Commonwealth of Virginia
November 13, 2017

Report to the Governor and the General Assembly of Virginia

Evaluation: Film Incentives

Economic Development Incentives Evaluation Series

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Evaluation: Film Incentives – Summary

WHAT WE FOUND

- Virginia spending on economic development incentives for the film industry totaled $47.5 million over the past five years, including $14 million in FY16, through a combination of grants, tax credits, and tax exemptions.
- The film tax credit and grant have had mixed success in achieving their goals. While the incentives have influenced most productions that received incentives to film in the state, film industry growth in Virginia has been very small overall even after increased spending through its incentives.
- The tax credit and grant have a positive impact on Virginia's economy (an additional 580 jobs and $51 million in Virginia GDP per year, on average), but the impact is smaller than that of other economic development incentive programs.
- Both incentives provide a low return in revenue to the state (20 cents per dollar invested for the tax credit and 30 cents per dollar for the grant.)
- Virginia's grant program is unique in that it leverages in-kind advertising from productions, which generates additional economic benefits and state revenue through increased tourism in Virginia.
- The film tax exemption has little effect on film location decisions, a negligible benefit to the Virginia economy, and provides a negligible return on the state's investment. However, the exemption addresses imperfections in the sales and use tax system.

WHY WE DID THIS STUDY

Through language in the Appropriation Act, the General Assembly directed the Joint Legislative Audit and Review Commission (JLARC) to review and evaluate economic development initiatives. Topics include spending on incentives and activity generated by businesses receiving incentives; the economic benefits of incentives; and the effectiveness of incentives.

JLARC releases two reports each year: a report on overall spending and business activity and an in-depth report on the effectiveness of selected individual incentives. (See Appendix A: Study mandate.) JLARC contracted with the Weldon Cooper Center for Public Service to perform the analysis for both reports.

This report is the first in the series of in-depth reports on the effectiveness of individual incentives and focuses on Virginia's film incentives.

OPTIONS AND RECOMMENDATIONS

Legislative action

Options: The General Assembly could consider eliminating the film tax credit and grant or creating a more effective film grant.

Recommendation: If the General Assembly decides to maintain the film incentive program in Virginia, elements of the tax credit and grant should be combined to provide a more effective incentive. The enhanced incentive should be structured as a

grant, use the formal award criteria of the tax credit, have a simplified version of the rate structure used by the tax credit, and use a scoring system to make award decisions.

Executive action

Recommendations: If the General Assembly decides to maintain the film incentive program in Virginia, the Virginia Film Office should develop proposals to simplify the reimbursement rate structure and create a scoring system to make award decisions.

Evaluation: Film Incentives – Options and recommendations

OPTION 1

The General Assembly could consider eliminating the Motion Picture Production Tax Credit and the Governor's Motion Picture Opportunity Fund.

OPTION 2

The General Assembly could consider maintaining a film incentive program in Virginia and making substantive changes to improve the effectiveness and the economic benefit of the program.

RECOMMENDATION 1

If the General Assembly decides to maintain the film incentive program in Virginia, the General Assembly may wish to consider amending the Code of Virginia to repeal § 58.1-439.12:03, which establishes the Motion Picture Production Tax Credit, and to incorporate the tax credit criteria and reimbursement rate provisions into § 2.2-2320, which establishes the Governor's Motion Picture Opportunity Fund.

RECOMMENDATION 2

If the General Assembly decides to maintain the film incentive program in Virginia, the Virginia Film Office should develop a proposal to simplify the reimbursement rate structure of the Motion Picture Production Tax Credit for use in the new grant program. In developing the proposal, consideration should be given to making the rate more competitive. The Virginia Film Office should report on its proposal to the governor and the chairs of the House Appropriations and Senate Finance Committees no later than November 1, 2018.

RECOMMENDATION 3

If the General Assembly decides to maintain the film incentive program in Virginia, the Virginia Film Office should create a formal point-based scoring system to evaluate each application for a grant award. The system should be based on objective criteria to better enable staff to identify projects likely to maximize state economic benefits. The Virginia Film Office should report on its proposal to the governor and the chairs of the House Appropriations and Senate Finance Committees no later than November 1, 2018.

RECOMMENDATION 4

The JLARC Economic Development Subcommittee may wish to consider sending a letter to the Joint Subcommittee to Evaluate Tax Preferences requesting the subcommittee to review the merits of the Film, TV, and Audio Production Input Sales and Use Tax Exemption in achieving a more efficient tax system. The review should consider that the exemption narrows the tax base, complicates state tax regulations, and provides little or no effect on film production activity.

Evaluation: Film Incentives

Economic Development Incentives Evaluation Series

Virginia provides economic development incentives to encourage business growth as part of its economic development strategy. In order to better understand the effectiveness of these incentives in stimulating business activity, the General Assembly directed the Joint Legislative Audit and Review Commission (JLARC) to conduct, on a continuing basis, a review and evaluation of the effectiveness and economic benefits of economic development incentives such as grants, tax preferences, and other assistance. (See Appendix A for the study mandate.) This report is the first in a series of annual reports that provide comprehensive information about effectiveness and economic benefits of individual economic development incentives offered by the state. JLARC contracted with the University of Virginia's Weldon Cooper Center for Public Service to perform the evaluation.

For purposes of this report, **spending on incentives** refers to (1) actual expenditures by the state in the form of grant awards and (2) tax expenditures in the form of forgone revenue, through tax credits or sales and use tax exemptions. Refundable tax credits, such as the film tax credit, may result in actual expenditures.

For the analyses in this report, spending on the film tax credit and grant are allocated to the year in which the film production occurred. (See Appendix C for spending by date of award.)

This report focuses on the three incentives Virginia provides to promote the expansion of the film industry in the state:

- **Motion Picture Production Tax Credit** ($25.8 million awarded between FY12 and FY16)—allows production companies to claim a refundable tax credit against their income taxes. This is Virginia's largest and newest film incentive.
- **Governor's Motion Picture Opportunity Fund** ($17.4 million awarded between FY12 and FY16)—provides grant funding to production companies.
- **Film, Television, and Audio Production Inputs Exemption** ($4.3 million exempted between FY12 and FY16)—exempts qualifying expenditures from the state's retail sales and use tax.

State spending on these three incentives—either directly on grant awards or indirectly through tax expenditures (revenue losses attributable to state tax laws that allow a special credit, exemption, or similar provisions)—totaled $47.5 million (FY12 to FY16).

Virginia is one of 39 states that currently offer film incentives to attract film production projects. Virginia and other states justify these incentives as ways to boost economic growth. States also view these incentives as a way to promote tourism through media exposure, particularly if the film features the state's landscapes or historical landmarks, and to support the arts and foster creative communities. The most common types of incentives offered are tax credits (19 states), sales tax exemptions (21 states), and grants or rebates (16 states).

Virginia has expanded its film incentive programs over time, mirroring patterns in other states

Virginia adopted its first film incentive—the exemption—in 1995 and then adopted the grant in 1999, making Virginia among the first group of states to offer film incentives.

Arkansas was the first state to offer a film incentive—a rebate of five percent of production expenditures—in 1983. Louisiana was the first state to adopt a film tax credit in 1992. The impetus behind film incentives can be traced to efforts of Canada and its provincial governments to recruit film production away from the U.S. during the late 1990s.

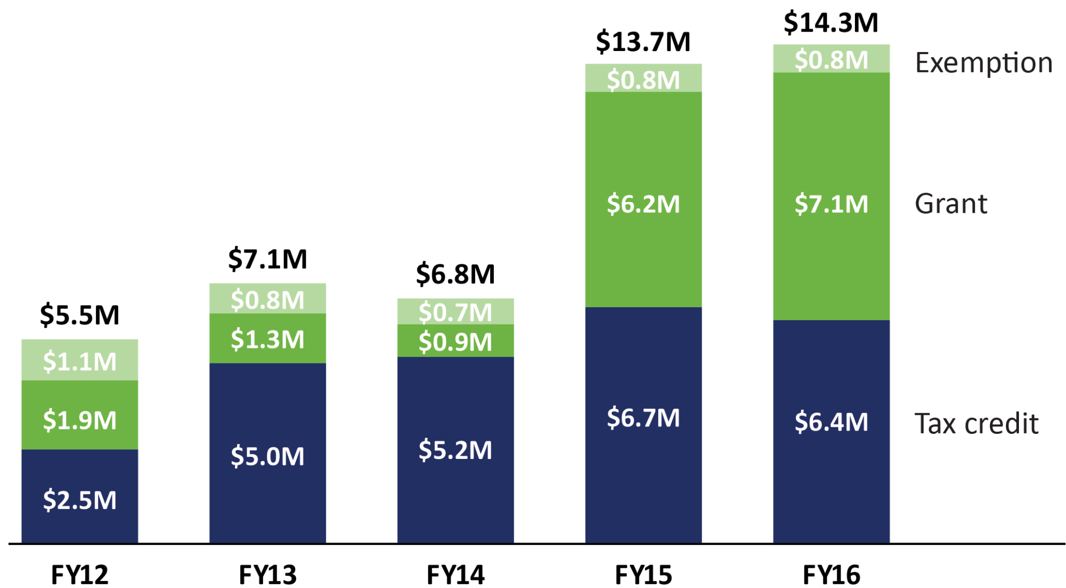
Since 2010, several states have **eliminated or defunded their film incentives**, citing budget constrictions related to the 2007-09 recession. State evaluations, some of which raised doubt about the efficacy of film incentive programs, also played a role.

A few states, including Georgia, Kentucky, and Ohio, have increased their spending on film incentives.

Virginia did not adopt its tax credit until 2010, after the number and generosity of other states' programs began expanding during the early 2000s. In 2003, Louisiana and New Mexico adopted tax credits that were worth 10 percent and 15 percent of film production expenditures, respectively. In 2008, Georgia began offering its transferable tax credit at a rate of 30 percent of production expenditures, with no budget cap. Georgia currently offers the most generous film tax credit in the nation. By 2010, the number of states that offered film tax incentives reached a peak of 44, and since then, several states have eliminated or defunded their film incentives.

Spending on Virginia's film incentives has increased substantially (Figure 1). Much of the increase was the result of increases in the credit cap (from the original cap of $2.5 million per biennium, to $5 million per biennium in FY13 and FY14, and then $6.5 million per year in FY15 and thereafter) and an increase in the availability of grant funds as appropriations increased over time (from $200,000 in FY10, to $1 million in FY11, and $2.4 million or more per year between FY12 and FY16).

FIGURE 1
Spending on Virginia's film incentives has increased substantially since FY12



SOURCE: Weldon Cooper Center analysis of data provided by the Virginia Film Office and estimation of forgone revenue from the film exemption.
NOTE: Exempted amount does not include the portion exempted because of the 1 percent local sales tax and regional taxes. Amounts shown are not adjusted for inflation. Adjusting for inflation has very little impact on the results: for example, total spending in FY12 would be $5.8 million (adjusted) instead of $5.5 million (not adjusted).

Despite widespread use of incentives by states, film production remains concentrated in California and New York

New York City became the center of early film activity at the turn of the 20th century because of its close proximity to Edison Studios in northern New Jersey, which introduced the first filming devices, and the availability of large audiences. Film activity gradually migrated to California and Florida, which offer diverse landscapes and milder weather, so companies could film outdoors all year long. Florida later faded as a filming location, and Hollywood, California became the center of the industry. Movie studios such as Warner Brothers and Paramount Pictures expanded to dominate all aspects of film development, production, distribution, and theater exhibition.

California and New York still have the majority of film infrastructure and activity today, even though technological advances (hand-held digital cameras, less bulky sound and lighting equipment, and new computerized film composition tools and software) have made filming easier and more cost-effective at almost any location. The percentage of nationwide film production employment located in California and New York (67 percent) in 2016 has barely changed since 2001 (69 percent). These states also have high concentrations of film employment compared to other states, as reflected in their high "location quotients" (sidebar) (Table 1).

No other states come close to the levels of film industry employment of California and New York (Figure 2). Georgia, which offers one of the most generous film tax credits in terms of the rate, ranks third after California and New York, but its share of national film production employment is only four percent (12,500 workers). Georgia and two other states are the only states other than California and New York that have location quotients greater than 1.0.

Location quotient indicates how concentrated an industry or occupation is in a region compared to the national average.

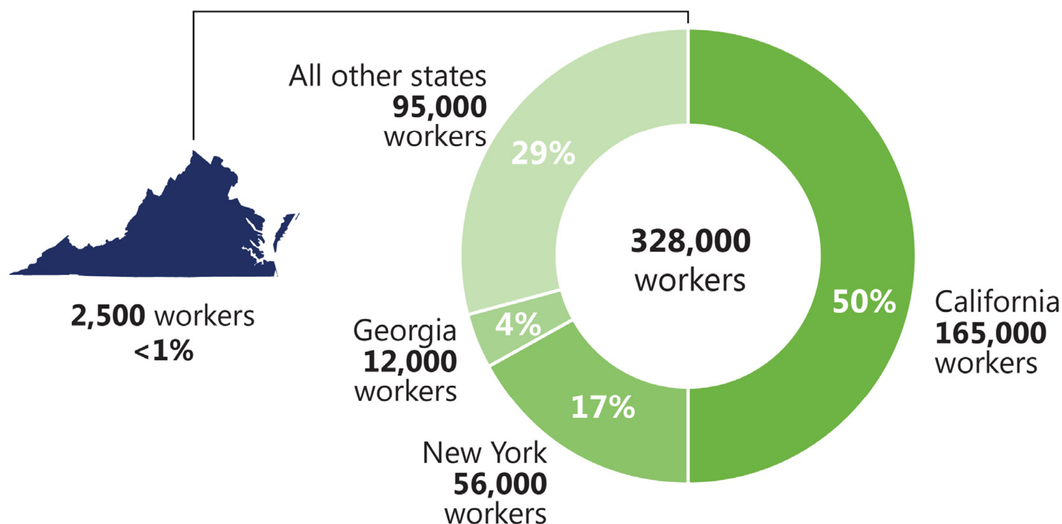
A location quotient above 1.0 indicates the industry or occupation in a region is more concentrated than the national average. A location quotient below 1.0 indicates it is less concentrated.

TABLE 1
Only California, New York, and a few other states have high concentrations of film industry employment (2016)

State	Location quotient
California	4.2
New York	2.7
Louisiana	1.3
Georgia	1.3
Hawaii	1.2
Virginia	0.3
All other states	< 1.0

SOURCE: Weldon Cooper Center analysis of employment data.
NOTE: Employment numbers exclude some film production workers such as temporary freelance workers and production and post-production workers in related industries.

FIGURE 2
Two-thirds of film employment in the U.S. is located in California and New York (2016)



SOURCE: Weldon Cooper Center analysis of EMSI data.
NOTE: Employment numbers exclude some film production workers such as temporary freelance workers and production and post-production workers in related industries.

Virginia's film production industry is small, diverse, and located mostly in metropolitan areas

Virginia's film production industry is relatively small. It ranks 18th in the nation for film production industry employment, with approximately 2,500 workers or less than one percent of the nation's film employment. The small presence of the industry in Virginia is a major impediment to substantially increasing film employment and other film industry activity.

The film industry in Virginia, however, is diverse. Businesses are engaged in many different segments of the industry, including animation studios, audio and video mastering studios, film studios, recording studios, television studios, and companies involved in other aspects of the video production industry, such as equipment rental, payroll, captioning, and lighting. In Virginia, 88 percent of film industry employment is engaged in movie and video production, 10 percent is engaged in teleproduction and post-production services, and the remainder is engaged in distribution and other industry activities. Nearly all Virginia film industry employment is located in the metropolitan areas around Washington, DC, Richmond, and Virginia Beach, with 60 percent located in the Washington, DC, area alone (Figure 3). Only 35 of 133 Virginia localities have employment in the film industry.

Many film production companies operating in the state—and particularly those in the Washington, DC, metropolitan area—have little connection to film and television production activities that received the film tax credit or grant. Some companies produce

films for industry, non-profit, and education sectors, including training videos and other corporate or non-profit audiovisual content. These products are not generally eligible to receive funds or exemptions through Virginia's film incentive programs.

FIGURE 3
Thirty-five Virginia localities have film employment, and most is in Northern Virginia (2016)

SOURCE: Weldon Cooper Center analysis of Virginia Employment Commission Quarterly Census of Employment and Wages data.

1. Virginia's Film Tax Credit and Grant

Virginia offers both a tax credit and a grant to attract film production to the state. The purpose and criteria for awarding both of these incentives are nearly the same (Table 2). The incentives are often used interchangeably, and one-third of all incentivized film productions received both a film tax credit and grant, representing more than two-thirds (69 percent) of total film incentives funding. In these cases, the grant was often used as an additional financial incentive to attract productions that are expected to have large economic benefits, have creative reasons for filming in Virginia (e.g., depiction of historical events that happened in Virginia), or agree to create Virginia-specific promotional products (e.g., television commercials that promote Virginia tourism). Even though the Virginia Film Office has broad discretion in making grant awards, staff have used the tax credit criteria and formula for making grant awards in recent years.

TABLE 2
Virginia offers a tax credit and grant to incentivize film activity in the state

	Motion Picture Production Tax Credit
Purpose	Increase employment in the film production industry, enhance the state's film industry infrastructure, and improve the state economy
Eligible projects	Feature films, documentaries, long-form specials, television mini-series, episodic television series, commercial advertisements, videos and music videos, interactive television, and digital interactive media productions
Other eligibility requirements	Minimum film production expenditures in Virginia of $250,000 Must not be a political advertisement, news program, live sporting event, or reality television show; must not contain obscene material Must be fully funded (with a multi-market distribution contract) without taking into account the value of the tax credit Must make a best faith effort to film at least 50% of production in Virginia
Determination of awards	Base credit: 15% of qualifying expenditures, or 20% if filming takes place in an economically distressed area of Virginia Two additional payroll credits 10% of Virginia payroll expenses (or 20% if production expenses > $1 million) 10% of payroll for Virginia first-time actors or crew
	Governor's Motion Picture Opportunity Fund
Purpose	Support the film industry by "providing the means to attract production companies and producers to make their projects in the Commonwealth using Virginia employees, goods, and services" (§ 2.2-2320)
Eligible projects	Feature films, children's programs, documentaries, television series or programs of 30 minutes or more
Other eligibility requirements	No minimum film production expenditures
Determination of awards	Made at discretion of the governor, based on recommendations by Virginia Film Office Virginia Film Office granted broad discretion to develop guidelines, including guidelines to ensure geographic diversity

SOURCE: Weldon Cooper Center review of legislative documents; discussions with staff of Virginia Dept. of Taxation, Virginia Film Office.
NOTE: The purpose of the tax credit is not specified in statute and is based on discussions with agency staff.

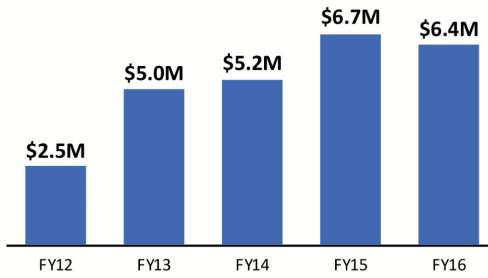
VIRGINIA MOTION PICTURE PRODUCTION TAX CREDIT

Refundable tax credit for production companies that film in Virginia

VALUE TO BENEFICIARIES

FY12-FY16

Taxpayer credits: $25.8M total

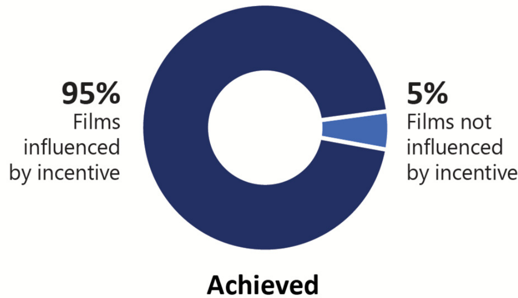


Beneficiaries

16 companies total

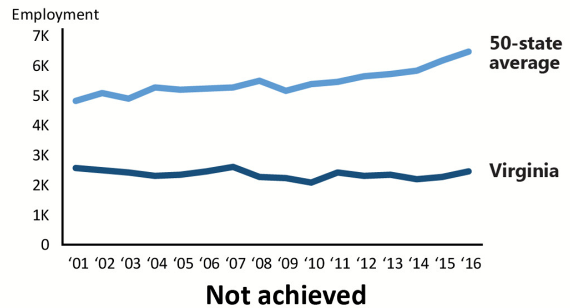
ACHIEVEMENT OF PURPOSE

Influence film production in state



Achieved

Promote film industry employment in state



Not achieved

IMPACT TO STATE ECONOMY

average FY12-FY16

Small positive impact per $1M of incentive

62
jobs

$10.5M
state GDP

$4.7M
personal income

Low return in revenue

$0.20
per $1 spent

NOTE: Adopted 2010 (§ 58.1-439.12:03) and expires 2022. Credit amounts are assigned to the year of film production rather than when the credit was claimed and may be higher than the credit cap. The number of taxpayers receiving credits per year cannot be reported. Credits were claimed on fewer than four returns in some years and cannot be disclosed.

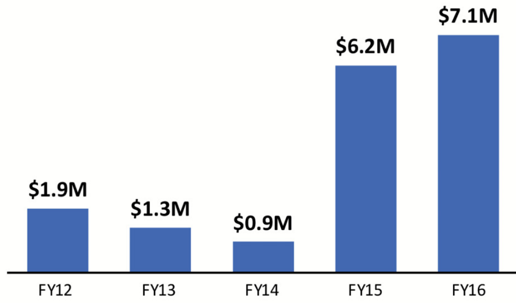
GOVERNOR'S MOTION PICTURE OPPORTUNITY FUND

Discretionary grant for production companies that film in Virginia

VALUE TO BENEFICIARIES

FY12-FY16

Grant awards: $17.4M total

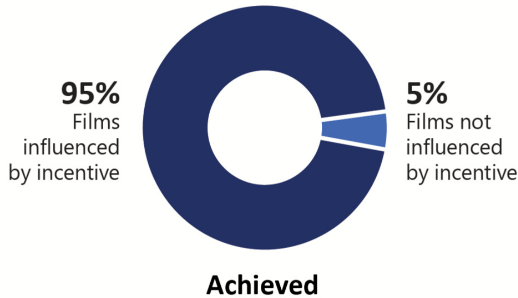


Beneficiaries

24 companies total

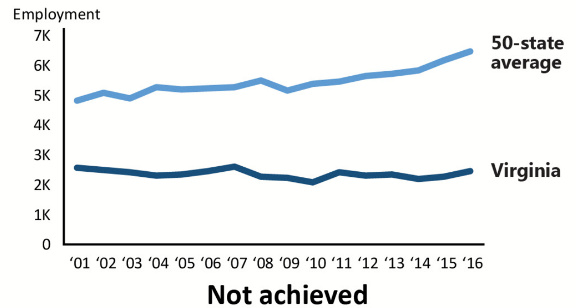
ACHIEVEMENT OF PURPOSE

Influence film production in state



Achieved

Promote film industry employment in state



Not achieved

IMPACT TO STATE ECONOMY

average FY12-FY16

Small positive impact per $1M of incentive

97
jobs

$15.5M
state GDP

$7.2M
personal income

Low return in revenue

$0.30
per $1 spent

NOTE: Adopted 1999 (§ 2.2-2320). An average of five film productions per year benefited from the film grant.

Virginia awarded $43 million in film tax credits and grants in the past five years

Virginia awarded $43.2 million in film tax credits and grants to 31 productions between FY12 and FY16. Sixty percent ($25.8 million) of the amount awarded was through the film tax credit, which funded 16 productions. The annual amount awarded has increased over time from $2.5 million in FY12 to $6.5 million in FY16. This increase corresponds to increases in the tax credit cap.

The original **credit cap** was $2.5 million per *biennium*. It was raised to $5 million per *biennium* for FY13 and FY14 and to $6.5 million *per year* in FY15, where it remains.

The remaining 40 percent ($17.4 million) of the amount awarded between FY12 and FY16 was awarded through the film grant program, which funded 24 productions. As with the tax credit, the annual amount awarded through the film grant program has increased significantly over time. By FY16 the total award reached $7 million because available funding increased due to increased appropriations and additional fee revenue. Since FY10, the film grant program has received funding from a fee on digital movie rentals in hotels, but funding from this source has declined because hotel occupants increasingly use smart phones and tablets to access digital media.

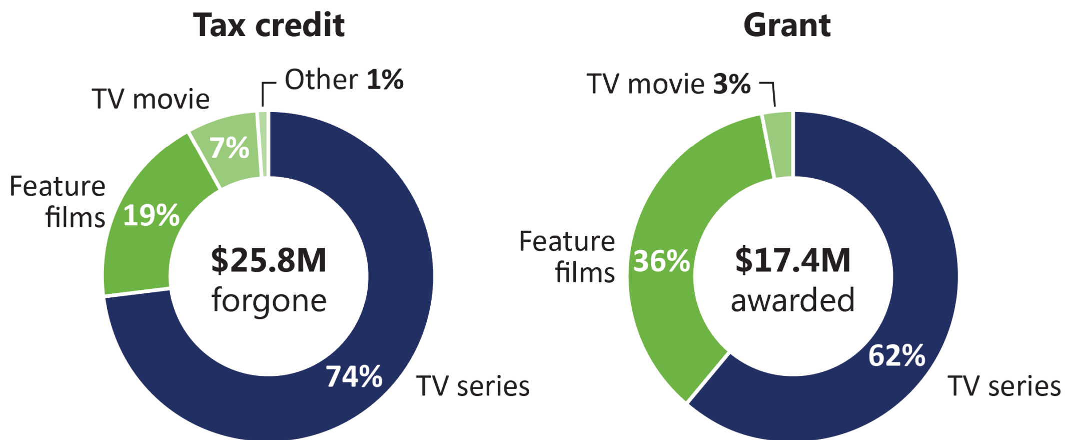
Film productions must apply for **tax credit and grant awards** prior to filming but awards are not paid until production ends and expenditures in Virginia are verified.

The tax credit program typically provides larger awards than the grant program does. Between FY12 and FY16, the average tax credit award was $1.6 million, and the average grant award was $727,000.

The majority of the amount awarded by both programs since FY12 has gone to television series (Figure 4). The Virginia Film Office works to attract television series, because of the longer shooting durations, to keep local cast and crew employed. The Virginia Film Office also directs its efforts toward independent feature films with lower budgets (less than $10 million in production expenditures) because those projects make the best use of the remaining funding available. "Blockbuster" feature films that involve budgets of over $30 million are generally not targeted for incentives because a single production would likely deplete the amount available under the tax credit cap and provide a much lower economic benefit to the state. Some blockbusters, such as "Lincoln" and "Captain Phillips," have received a Virginia film tax credit or grant, but their total awards were small relative to the awards for television series because of funding limitations or because a very limited amount of production occurred in Virginia.

A **feature film** is a motion picture with a running time of 40 minutes or longer that was intended to be exhibited theatrically or distributed by DVD or other digital format for home viewing.

FIGURE 4
Most tax credit and grant awards in past five years have been for television series



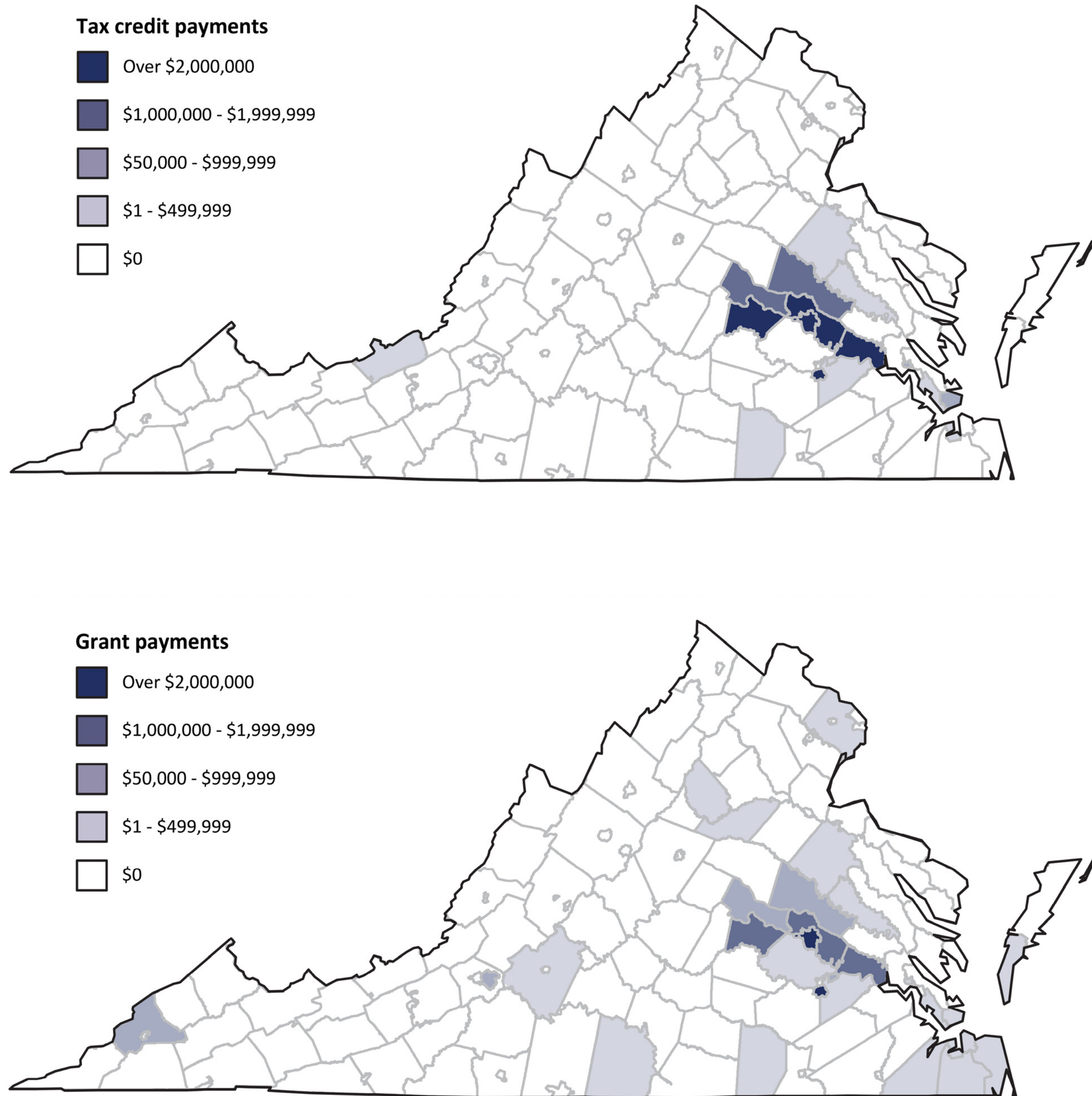
SOURCE: Weldon Cooper Center analysis of Virginia Film Office data.

For purposes of the credit, an **economically distressed area** is one with an unemployment rate of at least 0.5 percent higher than the average statewide unemployment rate in the year before.

Filming for productions that received tax credits is largely concentrated in the Richmond Metropolitan Statistical Area, which encompasses 17 localities. Nearly all (90 percent) of total tax credit awards since FY12 have gone to productions that filmed in this area (Figure 5). About one-fourth (26 percent) of filming was performed in just two cities in this area, Richmond and Petersburg. This geographic concentration may have been in part because of the larger tax credit (20 percent) for productions that film in economically distressed areas. Of projects that received the tax credit, 48 percent were concentrated in distressed areas. Both Richmond and Petersburg were considered economically distressed during the five-year review period for this report and are estimated to account for more than half of the distressed credit amount used. These cities also have substantial historical landmarks and buildings that have been featured in productions included in the analysis. No funding has been awarded in 115 localities.

Filming for productions that received grant awards is somewhat less geographically concentrated than for projects that received the tax credit. Eighty-two percent of grant-funded projects were filmed Richmond Metropolitan Statistical Area. Only 44 percent of grant-funded projects were concentrated in distressed areas.

FIGURE 5
Ninety percent of tax credit and 82 percent of grant funding was awarded to productions in the Richmond area



SOURCE: Weldon Cooper Center analysis of Virginia Film Office data.

Virginia's tax credit and grant programs are small relative to programs in other states

The annual amount Virginia can award to film productions in tax credit (capped at $6.5 million) and grant funding is small compared to the amounts available from other states with a tax credit, grant, or rebate program, based on analysis of all awards for FY16. A handful of states are outliers and set their tax credit caps high or have uncapped tax credits. The median amount that states spent (or had available to spend under the cap) on film tax credits, grants, or rebates was $14.5 million in FY16. The amount Virginia awarded in film tax credits and grants in FY16 is lower than the amount awarded by many of its main competitor states, with the exception of Tennessee, Maryland, which recently lowered its cap, and South Carolina (Table 1). (See Appendix D for more information about Virginia's main competitors.)

States with **high credit caps** include California ($330 million), New York ($395 million), and Louisiana ($180 million), based on caps in FY16.

Georgia has an uncapped **credit.**

The effective reimbursement rate for Virginia's film tax credit and grant is 19 percent. This rate is below the average (20.3 percent) for the 33 states that offer film tax credits, grants, or rebates and for which effective reimbursement rates can be calculated. Effective reimbursement rates are generally higher in states east of the Mississippi River and for Virginia's main competitors (Table 3).

Level of influence of typical economic development incentives

The 2012 JLARC report on the effectiveness of economic development incentive grants reported that—based on best available evidence at the time—approximately 10 percent of location and expansion decisions, on average, are swayed by typical economic development incentives.

TABLE 3
Virginia's funding and effective reimbursement rate for its film tax credit and grant are generally low relative to its main competitor states, FY16

State	Available funding FY16 ($M)	Effective rate FY16
Georgia	$606.0M	24.0%
Louisiana	180.0	27.2
Pennsylvania	60.0	28.0
North Carolina	30.0	25.0
Virginia	**13.6**	**19.0**
South Carolina	13.0	26.9
Maryland	7.5	25.0
Tennessee	2.0	20.0

SOURCE: Weldon Cooper Center analysis of state film incentive data and Cast and Crew Financial Services.
NOTE: Includes states that provide a rebate, which operates similarly to a tax credit but with a different funding mechanism. Available funding for each state is the funding cap for the tax credit, FY16 expenditures for states that have no cap (such as Georgia), or a combination of the two (such as for Virginia which has a tax credit and a grant). (See Appendix B for a description of how the effective rate was calculated by Weldon Cooper Center. See Appendix E for information about film incentives provided by all states.)

Film tax credit and grant were critical factors influencing productions to film in Virginia

Evidence suggests that most of the productions that received film incentives would not have filmed in Virginia without the incentive. Nearly all (95 percent) productions that received a Virginia film tax credit or grant would not have filmed in the state

without the incentive, according to a survey of production executives for these films. This estimate, while substantially higher than the level of influence of the typical economic incentive on a business, is similar to assumptions used in or reported by evaluations of film incentive programs in other states.

Evaluations in other states have found that the percentages of film productions that would have filmed in their state *without* a film incentive are generally low. The most compelling evidence is from California, where awards were once made on the basis of a randomized lottery. Nearly 200 projects applied to the program and did not receive assistance; only 33 percent of these projects filmed in California anyway. This percentage may be higher than what would occur in other states because California is uniquely well suited for film production, given its premier film infrastructure and abundant supply of cast and crew. A survey of Florida tax credit recipients found that only 23 percent would have filmed as planned without the incentive. Recent evaluations of the Massachusetts program estimate that only eight to 10 percent of the incentivized activity would have occurred without an incentive. Evaluations for several states with low levels of film infrastructure and crew base (similar to Virginia) assume that none of their incentivized film production would have occurred without the incentives.

Film activity has declined in states that discontinued or reduced film incentives

States that discontinued or reduced their film incentives in recent years have experienced a loss of crew and other filming assets. This provides further evidence that incentives influence filming activity. Florida, which eliminated its incentives in 2016, has lost a third of its unionized film crew base. Further, Florida has lost some film-related companies, including ARRI Rental (a leading supplier of filming equipment), Cineworks Digital Studios (a post-production company), and Merlin Production Solutions (a mechanical special effects company). Several television series, such as Netflix's "Bloodline" and HBO's "Ballers" stopped production in Florida.

Ten states discontinued or reduced their film incentives in recent years: Alaska, Arizona, Florida, Indiana, Iowa, Kansas, Michigan, Missouri, New Jersey, and Wisconsin.

Film incentives are a critical factor in initial decisions about location

Film incentives may be influential, compared to other business incentives, because film incentives are usually an early factor in the decision about where to locate a film project, according to film producers interviewed for this review. States without film incentives are not considered, except in rare instances in which financial backers have strong ties to the state, or the film director has significant clout in the industry and can influence a locational decision because of creative advantages. Early in the decision process, budget specialists analyze information about incentive reimbursement rates and caps to help narrow down and select filming locations. In contrast, incentives for location projects for other types of business are usually considered later in the decision-making process, once locations have been narrowed down to a few prospects, after which incentives may "tip" the decision to a particular location.

Virginia's tax credit program, which has explicit criteria and rates established in statute, likely has a greater effect on early decisions about location than the grant program.

Film producers and other stakeholders sometimes view Virginia's current grant process, which includes more discretion and fewer formally stated guidelines, as less transparent than the tax credit. Several producers indicated that the historical lack of a specific funding formula associated with the grant, and the smaller amount of funding available per project ($727,000 versus $1.6 million for the tax credit, on average), may hinder the use of the grant program by larger film productions in particular. States with less transparent funding formulas and lower reimbursement rates are usually ruled out early in the decision process.

The film grant still plays an important role in influencing location decisions, according to the Virginia Film Office, film producers, and other stakeholders. Its role is complementary to the tax credit; more than half of the projects that received a tax credit between FY12 and FY16 also received a grant. Production companies that wish to film in Virginia for artistic reasons often make inquiries about program resources, and at this point of contact, the Virginia Film Office can offer enticements. In addition to grant funding, the Virginia Film Office can provide low- or no-cost enticements such as rent-free filming locations at state-owned property, surplus office space and furniture, sets retained and owned by the state, and locational services. In return, the performance agreement for obtaining the grant can require the production company to provide in-kind advertising to help promote tourism in the state.

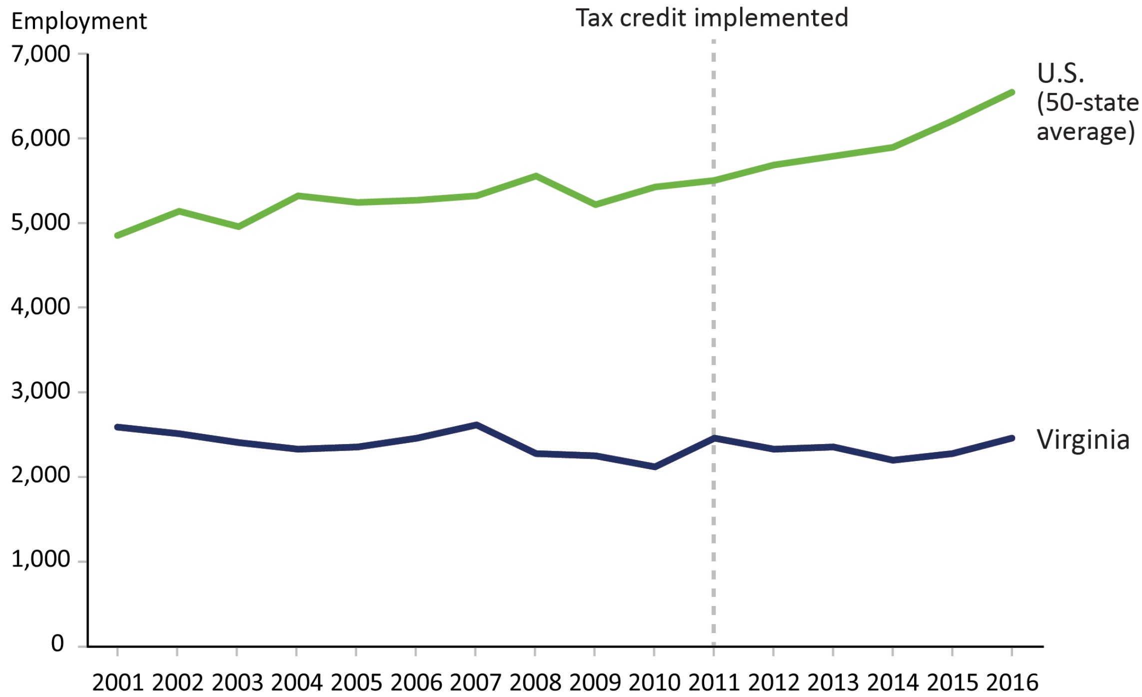
For some film projects, physical location is not important

Incentives may have more influence on film production companies than on other businesses because, for some projects, the specific filming location is not important. Improvements to technology make it easy to "fake" a location and allow productions to convert empty warehouses into filming stages rather than requiring large soundstage facilities as in the past. Film productions are mobile and may film in multiple areas over relatively short periods of time, rather than film an entire project in one location that must meet all scenic and cost needs. In contrast, for some other types of businesses, physical location is critical over the longer term to meet market, transportation, and labor needs.

Film employment growth in Virginia has been low, but job levels may be slightly higher than they would be without tax credit and grant

Despite being a critical factor in influencing productions to film in Virginia, the tax credit and grant have not substantially increased film industry employment in the state. Film industry employment in Virginia has changed little over time, especially compared to growth in film industry employment nationwide (Figure 6). Employment in Virginia decreased by 18 percent between 2001 and 2010, prior to the enactment of the tax credit in 2011. Even though employment increased by 17 percent between 2010 and 2016, it is still below 2001 employment levels. In contrast, film industry employment has steadily increased across the United States.

FIGURE 6
Film industry employment in Virginia has changed little over time



SOURCE: Weldon Cooper Center analysis of EMSI employment data for the film production sector for Virginia and US.
NOTE: Excludes some film production workers such as temporary freelance workers and production and post-production workers in related industries. Both the tax credit (FY14) and grant (FY12) received funding enhancements.

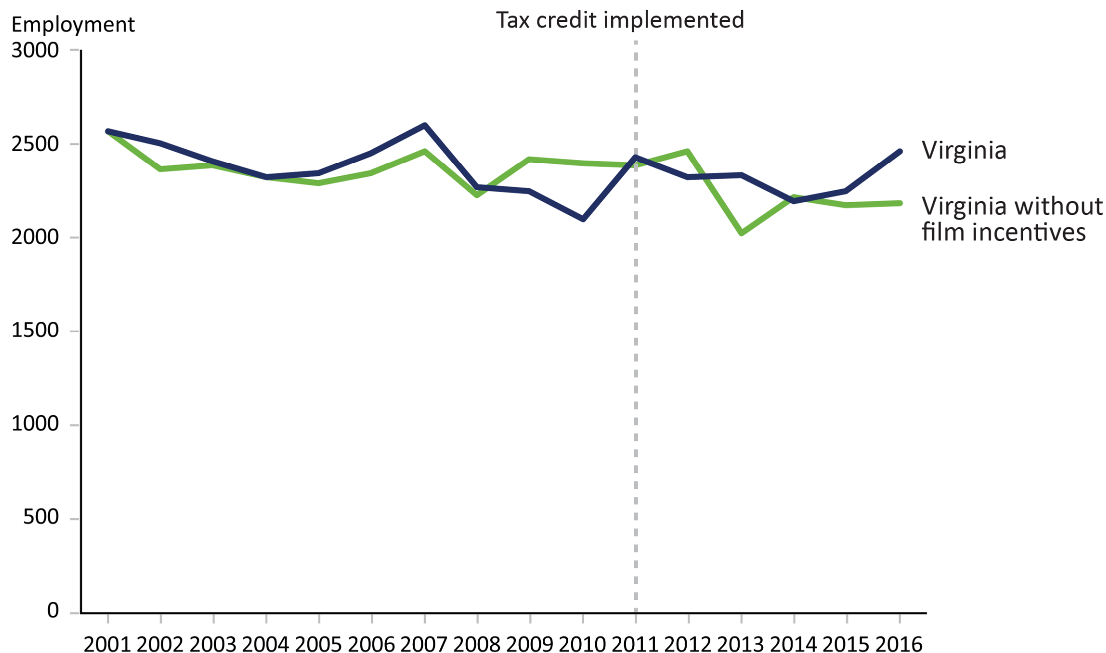
However, analysis indicates that the tax credit and grant may have had a small positive impact on film industry employment in recent years. Since 2012—when the tax credit took effect and available grant funding increased—Virginia's film industry employment has been slightly higher (100 additional jobs per year on average) than estimates of what it would have been if Virginia did not have the incentives (Figure 7).

The fact that Virginia has only experienced a minor increase in film-related employment in recent years was confirmed by industry stakeholders. Stakeholders reported that although the state has seen a modest increase in some film industry infrastructure, including production and post-production activity, Virginia still lacks crew depth (availability of skilled film production staff) and has significant gaps in areas such as pre-production, production design, script supervising, and wardrobe.

Three stages of film production: (1) pre-production, which includes concept development, script-writing, financing, location selection, and casting; (2) production, which is when filming occurs; and (3) post-production, which includes activities needed to enhance film quality for distribution, including picture editing, sound editing, and lab processing.

FIGURE 7
Film production employment after 2012 was slightly higher than it likely would have been without film incentives

A synthetic control group to represent **Virginia without film incentives** was constructed from states that did not have significant film incentives during the time period studied. Select characteristics of states that made up the synthetic control group were weighted so that once combined, it closely resembled Virginia on those characteristics. (See Appendix B for research methods used in this study.)



SOURCE: Weldon Cooper Center analysis of EMSI data.

The finding that Virginia's film tax credit and grant have not had a major impact on film industry employment is consistent with the findings of peer-reviewed research of film incentives. Only one study (O'Brien and Lane, 2017) found that state film incentives increase film production and employment. Other studies, in contrast, found that film tax credits and rebates or grants may have a moderate effect on film location decisions but do not generally stimulate film industry employment (Button 2015; Thom 2016; Swenson 2017). (See Appendix F for more information on the findings of these studies.)

Economic impact analysis of expenditures by tax credit and grant recipients between FY12 and FY16 was conducted using economic modeling software developed by REMI, Inc.

(See Appendix B for the economic impact analysis used in this study.)

Based on the experience in Georgia, Virginia would likely have to substantially increase its spending on film incentives to achieve a meaningful increase in film industry employment. Spending on Georgia's tax credit increased from $0 in FY05, when the tax credit was adopted, to $89.2 million in FY09, and again to $606 million by FY16. Over the same period, Georgia's film production employment increased from 3,591 in 2005, to 3,844 in 2009, and again to 12,140 in 2016. The large increase in employment occurred only after the large increase in spending, and Georgia is still a distant third behind California and New York in terms of its share of film production employment.

Both incentives have small positive impact on Virginia economy, but grant has greater impact than tax credit

The film tax credit and grant have a small positive impact on Virginia's economy. Film employment increased by 272 full-time jobs per year and Virginia GDP increased by $49 million per year, on average, between FY12 and FY16 because of projects funded by the tax credit (Table 4). The economic activity generated by the film grant is greater than the activity generated by the tax credit program, even though grant awards are typically less. The difference in benefit is apparent when economic impact is measured in terms of jobs and Virginia GDP per $1 million in spending. For example, grant-funded projects created 97 jobs and $15.5 million in Virginia GDP per $1 million in grant awards, but tax credit projects created only 62 jobs and $10.5 million in Virginia GDP per $1 million in tax credit awards.

These economic impacts, while positive, are smaller than the impact of other types of economic development incentives, in part because of the short-term nature of economic activity required to produce each film project. The Virginia GDP generated by completed projects for other economic development programs was estimated to be $58.6 million per $1 million in grant awards by the 10th year, when nearly all projects had completed (assuming they were still in existence) (*Review of State Economic Development Incentive Grants*, JLARC, 2012).

Net impact reflects the increase in economic activity induced by the incentive after adjusting for the opportunity cost of increasing taxes to pay for the incentive.

For example, the total impact of the tax credit on private employment was estimated to be an additional 321 jobs annually, on average. The impact of increasing taxes to cover the cost of the tax credit (a measure of the opportunity cost of the credit) was estimated to reduce private employment by 49 jobs annually, on average, for a net employment impact of 272 additional jobs annually, on average.

(See Appendix G for information on the total economic impact and the opportunity cost of increasing taxes.)

TABLE 4
Film tax credit and grant have small positive impact to Virginia economy

	Annual average FY12-FY16	
	Tax credit	**Grant**
Net impact to Virginia economy		
Private employment	272 jobs	306 jobs
Virginia GDP	$49.0 million	$51.0 million
Personal income	$20.5 million	$22.5 million
Impact to Virginia economy per $1 million of tax credit/grant awards		
Private employment	62 jobs	97 jobs
Virginia GDP	$10.5 million	$15.5 million
Personal income	$4.7 million	$7.2 million
Impact to state revenue		
Total revenue	$1.0 million	$1.1 million
Incentive awards	$5.1 million	$3.5 million
Revenue net of awards	($4.1 million)	($2.4 million)
Return in revenue	$0.20 for every $1 spent	$0.30 for every $1 spent

SOURCE: Weldon Cooper Center economic impact analysis of spending by film productions that received a Virginia film tax credit between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Assumes that 95 percent of the film productions would not have filmed without the tax credit. Assumes impacts to the economy occur in the year the film was produced. The gross impact on Virginia's economy is used to calculate the impact per $1 million per incentive awards and the impact to state revenue. This is consistent with how the economic development research literature typically calculates these impacts. (See Appendix G for detailed results on total impact of the tax credit, impact of raising income taxes by the amount of the credit [opportunity cost], and revenue generated by source.)

The return in state revenue from the incentive for every dollar spent in incentive awards is also low for both the tax credit and the grant. The state recovers only 20 cents for every dollar in tax credit awards and 30 cents for every dollar spent on grant awards. Virginia's rates of return are in the middle of the range of return rates of other states. According to analysis done on film incentives in other states, Maryland recovers six cents per dollar invested in film incentives; Mississippi recovers 49 cents; and Michigan recovers 24 cents. The returns in revenue for Virginia's film incentives are low compared to the returns estimated by JLARC in 2012 for all types of economic development grants. Estimates indicated that the state recouped approximately $2.88 for every dollar spent by the 10th year (*Review of State Economic Development Incentive Grants*, JLARC, 2012).

The small positive impacts and low returns in revenue for Virginia's tax credit and grant likely occur for several reasons, including the relatively low numbers of film industry businesses, the types of projects that receive incentives, and the short-term nature of film industry jobs.

Low numbers of film industry businesses lead to substantial spending outside of the state

An **economic multiplier** indicates the proportional increase (or decrease) in activity that occurs in the economy due to an injection of new spending or activity.

Because Virginia is home to relatively few film industry businesses, those businesses find it difficult to significantly reduce filmmaking costs and develop a viable filmmaking agglomeration and supply chain (network between a company and its suppliers to produce and distribute products) in the state. As a result, the output economic multiplier for the film industry in Virginia (1.6) is somewhat smaller than in traditional film production states such as California (2.0) and New York (1.8), which have well-developed industry supply chains.

Because Virginia has relatively few pre- and post-production companies, film production spending on these services occurs outside the state. The film production spending that does occur in the state has a lower economic impact than it would have in a state like California because Virginia has a lower multiplier.

The **leverage factor** is the ratio of the amount of spending in Virginia per dollar of incentive award.

The higher the leverage factor, the greater the in-state spending per dollar of incentive award.

This finding is consistent with other peer-reviewed research and research performed by the Tax Foundation and the Center on Budget and Policy Priorities. In most states, incentives have limited benefits to the economy and industry employment because a large portion of total spending on film production occurs outside the state. Most pre-production and post-production activities are still performed in California or New York. Most "above-the-line" workers (lead actors and directors) come from out-of-state, and a significant proportion of "below-the-line" workers (film crew and extras) may be recruited from out-of-state because Virginia has limited crew availability.

Incentives are not targeted to projects that achieve the highest economic returns

Virginia's film incentives—both the tax credit and the grant—are not targeted toward the types of films that have achieved the highest return for Virginia, according to analysis of the leverage factor by type of film (Table 5). Virginia's incentives are targeted toward television series that, in theory, should be expected to have a higher economic

return. Television series typically have large budgets, film over longer periods of time (often three to seven months), and spend much of their budget on "below-the-line" costs for film extras and crew. These productions should also help develop deeper local procurement networks for production equipment, services, and supplies, and offer the possibility of longer-term commitments to filming in the area if the series is successful.

In practice, however, television series that have received Virginia film tax credits or grants have had a lower leverage factor (2.4) than other productions such as feature films (3.9), Virginia-based productions (3.4), and productions with smaller qualifying budgets (more than 4.0). Television series filmed in Virginia have employed a lower proportion of local workers, and have spent proportionally less of their total budget in Virginia, than other film projects. Television series have also received proportionally higher tax credit awards based on the tiered in-state hiring bonus rate, which provides a 20 percent credit rate for resident payroll (in addition to the 15 percent credit for all qualified expenditures) when a production's spending in Virginia is more than $1 million. This accounts for the lower leverage factor.

TABLE 5
Incentives for feature films, Virginia-based productions, and smaller budget productions leverage more in-state spending (FY12-FY16)

	Number	Incentive amount	Total spending in Virginia	Leverage factor
Type of production				
Feature	14	$11,070,093	$43,027,475	3.9
Television series	11	29,677,664	70,320,712	2.4
Television movie	2	2,260,277	4,538,361	2.0
Other	4	226,318	1,125,517	5.0
Setting of production				
Virginia-based	11	2,596,345	8,826,359	3.4
Not Virginia-based	20	40,638,007	110,185,705	2.7
Qualified expenditures				
Less than $250,000	1	30,000	138,609	4.6
$250,000-$1,000,000	8	696,184	2,901,739	4.2
$1,000,000-$10,000,000	16	13,952,262	42,713,090	3.1
Greater than $10,000,000	6	28,555,906	73,258,628	2.6
All films	**31**	**$43,234,352**	**$119,012,065**	**2.8**

SOURCE: Weldon Cooper Center analysis of location spending reports by film productions that were provided to the Virginia Film Office as part of the application for the tax credit or grant.

The greater positive impact of the grant program, despite lower total spending, is due to the particular mix of productions funded by the grant program. Compared to the tax credit, the grant program has funded a higher proportion of projects with higher leverage factors, including feature films and smaller productions.

Per-job cost of film incentives is high, and jobs are short-term

The amount awarded or "cost" per job incentivized by the film tax credit and grant is high compared to other types of economic development incentives. This is because both the credit and grant incentivize short-term jobs rather than permanent, full-time jobs. The cost to the state of a full-time equivalent job is $28,130 for the film tax credit and $20,033 for the grant. In comparison, the estimated cost per full-time equivalent job incentivized by the Commonwealth Opportunity Fund, the state's primary "deal closing" grant, is $21,707 (assuming only 10 percent of jobs were attributable to the grant). The cost of these jobs can be spread out over a longer period of time because they are permanent. Therefore, the cost of a job incentivized by a Commonwealth Opportunity Fund grant over a 10-year duration ($2,170 per year) is much less than the cost of a job incentivized by the film tax credit or grant, which has a duration of less than a year. (See Appendix B for method used to convert short-term film employment to full-time equivalents and calculate "cost" of creating a job.)

Film grant leverages in-kind advertising, which has additional economic benefit

A benefit of the film grant, compared to the tax credit, is that the grant can leverage in-kind advertising from productions. Any film-related tourism that results from the free advertising adds to the economic benefit of the grant. Twelve grant-funded film and television productions that filmed between FY12 and FY16 provided commercial advertising for the state, usually in the form of a short video on a feature film DVD or a commercial aired during television productions. The advertisements were produced and aired under performance agreements with the Virginia Film Office in return for receiving the grant. Virginia was reportedly the only state to have developed such agreements until recently.

The most visible of such arrangements were made with the academy award-winning film "Lincoln" and the "TURN" television production. The Lincoln DVD was distributed with a three-minute video, "A Historic Tapestry: Richmond, Virginia," featuring actors such as Sally Field. Over 2.5 million copies were distributed at a market value of $184.6 million, measured using estimates of the cost to a client for producing the advertising. Two seasons of "TURN" included more than 90 15-second advertising spots featuring Virginia, with an estimated value of more than $21 million. "Mercy Street" and "Killing Lincoln" also produced advertising as part of their agreement to receive grant funding.

According to a survey of local visitor bureaus, the in-kind advertising by grant-funded film productions resulted in increased tourism for some Virginia locations. Staff of

the Visit Alexandria bureau reported that attendance doubled at "Mercy Street"-related historical sites after the series aired on television. There are no coordinated or ongoing efforts by the Virginia Film Office or Virginia Tourism Corporation to track specific metrics to quantify the economic benefit of film tourism.

Film-related tourism from in-kind advertising by grant-funded productions is estimated to generate additional benefits to the state (Table 6). Tourist expenditures were estimated to generate between $139,000 and $5.3 million in revenue to the state, mostly from sales tax collections, compared to revenue generated by the tax credit ($1.0 million) and the grant ($1.1 million). It is unlikely that the state achieves the high estimate of $5.3 million in additional revenue from the in-kind advertising. However, the state would recoup what it spent on the grant ($3.5 million per year, on average) if tax revenue from film-related tourism was at least $2.4 million per year. (See Appendix B for methodology used to estimate the benefit of the film grant program to Virginia tourism.)

TABLE 6
Film tourism for grant-funded productions generates additional economic benefit and state revenue per year, on average (FY12-FY16)

	Film-related tourism	
Economic activity	**Low estimate**	**High estimate**
Private employment	36 jobs	1,320 jobs
Virginia GDP	$2.6M	$95.5M
Personal income	$1.7M	$65.6M
Total revenue	$139,000	$5.3M

SOURCE: Weldon Cooper Center economic impact analysis.
NOTE: High estimate is an overestimate because it is based on estimates of the impact that general tourism marketing funded by states have on tourist spending and is not limited to film-tourism marketing. Tourism impacts are assumed to occur in the same year as film production for ease of presentation. (See Appendix G for impact by year for tourism.)

Eliminating both film incentives or creating a more effective film grant could be considered

Eliminating the film tax credit and grant could be considered given the relatively low economic benefits compared to other economic development incentives and low returns in revenue (Table 7). However, there are also benefits to maintaining film incentives. The incentives provide some economic benefit to the state, even though it is relatively small, and generate additional tourism. Virginia would likely lose its film industry activity if both incentives were eliminated, based on the experience of states that have eliminated their incentives. Several changes, if implemented, would create a more effective film incentive program in Virginia that yields a greater economic benefit and return in revenue. Ultimately, whether to maintain a film incentive program in Virginia is a policy decision.

TABLE 7
Advantages and disadvantages to maintaining film incentive

Advantages	Disadvantages
Maintains existing film production activity/industry in state	Growth in state film activity/industry will likely be minimal without substantial increase in incentive funding
Positive impact on economy (creates jobs; increases Virginia GDP and personal income)	Incentivizes only short-term film production activity
Generates tourism to areas featured in films, generating additional economic activity	Small impact on economy compared to other economic development incentives
	Low return in state revenue

OPTION 1
The General Assembly could consider eliminating the Motion Picture Production Tax Credit and the Governor's Motion Picture Opportunity Fund.

OPTION 2
The General Assembly could consider maintaining a film incentive program in Virginia and making substantive changes to improve the effectiveness and the economic benefit of the program.

If a film incentive is maintained (Option 2), combining elements of the tax credit with the grant program to develop a new, more effective film incentive should be considered. This new incentive should be structured as a grant (or a rebate, which is very similar and the terminology used by many other states) but include the formal criteria and rate of the tax credit, with some modifications. The goal of combining the elements of the two programs would be to increase the economic benefit and preserve the features of the tax credit, such as the rate, that are used in the initial location selection process.

Structuring the new incentive as a grant rather than a tax credit would allow for more discretion to select film productions that would generate higher benefits for the state. Virginia's film grant program provides a higher economic and revenue benefit than the tax credit with a lower level of funding. Higher benefits of the grant program depend partly on the ability of the Virginia Film Office to use more discretion in selecting projects that stimulate significantly higher in-state spending than the tax credit program. More importantly, the film office staff have the discretion to leverage additional benefits for the state, in the form of advertising to generate film-related tourism in the state with the grant program. This aspect is critical for increasing the return on the state's investment in the program. Although grant-funded projects received one-third of the total award amount ($43 million) from the tax credit and grant combined between FY12 and FY16, grant-funded projects were responsible for a larger share of the employment, tax revenue, and Virginia GDP, when tourism-related benefits from grant-funded activity are included (Table 8).

TABLE 8
Grant projects were responsible for majority of economic benefits of grant and tax credit incentives when tourism benefits from grant projects are included

	Percentage induced by grant-funded projects on average (FY12-FY16)	
Economic activity	**Low estimate**	**High estimate**
Private employment	55.5%	84.0%
Virginia GDP	51.2	73.5
Personal income	52.3	78.9
Total revenue	53.6	86.1

SOURCE: Weldon Cooper Center economic impact analysis.

The simplicity, transparency, and attractiveness of the new grant program would be increased by formally incorporating the more explicit guidelines and expenditure reimbursement rates of the tax credit into the statutes and program guidelines governing the grant program. Having more explicit guidelines would enable film producers to more readily include the necessary information in their deliberations and analytic tools to help them select filming locations. Many rebate programs offered in other states have explicit guidelines and reimbursement rates.

One consideration is whether to increase funding for the new grant program by the amount of revenue that would be available from the discontinued tax credit. This policy decision would depend on whether and how much the General Assembly wishes to incentivize the film industry in Virginia.

RECOMMENDATION 1
If the General Assembly decides to maintain the film incentive program in Virginia, the General Assembly may wish to consider amending the Code of Virginia to repeal § 58.1-439.12:03, which establishes the Motion Picture Production Tax Credit, and to incorporate the tax credit criteria and reimbursement rate provisions into § 2.2-2320, which establishes the Governor's Motion Picture Opportunity Fund.

Simplify the rate structure

The new grant program should utilize a simplified version of the tax credit's rate structure. The current structure has a base rate with an additional five percent bonus for filming in economically distressed areas and two additional credits on payroll expenses for Virginia hires and first-time Virginia hires. Many film producers and other stakeholders view the current structure as too complicated because the additional rates are not easily incorporated into the budgetary process for selecting filming locations. This means that the value of Virginia's credit may not be understood, and film producers may choose to film in another state that appears to have a more favorable incentive. Many states that compete with Virginia for film production, including Georgia, Maryland, North Carolina, Ohio, and Tennessee, offer relatively flat reimbursement structures. The rates and

definitions of qualifying expenditures differ, but the financial benefits of these states' incentives can be more readily assessed by film production companies.

The base rate for the new grant program should be increased from the current tax credit base of 15 percent. One consideration could be to raise the rate to 19 percent (the effective rate of the tax credit), to incorporate the effect of the bonus rate for filming in a distressed area, which many productions claim. This change would increase Virginia's competitiveness without having a significant impact on how much the state spends on attracting film productions. The bonus rate for filming in distressed areas may provide additional local revenue for these areas, but the local benefit may be partly offset by the increased costs of awards to the state to cover higher production costs of crew and other expenses, particularly if filming occurs in locations that are remote or lack filming infrastructure. This bonus penalizes the Northern Virginia region, which has no distressed localities but where much of Virginia's film industry employment is located.

Dropping one or both of the additional payroll credits could also be considered. The first-time hire credit has not achieved its intended purpose. Although 19 productions reported using the additional new hire tax credit, it applied to only five percent of their total eligible Virginia payroll. Much of the spending on first-time hires was for extras, which suggests that the credit has little effect on fostering an upcoming pool of actors and film crew in the state.

RECOMMENDATION 2

If the General Assembly decides to maintain the film incentive program in Virginia, the Virginia Film Office should develop a proposal to simplify the reimbursement rate structure of the Motion Picture Production Tax Credit for use in the new grant program. In developing the proposal, consideration should be given to making the rate more competitive. The Virginia Film Office should report on its proposal to the governor and the chairs of the House Appropriations and Senate Finance Committees no later than November 1, 2018.

If the General Assembly chooses not to eliminate the tax credit, it may wish to consider implementing this simplified reimbursement rate structure in the existing tax credit program.

Develop a scoring system for making grant award decisions

The Virginia Film Office does not use a scoring system in making award decisions for the current tax credit or grant program. Instead, it relies on staff judgment to select productions that maximize the economic impacts of filming activities, meet the needs of the state film workforce, and leverage additional marketing exposure for state tourism.

Film agencies increasingly use objective return-on-investment models to select credit or grant award recipients and award amounts. California recently replaced its lottery process for awarding tax credits with a scoring system based on the ratio of new jobs

with additional points for higher amounts of in-state spending on visual effects, higher proportions of filming in state production facilities, and higher proportions of filming in the state that occurs outside of Los Angeles. New Zealand awards incentives using a scoring system that assigns points based on production activity, employment, and marketing and promotional benefits.

The Virginia Film Office should create a more formalized points-based scoring system to evaluate each film grant application. This system would provide more transparency and accountability than the current discretionary process, and it would allow more effective program evaluation. The scoring system should be based on objective criteria to enable staff to identify projects likely to maximize state economic impacts. Points could be awarded for

- spending on Virginia hires, supplies, and materials;
- use of Virginia landscapes, landmarks, or storylines, which could generate additional economic activity and tax revenue from tourism;
- use of advertising or marketing that benefits the state or a locality; and
- contributions to local training and workforce development.

RECOMMENDATION 3

If the General Assembly decides to maintain the film incentive program in Virginia, the Virginia Film Office should create a formal point-based scoring system to evaluate each application for a grant award. The system should be based on objective criteria to better enable staff to identify projects likely to maximize state economic benefits. The Virginia Film Office should report on its proposal to the governor and the chairs of the House Appropriations and Senate Finance Committees no later than November 1, 2018.

If the General Assembly chooses not to eliminate the tax credit, it may wish to consider implementing this proposed scoring system in the existing tax credit and grant program.

Virginia Film Office could focus additional efforts on film tourism

The state can achieve additional economic benefits from film tourism attributed to projects that provide in-kind advertising. However, the Virginia Film Office currently has little data on how film exposure through Virginia-based productions affects state tourism to fully understand the level of additional economic benefits possible. The Virginia Film Office could work with the Virginia Tourism Corporation and local tourism offices to collect information from across the state on the effects of film-related tourism. This would allow the Virginia Film Office to better understand the current impact of film exposure on tourism and to develop a strategic approach for using in-kind advertising by grant-funded projects and other efforts, such as the "film trail" websites that were created for "Lincoln" and other films, to boost tourism. Film tourism could also be incorporated into the annual state tourism visitation profile as a reason to visit Virginia.

The Virginia Film Office, in conjunction with the Virginia Tourism Corporation, has developed **film trail** websites that provide information on filming locations, scheduled tours of certain filming sites, and other information about the film productions to encourage tourism.

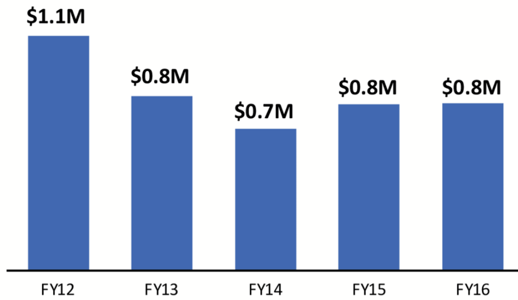
FILM, TV, AND AUDIO PRODUCTION INPUTS SALES AND USE TAX EXEMPTION

Exempts film production inputs purchased in Virginia from sales and use tax

VALUE TO BENEFICIARIES

FY12-FY16

Exempted amount - $4.3M total



Beneficiaries

An estimated

280

businesses per year are eligible to claim exemption

ACHIEVEMENT OF PURPOSE

Influence film production in state

Incentive has little to no impact on film location decisions, according to interviews with film producers and industry stakeholders

Not achieved

Strengthen supplier base in state

Film industry suppliers, such as camera operators who make large purchases of capital equipment, view the exemption as important for their competitiveness

Achieved

IMPACT TO STATE ECONOMY

average FY12-FY16

Small positive impact per $1M of incentive

10
jobs

$1.4M
state GDP

$0.8M
personal income

Low return in revenue

$0.04
per $1 spent

NOTE: Adopted 1995 (§ 58.1-609.6(6)) and expires 2022. Exempted amounts and beneficiary information is not collected by the Department of Taxation and must be estimated. Exempted amount does not include the portion exempted because of the 1 percent local sales tax and regional taxes.

2. Film, TV, and Audio Production Inputs Sales and Use Tax Exemption

The Film, TV, and Audio Production Input exemption was adopted in 1995 and exempts companies that produce audiovisual material for licensure, distribution, or commercial exhibition, or for broadcast or use in the production of another exempt work, from paying the state's retail sales and use tax on eligible purchases. The purpose of the exemption is to encourage film and other audiovisual production in Virginia and to encourage film, television, and other audiovisual producers to establish operations in Virginia, according to the fiscal impact statement for its enabling legislation. This exemption was also seen as extending tax treatment to film and audiovisual producers that was similar to that accorded to manufacturers, farmers, and other goods-producing industries.

Virginia's **retail sales and use tax** is currently 6 percent of eligible purchases in Northern Virginia and Hampton Roads and 5.3 percent of eligible purchases elsewhere in the state. One percent is retained by the locality where the purchase is made.

The **sales tax** applies to the sales of certain goods and services purchased in the state and is collected by the merchant at the point of sale.

The **use tax** is levied on out-of-state purchases that are used in Virginia and is self-assessed and remitted to the state by the consumer.

The exemption applies to purchases of audiovisual works and tapes; equipment and parts used in producing audiovisual content, such as light and sound equipment, sets, and props; and production services used to produce audiovisual works and tangible personal property, such as scripts, musical scores, and storyboards. It also exempts production inputs used by facilities that transfer a tangible product to companies for incorporation into the final product. According to the Virginia Department of Taxation, the exemption does not apply to producers of audiovisual works such as corporate in-house training that are not intended for commercial distribution.

Virginia exempted $4.3 million from film production purchases in past five years

The estimated value of the film production exemption was approximately $4.3 million, for an average of $853,000 per year, between FY12 and FY16. There are approximately 280 businesses in the film production and sound recording industries that could potentially use the exemption, but the number that use it and the average annual benefit received are unknown.

Information on the forgone revenue to the state because businesses claim the exemption is not available and can only be estimated. To claim the exemption companies must obtain an exemption certificate from the Department of Taxation and present it to merchants at time of sale. As with most exemptions, no record of the form is retained by the Department of Taxation, and merchants keep no records to show which of their sales received this specific exemption. (See Appendix B for methods used to estimate the cost of the exemption.)

Nearly half of states with sales and use tax have a similar exemption, but some are more restrictive than Virginia's

Nearly half (43 percent) of U.S. states with a retail sales and use tax have some form of exemption for the film and audiovisual production industries. State laws vary widely regarding the types of companies that qualify, the types of purchases covered (e.g.,

equipment or leases only), the amount of the sales and use tax waived (partial or full), and the point of reimbursement. Eleven states, including Maryland, offer exemptions that are similar in content and coverage to Virginia's exemption. Eight states, including South Carolina, have exemptions that are more restrictive. Some states restrict the exemption to film production companies or narrower categories of businesses. New Mexico does not allow film production companies to use its sales and tax exemption if they have already claimed a film tax credit. Neither North Carolina nor Georgia—two of Virginia's main competitors for film production—offer a tax exemption.

States vary in their ability to accurately track the fiscal ramifications of the exemption. Most states offer point-of-sale redemption like Virginia, but a few, such as Kentucky, offer refunds of the taxes at the end of the year after businesses submit a list of eligible purchases. States that offer end-of-year rebates are able to quantify the impact. Some states require applicants to provide estimates of their purchases that are exempted on their application forms.

Film exemption has little effect on film location decisions but helps Virginia businesses compete with film industry suppliers in other states

In interviews, film producers and other industry stakeholders indicated that the sales and use exemption has little to no impact on film location decisions. The bulk of each decision rests on the size and availability of tax credits and grant funding. Several stakeholders described the exemption as a "nice enhancement" but not a "make or break" factor. Others reported it was not very important because it is not one of the key film incentive parameters, such as the credit expenditure rate, that are incorporated into the analytic tool used to help select filming locations.

The exemption, at best, has the effect of encouraging companies to make incremental capital investments over time by reducing the cost of purchasing capital goods. In fact, film industry suppliers such as camera operators and studios placed more importance on the exemption than film producers because they make large purchases of capital equipment. The exemption was also considered important in maintaining competitiveness with out-of-state service providers.

Economic impact analysis of expenditures by exemption recipients between FY12 and FY16 was conducted using economic modeling software developed by REMI, Inc.

(See Appendix B for the economic impact analysis used in this study.)

Exemption has negligible benefit to state economy and negligible return in revenue

The film production exemption has a negligible benefit to the state economy. Between FY12 and FY16, private employment increased by an average of one job; Virginia GDP increased by an average of $400,000; and statewide personal income decreased by an average of $2,000 per year as a result of the exemption (Table 9). The benefit of the exemption to the state economy is much smaller than the benefit of other film incentives because the size of the incentive is smaller in absolute magnitude. It also has a smaller impact because its benefit is spread out among the entire state film and sound recording industries rather than the much smaller subset of incentivized film production companies that benefit from tax credits and grants. Thus, it plays a much

smaller role in influencing business expansion and location decisions, doing so indirectly by reducing the cost of acquisition of capital goods and encouraging companies to make incremental capital investments over time.

TABLE 9
Film exemption has negligible benefit to state economy and low return in revenue

	Annual average (FY12-FY16)
Net impact to Virginia economy	
Private employment	0.6 job
Virginia GDP	$0.4 million
Personal income	($.002 million)
Impact to Virginia economy per $1 million of spending on exemption	
Private employment	10 jobs
Virginia GDP	$1.4 million
Personal Income	$0.8 million
Impact on state revenue	
Total revenue	$0.03 million
Spending on exemption	$0.85 million
Net revenue	($0.82 million)
Return in revenue	$0.04 for every $1 spent

SOURCE: Weldon Cooper Center economic impact analysis.
NOTE: Assumes that exemption reduces cost of capital for film and sound recording industries. The impact to Virginia economy is a net impact because it takes the opportunity cost of state funds into account. The gross impact on Virginia's economy is used to calculate the impact per $1 million of spending on exemption and the impact on state revenue. This is consistent with how the economic development research literature typically calculates these impacts. (See Appendix G for detailed results of this analysis.)

The return in revenue to the state is very low, at only four cents per $1 of exempted amount. State revenue generated as a result of the exemption was just under $30,000 per year on average between FY12 and FY16. The spending on the exemption was estimated to be $850,000 per year on average during this time period.

Film exemption addresses imperfections in sales tax system

The adoption of the film production exemption provided film and audiovisual producers (generally classified as service providers) with the same tax treatment as other industries such as manufacturers in terms of only taxing the final product and not taxing the production inputs they purchase. For example, the inputs such as machinery and equipment that manufacturers use directly in the production process are exempt from the sales tax because these inputs are incorporated into the final product, which is taxed when sold to the final consumer. Economists generally consider sales taxes to be most optimal when only final sales for personal consumption are taxed.

Taxing production inputs is undesirable because it may hinder economic efficiency in several ways. It may shift the mix of inputs used by producers to less optimal goods and service inputs that are not taxed. It may lead to less capital investment and less

incorporation of new technology in equipment used for production. Producers may vertically integrate their businesses to produce their own inputs to avoid having to purchase them from other businesses and pay taxes. Taxing inputs of state-based businesses can also make their products less competitive in national and international markets if businesses elsewhere are not subject to the tax.

In addition, taxing production inputs can lead to tax pyramiding, whereby taxes on inputs along the supply chain are passed on to producers at other stages of production and ultimately embedded in the sale of the good or service to the final consumers. This can create differences in the amount of the final sales tax paid by consumers for similar goods and services depending on the number of stages of production.

Before changing or eliminating the film exemption, the state should evaluate the exemption for effectiveness in achieving a more efficient tax system. The merits of offering the exemption to achieve a more efficient tax system should be weighed against the disadvantages: (1) the exemption narrows the tax base; (2) it complicates state tax regulations with another carved out exception for a specific industry; and (3) it provides little or no effect on filming locations.

RECOMMENDATION 4

The JLARC Economic Development Subcommittee may wish to consider sending a letter to the Joint Subcommittee to Evaluate Tax Preferences requesting the subcommittee to review the merits of the Film, TV, and Audio Production Input Sales and Use Tax Exemption in achieving a more efficient tax system. The review should consider that the exemption narrows the tax base, complicates state tax regulations, and provides little or no effect on film production activity.

Appendix A: Study mandate

2016-2018 Appropriation Act
Passed as Chapter 780 of the Acts Assembly, May 20, 2016

§1-11 Item 33 H

H.1. The General Assembly hereby designates the Joint Legislative Audit and Review Commission (JLARC) to conduct, on a continuing basis, a review and evaluation of economic development initiatives and policies and to make such special studies and reports as may be requested by the General Assembly, the House Appropriations Committee, or the Senate Finance Committee.

2. The areas of review and evaluation to be conducted by the Commission shall include, but are not limited to, the following: (i) spending on and performance of individual economic development incentives, including grants, tax preferences, and other assistance; (ii) economic benefits to Virginia of total spending on economic development initiatives at least biennially; (iii) effectiveness, value to taxpayers, and economic benefits to Virginia of individual economic development initiatives on a cycle approved by the Commission; and (iv) design, oversight, and accountability of economic development entities, initiatives, and policies as needed.

3. For the purpose of carrying out its duties under this authority and notwithstanding any contrary provision of law, JLARC shall have the legal authority to access the facilities, employees, information, and records, including confidential information, and the public and executive session meetings and records of the board of VEDP, involved in economic development initiatives and policies for the purpose of carrying out such duties in accordance with the established standards, processes, and practices exercised by JLARC pursuant to its statutory authority. Access shall include the right to attend such meetings for the purpose of carrying out such duties. Any non-disclosure agreement that VEDP enters into on or after July 1, 2016, for the provision of confidential and proprietary information to VEDP by a third party shall require that JLARC also be allowed access to such information for the purposes of carrying out its duties.

4. Notwithstanding the provisions of subsection A or B of § 58.1-3 or any other provision of law, unless prohibited by federal law, an agreement with a federal entity, or a court decree, the Tax Commissioner is authorized to provide to JLARC such tax information as may be necessary to conduct oversight of economic development initiatives and policies.

5. The following records shall be excluded from the provisions of the Virginia Freedom of Information Act (§ 2.2-3700 et seq.), and shall not be disclosed by JLARC:

(a) records provided by a public body as defined in § 2.2-3701, Code of Virginia, to JLARC in connection with its oversight of economic development initiatives and policies, where the records would not be subject to disclosure by the public body providing the records. The public body providing the records to JLARC shall identify the specific portion of the records to be protected and the applicable provision of the Freedom of Information Act or other provision of law that excludes the record or portions thereof from mandatory disclosure.

(b) confidential proprietary records provided by private entities pursuant to a promise of confidentiality from JLARC, used by JLARC in connection with its oversight of economic development initiatives and policies where, if such records are made public, the financial interest of the private entity would be adversely affected.

6. By August 15 of each year, the Secretary of Commerce and Trade shall provide to JLARC all information collected pursuant to § 2.2-206.2, Code of Virginia, in a format and manner specified by JLARC to ensure that the final report to be submitted by the Secretary fulfills the intent of the General Assembly and provides the data and evaluation in a meaningful manner for decision-makers.

7. JLARC shall assist the agencies submitting information to the Secretary of Commerce and Trade pursuant to the provisions of § 2.2-206.2, Code of Virginia, to ensure that the agencies work together to effectively develop standard definitions and measures for the data required to be reported and facilitate the development of appropriate unique project identifiers to be used by the impacted agencies.

8. The Chairman of JLARC may appoint a permanent subcommittee to provide guidance and direction for ongoing review and evaluation activities, subject to the full Commission's supervision and such guidelines as the Commission itself may provide.

9. JLARC may employ on a consulting basis such professional or technical experts as may be reasonably necessary for the Commission to fulfill its responsibilities under this authority.

10. All agencies of the Commonwealth shall cooperate as requested by JLARC in the performance of its duties under this authority.

Appendix B: Research activities and methods

JLARC contracted with the University of Virginia's Weldon Cooper Center for Public Service (Weldon Cooper Center) for this review. Key research activities performed by Weldon Cooper Center staff for this study included

- quantitative analysis of motion picture employment and activity data;
- computation of effective motion picture tax credit rate by state;
- estimation of Film, Television, and Audio Production Inputs Sales and Use Tax Exemption revenue loss;
- quasi-experimental statistical analysis of Virginia film incentives;
- quantitative analysis of the economic and fiscal impacts of Virginia incentives using a dynamic economic simulation model;
- structured interviews and surveys;
- meetings with Virginia Film Office and Virginia Production Alliance and tour of the set of season four filming of the TURN television series; and
- a review of documents, reports, and other research.

Quantitative analysis of motion picture employment and incentive activity data

Weldon Cooper Center staff assembled and analyzed quantitative data on the motion picture production industry from a variety of different sources including Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) and EMSI's proprietary employment series. QCEW data was used to identify geographical patterns of film production employment in the state. EMSI data was used to determine changes to state film production employment.

In analyzing film production industry employment, only those industries most commonly associated with motion picture production were included (Table B-1). This definition may exclude some film industry workers, including temporary freelance workers who are sometimes counted within the temporary sector, and workers involved in production and post-production activities but are classified in sectors that involve activities other than just film production. Examples include workers in the

- sound recording studios sector (NAICS 512240),
- employment placement agencies sector (NAICS 561310),
- independent artists, writers, and performers sector (NAICS 711510), and
- agents and managers for artists, athletes, entertainers, and other public figures sector (NAICS 711410).

QCEW employment data has the additional limitation of not counting self-employed individuals, including independent contractors. A recent Motion Picture of Association of America study concluded that 25 percent of film production industry employees are self-employed.

TABLE B-1
Industries included in motion picture production industry

NAICS code	Category name	Includes businesses primarily engaged in ....
512110	Motion picture and video production	Producing motion picture, videos, television programs, or television and video commercials
512120	Motion picture and video distribution	Acquiring distribution rights and distributing film and video productions to motion picture theaters, television networks and stations, and exhibitors
512191	Teleproduction and other postproduction services	Providing specialized motion picture or video postproduction services, such as editing, film/tape transfers, subtitling, credits, closed captioning, animation, and special effects
512199	Other motion picture and video industries	Developing and processing motion picture films and other motion picture related establishments that cannot be classified elsewhere

SOURCE: U.S. Census Bureau.

Weldon Cooper Center staff also reviewed and tabulated information from documents associated with each incentivized film production. The Virginia Film Office provided information and data on film productions that received incentives since 2011 (Table B-2).

TABLE B-2
Documents provided by Virginia Film Office

Document type	Description of information reviewed	Analysis performed
Film incentive applications	Alternative locations considered for filming	Identify Virginia's competitor states
Film incentive award documentation	Award amount, award date, shooting locations	Economic impact analysis, calculate leverage factor, film location analysis
Financial and expenditure reports provided by film production companies	Summary of qualified expenditures by category of spending	Economic impact analysis, calculate leverage factor
Memorandum of understanding and performance agreements	Description of type and quantity of ancillary deliverables (in-kind advertising) provided by production company	Analysis of tourism marketing value
Reviews by certified public accountants (where available)	Breakdown of expenditures in economically distressed areas Payroll for first-time Virginia hires that qualified for credit rate bonuses	Analysis of usage of additional credit rates

SOURCE: Weldon Cooper Center review of documentation maintained by Virginia Film Office on incentivized film productions.

Computation of effective film credit rates by state

State incentives vary widely in terms of how they structure their credit rates and what they count as qualifying expenses, especially for labor expenses. Some states only compensate for in-state labor expenses, while most have numerical caps on payments to individuals. Distinctive rates are also sometimes applied for above-the-line (e.g., actors, producers, directors) and below-the-line (i.e., crews) labor. Finally, tax credits differ in terms of their immediate value to the user. Transferable credits can be sold to brokers for less than face value, while refundable credits are reimbursed at the value of the credit that remains after paying taxes.

In order to provide an "apples to apples" comparison of the tax credits, Weldon Cooper Center staff calculated a uniform effective tax credit rate for each state using a hypothetical feature film budget (Table B-3) and the reimbursement rates used by each state. The budget is subdivided into various categories for which states apply different credit rates. If a state has a transferable credit, its value was converted to an equivalent refundable amount. The assumption is made that transferable credits are reimbursed at 85 percent of face value, with the difference accruing to the credit broker and the purchaser of the credit (ordinarily a business that applies the full face value of the credit against its tax liability). Several states (including Virginia) offer bonus incentives for filming in economically disadvantaged areas and for hiring special categories of workers (e.g., new entrants/trainees, veterans, females, and minorities). These bonus rates are not considered in the computations of effective expenditure rates for the purpose of interstate comparisons.

Estimation of business savings from claiming the film, television, and audio production input sales and use tax exemption

Weldon Cooper Center used up-to-date IMPLAN data for the state of Virginia to estimate the revenue loss due to the film, television, and audio production input sales and use tax exemption. IMPLAN is a commercial economic impact model produced by MIG, Inc. It is based on input-output analysis, which requires estimates of the value of intermediate input purchases for each industry to calculate economic impacts. The intermediate input purchase estimates for Virginia formed the basis of the relevant sales tax base for calculations of the sales and use tax revenue impact.

The relevant sectors to include in the analysis were assumed to be IMPLAN sectors 423 (motion picture and video industries) and 424 (sound recording industries) for model years 2013-2015 and the corresponding sectors (346 and 347) for the older IMPLAN models 2011-2012 that used a slightly different sector scheme.

Spending on the intermediate inputs (durable and leased goods) that qualified for the exemption was estimated by multiplying film industry output by the gross absorption coefficients for film industry spending on the relevant IMPLAN commodity sectors. For 2013-2015, the relevant IMPLAN commodity sectors were 3111-3395 and 3442-3446. Their equivalents in the older model were used for 2011 and 2012. For example, the gross absorption coefficient for spending by the motion picture and video industries on industry 445 (commercial and industrial machinery and equipment renting and leasing services) was 0.00601 in 2015. This meant that the motion picture and video industries spent

$0.00610 per dollar of output on that industry in 2015. This absorption coefficient was multiplied by the output ($1,045,630,249) of the motion picture and video industry for 2015 to obtain the expenditures ($6,284,238) on the inputs that qualified for the exemption.

TABLE B-3
Hypothetical feature film budget by expense category

Expense category	Expense
Labor costs	
Above the Line Wages	$2,700,000
Residents	$270,000
Non-residents	$2,430,000
Below the Line Wages	$3,500,000
Residents	$1,750,000
Non-residents	$1,750,000
Other costs*	
Per diems	$700,000
Lodging	$400,000
Food	$200,000
Travel costs	$200,000
Leased equipment and facilities	$1,300,000
Location fees	$200,000
Purchased services	$300,000
Other services	$500,000
Total	**$10,000,000**

SOURCE: Weldon Cooper Center review of Ernst & Young (2012).
NOTE: Assumption is made that all other costs are made within the state.
*Several states count at least some out-of-state non-labor costs as eligible expenditures, including New York and Ohio that count all such costs.

Some input expenditures from this calculation had to be excluded. The IMPLAN sector 423 (motion picture and video industries) includes motion picture theaters (NAICS 512131) and Drive-In Motion Picture Theaters (NAICS 512132), which needed to be excluded from the analysis. To exclude the input expenditures for these two theater sectors, the percentage of relevant motion picture production (NAICS sectors 512110, 512120, 512191, and 512199) employment out of total motion picture industry (NAICS 5121) employment was calculated using EMSI employment data. The resulting percentage was then applied to the total amount of motion picture and video industries input expenditures to generate the estimates for calendar years 2011-2015 excluding the theatre sectors. Fiscal year estimates were calculated by averaging two calendar years (e.g., FY12 is the average of calendar years 2011 and 2012). FY16 revenue estimates were made by adjusting FY15 estimates by the consumer price index to account for inflation.

Quasi-experimental statistical analysis of tax credit and grant impact

Weldon Cooper Center conducted a synthetic control method analysis of Virginia's film tax credit and grant. The method is a quasi-experimental case study method developed by Abadie and Gardeazabal (2003) and Abadie, Diamond, and Hainmueller (2010). The purpose of the analysis is to identify the change in film production employment after the boost in incentive spending tied to the creation of the Motion Picture Production Tax Credit program and increase in the Governor's Motion Picture Opportunity Fund allotment in 2011. The synthetic control method analysis compares a treatment unit (Virginia) affected by a particular policy (film incentives) to a synthetic control constructed from weighted units (other states) unaffected by the policy. The synthetic control group represents the "counterfactual" or what would have happened to the treated unit (Virginia) without the policy (film incentives).

Statistical analysis was conducted to develop the synthetic control group. The analysis used film production employment as a percentage of base year (2001) film employment (MPEMP) as the outcome variable of interest. Net corporate tax revenue as a percentage of GDP (CORPTAX), film production employment as a percentage of total employment (PCTMPEMP), average wages (AVGWAGE), and population density per square mile (POPDEN) were the *predictor* variables because they have been identified as *explanatory* variables for film production growth in other research. Two lagged variables for film production employment (2004 and 2008) were also included to improve the "fit" of the control group. This information was obtained from EMSI, U.S. Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics for Virginia and the seven states that had not established film incentives. The data was input into the STATA analysis software to perform the analysis using the "synth" procedure, which is a data-driven procedure in the software for constructing a synthetic control unit. The pre-treatment period, over which predictor variables are averaged, was 2001-2011. The treatment period, which represents the period when the incentive was in effect, was 2012-2016.

The synth procedure selected a weighted average of Vermont (0.652), Delaware (0.081), and New Hampshire (0.268) as the synthetic control group (Table B-4). This group was constructed by selecting weights that minimize the mean squared prediction errors of the predictor variables during the pre-treatment period. The lower the mean squared prediction errors, the closer the "fit" of the synthetic control group to the treated unit (Virginia). The suitability of the synthetic group was evaluated by several diagnostics. Synthetic control predictor values for the pre-treatment period are almost always closer to Virginia values than all untreated states as the method ensures (Table B-5).

TABLE B-4
Seven states that had not established film incentives were considered for synthetic control group

States included in control group (weight)	States not included
Vermont (0.652)	Idaho
Delaware (0.081)	Nebraska
New Hampshire (0.268)	North Dakota
	South Dakota

SOURCE: Weldon Cooper Center.
NOTE: Weight reflects the proportion of the control group that is represented by that state. Four of the states without incentives were excluded because they did not improve the fit of the control group.

TABLE B-5
Predictor variables of the synthetic control are almost always closer to Virginia values than all untreated states prior to establishing the tax credit

Predictor variable	Virginia	Synthetic control	All untreated states
CORPTAX	0.1648555	0.4504883	0.3692262
PCTMPEMP	0.0590767	0.0482589	0.0280365
PODEN	193.358	118.391	101.5399
AVGWAGE	43,750.89	37,926.87	35,724.4
MPEMP(2004)	90.43174	90.59257	99.12458
MPEMP(2008)	88.48697	86.78583	124.6117

SOURCE: Weldon Cooper Center.

Informal statistical inference of the causal relationship occurs by conducting "placebo" comparisons and mean square prediction error tests. In the placebo comparisons, the units (states) eligible for the synthetic control were regarded as treatment units and synthetic controls for each state were constructed. The differences between the eligible control units and their corresponding synthetic controls were compared with the differences between the treatment unit (Virginia) and its synthetic control. If the difference between Virginia and its synthetic control is an outlier during the post-treatment period, this provides evidence that the difference is causal. The placebo test results (not shown) were inconclusive because of high mean square prediction errors for most state control candidates relative to Virginia during the pre-treatment period.

Mean square prediction error tests are conducted by calculating ratios of post-treatment period to pre-treatment period. A relatively high ratio for the treatment unit compared to the eligible control units provides another informal test of causal relationship. Ratios of post/pre mean square prediction errors indicate that the Virginia value is lower than several states, which provides additional evidence that the Virginia result is not causal.

Economic impact modeling

Weldon Cooper Center staff conducted analyses of the economic impact of Virginia film incentives using REMI PI+ (Policy Insight Plus) software. The analysis was an ex post—or after the fact—analysis rather than a forecast of expected economic impacts. REMI PI+ is a dynamic, multi-sector regional economic simulation model used for economic forecasting and measuring the impact of public policy changes on local economies. The model combines contemporary methods for regional economic modeling such as input-output analysis, econometric forecasting, and computable general equilibrium to characterize the mechanics and path of a regional economy. The model has been extensively peer-reviewed and is widely used by state agencies elsewhere in the nation to model economic and tax revenue impacts of economic development incentive programs, including film incentives. The model used for this analysis was customized for the state of Virginia and includes 70 industry sectors. Outcome variables examined include total private employment, state gross domestic product (GDP), and personal income.

Key inputs and assumptions

The modeling of the economic impacts of the film tax credit and grant for this report was similar in approach to a study conducted by REMI Inc. for the state of Michigan (Motamedi and Huaqun 2014), with film production employment and in-state expenditures as the key inputs. Film production employment (of short-term duration) for Virginia residents as reported on incentive applications was converted to an estimate of full-time jobs. This was done by dividing the total payroll for Virginia residents from location expenditure reports for productions funded between FY12 and FY16 by the industry average wage reported in quarterly wage data from the Bureau of Labor Statistics ($1,000,000 in payroll / $50,000 average wage for film industry workers = 20 full-time jobs). In-state expenditures on goods and services (e.g. air transportation, lodging, construction) obtained from location expenditure reports were assigned to the most appropriate industry with allowance for retail trade and wholesale trade margins. Per diem payments were modeled as tourism spending using REMI assumptions on the distribution of such spending by category. To simplify the analysis, film production activity was assumed to align with credit or grant disbursement. Since nine of the 31 productions during the study period received both grant and tax credit funding, spending was allocated to each program based on the comparative size of each incentive.

Based on a survey of producers of films that received a Virginia film tax credit or grant, Weldon Cooper Center estimates that 95 percent of incentivized film expenditures in Virginia would not have occurred without the state's film incentives. While state evaluation studies for California, Florida, and Massachusetts have estimated that lower percentages of incentivized film activity would not have occurred without their state incentives, they have significantly larger film production industry employment and infrastructure than Virginia. These differences translate into cost and quality advantages. Most states' evaluation studies assume that all productions receiving state incentive is due to the availability of state incentives.

The film sales tax exemption was modeled in REMI as a cost of capital reduction for the motion picture and sound recording industries.

For each economic impact analysis, the opportunity cost of state funds was accounted for by raising personal income taxes. Personal income taxes are the largest source of tax revenue for the general fund, and thus seemed appropriate as a source for offsetting the cost of the incentive programs.

Precision of results

The analysis may underestimate economic impacts in several ways. It does not assume that the presence of the film incentives makes the state more attractive for non-incentivized film activity because of enhancements from incentive-related infrastructure and crew. It does not attempt to gauge the payment of royalties and other post-release income for resident above-the-line labor involved in commercially successful incentivized films.

The analysis may also overestimate economic impacts. It does not fully take into consideration displacement and congestion effects. Film industry workers are fairly itinerant. A boost in local motion picture spending may increase local hiring of residents who might have temporarily worked in out-of-state locations. However, the new income does not represent a net addition to state household income and spending. Some displacement effects may occur as a result of the expenditures of film workers

on lodging and meals. For small towns with limited tourism infrastructure, this short burst of filming activity could result in some displacement of routine tourism visits in the short-term similar to that sometimes observed for large scale events such as bicycle tournaments or musical concerts.

State revenue impact analysis

REMI PI+ discontinued tax revenue estimation as part of its base package beginning with the 2.0 version and moved improved revenue modeling capabilities into its new REMI Tax PI model. In order to conduct tax revenue analysis, this study utilized a similar approach to tax revenue estimation as the older 1.0 package (see Regional Economic Models, Inc. 2012). State tax revenues were obtained from the Census of Government's Annual Survey of State Tax Collections. Revenue estimates are calculated by multiplying state revenue rates by the corresponding base quantity, which included state-level demand for selected industries (general sales tax, selective sales tax, license taxes) state-level personal income less transfer payments (individual income tax), corporate income tax (gross domestic product), and personal income (other taxes). The tax revenue impact estimates do not include Virginia income tax collections derived from out-of-state personnel. The analysis does not include the effect of film incentives on other revenues, including non-general revenues. Nor does it estimate the effect on local tax revenues. Lastly, it does not estimate the effect of film incentives on government expenditures at the state or local level.

Modeling the economic impact of state tourism expenditures

State film tourism expenditure estimates were made using two different methodologies. Both techniques assume that tourism impacts are synchronized with film production and fully realized within the FY12-FY17 period.

An upper bound estimate was calculated based on information on ancillary marketing benefits of Virginia film productions that were provided by the Virginia Film Office. These ancillary benefits are the advertising value of television commercials and Virginia tourism media distributed with feature film DVDs/Blu-Ray discs. The original estimates for "Lincoln" and the "TURN" productions were made by the Virginia Beach based marketing and advertising firm Barker Campbell Farley. "Lincoln" valuations were based on an estimated average cost per impression of $74 each for 2.5 million distributed DVDs. The values for "TURN" television advertisements were based on the cobranding value and estimated cost per spots for 42, 60, and 80 spots for the pilot and seasons 1-3. Advertising value estimates for "Mercy Street" Seasons 1 and 2 were obtained from the PBS Director of Operations. Estimates were not available for several other projects that provided ancillary deliverables, including promotion clips for "Loving," "Big Stone Gap," and "Killing Kennedy." "Loving" sold approximately 50,000 DVDs. Total estimates of ancillary benefits varied from a low of $300,000 in FY13 to a high of $185 million in FY12 (when Lincoln was filmed).

These ancillary benefits were assumed to be equivalent in content and effectiveness to similarly valued state tourism promotion marketing spending. Estimates were made of the impact of state tourism expenditure growth using econometric equations estimating state tourism spending effects on tourism expenditures found in Deskins and Seevers (2011), information on state tourism expenditures from Travel Association of America (TAA) economic impacts reports, and an assumption that approximately 70 percent of visitors were from out-of-state based on TAA visitor profiles. This growth rate

was multiplied by base year tourism spending from TAA. According to the equation, the marginal effect of spending decreases with higher levels of promotional spending. These estimated state tourism expenditures were modeled as tourism spending using REMI assumptions for the distribution of such spending by category for non-residents. For simplicity of presentation, they were assumed to occur in the same year that the motion picture was produced.

For the purposes of estimating the economic impact of tourism marketing benefits resulting from film production videos and commercials created in conjunction with the grant program, the assumption is that none of the marketing benefits and associated tourism spending would have been realized without the incentive funding.

An alternative lower bound estimate is calculated based on information from a study of the Georgia film and television industry by Meyers, Norris, Penny, LLP (*Economic Contributions of the Georgia Film and Television Industry*) published in 2011. Using a proprietary model, Meyers, Norris, and Penny estimated that film related tourism expenditures grew from 0 percent of total Georgia tourism expenditures in 2006 when the credit was introduced to 0.8 percent over the five-year period 2006-2010 because of the film tax credit. The percentage of Georgia tourism expenditures for its first five years (0.8 percent from 2006 to 2010) was scaled to a Virginia amount based on Virginia's grant and tax credit spending over a similar five-year period (2012-2016) as a proportion of Georgia's over the 2006-2010 period. Because 95 percent of the incentivized Virginia film activity is estimated to depend on the existence of film incentives, this factor was applied to the tourism expenditure estimates. Also, because only approximately 70 percent of tourism spending is attributable to non-residents, only 70 percent of the estimated expenditures were considered as an injection of new spending in the Virginia economy.

Structured interviews and surveys

Weldon Cooper Center staff conducted structured interviews with staff of the Virginia Film Office and Department of Taxation which have responsibility for administering Virginia's film incentives (Table B-6). Weldon Cooper Center staff also surveyed film production decision-makers and selected other industry stakeholders in order to assess the effect of Virginia motion picture incentives on film activity. The production decision-makers who played a key role in the selection of film location—Executive Producer, Producer, or Line Producer—were able to provide insight into the factors that influenced film location and importance of film incentives. Interviewees were drawn from three groups: (1) film productions that received a Virginia incentive, (2) film productions that contacted the Virginia Film Office about Virginia's incentive package but filmed elsewhere, and (3) productions that filmed in Virginia without the benefit of either tax credit or grant programs as identified by review of the Internet Movie Database (IMDb) and other sources. Nineteen survey interviews were completed in July 2017 from a list of 53 prospective interviewees. Eleven had been producers or other decision-makers in productions that received Virginia film tax credit or grant funds. Two interviewees had considered Virginia as film locations but elected to film elsewhere. The remaining six interviewees consisted of representatives from industry organizations, higher education institutions, and Virginia-based firms involved in the film industry.

In order to assess the effect of Virginia film incentives on state tourism, Weldon Cooper Center surveyed local visitor centers and film festival organizers by email. A contact list of 25 Virginia local visitor centers

was assembled for film productions that had filmed in their communities or depicted their communities but filmed elsewhere. All 25 were contacted via email, and nine responded to the survey. The contact list for the Virginia film festivals consisted of 44 festivals listed on the Virginia Film Office website. Fifteen film festivals responded to the survey, including the state's largest film festival.

TABLE B-6
Multiple interviews and surveys were performed for this study

Entity interviewed or surveyed	Topics discussed
Virginia Film Office	Purpose and history of Virginia film incentives Information captured on incentive applications and supporting documentation Decision-making process for awarding incentives Virginia locational strengths and weaknesses Changes in Virginia's motion picture industry Economic and tourism impacts of Virginia film production
Virginia Department of Taxation	Purpose and history of Virginia's film tax credit and sales tax exemption Information captured on tax forms Motion picture production tax credit reporting
Film producers	Production location decision factors Virginia locational strengths and weaknesses Most competitive locations for film production and why Incentives offered by other states Contribution of film incentives to location decision Importance of state and local in-kind assistance (e.g., public safety, property) and sales and use tax exemptions Changes recommended for the incentives
Local tourism bureaus	Influence of film(s) on local tourism How visitors are made aware of film related sites and activities Effect of film on marketing local area
Film festival organizers	Year begun and orientation (e.g., local, state, regional, international) Total attendance and out-of-state attendance Number of films and Virginia produced films Types of films Importance of Virginia Film Office and film incentive program to festival success

SOURCE: Weldon Cooper Center.

Site visits and interviews with film industry stakeholders

Weldon Cooper Center staff toured the set of the fourth year of the TURN television series production in Richmond on March 27, 2017 and met with representative members of Virginia's film industry that was assembled by the Virginia Production Alliance on June 28, 2017. On the TURN production, the principal investigator interviewed site managers, actors, and crewmembers about the production's operation. For the Virginia Production Alliance meeting, participants represented many facets of the industry including casting, education, crew, post-production, and equipment sales. Members provided

statements about the role of the Virginia film incentive programs in the industry and answered questions about the development of the Virginia film industry, geographical variation in the industry, and changes that might improve the programs economic impact. This information was used to better understand Virginia's film production industry and how film incentives affect Virginia-based crew, actors, and suppliers.

Review of other states' film incentive programs

Weldon Cooper Center staff reviewed several sources of information to obtain historical and current information on state film incentive programs. The Incentives Program ("TIP") Guide published by Cast & Crew Financial Services is widely considered the most current and accurate industry source. This information was supplemented with information from

- Pew Charitable Trusts;
- National Conference of State Legislatures;
- documentation of state code changes assembled by Button (2015);
- internet research of film offices, departments of taxation, and legislative websites for selected states; and
- email or phone contact with state film offices.

Information on state film-related sales and use tax exemptions were obtained from several sources including the TIP Guide and Grand (2006). TIP Guide provides a listing for only the largest incentive programs, while information in Grand (2006) is dated. Weldon Cooper Center staff conducted internet research and made email and phone contact with several state motion picture offices and departments of taxation to obtain complete and up-to-date information about state exemptions.

Review of documents and literature

During this study, several sources of information, including documents, reports, and published or unpublished research were examined. The purpose of this literature review was to understand the purpose and goals of Virginia incentive programs, film production locational factors, role and importance of film incentives, and methodological approaches for quantifying the economic and tax revenue impacts of motion picture incentives. Sources consulted included

- Virginia legislative documents describing tax credit, grant, and sales and use exemption statutes and fiscal impact estimates prepared by the Department of Taxation;
- newspaper articles published in Virginia media that described the Virginia film productions and productions lost to other states;
- state evaluations and economic impact studies published by state agencies or their consultants in Virginia and other states;
- state and national economic impacts sponsored by industry interests such as the Motion Picture Association of America (MPAA); and
- scholarly books and articles that examine the U.S. film industry, changes in the industry, and the economic effects of state motion picture incentives.

Appendix C: Distribution of film tax credit and grant awards by fiscal year of award

Tax credit and grant awards are grouped into the year that film production occurred for purposes of this report. However, other reports, such as the Department of Taxation's Annual Report and the Secretary of Commerce and Trade's report on Virginia's incentive grant programs, report spending based on the year in which the tax credit was processed or the grant award was made. The distribution of film tax credit and grant awards by year the tax credit was processed or year of award (grant) are provided in Table C-1.

TABLE C-1
Tax credit and grant awards by year of award rather than year of production (FY12-FY16)

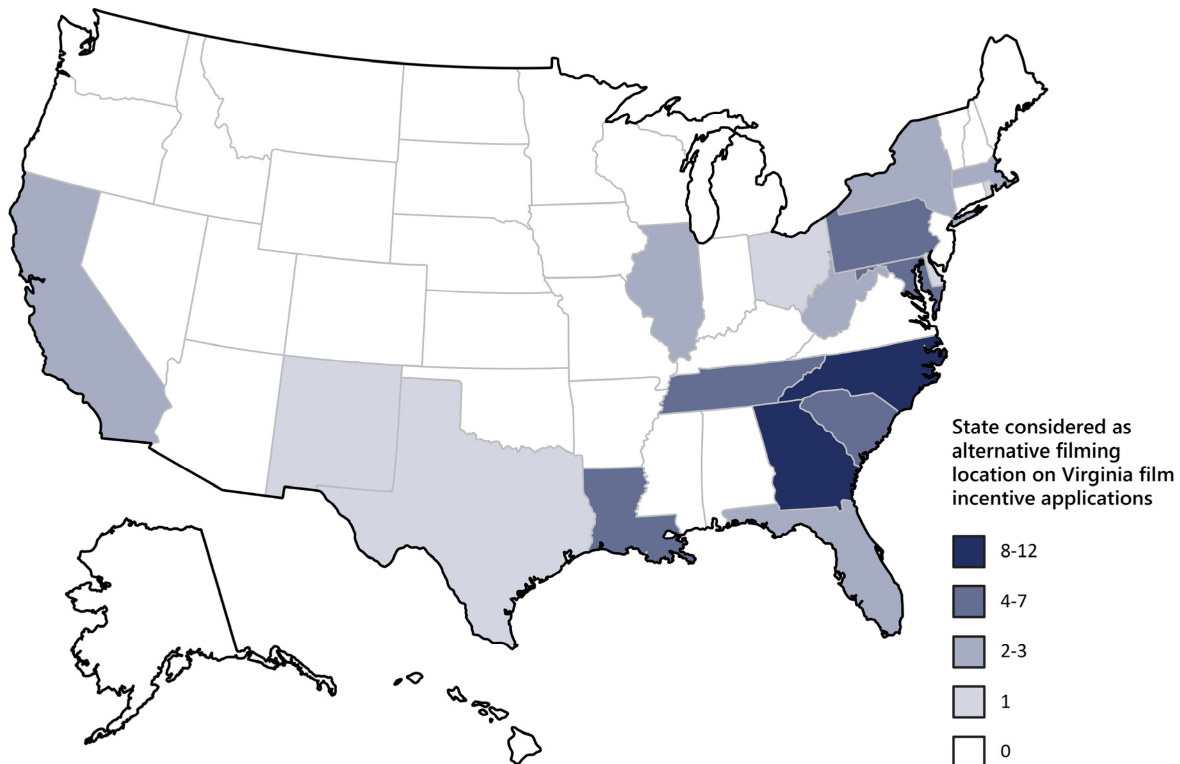
Year	Tax credit ($M)	Grant ($M)
FY12	$0.0M	$2.4M
FY13	0.0	0.6
FY14	2.95	1.7
FY15	7.18	2.9
FY16	5.49	12.5
Total	$15.6M	$20.1M

SOURCE: Weldon Cooper Center analysis of award amounts provided by the Virginia Film Office and the Department of Taxation.

Appendix D: Virginia's competitors for film production activity are southeastern and mid-Atlantic states

A review of 31 film incentive applications that filmed in Virginia showed that the southeastern U.S. states are Virginia's main competitors followed by the mid-Atlantic states (Figure D-1). The application form asks applicants to list other states and foreign countries that they are considering for film production at the time they are seeking state funding. Georgia, which offers the largest film incentive amount, was selected as an alternative by 12 production companies, followed by North Carolina at 10. Seven applicants each identified Pennsylvania and Louisiana. These states appear to offer similar combinations of scenic backdrop, production costs, and film incentives as Virginia. This ordering was verified by interviews conducted with film producers and other industry stakeholders, with one exception. Several interviewees cited Kentucky, which was not identified as an alternative location for filming on applications, as a competitive location for filming. Kentucky recently raised its incentives, but interviewees still described its crew base as weak. Ohio is also recognized as much more competitive with its recent incentive enhancements. The applications may not have fully captured these recent changes since many of the applications are now several years old.

FIGURE D-1
Virginia's main competitors for film activity are other southeastern and mid-Atlantic states



SOURCE: Weldon Cooper Center analysis of film incentive applications provided by the Virginia Film Office and interviews with industry stakeholders.

Appendix E: Film incentives by state

					Credit rate		Bonus rates		
	Credit/grant/rebate	Exemption	Minimum spend	Annual funding cap	Base	Effective	In-state employment	Distressed/ rural area	First-time employee
Alabama	Refundable credit	Exemption	$500,000	$20,000,000	25%	27.0%	✓		
Alaska		No sales tax							
Arizona									
Arkansas	Rebate/Grant		$200,000	$22,600,000	20	21.8	✓		
California	Transferable credit	Restricted exemption	$1,000,000	$330,000,000	25	14.6	✓	✓	
Colorado	Rebate/Grant			$3,500,000	20	20.0			
Connecticut	Transferable credit	Restricted exemption	$100,000	$93,000,000	10	24.0			
Delaware		No sales tax							
D.C.	Rebate/Grant		$250,000	$2,500,000	35	23.5	✓		
Florida		Exemption							
Georgia	Transferable credit		$500,000	$606,000,000	20	24.0			
Hawaii	Refundable credit		$200,000	$44,512,000	20	16.0		✓	
Idaho	Incentive not funded								
Illinois	Transferable credit		$100,000	$150,000,000	30	14.0	✓	✓	
Indiana									
Iowa									
Kansas									
Kentucky	Refundable credit	Exemption	$125,000	$2,052,660	30	30.9	✓		
Louisiana	Transferable credit		$300,000	$180,000,000	30	27.2	✓		
Maine	Rebate/Grant		$75,000	$0	10	6.6	✓		
Maryland	Refundable credit	Exemption	$500,000	$7,500,000	25	25.0			
Massachusetts	Transferable credit	Exemption	$50,000	$77,900,000	25	22.5			
Michigan		Restricted exemption							
Minnesota	Rebate/Grant	Restricted exemption	$100,000	$6,000,000	20	20.6	✓	✓	
Mississippi	Rebate/Grant	Restricted exemption	$50,000	$20,000,000	25	26.0	✓		

	Credit/grant/rebate	Exemption	Minimum spend	Annual funding cap	Credit rate		Bonus rates		
					Base	Effective	In-state employment	Distressed/ rural area	First-time employee
Missouri									
Montana	Rebate/Grant	No sales tax	$300,000	$1,000,000	N/A	N/A			
Nebraska									
Nevada	Transferable credit		$500,000	$10,000,000	15	10.4	✓	✓	
New Hampshire		No sales tax							
New Jersey		Exemption	$0	$50,000,000					
New Mexico	Ref. or transferable	Restricted exemption			25	15.2	✓		
New York	Refundable credit	Exemption	$0	$395,000,000	30	21.9	✓		
North Carolina	Rebate/Grant		$5,000,000	$30,000,000	25	25.0			
North Dakota									
Ohio	Ref. or transferable		$300,000	$40,000,000	30	30.0	✓		✓
Oklahoma	Rebate/Grant	Exemption	$25,000	$5,000,000	35	20.4	✓		
Oregon	Rebate/Grant	No sales tax	$1,000,000	$14,000,000	20	13.8		✓	
Pennsylvania	Transferable credit			$60,000,000	30	28.0			
Rhode Island	Transferable credit		$100,000	$15,000,000	25	20.0			
South Carolina	Rebate/Grant	Restricted exemption	$1,000,000	$13,000,000	30	26.9	✓		
South Dakota									
Tennessee	Rebate/Grant		$200,000	$2,000,000	25	20.0			
Texas	Rebate/Grant	Exemption	$250,000	$32,000,000	5	11.6		✓	
Utah	Refundable credit	Exemption	$200,000	$6,790,000	20	19.0		✓	
Vermont									
Virginia	Ref. credit/grant	Exemption	$250,000	$6,500,000	15	19.0		✓	✓
Washington	Rebate/Grant	Restricted exemption	$500,000	$3,500,000	30	16.1	✓		
West Virginia	Transferable credit	Exemption	$25,000	$5,000,000	27	21.6			
Wisconsin									
Wyoming	Rebate/Grant		$200,000	$282,000	12	7.0	✓		

SOURCE: Weldon Cooper Center analysis.
NOTE: FY16 expenditures were used for states that have no cap. Illinois entry is an estimate based on fiscal year qualified expenditures.

Appendix F: Findings of peer-reviewed research

Within the past three years, several scholarly studies have been published that examine the economic effects of state film incentives. These studies rely on quasi-experimental statistical analysis such as pooled cross-section time series regression, difference in differences techniques, and synthetic control studies to identify the effects of film tax credits, grants, and other incentives. The studies have generally found at least limited effects of film incentives on film industry economic measures such as production activity, employment and wages. The studies find that incentives are more likely to be effective if they are structured in certain ways and have been in place for a longer period of time.

TABLE F-1
Academic studies generally find mixed evidence of film incentive effects

Author (year)	Purpose of study	Key results
Button (2015)	Quantify the impact of film tax credit type and structure on productions, employment, and establishments	Film tax credits and rebates may have moderate effect on film production but do not generally stimulate film industry employment or number of establishments
		Increase in expenditure rate for in state workers has a positive effect on the number of movie productions (16.1 percent increase in productions over 5 years) and employment
		Large incentives that are adopted early can have a significant effect on both film production and employment
O'Brien & Lane (2017)	Identify the effect of film incentives and state film industry characteristics on film production, employment, and establishments	Presence of film incentive is positively associated with film production, film employment, and number of film industry establishments but size of incentive has no similar positive effect
		Indicators such as diversity of film industry supply chain and relative size of film distribution, marketing and sales has positive effect on film production, employment, and number of establishments
Swenson (2017)	Quantify the effect of film production tax credits, sales tax exemptions, and lodging tax exemptions on film production employment and establishments	Film incentives have no effect on motion picture employment and small effect on number of establishments
		Film incentives have a "crowding out" effect across states that resembles a "zero sum game"
Thom (2016)	Quantify the impact of film production tax credits, sales tax exemptions, and lodging tax exemptions on film production employment, wages, gross state production, and industry concentration	Film incentives have no effects on state film industry gross state production or movie industry concentration
		Refundable tax credits are positively associated with film industry wages but effect dissipates with time
		Transferable tax credits are positively associated with film industry employment which increases with duration of credit
		Amount of spending on film incentives has no effect on motion picture employment, wages, gross state production, or industry concentration

SOURCE: Weldon Cooper Center analysis.

Appendix G: Results of economic and revenue impact analyses

Economic and revenue impact analyses were conducted of the expenditures by film productions that received a film tax credit or grant, or qualified for the film and audiovisual production sales tax exemption between FY12 and FY16. Expenditure information was obtained from the location expenditure reports for each production that received a tax credit or grant. Additional analysis was also conducted to estimate the economic and revenue impact of tourism expenditures that is estimated to occur because of the advertising that film productions are required to perform in return for receiving a film grant. The analyses performed in this section assumes that the impact accrues in the year the film was produced unless otherwise specified.

The economic impact analysis for each incentive involved modeling (1) the additional economic activity that occurred because of the incentive and (2) the simultaneous increase in taxes that was used to "pay" for the incentive. Increasing taxes has the general effect of decreasing employment and other economic activity. Thus, increasing taxes to pay for the incentive reduced the total effect of the incentive on the economy. Each table in this appendix provides estimates of the total economic activity induced by the incentive, the reduction in economic activity as a result of raising taxes to pay for the incentive, and the net impact (total activity adjusted for the reduction). Economic activity reported in the tables is defined as follows:

- Total employment – private and public employment
- Private employment – private non-farm employment
- Virginia GDP – Gross domestic product for Virginia (the market value of goods and services produced by labor and property in the Virginia)
- Personal income – real disposable personal income or available income after taxes

Economic and revenue impact of tax credit fluctuates along with fluctuations in tax credit awards

The economic activity induced by Virginia's film tax credit fluctuates from year to year between FY12 and FY16 (Table G-1) as tax credit awards also fluctuate (Table G-2). Private employment on net is estimated to have increased by a low of 218 jobs in FY12 to a high of 340 jobs in FY15, the year when awards were the highest. Changes to Virginia GDP and personal income follow the same pattern.

The economic activity induced by the film tax credit generated state tax revenue through additional sales, income, and other tax collections (Table G-2). Total tax revenue collections induced by the film tax credit ranged from year to year from a low of $645,000 in FY12 to a high of $1.4 million in FY15. The return on investment also varied from a low of 18 cents per dollar invested in the tax credit in FY13 to a high of 26 cents per dollar invested in FY12.

TABLE G-1
Impact of the film tax credit to the Virginia economy

Impact to Virginia	FY12	FY13	FY14	FY15	FY16
Economic activity induced by the film tax credit					
Direct jobs	131	174	191	231	190
Total employment	254	316	356	440	374
Private employment	241	295	328	405	338
Virginia GDP	$34.1 M	$46.5M	$55.4M	$70.3M	$63.5M
Personal income	$14.7M	$20.1M	$24.5M	$32.0M	$30.3M
Reduction in economic activity because of the tax increase to pay for the credit					
Total employment	−24	−51	−57	−70	−66
Private employment	−23	−47	−53	−64	−59
Virginia GDP	−$1.9M	−$4.3M	−$5.2M	−$6.6M	−$6.6M
Personal income	−$1.5M	−$3.2M	−$4.0M	−$5.3M	−$5.4M
Net economic impact of tax credit					
Total employment	229	265	299	370	309
Private employment	218	247	276	340	279
Virginia GDP	$32.2M	$42.2M	$50.2M	$63.7M	$57.0M
Personal income	$13.3M	$16.9M	$20.5M	$26.7M	$24.9M

SOURCE: Weldon Cooper Center economic impact analysis of spending by film productions that received a Virginia film tax credit between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Assumes impacts to the economy occur in the year the film was produced.

TABLE G-2
Revenue collections from the film tax credit and its return in revenue

	FY12	FY13	FY14	FY15	FY16
Revenue tax collections induced by tax credit					
General sales tax	$99,669	$143,162	$159,833	$207,268	$200,261
Selective sales tax	67,828	95,905	111,098	147,635	150,495
License taxes	10,617	14,944	17,574	22,353	21,131
Individual income tax	395,446	551,144	633,165	851,486	774,884
Corporate income tax	56,964	68,654	74,572	99,406	78,624
Other taxes	15,093	22,517	23,964	30,868	29,290
Total revenue	$645,617	$896,326	$1,020,207	$1,359,016	$1,254,684
Tax credit awards	$2,500,000	$4,961,859	$5,247,500	$6,714,009	$6,361,969
Net revenue	−$1,854,383	−$4,065,533	−$4,227,293	−$5,354,993	−$5,107,285
Return in revenue					
Return per $1 spent	$0.26	$0.18	$0.19	$0.20	$0.20

SOURCE: Weldon Cooper Center analysis of spending by film productions that received a Virginia film tax credit between FY12 and FY16.
NOTE: Net revenue is total revenue minus tax credit awards.

Economic and revenue impact of film grant fluctuates widely from year to year

The economic impact of the film grant fluctuates widely (Table G-3) between FY12 and FY16 because of large swings in grant awards (Table G-4). Private employment on net ranged from a high of 527 jobs in FY16 when grant payments exceeded $7 million to a low of only 54 jobs in FY14 when grant payments were just under $1 million. The impact on revenue also varied widely, with the state obtaining its highest return on investment ($0.56 in return for every $1 spent on grant awards) in FY12.

TABLE G-3
Impact of the film grant to the Virginia economy

Impact	FY12	FY13	FY14	FY15	FY16
Economic activity induced by the film grant					
Direct jobs	201	79	33	258	300
Total employment	428	156	77	520	636
Private employment	408	139	65	489	591
Virginia GDP	$55.5M	$24.8M	$11.9M	$77.4M	$100.8M
Personal income	$24.7M	$10.9M	$6.4M	$35.7M	$47.1M
Reduction in economic activity because of the tax increase to pay for the grant					
Total employment	−18	−16	−11	−57	−69
Private employment	−17	−14	−10	−53	−64
Virginia GDP	−$1.5M	−$1.4M	−$1.1M	−$5.1M	−$6.8M
Personal income	−$1.1M	−$1.0M	−$0.9M	−$4.0M	−$5.3M
Net economic impact of grant					
Total employment	410	141	65	463	567
Private employment	390	125	54	436	527
Virginia GDP	$54.0M	$23.4M	$10.8M	$72.3M	$94.0M
Personal income	$23.6M	$9.9M	$5.5M	$31.7M	$41.8M

SOURCE: Weldon Cooper Center economic impact analysis of spending by film productions that received a Virginia film grant between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Assumes impacts to the economy occur in the year the film was produced.

TABLE G-4
Revenue collections from the film grant and its return in revenue

	FY12	FY13	FY14	FY15	FY16
Revenue tax collections induced by film grant					
General sales tax	$163,891	$91,356	$48,439	$214,745	$300,093
Selective sales tax	111,532	61,200	33,669	152,961	225,518
License taxes	17,459	9,536	5,326	23,159	31,666
Individual income tax	663,497	296,762	162,288	952,762	1,214,967
Corporate income tax	92,711	36,650	16,004	109,382	124,776
Other taxes	25,327	12,195	6,240	34,443	45,584
Total	$1,074,416	$507,699	$271,967	$1,487,452	$1,942,603
Grant awards	$1,900,000	$1,328,236	$900,000	$6,204,053	$7,116,726
Net revenues	−$825,584	−$820,537	−$628,033	−$4,716,601	−$5,174,123
Return in revenue					
Return per $1 spent	$0.56	$0.38	$0.30	$0.24	$0.27

SOURCE: Weldon Cooper Center analysis of spending by film productions that received a Virginia film grant between FY12 and FY16.
NOTE: Net revenue is total revenue minus grant awards.

State tourism expenditures result in additional positive impacts to state economy and state revenue

Additional analysis of estimated tourism expenditures provides information that Virginia could obtain substantial benefits from film tourism. Two estimates were generated—an upper bound and a lower bound estimate—because of the extent to which assumptions must be made for this analysis.

For the upper bound estimate (Table G-5), the economic and revenue impacts vary substantially from year to year, largely because of the filming of "Lincoln" in FY12. Estimates of tourism expenditures range from a high of $741.7 million in FY12 to a low of $2.6 million in FY14. The level of advertising ($184.6 million) associated with "Lincoln" is not likely to be a common occurrence. However, results demonstrate that the revenue generated from film tourism could be as much or greater as the revenue directly induced by the film incentives.

TABLE G-5
Upper bound estimate of impact of film tourism resulting from grant-funded productions to the Virginia economy

	FY12	FY13	FY14	FY15	FY16
Economic activity induced by tourism spending associated with the film grant					
Total employment	5,531	213	446	421	388
Private employment	5,368	125	385	373	349
Virginia GDP	$324.0M	$50.8M	$37.1M	$34.3M	$31.2M
Personal income	$197.9M	$31.1M	$36.3M	$32.7M	$30.0M
Revenue tax collections induced by tourism spending associated with film grant					
General sales tax	$7,068,942	$528,176	$649,685	$684,618	$664,195
Selective sales tax	4,810,612	353,829	451,589	487,647	499,138
License taxes	753,026	55,132	71,434	73,832	70,085
Individual income tax	5,322,171	762,371	852,080	771,900	680,153
Corporate income tax	541,558	74,966	49,900	48,447	38,603
Other taxes	202,789	34,863	35,492	31,498	29,016
Total	$18,699,098	$1,809,338	$2,110,180	$2,097,942	$1,981,190

SOURCE: Weldon Cooper Center economic and revenue impact analysis of tourism spending that resulted from film productions that received a Virginia film grant between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Assumes impacts to the economy occur in the year the film was produced.

Less variation exists in the lower bound estimate which is based on estimation of tourism expenditures in Georgia that resulted from its film tax credit (Table G-6).

TABLE G-6
Lower bound estimate of impact of film tourism resulting from grant-funded productions to the Virginia economy

	FY12	FY13	FY14	FY15	FY16
Economic activity induced by tourism spending associated with the film grant					
Total employment	15	31	46	52	43
Private employment	15	30	44	50	40
Virginia GDP	$0.9M	$2.0M	$3.1M	$3.7M	$3.4M
Personal income	$0.5M	$1.2M	$1.9M	$2.5M	$2.4M
Revenue tax collections induced by tourism spending associated with film grant					
General sales tax	$19,615	$42,151	$57,963	$69,790	$59,801
Selective sales tax	13,349	28,237	40,290	49,711	44,940
License taxes	2,090	4,400	6,373	7,526	6,310
Individual income tax	14,769	32,917	49,540	63,890	58,480
Corporate income tax	1,503	2,918	4,154	5,299	4,164
Other taxes	563	1,349	1,894	2,366	2,291
Total	$51,888	$111,973	$160,215	$198,582	$175,986

SOURCE: Weldon Cooper Center economic and revenue impact analysis of tourism spending that resulted from film productions that received a Virginia film grant between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Assumes impacts to the economy occur in the year the film was produced.

Economic and revenue impacts of the film sales and use tax exemption are positive but very small

The economic and revenue impacts of the film sales and use tax exemption are very small each year between FY12 and FY16 (Table G-7 and Table G-8). Impacts rise slightly over time because lower capital costs of film production companies that use the exemption are likely to stimulate additional capital investment, improve labor productivity, and generate greater output.

TABLE G-7
Impact of the film exemption to the Virginia economy

Impact	FY12	FY13	FY14	FY15	FY16
Economic activity induced by the film exemption					
Total employment	7	9	10	11	12
Private employment	6	8	9	10	11
Virginia GDP	$553,358	$998,964	$1,276,124	$1,534,958	$1,764,541
Personal income	$381,765	$544,859	$655,279	$797,480	$915,091
Reduction in economic activity because of the tax increase to pay for the exemption					
Total employment	−11	−10	−8	−9	−8
Private employment	−10	−9	−7	−8	−7
Virginia GDP	−$877,413	−$882,793	−$776,078	−$817,568	−$786,597
Personal income	−$671,086	−$647,200	−$610,293	−$685,838	−$689,454
Net economic impact of exemption					
Total employment	−4	−1	2	2	4
Private employment	−4	−1	2	2	4
Virginia GDP	−$324,055	$116,171	$500,046	$717,390	$977,944
Personal income	−$289,321	−$102,340	$44,986	$111,642	$225,637

SOURCE: Weldon Cooper Center economic impact analysis of spending that was eligible for the sales tax exemption between FY12 and FY16.
NOTE: Includes direct, indirect, and induced impacts. Impacts to the economy continue to accrue in years after purchases occurred.

TABLE G-8
Revenue collections from film exemption and its return in revenue

	FY12	FY13	FY14	FY15	FY16
Revenue tax collections induced by film tax exemption					
General sales tax	$5,910	$7,495	$7,503	$8,991	$9,801
Selective sales tax	$4,022	5,021	$5,215	$6,404	$7,365
License taxes	$630	$782	$825	$970	$1,034
Individual income tax	$10,227	$14,838	$16,770	$20,977	$23,226
Corporate income tax	$925	$1,475	$1,718	$2,170	$2,184
Other taxes	$391	$610	$641	$769	$885
Total	$22,105	$30,221	$32,671	$40,282	$44,495
Exempted amount	$1,135,932	$840,035	$802,454	$807,738	$807,738
Net revenues	−$1,113,827	−$809,814	−$762,172	−$762,172	−$763,243
Return in revenue					
Return per $1 spent	$0.019	$0.036	$0.05	$0.05	$0.055

SOURCE: Weldon Cooper Center analysis of spending by film productions that received a Virginia film grant between FY12 and FY16.
NOTE: Net revenue is calculated as total revenue collected minus amount of exemptions.

Appendix H: References

Abadie, Alberto and Javier Gardeazabal. 2003. The economic costs of conflict: A case study of the Basque country. *American Economic Review* 93, 1:113-32.

Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2010. Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American Statistical Association* 105, 490: 493-505.

Button, Patrick. 2015. Do tax incentives affect business location? Evidence from motion picture production incentives. Tulane University, Tulane Economic Working Paper 1507.

Center for Public Policy. 2005. An economic analysis of Virginia's film and video production-distribution industry. Virginia Commonwealth University. Prepared for Virginia Film Office.

Christopherson, Susan and Ned Rightor. 2010. The creative economy as "Big Business": Evaluating state strategies to lure filmmakers. *Journal of Planning Education and Research*. 29, 3: 336-352.

Connell, Joanne. 2012. Film tourism—Evolution, progress and prospects. *Tourism Management* 33: 1007-29.

Crompton, John. 2006. Economic impact studies: Instruments for political shenanigans? *Journal of Travel Research* 45, 1: 67-82.

Department of Legislative Services (MD). 2015. Evaluation of the Maryland film production activity tax credit. Annapolis, MD: Department of Legislative Services, Office of Policy Analysis.

Deskins, John and Matthew T. Seevers. 2011. Are state expenditures to promote tourism effective? *Journal of Travel Research* 50, 2: 154-70.

Due, John E and John L. Mikesell. 1994. *Sales taxation: State and local structure and administration*. 2nd edition. Washington, DC: Urban Institute Press.

Phillips, Andrew, Robert Cline, and William Fox. 2012. *Evaluating the effectiveness of state film tax credit programs: Issues that need to be considered.* Ernst & Young LLP. Commissioned by Motion Picture Association of America.

Foster, Pacey, Stephan Manning, and David Terkla. 2015. The rise of Hollywood east: Regional film offices as intermediaries in film and television production clusters. *Regional Studies* 49, 3: 433-50.

Foster, Pacey C. 2013. Mobile project networks: Regional dynamics in the U.S. film and television industry. *Work and Occupation* 40, 4: 398-430.

Grand, John. 2006. Motion picture tax incentives: There's no business like show business. *State Tax Notes*. March 13, 2006, 791-803.

Heffernan, Michael J. 2016. Report on the impact of Massachusetts film industry tax incentives through calendar year 2014. Commonwealth of Massachusetts, Department of Revenue.

Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER). 2015. An evaluation of the effectiveness of the Mississippi film office. Report to the Mississippi Legislature. Peer Report 602.

Leiser, Stephanie. 2017. The diffusion of state film incentives: A mixed-methods case study. *Economic Development Quarterly* 1:17. (Forthcoming)

Loren C. Scott & Associates, Inc. 2015. The economic impact of Louisiana's entertainment tax credit programs. Prepared for Louisiana Department of Economic Development.

Luther, William. 2010. Movie production incentives: Blockbuster support for lackluster policy. Tax Foundation special report. no. 173.

Mangum Economic Consulting, LLC. 2013. Economic impact of major film and television productions shot in Virginia between 2011 and 2013. Prepared for Virginia Film Office.

Meyers, Norris, Penny (MNP) LLP. 2014. New Mexico film production tax incentive study. Phase I report (2014); Phase II report (2015); Phase III report. (2016).

Mikesell, John L. 2001. Sales tax incentives for economic development: Why shouldn't production exemptions be general? *National Tax Journal* 54, 3: 557-67.

Motamedi, Rod and Huaqun Li. 2014. Modeling tax return on TV, film, and digital media incentives in Michigan. Regional Economic Models, Inc. (REMI). Prepared for Michigan Film Office. March 31, 2014.

Oaksmith, Laura. 1989. The Virginia film initiative. *University of Virginia News Letter*. 65, 10: 67-74.

O'Brien, Nina O. and Christianne J. Lane. 2017. Effects of economic incentives in the American film industry: an ecological approach. *Regional Studies.*

Office of Program Policy Analysis and Government Accountability. 2015. *Florida economic development program evaluations – Year 2*. Report No. 15-01.

Pitter, Amy. 2011. A report on the Massachusetts film industry tax incentives. Commonwealth of Massachusetts, Department of Revenue. November 2011.

Regional Economic Models, Inc. 2012. *Predicted revenue & expenditure effects.*

Riley, Roger, Dwayne Baker, and Carlton S. Van Doren. 1998. Movie-induced tourism. *Annals of Tourism Research* 25, 4: 919-35.

Scott, Allen J. 2005. *On Hollywood*. Princeton, NJ: Princeton University Press.

Swenson, Charles W. 2017. Preliminary evidence on film production and state incentives. *Economic Development Quarterly* 31, 1: 65-80.

Tannenwald, Robert. 2010. *State film subsidies: Not much bang for too many bucks*. Center on Budget and Policy Priorities. November 17, 2010.

Taylor, Mac. 2016. *California's first film tax credit program*. Sacramento, CA: Legislative Analyst's Office.

Thom, Michael. Forthcoming. Lights, camera, but no action? Tax and economic development lessons from state motion picture incentive programs. *American Review of Public Administration* 1-23.

Thom, Michael and Brian An. 2017. Fade to black? Exploring policy enactment and termination through the rise and fall of state tax incentives for the motion picture industry. *American Politics Research* 45,1: 85-108.

Weinstein, Bernard L. and Terry L. Clower. 2000. Filmed entertainment and local economic development: Texas as a case study. *Economic Development Quarterly* 14, 4: 384-94.

Virginia Economic Development Partnership. 2016. *Effectiveness of Economic Development Incentive Grant Programs Administered by the Commonwealth of Virginia in Accordance with Chapter 817 of the 2014 Acts of Assembly.*

Appendix I: Agency responses

As part of an extensive validation process, the state agencies and other entities that are subject to a JLARC assessment are given the opportunity to comment on an exposure draft of the report. JLARC staff sent an exposure draft of this report to the Virginia Film Office, Virginia Department of Taxation, Secretary of Commerce and Trade, and Secretary of Finance.

Appropriate corrections resulting from technical and substantive comments are incorporated in this version of the report. This appendix includes response letters from the following:

- Virginia Film Office and
- Virginia Department of Taxation

November 3rd, 2017

Mr. Hal E. Greer, Director
Joint Legislative Audit & Review Commission
919 East Main Street
Suite 2101
Richmond, VA 23219

Dear Mr. Greer,

Thanks to you, your staff and your contractors for the hard and meticulous work on the JLARC report Evaluation: Film Incentives. As a citizen and taxpayer, I am grateful for the work you do to try to clearly inform policy-makers as to the effectiveness of various state programs; so that we can maximize our return on investment.

We are in full support of 1) creating a more effective, simplified and sustainable incentive that is a marketable tool and 2) developing a practical scoring system.

We are also pleased that the report recognizes the innovative and unique approach the Virginia Film Office has pioneered: including added-value tourism advertising as part of our incentive package deliverables. The report also appropriately appreciates the significant dollar value of this leveraged tourism advertising. Worth noting is that this represents the only national TV advertising that has been available for the Virginia Tourism Corporation.

The report also supports the conclusions and data of reports that we have been providing to policy makers each year since the inception of the film tax credit program.

To assist in providing the most accurate overview for the commission, policy-makers, the media and the citizenry we would appreciate your kind consideration of the following areas:

- *The report states that film incentives generate a smaller ROI than traditional manufacturing incentives.*

  Content Manufacturing economic impact is indeed very different due to multiple and diverse revenue streams to consider.

When tourism added-value is included we would suggest that the program is by all measures highly competitive with and often superior to other economic development incentives.

Additionally, when comparing this program through a lens of traditional manufacturing incentives, it may be worth noting that film incentives are performance-based; recipients of film incentives do not receive a dime until they have spent an audited dollar in Virginia.

- *The report states that series television production has a lower ROI as compared to other production categories.*

  The data as analyzed on the surface appears to support that notion. However, if infrastructure investment and local business expansion, local resident career advancement and the added value of a broadcast platform related to tourism advertising were taken into account, the ROI would likely be much higher. Which is why every state, country, city and county participating in this industry considers a TV series to be the golden goose of production for these same reasons: infrastructure investment and ongoing jobs. A larger study sample would likely reveal the ROI to be higher using this same data analysis method.

We continue to believe that our approach of targeting TV series and independent film, and nurturing Virginia's home-grown production activity is the best strategy.

Thank you again for your comprehensive work, and for your kind consideration of the above important information. We look forward to continuing to work with JLARC to integrate your recommendations in a way that will make our effective and efficient program even better for all Virginians.

Best regards,

Andrew Edmunds, Director
Virginia Film Office / Virginia Tourism Corporation
804-545-5534 | aedmunds@virginia.org

COMMONWEALTH of VIRGINIA

Department of Taxation

November 3, 2017

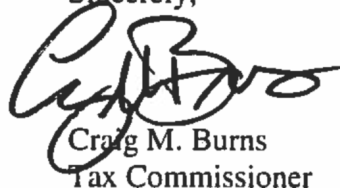
Mr. Hal E. Greer, Director
Joint Legislative Audit and Review Commission
919 East Main Street, Suite 2101
Richmond, Virginia 23219

Dear ~~Mr. Greer~~ Hal:

Thank you for the opportunity to review and comment on the exposure draft reports: *Evaluation: Film Incentives and Economic Development Incentives 2017.* We believe the reports are very well done and will be useful to the members of the General Assembly going forward. We also appreciate you incorporating our comments and suggestions into the final report drafts.

Thank you again for the opportunity to review the draft reports. Should you have any additional questions, please feel free to contact me.

Sincerely,



Craig M. Burns
Tax Commissioner

c: The Honorable Richard D. Brown, Secretary of Finance

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