SHARED EQUITY HOMEOWNERSHIP EVALUATION:
CASE STUDY OF THISTLE COMMUNITY HOUSING

Final Report
October 2010

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Shared Equity Homeownership Evaluation: Case Study of Thistle Community Housing

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In Memory of
Norbourne "Norb" Alan Smith
January 5, 1940 – March 12, 2010
with appreciation from his Thistle colleagues.

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I. Introduction

This case study analyzes outcomes for Thistle Community Housing's Community Land Trust, which started providing homeownership opportunities in the Boulder area to low- and moderate-income households in 1996. Through December 2009, Thistle had sold homes to 172 families (including single homeowners). Included in this total were 69 resales, where the same price-restricted home was successively purchased by more than one income-eligible family. Using client-level data provided by Thistle, we present analyses that address the following four research topics:

1. Affordability: Is the program effective in creating and preserving affordability for low- and/or moderate-income homebuyers?
2. Personal Wealth: Is the program effective in building wealth for individual households, providing opportunities for financial gains that are unavailable to renters?
3. Security of Tenure: Is the program effective in maintaining high levels of owner-occupancy for its participants?
4. Mobility: Are program participants able to sell their shared-equity homes and move into other housing and neighborhoods of their choice?

In the following section we describe Thistle's program, including the methods used to calculate the allowable amount of appreciation that can be realized by resellers and the amount of capital investment that can be recaptured by resellers.

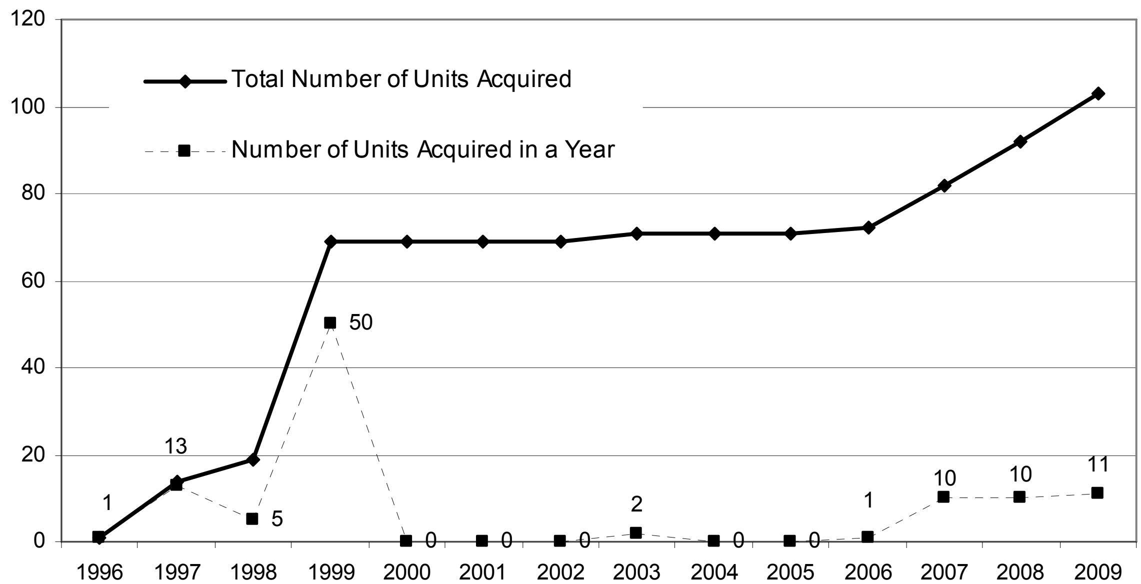
II. Program Description

Thistle Community Housing (a 501(c)(3) nonprofit organization doing business as Thistle Communities) sells and rents homes at below-market prices in and around Boulder, Colorado. Through their community land trust (CLT), Thistle sells homes to families whose income is no more than the area HUD-low income level (currently 71.7 percent of area median income). The program's homes have between one and four bedrooms and a range of designs, including condominiums, single-family houses, townhomes, and mobile homes (none of the 136 mobile homes were included in this count or in the study). Of the 102 resale-restricted, owner-occupied homes currently in the land trust, about 80 are new construction built by Thistle, while the rest were existing homes, mostly built 20 to 40 years ago. Most homes are located inside Boulder's city limits, while some are in two other Boulder County cities, Longmont and Lafayette.

Thistle acquired about half of its portfolio (50 of 103 units) by 1999, bringing their total to 69 units (Figure 1). Over the next several years, Thistle focused on the acquisition of a large manufactured home development in Boulder, which is not included in this study. Thistle only acquired three nonmanufactured shared equity homes over the next seven years, but began increasing their nonmanufactured portfolio again in 2007 by about 10 homes per year. By the end of 2009, Thistle had acquired a total of 103 units, although one had been lost one to foreclosure. Because some of these homes have been resold one or more times without leaving

Thistle's portfolio, a total of 172 families have been helped to buy a home through Thistle's CLT program.

Figure 1: Number of Units Acquired by Year and Cumulative Number of Units Acquired by Thistle, 1996-2009



Source: Authors' analysis of Thistle client-level data.

Thistle sets a maximum price for resales via a formula embedded in the ground lease, and the vast majority of sales sell for this price. Under Thistle's program, the maximum increase in sales price of any home is 25 percent of any increase in market appreciation on the house[1], times whatever percentage of the property's total value that the seller actually purchased when first buying her house. For example, if an owner buys a home for $100,000 that was appraised at $200,000 (a 50 percent share of the property's value) and the home appreciates to $300,000, the owner may sell the home for $100,000 + [50% x 25% x ($300,000 - $200,000)] = $112,500. To determine the market appreciation, an appraisal is done at the time of original purchase, and a new appraisal is done at time of resale. Beginning in 2007, Thistle amended the resale formula in its ground lease to help prevent the possible loss of a homeowner's initial investment, should the market value of their home decrease. In this case, the maximum resale price of a Thistle home would be equivalent to home's original purchase price (plus any capital improvements made after the home was purchased and minus any realtor fees). This maximum resale price is not a guaranteed sale price for the borrower, however. In addition to a share of appreciation, resellers receive a credit worth 100 percent of the market value of any qualified post-purchase capital improvements that have an appraised value and cost over $2,000. Qualified capital improvements are defined as additions of bedrooms and/or bathrooms (as valued by an appraisal), and improvements in handicapped accessibility or energy efficiency

[1] The outstanding 75 percent of appreciation remains in the home to preserve affordability. Thistle also receives a lease reissuance fee on resales.

(half of the value a contractor determines). Any capital improvement must be approved by both Thistle and the homeowners' association.

Thistle's homebuyers participate in an application process requiring they document that their household income is below the HUD-determined low-income level for Boulder County, CO. Their household savings must also be under Thistle's asset limit.[2] Buyers must have at least $2,000 cash on hand (though some do not use all of it for a down payment) and obtain an approved mortgage loan. Thistle provides buyers with a list of lenders who are willing to underwrite CLT mortgage loans, including information identifying those lenders that offer mortgage loans through the Colorado Housing and Finance Authority.

Applicants must complete a Land Trust orientation and attend homeowner training classes offered by local housing authorities and approved by the Colorado Housing and Finance Authority. In these classes, applicants review advantages and disadvantages of acquiring a resale-restricted home through Thistle's CLT program; steps in the home-buying process; mortgage payments and other costs of homeownership; and home affordability worksheets, credit scores, and budgeting.

Thistle employs a part-time certified housing counselor for pre- or post-purchase issues (including counseling to homeowners in danger of delinquency and foreclosure). Free homebuyer counseling is also available through the Boulder County Housing Authority, which also offers post-purchase classes on homeownership topics like home maintenance and financial fitness.

Nearly all of Thistle's resales occur as a direct seller-to-buyer transaction, with Thistle overseeing the transfer to ensure that the home is sold for the formula-determined "affordable" price to a buyer who is income-eligible. An owner who intends to resell her Thistle home must notify Thistle, which works with the seller throughout the process. Thistle connects sellers to realtors, attorneys, appraisers, lenders, and buyers. Thistle has the preemptive right to repurchase the home itself, although it has only done so once. In most cases, Thistle contacts qualified buyers who have been placed on an optional waiting list and refers those buyers to the family offering the home for sale. If no qualified buyer is found, the home is advertised on Thistle's website, and the seller may use a realtor to find a buyer.

III. Summary of Thistle Sales and Homebuyers

The sale and resale of Thistle's homes served 172 families between 1996 and 2009. There have been 69 resales during the 14 years that this CLT program has operated, representing 40.1 percent of all sales. As detailed in the following table, the median sales price paid by homebuyers (in 2008 $) was $127,519, compared to a median appraised value of nearly $195,000 for these homes. The median difference in the price paid by the buyer and the

[2] Thistle's asset limits for prospective buyers are as follows: retirement accounts cannot exceed $50,000 per adult in the household (or $75,000 for retired members of the household); liquid assets may not exceed 80 percent of area median income, adjusted for household size.

appraised value of the home, expressed in 2008 dollars, was $50,955 (Table 1).

Table 1: Selected Characteristics of Thistle Homes and Homebuyers

Number of units in Land Trust as of December 31, 2009	102
Number of resales: 1996–2009	69
Total number of sales: 1996–2009	172
Median sales price paid by homeowner (in 2008 $)	$127,519
Median appraised value of homes at sale (in 2008 $)	$194,689
Median difference between appraised value and sales price (in 2008 $)	$50,955
Median down payment and closing costs paid by purchaser (in 2008 $)	$6,080
Median household income of purchasers (in 2008 $)	$38,670
Share of buyers who are first-time homebuyers	85.0 percent

Source: Authors' analysis of Thistle client-level data

The ability to purchase homes at well below-market prices (the median sales price for a resale restricted home was 65 percent of the median appraised value for these homes) provided homeownership opportunities to lower income households: Thistle homebuyers had a median household income (in 2008 $) of $38,670. As detailed in our affordability analyses, this is 45.5 percent of the surrounding metropolitan area's 2008 median family income of $85,000.[3] In addition to serving lower income households, Thistle homes made it possible for at least 125 families to become homeowners for the first time: of those Thistle buyers for whom prior homebuyer status is known, 85.0 percent were first-time homeowners.[4]

IV. Findings

In this section we present our analyses that address each of the four research topics: affordability, personal wealth, security of tenure, and mobility.

1. Affordability

A primary purpose of any shared equity program is to provide homeownership opportunities that

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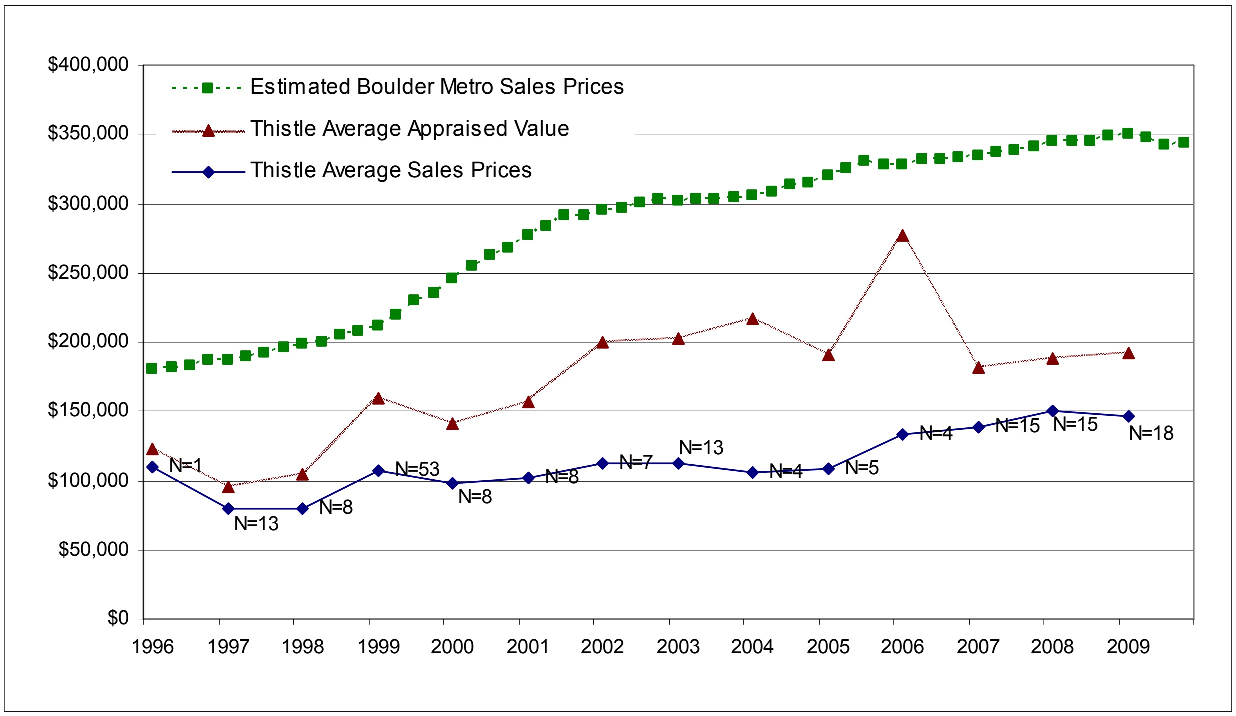
[3] Boulder is located in the Boulder, CO MSA. See the HUD-defined median family income here: http://www.huduser.org/portal/datasets/il/il08/co_fy2008.pdf. This number differs from the median household income in Boulder County, CO (where Boulder is located) of $66,760. These data from the Economic Research Service are derived from Bureau of Labor Statistics Local Area Unemployment Statistics data. See: http://www.ers.usda.gov/Data/Unemployment/.

[4] This information is missing for 25 of 172 homebuyers.

continue to be affordable for lower income families across multiple resales. Meeting this objective is more challenging in a market where house prices are rapidly appreciating. Home prices increased by about 90 percent between the first quarter of 1996 and the fourth quarter of 2009 in the Boulder metropolitan area, as measured by the Federal Housing Finance Agency's (FHFA) house price index. The median price in the Boulder metro for detached homes in 2008 was $348,800. Applying FHFA's index to this price, we estimate that median prices (in nominal dollars) for detached homes increased from about $180,372 in the first quarter of 2000 to its current level of about $343,742.[5] During this time, median home prices in Thistle's portfolio of resale-restricted homes remained well below Boulder metro averages, while appraised values for these same homes fell between the sales price and the area averages. Figure 2 shows median prices in the Boulder area and prices and appraised values for Thistle homes from 1996 through 2009, the time during which the bulk of Thistle sales occurred.

Figure 2: Estimated Median House Prices and Appraised Values in Thistle and the Boulder, Colorado Metropolitan Area: Homes Sold from 1996 through 2009

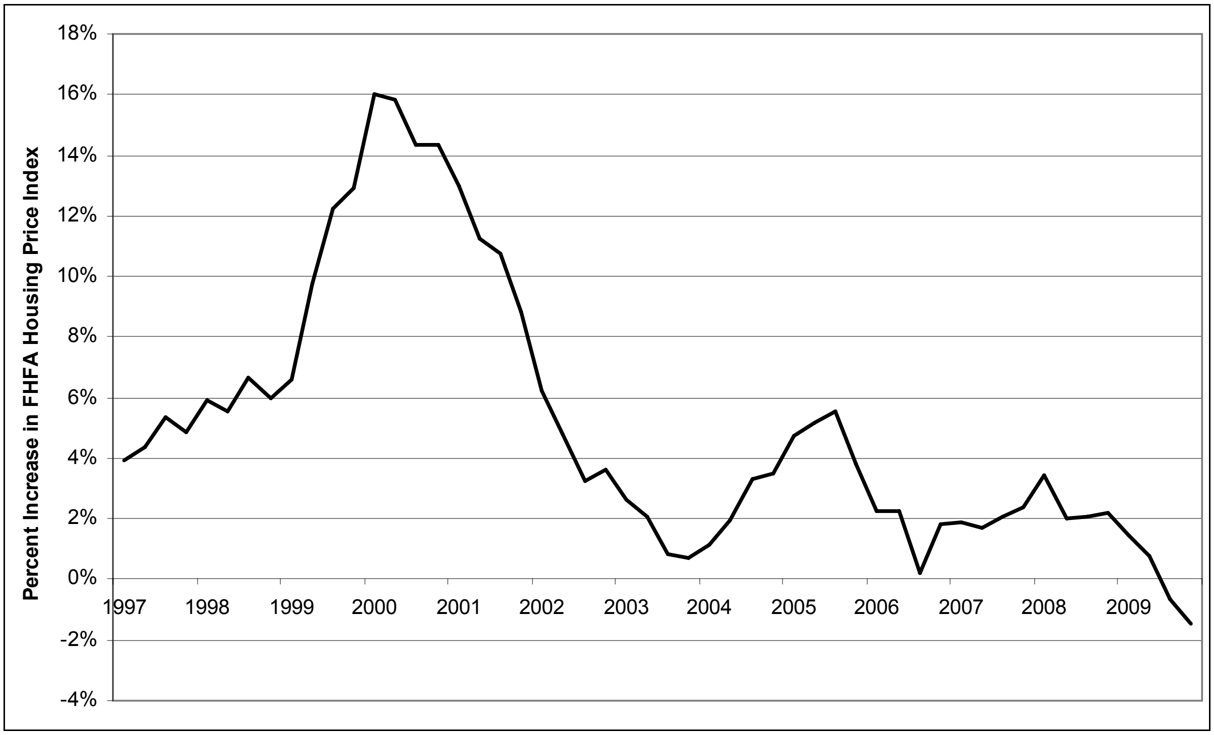


Sources: FHFA House Price Index, American Communities Survey, and authors' analysis of Thistle client-level data.

Annual price increases in the Boulder metropolitan area rose from around 4 percent in 1997 to around 16 percent in 2000 before falling back. Since 2002, they ranged between 0 and 6 percent, turning negative in 2009 (Figure 3).

[5] Data taken from the 2008 American Community Survey.

Figure 3: Year-by-Year Percentage Change in House Prices in the Boulder, Colorado Metropolitan Area: 1997-2009

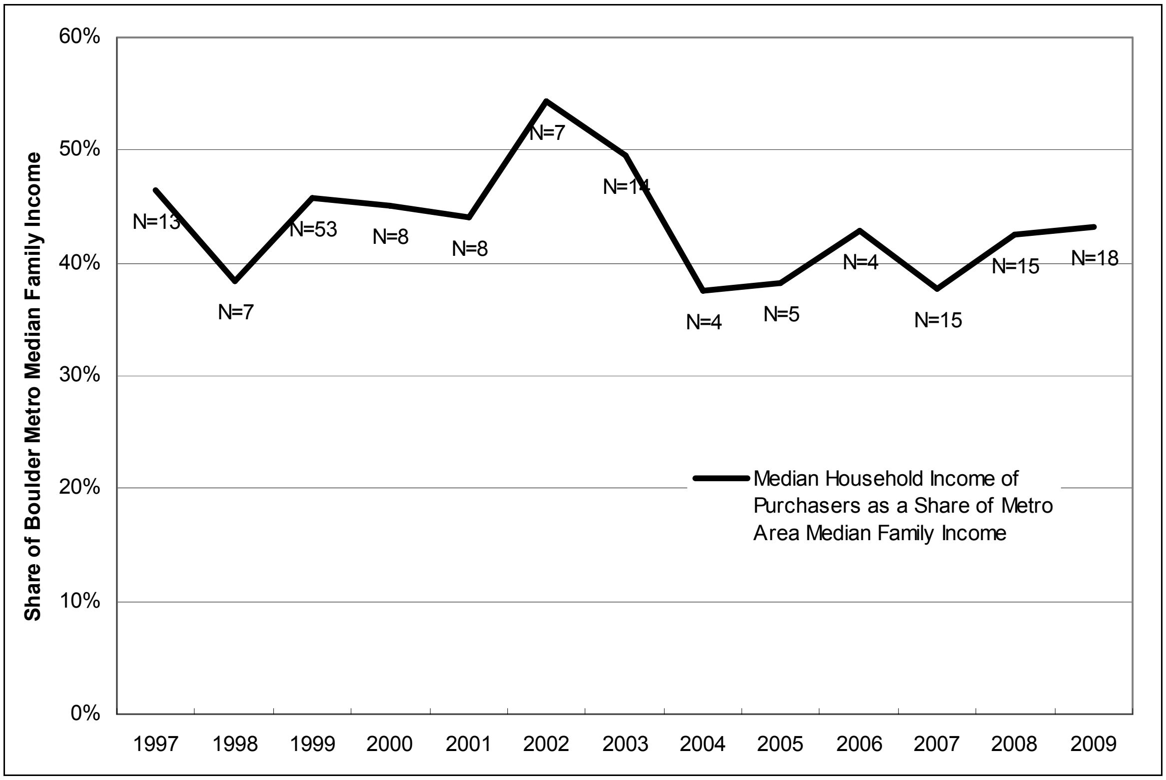


Source: FHFA House Price Index

While the overall U.S. housing market slumped dramatically from its high in mid-2006[6], the Boulder metropolitan area's house prices did not reach their peak until the first quarter of 2009, and have only declined by about 2 percent since that peak. Like the surrounding Boulder area, Thistle homes saw considerable price appreciation during this time (since Thistle's resale formula is pegged to the rise in market values). But despite a healthy run-up in prices, this CLT program still was able to keep its homes affordable to low-income buyers. The real median household income of all Thistle homebuyers was 45.5 percent of Boulder metropolitan area's median family income in 2008. This income spread remained relatively constant between 1997 and 2009, when nearly all of the program's homes were sold (See Figure 4). In those 13 years Thistle sold homes to 171 households. In any given year, the median real household income for these homebuyers, as a share of the metro area's real median, ranged from a low of 37.5 percent (in 2004) to a high of 54.3 percent (in 2002). In most years, the median household income of Thistle homebuyers, as a share of Boulder County's median household income, varied in a relatively narrow range of between 40 and 50 percent. On average, Thistle's homes were purchased by households with an income of less than half of the surrounding area median income.

[6] According to information reported in the Case/Schiller index of house prices, on average home prices in the 20 largest U.S. metro areas declined by 27 percent between July 2006 and December 2008.

Figure 4: Median HH Income of Thistle Homebuyers Relative to Median Family Income for Boulder Metropolitan Area, 1997–2009



N=number of sales in a given year.

Source: Authors' analysis of Thistle client-level data.

One of the major objectives of a shared equity homeownership program like Thistle's is to ensure that the price of any homes that are resold will remain permanently affordable for successive generations of lower income homebuyers. The key question is whether or not the home remains affordable to the next buyer. There are many ways to measure the continuing affordability of renter-occupied or owner-occupied housing, although every method begins with the basic assumption that "housing affordability is a measure of housing costs relative to income."[7] Previous analyses of changes to the affordability of shared equity homes have used the minimum income required to purchase a home as the indicator of the housing *cost* and the area's median family income (MFI), published by HUD.[8] To the extent that the ratio of the minimum income required to purchase a home relative to the MFI is the same, when a home is initially purchased and when that home is resold, the unit is considered to have maintained its affordability. (We refer to this method as the MFI method.)

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[7]Goodman, Jack. 2001. *Housing Affordability in the United States: Trends, Interpretations, and Outlook.* A Report Prepared for the Millennial Housing Commission, page 3.

[8] See, for example, Davis, John Emmeus and Alice Stoke. 2009. *Lands in Trust, Homes That Last: A Performance Evaluation of the Champlain Housing Trust*. Burlington VT: Champlain Housing Trust.

This MFI method measures, at two separate points in time, the required minimum income to purchase a given home relative to the MFI. A problem with this methodology is that it does not measure changes to a particular household's income over time; rather, it assumes the incomes of the target population for whom shared equity homes are being kept affordable and to whom these homes are being resold increase at the same rate as the MFI. But, as discussed earlier, the incomes of the families purchasing Thistle homes are well below the area median family income; and the minimum income required to purchase a shared equity home is often lower than the purchasers' actual income. Given uneven income growth for families earning less than the median, using the MFI to calculate affordability may overstate the extent to which homes remain affordable to lower income families because the growth in MFI reflects changes to the types of households living in the area at the two different points in time (initial sale and resale) as well as changes to incomes for households that are present at both time periods.[9]

Despite these drawbacks, the MFI method has two distinct advantages: its sensitivity to local area differences in incomes and family size; and its widespread use by policy analysts in evaluating major housing assistance programs funded by HUD, where eligibility is set by household income relative to median incomes in the local area.[10] As a result, we analyzed changes to the affordability of resold units, comparing changes in required income *relative* to MFI.

Recognizing the issues associated with the MFI method, we first calculated the *absolute* changes in required real minimum income to purchase a home at resale. This measure establishes the required income growth for a given household to purchase a home at resale, and so identifies the extent to which *the same* household earning the required minimum income at a given point in time can afford a unit when it is resold. Consequently, it is not dependent on an area's changes in income distribution or household structure; rather, it provides information about the income growth required for a particular cohort of households to be able to afford a home at resale.

Starting with the absolute measure, we calculated the real income required for the initial purchase and subsequent resale of the shared equity homes, assuming that the buyer would finance the purchase with a 30-year, fixed rate mortgage that had an interest rate that was the median interest rate for all buyers. In addition, we assumed that the buyer paid a down payment that was equal to the median down payment share of all homes sold under the program, and further assumed that the buyer would spend no more than 33 percent for his/her income for housing (which included the mortgage payment and any property taxes or co-op fees reported by the program).

Based on the length of time between the two sales, we calculated the average annual increase in the required minimum income. For example, assume that a home requires a minimum income

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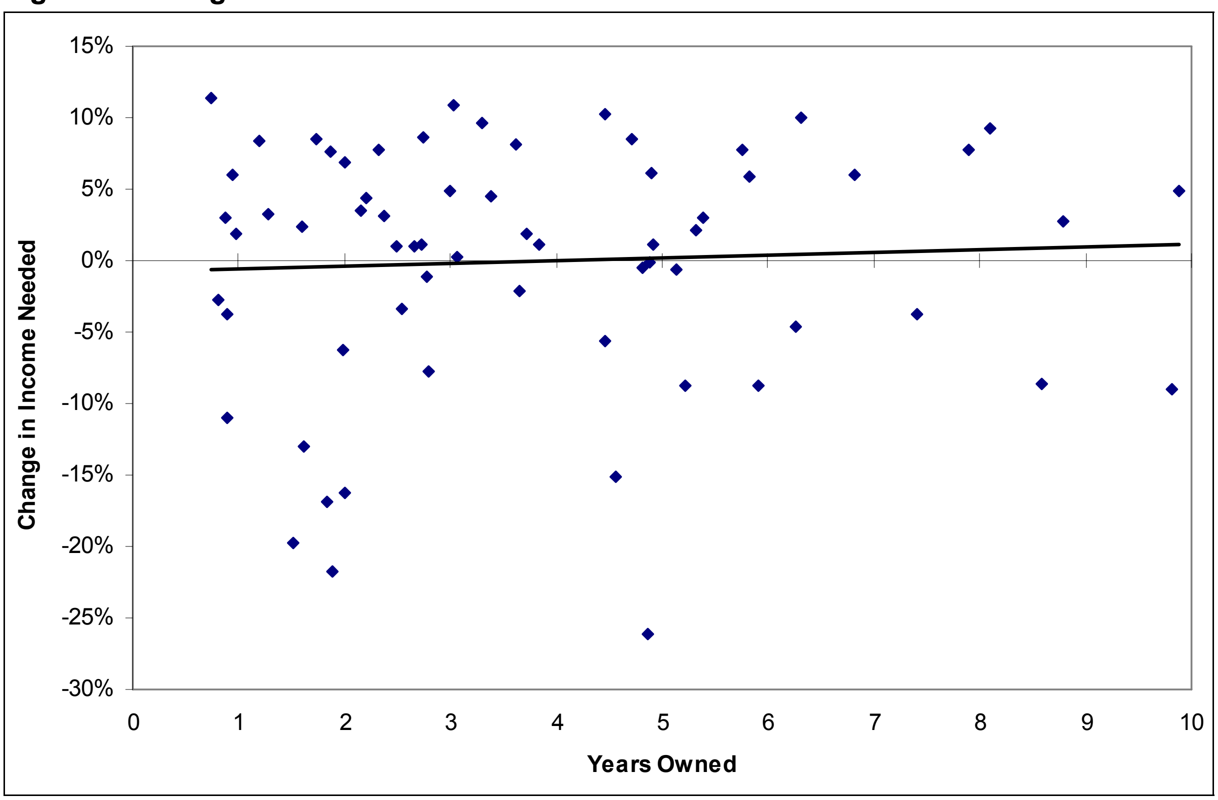
[9] See, for example, Gangl, Markus. 2008. "A Longitudinal Perspective on Income Inequality in the United States and Europe. *Focus*" Vol. 26(1). The author reports, using data from the Panel Study of Income Dynamics, that the income for households within the bottom three income deciles between 1992 and 1997 either remained the same or declined during the five-year period.

[10] Goodman, page 17.

(in 2008 $) of $20,000 at the initial sale, and, at a resale that takes place 3 years later, requires a minimum income (in 2008 $) of $22,000. The real income at resale is 10 percent greater than at the initial sale, which means that the required minimum income increased by an average of 3.3 percent per year. To the extent that real incomes increased by the same amount for households earning $20,000 at the time of the initial sale, the unit remains affordable to such households. Using this methodology, we calculated that the real required minimum income increased between units' initial and subsequent resale by 0.5 percent per year. As a result, only 4 percent of resold homes required a minimum income that was, in real terms, 10 percent greater than needed for the initial sale.

In addition, we ran a regression in which the percentage change in required minimum income was the dependent variable and length of tenure was the explanatory variable. The parameter estimate from this regression indicates the percentage change in the minimum income (in real $), by year, that is required to purchase the home. Our analysis revealed no relationship between the extent to which the affordability of a resold home declined and the length of time that the initial purchaser lived in the home. Due to the resale restrictions, no significant erosion occurred.

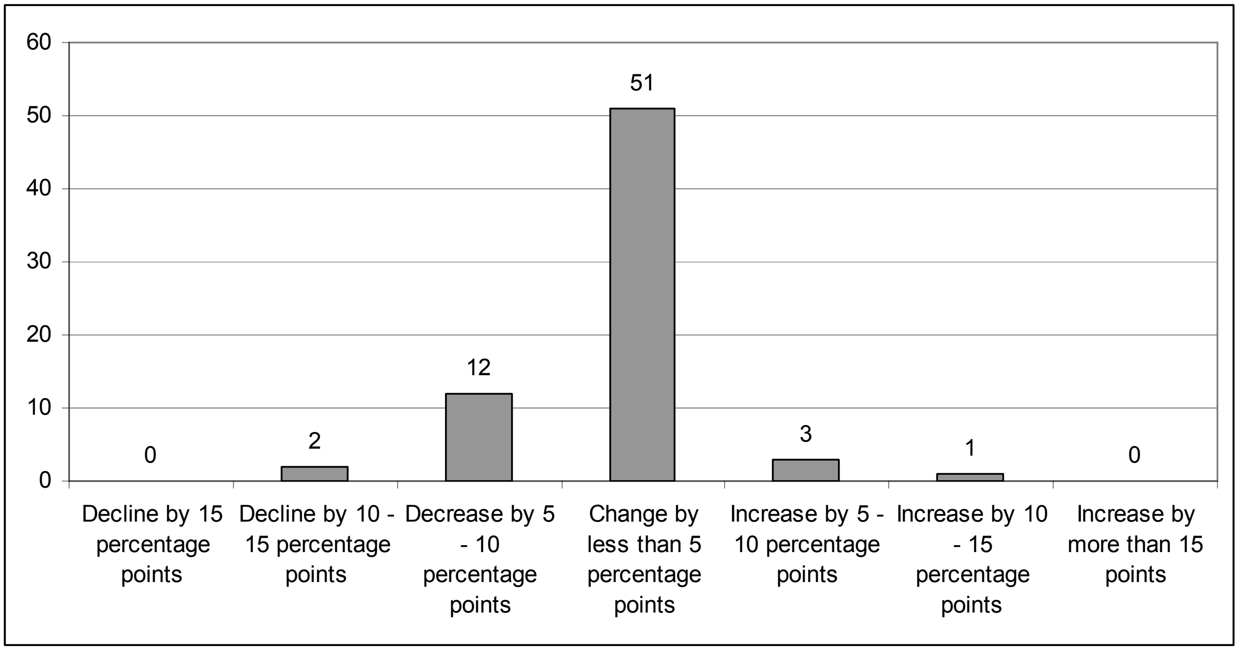
Figure 5: Changes in Income Needed vs. Years Owned for Thistle Homes



Source: Authors' analysis of Thistle client-level data.

Looking at the relative measure, the median minimum income required to purchase a Thistle home that was subsequently resold was 39.4 percent of the area MFI. These homes, when resold, required a median minimum income that was 38.1 percent of area MFI. The median difference between these two ratios for all of the units resold by Thistle was -1.2 percentage points, which indicates an increase in affordability. As shown in the following figure, 94 percent of resales had the required minimum income, as a share of area MFI, increase by less than 5 percentage points.

Figure 6: Percentage Point Change in Income (as a share of Median Family Income) Needed for Thistle Homes, Initial Purchase vs. Later Resale



Source: Authors' analysis of Thistle client-level data.

Note: Note: We assume that one-third of income is paid in principal, interest, taxes, insurance, and ground lease fee, with a 6.5 percent 30-year fixed-rate mortgage and a 5 percent down payment.

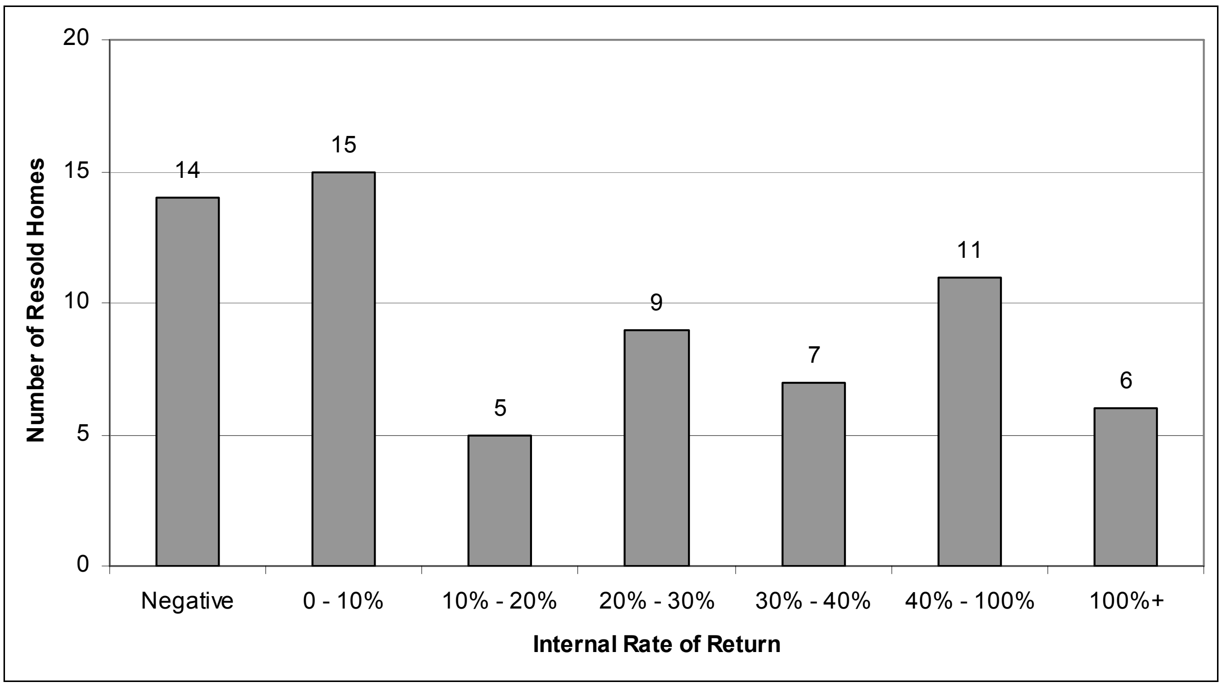
2. Personal Wealth

Shared equity homeownership programs attempt to balance providing owners with an opportunity to accumulate wealth while maintaining the affordability of the units for subsequent purchasers. As detailed in the previous section, Thistle's program preserved the affordability of its units, even in a housing market that saw steady price appreciation in the last decade. By allowing sellers to retain 25 percent of the appreciation on that portion of their property's total value that the homebuyer originally bought, Thistle's resellers earned a median internal rate of return of 22.1 percent on their initial investment of about $6,000.[11] This rate of return realized by most Thistle home resellers far exceeded the returns that those resellers would have earned if

[11] IRR is [(effective appreciation + his or her down payment) / his or her down payment]$^{(1/yrs\_owned)}$ – 1. We define effective appreciation as the lesser of (seller's realized appreciation + capital improvements) and (seller's proceeds at resale + capital improvements + cash-out refinancing - principal paid). This internal rate of return does not include 3 sales in which the reseller's effective appreciation is less than the down payment. It is impossible to compute an internal rate of return in such a circumstance.

they had rented a unit[12] and invested their down payment in stocks or bonds. Had Thistle resellers invested their down payment amount in an S&P 500 index fund, they would have earned a median return of -0.1 percent. A comparable investment in 10-year Treasury bonds would have yielded a 5.9 percent median return.[13] Not all Thistle owners saw such high rates of return, though; 20.9 percent of Thistle resellers saw negative effective appreciation, and only 73.4 percent of Thistle homeowners with an IRR calculated saw a higher return than they would have realized with either. On the other hand, 22.4 percent of Thistle resellers saw internal rates of return of at least twice Thistle's median, and 9.0 percent saw rates of return of over 100 percent (see Figure 7). Note that residents with short tenures have greater variability in IRR; because of this, many resellers with very high and very low rates returns actually had fairly low effective appreciation in dollar terms.

Figure 7: Rates of Return for Resold Homes in Thistle



Note: Internal rate of return does not include 2 sales with missing data. Negative IRR includes 3 sales in which the reseller's effective appreciation is negative and larger in magnitude than the down payment.

Source: Authors' analysis of Thistle client-level data.

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[12] To add simplicity to the analysis, we assume that the rent paid by the owner, if he/she chose to rent the purchased home, would have been the same as the after-tax cost of owning a home. This simplifying assumption may underestimate the benefit: the median total monthly payment for all Thistle owners in 2008 dollars is $806. The median gross rent in 2008 in Boulder was $976 (source: 2008 American Community Survey). There are other benefits and costs to homeownership that we have also excluded from our analysis. Benefits include the deduction of house and mortgage interest paid from income tax liabilities, any homebuyer tax credits, and stabilization of housing payments (for those with fixed rate mortgages). Added costs include maintenance costs, realtor fees, and other transfer and transaction costs.

[13] We assume that Thistle resellers would hold their 10-year Treasury bonds until maturity, and so did not calculate any gains or losses that would have resulted from selling their bonds at the time that the owners sold their Thistle homes.

In addition to their share of appreciation, resellers received the entire principal amount that they had paid on their first-lien mortgage (including their down payment) and, for those homeowners who made qualified post-purchase improvements, a portion of the amount spent by the homeowner on those capital improvements. Twelve resellers have removed equity from their homes before sale when refinancing their mortgages. The median value of the equity removed through cash-out refinancing by these owners was $3,462. Of 172 homebuyers, 64 had to repay second-lien mortgages at resale, which they received as down payment assistance, often from the Colorado Housing Finance Agency when they purchased the home. The median value for these second mortgages was $3,826. The 7 homeowners who made capital improvements and sold their home were credited a median of $7,782. As a result, resellers walked away from the closing table with a median of over $13,000 after they resold their home (see Table 2).

Table 2: Summary Characteristics of Thistle Purchase Transactions

Median purchase price (in 2008 $)	$127,519
Share of purchasers who received first-lien mortgages, among those with mortgage information	99.4 percent (169 out of 170 homebuyers)
Median first-lien mortgage among those with a mortgage (in 2008 $)	$114,509
Share of first-lien mortgages with fixed interest rates	94.7 percent (160 out of 169 mortgages)
Median initial interest rate on first-lien mortgages	6.5 percent
Share of first-lien mortgages with a term of 30 years	99.4 percent (168 out of 169 mortgages)
Median down payment and closing costs paid by purchaser at closing (in 2008 $)	$6,080
Median percent of sales price paid in down payment	4.8 percent
Number of purchasers who received an amortizing second-lien mortgage	10 homebuyers
Median second-lien amortizing mortgage among those with a mortgage (in 2008 $)	$10,117
Share of second-lien mortgages with fixed interest rates	100 percent
Median initial interest rate on second-lien mortgages	3.0 percent
Share of second-lien mortgages with a term of 30 years	60 percent (6 of 10 mortgages)
Share of purchasers who received non-amortizing second-lien mortgage as down payment assistance	37.2 percent (64 out of 172 homebuyers)
Median non-amortizing second-lien mortgage amount for purchasers who received such a mortgage (in 2008 $)	$3,826
Number of purchasers who received a down payment assistance grant	5 homebuyers
Median down payment assistance grant, among those who received such a grant (in 2008 $)	$3,919
Median principal paid on home by resellers (including down payment and closing costs) (in 2008 $)	$8,567
Share of resellers who removed equity from their homes through refinancing	17.4 percent (12 out of 69 resellers)
Median cash removed through refinancing by resellers who refinanced (in 2008 $)	$3,462
Median forced savings - principal paid on mortgages other than down payment (in 2008 $)	$3,065
Median proceeds realized by resellers (in 2008 $)	$13,043
Median appreciation realized by resellers (in 2008 $)	$8,107
Number of resellers with capital improvements	7 homebuyers
Median capital improvements among those with information (in 2008 $)	$7,782
Median Internal Rate of Return Earned by resellers	22.1 percent

Source: Authors' analysis of Thistle client-level data.

The shared equity model used by Thistle provides a subsidy by pricing its homes at about $50,000 below their appraised value and then passing along that lower price to subsequent homebuyers at resale. An alternative method for subsidizing homeownership would have been to provide this subsidy directly to Thistle homebuyers, who could have used it to purchase the same homes, but without any restrictions on the amount of appreciation they could realize upon resale. We performed an analysis to compare these two approaches.

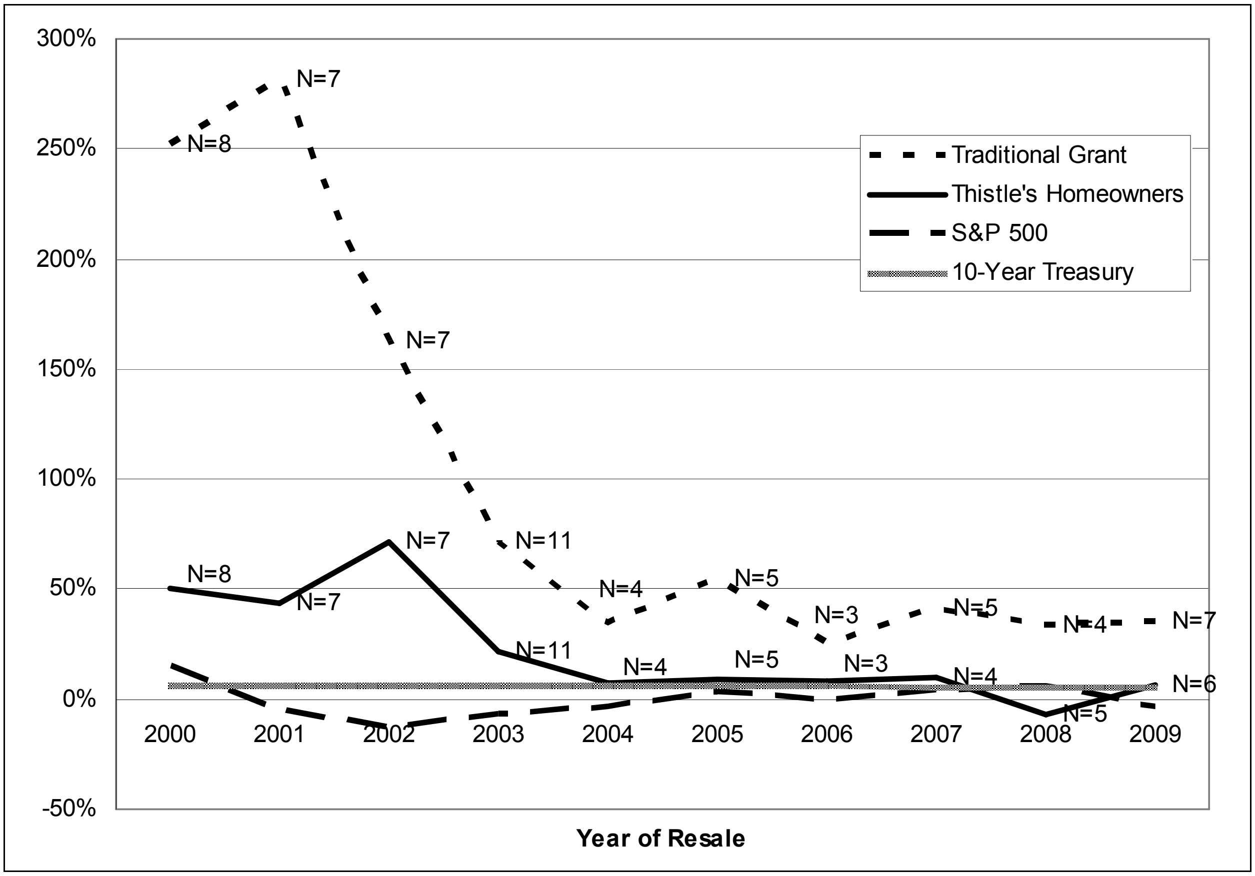
For the direct subsidy-to-homeowner grant program, we assumed that: (1) homebuyers would make the same down payment as they did when purchasing the home under the shared equity program; (2) the price charged by those who resold their homes was equal to the appraised value of their homes at the time of resale; and (3) the homeowner would pocket the entirety of both the initial subsidy and all market appreciation at the home's resale. The median appreciation for resold units (in 2008 $) was $31,849. Given their down payments, which averaged about $6,000, these resellers would have realized a median internal rate of return of 75.5 percent.

The respective rates of return for Thistle's CLT program, for the traditional grant program, and for stocks and bonds vary greatly depending on the year. Most of Thistle's resales (95.2 percent) occurred in 2000 or after. During this period, the median IRR under the Thistle's program ranged from a high of 71.6 percent among those who resold in 2002 to a low of -7.0 percent in 2008 (Figure 8). Thistle owners who resold their homes after 2003 earned lower returns due to low appreciation rates in Boulder's real estate market. (The length of tenure among Thistle's homeowners has increased over the life of the program from a median of about 1.1 year among those who resold in 2000 to about 7.4 years in 2009.)

Returns to renters from investing in the stock or bond markets varied little over this time. The internal rate of return for Thistle's resellers in all but one of the ten years was greater than the return they would have realized in the stock market or the return they would have realized from investing in a 10-year Treasury bond.

As expected, the returns earned by Thistle homeowners would have been even higher if they had purchased their home with a grant and had been allowed to resell their homes on the open market, with no restriction on the amount of appreciation they could claim. Resellers in a grant program would have earned returns 150 to 200 percent higher than under Thistle program had they resold in 2000 or 2001. In later years, however, this gap in the rate of return between the Thistle and grant programs narrowed, as returns fell for both.

Figure 8: Comparison of Median Rates of Return for Alternative Investments



Note: Differences in the number of transactions used to calculate internal rate of return for a traditional grant and the Thistle program is the product of some transactions in the actual program resulting in negative effective appreciation that is greater in magnitude than the down payment, and some homes in a traditional grant program having appraised value depreciate by more than the down payment. It is impossible to compute an internal rate of return in such a circumstance.

Source: Authors' analysis of Thistle client-level data; Treasury data (http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield_historical_main.shtml); S&P 500 data (http://www.irrationalexuberance.com/)

We do not compare owners' actual returns to IRRs that would have been achieved had an owner purchased a market-rate home. It is unlikely that an owner could have afforded one, given that the median price in Boulder, in 2008, for such units was $348,800 according to the ACS. Assuming that a member had sufficient funds for a 3 percent down payment, the monthly share loan payment would have been $2,029, assuming a 30-year fixed rate loan at 6.0 percent. This payment would require an annual income of over $73,000, well higher than actual median income of approximately $39,000 for Thistle homebuyers.

Allowing homeowners to realize *all* of their home's market appreciation (and the initial subsidy), the more traditional method of subsidizing homeownership, would have had major repercussions for the affordability of the resold homes and the total cost of the program. Any shared equity program must balance three competing goals: provide an opportunity for homebuyers to earn a fair return on their investment, retain the affordability of the assisted units for subsequent purchasers of modest means, and minimize the public cost of subsidizing (and re-subsidizing) these homes.

Using information about Thistle's sales and resales, we modeled the trade-off between affordability and the homeowner's return for a hypothetical home (holding subsidy levels constant). The following figure shows the internal rate of return earned by an owner under the following assumptions: (1) the owner lives in her/his house for 3.4 years (the median for Thistle resellers); (2) s/he has a $6,080 down payment (median amount for all Thistle buyers); (3) s/he purchases a home appraised at $194,689 (the median appraisal of homes purchased by Thistle homebuyers) for $127,519; and (4) the home appreciates by $31,849 (the median increase for Thistle resold homes).

Not surprisingly, allowing a reseller to realize a greater share of a home's appreciation would significantly increase his/her internal rate of return. In our hypothetical example, allowing the homeowner to retain 20 percent of the market appreciation (which is approximately the average level for Thistle's program[14]) yields a 23.6 percent rate of return, which is similar to the median rate of return (22.1 percent) that was actually earned by all Thistle resellers. The rate of return would be 13.3 percent if the resellers were only allowed to keep 10 percent of their appreciation, but would be as high as 71.7 percent if resellers could keep all of their appreciation (Figure 9).

By allowing resellers to retain a greater share of their home's appreciation, however, the home at resale would have had a higher price, with the new buyer paying the reseller for the appreciated value which the latter was allowed to remove from the home. We calculated the minimum income required to make a house payment that included a 30-year fixed mortgage with an interest rate of 6.5 percent for $6,080 less than the purchase price, assuming that this payment was 33 percent of the purchaser's gross monthly income.[15] Assuming that only 10 percent of the appreciation is realized by the reseller, a household with an income of $25,700 could afford to purchase the home from the reseller. If the reseller is allowed to retain 100 percent of the appreciation, however, then the purchaser would need a minimum income of nearly $43,300, or 16 percent more than what the purchaser would need, had the reseller retained only 10 percent of the appreciation (Figure 9). Thus, as the share of appreciation realized by the reseller increases, the income required by the buyer goes up, affordability declines.

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[14] Under Thistle's program, the maximum increase in sales price of any home is 25 percent of any increase in market appreciation on the house, times whatever percentage of the property's total value that the seller actually purchased when first buying her house.

[15] The interest rate and loan term are the same as the median rate and term for all Thistle homebuyers.

Figure 9: Analysis of the Internal Rate of Return and Minimum Required Income to Purchase a Hypothetical Resold Thistle Unit

Source: Authors' analysis of Thistle client-level data.

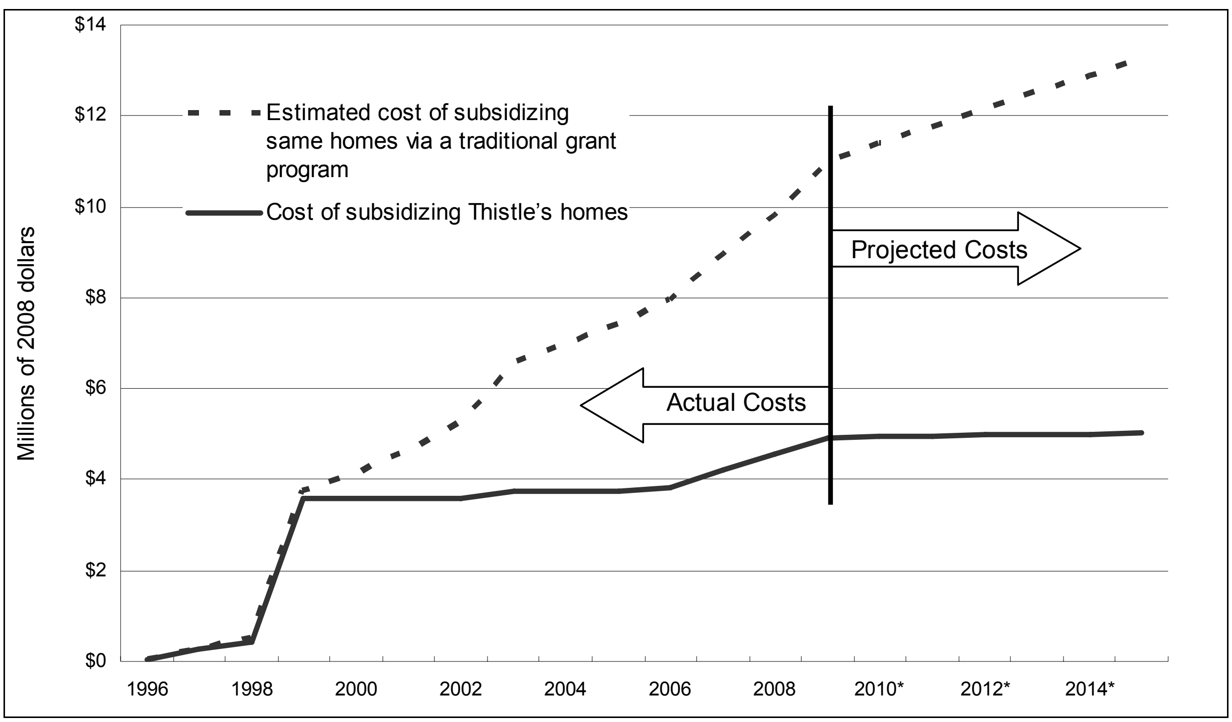
By locking the public subsidy into the home and by limiting the amount of appreciation that a reseller is allowed to keep, Thistle's shared equity program ensures that the home can be resold to lower income families without the need for additional subsidies. Thistle, with its current portfolio of 102 units, has provided ownership opportunities for 172 households. Therefore, the subsidy (the difference between the initial cost of purchasing the unit and the price paid by the initial buyer of that home) is retained and recycled in the home, allowing another family to purchase the same home at a below-market price.

This would not have happened in a direct subsidy-to-homeowner program, under which the recipient could resell his/her home at an unrestricted, market price, pocketing both the subsidy and 100 percent of the appreciation at resale. A program providing grants directly to the homebuyers with no resale restrictions would have been able to serve 69 fewer households than the 172 households served by Thistle. Conversely, to serve the same number of households as Thistle, a direct subsidy-to-homeowner program would have cost the public much more, a cost differential that increases as resale volume increases.

The total cost for homes in Thistle's program, through 2009 (in 2008 $) was $4.9 million. We define total cost as the difference between the appraised value of the 103 homes purchased or constructed by Thistle, compared to the price paid by the initial purchaser. It also includes any investments made by the program to get homes ready for resale; and any grants provided by the program to purchasers. An important clarification is that while $4.9 million is the total value of the subsidy necessary for Thistle to provide these homes at reduced prices, it is not necessarily the case that this is the value of what the program contributed toward this effort. Costs can be borne by developers (as is the case with inclusionary zoning), the shared equity program, other federal, state, or local public programs, or private individuals, lenders, or corporations making monetary or in-kind donations.

The cost of a traditional grant program would include the above costs (difference between the appraised value and initial price paid, subsequent investments, grants to homebuyers) , plus the difference between the appraised value of a home and the price paid by the buyer for all resales, rather than just for the 103 initial sales. With no restrictions on resale, in other words, a traditional subsidy-to-homeowner grant program would need subsidies for an additional 69 homes to match the number of low-income homebuyers served by Thistle. We estimate the total cost to-date (in 2008 $), for this traditional program would have been $11.0 million, or $6.1 million more than the actual cost of Thistle's shared equity program. This difference was so great partially because appraised values were especially high compared to sales prices between 2002 through 2006, when 30 of 33 sales were resales. This differential will continue to grow as resale volume increases. Assuming there are six resales per year between 2010 and 2015 (the average number of resales between 2007 and 2009), the cost of the traditional grant program by the end of 2015 would be $13.2 million, compared to $5.0 million for the shared equity program (see Figure 10).

Figure 10: Cumulative Cost of Subsidizing Homebuyers, Thistle Versus a Traditional Grant Program



Note: 2010 – 2014 reflect projected costs. The costs do not include the difference between total development costs and appraised values for resold properties

Source: Authors' analysis of Thistle client-level data.

3. Security of Tenure

In the current economic environment, where many low-income homeowners have lost their homes to foreclosure, security of tenure is an important outcome against which to judge shared equity programs. As a result of the housing meltdown, some policymakers are questioning the wisdom of programs that expand homeownership opportunities to lower income families. We investigated whether Thistle better positioned its homebuyers in mortgages that were not high cost, and whether these buyers were able to retain their homes, avoiding foreclosure and the intermediate step of delinquency.

High-cost loans (also referred to as subprime loans) often contain features that increase the likelihood of a borrower default. Some high-cost loans allow borrowers to make payments that are less than the amount required under a fully amortizing loan. In addition, many subprime loans are originated with low teaser rates that reset after a given period of time; borrowers oftentimes cannot afford payments with the new interest rate. The percentage of a homeownership program's beneficiaries who have financed their homes using subprime loans is a leading indicator of the likelihood of future delinquency and foreclosure.

Almost all of Thistle's buyers (169 of 172) took out a first mortgage to pay for their homes. All but one received 30-year mortgages from approved lenders, and 94.7 percent (160 out of 169) were fixed-rate mortgages. The median interest rate for all first-lien mortgages at origination was 6.5 percent, ranging from a low of 3.0 percent to a high of 8.8 percent. In addition, over one in three homebuyers (37.2 percent) received non-amortizing, no-interest second mortgages worth a median of $3,826.

None of the first mortgages on Thistle homes had prepayment penalties and just 1.2 percent (2 of 164) of loans for which mortgage rate was known were high cost, defined as having an interest rate more than 300 basis points above a comparable term yield. By comparison, 4.3 percent of all mortgages on one to four family homes closed in Boulder, CO between 2004 and 2006 were high cost, according to data from the Home Mortgage Disclosure Act (HMDA).[16] HMDA, which includes both lower and upper income buyers, defines high-cost loans as first-lien mortgages with an APR that is at least 300 basis points above the comparable term Treasury yield. We apply a similar definition to Thistle home loans.[17]

Using Thistle's client-level data, we calculated the share of current mortgage loans on homes

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[16] http://www.foreclosure-response.org/assets/hmda_08/hmda_state_CO_11_2009_Novice.xls

[17] Where available, we used yields on 30-year Treasury securities. This information is not available from February 2002 to February 2006. The U.S. Department of Treasury provides, for those years, the 20-year Treasury security yield, which we use as an estimate for the 30-year yield. See http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield_historical_main.shtml and http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/ltcompositeindex.shtml. HMDA high cost loans are calculated using the Treasury yield on the 15th of a given month when the interest rate was determined. (Any interest rate determined before the 15th of a month is calculated using the previous month's yield.) See Robert Avery, Kenneth Brevoort, and Glenn Canner. 2006. Higher-Priced Home Lending and the 2005 HMDA Data. For Thistle, we do not have the date the interest rate was determined, so we use the purchase date.

that are seriously delinquent—that is, more than 90 days late on their mortgage payment. One of Thistle's 102 homes is seriously delinquent (1.0 percent) at present. This is half the delinquency rate for Boulder County as a whole. As reported by TransUnion, 2.0 percent of all homeowners in the County—including upper income buyers—were more than 90 days late in paying their mortgage as of the fourth quarter of 2009.[18]

In addition, we calculated the share of all mortgages on Thistle homes (current or not) that had ever been seriously delinquent. Four of the 172 homes fell into this category (2.3 percent). By comparison, 15.0 percent of FHA-insured loans originated in 2004 had been delinquent at some point by 2008.[19]

Losing a home to foreclosure is a wrenching event for an owner, who ends up losing a place to live and any equity she has invested in the property. But a foreclosed home is also a setback for the Land Trust. In the event of foreclosure, Thistle risks losing the property from its portfolio, with the accompanying loss of all restrictions on occupancy and affordability.

None of Thistle's 102 homes were in foreclosure as of December 2009. This figure was less than the already-low foreclosure rate for Boulder as a whole, which stood at 1.1 percent in December 2009.[20] Over Thistle's 15-year history, only one Thistle home has ever gone into foreclosure (0.6 percent); this home was lost from its portfolio but Thistle recouped its investment when the land sold. This is well below national cumulative foreclosure rates: 2.3 percent of FHA-insured home loans originated in 1998 were in foreclosure after four years[21]; in 2008, 4.2 percent of FHA-insured home loans originated in 2004 were in foreclosure[22]. It should be noted that Thistle has achieved a low foreclosure rate compared to the rate among all FHA-insured homes while serving a clientele having a much lower income than the average household purchasing an FHA-insured home.

A final measure of how effective Thistle has been in not only helping low income families to *attain* homeownership but to *sustain* it is the percentage of buyers who remain homeowners five years after they purchase a Thistle home. We counted a buyer as a continued homeowner if, after five years, she remains in her original Thistle home, or has moved into another owner-occupied market-rate or shared-equity home. Of the 57 first-time buyers who bought a Thistle home more than five years ago (and for whom we have mobility information), 91.2 percent were still homeowners after five years (52 of 57). This is an impressive rate, considering that all were low-income and almost were all first-time homeowners. By comparison, previous studies have found that roughly half of all low-income homebuyers fail to remain homeowners five years after

[18] We accessed these data through the Federal Reserve Bank of New York. http://data.newyorkfed.org/creditconditions/

[19] Cumulative delinquency rates are not available for Boulder County. The FHA figures are nationwide. We calculated this figure from data at http://portal.hud.gov/fha/investment/5087-N-04_DPA_Pub_6-11-08.pdf.

[20] Data are available from HUD at http://www.huduser.org/portal/datasets/nsp_foreclosure_data.html. Colorado data is available at http://www.huduser.org/portal/datasets/excel/CO_foreclosure.zip.

[21] http://www.gao.gov/new.items/d02773.pdf

[22] http://portal.hud.gov/fha/investment/5087-N-04_DPA_Pub_6-11-08.pdf

acquiring a home.[23]

4. Mobility

Families move frequently. According to the American Community Survey, in 2008, about 13 percent of the U.S. population moved to a new address, though rates are higher for renters than homeowners. High rates of mobility nationally raise key questions for shared equity homeownership programs. Does the purchase of a shared equity home limit mobility? Are families reluctant to sell their homes because the housing market has outpaced their appreciation? Or conversely, do some types of shared equity homeownership result in fewer moves, promoting cohesive communities? To inform these questions, we assessed the rates at which Thistle participants moved and their average length of tenure. We also conducted a survey of movers to get at their motivations for moving, the destination of their move, and the type of home they moved into.

Of the 172 owners who purchased homes under the Thistle program since its inception, 69 (40.1 percent) sold their home and moved by the point of data collection in 2009. During a comparable time period and with buyers of the same first-time homebuyer status, we would have expected 31.3 percent nationally to have sold their homes and moved.[24] It does not appear, therefore, that Thistle homebuyers are moving at substantially lower rates than other first-time homebuyers. Just five of Thistle's homeowners moved prior to 2000. From 2000 to 2009, an average of 6.9 percent of owners moved each year. As shown in Figure 10, the percentage of households that moved between these years was mostly between four and twelve percent of all households.

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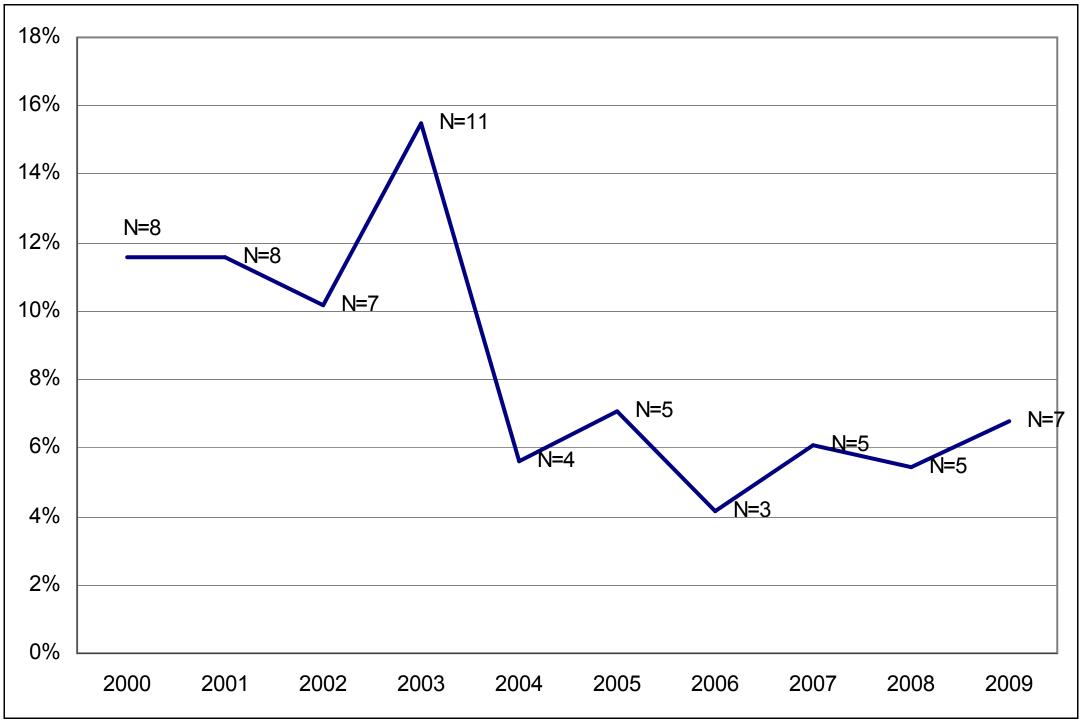
[23] Herbert, Chris and Belsky, Eric. "The Homeownership Experience of Low-income and Minority Households: A Review and Synthesis of the Literature." *Cityscape* 10 (2), 2008; and http://frpo.org/Document/Topics&Issues/Renting%20vs.%20Owning/Achieving%20American%20Dream%20Katz%20Reid.pdf.

[24] Comparison data from the National Association of Home Builders:http://www.nahb.org/generic.aspx?sectionID=734&genericContentID=110770&print=true Note that comparison data can only be calculated for those with information on whether they are first-time homebuyers; 32.0 percent of such Thistle residents have resold their home.

Figure 11: Number and Percentage of Thistle Homeowners Moving Each Year



Source: Authors' analysis of Thistle client-level data.

A different way to look at this same information is to calculate the length of tenure for families who move. Across the 14-year life of Thistle's program, the median length of tenure for movers was 3.4 years, increasing from 1.0 year in 2000 to 7.4 years in 2009. Looking both at the percentage of Thistle homeowners who moved and their length of tenure, we do not see evidence that homeowners in the Thistle program were stuck in place.

Research has established that some families move because of positive changes in a family's circumstances, such as buying a bigger home to fit a growing family or moving to be close to a new job. But mobility can also be a symptom of instability and insecurity. To gain a better understanding of why Thistle buyers moved and what their housing outcomes were, we conducted a short web-based survey of movers. Of the 69 Thistle resellers, 39 responded to the survey. For twenty-seven resellers, we were either unable to contact them or they refused to participate in the survey. Three Thistle residents died while in their Thistle home.

Of those who responded, most Thistle movers reported they moved for family reasons (10 of 19), followed by housing or neighborhood reasons (4 movers), and job reasons (3 movers); finally, two movers left for other reasons (see Table 3).[25] The most frequently cited reason for moving was a change in martial status, reported by 7 movers. This was confirmed in

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[25] Family reasons include: change in martial status, establish own household, or other family reason. Job reasons include: new job or job transfer, to look for work or lost job, to be closer to work/easier commute, retired, or other job-related reason. Housing and neighborhood reasons include: wanted to own home, not rent, wanted new or better house/ apartment, wanted better neighborhood/less crime, wanted cheaper housing, or other housing reason. Other reasons include: to attend or leave college, change of climate, health reasons, or a natural disaster.

discussions with Thistle staff, who stated that many households in Thistle's program were female-headed, and several of these women moved after getting married. Only three movers left for what may be considered negative reasons (wanting cheaper housing, a better home, or a better neighborhood). These responses paint a picture of most owners leaving their Thistle homes not in financial stress or reluctantly, but in response to family, life cycle, and employment changes. To provide context for these Thistle findings, we include in Table 3 the percentage of households who moved nationwide for these same reasons in 2008. We used data from the Current Population Survey that we restrict to more closely resemble the Thistle homebuyers.[26]

Table 3: Main Reason for Moving, Thistle and Nation

	Thistle Movers (N)	Thistle Movers (%)	Movers Nationwide (%)
Family reason	10	53	28
Job reason	3	16	19
Housing and neighborhood reason	4	21	43
Other reason	2	11	10
Total	19	100	100

Note: Data missing for 47 Thistle movers (27 survey nonrespondents, 20 item nonrespondents). Nationwide figures include movers age 18 and over, who are not claimed as a dependant, with household incomes ranging from $15,000 to $50,000.

Source: Authors' analysis of Thistle mobility survey. National data from the Current Population Survey Annual Social and Economic Supplement, 2009 release.

Nationally, most movers resettle near the home they are leaving. We found this to also be the case for Thistle movers, though they tended to move further than the national average, possibly because of high housing costs in the area. Forty-nine percent of them stayed within the same county (19 of 49), though most of those moved out of the City of Boulder (11 of 19). Six Thistle movers left Boulder County, but stayed within Colorado, and 14 households moved out of state. These figures may show a lower likelihood for local moves than nationwide estimates (Table 4).

[26] Figures include movers age 18 and over, who are not claimed as a dependant, with household incomes ranging from $15,000 to $50,000. These figures include both renters and homeowners, however.

Table 4: Destination of Movers, Thistle and Nation

	Thistle Movers (N)	Thistle Movers (%)	Movers Nationwide (%)
Within same county	19	49	68
Another county, but same state	6	15	17
Different state or country	14	36	15
Total	39	100	100

Note: Data missing for 27 Thistle movers (all survey nonrespondents). Nationwide figures include movers age 18 and over, who are not claimed as a dependant, with household incomes ranging from $15,000 to $50,000.

Source: Authors' analysis of Thistle mobility survey. National data from the Current Population Survey Annual Social and Economic Supplement, 2009 release.

Finally, we asked movers about the tenure of housing they moved into after reselling their Thistle home. This measure is an important outcome of residential and economic mobility. The overwhelming majority of movers reported transitioning into another owner-occupied home (27 out of 32). Of these, most purchased market-rate housing. With proceeds, at the median, of just over $13,000, these movers had accumulated funds for a moderate down payment on their next home. Additionally, as several Thistle homeowners moved after getting married, they may have benefited from increased household earnings. Thirteen percent of movers (4 of 32) shifted to rental housing subsequent to leaving their Thistle home.

Table 5: Type of New Unit for Thistle Movers

	Thistle Movers (N)	Thistle Movers (%)
Owner-occupied, market rate housing	23	72
Owner-occupied, restricted resale housing	4	13
Market-rate rental housing	4	13
With family	1	3
Total	32	100

Note: Data missing for 34 Thistle movers (27 survey nonrespondents, 7 item nonrespondents)

Source: Authors' analysis of Thistle mobility survey.

V. Conclusion

This case study analyzes Thistle's program of providing homeownership opportunities to low- and moderate income families. The findings suggest that the land trust model does an outstanding job of providing sustainable homeownership to lower income families. Of the 172 families who purchased Thistle homes, 85.0 percent of them were first-time homebuyers. Despite restrictions on the appreciation that they could realize upon resale, Thistle homebuyers who sold their home realized a median internal rate of return of 22.1 percent. This high average meant that most resellers saw returns well above what they would have earned if they placed their down payment in either the stock or bond market, though only 73.4 percent had higher returns than they would have seen in either. A high percentage of resellers (72 percent) invested their earnings in purchasing another house or condominium, stepping into market-rate homeownership for the first time. Upon resale, the required minimum income, as a share of area MFI, was 1.2 percentage points lower, indicating that Thistle's units gained affordability.

Although Thistle homeowners, on average earn 45.5 percent of the median income in Boulder, only 1 out of 172 homeowners (0.6 percent) had their loan go into foreclosure. In large part, the low foreclosure rate reflects the type of loans received by Thistle homebuyers: most purchase loans are 30-year, fixed-rate mortgages, and all loans had a median interest rate of 6.5 percent. Rather than use high-cost loans, Thistle homebuyers finance their purchases with mortgages that are underwritten with standards that allow for sustainable homeownership over time.

Given the recent foreclosure crisis, the program managed by Thistle provides a potential model for increasing homeownership opportunities to families who may not be able to afford market rate homes, and does so in a manner that promotes wealth creation without placing these buyers at an undue risk of losing their homes.