



The Resilience of Creativity

An Examination of the COVID-19 Impact on
Copyright-Reliant Industries and Their Subsequent Recovery

A special report by the United States Copyright Office





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Executive Summary

Copyright is a public policy that operates primarily through market mechanisms, meaning that systemic or structural changes to certain markets can have implications for the role and efficacy of copyright policy. For that reason, it is important to monitor the health and changing characteristics of those markets and industries that may be most reliant on copyright, especially in the aftermath of significant social or economic events. The COVID-19 pandemic is one such event, with the potential for meaningful impact on the structure and function of markets.

The COVID-19 pandemic was an unprecedented disruption to U.S. industries and jobs that rely on copyright protection. In order to understand the characteristics of that disruption, this study examines the impact and subsequent recovery from the COVID-19 pandemic on employment, revenues, and creative outputs in copyright-reliant industries.¹ It uses data from the Bureau of Labor Statistics, U.S. Census, and U.S. Copyright Office pertaining to eighteen industries that produce the types of works registered with the U.S. Copyright Office. From this data, the study identifies which industries and which U.S. states experienced the largest impacts from the COVID-19 pandemic and, subsequently, which returned to their pre-pandemic trends. The analysis also reveals other potentially useful observations, such as shifts in the sources of creative activity.

While there exists substantial variation in outcomes across both geography and industry, this analysis reveals several general patterns. Overall, copyright-reliant industries saw a significant sudden decrease in employment, revenues, and copyright registrations between February and April 2020. In most of these industries, revenues recovered to their pre-pandemic trends faster than did employment. As of December 2021, most copyright-reliant industries had not returned to their pre-pandemic employment trend; however, nearly all industries for which data is available returned to their pre-pandemic revenue trends, suggesting that employees within these industries experienced a longer-lived COVID-19 effect than did their employers (noting that revenues only provide a partial picture of a firm's health). This is broadly consistent with the experience of many other industries in the U.S. economy during this period. Nearly all of the copyright-reliant industries also returned to their pre-pandemic trends in terms of relevant copyright registrations. Notably, the production of registered creative works recovered well before impacted employees went back to work within copyright-reliant industries. Additionally, on average, creative industries fared noticeably better than did the U.S. economy at large.

¹ See the definition of copyright-reliant industries in the Data and Methodology section.

Quick Facts

As a whole, copyright-reliant industries experienced a substantial downturn as a result of the COVID-19 pandemic, but the effect was decidedly smaller than that on the broader U.S. economy.

- Between February and April 2020, copyright-reliant industries experienced a decline of approximately 375,800 jobs (a -11.5 percent change), produced about 4,000 fewer copyright registrations (a -11 percent change), and experienced a decrease in revenue of \$21.7 billion (a 5.5 percent decrease).
- By comparison, the U.S. economy at-large suffered a 30 percent higher rate of job loss than did copyright-reliant industries, and the impact on U.S. Gross Domestic Product (GDP) (as a rough comparator) was 62 percent greater than the impact on industry revenues.

Copyright-reliant industries, as a whole, recovered from the pandemic-induced downturn substantially quicker than the broader U.S. economy.

- The total employment level recovered from the economic shock of the pandemic by mid-2022, with revenues recovering within six to nine months and copyright registrations recovering within the first three to six months.
- These industries combined were more resilient than the overall U.S. economy, with U.S. GDP recovery taking twelve to eighteen months and economy-wide employment recovery taking at least six months longer than it did in copyright-reliant industries.

The pandemic impact on employees was substantially larger than the impact on copyright-reliant firms and their investors (which is consistent with the experience of non-copyright reliant industries).

- Most copyright-reliant industries experienced a substantially larger decline in employment levels than in revenues (an average of -11 compared to -5.5 percent), and revenues recovered much faster than employment (in about half the time).
- Revenues exceeded their pre-pandemic trends into 2021 and 2022, largely compensating for lost revenue over the beginning of the pandemic, whereas employment did not experience any such post-recovery compensating surge.

The pandemic effects were significantly varied between industries.

- Industries that necessitated personal proximity among employees or between employees and consumers, such as photography studios, motion picture industries, and performing arts companies, faced the greatest shocks, whereas industries more connected to computers and the internet faced the smallest (and in some cases no) shocks and recovered quicker than other industries.
- For some types of works, declines in industry-produced output was tempered by increases in individually produced creative output, and in certain cases, such as for sound recordings, this resulted in a substantial net increase in creative output.

Introduction

Copyright is a public policy that operates primarily through markets. By facilitating market transactions, copyright provides incentives to produce expressive works and channels for the public to access those works. For that reason, the impact and efficacy of copyright policy is influenced by the health and structure of markets for expressive works and the industries that arise within those markets. Thus, it is important to monitor changes in those factors, especially in the aftermath of significant social or economic events. The COVID-19 pandemic is one such event, with the potential for meaningful impact on the structure and function of markets.² This study examines the COVID-19 shock and subsequent recovery across the copyright-reliant industries within and across the United States.³

The COVID-19 pandemic was an unprecedented disruption to U.S. industries that rely on copyright protection.⁴ Those industries initially (within the first few months of the pandemic) suffered job losses of approximately 375 thousand, an estimated \$15.2 billion in lost wages, and \$21.7 billion in lost revenues. While the initial effects on industry revenues were relatively short-lived, employment suffered a prolonged effect, with an estimated \$194 billion in gross wages lost during the approximately two years over which employment was depressed.⁵ Despite these hardships, copyright-reliant industries fared significantly better in many ways than the broader economy.

Beyond the negative shock to employment and industry revenues, the pandemic substantially impacted creative output. Copyright registrations fell by about 4,000 in total the first two months alone, with noticeable shifts in the composition of registrations. Though creative output is notoriously difficult to measure, copyright registration activity can be a reasonable proxy for that measure in certain contexts.⁶ Thus, the observed patterns in registrations, while not a definitive measure of creative output, are likely indicative of the relative magnitude and direction of shifts in the production of creative works.

Ultimately, the analysis reveals that the recovery from 2020 through 2022 has been fairly successful in some measures, although it is unevenly distributed across both states and industries. Some states and

2 Several previous studies have examined related questions. Lee, Park, and Shin (2021), Fairlie, Couch, and Xu (2020), and Montenegro et al. (2022) use individual-level data and all find unevenly distributed employment effects across different demographics and states, looking broadly across all industries in the country. Florida and Seman (2020) specifically examines the “creative industries” in the first few months of the pandemic and find job losses on the order of 2.7 million, hitting the performing arts industries the hardest. The National Endowment for the Arts also released a brief summary of impacts to cultural industries by state in 2021 (National Endowment for the Arts 2021), confirming the hardest hit states in 2020 but also showing that in 2021, all but one state saw their employment levels rise, but none to pre-pandemic levels. Note that there are substantial differences between definitions of “creative industries,” “cultural industries,” and “copyright-reliant industries” as discussed in the next section. This, in large part, explains the difference in magnitudes found in this study with others mentioned here.

3 For lack of a quantitative measure, “copyright-reliance” is currently binary and based on a qualitative understanding of relevant industries. Future work in progress will improve on these identification methods using empirical analyses of copyright registration activity and industry metrics.

4 See the next section for how these industries are identified.

5 This broad estimate was calculated by taking the quarterly difference between actual employment levels and the expected number of jobs (projected by using the counterfactual pre-pandemic trend explained below) per quarter and multiplying by the median total quarterly wages paid over 2018–2022. The net effect on household income was likely smaller than the gross wages lost across copyright-reliant industries, due to social programs made available during the pandemic and the uptake of temporary (but often low-paying) work.

6 While copyright protection in the United States is automatic once an original work of authorship is fixed in a tangible medium, there are significant benefits to voluntarily registering a work’s copyright with the U.S. Copyright Office (See [U.S. Copyright Office Circular 1: Copyright Basics](#) and [U.S. Copyright Office Circular 2: Registration](#).) These include the right to initiate a lawsuit against infringement and the possibility of recovering statutory damages as well as attorneys’ fees from a successful suit.

industries experienced a much larger decline in employment, revenues, and copyright registrations than others. Similarly, some states and industries made a full recovery, while others had not yet recovered by the end of the analysis period.

This work is a significant step in ongoing, broader research aimed at relating newly available copyright registrations data with other insights about the copyright-reliant industries. These initial findings may facilitate a robust examination of the policies and other factors that most impact copyright-reliant industries in different ways than other sectors of the economy, which is the subject of ongoing research.

Data and Methodology

This section describes the data sources used in this report, along with the scope of the industries defined as “copyright reliant” for this analysis, and the metrics used to estimate impact and recovery.

Data Sources

This report uses data from the Bureau of Labor Statistics’ (BLS) [Quarterly Census of Employment and Wages \(QCEW\)](#) program to identify monthly employment levels in U.S. copyright-reliant industries using North American Industry Classification System (NAICS) codes between 2018 and 2022.⁷ It uses quarterly revenue data from [U.S. Census Bureau’s Quarterly Services Survey](#) for most of these industries during the same time period for comparison.⁸ Revenue data are only available quarterly and are not available for every industry included in this study.⁹ It also uses data that the U.S. Copyright Office maintains on all copyright registrations received.¹⁰

Analyses based on state-wide total employment across all copyright-reliant industries use data from January 2018 to December 2022. Analyses based on industry-level employment span a slightly shorter time frame, ending in December 2021. A 2022 revision to NAICS that caused some copyright-reliant industries to be merged with others or split across several industries¹¹ necessitated the latter abbreviated timeline. This reclassification diminishes the compatibility of measures of the copyright-reliant industries after December 2021 to previously produced measures, so the analysis period terminates before 2022.¹²

7 All statistics in this report, except where noted otherwise, use seasonally adjusted employment levels, rounded to the nearest whole number. Seasonal adjustments at the state-industry level are made using the [X-13ARIMA-SEATS methods](#) used by the United States Census Bureau.

8 The data are seasonally adjusted (with the exception of architecture) net sales, receipts, and operating revenues.

9 Data are available for Architectural and Related Services (NAICS 5413); Newspaper, Periodical, Book, and Directory Publishers (NAICS 5111); Software Publishers (NAICS 5112); Motion Picture and Sound Recording Industries (NAICS 512); Radio and Television Broadcasting (NAICS 5151); Cable and Other Subscription Programming (NAICS 5152); Other Information Services (NAICS 519); Computer Systems Design and Related Services (NAICS 5415); Performing Arts Companies (NAICS 7111); and Independent Artists, Writers, and Performers (NAICS 7115). These significantly overlap, but are not identical to, the list of copyright-reliant industries used for this analysis, and some are taken at different NAICS levels and groupings. See the [Bureau of Labor Statistics](#) for more on different NAICS levels.

10 See Lutes, Waldfogel, and Watson (forthcoming, 2024) for a fuller description of the Copyright Office data.

11 See the [announcement on the BLS website](#) and also the [list of industries affected](#).

12 In contrast, the reclassification does not appear to be a significant concern when examining aggregated employment within states (as the data still contains all the same jobs, just possibly under different industry codes, and are thus captured by the aggregate).

Defining “Copyright-Reliant” Industries

This report focuses specifically on the “copyright-reliant industries” that primarily rely on copyright for their core business models. Attempts to identify “copyright-reliant” or “creative” industries have been based on qualitative assessments. The classification used in this report remains qualitatively based — ongoing research to construct quantitative measures of copyright reliance will provide a more refined classification methodology. In practice, the classification is based on an assessment of which industries would look substantially different (or not exist) in the absence of any copyright protection. The industries identified by this method substantially overlap with the types of industries submitting copyright registrations for various types of works to the U.S. Copyright Office. These industries are generally consistent with other measures of core “copyright” industries.¹³ Table 1 lists the eighteen industries included this study under this definition.

Table 1: The copyright-reliant industries

Architecture		Other	
541310	Architectural Services	7115	Independent Artists, Writers, and Performers
Literary Works		Software	
5111	Newspaper, Periodical, Book, and Directory Publishers	5112	Software Publishers
519110	News Syndicates	519130	Internet Publishing and Broadcasting and Web Search Portals
Motion Pictures		541511	Computer Systems Design and Related Services
5121	Motion Picture and Video Industries	519190	All Other Information Services
515120	Television Broadcasting	Visual and Graphic Arts	
5152	Cable and Other Subscription Programming	541410	Graphic Design Services
Musical Works		541921	Photography Studios
5122	Sound Recording Industries	541922	Commercial Photography
515111	Radio Networks		
515112	Radio Stations		
7111	Performing Arts Companies		

Note: Industries compiled using 2017 NAICS classifications

¹³ See Stoner and Dutra (2022), World Intellectual Property Organization (2015), Toole, Miller, and Rada (2022a), and Toole, Miller, and Rada (2022b) for other alternative definitions of industries commonly associated with copyright. The purposes of those previous codifications of copyright industries (to assess the economic contribution of copyright industries) differs from the more limited purposes of this study (to quantify the shock and recovery from the COVID-19 pandemic to employment in “copyright-reliant” industries); thus, the current codification differs slightly from those.

Measuring Impact and Recovery

This report aims to quantify two important trends in the copyright-reliant industries: the size of the impact from COVID-19 and the subsequent recovery. The shock to employment, revenues, and copyright registrations is measured in terms of both the absolute change and the percentage change from February to April 2020.¹⁴

A return to two separate benchmarks is used to quantify the length of recovery in months beginning in May 2020. The first is simply the *level* of employment, revenues, or registrations that existed in February 2020 before the start of the pandemic. While on the surface this is an attractively simple benchmark, it relies on the assumption that these levels, in the absence of a pandemic, would have remained static after 2020. This might be a realistic assumption in a few select cases, but in general, some industries had clear patterns of growth and others of decline well before the pandemic began. As such, a return to pre-pandemic levels may be an incomplete measure of recovery and overlooks interesting changes in patterns over time.

Counterfactual scenarios based on pre-pandemic trends are therefore also used as a more robust benchmark. These counterfactual scenarios project the employment, revenue, and registration levels that the industries would likely have achieved if the pandemic had not occurred.¹⁵ While this introduces a degree of estimation error, it is likely a more accurate recovery benchmark for those industries that were in the midst of significant change prior to the pandemic. It also highlights interesting cases where there were significant changes or reversals in trends following the onset of the pandemic.

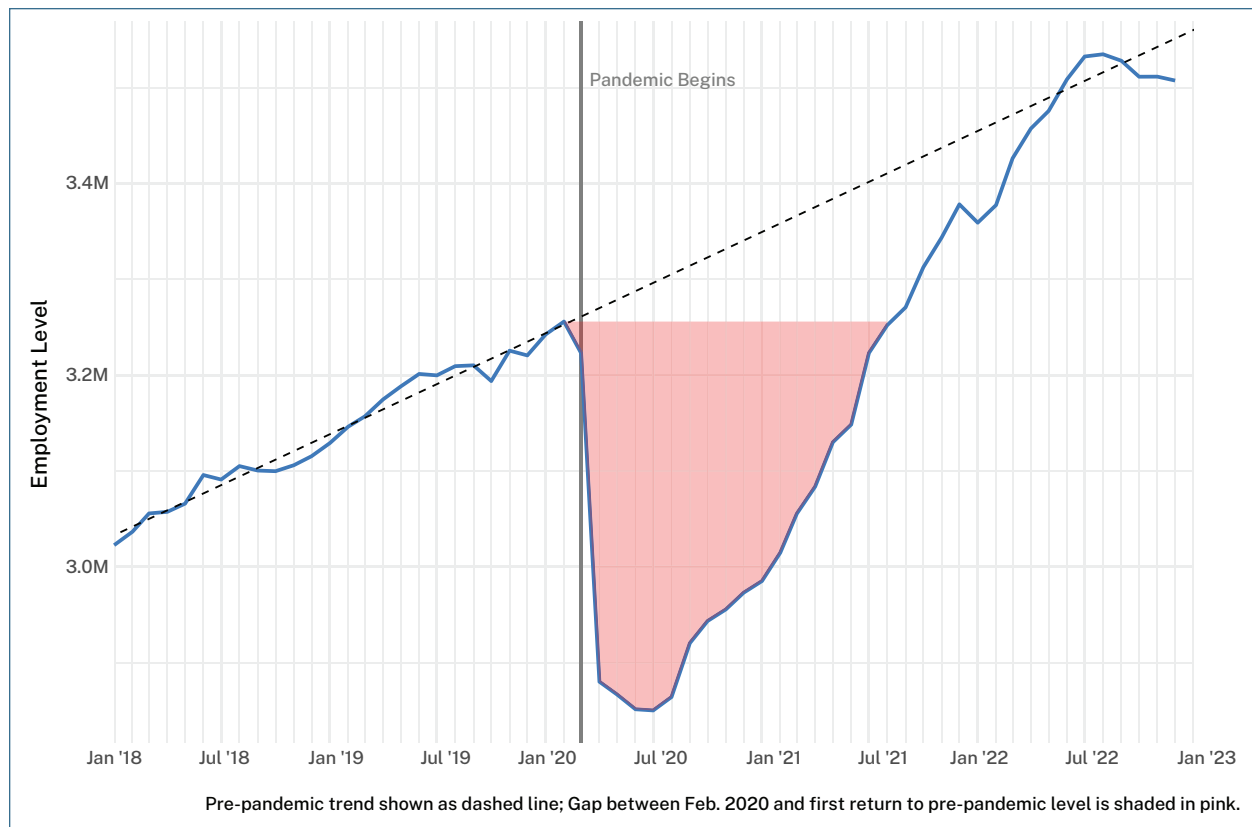
Findings

Of the three measures used in this analysis to assess COVID-19 impact and recovery (employment, revenues, and copyright registrations), the most pronounced effects are found in copyright-reliant industry employment measures. Overall, employment in copyright-reliant industries nationwide fell by 375,768 between February and April 2020, equating to an 11.5 percent reduction (see Figure 1). Taken in the aggregate, the total employment level of these industries returned to pre-pandemic levels in September 2021 (nineteen months after the start of the pandemic) and to the pre-pandemic trend in June 2022 (twenty-eight months after the start of the pandemic).

14 As a small number of industries and states remained at or exceeded their February 2020 levels in March, only to decline again in April, the full impact of the recovery is defined from February to April, and “recovery” is defined as the point in time after April 2020 in which an industry or state returned to a benchmark measure. In the case of industry revenues, which are only available quarterly, the first quarter to third quarter absolute and percentage changes are measured instead.

15 A time series regression using the seasonally adjusted data from January 2018 to February 2020 for each state and each industry is used to estimate the pre-pandemic trend. This is extrapolated forward in time to determine when a state or industry first returned to its pre-pandemic trend line (if applicable).

Figure 1: Total employment in copyright-reliant industries



In contrast, the entire U.S. economy¹⁶ suffered a 15 percent reduction in employment. While the copyright-reliant industries examined in this analysis account for about 2.4 percent of the labor force in the United States, those industries comprised only about 1.6 percent of lost jobs economy-wide. Economy-wide job losses were about 30 percent higher than total job losses across copyright-reliant industries. Similarly, copyright-reliant industries recovered substantially quicker than the broader economy, with a return to pre-pandemic levels in September 2021 and to its pre-pandemic trend in June 2022. In contrast, the U.S. economy returned to its pre-pandemic employment level in February 2022 (about five months after the recovery in copyright-reliant industries) and had *not* returned to the pre-pandemic trend as of the end of the analysis period (December 2022). Thus, overall, copyright-reliant industries appear to have suffered a smaller shock than most other industries and were quicker to recover from that shock compared to economy-wide trends. There are multiple plausible explanations for this difference; further research is needed to identify the precise factors that made copyright-reliant industry employment relatively more robust to the effects of the pandemic.

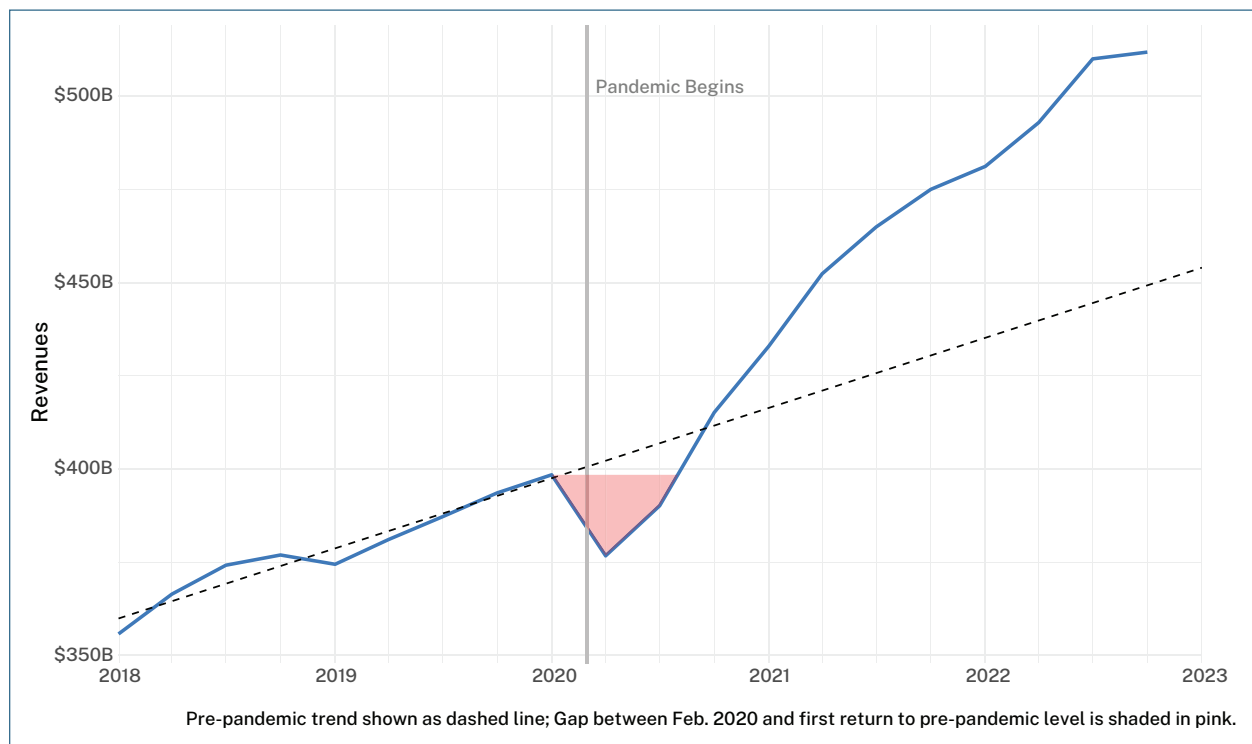
The most visible and perhaps largest burden of the pandemic on copyright-reliant industries was the sudden loss or furlough of employment for hundreds of thousands of American workers. However, another important metric for the resilience of these industries is the pandemic's impact on and recovery of industry

¹⁶ Employment data for the entire United States use the BLS QCEW data for all U.S. industries. Other employment measures, such as Total Nonfarm Payrolls report approximately the same magnitude of employment change.

revenues during this period. Combining the available revenue data for ten industries,¹⁷ revenue follows a path that is similar to that of employment. As shown in Figure 2, industry revenues were growing until the start of the pandemic. After the pandemic began, there is a sharp drop of about \$21.73 billion (a 5.5 percent decrease). This is substantially smaller than the overall impact on U.S. Gross Domestic Product (GDP), which suffered an 8.9 percent decline (about 62 percent greater than the decline in industry revenues).¹⁸

Recovery was swift, taking only about six to nine months (by the third quarter of 2020) to return to both pre-pandemic levels and trends, which is about half the time it took for U.S. GDP to recover.¹⁹ After the initial shock, revenues began to increase at a faster rate than before the pandemic and have continued to significantly exceed the pre-pandemic trend. Notably, the impact on revenues was only about half of the impact on employment, and revenues recovered three to five times faster than did employment. Additionally, copyright-reliant industries appear to have made up for much of the pandemic losses with better than projected post-recovery revenues. This further suggests that creators and other employees of the copyright-reliant industries suffered the brunt and long-term effects of the pandemic more than employers. This experience, however, is not unique to the copyright-reliant industries. In the aggregate, all industries reporting their revenues in the Quarterly Services Survey collectively recovered to the pre-pandemic level by Q4 of 2020 and the pre-pandemic trend by Q2 of 2021.

Figure 2: Total quarterly revenues for selected copyright-reliant industries, 2018–2022



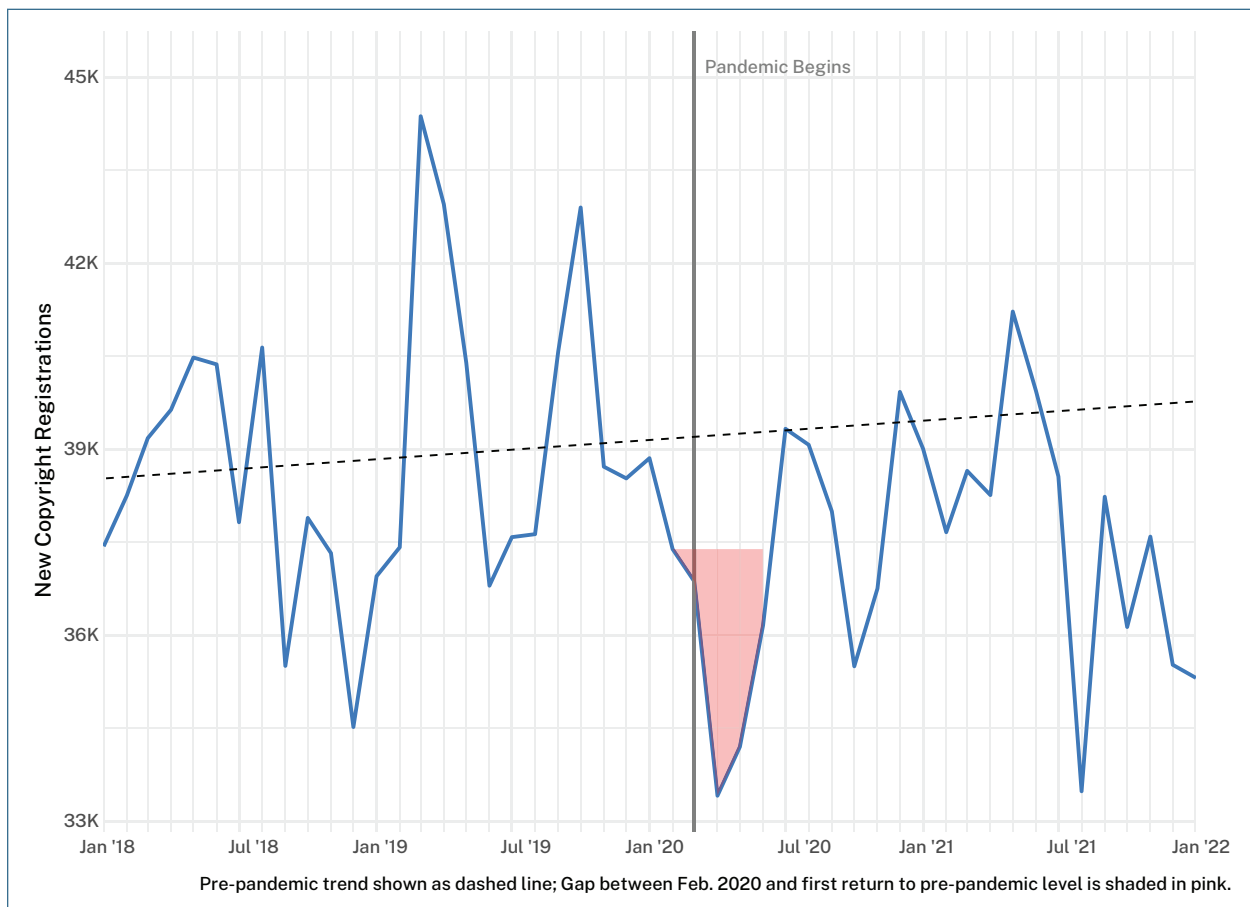
¹⁷ Industry revenue data is available on a quarterly basis, as opposed to the monthly employment data, and is not available for certain copyright-reliant industries.

¹⁸ See U.S. White House, [The U.S. Economy and the Global Pandemic](#) report (2022).

¹⁹ See U.S. White House, [The U.S. Economy and the Global Pandemic](#) report (2022).

Output of creative works, as measured by copyright registrations, is another important measure of the health and robustness of copyright-reliant industries. Nationwide, copyright registrations fell by approximately 3,977 between February and April 2020, an 11 percent decline.²⁰ The total number of registrations returned to both its pre-pandemic level and trend line in July 2020 (five months after the start of the pandemic). This is shown in Figure 3. The figure shows that registrations vary significantly month by month even before the pandemic. While there is a clear decline in registrations during the onset of the pandemic, this change is no more substantial than other variations that may regularly occur over a long time period (declines in early 2019 and the middle of 2021 were larger in magnitude).

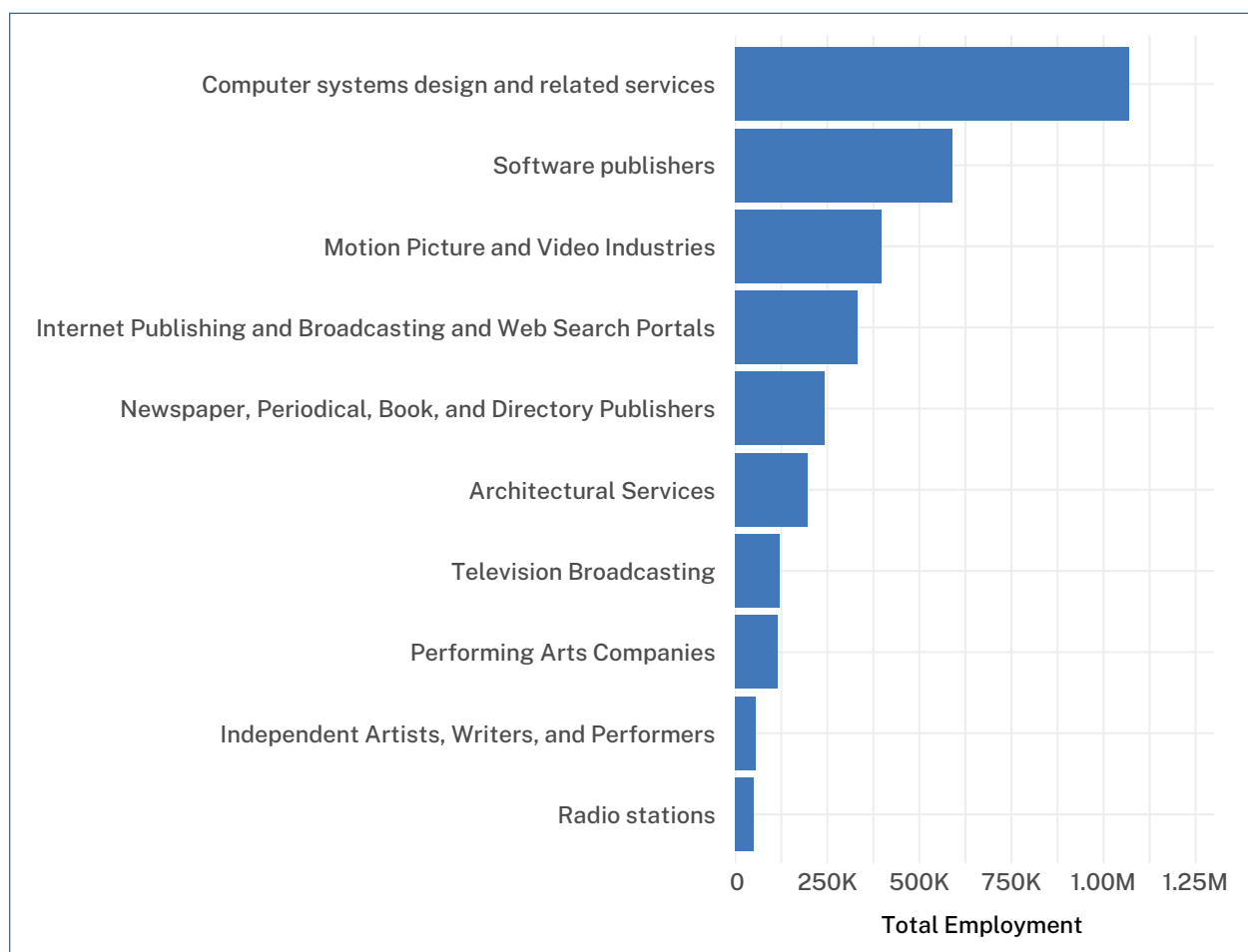
Figure 3: Copyright registrations nationwide, 2018–2022



²⁰ All statistics have been adjusted for seasonality.

There are substantial differences in employment, revenue, and creative output across industries, type of creative work, and geography. As discussed in subsequent sections, there are meaningful differences in pandemic effects along these same lines. For example, there is significant variation in size between the eighteen copyright-reliant industries from [Table 1](#). Figure 4 highlights the ten largest copyright-reliant industries by employment nationwide as of December 2021.²¹ Software and internet-connected industries dwarf most other copyright-reliant industries in terms of employment, employing over a million and half Americans. As is seen below, these industries tend to register fewer copyrights than other industries.²² Following these industries, the motion picture and print industries are relatively large in terms of employment. This general distribution of relative industry size is largely unaffected by the pandemic.

Figure 4: Top ten largest U.S. copyright-reliant industries (December 2021)



²¹ As discussed above, in 2022 NAICS reclassified industries that fall under the scope of this study. For these reasons, the industry level analysis below only contains the period ending in December 2021. Otherwise, certain industry employment levels would drop precipitously to zero starting January 2022, and others would begin at zero in 2018 until a precipitous rise in January 2022.

²² It is difficult in practice to disentangle copyright registrations (as well as employment numbers) between broad classifications of industries that write “software applications” as opposed to companies that may, in part, publish and disseminate literary works, audiovisual works, musical works, and other works over the internet. A streaming service such as Netflix, for example, is classified under NAICS 519310 – “Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers.” This certainly differs from the production of more traditional software programs but is in practice difficult to disaggregate broad NAICS classifications into the type of content they produce, such as audiovisual or literary works.

Figure 5: Total employment in copyright-reliant industries across the United States (2018–2021)

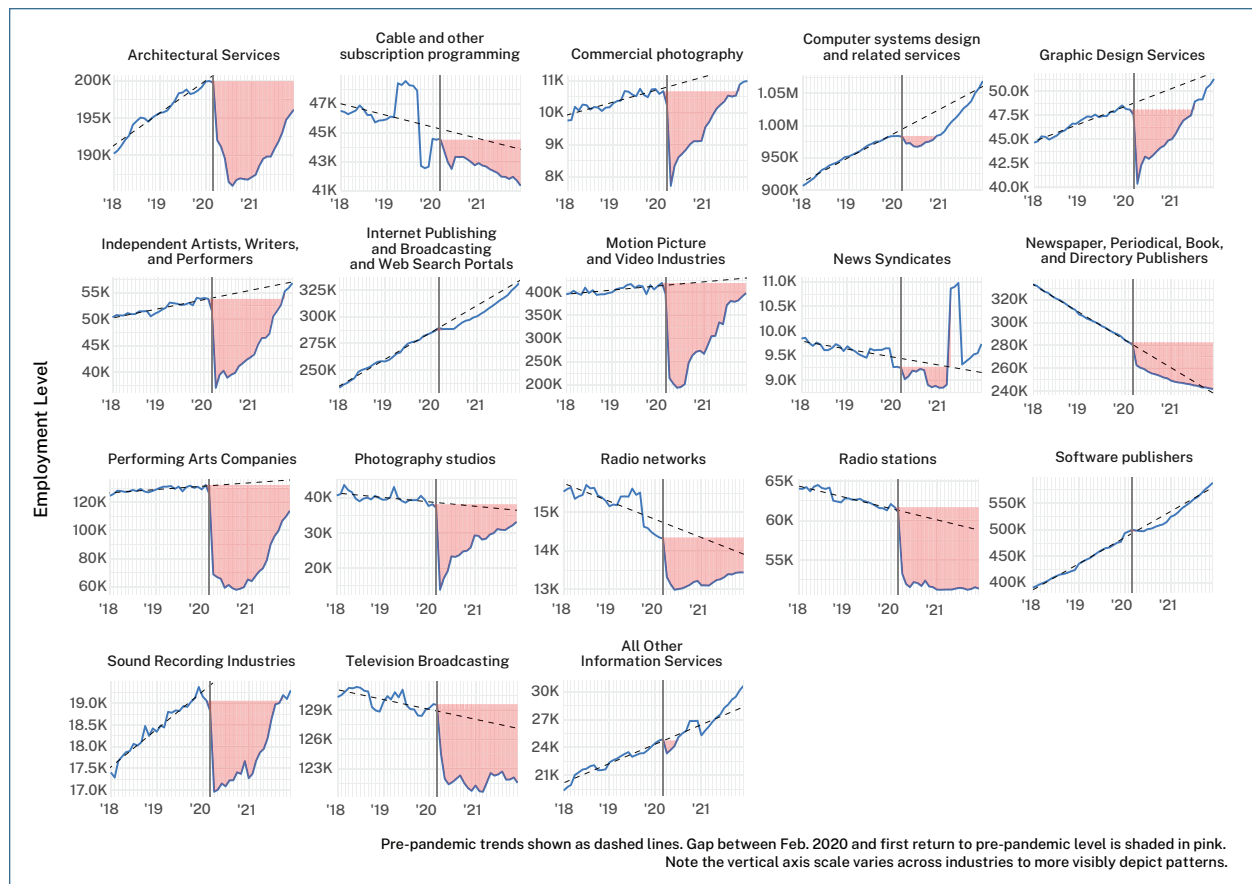


Figure 5 shows the total employment level in the copyright-reliant industries by industry from 2018–2021. Several notable patterns emerge. Some industries, such as those connected with software and the internet, were growing rapidly prior to the pandemic (indicated by steep upward sloping trend lines). Due to their large size and sustained growth relative to the other industries, software and internet-adjacent industries contributed a large effect to the overall employment recovery depicted above in Figure 1. Other industries, such as those associated with physical printing, radio, and television broadcasting were shrinking in term of jobs (indicated by a downward sloping line). Overall, prior to March 2020, seven industries (39 percent) were shrinking, with the remaining eleven being stable or growing.

Figure 6: Revenues by industry (2018–2022)

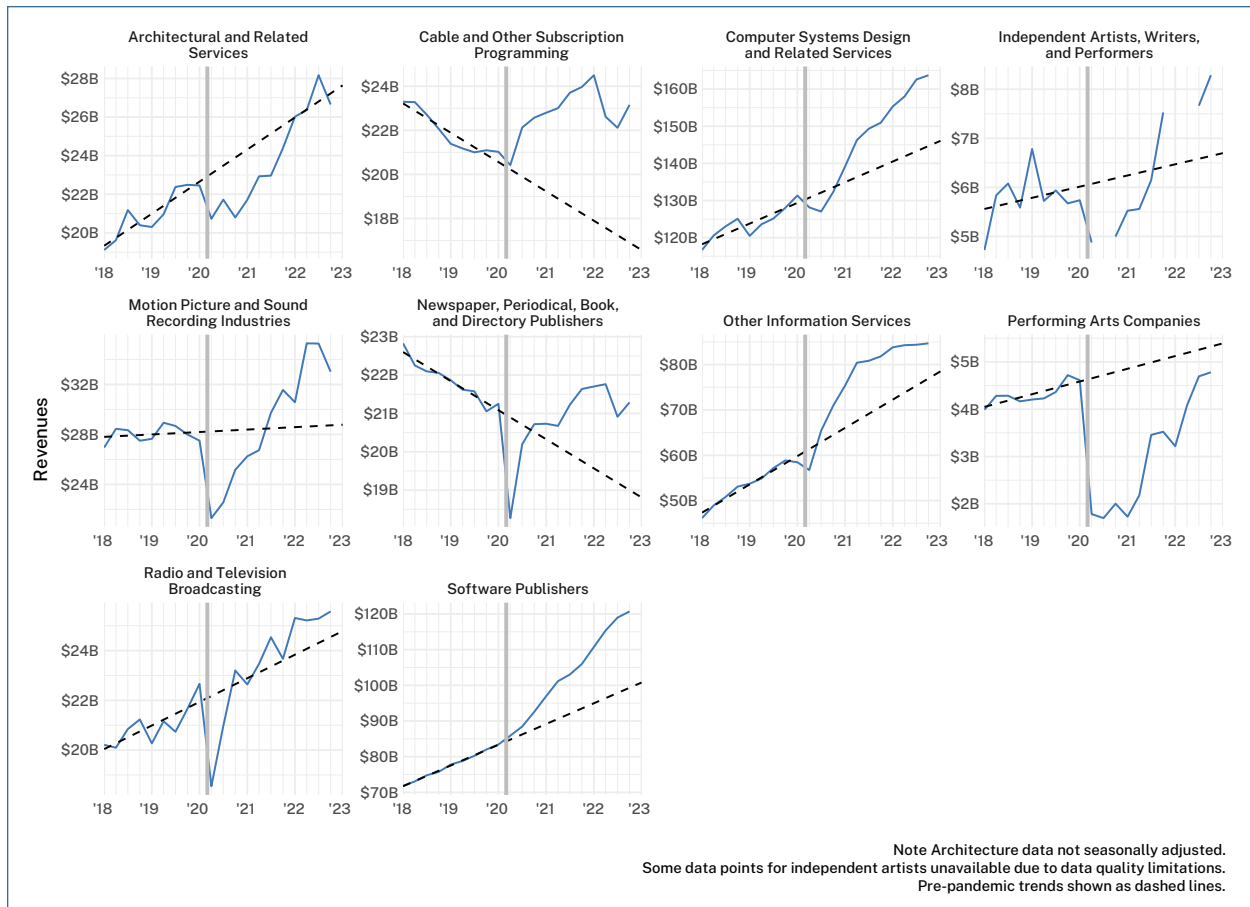
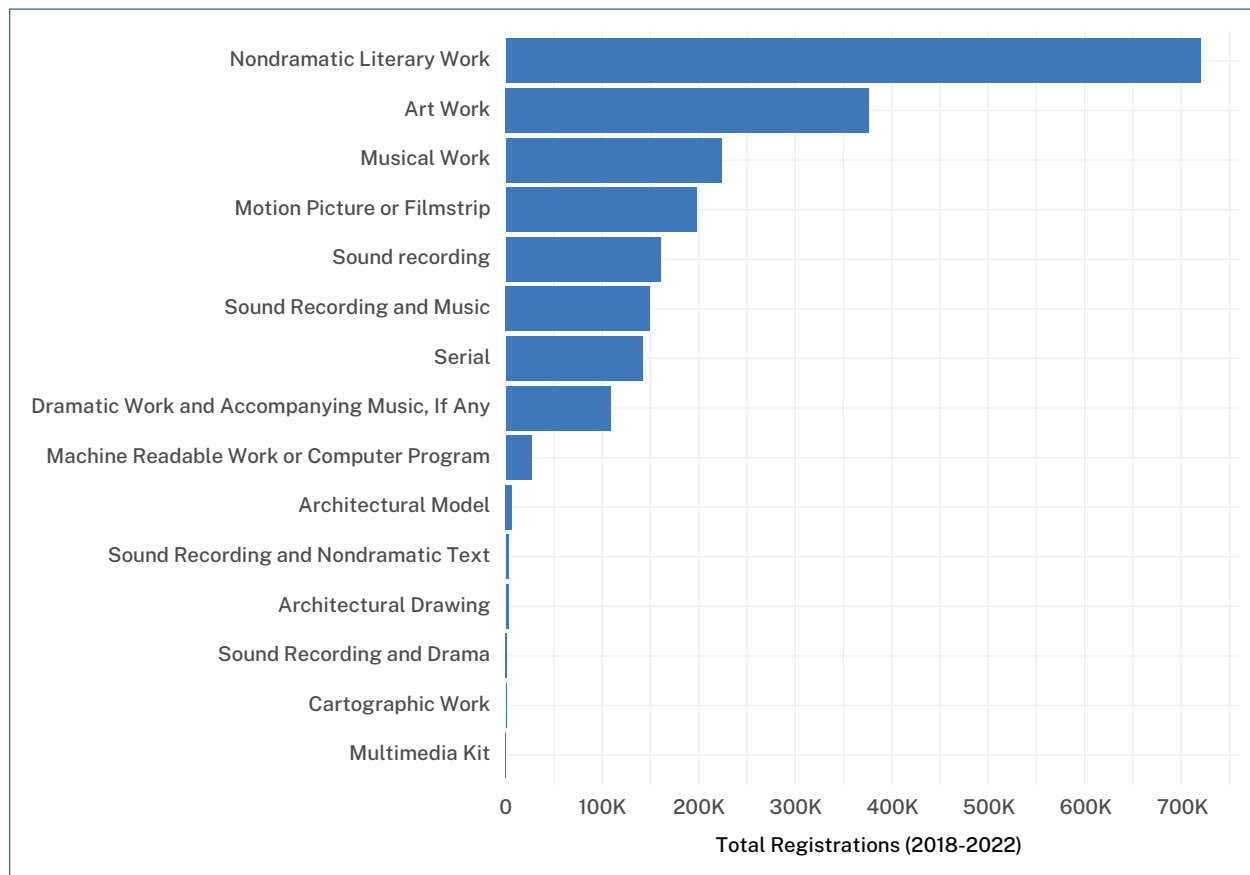


Figure 6 shows similar patterns of industry revenue, with only two industries out of the eleven with available data (18 percent) shrinking and the remainder growing steadily.

In addition to differences across the copyright-reliant industries, copyright registrations vary significantly between different types of creative works. Figure 7 depicts the relative volume of types of works registered in total over the 2018–2022 period.²³ Nondramatic literary works are the largest category, closely mirroring the number of all other types of work put together.

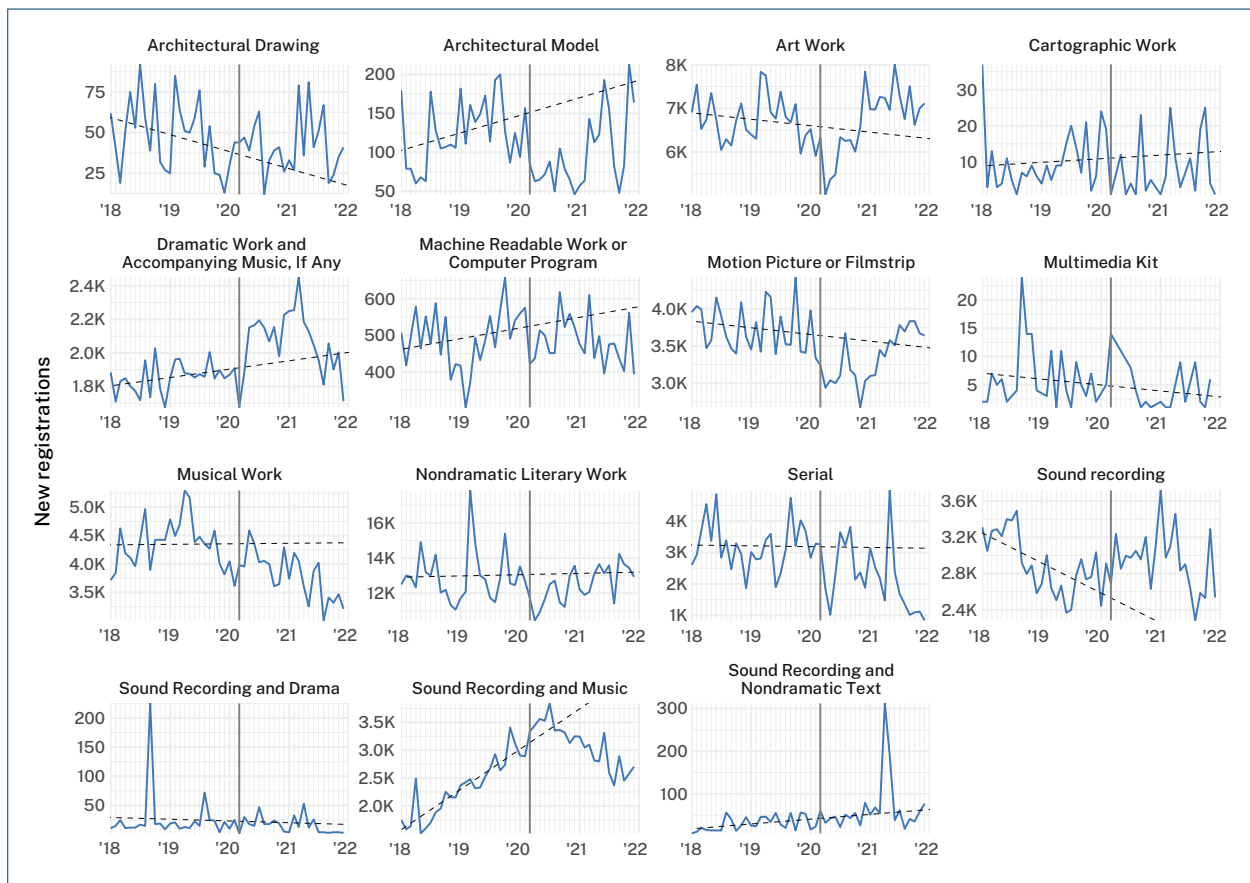
Figure 7: Types of copyright-registrations by relative volume (2018–2022)



²³ Types of copyrightable works are categorized under the Marc 21 system of classification. For more information readers can see "Library of Congress Copyright information As Distributed in the MARC 21 Format," (<https://www.copyright.gov/economic-research/>)

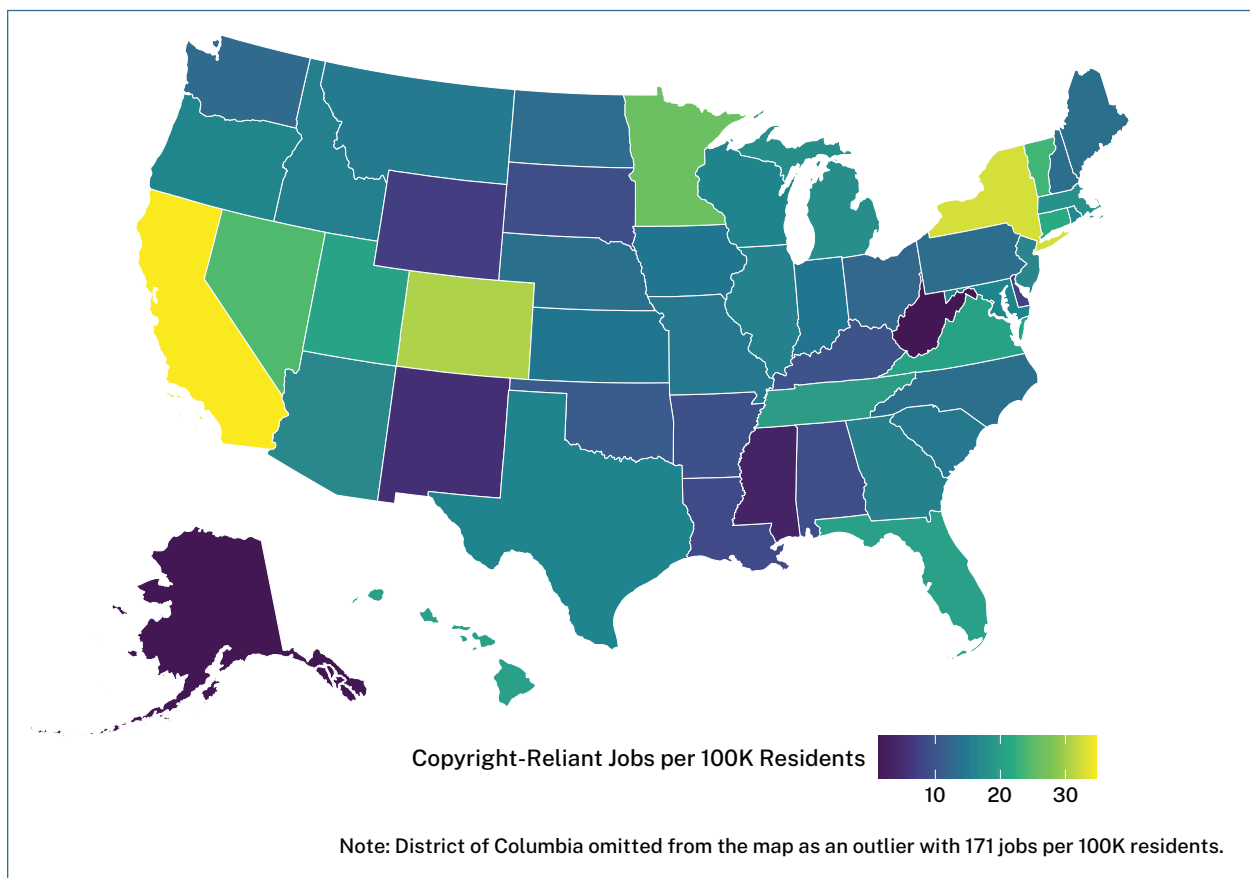
Figure 8 shows time series plots of copyright registrations received by the U.S. Copyright Office, broken down by type of work, monthly from 2018–2022. Even prior to the pandemic, monthly registrations for each type of work fluctuated significantly, with many frequent peaks and troughs. Before the pandemic, multiple types of works saw their registrations growing over time, such as sound recordings with music and machine-readable works/computer programs, while others were decreasing, such as sound recordings not including music. Again, due to the high variance in monthly registrations, these trends are less apparent in most cases.

Figure 8: Monthly copyright registrations by type of work (2018–2022)



In addition to variations across the copyright-reliant industries and types of creative works produced, geographic distribution of jobs in these industries varies across the United States. Most obviously, a significant portion of copyright-reliant industry activity is clustered within a few key states like California, New York, Texas, and Florida. These four states collectively accounted for about 47 percent of the nation's copyright-reliant jobs before the pandemic and 46 percent after the pandemic, despite only having about 33 percent of the U.S. population.²⁴ This distribution remained stable throughout the time period under study. Figure 9 shows the geographic variation in jobs as measured by the median monthly employment in copyright-reliant industries per 100,000 residents over the 2018–2021 period.²⁵

Figure 9: States by relative size of copyright-reliant industries as measured by median monthly employment level per 100,000 residents (2018–2021)²⁶



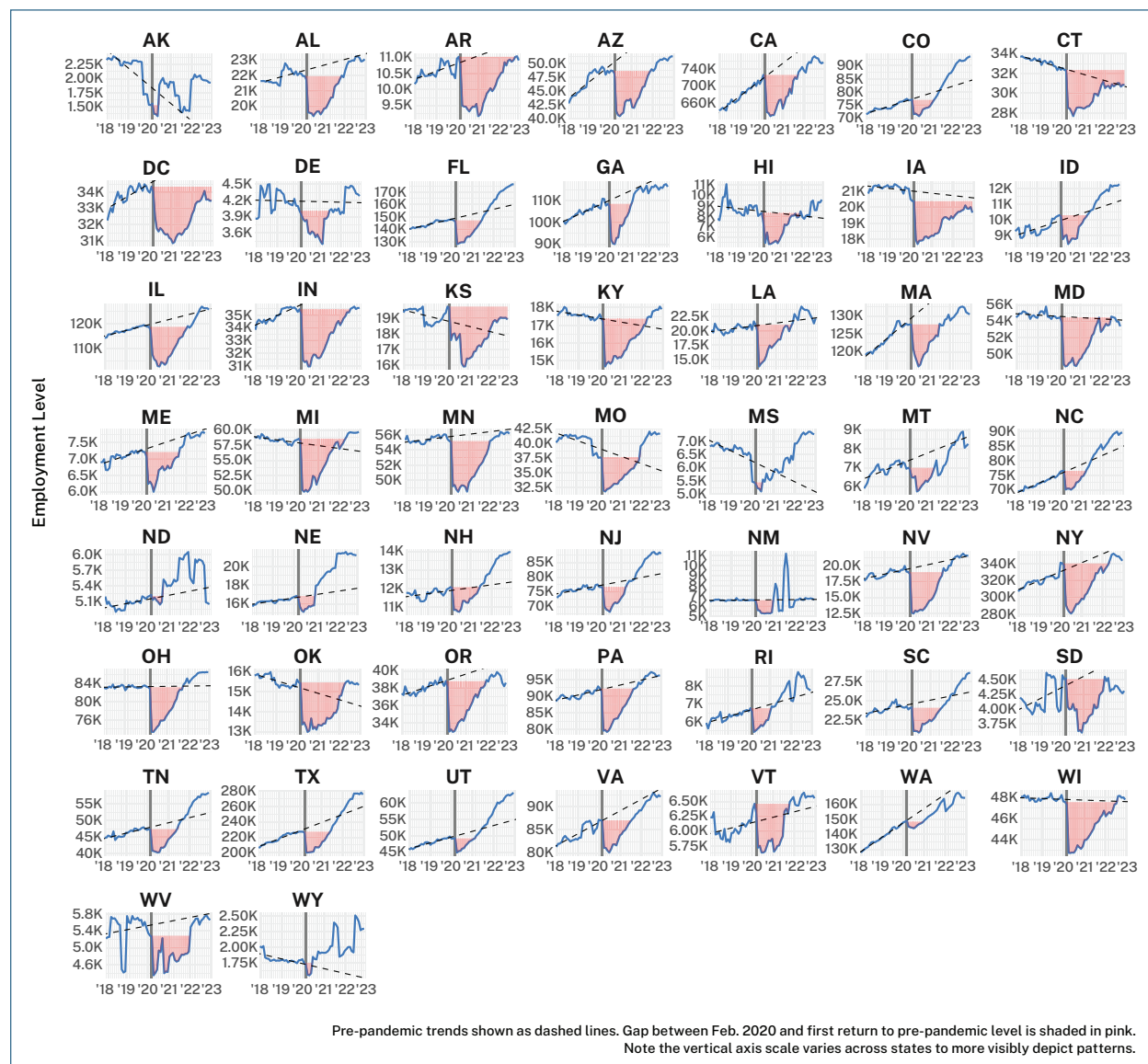
²⁴ These numbers are calculated by taking the median number of total copyright-reliant industry jobs for each state in 2019 and again in 2021. See 2022 estimates of statewide population by the [U.S. Census Bureau](#).

²⁵ Population estimates for 2020 are used from the [U.S. Census Bureau](#).

²⁶ Using this metric, the District of Columbia has an order of magnitude more copyright-reliant jobs per 100,000 residents (at about 171) because copyright-reliant industry jobs tend to be concentrated in cities and the District of Columbia is entirely urban, whereas states are a mix of urban and rural areas. For that reason, the District of Columbia is omitted from the map.

Figure 10 shows the total employment level in the copyright-reliant industries by state from 2018–2022. Overall, by December 2022, forty-seven states returned to their pre-pandemic (February 2020) total employment levels and thirty-six states returned fully to their pre-pandemic trend line. Note that fourteen states had a *negative* pre-pandemic trend line, meaning on the whole, their copyright-reliant industries were shrinking even before the pandemic started.

Figure 10: Total employment in copyright-reliant industries across the United States (2018–2022)

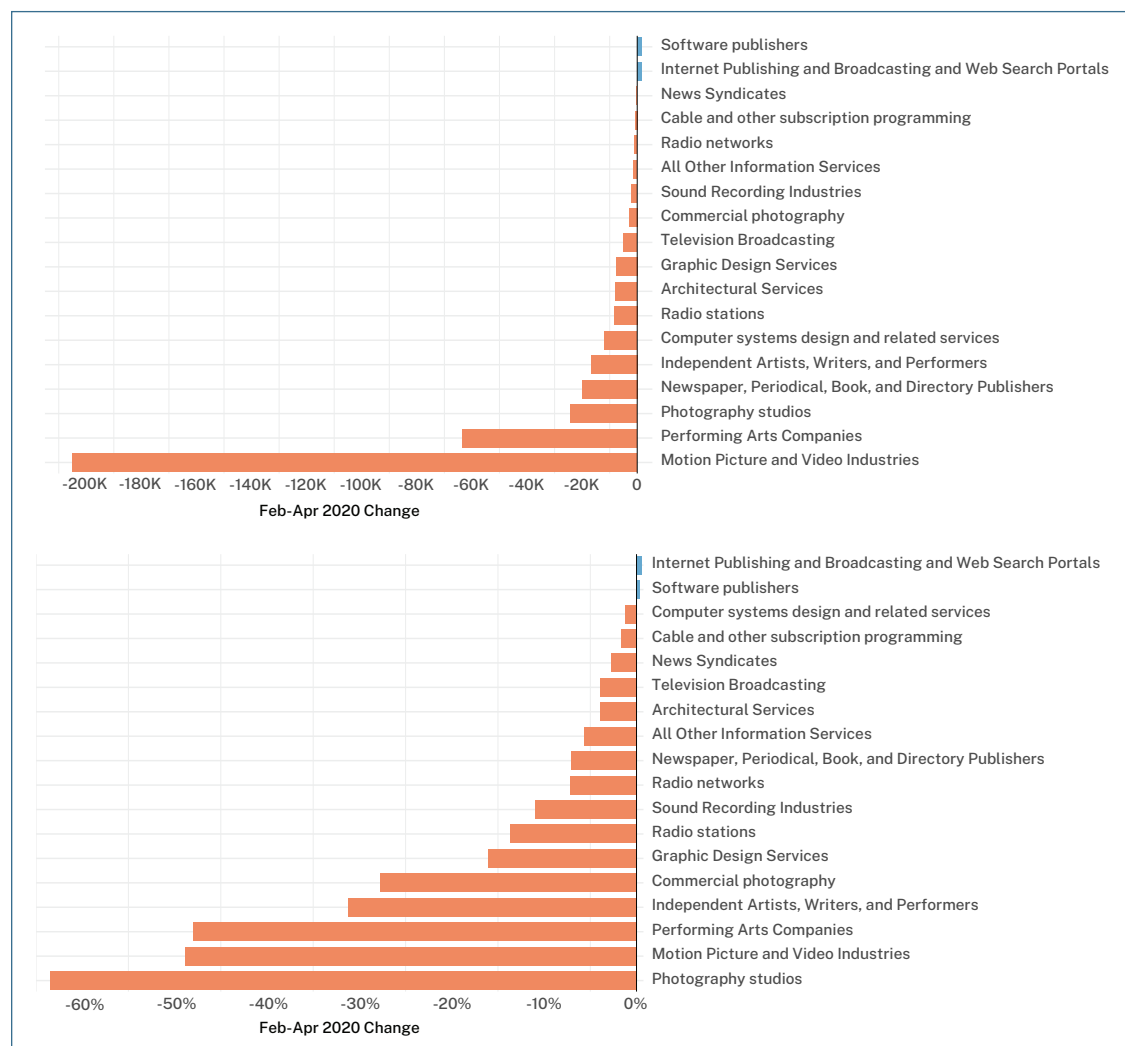


The remainder of this section provides a more detailed view of the impacts of the pandemic and the recovery from those impacts. Additionally, it examines three copyright-reliant industry case studies for additional insights.

Pandemic Impact

As discussed above, the impact of the pandemic is apparent across all three measures examined in this study. Employment appears to have suffered the largest negative effect overall. Nonetheless, the effects on employment varied substantially across the various copyright-reliant industries. While nearly every industry experienced a decline, the absolute magnitude of the shock, as well as the size of the shock in proportion to the size of the industry itself, varied considerably. Figure 11 shows the February to April change in employment levels and the proportionate change. The decline in employment levels ranges from about 0 to 205,000 jobs, and the percent decline ranges from about 0 to about 65 percent across the copyright-reliant industries.

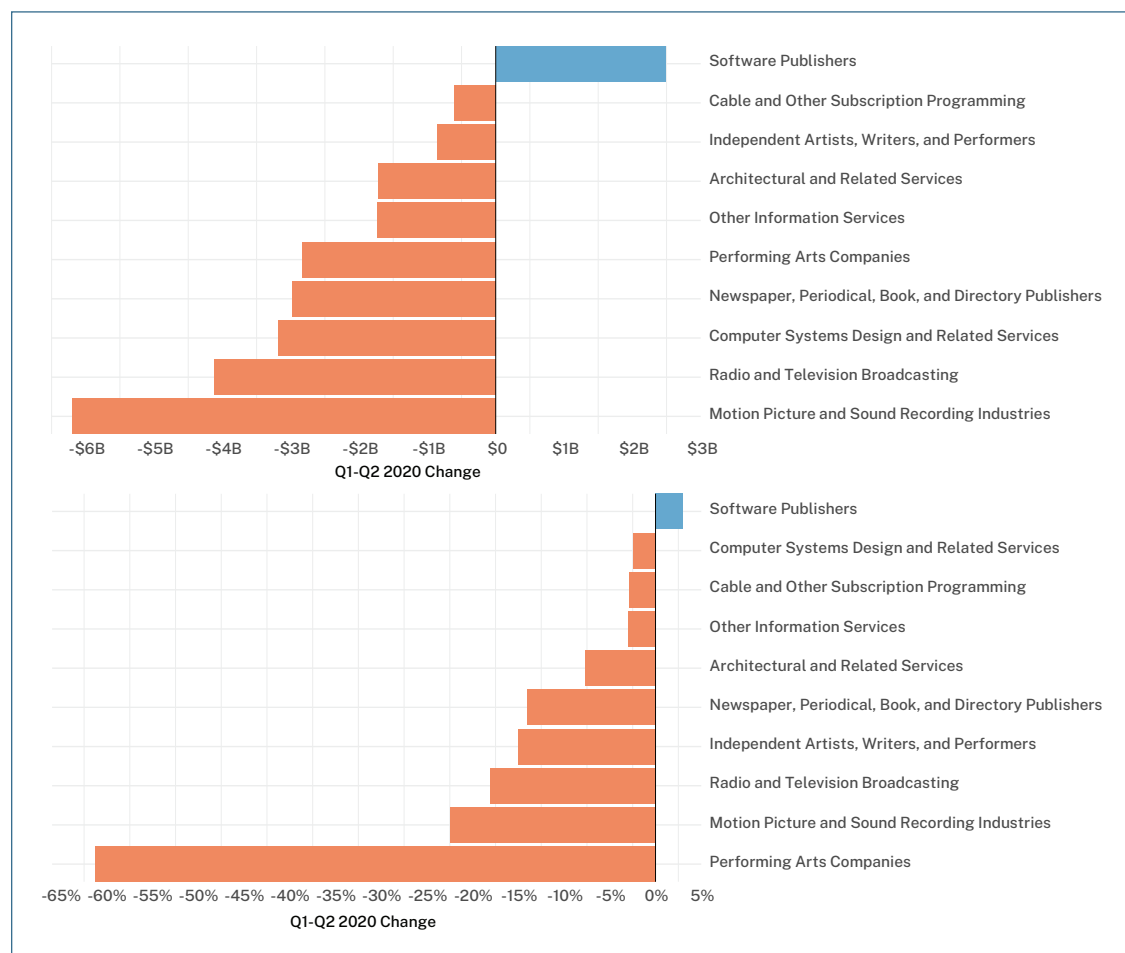
Figure 11: February–April 2020 changes in industry employment levels;
(top: by total shock; bottom: by proportionate shock)



The pandemic hit industries that require employees to be in physical proximity to each other or to patrons most heavily, since that was impractical or impossible during the pandemic. For example, filming television and video content is less conducive to a remote work model than traditional office work. Thus, motion picture industries, performing arts companies, and photography studios tended to suffer the greatest employment losses, both in absolute and proportionate terms. Motion picture industries in particular suffered an even greater loss than most industries, shedding 205,094 jobs (a 48.9 percent decrease). In contrast, some of the industries that fared best can produce their products entirely in digital form, facilitating remote work. They then can distribute those products over the internet, minimizing the need for physical proximity between employees and patrons. Software publishers and other internet-based publishers, including streaming platforms, actually increased employment slightly during the onset of the pandemic.

The pandemic also impacted industries very differently in terms of their revenues. Again, while nearly every industry experienced a decline in revenues, the magnitude of the shock varied greatly. Figure 12 shows the first quarter to second quarter of 2020 total change and proportionate change in revenues. The change in revenues ranges from about a \$2.5 billion *increase* to a \$6 billion decrease, and the percentage change ranges from about 3 percent gain to about a 60 percent decline across the copyright-reliant industries.

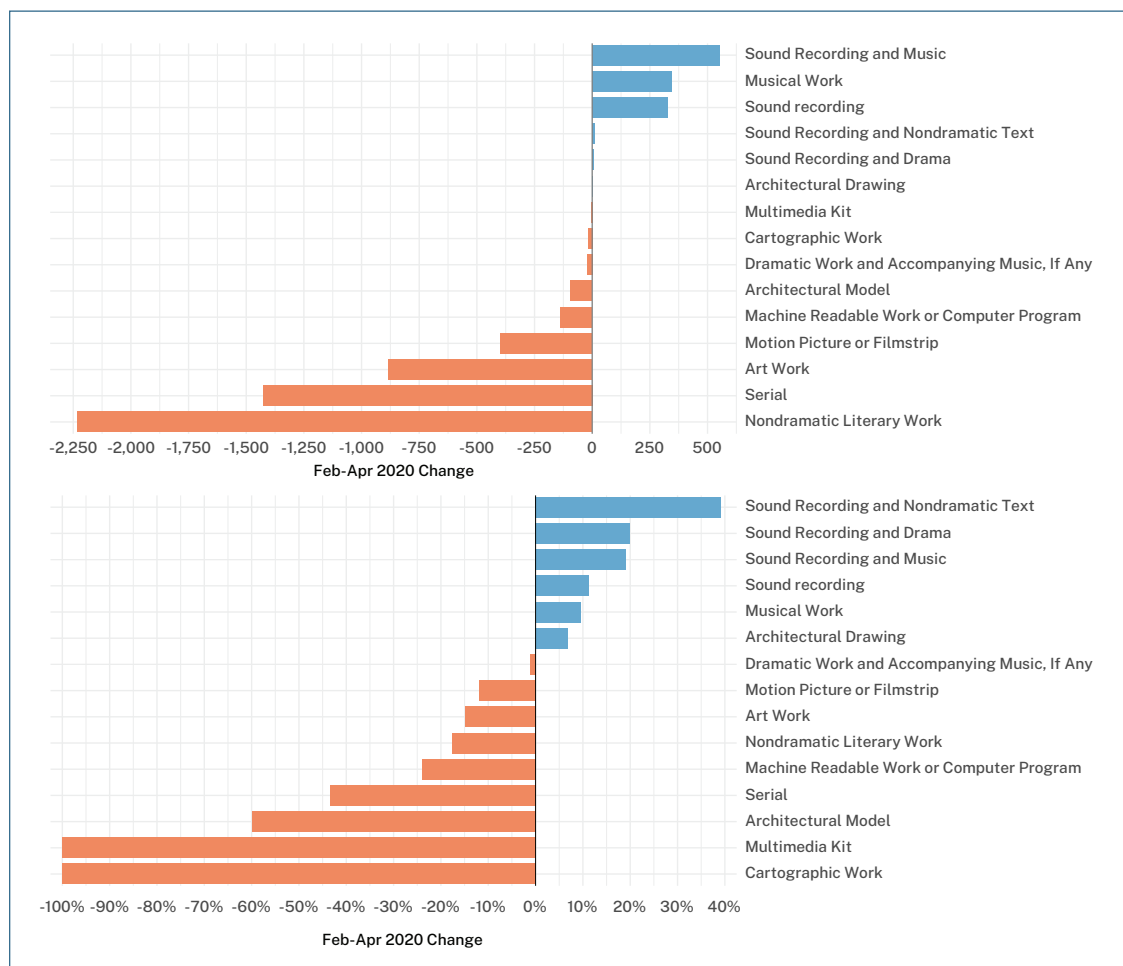
Figure 12: First quarter–third quarter 2020 change in industry revenues; total change; proportionate change (top: by total change; bottom: by proportionate change)



Nearly every industry, at least initially, experienced a drop in revenue from the first quarter to the second quarter, regardless of its connection to in-person or online activities. Across all copyright-reliant industries, the median change was \$2.28 billion and the median percentage was a decline of about 10.85 percent. Software publishers, unlike other aspects of software and internet-associated activities, were the only industry that saw a sizable gain in revenue of \$2.5 billion over that period (a 3.0 percent increase). Motion picture and sound recording industries were hit the heaviest, losing \$6.2 billion (a 22.5 percent decline). While performing arts companies' \$2.8 billion loss was similar to the copyright-reliant industries' median in total revenue lost, its 61.3 percent fall was the highest proportionally.

Unlike employment and revenue, copyright registrations, when broken down by type of works, which can be loosely associated with industries, exhibit less pronounced impacts from the pandemic. This is in part due to the substantial variation in registration volume that normally occurs month to month, regardless of the pandemic. Many types of works saw fewer registrations between February and April, while some saw increases. Figure 13 shows the absolute and relative impact of COVID-19 on registrations.

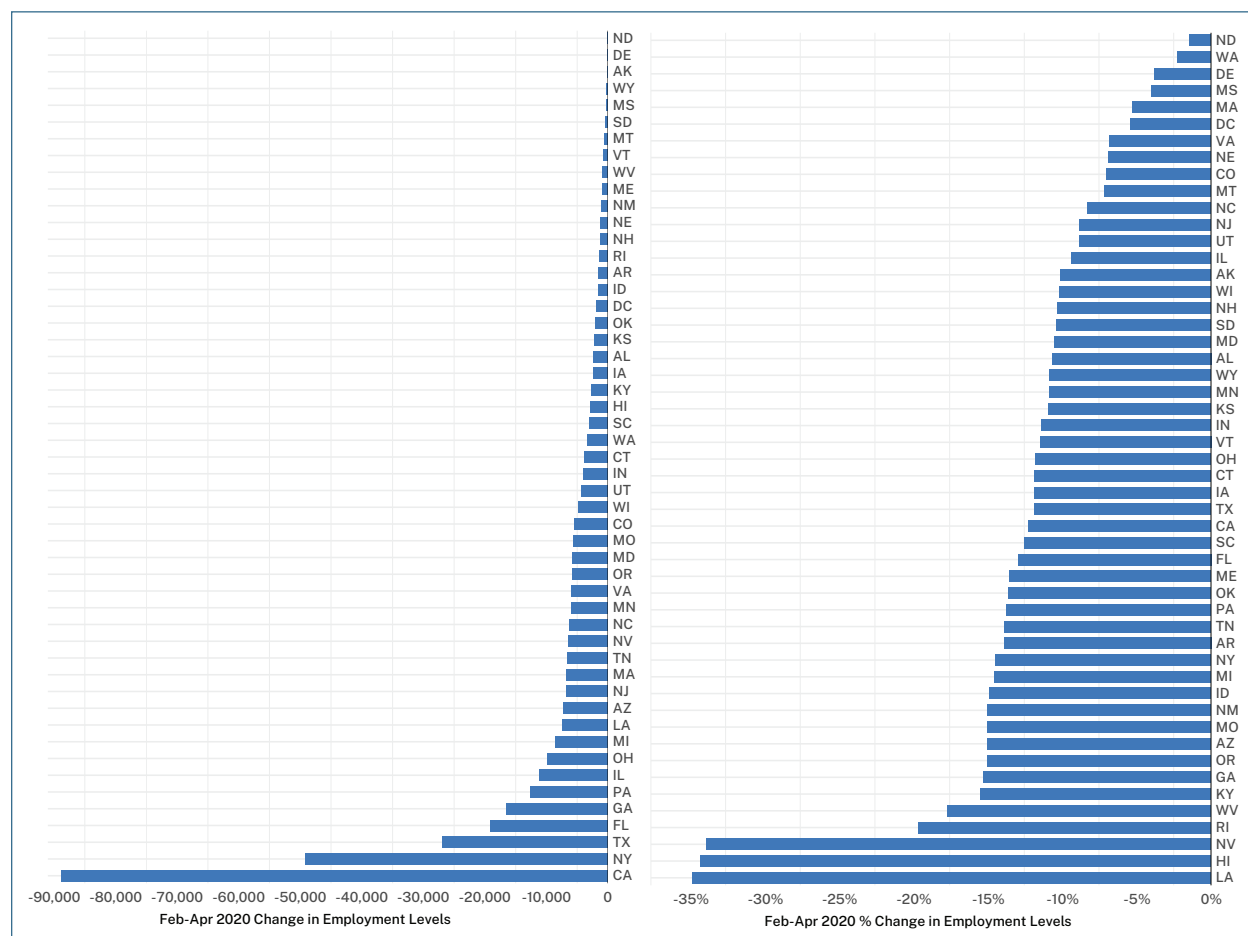
Figure 13: February–April 2020 change in copyright registrations
(top: by total shock; bottom: by proportionate shock)



In terms of total changes, roughly half of the types of works saw increases or decreases over the February to April period. Across all types of works, the median percentage change in copyright registrations was a decline of about 11.95 percent. Nondramatic literary works saw the largest total drop of 2,231 fewer registrations. This is regularly the most frequent type of work registered, so while the proportionate change was a serious -17.6 percent, it was nowhere near the largest. Serials and art works also saw some of the largest drops. However, music and sound recordings saw registrations increase over the period, indicating that the onset of the pandemic had little negative impact on creative output in the music space. Architecture saw the largest proportionate change, as there was less demand for new buildings with everyone staying home. Music registrations again increased by a substantial amount proportionately as well as in absolute totals.

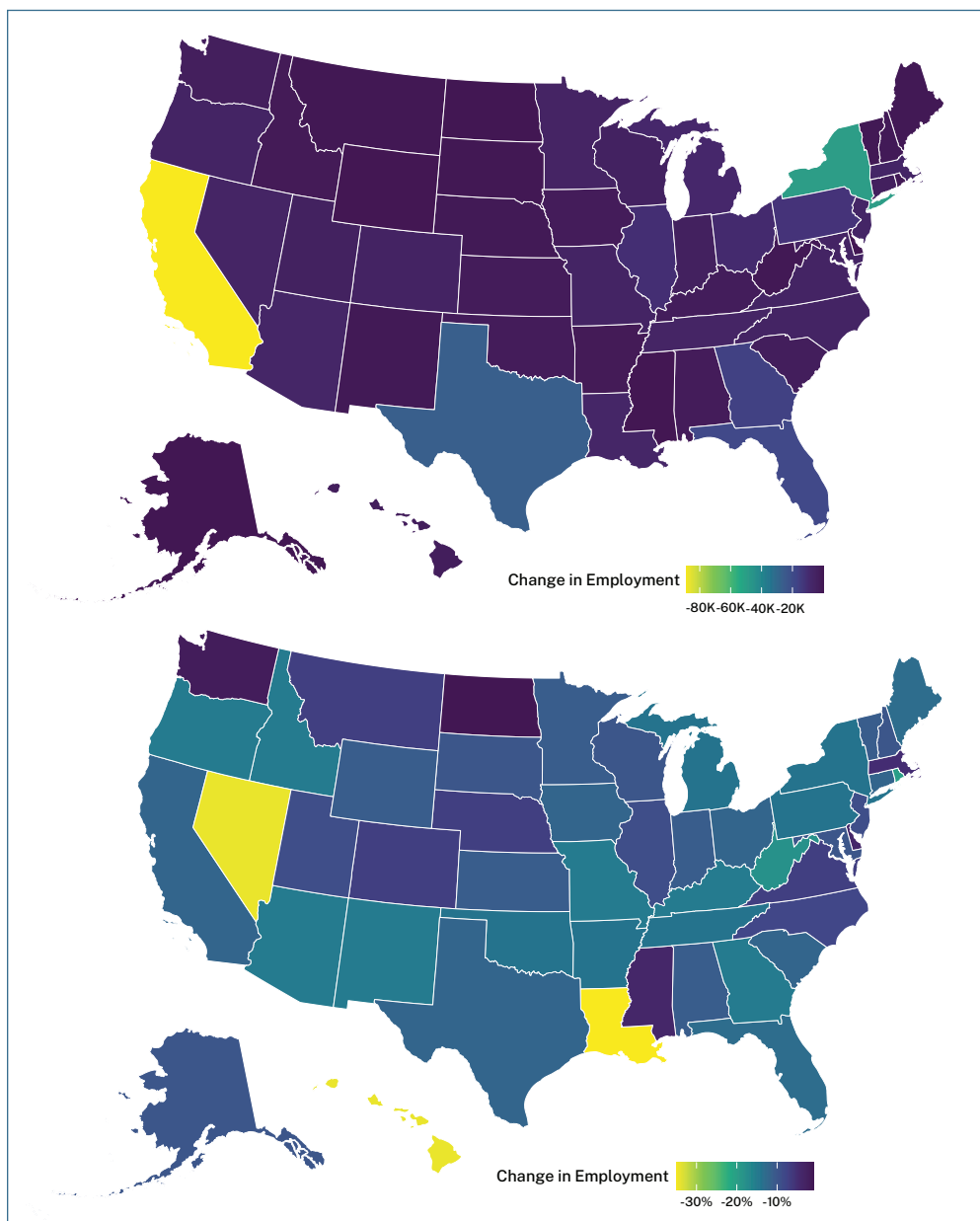
Employment in copyright-reliant industries significantly varies geographically, and the pandemic's impact on these jobs followed. Figures 14 and 15 show the variation in impact of COVID-19 on the copyright-reliant industries by examining the total change and percentage change in statewide employment. The median change was a loss of 3,815 jobs, with the median percentage change being a decline of about 11.76 percent.

Figure 14: Decrease in state employment level (February–April 2020 Change)
(left: by total change; right: by percentage change)



The states with the largest and smallest absolute shocks are not surprising, as they are respectively among the largest and smallest states in terms of copyright-reliant industry presence and population and thus have the most or fewest jobs to lose. In contrast, some of the states that experienced the largest proportional negative shocks are surprising. For example, Hawaii, Louisiana, and Nevada's proportional negative shocks are likely because local copyright-reliant industries are tourism-based. Pandemic-related travel restrictions and collapse of tourism demand hit these industries harder. However, Rhode Island's and West Virginia's employment declines stand out as more unexpected. It is not yet clear why these states experienced outsized effects.

Figure 15: February–April 2020 change in statewide copyright-reliant industry employment levels (top: by total change; bottom: by percentage change)

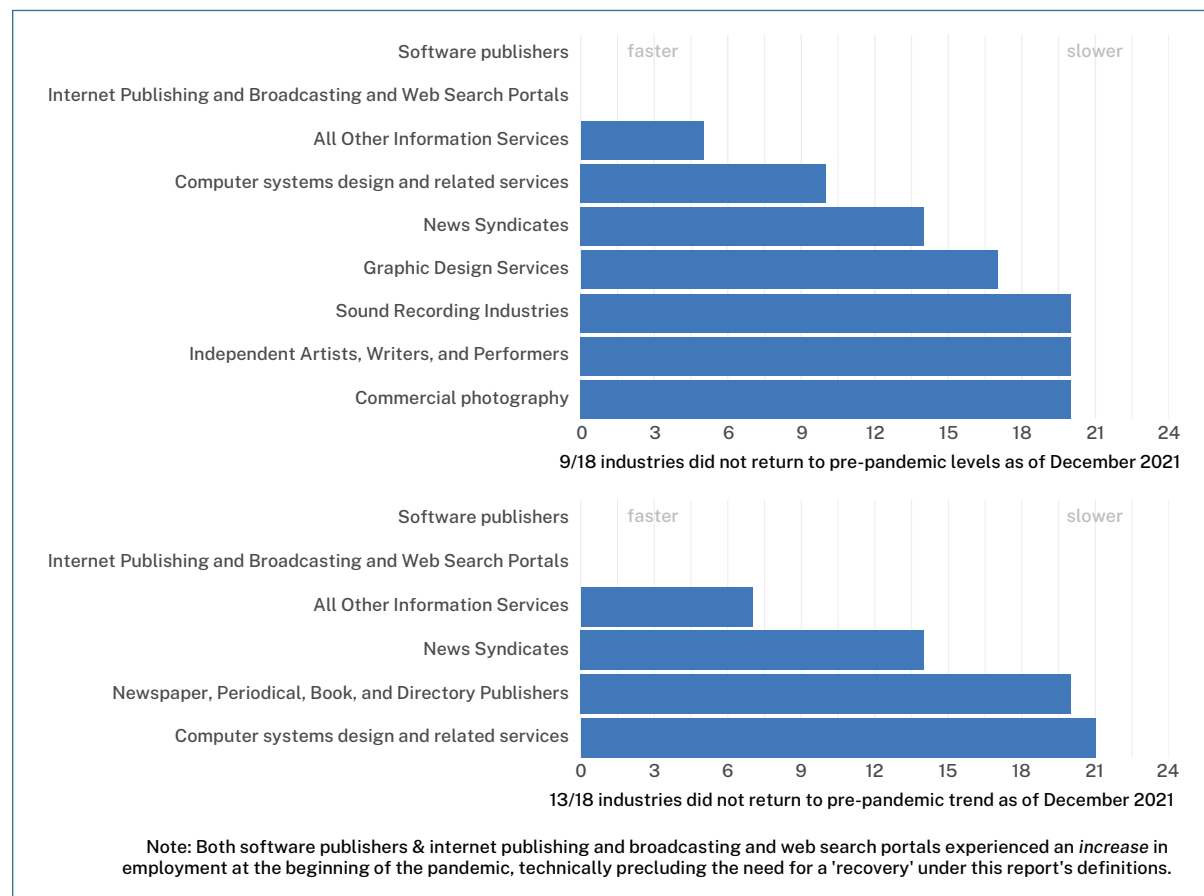


Recovery

As previously discussed, recovery can be measured in two ways — a return to the pre-pandemic (February 2020) levels and a return to the pre-pandemic trend line where the industry or state would likely have been if not for the pandemic.²⁷ Both are measured as the number of months until the benchmark is reached.

Employment recovered more slowly than revenues and copyright registrations for the copyright-reliant industries considered. Figure 16 shows the recovery to pre-pandemic (February 2020) employment levels and pre-pandemic trend lines. Nine (50 percent) of the eighteen copyright-reliant industries examined in this study recovered to the less-robust but simpler measure of pre-pandemic level by the end of 2021,²⁸ with four industries recovering within one year. Similar to the industries that experienced the smallest shocks, or slight boosts, from the beginning of the pandemic, software publishers and internet-related industries tended to recover faster.

Figure 16: Employment recovery times (in months) as of December 2021
(top: recovery to pre-pandemic level; bottom: recovery to pre-pandemic trend)



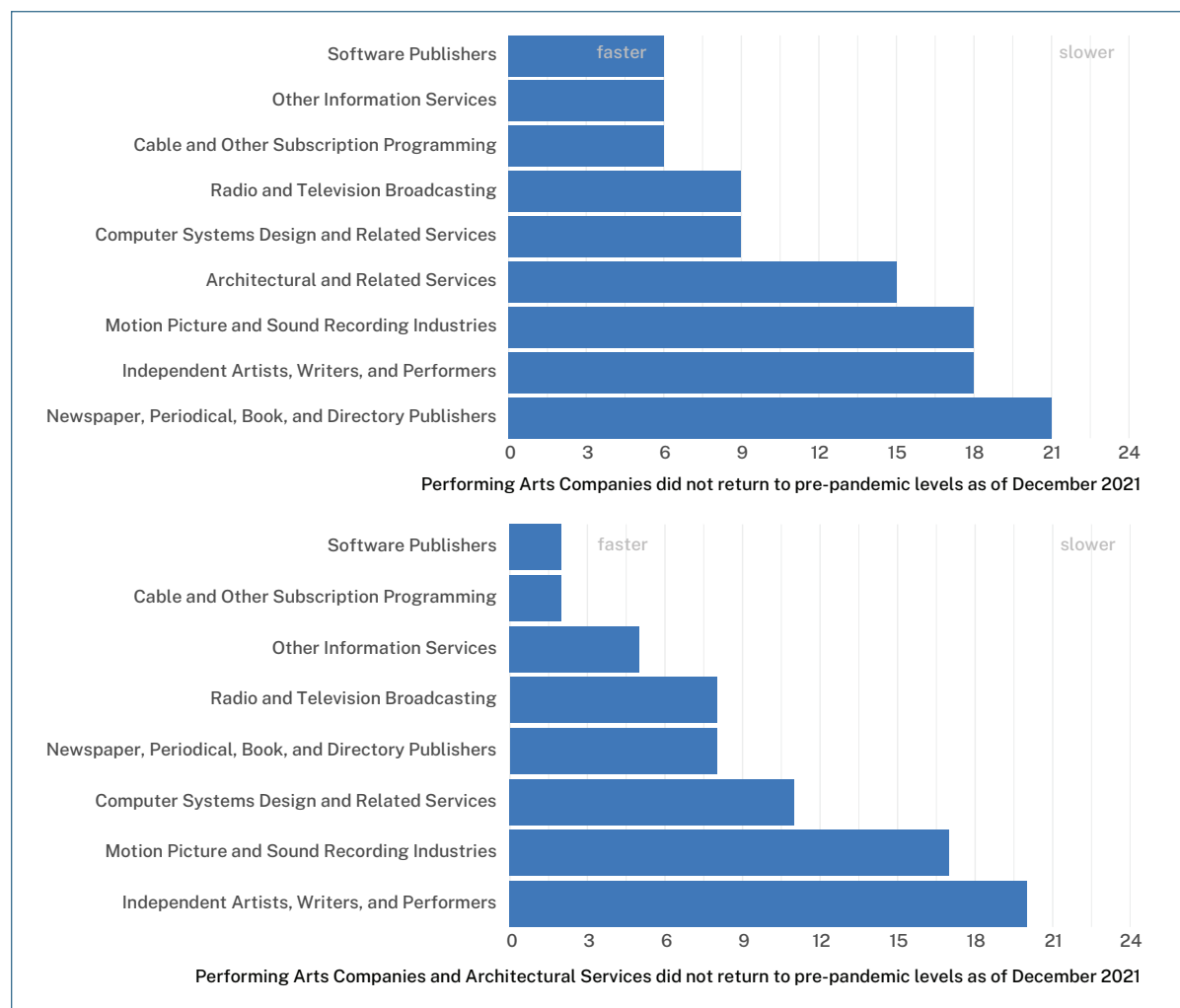
²⁷ These recovery metrics merely require at least one month of the industry meeting or exceeding the February 2020 employment level to constitute a recovery to pre-pandemic level, and at least one month of meeting or exceeding that month's predicted level from the pre-pandemic trend line to constitute a recovery to pre-pandemic trend. Industries that have "recovered" thus may dip back below the pre-pandemic level and/or trend in future periods.

²⁸ Due to the NAICS reclassification of industries in 2022, the analysis here terminates after December 2021.

Using the more robust counterfactual measure of recovery to pre-pandemic trends, five (28 percent) of the eighteen copyright-reliant industries recovered by the end of 2021, with two industries recovering within one year.

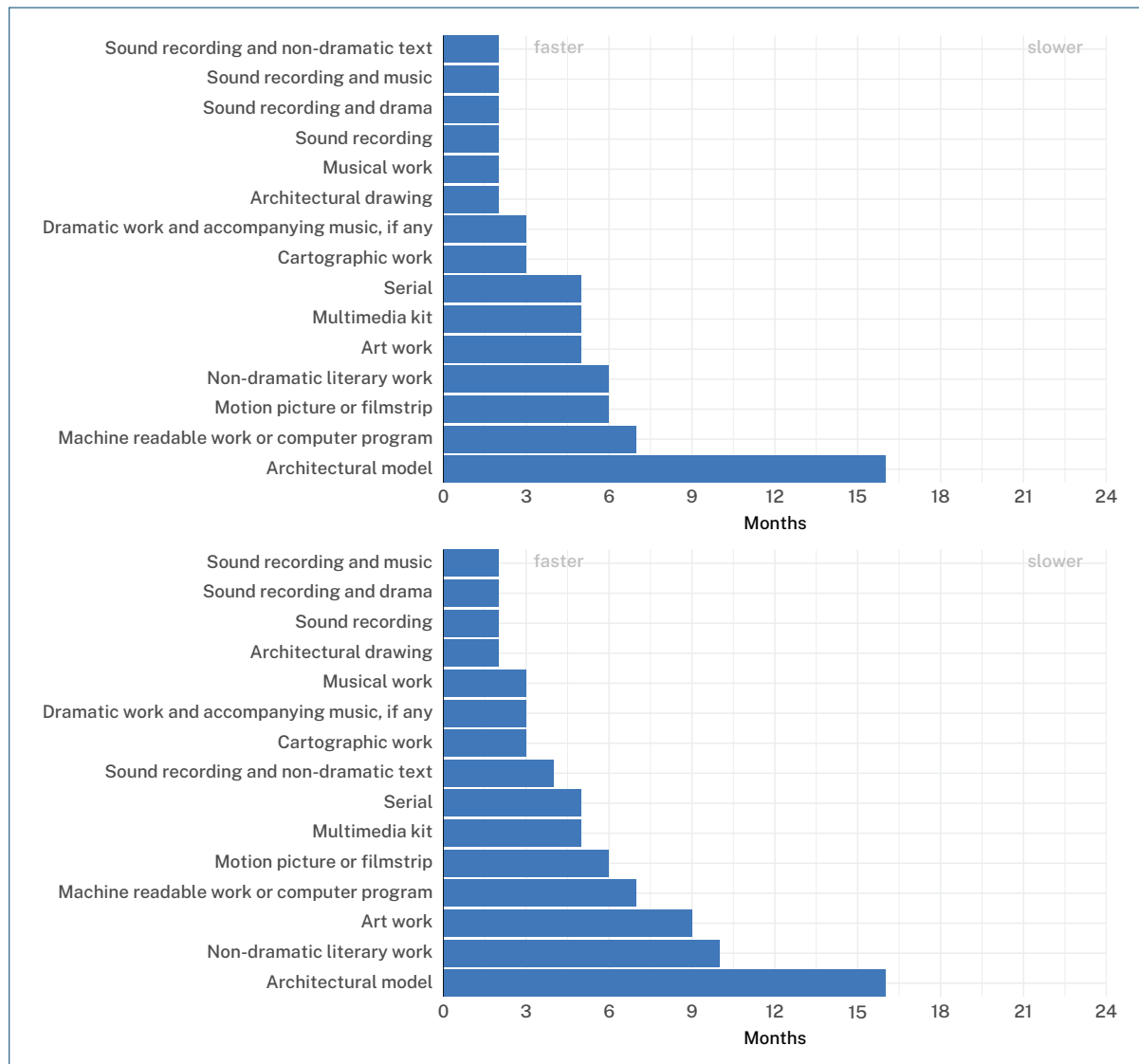
Industry revenues, as shown in Figure 17, tended to recover substantially more quickly than did employment. Of the ten industries with available data, nine returned to their pre-pandemic revenue levels by the end of 2021, with five industries recovering within one year. Independent artists, writers, and performers, as well as the motion picture and sound recording industry, recovered last of the copyright-reliant industries. In contrast, software publishers and the cable and subscription programming industries recovered the most quickly.

Figure 17: Revenue recovery times (in months) for industry revenues as of December 2021
(top: recovery to pre-pandemic level; bottom: recovery to pre-pandemic trend)



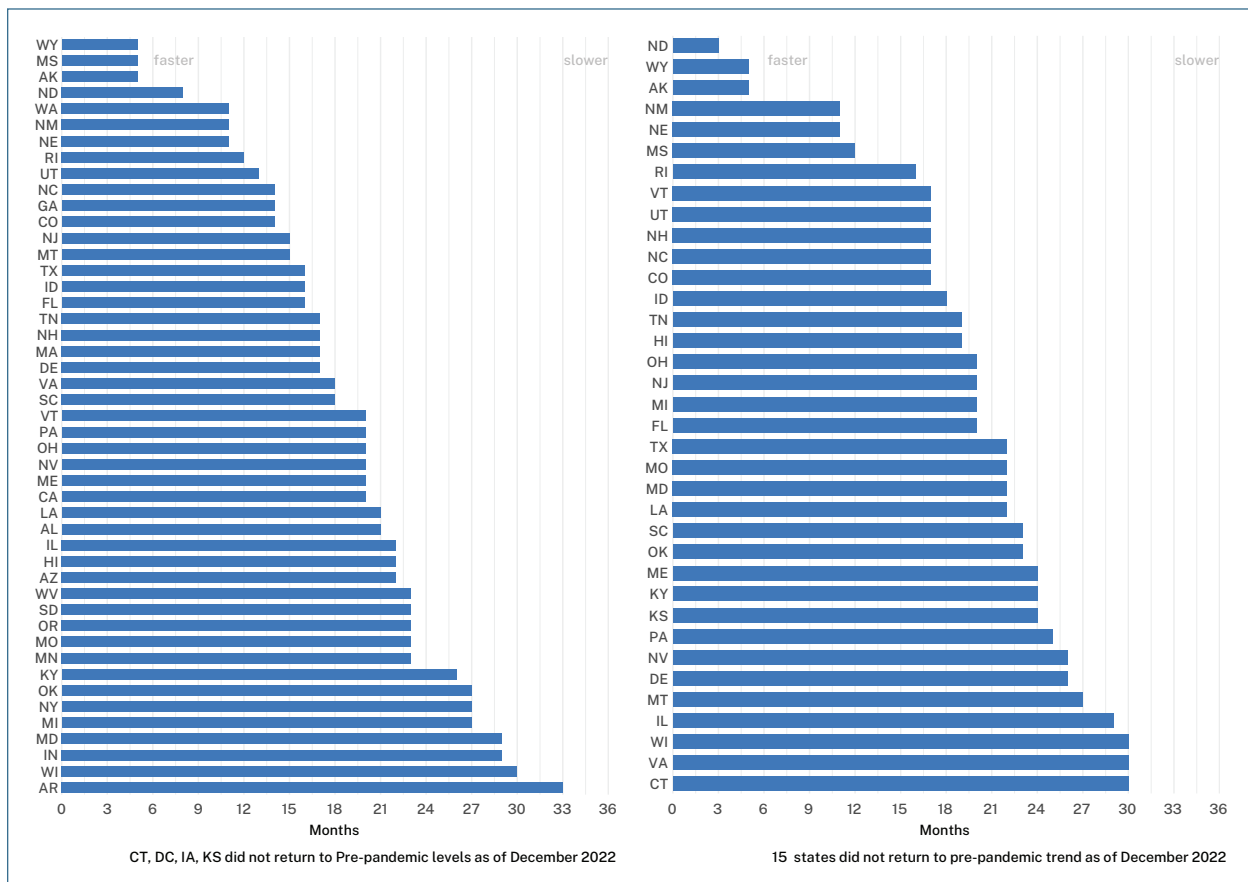
Although measures of creative output recovery are partially obscured by the regular variation of that metric, recovery of this indicator appears to be more like that of industry revenues than the recovery of employment. As shown in Figure 18, fourteen categories of works overall returned to pre-pandemic levels within one year. When considering the return to pre-pandemic trends, recovery varies more across types of works. Overall, fourteen categories returned within one year and all fifteen within two years.

Figure 18: Copyright registrations recovery times (in months) by type of work as of December 2021
(top: recovery to pre-pandemic level; bottom: recovery to pre-pandemic trend)



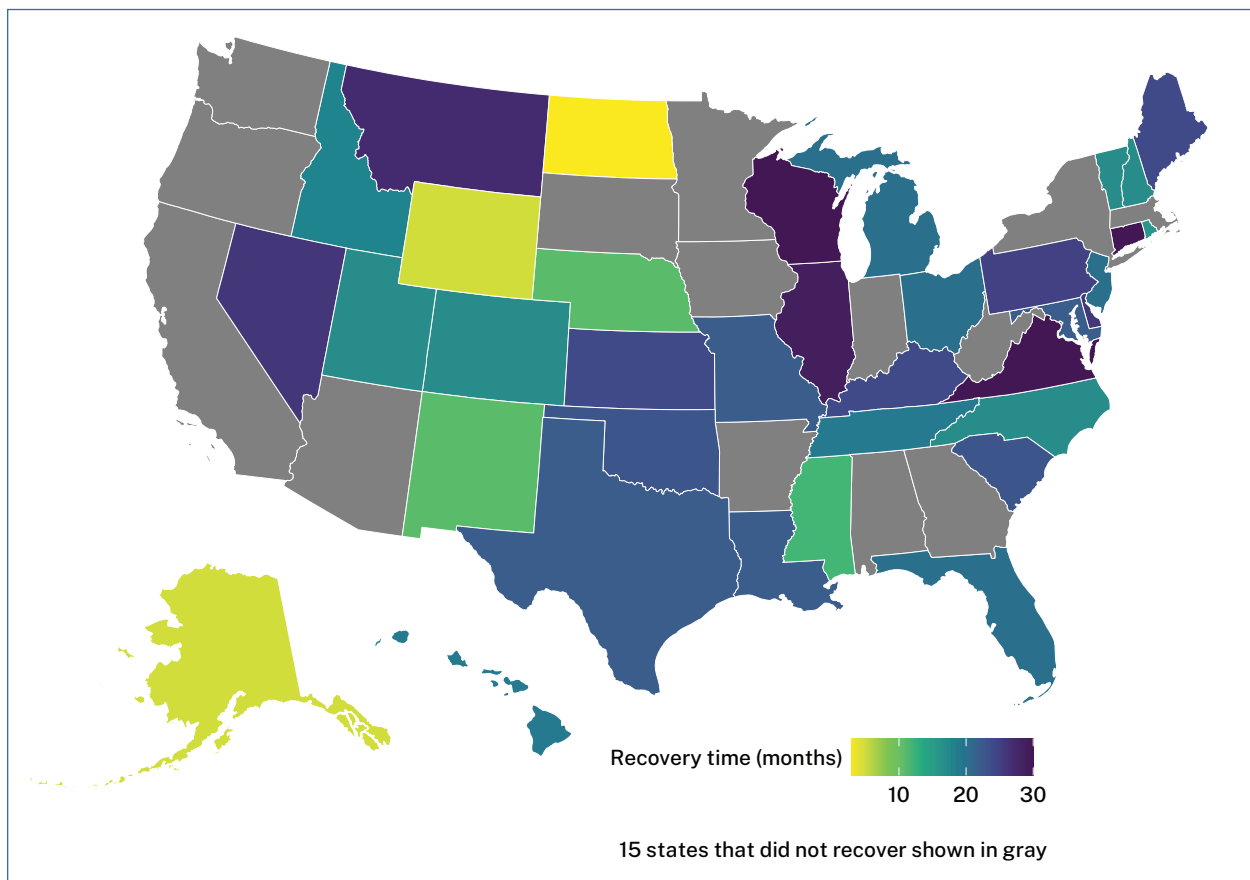
As initial pandemic effects varied substantially across the country, so did recovery. As shown in Figure 19, eight states overall returned to pre-pandemic copyright-reliant industry-wide employment levels within one year, thirty-nine within two years, and forty-seven by the end of 2022 (the endpoint of the available data). Four states did not return by the end of 2022. Considering the recovery to pre-pandemic trends, six states returned within one year, twenty-eight by two years, and thirty-six by the end of 2022 (the endpoint of the available data). Fifteen states did not return to their counterfactual projected levels by the end of 2022.

Figure 19: Recovery times (in months) for statewide copyright-reliant industry employment as of December 2022 (left: recovery to pre-pandemic level; right: recovery to pre-pandemic trend)



Looking at the largest states, Florida and Texas fully returned to pre-pandemic trends, but California only returned to 91 percent and New York only to 95 percent of pre-pandemic trend predictions as of 2022. As depicted above in Figure 9, these states in general account for a large portion of all copyright-reliant industry jobs. Figure 20 shows the states by recovery time to their pre-pandemic trends.

Figure 20: Recovery time (in months) for states to return to pre-pandemic employment trend

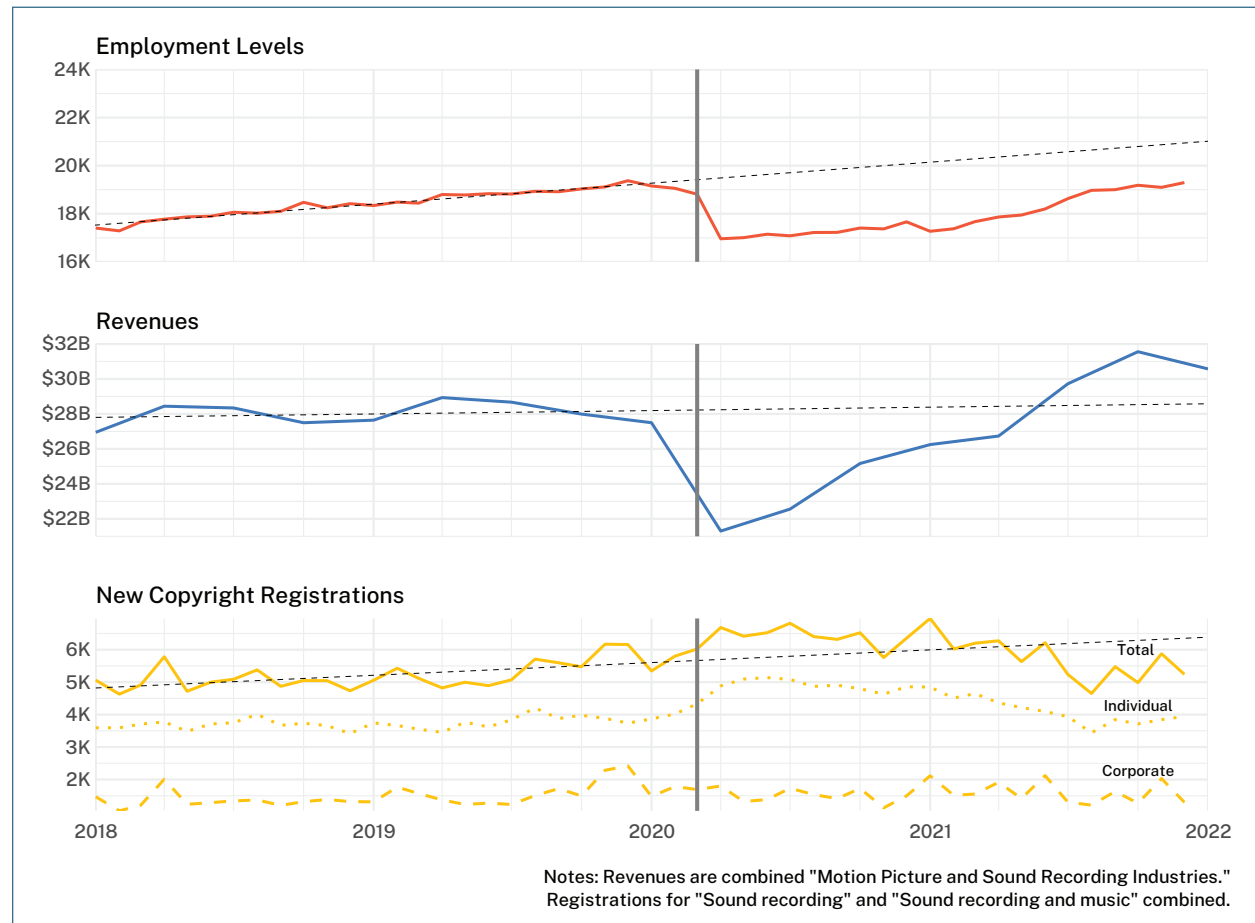


Case Studies

Three industries that exhibit interesting patterns from the foregoing analysis of employment, revenues, and registrations are highlighted below.

Sound Recording

Figure 21: The sound recording industries



The sound recording industry provides an interesting case where changes in employment, revenues, and copyright registrations diverged in notable ways, as shown in Figure 21. From 2018 to early 2020, it was growing rapidly in terms of employment and new copyright registrations, with steady but relatively constant revenue.²⁹ The onset of the pandemic saw a sharp decline in both employment and revenues (an 11 percent and 23 percent decline, respectively) but a notable 11 percent immediate *increase* in total copyright registrations.

²⁹ Due to data limitations, revenues are quarterly and are combined with the motion picture industry.

That increase almost entirely comprised additional registrations from individual claimants. Corporate claimants' registrations remained relatively constant. For context, recording artists who are contracted with a record label typically register their work through that record label and are thus classified as corporate claimants. In contrast, independent artists (those without a standard arrangement with a record label) tend to register on their own behalf and are thus classified as individual claimants. Comparing March 2020 to January 2020, registrations from individuals increased by more than 25 percent and registrations from corporate claimants did not change appreciably. These findings imply that, despite a precipitous employment drop in the recording industry, the industry did not suffer a loss in productivity, and independent creative output even spiked. There are several plausible explanations for this.

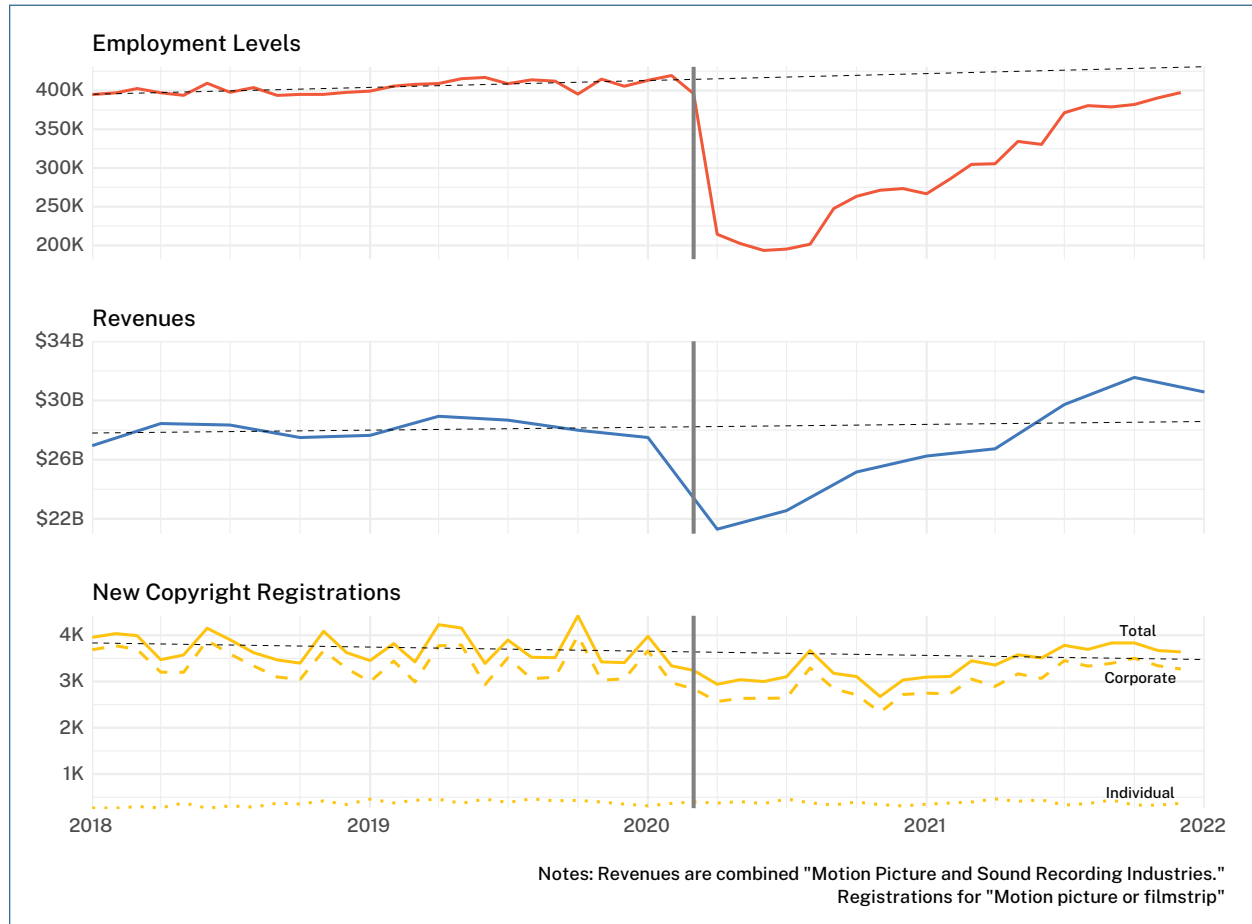
On the industry productivity side, one plausible explanation is that the lost jobs were not heavily concentrated on creators but rather on support roles that have little effect on short-term productivity. However, if that were the case, the subsequent recovery of employment levels implies that such roles are in fact relevant for long-term productivity. For example, a reduction in marketing staff would not meaningfully affect music production in the short term, but in the long term, a persistent reduction in marketing activities would likely reduce the revenue stream that funds production.

It is also plausible that the employment shock did proportionally impact creators, but those who remained employed increased their productivity. The pandemic shifted mental and temporal capacity for many people in different ways. For example, workers who were also parents of school-aged children possibly shifted their time and attention toward educating those children, potentially diminishing their professional productivity. In contrast, those who spent much of their pre-pandemic leisure time in social engagements no longer had those demands on their attention. Many of them shifted their concentration to professional endeavors, thus increasing their productivity.

The spike in independent creative output indicated by increased individual copyright registrations could be related to the identity of artists registering the additional claims. It may be that those who were already independently producing music before the pandemic ramped up their productivity, or new artists began to independently produce music. This explanation is consistent with notion of shifting social obligations described above. It is also consistent with the idea that challenging social climates can drive artistic output. Alternatively, it may be that the spike is coming from recently unemployed individuals from the recording industry who are simply shifting from corporate-backed registrations to individual registrations. In either case, the findings reveal something about the resilience of creative activity, at least in this realm. Future research into the identity and history of claimants may help disentangle the determinants of that resilience.

Motion Pictures

Figure 22: The motion pictures industries



The motion picture industries, shown in Figure 22, provide a similar story to the sound recording industries with a key difference in post-pandemic copyright registration patterns. From 2018 to early 2020, growth in both employment and revenues was fairly flat but positive. Copyright registrations before the pandemic were also trending slightly downward. The onset of the pandemic saw a much sharper decline in employment than in revenues (49 percent and 23 percent declines, respectively), and 12 percent decrease in copyright registrations.

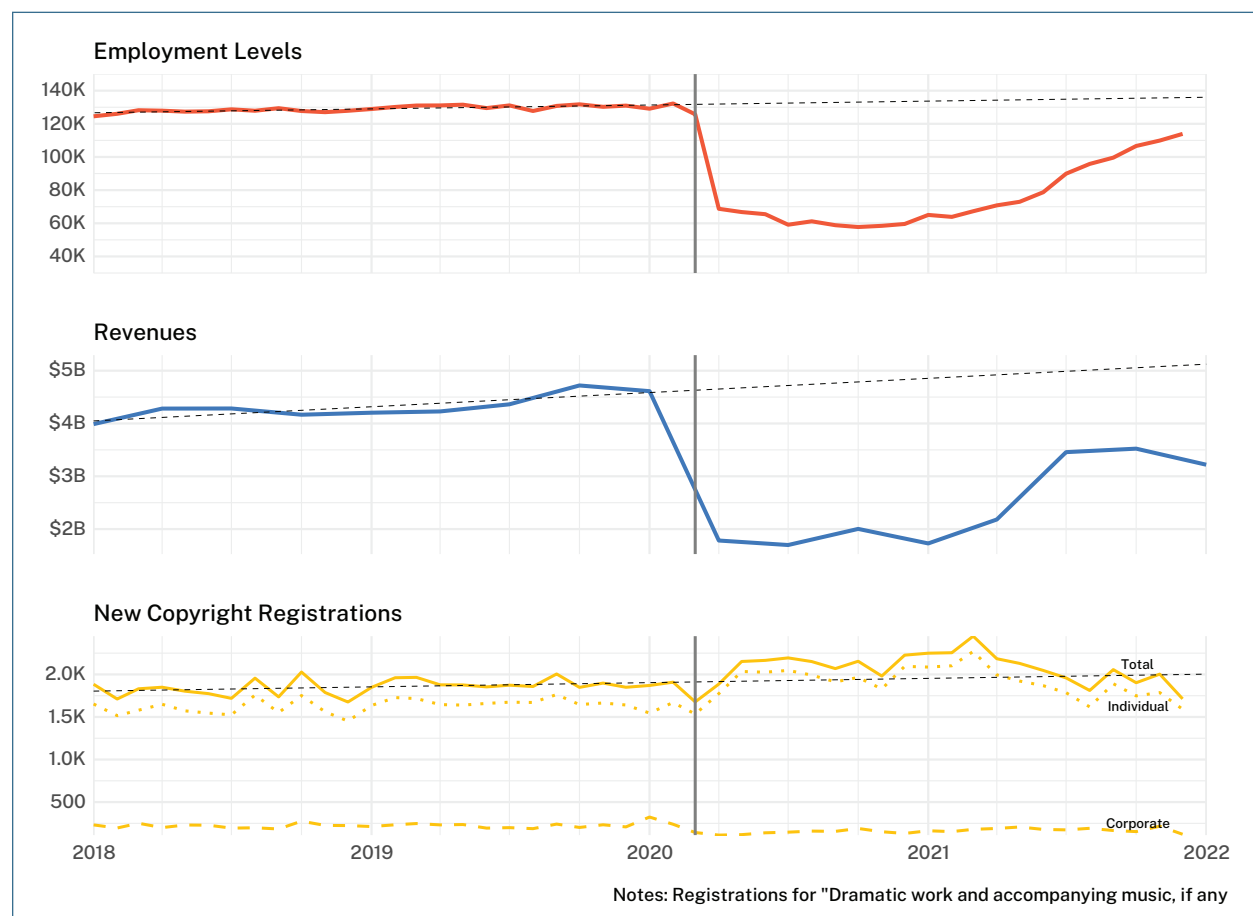
Revenues recovered to their pre-pandemic level and trend around a year and a half after the start of the pandemic, whereas employment had not recovered to its pre-pandemic level nor its pre-pandemic trend as of December 2021. However, by the end of the analysis period, the industry had recovered to about 93 percent of its pre-pandemic trend for employment. Notably, revenues exceeded recovery expectations with a significant increase in revenues about a year and a half to two years after the onset of the pandemic, suggesting strong "pent up demand" for movies.

Copyright registrations for motion pictures were hit relatively hard and took longer to normalize when compared to sound recordings. Although motion picture registrations experienced a short-lived rebound in the summer of 2020, sustained recovery did not occur until late 2021. Several differences between the motion picture and recording industries may be driving the divergent patterns in post pandemic registration activity.

For example, motion picture production is not as accessible to individual creators as is sound recording production. Although inexpensive cameras of sufficiently high quality are available to consumers, movie production requires other expensive equipment and materials (e.g., lighting and sets) that may be out of reach for individual creators. Separately, it is also difficult to produce a motion picture on one's own; typically, some sort of crew and cast are necessary, requiring physical proximity to other people. Motion pictures operate on a much larger scale than the production of sound recordings, which can be done with a handful of individuals operating at a comfortable distance from one another. It is likely for these reasons that individual creators did not shift their focus to motion picture production in the same way they did toward record production. Accounting for that cushion of increased individual creative activity in record production, the difference between post-pandemic motion picture production and sound recording production looks less stark.

Performing Arts

Figure 23: The performing arts industries



The performing arts industries, shown in Figure 23, took the brunt of the pandemic and still had not recovered as of December 2021, in terms of both employment and revenues. Prior to the pandemic, growth in employment, revenues, and copyright registrations was mild but sustained. The onset of the pandemic led to an enormous loss in employment and revenue (-31 percent and -61 percent, respectively), and a modest initial 1.2 percent decline in copyright registrations. The impact of the pandemic continues to be felt, as neither employment nor revenues have returned to their pre-pandemic trend as of December 2021, though revenues did return to their pre-pandemic level in late 2021. By that time, the industry had recovered about 83 percent of its pre-pandemic trend for employment. Copyright registrations, on the other hand, returned to both trend and level very quickly, largely driven by an increase in individual registrations, and for much of 2020 and 2021 have been above the pre-pandemic trend, suggesting that creators wrote many new dramatic works during the pandemic.

The pandemic took the largest toll on those industries where interpersonal proximity is required. The substantial revenue and employment shock felt by the performing arts industry is likely the result of the industry's focus on in-person consumption, in the form of live performances. The industry did attempt to adapt to the new realities of remote entertainment with some limited success (e.g., Disney's airing of the Broadway performance of *Hamilton*), but those adaptations were not instantaneous and were ultimately not enough to counteract the losses from cancelled live performances.

In contrast, the patterns in registrations differ markedly from the patterns in employment and revenue. This is likely the function of two factors. First, the way copyrighted material links back to the revenue-generating activities of the industry is slightly different than in other industries. Live performances, unless recorded, are typically not themselves the subject of copyright. Rather, the musical work, script, or in some cases choreographic work behind those performances are the works protected by copyright. While the pandemic hampered live performances and thus employment and revenue connected to live performances, the production of the underlying copyrighted materials, which does not necessarily require physical proximity to others in its production, was not restricted in the same way.

Second, these types of works experienced an increase in registrations from individuals as opposed to corporate claimants. As previously discussed, many individuals had unanticipated productive capacity due to restrictions on social engagements. Combined with other sudden social and economic change, this likely provided a lot of fodder for music creation, which may explain the increase in individual registrations, which more than counteracted the decrease in corporate registrations.

Implications and Future Research

Although copyright-reliant industries appear to be more robust to the social and economic shocks associated with the COVID-19 pandemic than most other sectors of the economy, the pandemic, unsurprisingly, inflicted substantial harm on both firms and employees in those industries. The pandemic hit employment more than twice as hard as it hit firm revenues, and employment took three to five times longer to recover. Employees appear to have borne the brunt of the negative effects with an overall 11 percent decline in jobs compared to a 5 percent decline in firm revenue and a twenty-eight-month recovery time compared with a six-to nine-month recovery time for revenues.

Moreover, jobs merely recovered to a level commensurate with pre-pandemic projections, suggesting sustained and, as of 2022, unrecouped losses in wages. In contrast, revenues recovered to a level in substantial excess of those projections. This suggests that the pandemic impact on revenue was, to some extent, simply a shift in the timing with which revenues were realized. The shift is still harmful for business activities, but perhaps less so than an unrecouped loss. It is likely that regular and pandemic-specific social programs (e.g., unemployment insurance or COVID-19 relief funds) and the uptake of temporary employment outside of the industries offset some of the lost wages in these industries. It is difficult, however, to assess the extent to which these things may have cushioned the blow to their employees.

Importantly, the pandemic appears to have had minimal effect on the volume of creative output as measured by copyright registrations. Although not universally conclusive, some evidence suggests that this may be due to a short-term shift from corporate backed creative output to independent creative output. The uptick in independent creativity may have been driven by employees who were laid off from copyright-reliant industries but continued the creative pursuits they would have otherwise engaged in at work. Alternatively, the uptick may come from a more general populace who were suddenly stuck at home with a wealth of free time.

Notably, despite the ability to measure changes in the volume of registered creative works, it is difficult to observe changes in the quality of those works. Thus, while large or lasting changes in the volume of creative works appear not to have occurred, one cannot conclude that the social value of creative output (a function of both quantity and quality) remained unaffected. Additionally, the fact that there was large variation in the impact of and recovery from COVID-19 across both geography and different industries may provide a useful path for further understanding the factors that contribute to the health and stability of copyright-reliant industries. In that respect, more research is needed to assess what similarities exist between states and industries that had similar COVID-19 experiences.

This research leads to further interesting questions about the extent that certain policies directed toward recovery, such as NEA grants and other allocations of funds for the arts, played in the variation in speed and success of recovery within copyright-reliant industries.

The Copyright Office will continue to examine the relationship between changes in employment in copyright-reliant industries due to shocks such as the pandemic and copyright registrations. Preliminary analysis suggests a strong correlation³⁰ between these two measures in the aggregate over the time period of this study. The contours of this relationship can help determine the contexts in which copyright registrations are a reliable proxy for measuring creative output.

30 The overall correlation between total registrations and total employment monthly over 2018–2022 is 0.947.

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