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Tax Incentive Evaluation: Georgia's Film Tax Credit

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Executive Summary

The Georgia Entertainment Industry Investment Act, commonly referred to as the Film Tax Credit, (O.C.G.A. § 48-7-40.26) was enacted in 2005 to promote investment in film, television, and digital media projects. Georgia House Bill 1100 (2008) significantly altered the original film income tax credit (FTC), increasing the value to 20 percent of eligible production expenditures and providing an additional credit of 10 percent to companies that offer Georgia marketing opportunities. The tax credit is transferable and has a three year carry forward period.

The purpose of this report is to evaluate the Georgia FTC, in accordance with the provisions of O.C.G.A. § 28-5-41.1 (2021 Senate Bill 6), in terms of its fiscal and economic impacts, as well as its public benefits. In addition, the report discusses the administration of the program in Georgia, similar programs in other states, and other research into state FTC programs. Key findings are summarized below. This report was prepared under a contract with the Georgia Department of Audits and Accounts (DOAA).

The administration of the FTC program is overseen by two state agencies: the Department of Economic Development (GDEcD) and Department of Revenue (DOR). DOR reported that it does not track administrative expenses for this program.

Economic activity associated with FTC projects is estimated in two steps, the first being a standard IMPLAN analysis (described more fully in Section 5) of direct, indirect, and induced effects of a representative year's projects, without consideration of causality. That is, we assume that, but for the availability of the state credits, none of the projects receiving the credits would have been undertaken. The economic impact associated with this assumption and production spending of \$4.4 billion in the representative year 2022 show direct production spending supported 4,900 direct jobs with a total labor income of \$401 million. Production spending supported an additional 14,226 indirect and induced jobs, but these do not necessarily reflect full-time employment. FTC production spending also supported \$1.3 billion in total labor income, \$2.3 billion in value added, and \$4.5 billion in total output. These economic impacts include all verified production expenses and wages paid to Georgia residents. Wages paid to out-of-state residents provide income tax revenue to the state but have been found to have no material economic impact on the Georgia economy and thus not included in the IMPLAN analysis.

Economic impact analyses commonly assume that all activity benefiting from the incentive would not have occurred without the incentive, but this is not likely realistic. We use a "but-for" percentage of 92.1 percent, as reported by respondents to a recent survey by the creative industries consultancy Olsberg SPI. We also calculate the economic activity associated with alternative use of the tax expenditure by the State of Georgia. Net economic activity is the remaining activity after accounting for the "but-for" percentage and the impact of the alternative use. Tables ES1 and ES2 below summarize the state and local fiscal effects of the FTC, including the associated activity of film tourism and construction—adjusted by the 92.1 percent "but-for" activity share.

Table ES1. Film Tax Credit, Tourism, and Construction – State Fiscal Effects*

(\$ millions)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Revenue gains from economic impact	\$224.69	\$251.21	\$280.85	\$313.99	\$351.04
Less:					
Tax expenditure cost	-\$762.85	-\$1,021.50	-\$1,188.40	-\$1,261.37	-\$1,277.45
Alternative use revenue gains	-\$79.98	-\$89.42	-\$99.97	-\$111.77	-\$124.96
Net Fiscal Effects	-\$618.14	-\$859.71	-\$1,007.52	-\$1,059.14	-\$1,051.36
State Fiscal ROI	\$0.19	\$0.16	\$0.15	\$0.16	\$0.18

* Includes “but-for” adjustment of 92.1%

Table ES2. Film Tax Credit, Tourism, and Construction – Local Fiscal Effects*

(\$ millions)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Revenue gains from economic impact	\$65.74	\$73.50	\$82.17	\$91.87	\$102.71
Less:					
Alternative use revenue gains	-\$36.51	-\$40.82	-\$45.63	-\$51.02	-\$57.04
Net Fiscal Effects	\$29.23	\$32.68	\$36.54	\$40.85	\$45.67
Local ROI	N/A	N/A	N/A	N/A	N/A

* Includes but for adjustment of 92.1%

N/A: Local tax expenditure is \$0 across all years.

Table of Contents

1. Introduction	1
2. Overview of Georgia’s Film Tax Credit.....	1
History.....	1
Purpose.....	2
How the Tax Provision Works.....	2
Eligible Expenses.....	3
Administration	3
3. Tax Provision-related Activity	4
Project Activity	4
Tax Credit Activity	7
4. Similar Programs in Other States	10
Variation in State Film Tax Credit Programs	10
Studies of Other States’ Programs	13
5. Economic Activity	14
Overview of How Economic Activity Is Measured.....	14
IMPLAN Model.....	15
Production-related Impacts	16
Additional Construction and Tourism Related Impacts.....	17
“But-For” Analysis	19
Data and Methods	19
Results.....	20
Alternate Use of Forgone Revenue/Tax Expenditure.....	21
6. Fiscal Impact.....	22
Revenue Impacts.....	22
Forgone Revenue	22
Additional Tax Revenue, Project Expenditures, Studio Construction, and Film Tourism...	24
State and Local Taxes Generated from Alternative Use of Funds.....	25
Additional Fee Revenue.....	25
Administrative Costs for State Agencies	25
7. Other Public Benefits.....	26
8. Conclusions	26
References.....	28
Appendix A.....	29
Appendix B	34
Appendix C.....	35
Appendix D.....	36
Appendix E	37

1. Introduction

The Georgia Entertainment Industry Investment Act, commonly referred to as the Film Tax Credit, (Ref. O.C.G.A. § 48-7-40.26) was enacted in 2005 to promote investment in film, television, and digital media projects. Georgia House Bill 1100 (2008) significantly altered the original Georgia film income tax credit (FTC), increasing the credit to 20 percent of eligible production expenditures and providing for an additional credit of 10 percent to companies that offer Georgia marketing opportunities. A 2012 amendment (HB 1027) added separate eligibility and program requirements for qualified interactive entertainment production companies (QIEPC). Some previously ineligible post-production activities became qualified expenses through House Bill 199 (2017). Georgia House Bill 1037 (2020) instituted a project audit requirement and shortened the carry forward period from five to three years. The program is administered by the Georgia Department of Economic Development (GDECD) and the Georgia Department of Revenue (DOR).

Currently, the FTC is available to production companies with a minimum of \$500,000 in qualified spending in Georgia.¹ Although there is a \$12.5 million annual aggregate cap for QIEPC tax credits, there is no annual cap on the total amount of tax credits generated by most qualifying production expenditures. Georgia has had a significant increase in qualifying production activity since 2008 and, thus, a substantial increase in the tax credits generated by the FTC program.

The purpose of this report is to evaluate the Georgia FTC, in accordance with the provisions of O.C.G.A. § 28-5-41.1 (2021 Senate Bill 6), in terms of its fiscal and economic impacts, as well as its public benefits. In addition, the report discusses the administration of the program in Georgia, similar programs in other states, and other research into state FTC programs.

The report first describes the background and administration of the Georgia FTC, followed by a summary of FTC-related activity and a discussion of other states' programs. The report then addresses the economic and fiscal impact of a representative year of credit-eligible projects—net of activity that would have occurred in the absence of the credit and net of activity that would have occurred from an alternative use of the tax expenditures on FTCs for the same amount of general state spending. A brief discussion of other public benefits and considerations concludes the report.

This report was prepared under a contract with the Georgia Department of Audits and Accounts (DOAA).

2. Overview of Georgia's Film Tax Credit

History

The 2005 Act creating the FTC specified an income tax credit equal to 9 percent of qualifying expenditures by production companies spending at least \$500,000 in Georgia. The original program included supplemental provisions for spending in targeted areas, Georgia payrolls, and large projects. Additionally, the law included a provision that reduced the credit for companies

¹ HB 199 (2017) lowered the spending requirement for QIEPC to \$250,000, beginning in 2018.

with a significant existing presence in Georgia, defined as in-state expenditures over \$30 million, averaged over 2002–04. Expenditures by such companies must exceed the 2002–04 average to be eligible for the credit.

HB 1100 (2008) substantially changed Georgia’s FTC, increasing the credit percentage on qualified production expenditures to 20 percent with an additional 10 percent possible for the inclusion of Georgia promotion or marketing. The amendment also removed the supplemental credits that were part of the original bill.

HB 1027 (2012) added eligibility criteria for QIEPC, with a lifetime aggregate credit cap of \$25 million and lifetime company credit cap of \$5 million. The bill increased the promotional activities allowed for companies to qualify for the additional 10 percent “uplift” credit.

HB 958 (2014) replaced the QIEPC lifetime credit caps with annual aggregate and company caps of \$12.5 million and \$1.5 million, respectively, and set a 2016 sunset for QIEPC credits. The sunset was delayed until 2019 by HB 339 (2015).

HB 199 (2017) eliminated the QIEPC credit sunset as well as lowered the minimum spending requirement for QIEPC credits to \$250,000 and changed some payroll requirements. The bill also created a separate post-production credit.

The most recent changes to Georgia’s FTC were enacted through HB 1037, effective January 1, 2021. The law requires that projects certified after January 1, 2021, generate a credit only after a mandatory audit of project spending, and it shortens the carry forward period from five to three years. As prescribed in the legislation, audit requirements have been phased in: projects exceeding \$2.5 million credits require an audit in 2021, projects exceeding \$1.25 million in credits require an audit in 2022, and all projects require a mandatory audit in 2023. Prior to the bill, audits were not mandatory, and credits were generated at the time of GDEcD certification of the project. As discussed below, the audit requirement creates a timing lag between the fiscal year in which project spending occurs and the fiscal year in which the credit is generated.

Purpose

The purpose of the FTC is to encourage expenditure and investments into the film, television, and digital media industries within Georgia.

How the Tax Provision Works

Under the current provision, production companies spending at least \$500,000 on one or more eligible productions may claim an income tax credit for 20 percent of qualifying in-state expenditures. Additionally, by engaging in approved promotional activities, such as placing an embedded Georgia logo in authorized projects and a link to [ExploreGeorgia.org/Film](https://www.exploregeorgia.org/Film) on the project's landing page, an extra 10 percent Georgia Entertainment Promotion (GEP) uplift can be obtained. The incentives are comparable to those in states like New York and Louisiana, but Georgia’s statute is perpetual, unlike those states’ laws which contain sunset provisions.

The absence of caps or spending ceilings in Georgia is one of the incentive’s most notable features. There is currently no cap on qualifying expenditures for companies, nor is there an aggregate cap for annual or lifetime credit generation.

The credit is available to both in-state and out-of-state companies that may:

- use the credit to offset their own income tax liabilities;
- use the credit to satisfy employee withholding (with DOR approval);
- sell the credit to another taxpayer;
- assign the credit to an affiliated entity; or
- pass the credit through to their owners.

The credit may be used to offset Georgia tax liabilities for up to three years. It is also transferable, and production businesses typically sell or assign credits to other taxpayers. However, a transferred credit may only be used to offset income tax liability, and a transfer does not extend the carry forward period.

Eligible Expenses

Eligible productions include feature films, television series, pilots, movies for television, televised commercials, and music video productions. Digital interactive entertainment products, such as video games, are eligible for QIEPC tax credit.

Eligible expenses include in-state expenditures on materials, services, and labor during the pre-production, production, and post-production phases of the project. Project development expenses, such as screenplay writing, story rights, and financing negotiations, are not eligible. Expenses associated with distribution and marketing are also ineligible.

Labor expenses comprise a large portion of production expenses eligible for the credit. Payrolls for both resident and non-resident employees are eligible for the tax credit, as well as the corresponding FICA and state and federal unemployment insurance taxes. Employees who earn a salary and are compensated through Form W-2 are subject to a compensation cap of \$500,000 per person and production. Individuals paid through Form 1099, personal service contracts, or loan-outs are not subject to a salary cap, in contrast to some jurisdictions.²

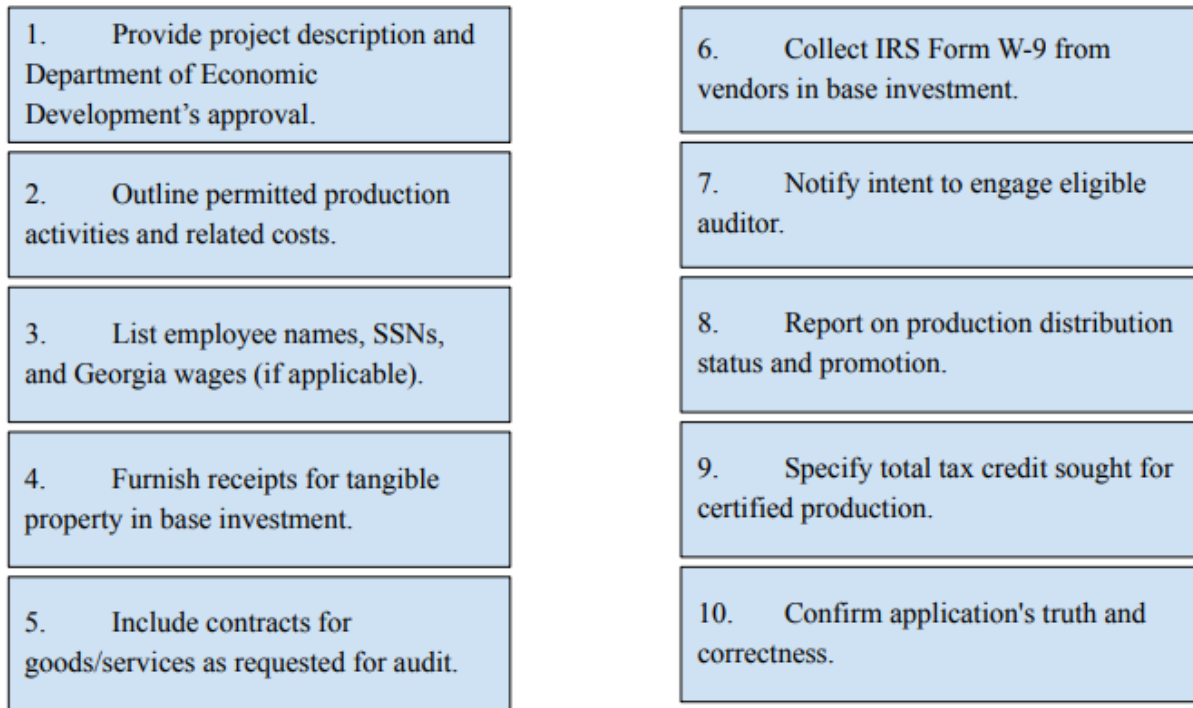
The latter provision is important due to the prevalence of non-W-2 employment in the industry. As outlined in the economic impact section of the report, a considerable portion of labor income is paid to non-residents. Salaries for top talent, such as actors and directors, are typically paid through loan-out companies and therefore not subject to the compensation cap.

Administration

The FTC in Georgia is administered by GDEcD and DOR. GDEcD oversees a project's eligibility for the FTC, reviewing the credit application and certifying project eligibility. GDEcD also verifies that the promotional uplift requirement has been met and issues a separate certificate for the uplift tax credit. GDEcD sends project certificates to DOR, which is responsible for credit generation and use. HB 1037 requires that projects undergo a mandatory audit of eligible expenses and submit the audit to DOR prior to generation of the credit. Figure 1 summarizes the credit application and audit process under HB 1037.

² Loan-out companies are contracted to provide personnel, particularly actors and directors, to a production company. The associated salaries for the personnel are paid to the loan-out-company rather than the individual.

Figure 1. Film Tax Credit Process with HB 1037 Audit Requirements



Source: O.C.G.A. § 48-7-29.8

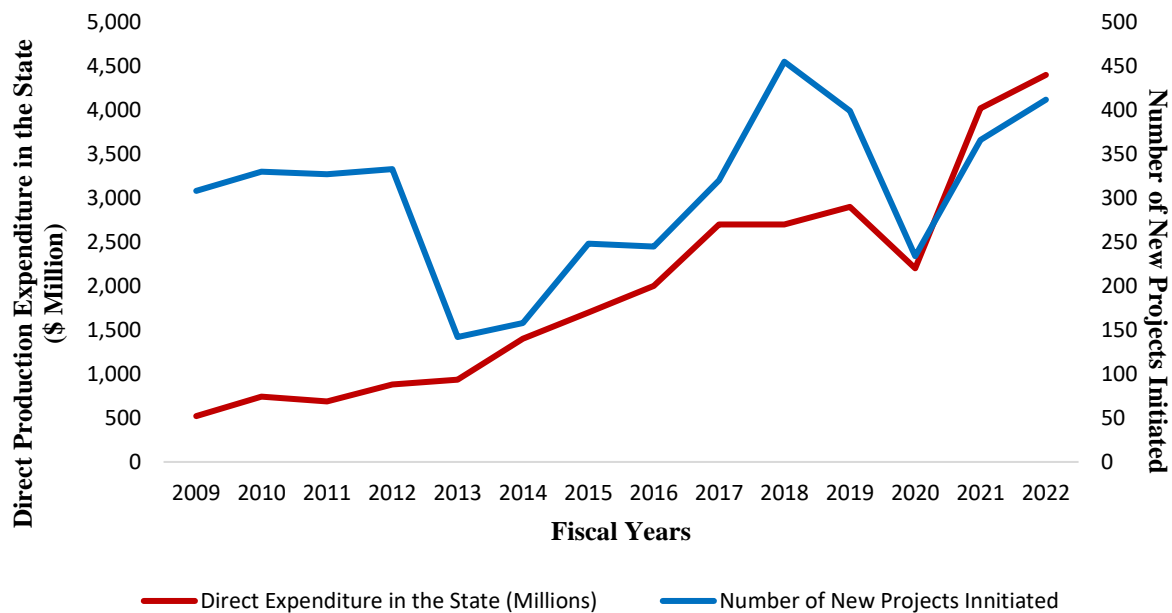
3. Tax Provision-related Activity

Project Activity

Figure 2 depicts the number of Georgia FTC projects and their related expenditures, as reported by the GDEcD in their annual performance measure reports from 2009–22. Although the total number of projects is relatively volatile, project expenditures have steadily increased over the period, except for the 2020 dip associated with COVID-19 shutdowns. There is a sharp increase in overall spending in 2014, which does not correspond to any major changes to the FTC.³ It is therefore unclear the extent to which the accelerated growth in projects is attributable to the tax credit or to other factors that increased Georgia's relative attractiveness for film projects.

³ In FY 2014, the number of big-budget box-office production filming in Georgia began to rise—including *The Hunger Games: Mockingjay Part 1 & 2*, *Insurgent*, *Taken 3*, and *Furious 7*. The state also saw a large increase in purpose-built studio space in FY 2014 and 2015, with the opening of Atlanta Filmworks (36,000 sq.ft.) and Trilith (Pinewood) Studios (717,150 sq. ft.). Studio construction has slowed considerably since its peak in 2014 and 2015.

Figure 2. Number and Total Expenditures of Georgia Film Tax Credit Projects, 2009–22



Source: Agency Performance Measure Reports, 2009–22

The increase reflects overall growth in the industry throughout the United States as well as an increase in Georgia’s relative share of the industry. To provide a sense of Georgia’s relative position in the industry, we obtained proprietary data from Studio System, which publishes a proprietary industry database of feature films and television series. Content is managed by Studio System staff to guarantee data quality, in contrast to some other sources that are user generated.⁴

Figure 3 illustrates the trends in Georgia’s share of all U.S. film projects and budgets from 2009–2022, showing a significant increase in Georgia’s share of U.S. film budgets from 2013–17, which corresponds to the increase in FTC project expenditures in Figure 2. However, unlike FTC projects and expenditures, there is a decline from the 2017 peak share in 2018 that continues through the pandemic.

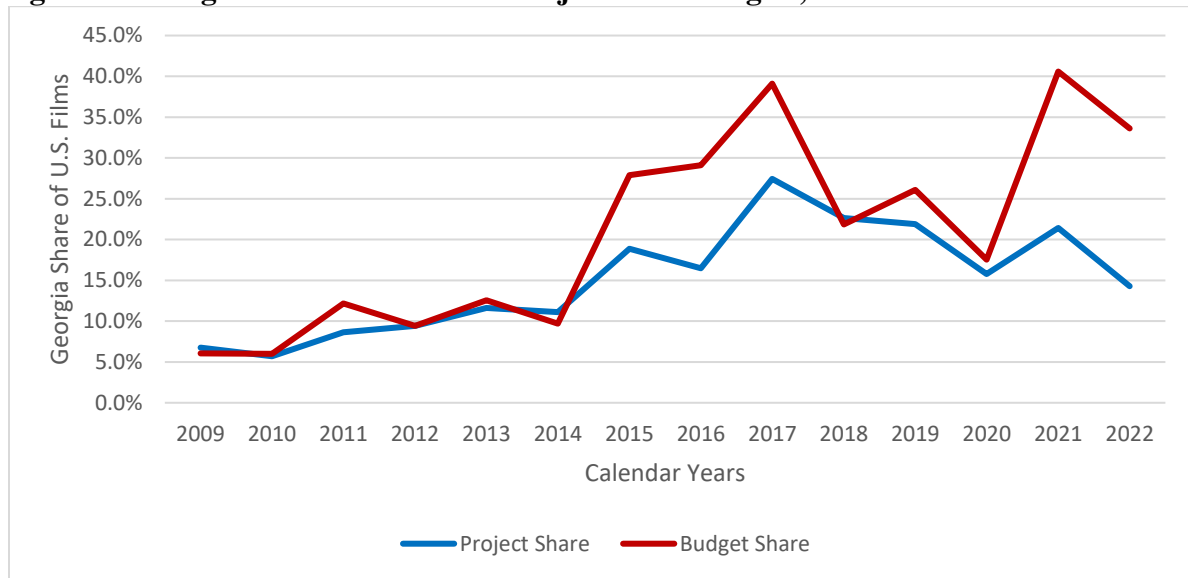
We also use the Studio System data to determine Georgia’s share of U.S. television projects over time.⁵ Figure 4 demonstrates a general increasing trend in Georgia’s share of television projects,

⁴ We extracted from Studio System a database of feature films in which filming occurred between January 1, 1990, and December 31, 2022, and took place, at least partially, in the United States. We use the 1990–2008 data in our alternative “but-for” analysis below. We selected featured films that contained budget information, for a total of 5,291 featured films. With this raw data, we created state by year estimates of the number of featured films, the average budget per location, and each state’s respective shares of total films and budget for each year in the United States. A portion of featured films were filmed in multiple locations—different states within the United States as well as internationally. When calculating the average budget per location, we divided evenly the estimated budget into all the locations that the film took place. Regarding the filming dates, we used the year of filming when available, or else the year of release when information on the start of the shooting was missing.

⁵ We extracted from Studio System a database of television series whose season span falls within January 1, 1990, and December 31, 2022, and the filming took place, at least partially, in the United States. With this raw data, we created state by year estimates of the number of television series. No information on budget was available in the Studio System data. A portion of the TV series were filmed in multiple locations— different states within the US

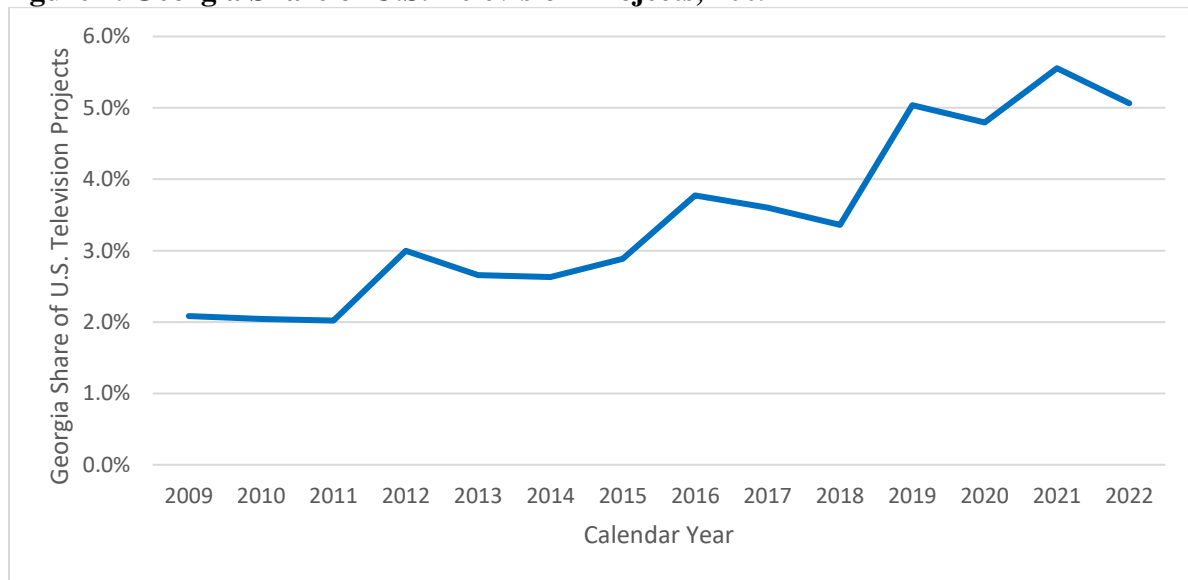
with only a slight pandemic effect in 2022. The combination of decreasing film project and increasing television project shares is consistent with the increase in FTC usage by television and episodic productions since the last FTC audit.

Figure 3. Georgia Share of U.S. Film Projects and Budgets, 2009–22



Source: Studio System and authors’ calculations

Figure 4. Georgia Share of U.S. Television Projects, 2009–22



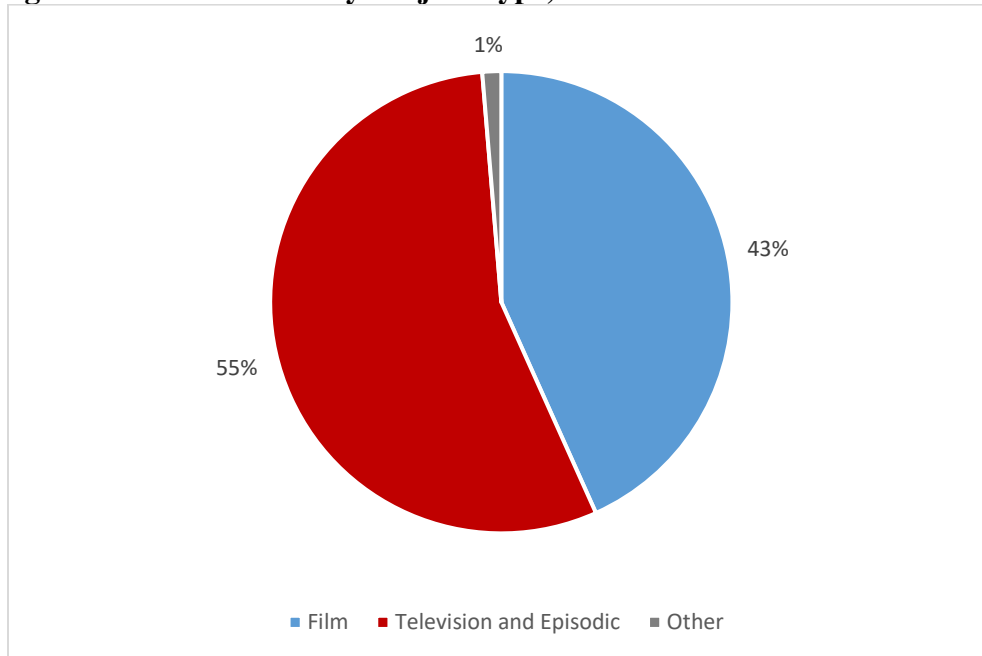
Source: Studio System and authors’ calculations

Figure 5 depicts the share of credits used by film, television, and other types of projects, reported in the 2018–19 GDEcD certification data submitted to DOR. We calculate all projects for which

and internationally. Regarding the filming dates, we used the season span of each series to determine the number of series year by year.

there is a 2018–19 certificate—audited and unaudited.⁶ Television and episodic series, including scripted and reality shows as well as television specials, represent the largest share of incentivized production spending in the state, followed by feature and independent films. Together, television and film production projects utilize 98.7 percent of the FTC. The remaining 1.3 percent of FTC project spending in the “Other” category includes commercials, music videos, and other forms of digital entertainment.

Figure 5. Use of Credits by Project Type, 2018–19



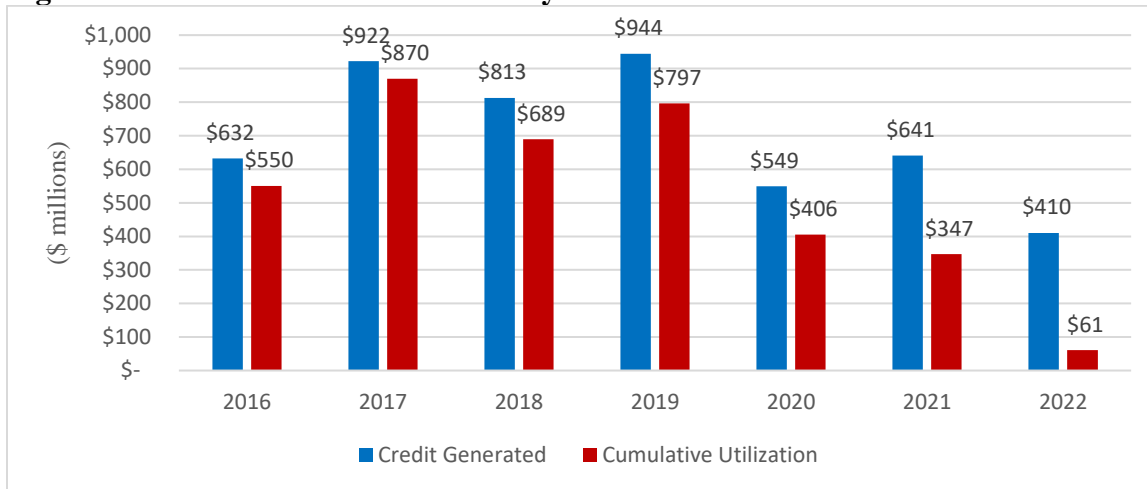
Source: Authors’ calculation from DOR audited and unaudited 2018–19 GDEcD certificates

Tax Credit Activity

The value of FTC credits generated from 2016–22 as well as their lifetime utilization are depicted in Figure 6. The credits may be utilized for up to three years after generation. The figure illustrates the portion of the credits generated in the certificate year that are claimed within the carry forward period. Credits generated in 2018 and afterwards may still be used. Unused credits from those certificate years represent potential future-year foregone tax revenue. Note the number of years allowed for carry forwards was changed in 2020 from five years to three years, and thus, credits generated after the new law’s implementation in 2021 are subject to the three-year rule.

⁶ We exclude 2020 due to the potential that COVID-19 pandemic-related production halts resulted in uses by project type that are not representative of typical activity. We do not use post-2021 data because the DOR certificate does not yet reflect the reported post-2021 GDEcD project activity, and GDEcD declined to provide additional detail by project type.

Figure 6. Tax Provision Related Activity



Source: DOR

Table 1 summarizes the average utilization rate by certificate age calculated from historical DOR data. We use these average utilization rates in our fiscal projections because a credit’s fiscal impact occurs in the year in which it is utilized (not the year in which it is generated).

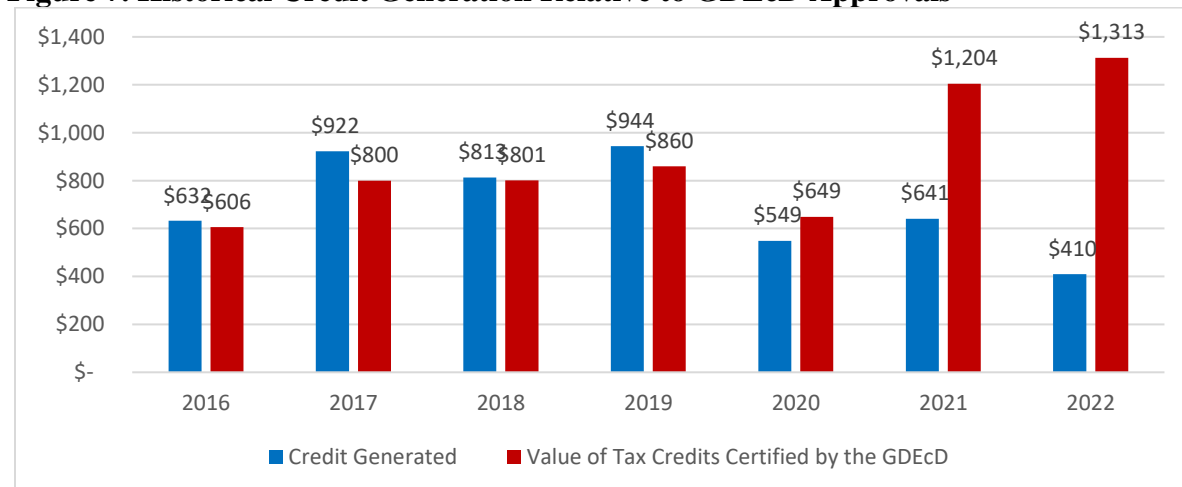
Table 1. Historical Credit Utilization Rates by Certificate Age

Certificate Age:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Utilization Rate:	20.3%	38.3%	25.0%	8.0%	2.80%	0%

Source: Authors’ calculations from historical DOR data

The significant decline in credit generation in recent years, despite significant increases in project related activity, is attributable to timing changes induced by HB 1037. Prior to HB 1037, production spending used by GDEcD to certify tax credits generally occurred in the same year in which DOR generated the credits. HB 1037 requires an audit prior to credit generation for all production commencing after January 1, 2021. Figure 7 illustrates the dramatic decline in 2021 and 2022 credit generation relative to those approved by GDEcD.

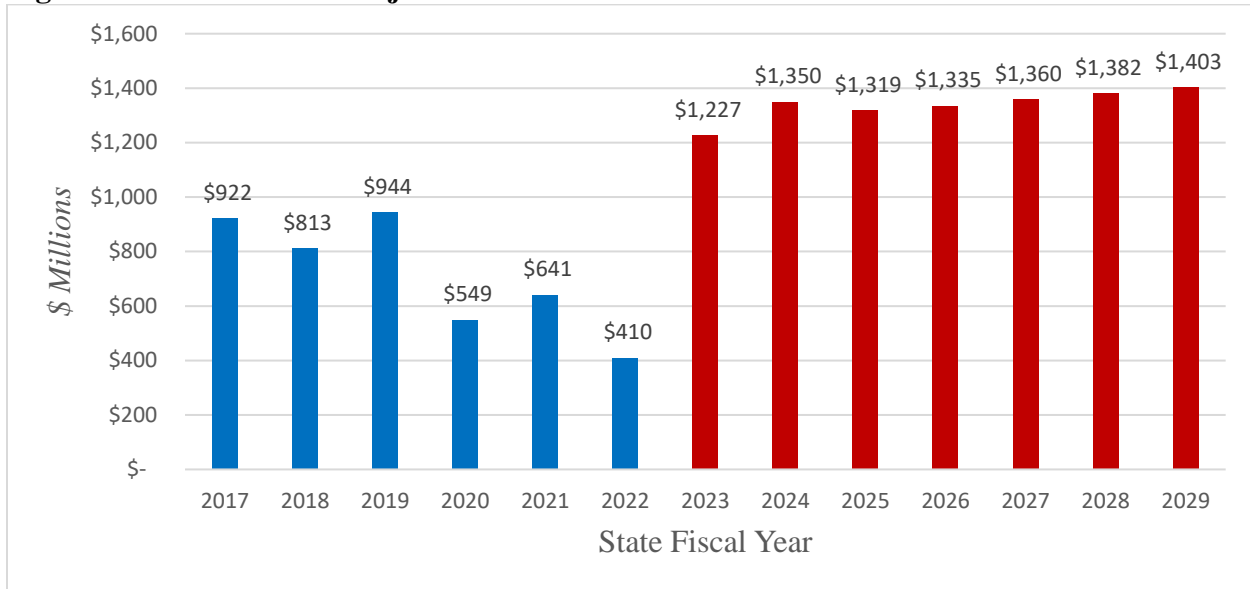
Figure 7. Historical Credit Generation Relative to GDEcD Approvals



Source: DOR and Agency Performance Measures

The decline in credit generation is temporary. A review of project production dates relative to credit generation dates reveals an average two-year lag between production spending and credit generation in the post-HB 1037 environment.⁷ Figure 8 incorporates this lag into calculations of future credit generation. Based upon current GDEcD project data and projected spending growth, it is expected that the FTC will generate more than \$1.2–\$1.4 billion in tax credits annually from 2023–29.⁸

Figure 8. Historical and Projected Credit Generation



Source: Historical data from 2017–22 from DOR data; projections are authors’ calculations

Table 2 allocates the estimated fiscal year tax expenditures (credits utilized) between individual and corporate income taxes, based on historical patterns in DOR utilization reporting by tax type. The majority portion of credits is utilized by individual taxpayers. This shows that most production companies end up transferring a significant amount of the credits to individuals, rather than firms—a somewhat surprising result.

Table 2. Credit Utilization/Tax Expenditure Estimates by Tax Type, FY 2024–28

(\$ millions)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Individual	\$484.3	\$648.4	\$754.4	\$800.7	\$810.9
Corporate	\$278.6	\$373.1	\$434.0	\$460.7	\$466.5
Total	\$762.8	\$1,021.5	\$1,188.4	\$1,261.4	\$1,277.4

Source: Authors’ calculations and historical DOR data

⁷ The lag between audit and production will also likely smooth the impact of recent industry strikes on future credit generation, as delayed projects join the queue for audits.

⁸ The annual growth rate is based on IBISWorld projected national industry growth, assuming Georgia maintains its current industry share.

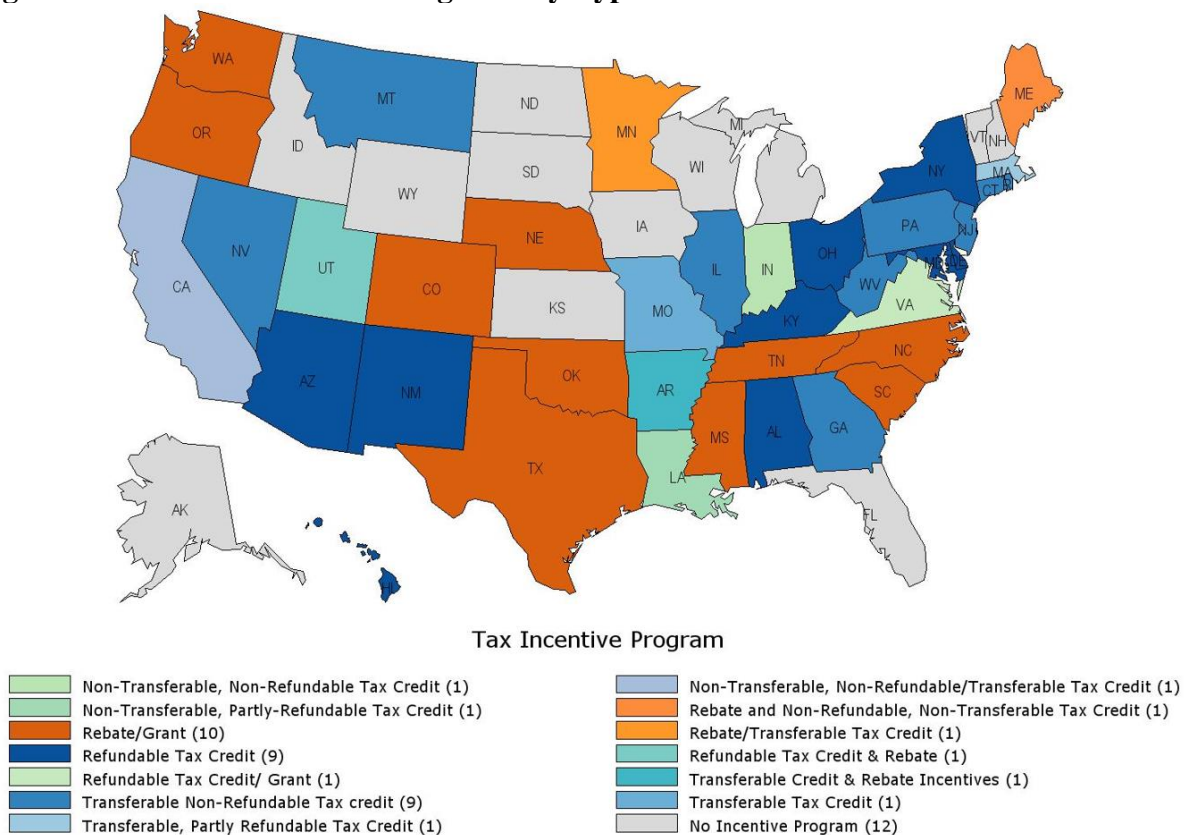
4. Similar Programs in Other States

Variation in State Film Tax Credit Programs

States began establishing tax incentive programs to draw the film and television industry in the 1990s as California's production expenses rose. In 1992, Louisiana implemented the first state tax incentive program for the film industry, and by 2009, similar arrangements had been approved by 44 states and the District of Columbia, though several states have since repealed or suspended their programs. Currently, 22 states or U.S. territories offer film tax credits, and 38 states offer some kind of incentive for the creation of television, video, and film.

In general, states offer film incentives in the form of 1) tax credits, 2) rebates and grants, or 3) some combination. Tax credits are used to offset state tax liabilities, while rebates and grants are direct payments to the production company that is tied to qualifying project expenditures. Tax credit programs are further differentiated by whether the credit is refundable or transferable. Refundable credits allow recipients to receive a direct payment for any credits in excess of state tax liability. Transferable credits may be sold or assigned to another taxpayer. Figure 9 illustrates the variation in film incentive program types across the United States.

Figure 9. State Film Incentive Programs by Type



Source: Authors' review and analysis

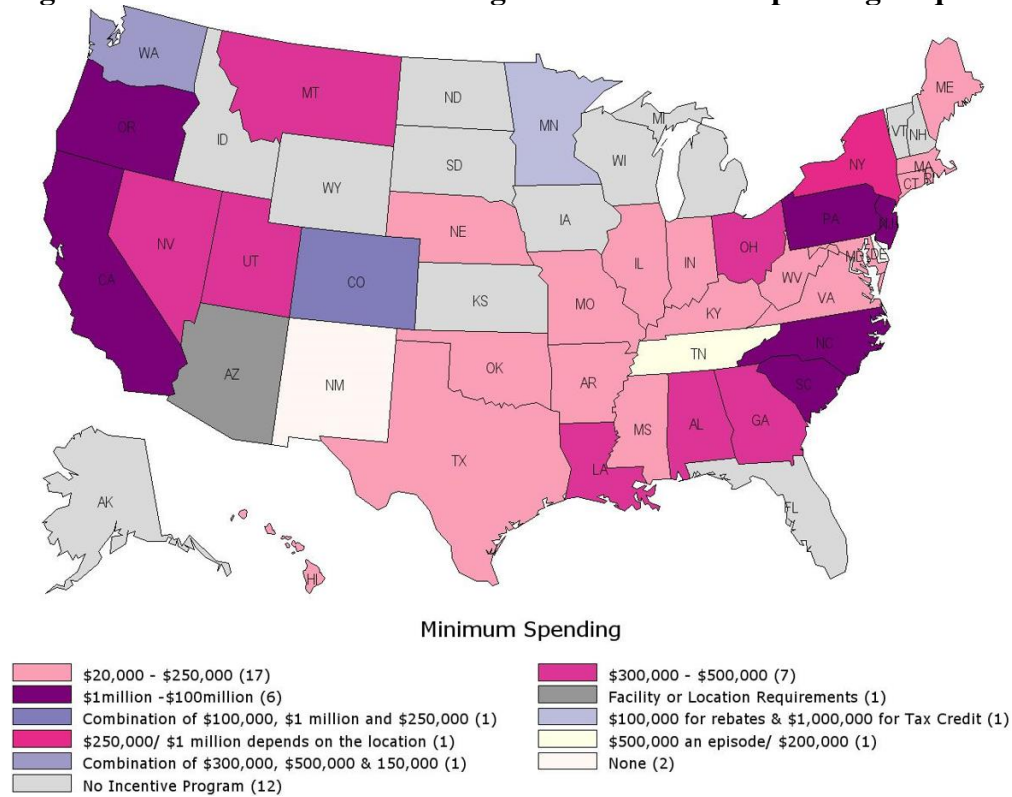
The main features of film incentive programs across the states are summarized in Appendix A. State programs also vary with respect to:

- *Rate.* The percentage of qualified expenditures for which companies receive the incentive varies from a low of 5 percent for small budget productions in Texas to a high of 45 percent of wages paid to Louisiana residents. Many states vary rates based upon the type of expenditure as well as differentiate between resident and non-resident labor, in-state and out-of-state suppliers, and above-the-line or below-the-line expenses.⁹ For example, South Carolina’s tax rebate is 30 percent for in-state goods and services versus 25 percent for out-of-state, and 25 percent for resident wages versus 20 percent for non-resident.
- *Minimum spending requirements.* The minimum required spending for a production to qualify for a state’s incentive program ranges from a low of \$20,000 for documentary projects in Kentucky to \$1.5 million per project in North Carolina. Georgia’s \$500,000 minimum spending requirement for films is the most frequently seen minimal spending for films and television series and slightly above the mean value. Figure 10 illustrates the variation in minimum spending requirements across states, depicting requirements for any project qualifying for state film incentive programs; however, some states have different minimum spending requirements for different project types, local and out-of-state production companies, and targeted locations.
- *Eligible Expenses.* Like Georgia, most state incentive programs are based on total production spending (labor and non-labor). However, some states differentiate between spending with out-of-state companies or non-resident labor. For example, non-resident wages and salaries are not eligible for the tax credit/rebate program in Utah.
- *Annual company or project caps.* Approximately one half of state film incentive programs include an annual limit on individual project or company expenditures eligible for the credit, ranging from \$5 million to \$50 million.¹⁰
- *Annual aggregate caps.* Georgia is one of only five states with a program that does not have an annual aggregate cap limiting the value of potential tax credits. Figure 11 illustrates the variation in annual aggregate cap amounts.

⁹ Above-the-line expenses typically include fixed-rate payments to directors, screenwriters, executive producers, principal cast, and others involved in primary creative decisions. Below-the-line refers to remaining expenses, including “extras,” services, technical crew, etc.

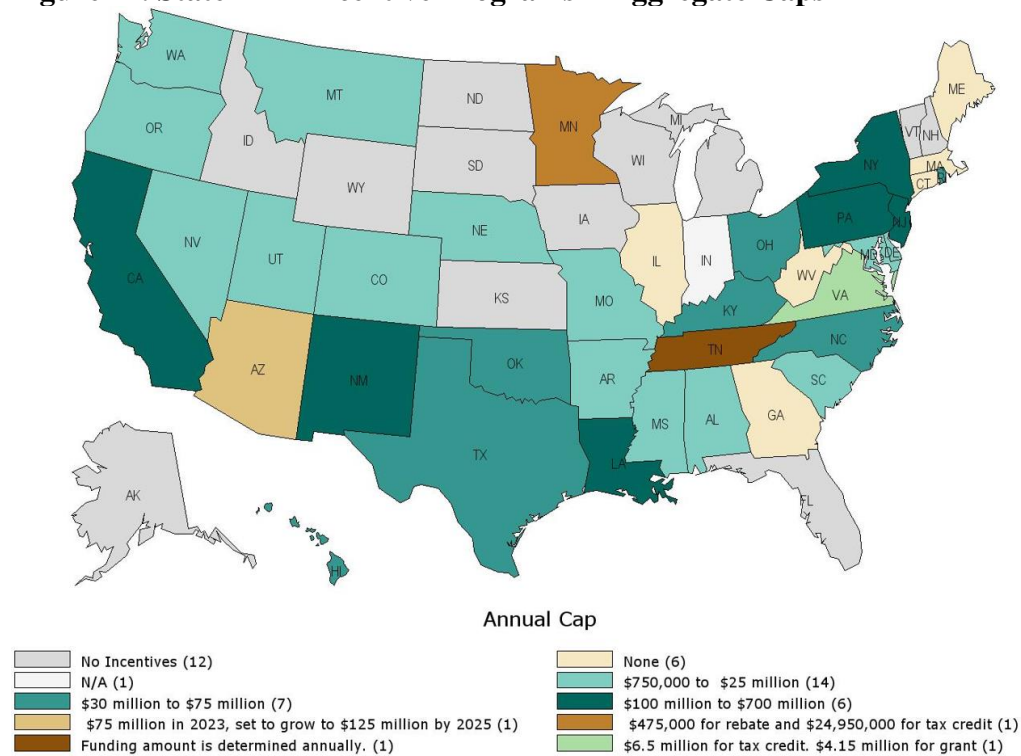
¹⁰ Nebraska has a \$400,000 project cap for its grant program.

Figure 10. State Film Incentive Programs – Minimum Spending Requirements



Source: Authors' review and analysis

Figure 11. State Film Incentive Programs – Aggregate Caps



Source: Authors' review and analysis

Studies of Other States' Programs

A number of state film incentive program studies exist, including peer-reviewed academic publications, legislative audits, and industry studies. In this section, we briefly discuss the general findings. Appendix B contains additional summaries of specific studies.

Button (2019) analyzes all state film incentive programs in the United States, relating adoption to changes in feature film and television series production as well as establishment, wage, and employment. Button's research design is one of the more credibly causal of the reviewed studies. He finds that film incentives, on average, significantly increase television series filming after adoption; however, he finds no significant effect on feature films or employment, wages, and establishments in the film industry.¹¹ Thom (2018a) employs a similar research design and reaches similar conclusions, with transferable tax credits having a small employment effect, refundable tax credits having temporary wage effects, and no other effects on wages, output, employment, or industry concentration.

Owens and Rennhoff (2018) study film incentives through a discrete choice framework and find that incentives are effective at attracting production spending. They also note differences in the effects of incentive types for different kinds of studios. Independent studios did not respond to any type of incentive. On the other hand, all forms of incentives attracted medium-sized studio production. Major studios increased production only in response to refundable and transferable tax credits. However, they also find that successful attraction of production does not create a permanent film industry in the state and comes with significant state revenue losses. For the 29 states analyzed, fiscal return on investment ranged from 0.03–0.77.

Several peer-reviewed studies examine specific state programs, rather than estimate an average effect across states. Button (2021) uses a synthetic control research design to causally estimate the effects of Louisiana and New Mexico's film incentives. Louisiana and New Mexico are interesting case studies because they were early adopters of film incentives. The findings are similar to the average effects studies, with no significant changes in employment or establishments. Unlike the average effect studies, the case studies indicate no changes in television series filming but a statistically significant increase in feature film production. These studies use more robust methods than the average effects studies, but the different results highlight the ambiguity of the impact of such state film tax incentives.

Thom (2019) focuses on the five states that comprised 77 percent of all U.S. tax expenditures on film incentives in 2017: New York, Louisiana, Georgia, Connecticut, and Massachusetts. He finds mixed results using an interrupted time-series method, with Connecticut experiencing an initial increase in employment that dissipates over time, Louisiana experiencing a more gradual and sustained increase in employment, and no effect in the other states.

¹¹ The increase in television series filming ranges from 0.67 to 1.5 additional TV series, and this does not appear sufficient to generate significant employment, wage, and establishment effects. Button (2019) utilizes Quarterly Census of Employment and Wages (QCEW) data to estimate the employment, wage, and establishment results. He conducts robustness tests using County Business Patterns data on employment and establishments as well as using alternative specifications and controls with both data sets. In general, the effects are statistically indistinguishable from zero; however, there are known problems using the QCEW data for analyzing the industry, including that the data do not include contract employment or wages. Given the prevalence of contract work in the industry, this issue likely contributes to the lack of statistically significant employment, wage, or establishment effects.

These findings contrast those in Workman’s (2021) investigation of (changes to) California’s film incentive programs. Exploiting random variation in the allocation of tax credits through a lottery process, he finds that the tax incentive increases the probability that a film is made in California and significantly increased overall production spending and employment. Similarly, Meares et al. (2020) study Georgia and find increases in employment, wages, establishments, and the number of productions.

In addition to the peer-reviewed publications evaluating state film incentive programs, there have been many evaluations conducted on behalf of state legislatures, state agencies, and industry groups. These evaluations generally include information on economic impact, calculated from estimates of production activity benefiting from the incentive. Most also include a net fiscal impact calculation that relates the cost of the incentive program to the additional tax revenue generated by the incentive-related economic activity—the fiscal return on investment (ROI) for the state. Rarely, the evaluations will consider the alternative uses of film incentive program expenditures or the fact that some incentivized productions would have occurred in the absence of the credit.

Three recent reviews of state evaluations (Christopherson and Rightor, 2010: 14 state evaluations; Tannenwald, 2010: eight state evaluations; and Thom, 2018b: nine state evaluations) all reach the same conclusion that states lose money with these programs. Fiscal ROI ranges from 0.07–0.28. The only exception among the reviewed evaluations were two EY studies, funded in part by the Motion Picture Association, which found positive fiscal returns for New York and New Mexico.

We reviewed additional state evaluations and calculated the fiscal ROI in those reports, reaching a similar conclusion. Fiscal ROI ranges from 0.10–0.56 for all additional studies, with the exception of a 2014 Maryland Film Industry Coalition study that suggests a positive ROI of 1.05.

5. Economic Activity

Overview of How Economic Activity Is Measured

We measure economic activity using data on production spending as well as on studio construction and tourism. The latter do not receive the FTC; however, they are related activities that may be attributable to the productions incentivized by the FTC. For the purpose of estimating economic activity, we use 2022 as the representative year. We calculate the net effect of the state-level credit by assuming that 92.1 percent of the economic activity is attributable to the FTC and then subtracting the estimated economic activity associated with an alternative use of the funds. Table 3 summarizes the estimated economic activity. The remainder of this section provides details.

Table 3. Net Economic Activity – Film Production, Tourism and Construction

<i>(\$ millions)</i>	Employment*	Labor Income	Value Added	Output
Gross Activity for Period	22,702	\$1,407,984,673	\$2,516,277,327	\$4,889,613,821
Less: “But-for” Reduction	1,793	\$111,230,789	\$198,785,909	\$386,279,492
Activity Net of “But-for”	20,909	\$1,296,753,883	\$2,317,491,419	\$4,503,334,329
Less: Alternative Use Impacts	27,679	\$1,241,531,644	\$1,477,580,566	\$2,249,327,663
Net Economic Impact	-6,770	\$55,222,240	\$839,910,852	\$2,254,006,667

Source: IMPLAN and authors' calculations

* Employment activity includes temporary jobs such as those associated with construction activity.

IMPLAN Model

To estimate the economic impact of the FTC in Georgia, the IMPLAN model is used. IMPLAN is a regional input-output model that is used to estimate how an initial change in spending or revenue for any industry category works its way through a regional economy. It also has data on the size of each industry in the economy in terms of revenue and employment at the state and county level. This analysis uses IMPLAN model data for a representative year production spending.

The model uses sector multipliers to estimate the impact of the initial spending by firms on suppliers of goods and services to the sectors of interest. Below is a discussion of the relevant IMPLAN terms used in the report.

- *Output* is the value of production. This includes the value of all final goods and services, as well as all intermediate goods and services used to produce them. IMPLAN measures output as annual firm-level revenues or sales, assuming firms hold no inventory.
- Estimates of output changes resulting from all film production economic activity, including construction and film tourism, are then used to estimate state and local sales tax revenue.
- *Labor income* includes total compensation—wages, benefits, and payroll taxes—for both employees and self-employed individuals. Wage-gain estimates are used to estimate incremental state income tax revenue.
- *Employment* includes full-time, part-time, and temporary jobs, including the self-employed. Job numbers do not represent full-time equivalents, so one individual may hold multiple jobs.
- Three changes (effects) comprise the *total impact* and can be calculated for relevant construction activity reviewed (output, employment, and labor income):
 - *Direct effects* are the changes that initiate the ripple effect. For purposes of this analysis, direct effects are increased firm output (revenue) directly attributable to construction activity and the associated firm employment and labor income supported by this output.
 - *Indirect effects* are the economic activity supported by business-to-business purchases in the supply chain for construction activity firms. For example, a construction firm purchases raw materials and equipment needed in its building activity. Each of the supplying businesses subsequently spends a portion of the money they receive on their own production inputs, which in turn prompts spending by the suppliers of these inputs. This spending continues but progressively decreases due to “leakages,” which occur when firms spend money on imports (including imports from other states), taxes, and profits.
 - *Induced effects* are economic activity that occurs from households spending labor income earned from the direct and indirect activities. This activity results from household purchases on items such as food, healthcare, and entertainment. The labor income spent to generate these effects does not include taxes, savings, or compensation of nonresidents (commuters) as these leave the local economy (leakage).

Production-related Impacts

The tables below show the gross economic impact from three different activities. The first is that of the FTC. This estimate reflects our analysis of how the \$4.4 billion in film industry total spending is allocated between various factors.

Data on production-related expenses associated with the FTC were obtained from Agency Performance Measure reports. We chose 2022 as the representative year for production spending of \$4.4 billion and then allocated production spending to inputs and labor using shares from the 2020 DOAA evaluation of the FTC.¹² We next allocated representative-year spending to project type (i.e., film, television, or other) and further allocated film spending into budget quartiles.¹³ We then allocated film budget quartile, television, and other labor expenditures to residents and non-residents, using data from the DOAA report (see Appendix C). Table 4 reports the results of this allocation procedure for the total amount of FTC-related production expenditure, reported by GDEcD, as well as for the 92.1 percent of production spending that would not have occurred without the FTC. The “but-for” percentage is taken from the Olsberg SPI study presented to the Joint Tax Credit Review Panel on October 4, 2023. The percentage is the production spending-weighted average of survey responses regarding the FTC’s role in the locational decision.

Table 4. Direct Production Spending Allocation

	Top Line Estimate	"But-for" 92.1%
Estimated Spending 2022	\$4,400,000,000	\$4,052,400,000
Estimated Spending Inputs	\$1,320,000,000	\$1,215,720,000
Estimated Spending Labor	\$3,080,000,000	\$2,836,680,000
Estimated Resident Labor	\$1,508,808,545	\$1,389,612,670
Estimated Non-resident Labor	\$1,571,191,455	\$1,447,067,330

Table 5 reports the economic impact of the FTC productions’ gross spending. The economic impact reflects the \$1.32 billion in industry spending on inputs plus roughly 24 percent of that amount as film production firm associated labor, which is treated as an intermediate input to making the film.¹⁴ The remaining resident labor spending is included in the model as additional labor income but is not treated as an intermediate input. Non-resident labor income does not contribute to the economic impact of the credit here. As was discussed thoroughly by DOAA in their report, they found no evidence that non-resident labor participated substantially in the

¹² DOAA was given access to the production expenditures and audits submitted to DOR when performing their audit. The report analyzed these budgets and determined that labor spending comprises approximately 70 percent of production expenditures. We were unable to update this approximation with more current information because DOR did not provide access to similar information.

¹³ We determined the relative share of production spending for each type by analyzing GDEcD project certificate data, as described in Section 3.

¹⁴ Note that production spending on labor and labor income are not the same. Production spending on labor relies on resident labor as an input to the production of a film and is treated like other film inputs, such as a movie set or lighting and sound equipment. As such, it is included in direct effects and, in turn, generates indirect and induced effects. Labor income is merely additional wages paid to workers and does not flow through the production process. IMPLAN models this as induced effects only, which is the third-order effect of money flowing through the economy. Additional labor income can be thought of as the film industry hiring workers as independent contractors.

Georgia economy. Instead, these non-residents were supported by production companies, staying in hotels or similar accommodations and generally eating most meals on set.

Table 5 shows the economic impact associated with the representative year 2022 production spending, which are the relevant amounts for the remainder of this analysis. Direct production spending supported 4,900 direct jobs with a total labor income of \$401 million. Production spending supported an additional 14,226 indirect and induced jobs. It should be noted that these do not necessarily reflect full-time employment. FTC production spending also supported \$1.3 billion in total labor income, \$2.3 billion in value added, and \$4.5 billion in total output.

Table 5. Gross FTC Production Economic Impact

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	4,900	\$400,592,872	\$719,530,082	\$1,642,029,832
Indirect Effect	5,185	\$356,988,532	\$629,859,616	\$1,237,455,412
Induced Effect	9,041	\$504,673,263	\$937,716,774	\$1,595,665,945
Total Effect	19,126	\$1,262,254,667	\$2,287,106,472	\$4,475,151,189

Source: IMPLAN and authors' calculations

To put our estimates of employment and output in context, we offer several other estimates of the size of the Georgia film industry. IMPLAN estimates the size of the Georgia film industry at roughly \$8 billion in output, employing roughly 24,000 with labor income of \$1.96 billion in 2021. Data from the Quarterly Census of Employment and Wages (QCEW) lists employment at roughly 21,000 in 2022 with wages of \$1.88 billion. Based on these QCEW estimates, the size of the film industry is approximately \$7.7 billion.

Our estimates using direct film industry spending of \$1.64 billion supports 4,900 jobs in the film industry. Both these estimates correspond to roughly 20 percent of total industry revenue and employment, based on IMPLAN and Census estimates. The remainder of the spending, \$1.19 billion, goes to Georgia resident labor income.

It is generally understood that these workers are paid as contract employees—thus, there is little data on the industries they work in. It is possible that most would be classified as working in the film industry. If we take the average annual wage per job based on IMPLAN and Census data and divide that into the \$1.19 billion, we get an estimate of nearly 14,600 jobs supported by this spending in the film industry. Therefore, the 4,900 direct industry jobs and the possible 14,600 film industry jobs from the \$1.19 billion labor spending generate about 19,500 jobs, which is in line with both IMPLAN and Census estimates for industry size.

Note these 14,600 jobs are not reflected in the IMPLAN model for induced effects, as those only measure the third-order spending of the additional \$1.19 billion in the economy. This traces how consumers spend money in the economy—for instance, on housing, healthcare, food, restaurant meals, etc. This spending supports jobs in the above sectors, housing, healthcare, retail, and many others. IMPLAN estimates the total number of these third-order induced jobs to be 9,000 from the total of \$2.83 billion spent on Georgia labor and inputs by the film industry. Again, these induced jobs do not include the potential 14,600 jobs to which the \$1.19 billion in additional wages initially went.

Additional Construction and Tourism Related Impacts

The next two tables show the economic impact of film tourism and construction associated with film industry spending in the representative year of 2022.

Table 6 reports the gross impact for tourism-related activity. Data for film tourism are not readily available for recent years. We use the estimates from the 2020 DOAA report of \$146 million. We note this is still a *generous* estimate—comparable to the estimated \$200 million spent in FY 2022 by out-of-state visitors attending all events at the Georgia World Congress Center and Mercedes-Benz Stadium (including conventions, Atlanta Falcons and Atlanta United games, as well as college football games).

Table 6. Gross FTC Tourism Economic Impact

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	2,000	\$48,315,583	\$79,357,784	\$146,000,000
Indirect Effect	386	\$25,794,156	\$41,749,178	\$75,886,423
Induced Effect	371	\$20,730,602	\$38,515,224	\$65,540,970
Total Effect	2,758	\$94,840,340	\$159,622,186	\$287,427,392

Source: IMPLAN and authors' calculations

Table 7 shows the economic impact of construction activity estimated to have occurred during representative year, using 2022 spending. It should be noted that construction activity associated with industry is very volatile. Appendix D details the square footage of stage space in purpose-built and conversion buildings from FY 2012–22. Over one half of the additional stage space was added in just three years (FY 2014–16). We allocate the \$1.28 billion in studio construction spending from FY 2012–22 on a square-footage basis across the period. This process generates \$65 million in construction spending for representative year 2022.

Table 7. Gross FTC Construction Economic Impact

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	506	\$31,292,275	\$34,329,900	\$64,549,432
Indirect Effect	112	\$8,468,240	\$14,548,590	\$27,308,789
Induced Effect	200	\$11,129,151	\$20,670,180	\$35,177,019
Total Effect	818	\$50,889,666	\$69,548,670	\$127,035,240

Source: IMPLAN and authors' calculations

“But-For” Analysis

As is common in economic impact analyses using IMPLAN or similar models, many estimates do not address the “but-for” question:

But for the Georgia FTC, would these productions have been undertaken?

That is, how many of the projects (and thus estimated gains) occur *only* because of the Georgia FTC incentive, and how many of the projects would have occurred even *in the absence* of the state credit? If projects that would have occurred anyway are included in the economic impact estimates, then those estimates are necessarily overstated.

The analysis of gross activity in Table 5 assumes a “but-for” percentage of 92.1 percent, based on the results of the survey by creative industries consultancy Olsberg SPI. The “but-for” percentage is the proportion of gross activity induced by the Georgia FTC. However, 92.1 percent is substantially higher than the “but-for” percentages in the literature. We therefore use econometric methods to estimate alternative “but-for” percentages using data on employment, wages, establishments, shares of U.S. film projects and budgets, and shares of U.S. television projects. While our primary analysis utilizes the industry percentage estimate, our alternative method indicates that the “but-for” percentages have increased over time—that is, as spending has increased over time, the incentive has become more important to the spending.

Data and Methods

Several econometric methods are available to estimate the impact of exposure to a particular policy, especially when the unit of analysis is available in a panel structure (information available for the same unit over time)—as is the case of states. The main idea is to determine what would have happened to treated units if they had not received the treatment or had not been exposed to the policy. That is the so called *counterfactual* scenario. The goal then is to compare outcomes in treated units with untreated ones.

We used the synthetic control method to analyze the effect of the FTC because this method is commonly used when a single treated unit is observed—in this case, Georgia. The goal is to build a matched “synthetic Georgia” from a larger number of potential donor units (states that did not have film incentives), producing a weighted combination of these underlying control units so that the synthetic Georgia is as closely matched as possible to the actual Georgia in pre-treatment outcomes (i.e., employment, wages, establishments, share of films produced, and share of budget involved before 2008). The weights are optimally generated and fixed over time. We present the main results for the estimation using the synthetic control method, although, we also performed additional analyses with estimators such as difference-in-differences and synthetic difference-in-differences. The results were similar when using these additional methods.

Data on employment, wages, and establishments for the motion picture production industry comes from QCEW, collected by the U.S. Bureau of Labor Statistics. Our estimates consider solely private business establishments. Following Button (2021), data on motion picture production fall under the six-digit NAICS level (512110) and four-digit SIC level (7812) for the period of analysis.

Studio System provided proprietary data on Georgia’s share of U.S. film projects and budgets as well as Georgia’s share of total production, as discussed in Section 3.

Results

We chose a pool of donor states—which did not have a film incentive during the study period and are therefore control states—and potential donors.¹⁵ Appendix E indicates the weights of the donor states used in each specification. The list of potential donor states includes all those without film tax incentives, but only certain states are used in each specification based on the weighting system. These chosen states are then the actual donor states. The main requirement for a valid causal interpretation is that the synthetic Georgia closely approximates the pre-incentive outcomes in Georgia. Appendix E reports the weights for each of our outcomes as well as visually represents the results of our synthetic control estimates. The difference between actual Georgia outcomes and synthetic Georgia are virtually indistinguishable prior to the 2008 change in the FTC. The figures also demonstrate significant gains in outcomes after 2008, with the most dramatic increases occurring in 2014 onward.

To calculate the “but-for” percentages implied by our estimates, we take the difference between Georgia and synthetic Georgia and represent this difference as a share of the actual outcomes in Georgia for each year. To interpret these as the causal effect of the FTC, one must assume that nothing else occurred that differentially influenced Georgia’s film industry outcomes. Table 8 summarizes the results. The estimates range from essentially 0 percent, indicating that all of the activity would have occurred in the absence of the incentive, to 100 percent for the last few years of film shares and budgets. Estimates for establishments are on average the smallest and indicate that 11–30 percent of new establishments are attributable to the FTC. On the other hand, the FTC appears to induce the bulk of film activity and, more recently, television projects.

The average is approximately 65 percent, with the general trend suggesting an increasing share of all outcomes would not have occurred without the FTC. The finding that the “but-for” percentage is increasing, rather than decreasing, over time runs counter to the idea that incentives act to establish a nascent industry that will eventually reach a point where support is no longer needed. One caveat, however: We cannot rule out the possibility that the industry reached a sustainable point during the study period and favorable factors associated with industry concentration are being attributed to the FTC.

¹⁵ Our potential donor states for Table 8 included Florida and Alaska, both of which temporarily had film incentives during the study period. We repeated the exercise excluding Florida and Alaska. Our findings are similar to those in Table 8, with slightly higher “but-for” percentages. However, the pre-period fit is not as precise. We include those results in Appendix F.

Table 8. Synthetic Control “But-for” Estimates by Outcome and Year

	Employment	Wages	Establish-ments	Share of U.S. Films	Share of U.S. Film Budgets	Share of U.S. TV Series	Average
2009	29.43%	43.44%	10.72%	14.07%	85.95%	-0.84%	30.46%
2010	31.47%	53.81%	11.86%	82.60%	90.52%	-0.84%	44.90%
2011	36.91%	56.11%	17.20%	86.18%	90.48%	-7.23%	46.61%
2012	42.16%	56.95%	17.78%	86.00%	89.59%	28.51%	53.50%
2013	53.30%	66.38%	18.80%	92.03%	91.91%	24.25%	57.78%
2014	48.33%	40.00%	22.15%	93.39%	98.33%	37.42%	56.60%
2015	74.05%	70.50%	29.61%	98.42%	98.18%	41.51%	68.71%
2016	76.32%	81.10%	33.85%	93.64%	99.23%	61.07%	74.20%
2017	81.81%	85.62%	28.48%	99.37%	99.10%	61.07%	75.91%
2018	81.48%	85.31%	35.13%	99.39%	94.87%	61.07%	76.21%
2019	84.43%	86.80%	35.15%	93.45%	97.48%	75.93%	78.87%
2020	79.91%	81.46%	37.16%	98.64%	100.00%	81.57%	79.79%
2021	86.81%	89.10%	35.44%	100.00%	100.00%	84.57%	82.65%
2022	84.56%	89.01%	32.22%	100.00%	100.00%	86.71%	82.08%
Average	63.64%	70.40%	26.11%	88.37%	95.40%	45.34%	64.88%

Alternate Use of Forgone Revenue/Tax Expenditure

The induced economic impacts estimated above do not account for forgone state revenues, i.e., the economic impacts of alternative uses of the funds currently expended through the tax exemption. SB 6 requires evaluations of tax incentives to include estimates of *net* economic and fiscal impacts, thus requiring consideration of the economic and revenue effects of alternative uses of the revenues that would be available for other purposes in the absence of the exemption.

Alternatives could include other economic incentives, spending on other policy areas across state government, or a reduction in taxes—all of which could also result in direct, indirect, and induced economic effects. However, absent information as to how the General Assembly would otherwise choose to spend foregone revenue if not on the FTC, we estimate the impact of using the revenue to fund an equivalent increase in state government spending in proportion to existing expenditures. That is, we allocated the foregone revenue to industry sectors as direct effects based on the sector shares of spending in the state budget. The two largest categories of spending—education (57 percent) and healthcare (23 percent)—account for about 80 percent of the state budget.

As shown in Table 9 below, if the state received the forgone revenue associated with the excluded FTC and spent the money, it could be expected to generate approximately \$2.2 billion in gross output. This estimate includes \$1.08 billion in annual direct government outlays, the FY 2021 estimated tax expenditure for the exemption, plus the amounts shown for indirect and induced effects resulting from the initial, direct outlays.

Table 9. Summary of Alternative Use Economic Impacts

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	21,192	\$872,709,586	\$813,092,617	\$1,083,319,082
Indirect Effect	1,654	\$98,129,505	\$161,693,723	\$309,902,969
Induced Effect	4,833	\$270,692,553	\$502,794,226	\$856,105,612
Total Effect	27,679	\$1,241,531,644	\$1,477,580,566	\$2,249,327,663

Source: IMPLAN and authors' calculations; spending shares based on FY 2022 Governor's Budget Report

6. Fiscal Impact

A summary of the fiscal impacts of the FTC is presented in Table 10 below. We then detail the estimates of the revenue effects of FTC economic impacts and of the opportunity cost of the tax expenditure—the revenues that could be expected from the alternate use of funds. The detailed estimates are projected forward to obtain the amounts below.

Table 10. Fiscal Impact Summary*

<i>(\$ millions)</i>	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Tax Expenditure Cost					
State	-762.8	-1,021.5	-1,188.4	-1,261.4	-1,277.4
Revenue Gains from Economic Impact*					
State	\$224.69	\$251.21	\$280.85	\$313.99	\$351.04
Local	\$65.74	\$73.50	\$82.17	\$91.87	\$102.71
Alternative Use Reduction					
State	-\$80.0	-\$89.4	-\$100.0	-\$111.8	-\$125.0
Local	-\$36.5	-\$40.8	-\$45.6	-\$51.0	-\$57.0
Net Fiscal Effects					
State	-\$618.1	-\$859.7	-\$1,007.5	-\$1,059.1	-\$1,051.4
Local	\$29.2	\$32.7	\$36.5	\$40.9	\$45.7
Total Net Fiscal Effects	-\$588.9	-\$827.0	-\$971.0	-\$1,018.3	-\$1,005.7
State ROI	0.19	0.16	0.15	0.16	0.18

*reflects adjustment for “but-for” estimate of 92.1 percent

Revenue Impacts

Forgone Revenue

We estimate foregone revenue associated with project expenditures of the representative year, outlined below in Table 11 estimating FTC generation and utilization. In 2021, per HB 1037, new rules require that FTC certificates must go through an audit before approval. Using DOR data from previous years, we determined that the lag period between industry spending and credit generation is approximately two years.

Table 11. Estimated Tax Expenditures for Representative Year Projects

Film Spending	\$4,400,000,000
Credit Generated (2-year Average Lag) ¹⁶	\$1,349,734,480
Discount Rate 2022 (10-year Treasury)	3.88%
Year Relative to Production Spending	Credit Utilization
Year 0	\$0.00
Year 1	\$0.00
Year 2	\$273,996,100
Year 3	\$516,948,306
Year 4	\$337,433,620
Year 5	\$145,771,324
Year 6	\$0
Year 7	\$0
Total	\$1,274,149,350
Credit Utilization (Over 5-year Period)	94.40%
Net Present Value	\$1,083,319,081

Source: DOR data and authors' calculations

Table 12 uses the estimated credit utilization patterns to estimate future FTC tax expenditures. To estimate the credits generated in CY 2023, we use the industry film spending in CY 2021 of \$4.0 billion, which generates estimated credits of \$1,227,031,346. We then assume industry spending grows each year such that Georgia maintains a constant share of IBISWorld industry revenue projections. We assume no changes to the FTC when calculating the credit generation for subsequent years. We then take into account our estimated credit utilization pattern, including the lag between production spending and credit generation, to estimate FTC tax expenditures. As seen in Table 12 and discussed previously, there is a dip in FY 2023 and FY 2024 tax expenditures, which is expected to be temporary, due to HB 1037 audit requirements.

Table 12. Estimated Tax Expenditures

(\$ millions)	2023	2024	2025	2026	2027	2028
Revenue Effect - CY/TY	\$645.0	\$939.6	\$1,144.3	\$1,254.6	\$1,271.5	\$1,286.3
Revenue Effect - FY	\$601.5	\$762.8	\$1,021.5	\$1,188.4	\$1,261.4	\$1,277.4

Source: DOR data and authors' calculations

Additional tax revenue is generated through direct FTC project expenditures and may also be generated by associated activities in studio construction and film tourism. The following subsections detail our estimation of these revenue impacts. We also estimate the additional tax

¹⁶ Spending data is obtained from GDEcD representative year. The ratio of credit to spending is calculated from historical GDEcD data on spending and DOR data on actual credit generation. The fact that this ratio is greater than 30 percent likely reflects differences in the spending initially approved by GDEcD and final (audited) expenditures submitted to DOR for credit generation.

revenue associated with the alternative use scenario outlined in the economic activity section of this report.

Additional Tax Revenue, Project Expenditures, Studio Construction, and Film Tourism

Table 13 shows estimates for state and local tax revenues attributable to economic activity associated with the FTC for the base year of FY 2022. State income tax is estimated using employee compensation generated by IMPLAN. The labor income estimated in the broader consumer-facing economy is comprised mostly of service workers, where the average labor income is approximately \$48,000 per job. Based on Georgia DOR tax data, specifically net tax liability relative to adjusted gross income (AGI) for taxpayers with AGI of \$45,000–\$90,000 in tax year (TY) 2022, we assume an average effective tax rate (AETR) under current law of 3.89 percent on labor income estimated for in-state residents. For this group of resident Georgia income-tax payers, the estimated income tax is roughly \$56 million—this is for all economic impacts, film industry, construction, and film tourism, adjusted by the “but-for” estimate of 92.1 percent.

Out-of-state residents are separated into two groups. The first group includes those paid as contractors or through out-of-state companies, which has similar average wages to the Georgia residents discussed above. The second group includes those paid through loan-out companies. Production companies must withhold Georgia income tax at a rate of 5.75 percent for payments to loan-out companies. This group is estimated to be high-income individuals and to account for most of the out-of-state income. It is further assumed that this amount of Georgia taxes paid will be used as a credit by the residents’ home states, and thus even if the taxpayer is due a refund on state taxes, it will come from only the home state. Based on estimates of the shares of each of these two groups in terms of wages, our estimated AETR is 5.5 percent. For this group of non-resident Georgia income-tax payers, the estimated income tax is roughly \$79.6 million—this is only the impact of the film industry adjusted by the “but-for” estimate of 92.1 percent, as this labor income is deemed to have no other impact on the Georgia economy.

IMPLAN incorporates estimates of sales and property taxes. However, the model relies on levels of economic activity rather than sales or property tax rates and tax bases. Thus, they are not our preferred estimates. Instead, to estimate sales tax revenues, we use the model’s estimated incremental output for various retail sectors and adjust for the taxable portion of sector sales to arrive at estimates of taxable sales. For retail sectors, IMPLAN reports as output only the retail gross margin, not the total sales at retail, so these estimates are grossed up using average gross margin rates from IMPLAN for each retail sector to arrive at estimated sales to which the tax would be applied. The state sales tax is calculated using the state sales tax rate of 4 percent and the local sales tax is calculated using an average local sales tax rate of 3.37 percent, the population-weighted average as of July 2022, according to the Tax Foundation. The state and local sales tax estimates for the base year are also shown in Table 13.

To estimate the additional property tax due to the economic activity associated with the tax exemption, we calculate the ratio of the IMPLAN estimate of sales tax to our preferred estimate of sales tax above and apply this to the IMPLAN estimate of property tax revenue. This estimate assumes that economic activity generating IMPLAN’s sales tax estimates is like that which generates the property tax—thus, this estimate should be treated cautiously.

Finally, about 81 percent of Georgia state tax collections is from personal income and state sales taxes. Georgia collects a host of other taxes that make up the remaining 19 percent, on average. Two taxes make up about one half of the 19 percent: corporate income tax and title ad valorem tax (TAVT) on motor vehicles. Table 13 shows the base-year estimated revenue from these other taxes, assuming a proportional effect such that the 19 percent of total tax revenues holds for the economic activity resulting from the FTC. Note that out-of-state income tax is not applied to this estimate of other state taxes because the wages that generated this out-of-state tax revenue did not flow through the Georgia economy.

Table 13. State and Local Tax Revenue, Project Spending, Tourism, and Construction Activity (\$ millions)

Tax Type	State Revenue	Local Revenue
Income Tax	\$143.3	\$0.0
Sales Tax	\$19.7	\$19.0
Property Tax	\$0.0	\$33.6
All Other State Taxes	\$16.7	\$0.0
Total	\$179.8	\$52.6

Source: IMPLAN and authors' calculations

The sales tax estimates from IMPLAN rely on the level of economic activity rather than sales tax rates and tax bases.

State and Local Taxes Generated from Alternative Use of Funds

New annual tax revenues resulting from the alternative use case are estimated in a similar manner as that generated by project expenditures. Like the construction activity revenues, the alternate use case revenues are nonrecurring because they result from a one-time tax expenditure.

Table 14. State and Local Tax Revenues, Alternative Use of Funds (\$ millions)

Tax Type	State Revenue	Local Revenue
Income Tax	\$40.97	\$0.00
Sales Tax	\$10.56	\$10.14
Property Tax	\$0.00	\$19.07
All Other State Taxes	\$12.46	\$0.00
Total State and Local Tax Estimates	\$63.99	\$29.21

Source: IMPLAN and authors' calculations

Additional Fee Revenue

The FTC does not generate any additional fee revenue that is remitted to the State of Georgia.

Administrative Costs for State Agencies

The FTC is administered by GDEcD and DOR. GDEcD oversees a project's eligibility for the FTC, reviewing the credit application and certifying project eligibility. GDEcD also verifies that the promotional uplift requirement has been met and issues a separate certificate for the uplift tax

credit. GDEcD sends project certificates to DOR, which is responsible for credit generation and use. HB 1037 requires that projects undergo a mandatory audit of eligible expenses and submit the audit to DOR prior to generation of the credit. DOR charges companies a fee to conduct or finalize the audit.¹⁷ Inquiries as to the cost to administer and audit FTC applications and credits are still outstanding. Thus, while there is certainly an administrative cost to both agencies, given the size of the FTC it is assumed to be de minimis for purposes of this analysis.

7. Other Public Benefits

The purpose of the Georgia FTC is to encourage expenditure and investments in the film, television, and digital media industries within Georgia. These are all privately owned firms and generally produce products and services for the purpose of entertainment. As with other state economic incentive programs, a plausible public benefit is job creation. Some of these jobs involve people in creative fields who also contribute to the arts and cultural amenities of the state. Thus, another potential public benefit of the FTC may be to support the arts and culture in Georgia.

8. Conclusions

The Georgia FTC induces substantial economic activity in Georgia. It is also the largest tax expenditure among Georgia's economic development incentives. Consistent with studies of other state film tax incentives programs, the State of Georgia loses money. We calculate a state fiscal ROI of 0.19 for FY 2024, or a loss of 81 percent, using the estimates generated from the representative year of 2022 and using credits generated of \$1.35 billion.

Table 15 summarizes the FTC cost per job as well as dollar of labor income, value added, and output implied by our estimates. We calculate these costs using the credits generated by a representative year of spending as well as the net present value (NPV) of those credits under our generation and utilization assumptions. Gross costs use the gross (direct, indirect, and induced) economic activity generated by representative-year production spending of \$4.4 billion and associated tourism and construction spending. The net calculations divide the credit amount by net economic activity—that is, economic activity remaining after the “but-for” amount and alternative use reductions.

For example, the gross credit generated cost per job is \$59,455, calculated as the \$1.3 billion credits generated from representative year production spending divided by the 22,702 gross jobs associated with representative year production spending, tourism, and construction. The net costs per job are negative because net job creation is negative—due to alternative use employment exceeding the total (direct, indirect, and induced) combined production-, tourism-, and construction-supported employment. The net credit cost per job is calculated as \$1.3 billion in generated credits divided by net job creation of -6,770. Thus, Table 15 indicates that there are an estimated \$199,359 credits generated for every one job that an alternative use would have supported. Considering utilization rates over time, this corresponds to a net present value (NPV) cost of \$160,009 for every net job.

Similarly, there are an estimated 96 cents of credits generated for every \$1 of labor income supported by the associated gross economic activity, which corresponds to a NPV tax

¹⁷ These are posted on the DOR website: dor.georgia.gov/required-mandatory-film-tax-credit-audit-fees.

expenditure cost of 77 cents per dollar of labor income. After accounting for the labor income that would have occurred in the absence of the FTC, as well as the labor income from an alternative use of government funds, there are \$24.44 in credits generated for every \$1 of net labor income supported by the FTC.

Table 15. FTC Cost per Unit of Economic Activity

	Employment	Labor Income	Value Added	Output
Gross				
Credit Generated Cost	\$59,455	\$0.96	\$0.54	\$0.28
Credit Utilization NPV Cost	\$47,719	\$0.77	\$0.43	\$0.22
Net				
Credit Generated Cost	-\$199,359	\$24.44	\$1.61	\$0.60
Credit Utilization NPV Cost	-\$160,009	\$19.62	\$1.29	\$0.48

NPV: net present value

9. Matters for Consideration

As discussed in the fiscal impact section of this report, non-resident labor income is a substantial portion of tax credit-generating expenditures. Non-resident labor income, particularly for above-the-line talent, has no economic impact in our models but does contribute to the fiscal impact via state income tax. A number of states differentiate the credit rate or exclude such expenditures from qualifying for tax credits. Exploring similar options could increase the fiscal and economic ROI, potentially, depending on the industry response to such a change.

It may also be worth noting that virtually all of the FTC beneficiary projects utilize the 10-percent marketing “uplift.” Currently, the uplift credit requires separate verification and certification. It may be worth investing in institutionalizing the uplift percentage and requirement in a post-HB1037 environment.

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Appendix A

Table A1. State-level Incentives for Film and Television Production

State	Incentive Type	Minimum Spend	Annual Cap	Project Cap	Terms
Alabama	Fully Refundable Tax Credit	\$500,000	\$20 million	\$20 million	Resident workers (both above and below-the-line) earn a 35% tax incentive, and all other qualified workers get a 25% tax incentive. Any other expenses incurred also get a 25% tax incentive.
Alaska					
Arizona	Fully Refundable Tax Credit	Facility or location requirements	\$75 million in 2023, set to grow to \$125 million by 2025	\$25 million	15% tax credit for productions of up to \$10 million, 17.5% tax credit for productions of up to \$35 million, and 20% tax credit for productions over \$35 million. Additional 2.5% tax credit on production labor costs for positions held by Arizona residents.
Arkansas	Combination of Transferable Credit and Rebate Incentives	\$200,000	\$4 million	None	30% for below-the-line residents 20% for all other staff and qualified expenditures
California	Non-Transferable, Non-Refundable Tax Credit (Studio) / Fully Transferable Tax Credit (Independent)	\$1 million	\$330 million	\$25 million	For studio movies and repeating TV series, 20% on local spending and below-the-line crew, with up to a total of 10% in bonuses based on where you shoot. For independent productions, 25% on local spending and below-the-line crew, with the potential of a 5% bonus on labor incurred outside the L.A. radius.
Colorado	Rebate	\$100,000 for a local production company, \$1 million for an out-of-state production company, \$250,000 for a video game shoot	\$750,000	None	20% rebate for all qualified expenditures

Connecticut	Transferable Non-Refundable Tax Credit	\$100,000	None	None	10-30% credit for all qualified expenditures, depending on the production budget
Delaware	Refund	None	\$1 million	None	A case-by-case program awarding up to 30% on local spending to local production companies
Florida					
Georgia	Transferable Non-Refundable Tax Credit	\$500,000	None	None	20-30% for all qualified expenditures
Hawaii	Fully Refundable Tax Credit	\$100,000	\$50 million	\$17 million	22–27% for all qualified expenditures, depending on the location
Idaho					
Illinois	Transferable Non-Refundable Tax Credit	\$100,000	None	None	30% tax credit for feature films and a bonus of 15% if locals from economically disadvantaged areas are hired
Indiana	Non-Transferable, Non-Refundable Tax Credit	\$50,000	N/A	None	A case-by-case program awarding up to 30% on local spending including resident and non-resident payroll to local production companies
Iowa					
Kansas					
Kentucky	Fully Refundable Tax Credit	\$250,000, \$20,000 for documentaries	\$75 million	\$10 million	35% to local residents 30% to non-residents and local spending 40% is available for productions that have continuous projects over 12 months
Louisiana	Non-Transferable, Partly Refundable Tax Credit	\$300,000	\$150 million	\$20 million	40% for local residents, 25% for non-residents and local spending
Maine	Rebate and Non-Refundable, Non-Transferable Tax Credit	\$75,000	None	None	12% for residents, 10% for non-residents 5% on local spending
Maryland	Fully Refundable Tax Credit	\$250,000	\$15 million (FY 2024)	\$10 million	28% for all crew and local spending with an additional 2% given to qualified TV series and pilots

Massachusetts	Transferable, Partly Refundable Tax Credit	\$50,000	None	None	25% for all qualified expenditures, if a minimum of \$50,000 is spent within the first 12 months of application
Michigan					
Minnesota	Rebate/ Transferable Credit	\$100,000 for rebate; \$1,000,000 for tax credit	\$475,000 for rebate and \$24,950,000 for tax credit	None	Rebate - 20% rebate for feature films, documentaries, and music videos, and an additional 5% if the project budget is over \$1 million or shoot a minimum of 60% outside the metro area Tax Credit - 20-25%, must show proof of 75% of financing is in place
Mississippi	Rebate	\$50,000	\$20 million	\$10 million	30% for local residents 25% for non-residents and local spending
Missouri	Fully Transferable Credit	\$50,000 (commercial), \$100,000 (Feature/TV)	\$16 million	\$8 million	20% base incentive
Montana	Transferable Non-Refundable Tax Credit	\$350,000	\$12 million	\$5 million	25% for below-the-line residents 15% for below the line non-residents 20% for all above-the-line payroll and local spending
Nebraska	Grant	\$1 million	\$1 million	\$400,000 or 25% of Nebraska production cost	20% above or below-the-line residents and local spending
Nevada	Transferable Non-Refundable Tax Credit	\$500,000	\$10 million	\$6 million	15-25% for local residents and local spending 12-17% for non-residents
New Hampshire					
New Jersey	Transferable Non-Refundable Tax Credit	\$1 million, or at least 60% of the total film production expenses must incur in NJ.	\$100 million	None	35% for all crew and an additional 2% for people who meet the diversity criteria. 30% for all local spending unless outside a designated radius of the state. If outside the radius, an extra 5% is granted to local expenditures.

New Mexico	Fully Refundable Tax Credit	None	\$120 million (FY 2024)	None	25% for all local spending and residents 15% for certain approved below-the-line non-residents 25% on non-residents who are only on-screen talent that meet certain criteria
New York	Fully Refundable Tax Credit	\$250,000/\$1 million depending on where you film in the state	\$700 million	None	30-40%, depending upon location, for certain above-the-line wages subject to specific caps, below-the-line wages, and production costs directly related to the production
North Carolina	Rebate	\$1.5 million	\$31 million	\$7 million	25% for all crew and spending in the state
North Dakota					
Ohio	Fully Refundable Tax Credit	\$300,000	\$40 million	None	30% for all crew and local spending
Oklahoma	Rebate	\$25,000	\$30 million	\$8 million	20% for all local spending and below-the-line, non-resident payroll 30% for resident payroll and any expatriates of the state
Oregon	Rebate	\$1 million	\$20 million	\$7 million	20-26.2% for all crew working in the state that utilizes the 6.2% rebate 25% on all local spending
Pennsylvania	Transferable Non-Refundable Tax Credit	None	\$100 million	\$12 million	25% for all crew and local spending
Rhode Island	Transferable Non-Refundable Tax Credit	\$100,000	\$40 million	\$7 million	30% for all qualified expenditure
South Carolina	Rebate	\$1 million	\$17 million	None	30% on local spending 25% for residents 20% for non-residents
South Dakota					

Tennessee	Grant	\$500,000 an episode / \$200,000	Funding amount determined annually	\$13 million for scripted TV, \$2.2 million for everything else	25% for all residents and local spending. Scripted TV can get 25% on non-residents as well
Texas	Grant	\$250,000	\$45 million (Bi-Annual)	None	5-20% for all residents and local spending, depending on the budge size
Utah	Fully Refundable Tax Credit and Rebate	\$500,000	\$20,393,700	None	20% for all resident payroll and local spend
Vermont					
Virginia	Fully Refundable Tax Credit / Grant	\$250,000 for tax credit; None for grant	\$6.5 million for tax credit. \$4.15 million for grant	None	15% on local spending and resident and non-resident payroll
Washington	Rebate	\$300,000 per episode. \$500,000 for motion pictures. \$150,000 for commercials	\$15 million	None	30% on local spending and resident payroll. 15% on below-the-line, non-resident payroll
West Virginia	Transferable Non-Refundable Tax Credit	\$50,000	None	None	27% on local spending and both resident and non-resident labor
Wisconsin					
Wyoming					

Source: authors' review of states documents

Appendix B

Table B1. Summary of Relevant State Evaluations

Peer-reviewed Studies			
State	Date	Journal	Summary of Findings
North Carolina	2018	<i>Applied Economic Letters</i>	Using comparative input-output analysis, the study finds the increase in output per tax dollar invested is smaller for film incentives than for 2 out of 3 alternative uses.
Georgia	2020	<i>Questions in Politics</i>	Applying pre/post-test design that contrasts data from post-adoption with data from before the state film incentive generated increases in employment, wages, establishments, and number of productions. It also raises questions about the long-term sustainability and cost effectiveness.
California	2021	<i>Economic Development Quarterly</i>	Employing the experimental technique demonstrates that in California, providing a tax incentive raised the likelihood that a film would be made there by 16 percentage points, increased the amount spent on the production budget by 267%, and resulted in the hiring of 123% more actors and filmmakers.

Non-Peer-reviewed Reports			
State	Date	Prepared for	State Government Fiscal Return on Investment¹
Legislative Audit or Similar			
Virginia	2017	Joint Legislative Audit & Review Commission	0.30
Mississippi	2015	Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER)	0.49
Other State Agencies			
Louisiana ²	March 2015	Department of Economic Development	0.15 ³
Georgia	2020	Georgia Department of Audits & Accounts Performance Audit Division	0.10

Hawaii	2022	Department of Business, Economic Development & Tourism	0.56
Industry Studies			
New York	2020	Camoin Associates	0.50
Pennsylvania	2019	Independent Fiscal Office	0.13
Maryland	2014	Maryland Film Industry Coalition	1.05

¹ State tax revenue divided by state incentive costs

² FY 2013 and 2014

³ p. 34

Appendix C

Table C1. Labor Income Breakdown by Production Type

Project Type	Quartile	Budget Range	Labor Income	
			Residents	Non-residents
Movie	1	Less than \$2.7 million	67%	33%
Movie	2	\$2.8 million to \$9.4 million	40%	60%
Movie	3	\$9.4 million to \$27.5 million	40%	60%
Movie	4	Over \$27.5 million	30%	70%
Television			60%	40%
Other*			100%	-
Overall			47%	53%

Source: DOAA 2020

Appendix D

Table D1. Square Footage (SF) and Construction Spending, FY 2012–22

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Total Purpose Built and Conversion Stage SF	231,250	307,750	364,250	554,250	960,300
YoY Change in SF	-	76,500	56,500	190,000	406,050
Share of Total Increase in SF	-	0.03	0.02	0.07	0.15
Construction Spending	-	\$36,156,189	\$26,703,591	\$89,799,686	\$191,911,382

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Total Purpose Built and Conversion Stage SF	1,489,000	1,915,900	2,220,150	2,419,650	2,547,750
YoY Change in SF	528,700	426,900	304,250	199,500	128,100
Share of Total Increase in SF	0.20	0.16	0.11	0.07	0.05
Construction Spending	\$249,879,442	\$201,765,716	\$143,797,655	\$94,289,670	\$60,543,894

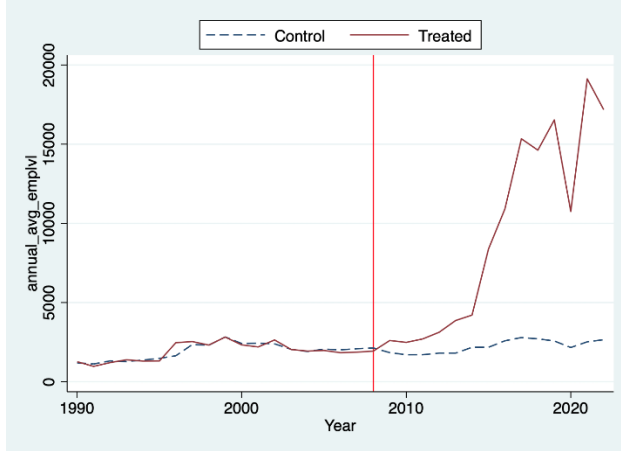
	FY2021	FY2022
Total Purpose Built and Conversion Stage SF	2,802,925	2,939,500
YoY Change in SF	255,175	136,575
Share of Total Increase in SF	0.09	0.05
Construction Spending	\$120,603,342	\$64,549,432

Appendix E

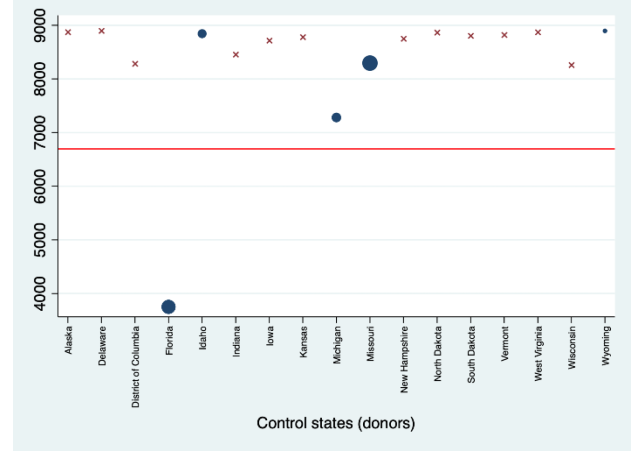
The following graphs and tables detail the weights for each of our outcomes while visually representing the results of our synthetic control estimates.

Annual Average Employment, 1990–2022

Synthetic Control vs. Georgia (Treated)



Donor Pool

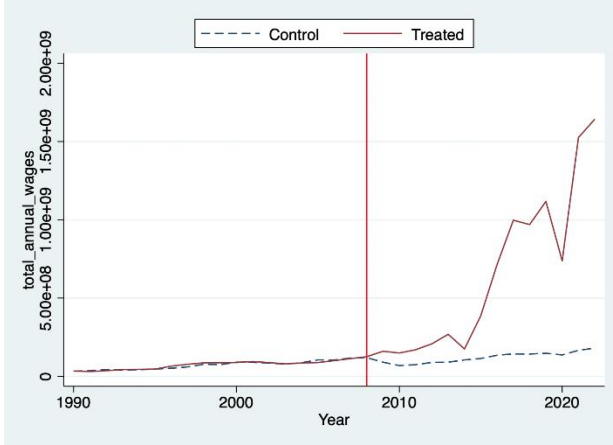


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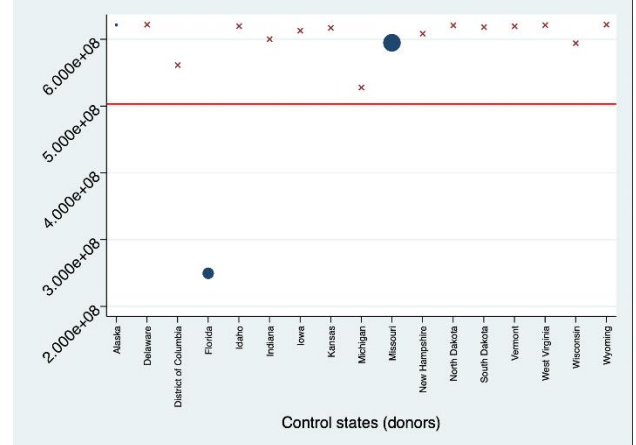
Employment		
Unit Weights (SC)	Weight	
Alaska	0	0%
Delaware	0	0%
DC	0	0%
Florida	0.33825399	34%
Idaho	0.10569799	11%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.12605152	13%
Missouri	0.41722	42%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0.01277651	1%
Adoption Time	2008	

Annual Average Wages, 1990 – 2022

Synthetic Control vs. Georgia (Treated)



Donor Pool

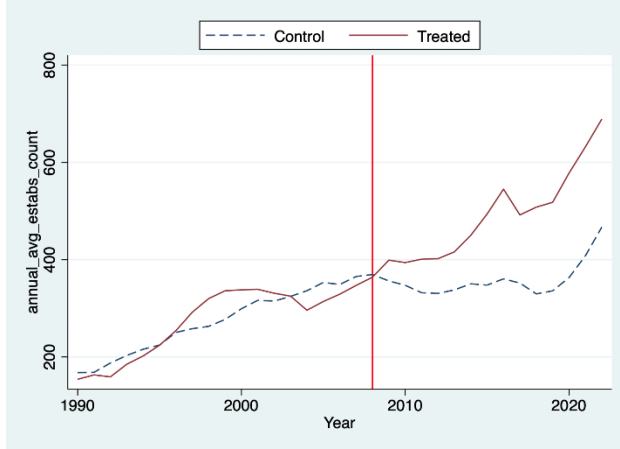


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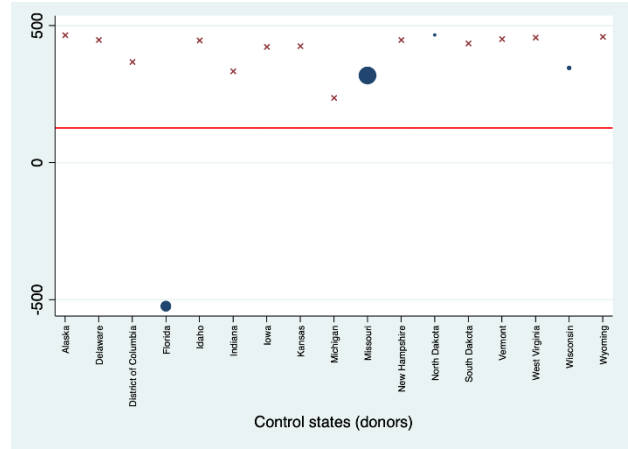
Wages		
Unit Weights (SC)	Weight	
Alaska	0.00368289	0%
Delaware	0	0%
DC	0	0%
Florida	0.26628817	27%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0	0%
Missouri	0.73002894	73%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%
Adoption Time	2008	

Annual Average Establishments (Count), 1990–2022

Synthetic Control vs. Georgia (Treated)



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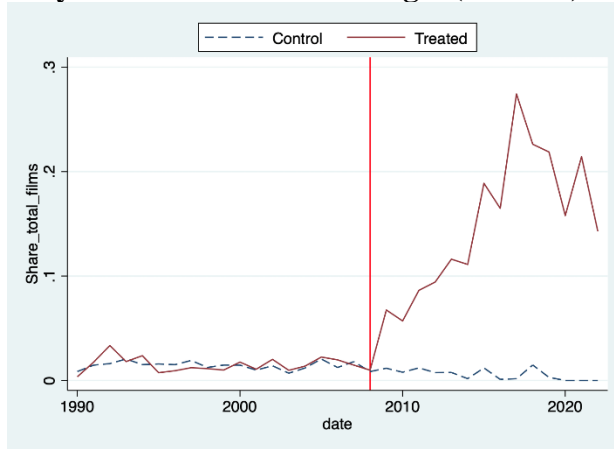


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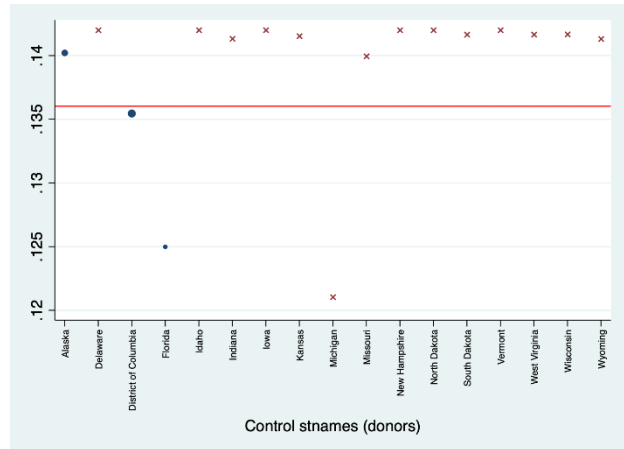
Establishments		
Unit Weights (SC)	Weight	
Alaska	0	0%
Delaware	0	0%
DC	0	0%
Florida	0.22906987	23%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0	0%
Missouri	0.74877806	75%
New Hampshire	0	0%
North Dakota	0.00390384	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0.01824823	2%
Wyoming	0	0%
Adoption Time	2008	

Share of Total Films, 1990–2022

Synthetic Control vs. Georgia (Treated)



Donor Pool

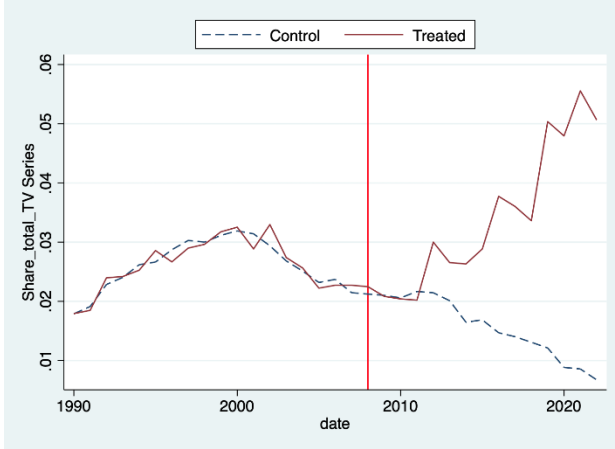


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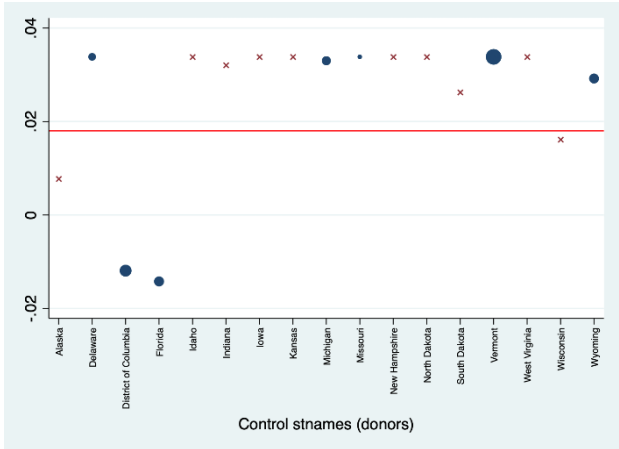
Films Share		
Unit weights (SC)	Weight	
Alaska	0.33046741	33%
Delaware	0	0%
DC	0.57466214	57%
Florida	0.09487045	9%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0	0%
Missouri	0	0%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%
Adoption Time	2008	

Share of Total Television Series, 1990–2022

Synthetic Control vs. Georgia (Treated)



Donor Pool

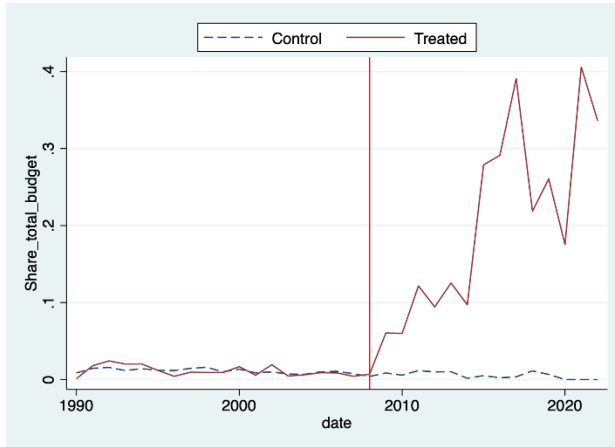


Donor Pool

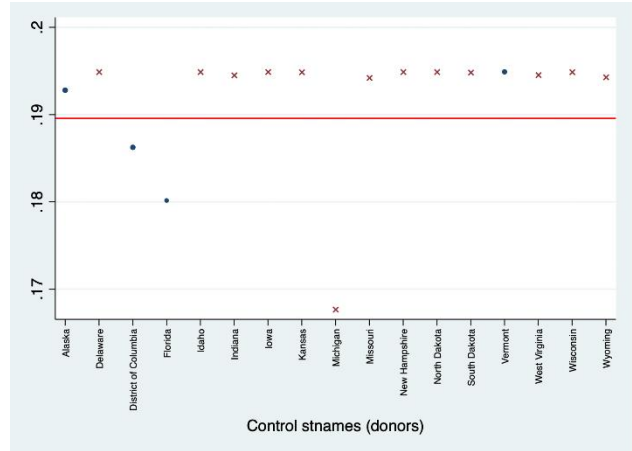
Television Series Share		
Unit Weights (SC)	Weight	
Alaska	0	0%
Delaware	0.06289815	6%
DC	0.19749869	20%
Florida	0.1278449	13%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.09883716	10%
Missouri	0.01141427	1%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0.37857428	38%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0.12293255	12%
Adoption Time	2008	

Share of Total Films Budget, 1990–2022

Synthetic Control vs. Georgia (Treated)



Donor Pool



Donor Pool

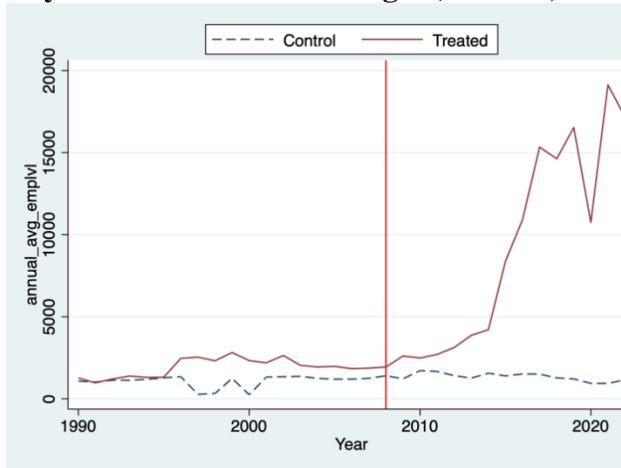
Budget Share		
Unit Weights (SC)	Weight	
Alaska	0.30600924	31%
Delaware	0	0%
DC	0.28286567	28%
Florida	0.15201197	15%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0	0%
Missouri	0	0%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0.25911312	26%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%
Adoption Time	2008	

Appendix F

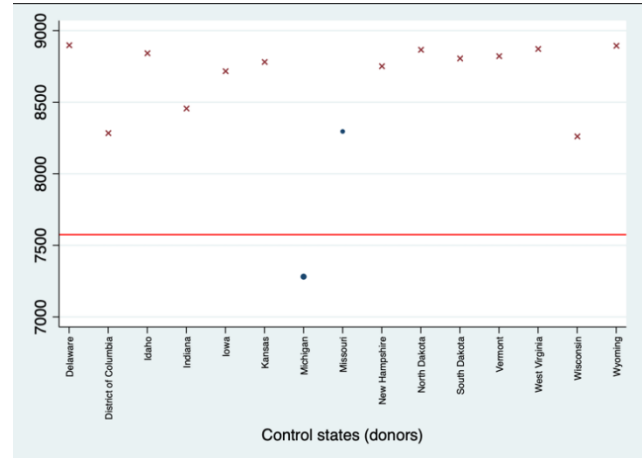
The following graphs and tables detail the weights for each of our outcomes while visually representing the results of our synthetic control estimates excluding Florida and Alaska from the donor pool.

Annual Average Employment 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool

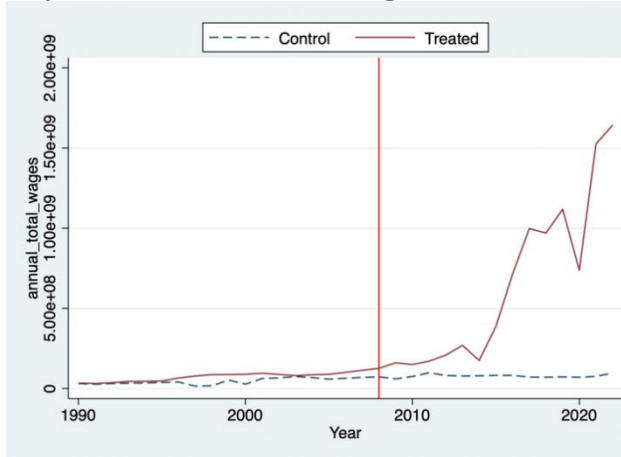


Donor Pool

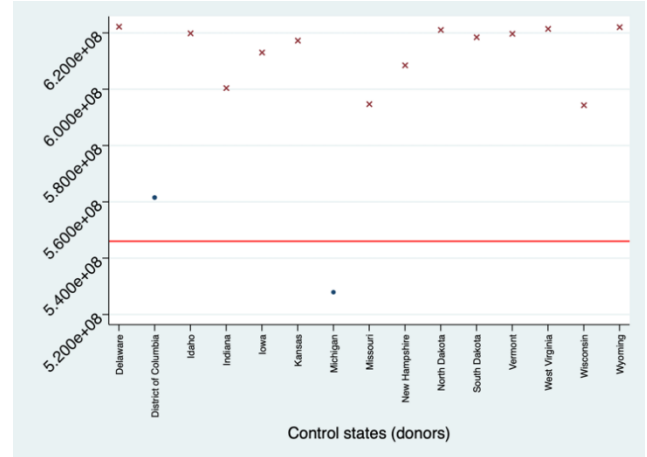
Employment		
Unit weights (SC)	Weight	
Delaware	0	0%
DC	0	0%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.71078699	71%
Missouri	0.28921301	29%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	1%

Annual Average Wages 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool

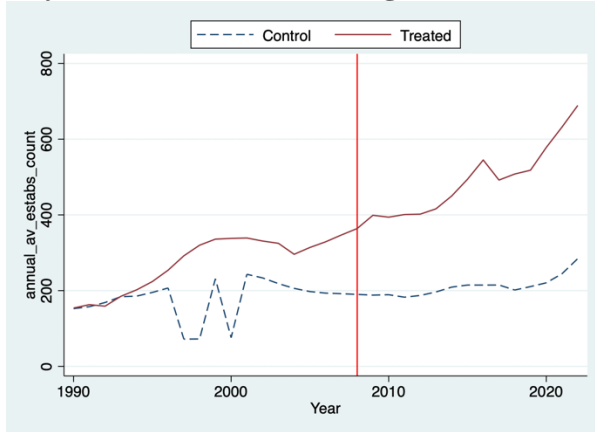


Donor Pool

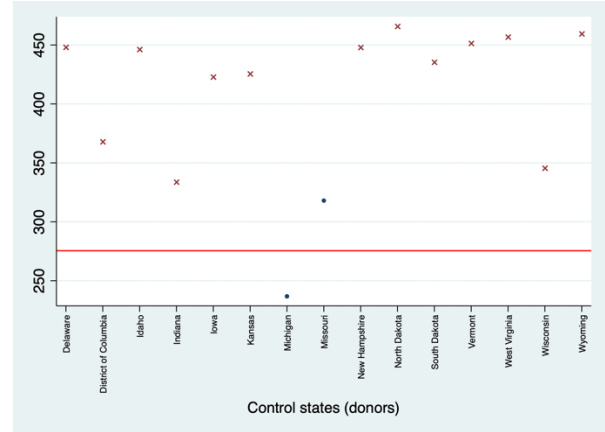
Wages		
Unit weights (SC)	Weight	
Delaware	0	0%
DC	0.53303886	53%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.46696114	47%
Missouri	0	0%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%

Annual Average Establishments 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool

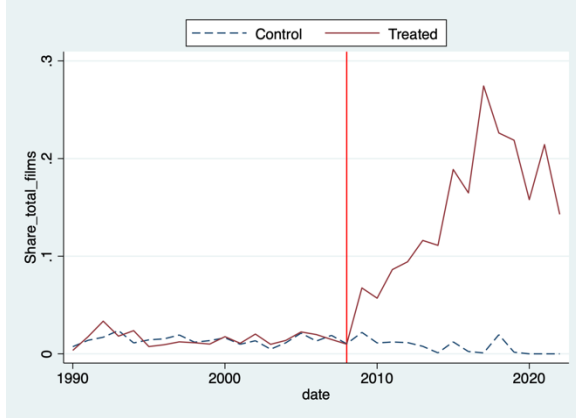


Donor Pool

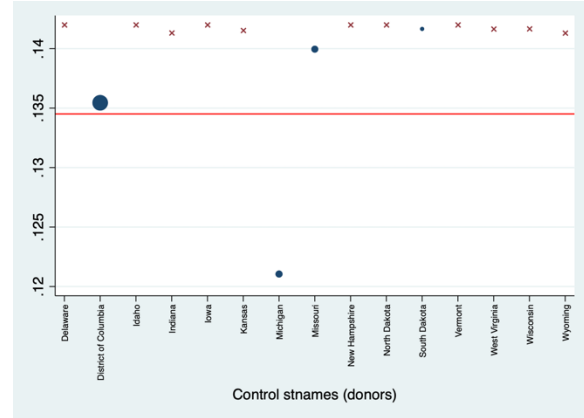
Establishments		
Unit weights (SC)	Weight	
Delaware	0	0%
DC	0	0%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.5236453	52%
Missouri	0.4763547	48%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%

Share of Total Films 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool

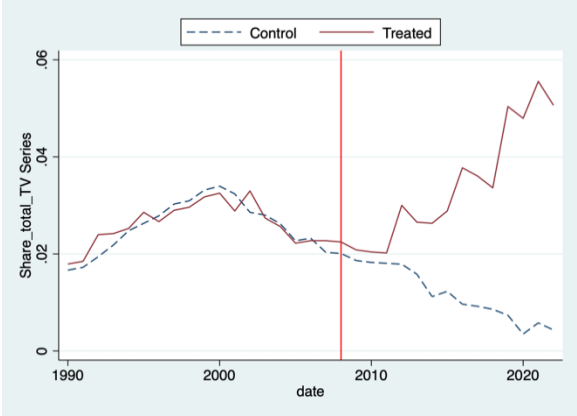


Donor Pool

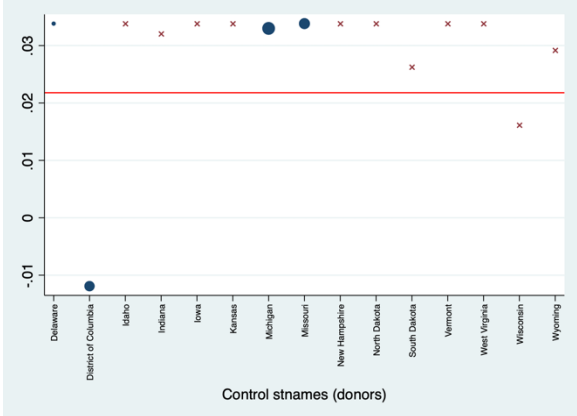
Films share		
Unit weights (SC)	Weight	
Delaware	0	0%
DC	0.77052443	77%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.10627416	11%
Missouri	0.10356637	10%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0.01963504	2%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%

Share of Total TV Series 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool

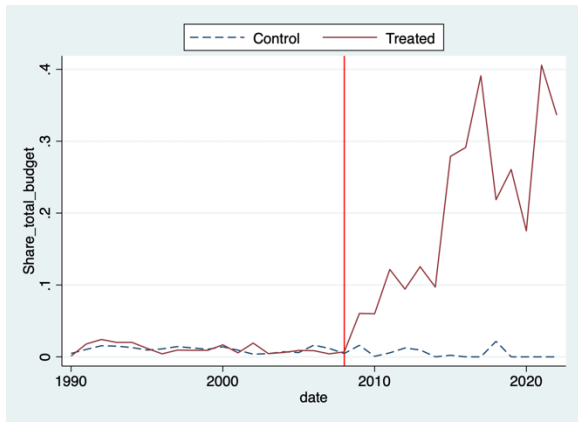


Donor Pool

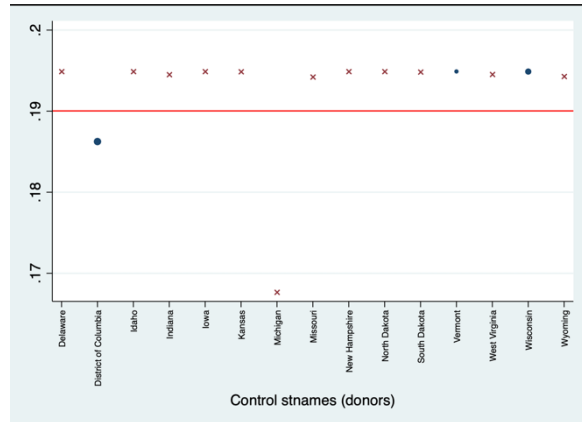
Tv Series share		
Unit weights (SC)	Weight	
Delaware	0.01755144	2%
DC	0.25556449	26%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0.42712558	43%
Missouri	0.29975849	30%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0	0%
West Virginia	0	0%
Wisconsin	0	0%
Wyoming	0	0%

Share of Total Films Budget 1990 – 2022

Synthetic Control vs Georgia (Treated)



Donor Pool



Donor Pool

Budget share		
Unit weights (SC)	Weight	
Delaware	0	0%
DC	0.56236238	56%
Idaho	0	0%
Indiana	0	0%
Iowa	0	0%
Kansas	0	0%
Michigan	0	0%
Missouri	0	0%
New Hampshire	0	0%
North Dakota	0	0%
South Dakota	0	0%
Vermont	0.09690078	10%
West Virginia	0	0%
Wisconsin	0.34073684	34%
Wyoming	0	0%