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# Economic Impacts of Virginia's Housing Industry

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*Authored by:*

Terry L. Clower, Ph.D. & Mark White, Ph.D.,  
Center for Regional Analysis, George Mason University

## Executive Summary

This report presents the findings of our economic impact analysis of the Commonwealth of Virginia's housing industry. This project is a component of a larger research effort for the Virginia Housing Policy Advisory Council entitled *Addressing the Importance of Housing for Virginia's Economy*. The study responds to Governor McAuliffe's Executive Order 32 recognizing "the sustained economic and social vitality of communities throughout the Commonwealth of Virginia depends upon the quality, availability, and affordability of housing. Housing is, and will remain, a key policy priority with far-reaching economic and social consequences." Conducting the research is the Virginia Coalition of Housing and Economic Development Researchers, which includes Virginia Tech, George Mason University, Virginia Commonwealth University, and the College of William and Mary. The research reported here was led by the Center for Regional Analysis at George Mason University. Key study characteristics include the following assumptions and findings:

- The Virginia Housing Industry is a diversified group of economic sectors representing construction and the housing components of finance, retail trade, transportation, professional services, and residential services including:
  - Construction:* Single family, multifamily, other residences, renovation & repair
  - Finance:* Banks, other lending institutions (real estate), mortgage brokers
  - Insurance:* Property insurance carriers and brokers, title insurance
  - Transport:* Household goods movers
  - Agencies:* Non-profit and other non-governmental agencies supporting housing
  - Real Estate:* Sales brokers, property management, appraisers, inspectors, conveyance services, title services, lawyers
  - Retail Trade:* Lumber yards, building materials, home centers (DIY only), household goods and furnishings, appliances
  - Services:* Interior design, home security, pest control, maid services, landscaping, waste collection, furniture and appliance repair, home owners' associations, household domestic staff.
- The analysis is based on the IMPLAN economic input-output model. Data for this analysis comes from the IMPLAN model, Chmura Economics, IBIS Worldwide, and industry sources. The model is adjusted to prevent double counting cross-sector business activities.
- Virginia's housing industry generated \$47.8 billion in economic activity in 2015. This activity supported over 314,000 jobs paying almost \$14.2 billion in salaries, wages, and benefits (see Table ES1).
- Based on direct expenditures only, the Housing Industry is the 6<sup>th</sup> largest private sector industry in the Commonwealth of Virginia (see Table ES2).

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**Table ES1**  
**Economic Impacts of Virginia’s Housing Industry**  
**2015**

| Description                              | Impact            |
|--|-------------------|
| Output (transactions)                    | \$ 47,814,092,000 |
| Value Added (gross state product)        | \$ 23,269,525,000 |
| Labor Income (salaries, wages, benefits) | \$ 14,197,085,000 |
| Jobs                                     | 314,299           |
| State and Local Taxes                    | \$ 1,665,701,000  |

Sources: GMU Center for Regional Analysis, Chmura Economics, IBIS World, industry sources, IMPLAN.

**Table ES2**  
**Virginia’s Largest Private Sector Industries**  
**2015**

| Industry  | Direct Output          |
|---|------------------------|
| Federal Procurement Spending (FY15)                                     | \$ 100.4 billion       |
| Defense Spending  | \$ 65.0 billion        |
| Healthcare Services   | \$ 44.3 billion        |
| Retail  | \$ 36.6 billion        |
| Wholesale   | \$ 30.3 billion        |
| Non-Residential Construction  | \$ 30.1 billion        |
| <b>Housing (construction, real estate services, household services)</b> | <b>\$ 28.1 billion</b> |
| Transportation & Warehousing  | \$ 24.6 billion        |
| Food & Beverage Product Manufacturing                                   | \$ 16.9 billion        |
| Tobacco   | \$ 11.7 billion        |

Sources: IMPLAN, ODU (2015)

The housing industry is one of the largest contributors to the Virginia economy by creating \$47.8 billion in economic activity in 2015. This activity supported over 314,000 jobs paying more than \$14 billion in annual wages, salaries, and benefits. About 8 percent of Virginia’s jobs (including agricultural and government employment) are related to private sector housing activities. As much as the housing industry contributes to the state economy, having an efficient housing market that can supply housing products to all Virginia residents is key to economic development efforts and the vitality of Virginia communities. These issues comprise the key subject matter for the other components of our study: *Addressing the Importance of Housing for Virginia’s Economy*.

**Introduction**

This report presents the findings of our economic impact analysis of the Commonwealth of Virginia’s housing industry, which is a component of a larger research effort for the Virginia Housing Policy Advisory Council (HPAC) entitled *Addressing the Importance of Housing for Virginia’s Economy*. The study responds to Governor McAuliffe’s Executive Order 32 recognizing “the sustained economic and social vitality of communities throughout the Commonwealth of Virginia depends upon the quality, availability, and affordability of housing. Housing is, and will remain, a key policy priority with far-reaching economic and social consequences.” The HPAC is a volunteer group representing private, non-profit, and public sector entities with an interest in housing. Support for this research is provided by the Office of the Secretary of Commerce and Trade, the Office of the Secretary for Health and Human Services, the Virginia Department of Housing and Community Development, and the Virginia Housing Development Authority. Conducting the research is the Virginia Coalition of Housing and Economic Development Researchers, which includes Virginia Tech, George Mason University, Virginia Commonwealth University, and the College of William and Mary. The research reported here is led by the Center for Regional Analysis at George Mason University

*Assessing the Importance of Housing for Virginia’s Economy* is a multi-phased, comprehensive examination of current and future trends and issues to illuminate the role that housing plays in economic vitality and competitiveness across the Commonwealth. The study team is a unique collaboration of the state’s leading university-based experts on housing, economic growth and development, and transportation. The research program is separated into three interlocking focus areas that address housing’s impact on economic performance and competitiveness, community vitality, and household well-being. This 2-year study will be completed in Summer 2017.

Housing plays a critical role in economic and community development, and housing quality can significantly influence health and education outcomes, as well as access to economic opportunity. The availability of appropriate, affordable workforce housing is key to attracting workers, which in turn attracts business investment. Challenges of having enough affordable housing to accommodate a wide range of household income cohorts creates systematic stress on transportation networks, lowers the perceived quality of life for a community, and weakens competitive positioning for attracting and retaining businesses to the state and its regions. Just as challenging for some regions is the need to have housing stock with the quality and amenities that homeowners demand. Yet, even with increasing recognition about the linkages between housing and prosperity there is relatively less awareness about how the housing industry contributes to job creation and economic activity. This study begins by addressing this information gap on the value of housing to the state’s economy.

For purposes of this analysis, we define the housing industry as private sector activities directly related to providing housing and residential-based services. The following section provides additional detail on how we defined the housing industry for this analysis. In general, housing includes the construction of new residential units, renovation and repair of existing units, professional services related to the housing market, and services provided to residences. The research employs data from a variety of sources and uses state-of-the-art modeling approaches.

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### **Methodology**

Determining the economic activities to include in the analysis is the first step in determining an industry's economic impact. Industries are defined according to the North American Industry Classification System (NAICS), which categorizes industries based on their primary product or activity. Table 1 below shows the industries selected for this study in consultation with the HPAC. It should be noted that certain industry activities do not appear in the list that have a role in the production and maintenance of housing such as plumbers, electricians, and other trades. Based on the way the data are organized, these trade activities are captured in the output estimates for the construction and remodeling industry sectors; therefore, they are not listed separately. Similarly, companies that specialize in disaster recovery, such as firms that provide flood cleanup services, are also included in the construction/repair industry category.

Our data sources for construction sector activity separate residential-based activities from other construction sectors, such as building roads, office buildings, hospitals, and other infrastructure and commercial buildings. However, most of the service industry sectors included provides services to residential and non-residential customers. Therefore, we obtained industry-specific market information that allowed us to estimate the proportion of total industry activity focused specifically on residential markets. If a market segment was ambiguous regarding the residential-nonresidential split, we excluded that portion of industry activities from our analysis. This means that we have likely undercounted some of the business activities associated with support for residential units making our total impact estimates more conservative. Details on the proportion of industry activity included in this analysis can be found in the Technical Appendix.

Importantly, the activities included in this impact assessment do not include public agencies, such as the Virginia Department of Housing and Community Development and the U.S. Department of Housing and Urban Development. Given that these agencies support jobs and economic activity in the state, our approach offers conservative estimates of the housing industry's total impacts. The analysis includes government sponsored entities including Freddie Mac, and the Virginia Housing Development Authority. In addition, we include non-profit entities directly related to housing.

This analysis utilizes an economic input-output modeling approach to assess the direct, indirect, and induced economic impacts of housing related industries in Virginia. Direct effects capture the economic value of spending in the subject industry, such as a home builder buying materials from a lumber yard, a real estate agent renting office space, or a home pest control company hiring an accounting firm. Indirect effects represent upstream, supply chain spending by businesses. For example, the lumber yard purchases materials from manufacturers and trucking services. In turn, the trucking company hires a janitorial service to clean their offices. Induced effects estimate the impacts of employees of these businesses spending a portion of their earnings for goods and services in the state economy. At each stage of spending, the model estimates the proportion of spending that leaves the state economy. For example, the fuel used for construction equipment is not refined in Virginia, therefore little of purchase value of fuel is counted in our analysis.

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**Table 1: Industries Included in Impact Analysis**

| Description                             | notes  |
|---|--|
| <b>Construction</b>                     |  |
| Single Family Home New Construction     | Includes trades (plumbers/electricians/etc)              |
| Multi-Family Home New Construction      | Includes trades  |
| Other New Residential Structures/Units  | Trailers, includes trades                                |
| Maintenance & Repair Residential        | includes related trades and services (disaster recovery) |
| <b>Retail</b>                           |  |
| Household Furniture/Good Sales          |  |
| Appliance Retailers                     |  |
| Lumber and Building Materials Retail    | Only include DIY sales, other sales in construction      |
| <b>Transportation</b>                   |  |
| Household Goods Movers                  | Residential only   |
| <b>Finance</b>                          |  |
| Banks, Thrifts, Other                   | Residential lending                                      |
| Real Estate Loans & Collateralized Debt | Real estate lending specialists, includes Freddie, other |
| Mortgage Brokers                        | Residential mortgages                                    |
| <b>Insurance</b>                        |  |
| Property & Casualty Insurance           | Carriers, homeowners/renters only                        |
| Title Insurance                         |  |
| Insurance Brokers                       |  |
| <b>Real Estate</b>                      |  |
| Real Estate Sales Brokerage             | Based on total and estimated commissions                 |
| Property Management                     | Residential property management                          |
| Real Estate Appraisal                   |  |
| Law Firms                               | Estimated portion of market for household real estate    |
| Conveyance/Title Services (legal)       | Individual only, services to builders in construction    |
| Building Inspectors                     | Home, not including new home construction                |
| <b>Services</b>                         |  |
| Interior Design                         | Residential  |
| Home Security                           | Estimate residential                                     |
| Pest Control                            | Residential  |
| Janitorial/Maid Services                | Residential  |
| Lawn and Landscape, Arborists           | Residential (may not include architects)                 |
| Waste Collection                        | Residential including junk removal                       |
| Agencies/Non-Profits                    | VHDA, non-profit developers, other                       |
| Appliance Repair                        | Households   |
| Furniture Repair                        | Residential  |
| Home Owners Associations                | Not including some service activities of HOAs            |
| Household Domestic Staff                | Maids, gardeners. Not nannies                            |

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When conducting an industry study with multiple components, it is necessary to adjust the input-output analysis to prevent double counting. For example, the induced effects of single family home construction include a carpenter purchasing her own home. Similarly, that carpenter purchases furniture, pest control, and others services included in this analysis. Therefore, we have adjusted the induced impacts to prevent double counting. Similarly, we removed indirect effects that cross over in the construction sectors due to potential double counting. Not all of the indirect effects among the construction sectors are really duplicative, but there is no clear way to parse out this particular effect therefore, we take the conservative approach of not counting any indirect effects among the construction sectors.

The analysis presented here used the IMPLAN economic input-output model developed by MIG, Inc. The IMPLAN model is widely used in academic and professional research. Inputs into the model can include estimates of industry sales or industry employment. The model provides estimates of direct output (sales) for industry sectors. However, due to the sector coding scheme used in the IMPLAN model, we used other data sources for non-construction industry activity inputs. For real estate brokers, we employed data obtained with the support and advice of the Virginia Association of Realtors. For other non-construction sectors we used estimates of statewide employment by industry from Chmura Economics and adjusted total employment based on industry market data from IBIS World and industry resources.

### **Findings**

Based on the data described above, the housing industry generated \$47.8 billion in economic activity in the Commonwealth of Virginia in 2015 (see Table 2). This level of impact boosted total gross state product by about \$23.3 billion and supported over 314,000 jobs paying over \$14 billion in salaries, wages, and benefits. The business activities and transactions supporting the housing industry provided substantial support to state and local taxing jurisdictions with revenues approaching \$1.7 billion in 2015.

**Table 2: Economic Impacts of the Virginia Housing Industry, 2015**

| Description                              | Impact            |
|--|-------------------|
| Output (transactions)                    | \$ 47,814,092,000 |
| Value Added (gross state product)        | \$ 23,269,525,000 |
| Labor Income (salaries, wages, benefits) | \$ 14,197,085,000 |
| Jobs                                     | 314,299           |
| State and Local Taxes                    | \$ 1,665,701,000  |

Sources: GMU Center for Regional Analysis, Chmura Economics, IBIS World, industry sources, IMPLAN.

The impacts presented here are impressive, but leave a question regarding comparative scale. While we do not offer an assessment of the total economic impacts of all industries in the Commonwealth, it is useful to consider how the housing industry stacks up against the state's other major industries. Using the data from this analysis, IMPLAN, and other industry reports, we compared direct outputs across the largest industry sectors. As shown in Table 2, federal procurement spending, including Department of Defense spending, in the private sector generated over \$100 billion in direct economic activity. It is the largest single contributor to the

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state economy.<sup>1</sup> As is well known, this has historically been one of Virginia's economic strengths, but recession, sequestration, and some military base realignments has forced the state to boost other industrial sectors to promote future growth. The importance of having a healthy, diversified housing market providing affordable opportunities for workers across the economic spectrum is addressed throughout this research project.

The data presented show that the Housing Industry is Virginia's 6<sup>th</sup> largest private sector industry. Interestingly, non-residential construction is the 5<sup>th</sup> largest industry, which in part is driven by housing induced demand for infrastructure. Retail and Wholesale Trade and Healthcare Services are also among the largest sectors. Also appearing on this list are Transportation and Warehousing, reflecting the importance of the state's many transportation assets, and traditional food production and tobacco industries.

**Table 3: Virginia's Largest Private Sector Industries**

| Industry  | Direct Output          |
|---|------------------------|
| Federal Procurement Spending (FY15)                                     | \$ 100.4 billion       |
| Defense Spending  | \$ 65.0 billion        |
| Healthcare Services   | \$ 44.3 billion        |
| Retail  | \$ 36.6 billion        |
| Wholesale   | \$ 30.3 billion        |
| Non-Residential Construction  | \$ 30.1 billion        |
| <b>Housing (construction, real estate services, household services)</b> | <b>\$ 28.1 billion</b> |
| Transportation & Warehousing  | \$ 24.6 billion        |
| Food & Beverage Product Manufacturing                                   | \$ 16.9 billion        |
| Tobacco   | \$ 11.7 billion        |

Sources: IMPLAN, ODU (2015)

### Conclusions

The housing industry is one of the largest contributors to Virginia's economy, as it created \$47.8 billion in economic activity in 2015. This activity supports over 314,000 jobs paying more than \$14 billion in annual wages, salaries, and benefits. About 8 percent of all jobs in Virginia (including agricultural and government employment) are related to private sector housing activities. As important as the housing industry is to the state's economy, having an efficient housing market than can supply housing products to all Virginia residents is key to economic development efforts and the vitality of all Virginia communities. These issues are discussed in greater detail in other components of our study: *Addressing the Importance of Housing for Virginia's Economy*.

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<sup>1</sup> Data presented on federal spending represent fiscal year 2015, which is not the same as calendar year data used for other measures. However, the data support an assessment of the magnitude of contributions from this sector of the economy. The data presented are sourced from Old Dominion University's State of the Commonwealth report for 2015.

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### TECHNICAL APPENDIX

The following offers details regarding key assumptions and methodologies employed in estimating the economic impact of the housing industry on the Commonwealth of Virginia.

- Input-Output Model: IMPLAN
  - Trade Flow model
  - Type SAM multipliers (social accounting matrix)
- Data sources
  - Industry output for construction sectors from IMPLAN model
  - Output for residential real estate brokers estimated based on the value of total recorded home sales in Virginia for 2015 multiplied by 5.2%, which is the estimated brokerage fees for all transactions. Source of information is the Virginia Association of Realtors.
  - Other industry sector inputs are based on headcount employment. Headcount employment by sector come from the Jobs EQ databased provided by Chmura Economics. The Virginia Housing Development Authority provided FTE jobs data for their organization, which was converted to headcount jobs using an industry-specific adjustment factor found in the IMPLAN data set.
- Input Data Adjustment
  - For industries that include residential and non-residential activities, such as interior design work, we only counted that proportion of industry activity representing services or sales to residential households. Market segmentation is based on data from IBIS World and other industry sources.
- Model Output Adjustment
  - Because we used inputs from multiple sectors of the economy, it is necessary to adjust the IMPLAN model outputs to avoid double counting impacts in the indirect and induced components.
  - For any industry that appears as a direct effect, we remove crossover induced effects so this household spending is not counted twice.
  - We also adjust indirect effects where a home builder may purchase certain residential services as a part of the building process – pre-finish termite treatments as an example.
  - All remaining induced impacts by the proportion of total industry activity associated with the housing industry (6.3%) to prevent double counting household spending effects.

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Industries and Assumptions Used in Modeling the Economic Impacts of the Housing Industry

| NAICS  | IMPLAN | Description                               | Jobs   | Value (000s) | Adjustment | Input        | Notes  |
|--------|--------|---|--------|--------------|------------|--------------|--|
| 236115 | 59     | SF new construction                       | 10,210 | \$ 5,390,708 |            | \$ 5,390,708 | Includes trades                                |
| 236116 | 60     | MF new construction                       | 758    | \$ 1,244,643 |            | \$ 1,244,643 | Includes trades                                |
| 236117 | 61     | Other new construction                    | 2,619  | \$ 8,105,171 |            | \$ 8,105,171 | Includes trades                                |
| 236118 | 63     | Maintenance & repair residential          | 14,805 | \$ 2,611,078 |            | \$ 2,611,078 | Includes trades                                |
| 442299 | 397    | household furniture sales                 | 11,332 |              | 0.61       | 6,913        | households, also includes 442110               |
| 443141 | 398    | appliance retailers                       | 819    |              | 0.881      | 722          |  |
| 444110 | 399    | lumber and building materials retail      | 18,689 |              | 0.1        | 1,869        | DIY only                                       |
| 484210 | 411    | movers                                    | 5,352  |              | 0.605      | 3,238        | residential                                    |
| 522120 | 433    | Savings banks & thrifts                   | 351    |              | 0.43       | 151          | 43% residential mortgage, 4.3% home equity     |
| 522292 | 434    | real estate loans and collateralized debt | 7,875  |              | 0.317      | 2,496        | Fannie, FHLMC, real estate lending             |
| 522310 | 434    | loan brokers                              | 1,703  |              | 0.805      | 1,371        | residential mortgages                          |
| 524126 | 437    | property & casualty insurance             | 13,920 |              | 0.151      | 2,102        | homeowners                                     |
| 524127 | 437    | title insurance                           | 1,782  |              | 1          | 1,782        |  |
| 524210 | 438    | insurance brokers                         | 17,941 |              | 0.13       | 2,332        | estimate, 27.6% includes cars, homes & renters |
| 531210 | 440    | real estate sales brokerage               | 15,362 | \$ 1,813,240 |            | \$ 1,813,240 | 2015 total sales (\$34.87 b) X 5.2%            |
| 531311 | 440    | property management                       | 11,621 |              | 1          | 11,621       | residential property management                |
| 531320 | 440    | real estate appraisal                     | 1,153  |              | 0.265      | 306          |  |
| 541110 | 447    | law firms                                 | 25,023 |              | 0.024      | 601          | 29.1% households X 8.1% real estate = 2.4%     |
| 541191 | 447    | conveyance/title services (legal)         | 1,463  |              | 0.426      | 623          | 42.6% individual,                              |
| 541350 | 449    | building inspectors                       | 721    |              | 0.283      | 204          | home, n/inc 5.5% new construction              |
| 541410 | 450    | interior design                           | 1,385  |              | 0.468      | 648          | residential                                    |
| 561621 | 467    | home security                             | 4,150  |              | 0.5        | 2,075        | Estimate based on industry avgs                |
| 561710 | 468    | pest control                              | 3,561  |              | 0.683      | 2,432        |  |
| 561720 | 468    | janitorial                                | 47,852 |              | 0.083      | 3,972        | residential                                    |
| 561730 | 469    | lawn and landscape                        | 27,145 |              | 0.74       | 20,087       | residential, includes arborists                |
| 562111 | 471    | waste collection                          | 3,997  |              | 0.353      | 1,411        | residential                                    |
| 624229 | 486    | agencies                                  | 378    |              | 1          | 378          | VHDA 378 headcount jobs*                       |
| 811412 | 508    | appliance repair                          | 670    |              | 0.75       | 503          | households                                     |
| 811420 | 508    | furniture repair                          | 528    |              | 0.455      | 240          | residential                                    |
| 813990 | 516    | home owners' associations                 | 2,822  |              | 0.647      | 1,826        | n/inc amenities mgmt. (pools, etc)             |
| 814110 | 517    | maids, nannies, gardeners                 | 10,302 |              | 0.372      | 3,832        | house cleaners, gardeners                      |

\* IMPLAN jobs are expressed as headcount jobs. Conversion factor for FTE from the IMPLAN model for VHDA is 328 FTEs / 0.867383279 = 378