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May 19, 2020

The Honorable Mitch McConnell  
Majority Leader, United States Senate  
Washington, DC 20510

The Honorable Charles Schumer  
Minority Leader, United States Senate  
Washington, DC 20510

Dear Majority Leader McConnell and Minority Leader Schumer:

As a resource and advocate for 19,000 cities, towns, and villages representing more than 218 million Americans, the National League of Cities (NLC) is grateful for your leadership during this time of uncertainty for local governments. Leader McConnell's CARES Act, which NLC supported, provided critical funding to protect public health and hold off financial decline for our most vulnerable households and small businesses; and the Paycheck Protection Program and Health Care Enhancement Act was another positive step forward in the effort to prevent the worst possible health and fiscal outcomes resulting from efforts to contain COVID-19.

We also appreciate the significant fiscal assistance that has already been enacted for states, cities, and counties. For some municipalities, the Coronavirus Relief Fund has been a lifeline for maintaining uninterrupted operation of local government services in extremely challenging circumstances. Unfortunately for most local governments, that lifeline remains unavailable, and is unlikely to ever be available for the vast majority of local governments representing small and rural communities. As a result, there is a real possibility that the very cities, towns, and villages that have helped ensure stability throughout this crisis, even as their revenue base has declined, will now go from being an essential part of America's recovery to becoming a serious drag on it.

**We urgently request your support for all local governments. In particular, NLC is seeking \$125 billion in 2020 and \$125 billion in 2021 for municipalities governing cities, towns and villages of all sizes to reopen our communities and maintain core responsibilities, including keeping emergency responders on the job and intervening in localized outbreaks of COVID-19, and restoring the economic activity of our communities in lasting ways.**

This additional federal intervention is warranted. According to our recent analysis of finance data from the U.S. Census Bureau and unemployment projections from the Congressional Budget Office, NLC found that a 1 percentage point increase in unemployment results in a 3.02% budget shortfall for cities, towns and villages. Collectively, these figures project to over \$360 billion in lost revenues between 2020 and 2022, with shortfalls varying significantly by state. Our research further shows that between 300,000 and 1 million public-sector workers could be furloughed or laid off without additional intervention.

NLC recognizes that the HEROES Act that passed the House last week is just a starting point on the road to a bipartisan bill that will hopefully deliver the assistance cities, towns, and villages need to maintain the critical services Americans take for granted every day and to facilitate our national recovery.

We stand ready to work on bicameral, bipartisan legislation that will provide fair and appropriate levels of assistance to all cities, towns, and villages to achieve our mutual goal. If NLC can be of further help to you in this crisis, please contact Irma Esparza Diggs, NLC Senior Executive and Director of Federal Advocacy, at 202-626-3176 or [diggs@nlc.org](mailto:diggs@nlc.org).

Sincerely,



Clarence E. Anthony  
CEO and Executive Director  
National League of Cities

Enclosures:

1. Anomalies and Guardrails for Federal Assistance to Municipal Governments
2. Fiscal Impact of the Pandemic Recession on Cities, Towns and Villages

## Anomalies and Guardrails for Federal Assistance to Municipal Governments

1. No uniform delineation of responsibilities to municipal governments across the states
  - a. Dilemma: The definition and responsibilities of cities, towns, townships, villages, and boroughs vary across state lines.
  - a. Potential solution: To safeguard against funding levels greater than appropriate to meet the responsibilities delineated to municipal governments, allocations for non-entitlement municipalities could be capped at 75% of their annual budget or 75% of projected revenue, whichever is greater.
2. Excessive grants
  - a. Dilemma: In some cases, local governments of small and rural towns may be eligible for inappropriately large grants equal to their total annual budget, or greater.
  - b. Potential Solution 1: Same as above, cap allocations for non-entitlement local municipal governments at 75% of their annual budget or 75% of projected revenue, whichever is greater.
  - c. Potential Solution 2: Permit municipal and county governments to transfer funds to special purpose governments and special district governments that are ineligible for direct federal support. Examples include library districts, water and sewer authorities, power and electric authorities, transit authorities, port authorities, housing authorities, regional public services, etc.
3. Maintenance of Effort
  - a. Dilemma: States may use federal assistance as a reason to cut or supplant existing state payments to local governments. States may attempt to constrain or preempt local authority over expenditures supported by the municipal fund.
  - b. Potential solution 1: The amounts distributed from the municipal fund shall be used to supplement, and not supplant, any non-Federal funds that a State or such other jurisdiction would otherwise provide to cities, counties, parishes, or other units of general local government of the State or other jurisdiction.
  - c. Potential Solution 2: States may not impose eligibility standards, methodologies, procedures, or other constraints on local governments that are more restrictive than those that were in place on January 1, 2020, in order to receive state budget aid under this title. (Stronger option)
4. States with no functional counties
  - a. Dilemma: Some states have diminished or eliminated county governments, and traditional county government services to residents are divided between the state and its municipal governments.
  - b. Potential Solution: For states where there are diminished or non-existent county governments, increase the allocation of municipal funds.
5. Combined city/county governments
  - a. Dilemma: Some municipalities have merged into combined city/county councils.
  - b. Potential Solution: Combined city/county councils may receive both municipal and county fund payments, but cap the overall payment to a reasonable percentage of their annual budget.
6. Unfunded Pension Liabilities
  - a. Dilemma: Unfunded pension liabilities may incent a few states to redirect funds to meet that need.
  - b. Prohibit the deposit of funds into and pension account or fund.

7. Unanticipated Dilemmas

- a. Dilemma: It is not likely federal legislation can account for every possible state and local intergovernmental structure or agreement
- b. Potential Solution: Grant the governors limited authority to resolve unaddressed conflicts or situations resulting from the bill. The governor could be directed to consider specific data in their decision-making, including the locally collected revenue of the entities in question.

# CITIES ARE ESSENTIAL

## Fiscal Impact of the Pandemic Recession on Cities, Towns and Villages

CHRISTIANA K. MCFARLAND, Research Director  
BRENNAN RIVETT, Program Manager  
CENTER FOR CITY SOLUTIONS<sup>1</sup>

Despite significant uncertainty about how long the coronavirus and the economic impacts of the public health crisis will last, one thing that is clear is that the U.S. has entered a recession. From skyrocketing unemployment, jobless claims and business closures to plummeting consumer spending and income, families and businesses, particularly Americans of color, are burdened with mounting financial insecurity. As local leaders grapple to help their communities face these new economic realities, they are also working to soften the blow to their own budgets.

From a recent survey of about 2,500 cities, towns and villages, nearly all communities greater than 50,000 in population reported that they will experience a revenue shortfall this year, with 87% of those less than 50,000 in population expecting revenue shortfalls as well.<sup>2</sup> In Charleston, WV, the city approved a \$98.9 million budget in fiscal year 2019 but is on track to end with a \$2 million deficit.<sup>3</sup> The city of Boulder, CO, projects a shortfall of approximately \$21 million in the general fund and a \$41 million overall budget deficit.<sup>4</sup> In New Orleans, LA, city officials estimate the city can lose up to \$150 million this year as a result of losses in sales tax revenue.<sup>5</sup>

<sup>1</sup> The authors are grateful for the contributions of Anita Yadavalli, Program Director, Spencer Wagner, Program Specialist and Rose Kim, Research Specialist in the Center for City Solutions, who contributed to data collection and analysis supporting this research. Special thanks to Timothy J. Bartik, Senior Economist, Upjohn Institute for his guidance and input.

<sup>2</sup> "The Economy and Cities: What America's Local Leaders Are Seeing." National League of Cities, April 2020 at: [www.nlc.org/sites/default/files/users/user57221/NLC-USCM-One-Pager.pdf](http://www.nlc.org/sites/default/files/users/user57221/NLC-USCM-One-Pager.pdf)

<sup>3</sup> Alex Thomas. "Charleston expected to end fiscal year with \$2 million shortfall." Metro News, April 20, 2020 at: <https://wvmetronews.com/2020/04/20/charleston-expected-to-end-fiscal-year-with-2-million-shortfall/>

<sup>4</sup> Shay Castle. "Projected Boulder budget shortfall widens to \$41M." Boulder Beat, May 2, 2020 at: <https://boulderbeat.news/2020/05/02/projected-boulder-budget-shortfall-widens-to-41m/>

<sup>5</sup> Jeff Adelson. "New Orleans City Council gives preliminary green light to plan to borrow to fill coronavirus budget hole." NOLA, May 7, 2020 at: [www.nola.com/news/coronavirus/article\\_43669e02-90b6-11ea-97d9-2741b3abfab2.html](http://www.nola.com/news/coronavirus/article_43669e02-90b6-11ea-97d9-2741b3abfab2.html)

To better understand the depths and contours of the fiscal impact of the pandemic recession on cities, towns and villages across the nation, we analyzed finance data from the U.S. Census Bureau and unemployment projections from the Congressional Budget Office. Our model accounts for both economic conditions and local fiscal structures and finds that a 1 percentage point increase in unemployment results in a 3.02% budget shortfall for cities, towns and villages. Collectively, this amounts to over \$360 billion in lost revenues between 2020 and 2022, with shortfalls varying significantly by state.

### Total Revenue Loss for Cities, Towns and Villages (\$billion)



Source: National League of Cities analysis of U.S. Census Bureau data (2017 total own-source revenues for municipal and township governments), adjusted for inflation, and based on unemployment projections provided by the Congressional Budget Office.

## Budget Shortfall Framework

The framework for our analysis of pandemic-induced budget shortfalls for cities, towns and villages considers the disparate revenue compositions and economic environments of communities across the country as well as the distinct ways in which revenue streams respond to economic conditions (see Appendix I for detailed methodology).<sup>6</sup>

We build on a model developed by senior economist Timothy J. Bartik of the Upjohn Institute that estimates local revenue responsiveness to unemployment relative to state revenue responsiveness.<sup>7</sup> One key difference between our study and Bartik’s is that we focus specifically on fiscal impacts to cities, towns and villages, where Bartik’s estimations account for the full local government sector, including counties, school districts and special purpose districts.<sup>8</sup>

<sup>6</sup> Michael Pagano and Christiana K. McFarland. *When will your city feel the fiscal impact of COVID-19?* The Brookings Institution. March 31, 2020.

<sup>7</sup> Timothy J. Bartik. *A proposal for timely responsive federal aid to state and local governments during the pandemic recession.* Upjohn Institute, Kalamazoo, MI. April 20, 2020.

<sup>8</sup> Therefore, we use the U.S. Census Bureau own-source revenue data for municipalities and townships, not for local government writ large.

Prior research by Fiedler, Furman and Powell (2019) and Fiedler and Powell (2020) finds that each 1 percentage point increase in the national unemployment rate results in a 4.1% state budget shortfall (\$45 billion annually).<sup>9</sup> Do revenues for cities respond in the same way? That depends on the local revenue structure. For example, if a city's revenue consisted entirely of revenue from sales and income taxes, we would anticipate that the city's revenue, like that estimated for states, would decrease 4.1% for each one percentage point increase in unemployment.

Given local reliance on a variety of own-source revenues, from sales and income taxes to property taxes to fees, charges and miscellaneous taxes, we adapt local revenue responsiveness, so that, like Bartik, our model assumes that local sales and income tax revenue is just as responsive as state revenues to unemployment, but that local property tax revenue is less responsive. Our model also accounts for another large share of revenues for cities, towns and villages - fees, charges and miscellaneous taxes. The portion of local revenues generated by fees and charges is more responsive than property tax revenue streams but less so than sales and income tax revenue. We detail these assumptions below.

## Revenue Responsiveness

The relationship between fiscal structure and the economy underpins the framework employed in this model. As noted by Pagano and McFarland (2020) in a recent Brookings Institution analysis, how city governments raise revenues and how these revenues rise and fall with economic conditions is most evident in the rapid response of sales and income tax revenue.<sup>10</sup> Cities that generate the majority of their revenue from sales or income taxes, like states, have been hit hard as their budgets experience the immediate impacts of massive declines in jobs and consumer spending. For example, the city of Akron, Ohio, which is highly dependent on the income tax announced in March that it is furloughing one-third of its municipal workforce due to budget shortfalls.<sup>11</sup>

Cities relying on property tax revenues, however, will not experience such an immediate collapse in revenues. Local assessment practices require that cities wait to estimate the value of land and property until the property is exchanged on the market or an assessment is conducted. Current property tax bills, therefore, typically reflect values of the property anywhere from 18 months to several years prior to

<sup>9</sup> Matthew Fiedler, Jason Furman and Wilson Powell III. *Increasing federal support for state Medicaid and CHIP programs in response to economic downturns*. The Brookings Institution. May 16, 2019; Matthew Fiedler and Wilson Powell III. *States will need more fiscal relief. Policymakers should make that happen automatically*. The Brookings Institution. April 2, 2020.

<sup>10</sup> Michael Pagano and Christiana K. McFarland. *When will your city feel the fiscal impact of COVID-19?* The Brookings Institution. March 31, 2020.

<sup>11</sup> "Akron furloughs 600 city workers to stop spread of coronavirus." Akron Beacon Journal, March 17, 2020 at: <https://www.beaconjournal.com/news/20200317/akron-furloughs-600-city-workers-to-stem-spread-of-coronavirus>

collection. Property tax collections are less responsive, or “elastic,” in the short term—but over time, as rising unemployment dampens real-estate demand and accelerates foreclosures and missed tax payments, even property tax-dependent cities will feel the impact of the pandemic-induced recession.<sup>12</sup> Given this lag, we estimate that the portion of local revenues generated by property taxes is half as responsive to economic conditions as sales and income tax revenue.

Local revenues are also generated from fees and charges for services such as trash collection and water. Although the downturn is immediately and adversely affecting some fee-driven services, like transit and parking fees, because demand is reduced, fees for other services, like water and sewer, may be less severely impacted as residents remain in place and continue to use them.<sup>13</sup>

However, even these fees and charges appear to be affected. The city of Richardson, TX’s \$18 million shortfall this year is attributed primarily to a decline in fees and permits resulting from a lull in construction, low hotel occupancy rates, inability of residents to pay water and sewer fees, reductions in commercial solid waste service requests, and the closing of a municipal recreation center.<sup>14</sup> In addition to yet-to-be determined declines in sales tax revenues, Little Rock, AR, is projecting a \$5 million shortfall just from a slump in fees and charges revenue from closed recreational facilities and declining building permits.<sup>15</sup> South Bend, IN, estimates a loss of about \$200,000 per month in gas taxes alone.<sup>16</sup>

Given the unique contours of the current economic downturn, its impact on fees and charges, and wide variation in types of fees and charges, our model estimates that the portion of local revenues generated by fees, charges and miscellaneous taxes are highly responsive to economic conditions, but less so than sales and income tax revenue.

Overall, the portion of revenues for cities, towns and villages generated by sales and income taxes will have the largest relative fiscal impact on budget shortfalls, whereas property tax revenue will have the least. When applying the responsiveness rates for sales/income tax revenue, property tax revenue and revenue from fees, charges and miscellaneous taxes (100%, 50% and 75% of state revenue responsiveness, respectively) to the share of own-source revenue generated by each stream, we find

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<sup>12</sup> Michael Pagano and Christiana K. McFarland. *When will your city feel the fiscal impact of COVID-19?* The Brookings Institution. March 31, 2020.

<sup>13</sup> *Ibid.*

<sup>14</sup> Teri Webster. “Richardson estimates \$18 million in lost revenue from coronavirus pandemic.” *The Dallas Morning News*, April 30, 2020 at: [www.dallasnews.com/news/2020/04/30/richardson-estimates-18-million-in-lost-revenue-from-coronavirus-pandemic/](http://www.dallasnews.com/news/2020/04/30/richardson-estimates-18-million-in-lost-revenue-from-coronavirus-pandemic/)

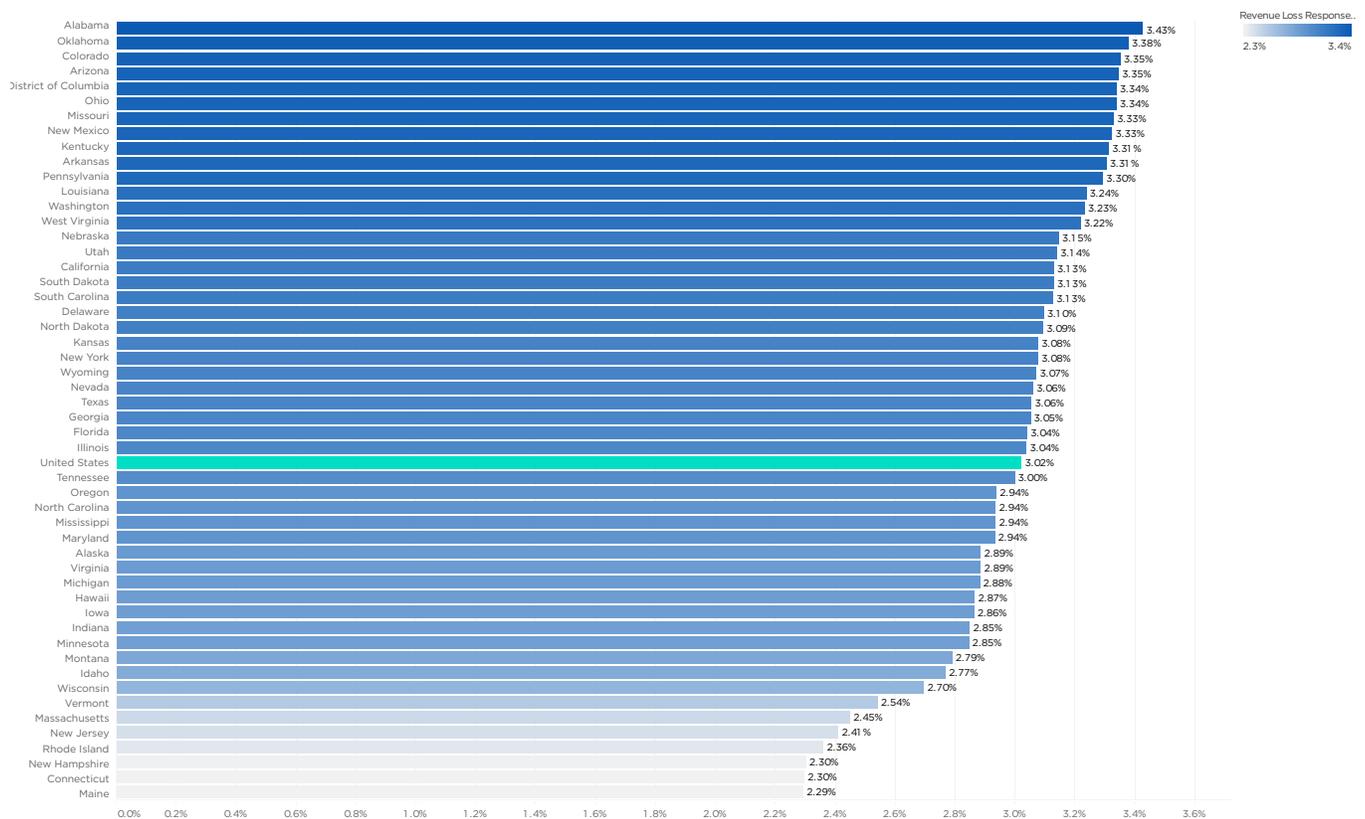
<sup>15</sup> Rachel Herzog. “Little Rock financial picture emerges.” *Arkansas Democrat Gazette*, May 6, 2020 at: [www.arkansasonline.com/news/2020/may/06/lr-financial-picture-emerges-20200506/](http://www.arkansasonline.com/news/2020/may/06/lr-financial-picture-emerges-20200506/)

<sup>16</sup> Max Lewis. “Local city government feeling the financial sting from coronavirus.” *WSBT 22*, May 7, 2020 at: <https://wsbt.com/news/local/local-cities-feeling-the-financial-sting-from-coronavirus>

that, collectively, a 1 percentage point increase in unemployment results in a 3.02% budget shortfall for cities, towns and villages.

Since the share of local revenues generated by each stream varies greatly by state, so too does the sensitivity of local budgets to economic conditions. Cities, towns and villages in Alabama (relying primarily on sales taxes) have the most responsive fiscal structure (3.43%), while those in Maine (relying primarily on property tax revenue) have the least (2.29%).

### Revenue Loss Response for Cities, Towns and Villages for Each 1 Percentage Point Increase in State Unemployment Rate



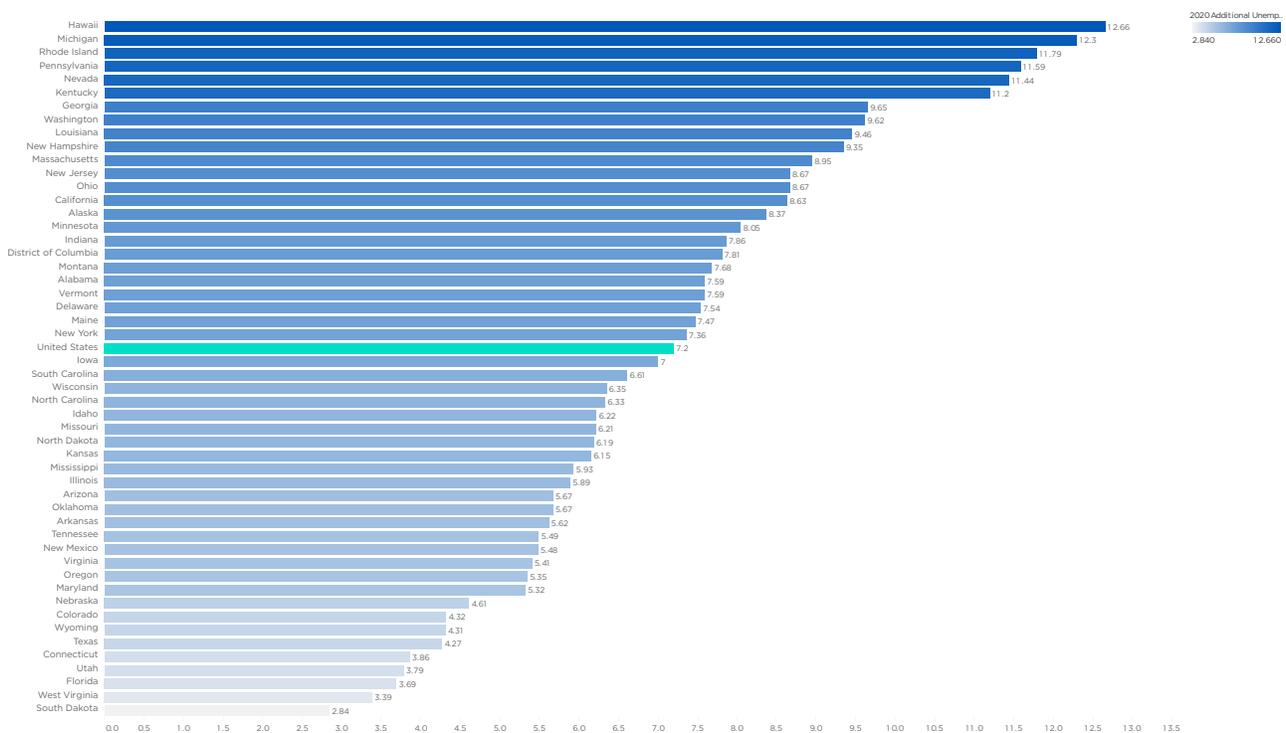
National League of Cities analysis of U.S. Census Bureau data (2017 total own-source revenues for municipal and township governments), adjusted for inflation, with unemployment projections provided by the Congressional Budget Office.

## Economic Conditions

Budget shortfalls are the result not only of fiscal structure but also the underlying economic conditions driving the ebb and flow of these various revenue sources. Although the pandemic has forced the shutdown of the entire economy, unemployment and other economic impacts have not been evenly distributed.<sup>17</sup> For example, the Bureau of Labor Statistics jobs report revealed that nearly half the leisure and hospitality jobs were lost in April 2020.<sup>18</sup> Local economies with a large share of these jobs, as well as jobs in other vulnerable industries like transportation, services and travel, will feel the sting of unemployment more so than communities with smaller shares of these jobs.

Therefore, this analysis marries estimates for local revenue responsiveness by state with “additional unemployment,” or the amount of unemployment above pre-pandemic levels for 2020, 2021 and 2022 based on projections by the Congressional

Additional State Unemployment, 2020  
Percentage Points Above Pre-Pandemic Unemployment Rate



Source: National League of Cities analysis of Congressional Budget Office and Department of Labor data.

<sup>17</sup> Mark Muro, Robert Maxim and Jacob Whiten. *The places a COVID-19 recession will likely hit hardest*. The Brookings Institution. March 17, 2020.

<sup>18</sup> Thomas Frank. *Hardest-hit industries: Nearly half the leisure and hospitality jobs were lost in April*. CNBC. May 8, 2020.

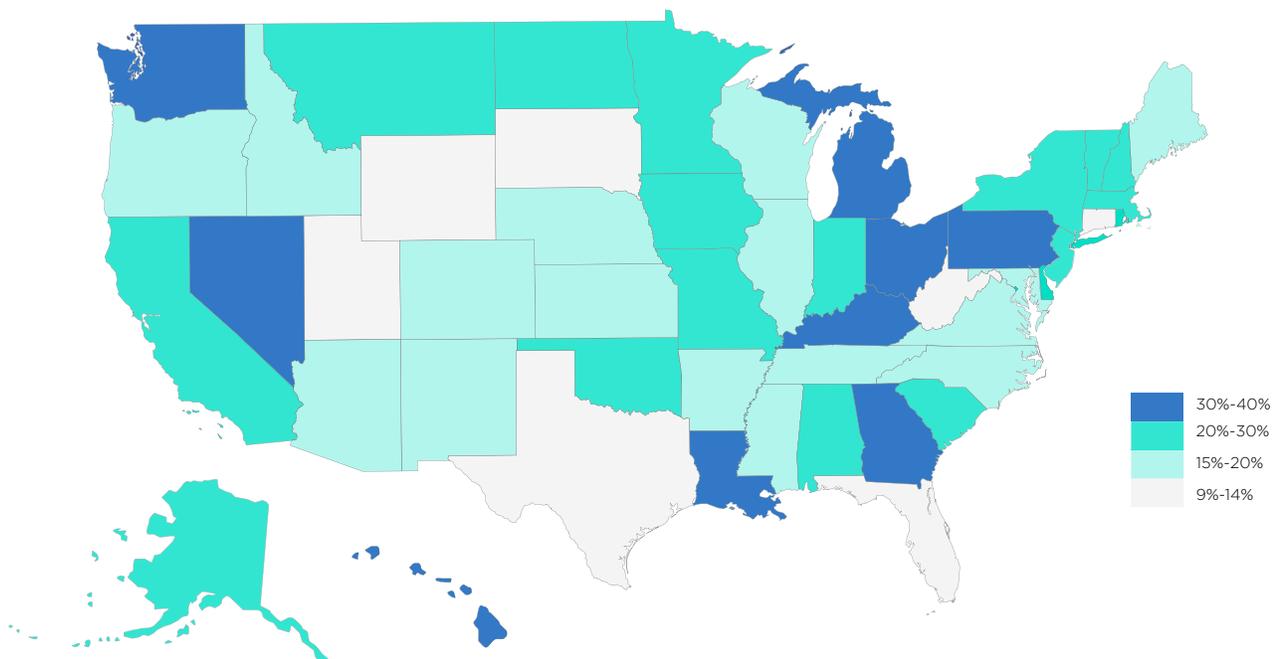
Budget Office (see Appendix I for detailed methodology).<sup>19</sup> This approach ensures that our estimates capture fiscal impacts resulting specifically from the pandemic-induced recession, while excluding revenue loss resulting from existing unemployment levels.

The unemployment rate for the U.S. for 2020 is projected to be 7.2 percentage points greater than pre-pandemic levels. Across the states, unemployment is anticipated to hit Hawaii most significantly, with the state unemployment rate 12.66 percentage points greater than pre-pandemic levels, and South Dakota the least, with 2.84 percentage points greater unemployment.

## Fiscal Impact

Marrying revenue responsiveness with economic conditions provides a more complete picture of budget shortfalls for cities, towns and villages nationwide, as well as shortfall variations across the states. Collectively, our model estimates

Revenue Loss for Cities, Towns and Villages as a Share of Total Own-Source Revenue by State, 2020



Source: National League of Cities analysis of U.S. Census Bureau data (2017 total own-source revenues for municipal and township governments), adjusted for inflation, with unemployment projections provided by the Congressional Budget Office and unemployment claims by the Department of Labor.

<sup>19</sup> We derive unemployment projections by state using the Congressional Budget Office's national unemployment projections of 11.6 and 10.1 percent for 2020 and 2021, respectively (we adjust the CBO's projection for 2020 from 11.4% to 11.6% based on the BLS' recently released higher-than-expected unemployment numbers for April). According to the CBO, the national unemployment rate is projected to decline to 9.5 percent by the end of 2021, the figure we use for 2022 unemployment projection. These unemployment projections are applied to the proportion of recent unemployment claims by state to estimate each state's additional unemployment rate for 2020, 2021 and 2022.

a 3.02% budget shortfall for each 1 percentage point increase in unemployment. With additional unemployment at 7.2 percentage points greater than expected, this amounts to a shortfall of over \$134 billion for 2020 alone, representing 21.6% of total own-source revenue. Extended out to 2022, cities, towns and villages can expect losses amounting to over \$360 billion. By comparison, the Great Recession resulted in a \$100 billion decline in revenues for state and local governments combined from 2007 to 2009.<sup>20</sup>

By state, revenue losses for cities, towns and villages in 2020 are expected to be the most significant in Pennsylvania, with a shortfall representing 40.2% of total own-source revenues. We project that Connecticut will experience the least significant shortfall, at 9.3% of total own-source revenue (see Appendix II for detailed data on 2021 and 2022 projections).

These two states demonstrate key elements of our fiscal impact model. Pennsylvania is projected to have an 11.59 percentage point increase in unemployment this year over levels expected before the pandemic struck, with a local fiscal structure that amounts to revenue losses at 3.30% per 1 percentage point increase in unemployment. Cities, towns and villages in Connecticut, on the other hand, only anticipate a 3.86 percentage point increase in unemployment over its pre-pandemic baseline, with a revenue responsiveness rate of 2.30% revenue decline per 1 percentage point increase in the unemployment rate. Both Connecticut's revenue responsiveness rate and unemployment projections are less than those for Pennsylvania, resulting in significantly different projected fiscal futures.

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<sup>20</sup> Tracy Gordon. State and Local Budgets and the Great Recession. The Brookings Institution. December 31, 2012.

## Implications and Conclusion

Amid significant uncertainty about the impacts of the pandemic recession in the mid- and long-term, cities, towns and villages across the country are bracing for significant budget shortfalls based on how their unique fiscal and economic structures are responding. Given nationwide shortfalls for cities approaching \$360 billion over the next couple of years, the question quickly turns to what do we do about it?

If local governments are left in a position to go-it-alone, the economic implications will be disastrous. Given state- and voter-imposed restrictions on local taxing authority as well as political challenges, local governments are limited in levying new taxes or raising existing ones. Increases in sales, income or other types of tax rates are even less common, and in the current environment, would prove fruitless. As a result, cities can either cut services or increase the fees charged for services, which places greater financial burden on businesses and residents, particularly those who can least afford it. In response to the current pandemic, cities have not been imposing new fees, but have gone to lengths to spare communities by deferring property tax payments, suspending business license fees, and cancelling library late charges.

Cities therefore are turning to their options of last resort, which are to severely cut services at a time when communities need them most, to layoff and furlough employees, who comprise a large share of America's middle class, and to pull back on capital projects, further impacting local employment, business contracts and overall investment in the economy. These cuts will also exacerbate infrastructure challenges, which will place future fiscal burden on local, state, and federal government.

With states likely to cut aid to local governments to help alleviate their own budget pressures, federal support for cities, towns and villages is more critical than ever. Without it, we estimate that nearly 1 million municipal workers could be furloughed or laid off, resulting in fewer police officers to respond when residents call 9-1-1, fewer firefighters to rush to the scene, fewer EMS responders to help those in need, fewer sanitation workers to keep communities clean, and fewer services for youth, seniors, and the most vulnerable people in our communities.<sup>21</sup> Federal relief for local governments who have been on the frontlines of this crisis, is critical to ensuring that families and workers in our communities will be safer, healthier and more prosperous, and that our national economy is resilient in the face of this unprecedented pandemic-induced recession.

<sup>21</sup> Christiana McFarland and Spencer Wagner. "Essential Municipal Employees Vulnerable to Severe Cuts." National League of Cities, May 6, 2020 at: <https://citiesspeak.org/2020/05/06/essential-municipal-employees-vulnerable-to-severe-cuts/>

## Appendix I: Methodology

To calculate local budget shortfalls, we utilize municipal and township financial data from the U.S. Census Bureau, adjusted for inflation to 2019 dollars based on the Implicit Price Deflator for State & Local Government Purchases (S&L IPD). Our model for cities, towns and villages is adapted from Bartik’s model of revenue responsiveness for the full local government sector (including schools, counties, etc.) to unemployment. Bartik’s model assumes local budgetary response to unemployment relative to state budgetary response to unemployment based on work by Fiedler, Furman and Powell (2019) and Fiedler and Powell (2020). They find that each 1 percentage point increase in the national unemployment rate results in a 4.1% state budget shortfall (\$45 billion annually). Bartik’s model assumes that local sales and income tax revenue is just as responsive to unemployment as state revenue and that property tax revenue is 50% as responsive. Our model integrates these same assumptions, and also accounts for another critical local revenue stream, charges, fees and miscellaneous taxes at a rate of 75% as responsive as state revenue to a 1 percentage point increase in unemployment.

Therefore, the equation used to establish the budget shortfall rate, or revenue responsiveness rate, for cities, towns and villages per 1 percentage point increase in unemployment is as follows:

$$4.1\% * [100\% * (\text{share of revenue from sales and income taxes}) + 50\% * (\text{share of revenue from property taxes}) + 75\% * (\text{share of revenue from charges, fees and miscellaneous revenue})]$$

In aggregate, this model results in a 3.02% budget shortfall for cities, towns and villages. To understand how and whether this rate differs for cities in different states, we apply this same formula to revenue data for all municipalities and townships in each state. This results in a revenue responsiveness rate ranging from 3.43% in Alabama to 2.30% in Maine.

These rates are then applied to additional unemployment levels, or the elevated unemployment resulting specifically from the pandemic-induced recession. “Additional unemployment” is unemployment above the unemployment rate for March 2020, which on average was 4.2% across the states, and projected out for 2020, 2021 and 2022 for the U.S. and in each state. To make additional unemployment projections, we use labor force participation, established unemployment projections and unemployment claims by state. We use labor force participation by state from the Bureau of Labor Statistics’ labor force estimates for March 2020 and labor force participation projections for 2021 and 2022.

To calculate national labor force participation for 2021, we apply a 0.22 percent increase to each state’s labor force participation in March 2020, based on the BLS’ labor force projections. To calculate labor force participation for 2022, we apply a 0.22 percent increase to each state’s labor force participation in 2021.

We derive unemployment projections by state using the Congressional Budget Office’s national unemployment projections of 11.6% and 10.1% for 2020 and 2021, respectively (we

adjust the CBO's projection for 2020 from 11.4% to 11.6% based on the BLS' recently released higher-than-expected unemployment numbers for April). According to the CBO, the national unemployment rate is projected to decline to 9.5% by the end of 2021, the figure we use for 2022 unemployment projection.

Specifically, to calculate unemployment numbers by state for 2021, we apply a proportion based on the CBO's unemployment projections for 2020 and 2021, such that a state's unemployment in 2021 is calculated as:

*[(state unemployment in 2020) \*(projected unemployment for 2021)/projected unemployment for 2020].*

To calculate unemployment numbers for 2022, we apply a proportion based on the CBO's unemployment projections for 2021 and 2022.

Finally, to derive "additional" unemployment by state - or extra unemployment due to the pandemic - we examine the total number of unemployment claims over the five most-claimed weeks beginning March 9th and ending April 11th. Additional national unemployment is calculated as:

*[(current labor force participation\*CBO's unemployment projection rate for each year) - current unemployment rate].*

This amount is distributed among states based on each state's unemployment claims over the five most-claimed weeks. Using the budget responsiveness rates, the additional unemployment due to COVID-19 forecasts detailed above, and total own-source revenue adjusted for inflation, we estimate the budget shortfalls that cities, towns and villages will experience in 2020, 2021 and 2022 due to the pandemic-induced recession for the U.S. as a whole as well as by state. This dollar amount lost is derived by multiplying the total own-source revenue by the budget responsiveness rate by the projected additional unemployment figure for each year.

## Appendix II: Unemployment and Revenue Loss Response for Cities, Towns and Villages

State	Revenue Loss (%) for Cities, Towns and Villages by State, 2020	Revenue Loss Response for Cities, Towns and Villages for Each Percentage Point Increase in State Unemployment Rate	2020 Additional Unemployment (%)	2021 Additional Unemployment (%)	2022 Additional Unemployment (%)	Revenue Loss (\$) for Cities, Towns and Villages by State, 2020	Revenue Loss (\$) for Cities, Towns and Villages by State, 2021	Revenue Loss (\$) for Cities, Towns and Villages by State, 2022
United States	21.6%	3.02%	7.2	6.2	5.9	\$134,351,681,000	\$117,135,739,000	\$110,324,647,000
Alabama	27.4%	3.43%	7.59	6.62	6.23	\$1,928,805,000	\$1,681,646,000	\$1,583,863,000
Alaska	25.4%	2.89%	8.37	7.3	6.88	\$530,488,000	\$462,511,000	\$435,618,000
Arizona	20.0%	3.35%	5.67	4.95	4.66	\$1,729,707,000	\$1,508,061,000	\$1,420,371,000
Arkansas	19.5%	3.31%	5.62	4.9	4.62	\$573,008,000	\$499,582,000	\$470,533,000
California	28.4%	3.13%	8.63	7.53	7.09	\$23,361,528,000	\$20,367,961,000	\$19,183,625,000
Colorado	15.2%	3.35%	4.32	3.77	3.55	\$1,677,784,000	\$1,462,791,000	\$1,377,734,000
Connecticut	9.3%	2.30%	3.86	3.37	3.17	\$1,281,776,000	\$1,117,528,000	\$1,052,547,000
District of Columbia	27.4%	3.34%	7.81	6.81	6.41	\$2,738,839,000	\$2,387,882,000	\$2,249,034,000
Delaware	24.6%	3.10%	7.54	6.57	6.19	\$181,621,000	\$158,348,000	\$149,141,000
Florida	11.8%	3.04%	3.69	3.21	3.03	\$2,975,772,000	\$2,594,454,000	\$2,443,594,000
Georgia	31.0%	3.05%	9.65	8.42	7.93	\$2,728,006,000	\$2,378,437,000	\$2,240,138,000
Hawaii	38.2%	2.87%	12.66	11.04	10.39	\$1,050,344,000	\$915,752,000	\$862,503,000
Idaho	18.1%	2.77%	6.22	5.42	5.11	\$244,699,000	\$213,343,000	\$200,938,000
Illinois	18.8%	3.04%	5.89	5.13	4.83	\$4,021,296,000	\$3,506,004,000	\$3,302,140,000
Indiana	23.6%	2.85%	7.86	6.86	6.46	\$2,132,316,000	\$1,859,079,000	\$1,750,979,000
Iowa	21.1%	2.86%	7	6.1	5.75	\$1,106,329,000	\$964,563,000	\$908,476,000
Kansas	19.9%	3.08%	6.15	5.36	5.05	\$924,845,000	\$806,335,000	\$759,449,000
Kentucky	39.1%	3.31%	11.2	9.77	9.2	\$1,812,297,000	\$1,580,068,000	\$1,488,191,000
Louisiana	32.2%	3.24%	9.46	8.24	7.76	\$1,868,659,000	\$1,629,207,000	\$1,534,474,000
Maine	18.0%	2.29%	7.47	6.52	6.14	\$432,764,000	\$377,309,000	\$355,370,000
Maryland	16.4%	2.94%	5.32	4.63	4.36	\$688,062,000	\$599,893,000	\$565,011,000
Massachusetts	23.0%	2.45%	8.95	7.8	7.35	\$5,973,088,000	\$5,207,692,000	\$4,904,880,000
Michigan	37.3%	2.88%	12.3	10.72	10.1	\$4,925,687,000	\$4,294,505,000	\$4,044,793,000
Minnesota	24.1%	2.85%	8.05	7.02	6.61	\$2,044,836,000	\$1,782,809,000	\$1,679,144,000
Mississippi	18.3%	2.94%	5.93	5.17	4.87	\$523,369,000	\$456,304,000	\$429,771,000
Missouri	21.8%	3.33%	6.21	5.42	5.1	\$1,977,885,000	\$1,724,437,000	\$1,624,167,000
Montana	22.5%	2.79%	7.68	6.69	6.31	\$171,130,000	\$149,201,000	\$140,525,000

State	Revenue Loss (%) for Cities, Towns and Villages by State, 2020	Revenue Loss Response for Cities, Towns and Villages for Each Percentage Point Increase in State Unemployment Rate	2020 Additional Unemployment (%)	2021 Additional Unemployment (%)	2022 Additional Unemployment (%)	Revenue Loss (\$) for Cities, Towns and Villages by State, 2020	Revenue Loss (\$) for Cities, Towns and Villages by State, 2021	Revenue Loss (\$) for Cities, Towns and Villages by State, 2022
Nebraska	15.3%	3.15%	4.61	4.02	3.79	\$453,643,000	\$395,513,000	\$372,515,000
Nevada	36.8%	3.06%	11.44	9.98	9.4	\$625,714,000	\$545,534,000	\$513,813,000
New Hampshire	22.6%	2.30%	9.35	8.15	7.68	\$642,223,000	\$559,928,000	\$527,370,000
New Jersey	22.0%	2.41%	8.67	7.56	7.12	\$3,265,176,000	\$2,846,773,000	\$2,681,242,000
New Mexico	19.2%	3.33%	5.48	4.78	4.5	\$457,194,000	\$398,609,000	\$375,431,000
New York	23.8%	3.08%	7.36	6.41	6.04	\$26,305,646,000	\$22,934,817,000	\$21,601,226,000
North Carolina	19.6%	2.94%	6.33	5.52	5.2	\$1,951,375,000	\$1,701,324,000	\$1,602,397,000
North Dakota	20.1%	3.09%	6.19	5.39	5.08	\$222,508,000	\$193,995,000	\$182,715,000
Ohio	30.4%	3.34%	8.67	7.56	7.12	\$4,585,324,000	\$3,997,756,000	\$3,765,299,000
Oklahoma	20.2%	3.38%	5.67	4.94	4.65	\$1,190,978,000	\$1,038,365,000	\$977,987,000
Oregon	16.6%	2.94%	5.35	4.67	4.39	\$879,956,000	\$767,198,000	\$722,588,000
Pennsylvania	40.2%	3.30%	11.59	10.1	9.52	\$6,011,373,000	\$5,241,070,000	\$4,936,318,000
Rhode Island	29.3%	2.36%	11.79	10.28	9.68	\$970,007,000	\$845,710,000	\$796,534,000
South Carolina	21.8%	3.13%	6.61	5.76	5.43	\$792,643,000	\$691,073,000	\$650,890,000
South Dakota	9.4%	3.13%	2.84	2.48	2.33	\$136,355,000	\$118,882,000	\$111,970,000
Tennessee	17.3%	3.00%	5.49	4.79	4.51	\$2,616,093,000	\$2,280,864,000	\$2,148,239,000
Texas	13.7%	3.06%	4.27	3.72	3.5	\$5,925,138,000	\$5,165,886,000	\$4,865,505,000
Utah	12.5%	3.14%	3.79	3.31	3.12	\$521,975,000	\$455,089,000	\$428,627,000
Vermont	20.3%	2.54%	7.59	6.62	6.23	\$214,098,000	\$186,663,000	\$175,809,000
Virginia	16.4%	2.89%	5.41	4.72	4.44	\$1,605,840,000	\$1,400,066,000	\$1,318,657,000
Washington	32.7%	3.23%	9.62	8.39	7.9	\$3,819,136,000	\$3,329,748,000	\$3,136,133,000
West Virginia	11.5%	3.22%	3.39	2.95	2.78	\$153,663,000	\$133,972,000	\$126,182,000
Wisconsin	18.0%	2.70%	6.35	5.54	5.22	\$1,327,642,000	\$1,157,517,000	\$1,090,211,000
Wyoming	13.9%	3.07%	4.31	3.75	3.54	\$73,042,000	\$63,682,000	\$59,980,000