

Virginia Coalition of Housing and Economic Development Researchers

Addressing the Impact of Housing for Virginia's Economy

A REPORT FOR VIRGINIA'S HOUSING POLICY ADVISORY COUNCIL|
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Appendix Report 1:

Economic Impacts of Virginia's Housing Industry

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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 that “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.” Research was conducted by 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:

- The Virginia Housing Industry is a diversified group of economic sectors representing construction and the following housing components of finance, retail trade, transportation, professional services, and residential services:
 - Construction:* Single family, multifamily, other residences, renovation and 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 come from the IMPLAN model, Chmura Economics, IBIS Worldwide, and industry sources. The model is adjusted to prevent double counting of cross-sector business activities.

Key Findings

- ✓ Virginia’s housing industry generated \$47.8 billion in economic activity in 2015 supporting over 314,000 jobs paying almost \$14.2 billion in salaries, wages, and benefits (see Table ES1).
- ✓ The Housing Industry is the 6th-largest private sector industry in the Commonwealth of Virginia for direct expenditures alone (see Table ES2).

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
Housing (construction, real estate services, household services)	\$ 28.1 billion
Transportation and Warehousing	\$ 24.6 billion
Food and 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, creating \$47.8 billion in economic activity in 2015. This activity supported over 314,000 jobs that paid more than \$14 billion in annual wages, salaries, and benefits. Approximately eight percent of Virginia’s jobs (including agricultural and government employment) are related to private-sector housing activities. Therefore, an efficient housing market that can supply housing products to all Virginia residents is critical 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*.

Table of Contents

Executive Summary	2
Executive Takeaways	Error! Bookmark not defined.
Table of Contents	4
List of Tables	5
Introduction	6
Methodology	7
Body of Findings	10
Conclusion	11
Technical Notes	11

List of Tables

Table 1. Industries Included in Impact Analysis

Table 2. Economic Impacts of the Virginia Housing Industry, 2015

Table 3. Virginia's Largest Private Sector Industries

Table 4: Industries and Assumptions Used in Modeling the Economic Impacts of the Housing Industry

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 that "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. Research was conducted by 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. This research project was led by the Center for Regional Analysis at George Mason University.

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 sufficient affordable housing to accommodate a wide range of household income cohorts create systematic stress on transportation networks, lower perceived quality of life for a community, and weaken competitive positioning for attracting and retaining businesses to the state and its regions. An additional challenge is that regions must have housing stock with the quality and amenities that homeowners demand. However, despite increased recognition in the linkages between housing and prosperity, relatively less awareness exists on how the housing industry contributes to job creation and economic activity. This study first addresses this information gap on the value of housing to the state's economy.

For 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.

Methodology

The first step in determining an industry's economic impact is determining economic activities to include in the analysis. Industries are defined according to the North American Industry Classification System (NAICS), which categorizes industries based on their primary product or activity. Table 1 shows the industries selected for this study in consultation with the HPAC. 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 organization of the data, these trade activities are captured in the output estimates for the construction and remodeling industry sectors and are thus not listed separately. Similarly, companies that specialize in disaster recovery (e.g., 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 roads, office buildings, hospitals, and other infrastructure and commercial buildings. However, most service industry sectors included in the data provide services to both 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. The portion of market segments that was ambiguous regarding the residential–nonresidential split was excluded from our analysis. It is therefore likely that we have 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.

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 such as Freddie Mac and the Virginia Housing Development Authority. In addition, we include non-profit entities directly related to housing.

This analysis uses 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, lumber yards purchase materials from

manufacturers and trucking service companies. 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 on 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, and, therefore, only a small percentage of the fuel purchase price is counted in our analysis.

Table 1: Industries Included in Impact Analysis

Description	notes
Construction	
Single-Family Home New Construction	Includes trades (e.g., plumbers and electricians)
Multi-Family Home New Construction	Includes trades
Other New Residential Structures/Units	Trailers, includes trades
Maintenance and Repair Residential	Includes related trades and services (disaster recovery)
Retail	
Household Furniture/Goods Sales	
Appliance Retailers	
Lumber and Building Materials Retail	Only include DIY sales and other sales in construction
Transportation	
Household Goods Movers	Residential only
Finance	
Banks, Thrifts, Other	Residential lending
Real Estate Loans and Collateralized Debt	Real estate lending specialists: Freddie Mac and other
Mortgage Brokers	Residential mortgages
Insurance	
Property and Casualty Insurance	Carriers, homeowners/renters only
Title Insurance	
Insurance Brokers	
Real Estate	
Real-Estate Sales Brokerage	Based on total and estimated commissions
Property Management	Residential property management
Real-Estate Appraisal	
Law Firms	Estimated portion of the market for household real estate
Conveyance/Title Services (legal)	Individual only, services for builders in construction
Building Inspectors	Home, not including new home construction
Services	
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 Owner Associations	Not including some service activities of HOAs
Household Domestic Staff	Maids and gardeners but not nannies

When conducting an industry study with multiple components, adjusting the input–output analysis is necessary to prevent double counting. For example, we must adjust for the induced effects of single-family home construction when a carpenter purchases her own home as well as furniture, pest control, and other services included in this analysis. Similarly, we removed indirect effects that cross over between construction sectors to prevent potential double counting. Not all indirect effects among the construction sectors are duplicative. However, because there is no clear way to parse out this effect, we used the conservative approach of not counting any indirect effects among 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. Model inputs may include estimates of industry sales or employment. The model provides estimates of direct output (sales) for industry sectors. However, owing 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.

Body of Findings

The data show that the housing industry generated \$47.8 billion in economic activity in the Commonwealth of Virginia in 2015 (see Table 2), which 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
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Sources: GMU Center for Regional Analysis, Chmura Economics, IBIS World, industry sources, IMPLAN

While we do not offer an assessment of the total economic impacts of all industries in the Commonwealth, considering how the housing industry stacks up against the state's other major industries is useful. 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 in the private sector, including Department of Defense spending, generated over \$100 billion in direct economic activity, which was the largest single contributor to the state economy.¹ Federal procurement has historically been one of Virginia's economic strengths, but recession, sequestration, and some military base realignments have 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 Housing is Virginia's sixth-largest private sector industry and Non-Residential Construction is the fifth-largest, partly driven by housing-induced demand for infrastructure. The other largest sectors are Retail, Wholesale Trade, Healthcare Services, and Transportation and Warehousing, reflecting the importance of the state's many transportation assets and traditional food production and

¹ For federal spending, we use fiscal year 2015 data, which differ from calendar year data used for other measures. The data support an assessment of the magnitude of contributions from this sector of the economy and are sourced from Old Dominion University's State of the Commonwealth report for 2015.

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
Housing (construction, real estate services, household services)	\$ 28.1 billion
Transportation and Warehousing	\$ 24.6 billion
Food and Beverage Product Manufacturing	\$ 16.9 billion
Tobacco	\$ 11.7 billion

Sources: IMPLAN, ODU (2015)

Conclusion

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 eight percent of all jobs in Virginia (including agricultural and government employment) are related to private-sector housing activities. An efficient housing market that can supply housing products to all Virginia residents is also critical 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*.

Technical Notes

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 using the value of total recorded home sales in Virginia for 2015 multiplied by 5.2%, which is the estimated brokerage fees for all transactions. The data were sourced from 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 that were converted to job headcount using an industry-specific adjustment factor found in the IMPLAN dataset.
- Input Data Adjustment
 - For industries that include residential and non-residential activities (e.g., interior design work), we counted only 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, adjusting the IMPLAN model outputs to avoid double-counting impacts in the indirect and induced components was necessary.
 - For any industry that appears as a direct effect, we removed crossover-induced effects to avoid double-counting household spending.
 - We also adjusted indirect effects where a homebuilder may have purchased certain residential services as part of the building process (e.g., pre-finish termite treatments).
 - All remaining induced effects were separated into the proportion of total industry activity associated with the housing industry (6.3%) to prevent double-counting household spending effects.

Table 4: 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 and repair residential	14,805	\$ 2,611,078		\$ 2,611,078	Includes trades
442299	397	household furniture sales	11,332		0.61	6,913	households, 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 and 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 of 27.6% includes cars, homes, and 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, not incl. 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 averages
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	not incl. amenities management (e.g., pools)
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