

National Impact of Home Building and Remodeling: Updated Estimates

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Special Study for HousingEconomics.com
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This article updates NAHB's estimates of the economic impact that residential construction has on the U.S. economy. These national estimates are designed for use when the impacts on all U.S. suppliers of goods and services to the construction industry—for example, manufacturers of building products—are of interest. The national estimates should not be used to try to analyze economic impacts confined to the state or local area where the housing is built. NAHB maintains separate estimates and models for that (see the [Local Economic Impact](#) web page).

The latest national estimates include the following:

- Building an average single-family home: 2.90 jobs, \$129,647 in taxes
- Building an average rental apartment: 1.25 jobs, \$55,909 in taxes
- \$100,000 spent on remodeling: 0.75 jobs, \$29,797 in taxes

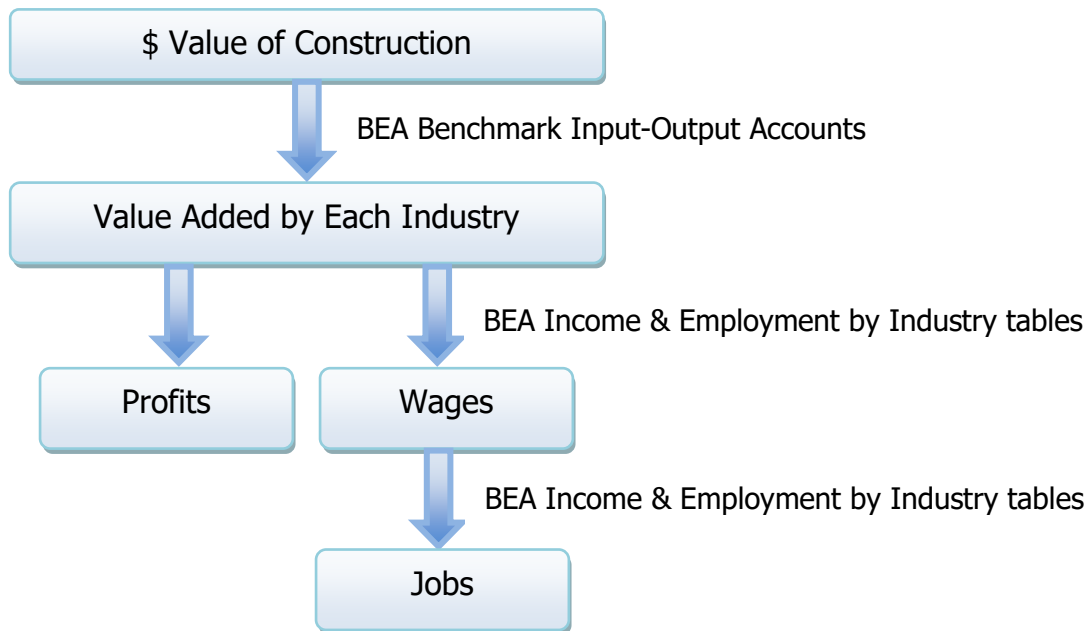
The jobs are reported in full-time equivalents (i.e., enough work to keep one worker employed for a full year based on average hours worked per week in the relevant industry). The term taxes is used for revenue paid to all levels of government—federal, state, county, municipal, school district, etc. The tax estimates include various fees and charges, such as residential permit and impact fees.

The impact of a new housing unit depends on, among other things, the value of construction per unit. The first two sets of estimates are based on projections of the value of construction of average single-family homes and rental apartments that will be built in 2020. Details are provided in the following sections, which also describe the methodology used to generate the estimates, including data sources, and break down jobs by industry and government revenue by category of tax or fee.

Employment Impacts by Industry

Probably the most obvious impacts of new construction are the jobs generated for construction workers. But, at the national level, the impact is broad-based, as jobs are generated in the industries that produce lumber, concrete, lighting fixtures, heating equipment, and other products that go into a home or remodeling project. Other jobs are generated in the process of transporting, storing and selling these products. Still others are generated for professionals such as architects, engineers, real estate agents, lawyers, and accountants who provide services to home builders, home buyers, and remodelers.

Conceptually, estimating the effects in each industry is a fairly straightforward exercise in manipulating national accounts maintained by the U.S. Bureau of Economic Analysis, as the flow diagram below indicates:



In practice, the process is slightly more involved than the diagram shows, primarily because the industry categories BEA uses in the [input-output accounts](#) and [employment by industry tables](#) do not match perfectly.

A key part of the process is inputting the dollar value of construction. Because the estimates reported here are for calendar year 2020, the inputs are projections of the average construction values for new single-family homes and rental apartments that will be built during 2020. The projections include an average construction value of \$421,000 for single-family homes and

\$169,000 for rental apartments. Details and data sources for these projections are given in the appendix. For purposes of presentation, a construction value of \$100,000 was chosen for remodeling—a convenient round number on the same order of magnitude as the value of a new housing unit.

The jobs, wages and salaries, and profits generated by these construction values are summarized in Table 1:

Table 1. Income/Employment Impacts of Residential Construction on the U.S. Economy

	Full Time Equivalent Jobs	Wages and Salaries	Profits Before Taxes		Wages and Profits Combined
			Proprietors	Corporations	
Per New Single-family Home:					
All industries	2.90	\$188,962	\$71,963	\$66,656	\$327,581
Construction	1.71	\$111,668	\$45,029	\$19,760	\$176,457
Manufacturing	0.36	\$22,197	\$1,955	\$18,259	\$42,411
Wholesale & retail trade, Transportation & warehousing	0.37	\$19,475	\$3,097	\$9,052	\$31,623
Finance and insurance	0.06	\$6,132	\$151	\$4,486	\$10,768
Real estate and rental and leasing	0.02	\$1,542	\$8,650	\$2,024	\$12,216
Professional, Management, Administrative services	0.21	\$16,585	\$4,711	\$3,148	\$24,445
Other	0.18	\$11,362	\$8,371	\$9,928	\$29,661
Per New Multifamily Rental Unit:					
All industries	1.25	\$80,334	\$32,189	\$29,619	\$142,141
Construction	0.75	\$48,660	\$23,685	\$10,393	\$82,739
Manufacturing	0.16	\$10,223	\$669	\$8,119	\$19,011
Wholesale & retail trade, Transportation & warehousing	0.19	\$9,671	\$1,555	\$4,403	\$15,629
Finance and insurance	0.01	\$1,583	\$43	\$1,197	\$2,822
Real estate and rental and leasing	0.01	\$516	\$1,759	\$894	\$3,169
Professional, Management, Administrative services	0.07	\$5,547	\$1,345	\$852	\$7,745
Other	0.06	\$4,135	\$3,132	\$3,761	\$11,027
Per \$100,000 Spent on Remodeling:					
All industries	0.75	\$48,212	\$17,975	\$17,215	\$83,402
Construction	0.46	\$29,975	\$12,833	\$5,631	\$48,439
Manufacturing	0.09	\$5,550	\$434	\$4,872	\$10,855
Wholesale & retail trade, Transportation & warehousing	0.10	\$5,371	\$829	\$2,432	\$8,632
Finance and insurance	0.01	\$990	\$24	\$577	\$1,591
Real estate and rental and leasing	0.00	\$308	\$759	\$602	\$1,668
Professional, Management, Administrative services	0.04	\$3,241	\$742	\$492	\$4,475
Other	0.04	\$2,779	\$2,354	\$2,610	\$7,743

Source: NAHB estimates, as described in the text and appendix.

The estimates are based on total requirements tables from the BEA input-output accounts, so they capture not only products and services of industries directly used in construction, but the indirect effect of products and services used by those industries as well. For convenience, the table shows detail for relatively broad industry categories.

At this level of detail, the largest share of wages and salaries are generated in the construction industry, followed by manufacturing, trade & transportation & warehousing, and professional & management & administrative services.

At a more granular level, within manufacturing, substantial shares of the wages are generated in many categories of wood products (led by wood kitchen cabinet and countertop manufacturing). Outside of wood products, the largest shares of the manufacturing jobs are generated in the production of concrete, and ornamental & architectural metal products.

Within trade & transportation & warehousing, the largest shares of wages are generated in retail trade, wholesale trade, and truck transportation. Within professional & management & administrative services, the largest share is in architectural and engineering services.

Note that, in the construction industry, profits of proprietors are roughly 40 percent as large as wages and salaries. Subcontractors account for a large share of the proprietors. As discussed in the September 1, 2015 Special Study, two-thirds of single-family builders subcontract out more than 75 percent of their construction work. Often these subcontractors are quite small, even one-person operations. According to the Census Bureau's most recent (2017) [nonemployer statistics](#), there are roughly 2.5 million business establishments without a payroll in the U.S. construction industry, with an average annual revenue of under \$63,000. These numerous but relatively small businesses are excluded from the jobs reported in Table 1, because the government doesn't classify the self-employed as having jobs, even though most casual observers would probably think of them that way.

On a percentage basis, self-employment is even more of an issue in the real estate industry, where proprietor profits are several times larger than the wages and salaries generated. This is because realtor offices are conventionally organized as a group of independent contractors, who again don't meet the government criteria for having jobs and earning wages.

Impacts on Taxes

The wages and salaries of workers shown in Table 1 are subject to federal, state, and sometimes local taxes. So are the profits of businesses, whether organized as proprietorships or corporations. Beyond this, many states collect sales taxes on material sold to home builders, and local jurisdictions typically charge fees for approving building permits and extending utility services.

The amount of tax and other revenue generated for governments by new residential construction is shown in Table 2.

Table 2. Impacts on Government Revenue

	Per New Single-family Home:	Per New Multi-family Rental Unit:	Per \$100,000 Spent on Remodeling:
Total government revenue generated	\$129,647	\$55,909	\$29,797
Federal	\$86,759	\$37,363	\$21,796
Income taxes	\$44,081	\$18,928	\$10,931
Government social insurance*	\$41,270	\$17,849	\$10,512
Excise taxes and customs duties	\$1,408	\$586	\$353
State and local	\$42,888	\$18,546	\$8,001
Income taxes	\$12,444	\$5,344	\$3,086
Permit, hook-up, impact, etc. fees	\$15,805	\$7,108	\$1,250
Sales taxes	\$5,458	\$2,272	\$1,367
Other business taxes & license fees	\$9,181	\$3,823	\$2,299

Source: NAHB estimates, as described in the text and appendix.

At the federal level, income taxes include those paid by corporations, receivers of dividends from corporations, proprietors, and employees. Corporate income taxes paid and dividends are available by industry from the same series of BEA income and employment by industry tables shown in the above flow chart. Otherwise, federal income tax rates of 15.00% are applied to dividends, and 24.46% to proprietor's income (which incorporates a downward adjustment because the self-employed component of social security taxes is deductible). Variable income tax rates are applied to wages and salaries, depending on the industry in which they're earned, that averages to 8.906%.

Government social insurance paid by employers (which includes social security, Medicare, and unemployment insurance) is also available directly from the income and employment by industry tables. Rates of 7.65% and 15.30% are applied to wages and salaries and proprietors' profits, respectively. Derivation of these rates is shown in the appendix.

The benchmark input-output tables also generate a category called taxes on production and imports (or TOPI) by industry. Most of this is sales and other taxes collected by state governments, but BEA's [government current receipts and expenditures tables](#) show that 11.2% of TOPI is collected by the federal government—all either some form of excise tax or customs duty. Although, relatively small, this is included in Table 2 for completeness.

State and local income tax revenue is estimated as 28.2% of the federal amount in table 2, based on the same BEA government receipt tables. These tables are also used to separate state and local sales tax receipts from other forms of TOPI, primarily various types of licenses and

non-residential property taxes (although TOPI includes all property taxes and estimate for the residential component was subtracted). Residential property taxes are not included in Table 2, because Table 2 shows one-time revenue impacts realized roughly in the same year construction takes place. There is also and local variation surrounding the difference between non-residential and residential property tax rates, and when a residential rate on the full value of construction kicks in. According to the Census Bureau's 2018 [American Community Survey](#) data, the average effective property tax rate on owner-occupied homes is 1.1 percent of the property's value.

Finally, permit, hook-up and impact fees are estimated as 3.54% of a for-sale single-family house price from NAHB estimates described in the previous Special Study on Government Regulation in the Price of a New Home (May 2, 2016 Special Study). The same percentage is used to estimate local construction-related fees for rental apartments. The remodeling estimates assume an average permit fee equal to 1.25% of the cost of the remodeling project is used, based on conversations between NAHB Economics and Housing Policy staff and NAHB Remodelers.

New and Old Estimates Compared

This study updates the National Impact of Home Building estimates last published by NAHB in 2014. For new construction, the number of jobs generated by an average housing unit in 2020 was fairly close to the estimate published in 2014, although it was slightly higher for multifamily rental and slightly lower for single-family. Almost all of the relatively small decline in jobs per average new single-family home is the result of a changing assumption about the share of homes that are custom built one at a time on the owner's land. Custom homes tend to be somewhat larger and more expensive, so it requires somewhat more labor to build one. NAHB's 2014 national impact estimates assumed one-fourth of new single-family homes were custom built, which was appropriate based on data available at that time. However, as described in one of [NAHB's blogs](#), the custom home share has been falling and is currently one-fifth of single-family starts, which is the assumption used to generate the 2020 single-family impact estimates. The nominal impacts—wages, profits & taxes—are all higher in 2020 than in 2014, which is hardly surprising given the intervening six years of general inflation and house price appreciation.

For remodeling, the nominal impacts per \$100,000 of spending are roughly the same in 2020 as they were in 2014, but the number of jobs reported in the table is lower in 2020. This simply a result of inflation, as \$100,000 doesn't buy quite as much of anything—including labor—as it did six years ago.

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**Appendix:
Assumptions Underlying the 2020 Estimated Impacts**

A. Value of New Construction

- Average price of a single-family home built for sale in 2020: \$385,000 (average price of a new single-family home sold in 2018 from the Census series on [New Residential Sales](#), inflated to a 2020 value using NAHB's forecast of the national Case-Shiller index).
- Difference between price and construction value of a home built for sale: 15.8% (for raw land, landscaping, appliances, brokers fees, and marketing & finance costs. These are taken from the Census Bureau's [Construction Methodology](#), where they are called non-construction cost factors).
- Average market value of a new custom home built in 2020: \$498,060 (1.4 times the average price of a single-family home, with the ratio of 1.4 computed using microdata from the HUD/Census Bureau [American Housing Survey](#)).
- Difference between market value and construction value of a custom built home: 12.0% (using Census non-construction cost factors for contractor built homes, plus assuming that the 10.6% for value of raw land for homes built for sale also applies).
- Share of new single-family homes built for sale: 80% (the current ratio from the Census Bureau's [Housing Units Started by Purpose and Design](#)).
- Average market value of a newly built rental apartment in 2020: \$189,100 (median average asking rent for apartments completed in 2017 from the HUD/Census Bureau [Survey of Market Absorption](#), divided by the median 11%, the median rent to value ratio from the HUD/Census Bureau [Rental Housing Finance Survey](#), inflated to a 2020 value using NAHB's forecast of the national Case-Shiller index).
- Treatment of non-construction cost factors. Except for raw land, NAHB adds the items that the Census Bureau subtracts from the price of single-family homes to arrive at construction back into the input-output accounts. Landscaping is added to the construction industry input; appliances to household cooking appliance manufacturing; brokers fees to a subset of the real estate sector that NAHB separated from the rest of real estate using data from the Census Bureau's 2012 [Economic Census](#); half of finance & marketing to monetary authorities and depository credit intermediation, the other half to marketing research and other miscellaneous services.

- Other additions for single-family homes built for sale. Based on an analysis undertaken many years ago by HUD in conjunction with the Real Estate Settlement Procedures Act, NAHB adds approximately 0.5% of construction value to monetary authorities and depository credit intermediation; 0.1% to insurance agencies, brokerages, and related activities; and 0.3% to legal services, of insurance agencies, brokerages, and related activities to account for closing costs paid by the buyer (and therefore not directly embodied in the price of the home).
- Brokers fee for rental apartments 0.56% of construction value. NAHB discussions with brokers who sell multifamily properties indicate that the fee for a typical property is about 1.0% of the sale price. This is converted to a fraction of construction value and divided in two under the assumption that half of rental apartments are sold through brokers.

B. Federal Tax Rates

- Income tax rate on dividends: 15.00% (the statutory rate for qualified dividends that applies to most income brackets).
- Base income tax rate on proprietors' profit: 26.46% (the effective rate paid by individual taxpayers with businesses income calculated from the IRS 2016 [Statistics of Income](#)), reduced by 1.64% to account for the fact that the extra 6.20% the self-employed pay in Social Security taxes is deductible).
- The SOI is also used to calculate a series of effective federal income tax rates based on annual income. These rates are applied to the average wage in each industry in the input-output accounts. The effective income tax rates range from 6.10% to 19.70%, depending on the industry, and average 8.906% when aggregate tax payments are divided by aggregate wages and salaries across all industries.
- Employee contribution to social security is 6.20% of wages and salaries, the current statutory rate that applies up to wage income up to about \$110,000. Employee Medicare payment is the statutory rate of 1.45%. Due to a provision in the Affordable Health Care Act, those with incomes above \$200,000 now pay an additional 0.9%, but we assume this and the social security cut-off roughly offset, so the total employee contribution for government social insurance is 7.65% of wages. Proprietors contribution is double this rate, or 15.30%, of their profits.