NORTHERN TRUST
ASSET MANAGEMENT

2021 MUNICIPAL CREDIT OUTLOOK

PANDEMIC HIGHLIGHTS RESILIENCY DESPITE CHALLENGES FACING ALL MUNICIPAL SECTORS

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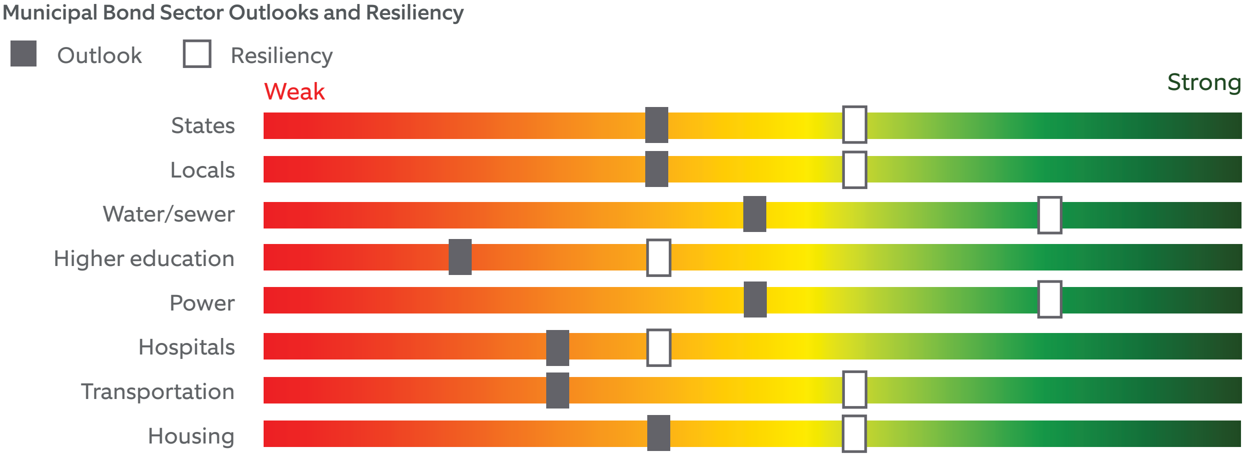
Most of our sector outlooks have shifted negative for the next 12 to 18 months due to the COVID-19 pandemic's effect on economic activity. Despite this near-term outlook, the municipal market's long-term strength continues. The vast majority of municipal issuers have used the past decade's economic expansion to position for volatility by growing reserves and deleveraging. Revenue diversity, manageable fixed costs and budget flexibility remain hallmarks of municipals' resiliency. That resiliency is now being tested, but most sectors and credits are holding up as expected.

We project U.S. growth to average 2.1% annually over the next five years, as we think economic growth will slow after an early bounce back from U.S. government stimulus. The municipal market will be affected by the pace of job recovery as employment trends will drive income and sales tax revenue. Home values, which affect property taxes, initially held up well through 2020 but will be influenced by local growth trends and the direction of interest rates in 2021.

EXHIBIT 1: DESPITE SHIFT TO NEGATIVE OUTLOOKS, MOST SECTORS REMAIN RESILIENT

Municipal bond sectors face varying outlooks and differing degrees of resiliency. The pandemic has ratcheted up pre-existing higher education risks while water/sewer and power are best-positioned entering 2021 due to the essential nature of services.

Municipal Bond Sector Outlooks and Resiliency



Source: Northern Trust Asset Management as of January 2021

STATES: RESILIENT REVENUE, TOURISM STATES STRUGGLE

Revenue weakness will continue to stress states, driving our negative outlook for the next 12 to 18 months. We expect volatility through the winter but believe most states will end fiscal 2021 with revenues within 5% of fiscal 2019 — a much stronger outcome than expected as of July 2020. Tourism-dependent states will underperform. More stable employment for higher income earners, on-line spending, federal stimulus, and 2020's strong stock market performance should support revenue collection in 2021.

States will fill budget gaps with expense cuts, utilization of historically high reserves, debt restructuring and anticipated federal stimulus. Most states will maintain adequate reserves into 2022, absent a large pullback in economic activity. Without direct state and local aid, some states may need to make more cuts to key expense categories, including education, transportation and Medicaid. Federal aid would help public employment and tax revenue to recover more quickly but is not required to maintain state solvency.

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We expect expense pressure on local governments. Transportation and tourism agencies are likely to require additional support and may seek state aid to fix more significant budget gaps due to weakness in hospitality tax collections and public transportation ridership. Local governments hit harder by the pandemic, mostly those dependent on tourism, may look to share in state-level stimulus or revenue outperformance.

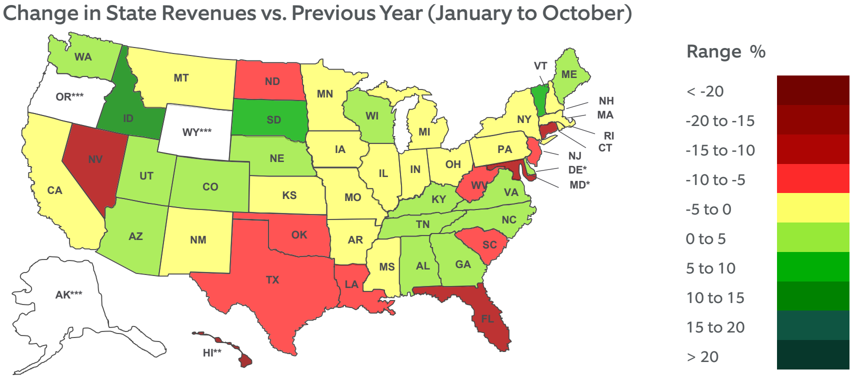
The most vulnerable states remain Illinois and New Jersey, where the pandemic highlighted existing budget issues. Hawaii's and Nevada's budgets have been hit hard, given their dependence on visitors. Alaska, Louisiana and Oklahoma will suffer from falling oil prices and energy sector volatility. Despite these stresses, we do not expect any states will fail to make principal and interest payments. Pensions remain a concern. Future stock market corrections/underperformance will raise pension costs and pressure states' ability to maintain funding.

Resiliency Tested: The pandemic will test states' abilities to manage its lingering effects. Sales and income taxes have proven resilient and states, at the median, are well prepared with reserves, budget flexibility, manageable fixed costs, moderate debt loads and sound governance structures. Long-term resiliency remains sound.

EXHIBIT 2: 2020 STATE REVENUE DOWN LESS THAN 2% COMPARED TO 2019

Despite dire projections for 2020, state revenue only fell by an average of 1.8%. Most states were in the range of +/-5% with tourism dependent states hit harder.

Change in State Revenues vs. Previous Year (January to October)



* Monthly tax receipts from Jan to Sept
** Hawaii reflects Jan to Jun (does not reflect deferred 'April tax collections')
*** Monthly cash not reported
Source: Northern Trust Asset Management, individual state monthly tax reports, from January 2020 to October 2020 except for Delaware and Maryland as of September 2020 and Hawaii as of June 2020. Data for Arkansas, Oregon and Wyoming are not available.

LOCAL GOVERNMENTS: NEGATIVE OUTLOOK BUT STRONG RESERVES AND STABLE PROPERTY TAXES SUPPORT RESILIENCY

The negative outlook reflects budget pressures. Property tax collection (30% to 70% of local revenue) will remain stable or increase in 2021, helping to stabilize budgets, but pressure from sales tax and local fee/rate collection will strain budgets. Unlike states, many local governments do not collect sales taxes (typically 10% to 40% of local revenue) for online purchases. State aid for schools has fared better than earlier anticipated, with minimal cuts to most local schools. Challenged states have more susceptible schools. Ultimately, we expect school budgets to rise or fall in the range of 2%. City and county budgets will vary more widely based on geography and tourism dependence. We expect numbers from -15% to somewhere in positive territory. Historically high reserves and budget flexibility will provide support in the coming year.

Big cities like New York and San Francisco are more susceptible to pandemic effects. These challenges include lower populations as people move away, low hotel occupancy, falling rental prices and rising rental and commercial vacancy rates that are more than five times the pre-pandemic lows. Downtowns and restaurants/bars are highly susceptible to recurring shutdowns and occupancy limits. However, these two cities' revenues have been more resilient than anticipated in 2020. Both cities entered the pandemic with strong reserves (40% for San Francisco and 14% for New York) that will support essential spending. We expect real estate values to continue to fall in the coming months. But as a vaccine is distributed and people adjust to a new normal, those values should quickly find a floor and begin to rebound. For every person or company that reduces occupancy or leaves these economic centers, there are more ready to take their place at a more attractive price. Cities will face a few challenging years, but we expect long-term resiliency to remain. Cities that entered the pandemic with low resiliency, like Chicago, may not fare as well over the long term.

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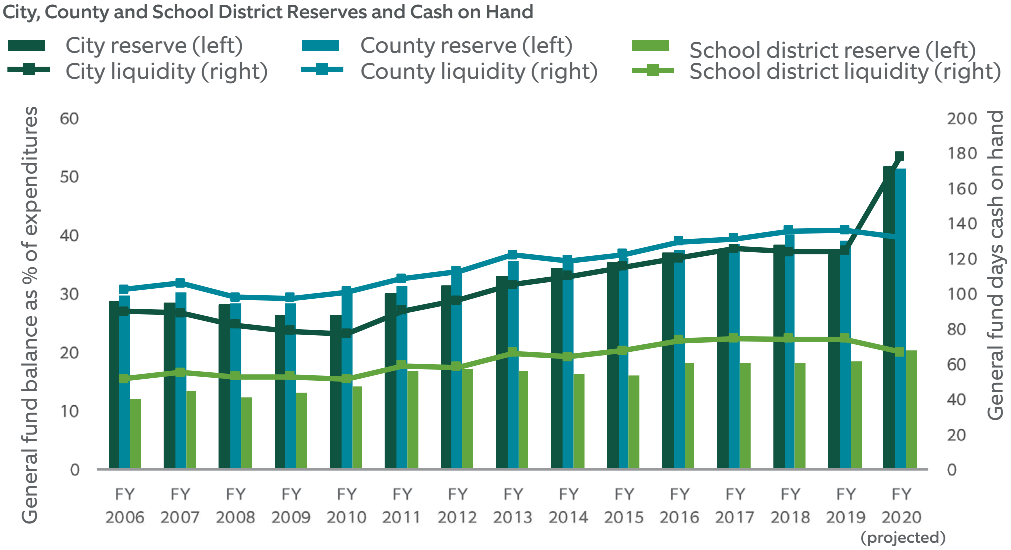
Resiliency Supported by Property Taxes and Reserves: General fund reserves are at record high levels as many locals were well positioned for the downturn. Also, low volatility in property tax, cities' largest revenue source, supports sector resiliency during the downturn.

EXHIBIT 3: LOCAL GOVERNMENT RESERVES AT HISTORICAL HIGHS

City and county governments' reserves have risen significantly since fiscal year 2006, hitting historical highs as of fiscal year 2020.

City, County and School District Reserves and Cash on Hand



Source: Merritt Research, as of December 2020

WATER AND SEWER: WELL-POSITIONED

Strong coverage and liquidity drive a stable outlook and help limit the pandemic's recessionary impact. During the last decade of economic growth, utilities gained from strong financial performance by implementing rate increases, strengthening liquidity and improving debt service coverage. Median liquidity has increased 75% in the last decade. Solid debt service coverage levels are expected to decline modestly, but remain healthy.

Many water and sewer utilities are experiencing slower receivable collections and a shift in demand from commercial to residential usage, driven by stay-at-home mandates and increased work from home. Utilities have waived late fees, stopped service shut-offs for nonpayment and have deferred planned rate hikes to 2021 and beyond, with limited revenue impact.

Droughts and wildfires continue to pose threats. Drought conditions pose a risk for western and southern states. West Coast states — particularly California and Oregon — had their most destructive wildfire season in 2020. Wildfires can lead to contaminated water, increased flooding, water shortages and infrastructure damage that force utilities to change treatment processes.

Resiliency is Strong: The sector's strong fundamentals are supported by their essential service role, monopolistic business nature, very high barriers to entry, low customer price sensitivity, strong liquidity, healthy coverage and independent rate-setting authority. These make the water and sewer sector among the best positioned in the municipal market to withstand pressures from COVID-19. However, growing infrastructure needs, persistent droughts and wildfires can add long-term risk.

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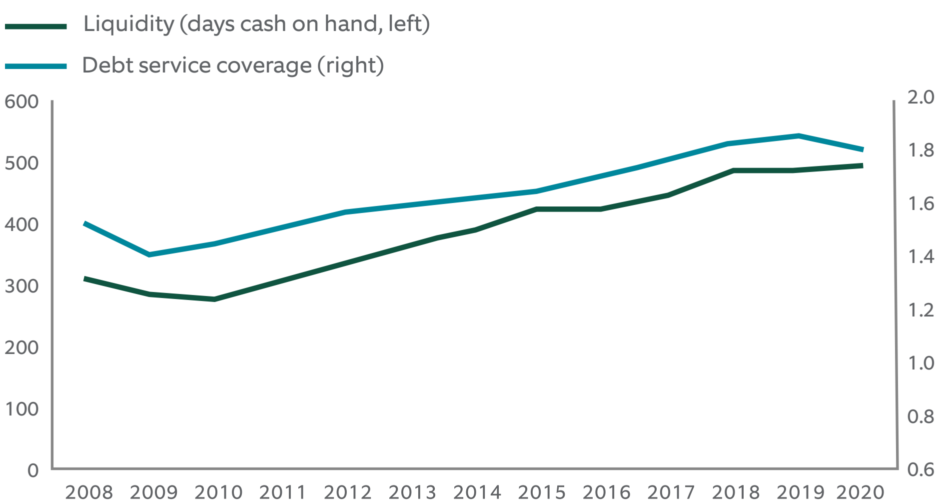
EXHIBIT 4: STRONG LIQUIDITY AND COVERAGE OFFSET COVID-19 STRESS

A decade of strong economic growth has strengthened the liquidity and debt service coverage of water and sewer utilities.

Water and Sewer Liquidity and Debt Coverage



Source: Merritt Research Services. Debt service coverage represents the ability to pay debt obligations, with a higher number representing more ability based on cash flow and debt, through 2020.

HIGHER EDUCATION: PANDEMIC INCREASES EXISTING PRESSURES

The higher education outlook has shifted more negative, due to the pandemic's impacts on enrollment and revenue potential.

Enrollment and net tuition revenue are declining. National Student Clearinghouse Research reports that freshman enrollment is down 16% nationally in fall 2020 — a 4% decline in overall enrollment. The decline is greater at community colleges (where technical training may be more challenging in an online format), followed by private colleges and universities, with public schools faring the best (-1%). Competition for a smaller freshman pool forces more tuition discounting, resulting in net tuition revenue declines that outpace the relative enrollment declines. Moody's annual enrollment survey found that nearly 75% of private and 60% of public nonprofit four-year higher education respondents expect declines in net tuition revenues for the year.

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Enrollment declines are driven by:

- COVID-19 pandemic
- Stagnation of high school graduation levels
- Increased scrutiny of affordability
- Accepted students deferring start dates to the spring or fall 2021 — reported at up to 20% at some schools
- Declining international enrollment due to travel restrictions, lack of visa options, tone on immigration and increased competition from high quality international education providers. After years of robust international growth, fall 2020 will be the third consecutive and most impactful decline yet. Fewer full-pay international students magnify revenue declines compared to more-discounted domestic students.

Auxiliary revenues (housing, sports, parking, etc.) will continue to decline. After many years of consistent auxiliary revenue growth, the 2020 fiscal year saw a nearly 17% median drop, largely due to housing refunds issued after the March closure of on-campus activities. Fiscal 2021 may see more than a 40% aggregate decline, with significant disparity tied to the status of on-campus activity.

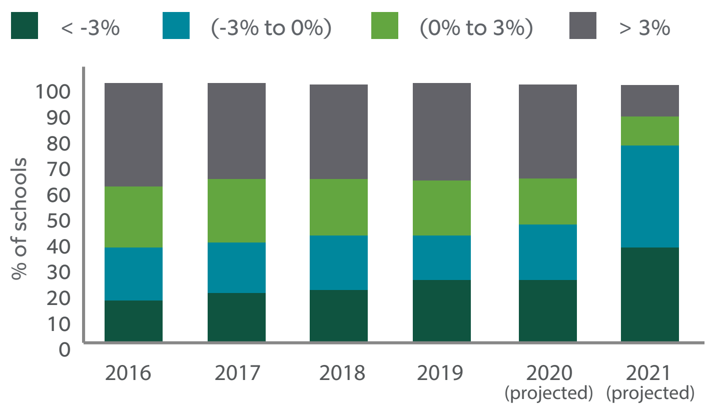
External support is mixed. State support for public schools is flat to down for the year. CARES funding, along with budget cuts, supported operational balance for many in fiscal 2020, but is insufficient to support projected revenue losses in 2021 and beyond. The nature and level of any additional stimulus will be impactful.

Resiliency Varies Significantly: State flagships and wealthy, nationally recognized private schools are bolstered by sticky demand, large endowments, strong liquidity, and expectations for quick revenue rebounds in the future. Smaller public and private schools with modest regional demand are vulnerable to more significant enrollment declines, low liquidity and pressure from existing trends that will continue after the pandemic. There is an elevated risk of closure for the lowest-tier colleges and universities.

EXHIBIT 5: TUITION DECLINES WILL PRESSURE HIGHER EDUCATION

Net tuition revenue, which was already stagnant at the median, is projected to fall significantly in fiscal year 2021 as competition for a smaller pool of students spurs greater tuition discounting.

Net Tuition Growth/Decline for Private Higher Education



Source: Northern Trust Asset Management, Merritt Research Services , Moody's Investors Service , data as of December 2020

POWER: RESILIENT DESPITE LINGERING FINANCIAL CHALLENGES

Public power has proven resilient in the face of the pandemic and related economic challenges. The sector faced additional cost and revenue stresses in 2020 with increased natural disaster activity. The revenue impacts have been gradual and modest, but are likely to linger. Lower purchased power/fuel costs have provided a modest offset to lower revenues for some.

Increased residential demand will partly offset reduced commercial customer demand, but the reduced usage will pressure liquidity levels. A staggered return-to-work schedule may benefit the sector as residential demand remains elevated and business usage ramps up.

Improved reserves and coverage levels heading into the pandemic will be tested due to the lower overall demand and increased bad debt expense. A prolonged work-from-home environment and continued business closures may weigh on economic activity, further pressuring revenue generation, liquidity levels and debt service coverage levels. Those with higher commercial account revenue in more restrictive states are likely to face a greater impact.

Consumer affordability may suffer with a prolonged economic recovery. Many automatic inflation-adjusted rate increases have a floor, thus ensuring a modest increase in power rates. Rate increases could be pared back or delayed, as rate increases face more scrutiny due to their economic impact on consumers.

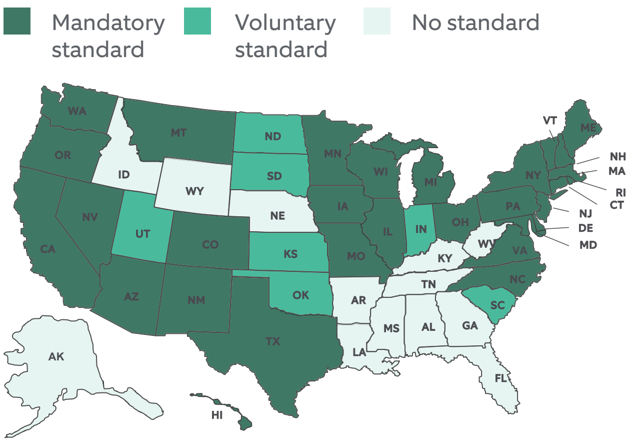
A focus on renewables will continue. Electricity providers across the country will continue to move toward generating power from renewable sources. Thirty states and the District of Columbia have adopted mandatory renewable standards, while seven states have voluntary renewables goals. These state mandates, consumer demand and aging coal plants are driving the shift, despite relaxed federal standards. A political shift in Washington could renew efforts to enact new carbon-free initiatives.

Resiliency is Strong: The essential nature of power, monopolistic characteristics in designated service areas and dependable cash flow provide stability to the sector.

EXHIBIT 6: RENEWABLE ENERGY STANDARDS WILL CONTINUE TO GROW

Thirty-seven states and the District of Columbia have adopted mandatory or voluntary standards for the use of renewable energy.

States with Mandatory or Voluntary Renewable Energy Standards



Source: National Conference of State Legislatures as of November 2020

HOSPITALS: FALLING MARGINS, REGULATORY RISKS

Our negative outlook is driven by expected margin compression in 2021, with hospital revenue declines combining with higher expenses for personal protective equipment and staff shortages. The effect on top-line revenue from the pandemic-induced halt in profitable elective procedures was significant. While volumes have recovered faster than anticipated, a resurgence in cases may cause another pullback in 2021. The continued shift to the outpatient setting, which reimburses at lower rates than inpatient, will also lower revenue.

The payer mix will weaken in 2021. Higher unemployment will make people lose commercial insurance, which reimburses at a higher rate than government payers. Slight shifts in payer mix from commercial to governmental or uninsured in 2021 will pressure margins.

Federal support helped stabilize hospitals in 2020, but additional support is uncertain and temporary liquidity will need to be paid back. The government response through stimulus funding helped offset revenue losses. While there is potential for additional stimulus, the timing and amount is uncertain. Liquidity was initially supported by hospitals pulling forward future payments of Medicare and external lines of credit. This boost in liquidity is temporary, as Medicare advances and lines of credit will need to be repaid in 2021.

A divided government would remove some uncertainty for large changes to healthcare in 2021. This is a positive. Yet, policy risks are heightened with the new makeup of the U.S. Supreme Court, which will rule on a case that challenges the constitutionality of the Affordable Care Act. There is a wide range of outcomes that will create uncertainty throughout 2021.

Healthcare mergers and acquisitions had been slowing before COVID-19 and essentially paused thereafter. However, we anticipate that activity will pick up into 2021, as struggling hospitals will seek new partners out of distress, while larger systems will evaluate new opportunities to increase their market essentiality.

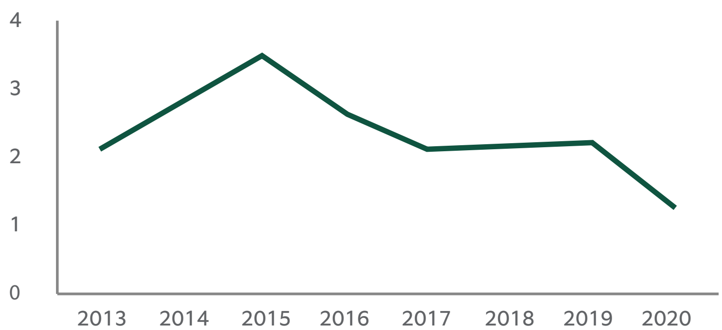
Resiliency Relies on Federal Payers: Hospitals are subject to a downturn in the economy, as increased unemployment would lead to less commercial insurance and more uninsured or Medicaid patients. When the economy slows, unpaid hospital bills rise and people may put off elective procedures. Reliance on federal and state Medicaid funding, which may decline in a downturn, leaves hospitals exposed to policy shifts.

We expect the gradual recovery to continue in 2021 with likely interruptions due to varying travel restrictions across the country.

EXHIBIT 7: HOSPITAL MARGINS CONTINUE TO TREND LOWER

Hospitals' margins have been trending lower since 2015. They fell even more during 2020, as lockdowns spurred a decline in elective procedures. In 2021, they may also be hurt by any resurgence in COVID-19 cases and shifts in payer mix.

Hospital Operating Margins %



Source: Merritt Research Services, data as of December 2020

TRANSPORTATION: NEGATIVE OUTLOOK, BUT RESILIENT

Airports

The pandemic's impact on passenger traffic was both immediate and severe. Most airports saw early declines of 95%, with a near halt to international traffic. By October, domestic travel recovered to approximately 40% to 50% of 2019 levels. The recovery has been led by leisure travel, given the absence of business travel. We expect the gradual recovery to continue in 2021 with likely interruptions due to varying travel restrictions across the country. Cheaper airfares are likely to persist, as airlines attempt to lure potential travelers.

Financials will be challenged, but healthy reserves heading into the pandemic should provide support as traffic levels recover. Liquidity was aided by a $10 billion allocation from the CARES Act. It was commonly used to support operations along with current and future debt service. The sector generally benefits from cost recovery terms in airline contracts that have provided support in light of the reduced traffic volumes.

Large hubs are expected to outperform in 2021 due to airlines consolidating operations. Those with sizable connecting activity have performed better early in the recovery.

Toll Roads

Pandemic-driven restrictions, increased work from home and remote learning led to significant passenger vehicle transaction declines on toll roads. April declines averaged 60%. Commercial traffic fared much better, with increased demand from home delivery and online shopping. Toll roads experienced a more rapid recovery, as states reopened and travelers chose driving due to safety concerns and restrictions on flying. We expect transaction volumes to continue to recover in 2021, especially during the second half of the year, as more restrictions are lifted and travel increases. Toll roads have benefited from a reduction in public transit use, carpooling and ridesharing services. We expect this to continue, as it will take time for the consumer to regain comfort in using these services.

Fuel Tax

Revenues are mixed — hurt by people working from home, but benefiting from lower car pool traffic and driving versus public transportation.

Public Transportation

Revenue has been hit hard. Many public transportation bonds are supported by sales tax, currently a more resilient revenue stream than ridership. Public transportation recovery will follow the path of the vaccine and work-from-home mandates.

Resiliency is Solid: The resiliency of these essential sectors is supported near term by strong liquidity and federal aid. Over the long term, consumers' desire to travel is evidenced by leisure travel leading the 2020 enplanement recovery and by the recovery of vehicle miles driven. Airports with a higher concentration of international traffic will be slower to recover.

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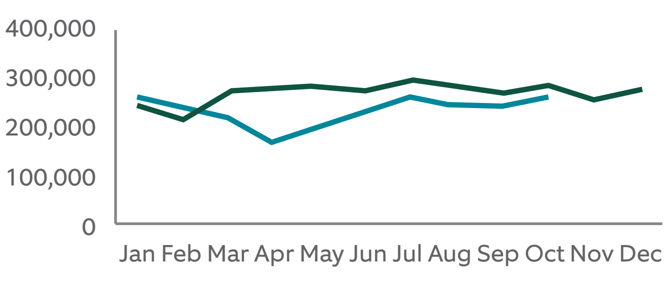
EXHIBIT 8: TRAVEL TRENDS DURING THE PANDEMIC — A COMPARISON

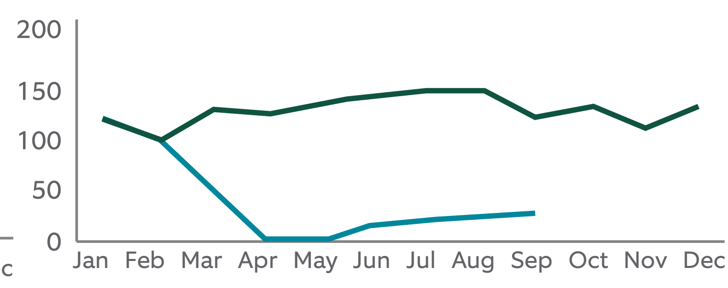
Toll road and air travel both slowed dramatically at the onset of the pandemic. Driving activity recovered faster and was aided by commercial traffic from increased online shopping and home delivery. Air travel is still only 40-50% of 2019 by October.

2019 2020

Fast Recovery - Vehicle Miles Traveled (millions)



Slow Recovery - Airline Revenue Passenger Miles (millions)



Sources: Federal Highway Administration, Department of Transportation, vehicle miles are seasonally adjusted , vehicle data as of October 2020 and airline data as of September 2020

HOUSING: FINANCIAL CUSHION AGAINST PANDEMIC

A moderately negative outlook is driven by expected margin compression. Near-zero interest rates will lower investment earnings. This, along with rising forbearance requests and eviction moratoriums, should lower margins. Tighter spreads between tax-exempt bonds rates and mortgage loan rates limit the benefit from new bond-financed housing finance agency (HFA) loans. As loan refinancing becomes increasingly attractive, elevated prepayments force agencies to reinvest assets at lower interest rates. Without ample loan demand, agencies have moved toward debt retirement or refinancing existing debt at lower rates.

Overcollateralization (asset-to-debt ratio) is likely to decline modestly as a result of reduced interest income, reduced bond issuance or higher retirement of debt.

High demand for affordable housing would support HFA loan origination, but lack of supply will continue to limit activity. There is a high demand for affordable housing units across the country. However, high construction costs, increasing home prices and lagging wage growth are contributing to lack of supply, which has tempered loan origination and HFA margins.

The addition of mortgage-backed securities (MBS) to balance sheets will continue, reducing exposure to loan losses.

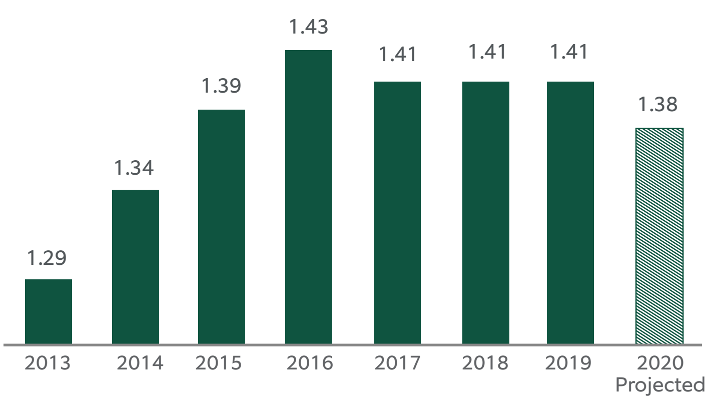
Resiliency Remains Adequate: HFA programs entered the recession with significantly more equity than during the Great Recession. Most HFAs can weather the negative cash flow impact because of this strong financial position. Additionally, HFAs have strengthened their loan portfolios by adding MBS and government insurance, which can withstand considerable housing market volatility. Also, agencies' significant liquidity position (median: 39% of bonds outstanding) positions the sector to withstand the downturn.

A moderately negative outlook is driven by expected margin compression. Near-zero interest rates will lower investment earnings.

EXHIBIT 9: ASSET-TO-DEBT RATIOS REMAIN SOLID

Asset-to-debt ratios are strong, but are expected to continue to decline as low loan demand spurs agencies to retire or refinance debt.

House Finance Agency Asset-to-Debt Ratios



Source: Moody's Investors Service, data as of December 2020

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How helpful was this paper?

DEFINITIONS

Outlook: The outlook for each municipal sector reflects our opinion on whether key macroeconomic and sector-specific factors will be predominantly supportive or challenging for the sector's fiscal health in the next 12 to 18 months. Individual outlooks reflect our base case expectation — modest general economic growth in the short term — as well as unique sector-specific factors and trends. The outlook does not reflect an issuer's ability to navigate these macro factors, nor does it suggest credit trajectory or rating movement for any individual issuer. The sector outlook considers all issuers in the sector, but is also weighted by market presence. For example, the state of California (the largest issuer in the market) will affect the state outlook more than Nebraska (one of the smallest issuers in the market).

Resiliency: Resiliency reflects a sector's relative ability to withstand a material economic downturn within the outlook's timeframe. This view specifically considers historical and projected revenue volatility, elasticity of market demand, flexibility of operating costs, fixed cost burden and current reserve position relative to projected need.

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