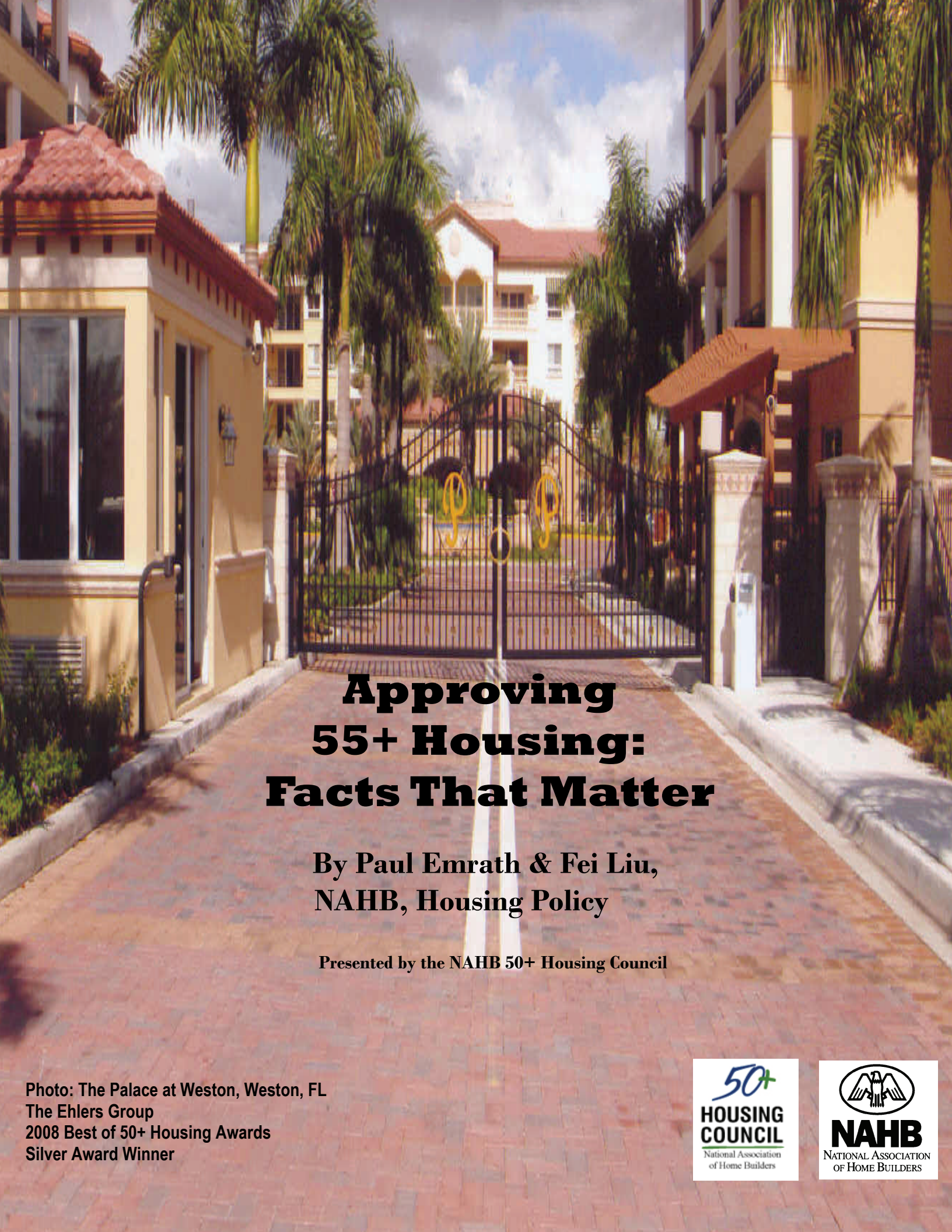


Approving 55+ Housing: Facts That Matter

By Paul Emrath & Fei Liu,
NAHB, Housing Policy

Presented by the NAHB 50+ Housing Council

Photo: The Palace at Weston, Weston, FL
The Ehlers Group
2008 Best of 50+ Housing Awards
Silver Award Winner

50+ HOUSING COUNCIL
National Association of Home Builders

NAHB
National Association of Home Builders

Approving 55+ Housing: Facts That Matter

Authors

Paul Emrath, Assistant Staff Vice President of Housing Policy Research, Housing Policy Department, National Association of Home Builders, Washington, D.C.

Fei Liu, Housing Policy Economist, Housing Policy Department, National Association of Home Builders, Washington, D.C.

About the Authors

Paul Emrath, Assistant Staff Vice President of Housing Policy Research. At NAHB, Emrath's responsibilities include conducting statistical and economic research on a wide variety of housing policy topics, estimating the economic impact of home building, and generally overseeing the research activities of the Housing Policy Department. Since joining NAHB in 1992, he has developed many of the methods NAHB uses to analyze government programs and housing market data, produced more than 400 customized reports analyzing the impact of residential construction in various metropolitan areas, non-metropolitan counties and states across the country, and published more than 100 research articles. His articles "Seniors in the Market for Housing: State Forecasts Through 2006" (NIC Review, Vol. 6, November 1998) and "The American Housing Survey: A Valuable New Information Source for Seniors Housing" (Seniors Housing & Care Journal, Vol. 10 No. 1, 2003) won National Investment Center awards for original research in the field of 50+ housing.

Before his promotion to Assistant Staff Vice President, Emrath worked for NAHB as Housing Policy Analyst (1992-1994), Director of Survey Analysis (1994-1995), Senior Economist (1995-1999) and Regulatory Economist (1999-2001). Prior to joining NAHB, he taught economic theory and statistics at the University of Wisconsin-Oshkosh. Emrath has a Ph.D. in Economics from the University of Wisconsin-Milwaukee.

Fei Liu, Housing Policy Economist, joined NAHB's Housing Policy Department in 2006. She also earned a Ph.D. degree in Economics from Indiana University in 2006.

Acknowledgements

The authors would like to thank the NAHB 50+ Housing Council's Research Committee for the contributions in made to this project. The Research Committee reviewed drafts of each chapter and provided valuable insights that significantly improved the final product. During this process, the Committee was chaired by Steve Wattenbarger, Bellevue, Washington.

About the 50+ Housing Council

The NAHB 50+ Housing Council exists to encourage the development and management of an adequate supply of housing for 50+ consumers by serving its members and affiliated local councils through education, membership, research, communication, information, advocacy and networking products and services. As information providers, we are committed to compiling and sharing strategic housing solutions that optimize individual and corporate achievements of NAHB and 50+ Housing Council members as they strive to meet the housing needs of 50+ consumers in the United States. For more information or to join, visit www.nahb.org/join50plus.

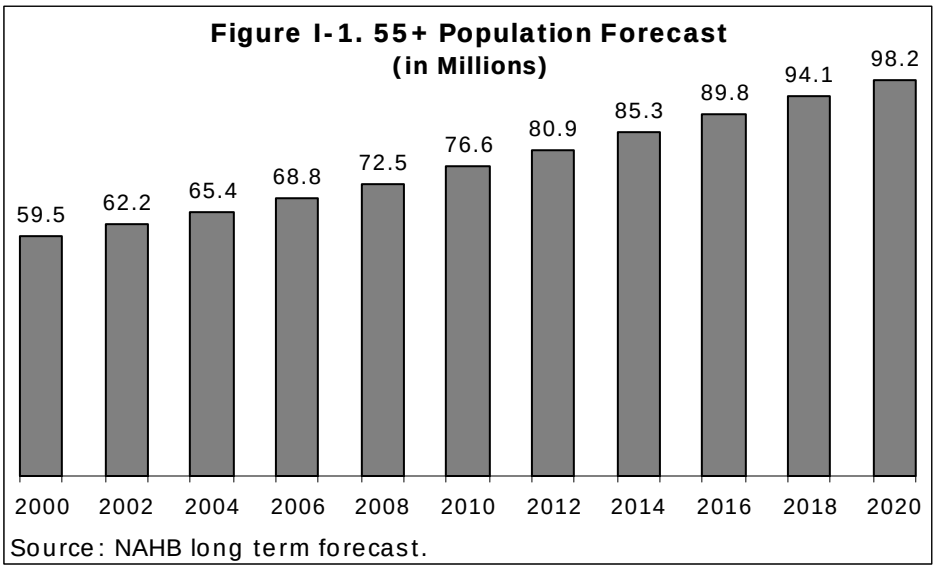
Table of Contents

Figure List

Table List

Introduction

Housing for Americans age 55 and older is a rapidly evolving segment of the industry. Demand in this market is expected to grow as the baby boomers age and approach retirement. According to the Census Bureau, the number of Americans age 55 or older has increased from 59.3 million (about 21 percent) in 2000, and to 67.0 million (22.6 percent) in 2005. Based on NAHB's forecast, the 55+ population will grow to 76.6 million (24.6 percent of the population) in 2010, and to 98.2 million (28.5 percent) in 2020 (Figure I-1).



Housing intended for 55+ residents comes in a variety of types. A universally recognized scheme for classifying these housing types doesn't exist, but the following are terms in common use within in the industry, along with some explanation of what parishioners typically mean when they use the terms.

Active Adult Communities: Single-family homes, town homes, cluster homes, manufactured housing and multifamily housing—targeted to adults 55 years of age or older as allowed under exemptions granted in the Fair Housing Law—where residents lead an independent, active lifestyle. These communities are not equipped to provide increased care or health-related services, but often include amenities such as a clubhouse, a golf course, walking trails and other recreational spaces. Outdoor maintenance normally is included in a monthly homeowner's association or condominium fee.

Lifestyle Communities: Single family homes, townhomes, cluster homes, manufactured housing and multifamily housing—that are considered likely to appeal primarily to adults, but not explicitly age-restricted—where residents lead an independent active lifestyle. These communities are not equipped to provide increased care or health-related services, but often include amenities such as a clubhouse, a golf course, walking trails, and other

recreational spaces. Outdoor maintenance is normally included in a monthly homeowner's association or condominium fee.

Seniors Apartments: Multifamily rental housing restricted to adults 55 years of age or older. These properties do not have a central kitchen and generally do not provide meals to residents, but may offer community rooms, social activities and other recreational amenities.

Independent Living Communities: Age-restricted multifamily rental housing with central dining facilities that provide residents, as part of a monthly fee, meals and other services such as housekeeping, linen service, transportation and social and recreational activities.

Assisted Living Residences: State-licensed and regulated rental housing that provides the same services as an independent living community, plus assistance with activities of daily living—such as bathing, dressing, toileting, moving from place to place, and managing medication—from trained employees. Many of these facilities include wings or floors dedicated to residents with Alzheimer's or other forms of dementia. Some assisted living facilities provide skilled nursing care, but not for a majority of the residents.

Skilled Nursing Facilities: Intended primarily for residents who require 24-hour nursing or medical care. Skilled nursing facilities are subject to state licensing and regulations and, in most cases, are licensed for Medicaid and Medicare reimbursement as well. They may include some units that provide only the services of an assisted living facility, but these units are not for the majority of the residents.

Continuing Care Retirement Communities (or CCRCs): Age-restricted properties that offer a combination of independent living, assisted living, and skilled nursing services to residents all on one campus. Payment plans vary, but usually include a long-term contract between the resident and the community.

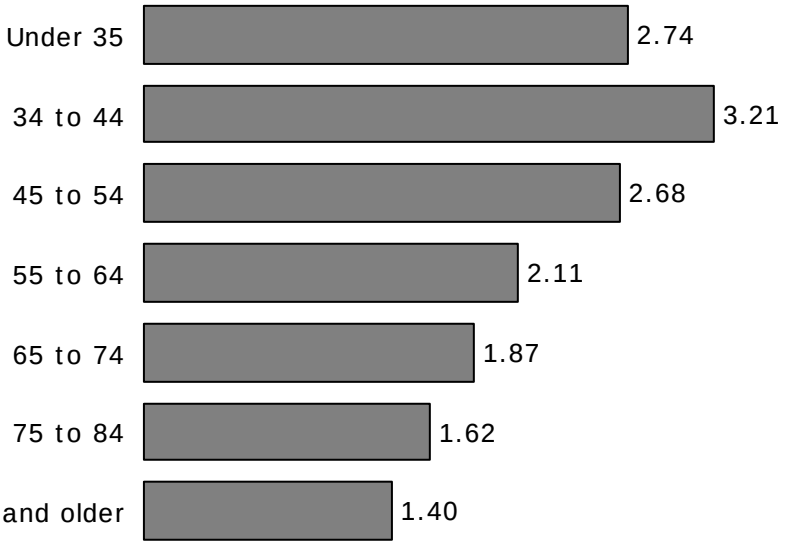
The Census Bureau classifies the places where people live as either housing units or group quarters. A housing unit is "a house, apartment, mobile home (or trailer), or group of rooms occupied as separate living quarters, or, if vacant, intended for occupancy as separate living quarters." Group quarters are then defined as all places where people live that are not housing units. Skilled nursing facilities are clearly group quarters. Other types of 55+ housing are either housing units or straddle the boundary between what has traditionally been considered housing units and group quarters. This has inevitably led to some confusion. For the past several years, the Census Bureau has made a consistent effort to include as many assisted living residences as possible in the universe of housing units.

The rapidly evolving nature of 55+ housing markets has also created some complications at the local level, especially for developers seeking approval for a new project. Zoning ordinances do not always explicitly recognize 55+ housing as an allowable land use. In these cases, a special exemption or use permit is required. If this or confusion over other issues arises, it may cause unnecessary delays in the permit approval process, driving up costs and making 55+ housing more expensive. Costs may also be unnecessarily high if

infrastructure requirements or impact fees that are set at levels that are excessive, given the nature of 55+ communities.

55+ communities differ from traditional housing in a number of ways. One difference is simply household size, or the number of persons expected to occupy each residence. Census statistics show that average household size decreases with age, especially after age 45, and is below two persons per household for households over age 65 (Figure I-2). A similar pattern exists in virtually every state, with the exception of Hawaii (Table A1-1 in Appendix 1).

Figure I-2. Persons Per Household by Age of Household Head



Source: 2006 American Community Survey, U.S. Census Bureau.

Other important differences associated with 55+ housing also exist, such as low demand for public education or parking space, and a low volume of traffic on local streets during rush hours. In order to obtain approval for 55+ communities without unnecessary delays, it would be helpful if developers had access to information that quantified these differences in a clear and concise way. The purpose of this study is to provide such information.

The study by itself will not ensure that a particular 55+ project is approved. Developers still need to make the case to local planning boards and councils that a specific project is appropriate and desirable in a specific community. This study is designed to provide supporting data that will be useful in such a situation.

The study is organized by local government budget line items in the order they appear when reported by the Governments Division of the U.S. Census Bureau. The first chapter deals with the impacts of 55+ housing on local government revenue; chapters 2 through 6 cover expenses for providing the public services that tend to be most commonly discussed in the context of 55+ housing.

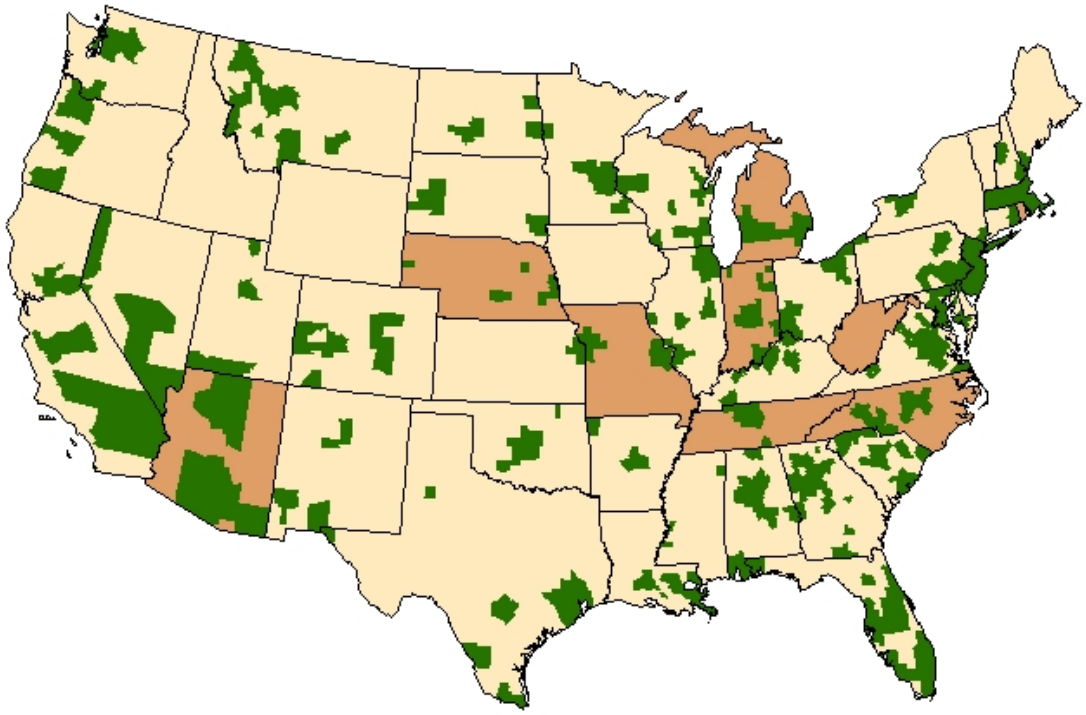
Chapter 1 Tax Revenue and Other Economic Benefits

When a new 55+ community is built, its impacts on the community include income and jobs for other residents of the community, as well as tax and other revenue for local governments in the area.

NAHB's Housing Policy Department has developed a model to estimate these local economic benefits. The model captures the effect of the construction activity itself, the ripple impact that occurs when income earned from construction activity is spent and recycles in the local economy, and the ongoing impact that results from new homes becoming occupied by residents who pay taxes and buy locally produced goods and services. In order to fully appreciate the positive impact residential construction has on a community, it's important to include the ripple effects and the ongoing benefits. Versions of the model for different types of residential construction (for example, active adult) differ primarily in the income and spending tendencies of the residents used in estimating the ongoing impacts. As of January 2008, the Housing Policy Department has produced over 500 of these customized reports analyzing residential construction in various metropolitan areas, non-metropolitan counties, and states across the country (Figure 1-1).

Figure 1-1 Areas Covered by NAHB Local Impact Studies

The darkest shading indicates studies that covered metro areas and non-metro counties; the somewhat lighter shading indicates studies that were produced for an entire state.



This chapter presents estimates of the local economic impacts of building 100 homes in a typical active adult community and 100 apartments in a typical elderly tax credit project. The characteristics of the homes built in the community are based on national averages for new single family homes, using averages for age-qualified homes from the American Housing Survey (AHS) whenever these are available. The characteristics of the apartments in the typical elderly tax credit project are based on averages for new age-restricted apartments that offer no special services in the AHS.

The elderly tax credit project refers to a project that uses the Low-Income Housing Tax Credit Program. Created as part of the Tax Reform Act of 1986, this program is currently the federal government's largest vehicle for building affordable rental housing. Under the program, federal income tax credits are awarded by state Housing Finance Agencies to a development under the condition that the rents and incomes of its tenants remain restricted. The credits are shared among the owners of a project, who are typically investors recruited by syndicators through limited partnership agreements. The investors receive the credits for ten years, provided the property continues to comply with the rent and income restrictions. The federal law requires that the rents and incomes remain restricted for 15 years, but all states now employ "extended use" agreements designed to retain the units in the affordable housing stock for at least 30 years.

Most states make a fundamental distinction between "family" and "elderly" tax credit projects. Elderly projects typically do not offer special services (there is a separate "assisted living" category), but are age-restricted according to provisions of the Housing for Older Persons Act of 1995, which defined three conditions under which it is legally possible to exclude residents below a certain age.

The versions of the NAHB models for active adult and elderly tax credit housing model differ from each other, as well as from the versions for generic single family and multifamily construction, primarily in the way incomes and spending tendencies of the buyers are estimated when calculating the ongoing impact.

The NAHB model produces impacts on income and employment in 16 industries and local government, as well as detailed information about taxes and other types of local government revenue. The key results are summarized below. Additional details are contained in Appendix 2

Active Adult Community

The estimated one-year local impacts of building 100 single-family homes in a typical active adult community include

- $22.5 million in local income,
- $2.3 million in taxes and other revenue for local governments, and
- 378 local jobs.

These are local impacts, representing income and jobs for residents of the local area and taxes (and other sources of revenue, including permit fees) for all local jurisdictions within the area. They also are one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity and spend part of it within the local area.

The additional, annually recurring impacts of building 100 single-family homes in a typical active adult community include

- $3.9 million in local income,
- $968,000 in taxes and other revenue for local governments, and
- 69 local jobs.

These are ongoing, annual local impacts that result from the new homes being occupied, and the occupants paying taxes and otherwise participating in the local economy year after year.

The above impacts were calculated assuming that new single family homes built in the typical active adult community have an average price of $383,881; are built on a lot for which the average value of the raw land is $40,691; require the builder and developer to pay an average of $6,526 in impact, permit, and other fees to local governments; and incur an average property tax of $3,701 per year. In addition, the owners of the homes pay an average of $150 a month to a homeowners association. The average price of the home and homeowners association fee are based on averages for new age-qualified single family homes in the 2005 American Housing Survey (conducted by the U.S. Census Bureau and the Department of Housing and Urban Development), adjusted for inflation to bring the numbers forward to 2007. The raw land value, impact fees, and property tax payment are calculated using national average ratios for all owner-occupied single-family housing.

As stated above, the version of the NAHB model for an active adult community differs from the generic single-family model primarily in the estimates of buyer income and spending tendencies used to generate the ongoing impacts. For the typical active adult community considered here, the average annual income of buyers is estimated at about $78,000. For single-family homes of the same price in an otherwise similar non-age-qualified community, the model would estimate an average buyer income of about $114,000. However, the lower estimated income of active adult buyers is largely offset by their tendency to spend a larger share of their incomes (34 vs. 25 percent) on locally produced goods and services.

Elderly Tax Credit Project

The estimated one-year local impacts of building 100 apartments in a typical elderly tax credit project include

- $5.5 million in local income,
- $515,000 in taxes and other revenue for local governments, and
- 93 local jobs.

These are local impacts, representing income and jobs for local residents, and taxes (and other sources of revenue, including permit fees) for all local jurisdictions within the area. They also are one-year impacts that include both the direct and indirect impact of the construction activity itself, and the impact of local residents who earn money from the construction activity spending part of it within the metro area.

The additional, annually recurring impacts of building 100 apartments in a typical elderly tax credit project include

- $2.0 million in local income,
- $381,000 in taxes and other revenue for local governments, and
- 28 local jobs.

These are ongoing, annual local impacts that result from the new apartments being occupied, and the occupants paying taxes and otherwise participating in the local economy year after year. In order to fully understand the impact residential construction has on a community, it's important to account for the ongoing benefits as well as the one-time effects.

The impacts summarized above were estimated under the assumptions that the apartments in the typical elderly tax credit project have an average market value of $86,000; embody an average raw land value of $9,116; require the builder and developer to pay an average of $1,462 in impact, permit, and other fees per unit to local governments; and incur an average annual property tax of $829 per unit.

The average value is based on new, renter-occupied, age-restricted, multifamily units in the most recent (2005) AHS, which is conducted in odd-numbered years by the U.S. Census Bureau and the Department of Housing and Urban Development. The AHS does not capture market value for rental properties, so values are derived from rental income using cap rates taken from the Census Bureau's 2001 Residential Finance Survey (RFS).

Because the relationship between rents and value is skewed for tax credit properties (the program is deliberately designed to create apartments that rent for less than otherwise comparable non-tax credit units), the following procedure is used. First, average characteristics (size, number of bedrooms, and number of bathrooms) for new age-restricted apartments that offer no special services are calculated from the 2005 AHS. Second, average rents paid for similar non-age-restricted apartments are computed. These rents are then converted into value using the RFS cap rate and adjusted for inflation using the Consumer Price Index (CPI), and NAHB's forecast for the change in the CPI. Finally, the raw land value, impact and other local construction fees, and property tax payment are calculated using national average ratios.

Compared to the estimates for family tax credit apartments or generic multifamily units, the economic benefits generated by 100 elderly tax credit apartments are somewhat smaller. The one-year impacts are smaller, because the elderly tax credit apartments are of modest, below-average size. The ongoing impacts are smaller, primarily because the estimated average income of the tenants is lower (only $22,723, compared, for example, to $30,743 in the typical family tax credit project). However, to a large extent, the lower income is offset by the tendency of elderly tax credit residents to spend a very large share of their incomes on locally produced goods and services. NAHB's estimates take into account third-party payments, such as payments made to local providers of health services by Medicare or private insurance companies.

A round number of 100 apartments was chosen for convenience. The NAHB models produce estimates of the local income, jobs, and taxes for one housing unit, and these are multiplied by 100 to obtain the numbers shown in this chapter. Estimates for a larger or

smaller project can easily be obtained by multiplying by an appropriate factor. For example, estimates for a 200-unit elderly tax credit project can be obtained by doubling all the numbers for the 100-unit elderly tax credit project; estimates for a 60-unit active adult community can be obtained by multiplying the numbers for the 100-unit active adult community by 0.6; and so on. The results, however, will still be based on average housing units in a typical metropolitan area.

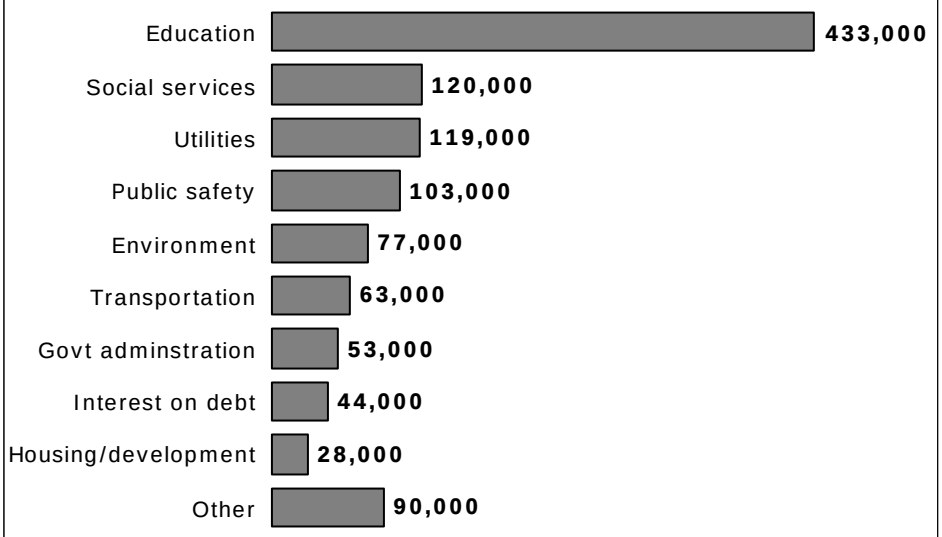
It is possible to use the NAHB models to estimate the local economic benefits of a specific active adult community or elderly tax credit project in a particular local area. When this is done, the comprehensive nature of the model means that, in practice, the local area over which the impact is spread will be either a metropolitan area (generally an aggregation of counties determined to belong to the same market area by the U.S. Office of Management and Budget), a non-metropolitan county, or an entire state. For more information about applying the NAHB local impact model to construction in a particular area of the country, contact Elliot Eisenberg in NAHB's Housing Policy Department: (202) 266-8398 or eeisenberg@nahb.com.

Chapter 2 Education Services

One important way 55+ housing differs from other types of residential construction is in its impact on education. Many jurisdictions considering proposals for 55+ housing will tend to focus on this aspect of it, partly because the contention that households headed by older Americans tend to have fewer school-age children is intuitively plausible, and partly because education accounts for such a large share of the typical local government budget.

Across all local governments in the U.S., public education accounts for about 42 percent of all direct spending—far more than other major categories such as social services, utilities, public safety, and transportation, etc. (Figure 2-1).

Figure 2-1. Direct Spending by Local Governments in $Million



Source: 2002 Census of Governments, U.S. Census Bureau

It is now possible to exclude school-age children from a new development and stay within the law, despite the 1968 Fair Housing Act. This is due to amendments to the Act which have carved out exemptions in certain cases. A 1988 amendment allowed housing to be age-restricted if it provided significant facilities and services designed for the elderly. The Housing for Older Persons Act of 1995 relaxed the conditions under which housing could be age-restricted housing by removing the "significant facilities" requirement.

Under current federal law, a housing community can exclude residents below a certain age if it meets any of the following requirements:

- Demonstrates the intent to house people age 55 or older and has at least one person of that age group in 80 percent of its occupied units.
- Is occupied by people who are age 62 or older.
- Is designed for and occupied by elderly people under some federal, state, or local government program.

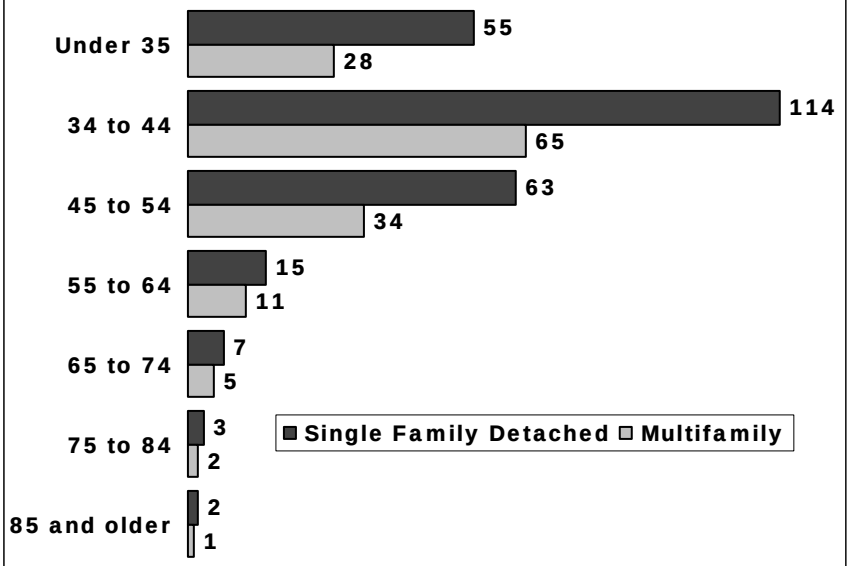
In practice, the developer of an age-restricted community does not have to officially register with the federal government (but may have to register with the state in which the developer is located), but needs to maintain records on the age of occupants and needs to keep records, such as advertising materials, that document the intent to house people age 55 and older (unless it's a community only for people above age 62 or one developed using a government program).

In the 55+ housing industry, the term age-restricted is considered rather harsh sounding an unfriendly for marketing purposes, and the term "age-qualified" is often used instead.

Obviously, age-qualified housing will contain no school-aged children, and therefore will not increase the demand for public elementary and secondary education.

Even not explicitly age-qualified, if a community is built with the right set of amenities—or is located in an area where it may reasonably be expected to attract mostly households over age 55—it may have a rather small impact on local schools. Figure 2-2, which is based on the Census Bureau's 2006 American Community Survey (ACS) shows that, if households are headed by someone over age 55, they tend to contain few school-aged children. For single-family housing, per 100 households, there are 114 school-aged children headed by someone 35 to 44, there are 63 school-aged children headed by someone 45 to 54. In contrast, per 100 single-family households, there are only 15 school-aged children headed by someone 55 to 64, and the number is even smaller for older households.

Figure 2-2. School-aged Children Per 100 Households by Age of Household Head



School-aged children are those age 5 through 18
Source: 2006 American Community Survey, U.S. Census Bureau

Because 55+ households contain few children, a perception may arise that these households have a small stake in local school systems, and that a 55+ housing development will create a voting block that tends to oppose new school bond issues. But this perception isn't true in every case, as California's Measure K demonstrates.

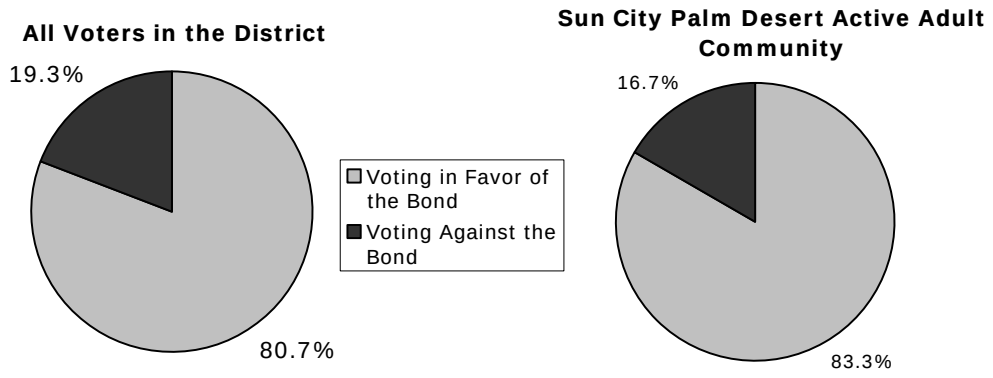
Measure K was a $450 million bond issue for school construction (the fourth-largest school bond in California history), which was on the November 2001 ballot in the Desert Sands Unified School District in Riverside County. In order to pass, the bond required a 67 percent supermajority of the votes.

A large minority of voters in the district live in Sun City Palm Desert, a Del Webb age-restricted active adult community. California adds some conditions to the federal laws governing seniors housing. In California every household in an age-restricted community must have at least one member who is age 55 or older, and none of the residents can be under age 45 with certain exceptions (such as a spouse, caregiver, principal means of support, or handicapped child).

According to information obtained from the Riverside County Registrar of Voters through Del Webb's director of public affairs, Measure K passed easily. Overall, the measure gained 12,110 "yes" votes compared to 2,896 "no" votes, so that just over than 80 percent voted in favor of the bond issue and easily surpassed the required two-thirds supermajority.

Rather than hindering passage of the bond issue, the seniors in Sun City Palm Desert showed strong support for it. Residents of Sun City Palm Desert cast 1,170 "yes" votes and only 234 "no" votes. In other words, 83 percent the voters in the seniors community voted in favor of a $450 million school bond issue—a slightly higher percentage than in the school district overall (Figure 2-3).

Figure 2-3. Voting on the Measure K $450 million School Bond Issue (Riverside County, CA)



Source: Riverside County Registrar of Voters through Del Webb's Director of Public Affairs

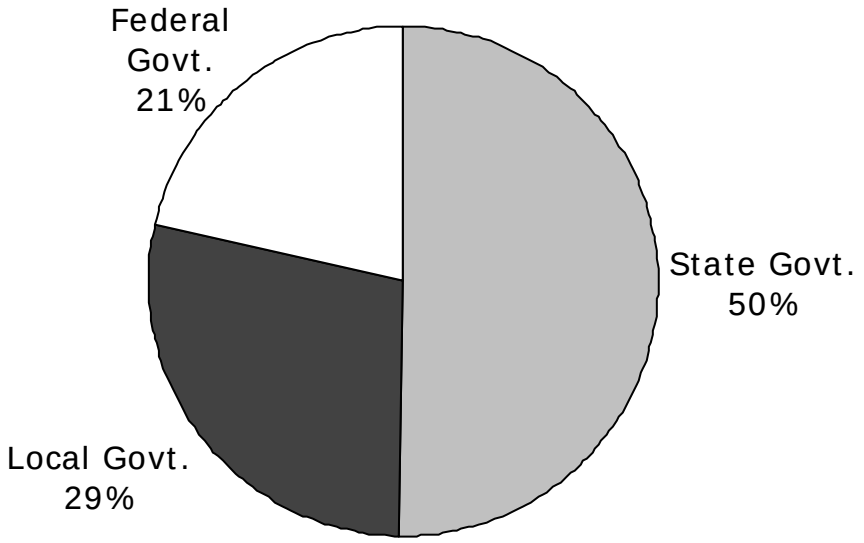
This case study is based on the results of one ballot in one school district. As such, it doesn't prove that 55+ households support school bond issues in general. But it does illustrate that, under the right conditions in one place, 55+ households can strongly support a large school bond issue—providing a counterexample for those who assume that this never occurs.

Chapter 3 Transportation

In the local government budgets, transportation accounts for a share that, although smaller than education, is still significant. The transportation budget includes spending on highways, airports, parking facilities, sea and inland port facilities, and transit subsidies. Among all these items, highways account for the largest share of transportation budget, according to the 2002 Census of Governments.

Although the amount spent on road infrastructure concerns the local jurisdictions that issue building permits, it is likely to be a greater concern for the state governments that fund the lion's share of highway spending (Figure 3-1).

Figure 3-1. Public Spending on Roads and Highways



Source: Highway Statistics 2004, Federal Highway Administration

Local governments are more likely to concern issues as whether new development strains the existing network of local streets, and whether it increases congestion and commuting times for residents of existing neighborhoods.

Residential construction and transportation infrastructure are complementary. Sometimes new roads precede other construction and allow traffic into previously inaccessible areas. Other times homebuilding takes place first, and then the population growth induces road improvements.

Some jurisdictions require developers to build roads, dedicate land for that purpose, or pay an impact fee to cover the anticipated cost. These road-building requirements, land dedications, and fees need to be kept within reasonable limits. However, current residents

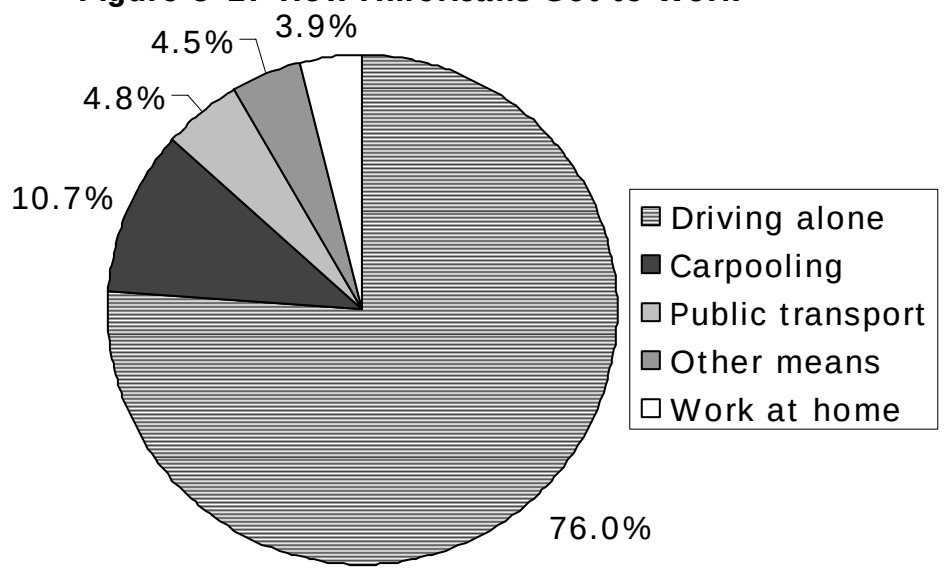
in a local jurisdiction have an incentive to charge excessive fees for new communities, especially if they need to make up for years of neglected infrastructure spending.

The excessive fees will prevent, or slow down new developments in one area, but eventually, it is unlikely to succeed. Preventing development in one area merely shits it to another area. Also, this shift may cause homes and trip destinations to be farther apart, leading to longer average commuting distances, and increased congestion. Congestion can even rise inside the growth restriction boundaries, as people may drive through the area even though they are prevented from living there.

Probably the only solution to this situation is that the public sector provides adequate funding for road improvements on an ongoing basis, and encourages strategies for reducing congestion. Such strategies include increased carpooling, use of public transportation, and telecommuting, etc.

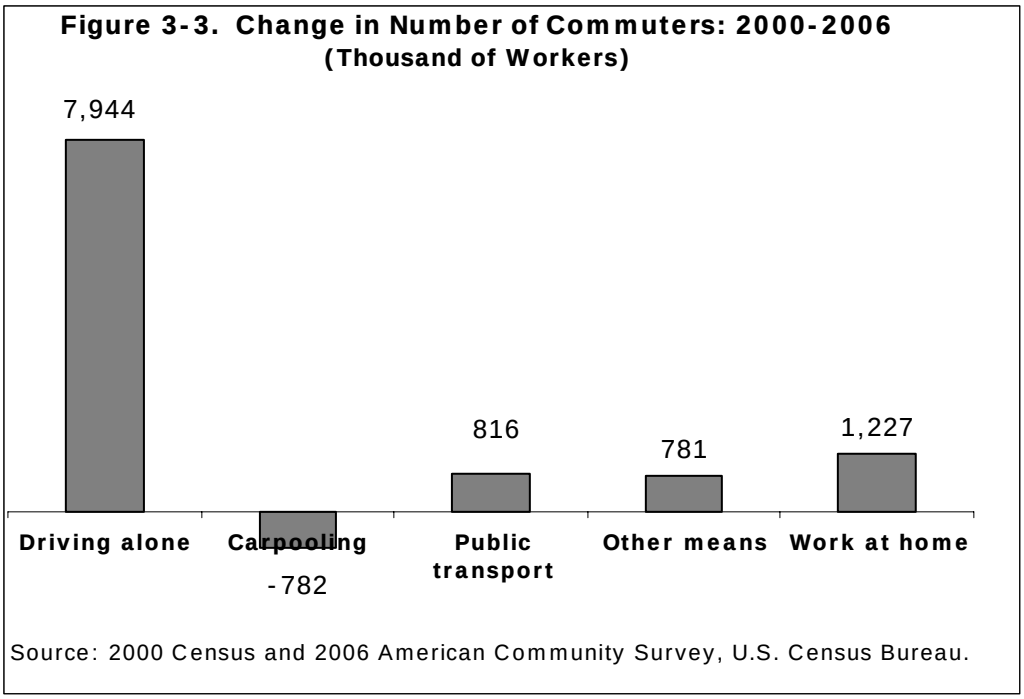
Figure 3-2 shows the means of transportation to work, using 2006 American Community Survey data. Driving alone remains by far the most common way of getting to work.

Figure 3-2. How Americans Get to Work



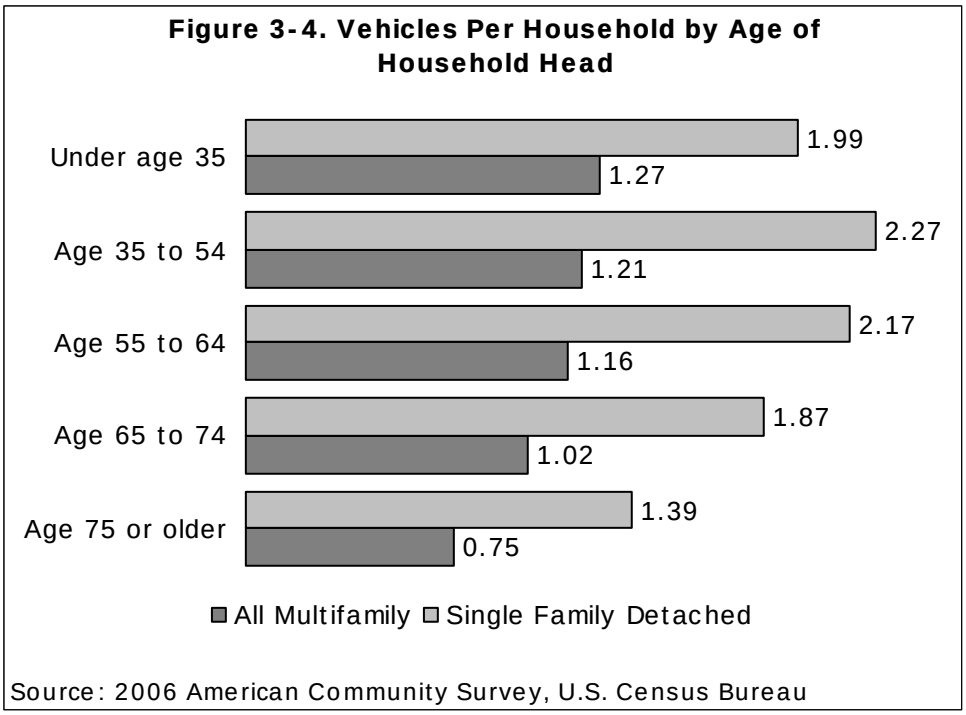
Source: 2006 American Community Survey, U.S. Census Bureau.

Moreover, the number of workers commuting has increased strongly since 2000. In comparison, the number of workers who carpool actually declined (Figure 3-3)



Therefore, it seems that in the short run adequacy of streets and highways to handle local traffic flow—especially during the peak flows that occur during morning and evening rush hours—will remain an important issue for many local governments. In this regard, it is important to be able to quantify how much (or how little) stress 55+ housing tends to put on local street networks.

The number of persons per household is one of the key variables. After approximately age 45, household size declines as the age of the household head rises (Figure I-1). Another key factor is the number of vehicles each household owns. On average, households headed by someone 55 to 64 own 2.17 vehicles, and this number drops quickly as age of the householder increases (Figure 3-4). Households in multifamily buildings general own fewer vehicles, and the number of vehicle owned also decreases with age. Equivalent information by state is shown in Tables A1-2 and A1-3 in Appendix 1.



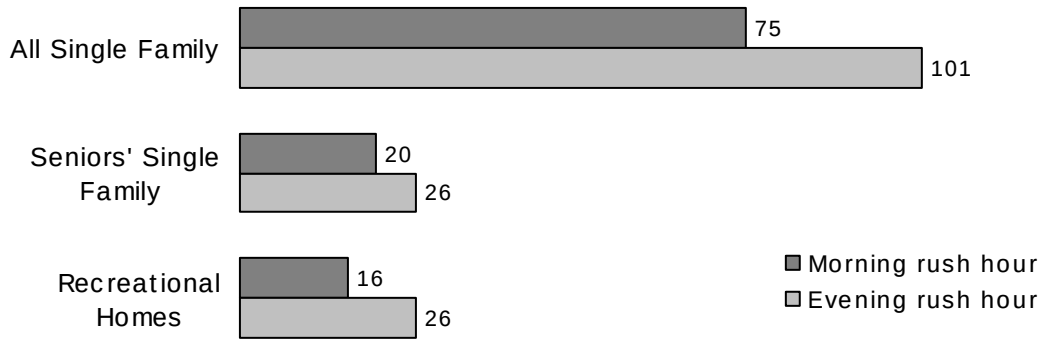
55+ households will tend to use roads less frequently simply because they contain fewer people and own fewer vehicles. In a jurisdiction where transportation-related fees or land dedications are based on use-per-person estimates, the requirements for a 55+ housing project should be reduced proportionately, as long as household size and number of vehicles owned are taken appropriately into account.

However, this isn't the whole story. Older Americans are more likely to be retired and therefore can time their travel to avoid work-related congestion.

The standard reference used by planners is *Trip Generation*, a manual published by the Institute of Transportation Engineers (ITE), that compiles studies showing how many trips (vehicles entering or leaving a location) are generated by different types of development. One of the most important indicators of impact on road congestion are trips generated during "rush" hours, which ITE defines as the hours between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. when traffic is at its greatest. The relevant numbers from the most recent, 7th edition of *Trip Generation* are summarized in Figures 3-5 and 3-6, with a few more details shown in Table 3-1.

According to *Trip Generation*, 100 average single-family homes occupied by residents of all ages, will generate 75 trips during the morning rush hour and 106 trips during the evening rush hour. However, 100 seniors' single-family homes generate, on average, only 20 trips and 26 trips respectively—or about one-fourth of the trips generated by a typical single family home.

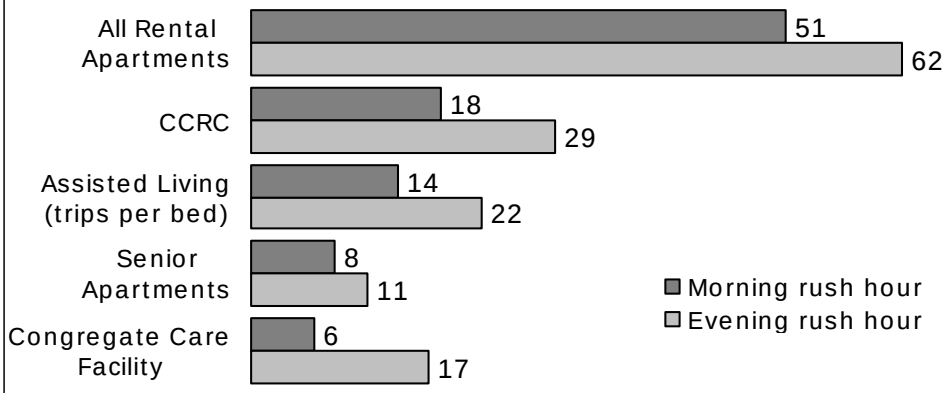
Figure 3-5. Average Number of Trips Generated Per 100 Housing Units--Single Family Homes



Source: Institute of Transportation Engineers; Trip Generation, 7th Edition, 2003.

Similarly, 100 rental apartments on average generate 51 trips during the morning rush hour and 62 trips during the evening rush hour. For different types of 55+ multifamily housing, however, the numbers of trips generated are much smaller. The number of trips generated is slightly different among different types of senior apartments, but the pattern of drastically reduced traffic for homes occupied by seniors is just as evident.

Figure 3-6. Average Number of Trips Generated Per 100 Housing Units--Multifamily Structures



Source: Institute of Transportation Engineers; Trip Generation, 7th Edition, 2003.

If measured over the course of a full day, whether on the weekend or not, 55+ housing shows a similar pattern of reduced traffic compared to other types of housing. This may be relevant for judging the impact of housing units on road maintenance. For judging whether the existing network of streets is adequate to handle anticipated traffic flow, however, traffic during times of peak congestion are more relevant.

Table 3-1. Average Number of Trips Generated Per 100 Housing Units

	Morning rush hour (peak hour of traffic on adjacent street between 7 and 9 am)	Evening rush hour (peak hour of traffic on adjacent street between 4 and 6 pm)	Weekday	Saturday	Sunday
All Single Family	75	101	957	1010	878
Seniors' Single Family	20	26	371	277	233
Recreational Homes	16	26	316	307	293
All Rental Apartments	51	62	672	639	586
Senior Apartments	8	11	n/a	n/a	n/a
Congregate Care Facility	6	17	202	n/a	n/a
Assisted Living (trips per bed)	14	22	266	220	244
CCRC	18	29	281	n/a	n/a

Source: Institute of Transportation Engineers; Trip Generation, 7th Edition, 2003.

If climate change and greenhouse gas emissions are the issue, vehicle miles traveled (VMT) and gasoline consumption are the relevant variables. NAHB's Housing Policy Department has recently developed a statistical model that estimates total VMT per year for a particular residential subdivision. The model is based on data from the most recent (2001) National Household Travel Survey (NHTS), which collects detailed information on all vehicle travels undertaken by a nationally representative of households and is conducted by the Federal Highway Administration.

The results of the model show that, controlling for the factors available in the NHTS data, VMT decline as the compactness of subdivisions increases. Similar models find a clear "congestion" effect: as the compactness of subdivisions increases, vehicles tend to be driven at less efficient speeds. However, this congestion effect is not strong enough to totally offset the reduced VMT, so that the statistical methods employed still estimate that gasoline consumption and the associated CO_2 emissions will be lower in more compact development.[1]

From the perspective of 55+ housing, the relationship between age of the households and VMT is of particular interest. We present the estimated VMT by age in Table 3-2, using a hypothetic subdivision in a Northeast metropolitan area with population under 1 million as an example.

[1] For details of the methodology employed, see "Vehicle CO_2 Emissions and the Compactness of Residential Development" by Helen Fei Liu in *Housing Economics*, December 2007: http://www.nahb.org/generic.aspx?sectionID=734&genericContentID=86266&channelID=311

Table 3-2. Estimated Annual Vehicle Miles Traveled Per Household In An Urban Subdivision (In a Northeastern metropolitan area which has population under 1 million)

Compactness of Subdivision*	Single Family Owner				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	29,782	28,772	22,268	16,398	13,027
0.08 to 0.39	28,181	27,171	20,668	14,797	11,427
0.39 to 1.56	27,895	26,885	20,382	14,512	11,141
1.56 to 4.69	25,534	24,524	18,020	12,150	8,779
4.69 to 7.81	25,158	24,148	17,645	11,774	8,404
7.81 or more	23,208	22,198	15,695	9,824	6,453
Compactness of Subdivision*	Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	22,702	20,215	15,860	11,235	8,694
0.08 to 0.39	21,101	18,614	14,259	9,635	7,094
0.39 to 1.56	20,815	18,328	13,973	9,349	6,808
1.56 to 4.69	18,454	15,967	11,612	6,987	4,446
4.69 to 7.81	18,078	15,591	11,236	6,612	4,071
7.81 or more	16,128	13,641	9,286	4,661	2,120

*: number of housing units per acre

In order to estimate the VMT of households in different age group, we assume that that household size and number of workers per household are set to the averages for a specific category shown in the table. For example, VMT for a single-family homeowner age 55 to 64 is estimated assuming that the number of persons and workers in the households are average for home owners age 55 to 64. Thus, these estimates also capture the differences in household size and workers per household that tend to exist between multifamily renters and single-family homeowners.

Under these assumptions, a single-family homeowner in the hypothetic subdivision in this Northeast metropolitan area generates about 25,534 VMT per year if the head is under age 35 (if lives in a subdivision with 1.6 to 4.7 housing units per acre), but only about 8,779 if the head is age 75 or older.

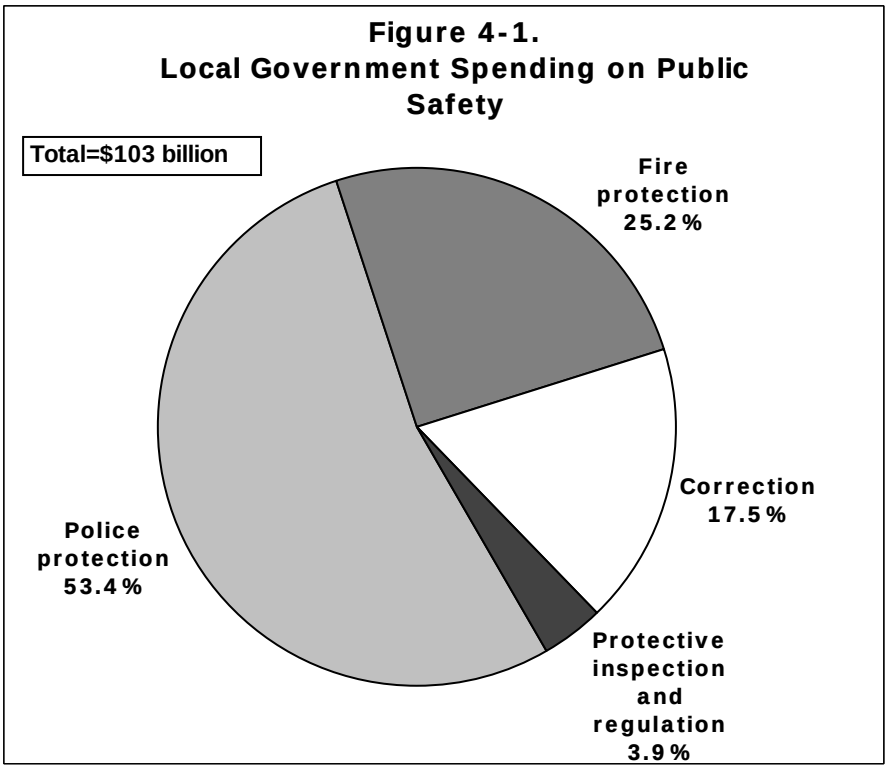
Table A1-4 in Appendix 1 shows a complete set of VMT estimates in different geographic areas. The results show that a 75-plus multifamily renter would generate about one-tenth to one-third of the VMT generated by a single family owner under 35 per year.

The above evidence shows that older people drive their cars less during the times when road use is closest to capacity, and older people generate fewer VMT and thus less greenhouse gas emissions in general. If the homes being built are seniors housing units, local jurisdictions can spend less on road infrastructure and still maintain existing traffic-flow and safety conditions.

Chapter 4 Public Safety

Public safety is another broad category of expenses in local government budgets. Local governments spent $103 billion on public safety, according to the 2002 Census of Government (Figure 4-1). The Governments Division of the U.S. Census Bureau splits the public safety budget into four components. Police protection is the largest component. Fire protection ranks second, accounting for about 25 percent of the total $103 billion, but is likely to rise to the top of the list when local authorities review proposals to develop 55+ housing.

Figure 4-1.
Local Government Spending on Public Safety



The cost of operating a judicial system is typically not part of the public safety budget, being counted instead as part of general government operations.
Source: 2002 Census of Governments, U.S. Census Bureau

This is due to the perception that older residents are more likely than others to use the ambulance services. While when the public sector provides ambulance service, it is usually run out of a municipal fire department. Therefore, if the perception that use of ambulance services increases with age is correct, it would tend to show up in the fire protection line item of the budget.

It is possible to investigate this issue, using the most recent available data from the National Hospital Ambulatory Medical Care Survey, conducted by National Center for Health Statistics. Table 4-1 shows statistics compiled from the most recent (2005) data set produced by this survey. The table presents a hypothetical example of a city

containing 100,000 households with an age distribution and pattern of ambulance use based on U.S. averages.

Table 4-1. Monthly Ambulance Use in a Hypothetical City
100,000 Households, Age Distribution and Ambulance Use Based on U.S. Averages

Age of Household Head	Number of Households	Ambulance Trips		Share of All Trips	Impact of Adding 100 Households	
		Per 1000 Households	Number of Trips		# Trips	%Increase
18 to 34 years	20,920	11.1	233	17.3%	1.1	0.1%
35 to 44 years	20,720	12.9	266	19.8%	1.3	0.1%
45 to 54 years	21,590	11.5	248	18.4%	1.2	0.1%
55 to 64 years	16,410	11.9	196	14.5%	1.2	0.1%
65 to 74 years	10,260	13.4	138	10.2%	1.3	0.1%
75 to 84 years	8,000	23.7	190	14.1%	2.4	0.2%
85 years and over	2,100	36.3	76	5.7%	3.6	0.3%
All ages	100,000	13.5	1,347	100.0%	1.3	0.1%

Source: NAHB tabulations of data from the 2005 National Hospital Ambulatory Medical Care Survey, U.S. National Center for Health Statistics, and the 2006 American Community Survey, U.S. Census Bureau.

The table shows that, per 1,000 households, people age 85 or older use 36 ambulance trips to a hospital emergency room and people age 75 to 84 use 24 ambulance trips on average. This is higher than average ambulance use for people age 18 to 34 (11 trips per month). However, people age 55 to 74 use roughly the same number of ambulance trips as people age 18 to 34.

When looking at the hypothetical example of the 100,000 households, there are several points to keep in mind that will help put 55+ ambulance use in perspective.

- 55+ households contain fewer people.
- Ambulance use doesn't really increase significantly until people are past the age when they move into active adult communities.
- In a community of 100,000 households, adding a hundred or so extra housing units, even if the new residents are of very advanced age, will have minimal impact on total ambulance use.

Ambulance trips per 1,000 households are higher for households headed by someone age 75 or older. However, in absolute terms, older households take fewer trips in an ambulance per month. On average, 1,000 households headed by someone 65 to 74 will generate 138 ambulance trips, and households headed by someone 85 and older will generate only 76, compared to about 250 for households headed by someone under 55.

The reason for a high trip rate but low actual ambulance trips is that the size of households declines fast with age. Consequently, 85 plus households account for less than 6 percent of the ambulance trips taken per month in the hypothetical city. Adding 100 households over age 85 increases ambulance use by about 4 ambulance trips per month (a 0.3 percent increase in the hypothetical city of 100,000 households). Local authorities may judge for themselves the extent to which 4 additional trips per month per 100 households (assuming they're all over age 85) would stress public ambulance services.

Ambulance service is only part of local fire protection budgets, and fire protection is on average only one-fourth of local budgets for public safety. Police protection is over half, and correctional facilities also account for a significant share. Even if a new 55+ housing project has some impact on ambulance use, it offers advantages that are likely to more than offset this in the context of the total budget for public safety.

There is a widespread belief among fire officials and others that newer homes are more fire-resistant. Two studies commissioned by home builders associations to look into this question provide some supporting evidence.[2]

A study commissioned by the California Building and Industry Association in the 1990s found that the average fatality rate in units that were less than 15 years old was one-eighth as high as the annual average for California's housing stock, and one-tenth as high as the rate for houses more than 15 years old.

Nearly identical results were obtained in a national study conducted by NAHB in 1987. That study found that the fatality rate for units that were five years old or less was one-fifth as high as the average fatality rate for all housing units.

In terms of seniors and fire safety, arguments have been made on both sides of the issue. Some have argued that, once a fire starts, older adults may be somewhat slower to act and therefore more prone to injury. However, a slow reaction to a dangerous situation could be even more true for very young children, who are not often in households where the head is over age 55.

A statistical regression analysis, based on fire death records combined with data on population and housing characteristics from the 2000 Census, lets us investigate both the seniors-fire safety and the new construction-fire safety issues. Results are summarized in Table 4-2.

Table 4-2. Statistical Results for County Fire Deaths Model

	Regression Coefficient	Absolute t-value*
Constant	29.71	11.64
White percent of population	-10.26	3.87
Median household income (in $10,000)	-2.58	6.47
Percent of the housing stock built after 1994	-17.58	2.45
Adjusted R squared	0.145	

* a commonly used standard is to consider a coefficient statistically significant if the absolute t-value is greater than 2.0.

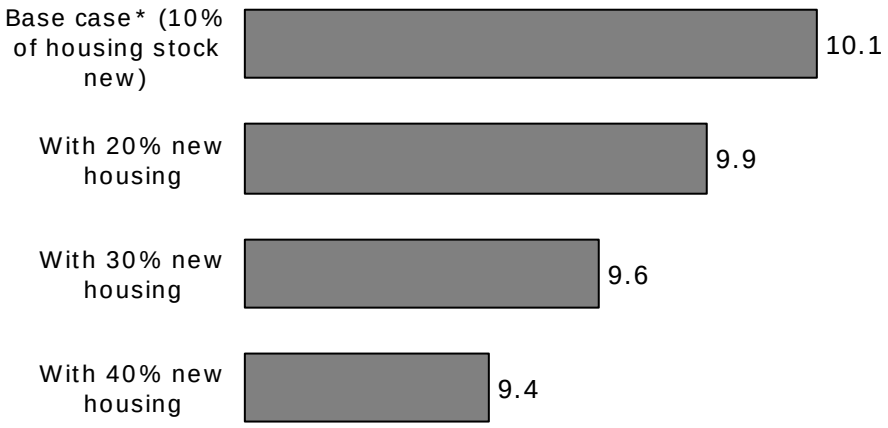
Source: NAHB analysis of data from the Multiple-Cause-of-Death file, National Center for Health Services, and 2000 Census of Population and Housing SF3 files, U.S. Census Bureau.

The regression finds several factors that significantly help explain the incidence of fire deaths in a particular county (although there is a substantial amount of county-to-county variation that the regression model doesn't explain.)[3]

[2] The studies are documented more thoroughly in "House Fire Deaths" by Elliot Eisenberg, published in Housing Economics, November 2002, by the NAHB Economics Group.

In summary, fire deaths are less common where incomes are higher, where more of the population lives in an urban area, where the housing stock is of comparatively recent vintage—and where more of the population is age 55 or older. As an aid to interpretation, the regression results are used to simulate several scenarios (Figure 4-2).

Figure 4-2. Regression Simulations: Fire Deaths Per Million Persons



*a county with a population that's 75 percent white and has median household income of $45,000.
Source: NAHB analysis of data from the Multiple-Cause-of-Death file, National Center for Health Services, and 2000 Census of Population and Housing SF3 files, U.S. Census Bureau.

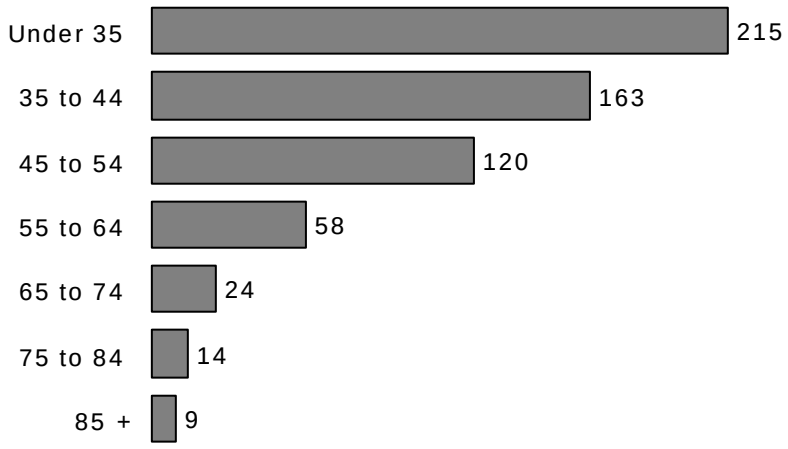
In the base case, the regression predicts 10.1 fire-related deaths per million people. If the share of relatively new construction increases from 10 to 20 percent, holding other factors constant, the death rate falls to 9.9 per million. Similar increases in the share of new construction lead to proportional reductions in the fire death rate.

Another important component of public safety budgets is police protection, and the most important statistics to consider in a discussion about 50+ housing and the public safety budget are those related to crime.

By virtually any measure, older households are correlated with reduced crime rates, and thus place less stress on the budget for correctional facilities. Figure 4-3 shows the number of arrests per 1,000 households by age of the household head. The data source is the 2006 Uniform Crime Reports compiled by the Federal Bureau of Investigation. This figure clearly shows that crime rates drop dramatically with age.

[3] The Census data provide significant but still somewhat limited information about local areas. A number of Census variables beyond the ones reported in the Table 5 were tried in the regression, but did not help explain reported differences in fire death rates. Nor did the inclusion of these extra variables change the estimated impact of the other explanatory variables in an important way. For more details on the specification of the model, contact the NAHB Housing Policy Department (202) 266-8398.

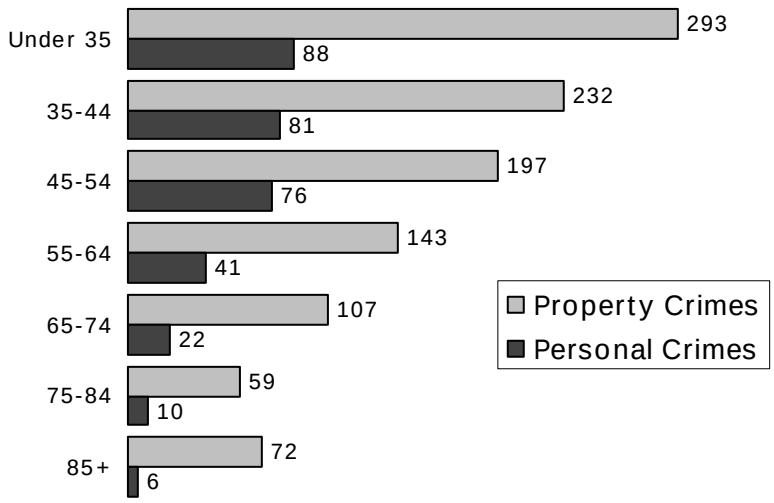
Figure 4-3. Arrests Per 1,000 Households By Age of Household Head



Sources: Crime in the United States, 2006 Uniform Crime Reports, Federal Bureau of Investigation; 2006 American Community Survey, U.S. Census Bureau.

Older citizens are less likely to commit crime, and actually they are also less likely to become victims of a crime. Figure 4-4 is based on tabulations of property crimes and personal crimes by age of the victimized household's head. The data source is the 2005 National Crime Victimization Survey, conducted by the Bureau of Justice Statistics (BJS). The figure shows a general pattern that a person in a household headed by someone under age 35 is about 15 times more likely than someone in a household where the head is over age 85 to become a victim of personal crimes, and about 4 times more likely to become a victim of property crimes.

Figure 4-4. Crimes Per 1,000 Households By Age of Victimized Household Head



Source: NAHB tabulations of data for year 2005 from the National Crime Victimization Survey, U.S. Bureau of Justice Statistics, and the 2006 American Community Survey, U.S. Census Bureau.

The survey collects information from victims and potential victims, and it captures information about crimes whether or not they are ever reported to the police. Personal crimes include rape and sexual attack, robbery, aggravated and simple assault, and purse-snatching/pocket-picking, and property crimes include burglary, theft, motor vehicle theft, and vandalism.

Figure 4-4 clearly shows that fewer crimes are committed against property owned or rented by older residents. A number of surveys conducted over the years have established that citizens over age 55 have a greater fear of crime and a desire for security.[4] This suggests that they may tend to choose to live in places with lower crime rates. It also is possible that when older households congregate together in a community, they behave in ways that help deter crime—if, for example, they spend more time at home, and in particular avoid going out at odd hours.

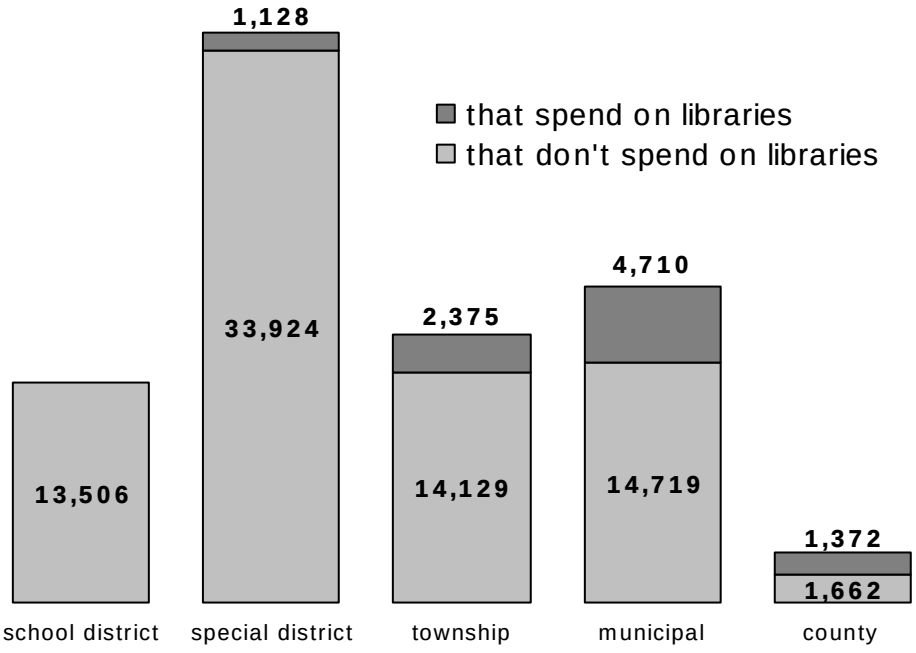
Whatever the explanation, the relevant statistics for jurisdictions contemplating the impact of 55+ housing on the public safety budget are that older households are both less likely to commit crimes, and less likely to become the targets of crime. The differences will offset, if not outweigh, any additional public safety costs that may be associated with above-average use of ambulance services.

[4] See Paul Emrath, "Crime and Seniors' Housing Preferences," Seniors Housing News, Fall 1998, published by the NAHB 50+ Housing Council.

Chapter 5 Parks and Recreation

The "Parks and Recreation" defined here includes public libraries—a significant detail, because the extent to which 55+ households use public libraries has become an issue in some jurisdictions. In its Census of Governments, the U.S. Census Bureau groups public libraries with education into a broad 'educational services' category, but individual local governments are less likely to view the world that way. The Census classification scheme would be awkward in cases where education is funded by a special school district that is independent enough to qualify as a separate government entity. The most recent (2002) Census of Governments counted about 13,500 of these independent school districts across the country. None of them reported having a separate budget for libraries (Figure 5-1).

Figure 5-1. Local Governments in the U.S. and Current Spending on Libraries



Source: 2002 Census of Governments, U.S. Census Bureau

A small share of municipal and township governments have budget for libraries, while about 45 percent of county governments have library budgets. These local governments that have library budgets are more likely to follow a standard local government finance reference that groups libraries with public parks and recreation into a category called "recreation and culture."[5] Of the two subcategories, public parks and recreation generally accounts for a larger share of the local government budget. In the 2001-2002

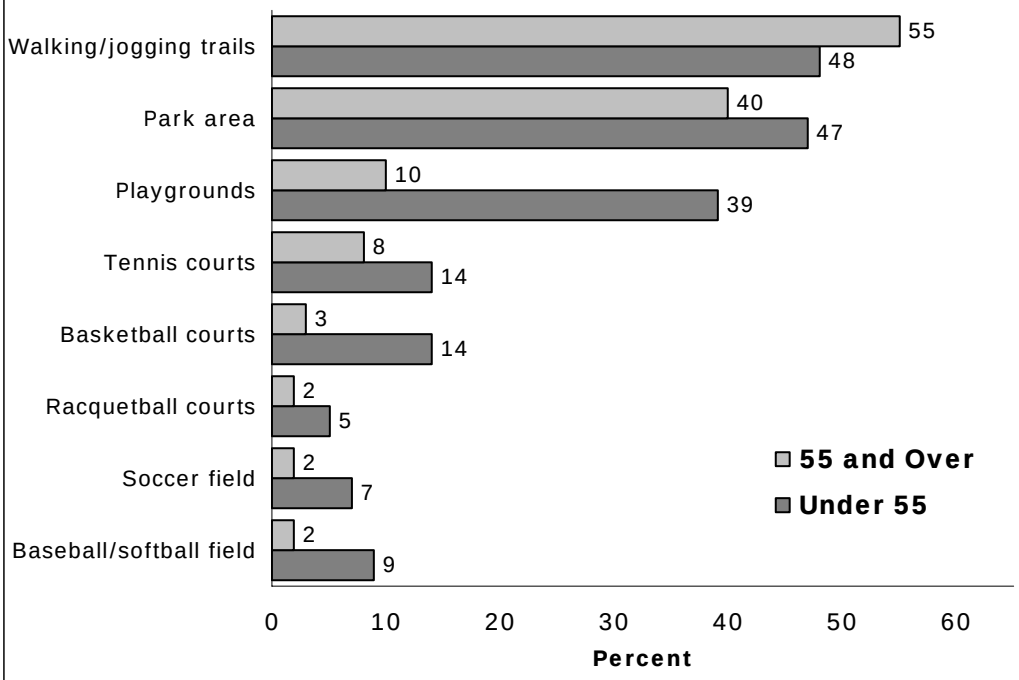
[5] See, for example, Burchell, Robert, David Listokin, and William Dolphin, The New Practitioner's Guide to Fiscal Impact Analysis, (New Brunswick, N.J.: Rutgers University Center for Urban Policy Research, 1985).

fiscal year, local governments spent $25 billion on parks and recreation, while they only spent about $8 billion on libraries.

Once again, on a per housing unit basis, older households tend to place less stress on public facilities, simply because these households on average contain fewer people (see Figure I-1 in the introduction).

Besides the reduction in the number of visits to public libraries, older households tend to use certain types of recreational facilities less often. NAHB's latest Consumer Preference Survey demonstrated that households headed by someone age 55 and older have reduced preferences for many facilities such as park area, playground, tennis courts, basketball courts, etc. (Figure 5-2).

Figure 5-2. Home Buyer Preferences for Recreational Facilities



Percent of survey respondents who say the presence of the facility would signifcantly influence them to move into a community. Source:Consumer Preference Survey, NAHB Economics Group, 2007.

Among the various types of recreational facilities local governments typically provide, 55+ households have dramatically reduced demand for playground—10 percent of the 55+ households prefer communities with playground, while 39 percent of the households under 55 prefer playground. It is not surprising that the only outdoor facility that 55+ households have stronger preference is walking/jogging trails (Table 5-1).

Table 5-1. Percent of Home Buyers Who Would Seriously Be Influenced to Move Into a Community by the Presence of Outdoor Facilities

(By Age of the Household Head)

	TOTAL	LESS THAN 35	35 TO 44	45 TO 54	55 TO 64	65+
Walking/jogging trails	49	49	47	46	58	52
Park area	46	50	49	41	37	45
Playgrounds	32	49	43	18	12	7
Tennis courts	13	15	16	11	8	7
Basketball courts	11	15	14	10	4	2
Baseball/softball field	8	11	10	5	2	3
Soccer field	6	9	10	2	2	1
Racquetball courts	4	5	5	4	2	1

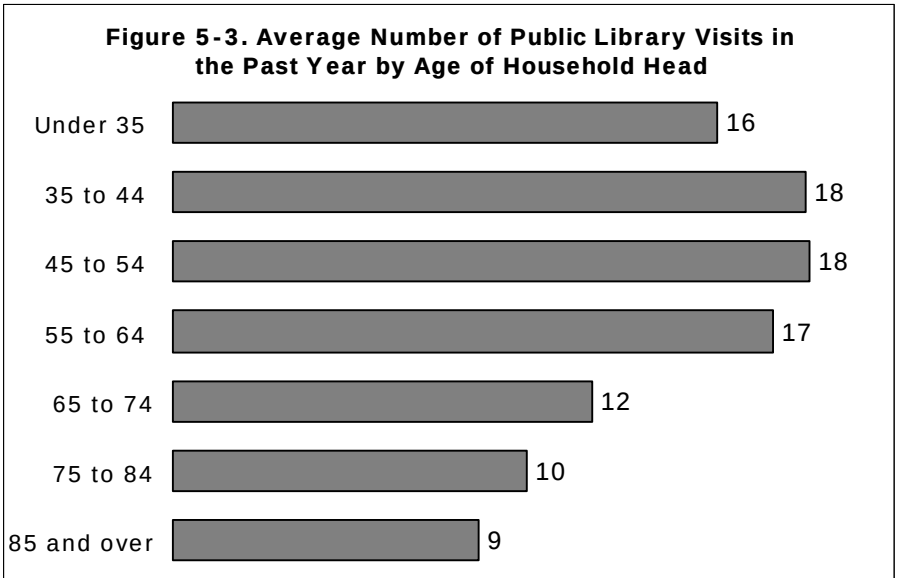
Source: Consumer Preference Survey, NAHB Economics Group, 2007.

As mentioned previously, a speculation has arisen in certain places that 55+ housing places a disproportionately high burden on a community's library facilities. The underlying reasoning may be that, because older households are either retired or approaching retirement age, they have more free time to visit public libraries.

Given the smaller size of older households and their lack of children, this speculation doesn't appear persuasive in the absence of supporting evidence. In order to investigate the relationship between public library use and older households, we can look at a national survey by American Library Association conducted in 2006.

The result—average number of public library visits in the past year by age of householder—is shown in Figure 5-3. Obviously, younger households visit libraries more often. Households headed by someone age 35 to 44 and 45 to 54 visit public libraries 18 times on average. After householders reach the age of 55, the number of visits to public libraries declines to 17 and eventually to less than 10 visits per year per household.

Figure 5-3. Average Number of Public Library Visits in the Past Year by Age of Household Head



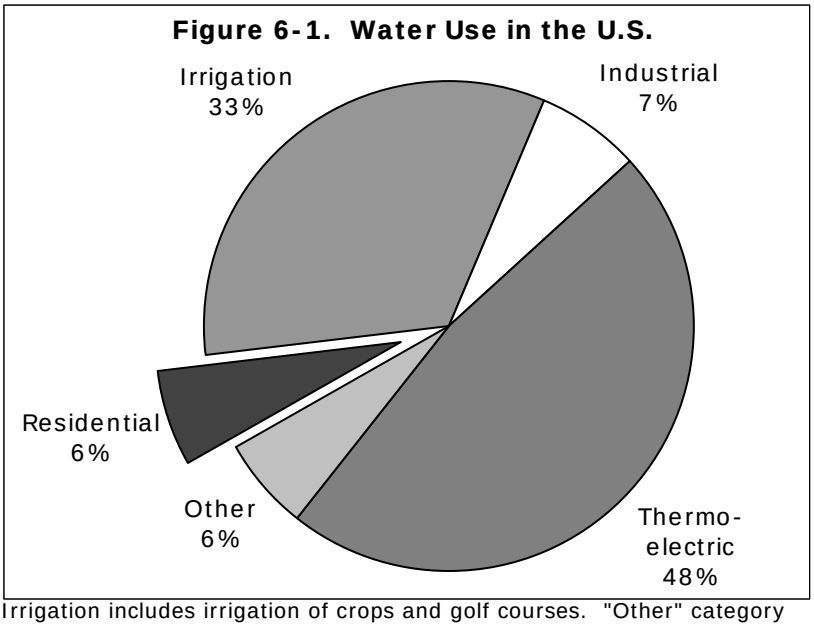
Source: 2006 national survey, American Library Association.

Chapter 6 Water Supply and Sewerage

In 2000, the estimated water use in the United States was about 408 billion gallons per day for all users including households, farms, businesses and governments, according to the U.S. Department of the Interior's most recent report. This total has varied less than 3 percent since 1985 as water withdrawals have stabilized for the two largest components of water usage—thermoelectric power and irrigation.

This report shows that about 81.5 percent of the water used in the United States is used to irrigate farmland and generate thermoelectric power. Although the latest report lacks detail on water consumed by the residential sector, it is possible to get these numbers from the previous (1995) report, noting that total water withdrawal in the U.S. has been rather stable over the past two decades. As shown in Figure 6-1, in 1995 residential uses accounted for only about 6 percent of total water usage.

Figure 6-1. Water Use in the U.S.



Irrigation includes irrigation of crops and golf courses. "Other" category includes commercial, livestock, mining, and public use and losses. The chart is based on water withdrawn, so it excludes hydroelectric power that uses water without diverting it

Source: U.S. Department of the Interior, Estimated Use of Water in the United States in 1995, U.S. Geological Survey Circular 1200.

Providing water and sewer services is most often the responsibility of local governments. Local jurisdictions often impose indirect costs on residential customers by charging fees for extending the services to new home, most commonly by levying a fee on the developer before the construction begins. This is another area where local jurisdictions should take differences between younger and older households into account—for example, when calculating impact or tap fees for a 55+ housing project.

Again, household size is relevant. Older households will tend to use water and sewer services less, simply because older households contain fewer people (Figure I-1). In the

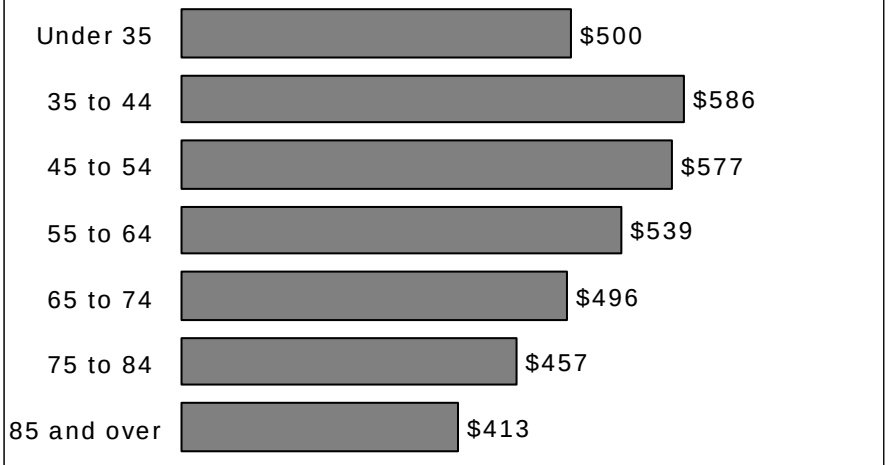
absence of a dataset containing information on both age and gallons of water used,[6] we can use a data on utility bills, or, the dollar amount spent on water and sewer services. The dollar amount is the physical units of water used multiply by a price of water. If the price varies with age—as might occur if areas with an older population also tended to charge higher or lower prices for water service, it has the potential to distort the results.

The 2007 American Housing Survey (AHS), which collects detailed utility expenditure data for individual households. In the AHS, expenses on water usage and sewage disposal over the course of a year are counted as one item. Actually, wastewater flow is usually monitored together, and utilities conventionally assume that it's proportional to water use.

We restrict the sample to be single-family detached home owners. Renters are excluded because of differential practices in including utility expenses in rents. Single-family detached, which account for the majority of owner-occupied homes, are used to control for possible differences among structure types. The samples of owner-occupied units in other types of structures are generally too small to cross tabulate by other variables.

Average water and sewer expenses by age of the household head are shown in Figure 6-2. Households in the age brackets 35 to 44 and 45 to 54 pay the most for water and sewer services. When the head of the household reaches 55, the expenses decline consistently as age increases. After age 65, water and sewer use drops even below the levels for the under-35 households and continues to decline with age.

Figure 6-2. Average Water/Sewer Bills in Single Family Homes by Age of Household Head



Source: 2007 American Housing Survey, U.S. Census Bureau and HUD

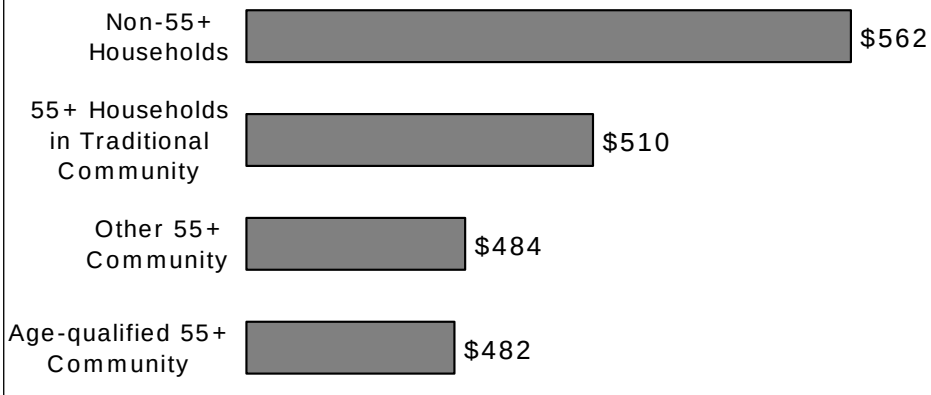
Households living in 55+ communities spend less on water and sewer bills than households living in traditional communities, as shown in Figure 6-3—water and sewer bills by community type. An age-qualified 55+ community is defined as age-restricted

[6] At NAHB's request, the American Water Works Association conducted an extensive search of thousands of articles and databases. It found no source of information on water use measured in physical units that identifies the age of the household or specifically separates seniors from other types of housing

communities in which the residents are households headed by someone age 55 and older. If the community is not specifically age-restricted, but the majority of the neighbors is 55 and older, then we name it "Other 55+ community". If the 55+ households live neither in age-qualified 55+ community, nor in other 55+ community, then we classify them to be "55+ households in traditional community." All other households headed by some one under 55 are in the "Non-55+ households" category.

On average, households living in age-qualified 55+ communities spend $482 per year on water and sewer services, and households living in other 55+ communities spend a similar of $484 per year. In contrast, if 55+ households live in traditional communities, they spend more—about $510 per year.

Figure 6-3. Average Water/Sewer Bills in Single Family Homes by Community Type



Source: 2007 American Housing Survey, U.S. Census Bureau and HUD

This finding supports our hypothesis that older households use fewer water and sewer services than younger households. Therefore, when approving a 55+ housing project, local governments should be aware that they will spend less on water sewer infrastructure per housing unit on a 55+ housing project than a typical project for residents of any age.

Appendix 1: Tables with Geographic Detail

This appendix contains four tables. Table A1-1 shows number of persons per household by age of household head and by state. The data used to calculate this statistic are the most recent (2006) American Community Survey conducted by the Census Bureau. This table is referred to in the Introduction section.

Household size is measured by number of persons per household, which differ significantly between 55+ households and younger households. In general, household size decreases with age, especially after age 45. For households age 65 and over, majority of the states has a household size of smaller than 2 on average.

Table A1-1. Persons Per Household by Age of Household Head and by State

State	Age of Household Head						
	Under 35	34 to 44	45 to 54	55 to 64	65 to 74	75 to 84	85 and older
Alabama	2.67	3.15	2.53	2.05	1.86	1.60	1.44
Alaska	2.84	3.25	2.72	2.06	2.08	1.92	1.71
Arizona	2.91	3.27	2.64	2.11	1.90	1.66	1.46
Arkansas	2.91	3.17	2.43	2.06	1.82	1.59	1.43
California	2.96	3.42	2.98	2.33	1.97	1.70	1.46
Colorado	2.62	3.13	2.53	1.98	1.81	1.59	1.34
Connecticut	2.63	3.23	2.77	2.10	1.87	1.56	1.38
Delaware	2.70	3.23	2.67	2.00	1.86	1.63	1.38
District of Columbia	2.03	2.28	2.03	1.92	1.87	1.67	1.61
Florida	2.68	3.08	2.62	2.08	1.87	1.61	1.42
Georgia	2.73	3.09	2.61	2.10	1.89	1.65	1.41
Hawaii	2.92	3.30	2.97	2.57	2.46	2.34	2.04
Idaho	2.90	3.43	2.60	2.03	1.82	1.68	1.52
Illinois	2.71	3.26	2.75	2.15	1.86	1.62	1.34
Indiana	2.78	3.22	2.57	2.02	1.81	1.56	1.37
Iowa	2.66	3.23	2.49	1.98	1.78	1.49	1.30
Kansas	2.68	3.28	2.58	2.00	1.81	1.50	1.30
Kentucky	2.71	3.03	2.44	1.99	1.80	1.60	1.34
Louisiana	2.83	3.17	2.62	2.13	1.93	1.66	1.46
Maine	2.62	2.98	2.46	1.95	1.76	1.56	1.25
Maryland	2.60	3.16	2.73	2.15	1.90	1.65	1.50
Massachusetts	2.49	3.17	2.80	2.08	1.82	1.59	1.37
Michigan	2.70	3.25	2.63	2.06	1.83	1.58	1.36
Minnesota	2.60	3.24	2.62	2.03	1.77	1.50	1.32
Mississippi	2.92	3.21	2.57	2.11	1.94	1.61	1.48
Missouri	2.71	3.18	2.56	2.00	1.81	1.58	1.33
Montana	2.64	3.19	2.49	2.04	1.77	1.50	1.23
Nebraska	2.70	3.30	2.69	2.01	1.73	1.52	1.26
Nevada	2.91	3.15	2.58	2.06	1.84	1.71	1.38
New Hampshire	2.54	3.15	2.62	2.06	1.83	1.58	1.27
New Jersey	2.71	3.30	2.98	2.25	1.93	1.63	1.41
New Mexico	2.86	3.07	2.55	2.06	1.88	1.72	1.50
New York	2.62	3.16	2.81	2.23	1.88	1.62	1.42
North Carolina	2.63	3.09	2.50	2.03	1.81	1.59	1.42
North Dakota	2.42	3.11	2.47	2.04	1.66	1.49	1.34
Ohio	2.69	3.17	2.56	2.02	1.86	1.56	1.34
Oklahoma	2.80	3.20	2.47	1.98	1.84	1.59	1.34
Oregon	2.70	3.14	2.46	2.00	1.82	1.63	1.33
Pennsylvania	2.58	3.16	2.67	2.05	1.81	1.57	1.35
Rhode Island	2.59	3.08	2.69	2.06	1.83	1.61	1.37
South Carolina	2.67	3.08	2.54	2.10	1.88	1.65	1.45
South Dakota	2.66	3.28	2.63	1.91	1.78	1.57	1.28
Tennessee	2.73	3.08	2.51	2.04	1.80	1.59	1.42
Texas	2.89	3.34	2.75	2.21	1.94	1.70	1.45
Utah	3.21	3.97	3.11	2.32	2.06	1.73	1.46
Vermont	2.56	3.10	2.48	2.01	1.87	1.56	1.30
Virginia	2.58	3.08	2.64	2.09	1.89	1.63	1.42
Washington	2.65	3.10	2.62	2.03	1.77	1.59	1.40
West Virginia	2.74	3.12	2.44	2.03	1.81	1.58	1.34
Wisconsin	2.61	3.21	2.57	1.97	1.77	1.55	1.25
Wyoming	2.64	3.29	2.42	1.98	1.83	1.50	1.31
U.S.	2.74	3.21	2.68	2.11	1.87	1.62	1.40

Source: 2006 American Community Survey, Census Bureau.

Tables A1-2 and A1-3 show number of vehicles per household by age of household head and by state. Data used are also the 2006 ACS. These two tables are referred to in Chapter 3—Transportation.

The number of vehicles owned affects vehicle miles traveled (VMT) of each household and thus affect the demand for road infrastructure. Basically in all states, the number of vehicles owned per household decreases quickly as age of the householder increases. Households in multifamily buildings general own fewer vehicles, and the number of vehicle owned also decreases with age.

Table A1-2. Vehicles Per Household by Age of Household Head and by State (Single Family Detached)

State	Age of Household Head				
	Under 35	35 to 54	55 to 64	65 to 74	Age 75 and older
Alabama	1.92	2.31	2.17	1.89	1.42
Alaska	1.87	2.23	2.09	1.69	1.32
Arizona	1.97	2.16	2.06	1.77	1.41
Arkansas	1.86	2.16	2.11	1.82	1.37
California	2.16	2.40	2.32	2.00	1.50
Colorado	2.09	2.33	2.24	2.04	1.61
Connecticut	2.05	2.36	2.32	1.95	1.40
Delaware	2.10	2.29	2.17	1.81	1.54
District of Columbia	1.57	1.57	1.84	1.46	1.01
Florida	1.92	2.14	2.01	1.73	1.31
Georgia	1.94	2.21	2.14	1.92	1.47
Hawaii	2.01	2.28	2.40	2.10	1.69
Idaho	2.21	2.48	2.37	2.13	1.62
Illinois	1.95	2.23	2.17	1.77	1.30
Indiana	1.95	2.28	2.20	1.89	1.35
Iowa	2.06	2.42	2.24	1.99	1.45
Kansas	1.97	2.38	2.26	2.01	1.55
Kentucky	1.92	2.25	2.15	1.79	1.34
Louisiana	1.80	2.07	1.96	1.68	1.23
Maine	1.99	2.25	2.12	1.78	1.31
Maryland	2.10	2.38	2.35	1.98	1.50
Massachusetts	1.95	2.22	2.12	1.78	1.30
Michigan	1.90	2.22	2.10	1.80	1.30
Minnesota	2.13	2.34	2.23	1.86	1.35
Mississippi	1.89	2.15	2.05	1.83	1.39
Missouri	1.95	2.24	2.11	1.86	1.39
Montana	2.13	2.56	2.28	2.12	1.61
Nebraska	2.05	2.41	2.34	2.02	1.53
Nevada	2.08	2.23	2.11	1.84	1.56
New Hampshire	2.20	2.44	2.25	1.98	1.44
New Jersey	2.00	2.29	2.25	1.80	1.30
New Mexico	2.02	2.19	2.15	1.95	1.51
New York	1.88	2.16	2.10	1.73	1.26
North Carolina	1.92	2.27	2.21	1.92	1.43
North Dakota	2.16	2.51	2.50	1.93	1.75
Ohio	1.94	2.26	2.14	1.84	1.34
Oklahoma	1.82	2.20	2.04	1.89	1.47
Oregon	2.11	2.29	2.25	2.03	1.56
Pennsylvania	1.98	2.26	2.16	1.82	1.27
Rhode Island	2.16	2.23	2.23	1.77	1.32
South Carolina	1.89	2.20	2.13	1.86	1.38
South Dakota	2.24	2.59	2.38	2.12	1.60
Tennessee	1.97	2.27	2.18	1.86	1.38
Texas	1.88	2.14	2.05	1.78	1.40
Utah	2.17	2.49	2.46	2.16	1.56
Vermont	2.02	2.23	2.22	1.80	1.27
Virginia	2.11	2.41	2.35	2.02	1.49
Washington	2.15	2.39	2.30	2.05	1.59
West Virginia	1.84	2.15	2.00	1.74	1.21
Wisconsin	2.08	2.34	2.13	1.85	1.36
Wyoming	2.16	2.61	2.54	2.22	1.74

Source: 2006 American Community Survey, Census Bureau.

Table A1-3. Vehicles Per Household by Age of Household Head and by State (Multifamily)

State	Age of Household Head				
	Under 35	35 to 54	55 to 64	65 to 74	Age 75 and older
Alabama	1.28	1.17	1.02	0.96	0.82
Alaska	1.37	1.32	1.27	1.08	0.81
Arizona	1.32	1.17	1.14	1.11	0.84
Arkansas	1.21	1.13	1.08	1.07	0.70
California	1.41	1.43	1.34	1.11	0.76
Colorado	1.40	1.31	1.20	1.12	0.80
Connecticut	1.32	1.34	1.37	1.19	0.81
Delaware	1.36	1.35	1.31	1.17	0.70
District of Columbia	0.79	0.83	0.86	0.83	0.68
Florida	1.38	1.36	1.28	1.14	0.86
Georgia	1.29	1.15	1.06	0.99	0.74
Hawaii	1.44	1.41	1.28	1.20	0.89
Idaho	1.50	1.43	1.28	1.24	0.95
Illinois	1.20	1.20	1.12	1.03	0.74
Indiana	1.31	1.17	1.22	1.04	0.79
Iowa	1.41	1.25	1.30	1.28	0.81
Kansas	1.46	1.30	1.09	1.08	0.79
Kentucky	1.29	1.14	1.10	0.97	0.72
Louisiana	1.27	1.14	1.12	1.02	0.63
Maine	1.33	1.32	1.23	1.13	0.92
Maryland	1.37	1.34	1.28	1.08	0.80
Massachusetts	1.19	1.30	1.21	1.03	0.70
Michigan	1.36	1.17	1.18	1.10	0.77
Minnesota	1.41	1.22	1.21	1.12	0.82
Mississippi	1.20	1.11	1.04	0.81	0.74
Missouri	1.28	1.12	1.07	1.09	0.75
Montana	1.54	1.18	1.19	1.20	0.71
Nebraska	1.42	1.22	1.16	1.09	0.72
Nevada	1.33	1.17	1.09	1.10	0.79
New Hampshire	1.45	1.48	1.49	1.30	0.80
New Jersey	1.17	1.26	1.26	1.04	0.74
New Mexico	1.34	1.23	1.20	0.97	0.79
New York	0.74	0.78	0.84	0.68	0.51
North Carolina	1.35	1.24	1.11	1.01	0.82
North Dakota	1.51	1.27	1.39	1.23	0.81
Ohio	1.26	1.13	1.15	1.02	0.75
Oklahoma	1.23	1.13	1.16	1.02	0.71
Oregon	1.21	1.19	1.01	0.97	0.70
Pennsylvania	1.21	1.26	1.20	1.01	0.75
Rhode Island	1.37	1.45	1.16	1.11	0.82
South Carolina	1.33	1.18	1.18	1.07	0.85
South Dakota	1.37	1.38	1.27	1.22	0.95
Tennessee	1.30	1.20	1.12	0.97	0.73
Texas	1.27	1.21	1.12	0.99	0.72
Utah	1.62	1.40	1.33	1.14	0.90
Vermont	1.25	1.29	1.61	1.22	1.27
Virginia	1.42	1.44	1.29	1.14	0.85
Washington	1.36	1.23	1.15	1.05	0.72
West Virginia	1.20	1.02	0.97	0.92	0.66
Wisconsin	1.35	1.27	1.25	1.15	0.80
Wyoming	1.51	1.59	1.18	1.29	0.70

Source: 2006 American Community Survey, Census Bureau.

In Chapter 3, we discuss a statistical model that estimates total VMT per year for a particular residential subdivision. The model is based on data from the most recent (2001) National Household Travel Survey (NHTS). Table A1-4 shows the complete set of VMT estimates in different geographic areas. Each small table in Table A1-4 shows the VMT estimates of a particular geographic area, and the geographic area is indicated in the table heading. For example, "Table a" estimates VMT of households living in an urban subdivision in a metropolitan area in the Northeast Census region, and the metropolitan area has population under 1 million. "Table b" estimates VMT of households living in an urban subdivision in a Northeast metropolitan area, and the metropolitan area has population between 1 to 3 million.

Household size and number of workers per household are much lower for older households than for younger ones. Therefore, when we estimate VMT for each age bracket, we set the household size and number of workers per household to be averages for that specific age bracket. For example, VMT for a single family home owner age 55 to 64 is estimated assuming that the number of persons and workers in the households are average for home owners age 55 to 64.

The results of the model show that, controlling for factors available in the NHTS data set, VMT is lower for older households, is lower for a multifamily renter than for a single-family owner, and is lower for households living in more compact subdivisions.

Table A1-4. Estimated Annual Vehicle Miles Traveled Per Household In An Urban Subdivision

Average number of persons is calculated for each age bracket and for SF owner and MF renter separately using 2006 ACS.
Average number of workers is calculated for each age bracket and for SF owner and MF renter separately using 2001 NHTS.

Table a. (In a **Northeastern** metropolitan area; the metro area has population under 1 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	29,782	28,772	22,268	16,398	13,027	22,702	20,215	15,860	11,235	8,694
0.08 to 0.39	28,181	27,171	20,668	14,797	11,427	21,101	18,614	14,259	9,635	7,094
0.39 to 1.56	27,895	26,885	20,382	14,512	11,141	20,815	18,328	13,973	9,349	6,808
1.56 to 4.69	25,534	24,524	18,020	12,150	8,779	18,454	15,967	11,612	6,987	4,446
4.69 to 7.81	25,158	24,148	17,645	11,774	8,404	18,078	15,591	11,236	6,612	4,071
7.81 or more	23,208	22,198	15,695	9,824	6,453	16,128	13,641	9,286	4,661	2,120

Table b. (In a **Northeastern** metropolitan area; the metro area has population 1-3 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	31,845	30,835	24,328	18,458	15,087	24,765	22,275	17,920	13,295	10,754
0.08 to 0.39	30,244	29,234	22,728	16,857	13,487	23,164	20,674	16,319	11,695	9,154
0.39 to 1.56	28,226	27,216	20,712	14,842	11,471	21,146	18,658	14,303	9,679	7,138
1.56 to 4.69	25,864	24,854	18,350	12,480	9,109	18,784	16,297	11,942	7,317	4,776
4.69 to 7.81	25,489	24,479	17,975	12,104	8,734	18,408	15,921	11,566	6,942	4,401
7.81 or more	23,538	22,528	16,025	10,154	6,783	16,458	13,971	9,616	4,991	2,450

Table c. (In a **Northeastern** metropolitan area; the metro area has population 3 million and up)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	31,920	30,915	24,408	18,538	15,167	24,845	22,355	18,000	13,375	10,834
0.08 to 0.39	30,320	29,314	22,808	16,937	13,567	23,244	20,754	16,399	11,775	9,234
0.39 to 1.56	29,524	28,516	22,012	16,142	12,771	22,446	19,958	15,603	10,979	8,438
1.56 to 4.69	27,162	26,154	19,650	13,780	10,409	20,084	17,597	13,242	8,617	6,076
4.69 to 7.81	26,787	25,779	19,275	13,404	10,034	19,708	17,221	12,866	8,242	5,701
7.81 or more	24,837	23,828	17,325	11,454	8,083	17,758	15,271	10,916	6,291	3,750

*: number of housing units per acre

Table d. (In a **Midwest** metropolitan area; the metro area has population under 1 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	31,650	30,642	24,138	18,268	14,897	24,572	22,085	17,730	13,105	10,564
0.08 to 0.39	30,049	29,041	22,538	16,667	13,297	22,971	20,484	16,129	11,505	8,964
0.39 to 1.56	29,764	28,755	22,252	16,382	13,011	22,685	20,198	15,843	11,219	8,678
1.56 to 4.69	27,402	26,394	19,890	14,020	10,649	20,324	17,837	13,482	8,857	6,316
4.69 to 7.81	27,026	26,018	19,515	13,644	10,274	19,948	17,461	13,106	8,482	5,941
7.81 or more	25,076	24,068	17,565	11,694	8,323	17,998	15,511	11,156	6,531	3,990

(housing units per acre)

Table e. (In a **Midwest** metropolitan area; the metro area has population 1-3 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	33,713	32,705	26,198	20,328	16,957	26,635	24,145	19,790	15,165	12,624
0.08 to 0.39	32,112	31,104	24,598	18,727	15,357	25,034	22,544	18,189	13,565	11,024
0.39 to 1.56	30,094	29,086	22,582	16,712	13,341	23,016	20,528	16,173	11,549	9,008
1.56 to 4.69	27,732	26,724	20,220	14,350	10,979	20,654	18,167	13,812	9,187	6,646
4.69 to 7.81	27,357	26,349	19,845	13,974	10,604	20,278	17,791	13,436	8,812	6,271
7.81 or more	25,406	24,398	17,895	12,024	8,653	18,328	15,841	11,486	6,861	4,320

Table f. (In a **Midwest** metropolitan area; the metro area has population 3 million and up)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	33,790	32,785	26,278	20,408	17,037	26,715	24,225	19,870	15,245	12,704
0.08 to 0.39	32,190	31,184	24,678	18,807	15,437	25,114	22,624	18,269	13,645	11,104
0.39 to 1.56	31,394	30,386	23,882	18,012	14,641	24,316	21,828	17,473	12,849	10,308
1.56 to 4.69	29,032	28,024	21,520	15,650	12,279	21,954	19,467	15,112	10,487	7,946
4.69 to 7.81	28,657	27,649	21,145	15,274	11,904	21,578	19,091	14,736	10,112	7,571
7.81 or more	26,707	25,698	19,195	13,324	9,953	19,628	17,141	12,786	8,161	5,620

Table g. (In a **South** metropolitan area; the metro area has population under 1 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	32,685	31,675	25,172	19,301	15,930	25,605	23,118	18,763	14,138	11,597
0.08 to 0.39	31,084	30,074	23,571	17,700	14,330	24,004	21,517	17,162	12,538	9,997
0.39 to 1.56	30,799	29,789	23,285	17,415	14,044	23,718	21,232	16,877	12,252	9,711
1.56 to 4.69	28,437	27,427	20,924	15,053	11,682	21,357	18,870	14,515	9,890	7,349
4.69 to 7.81	28,061	27,051	20,548	14,677	11,307	20,981	18,494	14,139	9,515	6,974
7.81 or more	26,111	25,101	18,598	12,727	9,357	19,031	16,544	12,189	7,564	5,024

(housing units per acre)

Table h. (In a **South** metropolitan area; the metro area has population 1-3 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	34,748	33,738	27,232	21,361	17,990	27,668	25,178	20,823	16,198	13,657
0.08 to 0.39	33,147	32,137	25,631	19,760	16,390	26,067	23,577	19,222	14,598	12,057
0.39 to 1.56	31,129	30,119	23,615	17,745	14,374	24,049	21,562	17,207	12,582	10,041
1.56 to 4.69	28,767	27,757	21,254	15,383	12,012	21,687	19,200	14,845	10,220	7,679
4.69 to 7.81	28,392	27,382	20,878	15,007	11,637	21,311	18,824	14,469	9,845	7,304
7.81 or more	26,441	25,431	18,928	13,057	9,687	19,361	16,874	12,519	7,894	5,354

Table i. (In a **South** metropolitan area; the metro area has population 3 million and up)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	34,824	33,818	27,312	21,441	18,070	27,748	25,258	20,903	16,278	13,737
0.08 to 0.39	33,223	32,217	25,711	19,840	16,470	26,147	23,657	19,302	14,678	12,137
0.39 to 1.56	32,427	31,419	24,915	19,045	15,674	25,349	22,862	18,507	13,882	11,341
1.56 to 4.69	30,065	29,057	22,554	16,683	13,312	22,987	20,500	16,145	11,520	8,979
4.69 to 7.81	29,690	28,682	22,178	16,307	12,937	22,611	20,124	15,769	11,145	8,604
7.81 or more	27,740	26,731	20,228	14,357	10,987	20,661	18,174	13,819	9,194	6,654

Table j. (In a **West** metropolitan area; the metro area has population under 1 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	31,585	30,575	24,071	18,201	14,830	24,504	22,018	17,663	13,038	10,497
0.08 to 0.39	29,984	28,974	22,471	16,600	13,230	22,904	20,417	16,062	11,437	8,897
0.39 to 1.56	29,698	28,688	22,185	16,314	12,944	22,618	20,131	15,776	11,152	8,611
1.56 to 4.69	27,337	26,327	19,823	13,953	10,582	20,256	17,770	13,415	8,790	6,249
4.69 to 7.81	26,961	25,951	19,448	13,577	10,207	19,881	17,394	13,039	8,414	5,874
7.81 or more	25,011	24,001	17,498	11,627	8,256	17,931	15,444	11,089	6,464	3,923

(housing units per acre)

Table k. (In a **West** metropolitan area; the metro area has population 1-3 million)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	33,648	32,638	26,131	20,261	16,890	26,568	24,078	19,723	15,098	12,557
0.08 to 0.39	32,047	31,037	24,531	18,660	15,290	24,967	22,477	18,122	13,497	10,957
0.39 to 1.56	30,029	29,019	22,515	16,644	13,274	22,949	20,461	16,106	11,482	8,941
1.56 to 4.69	27,667	26,657	20,153	14,283	10,912	20,586	18,100	13,745	9,120	6,579
4.69 to 7.81	27,292	26,282	19,778	13,907	10,537	20,211	17,724	13,369	8,744	6,204
7.81 or more	25,341	24,331	17,828	11,957	8,586	18,261	15,774	11,419	6,794	4,253

Table l. (In a **West** metropolitan area; the metro area has population 3 million and up)

Compactness of Subdivision*	Single Family Owner					Multifamily Renter				
	Under 35	35 to 54	55 to 64	65 to 74	75 and older	Under 35	35 to 54	55 to 64	65 to 74	75 and older
Under 0.08	33,723	32,718	26,211	20,341	16,970	26,648	24,158	19,803	15,178	12,637
0.08 to 0.39	32,123	31,117	24,611	18,740	15,370	25,047	22,557	18,202	13,577	11,037
0.39 to 1.56	31,327	30,319	23,815	17,944	14,574	24,249	21,761	17,406	12,782	10,241
1.56 to 4.69	28,965	27,957	21,453	15,583	12,212	21,886	19,400	15,045	10,420	7,879
4.69 to 7.81	28,590	27,582	21,078	15,207	11,837	21,511	19,024	14,669	10,044	7,504
7.81 or more	26,639	25,631	19,128	13,257	9,886	19,561	17,074	12,719	8,094	5,553

Source: NAHB estimates using 2001 National Household Travel Survey, Federal Highway Administration.

Appendix 2: Detail on the Economic Benefits

The first chapter provided the following brief summary of the economic benefits of building 100 housing units in a typical active adult or elderly tax credit project:

Active Adult Community
One-year

- $22.5 million in local income,
- $2.3 million in taxes and other revenue for local governments, and
- 378 local jobs.

Ongoing

- $3.9 million in local income,
- $968,000 in taxes and other revenue for local governments, and
- 69 local jobs.

Elderly Tax Credit Project
One-year

- $5.5 million in local income,
- $515,000 in taxes and other revenue for local governments, and
- 93 local jobs.

Ongoing

- $2.0 million in local income,
- $381,000 in taxes and other revenue for local governments, and
- 28 local jobs.

This appendix contains a series of tables that show these numbers in greater detail. For each of the three phases of the NAHB model, the local income and jobs supported are shown by industry, and local government revenue is broken into various categories of fees and taxes.

The appendix also provides a brief description of the NAHB model used to estimate the economic benefits of home building, explaining the basic structure of the model and the data used to calibrate it.

Table A2-1. Impact of Building 100 Single Family Homes in a Typical Active Adult Community: Summary

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$22,502,000	**$6,614,000**	**$15,888,000**	**$2,293,000**	**378**

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$15,163,000	$4,258,000	$10,905,000	$1,369,000	251

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$7,339,000	$2,356,000	$4,983,000	$924,000	127

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$3,853,000	**$1,136,000**	**$2,717,000**	**$968,000**	**69**

The term local taxes is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc…
Source: Results from NAHB local impact of home building model.

Table A2-2. Impact of Building 100 Homes in an Active Adult Community Phase I -- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$10,569,000	$2,732,000	$7,838,000	$44,000	177
Manufacturing	$30,000	$4,000	$26,000	$43,000	1
Transportation	$79,000	$9,000	$70,000	$28,000	3
Communications	$150,000	$53,000	$97,000	$65,000	1
Utilities	$77,000	$57,000	$20,000	$75,000	0
Wholesale and Retail Trade	$1,596,000	$244,000	$1,352,000	$36,000	38
Finance and Insurance	$284,000	$32,000	$252,000	$75,000	3
Real Estate	$259,000	$226,000	$33,000	$43,000	1
Personal & Repair Services	$135,000	$113,000	$22,000	$56,000	0
Services to Dwellings / Buildings	$69,000	$23,000	$46,000	$30,000	2
Business & Professional Services	$1,738,000	$668,000	$1,070,000	$48,000	22
Eating and Drinking Places	$31,000	($5,000)	$36,000	$19,000	2
Automobile Repair & Service	$41,000	$32,000	$9,000	$51,000	0
Entertainment Services	$10,000	$3,000	$7,000	$43,000	0
Health, Educ. & Social Services	$1,000	$0	$1,000	$36,000	0
Local Government	$9,000	$8,000	$1,000	$48,000	0
Other	$84,000	$58,000	$26,000	$51,000	1
Total	$15,163,000	$4,258,000	$10,905,000	$43,000	251

Source: Results from NAHB local impact of home building model.

Table A2-3. Impact of Building 100 Homes in an Active Adult Community
Phase I -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$93,000	Residential Permit / Impact Fees	653,000
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	219,000
General Sales Taxes	$133,000	Hospital Charges	67,000
Specific Excise Taxes	$13,000	Transportation Charges	28,000
Income Taxes	$30,000	Education Charges	29,000
License Taxes	$2,000	Other Fees and Charges	91,000
Other Taxes	$12,000	**TOTAL FEES & CHARGES**	**1,086,000**
TOTAL TAXES	**$283,000**	**TOTAL GENERAL REVENUE**	**1,369,000**

Source: Results from NAHB local impact of home building model.

Table A2-4. Impact of Building 100 Homes in an Active Adult Community
Phase II-- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$108,000	$18,000	$90,000	$44,000	2
Manufacturing	$26,000	$3,000	$23,000	$43,000	1
Transportation	$78,000	$6,000	$73,000	$33,000	2
Communications	$414,000	$161,000	$252,000	$65,000	4
Utilities	$166,000	$74,000	$91,000	$71,000	1
Wholesale and Retail Trade	$1,020,000	$167,000	$853,000	$31,000	28
Finance and Insurance	$322,000	$42,000	$279,000	$64,000	4
Real Estate	$1,135,000	$990,000	$146,000	$43,000	3
Personal & Repair Services	$449,000	$237,000	$213,000	$33,000	6
Services to Dwellings / Buildings	$105,000	$35,000	$70,000	$30,000	2
Business & Professional Services	$660,000	$268,000	$392,000	$43,000	9
Eating and Drinking Places	$290,000	$57,000	$233,000	$19,000	13
Automobile Repair & Service	$209,000	$102,000	$107,000	$62,000	2
Entertainment Services	$131,000	$47,000	$83,000	$35,000	2
Health, Educ. & Social Services	$733,000	$136,000	$597,000	$44,000	14
Local Government	$1,241,000	$0	$1,241,000	$48,000	26
Other	$252,000	$12,000	$240,000	$30,000	8
Total	$7,339,000	$2,356,000	$4,983,000	$39,000	127

Source: Results from NAHB local impact of home building model.

Table A2-5. Impact of Building 100 Homes in an Active Adult Community
Phase II -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$293,000	Residential Permit / Impact Fees	0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	270,000
General Sales Taxes	$95,000	Hospital Charges	32,000
Specific Excise Taxes	$40,000	Transportation Charges	14,000
Income Taxes	$21,000	Education Charges	14,000
License Taxes	$2,000	Other Fees and Charges	107,000
Other Taxes	$37,000	**TOTAL FEES & CHARGES**	**437,000**
TOTAL TAXES	**$487,000**	**TOTAL GENERAL REVENUE**	**924,000**

Source: Results from NAHB local impact of home building model.

Table A2-6. Impact of Building 100 Homes in an Active Adult Community Phase III-- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$65,000	$11,000	$54,000	$44,000	1
Manufacturing	$14,000	$2,000	$12,000	$43,000	0
Transportation	$32,000	$3,000	$29,000	$32,000	1
Communications	$219,000	$86,000	$133,000	$65,000	2
Utilities	$109,000	$49,000	$60,000	$71,000	1
Wholesale and Retail Trade	$513,000	$84,000	$429,000	$31,000	14
Finance and Insurance	$182,000	$24,000	$157,000	$65,000	2
Real Estate	$413,000	$360,000	$53,000	$43,000	1
Personal & Repair Services	$244,000	$129,000	$115,000	$33,000	4
Services to Dwellings / Buildings	$92,000	$31,000	$61,000	$30,000	2
Business & Professional Services	$368,000	$149,000	$219,000	$43,000	5
Eating and Drinking Places	$136,000	$27,000	$109,000	$19,000	6
Automobile Repair & Service	$104,000	$52,000	$53,000	$60,000	1
Entertainment Services	$65,000	$23,000	$42,000	$34,000	1
Health, Educ. & Social Services	$556,000	$95,000	$461,000	$44,000	10
Local Government	$548,000	$0	$548,000	$48,000	11
Other	$193,000	$12,000	$180,000	$30,000	6
Total	$3,853,000	$1,136,000	$2,717,000	$39,000	69

Source: Results from NAHB local impact of home building model.

Table A2-5. Impact of Building 100 Homes in an Active Adult Community Phase III -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$147,000	Residential Permit / Impact Fees	0
Residential Property Taxes	$331,000	Utilities & Other Govt. Enterprises	232,000
General Sales Taxes	$48,000	Hospital Charges	92,000
Specific Excise Taxes	$20,000	Transportation Charges	7,000
Income Taxes	$11,000	Education Charges	7,000
License Taxes	$1,000	Other Fees and Charges	54,000
Other Taxes	$19,000	**TOTAL FEES & CHARGES**	**393,000**
TOTAL TAXES	**$575,000**	**TOTAL GENERAL REVENUE**	**968,000**

Source: Results from NAHB local impact of home building model.

Table A2-8. Impact of Building 100 Single Family Homes in a Typical Elderly Tax Credit Project: Summary

Total One-Year Impact: Sum of Phase I and Phase II:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$5,471,000	**$1,146,000**	**$4,325,000**	**$515,000**	**93**

Phase I: Direct and Indirect Impact of Construction Activity:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$3,790,000	$723,000	$3,067,000	$308,000	67

Phase II: Induced (Ripple) Effect of Spending the Income and Taxes from Phase I:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$1,681,000	$423,000	$1,258,000	$207,000	26

Phase III: Ongoing, Annual Effect that Occurs When New Homes are Occupied:

Local Income	Local Business Owners' Income	Local Wages and Salaries	Local Taxes	Local Jobs Supported
$1,973,000	**$755,000**	**$1,219,000**	**$381,000**	**28**

The term local taxes is used as a shorthand for local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc…
Source: Results from NAHB local impact of home building model.

Table A2-9. Impact of Building 100 Homes in an Elderly Tax Credit Project Phase I -- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$2,716,000	$332,000	$2,384,000	$46,000	52
Manufacturing	$5,000	$1,000	$5,000	$45,000	0
Transportation	$11,000	$1,000	$10,000	$29,000	0
Communications	$35,000	$13,000	$22,000	$68,000	0
Utilities	$16,000	$11,000	$5,000	$79,000	0
Wholesale and Retail Trade	$262,000	$40,000	$222,000	$38,000	6
Finance and Insurance	$51,000	$5,000	$45,000	$72,000	1
Real Estate	$60,000	$52,000	$8,000	$45,000	0
Personal & Repair Services	$31,000	$29,000	$1,000	$44,000	0
Services to Dwellings / Buildings	$20,000	$7,000	$13,000	$31,000	0
Business & Professional Services	$557,000	$208,000	$349,000	$49,000	7
Eating and Drinking Places	$5,000	$4,000	$0	$19,000	0
Automobile Repair & Service	$11,000	$9,000	$1,000	$41,000	0
Entertainment Services	$2,000	$1,000	$1,000	$40,000	0
Health, Educ. & Social Services	$0	$0	$0	$40,000	0
Local Government	$2,000	$2,000	$0	$50,000	0
Other	$9,000	$8,000	$1,000	$35,000	0
Total	$3,790,000	$723,000	$3,067,000	$46,000	67

Source: Results from NAHB local impact of home building model.

Table A2-10. Impact of Building 100 Homes in an Elderly Tax Credit Project
Phase I -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$21,000	Residential Permit / Impact Fees	146,000
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	45,000
General Sales Taxes	$30,000	Hospital Charges	17,000
Specific Excise Taxes	$3,000	Transportation Charges	7,000
Income Taxes	$8,000	Education Charges	7,000
License Taxes	$0	Other Fees and Charges	22,000
Other Taxes	$3,000	**TOTAL FEES & CHARGES**	**245,000**
TOTAL TAXES	**$64,000**	**TOTAL GENERAL REVENUE**	**308,000**

Source: Results from NAHB local impact of home building model.

Table A2-11. Impact of Building 100 Homes in an Elderly Tax Credit Project
Phase II-- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$19,000	$3,000	$16,000	$46,000	0
Manufacturing	$18,000	$2,000	$15,000	$44,000	0
Transportation	$40,000	$3,000	$38,000	$37,000	1
Communications	$322,000	$82,000	$240,000	$73,000	3
Utilities	$24,000	$10,000	$14,000	$77,000	0
Wholesale and Retail Trade	$32,000	$5,000	$28,000	$44,000	1
Finance and Insurance	$117,000	$12,000	$105,000	$66,000	2
Real Estate	$58,000	$50,000	$7,000	$45,000	0
Personal & Repair Services	$126,000	$57,000	$68,000	$45,000	2
Services to Dwellings / Buildings	$7,000	$2,000	$5,000	$31,000	0
Business & Professional Services	$174,000	$72,000	$102,000	$45,000	2
Eating and Drinking Places	$12,000	$2,000	$9,000	$19,000	0
Automobile Repair & Service	$153,000	$80,000	$73,000	$53,000	1
Entertainment Services	$46,000	$17,000	$29,000	$44,000	1
Health, Educ. & Social Services	$159,000	$24,000	$135,000	$45,000	3
Local Government	$291,000	$0	$291,000	$50,000	6
Other	$83,000	$0	$82,000	$29,000	3
Total	$1,681,000	$423,000	$1,258,000	$49,000	26

Source: Results from NAHB local impact of home building model.

Table A2-12. Impact of Building 100 Homes in an Elderly Tax Credit Project
Phase II -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$58,000	Residential Permit / Impact Fees	0
Residential Property Taxes	$0	Utilities & Other Govt. Enterprises	80,000
General Sales Taxes	$19,000	Hospital Charges	1,000
Specific Excise Taxes	$8,000	Transportation Charges	3,000
Income Taxes	$5,000	Education Charges	3,000
License Taxes	$0	Other Fees and Charges	22,000
Other Taxes	$7,000	**TOTAL FEES & CHARGES**	**110,000**
TOTAL TAXES	**$97,000**	**TOTAL GENERAL REVENUE**	**207,000**

Source: Results from NAHB local impact of home building model.

Table A2-13. Impact of Building 100 Homes in an Elderly Tax Credit Project Phase III-- Local Income and Jobs by Industry

Industry	Local Income	Local Business Owners' Income	Local Wages and Salaries	Wages & Salaries per Full-time Job	Number of Local Jobs Supported
Construction	$19,000	$3,000	$17,000	$46,000	0
Manufacturing	$11,000	$1,000	$9,000	$44,000	0
Transportation	$32,000	$2,000	$30,000	$36,000	1
Communications	$161,000	$46,000	$115,000	$72,000	2
Utilities	$22,000	$9,000	$12,000	$75,000	0
Wholesale and Retail Trade	$142,000	$23,000	$119,000	$33,000	4
Finance and Insurance	$76,000	$9,000	$68,000	$67,000	1
Real Estate	$457,000	$399,000	$59,000	$45,000	1
Personal & Repair Services	$188,000	$90,000	$98,000	$35,000	3
Services to Dwellings / Buildings	$21,000	$7,000	$14,000	$31,000	0
Business & Professional Services	$177,000	$69,000	$108,000	$43,000	2
Eating and Drinking Places	$31,000	$6,000	$25,000	$19,000	1
Automobile Repair & Service	$70,000	$36,000	$34,000	$56,000	1
Entertainment Services	$37,000	$15,000	$22,000	$36,000	1
Health, Educ. & Social Services	$258,000	$38,000	$219,000	$45,000	5
Local Government	$205,000	$0	$205,000	$50,000	4
Other	$66,000	$1,000	$65,000	$30,000	2
Total	$1,973,000	$755,000	$1,219,000	$43,000	28

Source: Results from NAHB local impact of home building model.

Table A2-14. Impact of Building 100 Homes in an Elderly Tax Credit Project Phase III -- Local Government General Revenue by Type

TAXES		USER FEES & CHARGES	
Business Property Taxes	$73,000	Residential Permit / Impact Fees	0
Residential Property Taxes	$74,000	Utilities & Other Govt. Enterprises	110,000
General Sales Taxes	$24,000	Hospital Charges	40,000
Specific Excise Taxes	$10,000	Transportation Charges	4,000
Income Taxes	$5,000	Education Charges	4,000
License Taxes	$0	Other Fees and Charges	27,000
Other Taxes	$9,000	**TOTAL FEES & CHARGES**	**185,000**
TOTAL TAXES	**$196,000**	**TOTAL GENERAL REVENUE**	**381,000**

Source: Results from NAHB local impact of home building model.

Description of the NAHB Model Used to Estimate the Economic Benefits of Home Building

The Housing Policy Department of the National Association of Home Builders (NAHB) maintains an economic model that it uses to estimate the local economic benefits of home building. Originally developed in 1996, the model was at first calibrated to a typical metropolitan area using national averages, but from the beginning was capable of being adapted to a specific local economy by replacing key housing market variables. The initial version of the model could be applied to single family construction, multifamily construction, or a combination of the two.

In March 1997, NAHB began customizing the model to various areas around the country on a routine basis, primarily at the request of its local affiliated associations. As of January 2008, the Housing Policy Department has produced more than 500 of these customized reports analyzing residential construction in various metropolitan areas, non-metropolitan counties, and states across the country

The reports have analyzed the impacts of specific housing projects, as well as total home building in areas as large as entire states. In 2002, NAHB developed new versions of the model to analyze active adult housing projects and multifamily development financed with the Low-Income Housing Tax Credit. In 2005, a version of the model that analyzes residential remodeling was added to the mix.

Results from NAHB's local impact model have been used by outside organizations such as universities, state housing authorities and affordable housing agencies:

- The Shimburg Center for Affordable Housing at the University of Florida used results from the NAHB model to establish that "the real estate taxes paid year after year are the most obvious long-term economic benefit to the community. Probably the second most obvious long-term economic benefit is the purchases made by the family occupying the completed home." www.shimberg.ufl.edu/pdfs/Newslett-June02.pdf

- The Center for Applied Economic Research at Montana State University used "results from an input-output model developed by the National Association of Home Builders to assess the impacts to local areas from new home construction." The results show that "the construction industry contributes substantially to Montana's economy accounting for 5.5 percent of Gross State Product." www.msubillings.edu/caer/The%20Impact%20of%20Home%20Construction%20in%20Montana.pdf

- The Housing Education and Research Center at Michigan State University also adopted the NAHB approach: "The underlying basis for supporting the implementation of this [NAHB] model on Michigan communities is that it provides quantifiable results that link new residential development with commercial and other forms of development therefore illustrating the overall economic effects of residential growth." www.canr.msu.edu/cm/herc/h5over.html

- The Center for Economic Development at the University of Massachusetts found that "Home building generates substantial local economic activity, including income, jobs, and revenue for state and local governments. These far exceed the school costs-to-property-tax ratios. …these factors were evaluated by means of a quantitative assessment of data from the National Association of Home Builder's Local Impact of Home Building model" www.donahue.umassp.edu/publications/housing/7-economicco.html

- Similarly, the Association of Oregon Community Development Organizations decided to base its analysis of affordable housing on the NAHB model, stating that "This model is widely respected and utilized in analyzing the economic impact of market rate housing development," and that, compared to alternatives, it "is considered the most comprehensive and is considered an improvement on most previous models." www.aocdo.org/docs/EcoDevoStudyFinal.pdf

- The Boone County Kentucky Planning Commission included results from the NAHB model in its 2005 Comprehensive Report. The Planning Commission used values from the impact model to quantify the increase in local income, taxes, revenue, jobs, and overall local economic impacts in the Metro Area as a result of new home construction. http://www.boonecountyky.org/pc/2005CompPlan.aspxv

The NAHB model is divided into three phases. Phases I and II are one-time effects. Phase I captures the effects that result directly from the construction activity itself and the local industries that contribute to it. Phase II captures the effects that occur as a result of the wages and profits from Phase I being spent in the local economy. Phase III is an ongoing, annual effect that includes property tax payments and the result of the completed unit being occupied.

Phase I: Local Industries Involved in Home Building
The jobs, wages and local taxes (including permit, utility connection and impact fees) generated by the actual development, construction, and sale of the home. These jobs include on-site and off-site construction work as well as jobs generated in retail and wholesale sales of components, transportation to the site, and the professional services required to build a home and deliver it to its final customer.

Phase II: Ripple Effect
The wages and profits for local area residents earned during the construction period are spent on other locally produced goods and services. This generates additional income for local residents, which is spent on still more locally produced goods and services, and so on. This continuing recycling of income back into the community is usually called a *multiplier* or *ripple* effect.

Phase III: Ongoing, Annual Effect
The local jobs, income and taxes generated as a result of the home being occupied. A household moving into a new home generally spends about three-fifths of its income on goods and services sold in the local economy. A fraction of this will become income for local workers and local businesses proprietors. In a typical local area, the household will

also pay 1.25 percent of its income to local governments in the form of taxes and user fees, and a fraction of this will become income for local government employees. This is the first step in another set of economic ripples that cause a permanent increase in the level of economic activity, jobs, wages and local tax receipts.

The NAHB model defines a local economy as a collection of industries and commodities. These are selected from the detailed benchmark input-output tables produced by the U.S. Bureau of Economic Analysis. The idea is to choose goods and services that would typically be produced, sold and consumed within a local market area. Laundry services would qualify, for example, while automobile manufacturing would not. Both business-to-business and business-to-consumer transactions are considered. In general, the model takes a conservative approach and retains a relatively small number of the available industries and commodities. Of the roughly 600 industries and commodities provided in the input-output files, the model uses only 93 commodities and 95 industries.

The design of the model implies that a local economy should include not only the places people live, but also the places where they work, shop, typically go for entertainment, etc. This corresponds reasonably well to the concepts of Metropolitan Statistical Areas and Metropolitan Divisions, areas defined by the U.S. Office of Management and Budget based on local commuting patterns. Outside of these officially defined metropolitan areas, NAHB has determined that a county will usually satisfy the model's requirements.

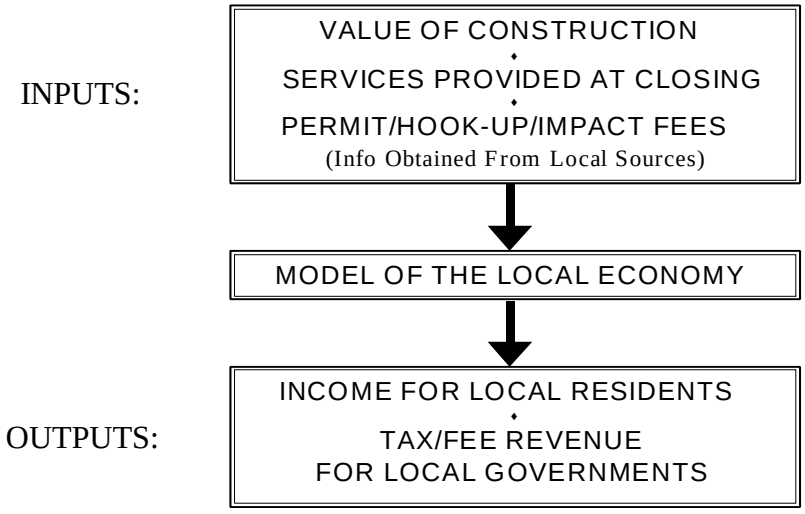
For a particular local area, the model adjusts the indirect business tax section of the national input-output accounts to account for the fiscal structure of local governments in the area. The information used to do this comes primarily from the U.S. Census Bureau's Census of Governments. Wages and salaries are extracted from the employee compensation section of the input-output accounts on an industry-by-industry basis. In order to relate wages and salaries to employment, the model incorporates data on local wages per job published by the Bureau of Economic Analysis.

Phase I: Construction

In order to estimate the local impacts generated by home building, it is necessary to know the sales price of the homes being built, how much raw land contributes to the final price and how much the builder and developer pay to local area governments in the form of permit, utility connection, impact, and other fees. This information is not generally available from national sources and, in most cases, must be provided by representatives from the area in question who have specialized knowledge of local conditions.

The model subtracts raw land value from the price of new construction and converts the difference into local wages, salaries, business owners' income and taxes. This is done separately for all 95 local industries. In addition, the taxes and fees collected by local governments during the construction phase generate wages and salaries for local government employees. Finally, the number of full time jobs supported by the wages and salaries generated in each private local industry and the local government sector is estimated. The process is illustrated in Figure A2-1.

Figure A2-1. SUMMARY OF PHASE I



Phase II: The Construction Ripple

Clearly, the local residents who earn income in Phase I will spend a share of it. Some of this will escape the local economy. A portion of the money used to buy a new car, for example, will become wages for autoworkers who are likely to live in another city, and increased profits for stockholders of an automobile manufacturing company who are also likely to live elsewhere. A portion of the spending, however, will remain within, and have an impact on, the local economy. The car is likely to be purchased from a local dealer and generate income for a salesperson who lives in the area, as well for local workers who provide cleaning, maintenance and other services to the dealership. Consumers also are likely to purchase many services locally, as well as to pay taxes and fees to local governments.

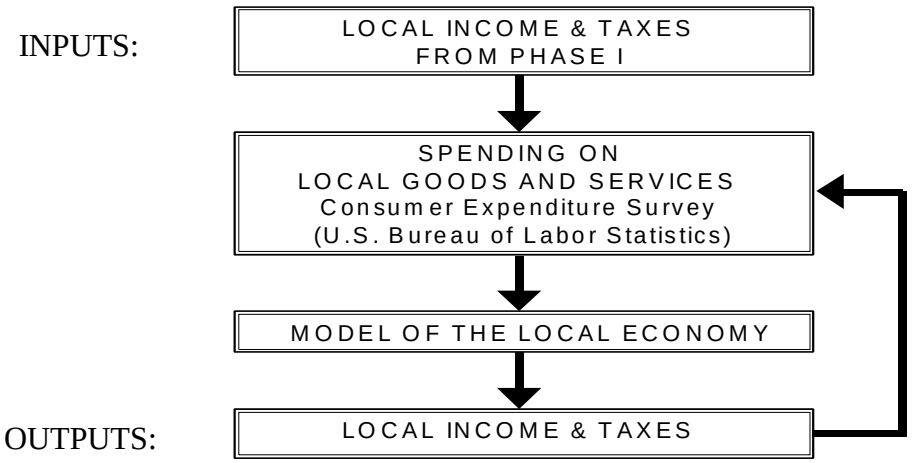
This implies that the income and taxes generated in Phase I become the input for additional economic impacts analyzed in what we call Phase II of the model. Phase II begins by estimating how much of the added income households spend on each of the local commodities. This requires detailed analysis of data from the Consumer Expenditure Survey (CES), which is conducted by the U.S. Bureau of Labor Statistics primarily for the purpose of determining the weights for the Consumer Price Index. The analysis produces household spending estimates for 56 local commodities (the remainder of the 93 local commodities entering the model exclusively through business-to-business transactions).

The model then translates the estimated local spending into local business owners' income, wages and salaries, jobs and taxes. This is essentially the same procedure applied to the homes sold to consumers in Phase I. In Phase II, however, the procedure is applied simultaneously to 56 locally produced and sold commodities.

In other words, the model converts the local income earned in Phase I into local spending, which then generates additional local income. But this, in turn, will lead to additional

spending, which will generate more local income, leading to another round of spending and so on. The process is illustrated in Figure A2-2.

Figure A2-2. SUMMARY OF PHASE II



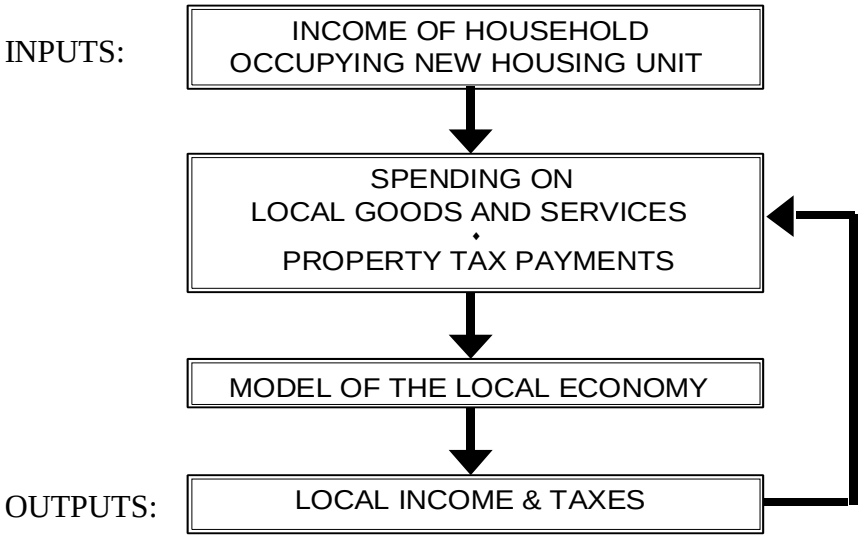
Phase III: The Ongoing Impacts

Like Phase II, Phase III involves computing the sum of successive ripples of economic activity. In Phase III, however, the first ripple is generated by the income and spending of a new household (along with the additional property taxes local governments collect as a result of the new structure). This does not necessarily imply that all new homes must be occupied by households moving in from outside the local area. It may be that an average new-home household moves into the newly constructed unit from elsewhere in the same local area, while average existing-home household moves in from outside to occupy the unit vacated by the first household. Alternatively, it may be that the new home allows the local area to retain a household that would otherwise move out of the area for lack of suitable housing.

In any of these cases, it is appropriate to treat a new, occupied housing unit as a net gain to the local economy of one household with average characteristics for a household that occupies a new home. This reasoning is often used, even if unconsciously, when it is assumed that a new home will be occupied by a household with average characteristics—for instance, an average number of children who will consume public education.

To estimate the impact of the net additional households, Phase III of the model requires an estimate of the income of the households occupying the new homes. The information used to compute this estimate comes from several sources, but primarily from an NAHB statistical model based on decennial census data. Phase III of the local impact model then estimates the fraction of income these households spend on various local commodities. This is done with CES data and is similar to the procedure described under Phase II. The model also calculates the amount of local taxes the households pay each year. This is done with Census of Governments data except in the case of residential property taxes, which are treated separately, and for which specific information must usually be obtained from a local source. Finally, a total ripple effect is computed, using essentially the same procedure outlined above under Phase II. The process is illustrated in Figure A2-3.

Figure A2-3. SUMMARY OF PHASE III



The details covered here provide only a brief description of the model NAHB uses to estimate the local economic benefits of home building. For a more complete description, see the technical documentation at the end of the report. For additional information about the model, or questions about applying it to a particular local area, contact one of the following in NAHB's Housing Policy Department:

- David Crowe, NAHB Chief Economist (202) 266-8383
- Paul Emrath, Assistant Staff Vice President (202) 266-8449
- Elliot Eisenberg, Senior Economist (202) 266-8398

NAHB's 50+ Housing Council

50+ HOUSING COUNCIL
National Association of Home Builders

Nationwide, builders and developers are striving to meet the housing needs of boomers, empty nesters, active adults, retirees, and older seniors. The 50+ Housing Council serves the diverse needs of NAHB members involved in all aspects of 50+ housing, including design, development, finance, ownership, management, and sales and marketing.

ABOUT THE 50+ HOUSING COUNCIL

Since 1989, NAHB's 50+ Housing Council (formerly known as the Seniors Housing Council) has provided nationally recognized educational programs, industry research, networking opportunities, specialized publications, awards and recognition programs, and regulatory and legislative assistance to 50+ housing professionals.

BENEFITS OF MEMBERSHIP

As a 50+ Housing Council member, you receive updates on industry issues, find out the latest demographics and trends, participate in educational seminars and training, network with industry experts, take advantage of member-only discounts, and more.

> Keep up-to-date on market changes with your free subscription to *50+ Housing Magazine*, an information-packed magazine published four times per year

> Visit **www.nahb.org/50plus**, the Council's members-only home on NAHB's web site, for industry research, sales and marketing tips, and other information on the 50+ housing industry

> Learn from industry experts at **Building for Boomers & Beyond: 50+ Housing Symposium**, the Council's annual education and networking conference

> Get free access to the 50+ Housing Channel **(www.nahb.org/50pluschannel)**, an online resource featuring 50+ housing articles and research

> Hone your professional skills by earning the Certified Active Adult Specialist in Housing (CAASH) designation, a series of educational courses on the 50+ housing market

> Gain recognition by participating in the Best of 50+ Housing Awards program, which honors design and marketing excellence for the mature market

> Receive substantial discounts on Council-sponsored educational programs and events

MEMBERS INCLUDE

> Builders
> Developers
> Architects
> Marketers
> Market researchers
> Sales professionals
> Interior designers and merchandisers
> Real estate professionals
> Providers of products and services to 50+ consumers
> Other industry professionals aiming to succeed in the growing 50+ housing market

HOW TO JOIN

To join the 50+ Housing Council, you must be a member of NAHB. Members join NAHB through their local association. To find the local association in your hometown, go to **www.nahb.org/join** or call **800-368-5242 x 5242 x0.**

NAHB members wishing to join the 50+ Housing Council may do so through a Council that is established within your local association, or in the event that no local 50+ Housing Council is established in your HBA, you may join directly through NAHB using the application on the reverse. You will be contacted upon its receipt.

Learn more online:
www.nahb.org/join50plus

A Council of NAHB National Association of Home Builders

800-368-5242 x 8220 | 202-266-8220 | fax: 202-266-8195 | 50plushousingcouncil@nahb.com
1201 15th Street, NW | Washington, DC 20005-2800 | www.nahb.org/50plus

NAHB 50+ HOUSING COUNCIL MEMBERSHIP APPLICATION/ 50+ HOUSING MAGAZINE SUBSCRIPTION FORM

NAHB National Association of Home Builders

NAHB MEMBER PIN

FIRST NAME | LAST NAME

COMPANY

ADDRESS | CITY | STATE | ZIP

TELEPHONE | FAX | EMAIL

SPIKE SPONSOR PIN | SPIKE SPONSOR NAME

PAYMENT OPTIONS

☐ Yes, I am an NAHB Member and also interested in joining the 50+ Housing Council. Please sign me up for an annual membership for $85 (includes a subscription to *50+ Housing Magazine*). Or I would like to be referred to a local 50+ Housing Council, if one exists at my HBA. Go to **www.nahb.org/join50plus** to see a list of local councils across the country.

☐ I am an NAHB Member and would prefer to only purchase a one-year subscription to *50+ Housing Magazine* for $95.

☐ I am not an NAHB Member but would like to learn more about the market by subscribing to *50+ Housing Magazine* for $114. (International members should add $20 to the cost)

PAYMENT

☐ I am sending a check made payable to the National Association of Home Builders to:

NAHB Council Dues | PO Box 631734 | Baltimore, MD 21263-1734

☐ Please bill my credit card:

AMOUNT $

☐ Visa

☐ MasterCard

☐ American Express

CARD NUMBER | EXP. DATE

SIGNATURE

If you are paying by credit card, you may fax this application to 202-266-8442.
If you have any questions, please contact 800-368-5242 x 8220

SEPT 2006