

The State and Local Sector During the Pandemic¹

INTRODUCTION

State and local governments are significant players in the US economy. Employment by state and local governments represents about 13 percent of total employment in the US, which is a larger share than federal government employment. State and local tax revenues represent about 9 percent of GDP, or approximately half the share of federal tax revenues.

Unlike the federal government, virtually all state and local governments have to balance their operating budgets; they cannot borrow to finance large deficits. Revenue losses experienced during recessions have to be financed by savings or offset by spending cuts or tax increases. Governments typically make most of these adjustments on the spending side—rather than on the tax side—likely because tax increases during economic downturns are particularly unpopular. Reductions in spending deprive residents of valuable services and weaken the macroeconomy. Tight spending at the state and local level in the aftermath of the Great Recession was a factor behind the slow recovery. Tight budgets are particularly problematic during a pandemic, because much of the public health infrastructure is at the state and local level.

In the spring of 2020, many analysts were projecting considerable revenue losses in the state and local sector—with some estimates suggesting losses of up to \$900 billion over two years. In addition, state and local governments were facing new demands on spending arising from the need to address public health during the pandemic. Congress acted swiftly to provide aid. The Coronavirus Aid, Relief, and Economic Security (CARES) Act, enacted in March 2020, provided significant aid to state and local governments—roughly \$350 billion—and legislation passed in December 2020 and the American Rescue Plan enacted in March 2021 provided an additional \$640 billion, totaling close to \$1 trillion in aid. This was far more aid than the roughly \$275 billion provided to state and local governments during the Great Recession (Congressional Research Service 2019). In addition, the Federal Reserve (the Fed) launched the Municipal Liquidity Facility (MLF) to ensure that state and local governments had access to credit.

So what happened? First, revenues did not decline nearly as much as had been first feared, and in all states, federal aid was more than sufficient to offset any revenue losses. Nevertheless, state and local government employment declined sharply, and the decline has been quite persistent: Employment at state and local governments in February 2022 was 3 percent below the January 2020 level, accounting for 35 percent of the decline in total US employment from January 2020 to February 2022. Total nominal state and local spending, as measured by the

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National Income and Product Accounts (NIPA; Bureau of Economic Analysis 2021b), has been muted as well, barely above a reasonable pre-pandemic baseline despite much faster inflation.

Thus, despite a large and rapid federal response, the state and local sector once again appears to be lagging most other sectors of the economy. Of course, unlike in the aftermath of the Great Recession, policymakers are now more worried about excess demand than insufficient demand, so the weakness in the state and local sector is much less of a concern from a macroeconomic perspective. Still, it is helpful to understand what happened and why, and to learn what that might tell us about responses to future downturns.

The remainder of the chapter addresses five questions.

1. Why were the revenue projections at the beginning of the pandemic so inaccurate?
2. How much aid did state and local governments receive, and was it sufficient to address revenue losses and increased costs related to the pandemic spending?
3. How well did the Fed's MLF work?
4. Why did employment decline so much? How much was specific to the pandemic, and how much was related to budget concerns?
5. What are state and local governments doing with all the federal aid they have received?

I conclude with a discussion of the lessons that can be learned from the experiences during the pandemic, which I summarize here:

- Policies that provide fiscal support to households and businesses indirectly support state and local revenues and should be taken into account in determining the amount of direct aid to state and local governments.
- In order to prevent layoffs, aid to state and local governments should be automatic or should be provided early in a recession.
- Aid should go directly to states and localities instead of only to state government, where possible, and should have few conditions placed on it.
- State and local governments are reticent about using one-time federal aid to finance ongoing expenditures, which might preclude aid from being used for the most effective purposes.
- The ability of state and local governments to borrow from the Fed can serve as an important backstop that can help stabilize municipal bonds markets.
- Timelier data on state and local government revenues and expenditures are needed in order to assess ongoing economic conditions and to evaluate policy.
- The lesson of the Great Recession (i.e., that inadequate aid to state and local governments can hamper an economic recovery) should not be discarded simply because the conditions created by the pandemic were so different.

PROJECTED AND REALIZED REVENUE LOSSES

As shown in table 6.1, virtually all analysts and policymakers projected much larger and more prolonged revenue losses. For example, Bartik (2020) projected losses of \$899 billion in fiscal years 2020 and 2021 while Bivens and Walker (2020) projected losses of \$345 billion. Others projected losses for only a subset of the state and local revenues (e.g., just state taxes or just income and sales taxes). These ranged from \$130 billion (White, Crane, and Seitz 2020) to \$395 billion (McNichol, Leachman, and Marshall 2020). Most of these projections relied on historical relationships between state and local revenues and the unemployment rate or the growth rate of personal income. Auerbach et al. (2020) took a different approach, using a bottom-up approach to project revenues by state for each type of revenue. All revenue projections, regardless of approach, relied on economic forecasts.

In fact, although tax revenues dipped at the onset of the pandemic, they quickly recovered and have been quite healthy since. Table 6.2 compares tax revenues from the US Census Bureau's Quarterly Summary of State and Local Tax Revenue to a baseline where revenues increased 4 percent per year from 2020Q1 on, a bit above what state budget officials expected for FY2021 right before the onset of the pandemic (NASBO, 2020). State and local taxes were \$71 billion lower in state FY 2020 but were \$145 billion *higher* in state FY 2021 (US Census Bureau 2021).^{2,3} Looking at the components, revenues were below baseline in FY 2020 but above baseline by FY 2021. This is in great contrast to the Great Recession, during which revenues fell sharply and remained depressed for many years.

Why Were the Projections So Off?

It is important to understand why the historical relationships between state and local revenues and projected economic conditions performed so poorly in predicting actual revenue collections, particularly because many economists have argued that federal aid to state and local governments ought to be triggered automatically when economic conditions reach a certain threshold. For example, Fiedler, Furman, and Powell (2019) argued that the federal share of Medicaid should be increased by 3.8 percentage points for each percentage point by which a state's unemployment rate exceeded a threshold. Using the historical relationship between unemployment and state revenues, they estimated that this increase in the Medicaid matching rate would be sufficient to offset two-thirds of a state's revenue losses (Fiedler, Furman, and Powell 2019). A key question, then, is whether these historic relationships broke down during the pandemic or the economic forecasts on which the revenue losses were based were too pessimistic.

² Part of the decline in FY 2020 and recovery in FY 2021 reflects a shift in tax collections from the delay in the tax filing deadline for individual and corporate income taxes.

³ Throughout this chapter, I define the fiscal year as beginning on July 1 and ending on July 30—that is, fiscal year 2020 is from July 1, 2019, to June 30, 2020. This timing is used by 46 states. The fiscal year begins on April 1 for New York, September 1 for Texas, and October 1 for Alabama, Michigan, and the District of Columbia.

Auerbach et al. (2020) examined the historical relationships between state and local revenues and economic conditions (their table is reproduced in table 6.3). They argued for excluding 2009, a particularly unusual year, and including a measure of the stock market performance when estimating the historical relationships. The inclusion of stock market performance was particularly important during the pandemic because, rather than declining as it does during most downturns, the stock market soared, boosting household wealth and taxable income. With these adjustments, they showed that the predicted losses were smaller than many others had projected.

Auerbach et al. (2020) also argued that this recession was sufficiently different so historical relationships might be misleading. First, social distancing and remote work meant that sources of revenue that are not typically cyclical (e.g., gas taxes, airport fees, motor vehicle licensing fees, etc.) plummeted. Second, low-wage workers suffered disproportionately from this recession, meaning that any given change in the unemployment rate had a smaller effect on consumption and personal income than is usually the case. Finally, generous federal aid to households strengthened household finances, thus supporting both sales taxes and property taxes, and some of the federal aid directly boosted taxable income (e.g., many states tax unemployment benefits, and Paycheck Protection Program loans boosted taxable profits).⁴

Another reason that the revenue forecasts were so off, however, is that the analysts relied on economic forecasts that proved far too pessimistic. In July 2020, for example, the Congressional Budget Office projected that, as a result of the pandemic, real GDP would be 8 percent below its pre-pandemic forecast by the end of 2020 and 5 percent below it by the end of 2021 (Congressional Budget Office 2020a and 2020b). Instead, real GDP was just 5 percent below the pre-pandemic projection in 2020Q4 and 1 percent below in 2021Q4. Similarly, the Congressional Budget Office projected that the unemployment rates in Q4 of 2020 and 2021 would be 10.5 percent and 7.6 percent, respectively. Instead, they were 6.8 percent and 4.2 percent, respectively. Private sector forecasts were similarly overly pessimistic.

Panel B of table 6.3 shows the decline in revenues over the FY 2020 and FY 2021 period that would be predicted from the regressions using actual economic outcomes. Using the simple unemployment rate regression in column 1, the actual decline in the unemployment rate would suggest income tax losses of \$116 billion, compared to the actual gain of \$48 billion, and sales tax losses of \$70 billion, relative to an actual loss of \$14 billion. These losses are much smaller than many of the losses predicted in the spring of 2020, but they are still substantial. Even when

⁴During normal times, 35 states tax UI benefits. However, 25 of these states adopted the federal exemption enacted as part of the American Rescue Plan (enacted in early 2021) on the first \$10,200 of benefits for most taxpayers or waived taxes on UI all together (Mengle 2022). Similarly, although Paycheck Protection Program loans were not taxable, it was originally thought that companies would not be able to deduct the costs paid out of the loans (i.e., they could not double dip). However, in the legislation enacted in December 2021, the Consolidated Appropriations Act of 2021, Congress explicitly provided that companies could do this. Many states automatically conform with the federal tax law, so this reduced taxes for states as well.

excluding FY 2009 and including changes in stock market performance, the losses using the unemployment rate regression are predicted to be \$87 billion for both sources of revenues combined, rather than the \$34 billion gain that actually occurred.

The predictions using personal income align more closely with actual tax collections. Using the regression of income tax changes on the change in total personal income (excluding the Economic Impact Payments) suggests income tax gains of between \$5 and \$22 billion, depending on the specification, which is closer to the actual gain of \$38 billion. But using what seems like a better-specified regressions that relates revenues to a measure more closely approximating taxable income (i.e., a measure that only includes sources of income subject to tax) does less well: predicting income tax losses of between \$11 billion and \$44 billion.⁵ Turning to the sales tax predictions, the huge increase in personal income would have predicted somewhat stronger sales tax collections than what was actually collected.

What does this exercise suggest about the usefulness of these types of regressions for predicting revenue losses in future recessions? First, to a large extent, the overly pessimistic revenue forecasts were the result of overly pessimistic economic forecasts. Policies that automatically provide aid to state and local governments when economic conditions warrant it would automatically adjust if economic projections turned out better (or worse) than expected. In other words, the very large forecast errors during the pandemic do not imply that these types of automatic stabilizer policies are misguided.

Second, changes in the unemployment rate or personal income are not great predictors of revenue losses, even at the aggregate level. Regressions that do not include FY 2009 had a relatively poor fit even before the pandemic (R^2 ranging from .24 to .44, depending on the regression).⁶ This finding may weaken the case for automatic aid to state and local governments, although such policies would still be helpful even if the amount of aid provided does not match revenue losses particularly well. For example, policies that are geared toward replacing two-thirds of the lost revenues on average will help support the economic recovery—even if that aid sometimes proves too large and sometimes too small. While Congress acted swiftly and

⁵ Personal income includes a lot of items that are not taxable and that should not affect tax receipts, including employer-provided health and pension benefits, government transfers like Medicare, Medicaid, and SNAP, imputed rental income on owner-occupied homes, and income earned by the nonprofit sector. This regression excludes those components of personal income. Note that the regressions also use lagged stock market performance, so the big gains in the stock market in 2021 are not affecting predicted revenues.

⁶ This fact is perhaps not surprising. Recessions differ from each other, and economies and tax structures differ across states. For example, New York is highly dependent on tourism, and its lower-income individuals were deeply affected by the pandemic, which is reflected in the unemployment rate and even in employment growth. However, its economic and revenue structure—a highly unequal economy, a financial sector-driven economy, and a tax structure that focuses on these features—meant that revenue growth was strong. Other tourism-focused economies were not as fortunate. There is likely no single variable or single combination of variables that can plausibly foretell fiscal stress across different kinds of recessions.

forcefully this time to support state and local governments, that may not be the case the next time.

Third, general fiscal support to households and businesses can indirectly support state and local governments. When contemplating discretionary aid to state and local governments during future downturns, it is important to account for the other policies being enacted that might have economically significant effects. The generous fiscal support enacted during the pandemic—which not only expanded unemployment insurance (UI) but also the Economic Impact Payments and Paycheck Protection Program—meant that (a) the economic recovery was stronger than it otherwise would have been, and (b) even holding economic conditions constant, high unemployment did not translate into tight household budgets, thus supporting sales, excise, and property tax collections for state and local governments. This is likely an important reason why relying on increases in the unemployment rate to predict state and local revenues losses yielded less accurate predictions than relying on changes in personal income, even though both measures of the economy have been similarly effective for predicting revenues historically.⁷

How Much Variation Is There in State and Local Revenues Across the States?

When thinking about the effects of tight budgets on the state and local sector, it is important to consider variation across the states: budget surpluses in one state will not compensate for budget deficits in another in terms of the services provided to the public. And if states are more likely to cut spending when their budgets are in deficits than they are to raise spending when they are in surpluses, as suggested by Sorenson and Yosha (2001), cross-state variation in revenue losses can also have implications for the level of employment and the macroeconomy more generally.

The data we have now only allow us to examine variation in tax collections by state governments; we have no information on local government revenue collections.⁸ Appendix figure 6.1 reports the change in state revenues averaged over FY 2020 and FY 2021 relative to revenues in FY 2019. There is a great deal of variation across the states. States that had the largest revenue losses were either energy producers (AK, ND, WY, TX, OK, WV, NM) or states heavily dependent on tourism (HI, NV, FL, NH, DC). Oregon experienced large revenue losses in FY 2020 for a reason unrelated to the pandemic: the state’s “kicker” law that refunds tax collections if they come in 2 percent or more above projections over the previous two years, which was the case in Oregon in 2020 because of strong revenues before the pandemic.

Still, aggregating both FY 2020 and FY 2021, revenues were only lower in 10 states than they would have been under a pre-pandemic baseline of 4 percent annual growth. Revenues in Alaska,

⁷ In addition, as discussed above, unemployment during this recession was unusually concentrated among low-wage workers, meaning that a given increase in unemployment had a smaller effect on total wages.

⁸ The US Census Bureau will eventually publish data on local government revenues by state; however, these data, which come from the Annual Survey of State and Local Government Finances, come out with a long lag: data for FY 2020 (ending for most states on July 1, 2020) will not be available until around June 2022.

where 90 percent of general fund revenues come from oil, were the weakest: roughly 35 percent below a pre-pandemic baseline, reflecting weak oil demand and low oil prices (Understanding Alaska's Budget n.d.).

Regression analysis of revenue losses, shown in appendix table 6.1, find that oil and tourism states had lower revenues on average over the two years, but other state characteristics—including the Biden share of the vote (a measure of political leanings and attitudes toward the pandemic); the change in the unemployment rate; personal income growth; the share of tax receipts coming from sales, income, and property taxes; and even states' own predictions for revenue declines early in the pandemic—had no predictive power for total state revenues over the two years.

FEDERAL SUPPORT TO STATE AND LOCAL GOVERNMENTS

Federal Aid

In response to the large projected revenue losses and concerns about increased demands on state and local budgets, Congress increased aid to state and local governments by about \$1 trillion—far more than the roughly \$275 billion provided during the Great Recession. Table 6.4 details the sources of aid. About \$250 billion was provided through legislation enacted in the spring of 2020 (i.e., the start of the pandemic). First, in mid-March, Congress increased the share of Medicaid spending financed by the federal government by 6.2 percentage points, retroactive to the start of 2020 and effective until the end of the public health emergency. This enhanced match rate increased federal Medicaid grants to state and local governments by about \$40 billion per year. Presuming the public health emergency is declared over by June 2022, this amounts to approximately \$100 billion in total. As part of that enhanced federal payment, states were prohibited from terminating Medicaid coverage for existing beneficiaries or to tighten eligibility criteria, leading to a surge in Medicaid enrollment. Nonetheless, the net effect was to lower overall state Medicaid spending, thus relieving pressure on state budgets (Auerbach et al. 2020).

Second, as part of the CARES Act, Congress created the Coronavirus Relief Fund (CRF), a \$150 billion fund allocated to state and local governments for the express purpose of addressing unanticipated expenses related to the pandemic. In addition, the CARES Act included provisions to help cover higher UI administrative expenses and provided targeted aid to public educational institutions, health providers (including public hospitals), and transit agencies. Additional targeted aid was enacted in the Consolidated Appropriations Act in December 2020 and the American Rescue Plan in March 2021. The American Rescue Plan also included an additional \$350 billion in direct aid to states.

How Was Aid Distributed Across the States, and How Flexible Was It?

The Coronavirus Relief Fund (CRF) provided \$142 billion in aid to state governments and some local governments and \$8 billion to tribal governments. Local governments of entities (counties, cities, townships, etc.) with a population of at least 500,000 were eligible to apply, with the amount paid to state government reduced by the aggregate amount that was disbursed to eligible local governments within the state. Aid was distributed based on population, but states received a minimum of \$1.25 billion, making it much more generous for smaller states. For example, Vermont, South Dakota, and Montana each received aid exceeding 20 percent of 2020 own-source revenues (i.e., revenues excluding federal grants), whereas Iowa, Missouri, Mississippi, California, Connecticut, New York, and Washington received aid of 6 percent of own-source revenues or less (Auerbach et al. 2020).

The ARP's Coronavirus State and Local Fiscal Recovery Funds (CSFRF and CLFRF) provided direct aid to many more entities than the CRF: While only 171 local governments received direct funding through the CARES Act's CRF, tens of thousands of local governments got aid from ARP's direct aid, with the total amounts provided to states, counties, cities, tribal government, territories, and other local governments specified by Congress.⁹ States received a total of \$195.3 billion, with \$25.5 billion allocated equally across the states and the District of Columbia (again providing much more generous aid to small states) and the remaining \$168 billion distributed on the basis of the number of unemployed individuals over the three-month period ending December 2020.¹⁰ Aid to local governments was distributed based on population in the case of counties and economic need in the case of cities.

The funding provided by the relief funds—the CRF, the CSFRF, and the CLFRF—was large enough to more than offset state revenue losses in *every* state. And given their dependence on property taxes, local governments likely had even more muted revenue losses than states, so it is almost certain that the aid exceeded aggregate revenue losses by state and local governments in each state. That is not even counting the other sources of aid (e.g., higher Medicaid match rate, aid targeted to K–12 education, public health providers, transit agencies, etc.) that in aggregate was about equal to the size of the relief funds.

There were, however, restrictions on the purposes to which the federal aid could be put. For example, the CARES Act's \$150 billion CRF was only to be used to cover expenses that were incurred due to the public health emergency, not to fund any items that were accounted for in the most recently approved budget. That is, they were explicitly not intended to cover any revenue losses. Of course, funding is fungible, so the restrictions on the use of particular funds may not bind on state and local governments. Furthermore, by the summer of 2020, Treasury had issued guidelines that allowed fairly broad use of the funds.¹¹ However, it is possible that these

⁹ For a description of both relief funds, including allocations methods, specified uses, and actual allocations, see US Department of the Treasury (n.d.).

¹⁰ Also, the District of Columbia got an additional \$254.9 billion to compensate it for receiving less than other states in CARES Act funding.

¹¹ For example, any costs related to public health or safety were deemed an acceptable use of CARES Act funding.

restrictions slowed the use of funds and possibly contributed to the declines in employment in the sector.

The funds made available by the ARP were far more flexible than the aid enacted in the CARES Act. In particular, recipients of ARP funds were permitted to use the aid to replace lost public sector revenue, fund public health efforts, and address the economic consequences of the pandemic, including covering the costs of UI, provide premium pay to public sector workers, and invest in water, sewers, and broadband infrastructure.¹² However, the ARP funds, which account for almost 60 percent of the total federal aid to state and local governments enacted during the pandemic, came too late to prevent employment losses in the sector, as I discuss below.

Federal Reserve Lending to State and Local Governments

Not only did the federal government provide fiscal support to state and local governments but it also took actions to reduce strains in the municipal bond market. In March 2020, fearing that massive revenue losses would leave state and local governments unable to service their debts, investors pulled a record \$45 billion from muni funds (i.e., mutual funds that hold the bonds of state and local governments). Spreads between the yield on muni bonds and Treasuries soared to levels not seen since the Great Depression, and many governments had trouble borrowing. The strains in the muni market were particularly problematic given that the April 15 tax filing deadline was pushed to July 15, which meant much lower cash flow than expected and greater need for short-term borrowing.

To support the flow of credit to state and local governments, the Fed launched the Municipal Liquidity Facility (MLF) on April 9, 2020.¹³ The facility initially was designed to purchase up to \$500 billion of short-term notes directly from US states, including the District of Columbia; US counties with a population of at least 2 million residents; and US cities with a population of at least 1 million residents. The facilities were later expanded to counties with a population of at least 500,000 and cities with a population of at least 250,000. This was the first time that the Fed made direct loans to state and local governments.

Under the MLF, the Fed would purchase newly issued state and local government bonds at normal spreads over Treasury bonds (rather than the elevated spreads prevailing in the muni market) plus a fee of 100 basis points, later reduced to 50 basis points. The Treasury and the Fed

¹² The funds were also explicitly prohibited from being used to finance tax cuts. However, the Treasury's implementation of that restriction leaves room for tax cuts. In particular, so long as tax collections are above 2019 taxes adjusted for inflation, the Treasury will not claw back any ARP money from states that cut taxes (Auxier 2021). The ARP funds were also explicitly prohibited from being used to pay down unfunded pension liabilities.

¹³ The Fed also supported the muni market prior to the launch of the MLF. In particular, on March 23, 2020, the Fed announced that it would begin accepting variable rate muni demand notes (long-term municipal bonds offered through money market funds) as collateral at its new Money Market Mutual Fund Liquidity Facility. Haughwout, Hyman, and Shachar (2021) note that municipal yields and other measures of market distress started falling the day the Fed made that announcement.

jointly set the terms to virtually guarantee that the program would not lose money in aggregate. Nonetheless, any losses incurred by the Fed on these loans would be absorbed by some of the \$454 billion provided in the CARES Act to the Treasury to be used to backstop Federal Reserve lending to businesses and state and local governments.

Take-up of MLF loans was very low: only the state of Illinois and the New York Metropolitan Transportation Authority made use of the program, borrowing \$3.2 billion and \$3.36 billion, respectively. Yet the MLF is widely viewed as a successful intervention because it stabilized yields in the private muni market. Bordo and Duca (2020), for example, estimated that muni yields could have risen by as much as 8 percentage points more than they did in mid-April had the Fed not launched the MLF. They argue that the MLF served as an important backstop that eased investor fears: the availability of Fed loans meant that state and local governments would be able to finance their debt even if revenues plummeted. As might be expected, the benefits of the MLF were particularly large for low-rated issuers. Comparing issuers just below and above the population eligibility cutoff, Haughwout, Hyman, and Shachar (2020) found that eligible low-rated issuers saw yields fall by about 72 basis points relative to comparable ineligible issuers.

Employment of State and Local Workers

One motivation for the generous aid provided to state and local governments was to allow them to finance pandemic-related expenses without having to lay off workers. Yet, despite muted revenue losses in FY 2020, healthy revenue gains in FY 2021, very generous federal aid, and ample borrowing capacity, state and local employment fell sharply during the pandemic and has yet to fully recover. State and local governments began laying off workers in March 2020, and by May 2020 seasonally adjusted employment was 7 percent lower than it had been in January 2020.

Analyses of state and local employment typically focus on four types of workers: state workers in the education sector (about 2.5 million in 2019), state workers outside of education (2.7 million), local education workers (8 million), and local workers outside of education (6.6 million). As shown in panel A of figure 6.1, in the first few months of the pandemic, employment fell sharply for state government workers in the education sector (solid blue line) as enrollment in institutions of higher education declined but fell only slightly for workers in other sectors of state government. As shown in panel B of the figure, in local government, employment fell sharply in both the education and non-education sectors.

Employment in education at both local and state governments began to recover in January 2021; the recovery in local employment outside of the education sector began in the fall of 2020.¹⁴ By January 2022 state education employment was a bit above its level in January 2020

¹⁴ The small increases in local and state education employment observed in the summer of 2020 likely reflect the unusual seasonal pattern in 2020. Many workers who typically would have been laid off in the summer (e.g.,

while employment at local governments remained 4 percent below. Of course, after two years employment would have been expected to increase somewhat, suggesting somewhat larger shortfalls in employment relative to a pre-pandemic baseline.¹⁵

These patterns are in sharp contrast to those in the Great Recession, shown by the green lines in figure 6.1. In particular, state education employment increased in the Great Recession as enrollment in higher education increased, and employment did not begin declining for other government workers until close to two years after the start of the Great Recession. But state and local government employment, other than in state education, fell consistently for many years thereafter, not even beginning to recover until the end of 2012.

Understanding the patterns of employment declines during the pandemic is critically important to understanding the efficacy of federal aid to state and local governments. Is it the case that aid from the federal government is generally ineffective at supporting employment, or was the pandemic just too unusual to be informative? In particular, we need to understand the extent to which the employment declines reflected actual or expected tight budgetary conditions versus pandemic-specific conditions, like office and school closures and lower supply of workers to the sector because of COVID-19 fears or vaccination mandates.

Figure 6.2 shows the changes relative to January 2020 in data on seasonally adjusted job openings, hiring, and job separations from the Job Openings and Labor Turnover Survey (US Bureau of Labor Statistics 2022c). These data are available for state and local education workers combined as well as state and local non-education workers combined. Examining the patterns over time, most of the reductions in employment in the spring of 2020 came from the employer side: the number of employees hired fell between 30 percent and 50 percent while layoffs surged. In the education sector, quits and other separations, which include retirements, also increased sharply in the spring and summer of 2020.

The story is a bit different beginning in the second quarter of 2021, after vaccines were rolled out. Then, layoffs actually fell below pre-pandemic levels, accounting for most of the employment increases, while job openings rose. Hiring rates, however, remained muted. The lackluster pace of hiring may reflect the fact that wages in the public sector did not keep up with private sector wages (see figure 6.3).

It seems clear that at least part of the surge in layoffs in the spring of 2020 reflects school and office closures. Cafeteria workers, bus drivers, classroom aides, and office workers were no longer necessary; furthermore, the availability of generous federally financed UI meant that

cafeteria workers, bus drivers, maintenance workers, etc.) were instead laid off in the spring. As a result, the typical summer layoffs were smaller than normal, and this caused an increase in seasonally adjusted employment in the summer.

¹⁵ It is not clear what a good counterfactual baseline would be. Over the three years preceding the pandemic, employment at state and local governments increased about 0.75 percent per year, but the increase in 2019 was 1.1 percent.

laying workers off instead of keeping them on the payroll was beneficial to both the government and the workers. One piece of evidence that it was the support staff that were more likely to be initially laid off comes from the distribution of job losses across wage quartiles. The data in figure 6.4 show the change in employment by occupation wage quartile from the same quarter in 2019 using the Current Population Survey (also referred to as the “Household Survey”).¹⁶ For all three sectors in which there were significant layoffs in the spring of 2020—local education, local noneducation, and state education, the lowest wage workers suffered disproportionately; this is especially true in education, where low wage workers suffered the brunt of the early layoffs.

But employment declined even for those in the highest wage quartile, and by the beginning of 2021, the employment declines were relatively evenly distributed across the quartiles. This is consistent with the declines in employment in the spring of 2020 consisting both of workers who were no longer needed or could not work remotely being laid off, and some broader layoffs that might have reflected expected budgetary pressures from the massive revenue losses everyone was predicting at the time. Having been scarred by the large revenue losses of the Great Recession and the painful spending cuts they required, state and local governments might have wanted to act more quickly this time around.

Evidence from Cross-State Variation

There are three sources of data on state and local government employment by state. The first, which I rely on, is the monthly Current Employment Statistics (CES) data—also known as the establishment survey (US Bureau of Labor Statistics 2022a). This is a large survey covering roughly 70 percent of state and local employment. It provides employment data for four categories of state and local workers—state education, state noneducation, local education, and local noneducation—on a not seasonally adjusted basis.¹⁷ The literature that I discuss below relies on different data, including the monthly Current Population Survey (US Census Bureau 2022) and the Quarterly Census of Wages (QCEW; US Bureau of Labor Statistics 2022). The CPS is a household survey that does not include as many state and local workers as the CES does. The QCEW has comprehensive administrative data on employment—that is, it includes every state and local government—but is only available after a six to nine month lag.¹⁸ As I discuss below, these data sources can give somewhat different signals, reflecting the different definitions of “employment,” the source of information (employer versus household), and, importantly, the different sample sizes of the surveys.

¹⁶ The data are sorted into quartiles based on the average wage by occupation in 2019. I use this comparison because there are strong seasonal patterns in state and local employment and the CPS data are not seasonally adjusted.

¹⁷ The data for total state and local employment—that is, not broken down by sector—are also available on a seasonally adjusted basis.

¹⁸ The QCEW only captures workers subject to the federal unemployment tax; this excludes elected officials and students on work-study programs who are captured by the CES.

Using the CES, I compare employment in 2020 and 2021 to employment in the same month in 2019, which I call the “employment gap,” in order to roughly adjust for seasonal patterns in employment. I compare four time periods: May 2020 (the lowest level of state and local employment in the pandemic), October 2020 (when many state and local economies had largely opened up), March 2021 (right before the vaccines became widely available), and January 2022 (the most recent available data at the time of writing).

Table 6.5 summarizes the data. There is a lot of variation across the states, with employment falling sharply in some states but rising or only falling a bit in others. The correlations in employment gaps across time periods and types (state/local, education/non-education) are reported in Table 6.6. There are three important findings:

1. The reductions in employment in the spring of 2020 are only loosely correlated with the gaps in later time periods, as shown in panel A of figure 6.5 for total state and local employment. For example, the correlation coefficient between the local education employment gap in May 2020 and the local education employment gap in October 2020 is just 0.25. The correlation coefficients are somewhat higher for the other sectors but still weak. In other words, state and local governments that laid off a lot of workers in the spring of 2020 are not necessarily those where employment remained low by the fall of 2020.
2. However, the rankings by state in employment gaps are fairly steady *after* the first wave of layoffs and rehires (panel B of figure 6.5), with the correlation coefficients in most cases closer to 0.7 or 0.8. That is, states where the level of employment in October 2020 was particularly far below the level of employment before the pandemic are also states with the largest gaps between pre-pandemic employment and employment in March 2021 and December 2021.
3. There is little correlation across types of employment. That is, changes in local education employment are not very correlated with changes in local noneducation employment, nor are they correlated with changes in state education employment.

The lack of correlation between employment gaps in the spring of 2020 and later suggests that the first wave of layoffs reflected different factors than whatever continues to keep employment levels down. The lack of correlations across types of workers suggests that it will be difficult to find “the story” that explains employment declines at state and local governments.

Understanding Cross-State Variation in Employment Losses

As shown in appendix table 6.2, many variables that might be expected to predict employment losses in the state and local sector during the pandemic do not. For example, state and local governments that had suffered larger revenue losses or employment declines during the Great Recession were not particularly likely to lay off workers during the pandemic, nor were states that predicted large state revenue losses or states that actually experienced larger revenue losses

in 2020. Similarly, oil states and tourism states, which did suffer larger revenue losses, did not on average lay off workers disproportionately. States that had large budget balances before the onset of the pandemic did not have smaller employment losses, nor did states that received more federal aid as a share of own source revenues (figure 6.6).

Two budget-related variables do predict employment gaps in the state and local sector. First, the share of K–12 spending financed by state governments predicts employment gaps in local education, perhaps because localities in these states were more vulnerable to budget cuts coming from state revenue losses.¹⁹ Second, states that announced hiring freezes at the beginning of the pandemic in response to expected revenue losses had lower levels in state employment outside of education relative to 2019, particularly later on in the pandemic.^{20,21}

What about measures that reflect attitudes toward COVID-19? These attitudes affected official decisions about whether offices, schools, and parks were closed or operating at less-than-full capacity, and they also affected workers' willingness to work in person and the level of demand for public services during the pandemic. It is well-known that blue states have been much more concerned about the pandemic than red states. The share of voters who chose President Biden tightly correlated with vaccination rates (appendix figure 6.2) and also with measures such as the Oxford Stringency Index, which captures the degree to which governments shut down economic activity (Hale et al. 2021).

As shown in figure 6.7, the vaccination rate, measured here as the share of population age 5 and older fully vaccinated in January 2022, is only loosely related to employment gaps in the state and local sector in May 2020. However, by the fall of 2020 it is strongly predictive of employment gaps: places that ultimately will have high vaccination rates are also those where state and local employment is depressed.²² The time pattern of the relationship makes sense, as attitudes toward COVID-19 were much more similar across the states in the spring of 2020 (e.g., every school system went virtual) than in the fall of 2020 and later (Ferren 2021).

Table 6.7 reports the coefficients from regressions of employment losses relative to 2019 on variables that seem to have some explanatory power. The effects of state financing of

¹⁹ Data from the Annual Survey of State Finances (US Census Bureau 2021) shows that aid to local governments increased less in FY 2020 than in FY 2019, perhaps reflecting some cutbacks in aid at the start of the pandemic. It is worth noting that state fiscal years typically begin July 1, but in a number of areas, county and city fiscal years begin later (Gentry 2015).

²⁰ Twenty states (AK, HI, IN, MD, ME, MI, MO, MN, NH, NJ, NM, NY, NV, OH, PA, TN, VA, WA, WI, WY) announced statewide hiring freezes in the spring of 2020, and many were not lifted until 2021 (with New York's not lifted until September 2021). Most states that instituted hiring freezes exempted positions necessary to protect health and safety while others exempted "essential positions" more broadly. Information on hiring freezes was gathered from a variety of sources, including National Association of State Budget Officers and newspaper articles.

²¹ These states did not, on average, experience larger revenue losses.

²² The Biden share of the vote and the Oxford Stringency Index (measured in the fall of 2020) also predict state and local employment gaps; the Biden share is about equally good as a predictor, while the fit of the Oxford index is a little weaker, perhaps because it does not measure overall attitudes as well (Hale et al. 2021)

education and hiring freezes are as described above. The vaccination rate is strongly predictive of employment gaps in local education and non-education sectors in the fall of 2020 and the spring of 2021 and of employments gaps in state education in the spring of 2021. But in later months, as vaccinations were rolled out and the blue states opened up, the coefficient on the vaccination rate became smaller and less significant. By December 2021 it no longer had a statistically significant effect on the employment gap. The insignificant effect of the vaccination rate on state noneducation employment may reflect that states that were very concerned about COVID-19 invested more in public health, which could have boosted employment, offsetting the negative effects from office closures and the like, as well as the fact that more of these workers were either critical workers, like highway patrols, or able to work remotely.

This analysis provides little evidence that weak employment has been driven by tight budget conditions or that federal aid has been an important determinant of employment. To be sure, states that announced hiring freezes did so in expectation of tight fiscal conditions, and these freezes, which did not get lifted until 2021, clearly constrained hiring of state noneducation workers. In addition, the fact that K–12 employment was cut more in states where the state financed a larger share of education expenses is also suggestive that fears of budget cuts affected employment. Still, the big determinants of fiscal conditions—revenue losses and federal aid—do not help explain the variation in employment across states.

To some extent, the finding that budget conditions were not important factors behind employment losses seems obviously correct; state and local governments have received abundant aid and yet employment remains lower than it was before the pandemic. But it is also the case that simply examining the relationship between the extent of federal aid and the change in employment may not uncover the causal effects of federal aid on employment. Federal aid was not randomly distributed: small states got much more generous aid relative to their budgets, and aid to K–12 was provided on the basis of need (as measured by Title I funding) so that poorer states got more generous allotments. Each of these factors could confound the analysis. For example, states that got a lot of federal aid were small states, and if for some reason, small states are more likely to have large layoffs, then it would appear that generous federal aid is associated with worse outcomes. A similar problem arises if states with few resources were more likely not only to have layoffs but also to get generous K–12 funding.

OTHER EMPIRICAL EVIDENCE

The finding using the CES that budget conditions—revenue declines and federal aid—had little effect on employment is contradicted by two papers in the literature that attempt to carefully identify the causal effects of tight budgets.²³

²³ In addition, in a blog post (Sheiner 2020) I showed that states that got more federal aid and states that had larger predicted revenue losses suffered larger declines in local education employment. However, the CES data were revised since then, and these variables no longer predict the revised measures of employment losses by state.

Relying on the Current Population Survey to measure state and local layoffs, Green and Loualiche (2021) used two strategies to show that a large proportion of the decline in employment in the state and local sector in the spring of 2020 was attributable to tight budgets. First, they argue that states that depended on sales taxes as an important source of financing expected larger revenue losses and show that these states cut employment more. They calculate that sales tax exposure can explain over 660,000 of the state and local jobs lost in April 2020, or about two-thirds of the total decline. In addition, they exploit the kink in the CARES Act formula for aid to show that states that got more CARES funding had lower employment losses, finding that the CARES Act prevented the loss of 400,000 jobs. They also find that these effects are larger for states with smaller rainy day funds.

In the online appendix, I reevaluate the findings in Green and Loualiche. In particular, I compare the results using the CPS used by Green and Loualiche to results using measures of employment changes from the establishment survey (used above) and the Quarterly Census of Employment and Wages. I show that the results in the Green and Loualiche paper do not hold using the establishment data or the QCEW data, which are almost a complete census of state and local workers. Using these alternative—and much more representative—data, there is no relationship between state and local employment declines and the reliance on sales taxes or the generosity of CARES Act funding (appendix tables 6.3 and 6.4). The increases in layoffs and the declines in employment across states in the CPS have little relationship to the declines in employment as measured by the other two surveys, likely because the CPS sample sizes are too small for reliable cross-state analysis.²⁴

Haughwout, Hyman, and Shachar (2021) used the kink in CARES Act funding to counties—only counties with population greater than 500,000 were eligible for direct aid—to explore the effects of federal aid on employment. Using the QCEW to measure state and local employment, they found that direct CARES Act funding led local governments to recall about 25 percent more education workers in the first two months after the law was passed and that the effect persisted into the fall for governments with good credit ratings. However, only \$28 billion of the CARES Act funds went directly to counties, with the remaining \$132 billion going to states, territories, and tribal governments. Furthermore, states where counties got money directly did not get more money overall: the amount provided to counties was subtracted from the overall allocation, suggesting that the direct targeting of counties mattered for employment.

Overall, it seems clear that the employment losses vary a lot by state in ways that cannot fully be explained. Employment gaps—the differences between employment during the pandemic and in 2019—were clearly affected by attitudes toward COVID-19, and there is some evidence that fears of tight fiscal conditions and direct federal aid to counties affected employment, but generous federal aid to states was clearly not sufficient to reverse or prevent all

²⁴ The total number of state and local workers captured in the CPS in April 2020 was about 6,000, and 572 were unemployed. The median number of unemployed state and local workers in a state was just 9.

the employment losses. One important question is, why not? What did state and local governments do with the federal aid, and why didn't they use it to increase employment?

What Has Happened to Spending by State and Local Governments?

Information on spending by state and local governments during the pandemic is sparse. The Census Bureau's Annual Survey of State Government Finances for fiscal year 2020, which includes the first quarter of the pandemic for most states, was released in December 2021. No data are yet available for either FY 2020 spending by local governments or for FY 2021 for either state or local governments. The National Association of State Budget Officers (NASBO) publishes an annual report on state government expenditures, the latest of which includes estimates for FY 2021. However, differences in accounting practices across the states can make that report somewhat difficult to interpret, as I explain below.

Information for FY 2020

According to the Census Bureau's Annual Survey of State Finances, expenditures by state governments increased 7.6 percent in 2020, up sharply from the 4.3 percent increase in 2019 (appendix table 6.5). However, most of that increase reflects larger expenditures on insurance benefits, consisting mostly of UI benefits. These expenditures are not subject to balanced budget requirements, and states can adjust to the shock gradually over many years.²⁵ Excluding such expenditures, state expenditures increased 4.7 percent—roughly the same as the 4.5 percent increase in 2019. The categories of spending did show marked differences, however. Growth in spending on corrections, police protection, health, hospitals, and public welfare picked up from 2019 while spending on parks and recreation, natural resources, highways, governmental administration, and education increased at a slower pace than in 2019. The savings that states realized from shutting down schools, offices, and parks likely allowed for increased spending elsewhere.

Information for FY 2021

Table 6.8 presents the data from NASBO for both FY 2020 and FY 2021. Overall spending increased 8.7 percent in FY 2020 and 16.2 percent in FY 2021 according to their data—the highest reading in the 35-year history of the NASBO report. Spending financed by the federal government increased 21 percent in FY 2020 and 36 percent in FY 2021. One difficulty with the NASBO data is the inconsistent accounting for UI benefits across states: according to NASBO, some states include only administrative costs associated with UI in their accounting, while others include benefits costs as well, but they do not report which method they use, nor is it clear whether they include all UI benefits or just the regular benefits financed by states (Brian Sigriz,

²⁵Regular UI benefits are financed by states but paid out of a UI trust fund. When benefits exceed available resources, states get automatic loans from the federal government. Following the Great Recession, states in aggregate eliminated their UI debt very slowly, only extinguishing it in 2019 (Auerbach et al. 2020).

email communication, December 2, 2022).²⁶ UI expenditures, to the extent they are included, are in the “all other” category. Excluding this category of spending, spending increased 4.6 percent in FY 2020—similar to the Census data—and 10 percent in FY 2021. Even accounting for the higher inflation in FY 2021, this is a rapid pace of increase. Furthermore, many other types of pandemic-related expenditures are included in “all other,” including spending on public health, housing assistance, economic relief, aid to local governments, and broadband and other technology upgrades, so excluding the category will understate the true increase in state spending in response to COVID-19.

Thus, according to the NASBO (2021) data, state spending in 2021 was quite robust, despite the fact that employment remained weak, and it appears that states are spending the federal aid and doing so at a relatively quick pace.²⁷ Nonetheless, states budget conditions remain very healthy, with total balances (rainy day funds plus general budget surpluses) reaching a record 23.3 percent of expenditures at the end of FY 2021.

State and local spending in the National Income and Product Accounts (NIPA; Bureau of Economic Analysis 2021a and 2021b) looks quite different from the state spending reported in the NASBO State Expenditure Report: in the NIPA, nominal state and local expenditures rose 3.3 percent in FY 2020 and just 3.7 percent in FY 2021.²⁸ Nominal state and local purchases—the part of state and local spending that enters directly into GDP—rose 3.2 percent in FY 2020 and 2.5 percent in FY 2021. But the data on which the purchase estimates are based are quite sparse: They include data on employee compensation (which comes from data on employment and wages), construction (which comes from monthly Census surveys), and motor vehicle purchases (from R. L. Polk and Company.) Most other expenditure categories are estimated from historical trends.²⁹ Given the strength of the NASBO data, it seems likely that the BEA has underestimated state and local purchases in 2021 and thus overstated the drag of the state and local sector on the macroeconomy. Of course, not all the increase in spending represents state and local purchases—as table 6.8 shows, in the NASBO state public aid increased sharply and this spending is not included in purchases—so the eventual revisions to GDP, which will occur during the annual revisions after BEA has the data from the Census, are difficult to predict.

²⁶ Brian Sigriz is the director of state fiscal studies at NASBO.

²⁷ Federally funded state expenditures were \$473 billion higher than implied by a baseline where federal grants increased 4 percent per year from 2019 on. Excluding the “all other” category that contains at least some federally paid UI benefits, the increase in federally financed expenditures is \$163 billion. Of the roughly \$1 trillion in funds, about \$350 billion went directly to states.

²⁸ In the NIPA, all UI benefits are deemed federal spending, so they are not included in these numbers. “FY 2020” is defined here as 2019Q3 through 2020Q2.

²⁹ For total expenditures, as opposed to purchases, the Bureau of Economic Analysis also has access to administrative data on Medicaid spending and some other social programs.

<https://www.bea.gov/resources/methodologies/nipa-handbook>

Why Haven't State and Local Governments Used the Federal Aid to Increase Employment or at Least Bring It Back to Pre-Pandemic Levels?

It is hard to understand why employment in the state and local sector remains depressed given the rollout of vaccines; the reopening of parks, schools, and offices; and the healthy state budgets. In this section, I discuss several possible reasons. These are based on conversations with state officials and anecdotes rather than on hard data.

One narrative that I have heard repeatedly is that “a rule of budgeting is not to use one-time money for permanent expenses.” Thus, decisionmakers are loathe to use federal aid on services for which there might be continued demand after the federal money runs out. For example, one school superintendent explained that he would not want to reduce class sizes using federal aid—even if that might be particularly effective at remediating learning losses from virtual schooling—because there would be continued demand for smaller classes after the federal aid ran out. Instead, schools were looking for one-time expenditures (e.g., new equipment or HVAC systems) to fund with the federal aid. A counterargument is that many states are eyeing tax cuts, which similarly hold down revenues over the long run.

To the extent that layoffs in the spring of 2020 were caused by the fear of tight budget conditions, the restrictions on the use of the CARES Act funds (i.e., the prohibition on using them for expenses that were budgeted for before the COVID-19 pandemic) may have limited their effectiveness at minimizing layoffs. Similarly, the funneling of most of the aid money through the states—rather than providing directly to local governments—may have meant the money was too slow to get to local governments.

When employers wanted to resume hiring, they faced an extremely tight labor market. As shown in figure 6.2, job openings have been elevated since the 2021Q2, but hiring has not increased much, and as shown in figure 6.3, even though wages of state and local government workers increased in 2021, they did not keep pace with raises in the private sector. This lack of pay parity likely exacerbated hiring difficulties associated with the difficulties faced by many state and local workers during the pandemic. School workers, for example, have had to deal with risks of COVID-19 exposure, hybrid teaching, school closures, and staff shortages. With the state and local workforce largely unionized, it is difficult to provide higher pay to attract new employees without having to increase pay all around. And again, state and local governments are wary of increasing pay because of the implications for future years when federal money is no longer available.

Another possibility that several state officials mentioned is that the pandemic has improved the efficiency of the public sector. Whether it was the laying off of workers whose services were not highly valued or the increased efficiency from remote work and videoconferencing, government officials may not think they need as many workers as they did before the pandemic.

Finally, changes that occurred during the pandemic may have increased the uncertainty about future spending needs and revenues. For example, given the strains on the public health system during the pandemic, state and local governments may want to increase investments going forward in order to ensure that they are prepared for future health emergencies.³⁰ In addition, the transition to remote work leaves many cities unsure about whether economic activity will return to pre-pandemic levels anytime soon, putting revenues from taxes and fees at risk and also leading them to perhaps fundamentally rethink their transportation and transit infrastructure. This type of uncertainty may have led state and local governments to be very cautious in committing funds too rapidly.

LESSONS LEARNED

1. Policies that provide fiscal support to households and businesses indirectly support state and local revenues. When contemplating the amount of direct aid that might be necessary, these policies should be taken into account.
2. In order to prevent layoffs and ensure adequate public service provision, aid to state and local governments should be automatic or should be provided early in a recession. While most of the employment declines in the state and local sector over the past two years are likely related to pandemic-specific factors, there is some evidence that some of the employment losses reflected fear of tight budget conditions. At a minimum, the states that imposed hiring freezes would likely not have taken that step had they anticipated the substantial federal aid that would be forthcoming. While not definitive, the experience during the pandemic suggests that preventing initial layoffs is important.
3. Federal aid should go directly to states and localities instead of only to state governments, where possible, and should have few conditions placed on it. Although money is fungible, the way aid is distributed does matter. The fact that states were explicitly prohibited from using CARES Act funding to cover revenue losses and the targeting of aid to states and only very large substate governments may have made it less effective at preventing layoffs. The \$350 billion in federal aid in the American Rescue Plan was much better on this front. It provided aid directly to local governments, thus bypassing the possibly slow process by which states redistribute aid to local governments, and allowed a much broader array of purposes.
4. State and local governments are reticent about using one-time federal aid to finance ongoing expenditures. That might preclude aid from being used for the most effective purposes (e.g., increasing teaching resources to address learning losses during the pandemic).
5. The ability of state and local governments to borrow from the Fed can serve as an important backstop that can help stabilize municipal bond markets.
6. More timely data on state and local governments is needed. In 2020 the Bureau of Economic Analysis relied on Urban Institute efforts at collecting data from state agencies

³⁰ <https://www.nytimes.com/2020/03/14/us/coronavirus-health-departments.html>

because these were available before the Census Bureau's Quarterly Survey of State and Local Taxes. Similarly, NASBO published data for state spending in FY 2021 over a year before the Census will release such data. Unfortunately, there are no nongovernmental sources for data on spending by local governments, and these data will not be released for FY 2020 (meaning through 2020Q2) until June of 2022. The lack of timely official data made it difficult to assess the fiscal conditions of state and local governments and to know whether the enacted policies were successful. Lack of timely data has also made it difficult to accurately assess the state of the economy because the BEA has such limited information on purchases by state and local governments.

7. This pandemic was different from most recessions. The fact that revenue losses were modest and short lived and employment declined despite healthy budgets does not suggest that aid to state and local governments is ineffective or unnecessary in economic downturns. The lesson of the Great Recession—that inadequate aid to state and local governments can hamper an economic recovery—should not be discarded simply because the experiences during the pandemic were so different.

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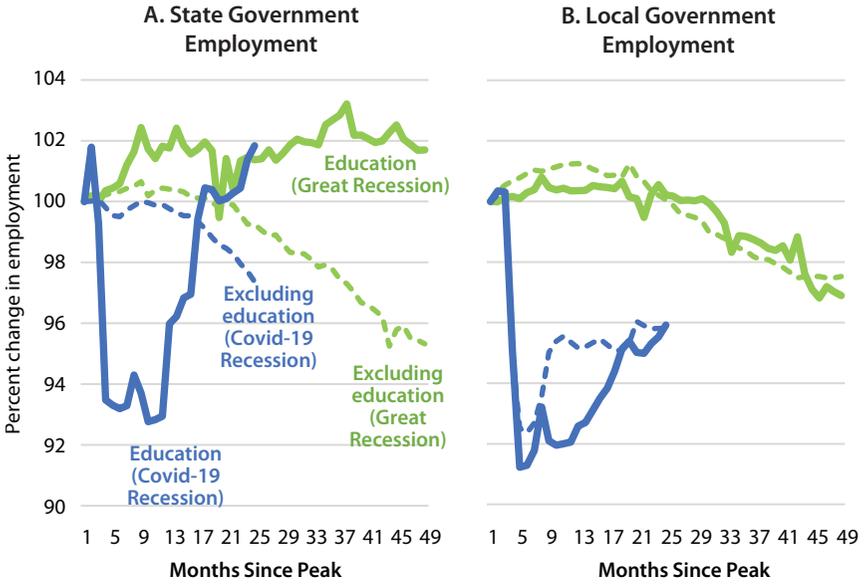
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FIGURE 1.

Employment Trends during the Great Recession vs. the COVID-19 Pandemic



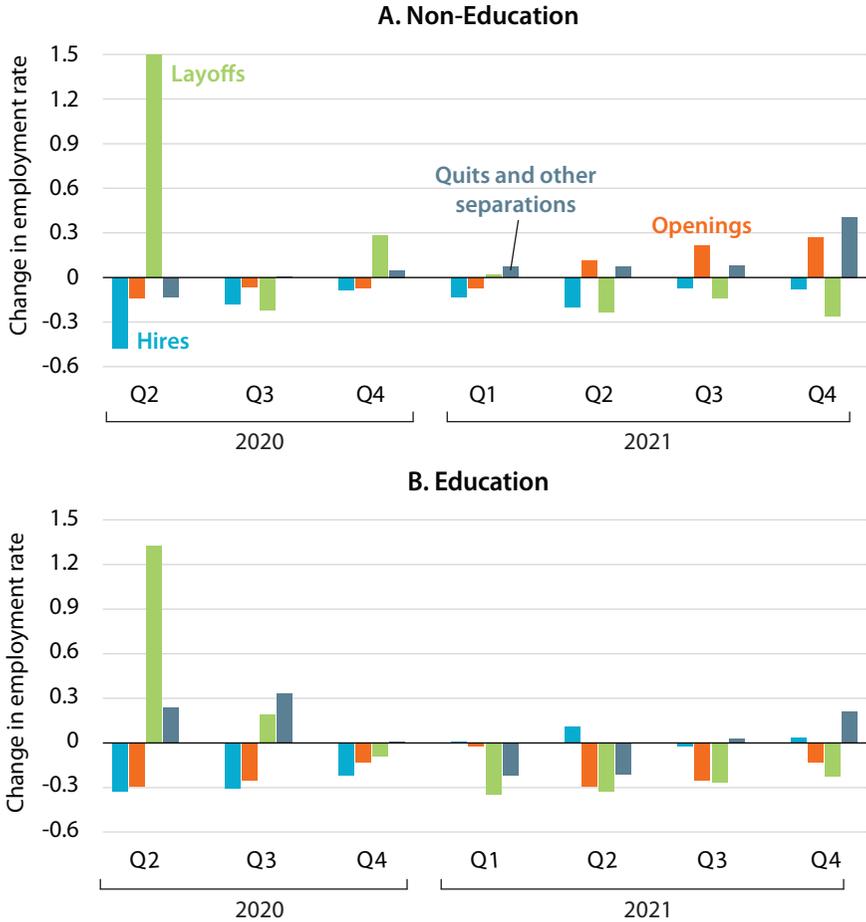
Source: Bureau of Labor Statistics, Current Employment Statistics.

Note: Seasonally-adjusted monthly employment relative to December 2007 for Great Recession and January 2020 for the COVID-19 pandemic recession.



FIGURE 2.

State and Local Job Openings and Labor Turnover



Source: Bureau of Labor Statistics, Job Openings and Labor Turnover Survey.

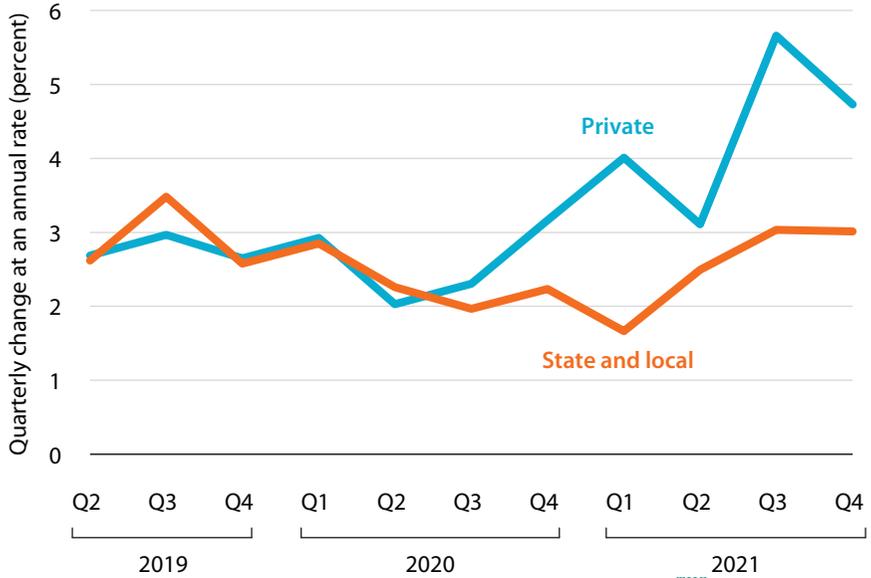
Note: Change in seasonally-adjusted levels relative to January 2020.



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FIGURE 3.

Change in Wages, Private Sector and State and Local Sector



Source: Bureau of Labor Statistics, Employment Cost Index.

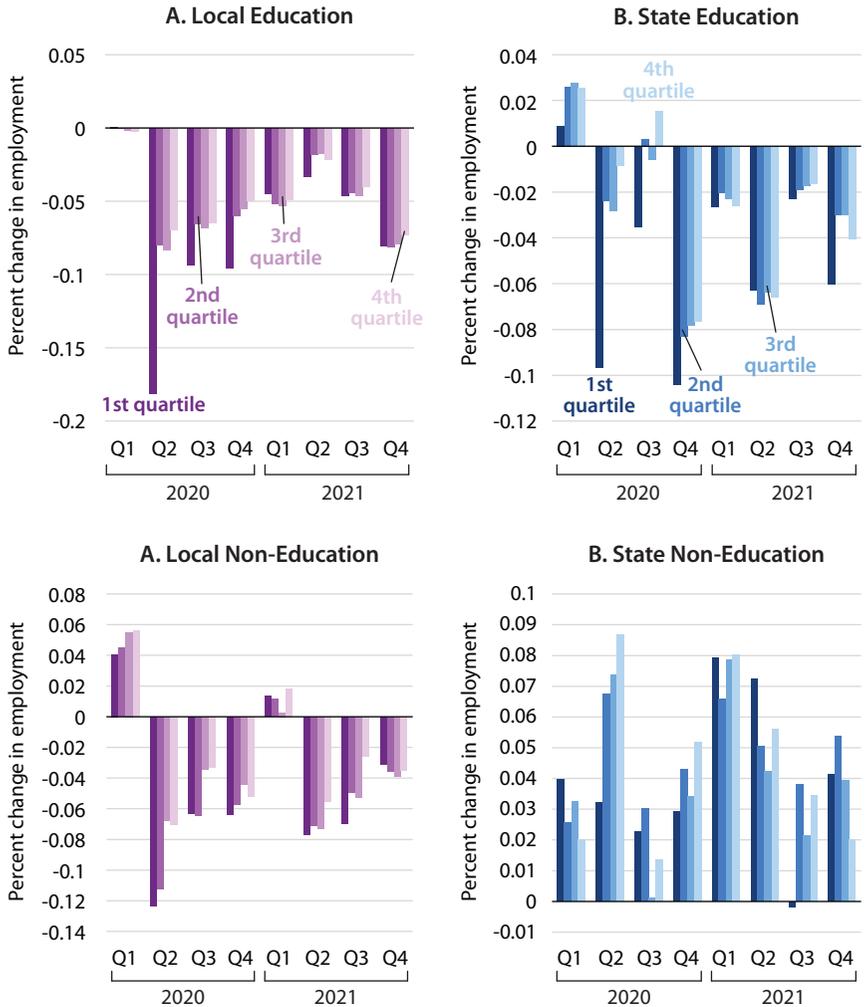
Note: Change from previous quarter in employment cost index for total compensation, annual rate.



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FIGURE 4.

Changes in State and Local Employment Growth, by Wage Quartile



Source: Author's calculations; IPUMS-CPS, University of Minnesota.

Note: Percent change in employment relative to same quarter in 2019 by occupation wage quartiles

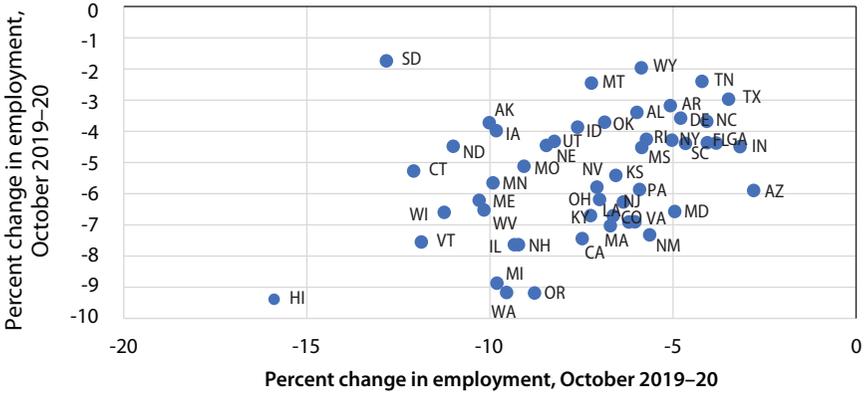


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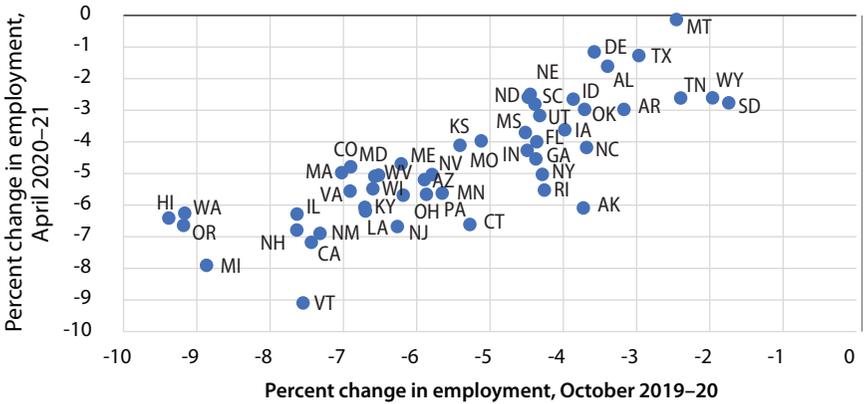
FIGURE 5.

State and Local Employment Losses over Time

A. Spring 2020 vs. Fall 2020



B. Fall 2020 vs. Spring 2021



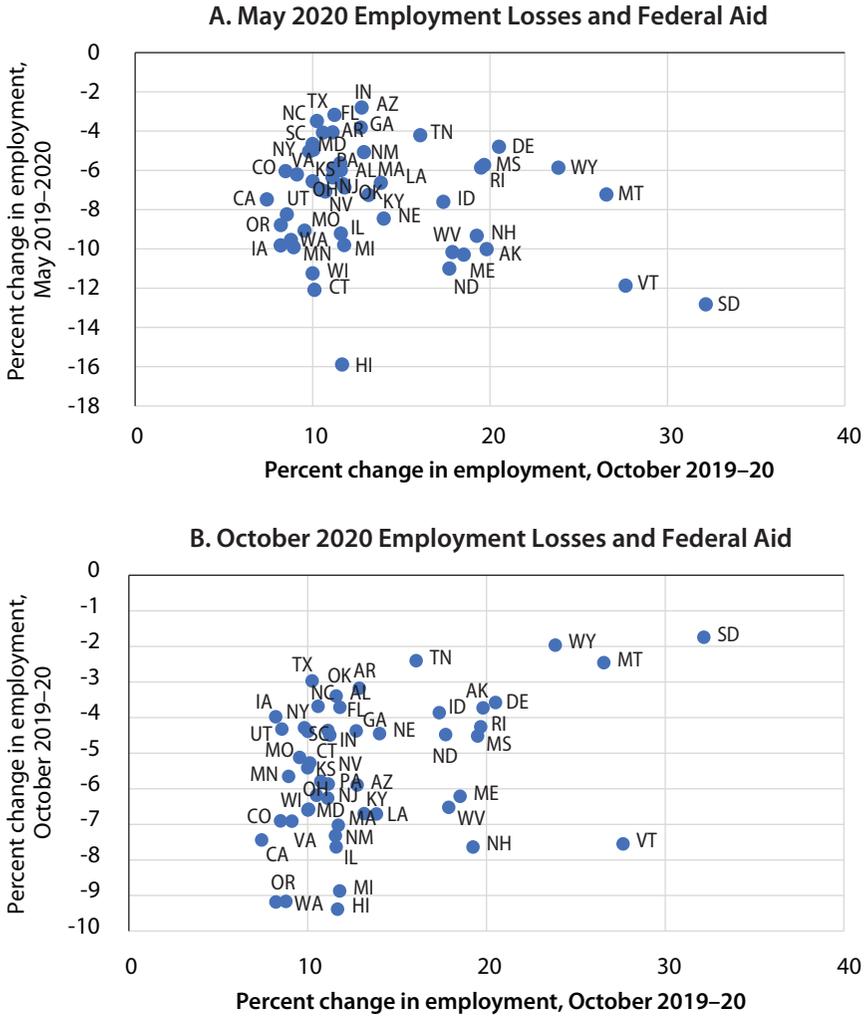
Source: Bureau of Labor Statistics, Current Employment Statistics.



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FIGURE 6.

Total State and Local Employment Losses and Federal Aid

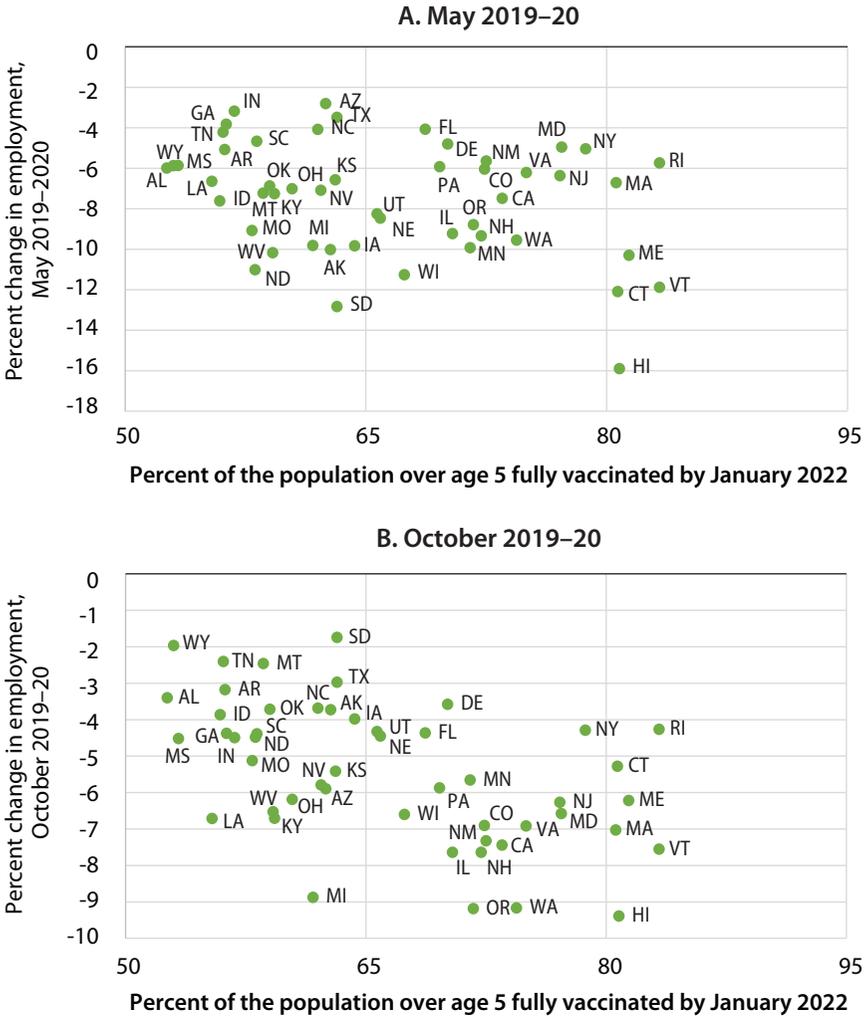


Source: Bureau of Labor Statistics, Current Employment Statistics; Auerbach et al, 2020.



FIGURE 7.

Vaccination Rates and Changes in State and Local Employment



Source: Bureau of Labor Statistics, Current Employment Statistics, Centers for Disease Control and Prevention.



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TABLE 1.

Projections of Revenue Losses From COVID in the State and Local Sector

Authors	Revenue or Spending	Revenue Losses FY2020 + FY2021 (billions)	Economic Forecast Underlying Estimate	Methodology
Bivens and Walker (April 2020) Economic Policy Institute	State and local taxes	\$345	Goldman Sachs (April 2020)	Historical relationship augmented for assumed local revenue effect. A 1% increase in unemployment associated with a \$60 billion decline in state and local revenues.
McNichol, Leachman, and Marshall (April 2020)	State taxes	\$395	CBO (April 2020)	Historical relationship: 1% increase in unemployment rate lowers revenues 3.7%
White, Crane and Seitz (April 2020) Moody's Analytics	State revenues general funds	\$130 baseline; \$203 more severe scenario	Baseline: Max 10% decline real GDP, gradual recovery. More severe: Max 14% decline real GDP, gradual recovery.	Proprietary model that includes state-by-state regressions of state revenues on economic revenues.
Bartik (May 2020) Upjohn Institute	State and local taxes	\$899	CBO (April 2020)	Historical relationship augmented for assumed local revenue effect. 1% increase in unemployment lower state and local revenues by \$60 billion.
Clemens and Veuger (June 2020)	State income and sales tax	\$148	CBO (April 2020)	Historical relationship: 1% decline in personal income lowers revenues by 1.6%.
Whitaker (June 2020)	All state and local revenue (including fees, charges, etc.)	\$200–\$490	Best: Recovery complete by 2020 Q4. Worst: Second wave shutdown 2020 Q4. Economy recovered by Q4 2021.	For income taxes: estimate wage declines and assume tax revenues decline proportionally. For sales taxes, use national changes in portions of PCE likely subject to sales tax.
Dadayan (July 2020) Urban Institute Tax Policy Center	State taxes	\$200	States forecasts	Estimated for all 50 states based on forecast data from 27 states.
Auerbach, Gale, Lutz, and Sheiner (September 2020)	State and local taxes and fees	\$270 (calendar years not fiscal years)	CBO (July 2020)	Detailed projections of tax bases and tax schedules



TABLE 2.

State and Local Government Revenues During the Pandemic

Revenue Losses Relative to Counterfactual 4% Growth (in billions)

	FY2020	FY2021
Total current tax receipts	-71	145
Personal Income taxes	-38	70
Sales taxes	-20	6
Property taxes	-4	44
Taxes on corporate income	-9	25

Source: Census Bureau, Quarterly Summary of State and Local Tax Revenue.



Note: This table reports the difference between revenues collected in FY2020 and FY2021 and revenues that would have been collected had they increased at a 4 percent annual rate from 2020 Q1 on.



TABLE 3.

Predicted Revenue Losses Given Actual Economic Outcomes, Total FY2020 and FY2021 (Billions)

A. State and Local Tax Revenues and the Business Cycle (1985–2019)

		All	Excluding 2009	Including Stocks	Including Stocks and Excluding 2009
Dependent Variable: Log Change in Real per Capita State and Local Income Taxes					
Change in UR	Coefficient	-4.90	-3.50	-3.30	-2.70
	Adjusted R ²	0.56	0.24	0.65	0.35
Log change real per cap personal income	Coefficient	2.00	1.40	1.40	1.10
	Adjusted R ²	0.58	0.28	0.65	0.36
Log change real per cap “taxable” personal income	Coefficient	1.50	1.10	1.10	0.89
	Adjusted R ²	0.61	0.33	0.67	0.40
Dependent Variable: Log Change in Real per Capita State and Local Sales Taxes					
Change in UR	Coefficient	-3.00	-2.30	-2.40	-2.00
	Adjusted R ²	0.72	0.44	0.75	0.49
Log change real per cap personal income	Coefficient	1.10	0.70	0.80	0.60
	Adjusted R ²	0.60	0.27	0.64	0.31

B. Predicted Revenue Losses Given Actual Economic Outcomes, Total FY2020 and FY2021, Billions

	All	Excluding 2009	Including Stocks	Including Stocks and Excluding 2009	Actual Change
Change in UR	-\$116	-\$83	-\$57	-\$46	\$48
Log change real per cap personal income (excluding EIPs)	\$5	\$3	\$23	\$19	\$48
Log change real per cap “taxable” personal income (excluding UI)	-\$44	-\$32	-\$14	-\$11	\$48
Sales Tax Revenues					
Change in UR	-\$70	-\$54	-\$49	-\$41	-\$14
Log change real per cap personal income	\$23	\$15	\$25	\$19	-\$14

Source: Data on taxes and personal income from BEA; unemployment rates from BLS; stock market uses the Wilshire 5000 from Fred.

Note: Change in personal income relative to a counterfactual in which real income grows 2% per year.



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TABLE 4.

Total Enacted Aid to State and Local Governments (Billions)

	Families First Coronavirus Response Act (Mar. 18, 2020)	CARES Act (Mar. 27, 2020)	Consolidated Appropriations Act, 2021 (Dec. 27, 2020)	American Rescue Plan (Mar. 11, 2021)	Total
Total	\$105	\$250	\$99	\$542	\$996
General Aid	\$100	\$150		\$350	\$600
Coronavirus Relief Fund		\$150			\$150
Coronavirus State and Local Fiscal Recovery Funds				\$350	\$350
Enhanced Medicaid matching rate ^a	\$100				\$100
Targeted Aid	\$5	\$100	\$99	\$192	\$396
Aid for Unemployment Insurance administrative expenses	\$5	\$12			\$16
Aid to K–12		\$17	\$56	\$123	\$195
Aid to public institutions of higher education ^b		\$12	\$19	\$35	\$66
Aid to health providers ^b		\$35	\$1	\$2	\$37
Aid to transit agencies and transportation infrastructure grants		\$25	\$24	\$33	\$81

Source: Committee for a Responsible Federal Budget Covid Money Tracker (n.d.), Kaiser Family Foundation (n.d.), U.S. Department of Education (n.d.).

Note: a. Author's estimated value assuming public health emergency ends on July 1, 2022 b. Author's estimate of share going to public institutions.



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TABLE 5.

Employment Changes Relative to 2019

	Mean	Standard Deviation	Minimum	Maximum
Local Education				
May 2020	-9.4%	3.3%	-18.7%	-4.4%
Oct 2020	-7.0%	2.9%	-15.7%	-2.5%
Mar 2021	-6.2%	3.0%	-13.7%	-0.7%
Dec 2021	-3.6%	2.5%	-9.3%	1.1%
Local Noneducation				
May 2020	-7.3%	4.7%	-28.2%	-1.3%
Oct 2020	-3.6%	2.7%	-11.2%	3.1%
Mar 2021	-3.6%	3.2%	-14.1%	2.9%
Dec 2021	-3.9%	3.1%	-11.2%	3.3%
State Education				
May 2020	-7.7%	6.8%	-25.3%	8.9%
Oct 2020	-8.3%	4.6%	-18.3%	0.0%
Mar 2021	-8.1%	5.7%	-17.7%	12.5%
Dec 2021	-6.3%	7.4%	-22.9%	11.1%
State Noneducation				
May 2020	-0.7%	2.4%	-8.9%	3.4%
Oct 2020	-0.4%	2.6%	-6.0%	7.0%
Mar 2021	0.1%	2.9%	-6.7%	5.1%
Dec 2021	-2.2%	3.2%	-11.8%	5.9%

Source: Bureau of Labor Statistics, Current Employment Statistics.

Note: This table reports the percent change in employment by sector compared to the same month in 2019.



TABLE 6.

Correlations in Employment Changes across States

A. Correlation within a Sector across Time Periods

	May 2020 and October 2020	May 2020 and March 2021	May 2020 and December 2021	October 2020 and March 2021	October 2020 and December 2021	March 2020 and December 2021
State Education	0.42	0.37	0.31	0.78	0.70	0.68
State Noneducation	0.52	0.59	0.38	0.83	0.71	0.83
Local Education	0.25	0.22	0.17	0.88	0.58	0.72
Local Non-education	0.67	0.64	0.55	0.89	0.77	0.83

B. Correlation within a Time Period across Sectors

	May 2020	October 2020	March 2021	December 2021
State education vs State non-education	0.21	0.06	0.10	0.15
State education vs Local education	0.30	0.04	0.02	-0.04
State non-education vs Local non-education	-0.06	0.01	0.00	-0.01
Local education vs Local non-education	0.15	0.21	0.27	0.01

Source: Bureau of Labor Statistics, Current Employment Statistics; Author's calculations.



Note: The table reports the correlation coefficients for employment declines relative to the same month in 2019 across time periods and sectors.



TABLE 7.

Explaining the Cross-State Variation in Employment Declines

	Education				Excluding Education			
	May 2020	Oct. 2020	Apr. 2021	Dec. 2021	May 2020	Oct. 2020	Apr. 2021	Dec. 2021
Local Employment								
Vaccination rates, January 2022	-0.045	-0.13***	-0.14***	-0.12*	-0.10**	-0.02	-0.11**	-0.05
State share K-12	-0.08*	-0.06*	-0.08**	-0.04	0.00	0.02	-0.01	0.04
State Employment								
Vaccination rates, January 2022	0.03	-0.07	-0.17*	-0.09	0.01	0.03	-0.02	0.02
State hiring freeze	0.007	-0.01	-0.01	0.01	-0.01	-0.02**	-0.02**	-0.01

Source: Bureau of Labor Statistics, Centers for Disease Control and Prevention, Congressional Research Service.



Note: The change in employment is defined as the change in a particular month from the same month in 2019. Vaccination rate is the share of the population 5 years and over who are fully vaccinated in January 2022.



TABLE 8.

Increase in State Spending, by Sources of Funds and Category, FY2020 and FY2021

Source of Financing	Total	General Revenues	Other State Revenues	Federal Funds	Bond Issuance
Fiscal Year 2020					
K–12 education	4.3%	4.9%	0.7%	7.8%	44.8%
Higher education	1.3%	3.4%	2.6%	13.8%	5.4%
Public assistance	-8.0%	3.4%	-17.5%	9.1%	
Medicaid	6.5%	1.3%	-1.3%	10.0%	
Corrections	1.7%	0.3%	13.5%	261.6%	54.0%
Transportation	6.0%	-6.9%	3.1%	6.4%	-0.4%
All other (includes UI benefits in some states)	18.9%	4.9%	5.1%	61.5%	0.5%
Total excluding other	4.6%	2.9%	1.7%	9.9%	7.8%
Total	8.7%	3.4%	3.1%	20.5%	4.7%
Fiscal Year 2021					
K–12 education	28.5%	3.2%	19.0%	83.9%	46.4%
Higher education	4.0%	4.1%	0.5%	11.7%	-3.2%
Public assistance	26.8%	15.6%	35.4%	28.5%	
Medicaid	11.7%	0.1%	12.2%	15.8%	
Corrections	0.2%	-7.3%	-1.5%	171.4%	-42.7%
Transportation	8.5%	38.8%	4.2%	13.1%	17.4%
All other (includes UI benefits in some states)	29.4%	8.5%	12.3%	73.0%	13.4%
Total excluding other	10.1%	2.3%	5.3%	21.4%	7.9%
Total	16.2%	4.1%	8.3%	35.7%	10.1%

Source: National Association of State Budget Officers Report (2021), State Expenditure Report, November 2021



Note: The table reports the annual percentage increase in state spending in fiscal years 2020 and 2021.

