods, there is also a wider distribution around the average within the time periods. The standard deviation of the appreciation rates among the manufactured units in parks is about twice that of site built homes, and even greater among the manufactured units outside of parks. This is reflected in the percentage of homes that depreciated. Although the average appreciation rate of manufactured homes and land and site built homes and land were similar over the entire 12 year period, manufactured homes were over twice as likely to depreciate. Seven point eight percent of manufactured homes with land depreciated, versus only 2.9 percent of site built homes.

Some Characteristics of the units:

Manufactured Homes on Leased Land	Manufactured Homes on Owned Land	Site Built Homes
--------------------------------------	-------------------------------------	------------------

	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>
1990 Improvement Value	10,946	11,690	56,359
1990 Land Value	-	9,789	17,021
1990 Total Value	10,946	21,480	73,380
Average percent improvement is of total value	100%	53%	76%
Acreage	-	0.43	0.07
Land price per acre	-	8,612	27,694
Age of Home (in 2002)	19	18	23

Manufactured homes tend to be less expensive and slightly younger than conventional homes. Those on land also tend to be located on larger acreage than conventional homes. But that land is worth less both overall and on a price per acre basis. Nevertheless, as in Travis county, land comprises a greater proportion of the total value of the land and home package.

Clustering/distribution of units.

Variable	Site Built Homes <u>Mean</u>	Manufactured Homes on Owned Land <u>Mean</u>	Manufactured Homes on Leased Land <u>Mean</u>
Distance to Urban Area ("map unit relative index")	30	317	45
Number of MH in immediate neighborhood	0.04	4.31	2.01
Distance to neighbor	2	6	20

Much like Travis county, manufactured homes tended to be grouped with other manufactured homes. They also are much further from urban areas. In fact, the majority of the manufactured homes are outside the Census Urban Area boundary, while the majority of site built homes are inside. Only 2% of site built homes have a manufactured home in their neighborhood, while 90% of manufactured homes on land do.

Explanatory Regressions:

Appreciation of Land and Home together for those homes on owned land.

	<u>1990-2002</u>	<u>1990-1995</u>	<u>1995-2002</u>
N	1002	1002	1307
Pof F	<.0001	<.0001	<.0001
R^2	0.0501	0.1325	0.1434
Variable	<u>1990-2002</u> Estimate	<u>1990-1995</u> Estimate	<u>1995-2002</u> Estimate
Intercept	0.13718 **	0.07116 **	0.20416 **
Orthogonalized Neighborhood Appreciation	0.04951	0.05548 *	0.13653 *
Number of MH in Neighborhood	-0.00233	-0.00122	-0.00157
Distance to Neighbor	-0.79428	1.38167	-1.78251
Distance to Urban Area	0.00586	0.03806	0.10303 *
House Only Value 1990	-4.1E-06 **	-4.8E-06 **	-5.1E-06 **
House Only Value 1990 Squared	6.70E-11 *	8.94E-11 **	3.13E-11 **
Percent House value is of total	0.01266	-0.03333 *	0.07724 **
Age of home	-0.00383 **	-0.00172 *	-0.00716 **
age of home Squared	3.89E-05 *	1.46E-06	9.18E-05 **

Note: * indicates significance at 95%
 ** indicates significance at 99%

- Overall, the parameter estimates were somewhat unstable from the earlier to later time period. However, although the exact estimates changed, the direction of the effect remain the same among significant variables. The exception was percent house value is of total.
- The performance of the neighborhood (even after controlling for distance to urban areas, neighborhood density, and number of manufactured homes in neighborhood) was significant in each of the separate time periods, but not across the entire 12 year span. The effect was not as strong as in Travis county.
- Homes costing less at the beginning of the appreciation period appreciated more, with the effect flattening out and reversing at larger values.
- Older homes appreciated less, with the decrease with age flattening out for the oldest homes.
- This same model, run on the site built data, explains twice as much of the variation as it does on the manufactured home data.

Appreciation Rates Manufactured Homes not including lot.

	<u>1990-2002</u>	<u>1990-1995</u>	<u>1995-2002</u>			
N	1581	1581	3248			
F	42.52	33.9	166.77			
Pof F	<.0001	<.0002	<.0001			
R^2	0.1958	0.1625	0.3167			
				<u>1990-2002</u>	<u>1990-1995</u>	<u>1995-2002</u>
Intercept				0.24474	**	0.19923
Orthogonalized						**
Neighborhood Appreciation				0.10621	*	0.02069
Number of MH in Neighborhood				-0.00117		0.000566
Distance to Neighbor				-0.50537		-1.4279
Distance to Urban Area				0.11289	*	0.03896
House Only Value 1990				-1.1E-05	**	-1.7E-05
House Only Value 1990 Squared				2.32E-10	**	3.61E-10
Age of home				-0.00685	**	-0.00427
age of home Squared				5.28E-05	**	4.42E-07
Manufactured Home on Leased Land				-0.04342	**	-0.02758
						**
						0.30406
						**
						0.24611
						**
						1.07866
						**
						0.22717
						**
						-7.2E-06
						**
						5.44E-11
						**
						-0.01127
						**
						0.000156
						**
						-0.07771
						**

Note: * indicates significance at 95%
 ** indicates significance at 99%

- Drivers are similar to those describe for the land/home package above.
- Manufactured homes on leased land appreciate less.

Bexar County:

Bexar county, Texas is primarily composed of the City of San Antonio. San Antonio is a large metropolitan area, with a population of over 1.1 million.³²

The data used for the Bexar county analysis was obtained from the Bexar County Appraisal District and the US. Census Bureau. Valuation data was available for 1998 and 2001, giving us a three year window to study changes in values. The study design was similar to the Denton and Travis studies, with a slight refinement. A sample of site built homes nearest to the manufactured homes in Bexar county was selected to give further insight on the effect the distribution of manufactured housing units has on their overall appreciation. The data from this county geocoded fairly well, with 77% of the site built homes located on the map vs. 61% of the manufactured homes.

<u>1998-2001</u>	<u>All Site Built Homes</u>	<u>Site Built Homes</u>	<u>Manufactured Homes on</u>	<u>Manufactured Homes</u>
		<u>Sample Nearest MH</u>	<u>Owned Land</u>	<u>in Parks</u>
	<u>Mean Appreciation</u>	<u>Mean Appreciation</u>	<u>Mean Appreciation</u>	<u>Mean Appreciation</u>

N	64943	4414	884	252
Improvement	7.8%	8.2%	8.5%	-3.4%
Land	0.7%	1.2%	3.0%	.
Total	5.9%	6.3%	5.7%	-3.4%

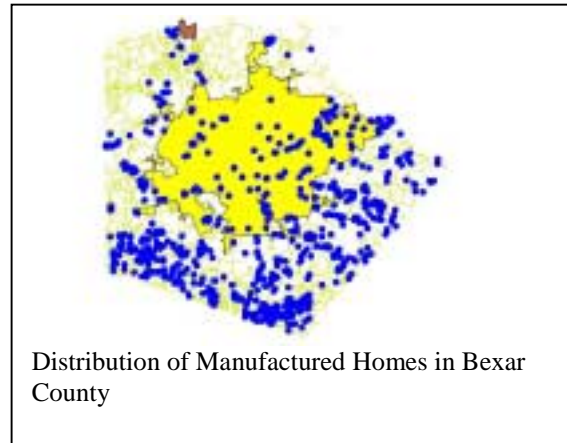
Those site built homes nearest manufactured homes appreciated more than the average of the entire site built market in the county. The average total appreciation of site built homes and their land edged out the average total appreciation of the manufactured homes. Those homes in parks lost value.

Most differences between categories of homes are statistically significant, except for the difference between the site built homes and the manufactured homes on owned land is not significant for the improvement and total appreciation.

	All Site Built Homes Median Appreciation	Site Built Homes Sample Nearest MH Median Appreciation	Manufactured Homes on Owned Land Median Appreciation	Manufactured Homes in Parks Median Appreciation
Improvement	5.2%	4.7%	2.7%	0.0%
Land	0.0%	0.0%	0.0%	.
Total	4.3%	4.2%	2.4%	0.0%

Medians tell a slightly different story, with the manufactured home unit themselves appreciating two percentage points less than site built homes. The median total appreciation of the site built homes nearest the manufactured homes was slightly lower than the general body of site built homes. The average appreciation for most home types was noticeably higher than the median in this county, indicating that a small number of homes appreciated a great deal, while most appreciated more modestly. This effect was strongest for manufactured homes on owned land, while the reverse was true for park placed manufactured homes.

The large difference between the mean and the median for manufactured homes on owned land is partially indicative of the higher variance in the manufactured home market vs. the site built market. This higher variance contributes to the inability of the statistical tests to identify a difference in the means. Note that the .4% difference between the appreciation all site built homes and those site built homes near manufactured homes is significant, but the .6% between the site built homes near manufactured homes and those manufactured homes on land is not. This is because the appreciation rates for manufactured homes are more widely dispersed, widening the confidence band around the average.



The wider distribution also leads to a higher likelihood the home will actually depreciate. 12.9 % of the manufactured homes depreciated, a rate twice that of the 5.7% of the site built homes that lost value over this time.

	Site Built Homes Sample Nearest Manufactured Homes Mean	Manufactured Homes on Owned Land Mean	Manufactured Homes in Parks Mean
Home Value	37,448	15,149	15,531
Land Value	8,980	10,436	-
Total Value	46,428	25,585	15,531
Extra Improvement Area (i.e. porches)	1	275	62
Living Area	n.a.	1,031	987
Price Per Square Foot	n.a.	14.04	13.66

Age	n.a.	25.4	19.6
Low Condition Score (1 or 2 on a 5 point scale)	1%	36%	24%

Once again, analysis of the location variables showed manufactured homes tended to be on the outskirts of the city. MH park placements tend to be closer to the city than those on owned land.

Regression analysis

Regression analysis of appreciation of manufactured homes and their land

Regressions.

N: 927
Pr > F <.0001
R-Square 0.0868
Parameter Estimates

Variable	Estimate	
Intercept	0.11891	**
Orthogonalized		
Neighborhood Appreciation	0.16447	**
Number of MH in Neighborhood	-0.00387	*
Distance to Urban Area	0.21562	**
House Only Value 1998	-8.45E-07	
House value as a percent of total value	-0.05659	*
Square Footage	1.99E-05	
Area of Extra Improvement e.g. porch)	1.48E-05	
Price per Square Ft.	-0.00371	*
Price per Square Ft. Squared	4.39E-05	*
Age of home	-0.00275	
age of home Squared	4.39E-05	
CAD identified as Poor Condition	-0.00633	

- Neighborhood appreciation significantly and positively correlated with the appreciation of the land and home.
- The presence of other manufactured homes in the neighborhood has a negative effect.
- The further from the urban area, the more homes appreciate.
- A land/home package with higher land value appreciated more.
- Adding porches was positive but not significant.
- Homes costing less per square foot at the beginning of the appreciation period will appreciate more, with the effect flattening out at larger values.
- Those homes identified by the CAD as in “poor condition” in the starting period performed worse, but the effect was not statistically significant.

Regression analysis of appreciation of home, for all homes regardless of land tenancy

N: 1133
F 10.66
Pr > F <.0001
R-Square 0.1015

Parameter Estimates Iapp3

Variable	Estimate
----------	----------

Intercept	0.2696	**
Orthogonalized		
Neighborhood Appreciation	0.14587	**
Number of MH in Neighborhood	-0.00342	
Distance to Urban Area	0.37949	**
House Only Value 1998	1.37E-06	
Area of Extra Improvement (e.g. porch)	1.64E-05	
Square Footage	-3.6E-05	
Price per Square Ft.	-0.01404	**
Price per Square Ft. Squared	0.000132	**
Age of home	-0.00554	
age of home Squared	7.68E-05	
CAD identified as Poor Condition	-0.02395	
On Leased Land	-0.115	**

- Manufactured homes on leased land appreciated significantly less than those on owner owned land (11.5%).
- The other factors were similar in magnitude and direction as for the analysis of manufactured homes with land.

Appendix B: American Housing Survey: Methodology and Data Sources

This study adds to the body of knowledge on housing appreciation by examining values of manufactured and conventional homes in the American Housing Survey (AHS). The AHS is a survey of about 55,000 homes across the United States, conducted in odd years by the Bureau of the Census for the U.S. Department of Housing and Urban Development. The current panel of homes has been in place since 1985. The survey questions the current occupants of the home on a variety of topics, ranging from mortgage payments and home value to structural characteristics of the home and neighborhood satisfaction.

Because the survey returns to the same panel of homes each biennium, individual housing units can be tracked over the entire 14 years. The AHS is the only national data set for individual dwelling units that is uniform and spans such an extended period of time. The extensive range of questions also adds a unique richness to the data.

One disadvantage of the AHS is that although the sample includes some 55,000 units, in a given year many units fail to respond to some questions. There may be systematic differences between reporting and non-reporting units. As we attempt to cut the data into smaller pieces, our sample sizes also quickly diminish.

In addition, the AHS presents the occupant's valuation of the home rather than market valuation. Several papers address this issue.³³ These papers found that although people tend to overvalue their homes, they do so the same way in all periods, so there is little or no effect on the estimated *change* in value. Also, people do not separately evaluate the value of the home and the value of the land for conventional homes. Thus, we must compare the mobile home alone to single-family homes and the land upon which they rest. While this may appear to be an apples and oranges problem, for park placements this does indeed represent the appropriate investment-asset comparison. Some mobile homes, those on private land, report land valuation. We repeat much of our comparative analysis on this subsample, allowing us to compare mobile homes with land with single-family homes and land. (Unfortunately, this subsample is limited in size.)

Our general methodology is to look at changes in valuations over four-year periods. This time-frame, although somewhat short, allows us to examine more time periods in the data, and to allow newer units to enter our analysis. A separate analysis of the entire 14-year period generally gives the same results, but with much smaller sample sizes as homes exit the sample. Unless otherwise noted, the results given in the body of the report reflect the population of all four-year observations available. Thus, for a given unit, the appreciation from 1991-to-1995 would be one observation, while the 1995-to-1999 time period would be another. The 1993-to-1997 observation would only be examined if data were missing from both of the overlapping periods.

The reported home value in the survey is capped. For example from 1985 to 1993, the highest recordable response was \$300,000. Homes valued at or above \$300,000 will not show positive appreciation, and homes that enter the top valuation category will show lower-than-actual appreciation rates. In order to reduce this effect, and in line with our specific interest in the affordable-housing market, we do not look at units valued at more than \$180,000 at the beginning of any four-year period.

We compare the appreciation of manufactured homes to site-built homes, and look at the data in three ways:

- Straight up comparison
- Controlled comparison
 - Regression
 - Matched pair
- Causes: Regression analysis

In the “straight up comparison,” we look at the distribution of appreciation rates for manufactured homes and site-built homes. This reflects the current population of homes. It compares the appreciation of a mobile home with the appreciation of a single-family residence and land, as well as mobile homes with land with site-built homes.

In the controlled comparison, we control for variables such as maintenance expenditures, size, age and neighborhood. This gives us an idea if any differences in the appreciation are due to systematic differences in the populations. For example, if manufactured homes are systematically smaller than site-built homes, and this affects appreciation, then larger manufactured homes may perform similar to site-built housing. The comparisons were controlled using two methodologies, “matched pair” and “regression” comparisons.

The matched pair analysis was performed on the entire 14-year sample. The appreciation rates were calculated from the average value reported over 1985, 1987, 1989 (minimum of two responses) to the average value reported over 1995, 1997, 1999 (again, with a two-response minimum). This reduced the effect of spuriously high or low responses for a single period. The mobile-home sample was then randomly matched with a single-family home that had the same urban/rural neighborhood characteristics, age (within two years), and similar square footage (within 500 sq. ft.) as the manufactured-housing sample. The appreciation rates were then compared. Another analysis was performed replacing “year built” with similar starting value (within \$5,000), yielding similar results. Because the longer panel was used, sample sizes for this part of the analysis were very low.

The regression analysis followed the general methodology of Kiel and Carson³⁴, who built a hedonic model predicting appreciation rates with home characteristics to study intercity differences in appreciation. We used their technique to examine how differences in the construction method (manufactured versus conventional) affect the appreciation rate.

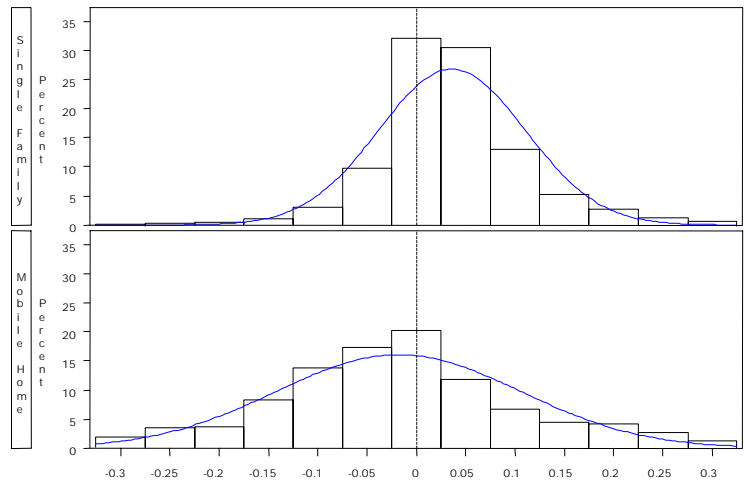
Using the unique control number assigned to each housing unit, the surveys were merged to create a panel data set. The sample was restricted to mobile homes and to site-built homes valued at less than \$180,000. Appreciation rates were constructed using respondents’ valuations of the units. Responses edited or imputed by the census bureau were removed, as responses are imputed on based on the current year matrix and are not appropriate for time series analysis. Addresses reporting a change in the housing unit, the unit type, a major change in the age, or a major change in the square footage were excluded. Weights were used for the means analysis, but not the regression analysis. Results did not differ significantly if an unweighted analysis was performed.

II. Results

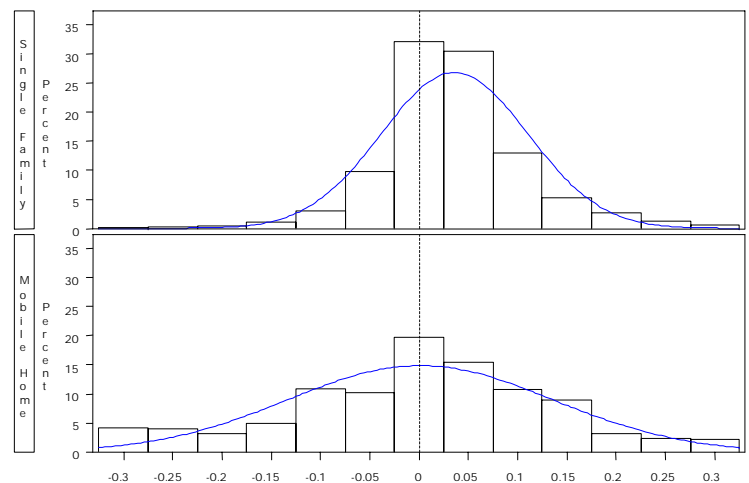
Straight Up Comparison

- The current stock of mobile homes appreciates at a rate significantly lower than that of the current stock of conventional single-family housing. The mobile home sample appreciated at an average rate of -1.5 percent (-2.0 percent median), while the single-family residences appreciated at a rate of 4.5 percent (3.0 median). This is a difference of 6.0 percent (5.0 percent median). A T-test shows the difference in the mean appreciation rate is significant at the 99 percent level.
- Mobile homes combined with land appreciated at 4.0 percent (1.7 percent median). This mean is not significantly different from the mean of single-family homes.
- Statistical testing supports the visual observation that the variance is greater in the manufactured-housing sample than the single-family sample regardless of the inclusion of the land.
- The average appreciation (-1.9 percent) of newer manufactured homes (those homes built since 1980) is not statistically different from the average appreciation of old mobile homes. The variance, however is lower than the variance in older manufactured homes. Both these results hold true for the small subsample of manufactured newer homes and their land, which appreciated at 3.3 percent. Note that the sample sizes for the manufactured homes with land are much smaller: approximately 550 observations, versus 2,571 for all the mobile homes.

Appreciation Rates Manufactured Homes and Site Built Homes



Appreciation Rates for Manufactured homes and Land and Site Built Homes



Controlled comparison

Controlling for differences between the mobile-home sample and the single-family home sample by house age, size, regional housing market,

changes in quality of neighborhood, overcrowding, maintenance expenditures and urban/rural characteristics of the neighborhood leaves a difference in the mean appreciation rate of -7 percent.[‡] The difference is -4 percent for the subsample of manufactured homes with land. Both residuals are significant at 99 percent. This means that with several influencing factors accounted for, manufactured homes appreciate significantly less.

A statistical (Chow) test shows that the parameters for the manufactured-housing sample are structurally different than for the conventional housing sample. So not only is the appreciation level different between the samples, but the causes are different as well. This is discussed in more detail below. The same effect is seen when comparing the mobile home with land sample to the single-family-home sample.

Controlled regression: Matched pairs

In another attempt to get at some of the same issues and yet avoid the obvious non-linear effect of the value issue, we did a matched-pair analysis. We searched the single-family home sample population for homes that had the same urban/rural neighborhood characteristics, similar year built, and similar square footage as the manufactured-home sample. This section of the analysis tracked specific homes over the entire sample period. 412 MHs were matched with 412 SFHs, and 75 MHs with land were matched with SFHs. We found that the matched sample of conventional houses appreciate at 3.9 percent, while the sample of MH appreciate at -1.1 percent. This difference of 5.0 percent is significant (according to a paired T-test) at 99 percent. The matched sample of MHs with land appreciated at 5.3 percent, while the SFHs appreciate at 4.19. The difference is not significant because of the very small sample size and variation within the sample. Similar results were found matching on year built, value, and urban/rural characteristics.

[‡] *Notes on Comparative Regression*

Attempting to control the differences between the mobile-home sample and the single-family housing sample by value, age, size, regional housing market, quality of neighborhood, maintenance expenditures and urban/rural characteristics of neighborhood leaves a residual difference in the mean appreciation rate of -20 percent, significantly different from zero at 99 percent. This number is suspicious, and further investigation shows that most of this spread is driven by the value variable. Over the study period, the lowest value homes performed better in both markets, but the effect occurs at higher levels for single-family homes. The reality is that the differences can not be captured in a single dummy variable. A (Chow) test shows that the parameters for the manufactured-housing sample are structurally different than for the conventional-housing sample. So not only is the appreciation level different between the samples, but the causes are different as well. More discussion is presented on that in the discussion section of the text. The same effect is seen, to a lesser degree, comparing the mobile home with land sample to the single-family home sample (the residual is 10 percent).

This may be an artifact of the data: at low levels, homes that depreciate actually depreciate out of existence and out of the sample, leaving a survivorship bias towards well performing homes. More lower-valued homes do in fact exit the sample, congruent with this hypothesis. Also, we would expect that the low-value homes contain a higher percentage of people who undervalue their homes in the first period. In the bottom group, there are no people who overvalue their homes to offset them. On the other hand, it may also be a very real effect of the high demand for affordable housing. We leave the question to other investigators, but note the effect also appeared in the analysis of the 1974–1983 AHS panel by Kiel and Carson.

Causes: regression analysis, betas and factors

The results of the regression of various predictive variables on appreciation are tabulated below.

Contributing Effects to the Appreciation of Manufactured Homes

Regression Variable	Parameter Estimate	Standard Error	Pr > t	Population Mean
Annual Appreciation				-1.0%
Intercept	-0.10985	0.03220	0.0007**	
Value (1983 Dollars)	-0.00000825	8.330251E-7	<.0001**	12,646 [22,219 in \$2001]
Value Squared (\$1983)	3.3484E-11	7.2361E-12	<.0001**	316,851,428
Square Footage	0.00008688	0.00001703	<.0001**	1,008
Owens Lot	0.05922	0.01218	<.0001**	0.36
Maintenance Cost as a Fraction of Value	0.52496	0.10942	<.0001**	0.02
First Site	0.02860	0.01276	0.0252*	0.73
Urban	0.03923	0.01217	0.0013**	0.40
Regional Housing Market	0.53155	0.36844	0.1493	0.04
Occupants Per Sq. Ft.	-8.55269	3.75575	0.0229*	0.003
North East	0.03959	0.01819	0.0297*	0.14
Mid West	-0.00128	0.01565	0.9351	0.21
West	0.05677	0.01674	0.0007**	0.24
Built Since 1980	0.00953	0.01194	0.4252	0.39
1987-91	0.03592	0.01867	0.0545	0.33
1989-92	-0.00995	0.02743	0.7168	0.06
1991-95	0.02815	0.02120	0.1844	0.24
1993-97	0.02703	0.02951	0.3597	0.05
1995-99	-0.00064847	0.01994	0.9741	0.20

F Value = **12.51** N = **1681** ** Significant at 99%
 Pr > F < **.0001** R-Square = **0.1192** * Significant at 95%

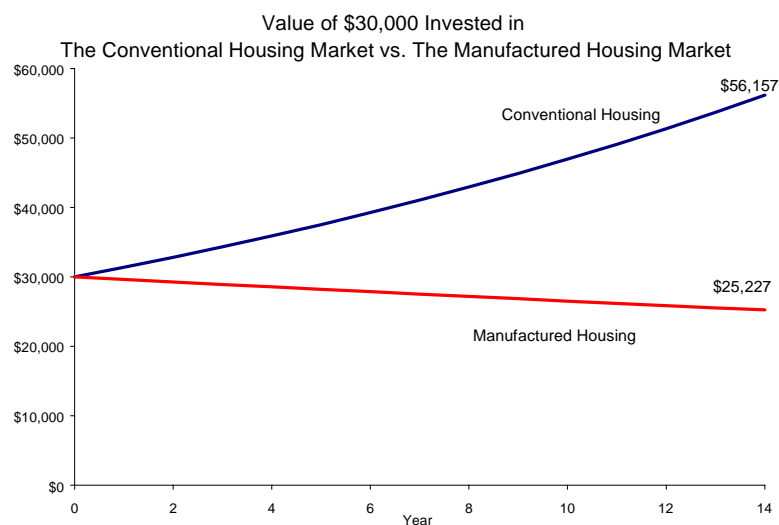
- The value factors predict that homes costing less at the beginning of the appreciation period will appreciate more, with the effect flattening out at larger values. A simple model using just value, and value Squared explains 38 percent of the variation explained by the entire model.
- Square footage is positively associated with appreciation. Larger homes appreciate more.
- Owning the lot has a very large positive association with appreciation of the home itself.
- As might be expected, spending money on maintenance the house helps fend off depreciation and raises resale value.
- Moving a home seems to have a negative effect, as homes still on their first site tend to outperform other homes.
- Homes in an “Urban” Environment (the AHS’s Central City, Metro Urban and Non-Metro Urban classifications) do well.
- The state of the regional (non-manufactured) housing market, as represented by the Office of Federal Housing Enterprise Oversight (OFHEO) Regional House Price Index (HPI), is also positively correlated with the appreciation of a manufactured unit. However, this correlation is only suggestive at a 15 percent p value.

- Intensive use and overcrowding also take a toll on the appreciation. The number of occupants per square foot of home is negatively correlated.³⁵
- There is also regional variation not explained by the regional housing market. Homes located in the Northeast and West Census regions performed significantly better than homes in the Mid-west and South.
- The fact that a home was built since 1980 (a proxy for 1976, the implementation of the HUD code) does not ensure higher appreciation. This coefficient, while positive, was not significant.
- Since homes were tracked over six four-year periods, dummy variables are listed to pick up variance in the market each year not explained by the HPI. Most years are not significant, with the 1987–91 period the exception, with homes generally performing better than predicted. This effect was only significant at 90 percent confidence. The 1985–89 period is the base case.
- Lot size was significant, with larger homes on larger lots performing better. The sample of homes reporting lot size was limited, and generally overlapped with owning the lot. Thus, those results are not included in the final model shown above.
- In a similar vein, for those homes located in parks, higher starting rent translated to higher appreciation.
- Lastly, appreciation since purchase is positively correlated with current period appreciation, so a unit that has depreciated in the past will continue to depreciate, even controlling for the other factors.
- The analysis only accounts for about 12 percent of the variation found the population.

In 1999, the survey began tracking the type of foundation upon which the manufactured home rests. This variable was therefore only available for a small subset of the data, so is not included in the general analysis. However, analysis of the period 1995–99 did not reveal a difference between the 67 units reporting a permanent foundation and the rest of the sample. This question should be revisited in the future when more data is available.

III. Discussion

The historical difference in appreciation between manufactured homes and site-built homes in our sample (–1.23 percent annually versus 4.58 percent) is cause for concern. An investment of \$30,000 in 1985 would appreciate to \$56,157 in 1999 if invested in the conventional housing market, while the same amount invested in a manufactured home would drop to only \$25,227.



Our regression looking for differences between our sample of mobile homes with land and single-family homes finds the unintuitive result that controlling for a wide range of variables actually widens the spread between the rates of appreciation. The mobile-home sample has a larger percent of the value of the home spent on maintenance, more homes in the West, and a higher presence in the rural areas near major cities. These factors lead

the model to predict higher rates of appreciation for the mobile homes. Yet, the mobile home sample doesn't perform as well as predicted. This causes the model to estimate that manufactured homes inherently appreciate less. This effect is primarily driven by the higher maintenance expenditures in mobile homes. This more than offsets the opposite effects of smaller size and more occupants per square foot.

The positive test for structural change is important for interpreting this result. When we allow all the parameters to be re-estimated between the samples, rather than forcing all the variation into one dummy variable, we find the manufactured-home sample reacts differently to the predictive factors. For example, overcrowding has a larger effect on appreciation in manufactured homes than in single-family homes, while spending money on repairs (as a fraction of the home's value) does not increase the appreciation of the mobile home as much as a similar fraction of spending would for a conventionally built single-family home. Age, while significant for single-family homes, is not significant in the manufactured-home sample.

Another intriguing result is the increase in noise and uncertainty in the manufactured housing market. Visual inspection of the distribution of appreciation rates suggests, and statistical tests support, that the appreciation rates of individual manufactured-housing units are dispersed over a wider range than the appreciation rates of conventional housing. The low end of the market (used homes worth less than \$7,500 in 1980 dollars) is especially noisy. Average appreciation rates in this low-end market, however, are generally higher, although this may be due to a survivorship bias in the data.

A homeowner cannot assume that a new home will appreciate just because it is built to the HUD code. We found no significant difference in appreciation rates for homes built since 1980. Much has been made of the implementation of a national building code (the HUD code) for mobile homes in the late 1970s. At least one study has shown an improvement in fire rates since the code, and general quality is often cited as improved.³⁶ We would not catch reductions in catastrophic events such as fires in our data, as destroyed homes drop out of the sample, but theoretically we could have caught improvements in quality which reduced physical depreciation.

Regional differences in appreciation remain even after controlling for regional differences in the housing market. The South and Midwest performed the worse. This is interesting, as 12 of the 13 states without any landlord-tenant protections are located in the South and Midwest.³⁷ (The 13th is Hawaii, which according to Foremost Insurance, only has one mobile home.³⁸) This correlation is far from proof, but regardless, security of tenure benefits the manufactured homeowner. Unfortunately, the AHS data does not illuminate the question of whether secure rental situations such as long-term (30+ year), transferable leases with indexed rent increases would offer opportunities for appreciation similar to owning the land.

The significance of location variables (such as rent, urban/rural setting, region, lot size, and ownership of the underlying land) on the AHS data drives home the oft-repeated statement that "mobile homes are not mobile." Almost every study we reviewed above that examined location variables found that location did matter. Because the sometimes prohibitive cost of moving ties the home's value to its neighborhood just like a site-built home, the location of the unit affects the value. Thus, a manufactured home located in a highly desirable mobile-home park might appreciate due to its fortuitous location, if the homeowner can sell it in place (this is where the importance of strong landlord-tenant protections comes into play). We note that moving a home has negative implications for appreciation, as evidenced by the positive residual on the first site variable.

IV. Appendix C: Detailed Data Review

Washington study 1991³⁹

In 1991 the Washington State Manufactured Housing Association (an industry trade group) analyzed 3,299 manufactured homes that had been resold in 1990, and compared the resale value to the original sales price. The homes last sold in the time period 1968–1989. This study calculates different appreciation rates for homes that are

on private land versus parks, as well as singlewide versus multisection units. All six counties examined contain urban areas (three of the counties are in the Seattle area).

The study found that, on average, manufactured homes have positive appreciation. Across all counties, across all years, the annual average appreciation was 2.65 percent. Results vary from county to county, reflecting the importance of location and local real estate markets on value. Across all counties, we find that singlewides appreciate less than multi-section units. In fact, in four of the six counties they actually depreciated. Homes placed in parks also appreciate slightly less than the overall average, but in two of the five counties reporting both types of units, park placements outperformed private-land placements.

The authors calculate the appreciation rate from the average change in values of all homes, rather than calculating the average appreciation rate of each home. The result is the average expected return of a dollar put into the current mix of mobile homes, not the average return on a specific mobile home. This technique weights expensive homes more than inexpensive homes. For example, the change in value of one \$100,000 mobile home counts five times more than the change in value of a \$20,000 mobile home. Raw data is not available to calculate the effect of this methodological choice, but since the study found that the more expensive doublewides outperformed the singlewides, this methodology almost certainly increased the calculated appreciation rate vs. a methodology averaging appreciation rates across homes.

The average appreciation rate is also impacted by the very high reported appreciation rate of one-to-three-year-old homes. Across all counties, the appreciation rate for one-year-old homes was a remarkable 21.65 percent. Such a high one-year appreciation rate may be due to the additional value of fixed installation features such as decks, but these outliers are not discussed in the text and have a large impact on the average appreciation figure.

An attempt to dilute these fixed effects can be made by looking at long-term price changes such as homes bought new in 1980 and sold in 1990. Pulling these numbers from the tables in the study we find that the annual appreciation rate across all types and counties falls to 1.1 percent. This compares to an average annual inflation rate during that period of 5.1 percent, and a growth in the Housing Price Index of 5.7 percent.

Michigan – Datacomp 1991

An article in the June 1991 *Manufactured Home Merchandiser* entitled “Do Manufactured Homes Appreciate or Depreciate?” focuses on the causes of differences in appreciation.⁴⁰ Datacomp, a commercial appraisal company specializing in manufactured housing, performed the research. They found that while the homes they studied had slight positive appreciation, there was great variation in performance, with some homes doing very well and others very poorly.

The list of factors in the article has been picked up and widely quoted in subsequent studies. There are few statistics associated with the factors and it is difficult to ascertain which are listed from the company’s qualitative appraisal experience and which are backed by quantitative analysis of its data. It describes the following factors as important to the appreciation debate:

- The general housing market. A strong market helps manufactured-housing sales.
- The quality of the community in the home is placed. Good community, good resale prices.
- Purchase price. Paying too much for a home hurts your return.
- Age. After 10 years, condition has a bigger effect than age.
- Obsolescence (design changes on new homes). New features on new models hurt resale value of old homes.
- Inflation. High inflation can lead to nominal appreciation.

- Availability and cost of community sites. High site rents lower home value, limited sites raise the value of homes already placed in a site.
- Existence of an organized resale network makes it easier to sell a home and stabilizes prices (reduces transaction costs).

Michigan 1993

The Michigan Department of Commerce published a study of manufactured-housing values in January 1993.⁴¹ This report, one of a six-part series on manufactured housing by University of Michigan researchers, reviewed previous studies and Michigan resale prices over time. The most interesting results were from a review of 455 manufactured homes that were sold twice over the period between 1987 and 1990. This sample included both new homes sold twice and used units that changed hands twice during the period. The average time between sales was 18 months.

The study found that 200 homes lost value, 240 sold for more the purchase price, and 15 sold for the same price. The average value change across all units was a positive 3.7 percent. New homes lost on average 1.5 percent of their original value while used homes gained 5.1 percent. Results varied by county.

The major drawback to this study is the short time period over which it was conducted. It is difficult to know if short-term real estate fluctuations have overshadowed longer-term value trends; results also varied by the year in which the home was sold. What is clear from this data is that there is a great deal of fluctuation in results, with individual unit changes ranging from a loss of 62.7 percent to an increase in value of 153.9 percent.

California 1993

The Resource, a publication of the California Manufactured Housing Institute (an industry group), ran an article written by Steve Hullibarger, a development consultant. Hullibarger examined 68 randomly selected manufactured homes on infill lots, using a commercial database to track purchase and resale market prices. Annual appreciation ranged from .09 to 49.73 percent, with an average of 8.62 percent, and an average holding period of 5.3 years.

Hullibarger visited each of these lots personally. Using qualitative analysis, Hullibarger concluded that the primary determinate of value for these lots was location. He then suggested that two other very important factors were visual and architectural compatibility with the neighborhood. The more compatible a house was with others in the neighborhood, the better it would appreciate.

Washington 1994

In 1994, The Washington Manufactured Housing Association commissioned another study to follow up on their 1991 report.⁴² This study used a completely different methodology. A “non-probability sampling method” was used to select 142 homes. No further details were given on how the sample was selected. Data on these houses were gathered through a mix of interviews, Multiple Listing Service sales data, and MLS tax records. The study focused on two counties in the Seattle area, including the county that had performed the best in the 1991 study. Only homes built after 1985 and placed on owned land were considered, and the value of the land was included in the calculations.

Although data was collected on both purchase prices and current estimated resale value, only purchase prices are used in the appreciation calculations. The authors calculate a trend line on dollar change in purchase prices and call it the appreciation rate. They concluded that manufactured homes appreciate at a greater percentage rate and same dollar rate as site-built housing. Their numbers on manufactured-housing appreciation work out to about 15.1 percent a year.

The problems with this report are numerous. The unknown and non-random source of the sample alone is cause for concern. Running a linear regression on the dollar change in purchase prices is troublesome for two reasons. First the dollar change, unlike the percent change, is most likely a non-linear value. Secondly, tracking changes in purchase prices only gives an indication of the price of an average new home, not the resale value of an old home. The authors purported to collect information on resale values but not publish that information. There is also a general lack of detail on the methodologies used. It is our opinion that no reliable conclusions can be reached from this work.

Housing Assistance Council 1996

The 1996 report “Manufactured Housing in Non-metropolitan Areas: A Data Review” by the Housing Assistance Council (HAC) contains a small section on appreciation.⁴³ HAC is a nonprofit organization “dedicated to building rural communities.” Using American Housing Survey Data from 1993, it compared purchase prices to current estimated values. It found different appreciation levels in non-metro areas, central cities, and suburban areas. Central city mobile homes performed the best, followed by non-metro mobile homes, and then suburban mobile homes, which depreciated slightly. Sample sizes, distributions and significance levels were not reported.

Overall appreciation levels of manufactured homes were found to be lower than conventional units. Overall period appreciation level, not an annual rate, was reported. Length of ownership was not factored in, although conventional homes had a median of 8 years longer between the purchase and the survey. This would tend to overstate the difference in rates. Based on their research and a review of other studies, the report concluded “Conventional homes are likely to appreciate in value over time, while manufactured homes — particularly single-wide units — either appreciate only slightly or depreciate.”

Texas REC 1999

The Real Estate Center at Texas A&M University published a buyers guide in 1999 that touched upon the appreciation issue.⁴⁴ Using data from the Multiple Listing Services (MLS) in Austin and Dallas, TX, the authors examined home sales prices for 1997 and 1998. The MLS contained data on 300 manufactured homes on a permanent foundation and converted (with the land) into real property. The authors compared the price (of the land and the home) per square foot of house over the two years. Price increase was measured by comparing a sample of manufactured-housing properties one year to a similar (but not the same) sample in the following year. The only controls on the sample were size of the home and location city. In both Austin and Dallas, larger homes (greater than 1,000 sq. ft.) had greater price increases than smaller homes. Overall price changes for single-family homes versus manufactured homes were greater for manufactured homes in Austin, while greater for single-family homes in Dallas.

The study suggests “Regarding resale value, it is unrealistic to expect a manufactured home without land to appreciate like a site-built home. In reality, land provides most of the appreciation in a home’s value unless there is an unusual shortage in [the] local housing market. When a manufactured home is permanently attached and converted to real estate, it should appreciate along with other homes in the neighborhood.”

The numbers from the report are suggestive. However, without further controls on the quality mix of the two samples, it is difficult to make definitive statements relating the changes in price appreciation in the samples to actual appreciation in a home. For example, the homes in the 1998 sample may on average have been newer than the homes in the 1997 sample. Thus, while the homes sold in 1998 sold for more than the homes sold in 1997, if the 1997 pool of homes had been sold in 1998, the results may have changed. However, clear size effect is worth noting.

Fort Worth 1999

Another study that looked at price levels rather than appreciation was a 1999 study, “What Affects Mobile Home Sales Price?” by two University of Texas at San Antonio professors.⁴⁵ This study looks at the determinates of sales price rather than the determinants in the change in sales price. The study uses MLS data from the Dallas area, and only includes homes attached to real estate.

Unfortunately, the authors are hamstrung by a small sample size for mobile homes, especially in relation to the number of variables they were examining. The authors looked at over 140 variables (over 110 of which were time dummies) on a sample size of 380 mobile homes. This sample size was compared with a conventional house sample size of 65,474 units. Square footage of house and lot, number of covered parking spaces, existence of a garage, number of bathrooms, proximity to a lake, and method of payment were all found to be statistically significant variables (at the 90 percent or greater level) in the mobile-home sample. Cash prices tended to be about 10 percent lower than other sales. It is interesting to note that age was not statistically significant. Many of these items had a greater percentage effect on the price of a mobile home than the price of other housing, probably due to the lower starting price of mobile homes. A garage probably has approximately the same dollar value whether it is next to a \$20,000 manufactured house or a \$100,000 conventional house. An increase of square footage had about the same effect across housing types. The R-squared of the mobile home regression was lower than that of model built explaining conventional homes (62% vs. 83%). The authors state “This indicates that greater variability exists in mobile homes than in houses.”

This study gives us valuable general background on the valuation of manufactured housing, but does not directly address the appreciation debate.

Vermont 1998, 2000

The state of Vermont, through the Vermont Housing Conservation Board (VHVB), assists in the purchase of mobile-home parks by nonprofit housing organizations. Once a park is purchased with public funds, a cap is placed on the appreciation available to homeowners within the park. This is to ensure a supply of affordable housing in the park. In 1998, and again in 2000, studies were conducted for internal use that examined appreciation rates of manufactured homes within nonprofit parks and for-profit parks.⁴⁶ The studies were conducted using property-tax transfer records that matched homes sold twice, and examined a total of 99 such transactions from the mid-1980s to the time of the study. The average time between sales was 3.8 years.

The second study (reviewing the results of the original 1998 research as well as those from the 2000 report) concluded that “the great majority of mobile homes in parks that sell depreciate or appreciate at insignificant levels,”⁴⁷ and “the value of mobile homes in parks is relatively low compared to homes on their own land.” The VHCB was kind enough to share their data with Consumers Union. We reanalyzed their data to compare appreciation rates between the nonprofit parks and private parks. We found that homes located in nonprofits parks generally outperformed homes in for-profit parks, but the result was merely suggestive and not statistically significant.⁴⁸ We also found a significant (at the 95 percent level) negative effect from the length of ownership

variable. The longer someone owned his or her home, the lower the annual rate of appreciation. We found the overall average annual appreciation rate from their sample to be $-.02$ percent.

Evidence from proximity studies

Our interest lies in the relative appreciation rates of manufactured housing and site-built housing, and in understanding the factors affecting the appreciation rate of manufactured housing. A separate but related body of evidence has accumulated regarding the effect manufactured housing has on the value of nearby site-built housing. This is an issue important to zoning boards and homeowners across the country as they attempt to make decisions regarding land use policy and planning. A small selection of studies which primarily address the proximity issue but also touch upon the issues of interest to us are presented in the following section.

Carolina 1997 (Shen & Stephenson)

This study is often cited in support of appreciation of manufactured homes. Primarily a proximity study, it also presents manufactured housing appreciation results.⁴⁹ The study was conducted by researchers at East Carolina University, and funded by the North Carolina Manufactured Housing Institute (NCMHI). The NCMHI characterizes the results of the study on its Web site as follows: “A 1997 study by East Carolina University found that when manufactured homes are located on a fixed foundation and are listed as real property, they appreciate at rates comparable to site-built homes. Also the study found that manufactured homes do NOT affect the overall appreciation rate of site-built homes in close proximity.”⁵⁰

Despite the sophistication of the data gathering and GIS mapping, no statistical tests are reported. Thus, at best, results can only be interpreted as an indication of trends. Nevertheless, information of interest can be extracted from the paper and appendixes. Personal-property mobile homes appreciated at a lower rate than real-property mobile homes (depreciating in three of the four counties). Real-property homes appreciated slightly less than single-family housing. Generally, wider manufactured homes performed better, as did newer homes. Interestingly, these effects were seen in both the changes in the value of the house and the land (i.e., the land under wider manufactured houses performed better than the land under narrower homes).

**Appreciation Rates from Three of the Counties
(results from Pitt county not comparably reported)**

<i>Property Type</i>	<i>Carteret County</i>	<i>Henderson County</i>	<i>Wake County</i>
Manufactured Housing Personal Property	-2.42%	.70%	-.294%
Manufactured Housing Real Property	2.68%	2.82%	2.98%
Single-Family Housing	2.75%	2.86%	3.09%

Carolina 2001

Shen, with a new co-author, returned to this subject four years later, this time funded by the Lincoln Institute of Land Policy.⁵¹ This study covers the same four North Carolina counties as the 1997 report, and adds one more. The major change is methodology: A hedonic regression model is used to estimate home values, and distance from manufactured housing is a variable. Whereas proximity to a manufactured home had no detectable effect on the appreciation of a home in the previous research, an effect on the value of the home was significant in this report. This report does not address the appreciation of the manufactured homes themselves, but is interesting

because the author reversed his findings from the previous report and underlines the importance of asking the right question.

Alabama Study 2000 — AMHI

In May of 2000, the Alabama Manufactured Housing Institute (AMHI) issued a press release about a recent study by the Auburn University – Montgomery. The press release stated that the study found “Manufactured homes appreciate in value” and “Manufactured housing does not have a significant negative impact on the value of adjacent site-built properties.”

The technical report conducted by Dr Hegji and Ms. Mitchell looked at tax-assessment data from two counties in Alabama, computing an appreciation rate based on tax assessments in 1997 and 1999.⁵² The study considered only manufactured homes on private land, not units placed under land-lease or land-rental agreements. Using GIS to determine proximity of addresses, they found that individually placed manufactured homes appreciate at about the same rate as site-built housing in the same neighborhood. “Clustered” manufactured housing did not appreciate as well as individually placed homes. Since only manufactured homes on private land were considered, “clustered” homes do not mean homes in parks, but rather groups of manufactured homes identifiable on the GIS map.⁵³

Officials from the appraisal district and state revenue office in Alabama discussed the underlying appraisal data. As with most appraisal districts, the land is appraised independently of the improvements upon it. Site-built homes are appraised by the county based on county comparables and location. Mobile homes are appraised statewide using a standard chart developed by the state department of revenue. This chart was developed by tracking statewide manufactured home sales. Factors such as size, quality, age and perceived condition are used to determine the current market value. Congruent with the findings of the University of Texas San Antonio and Datacomp studies, a state official indicated that after the first 4 to 5 years, condition is a bigger factor in value than age.

The results of this study are interesting. Without breaking out the appreciation in the land from the appreciation from the home, it is difficult to tell the relative contributions of each to the overall rate. However, it does support the importance of owning the land, in that land and home combinations seemed to perform well.

Alabama Study 2000 – Southern Business Review

The authors of the AMHI technical report used the same data 6 months later in the journal *Southern Business Review*.⁵⁴ In this more formal report, Hegji and Mitchell reversed the finding that “Manufactured housing does not have a significant negative impact on the value of adjacent site-built properties.” They determined that in Montgomery, the more urban of the two counties studied, a significant negative effect could be discerned on properties less than 250 feet from the manufactured home.

This report did not directly address the issue of the relative appreciation rates of manufactured housing versus site-built housing. A chart in an appendix shows that the annual appreciation rates over the two-year period were positive for all types of housing. The overall rate of appreciation for manufactured housing is slightly less than the overall rate for site-built housing in both counties, but tests of the significance of the difference were not given.

V. Endnotes

-
- ¹ Ward, Ken Jr. "West Virginia Leads Nation in Homeownership, Census Report Shows." *The Charleston Gazette*, November 28, 2001.
- ² Center for Auto Safety. "Mobile Homes: The Low Cost Housing Hoax." Viking, New York, 1975.
- ³ Fannie Mae National Housing Survey, 1995, Washington DC, as cited in McCarthy, Van Zandt, and Rohe, "The Economic Benefits and Costs of Homeownership." Research Institute for Housing America Working Paper, 01-02, May 2001.
- ⁴ Greenspan, Alan. "Mortgage markets and economic activity." Federal Reserve Board, remarks by Chairman Alan Greenspan before a conference on Mortgage Markets and Economic Activity, November 2, 1999.
- ⁵ Berenson, Alex. "Trailer Owners and Conseco Are Haunted by Risky Loans." *New York Times*, November 25, 2001.
- ⁶ Oliver, Gordon. "Manufactured Promises: The High Cost of Home." *The Oregonian*, August, 20, 2000.
- ⁷ Burkhardt, Mirely and Syal. "Final Report." Manufactured Housing Research Project, Michigan State University, December 1996 p.108.
- ⁸ Complaint to the Texas Office of the Attorney General, El Paso field office, 2000 (date not fully legible).
- ⁹ Whitney, Jon. "Manufactured Home Financing." Manufactured Housing Institute, 1998.
- ¹⁰ Harting, B.W. "Financial Services: Perspectives on Manufactured Housing." Lehman Brothers, February 8, 2000.
- ¹¹ GreenPoint Financial. "Exiting Manufactured Housing Investor Conference Call." January 3, 2002.
- ¹² SEC Form 424b5 for "Senior/Subordinate Pass-Through Certificates, Series 2000-D." November 16, 2000, filed by Vanderbilt Mortgage and Finance, Inc.
- ¹³ Mitchell, Kathy. "In Over Our Heads." Consumers Union Southwest Regional Office Public Policy Series, Vol. 5, No. 1, February 2002.
- ¹⁴ "What's Not Real About Real Estate" *The Wall Street Journal* Sunday, 08/19/2001. G. Donald Jud and Daniel T. Winkler "The Dynamics of Metropolitan Housing Prices" *Journal of Real Estate Research* V.23 N1/2 2002. "It's boom Time in the Housing Market, But for How Long?" *Research@penn* 7/3/02. Internet access: <http://www.upenn.edu/researchatpenn/article.php?28&bus>. Archer, Gatzlaff and Ling. "Location and House Price Appreciation" *Journal of Urban Economics* v 40 1996.
- ¹⁵ Ibid; "Remarks to the Independent Community Bankers of American Annual Convention" Alan Greenspan. via the Federal News Service. March 4, 2003.
- ¹⁶ Center for Auto Safety. "Mobile Homes: The Low Cost Housing Hoax." Viking, New York, 1975.
- ¹⁷ Apgar, Calder, Collins and Duda. "An Examination of Manufactured Housing as a Community and Asset-Building Strategy." Neighborhood Reinvestment Corporation, September 2002.
- ¹⁸ "What's Not Real About Real Estate" *The Wall Street Journal* Sunday, 08/19/2001.
- ¹⁹ Apgar, Calder, Collins and Duda. "An Examination of Manufactured Housing as a Community and Asset-Building Strategy." Neighborhood Reinvestment Corporation, September 2002, page 8.
- ²⁰ See, for example Christopher Mayer. "Taxes, Income and the Real Estate Cycle: Why all houses do not appreciate at the same rate." *New England Economic Review* May/June 1993. Mayer reaches the opposite conclusion, that high valued homes have a higher variance. On the other hand, Quercia, McCarthy, Ryznar and Can Talen. "Spatio-Temporal Measurement of House Price Appreciation in Underserved Areas." *Journal of Housing Research* V11 N. 1 2000, find that low-income tracts have higher variability in housing returns than the overall market.
- ²¹ Internet Source: <http://www.creonline.com/mobilehomes/wwwboard4/messages/10909.html>, accessed December 10, 2001.
- ²² Personal correspondence between Consumers Union and Jerry Rioux, City of Watsonville, CA, Housing and Economic Development Dept., January 29, 2002.
- ²³ Jewell, Kevin "Paper Tiger, Missing Dragon: Poor Warranty Service and Worse Enforcement Leave Manufactured Home Owners in the Lurch." Consumers Union November 2002. Internet Source: <http://www.consumersunion.org/mh>.
- ²⁴ Warner, Kate and Robert Johnson. "Manufactured Housing Values." Manufactured Housing Research Project Report #3, University of Michigan, January, 1993.

-
- ²⁵ Grissim, John. "The Complete Buyer's Guide to Manufactured Homes and Land." Rainshadow Publications, 2003, p.127.
- ²⁶ "National Survey of Mobile Home Owners" AARP July 1999
- ²⁷ Wooten, Tim. "Manufactured Housing Sales Analysis," Texas Comptroller's Property Tax Division (PTD), November 2001
- ²⁸ <http://www.tsha.utexas.edu/handbook/online/articles/view/AA/hda3.html>
<http://www.tsha.utexas.edu/handbook/online/articles/view/TT/hct8.html>
- ²⁹ Fullerton, Kevin. "Naked City," Austin Chronicle, December 29, 2000.
- ³⁰ "Population Statistics" Denton Chamber of Commerce. Internet Source: <http://www.denton-chamber.org/population.asp> Accessed 2/5/2003.
- ³¹ "Texas MLS Residential Housing Activity" Texas Real Estate Center. Internet Source: <http://recenter.tamu.edu/data/hs/hs800.a.htm> accessed 3/13/2002.
- ³² "DP-1 Profile of General Demographic Characteristics: 2000. San Antonio City, Texas." U.S. Census Bureau SF-1 Quick Table.
- ³³ Kiel, Zabel. "The Accuracy of Owner Provided House Values: The 1978-1991 American Housing Survey." *Real Estate Economics*, Vol. 27, No. 2, 1999, pp. 263-298; and Kiel, Carson. "An Examination of Systematic Differences in the Appreciation of Individual Housing Units." *The Journal of Real Estate Research*, Vol. 5, No. 3, 1990, pp. 301-318. See also Pollakowski, Henry. "Data Sources for Measuring House Price Changes." *Journal of Housing Research*, Vol. 6, No. 3, 1995 for further review of the literature.
- ³⁴ Kiel, Carson. "An Examination of Systematic Differences in the Appreciation of Individual Housing Units." *The Journal of Real Estate Research*, Vol. 5, No. 3, 1990, pp. 301-318.
- ³⁵ It is interesting to note that one variable that is not listed in this model, age of homeowner, appeared to explain much of the same variation that "Occupants per Sq. Ft" does. This makes sense, as many younger families have children, while older retirees are more likely to live alone.
- ³⁶ Hall, John R. Jr. "Manufactured Home Fires in the U.S." National Fire Protection Association, December 1999.
- ³⁷ Sheldon, Jonathon. "Manufactured Housing Park Tenants: Shifting the Balance of Power." American Association of Retired Persons/National Consumer Law Center, 1991.
- ³⁸ Sclafane, Susanne. "Mobile Home Insurance Specialist Continue to Weather Storms." National Underwriter & Casualty-Risk & Benefits Management, May 8, 2000. A manufactured-home production plant is in the process of opening; see "Maui Firm Soon to Open Oahu Home Factory," *Pacific Business News*, July 7, 2000.
- ³⁹ Elway Research. "Washington State Manufactured Home Value Appreciation Study." June 1991.
- ⁴⁰ Boers, Ted A. "Do Manufactured Homes Appreciate or Depreciate?" *The Manufactured Home Merchandiser*, June 1991. Internet source: <http://www.datacompappraisal.com/Depreciate.html>, accessed November 1, 2001.
- ⁴¹ Warner, Kate and Robert Johnson. "Manufactured Housing Values." Manufactured Housing Research Project Report #3, University of Michigan, January, 1993.
- ⁴² "Washington Manufactured Housing Association Appreciation Research." Herbert Research, Inc. June 1994.
- ⁴³ Internet source: <http://www.ruralhome.org/pubs/hsganalysis/manufactured/toc.htm>, accessed November 1, 2001.
- ⁴⁴ Harris, Evans, and Price. "Manufactured Home Buyers Guide." Texas Real Estate Center Technical Report 1300, April 1999. Also verbal communications with author Jack Harris.
- ⁴⁵ Rutherford, Ronald, and Thomas Thomson. "What Affects Mobile Home Sales Price?" *The Appraisal Journal*, July 1999.
- ⁴⁶ Internal memos and spreadsheets, courtesy Rick DeAngelis, Vermont Housing and Conservation Board, September 1998 and October 2000.
- ⁴⁷ In fact, reanalysis shows that the majority of the homes had zero or negative appreciation.
- ⁴⁸ The difference was significant at the 90 percent level (using a one-tailed T-test) upon removal of one outlier from the dataset.
- ⁴⁹ Shen and Stephenson. "The Impact of Manufactured Housing on Adjacent Site-Built Residential Properties in North Carolina." East Carolina University, June 30, 1997.
- ⁵⁰ "FAQ" Internet source: http://www.ncmhi.com/bg_fa_fq_001.htm, accessed November 1, 2001.

⁵¹ Wubneh and Shen. "The Impact of Manufactured Housing on Residential Property Values: A GIS Based Approach." 2001 Lincoln Institute of Land Policy Working Paper.

⁵² Internet source: [Http://www.amhi.org/impact.html](http://www.amhi.org/impact.html), accessed August 25, 2001.

⁵³ Correspondence with Charles Hegji, August 2000.

⁵⁴ Internet source:
<http://www2.gasou.edu/coba/centers/pub/Southern%20Business%20Review/fall2000/Charles%20Hegji%20and%20Linda%20Mitchell.htm>, accessed November 1, 2001.