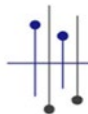




Federal Reserve
Bank of Boston®



New England Public Policy Center
at the Federal Reserve Bank of Boston

Economic Fallout of the COVID-19 Pandemic in New England

New England Public Policy Center (NEPPC)

Updated May 28, 2020

*Dr. Jeffrey Thompson, Dr. Osborne Jackson,
Dr. Bo Zhao, Nicholas Chiumenti, Riley Sullivan,
Darcy Saas, Melissa Gentry, Lan Ha and Thu Tran*

Disclaimer: The views expressed here are those of the authors and do not necessarily represent the views of the Federal Reserve Bank of Boston or the Federal Reserve System.



Public Service That Makes a Difference®

[bostonfed.org](https://www.bostonfed.org)

Contents

Profiles the economic impact of public and private actions taken to prevent the spread of the coronavirus in New England. NEPPC analysis compares effects on employment, housing, and state tax revenue across the New England states and with the national average.

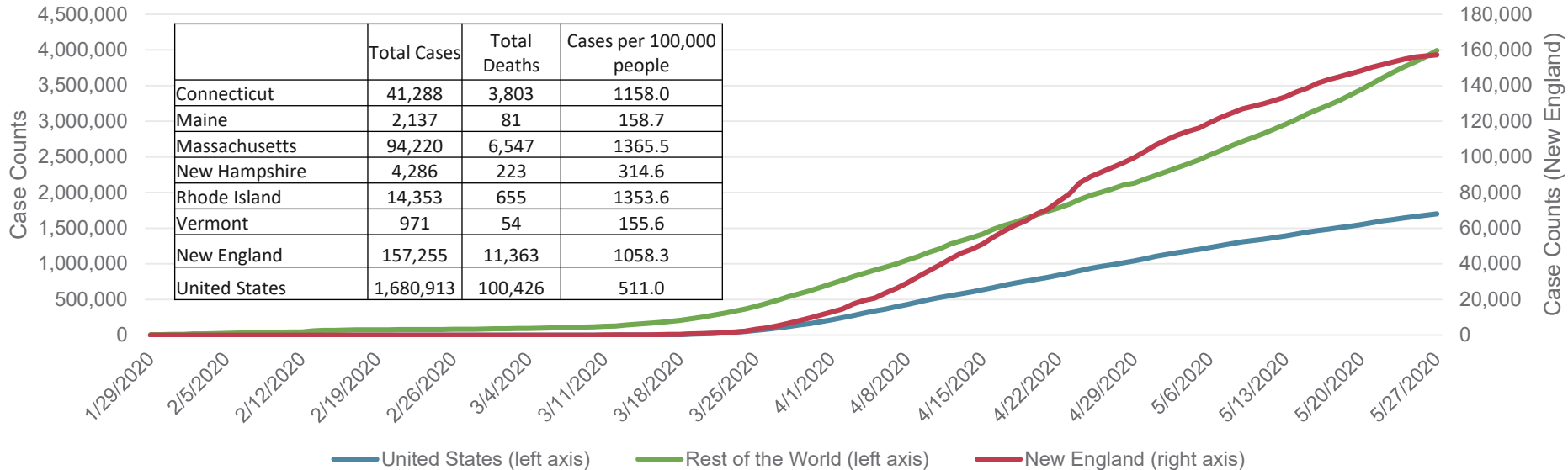
Key Preliminary Findings:

- ▶ Initial claims filed for unemployment insurance (UI) between March 21 and May 2, 2020 were equal to 26 percent of the total workforce in New England (slide 10).
- ▶ The NEPPC estimates that 33 percent of renters and 11 percent of homeowners in New England are at risk of not being able to make their housing payment; an estimated \$1.43 billion in monthly payments are at risk (slides 17,18).
- ▶ According to NEPPC estimates, state revenues across New England are expected to decline dramatically for FY 2020 and even possibly for FY 2021; in MA they are forecast to decline \$3.3 billion to \$3.9 billion between FY 2019 and FY2020, depending on how high unemployment rises (slide 24).

The number of COVID-19 cases continues to rise

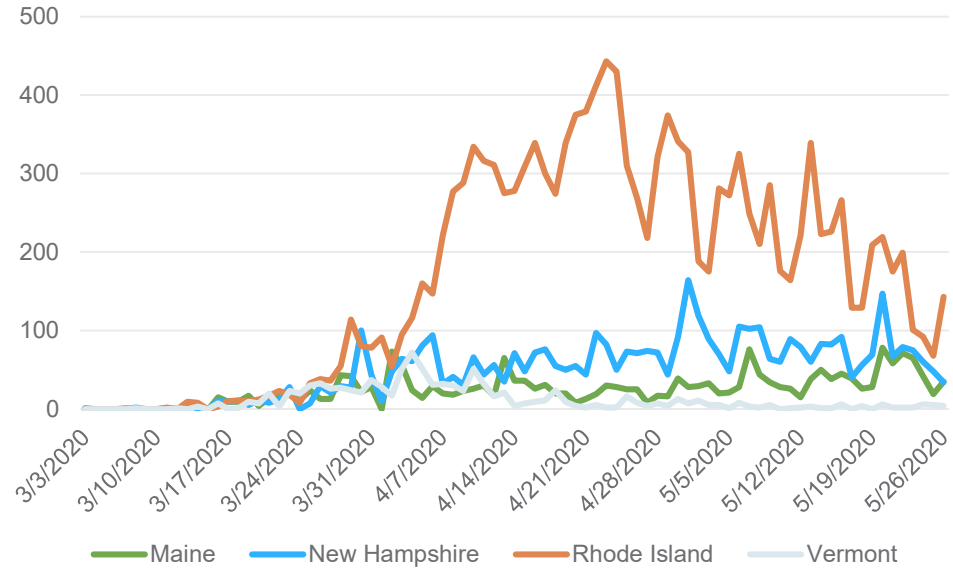
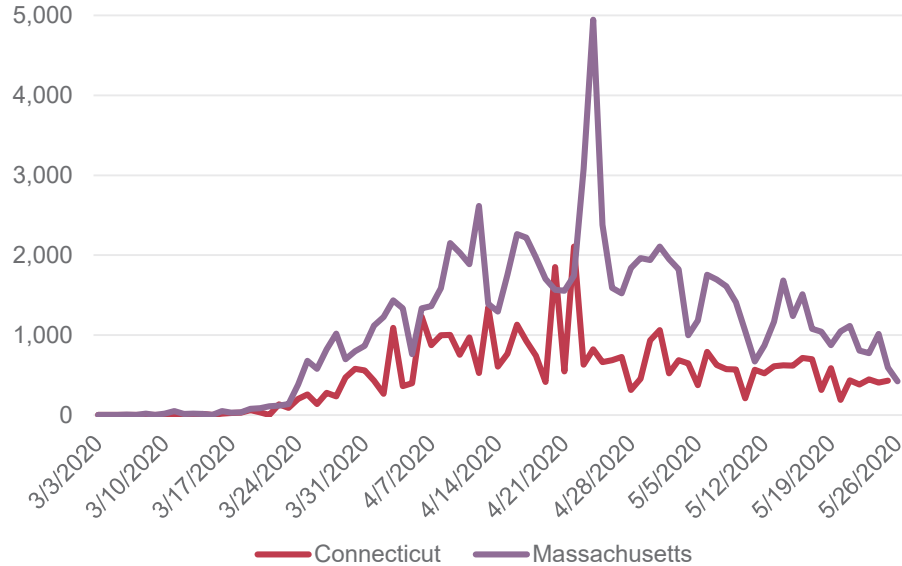
MA and CT residents have been hardest hit so far in New England

Cumulative Case Counts



Sources: Johns Hopkins CSSE, CDC, New York Times "Coronavirus in the US"

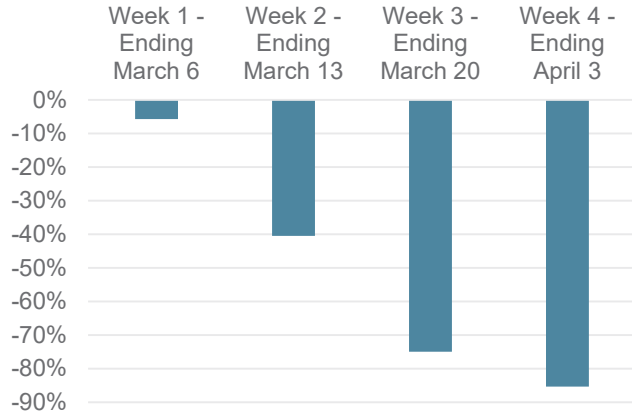
The daily number of new cases in New England



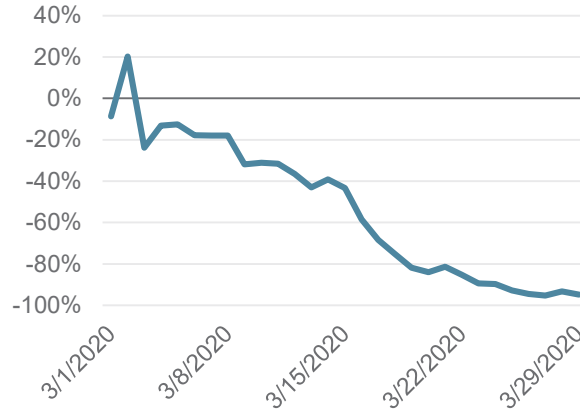
Sources: Johns Hopkins CSSE, CDC

The arrival of the first COVID-19 cases in February 2020, and state and federal quarantine actions taken in March, triggered a rapid deceleration of economic activity. Financial markets fell sharply, and entire industries effectively shut down.

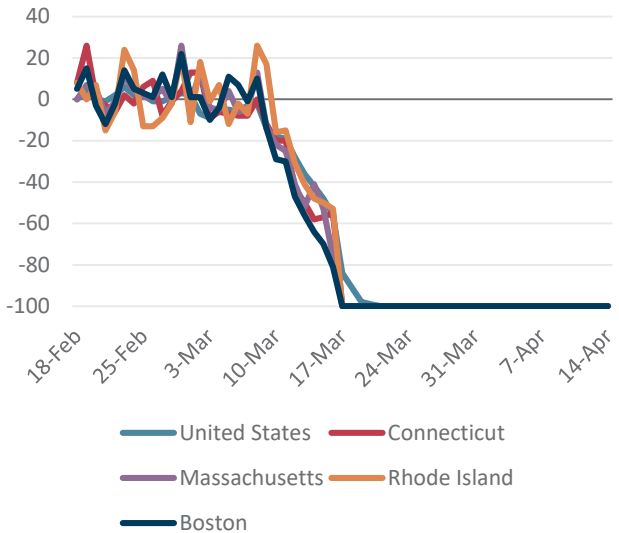
YoY Change in Boston Area Hotel Occupancy



YoY Change in Logan Airport Enplanements



YoY Change in OpenTable Reservations



Sources: Pinnacle Advisory Group and WBUR, MassPort, OpenTable

Federal and state policy actions taken in March and April seek to mitigate the economic impact of the pandemic

- ▶ The federal CARES Act provides, among other provisions:
 - ▶ *direct funding to households/individuals as much as \$1,200 per adult making less than \$75,000; married couples will receive \$2,400, plus an additional \$500 per child;*
 - ▶ *extended unemployment insurance;*
 - ▶ *small business relief focused on preventing layoffs and business closures;*
 - ▶ *a projected \$150 billion direct allocation to NE states for COVID-19 expenses; additional funding to state and federal agencies supporting affected populations/communities.*
- ▶ NE state economic policy actions expand unemployment benefit eligibility, provide assistance to firms (low-interest loans and grants), and seek to mitigate the impact on housing payments (eviction relief, mortgage assistance)

The material in these slides explores three questions regarding the pandemic-related downturn in New England:

- ▶ How has employment been impacted to-date?
 - ▶ How much more difficult will it become for households to make rent and mortgage payments?
 - ▶ How much tax-revenue loss can state governments expect?
-
- ▶ *Caveats and limitations to presented NEPPC analysis of these trends:*
 - ▶ *Ultimately, the depth of the downturn and the restoration of economic activity will depend on how quickly the spread of the virus can be halted. On the potential timing of the end of the pandemic, there is little NEPPC analysis can add.*
 - ▶ *Economic policy actions taken since early March have been unprecedented, for both monetary and fiscal policy. Analysis provided here does not fully model the range of outcomes for policy actions taken to date, but it does attempt—for the housing analysis—to reflect the major policy actions in the CARES Act in simple ways.*

Initial claims for unemployment insurance (UI) spiked in the second half of March and are now much higher than at the worst point of the Great Recession

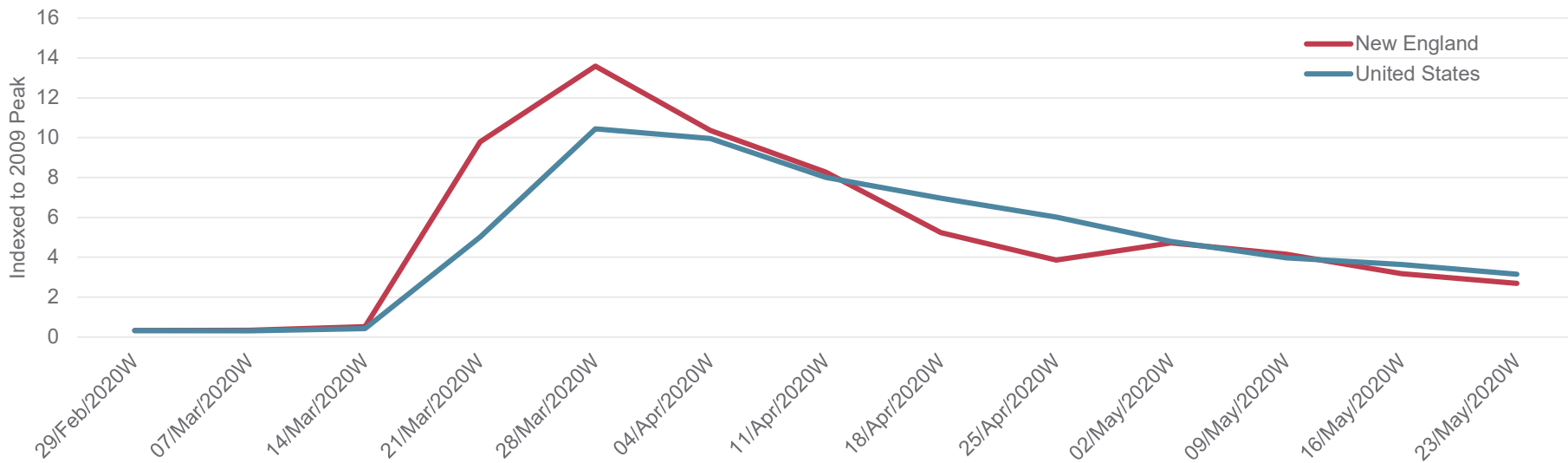


Figure uses seasonally adjusted initial unemployment claims.

In the week with the highest non-seasonally adjusted UI claims during the Great Recession (March 2009), New England had 42,307 and the United States had 956,791. During the most recent week of May 23, New England had 69,813 and the United States had 1,914,958 total initial claims.

Sources: Department of Labor, NBER, and Haver Analytics

All New England states saw a dramatic surge in unemployment insurance (UI) claims

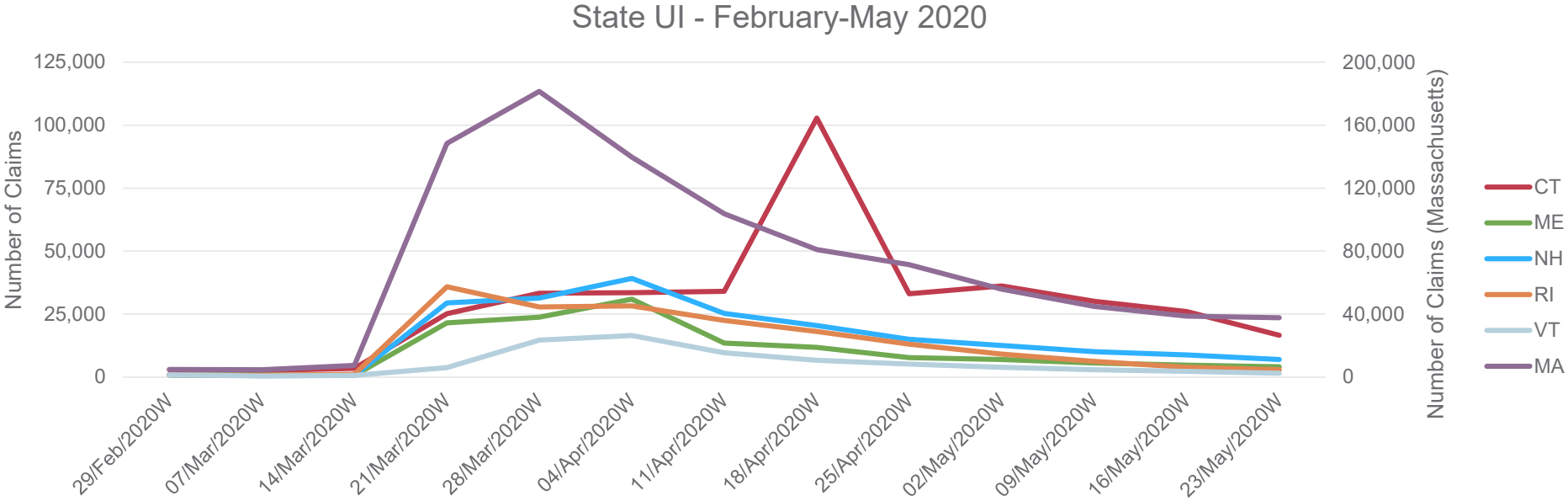


Figure uses non-seasonally adjusted initial unemployment claims.

Sources: Department of Labor, NBER, and Haver Analytics

New England average unemployment insurance (UI) claims as a share of the labor force were higher than the US average.

RI had the fourth highest share of any state.

Initial claims as a share of labor force
(10 Week Period Ending May 23)

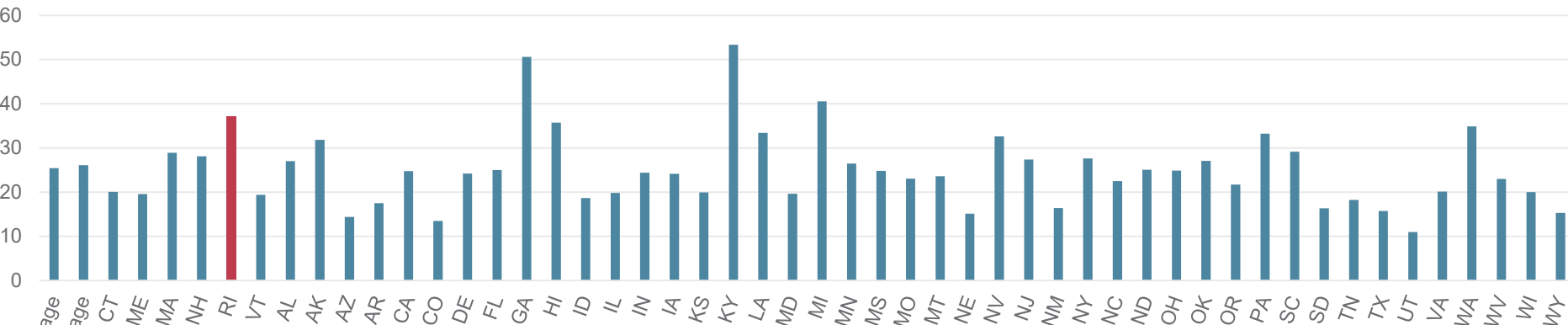


Figure uses seasonally adjusted initial unemployment claims. Values using non-seasonally adjusted claims are lower across-the-board.

Using non-seasonally adjusted data, the value for New England is 22.6% and the United States is 22.6%.

Unemployment Rates in April from the household survey for New England states: CT(17.5)*, ME(10.6), MA(15.1), NH(16.3), RI(17), VT(15.6)

Sources: US Department of Labor and BLS

In 2008–09 UI claims rose steadily over a 12-month period, in contrast with the steep rise during the pandemic

Continued UI Claims as a Share of the Labor Force
(May 2020 Value = Average of Most Current 3 Weeks)

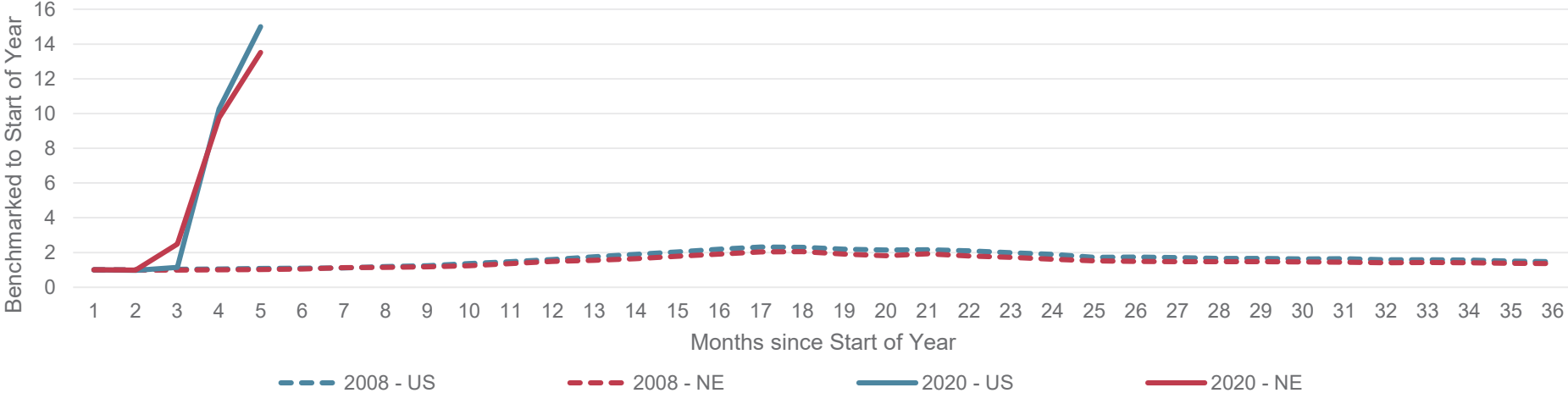


Figure uses seasonally adjusted continued unemployment claims.

Sources: US Department of Labor and BLS

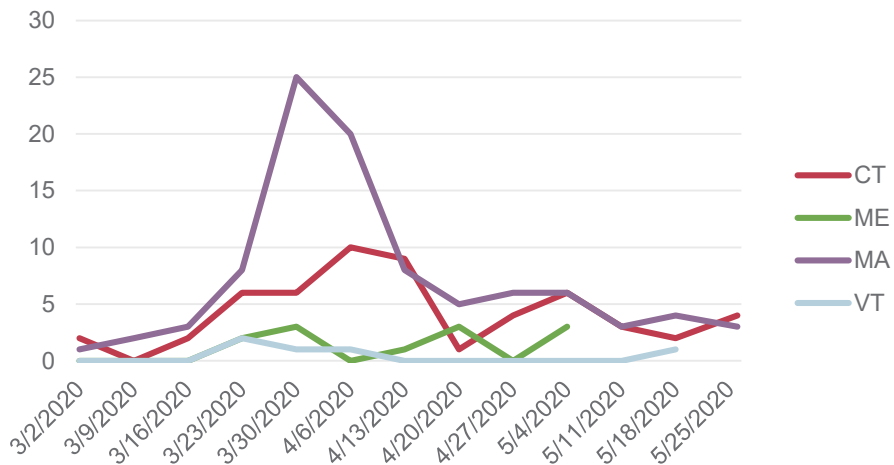
States that report industry-level breakdowns of weekly UI claims show that the majority of initial claims were from the services sector—in contrast to 2009

	Industry Share of Total UI Claims by State					
	Connecticut			Massachusetts		
	March 21 2020	March 21 - May 16 2020	March 2009	March 21 2020	March 21 - May 16 2020	March 2009
Construction	4.0%	3.3%	17.7%	9.1%	7.3%	19.7%
Manufacturing	5.8%	5.9%	16.7%	2.0%	5.1%	12.9%
Services	49.5%	44.3%	34.4%	62.8%	50.4%	36.4%
Trade	18.9%	17.2%	15.4%	8.0%	16.3%	11.9%
Transportation, Agriculture, and Utilities	2.5%	2.8%	4.2%	4.8%	4.2%	3.7%
Misc/unavailable	19.3%	26.5%	10.6%	13.3%	16.7%	11.8%

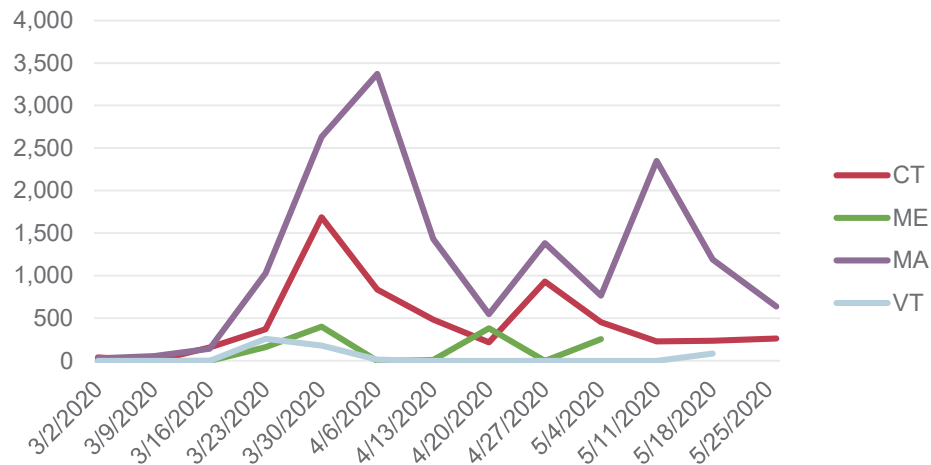
Sources: Connecticut Department of Labor, Massachusetts Office of Labor and Workforce Development

Advance notices of pending mass layoffs also spiked in late March

Number of WARN Notices



Number of Workers Impacted



Worker Adjustment and Retraining Notification (WARN) notices are triggered by plant closings, mass layoffs, or when 50 or more employees are laid off at a single site of employment.

Notice data reflect the date notices were received. Five claims that did not disclose worker counts are omitted from the worker impact figure.

Sources: Connecticut Department of Labor, Maine JobLink, MassHire Department of Career Services, Vermont JobLink

The pandemic has placed New England households at risk of not making rent and mortgage payments

- ▶ Wide-scale job losses as a result of COVID-19 will cause many households to fall behind on rent and mortgage payments.
- ▶ NEPPC housing payments analysis uses 2018 ACS data to explore the number of households that are at risk of missing rent/mortgage payments and falling into foreclosure or eviction.
 - ▶ Uses NEPPC definition of occupations at high risk of layoff, adjusting definition used by Gascon (2020) to more closely reflect official public shutdown orders
- ▶ Accounting for other sources of income, NEPPC analysis finds that 33 percent of renters and 11 percent of homeowners in New England are at risk of not being able to afford their monthly housing costs due to job loss.
 - ▶ Takes into account investment, retirement, Social Security, and other sources.
 - ▶ Equates to \$748 million in rent payments and \$678 million in missed mortgage payments in New England alone, every month.

Renter households are more likely to have a housing payment and have all adults employed in occupations with high layoff risk

High-Risk Employment among Homeowners and Renters

New England states and United States

	Share of all homeowners			Share of all renters		
	With a monthly mortgage payment	With at least 1 employed person in high-risk occupation	With all employed persons in high-risk occupations	With a monthly rent payment	With at least 1 employed person in high-risk occupation	With all employed persons in high-risk occupations
United States	62	35	16	95	40	25
New England Region	66	35	15	96	36	22
Connecticut	66	34	14	96	38	26
Maine	60	37	17	94	34	23
Massachusetts	68	33	13	97	34	20
New Hampshire	64	39	16	97	40	26
Rhode Island	69	36	16	97	33	23
Vermont	63	36	17	94	43	26

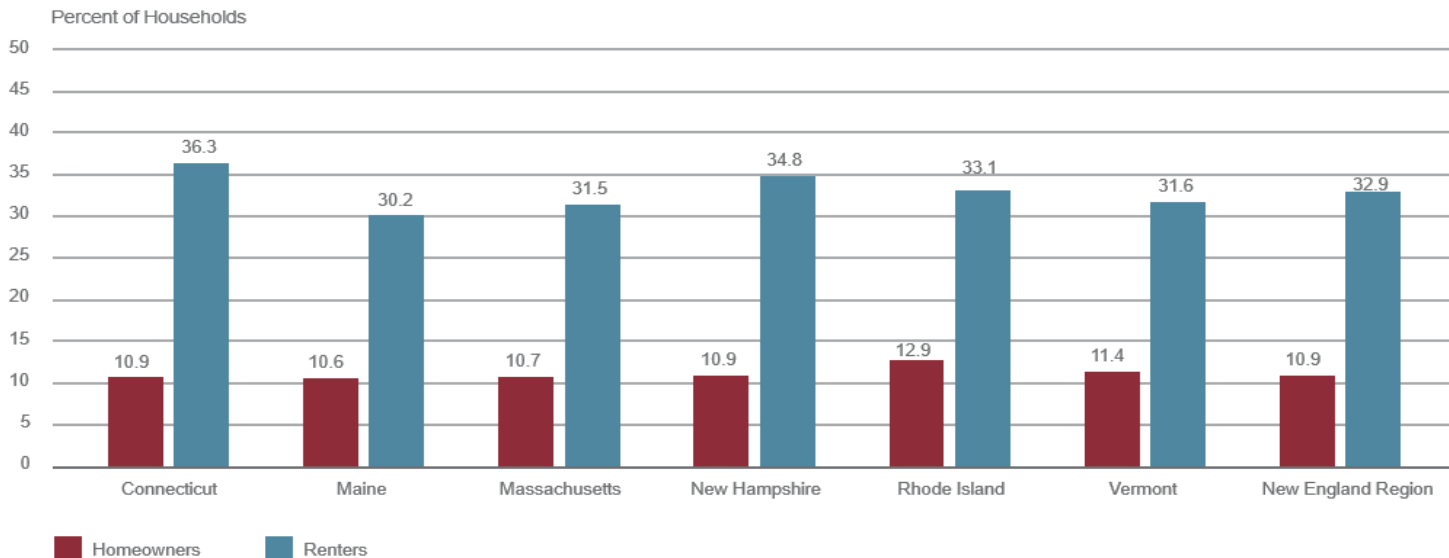
Note(s): Employed persons in a household are those at or above the age of 16 and employed in 2018. Households with housing payments are those with a mortgage (including second mortgages) or paying cash rent. Workers are at high risk of unemployment if their job is nonessential, cannot be done from home, and is paid hourly. The definition used here is based on one used in Gascon (2020), with adjustments made to essential occupations that better match Massachusetts's state-level policy.

Source(s): 2018 American Community Survey one-year estimates

One-tenth of homeowners and more than one-third of renters in New England are at risk of not being able to pay their monthly rent or mortgage

Share of Households at Risk of Missing Their Monthly Housing Payments

Not including CARES Act financial support, New England states



Households are unable to pay their monthly rent or mortgage if their total household income, excluding income earned in high-risk or high-contact occupations, is less than their monthly housing costs plus a low-cost food budget. Only those households with housing payments such as a mortgage (including second mortgages) and cash rent are included. Households with housing payments are those with a mortgage (including second mortgages) or paying cash rent. High-risk occupations are those defined in Gascon (2020), but with adjustment to reflect Massachusetts state policy.

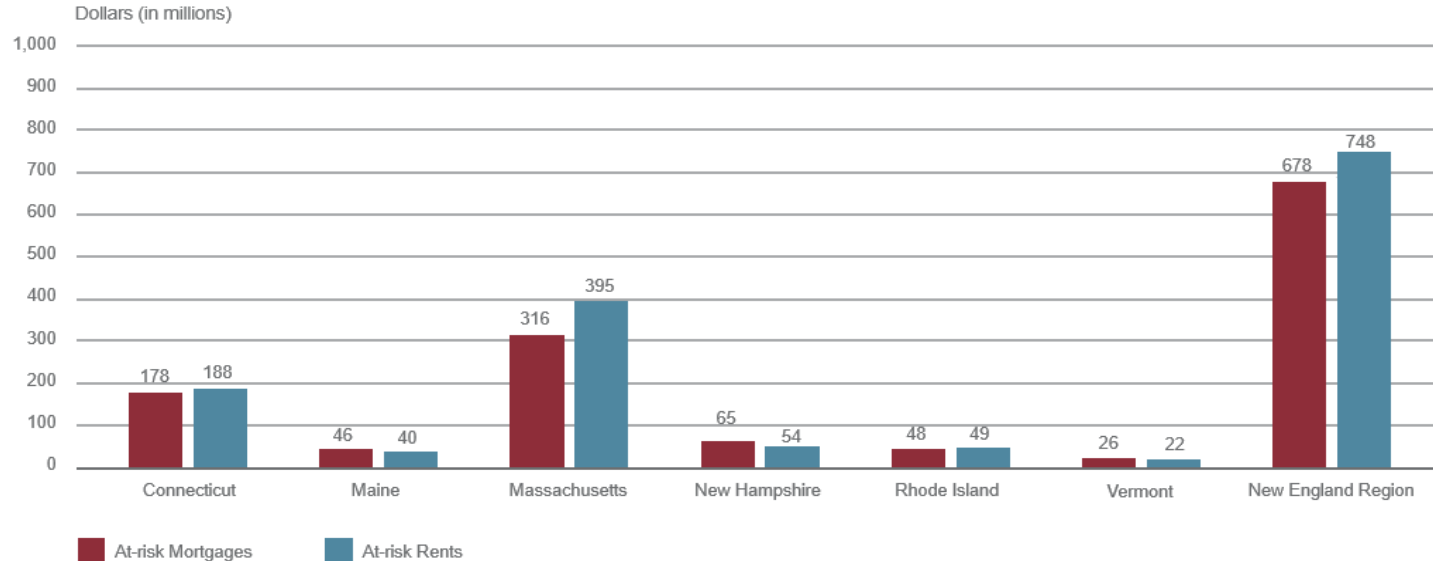
*For the US average, 19.9 percent of homeowners and 40.1 percent of renters are at risk of not making their housing payments.

Source(s): 2018 American Community Survey 1-year estimates; USDA Food Plans: Cost of Food Report for December 2018.

The total projected value of missed mortgage and rent payments is \$1.43 billion every month in New England alone

Total Monthly Value of At-risk Rent and Mortgage Payments

Not including CARES Act financial support, New England states



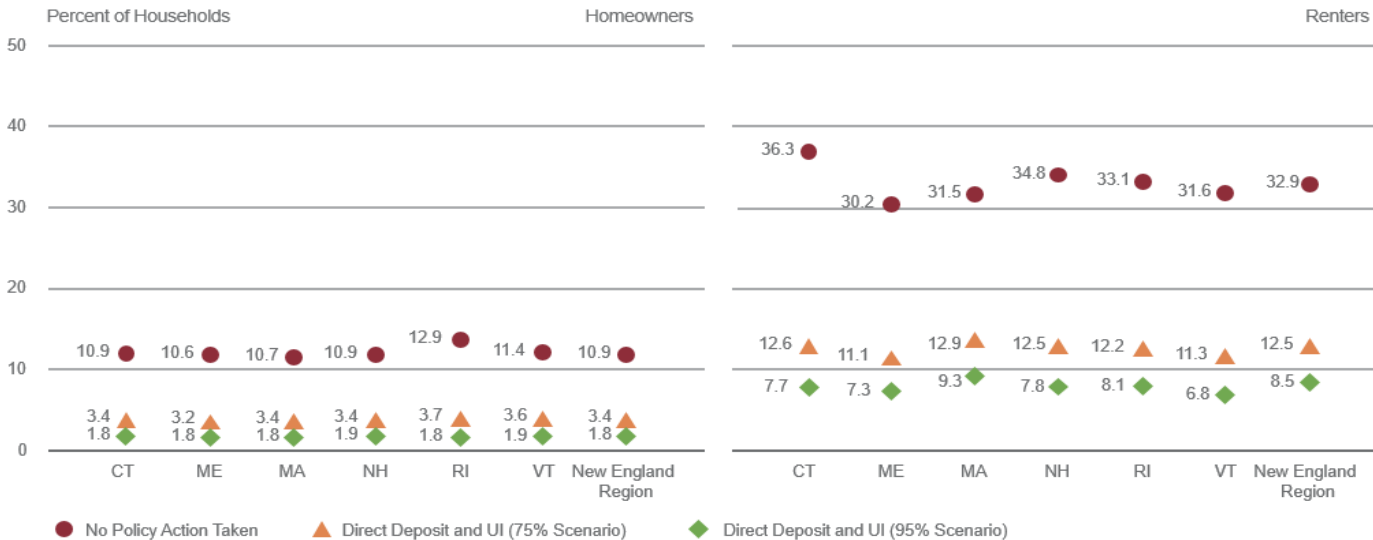
Note(s): Estimated unpaid mortgage and rent values are inflation adjusted to 2020 dollars. Calculated as the total value of all rent/mortgage payments (including second mortgages) of households who are unable to meet their monthly payment housing cost payments. Households with housing payments are those with a mortgage (including second mortgages) or paying cash rent. High-risk occupations are those defined in Gascon (2020), but with adjustment to reflect Massachusetts state policy.

Source(s): 2018 American Community Survey 1-year estimates. USDA Food Plans: Cost of Food Report for December 2018.

The CARES Act's UI expansion and direct payments to households are likely to have a major impact on households' ability to meet monthly housing payments.

Share of Households at Risk of Missing Their Monthly Housing Payments

Including CARES Act financial support, New England states



Note(s): The 2020 CARE Act provided households with up to \$1,200 for individuals and \$500 per child, as well as extended unemployment insurance with \$600 weekly federal supplement to a broad class of workers. Households are unable to pay their monthly rent or mortgage if their total household income, excluding income earned in high-risk or high-contact occupations, is less than their monthly housing costs plus a low-cost food budget. Only those households with housing payments such as a mortgage (including second mortgages) and cash rent are included. Households with housing payments are those with a mortgage (including second mortgages) or paying cash rent. The 95% scenario assumes 95 percent receive UI benefits. Eighty percent of households are assumed to receive their direct payments through direct deposit.

Source(s): 2018 American Community Survey one-year estimates; USDA Food Plans: Cost of Food Report for December 2018; IRS Filing Season Statistics; TAXSIM v9.

State revenue impacts

The same factors driving the reduction in economic activity will also lead to sharp declines in state government revenue.

- ▶ Declining tourism → drop-off in room and meal taxes
- ▶ Employment losses → falling personal income taxes
- ▶ Decreased business activity → falling business income taxes
- ▶ Falling consumption → downturn in sales taxes

The magnitude of the revenue losses will depend on the depth and the duration of the economic downturn as well as the elements of the state tax system.

Recently published estimates of revenue shortfalls in New England vary widely and rely on a range of methods

	Expected Revenue Shortfall for FY 2020	Expected Revenue Shortfall for FY 2021
CT	\$500 million	\$1.4 billion
MA (Estimate 1)	\$500 million	\$4.4 billion
MA (Estimate 2)	\$540–\$753 million	\$1.2–\$2.6 billion
MA (Estimate 3)	\$4.2–\$4.8 billion	\$5.1–\$5.8 billion
VT	\$193 million	

Sources: Connecticut: Connecticut Office of Policy and Management; Massachusetts: Massachusetts Taxpayers Foundation (Estimate 1); Tufts University's Center for State Policy Analysis (Estimate 2); Massachusetts Budget and Policy Center (Estimate 3); Vermont: Vermont Legislative Joint Fiscal Office

NEPPC estimates of projected state tax revenues extend standard empirical model

- ▶ The standard model evaluates the impact of relatively small changes in unemployment on revenues.
 - ▶ Fiedler, Furman, and Powell (2019) estimate that in the 1996–2017 period, a 1 percentage point increase in the state unemployment rate, on average, is associated with a 3.1 percent decrease in real state tax revenue per capita across all states, holding state tax policy constant.
 - ▶ Estimated using New England data, this model results in implausible revenue forecasts for some states, due to the magnitude of the projected change in unemployment and the elasticities of some states' tax systems.

NEPPC alternative approach.

- ▶ Estimating the model in levels and using the unemployment rate and time trends (linear and quadratic) produces plausible coefficients and less extreme revenue forecasts.
 - ▶ For elementary details on NEPPC model details, see supplemental materials.

New England states will face steep revenue losses for the remainder of fiscal year 2020

NEPPC Estimated State Revenue Decline in FY 2020 Compared with FY 2019				
	Low Unemployment Scenario		High Unemployment Scenario	
	(Million \$)	(%)	(Million \$)	(%)
Connecticut	-1,536 (-3,719, 647)	-8.05 (-19.50, 3.39)	-1,786 (-4,013, 441)	-9.36 (-21.04, 2.31)
Maine	-453 (-888, -17)	-9.78 (-19.17, -0.38)	-525 (-972, -78)	-11.33 (-20.98, -1.69)
Massachusetts	-3,279 (-5,170, -1,388)	-10.43 (-16.44, -4.41)	-3,961 (-5,878, -2,044)	-12.60 (-18.69, -6.50)
New Hampshire	-356 (-694, -18)	-14.25 (-27.79, -0.72)	-392 (-744, -41)	-15.72 (-29.79, -1.65)
Rhode Island	-400 (-588, -212)	-10.86 (-15.97, -5.74)	-464 (-655, -273)	-12.59 (-17.78, -7.40)
Vermont	-94 (-221, 34)	-4.04 (-9.53, 1.45)	-123 (-254, 7)	-5.32 (-10.96, 0.31)

Notes: (1) The “low unemployment” scenario assumes that Q2 2020 unemployment rates are consistent with current levels of Unemployment Insurance claims, and that unemployment promptly returns to substantially lower levels in FY 2021. The “high unemployment” scenario assumes that Q2 2020 unemployment rises to levels moderately higher than what is implied by current Unemployment Insurance claims, and that unemployment remains at those elevated levels over most of FY 2021. **Both scenarios are designed to illustrate the range of possibilities faced by state policy makers; the most realistic scenario depends on the ultimate path that unemployment follows. Neither scenario is intended as an official unemployment forecast of the Federal Reserve Bank of Boston.**

(2) The prediction interval with the 90% confidence level is shown in the parenthesis.

(3) The predicted FY2020 real state tax revenue per capita for CT, MA, and VT is estimated based on the linear time trend model. The predicted FY 2020 real state tax revenue per capita for ME, NH, and RI is estimated based on the quadratic time trend model.

State revenue losses will continue into fiscal year 2021

Declines depend on state of economy in second half of 2020

NEPPC Estimated State Revenue Decline in FY 2021 Compared with FY 2020		
	Low Unemployment Scenario (%)	High Unemployment Scenario (%)
Connecticut	-1.13	-25.05
Maine	-2.99	-30.56
Massachusetts	-2.87	-41.70
New Hampshire	-2.59	-29.84
Rhode Island	-3.34	-34.63
Vermont	0.13	-21.28

Notes: (1) The “low unemployment” scenario assumes that Q2 2020 unemployment rates are consistent with current levels of Unemployment Insurance claims, and that unemployment promptly returns to substantially lower levels in FY 2021. The “high unemployment” scenario assumes that Q2 2020 unemployment rises to levels moderately higher than what is implied by current Unemployment Insurance claims, and that unemployment remains at those elevated levels over most of FY 2021. **Both scenarios are designed to illustrate the range of possibilities faced by state policy makers; the most realistic scenario depends on the ultimate path that unemployment follows. Neither scenario is intended as an official unemployment forecast of the Federal Reserve Bank of Boston.**

(2) The predicted FY2020 and 2021 real state tax revenue per capita for CT, MA, and VT is estimated based on the linear time trend model. The predicted FY 2020 and 2021 real state tax revenue per capita for ME, NH, and RI is estimated based on the quadratic time trend model.

Recap

- ▶ The economic consequences of the spread of the novel coronavirus, and the public-health efforts to stop its spread, have been severe for businesses, workers, households, and governments in New England.
- ▶ Preliminary findings presented here confirm a massive loss of jobs, widespread difficulty making housing payments, and steep declines in state tax revenue.
- ▶ The full extent of the economic damage, though, cannot be known with certainty at this point. It will depend on the course the spread of the virus takes as well as the offsetting effects of the major economic stimulus efforts that have been undertaken and those that are under consideration.

Supplemental material

Relationship between state tax revenue and state unemployment rate (Fiscal year 1995–2019)

Relationship between State Tax Revenue and State Unemployment Rate (Fiscal Year 1995–2019)

	Connecticut		Maine		Massachusetts		New Hampshire		Rhode Island		Vermont	
Time	0.04 *** (0.01)	-0.02 ** (0.04)	0.03 *** (0.0045)	0.07 *** (0.02)	0.04 *** (0.0041)	0.05 ** (0.02)	0.02 *** (0.0032)	0.05 *** (0.01)	0.03 *** (0.0037)	0.09 *** (0.01)	0.06 *** (0.0029)	0.05 *** (0.01)
Square of Time		0.0022 (0.0014)		-0.0016 ** (0.0007)		-0.0004 (0.0007)		-0.0011 ** (0.0005)		-0.0021 *** (0.0004)		0.0004 *** (0.0005)
Unemployment Rate	-0.09 ** (0.04)	-0.08 * (0.04)	-0.07 *** (0.02)	-0.08 *** (0.02)	-0.16 ** (0.02)	-0.16 *** (0.02)	-0.03 (0.02)	-0.05 ** (0.02)	-0.06 *** (0.01)	-0.08 *** (0.01)	-0.10 *** (0.02)	-0.09 *** (0.02)
Adjusted R-Squared	0.412	0.450	0.648	0.711	0.842	0.837	0.557	0.618	0.801	0.916	0.941	0.940

Notes: (1) *p<0.10, **p<0.05, ***p<0.01

(2) The dependent variable in the regression is real adjusted state tax revenue per capita.

(3) Time = Fiscal Year - 1994

(4) Observations are at the fiscal-year level. The number of observations for each regression is 25.

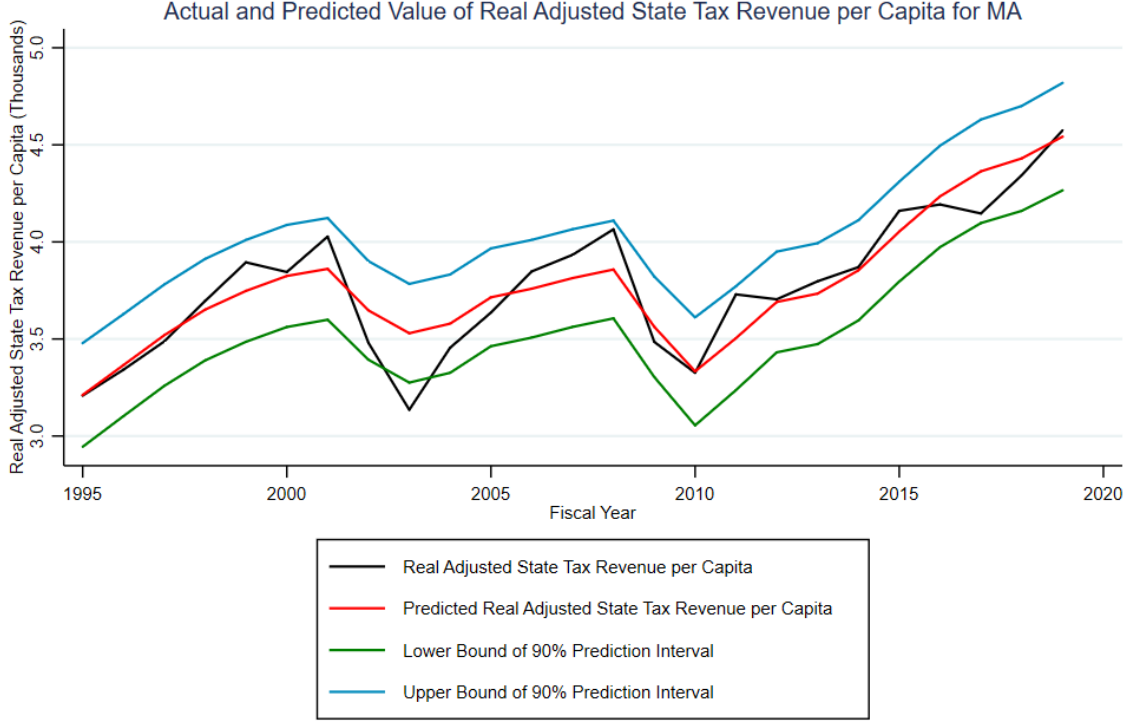
(5) State tax revenues are inflated into fiscal year 2019 dollars using the CPI-Northeast. State tax revenues are adjusted for state policy changes. State property taxes are also removed from state total tax revenues.

(6) A constant was included in the equation but has not been reported here.

Sources: US Census Bureau, Bureau of Labor Statistics, and the National Association of State Budget Officers

Federal Reserve Bank of Boston | [bostonfed.org](https://www.bostonfed.org) | Coronavirus Sliddeck | Supplementary Material

Revenue forecast model performance over time



Notes: (1) The predicted value of state tax revenue per capita is estimated from the linear time trend model.
(2) State tax revenues are inflated into fiscal year 2019 dollars using the CPI-Northeast. State tax revenues are adjusted for state policy changes. State property taxes are also removed from state total tax revenues.