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MARKETS

State of the states:

A review of the current municipal bond market and some of its largest issuers

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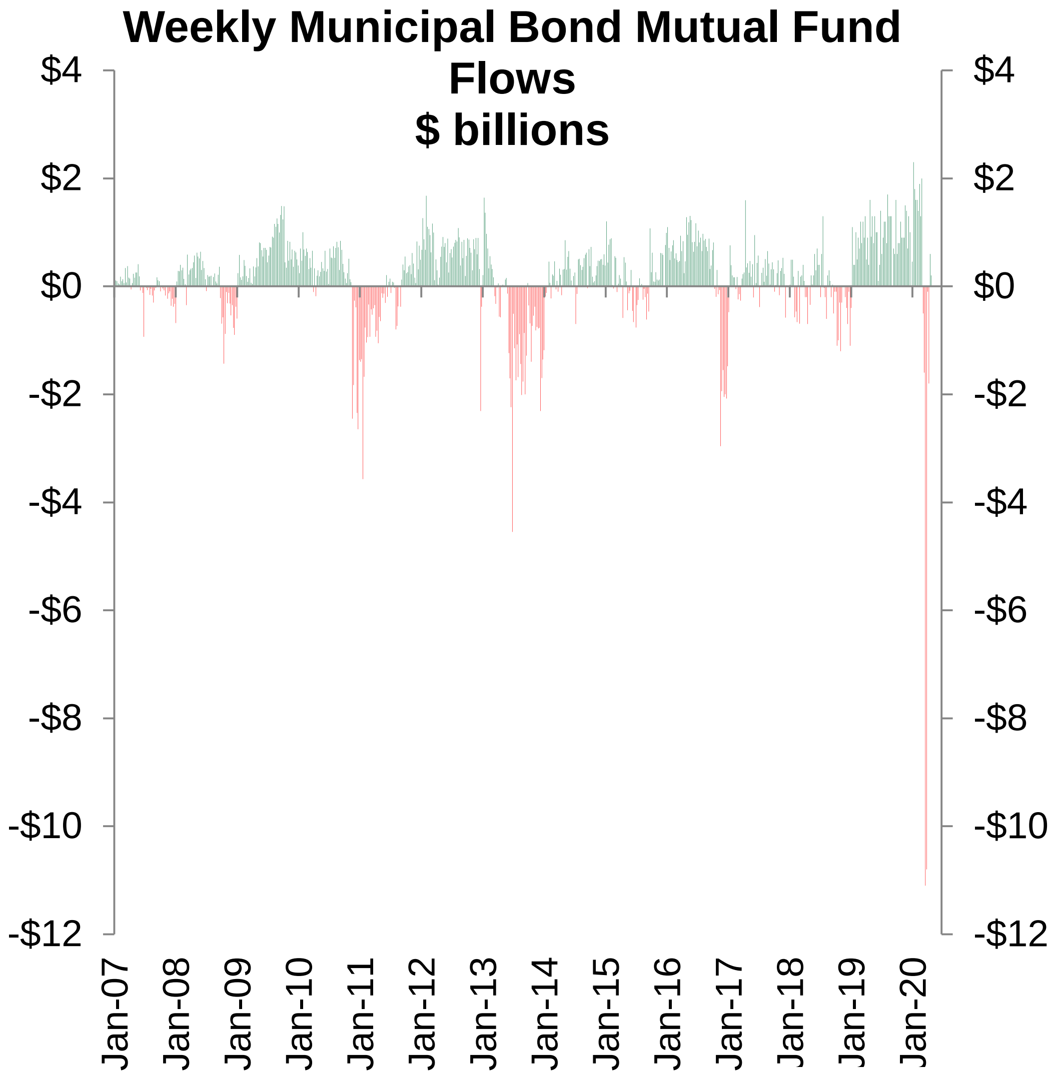
Mutual Fund Flows

Fund outflows in March were unprecedented and were driven by:

- **Spiking short-term rates**
- **Forced selling of longer-dated bonds by municipal closed end funds and other leveraged investment vehicles**
- **Rapidly rising long-term rates in the Treasury and municipal bond markets**
- **Municipal credit/liquidity concerns due to COVID-19 response by states**

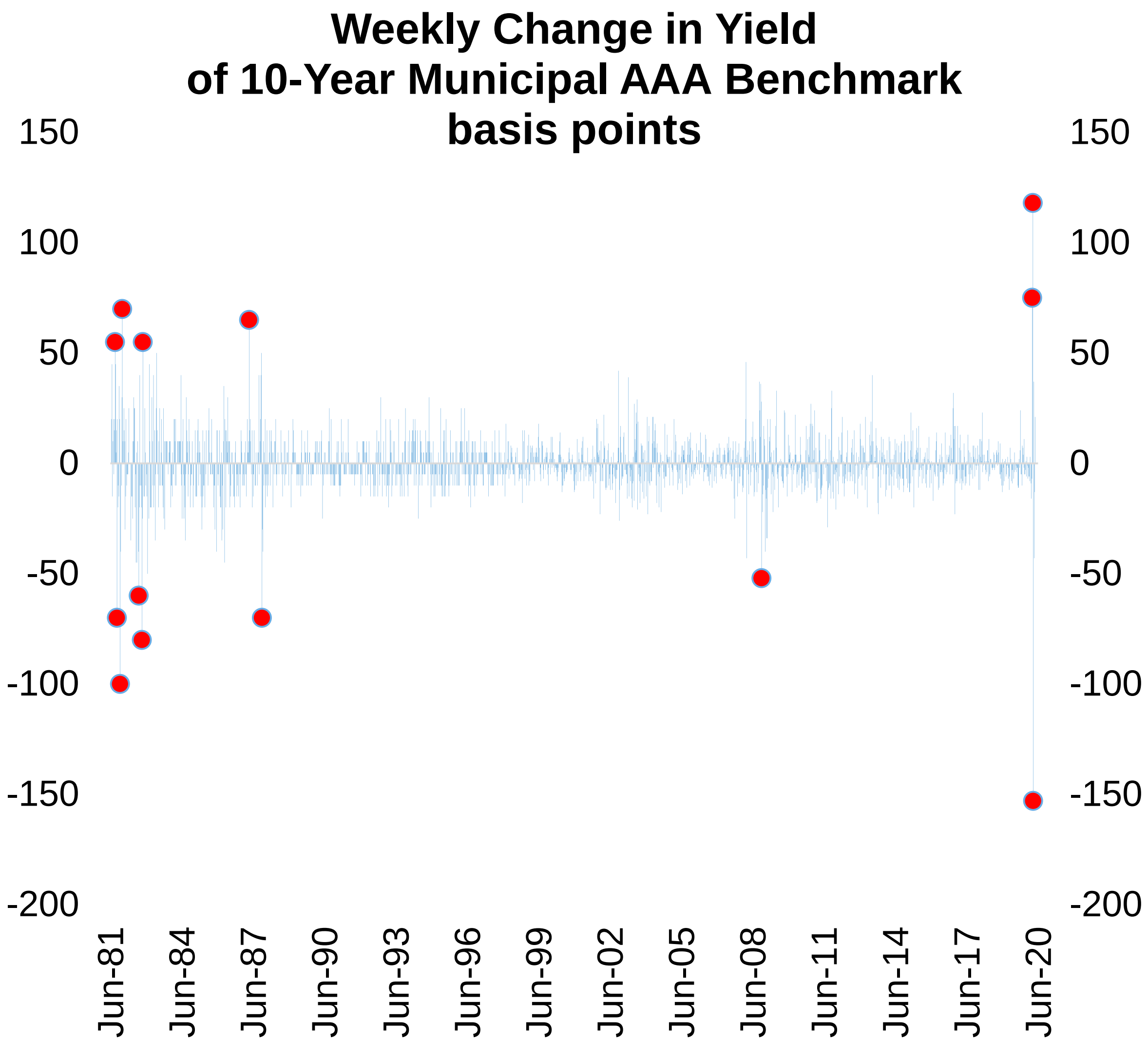


Source: EPFR Global, FCM as of 04/22/2020

Long-Term Interest Rates

Widespread selling caused long-term interest rates to swing wildly

- **5-day changes in the 10-year AAA benchmark were the greatest on record in March 2020**
- **Since the early 1980s there have been only 13 times when rates changed by more than 50 basis points over a 5-day stretch, and 3 of those periods were in March 2020**
- **The dislocation created both deep investor angst as well as rarely seen opportunities for nimble investors**



Source: Thomson Reuters, FCM as of 04/24/2020

Past performance is no guarantee of future results

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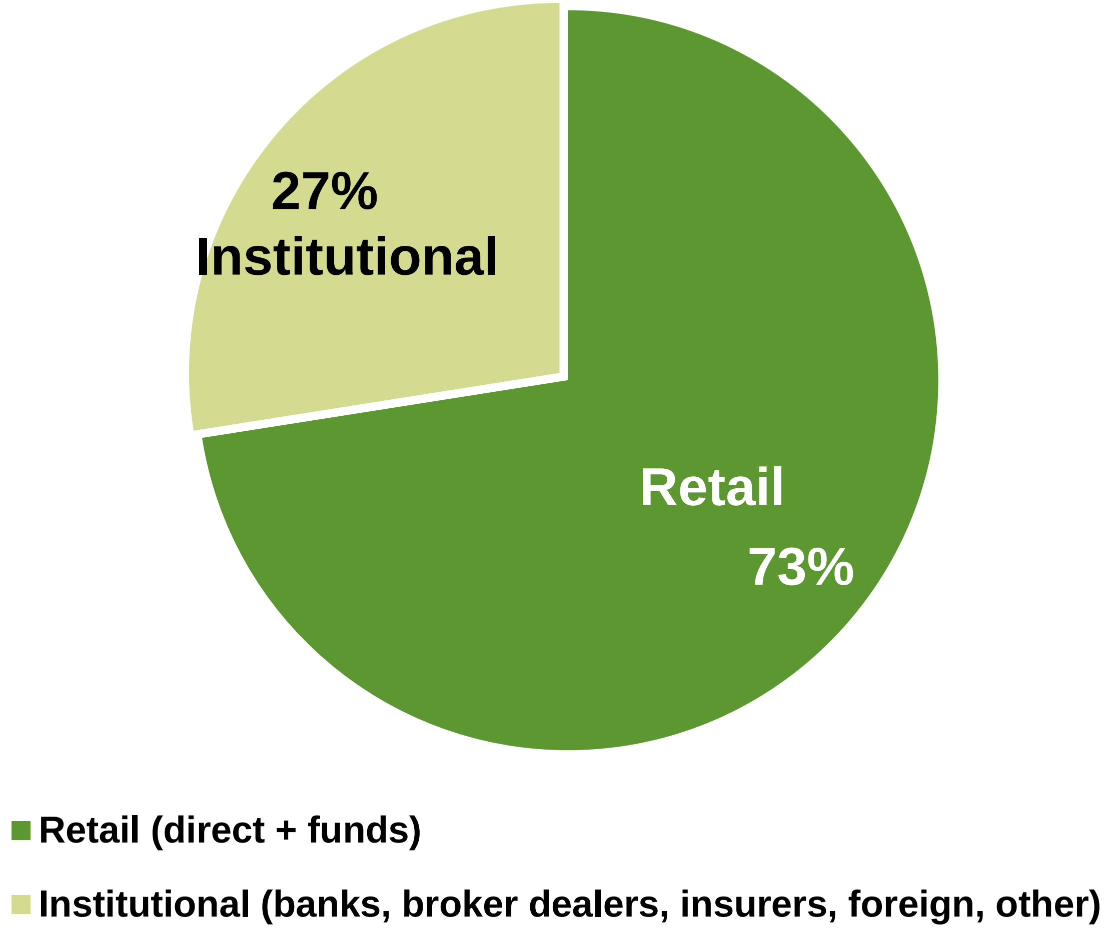
Investor Base Behavior

Concentrated investor base makes market susceptible to changes in behavior

- Retail investors are the dominant holders of municipals, either directly or through funds, and tend to be risk averse
- Since 2008 long-term funds holdings increased from 13% to 24% of the market, while direct household holdings have remained nearly unchanged at 46%
- Factors that limit the market's buyer base include tax and regulatory policy, the inability to go short, and lack of familiarity

Municipal Securities Holders as of Q4 2019



Source: Federal Reserve Board, FCM

Fiscal and Monetary Responses

1. **Commercial Paper Funding Facility (CPFF):** Announced Mar 17 and revised Mar 23 to include Muni. However, not many issuers have an outstanding Commercial Paper program. Hence, any benefit here to the broader market is likely indirect, i.e., helping to keep the yield on existing and new short-term paper low and keep the muni curve from inverting.

2. **Primary Dealer Credit Facility (PDCF):** Announced Mar 17. Credit extended to primary dealers under this facility may be collateralized by a broad range of investment grade debt securities, including commercial paper and municipal bonds, and a broad range of equity securities. The PDCF can be thought of as similar to the Fed's discount window but w/o the stigma. The new facility will offer funding with maturities up to 90 days starting on March 20 and be in place for at least six months. the goal of this and the CPFF is to prevent a wave of defaults from a liquidity shortage

3. **Money Market Mutual Fund Liquidity Facility:** a) Announced Mar 18, would allow assets to be purchased from muni market funds, but not Variable Rate Demand Obligations (VRDOs); b) revised Mar 20 to allow purchase of VRDOs. The latter was an important development in providing relief to issuers (i.e., hospitals and states), because VRDOs make up the majority of muni money market paper. It also indirectly helped the long end of the market, where historically high risk premia struggled to attract investors because of the higher yields in money market paper that emerged due to outflows

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Fiscal and Monetary Responses continued

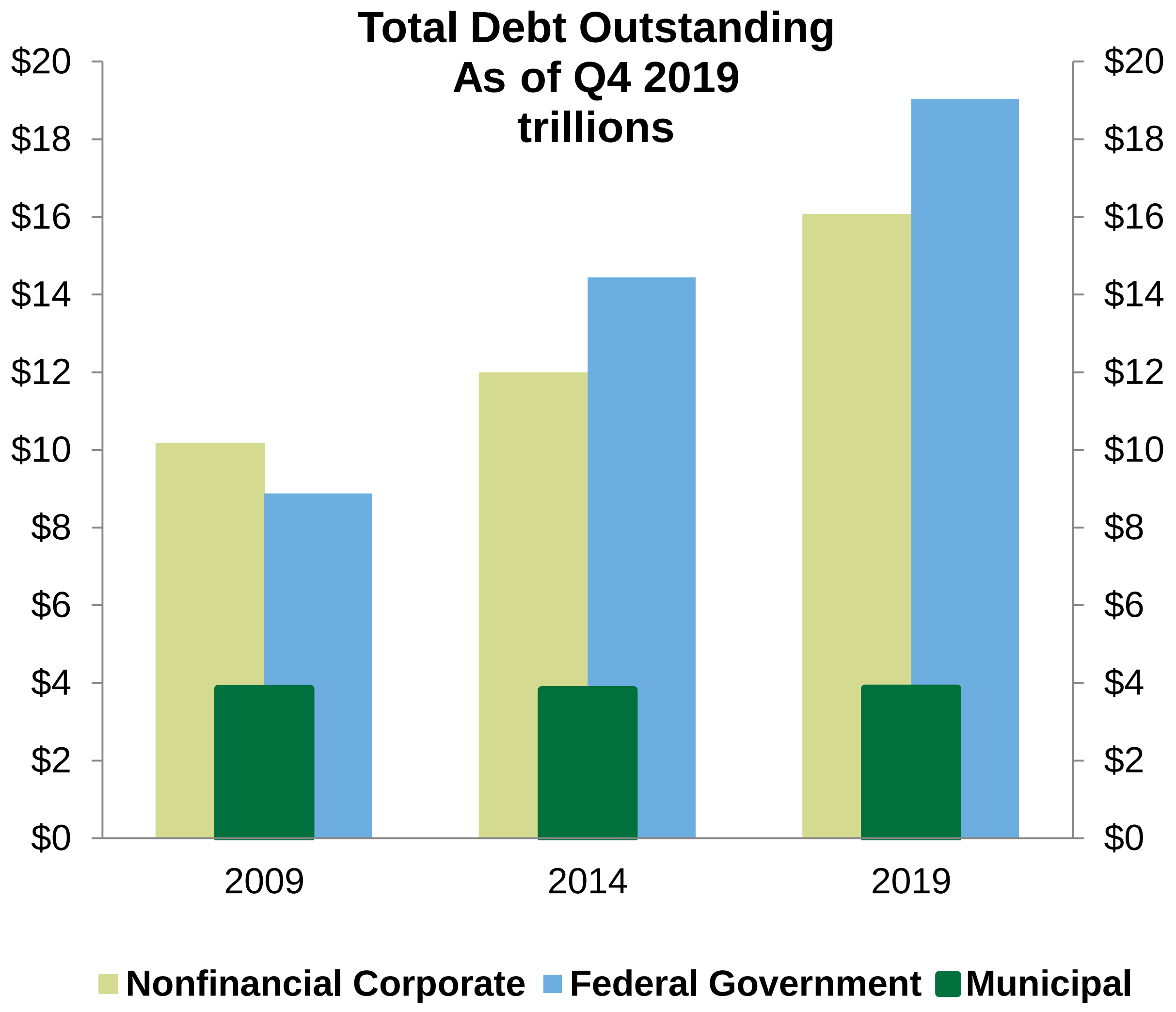
4. **CARES Act:** Includes a variety of spending & other provisions that impact muni credit including aid to State & locals ($150B) , Airports ($10B Airport authorities), Hospitals ($120B), Mass Transit ($25B), Higher Ed (modest). Primarily to cover Covid related expenses
5. **Municipal Liquidity Facility (MLF):** Offers up to $500bn in lending to states and municipalities; the Treasury will provide $35bn of credit protection to the Federal Reserve for this facility using funds appropriated by the CARES Act. Fed revised terms on Apr 27 – Fed will now purchase up to $500 billion of short-term notes issued by U.S. states (including the District of Columbia), US counties with a population of at least 500,000 residents (down from 2 million), and US cities with a population of at least 250,000 residents (down from 1 million). Allows participation in the facility by certain multistate entities. Maturity restriction has been raised to no later than 36 months from the date of issuance— vs. previously announced 24-month maximum term. Eligible issuers must have had an IG rating as of April 8, 2020, from at least two rating agencies. The termination date for the facility has been extended to Dec 31, 2020 from Sept 30. The Fed is also considering expanding the MLF to allow a limited number of governmental entities that issue revenue bonds (backed by their own revenue) to participate directly in the MLF as eligible issuers. While the Fed's tweak to the MLF is very positive for munis, it comes with a caveat buried in the FAQs: "Each Eligible Issuer must also provide a written certification that it is unable to secure adequate credit accommodations from other banking institutions and that it is not insolvent."

Net Result – Improved liquidity especially in money markets – SIFMA index goes from 5.20% on Mar 18 to 0.22% Apr 29. Overall liquidity has improved, new issue market has reopened but the market feels fragile overall. Reasons are multitude and include the economic damage to state and local municipalities is massive, conflicting signals are coming out of Washington regarding additional help to municipalities in a Phase 4 stimulus bill – so far money provided has only been for covid-related expenses and not an offset for lost revenues, some concerns surrounding the viability of the Municipal Liquidity Facility and finally, the tax-exempt pipeline is slowly growing and is putting some pressure on the secondary market, while fund flows bear monitoring

Municipal Sector Leverage

The municipal sector as a whole is not highly leveraged

- **Corporate debt has increased more than 50% since 2008 and federal debt has more than doubled**
- **Municipal debt outstanding has remained unchanged**
- **One conclusion to be drawn is that state and local governments are the only group to have deleveraged as their tax revenue has grown over the period**



Source: Federal Reserve Board, FCM

State government impact

Impact to state governments depends on stress scenario modeled

- **Statewide revenue figures lag by approximately one month**
- **Many assumptions are required to gauge impact of the lockdowns, and will vary greatly by state**
- **The severity of the impacts thus depends on the modeled assumptions as well as the state**

Baseline Scenario - Moderate Stress

» **Deep recession in first half of 2020 followed by modest rebound. Travel and business restrictions in effect through late second quarter.**

» **Peak jobless rate of 13% in Q2 2020. Peak-to-trough real GDP decline of 10%.**

Severe Stress Scenario

» **Travel and business restrictions last into the third quarter, delaying recovery and causing more long-term disruptions.**

» **Peak jobless rate of 17%. Peak-to-trough real GDP decline of 14%.**

Source: Bloomberg Finance LLP, Moody's, FCM as of 04/14/2020

Revenue Impact by State

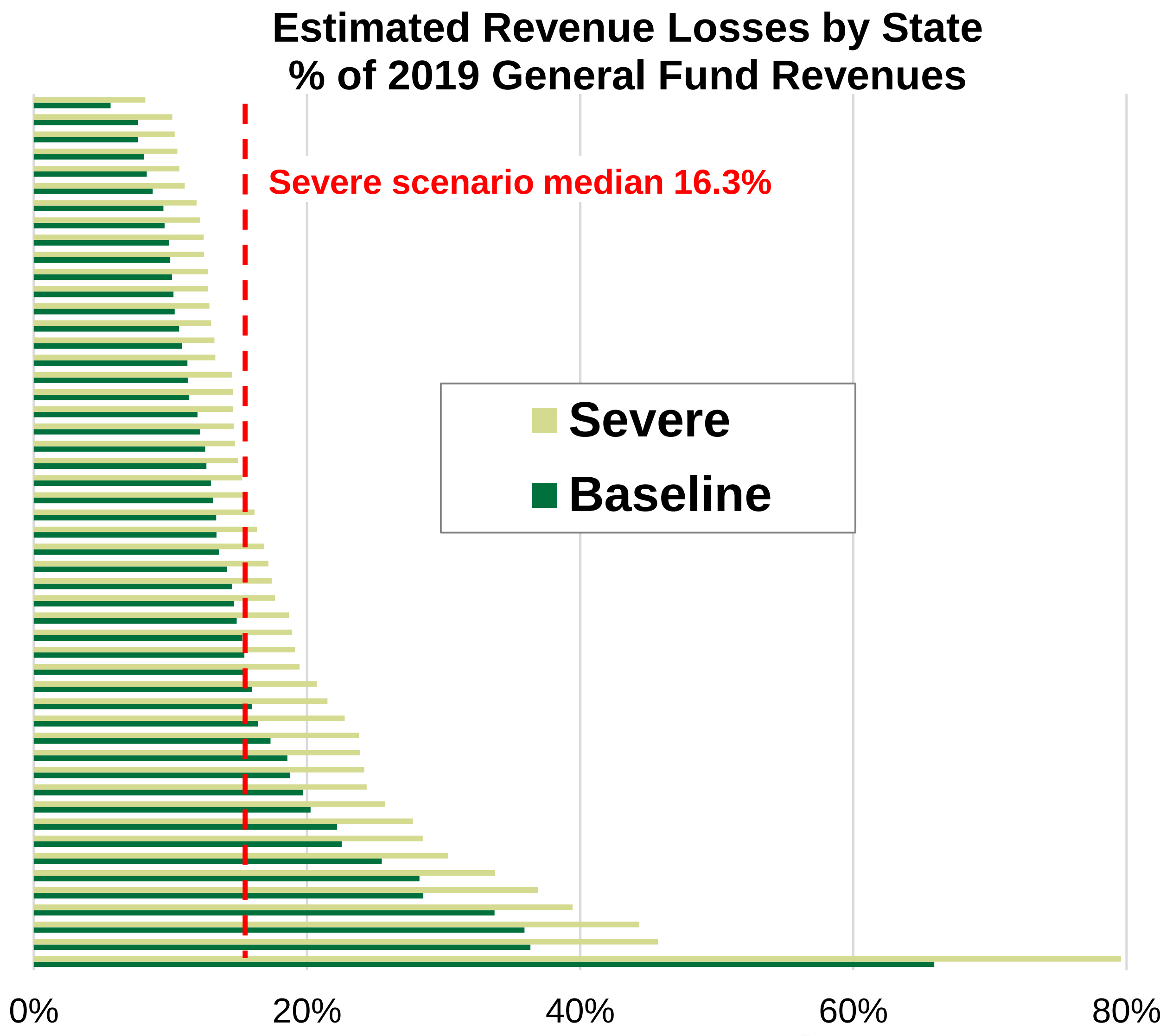
Revenue loss impacts vary widely by state

Largest impacts under severe scenario:

- Alaska – 80%
- Louisiana – 46%
- North Dakota – 44%
- West Virginia – 39%
- Wyoming – 37%
- New Jersey – 35%

Smallest impacts:

- Pennsylvania – 8%
- Maryland – 10%
- Massachusetts – 11%
- Alabama – 11%
- Arkansas – 12%
- South Dakota – 12%



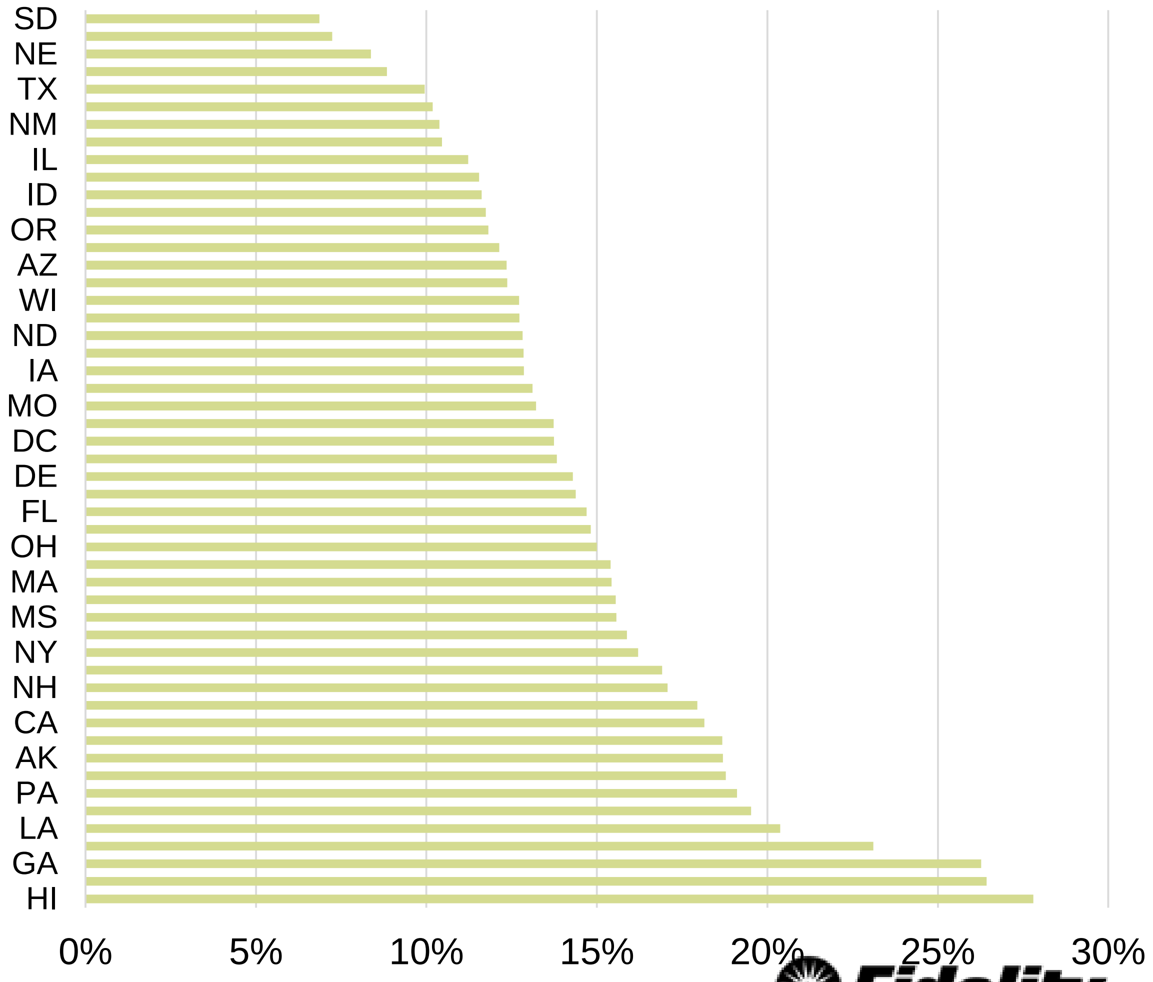
Source: Bloomberg Finance LLP, Moody's, FCM as of 04/14/2020

Unemployment Claims

Claims for unemployment insurance have surged

- The shear number of new claims belies the fact that weekly peak has already passed
- Most of the job losses have been in lower wage service sectors like hospitality
- While most states have large reserves, borrowing capacity, and ability to cut spending and increase taxes, the magnitude of the fiscal shock means a sizable shortfall remains even after promised federal aid is taken into account

% of Labor Force Filed for Unemployment by State
Sum of 5 Weekly Initial Claims Releases Around April Peak Divided by Labor Force



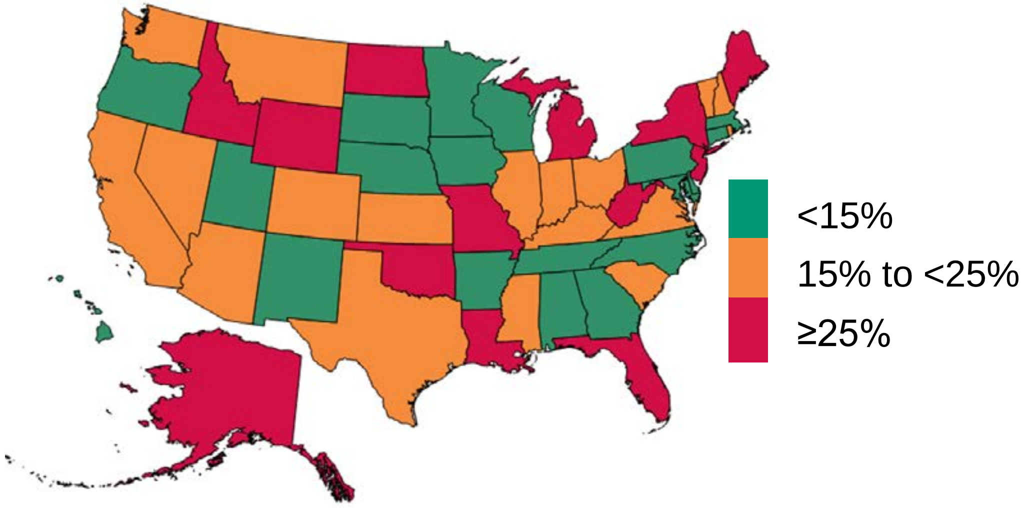
Source: Bloomberg Finance LLP, FCM as of 04/24/2020

Effects of Unemployment

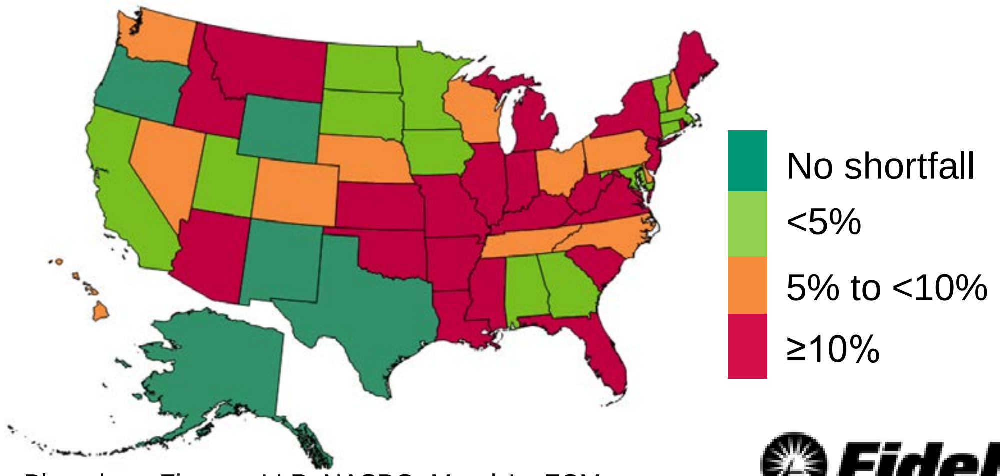
Unemployment drives Medicaid higher, compounding revenue losses

- **5 states have the reserves they need to absorb baseline levels of projected economic stress**
- **12 states have most of the reserves they need to absorb the baseline scenario**
- **An unprecedented 21 states would see budget gaps of 10% or more even after using reserves**

Baseline Fiscal Shock, % of General Fund



Baseline Shock Net of Reserves, % of General Fund



Source: Bloomberg Finance LLP, NASBO, Moody's, FCM as of 04/14/2020

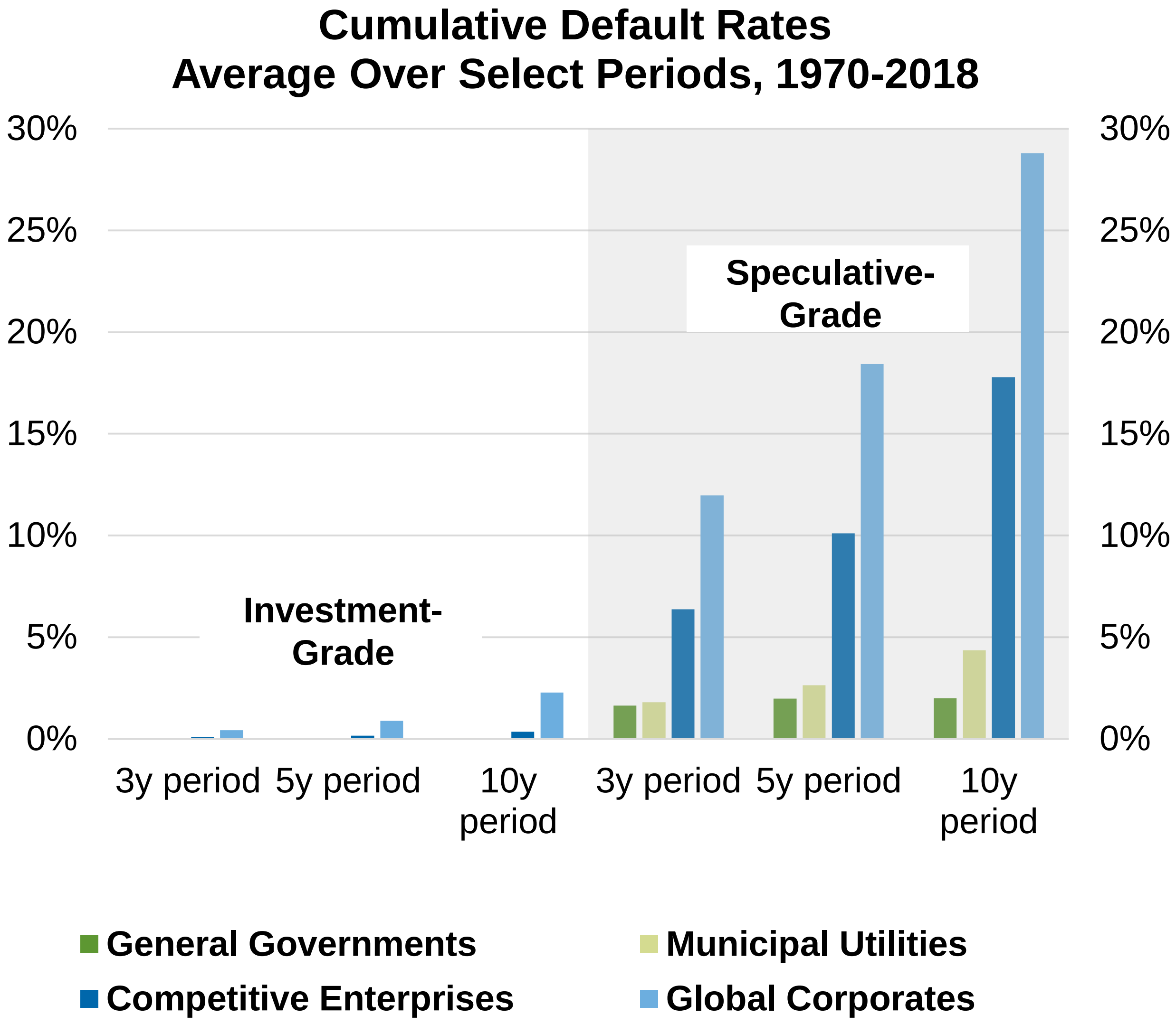
Municipal Default Rates

Municipal default rates among investment-grade issuers have been extremely rare

- Competitive enterprises such as housing projects and health service providers represent 67% of all defaults since 1970

- Cumulative 10-year average default rate since 1970 for investment-grade general governments is 0.05% and average just 0.01% over rolling 3-year periods

- Governments have advantage of delinked revenues and expenditures, and because they may not primarily be driven by financial and economic considerations, are able to "kick the can down the road" and forestall a point of crisis

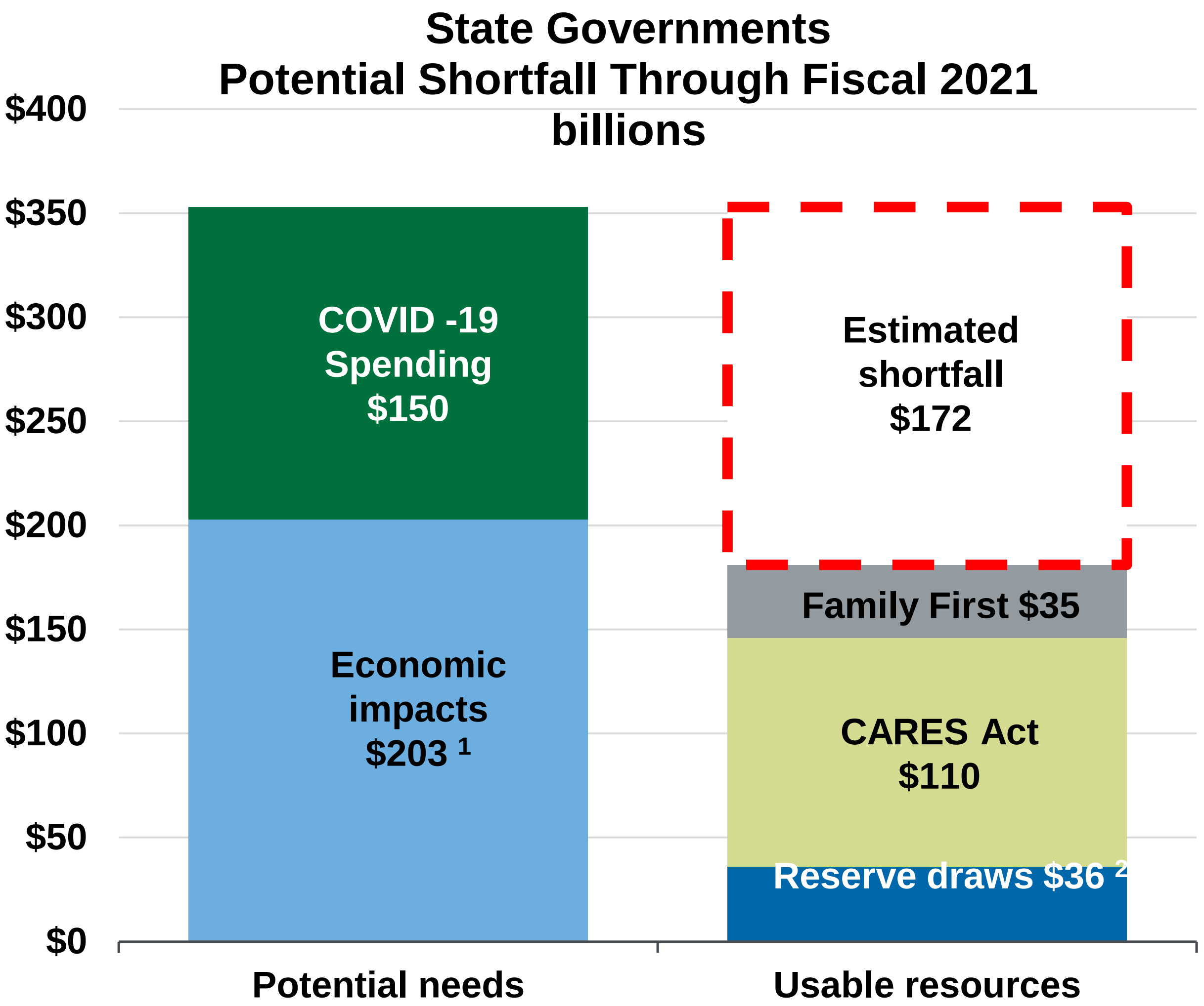


Source: Moody's, FCM

State Reserves

Even the best prepared states could eventually struggle

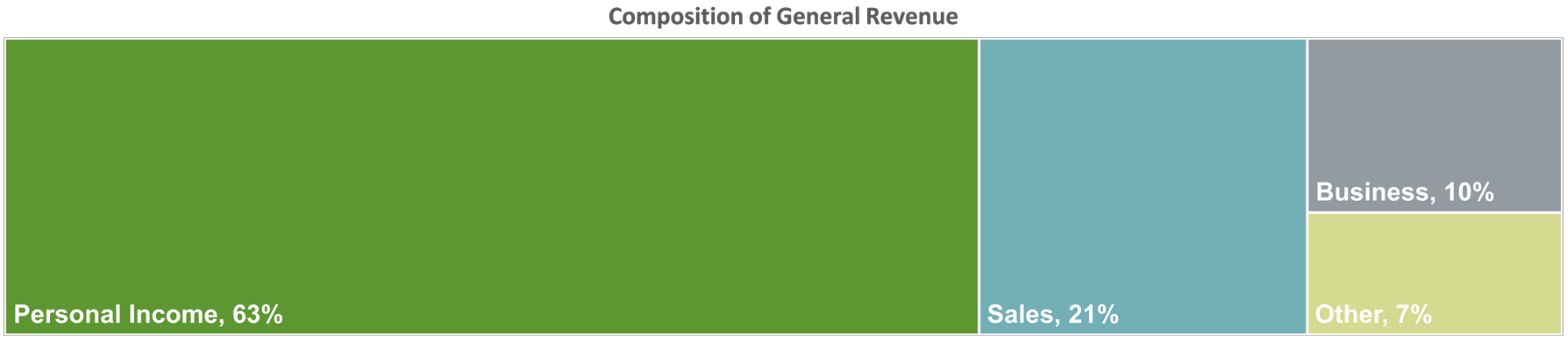
- Assumes states will initially draw on roughly half of their overall reserves
- Total need for additional federal aid comes to nearly $200 billion through FY21, and a further $100 billion+ through FY22
- Shortfalls of this magnitude will lead to layoffs and increase the likelihood of local government defaults

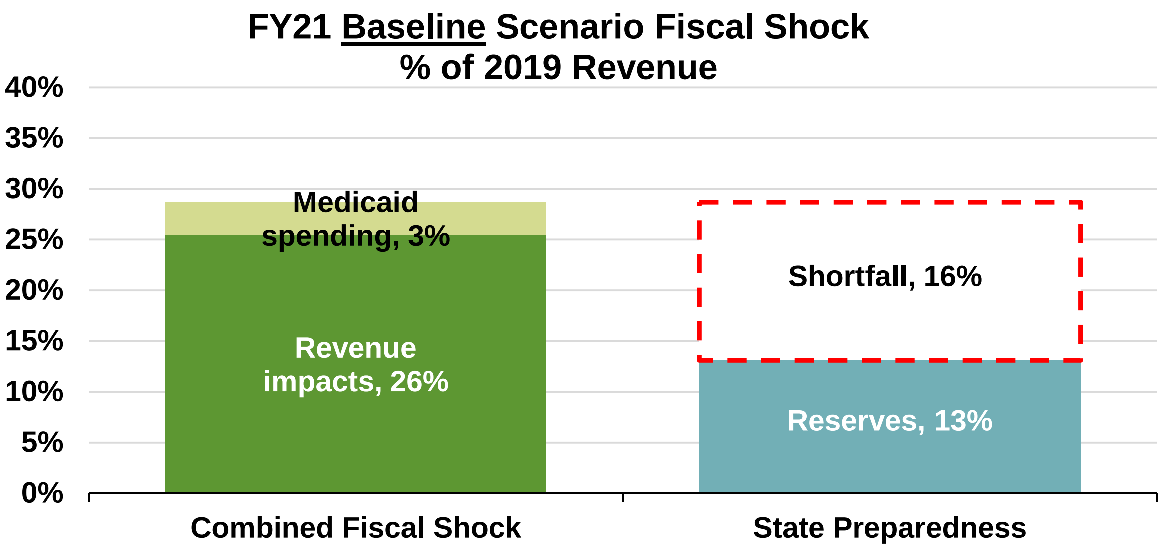


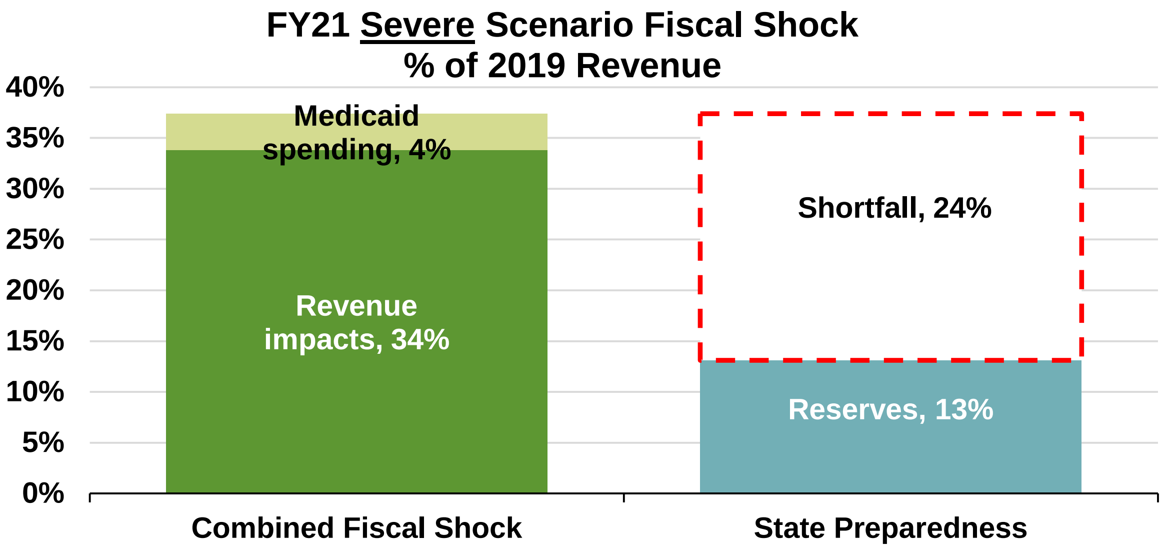
Source: Bloomberg Finance LLP, Moody's, FCM as of 04/14/2020

1) Impacts through FY21. Impacts through FY22 could be at least another $100 billion
2) Assumes states will initially only draw on approximately half of their reserves

State of New York

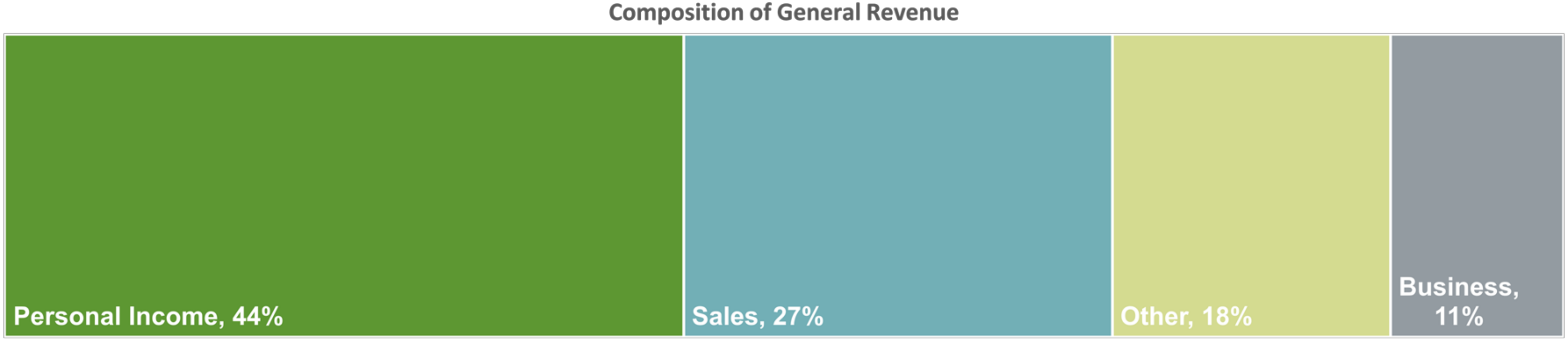


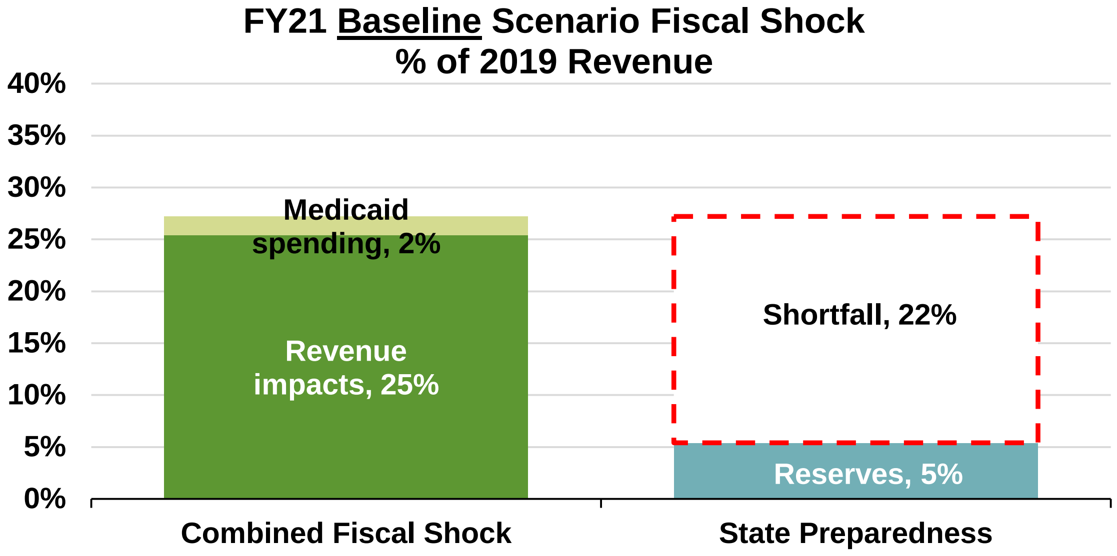


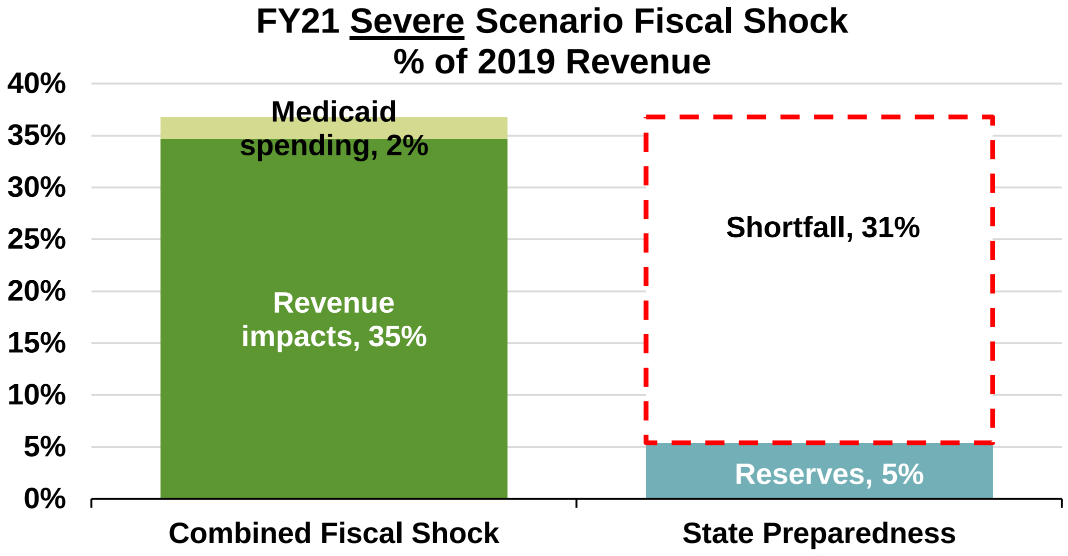


Source: Moody's, FCM as of 04/14/2020

State of New Jersey





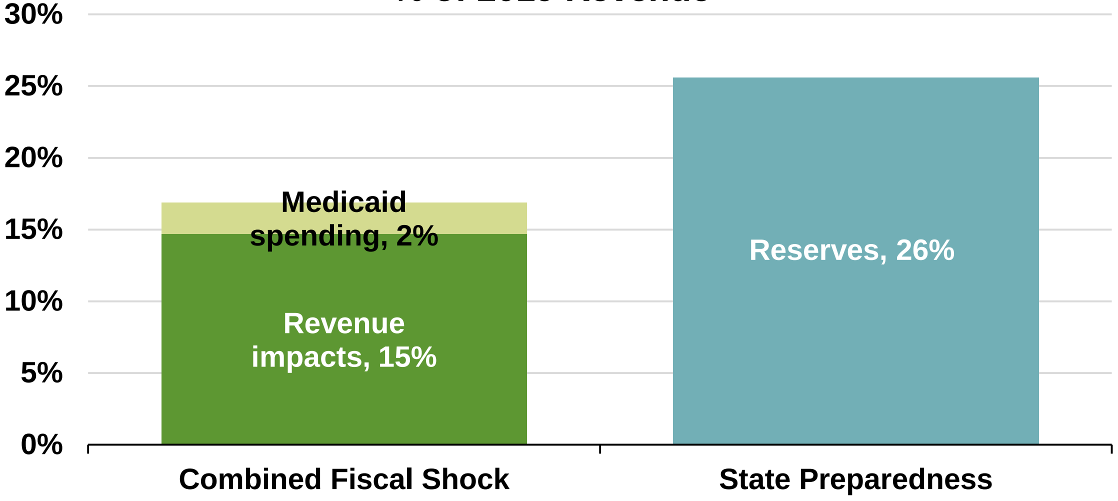


Source: Moody's, FCM as of 04/14/2020

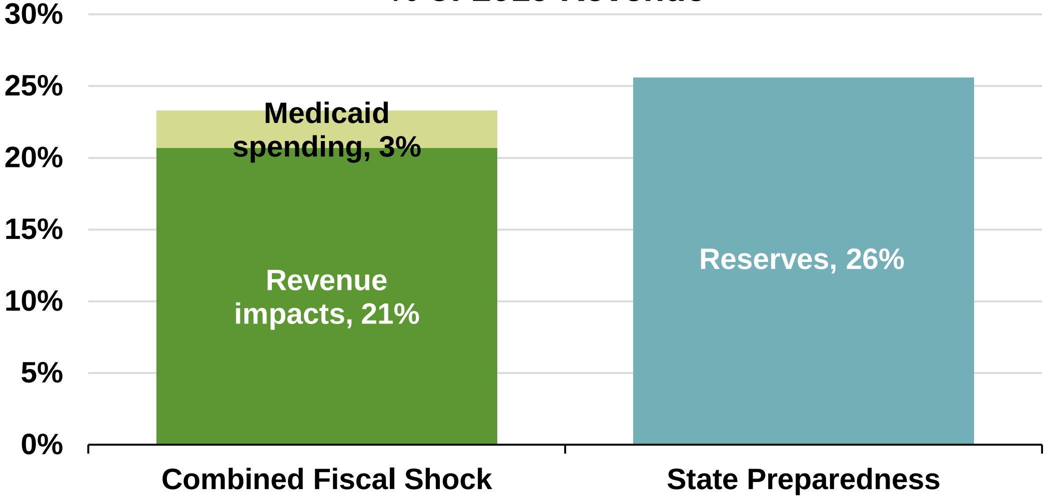
State of Texas

Composition of General Revenue

FY21 Baseline Scenario Fiscal Shock
% of 2019 Revenue



FY21 Severe Scenario Fiscal Shock
% of 2019 Revenue



Source: Moody's, FCM as of 04/14/2020

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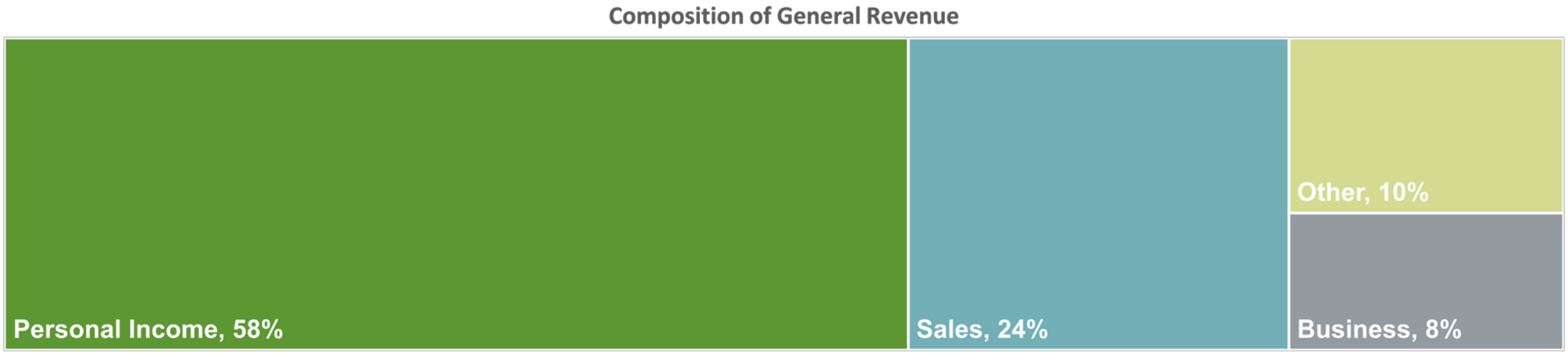
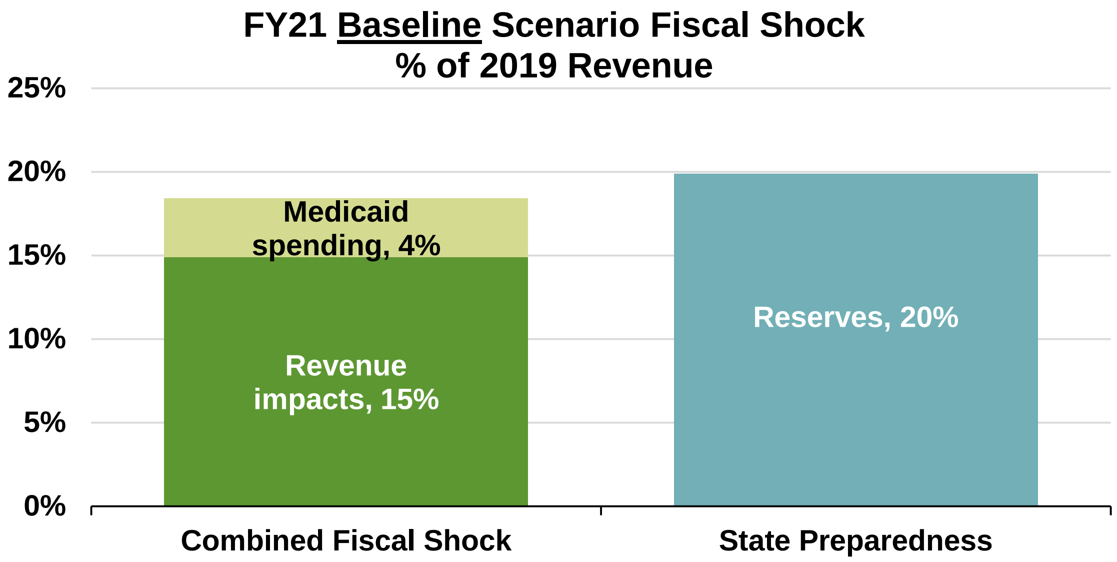
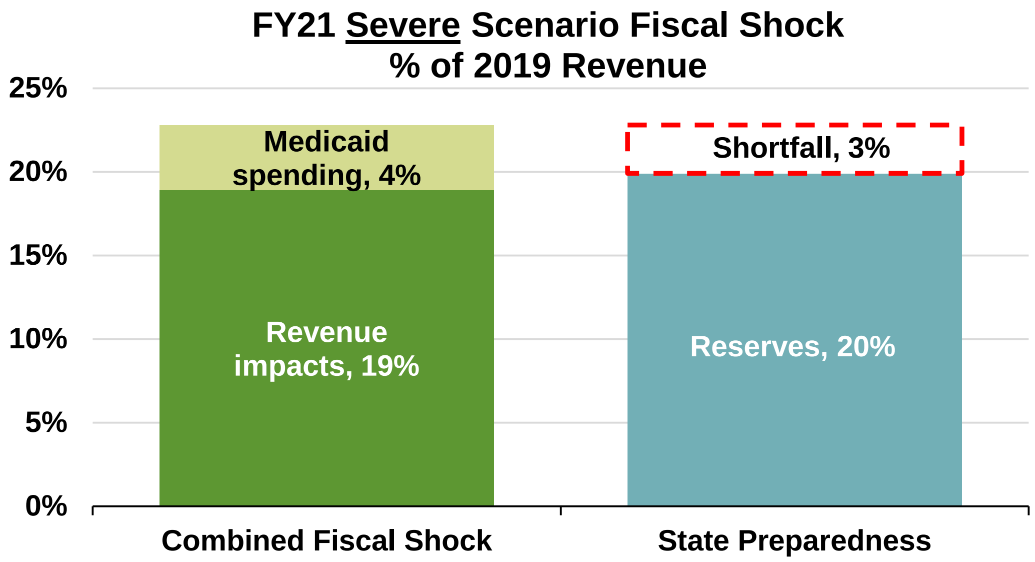
State of California



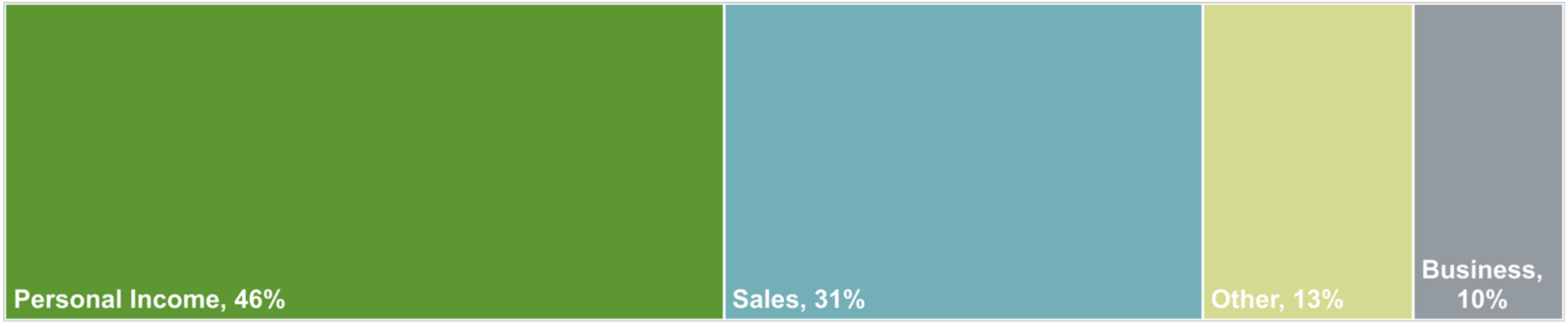




Source: Moody's, FCM as of 04/14/2020

State of Illinois

Composition of General Revenue



FY21 Baseline Scenario Fiscal Shock
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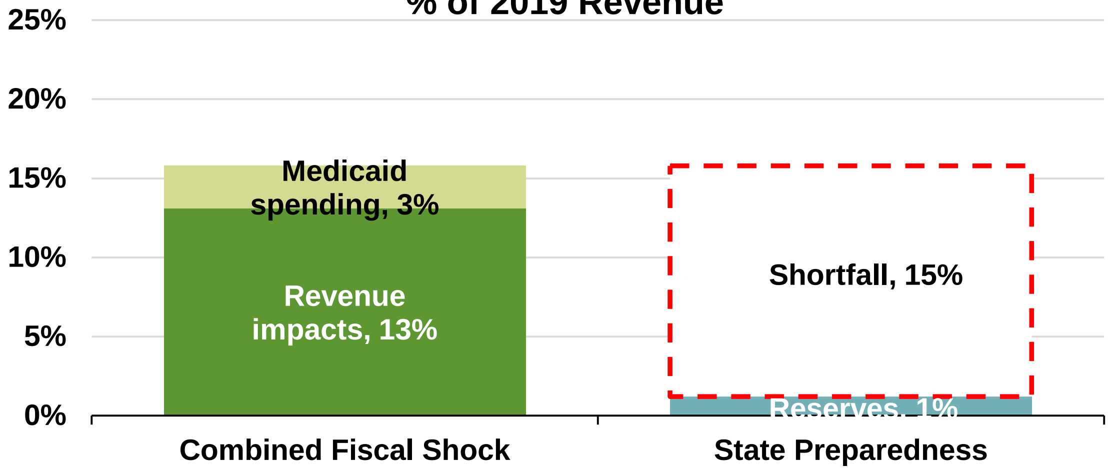

FY21 Severe Scenario Fiscal Shock
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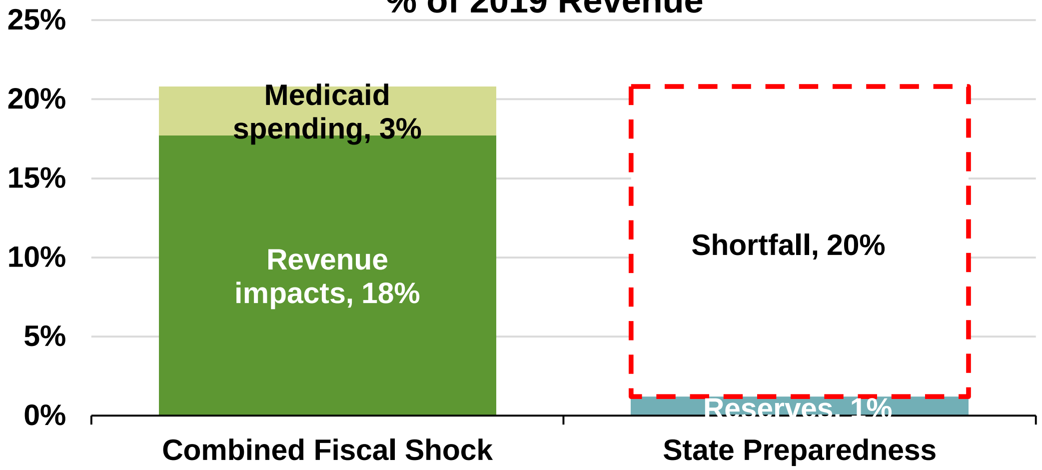

Source: Moody's, FCM as of 04/14/2020

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