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Harvard University

Residential Conversions

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Abstract

The stock of residential units in the United States is constantly changing as units are added, demolished, or converted. This paper looks at the conversion of units: larger units split into smaller units; smaller units merged into larger units; and nonresidential facilities converted to residential uses.

Using the Components of Inventory Change (CINCH) reports, it is estimated that about 170,000 housing units annually were adapted through conversions over the 1980 to 1993 period. Since splits and merges, as well as conversions to and from residential uses, largely offset each other, these activities have little impact nationally on the overall number of housing units, and therefore generally are not included in analyses of housing supply.

However, they can influence the stock and availability of certain types of units in selected areas. Splits and merges typically occur in urban areas, and are concentrated in older structures in the Northeast. Conversions from nonresidential facilities most commonly occur in rural areas in the South. Conversions often are associated with changes in household composition, providing an affordable way of adapting homes. It is estimated that conversions generate about $2-3 billion a year in home improvement activity.

Residential Conversions

by

Julia Reade and Zhu Xiao Di

Residential Conversions and the Housing Stock

The characteristics of the American housing stock are continually changing. New construction and demolition cause most stock additions and losses. However, residential conversions are important components of the changing inventory. A residential conversion takes place whenever the number of housing units within a structure changes. Residential conversions include housing unit splits and merges (which reconfigure residential spaces), and also include conversions from nonresidential uses to housing units.

Splits and merges reconfigure housing space to change the number of units. At one extreme, reconfigurations can be so complex as to require structural alterations to entrances, kitchens, baths, and other interior spaces. At the other, they can be as simple as locking or unlocking a connecting door.

Conversions of nonresidential space include any changes that convert nonresidential space within a structure to housing. This could be an entire building, such as converting a factory to an apartment building. More often, these are small projects that convert a small space, such as a garage or a basement to residential units.

Between 1980 and 1993, the housing stock grew from 89.2 to 106.6 million units. As shown in Table 1, most change was from new construction and demolition. Of the 89 million housing units existing in 1980, only 79 million units were the "same"[1] in both 1980 and 1993. In 1993, there were 107 million units in the housing stock; 27 million (over one-fourth) were recorded as added or converted since 1980; nearly 2 million of these housing units were recorded as adapted through residential conversions since 1980.

[1] "Same" units did not show any status change from 1980 to 1993. No information is available on their status in the interim.

Table 1: Sources of Housing Stock Change

Components of Inventory Change, 1980 – 1993 (in thousands)

	1980 Stock	1993 Stock	Net Change	Gross Change
Same	79,168	79,168	0	0
New Construction	0	21,309	21,309	21,309
Demolition / Disaster	3,305	0	-3,305	3,305
Other*	4,816	4,233	-583	583
Conversions				
Split	463	1,000	537	537
Merge	808	371	-437	437
From Nonresidential	0	530	530	530
To Nonresidential	712	0	-712	712
(Conversion Subtotal)	1,983	1,901	-82	2,216
Total Of All Components	89,272	106,611	17,339	27,413

* Includes house / mobile home unit moving in or out; exposed, damaged, or condemned units; and any other changes not categorized above.

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Stock-increasing conversions (splits and conversions of nonresidential spaces to housing) happened at a pace similar to stock-decreasing conversions (merges and conversions from housing to nonresidential spaces). Therefore, despite their moderate volume, residential conversions had a very small impact on the overall housing stock. Between 1980 and 1993, only 2.2 million housing units were affected (averaging over 170,000 housing units a year being converted). During the same period, conversions accounted for a net loss of just 82,000 units (just over 6,000 per year.)

Despite a small impact at the national level, however, residential conversions are important to certain subsets of housing and the population because they are an important method of adjusting the housing stock to changing housing demand.

Significance of Residential Conversions

In cases where the composition of an individual household is changing, conversions offer relatively quick means of adapting homes to these changing needs. Studies show that home

conversions are a method that allows an extended family to share a home or provides space for a caretaker (Hare, Hollis, and Guttman 1984).

In areas where the broader composition of households is changing, conversions offer alternatives to the demolition/new construction cycle (City of Columbus Community Development Department 1984). Conversions are less disruptive than demolition and new construction, making them a better strategy for reconfiguring homes in neighborhoods with evolving needs (Goldberg 1984; Hodges and Goldman 1983). Therefore, conversions are likely to be a preferred strategy for providing housing in established, denser neighborhoods.

In addition to being less disruptive, conversions are likely to be more affordable than new construction. Particularly important for low- and moderate-income populations, adapting existing homes to emerging needs is generally a cost-effective strategy. Furthermore, rental housing is often the most affordable option for low- and moderate-income households, and conversion activity traditionally has been concentrated in the rental stock.

Finally, since residential conversions involve modifications and potential improvements to existing homes, they may be a significant source of residential remodeling activity. Current measures of home improvement activity are estimated through surveys of spending by homeowners and rental property owners. Since conversions often occur in unoccupied units, or even in entire structures that may be classified as nonresidential, it is likely that the expenditures involved in converting these units are not fully included in the standard measures of residential improvements and repairs.[2]

Trends and Patterns in Conversion Activity

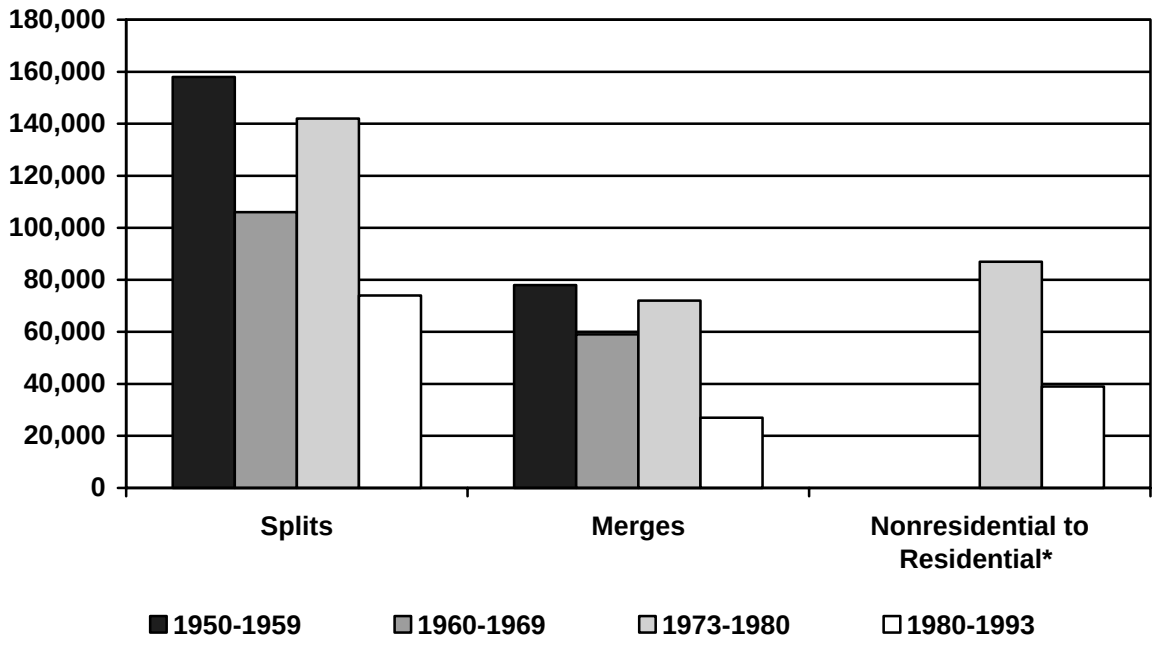
Information on splits and merges has been collected periodically since 1950. In general, the number of splits and merges has declined since 1950, from 236,000 per year on average during the 1950s to 101,000 per year on average over the 1980 to 1993 period, except for a surge in the late 1970s. Conversions of nonresidential spaces to residential uses have been covered in the Components of Inventory Change (CINCH) reports just since 1973. The

[2] The American Housing Survey measures spending for repairs and improvements only for owner-occupied homes, and therefore misses a substantial portion of conversion activity. The survey of residential improvements and repairs (the C-50 reports) attempts to measure spending in rental and vacant units, but likely misses activity in units converted from nonresidential uses.

activity level for conversions to residential uses has declined from 87,000 per year on average in the late 1970s to 39,000 per year on average over the 1980 to 1993 period.

As will be discussed, conversions predominantly affect the rental stock. Conversion trends generally have matched multifamily construction activity. Multifamily construction starts have declined as a share of overall construction activity in recent decades. However, they increased to 625,000 per year on average in the 1970s from under 500,000 in the 1960s. (No data are available for the 1950s because multifamily starts were not separated from single-family starts.) Splits and merges followed this same trend, increasing over the 1973-1980 period after declining during the 1960s. In the early 1980s, multifamily construction starts fell off to just over 400,000 per year on average, well below the levels of the 1960s. The mid-1980s witnessed a surge of multifamily construction to a record high, between 600,000 and 700,000 a year, and then quickly dropped to merely 170,000 a year in the early 1990s. Residential conversions also substantially dipped accordingly during the 1980-1993 period.

Figure 1: Overall Decline in Residential Conversions



* No Data Available 1950-1959, 1960-1969

A number of interesting patterns emerge from this analysis. As will be shown, conversions are not distributed evenly throughout the country or within metropolitan areas. Splits and merges usually occur in urban areas and are concentrated in the Northeast. Conversions from

nonresidential structures most often take place in rural areas and in the South. In these areas, conversions have a much stronger impact on the changing housing stock.

Conversions are also disproportionately concentrated in atypical structures. The structures are very often older and of poor quality. In addition, many conversions take place in 2-4 unit structures.

Conversions have a stronger impact on renter-occupied stock than owner-occupied stock, and therefore create a shift in the balance of renter-occupied and owner-occupied stock.

Data also show an interesting relationship between conversions and housing affordability. A high proportion of converted units is occupied by lower-income households. However, conversions overall do not appear to increase the number of affordable units in the housing stock.

These patterns suggest that restrictions to new construction may encourage renovations and residential conversions. If demand exists for a certain type of housing in a built-up area, conversions may be the most efficient way to create these units.

Evidence suggests that splits and merges are transitions in a common housing change cycle. That is, it is common for a unit to split and later recombine (i.e., merge). As will be shown, these transitions appear to occur at times of household demographic change.

Characteristics of Converted Units

Regional and Metropolitan Distribution

Conversions are spatially concentrated. As shown in Table 2, geographic patterns for conversions differ from the overall distribution of housing units in the United States.

Splits and merges are most common in central cities and suburbs in the Northeast. These areas contain 35 percent of splits, but only 17 percent of all housing units. Splits are rarest in the South's suburbs. Although central cities contain only 30 percent of all housing units, they contain 51 percent of merged units.

Table 2: Conversions Highly Concentrated

Percent Distribution of Housing Stock Types by Region and Geography (Central City, Suburban, or Rural), 1980-1993

		All Units	Same Units	New Units	Units Created by Conversions		
					Split	Merged	From Nonresidential
Total	All	100	100	100	100	100	100
	Central City	30	34	22	39	51	23
	Suburb	46	43	56	42	31	28
	Rural	24	23	22	20	18	49
Northeast	All	20	22	12	40	37	28
	Central City	6	8	1	18	18	8
	Suburb	11	12	8	17	16	6
	Rural	3	3	2	5	3	13
Midwest	All	24	26	18	27	28	15
	Central City	7	8	3	9	15	2
	Suburb	10	10	9	10	6	3
	Rural	7	8	5	8	6	9
South	All	36	32	46	16	20	45
	Central City	10	10	10	5	13	9
	Suburb	16	12	26	6	4	16
	Rural	10	9	11	5	4	20
West	All	21	20	24	17	14	13
	Central City	7	8	7	7	6	4
	Suburb	10	9	13	8	5	3
	Rural	4	3	4	1	4	6

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Conversions of nonresidential spaces, on the other hand, are common in the South and in rural areas. Although about one-quarter of U.S. housing is in rural areas, almost half of conversions from nonresidential use occur there. Most occur in the suburban and rural South, as well as rural Northeast. The rural Midwest and Northeast central cities also have high volume.

Structure Age

Limitations against new construction in some areas may encourage renovations and residential conversions. If demand exists for a certain type of housing in a built-up area, conversions may be the easiest way to create these units. Conversions often occur in older structures and are more common in areas dominated by old stock. For example, between 1980 and 1993, only 1 percent of new construction took place in the Northeast central cities, but 18 percent of splits, 18 percent of merges, and 8 percent of conversions of nonresidential spaces occurred there.

As seen in Table 3, in 1993, the median year that U.S. housing units were built was 1964. In contrast, splits and merges occur predominantly in pre-war structures. Conversions from nonresidential uses that produce renter-occupied units (which account for 65 percent of conversions of nonresidential space) are also in older units.

Table 3: Conversions Usually Occur in Older Structures

Percent Distribution by Year Built, 1993

			Before 1940	1940-1970	After 1970	Median
Rent		Own	18	36	46	1964
			25	34	41	1963
Same Units		Own	24	50	26	1958
		Rent	30	43	27	1956
Units Created by Conversions	Splits	Own	48	41	11	1944
		Rent	59	34	7	1938
	Merges	Own	58	34	8	1939
		Rent	53	39	8	1939
	From Nonresidential	Own	28	26	46	1966
		Rent	41	31	28	1946

Rows sum to 100%, excluding median.

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Structure Quality

Though most housing units are not reported to have structural problems, there is a strong relationship between reported structural conditions and housing type. Measured problems relate to plumbing, heating, electric, upkeep, and hallways. As shown in Table 4, splits and

conversions from nonresidential structures had very high rates of both moderate and severe problems. Merged units had structural problems at rates just higher than unchanged units. Much variation is likely due to structure age. As shown earlier, merged and split units are generally in older structures. However, this does not explain the very high rates of structural problems for split units.

Table 4: Conversions Have High Rates of Structural Problems

Proportion of Occupied Units with Structural Problems and Degree of Problems

	Same Units	New Units	Units Created by Conversions		
			Splits	Merges	From Nonresidential
None	93	97	83	91	87
Moderate	5	2	10	5	8
Severe	2	1	7	3	5

Columns sum to 100%.

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Poor data on structural conditions in 1980 make it difficult to determine whether conversions lead to stock deterioration or happen most often to stock of poor quality. However, with either possibility, it seems likely that conversions occur less frequently in higher-quality stock.

Conversions Common in Multi-Unit Structures

Units in the 1993 stock that had been split were concentrated in 2-4 unit structures. Merges follow a pattern closer to the distribution of the overall stock. Sixty-nine percent of merges created single-unit structures and 18 percent created 2-4 unit structures. This is a moderately high proportion in 2-4 unit structures. Sixty-one percent of conversions of nonresidential space created single-unit homes, and 22 percent created 2-4 unit structures. Again, this is a moderately high proportion of conversions in 2-4 unit structures.

Table 5: Conversions Often Affect 2-4 Unit Structures

Proportion According to Units in Structure, 1980 and 1993

1980						
		All Units	Same Units	Units To Be Converted		
				Split	Merged	
Single-Unit	Own	87	90	64	36	
	Rent	30	30	36	10	
2-4 Units	Own	4	4	32	53	
	Rent	23	23	53	60	
5+ Units	Own	9	6	4	11	
	Rent	47	47	11	30	
1993						
		All Units	Same Units	Units After Conversions		
				Split	Merged	From Nonresidential
Single-Unit	Own	87	93	---	74	92
	Rent	34	38	---	45	43
2-4 Units	Own	3	3	98	13	4
	Rent	22	22	89	31	32
5+ Units	Own	10	4	2	9	4
	Rent	44	40	11	24	25

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Splits, Merges, and Household Composition Change

As will be shown, splits and merges are likely often two transitions in a housing cycle affecting a single housing unit. Many splits are probably temporary and soon reversed by merges. Most of these transitions appear to occur to single-unit dwellings when household composition changes: the housing unit splits to accommodate new living arrangements and the split-off unit is later reabsorbed when the household composition changes again.

Little information is available on the people who decide to make residential conversions. Data are collected from occupants, who are not necessarily owners. As noted, renters occupy a high proportion of units that have been converted.

In 1980, two-thirds of to-be-split units were owner-occupied. There are two likely decision-making scenarios. First, owner-occupants could decide to split their own unit. Second, owner-occupants could sell their unit to someone else who subsequently splits it.

Table 6: Conversion Householders Have Lived in Those Units for a Long Time

Year Householder Moved In by Tenure and Unit Type

			Moved In After 1980	Moved In 1960-1980	Moved In Before 1960
All Units		Own	58	31	10
		Rent	91	7	2
Same Units		Own	45	41	13
		Rent	89	8	1
Converted Units	Splits	Own	31	35	30
		Rent	74	8	17
	Merges	Own	52	27	19
		Rent	61	21	20
	From Nonresidential	Own	87	13	0
		Rent	98	2	0

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Duration of residence data shown in Table 6 illuminates which of these two possibilities is more likely. As of 1993, a full 65 percent of current household heads in owner-occupied splits had moved into the unit before 1980. In fact, 30 percent had moved in before 1960. (By contrast, in "same" housing, 55 percent moved in before 1980 and only 13 percent before 1960.) These long periods of residence suggests that owner-occupants decide to split their own units and stay in one of the subsequent units.

This conclusion is further supported by looking at the proportion of 1993 owner-occupants of units who earn a significant portion of their income from rentals. As shown in Table 7, two-thirds of households occupying units that had been split have income from rentals. This proportion is markedly higher than the 12 percent average among all owners.

Table 7: Owners of Units That Had Been Split Very Likely to Own Rental Property

Proportion of Owner-Occupied Households with Income from Rental Properties

	All Units	Same Units	Converted Units		
			Split	Merged	From Nonresidential
Rental Income	12	12	67	24	18

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Who moves into the newly created split-off units? Again, duration of residence shown in Table 6 offers some clues. For renters of split units, 25 percent moved in before 1980, and 17 percent moved in before 1960. In "same" renter-occupied units, only 9 percent moved in before 1980, and 1 percent before 1960. This shows a surprisingly high level of occupant stability accompanying changes to the unit. This suggests that many renters of split-off units had already lived in the original to-be-split unit.

In 1993, ten percent of units that had been split or converted from nonresidential space lacked full kitchen facilities. This further suggests that many of these units are temporary and may have close relationships with an abutting unit.

More evidence suggests that splits match demographic fluxes in household composition. CINCH provides data on household composition change in the two years preceding the 1993 survey. As shown in Table 8, owner-occupied units that had been split had a high rate of composition change. Twenty percent had at least one member move into the unit.

Table 8: Owner-Occupied Split Units Have Very High Occupant Mobility

Owner-Occupied Household Had Member(s) Move In or Out, 1991-1993

	All Units	Same Units	Converted Units		
			Split	Merged	From Nonresidential
Any Move	11	8	20	10	16
… Joined members already there	4	4	10	7	3

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Notably high was the proportion of households with moves where individuals joined household members already there. As already shown in Table 7, split units have remarkably high levels of duration of residence for the householder. These contrasting mobility findings imply that although the "main" occupants of split units are there for a long time, there are high levels of changes in household composition associated with splits. This further supports the idea that splits occur at times of household composition change. (No comparable statistic of exiting household members is available for merged units.)

This high level of recent mobility is suggestive of another characteristic of splits and merges. If splits are quickly reversed (i.e., merged), most units classified as splits in 1993 would be those that were split recently before the survey. These recent splits would also be associated with high recent migration rates.

There is evidence for the scenario that the owner-occupants of to-be-split units leave their unit and new owners make the decision to split the unit. This is supported by the fact that 15 percent of the owner-occupants of to-be-split units in 1980 were over 75 years old. In the rest of the population, only 8 percent were this old. Because this is a high-mortality population, it is likely that many of these 1980 occupants were no longer in the units in 1993. Additionally, it is also possible that elderly occupants split their units to allow family members to move in to assist them (Pollak 1994).

Evidence on merges is consistent with this general explanation of a split / merge cycle, but is not as strong. As shown in Table 7, almost half of owner-occupants of merged units in 1993 have lived there since 1980. This suggests that in many merges, one unit absorbs an abutting unit; it is not that the two units are purchased, combined, and then resold. Even renters of merged units had long lengths of residence. Over 40 percent of renters in after-merged units

in 1993 had moved to that unit before 1980. A full 20 percent had moved to the unit before 1960.

Age of household head also offers some evidence to suggest why these abutting units become available. In 1980, the median age for an owner-occupant to-be-merged unit was 61 years old. In fact, 30 percent of these household heads were over 75 years old. As was stated earlier, it is unlikely that these homeowners are still living in the units by 1993.

All this supports the idea that splits and merges occur most often to families in times of composition change. Unfortunately, no micro-level data allow further testing of this hypothesis.

Impact of Conversions

Conversions and Housing Affordability

Overall, conversions eliminate about as many affordable units as they create. As shown in Table 9, there is a wide variation in median monthly costs for each unit type. This means different categories of conversions do not affect affordable housing equally.

Splits increase the number of less expensive housing units when compared to new construction, but not when compared to units with no change. The median monthly cost of new housing was $674 in 1993, and it had higher quality (as measured by occupant reports of deficiencies) and more space than split units. In both 1980 and 1993, split units and unchanged units had median costs that were not significantly different from each other.

Merges diminish the available number of affordable housing units. (However, due to data limitations, it is impossible to determine whether merges create affordable large units.) The median monthly cost of a 1980 to-be-merged unit was only $206, which was only 65 percent of the cost of units with no change. These were generally the least expensive units available. In fact, the monthly costs for to-be-merged units were not significantly different from to-be-demolished units. After merges, these became very expensive units, costing $609 per month, which was 30 percent higher than unchanged units.

Table 9: Conversions Less Expensive than New Housing

Median Monthly Cost By Unit, 1980 and 1993

1980					
	New Units	Same Units	Units To Be Converted		
			Split	Merge	
Total	…	317	312	206	
Own	…	407	439	*	
Rent	…	249	247	197	
1993					
	New Units	Same Units	Units After Conversions		
			Split	Merge	From Nonresidential
Total	674	470	468	609	329
Own	777	455	599	688	312
Rent	571	485	456	442	331

* Too few counts to provide median.

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Conversions from nonresidential use clearly benefit the lower-cost market. In 1993, the median monthly cost of one of these units was only $329. This is 70 percent of the cost of unchanged housing and only 48 percent of new construction.

Effect on lower-income housing can also be assessed through examination of household income by unit type. Nationally, 15 percent of all households were below the poverty line in 1993. Occupants of unchanged units and merged units matched this 15 percent rate. Twenty percent of households in splits were below the poverty line. Households in units that had been converted from nonresidential space exceeded all other unit types: 29 percent were below the poverty line.

This clustering is more dramatically shown through the lowest quartile of household incomes. In 1993, nationally, about one-quarter of household heads earned less than $15,000. As shown in Table 10, units that had been split or converted from nonresidential use were disproportionately populated with households earning less than $15,000.

Table 10: Residents of Units Converted from Nonresidential Use and Splits Likely To Be in the Lowest Income Quartile

Percent of Units Occupied by Households in Lowest Income Quartile, 1993

	New Units	Same Units	Units Created by Conversions		
			Split	Merged	From Nonresidential
Percent of Units	16	26	37	19	43

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Although a high proportion of lower-income households live in converted units, evidence does not support that conversions necessarily benefit this population. Conversions appear to take as many, if not more, low-cost housing units from the stock as they create. As shown in Table 11, in 1980 the median income for households in to-be-split or to-be-merged units was $12,646. This was only 71 percent of the national median. In 1993, split and merged unit occupants had median incomes of $25,753; this was 89 percent of the national average. This implies that split and merged units housed relatively higher income households than they had before. Even when units converted from nonresidential structures are included this pattern holds. The median income for households in all three types of units was $24,454, which was 85 percent of the national average.

Table 11: Conversions Most Strongly Affect Lower-Income Rentals

Median Household Income by Unit Type 1980 and 1993 ($)

1980						
	All	Same		Units To be Converted		
				Split	Merged	
Own	20,588	21,231		19,866	15,977	
Rent	11,535	11,986		12,168	9,534	
1993						
	All	Same	New	Units After Conversion		
				Split	Merged	From Nonresidential
Own	36,716	34,826	47,907	36,123	45,031	29,451
Rent	21,025	20,516	25,925	17,641	21,587	13,167

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

Conversions and the Rental Stock

As shown in Table 12, conversions overall have a disproportionately strong effect on the number of rental units. Nationally, one-third of all housing is renter-occupied. In contrast, three-quarters of units that had been split and two-thirds of units that had been converted from nonresidential use are renter-occupied. Units that had been converted since 1980 made up 15 percent of 1993 added or changed rental stock.

Table 12: Conversions Shift Tenure Patterns

Renter-Occupied as Percent of Occupied Units

1980					
	All Units	Same Units	Units to be Converted		
			Split	Merge	
Percent Renter-Occupied	34	33	34	58	
1993					
	All Units	Same Units	Units After Conversions		
			Split	Merge	From Nonresidential
Percent Renter-Occupied	34	34	76	33	65

Source: U.S. Bureau of the Census, *Current Housing Reports, American Housing Survey Components of Inventory Change: 1980-1993, United States and Regions, H151/93-2.*

To-be-split units were generally owner-occupied, then became renter-occupied after the conversion. To-be-merged units were mostly renter-occupied, then shifted to mostly owner-occupied. Unfortunately, no data are available to link individual units over time to see exactly how the tenure shifts.

Remodeling Activity Generated by Conversions

Although no remodeling data for residential conversions are directly available, other suggestive data can be used. There is a broad range of the amount of remodeling that occurs with each conversion. At most, there can be structural alterations to entrances, kitchens, baths, and other interior spaces. At the least, a conversion could occur from simply unlocking a connecting door. Due to the definition used in the American Housing Survey, structural changes are not required for classification as a conversion. Furthermore, if conversions are done with a temporary intent, it is unlikely that owners would invest heavily in restructuring a unit.

Two different estimation procedures are presented in Appendix A. One estimates spending on units converted from nonresidential use based on an industry source with cost data. The second estimates the volume and cost of bathrooms and kitchens likely added in splits and nonresidential conversions. Although these estimates are not directly comparable and have a wide distribution, they suggest a range of $1.5 - 4.5 billion spent each year on remodeling associated with residential conversions.

Conclusion

Residential conversions have a much stronger impact on housing stock in certain areas and locations than in others. Lower costs of residential conversions allow people to adapt structures to changing household needs. Conversions are often associated with household demographic change. Splits and merges appear to create a temporary cycle for expansion and contraction of a unit as the occupants' needs change.

Residential conversions offer an alternative to the cycle of demolition and new construction. Because so many conversions are in older stock, residential conversions may keep fringe housing from being lost to abandonment or demolition. They are one of few options for housing stock change in densely settled urban areas with older stock.

Both large, institutional owners of rental properties and average homeowners can convert homes. Average homeowners may not be able to afford a newly constructed unit, but are very likely to afford modifications to their own residences.

The high renter-occupancy rates and low conversion costs of converted units make them most important to renters and lower-income households. These households are most likely to live in a to-be-converted unit and a unit that has been converted.

Residential conversions also generate remodeling activity. Through two estimation techniques, it appears that conversions stimulate somewhere in the range of $1.5 - 4.5 billion of remodeling annually. Although not a large portion of the remodeling industry, it is an important niche market.

A report covering residential conversions during the 1985 to 1995 period in two-year intervals is scheduled to be released in 2000. These narrow time-spans could substantially improve residential conversion frequency estimates. Furthermore, it would be possible to examine household conditions nearer the time of conversion.

Further research on residential conversions would strongly benefit from micro-level data. Such data would illuminate the exact conditions associated with each conversion. If data were linked over time, it would be possible to determine the duration of these conversions and whether or not there is truly a split / merge cycle. Until then, research must rely on the more suggestive nature of the current data.

Appendix A: Estimates of Remodeling Expenditures from Residential Conversions

Two procedures are used to develop estimates of the amount of spending on residential conversions. They suggest estimates of annual spending from $1.5 - 4.5 billion. These estimation procedures are discussed below.

From-Nonresidential Conversions: F.W. Dodge Estimates

Data exist for units converted from nonresidential structures. F. W. Dodge, a division of The McGraw-Hill Companies, collects data on construction contracts. Between 1983 and 1990, Dodge collected data on entire nonresidential structures converted to apartment buildings. (As noted earlier, this is unlikely to be a typical form of conversions from nonresidential space; 60 percent of conversions from nonresidential space create single-unit dwellings.)

Dodge data are probably not representative of national patterns because they focus on large, metropolitan projects. This and other qualities make it difficult to use as a supplement to CINCH reports.

However, using Dodge data for conversion costs, it is possible to standardize the information and create a national estimate. The Dodge data state how many units were in the structure that was converted. The distribution of these units can be standardized against the distribution in CINCH. Using the median value for each structure size, estimates are formed for the annual amount of spending on these conversions from nonresidential use. This is shown in Table A1.

Table A1

Standardized Dodge Data Imply $1.7 Billion Annually

Remodeling Costs for Nonresidential Conversions

Units In Structure	Dodge Count	Dodge Median Value / Unit ($000)	CINCH Count (000)	Implied Value ($ billion)	Standardized Average
single-unit	12	50	321	16.1	
2 to 4	242	27	118	3.2	
5 to 9	218	30	33	1.0	
10 to 19	247	36	8	0.3	
20 to 49	482	34	23	0.8	
50 or more	382	40	27	1.1	
Total	1583		530	22.4	$42,219
(per year)				1.7	

Because Dodge data are more likely to measure the high-end of the market, median prices are probably skewed upward. However, as discussed earlier in this paper, CINCH underestimates frequencies of conversions. These two biases partially counteract each other in affecting the quality of the $1.7 billion annual estimate for conversions of nonresidential structures to residential units.

Given the relative frequencies of all conversions and the likely amount of change required for each one, it appears likely that conversions from nonresidential spaces account for about 40 percent of total spending on conversions. According to this estimate, the total spending would be $4.3 billion.

All Conversions: Estimates Based on Baths and Kitchens Alone

As another estimation procedure, we can estimate some minimum changes that would be required in standard conversions. For example, in 1980, just over one-third of the to-be-split units had two or more bathrooms. Therefore, we can conclude that new bathrooms had to be installed for the other two-thirds of split units. This implies that 314,000 bathrooms were added in split activities between 1980 and 1993. In 1997, the average cost of creating a finished bathroom from unfinished space was about $8,040. That translates to at least $187 million worth of bathrooms added in splits annually.

It is also likely that bathrooms must be created for conversions from nonresidential use. This suggests that the 530,000 conversions from nonresidential use between 1980 and 1993 led to $316 million worth of bathrooms added in conversions from nonresidential use annually.

Another major change would affect kitchens. All three forms of conversions would require the installation or removal of a kitchen. This implies that 537,000 kitchens were added in splits; possibly 437,000 were removed in merges; possibly 530,000 added in conversions from nonresidential space. According to Joint Center analyses of the American Housing Survey, in 1997, the average cost of creating a finished kitchen from unfinished space in owner-occupied homes was $5,365. That translates to at least $424 million worth of kitchens added annually in splits and conversions from nonresidential use.

These bath and kitchen estimates combined generate $927 million in remodeling spent annually. It is likely that at most, these modifications account for 60 percent of total conversion remodeling costs. This suggests that a lower-bound estimate for total annual spending on conversions is $1.5 billion.

Appendix B: Description of Data

The best data on residential conversion activities are available from a series of reports called "Components of Inventory Change," or CINCH. The U.S. Bureau of the Census and HUD produces the reports.

The format for these data is summary tables. No micro-level data are available. This makes descriptive work possible, but hypothesis testing difficult.

The data link two waves of household surveys and compares units at the start and end of the period. The data do not compile a running tally of residential conversions during this period. As shown, it is likely that many residential conversions exist for a short time and are soon reverted to their previous state. Therefore, estimates of these activities will be very low.

At the time of publication of this paper, the most recent data available are for the period between 1980 and 1993 in the CINCH report, "*American Housing Survey: Components of Inventory Change: 1980-1993*." Most data used in this working paper come from this report. (Newer data covering the 1985 to 1995 period in two-year intervals are scheduled to be released in 2000.)

CINCH reports offer excellent data on characteristics of households inhabiting units at the start and end of its period. We can take advantage of this data to examine changes in household characteristics associated with conversions. One weakness is that it generally has no information on the people who actually decide to do the conversions. This makes a decision-making analysis very difficult.

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