The Arts and Culture Sector's Contributions to Economic Recovery and Resiliency in the United States: 2001-2017

Technical Report

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Overview

The arts and culture are sometimes misunderstood as a "luxury good," an assortment of nonessential products and services that disproportionately wax—and disproportionately wane—as the health of the general economy fluctuates. However, in recent years data have emerged that reveal that the arts and related creative industries are a major economic force, comprising 4.5% of the U.S. gross domestic product (more than construction, transportation, mining and agriculture) and adding $877.8 billion to the nation's economy (U.S. Bureau of Economic Analysis 2020). We also now understand that arts can serve as economic catalysts—a cluster of industries, capacities and synergies that not only contribute creative goods and services to the nation's bottom line but also foster a skilled and innovative workforce (Paulsen et al. 2020; Rodríguez-Pose and Lee 2020; Tubadji et al. 2015), stimulate consumer spending in other sectors (e.g., Americans for the Arts 2017; McGrath et al. 2017; Torre and Scarborough 2017), and help to create a climate conducive to economic growth (Florida 2002; Markusen and Schrock 2006).

What Is the Role of the Arts and Cultural Sector in the Broader Economy?

Despite this abundance of evidence about the many economic attributes of the arts, little research has been conducted to date that examines statistical relationships between the arts and other economic indicators of national or state economic health. How does the arts economy fare over time, especially during periods of acute economic contraction? And do the arts exert any influence on larger state or national economic trends? This study explores some of those questions.

The results suggest that **the arts and culture sector can improve—not merely reflect—the health of the broader economy.** Trend data show that the arts offer economic diversification and can rapidly recover from economic downturns without being anchored down by other slow-recovering sectors or being subject to other sectors' volatility. These characteristics may make the arts a valuable asset for states seeking a path out of economic crises. Specifically:

- **Over the long term, the share of the economy derived from the arts sector has proved remarkably stable,** ranging from 4.2% to 4.7% of GDP since 2001, a time span that includes two national recessions.

- After the Great Recession of 2008-2009, the arts rebounded rapidly from economic shocks. In the year immediately following the Great Recession, the average gross state product per capita rose by 3% while the average state arts economy grew by 3.4%. Furthermore, **the core[1] arts subsector exhibited much higher growth rates than the general economy for the three years following states' economic low points.** States with larger arts economies, especially, grew more rapidly after the Great Recession. The creative industries, in other words, have been a fast-growth sector emerging from hard times.

- Unlike more conventional industrial supply chain dynamics, **the arts tend to grow independently from other sectors, which provides a diversification strength**—something that may be especially important for states whose economic fortunes hinge on just a few industries.

[1] Core arts and cultural production industries are originators of ideas and content associated with the creation of arts and culture.

Furthermore, states with more diverse arts sectors (including, for instance, a balanced mixture of performing, visual, and media and design arts, publishing, and related industries) experienced even greater economic growth after the Great Recession, suggesting that the presence of a broad array of creative activities and assets may offer an economic advantage.

- **Growth in employment in certain arts economy subsectors has a positive causal effect on general state level employment rates.** While this effect is stronger within some arts subsectors than others, it is nevertheless notable given the importance of jobs growth as a foundational ingredient for economic stability.

- **Arts employment per capita tends to boost overall employment per capita more strongly in rural areas than in urban areas.** This is meaningful given that rural communities, historically, tend to take longer to rebound from recessions than do their urban counterparts.

These findings point to areas of strength in the arts and culture sector and some ways in which the arts economy has positive ripple effects on the broader economy. The results also show that the arts and culture sector is not wholly dependent on broader economic trends for its growth—it has its own resilience and momentum. An arts sector that can help to diversify state economies and rapidly rebound from duress may be particularly valuable as the United States works to recover from an economically catastrophic 2020.

What Is the Evidence Base for These Findings?

This analysis uses Arts and Cultural Production Satellite Account (ACPSA) data (more at Data below) at the state level to measure the connection between states' overall economies and their arts and culture sectors, with a special focus on the "shock" of the Great Recession and its aftermath. The ACPSA tracks economic activity in the arts and creative industries and their supply chains—effectively accounting for the contributions of the arts economy and its subsectors, its many commodities and industries (both for-profit and nonprofit) as reflected in official GDP statistics. The ACPSA has offered objective and unparalleled annual coverage of the arts economies for each state and for 35 subsectors for almost two decades.

In addition to ACPSA data, this analysis incorporates data on demographics (e.g., income, education) and geography (e.g., ruralness, density, coastalness) and other industry data (e.g., employment in other sectors, size of nonprofit sector) at the state level. This nationwide analysis is conducted for all 50 states plus Washington, D.C., to identify trends over time within 20 years of the ACPSA data series. The statistical methods used enable us to detect how the arts and culture sector *leads* statewide economic growth or *follows* macroeconomic trends, and it shows how quickly big shocks dissipate or how long their effects linger. It also allows us to map out the interdependencies among the various components of states' arts economies (e.g., motion pictures, broadcasting, performing arts) and between these components and the broader statewide economy. Importantly, this analysis identifies the role that states' arts economies play in resiliency or recovery in the face of economic downturns like the one experienced in 2008-09, and finds that states' core arts economies rebound faster than states' overall economies and lead economic growth during times of economic recovery and growth.

Introduction

In light of the current challenges facing the arts and culture sector—unprecedented in many ways—the need to better understand the role of the sector in the broader economy has never been more acute. We can see the interdependencies between the general economy and its arts and cultural components in many forms. Sometimes, we see the arts as reflecting or following economic growth, as prosperity drives supply and demand for arts and cultural products and experiences. Likewise, a stagnating economy is often seen as drying up the pool of resources needed to sustain a vibrant arts and culture scene. At other times, however, we see the arts and culture sector as driving—not merely reflecting—the overall health of the economy. The power of creativity, its ability to attract and enhance talent, and its own expanding economic value can all contribute to the role of the arts and culture sector in leading or driving growth of the broader economy.

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Identifying the role of the arts and culture sector in the broader economy, the core purpose of this study, provides crucial information as we look to recover from a global pandemic-driven recession in 2020. The results of this analysis point to areas of strength or resilience in the arts and culture sector and where the arts economy has been able to promote recovery of the broader economy. Additionally, results show where the sector operates independently of the broader economy. This independence speaks to a resilience of the creative sector in its own right. Independence also means that the arts economy helps diversify a state's economy—something that can be especially valuable for states that derive much of their economic productivity from other industries. Having a sector of the economy that can rapidly recover from these shocks without being anchored down by other slow-recovering sectors or being subject to sector-specific volatility can be particularly valuable as states seek paths to economic recovery.

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The analyses within this report focus on state level economies over about a 20-year period to establish the patterns of interdependencies and reactions to negative macroeconomic shocks. The results presented here build on three main approaches to the analysis.

- First, a descriptive analysis portrays the relevant patterns and trends in the data, which reveals the interrelationships among the economic indicators and sets the stage for the analyses that move from correlations to causation.

- Second, results from an analysis of time trends in various economic indicators provides a high level perspective on the question of interdependencies. This analytic approach emphasizes the co-movement of economic indicators as if they were in a web of potential interdependencies.

- Third, results from more detailed models of how the arts sector influences general economic growth—and vice versa—are presented. These models help identify where more specific connections, especially in the elements that compose the arts and culture sector, arise. Included is evidence that homes in on the Great Recession and the experiences and roles of the arts economy during and immediately after that period.

Data

This analysis uses U.S. Bureau of Economic Analysis Arts and Cultural Production Satellite Account (ACPSA) data to better understand how arts and culture have impacted state level economies as well as the nation's. These data help us see how robust a state's arts and culture sectors are, which in turn helps determine where opportunities for growth and improvement reside. Overall, the ACPSA allows us to see where significant growth has occurred over the past almost 20 years and, conversely, where the sector has been hardest hit. The ACPSA also allows us to examine subsectors that bounced back relatively quickly and use this knowledge as a possible guide for future resilience. The ACPSA breaks down the arts and culture sector into 35 subsectors, which gives rich detail about how different aspects of the arts economy have fared.

The ACPSA is a collection of data gathered and published by the U.S. Bureau of Economic Analysis and the National Endowment for the Arts. See National Endowment for the Arts (2013) for a detailed discussion of the development of the ACPSA. Satellite accounts are meant to take a deeper look at a specific sector's information, allowing for very precise information to be found, and they are used to

describe the sector in a way that typically is obscured within the larger industry accounts. This precision is especially useful for complex industries like the arts as well as health care, tourism and outdoor recreation (to name a few other established satellite accounts)—activities that span multiple economic domains or tend to get buried in traditional sector aggregations. The ACPSA gives the most accurate picture of the creative sector's impact by distinguishing the portion of arts and culture data from the larger industry numbers. For example, an arts and cultural production satellite account does not use all the information about Book Publishing in general, but rather it isolates the portion related to arts and cultural production and omits the non-arts portion.

The ACPSA data measure two important values: industry output and value-added. Industry output is the market value of the goods and services produced by an industry. Value-added is the gross domestic product by an industry. It is the industry's contribution to the national GDP. For the present purposes, this study makes use of the value-added measure in order to provide a picture of how big an impact the arts and culture sector has on the economy as a whole as measured by the GDP or, for specific states, the gross state product (GSP). Keeping the measures closely aligned—value-added and GSP—allows for more direct comparability.

The ACPSA dataset used here includes data from all 50 states and the District of Columbia, spanning from 2001-2017. It contains the *value-added* measure as well as two other key metrics: the number of *jobs* in the sector and the dollar value of *compensation* paid in the sector. It also breaks out these three metrics by giving each indicator for 35 specific subsectors of arts and culture, such as Photography, Fine Arts Education, Publishing, Motion Pictures, etc. These values help paint an accurate picture of how big an impact the arts and culture sector is having on a state's economy over time, and what subsectors are especially significant to a state's unique cultural ecosystem.

This analysis supplements the ACPSA data with data from a variety of additional public data sources. It incorporates yearly demographic data on important factors like income and education from the U.S. Census Bureau. Employment and industry-mix variables available from the U.S. Bureau of Economic Analysis and Geographic measures—helping to describe rurality and density—also are employed. Additional information on political ideology, nonprofit revenues, poverty rates and unemployment insurance claims is used also to help impute missing values. Although most of these controls, outside of those listed in Table 1, are not featured in the results reported here, additional analyses were conducted to explore their relevance during this investigation.

Table 1: Key Indicators

Indicator	Description	Source
GSP	Gross state product ($1,000,000s) per capita	U.S. Bureau of Economic Analysis (BEA)
Jobs	Employment per capita	BEA
Income	Median household income ($), 3-year average	U.S. Census Bureau
Arts Value-Added	Value added ($1,000s) to the state economy (ACPSA output minus ACPSA intermediate consumption [e.g., costumes rented by a performing arts company or printing of the show's program])	BEA
Arts Jobs	Arts and culture employment per capita (all wage-and-salary jobs where the workers are engaged in the production of ACPSA goods and services)	BEA
Arts Compensation (Comp)	Compensation ($1,000s) per arts job (the remuneration [including wages and salaries, as well as benefits such as employer contributions to pension and health funds] payable to employees in return for their ACPSA work during a given year)	BEA
Tech Jobs	High-tech employment per capita	BEA
Top 1%	Average income of top 1% of income distribution in the state	Economic Policy Institute
PovRate	Poverty rate	U.S. Census Bureau
College	Percentage of population aged 25+ with bachelor's degree or higher	U.S. Census Bureau and National Center for Education Statistics

Analysis Methods

To better understand the relationship between a state's arts economy within its broader statewide economy, this study pursued a variety of analytical approaches. First, several snapshots of the arts economy and their time trends describe the relationship between the arts and creative industries and the broader economy. These are listed within the descriptive analysis below. These descriptions paint the straightforward picture about how the arts economy compares to the rest of the overall economy, how that relationship has varied from year to year over the past 20 years and how it varies from state to state. Second, a panel vector autoregressive (PVAR) model or, "dose and response" model, of all states' arts economies and their overall economies maps out how upticks or downticks in one sector of a state's overall economy can affect different sectors and their future trajectory. Third, a dynamic panel data (DPD) analysis models the cause-effect relationships between shocks to the arts economy and the overall economy. The purpose of these statistical estimation exercises is to trace out the patterns in the dynamics of key state level economic indicators with explicit consideration of how those indicators interact. As a state's economy grows, its overall economic indicators (such as gross state product) grow, and so might its arts economy. As these two measures grow jointly, it is not obvious which factor is in the driver's seat. Perhaps the arts economy is leading the state's overall economy, or the overall economy is dragging the arts sector along, or neither, or both. The statistical analyses are designed to disentangle these trends. They leverage the 17-year data series for each state to robustly identify how changes—up or down—in economic indicators affect other indicators in future years.

The analysis tracks three sets of indicators along the lines of three different themes: GSP, employment and income. For each set of indicators, there are two variables included—a general economy variable and an arts-sector-specific variable. The GSP set looks at per capita GSP and value-added from the ACPSA. The employment set is, straightforwardly, looking at all jobs per capita and arts related jobs per capita. The income set looks at average household income and compensation per arts job, thus getting at household income and pay issues.

Most of the analyses include other key state level indicators to account for other factors that might influence a state's economic dynamics. These enter the PVAR analyses on an equal footing with the general economy and the arts economy indicators. The four key variables in these analyses include tech-sector employment, education levels (share of adults with a college degree), and measures of the high- and low-ends of the wealth distribution in the state (poverty rate and income level of the top 1% of earners). These indicators also enter as control variables in the DPD models. Each of these indicators is often linked to the strength of the arts sector of the economy, whether it is the connection between the "creative class" and the growth of prized tech-sector jobs, the possibility that wealthy elite support the arts sector or the well-established role of education in driving arts demand. For each, the analysis shows whether these indicators drive or are driven by the arts sector in that state.

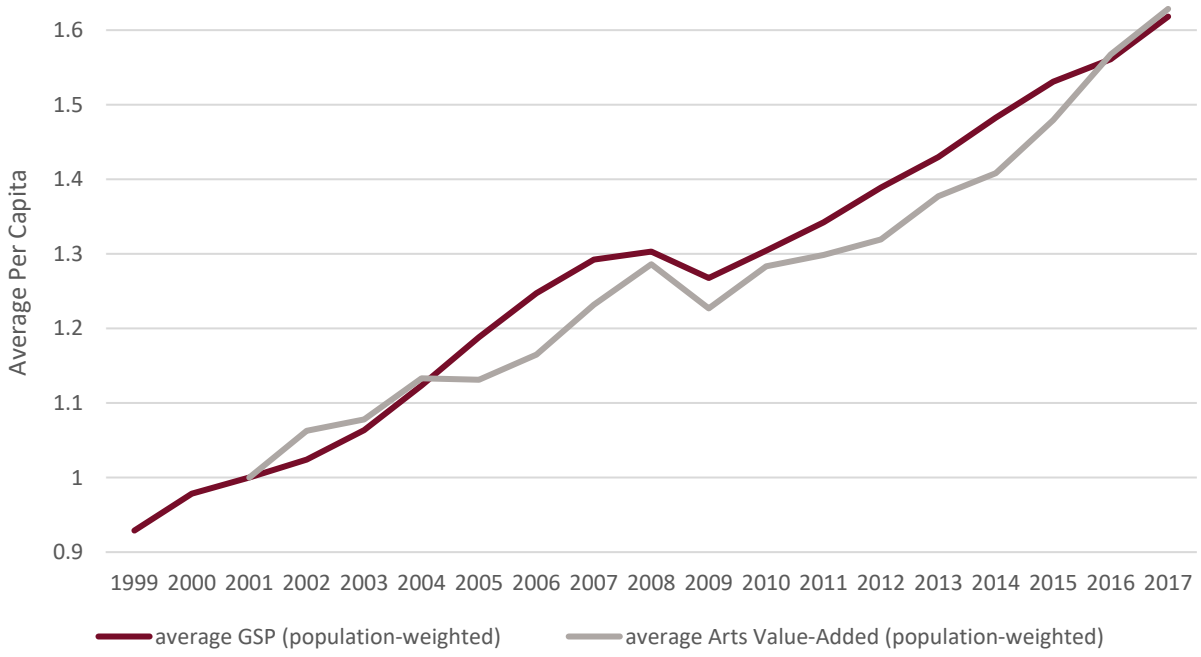
Importantly, the analysis adjusts for any persistent or permanent condition in a particular state. Thus, if a particular state has *always* had a much stronger or weaker arts sector than others, then the analysis automatically corrects for this. The results here depend only on the post-2000 dynamics of the states *relative to their own state-specific baseline*. In a sense, this puts Delaware on equal footing with California, and everything is measured in 'percent change' terms.

Descriptive Analysis

Arts and Culture Contribution to GDP

The arts economy accounts for a substantial share of the overall economy in the United States—nearly 5% of the GDP owes to value-added from the arts and culture sector. Further, the share of the economy owing to the arts sector has proved remarkably stable. While the GDP has grown by 84.5% from 2001 (when the tracking via the ACPSA first began) to 2017, the size of the arts and culture sector has grown by 85.5% over the same period. Although the arts economy's growth rate slowed somewhat after 2004, its robust growth since 2014 has restored its overall share of the economy to its original level.

Figure 1: Trends in GSP Indicators, Population Weighted, Indexed to 2001

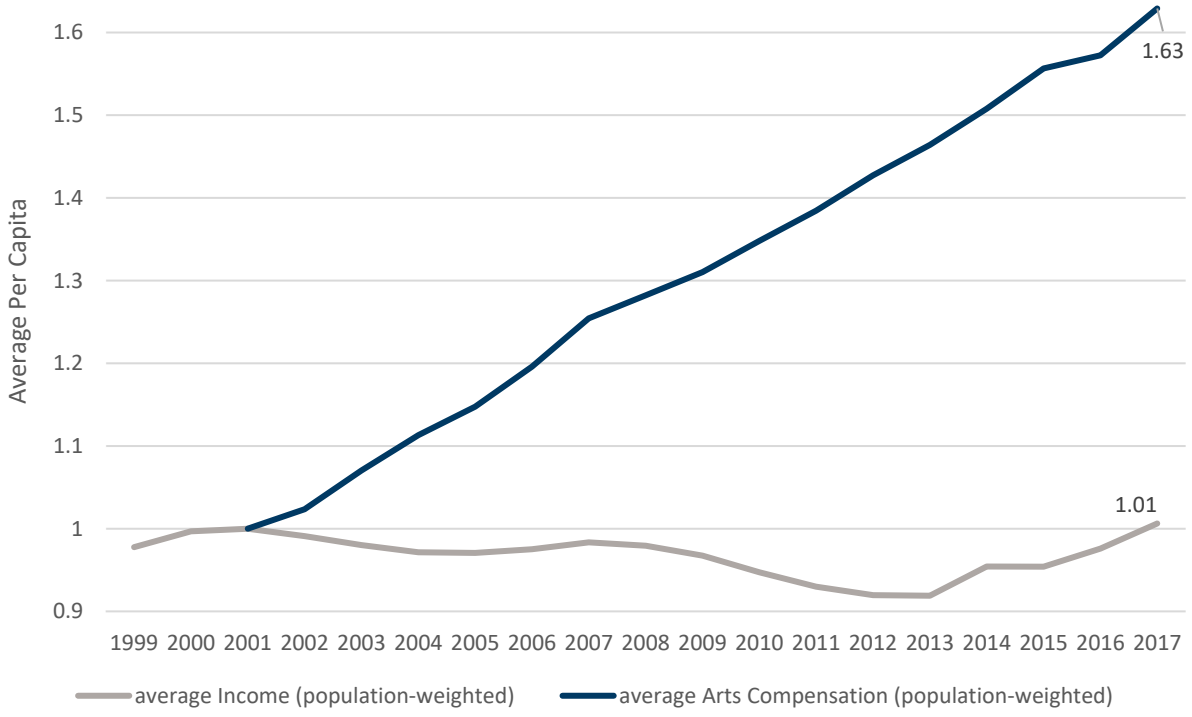


Arts and Culture Jobs and Compensation

Next, widening our perspective to include employment and compensation indicators in Figure 2 and Table 2, we can see compensation per employee in the arts and creative industries has been growing as fast as the economy overall. The arts and creative industries provide essential income for millions of ACPSA workers and account for almost 5% of total national compensation. Median income for the overall economy has been largely stagnant during this period (growing only 2%, on average, across states), reflecting a concentration of economic growth among the wealthier households. Average compensation

per arts-sector job, on the other hand, demonstrates a strong growth rate (58%) in Figure 2, not unlike the growth rates for GSP or arts value-added.

Figure 2: Trends in income indicators, Population Weighted, indexed to 2001



The employment indicators tell a different story. Per capita employment from 2001 to 2017 has remained largely flat and generally declined for arts employment. Table 2 shows this trend. The expansion of the arts sector—which has kept pace with the broader economy—has done so without expanding the size of its workforce. On average, state level per capita employment rose by only 3% over this period, while arts jobs per capita fell by 26%. As Table 2 shows, given the decline in arts jobs, the salaries and benefits per arts job have grown from only 68% of the median household income in 2001 to exceeding the median household income by 2017.

Table 2: Core Indicators, by Year

Year	GSP (in billions)	Arts Value Added (in billions)	Jobs (per capita)	ACPSA Jobs (per capita)	Income (in millions)	ACPSA Income (in millions)
1999	$33,860		0.61		$59,221	
2000	$35,585		0.61		$60,482	
2001	$36,628	$1,561	0.61	0.02	$60,687	$41,401
2002	$37,723	$1,658	0.60	0.02	$60,169	$42,513
2003	$39,404	$1,697	0.60	0.02	$59,626	$44,495
2004	$41,847	$1,775	0.61	0.02	$59,345	$46,112
2005	$44,293	$1,797	0.62	0.02	$59,433	$47,596
2006	$46,566	$1,833	0.62	0.02	$59,743	$49,541
2007	$48,452	$1,904	0.63	0.02	$60,373	$51,669
2008	$49,435	$1,978	0.62	0.02	$60,307	$52,962
2009	$48,057	$1,880	0.60	0.02	$59,682	$54,207
2010	$49,486	$1,941	0.59	0.02	$58,567	$55,552
2011	$51,095	$1,942	0.60	0.02	$57,602	$56,976
2012	$52,604	$1,967	0.60	0.02	$57,143	$58,309
2013	$53,635	$2,006	0.61	0.02	$56,906	$59,410
2014	$55,385	$2,038	0.61	0.02	$59,235	$61,371
2015	$56,680	$2,120	0.62	0.02	$59,235	$63,020
2016	$57,389	$2,216	0.62	0.02	$60,328	$63,984
2017	$59,208	$2,282	0.63	0.02	$61,831	$65,749
Average	**$47,228**	**$1,917**	**0.61**	**0.02**	**$59,469**	**$53,816**

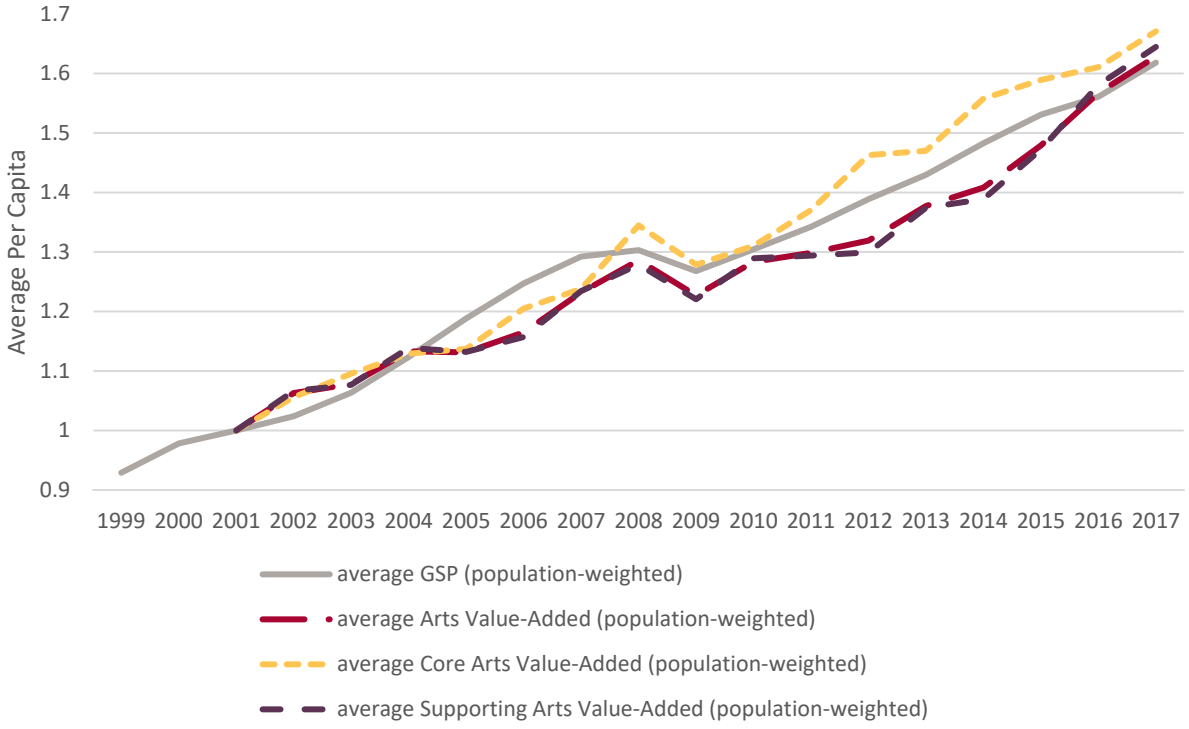
Core and Supporting Arts Sectors

The ACPSA provides valuable data that splits out two components of the arts economy: core arts and supporting arts. The core arts component represents the originators of ideas and content—the creators in these creative industries of arts and culture. The supporting arts component includes industries that produce and distribute arts and cultural products. The arts economy relies on both the idea generators and those who produce and disseminate the creative content. Figure 3 shows how the trends in growth rates for the core and supporting arts components do not diverge much from the overall trends in GSP and the arts economy as a whole. From 2001-2017, the average state's core arts and supporting arts subsectors have grown by 54% and 40%, respectively. Prior to the Great Recession, growth rates for core arts at the state level were somewhat faster (30% vs. 24% from 2001 to 2008). However, from 2009-2017, these average core arts growth rates were quite similar to GSP growth rates.

Taken as a whole, trends in the core and supporting arts subsectors do not reveal a markedly different story. These two elements of the arts economy appear to move in tandem. This shows a balanced growth

in the arts sector with the idea creators and those supporting industries complementing one another. The rise of the states' arts economies in recent decades is not simply a story of a growing "idea economy," but rather entails vital and vibrant growth from supporting industries. With a supporting arts economy three to four times the size of the core arts economy, the arts and creative industries are as much about making the stage as they are about the players acting on it.

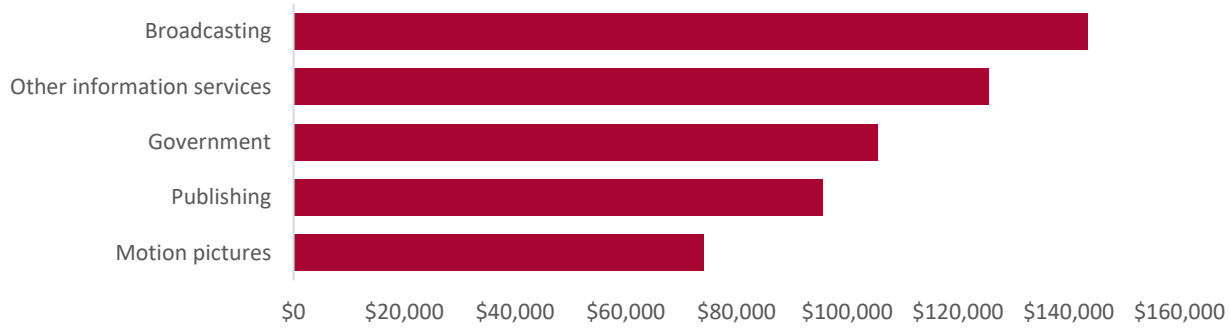
Figure 3: Trends in Core and Supporting Arts Value-Added, Population Weighted, Indexed to 2001



Industries Comprising the Creative Economy

Decomposing the arts economy even further allows examination of the 35 different subaccounts that the ACPSA tracks. Figure 4 helps put this in perspective. The top subaccounts include other information services, broadcasting, government, motion pictures and publishing. (The next largest subaccount—independent artists, writers and performers—is only half the size of publishing.) The lion's share (62%) of the entire arts and culture sector in 2017 derives from these top five subaccounts. This share has actually grown since 2001, when these five subaccounts contributed almost 54% of nation's arts economy, which suggests a growing diversification over time. For details on the taxonomy of the subaccounts, see National Endowment for the Arts (2013).

Figure 4: Value-added ($ in millions) of the Top 5 Subaccounts in the ACPSA, 2017



These time trends in subaccounts can be seen in Table 3. The table makes clear which subaccounts are in decline (e.g., Photography, Printed Goods, Rental and Leasing) and which subaccounts have grown the most since the Great Recession (e.g., Musical Instruments Manufacturing, Agents/Managers, Other Information Services and Other Design). The stark differences in pre- and postrecession trends for the Government and Motion Picture subaccounts are particularly noteworthy given the direct relevance of state policy for these subsectors. In total, 32 out of 35 subaccounts captured in ACPSA data have shown positive postrecession growth, and more than half of them grew faster than the average GSP growth rate during that period.

States with more diversified arts economies tended to experience much stronger statewide economic growth after the Great Recession.

The diversity of arts related products and the services that they represent offer numerous points of entry, from design (computer systems, graphic, industrial, interior) to manufacturing (woodwork and metalwork, musical instruments) to promoters and agents. It seems likely that every state can find an array of arts related subsectors ripe for growth based on their local conditions. These subaccount data also reinforce the earlier finding that the arts and culture sector offers diversification advantages. In addition to offering economic diversity vis-à-vis other industries, the arts and culture sector is an *internally* diversified industry, comprised of many different microsectors capable of growing or contracting independently of one another. In fact, states with more diversified arts economies (i.e., less concentrated in one subsector like sound recording or advertising) tended to experience much stronger statewide economic growth after the Great Recession.[2]

[2] One standard deviation increase in the amount of diversification of a state's arts economy is associated with a 4% greater GSP growth rate.

Table 3: State Level Average Growth in Subaccounts, Value-Added

Industry	2001-17	2001-08	2009-17
Musical Instruments Manufacturing	167%	2%	604%
Agents/Managers	256%	63%	326%
Other Information Services	1283%	378%	180%
Other Design Services	210%	66%	166%
Computer Systems Design	248%	81%	89%
Other Goods Manufacturing	57%	30%	88%
Promoters	354%	124%	72%
Wholesale and Transportation	70%	35%	54%
Independent Artists/Writers/Performers	149%	56%	51%
Museums	157%	68%	41%
Graphic Design Services	35%	11%	40%
Custom Woodwork and Metalwork Manufacturing	68%	45%	40%
Industrial Design Services	54%	28%	39%
Sound Recording	102%	812%	38%
Interior Design Services	162%	146%	33%
Grantmaking and Giving Services	140%	75%	28%
Other Support Services	67%	73%	26%
Education Services	109%	57%	25%
Construction	4%	-3%	23%
Architectural Services	37%	35%	21%
Jewelry and Silverware Manufacturing	17%	59%	21%
Broadcasting	101%	76%	20%
Fine Arts Education	119%	71%	15%
Government	2%	-12%	15%
Unions	48%	18%	15%
Advertising	40%	36%	12%
Landscape Architectural Services	11%	20%	10%
Performing Arts Companies	47%	17%	10%
Motion Pictures	100%	101%	5%
Publishing	46%	56%	3%
All Other Industries	11%	14%	0%
Retail	6%	7%	0%
Photography	-27%	-12%	-9%
Printed Goods Manufacturing	-9%	21%	-15%
Rental and Leasing	-35%	-6%	-23%

Economic Trajectories

States' overall economies and their arts economies have experienced strong growth since 2001. However, identifying the extent to which each drive one another cannot be discerned from these simple trendlines. Whether the arts economy is a leading indicator, a lagging indicator or neither requires a deeper probe of the data. To do so, the analysis begins with the panel vector autoregressive models. The PVAR models account for the potentially complex web of interdependencies among states' key indicators across all 50 states. These models test whether growth in (some aspect of) a state's arts economy causes improvements in the general state economy, or vice versa.

These models show that the indicator of Arts Value-Added does not predict growth or contraction for a state's GSP. It must be noted, however, that ACPSA data cannot be used to test whether the arts sector leads, lags or drives *local* economies. Plenty of other research points to this potential (e.g., Breznitz and Noonan 2018, 2014; Currid 2009). The evidence for positive impacts of the arts and culture sector on local level economic development can be seen in creative industries as an engine for local growth (Bakhshi and Mateos-Garcia 2014; Cerisola 2019; Markusen 2006), arts scenes as a component of community development and revitalization (Arikan et al. 2019; Noonan, Breznitz et al. 2020), and clusters of arts and arts related amenities attracting and retaining talented workforces (Tiruneh et al. 2018; Noonan, Breznitz et al. 2020). The state level analysis can dilute the otherwise very potent local stimulus of the arts.

The results for the PVAR subaccounts analysis for jobs, however, tells a somewhat different story. A more granular analysis of the ACPSA subaccounts shows that growth in employment in certain arts economy subsectors is shown to cause a rise in general state level employment rates. This positive effect is observed for Education, Graphic Design, Motion Pictures, Photography, Publishing and more. Growth in Agents/Managers employment, for example, also leads to growth in tech-sector employment and a decline in the income of top level earners.

Growth in employment in certain arts economy subsectors is shown to cause a rise in general state level employment rates.

Table 4: Selected Drivers of Overall Jobs Growth, by ACPSA Subaccounts

Industries	Effect on Jobs
Independent Artists/Writers/Performers	–*
Agents/Managers	–***
Computer Systems Design	–**
Education Services	+***
Graphic Design Services	+***
Jewelry and Silverware Manufacturing	+*
Motion Pictures	+***
Other Information Services	–**
All Other Industries	+*
Photography	+**
Publishing	+*
Retail	+*
Custom Woodwork & Metalwork Manufacturing	–**
Wholesale and Transportation	–**

*** p<0.01, ** p<0.05, * p<0.1

A final set of analyses is conducted to explore the *interdependencies among the subsectors* of the arts economy. These analyses examine how growth in core arts, supporting arts and the overall state economy might be interdependent. Surprisingly, the results show that the core arts and supporting arts sectors appear to evolve independently from one another. There is no statistically significant relationship between growth in the core arts economy and growth in the supporting arts subaccounts. Rather, they both appear to move on their own, largely independently from one another and in line with national level macroeconomic trends. This offers states some diversification in the face of economic shocks like the pandemic of 2020. Declines in, say, the motion pictures industry need not drag down adjacent "core" arts subsectors. This also suggests, again, a stronger role for interdependence at local and national scales: partners and clients might be just down the street or in another state. The independence of these subsectors points to opportunities for states to develop one without needing to also excel in the other. Economic growth in these sectors depends on broader economic trends rather than prior success or strengths in other subsectors, which opens up possibilities for new initiatives based on local conditions.

Drivers of the General Economy

While due diligence makes the PVAR analysis important to conduct, it's limited because it does not account for differential growth rates by region, nor does it allow us to trace a longer ripple effect through time for different variables. To remedy this, and to help better isolate the causal effects of the arts economy on the general economy, additional statistical models must be examined. Dynamic panel data models can sharpen our focus on ways in which a state's arts economy can cause future growth in the overall economy.

The results in Table 5 summarize the main findings from these DPD analyses. Generally, these results are consistent with the PVAR models presented in the previous section. Column 2 shows a positive effect of arts jobs per capita on general employment per capita, but the effects of the arts on GSP do not appear to be statistically significant.

Table 5: DPD Model Results – Select Drivers of GSP, Jobs and Income

General economy indicator:	GSP	Jobs	Income
Arts indicator:	**Arts Value Added**	**Arts Jobs**	**Arts Comp**
Variables	**(1)**	**(2)**	**(3)**
General economy indicator	0.8858***	0.8508***	0.6266***
(1 year prior)	(0.0393)	(0.0309)	(0.0701)
Arts indicator	0.0295	1.6301*	-0.0284
(1 year prior)	(0.0338)	(0.8792)	(0.0505)
Arts indicator	-0.0599*	-0.6467	-0.0078
(2 years prior)	(0.0321)	(0.8307)	(0.0437)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Core and Supporting Arts Subsectors' Effects on GSP and Employment

Additionally, this analysis examined whether the core arts or supporting arts subsectors might influence statewide economic growth. The results (using the main DPD model), highlighted in Table 6, illustrate that more value-added, jobs or compensation in core arts does not necessarily lead to more GSP, employment or income, respectively, in the statewide economy. There is, however, evidence showing modest effects from the supporting arts subsector. A growth in value added per capita from the supporting arts subsector causes a rise in GSP per capita two years later. Further, a rise in supporting arts jobs per capita leads to increases in overall per capita employment the following year. These effects reflect a positive role of arts subsectors on statewide economic growth.

Table 6: DPD Model Summaries – Select Subaccount Drivers of GSP, Jobs, Income

	Core Arts Value Added	Core Arts Jobs	Core Arts Compensation	Supporting Arts Value Added	Supporting Arts Jobs	Supporting Arts Compensation
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Effects on GSP						
1 year prior					+***	
2 years prior				+*		
Effects on Employment						
1 year prior	+*		+**	+**	+***	
2 years prior		–***			–**	
Effects on Income						
1 year prior					–*	
2 years prior						

*** p<0.01, ** p<0.05, * p<0.1

Further investigation indicates that a rise in core arts jobs drives increases in GSP per capita. The results show a one-standard-deviation increase in supporting arts jobs per capita leading to a 1.25% increase in GSP per capita at the state level. Growth in supporting arts value-added looks to have an eventual positive impact on GSP. Likewise, growth in core arts or supporting arts value-added has a positive impact on overall employment. Taken as a whole, the results reveal how the particular subsectors of the arts economy can positively affect statewide economic growth and overall employment.

Particular subsectors of the arts economy can positively affect statewide economic growth and overall employment.

Individual Subsectors' Effects on GSP and Employment

To further unpack the effects of subsectors of the arts economy, this study examines the impact of each ACPSA subaccount on GSP and employment levels in separate models. These models examine the effects of growth in value added in different subsectors on GSP one year out and two years out, and effects of growth in jobs per capita in that subsector on the state's overall employment per capita. What is most noteworthy is how many subaccounts have significantly positive effects on their statewide indicator, especially for jobs. In the case of subaccounts' employment effects on statewide employment, the effects are largely positive. Especially strong effects are evident for education, motion pictures and publishing. Growth in a state's value-added per capita from publishing, photography, other support services and jewelry leads to subsequent growth in GSP per capita for the state in the following year or two. The positive effects on statewide indicators from major subaccounts like government, motion pictures and publishing also are significant. Only a few subaccounts appear to have no significant effects on GSP or employment.

Rural/Urban Differences

Finally, estimating another set of models enables investigation of whether the experience of rural states diverges from more urban states in terms of the impacts of their arts economies on statewide economic growth. To this end, the same models estimated and reported in Table 5 are re-estimated to allow the effects of arts economy indicators to differ for more rural states. The results are summarized in Table 7. Overall, there do not appear to be many differences between rural and urban states in terms of how their arts economies affect state GSP. More urban states may tend to have somewhat more positive impacts of arts value-added (or arts compensation) on their GSP (median income), but that difference is quite noisy and not statistically significantly different from zero. However, arts employment tends to boost overall employment per capita in more rural areas, an effect that is not evident in more urban states.

Table 7: Dynamic Panel Data Model – Select Drivers of GSP, Interactions

General economy indicator:	GSP	Jobs	Income
Arts indicator:	Arts Value Added	Arts Jobs	Arts Comp
Variables	(1)	(2)	(3)
Arts indicator – overall (1 year prior)	–	+	–
Arts indicator – overall (2 years prior)	–*	+*	–
Arts indicator – more urban (1 year prior)	+	+	+
Arts indicator – more urban (2 years prior)	+	–	+

* p<0.1

Recovering from the Great Recession

Of particular interest in this investigation is the role that the arts and culture sector played in the recovery from the Great Recession. This analysis of the Great Recession period acknowledges several key facts and limitations. First, our data from the ACPSA is limited to annual data based on calendar years. This does not align neatly with the Great Recession, which lasted from December 2007 to June 2009. Second, not all states experienced the Great Recession's impacts in the same way and at the same time. Thus, the Great Recession does not function like a simple, "clean" shock to each state's economy in, say, 2008 or 2009. With that in mind, it is still possible to characterize the states' different experiences with the Great Recession period. As evident in Figures 1 and 3, the overall shock of the Great Recession did have adverse economic effects on average.

In the year immediately following the Great Recession, the average GSP per capita rose by 3% while the average state arts economy grew by 3.4%. This faster growth rate coming out of a major recession bodes well for postpandemic recovery.

Table 8 uses state level averages to illustrate how both the general economy and the arts and culture sector endured and recovered from the Great Recession. As GSP per capita declined from 2008 to 2009 and overall showed a nearly flat trend from 2008 to 2010, states' average growth rate in value-added from the arts economy was negative. This makes sense, since no sector was "immune" from those catastrophic events. However, about a third of the states saw their arts economy outperform their overall economy during this time. In the year immediately following the Great Recession, the average GSP per capita rose by 3% while the average state arts economy grew by 3.4%. This faster growth rate coming out of a major recession bodes well for postpandemic recovery.

Table 8: Average Growth Rates during and after the Great Recession

Years	GSP	All		Core		Supporting		Jobs	All	
		Arts Value-Added		Arts Value-Added		Arts Value-Added			Arts Jobs	
2008-09	-0.027	-0.050	(14)	-0.108	(18)	-0.073	(19)	-0.038	-0.071	(3)
2008-10	+0.002	-0.017	(12)	-0.116	(17)	-0.053	(20)	-0.05	-0.090	(2)
2009-10	+0.030	+0.034	(24)	-0.016	(17)	+0.018	(24)	-0.012	-0.021	(15)

Number of states with stronger (i.e., more positive) arts growth rates listed in parentheses.

In terms of the recovery rates—how fast a state's economy rebounded from its recessionary low point—Table 9 shows how resilient the arts and culture sector is. Average one-year growth rates after the low

point were 3% (median of 2.6%) for the general economy but were substantially greater for the arts economy. This is especially true for the core arts subsectors, which posted very robust average growth rates after bottoming out during the Great Recession. Further, while the faster burst of growth for the arts economies appears limited to that first year, the much higher growth rates for the core arts subsector persist for the two- and three-year growth rates. The core arts may hold promise in leading a state's recovery from a recession.

Table 9: Average Post-Great Recession Recovery Rates

Variable		No. of states	Mean	Median
GSP	Years to recover	49	1.8	1
GSP	1-year growth rate	51	3.0%	2.6%
GSP	2-year growth rate	51	5.2%	4.5%
GSP	3-year growth rate	51	8.1%	7.4%
Arts value-added	Years to recover	43	2.9	2
Arts value-added	1-year growth rate	51	3.6%	3.3%
Arts value-added	2-year growth rate	51	2.6%	2.0%
Arts value-added	3-year growth rate	51	4.8%	4.3%
Core arts value-added	Years to recover	23	2.1	1
Core arts value-added	1-year growth rate	51	10.9%	9.9%
Core arts value-added	2-year growth rate	51	19.8%	16.4%
Core arts value-added	3-year growth rate	51	21.0%	16.6%
Supporting arts value-added	Years to recover	31	2.6	1
Supporting arts value-added	1-year growth rate	51	3.7%	3.3%
Supporting arts value-added	2-year growth rate	51	2.7%	1.7%
Supporting arts value-added	3-year growth rate	51	6.6%	5.6%

Conclusion

A thorough investigation of the drivers of states' arts economies and their statewide (general) economic growth and recovery reveals the arts and culture sector to be a robust, independent contributor to state economic successes. States' arts economies tend to rise and fall alongside a state's broader economy, neither leading nor lagging a state's economic vibrancy. States can benefit from the economic engine of arts and culture as an independent contributor to their overall economic health. During economic downturns, lagging arts economies do not appear to drag down their states' overall economy. During periods of recovery, however, states' arts economies demonstrate greater resilience and rebound faster than state economies at large when emerging from the Great Recession.

The "arts economy" should not be seen as a monolith, but rather a mix of different elements or subsectors with different dynamics. The broader subsector of "supporting arts" does not appear to follow growth in the "core arts" subsector; rather, these components of the arts economy are growing largely independently of one another. The complex web of interconnections among the subsectors of the arts economy suggests some potentially fruitful paths to developing the general economy through building, say, information services related to arts and culture which, in turn, could be bolstered by a growing publishing subsector.

Both the arts economies and the overall economies follow paths where big positive or negative 'shocks' to the economy will ripple forward and affect growth rates a few years out. States' arts economies suffered disproportionately during the Great Recession, but they also recovered disproportionately quickly. And the states that suffer negative shocks—above and beyond what the national economy does—see the ripple effects of those shocks disappear within two years. The analysis of the post-Great Recession recovery shows that the arts economy is particularly resilient. It bounces back faster than the state economy as a whole, leading the economic recovery. Furthermore, while growth in the arts shows considerable inertia in driving future growth, a growing arts economy can significantly drive growth in overall GSP and employment. It's little wonder that that states with strongest postrecession growth are those with larger arts economies. If past patterns hold true after the COVID-19 crisis hobbled the arts and culture sector (Florida and Seman 2020), the arts sector can play a big role in revitalizing states' economies.

The independence of the arts economy places the arts and culture sector in a valuable position. Its contributions need not rely on other components of the state's economy and they provide a versatile, quick-to-adapt economic engine that rebounds faster than the rest of the state's economy. The arts and culture sector thus helps a state diversify its portfolio and mitigate risks associated with overdependence on particular economic sectors. As an independent economic engine, the arts economy can still lead statewide growth, and certain subsectors of the arts economy appear to drive growth in key indicators for the general economy. Developing those subsectors may help promote the state's arts and cultural vibrancy as well as advance its broader economy.

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