

# **The Economic Impact of Single-Family Real Estate Development in North Carolina**



A Report Prepared for

**North Carolina Association of Realtors®**

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## Executive Summary

Many communities across the country have begun to tightly regulate the pace of housing construction and have adopted substantial impact fees and other measures designed to slow and discourage the pace of housing development. This study undertaken for the North Carolina Association of Realtors® explores the economic impact of single-family residential development in North Carolina. It provides overall estimates of the economic impact stemming from single-family development. The impacts on the economy are examined using the IMPLAN® (IMPact Analysis for PLANing) model.

The analysis explores the economic impact of an average single-family development. A typical 100-home subdivision has a construction cost of \$25,380,000. In the construction phase, the economy benefits from the multiplier effects of this additional spending, resulting in additional income, jobs, and local tax revenues. During the occupancy phase, the economy benefits from the expenditures of the 100 households that occupy homes in the new development.

The typical residential project is estimated to generate an average of \$13,326,149 per year in additional output from the initiation of construction through the first 10 years of occupancy. The present value of the additional output is \$117,641,490. The average employment gain is 116 net new jobs, with an average wage of \$30,315. The new development is estimated to generate an additional \$1,100,779 in local tax revenues annually through the first 10 years of operation. The present value of the additional tax revenue is \$9,207,360.

The Census Bureau reports that \$7.3 billion of single-family residential building permits were issued in North Carolina in 2008. These permits represent *planned* construction expenditures. If all of this construction were actually put in place, it would create an economic annuity that would generate \$3,807,220,309 in additional output in the state each year. It would foster an estimated 33,245 net new jobs and \$1,007,816,297 in additional labor income annually. In the process, the development would spawn \$314,487,673 in extra tax revenue annually at the local level.

Fiscal impact analysis of single-family development on local government finances shows that development yields a fiscal surplus. Net fiscal surplus is the difference between the governmental revenues and expenditures generated by single-family development. The per capita revenue projected for new development is much above the estimated average and marginal cost of municipal services. The typical single-family residential development is estimated to produce an annual fiscal surplus of \$659 per capita, or a total of \$297,868 annually for the development. The net present value of the surplus calculated through the first 10 years of the occupancy phase is \$2,300,058, using a 5.0 percent discount rate. The net present value of the surplus per \$1,000,000 of residential construction expenditures is \$90,625.

In summary, single-family residential development provides substantial economic benefits to North Carolina in terms of increased income and employment, and the additional economic activity fostered by single-family development generates surplus tax revenues sufficient to offset its potential future tax burden. This study clearly demonstrates that the strong contribution of new single-family housing development to increased income and employment along with its positive fiscal impact make it inappropriate as a target of special fees and taxes.

## **Introduction**

Many communities across the country have begun to tightly regulate the pace of housing construction. In past decades, most communities sought to encourage housing construction as part of their broader efforts to foster growth and economic development. Today, however, there is widespread suspicion that housing development does not pay its way and results in ever higher tax burdens for existing residents. As a result, communities in North Carolina and across the country have adopted substantial impact fees and other measures designed to slow and discourage the pace of housing development.

This study undertaken for the North Carolina Association of Realtors® (NCAR) explores the economic impact of single-family real estate development in North Carolina. The first section provides a profile of North Carolina.

The second section of the report lays out the methodology used to evaluate the impacts of single-family development. It explains the impact measures and provides overall estimates of the economic impacts stemming from single-family development. This section provides estimates of the total impact of single-family development in North Carolina.

The third section provides estimates of the net fiscal impacts on local government finance arising from single-family development. It assesses the impact of development activity on local government receipts and expenditures. Net fiscal impact is the difference between the revenues and expenditures generated by single-family development. If revenues are greater than expenditures, single-family development is described as having a positive net fiscal impact. A positive impact means that the surplus generated by the development will allow local tax rates to be lowered, the level of locally funded services to increase, or a combination of the two. In contrast, a negative impact raises the average cost of services to prior residents because they in effect subsidize the cost of services to new residents.

The final section of the paper summarizes relevant finding. The results of this study suggest that the strong contribution of new single-family housing development to increased income and employment along with its positive fiscal impact on local government finances make it inappropriate as a target of special fees and taxes.

## North Carolina: Economic and Demographic Profile

North Carolina (Figure 1) is the tenth largest state in the nation, with an estimated population in 2008 of 9.2 million. Since 2000, the state's population has grown at an average annual rate of 1.7 percent, more rapidly than the 1.4 percent rate recorded for all southern states and faster than the 1.0 percent growth rate registered by the nation as a whole. Since 2000, the Census estimates that the population of the state has grown by 1,176,000. The net migration rate into the state is the tenth highest in the nation, with some 783,000 more people moving into North Carolina than moving out. An estimated 192,000 of these were migrants from abroad, chiefly Mexico and South America.

**Figure 1: North Carolina**



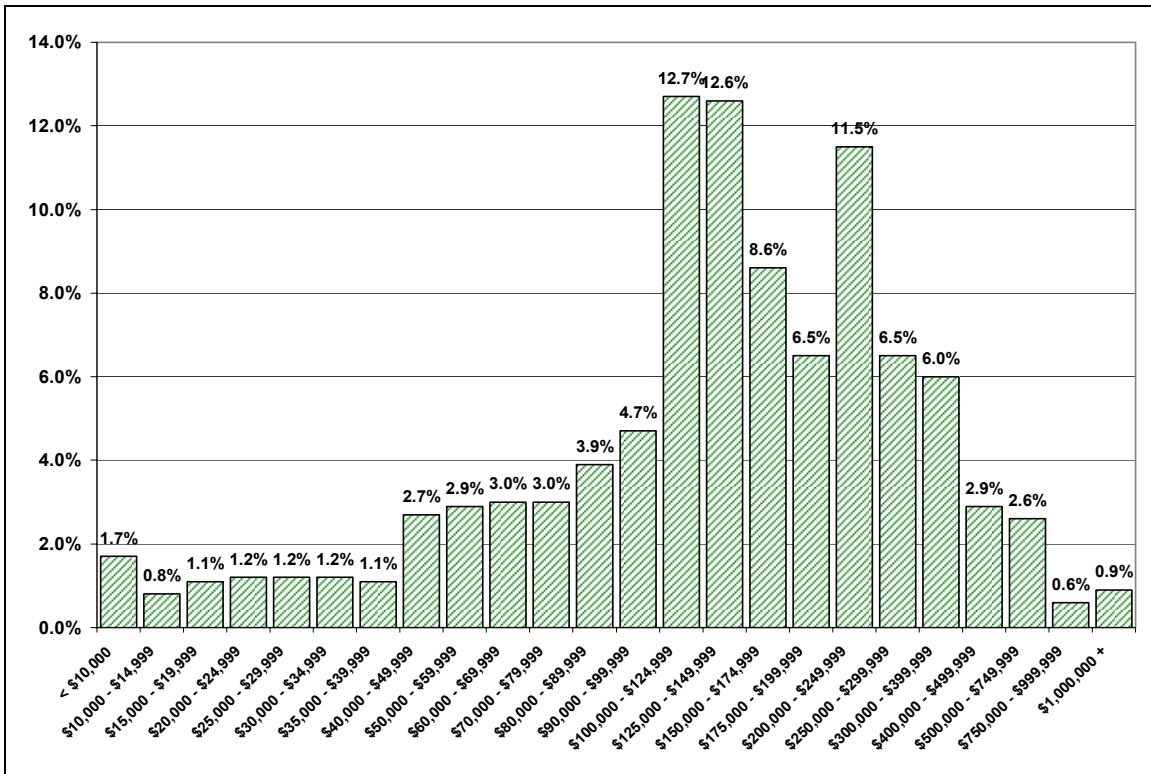
The state's population has become increasingly concentrated in metropolitan areas across the state. In 2007, 72.3 percent of the state's population lived in metropolitan areas; 37.6 percent lived in the three largest metro areas: Charlotte, Raleigh, and Greensboro. From 2000 through 2007, the state's metropolitan areas grew at an annual rate of 2.1 percent, while the population of non-metropolitan areas increased just 0.5 percent annually. The three largest metro areas grew 2.9 percent.

In 2008, 69.5 percent of occupied housing units in the state were owner occupied, compared to 67.7 percent nationally. Median household income in the state was \$51,411 in 2008, or 93.9 percent of the national average. A total of 15.3 percent of households earned more than \$100,000, while 51.6 percent earned more than \$50,000. Average household income was \$66,847.<sup>1</sup>

The median home value in the state was \$142,263 (Figure 2). The ratio of median home value to median household income was 2.77, compared to a national average of 3.34, which suggests that housing in North Carolina is much more affordable than in the nation as a whole. Industry experts estimate the average cost of a new home in the state is \$270,000.

<sup>1</sup> Income statistics and housing values are from ESRA, <http://www.esribis.com/>

**Figure 2: Home Values in North Carolina, 2008**



Source: ESRA, <http://www.esribis.com/>

## Literature Review

The contribution of new housing development is often assessed using fiscal impact analysis. Fiscal impact analysis seeks to show the effects of new development on local government budgets.<sup>2</sup> It assesses the impact of development activity on both government receipts and expenditures. The net fiscal impact is the difference between the revenues and expenditures generated by a proposed land use or development scenario. If revenues are greater than expenditures, a project or scenario is described as having a positive net fiscal impact.

The pessimism with which many planners and government officials have come to view new residential development stems from the findings of numerous fiscal impact studies which over the years have advanced the view that new residential development is a losing proposition for local governments.<sup>3</sup> Consulting firms like TischlerBise and others have produced hundreds of studies of communities across the country that generally stress the negative implications of expanding residential development.<sup>4</sup> The common conclusion of these studies is that the households inhabiting new housing tend to pay property and other local taxes that fall short of the costs of public services consumed. Elementary and secondary education is commonly implicated as the major public service cost associated with such households.

The American Farmland Trust (ATF) has developed and supported a variant of fiscal impact analysis that it has dubbed cost of community services (COCS) studies. This methodology compares the annual revenues and expenses that are associated with different land use categories. The analysis produces a series of ratios showing the proportional relationship of revenues and expenses for each particular land use. A ratio that is greater than one indicates that expenses are larger than revenues and, thus, suggests that the land use is a loser for local governments. ATF and others have undertaken more than 80 COCS studies across the country. These studies generally indicate that residential development is associated with higher taxes and service demands on local governments.<sup>5</sup>

A problem with many fiscal impact studies is that they are static and do not examine the full economic impact of new residential development. Studies which have evaluated the full economic impact of new home development have tended to be more optimistic about the impact of new housing development. Dotzour (1998), for example, examining housing development in Texas, shows that new housing development generates strong economic benefits and improves the fiscal condition of local governments. The National Association of Homebuilders (1997) reports that Dotzour's conclusions apply generally to communities across the country.<sup>6</sup> Their results are echoed by a study of new home construction in California finds that that new homes provide a strong one-time fiscal benefit to local communities when built and a net ongoing revenue stream when occupied (Gage and Newman, 2007). In Massachusetts, work by Nakosteen and Palma (2003) finds that new housing development is not inevitably followed by increased demands for services and higher municipal cost. Their report shows that many of the fastest growing communities in Massachusetts have experienced the slowest growth in per capita tax burdens during the 1990s.

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<sup>2</sup> Robert W. Burchell *et al.*, *The Costs of Sprawl Revisited* (Washington, D.C.: Transportation Research Board, National Academy of Science Press, 1998), Robert W. Burchell *et al.*, *The Fiscal Impact Handbook: Estimating Local Costs and Revenues of Land Development* (New Brunswick, NJ: Center for Urban Policy Research, 1978), and Michael L. Siegel and Susan Robinson, "Fiscal Impact Analysis: What It Is and How to Use It," The Government Finance Officers Association, Research Bulletin, September 1990.

<sup>3</sup> See, for example, Alan A. Alshuler and Jose A. Gomez-Ibanez, *Regulation for Revenue: The Political Economy of Land Use Exactions* (Washington, DC: The Brookings Institution, 1993), Chapter 6.

<sup>4</sup> See, <http://www.tischlerbise.com/pages/fiscalimpact.asp>

<sup>5</sup> American Farmland Trust, *Cost of Community Services Studies: Making the Case for Conservation* (Washington, DC, 2002).

<sup>6</sup> See, <http://www.nahb.org/generic.aspx?sectionID=784&genericContentID=35601>

## Economic Impact of Single-Family Development in North Carolina

The analysis presented here examines the economic impact of new real estate development in North Carolina. Economic impact is measured in terms of 1) total additional output of all industries in the area, 2) total number of new jobs created, 3) total value added (the sum of all final goods and services produced), 4) total amount of additional personal income (the income of all persons from all sources, including wages, profits, dividends, interest, rents, and transfer payments), 5) the total amount of additional labor income, and 6) total amount of additional city and county tax revenue.

The analysis is conducted using the IMPLAN® (Impact Analysis for PLANing) input-output model that divides the economy into sectors, defined by the good or service produced, where the outputs of one sector are inputs of another. IMPLAN analyzes a computer model that contains 509 sectors of the local economy and reflects the existing structure of the economy using data from the U.S. Department of Labor, Bureau of the Census, and the Bureau of Economic Analysis. IMPLAN was originally developed by the U.S. Forest Service and the University of Minnesota and is now marketed by Minnesota IMPLAN Group, Incorporated. Active users of the IMPLAN model include: NC Dept of Commerce and the NC Department of Parks, Recreation, & Tourism Management.

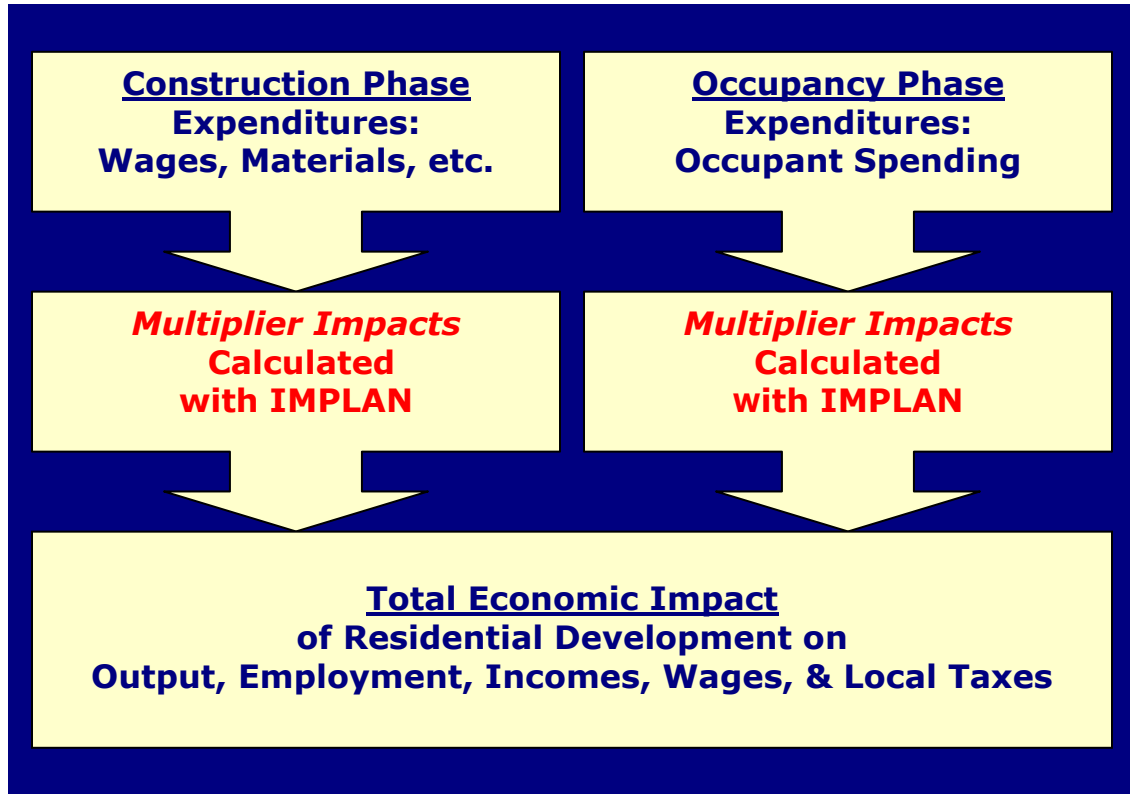
Figure 3 sketches the methodology used to calculate the economic impacts of residential real estate development. In the construction phase, expenditures for wages, materials, etc. generate multiplier impacts on output, employment, income, etc. The impacts are calculated using the IMPLAN model. Similarly, in the occupancy phase, the expenditures of new residents generate multiplier impacts which again are tabulated using the IMPLAN model. The total impact of the new development is the sum of the impacts generated in the construction and occupancy phases of the project.

During the construction phase, economic benefits arise from the direct and indirect effect of monies spent on wages, materials, and other services. As these monies are re-spent in the local economy, multiplier effects are generated leading to further increases in output (business receipts), income, and employment. When the new residential development is occupied, the spending of new residents continues to affect the level of area economic activity, assuming that the new residents will not live in the area if new development is not put in place.<sup>7</sup> The spending of new resident households produces multiplier effects on the economy as these monies are re-spent in the local economy stimulating the growth of output, income, and employment.

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<sup>7</sup> The assumption is that in the long-run, if there is no new construction, potential new residents will choose to live elsewhere.

**Figure 3: Calculating the Economic Impact of Residential Development**



Single-family development is examined by looking at the construction and subsequent occupancy of a typical 100-unit, single-family housing project. The assumed specifications for the single-family project are set out in Table 2.

The average size and price of new homes was estimated using data obtained NCAR from area Multiple Listing Services (MLSs) across the state.<sup>8</sup> The raw land cost was estimated in consultation with a panel of homebuilders assembled with the help of NCAR. The construction cost figures shown in Table 2 reflect the cost of home construction and the cost of land development (streets, sewers, curb and gutter, utilities, etc.).

**Table 2: Single-Family Housing Development**

<b>Subdivision Cost:</b>	
Number of Homes	100
Undeveloped Land	\$1,620,000
Total Construction Cost	\$25,380,000
Total Project Cost	\$27,000,000
<b>Average New Home in NC</b>	
Avg. Square Footage	2,100
Avg. Price	\$270,000
Avg. Undeveloped Land Cost	\$16,200
Avg. Construction Cost	\$253,800
Avg. Construction Cost per sq. ft.	\$121

Mortgage bankers were consulted to estimate the average income of households purchasing new homes in the state. They estimated that the price of a new home averages roughly 2.5 times household income. Accordingly, dividing the average purchase price of the assumed new home of \$270,000 by 2.5 yields an estimate of household income of \$108,000. Average household size is assumed to be 3.09 persons, based on the 2000 Census estimate for homeowner households occupying an individual dwelling unit (see Appendix D).

The construction cost of the new subdivision (total project cost less the cost of the undeveloped land) is entered as additional demand in the construction sector of the IMPLAN model to calculate the economic impact of the construction phase, which is assumed to last one year.

To calculate the economic impact of the occupancy phase, the average consumption spending of the new homeowner household is entered as additional demand in the household sector of the IMPLAN model. The average household income of North Carolina single-family homebuyers is estimated at \$108,000. In the occupancy phase, homeowner households are assumed to spend 68.0 percent of their pre-tax income. This estimate is derived from data published by Bureau of Labor Statistics, *Survey of Consumer Expenditures*, 2007.

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<sup>8</sup> The MLSs surveyed were Catawba Valley, Fayetteville, Rocky Mount, Triad, Triangle, Western NC (including Asheville & Hendersonville), and Wilmington.

**Table 3: Economic Impact of Single-Family Development**

	<b>Construction Phase</b>	<b>Occupancy Phase</b>	<b>Avg. Ann. Impact through 1st 10 years of Occupancy</b>	<b>Net Present Value of 1st 10 years of Occupancy</b>	<b>Avg. Ann. Impact Through the 1st 10 years of Occupancy Per \$1,000,000 of Construction Cost</b>
Construction Expenditure	\$25,380,000	n.a.	n.a.	n.a.	n.a.
Output	\$45,352,396	\$10,123,524	\$13,326,149	\$117,641,490	\$525,065
Employment	420	86	116	n.a.	4.6
Value Added	\$20,380,505	\$4,661,512	\$6,090,511	\$53,690,919	\$239,973
Personal Income	\$18,966,645	\$4,173,841	\$5,518,641	\$48,758,037	\$217,441
Labor Income	\$13,877,963	\$2,492,552	\$3,527,589	\$31,547,418	\$138,991
Avg. Income/Worker	\$33,043	\$28,983	\$30,315	n.a.	n.a.
Local Tax Revenue	\$1,394,960	\$1,071,361	\$1,100,779	\$9,207,360	\$43,372

\* Including construction phase, calculated using an interest rate of 5.0 percent.

The estimated economic impact of single-family residential development is shown in Table 3. The table separates the impact of the construction phase that arises because of construction expenditures from the impact that occurs during the occupancy phase. The table shows the average impact through the first 10 years of occupancy, assuming that the construction phase lasts one full year. Also shown are the present values of the impact measures which are calculated assuming a 5.0 percent rate of discount.<sup>9</sup>

The impacts on local property and sales tax revenues are calculated using the IMPLAN model and the average taxes paid per capita shown in Appendix B. Property taxes on the new development are assessed during the occupancy phase. The average tax rate for residential development in the state is estimated at \$0.951 per \$100 valuation. Details of the calculation of this rate are shown in Appendix A. Other local revenues (arising from other taxes, sales and services) and various miscellaneous revenues are calculated on the assumption that these revenues comprise 41.4 percent of consolidated tax revenues in the typical county area, excluding debt proceeds and intergovernmental transfers. In 2007, other revenues averaged 41.4 percent of the consolidated county total excluding proceeds from debt and intergovernmental transfers (see Appendix B).

The 100-home subdivision has a construction cost of \$25,380,000. In the construction phase, the economy benefits from the multiplier effects of this additional spending, resulting in additional income, jobs, and local tax revenues. During the occupancy phase, the economy benefits from the expenditures of the 100 households that occupy homes in the new development, assuming that the households would not reside in the local area if the development were not constructed.<sup>10</sup> The average income of the households is estimated at \$108,000, as discussed above. Households at this income level are estimated to spend 68.0 percent of their before-tax income.<sup>11</sup>

The residential project is estimated to generate an average of \$13,326,149 per year in additional output from the initiation of construction through the first 10 years of occupancy (Table 3). The present value of the additional output is \$117,641,490. The average employment gain is 116 net new jobs, with an average wage of \$30,315.<sup>12</sup> The new development is estimated to generate an additional \$1,100,779 in local tax revenues annually through the first 10 years of operation. The present value of the additional tax revenue is \$9,207,360.

The last column in Table 3 shows the average annual impacts per \$1,000,000 of construction expenditure. Single-family development is estimated to generate \$525,065 in additional output per \$1,000,000 of construction expenditure. Likewise, it creates 4.6 new jobs and \$43,372 in additional local tax revenue each year per \$1,000,000 of construction expenditure.

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<sup>9</sup> This rate approximates the long-term municipal bond rate over the past year, see <http://www.federalreserve.gov/releases/h15/data/m/slbond.txt>.

<sup>10</sup> In the long run, property markets are very competitive; therefore, if new homes are not built in North Carolina, new home buyers are likely to locate elsewhere.

<sup>11</sup> See, Bureau of Labor Statistics, *Survey of Consumer Expenditures*, 2007.

<sup>12</sup> The average wage in the state in 2007 was \$38,896. See, NC Employment Security Commission, <http://eslmi23.esc.state.nc.us/ew/EWResults.asp>

The Census Bureau reports that \$7,250,951,000 of single-family residential building permits were issued in North Carolina in 2008. These permits represent *planned* construction expenditures. Assuming that this volume of single-family construction was actually put in place, the value of permits can be used to estimate the impact of single-family development on the North Carolina economy.

The impact multipliers from the right-most column of Table 3 are shown in column (1) of Table 4. Multiplying the multipliers in column (1) times the value of permits in millions (\$7,250.95 million) yields the estimated economic impacts shown in column (2).

**Table 4: Economic Impact of Single-Family Residential Development**

	(1)	(2)
	<b>Avg. Ann. Impact Through the 1st 10 years of Operation Per \$1,000,000 of Construction Cost</b>	<b>Estimated Economic Impact</b>
Construction Expenditure	n.a.	\$7,250,951,000
Output	\$525,065	\$3,807,220,309
Employment	4.6	33,245
Value Added	\$239,973	\$1,740,031,500
Personal Income	\$217,441	\$1,576,650,832
Labor Income	\$138,991	\$1,007,816,297
Ave. Income/Worker	\$30,315	\$30,315
Local Tax Revenue	\$43,372	\$314,487,673

Single-family development is estimated to create an economic annuity that generates \$3,807,220,309 in additional output in the state each year. It fosters an estimated 33,245 net new jobs and \$1,007,816,297 in additional labor income. In the process, development spawns \$314,487,673 in extra tax revenue annually at the local level. The Bureau of Economic Analysis estimates that total personal income in the state in 2008.3 was \$318,843,000,000. Table 3 suggests that the personal income fostered by single-family residential development is equivalent 0.5 to percent of the state total.

## **Fiscal Impact Analysis of Single-Family Development in North Carolina**

Fiscal impact analysis refers to efforts to estimate the effects of various types of land uses on local government budgets.<sup>13</sup> It assesses the impact of development activity on both government receipts and expenditures. The net fiscal impact is the difference between the revenues and expenditures generated by the proposed land use or development scenario. If revenues are greater than expenditures, a project or scenario is described as having a positive net fiscal impact.

It is difficult to estimate precisely the level of government services consumed by any group of persons or employees. The standard adopted here is to compare the average local government revenues generated per capita by the development through the first 10 years of the occupancy phase with the average revenues collected from residents currently in the local area. This approach assumes that new residents consume the same mix of local government services as existing residents.<sup>14</sup> If the average level of revenues generated is greater than the current average of all persons in the area, the project is presumed to produce a positive net fiscal impact. A positive impact means that the surplus generated by the proposed project will allow local tax rates to be lowered, the level of locally funded services to increase, or a combination of the two. In contrast, a negative impact raises the average cost of services to prior residents because they in effect subsidize the cost of services to new residents.<sup>15</sup>

In evaluating the impact of new real estate development on local government in North Carolina, it is important to understand clearly the magnitude of current revenue collections. Appendix B shows the revenues and expenditures by all local governmental units (cities and counties) in 2007. The data are from the North Carolina Department of State Treasurer.

Total collections were \$22,383,209,286 or \$2,476 per capita. But \$6,462,150,042, or \$715 per capita, was from intergovernmental transfers and debt proceeds which should be excluded in a comparison with new development because they do not originate from the direct taxation of current local residents. If these two sources are excluded, the average revenue collected by local government from residents was \$1,761 in 2007.

Table 5 presents a fiscal analysis of single-family development in a typical county area of North Carolina. Column (1) of the table shows the average additional yearly local tax revenue generated by development through the first 10 years of the occupancy phase. It is taken from Table 3, column 2.

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<sup>13</sup> Robert W. Burchell *et al.*, *The Fiscal Impact Handbook: Estimating Local Costs and Revenues of Land Development* (New Brunswick, NJ: Center for Urban Policy Research, 1978) and Michael L. Siegel and Susan Robinson, "Fiscal Impact Analysis: What It Is and How to Use It," *The Government Finance Officers Association, Research Bulletin*, September 1990.

<sup>14</sup> The same approach was employed in Mark G. Dotzour, "New Subdivisions Pay Their Own Way," *Terra Grande*, January 1998, pp. 1-5.

<sup>15</sup> The analysis ignores the permit fees and other charges paid by developers for zoning requests, inspections, utility hookups, etc. The assumption here is that the level of these fees approximates the cost to local government of providing the associated services, and, therefore, the revenue impact is assumed to be neutral.

**Table 5: Fiscal Analysis of New Real Estate Development in North Carolina**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Property Type</b>	<b>Avg. Ann. Addition to Local Tax Revenues through the 1st 10 years of Operation</b>	<b>Added Population *</b>	<b>Added Revenue Per Capita</b>	<b>Expected Local Revenues Per Capita **</b>	<b>Net Fiscal Surplus or (Deficit) Per Capita</b>	<b>Total Ann. Net Fiscal Surplus or (Deficit)</b>	<b>Net Present Value of 1st 10 years of Operation</b>	<b>Net Present Value per \$1,000,000 of Project Cost</b>
Single-Family Development	\$1,071,361	452	\$2,370	1,711	\$659	\$297,868	\$2,300,058	\$90,625

\*Added population (column 2) is calculated by taking the number of new residents projected to occupy the new developments (309) plus the number of new jobs created during the occupancy phase (86)

times the state population/employment ratio (1.66).

\*\*Revenues are adjusted to reflect differences in the average number of school-age children and number of automobiles as they affect city and county expenditures on education and transportation.

Column (2) shows the expected additional population generated by development. Expected population is calculated by taking the number of new residents projected to occupy the new developments ( $100 \times 3.09 = 309$ )<sup>16</sup> plus the number of new jobs created during the occupancy phase (86) times the state population/employment ratio (1.66). As a result of the new single-family development, 452 persons are expected to live in the local area ( $100 \times 3.09 + 86 \times 1.66 = 452$ ).

Column (4) shows expected local tax revenues collected at the combined city and county level per capita. If every new resident consumed the same level of city and county services as existing residents, local governments would expect to collect \$1,761 per capita, the actual average local tax revenues collected per capita in 2007.

Census data reveal that single-family households differ for the average household in the number of school-age children they have and the number of automobiles they own (see Appendix D). Single-family households have 0.4 percent fewer school-age children and 3.2 percent more automobiles than the average of all households. Adjusting the average revenue figure for the differences in school-age children and number of automobiles shows that single-family residents should expect to pay \$1,711 per capita. This figure is included in Table 4, column (4), in calculating the net fiscal surplus (deficit) for single-family development.<sup>17</sup>

Column (5) shows the expected net fiscal surplus on a per capita basis. Column (7) shows the net present value of the annual surplus through the first 10 years of occupancy calculated at 5.0 percent. Column (8) shows the net present value of the surplus standardized per \$1,000,000 of construction expenditure.

Single-family residential development is estimated to produce an annual fiscal surplus of \$659 per capita, or a total of \$297,868 annually for the development. The net present value of the surplus calculated through the first 10 years of the occupancy phase is \$2,300,058, using a 5.0 percent discount rate. The net present value of the surplus per \$1,000,000 of residential construction expenditures is \$90,625.

Table 4 shows that the value of planned residential development in all North Carolina counties in 2008 amounted to \$7,250,951,000. Multiplying this amount in millions (\$7,250.95) times the multiplier in column 8 of Table 5 suggests that the net present value of the fiscal surplus generated by residential construction planned in 2008 amounts to \$657,117,344 through the first ten years of occupancy.

Another method of fiscal impact analysis is to simply compare the per capita revenue projected for the new development (\$2,370) to the per capita cost of county and municipal services. The appropriate measure of cost is total cost (shown in Appendix B) less proceeds from debt and intergovernmental transfers. Figure 4 plots this cost measure on a per capita basis after adjustment for inflation. The average inflation-adjusted per capita cost of county and municipal services is \$1,711, calculated over the 6-year period 2002-2007. Since the per capita revenue projected for the new development is \$2,370, the analysis indicates that revenues are 38.5 percent higher than average costs, thus, indicating a fiscal surplus.

<sup>16</sup> Average household size is assumed to be 3.09 persons, see Appendix D.

<sup>17</sup> The adjustments are calculated as shown the following table:

	Population Share	Education	Transportation	Other	Total
<b>Single-Family</b>					
<b>Project</b>	12.2	\$335	\$85	\$1,268	\$1,688
<b>Induced</b>	5.6	\$337	\$82	\$1,268	\$1,761
<b>Weighted Avg.</b>	17.8				\$1,711

In the education and transportation columns, the adjusted estimates are calculated by taking the average revenue figure (\$1,761) times the share of that type of expenditures in the average county budget (Appendix C) times the ratio of the number of school-age children in single-family households to school-age children in all households. For example, the education adjustment for single-family housing is  $\$1,761 \times 0.1912 \times 0.9958 = \$335$ .

**Figure 4: Per Capita Cost of County and Municipal Services, 2002 – 2007**  
(inflation-adjusted, 2007 dollars)

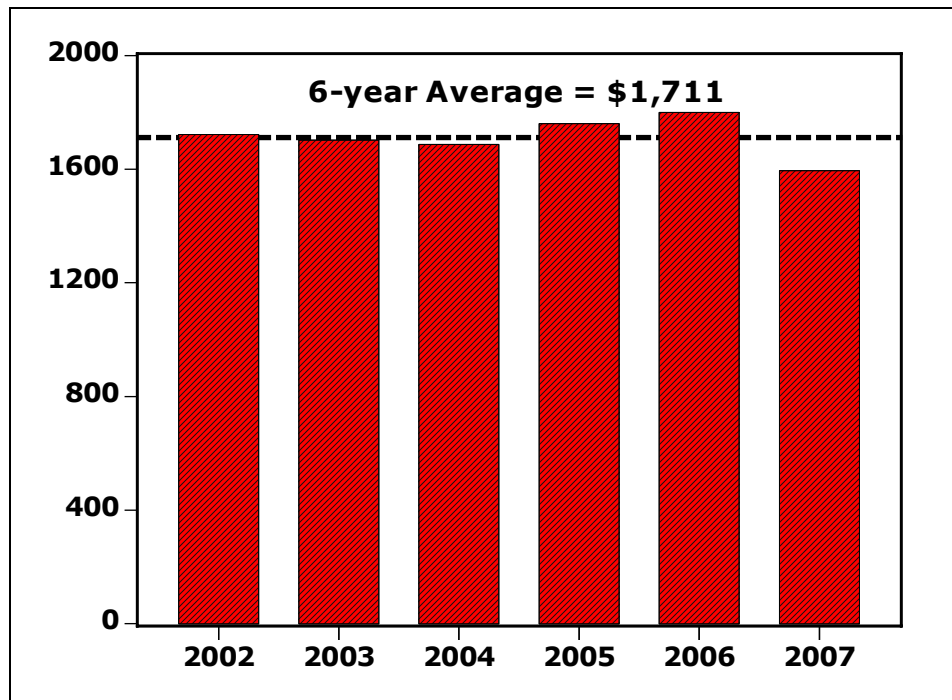


Figure 4 shows the per capita cost of county and municipal services. A comparison of the average cost of service to projected per capita revenue is appropriate if the production of services exhibits constant costs, where average cost equals marginal cost in the long run. Fiscal impact economists often suggest, however, that county and municipal service production is subject to increasing costs and, thus, the marginal revenue from new development should be compared to the *marginal cost* of municipal service production.<sup>18</sup>

To estimate marginal cost, an aggregate county/municipal cost function is estimated that has the following form:

$$1) \text{ Cost}_t = \alpha + \beta \text{ Pop}_t + \varepsilon_t$$

Where,

$\text{Cost}_t$  = the total inflation-adjusted expenditures during 2002-2007 (both current and capital) of all local governments in the state less inter-government transfers and proceeds from debt (see Appendix B).

$\text{Pop}_t$  = the total population of the state, 2002-2007.

The coefficient  $\beta$  in equation (1) measures the marginal cost of municipal services.

<sup>18</sup> Alan A. Alshuler and Jose A. Gomez-Ibanez, *Regulation for Revenue: The Political Economy of Land Use Exactions* (Washington, DC: The Brookings Institution, 1993).

**Table 6: Cost Function for Municipal Services**

(n = 5)

Variable	Coefficient	Std. Error	t-value	Prob.
Constant	5,600,000,000.00	9,420,000,000.00	0.59	0.58
Population	1,061.58	1,090.35	0.97	0.39
R-squared	0.19		F-statistic	0.95
Durbin-Watson	2.04		Prob.(F-statistic)	0.39

Table 6 shows an estimate of equation (1). The estimated coefficient on the population variable ( $\beta$ ) is not statistically significant, indicating that the margin of error for the estimated coefficient is quite large. Nevertheless, the size of the coefficient is substantially less than the average cost shown in Figure 4.

Thus, the per capita revenue projected for the new development of \$2,370 appears to be much above both the average and marginal cost of municipal services, indicating that new development more than pays its way.

## Summary and Conclusions

The foregoing study of new residential development in North Carolina shows that new housing development creates substantial economic benefits. The benefits derive not only from the jobs created during the construction phase but also from the spending after construction by the households that occupy the new homes. If all the residential development permitted in 2008 were actually put in place, it would generate an estimated \$3.8 billion in additional output, 33,245 net new jobs, and \$314.5 million in new county and municipal tax revenues. These impacts are not one year only but represent the average annual impact of new development through the first 10 years of occupancy. New single-family development thus creates an economic annuity that provides substantial benefits to local areas in North Carolina over time.

A fiscal impact analysis of the typical single-family development shows that the development generates a substantial fiscal surplus for local governments. The per capita revenue projected for new development is much above the estimated average and marginal cost of municipal services, indicating that new development more than pays its way. The net present value of the fiscal surplus generated for local governments by single-family construction planned in 2008 is estimated to amount to \$657 million through the first ten years of occupancy.

Despite these economic benefits, some government officials and others want to tax new residential development claiming that it does not pay its way.<sup>19</sup> Some of the new tax proposals are very creative, involving the imposition of new developmental impact fees and real estate transfer taxes. Many of these same officials also stress the need for new growth and development to make up for the revenue shortfalls stemming from wide-spread job losses in traditional industries, and some are willing to offer huge tax incentives to new industries for economic growth. Such attitudes are contradictory and reflect a misperception of the benefits of new home construction. This study shows that the residents occupying the newly build homes actually pay more in taxes than current residents who have an equivalent number of school-age children and drive an equal number of automobiles. On average, new-home residents pay \$2,370 in city and county taxes, while other demographically similar residents pay just \$1,711 per capita. New residential development thus more than pays its way. Assuming that both groups consume an equivalent amount of city and county services, the new-home residents pay \$659 more per capita each year than existing residents.

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<sup>19</sup> See, for example, Editorial: "Growth's Impact," *The Charlotte Observer*, December 1, 2005.

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### Appendix A: North Carolina Property Tax Rates

Property Type	Taxable Value, 2007	Percent
Residential Property	\$555,577,858,972	78.9%
Nonresidential Property	\$148,773,915,502	21.1%
Total	\$704,351,774,474	100.0%
Property Taxes, 2007	\$6,698,691,677	n.a.
Effective Tax Rate	0.951%	n.a.

Source: [http://www.dornc.com/publications/taxable\\_real\\_property\\_county\\_07-08.pdf](http://www.dornc.com/publications/taxable_real_property_county_07-08.pdf)

The table shows the taxable value of all real property in the state was \$704.4 billion in 2007. Local governments collected \$6.7 billion in property taxes (see Appendix B). The effective tax rate is calculated by dividing property-tax collections by taxable value.

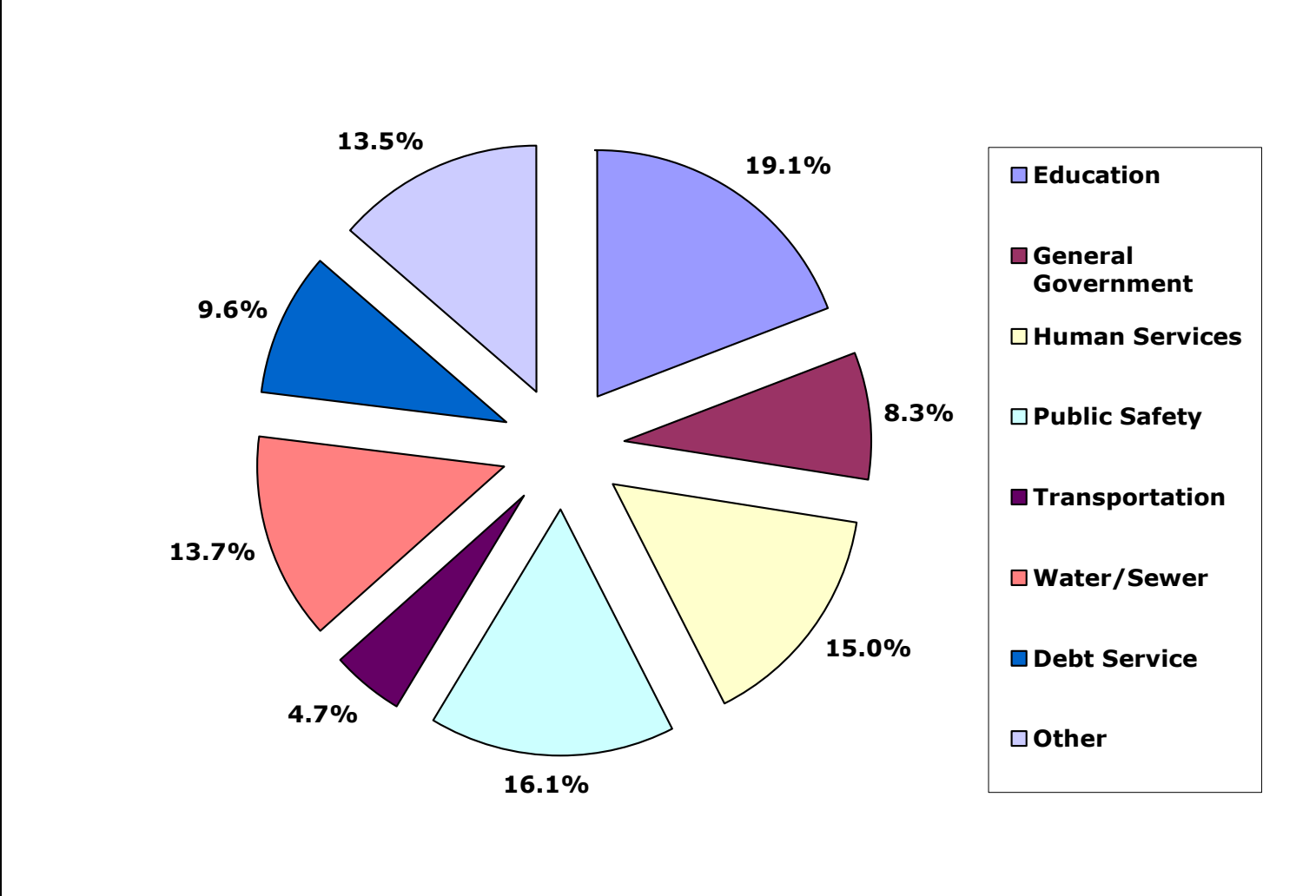
## Appendix B: North Carolina Local Governmental Revenues & Expenses, 2007-2002

Revenues:	2007	2006	2005	2004	2003	2002	Avg. Ann. % Chg.
Property Taxes	6,698,691,677	6,660,887,122	6,120,860,837	5,831,744,462	5,490,262,056	5,220,449,447	5.1%
Sales Tax	2,623,210,899	2,590,180,149	2,404,941,753	2,241,077,815	1,938,831,165	1,730,286,525	8.7%
Other Taxes	482,198,979	479,932,263	439,539,197	403,120,224	362,212,963	336,294,989	7.5%
Sales & Services	1,744,511,596	1,818,818,251	1,656,555,600	1,522,976,591	1,462,554,470	1,359,656,684	5.1%
Utility	2,834,747,651	3,239,136,657	3,125,277,598	2,838,629,091	2,614,080,233	2,500,513,252	2.5%
Other Miscellaneous	1,537,698,442	1,845,836,431	1,715,069,257	1,283,776,333	1,384,626,601	1,186,021,589	5.3%
Debt Proceeds	3,384,083,499	2,408,699,991	2,420,661,411	2,204,401,380	1,916,049,469	1,419,565,387	19.0%
Intergovernmental	3,078,066,543	3,134,990,688	2,972,853,901	2,835,182,650	2,740,077,246	3,036,474,037	0.3%
Total	22,383,209,286	22,178,481,552	20,855,759,554	19,160,908,546	17,908,694,203	16,789,261,910	5.9%
Total - Debt - Intergov.	15,921,059,244	16,634,790,873	15,462,244,242	14,121,324,516	13,252,567,488	12,333,222,486	5.2%
<b>Expenditures:</b>							
Education	\$3,991,410,491	\$3,482,377,418	\$3,017,405,048	\$2,908,216,510	\$2,859,484,089	\$3,068,075,788	5.4%
General Government	1,740,458,958	1,681,869,655	1,593,218,738	1,439,791,403	1,370,932,549	1,269,708,744	6.5%
Human Services	3,126,539,403	3,084,324,630	3,007,351,183	2,818,289,331	2,702,903,879	2,624,562,741	3.6%
Public Safety	3,370,307,696	3,402,087,864	3,137,337,778	2,887,671,448	2,706,330,110	2,566,204,517	5.6%
Transportation	977,378,692	1,174,761,108	1,091,620,021	933,204,639	880,739,047	757,251,703	5.2%
Water/Sewer	\$2,853,830,538	\$3,226,552,381	\$3,261,740,495	\$2,903,065,006	\$2,655,358,901	\$2,612,798,436	1.8%
Debt Service	1,994,815,356	2,035,373,350	1,894,465,841	1,699,078,443	1,655,604,474	1,465,072,647	6.4%
Other	2,819,554,762	2,925,837,917	2,749,768,423	2,547,725,301	2,528,924,983	2,509,150,364	2.4%
Total	\$20,874,295,896	\$21,013,184,323	\$19,752,907,527	\$18,137,042,081	\$17,360,278,032	\$16,872,824,940	4.3%
CPI-U	207.342	201.600	195.300	188.900	184.000	179.900	2.9%
Population	9,041,594	8,845,343	8,661,061	8,523,199	8,409,660	8,311,263	1.7%

Source: N.C. Department of State Treasurer, see: <http://www.treasurer.state.nc.us/dsthome/StateAndLocalGov>

The Table shows consolidated revenues and expenditures for counties and other political subdivisions in North Carolina. Consolidated receipts for all governmental entities were \$22,383,209,286, or \$2,476 per capita in 2007. Excluding intergovernmental transfers and debt proceeds, total revenues were 15,921,059,244, or \$1,761 per capita. Consolidated expenditures for all governmental entities were \$20,874,295,896, or \$2,309 per capita, but subtracting intergovernmental transfers and debt proceeds, per capita expenditures were \$1,594.

**Appendix C: Distribution of North Carolina Local Governmental Expenditures, 2007**



Source: N.C. Department of State Treasurer, see: <http://www.treasurer.state.nc.us/dsthome/StateAndLocalGov>

### Appendix D: North Carolina Households, 2000

	Population in Households	Average Household Size	Number of Households	Number of School-Age Children	No. of School-Age Children per Household	Number of Vehicles	Number of Vehicles per Household
Total	7,795,305	2.49	3,132,013	1,425,130	0.46	7,795,305	2.49
Owner-Occupied	5,561,011	2.56	2,172,270	997,835	0.46	5,553,133	2.56
Single-Family	5,302,978	3.09	1,718,100	778,453	0.45	4,413,681	2.57

Note: School-age children are those ages 5-17. Single-family units are owner-occupied, detached dwelling units.

Source: 2000 Census (SF 3) and NC Data Center.

## Background of the Principal Investigator

G. Donald Jud is Professor Emeritus of Finance in the Bryan School of Business and Economics at the University of North Carolina at Greensboro and principal of Jud & Associates. He has taught courses in economics, finance, and real estate. Dr. Jud received his Ph.D. from the University of Iowa and MBA and BA degrees from the University of Texas. He is author of over 80 academic articles and three books.

Dr. Jud is a NAIOP Distinguished Fellow and a past president of the American Real Estate Society (ARES). He is a fellow of the Homer Hoyt Advanced Studies Institute and the American Real Estate Society. In 2003, he was named a Burns Fellow at the University of Denver.

Dr. Jud serves on the editorial boards of the *Journal of Real Estate Finance and Economics* and the *Journal of Real Estate Literature* and is a member of the *Appraisal Journal*'s academic review panel. He is a past editor of the *Journal of Real Estate Research* and continues to serve as a member of its editorial board. Dr. Jud's research has appeared in numerous academic and professional journals including the *Appraisal Journal*, *American Real Estate and Urban Economics Association Journal*, *Journal of Real Estate Finance and Economics*, *Journal of Real Estate Research*, *Journal of Housing Economics*, *Journal of Financial Education*, *Journal of Real Estate Portfolio Management*, *Journal of Real Estate Practice and Education*, *Real Estate Issues*, *Journal of Property Research*, *Journal of Financial Economics*, *Land Economics*, and *Urban Studies*. A recent article entitled "The Internationalization of Real Estate Research," by Kam C. Chan, William G. Hardin III, Kartono Liano, and Zhenf Yu. (*Journal of Real Estate Research*, vol. 30, no. 1 (2008), pp. 91-124) ranks Dr. Jud 7<sup>th</sup> in a global ranking of real estate researchers publishing in top-tier academic real estate journals.

Dr. Jud has been a research consultant to Wachovia Bank, NC Department of Commerce, the Piedmont-Triad Partnership, the National Association of Realtors®, the NC Association of Realtors®, the Greensboro Chamber of Commerce, Downtown Greensboro, Inc., the Greensboro Regional Realtors® Association, the City of High Point, the Town of Boone, the North Carolina Association of Electrical Cooperatives, CME Merchant Energy, Home Builders Assn. of Burlington-Alamance County, Triad Real Estate and Building Industry Coalition (TREBIC), the Triad MLS, the Carroll Companies, the Homebuilders Association of Fayetteville, The Reynolds Companies, Wood Partners, Cone Mills, and RMIC Corporation.