

The Motion Picture and Video Industry's Contribution TO VIRGINIA'S ECONOMY IN 2016



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Report prepared by



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Mangum Economic Consulting, LLC is a Richmond, Virginia based firm that specializes in producing objective economic, quantitative, and qualitative analysis in support of strategic decision making. Examples of typical studies include:

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Executive Summary

This report provides an assessment of the contribution that the motion picture and video production and distribution industry made to Virginia's economy in 2016. The most salient findings from that assessment are as follows:

- The motion picture and video production and distribution industry has a sizeable economic impact on Virginia's economy. In 2016, the total contribution of this industry to Virginia's economy included 4,287 full-time-equivalent jobs, \$215.1 million in labor income, \$696.8 million in economic output, and \$85.3 million in total tax revenue (of which \$27.1 million was state and local tax revenue).
- The motion picture and video production and distribution industry has a significant impact on Virginia at a regional level as well. In 2016, it contributed:
 - \$295.3 million to Northern Virginia's economy, and was also responsible for creating 1,672 full time equivalent jobs, \$88.8 million in associated labor income, and \$35.1 million in tax revenue,
 - \$139.8 million to Central Virginia's economy, and was also responsible for creating 966 full time equivalent jobs, \$47.2 million in associated labor income, and \$18.4 million in tax revenue,
 - \$73.4 million to Hampton Roads' economy, and was also responsible for creating 452 full time equivalent jobs, \$22.4 million in associated labor income, and \$9.0 million in tax revenue, and
 - \$15.0 million to the Southwest and Shenandoah Valley region's economy, and was also responsible for creating 119 full time equivalent jobs, \$5.3 million in associated labor income, and \$2.1 million in tax revenue.

Introduction

This report provides an assessment of the contribution that the motion picture and video production and distribution industry made to Virginia’s economy in 2016. The remainder of this report is divided into two sections. The *Employment Trends* section provides some general background on statewide trends in industry employment and wages. While the *Economic Impact* section quantifies the economic impact that the motion picture and video production and distribution industry had on Virginia in 2016. This analysis was produced by Mangum Economics at the request of the Virginia Film Office.

Employment Trends

To provide a context for the economic impact analysis to follow, in this section we present general employment and wage data for Virginia’s film industry. Figure 1 depicts statewide employment in the motion picture and video production and distribution industry over the ten-year period from the second quarter of 2007 through the second quarter of 2017.¹ As this graph shows, employment in Virginia’s this industry generally trended downward from the second quarter of 2007 through the first quarter of 2010. If we exclude the second quarter of 2007 spike in employment, the industry experienced a loss of 232 jobs over this period.

However, in 2010 Virginia enacted a refundable tax credit for productions in which 50 percent of the principal photography was shot in Virginia and that spent at least \$250,000 on qualifying expenses in the state. In addition, funding for the Governor’s Motion Picture Opportunity Fund, a separate grant program, was also increased from \$200,000 to \$1,000,000. Following those initiatives, employment in Virginia’s motion picture and video production and distribution industry began to rise, peaking in 2011 with the major film production *Lincoln* at 2,591 jobs. Overall, between the first quarter of 2010 and the second quarter of 2017, the industry expanded by 719 jobs. As of the second quarter of 2017, employment in Virginia’s motion picture and video production and distribution industry stood at 2,059 jobs.

¹ In this graph and all subsequent areas of this report, the motion picture and video production and distribution industry is defined to include three specific industry groups, as defined by the U.S. Bureau of Labor Statistics’ North American Industry Code System (NAICS) industry classification taxonomy. These are: 1) Motion Picture and Video Production (NAICS 512110), 2) Motion Picture and Video Distribution (NAICS 512120), 3) Teleproduction and Other Postproduction Services (NAICS 512191), and 4) Other Motion Picture and Video Industries (NAICS 512199). This definition of the motion picture and video industry is consistent with those employed in earlier analyses conducted for the Virginia Film Office (see Mangum Economics, “How the Motion Picture and Video Industry Contributes to Virginia’s Economy,” December 2008).

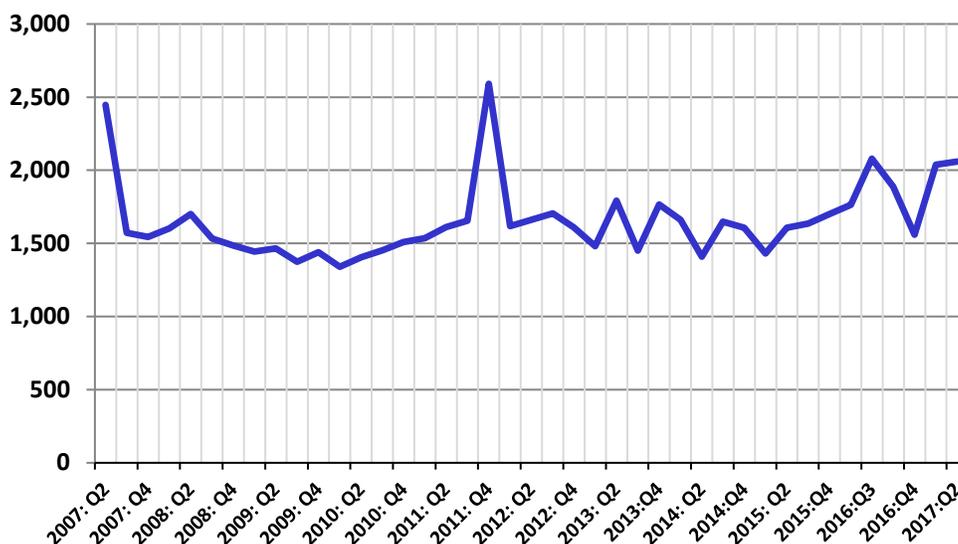


Figure 1: Motion Picture and Video Production and Distribution Industry Employment in Virginia – 2007:Q2 to 2017:Q2²

Figure 2 provides data on average annual wages within Virginia’s motion picture and video production and distribution industry, by comparing the 2016 average annual wage in the four specific industry classifications that comprise this industry to the average annual wage across all industries within state. As this graph shows, average annual wages in the motion picture and video production and distribution industry compare quite favorably to the statewide average across all industries.

² Data Source: Virginia Employment Commission.

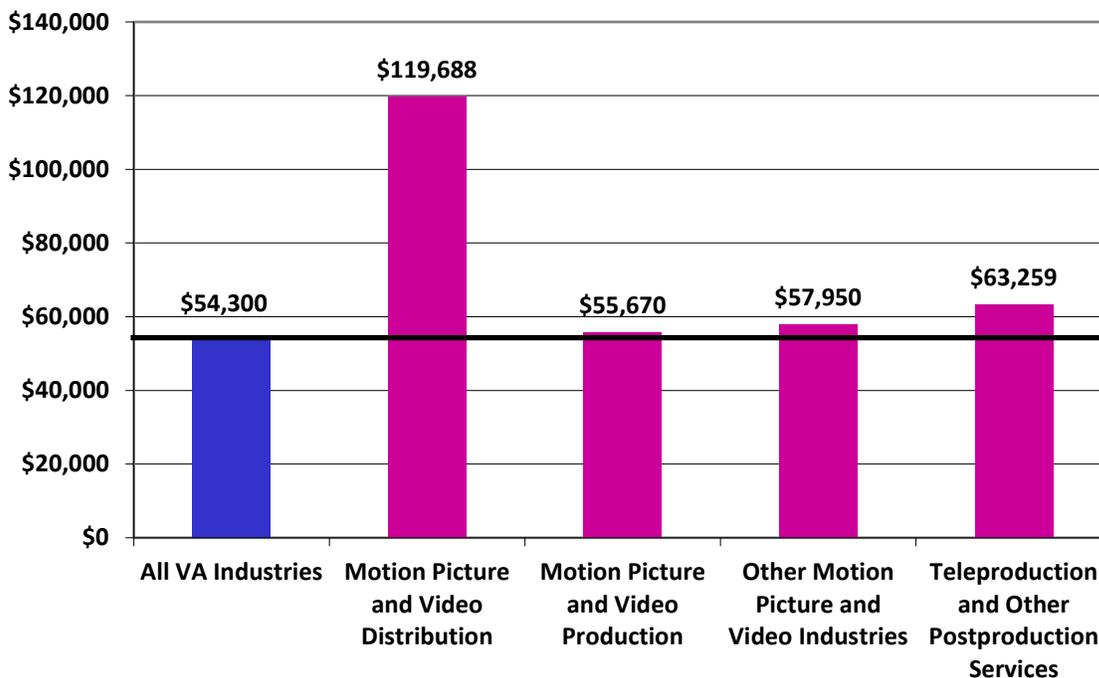


Figure 2: 2016 Average Annual Wages in the Virginia Motion Picture and Video Production and Distribution Industry³

Economic Impact

Method

To empirically evaluate the statewide and regional economic and fiscal impact attributable to Virginia’s motion picture and video production and distribution industry in 2016, we employ an economic impact model called IMPLAN.⁴ The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA’s Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

³ Data Source: Virginia Employment Commission.

⁴ IMPLAN v.3 is produced by Minnesota IMPLAN Group, Inc.



Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the motion picture and video production and distribution industry purchases goods and services – or when industry employees use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic, they reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (*e.g.*, own employment, wages paid, goods and services purchased, by the motion picture and video production and distribution industry). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), economic output (the total amount of economic activity that is created in the economy), and fiscal impact (the state and local tax revenues that are generated by this economic activity).

The data that we use in following economic and fiscal impact assessment come from two sources – the Virginia Employment Commission (VEC) and the Virginia Film Office. Employment data collected by VEC pertain to generally full-time positions that are covered by unemployment insurance. To augment these data to include part-time workers and others who are not covered by unemployment insurance, the Virginia Film Office also surveys known motion picture and video production and distribution firms within the state. These data are then reviewed on a firm-by-firm basis by the Virginia Film Office to ensure that there is no duplication with the VEC employment data.



Results

Statewide

By feeding these combined data into the IMPLAN model we are able to obtain the statewide impact estimates displayed in Table 1. As these data indicate, we estimate that the total contribution of the motion picture and video production and distribution industry to Virginia's economy in 2016 included: 1) 4,287 full-time-equivalent jobs, 2) \$215.1 million in labor income, 3) \$696.8 million in economic output, and 4) \$85.3 million in total tax revenue (of which \$27.1 million was state and local tax revenue). Based on integral assumptions used in the IMPLAN model and data provided by the Virginia Film Office, we are able to determine that the multiplier effect for in-state film industry expenditures was 1.83, which means that every \$1.00 in film industry expenditures spent within Virginia generated \$1.82 in total economic activity within the state's economy.

Table 1: Estimated Economic Impact of the Film Industry on Virginia in 2016

	Employment	Labor Income	Output
<i>First Round Direct Economic Activity</i>	2,045	\$122,613,215	\$435,439,503
<i>Second Round Indirect and Induced Economic Activity</i>	2,242	\$92,443,549	\$261,399,583
<i>Total, Direct, Indirect, and Induced Economic Activity</i>	4,287	\$215,056,764	\$696,839,085
<i>State and Local Fiscal Impact</i>			\$27,108,079
<i>Federal Fiscal Impact</i>			\$58,156,604
<i>Total Fiscal Impact</i>			\$85,264,683

Regional

Tables 2 through 5 provide the results from a similar analysis of four sub-state regions in Virginia: 1) Northern Virginia,⁵ 2) Central Virginia,⁶ 3) Hampton Roads,⁷ and Southwest/Shenandoah Valley.⁸ As these tables show, it is estimated that in 2016 the motion picture and video production and distribution industry:

- contributed \$295.3 million to Northern Virginia's economy, and was also responsible for creating 1,672 full time equivalent jobs, \$88.8 million in associated labor income, and \$35.1 million in tax revenue (see Table 2),
- contributed \$139.8 million to Central Virginia's economy, and was also responsible for creating 966 full time equivalent jobs, \$47.2 million in associated labor income, and \$18.4 million in tax revenue (see Table 3),
- contributed \$73.4 million to Hampton Roads' economy, and was also responsible for creating 452 full time equivalent jobs, \$22.4 million in associated labor income, and \$9.0 million in tax revenue (see Table 4), and
- contributed \$15.0 million to the Southwest and Shenandoah Valley region's economy, and was also responsible for creating 119 full time equivalent jobs, \$5.3 million in associated labor income, and \$2.1 million in tax revenue (see Table 5).

The reader will note that the regional totals shown in Tables 2 through 5 do not sum to the statewide totals shown in Table 1. There are two reasons for this. The first is that the VEC is required to suppress employment data if making such data public would violate the confidentiality of individual firms. As a result, particularly at the sub-state level, often not all

⁵ Northern Virginia is defined to include the cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, Manassas Park, and Winchester, and the counties of Arlington, Caroline, Clarke, Fairfax, Fauquier, Frederick, King George, Loudoun, Prince William, Spotsylvania, and Stafford.

⁶ Central Virginia is defined to include the cities of Colonial Heights, Hopewell, Petersburg, and Richmond, and the counties of Amelia, Charles City, Chesterfield, Dinwiddie, Goochland, Hanover, Henrico, New Kent, Powhatan, Prince George, Surry, and Sussex.

⁷ Hampton Roads is defined to include the cities of Chesapeake, Emporia, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, and the counties of Accomack, Essex, Gloucester, Isle of Wight, James City, King and Queen, King William, Lancaster, Mathews, Middlesex, Northampton, Northumberland, Richmond, Southampton, Westmoreland, and York.

⁸ Southwest and Shenandoah are defined to include the cities of Bedford, Bristol, Buena Vista, Charlottesville, Clifton Forge, Covington, Danville, Galax, Harrisonburg, Lexington, Lynchburg, Martinsville, Norton, Radford, Roanoke, Salem, South Boston, Staunton, and Waynesboro, and the counties of Albemarle, Alleghany, Amherst, Appomattox, Augusta, Bath, Bedford, Bland, Botetourt, Brunswick, Buchanan, Buckingham, Campbell, Carroll, Charlotte, Craig, Culpepper, Cumberland, Dickenson, Floyd, Fluvanna, Franklin, Giles, Grayson, Greene, Greenville, Halifax, Henry, Highland, Lee, Louisa, Lunenburg, Madison, Mecklenburg, Montgomery, Nelson, Nottoway, Orange, Page, Patrick, Pittsylvania, Prince Edward, Pulaski, Rappahannock, Roanoke, Rockbridge, Rockingham, Russell, Scott, Shenandoah, Smyth, Tazewell, Warren, Washington, Wise, and Wythe.



employment data can be reported. Second, the smaller a geographic area, the larger the proportion of dollars from an economic event that typically leave the area. This makes the Keynesian multiplier smaller, thereby decreasing the second round indirect and induced economic activity.

Table 2: Estimated Economic Impact of the Motion Picture and Video Production and Distribution Industry on Northern Virginia in 2016

	Employment	Labor Income	Output
<i>First Round Direct Economic Activity</i>	815	\$48,996,266	\$192,639,975
<i>Second Round Indirect and Induced Economic Activity</i>	857	\$39,774,800	\$102,679,807
<i>Total, Direct, Indirect, and Induced Economic Activity</i>	1,672	\$88,771,066	\$295,319,782
<i>State and Local Fiscal Impact</i>			\$10,907,769
<i>Federal Fiscal Impact</i>			\$24,207,819
<i>Total Fiscal Impact</i>			\$35,115,588

Table 3: Estimated Economic Impact of the Motion Picture and Video Production and Distribution Industry on Central Virginia in 2016

	Employment	Labor Income	Output
<i>First Round Direct Economic Activity</i>	473	\$26,959,369	\$80,573,333
<i>Second Round Indirect and Induced Economic Activity</i>	492	\$20,196,845	\$59,229,298
<i>Total, Direct, Indirect, and Induced Economic Activity</i>	966	\$47,156,214	\$139,802,631
<i>State and Local Fiscal Impact</i>			\$5,710,194
<i>Federal Fiscal Impact</i>			\$12,653,093
<i>Total Fiscal Impact</i>			\$18,363,287

Table 4: Estimated Economic Impact of the Motion Picture and Video Production and Distribution Industry on Hampton Roads in 2016

	Employment	Labor Income	Output
<i>First Round Direct Economic Activity</i>	233	\$14,223,659	\$47,641,547
<i>Second Round Indirect and Induced Economic Activity</i>	220	\$8,139,427	\$25,763,853
<i>Total, Direct, Indirect, and Induced Economic Activity</i>	452	\$22,363,086	\$73,405,400
<i>State and Local Fiscal Impact</i>			\$2,974,330
<i>Federal Fiscal Impact</i>			\$6,074,695
<i>Total Fiscal Impact</i>			\$9,049,025



Table 5: Estimated Economic Impact of the Motion Picture and Video Production and Distribution Industry on the Southwest and Shenandoah Valley Region in 2016

	Employment	Labor Income	Output
<i>First Round Direct Economic Activity</i>	60	\$3,614,856	\$9,523,792
<i>Second Round Indirect and Induced Economic Activity</i>	59	\$1,701,999	\$5,469,221
<i>Total, Direct, Indirect, and Induced Economic Activity</i>	119	\$5,316,855	\$14,993,013
<i>State and Local Fiscal Impact</i>			\$689,818
<i>Federal Fiscal Impact</i>			\$1,372,738
<i>Total Fiscal Impact</i>			\$2,062,556