How Much Help Do State and Local Governments Need? Updated Estimates of Revenue Losses from Pandemic Mitigation

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I estimate that state and local governments have lost $141 billion of revenue from all sources in fiscal year 2020 (FY20) due to the COVID-19 mitigation shutdowns. Under three scenarios of increasing severity, I estimate that state and local governments will need to cut expenditures by between $59 billion and $350 billion in fiscal year 2021 (FY21) to offset impending losses of revenue. Some of the revenue losses can be offset by the rainy day funds that state and local governments have set aside during the expansion, but jurisdictions that lack a fiscal buffer may face painfully deep service cuts. This data brief updates and improves upon the estimates in the District Data Brief published on May 13, 2020. In these new estimates, I include all revenue sources that are likely to decline; the original brief covered only income and sales taxes.

To create these estimates, I took the following steps:

1. I calculate 2020 baseline expected revenue levels by increasing every revenue value reported in the 2017 Census of Governments (COG).[1] For income, sales, corporate, gaming, and other sources of tax revenues, I use the percentage growth reported in the National Association of State Budget Officers' Fiscal Survey.[2,3] For non-tax revenues, such as airport fees and public hospital charges, I increased them by the rate of inflation between 2017 and 2020.[4] I assume the baseline expected revenue levels are the same for FY21 as they are for FY20 because no measure of growth is available for FY21 yet. With my approach, if the FY21 baseline were 1 percent higher, the estimated loses would also be 1 percent larger.

2. I pair a measure of the tax base to each type of revenue. For example, I used the Current Employment Statistics (CES) data with income taxes, the Personal Consumption Expenditures (PCE) data with sales taxes, and oil prices with severance taxes (a complete list of the pairings appears in table 4). With the tax base data, I estimate a decline from normal levels of activity to activity under a pandemic-mitigation shutdown.

3. I create three scenarios that specify how quickly the tax base declines are reversed and the base returns to normal. All the scenarios assume tax receipts came in at expected levels through 2020:Q1 and the tax base is at the shutdown level for 2020:Q2. In the V-shaped scenario, the declines are half-way reversed in 2020:Q3, and they completely reverse by 2020:Q4. In the middle scenario, based on the Great Recession, the declines are reversed over four quarters.

The most severe scenario assumes the declines are halfway reversed in 2020:Q3, but a second wave of COVID-19 cases requires a complete shutdown in 2020:Q4. The second shutdown is followed by a slow recovery that takes all of 2021.

4. The COG reports the date when each government ends its fiscal year, and I use the scenarios to weight the combinations of shutdown, partially recovered, and normal quarters that fall within each government's FY20 and FY21. Together, the quarterly levels imply a decline in the tax base below normal activity for the fiscal year.

5. Multiplying the projected fiscal year tax base percentage declines times the baseline revenue amounts gives a value of the revenue lost for each revenue type collected by each individual government. The results tables present these losses aggregated to national totals (table 1), state totals (tables 2 and 3) or totals by type of revenue (table 4).

The estimating equations and further details can be found in the Appendix of the District Data Brief published on May 13, 2020.

There are three important improvements in these estimates relative to the version published on May 13, 2020.

1. This version covers all revenue streams, including corporate income taxes, hospital revenue, airport revenue, and dozens of smaller sources of income. The previous brief covered only the two largest sources of revenue: individual income taxes and sales taxes.

2. Most of the revenue types are paired with line items in the NIPA PCE Table 2.4.5U.[5] In this brief, I use the contrast between the February 2020 and April 2020 values in the monthly version of this table to estimate how much lower the tax base transactions are under the stay-at-home orders. In the previous brief, I used the decline from 2019:Q4 to 2020:Q1 to estimate the decline. Using the monthly data gives a more accurate estimate of the declines because any spending growth in January or February is not obscuring the drop in March or April.

3. In the previous estimate, I assumed all revenue sources grew at the rate of inflation to scale up from FY17 to FY20 revenue values. That suggested baseline values 7 percent higher than the 2017 values. Using the revenue growth values reported by NASBO, we can see that state revenues grew faster than inflation. On average, the baseline values are now 11 percent higher than the 2017 values. Because the increases are applied by state and by type of revenue, they more accurately reflect each state's exposure to declines in different revenue streams.

The new national aggregate estimates appear in table 1. State governments may lose $85 billion of revenue in FY20. If the post-shutdown economic recovery is V shaped, I estimate that states will lose $45 billion in FY21. If the recovery is slow and similar to the recovery following the Great Recession, states

could lose $122 billion. In a second-wave scenario, where shutdowns are re-imposed this fall, states would lose $238 billion. I estimate that local governments will lose $56 billion in revenue in FY20, and between $14 billion and $112 billion in FY21. These local estimates cover all revenue types, including income and sales taxes, and they use all of the additional data sources introduced in this Data Brief. The total estimates in this Data Brief are much higher than those in the previous Data Brief mainly because they cover additional major revenue sources such as corporate income taxes, hospital revenue, and airport revenue.

In table 1, I also present the losses that would remain if states split their rainy day funds between FY20 and FY21. This reduces the losses to $40 billion in FY20 and between $11 billion to $183 billion in FY21. Local governments also maintain rainy day funds, but there is no data set with a consistent measure of these funds, so the local revenue loss estimates cannot be adjusted.

Table 2 presents total loses for state governments and the losses as a share of own-revenue, that is, revenue the state collects rather than receives as a federal-to-state intergovernmental transfer. The losses in FY20 are substantial, ranging from 3.3 percent in Vermont to more than 10 percent in North Dakota. The FY20 losses could be particularly difficult to deal with because most states must offset them with cuts in the fourth quarter of FY20 to meet their balanced budget requirements.[6] A second-wave shutdown, followed by a slow recovery would take 10 to 20 percent off of most FY21 state budgets and force major spending and job cuts. In table 3, the estimated losses of all of the individual local governments in the states are aggregated to state totals. The shares of own-revenue are means calculated with each government weighted by its total own-revenue. Even in the second-wave scenario, the average revenue loss is less than 10 percent in most states because local governments collect much of their revenue through property taxes. Property taxes usually do not decline until two years after the trough of a recession because the property tax assessment process operates with a multi-year lag.

Table 1. Declines in State and Local Government Revenue under Alternate Scenarios ($ billions)

	FY20	FY21		
		V-shaped	Slow	Second wave
State	84.9	44.6	122.1	238.1
Local	56.3	14.3	48.7	111.8
State + Local	141.2	58.9	170.8	349.9
States beyond 50% of RDF	40.0	10.6	68.6	182.6
States beyond 50% of RDF + Local	96.3	24.9	117.3	294.4

Sources: Census of Governments, Occupational Employment Statistics, National Association of State Budget Officers, National Income and Product Accounts, Bureau of Labor Statistics Current Employment Statistics, Energy Information Administration, and author's calculations

Table 2. Estimates of Lost State Government Revenue under Alternate Scenarios

State	Revenue lost ($B)				Revenue lost as share of own-revenue (%)			
	FY20	FY21			FY20	FY21		
		V-shaped	Slow	Second wave		V-shaped	Slow	Second wave
Alabama	1.4	0.0	0.7	2.4	7.4	0.0	3.7	12.3
Alaska	0.6	0.3	0.9	1.6	9.9	5.0	14.9	27.3
Arizona	1.2	0.6	1.8	3.3	5.0	2.5	7.5	13.8
Arkansas	0.8	0.4	1.2	2.2	5.6	2.8	8.3	15.3
California	11.6	5.8	17.4	31.9	5.2	2.6	7.8	14.3
Colorado	1.1	0.5	1.6	2.9	4.8	2.4	7.1	13.1
Connecticut	1.2	0.6	1.7	3.2	5.2	2.6	7.8	14.4
Delaware	0.5	0.3	0.8	1.5	8.2	4.1	12.3	22.5
Florida	4.6	2.3	6.9	12.6	7.3	3.7	11.0	20.2
Georgia	1.7	0.9	2.6	4.8	5.4	2.7	8.1	14.8
Hawaii	0.8	0.4	1.2	2.2	6.8	3.4	10.1	18.6
Idaho	0.4	0.2	0.6	1.1	5.7	2.9	8.6	15.7
Illinois	3.7	1.9	5.6	10.3	6.3	3.1	9.4	17.2
Indiana	1.5	0.7	2.2	4.0	5.7	2.8	8.5	15.5
Iowa	1.1	0.6	1.7	3.1	5.6	2.8	8.4	15.4
Kansas	0.9	0.4	1.3	2.5	5.8	2.9	8.7	16.0
Kentucky	1.1	0.5	1.6	3.0	5.8	2.9	8.7	16.0
Louisiana	1.0	0.5	1.4	2.6	6.3	3.2	9.5	17.4
Maine	0.4	0.2	0.6	1.0	6.2	3.1	9.2	16.9
Maryland	1.9	0.9	2.8	5.2	6.1	3.0	9.1	16.7
Massachusetts	2.7	1.4	4.1	7.5	6.1	3.0	9.1	16.6
Michigan	4.0	0.0	2.0	6.6	7.8	0.0	3.9	13.0
Minnesota	1.7	0.8	2.5	4.6	5.0	2.5	7.5	13.7
Mississippi	0.8	0.4	1.1	2.1	6.4	3.2	9.6	17.6
Missouri	1.0	0.5	1.6	2.8	5.3	2.6	7.9	14.5
Montana	0.2	0.1	0.3	0.6	4.9	2.5	7.4	13.5
Nebraska	0.4	0.2	0.6	1.1	5.2	2.6	7.7	14.2
Nevada	1.0	0.5	1.4	2.6	8.1	4.1	12.2	22.3
New Hampshire	0.3	0.1	0.4	0.8	5.5	2.7	8.2	15.0
New Jersey	3.3	1.7	5.0	9.2	6.3	3.1	9.4	17.3
New Mexico	0.8	0.4	1.2	2.2	6.9	3.4	10.3	18.8
New York	0.0	9.4	9.4	20.5	0.0	7.4	7.4	15.9
North Carolina	2.2	1.1	3.3	6.1	5.5	2.8	8.3	15.2
North Dakota	0.7	0.3	1.0	1.8	10.3	5.2	15.5	28.4
Ohio	2.6	1.3	3.9	7.1	5.4	2.7	8.0	14.7
Oklahoma	0.9	0.4	1.3	2.4	4.9	2.5	7.4	13.6
Oregon	1.0	0.5	1.6	2.9	4.8	2.4	7.2	13.1
Pennsylvania	3.9	2.0	5.9	10.8	6.1	3.1	9.2	16.9
Rhode Island	0.3	0.2	0.5	0.9	5.4	2.7	8.1	14.8
South Carolina	1.1	0.5	1.6	2.9	5.1	2.6	7.7	14.0
South Dakota	0.2	0.1	0.3	0.6	6.7	3.4	10.1	18.5
Tennessee	1.5	0.8	2.3	4.2	7.8	3.9	11.7	21.5
Texas	9.3	0.0	4.6	15.5	9.9	0.0	5.0	16.5
Utah	0.9	0.4	1.3	2.4	5.4	2.7	8.1	14.8
Vermont	0.2	0.1	0.2	0.4	3.3	1.7	5.0	9.1
Virginia	2.0	1.0	3.1	5.6	4.9	2.4	7.3	13.5
Washington	2.3	1.2	3.5	6.4	6.0	3.0	9.0	16.5
West Virginia	0.5	0.2	0.7	1.3	5.6	2.8	8.4	15.5
Wisconsin	1.6	0.8	2.3	4.3	5.4	2.7	8.1	14.9
Wyoming	0.2	0.1	0.3	0.6	6.4	3.2	9.7	17.7

Sources: Census of Governments, Occupational Employment Statistics, National Association of State Budget Officers, National Income and Product Accounts, Bureau of Labor Statistics Current Employment Statistics, Energy Information Administration, and author's calculations

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State	Revenue lost ($B)				Revenue lost as share of own-revenue (%)			
	FY20	FY21			FY20	FY21		
		V-shaped	Slow	Second wave		V-shaped	Slow	Second wave
Alabama	1.0	0.1	0.7	1.9	5.9	0.6	4.1	11.2
Alaska	0.1	0.0	0.1	0.3	3.6	1.1	3.6	7.6
Arizona	0.7	0.3	1.0	1.8	3.1	1.3	4.3	7.9
Arkansas	0.3	0.0	0.1	0.3	4.9	0.3	1.6	5.9
California	8.2	4.1	12.1	22.5	4.1	2.0	6.1	11.3
Colorado	1.9	0.0	0.4	2.0	6.7	0.1	1.4	7.1
Connecticut	0.1	0.1	0.2	0.4	1.0	0.5	1.5	2.7
Delaware	0.1	0.0	0.1	0.1	3.4	0.9	2.7	6.4
District Of Columbia	0.8	0.1	0.5	1.4	6.9	0.8	5.0	13.2
Florida	4.3	0.4	2.7	8.1	5.2	0.5	3.3	9.8
Georgia	1.4	0.4	1.3	2.8	3.9	1.1	3.6	8.1
Hawaii	0.1	0.0	0.1	0.2	1.6	0.8	2.4	4.4
Idaho	0.2	0.0	0.1	0.3	4.5	0.2	2.1	6.8
Illinois	2.3	0.5	1.1	3.5	4.0	0.9	1.9	6.2
Indiana	1.0	0.1	0.3	1.2	4.7	0.3	1.6	5.8
Iowa	0.4	0.2	0.6	1.0	3.0	1.5	4.5	8.3
Kansas	0.4	0.0	0.2	0.5	3.9	0.3	1.5	5.0
Kentucky	0.3	0.1	0.4	0.8	2.7	1.3	4.0	7.4
Louisiana	1.0	0.1	0.4	1.4	6.6	0.7	2.8	9.0
Maine	0.1	0.0	0.1	0.2	1.7	0.6	1.8	3.8
Maryland	0.4	0.2	0.6	1.1	1.7	0.8	2.5	4.6
Massachusetts	0.3	0.2	0.5	1.0	1.3	0.7	2.0	3.6
Michigan	0.9	0.2	0.6	1.6	3.2	0.7	2.3	5.7
Minnesota	1.0	0.0	0.3	1.1	4.9	0.2	1.4	5.7
Mississippi	0.5	0.0	0.3	0.8	5.7	0.1	3.1	9.8
Missouri	0.9	0.3	0.7	1.9	4.0	1.6	3.5	8.7
Montana	0.1	0.0	0.1	0.2	2.8	1.4	4.2	7.7
Nebraska	0.3	0.0	0.2	0.5	2.0	0.4	1.7	4.0
Nevada	0.6	0.3	0.9	1.6	5.8	2.9	8.7	15.9
New Hampshire	0.1	0.0	0.1	0.2	1.4	0.4	1.3	2.9
New Jersey	0.6	0.1	0.3	0.9	1.5	0.2	0.7	2.2
New Mexico	0.2	0.1	0.3	0.6	3.8	1.9	5.6	10.3
New York	9.4	2.5	8.3	18.3	6.1	1.6	5.4	11.8
North Carolina	1.5	0.8	2.3	4.2	4.2	2.2	6.4	11.8
North Dakota	0.2	0.0	0.1	0.2	5.8	0.3	1.7	6.8
Ohio	1.6	0.1	0.4	1.9	3.8	0.2	1.1	4.4
Oklahoma	0.5	0.2	0.7	1.2	4.0	2.0	5.9	10.9
Oregon	0.6	0.3	0.9	1.6	3.9	1.9	5.8	10.7
Pennsylvania	1.4	0.4	1.2	2.7	3.1	0.9	2.7	6.1
Rhode Island	0.0	0.0	0.0	0.1	0.8	0.4	1.2	2.2
South Carolina	1.1	0.2	0.9	2.2	5.5	1.0	4.8	11.3
South Dakota	0.1	0.0	0.0	0.1	3.8	0.2	1.3	4.6
Tennessee	0.6	0.3	0.9	1.7	2.4	1.1	3.5	6.3
Texas	4.1	0.7	2.8	8.0	3.5	0.6	2.4	6.9
Utah	0.4	0.1	0.4	0.8	3.9	1.1	3.6	7.8
Vermont	0.0	0.0	0.0	0.1	2.0	0.9	2.6	5.0
Virginia	1.2	0.4	1.2	2.5	3.9	1.3	4.0	8.3
Washington	2.2	0.0	0.4	2.3	5.8	0.0	1.0	5.9
West Virginia	0.1	0.1	0.2	0.4	3.6	1.8	5.3	9.8
Wisconsin	0.6	0.0	0.2	0.7	3.4	0.2	1.1	4.1
Wyoming	0.2	0.1	0.2	0.4	4.6	2.2	6.7	12.4

Sources: Census of Governments, Occupational Employment Statistics, National Association of State Budget Officers, National Income and Product Accounts, Bureau of Labor Statistics Current Employment Statistics, Energy Information Administration, and author's calculations

Table 4. Types of State and Local Revenue, Sources of Decline Estimates, and Estimated Decline

Revenue type	Source of estimate of decline under pandemic mitigation	FY20 Revenue lost ($B)	Mean decline (%)
Total General Sales Tax	NIPA Table 2.4.5U: all line items subject to sales taxes	39.6	29.1
Hospital Charges	NIPA Table 2.4.5U: government hospitals	17.8	37.3
Individual Income Tax	CES Table B-1 and OES Table 2 (see 5/13/20 Data Brief Appendix II)	11.9	11.5
Corporation Net Income Tax	2006:Q3 to 2009:Q1 decline in federal receipts from corporate income tax[a]	10.5	68.1
Air Transportation Charges	NIPA Table 2.4.5U: air transportation	7.6	95.6
Motor Fuel Sales Tax	NIPA Table 2.4.5U: gasoline and other motor fuel	7.5	54.5
Misc General Revenue NEC	Revenue-weighted average of the state or local government's other declines[b]	6.8	26.4
All Other NEC	Revenue-weighted average of the state or local government's other declines	5.7	25.6
Tolls	NIPA Table 2.4.5U: parking fees and tolls	3.8	81.3
Occupation & Business License, NEC	2006:Q3 to 2009:Q1 decline in federal receipts from corporate income tax	3.6	68.1
Transit Utilities	NIPA Table 2.4.5U: intracity mass transit	3.4	77.9
Parks and Recreation	NIPA Table 2.4.5U: amusement parks, campgrounds & related recreational svc	2.9	82.5
Other License Tax	2006:Q3 to 2009:Q1 decline in federal receipts from corporate income tax	2.7	68.1
Amusement Tax	NIPA Table 2.4.5U: membership clubs & participant sports centers	2.1	85.0
Severance Tax	Decline in oil price (WTI), mean 3/16/20 to 4/30/20 from preceding 1yr mean[c,d]	2.1	64.7
Interest Earnings	2008:Q3 to 2010:Q3 decline in Personal Interest Income[e]	2.0	13.9
Elementary Lunches	NIPA Table 2.4.5U: elementary & secondary school lunches	1.6	100.0
Net Lottery Revenue	NIPA Table 2.4.5U: lotteries	1.5	27.7
Water Transportation and Terminal Charge	NIPA Table 2.4.5U: water transportation	1.3	73.6
Corporate License Tax	2006:Q3 to 2009:Q1 decline in federal receipts from corporate income tax	1.1	68.1
Natural Resources NEC	Decline in oil price (WTI), mean 3/16/20 to 4/30/20 from preceding 1yr mean	0.9	64.7
Misc Commercial Activities NEC Charges	2006:Q3 to 2009:Q1 decline in federal receipts from corporate income tax	0.9	68.1
Parking Facilities	NIPA Table 2.4.5U: parking fees and tolls	0.8	81.3
Special Assessment	Revenue-weighted average of the state or local government's other declines	0.7	21.5
Regular Highway Charges	NIPA Table 2.4.5U: parking fees and tolls	0.7	81.3
Taxes, NEC	Revenue-weighted average of the state or local government's other declines	0.5	27.6
Higher Education Tuition Charges	NIPA Table 2.4.5U: proprietary & public higher education	0.5	2.0
Alcoholic Beverage Sales Tax	NIPA Table 2.4.5U: alcohol, in purchased meals and off-premises consumption	0.5	21.3
Rents	Revenue-weighted average of the state or local government's other declines	0.4	24.8
Insurance Premium Tax	NIPA Table 2.4.5U: life insurance	0.4	6.0
Royalties	Revenue-weighted average of the state or local government's other declines	0.4	29.5
Motor Vehicle Operators License	NIPA Table 2.4.5U: transportation services	0.3	50.5
Sale of Property	Revenue-weighted average of the state or local government's other declines	0.3	24.7
Donations From Private Sources	NIPA Table 2.4.5U: foundations & grant making & giving establishments	0.3	4.0
Amusement License Tax	NIPA Table 2.4.5U: membership clubs & participant sports centers	0.2	85.0

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Revenue type	Source of estimate of decline under pandemic mitigation	FY20 Revenue lost ($B)	Mean decline (%)
Higher Educ Auxiliary Charges	NIPA Table 2.4.5U: proprietary & public higher education	0.2	2.0
Education Tuition & Transportation Charge	NIPA Table 2.4.5U: nursery, elementary & secondary schools	0.1	19.9
Hunting & Fishing License	NIPA Table 2.4.5U: sporting equip, supplies, guns & ammunition	0.1	16.3
Alcoholic Beverage License Tax	NIPA Table 2.4.5U: alcohol, in purchased meals and off-premises consumption	0.1	21.3
Elementary NEC Charges	NIPA Table 2.4.5U: elementary & secondary schools	0.0	1.5
Education Other State Charges	NIPA Table 2.4.5U: education services	0.0	7.2
Pari-mutuels Tax	NIPA Table 2.4.5U: pari-mutuel net receipts	0.0	53.8
Property Tax	No decline[f]	0.0	
Motor Vehicle License	No decline	0.0	
Death & Gift Tax	No decline	0.0	
Fines & Forfeits	No decline	0.0	
Solid Waste	NIPA Table 2.4.5U: garbage and trash collection	0.0	-0.2
Housing and Community Development	NIPA Table 2.4.5U: rental of tenant-occupied nonfarm housing	0.0	-0.6
Public Utility License Tax	NIPA Table 2.4.5U: household utilities	0.0	-6.1
Tobacco Sales Tax	NIPA Table 2.4.5U: tobacco	-0.1	-1.2
Liquor Stores Revenue	NIPA Table 2.4.5U: alcoholic beverages purchased for off-premises consumption	-0.1	-2.5
Sewerage	NIPA Table 2.4.5U: water supply & sewage maintenance	-0.1	-0.4
Water Utilities	NIPA Table 2.4.5U: water supply & sewage maintenance	-0.1	-0.4
Documentary & Stock Transaction Tax	NIPA Table 2.4.5U: financial service charges, fees & commissions	-0.1	-1.8
Gas Utilities	NIPA Table 2.4.5U: natural gas	-0.4	-23.4
Public Utilities Tax	NIPA Table 2.4.5U: household utilities	-0.5	-6.1
Electric Utilities	NIPA Table 2.4.5U: electricity	-1.1	-4.9

[a] U.S. Bureau of Economic Analysis, Federal government current tax receipts: Taxes on corporate income [B075RC1Q027SBEA], retrieved from FRED, Federal Reserve Bank of St. Louis; fred.stlouisfed.org/series/B075RC1Q027SBEA, May 22, 2020.

[b] These revenue weighted averages are different for every type of revenue because in each case, a different subset of the COG observations report revenue of that type. Only governments that collect that type of revenue are included in the mean.

[c] U.S. Energy Information Administration, Crude Oil Prices: West Texas Intermediate (WTI) - Cushing, Oklahoma [DCOILWTICO], retrieved from FRED, Federal Reserve Bank of St. Louis; fred.stlouisfed.org/series/DCOILWTICO, May 21, 2020.

[d] The correlation between the change in the annual average of the WTI price and the annual sum of state severance tax collections is .8.

[e] U.S. Bureau of Economic Analysis, Personal Income Receipts on Assets: Personal Interest Income [PII], retrieved from FRED, Federal Reserve Bank of St. Louis; fred.stlouisfed.org/series/PII, May 22, 2020.

[f] Following the last three recessions, property tax receipts have declined eight quarters after home prices declined or slowed their appreciation. If a similar timeline holds, property tax declines will not appear until FY22.

[1] United States Census Bureau. 2017 Census of Governments: 2017 State and Local Government Finance Tables. census.gov/programs-surveys/cog/data/tables.2017.html.

[2] National Association of State Budget Officers. 2019. "Fiscal Survey of the States: Overview." (Fall). nasbo.org/reports-data/fiscal-survey-of-states.

[3] NASBO reports changes in five types of state general fund revenue streams: Sales taxes, individual income taxes, corporate income taxes, gaming and lotteries, and other revenues. I apply these increases to non-general fund revenue streams and local revenues of the same type within the state.

[4] U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items in U.S. City Average [CPIAUCSL], retrieved from FRED, Federal Reserve Bank of St. Louis; fred.stlouisfed.org/series/CPIAUCSL, June 17, 2020.

[5] Bureau of Economic Analysis. National Income and Product Accounts, Section 2, Table 2.4.5U. apps.bea.gov/iTable/iTable.cfm?ReqID=19&step=2#reqid=19&step=2&isuri=1&1921=underlying.

[6] Rueben, K., and Randall, M. 2017. *Balanced Budget Requirements: How States Limit Deficit Spending*. Urban Institute, urban.org/sites/default/files/publication/94891/balanced-budget-requirements.