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McKinsey Analysis—Metropolitan Transportation Authority
Financial Impact Assessment on 2020 Revenue of COVID-19

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Metropolitan Transportation Authority

Financial impact assessment on 2020 revenue of COVID-19

1 May 2020

In April 2020, McKinsey & Company was contracted by the MTA to analyze the potential near-term financial impact of Covid-19 on the MTA. This document represents a summary of the approach, analyses, and key findings.

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Overview of revenue components and forecast approach

Focus of this chapter

Fare and toll revenue

Applied different scenarios of how long the current state of social distancing will last based on actuals, and what ridership/mobility ramp-up might look like after that. For those scenarios, considered the impact of epidemiology, policy effects, and behavioral changes

Ridership/traffic curves

Non-fare revenue

Identified five archetypes of tax or subsidy revenue – Employment, Real Estate and Mortgages, Sales, Business Income, and Mobility – each with a distinct driver. Created a multiplier for each archetype, which was applied to each source to forecast 2020 revenue

Tax-specific change profiles

Guiding questions for fare methodology

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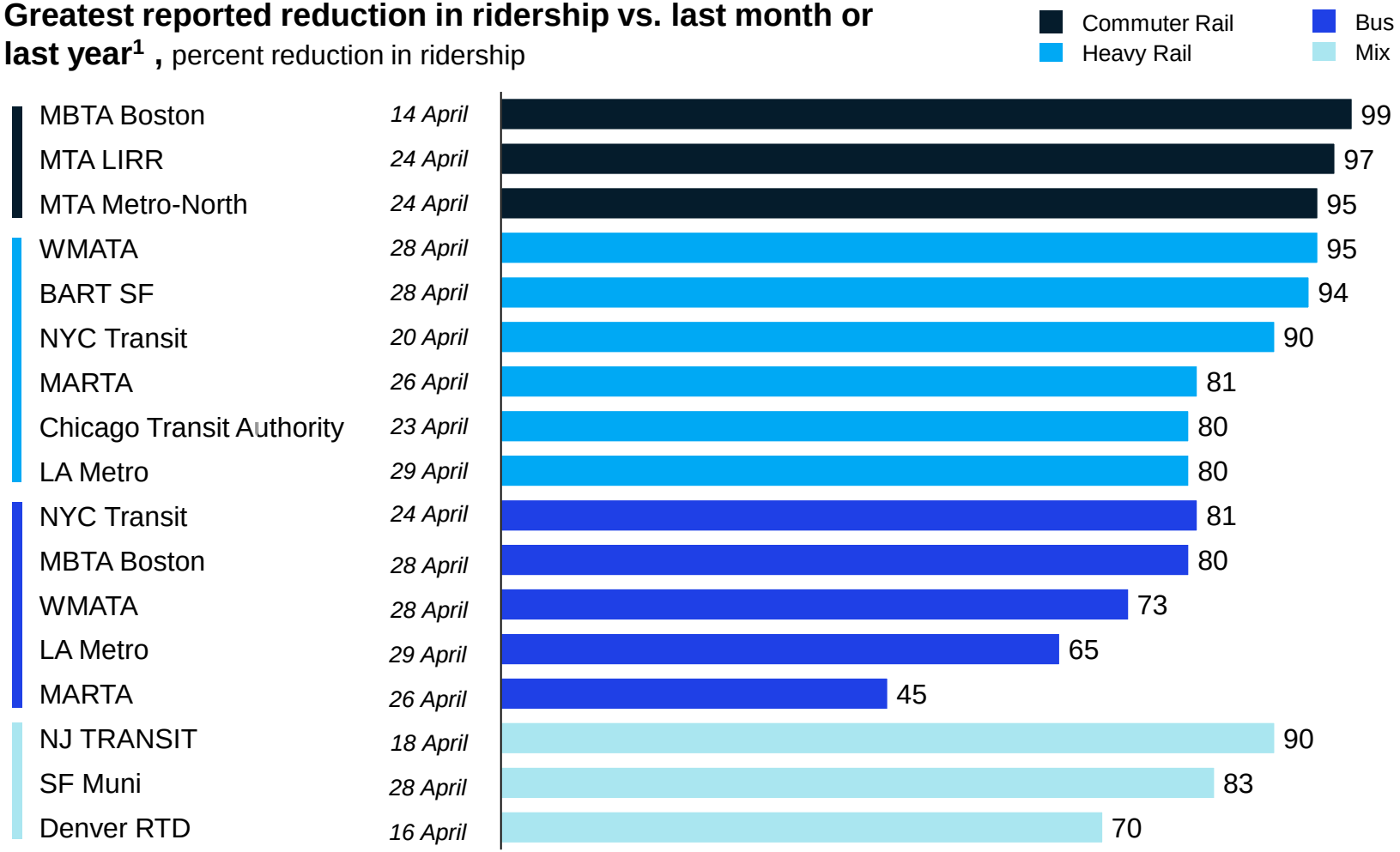
Guiding questions	Resulting actions for methodology
1 **What is current ridership** during intense social distancing (e.g., the current period)?	**Used actuals provided by the MTA** and compared across systems to calibrate. Ridership for most systems is down dramatically (~90%).
2 **What level of ridership are we going to**, i.e., what's the 'new normal' level in a period of economic decline/social distancing?	**Looked at historical experience for what "new normal" looks like in an economic crisis.** Began with ridership and toll recovery from the trough during the Great Recession, then took an additional haircut to reflect a number of factors that could continue to suppress demand (e.g., increased prevalence of work from home)
3 **What will the ramp up be like** to get from point 1 to point 2, and when will it start?	**Looked at ramp-up curves in health/safety/security crises (e.g., 9/11, SARS) as well as economic crises (e.g., Great Recession)** to understand how demand has reacted to past crises, and shaped a potential curve for a dual health/safety and economic crisis
4 **How will this ramp up be interrupted by a potential resurgence** of the virus in Q4 2020?	**Modeled two scenarios of potential interruption by a resurgence,** one where a second wave would result in something similar to present-day physical distancing conditions (in addition to seasonal flu), and a second more positive scenario factoring in the impact of better preparedness which would reduce the trough as currently experienced

Although different assets may behave differently, e.g., commuter rail may have a slower ramp-up than bus given that commuter rail riders could be more likely to work from home for longer or to use a personal vehicle, some early sensitivity testing was conducted and showed that additional precision from a bottom-up build did not meaningfully impact the aggregate number

Due to COVID-19 ridership has fallen drastically across all transit systems…

Commuter and heavy rail have been affected particularly severely

Greatest reported reduction in ridership vs. last month or last year[1] , percent reduction in ridership



1 Data collection and accuracy may vary across transit systems – some might be based on ticket entry, others on samples and extrapolation

Source: Chicago Tribune, Eno Center for Transportation, Boston Herald, WMATA.com, Bart.gov, The New York Times, Saporta Report, Chicago Sun Times, LAist, Seattle Transit Blog, MTA internal data, Boston Business Journal, LAist, WOMB, Bloomberg, Colorado Politics

Data collected April 30, 2020

Effects on public transit systems ridership

Ridership has fallen across systems across the US and the globe

Due to increased work from home policies, commuter rail systems are affected particularly strongly

Government mandates have also had strong effects in key geographies

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1

...and has remained low since this sharp drop

Initial declines led to persistently low ridership

Current as of 4/28

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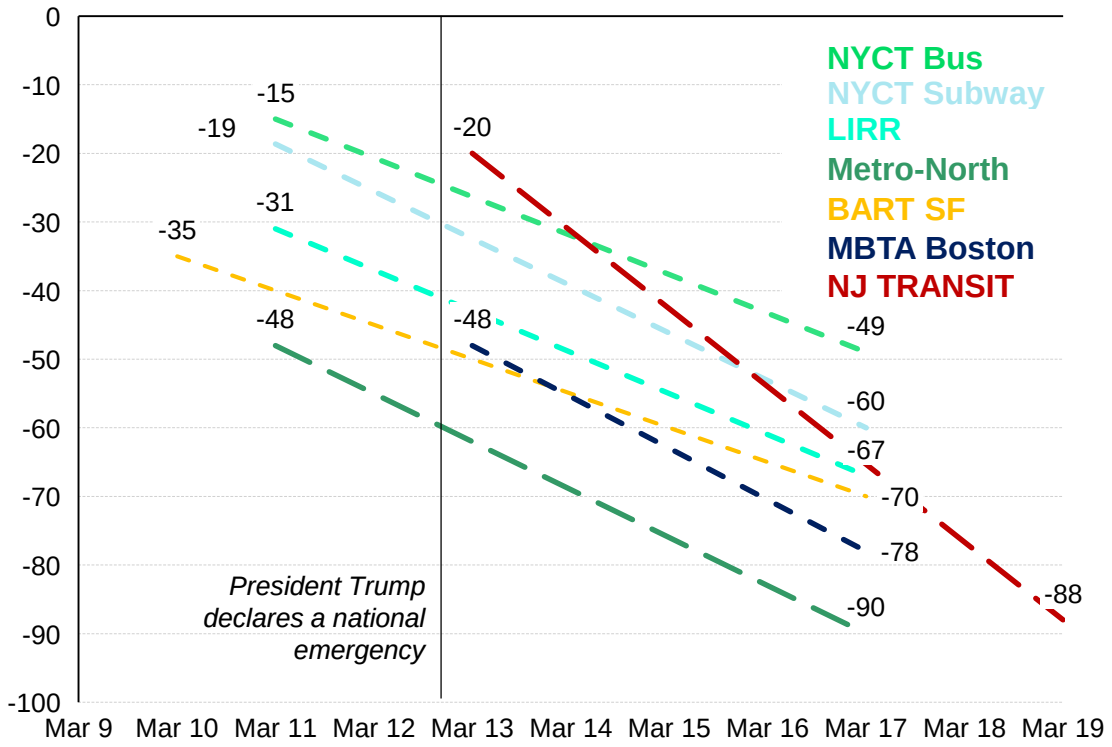
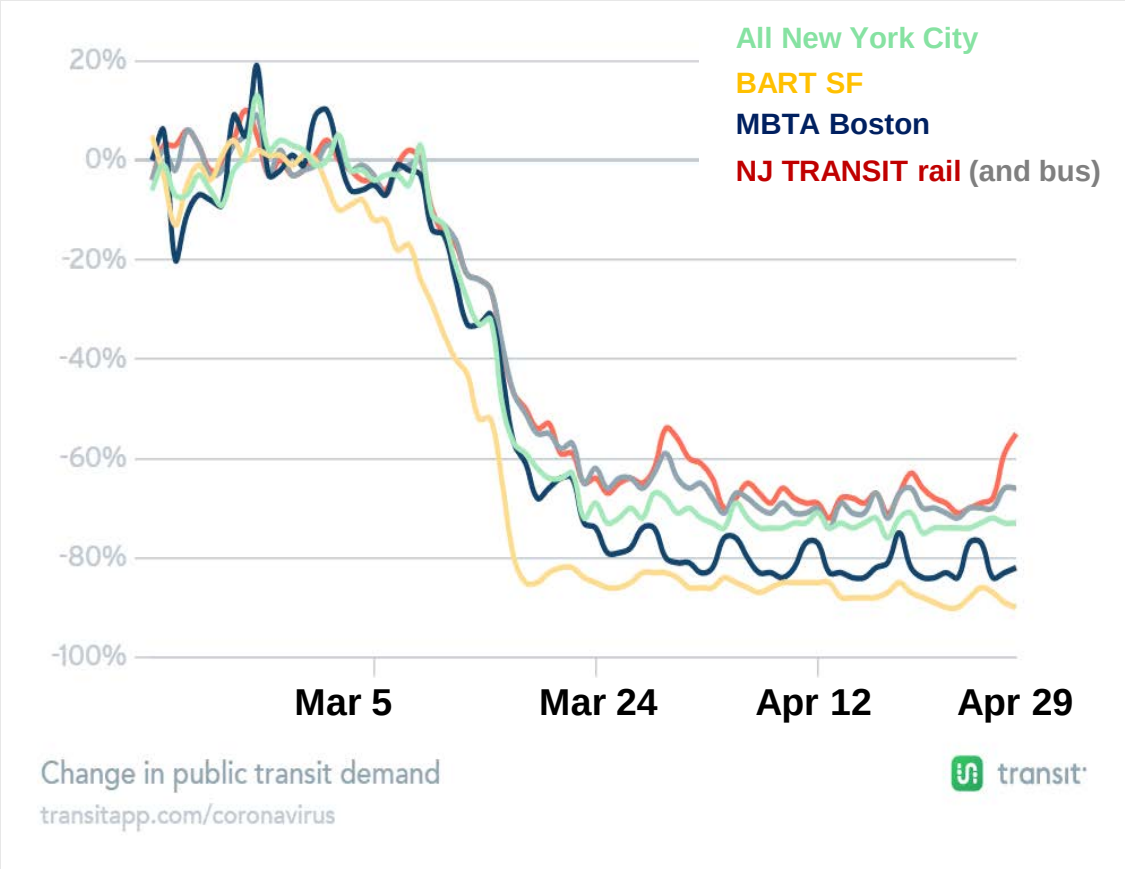
Initial decline: ridership fell swiftly and sharply across systems starting the week of March 9th

% decline in ridership, public reports



Sustained decline: Transit app data shows use at persistently low levels through April

% change in public transit demand measured by app use

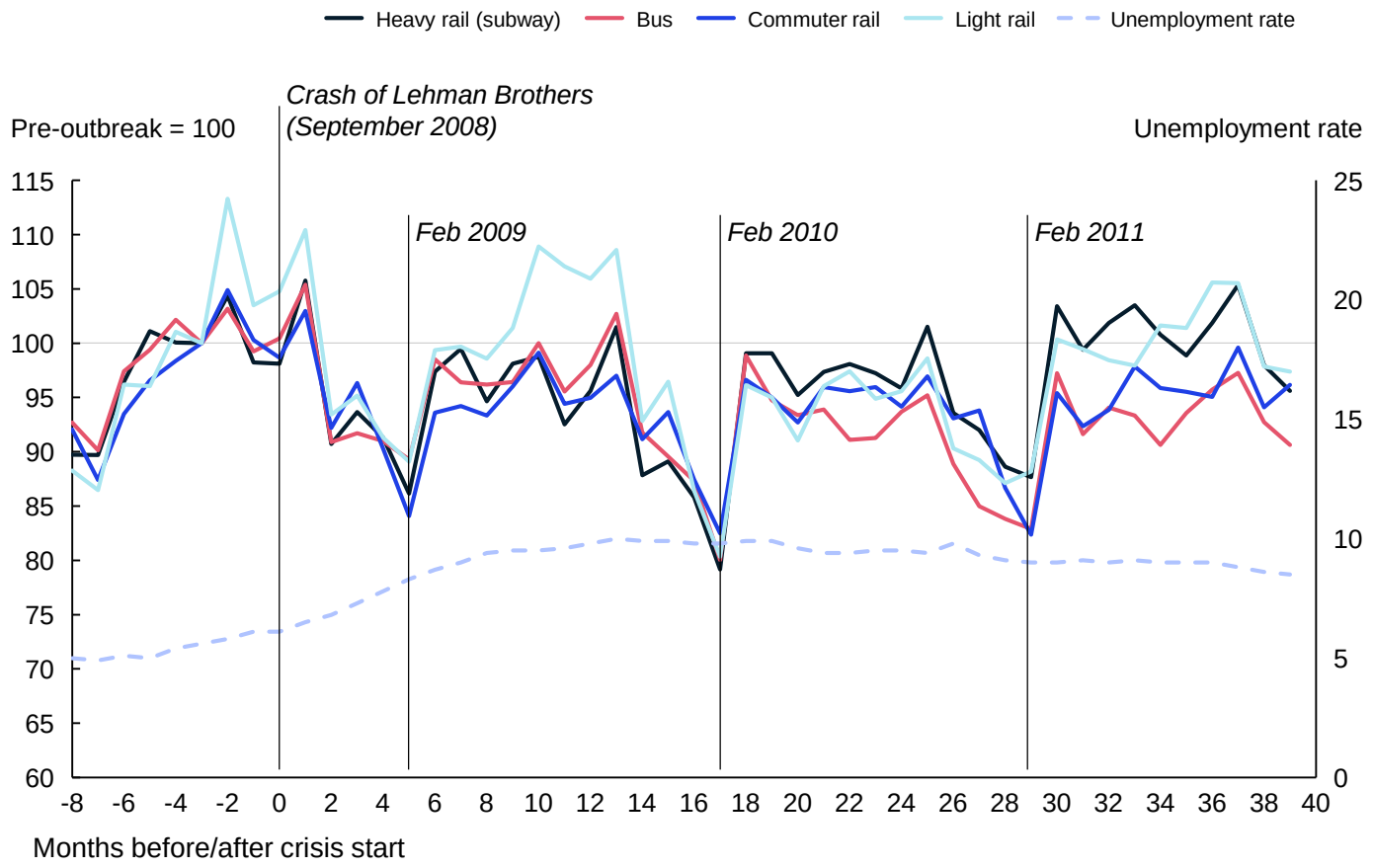


Source: The New York Times, Bloomberg, The Boston Herald, The Verge, CBS San Francisco, WHYY, TransitApp data measuring frequency of app opens compared to projected use of the app (adjusted for annual growth)

In the 08/09 financial crisis, urban transit ridership followed a "U" shape…

Impact of 2008/09 financial crisis on US urban transit[1]

By mode of transportation, average monthly ridership, in %



1. Includes New York, San Francisco, Washington DC, and Boston metro areas

Source: National Transit Database (NTD), Bureau of Labor Statistics (BLS)

… a decline with a long path to recovery

Financial crisis showed a long-term impact on transit ridership

While seasonality led to normal fluctuations in ridership, there was a drop of up to 20% across systems (February 2010) correlating with the peak of the unemployment rate in the US

The impact of the crisis was felt over a long time period, "U" vs. "V" shaped recovery

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Data collected March 23, 2020

Shocks affecting health and safety have historically had a "V" shape, with ridership dropping 30-50%, then returning to near normal in 2-3 months

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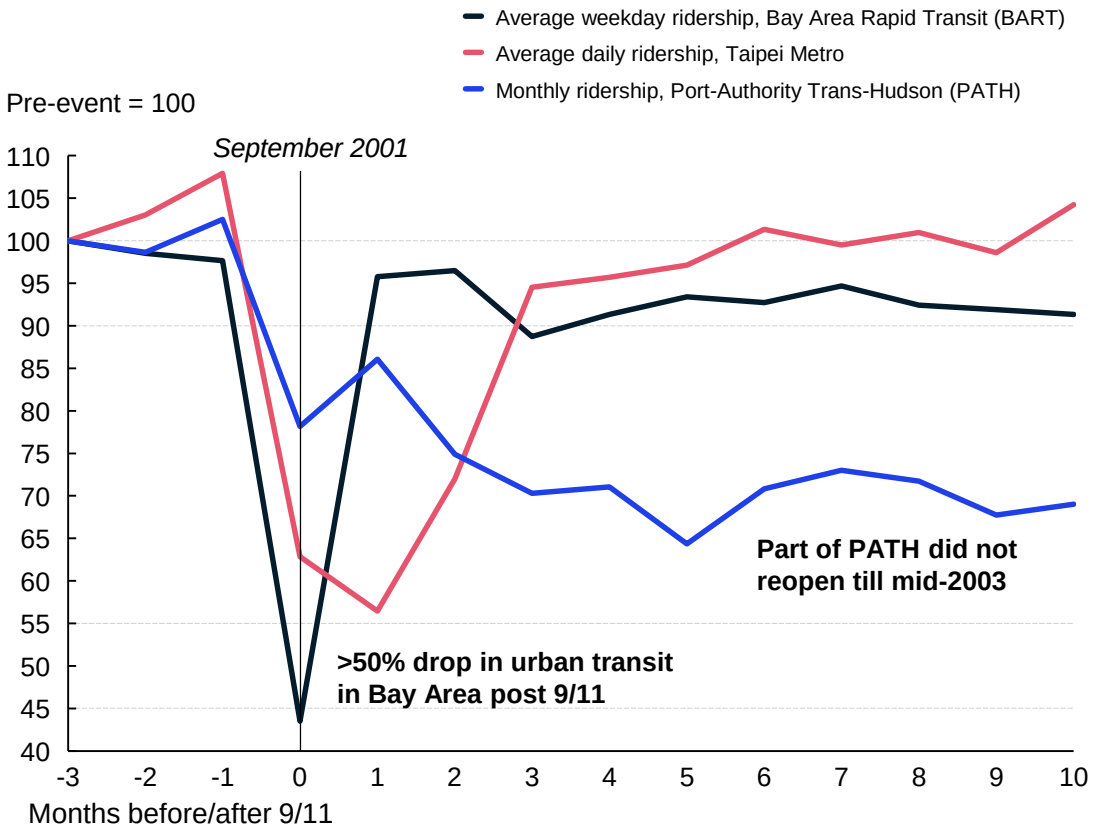
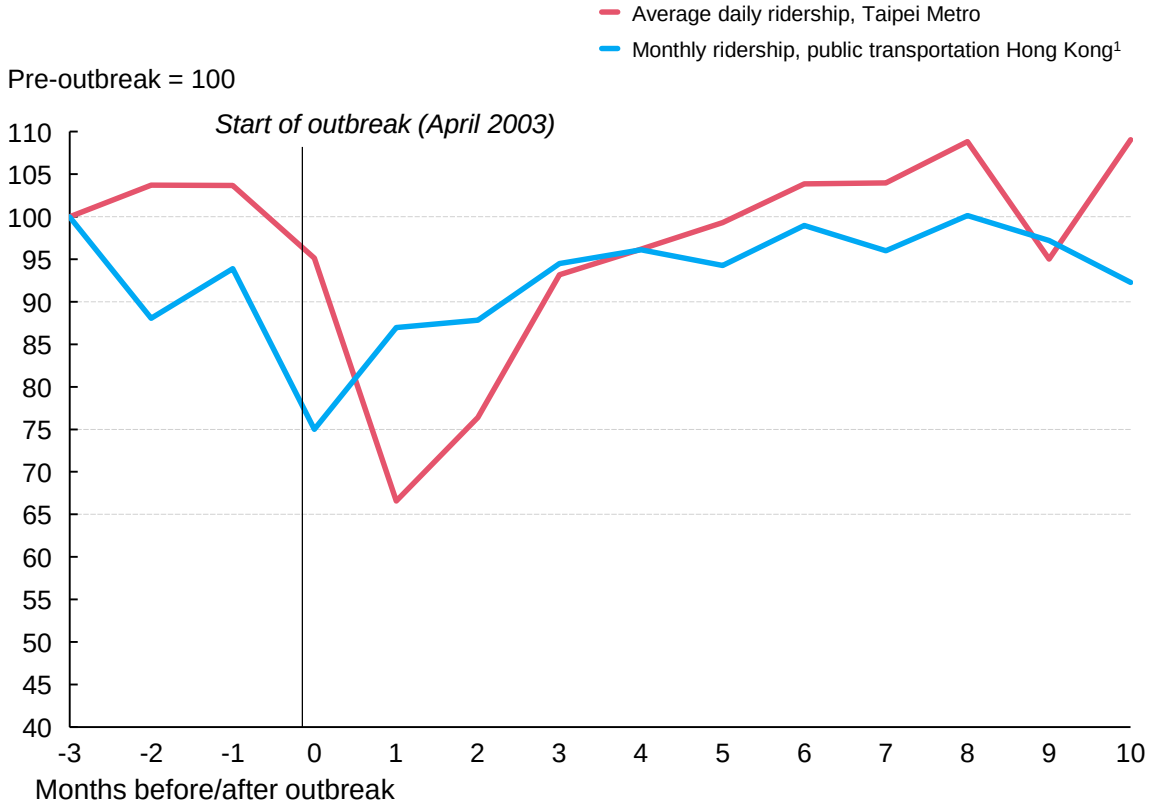
Impact of historical crises on urban transit ridership

Effect of safety/security crises – 9/11



Effect of health crises – SARS 2003



1. Includes various modes of transportation, such as bus, rail, and ferry; does not include taxi

Source: Bay Area Rapid Transit, Taipei Metro, New York State Open Data (data.ny.gov), Hong Kong Census and Statistics Department

How COVID-19 may be different than past health or safety shocks

Considerations for modeling a COVID-19 curve

Not Exhaustive

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Length of crisis

This does not appear to be a point in time crisis like 9/11 but an extended multi-month and possibly multi-year event until the virus is contained and therapeutics and vaccines are developed

Recovery pattern

As of this date, it is widely expected by public health officials that as social isolation measures are lifted, infection rates will increase

Seasonality

It is unclear what the impact of seasonality, if any, may be on the coronavirus spread

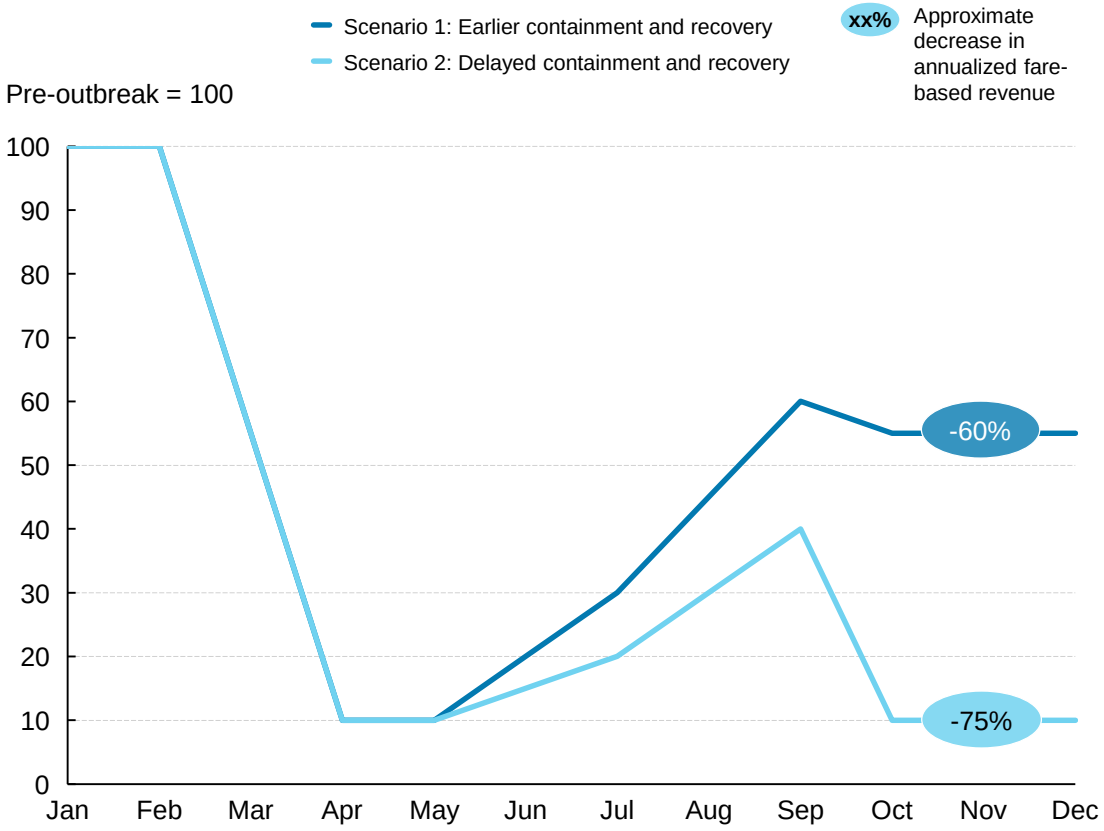
Potential for resurgence

Depending on multiple factors including herd immunity, human behaviors, hospital capacity readiness, and policies in the fall, a second major wave could be experienced, potentially coinciding with peak flu season

Two ridership scenarios were developed…

Potential scenarios for ridership through the end of 2020

% of base level ridership (previous year)



Source: MTA ridership scenarios analysis

…combining the characteristics of health and economic crises

Major assumptions underlying the difference in scenarios

Ramp-up after lockdown

Scenario 2 features a relatively slower change from current ridership levels due to an increased prevalence of countervailing factors (e.g., personal preferences away from transit, increased work from home, stronger virus spread resurgence) compared to those modeled in scenario 1

Resurgence in the fall

In both scenarios the COVID-19 pandemic could resume in the fall, but in scenario 2, the outcomes could be more dire (e.g., strained healthcare system, weak/lacking “herd immunity”)

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Current as of 4/17

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Resulting fare revenue assumptions and modeling

% of typical ridership in a given month

Assumptions											
Ridership as % of baseline in social distancing period	**10%**										
System trough % of baseline in Great Recession	90.6%		Nov 12 over Nov 07 ridership trough								
System trough % of baseline in COVID-19	**85.9%**		50% greater impact								
Annual fare revenue	6.49	B	2020 Feb Plan revenue								
Mar-Dec fare revenue	5.49	B									
Leakage from enhanced health procedures	**10%**										
Monthly cashflow			$ 0.25	$ -	$ -	$ 0.05	$ 0.13	$ 0.21	$ 0.27	$ 0.27	$ 0.24	$ 0.24
Monthly ridership			8.5%	8.5%	8.9%	8.3%	8.3%	8.2%	8.5%	9.1%	8.2%	8.1%
Scenario 1- Moderate			Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Virus spread largely contained in Q2, positive seasonal effect in Q3 with moderate resurgence in Q4			55%	10%	10%	20%	35%	50%	60%	55%	55%	55%
Ridership in remainder of 2020	40%											
Revenue loss	$3.82	B										

Monthly cashflow			$ 0.25	$ -	$ -	$ 0.03	$ 0.05	$ 0.11	$ 0.16	$ -	$ -	$ -
Monthly ridership			8.5%	8.5%	8.9%	8.3%	8.3%	8.2%	8.5%	9.1%	8.2%	8.1%
Scenario 2 - Severe			Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Virus spread less controlled, limited seasonality effect			55%	10%	10%	15%	20%	30%	40%	10%	10%	10%
Ridership in remainder of 2020	21%											
Revenue loss	$4.89	B										

Two toll scenarios were developed based on current data and traffic projections

Toll revenue followed many of the same underlying assumptions as ridership

Current as of 4/17

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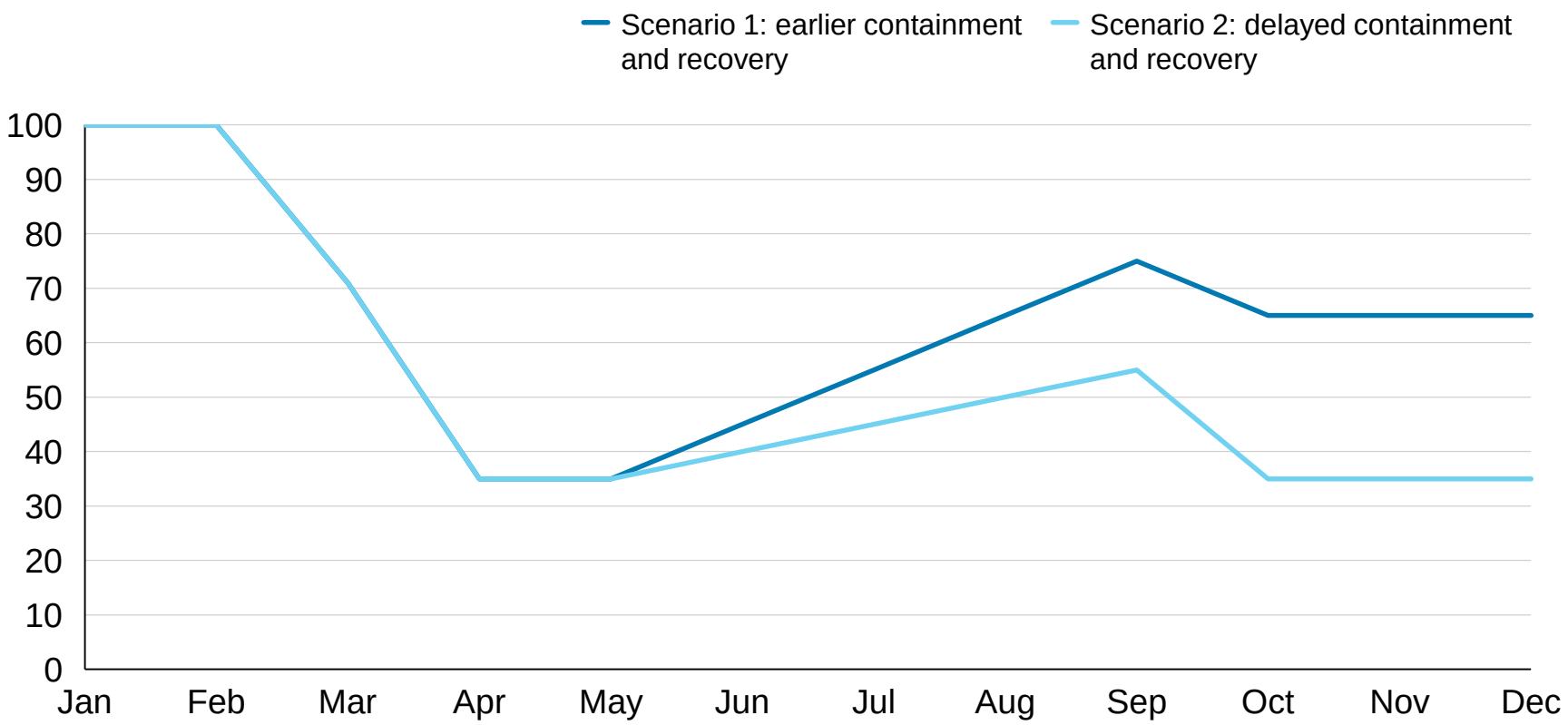
Potential scenarios for traffic development through the end of 2020

% of base level traffic (previous year)



Impact of social distancing on toll revenue was modeled using current data (i.e., down to 35% of typical traffic)

Modeled a slightly longer length of “lockdown” for Scenario 2 than 1, following the assumptions in the ridership model

Similar to ridership model, the impact of a “resurgence” in Q4 was modeled in two scenarios, one returning to present levels, one slightly more resilient

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Resulting toll revenue assumptions and modeling

% of typical ridership in a given month

Assumptions											
Ridership as % of baseline in social distancing period	35%	<- Rev ridership									
System trough % of baseline in Great Recession	84.4%	<-- Nov 12 over Nov 07 ridership trough									
System trough % of baseline in COVID-19	76.5%	<-- 50% greater impact									
Annual toll revenue	2.12	B	<-- 2020 Feb Plan revenue								
Mar-Dec toll revenue	1.81	B									
Leakage from enhanced health procedures	0%										
Monthly cashflow -->			$ 0.12	$0.06	$ 0.07	$0.08	$0.10	$ 0.12	$0.13	$0.12	$ 0.11	$0.11
Monthly traffic -->			8.3%	8.3%	8.9%	8.7%	8.8%	8.9%	8.4%	8.5%	8.2%	8.2%
Scenario 1- Moderate			Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Virus spread largely contained in Q2, positive seasonal effect in Q3 with moderate resurgence in Q4			71%	35%	35%	45%	55%	65%	75%	65%	65%	65%
Ridership in remainder of 2020	57%											
Revenue loss	$ 0.77	B										
Monthly cashflow -->			$ 0.12	$0.06	$ 0.07	$0.07	$0.08	$ 0.09	$0.10	$0.06	$ 0.06	$0.06
Monthly traffic -->			8.3%	8.3%	8.9%	8.7%	8.8%	8.9%	8.4%	8.5%	8.2%	8.2%
Scenario 2 - Severe			Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Virus spread less controlled, limited seasonality effect			71%	35%	35%	40%	45%	50%	55%	35%	35%	35%
Ridership in remainder of 2020	44%											
Revenue loss	$ 1.02	B										

Using similar considerations, the projections for fare and tolls were extended through Q1 2022

Ridership and traffic projections as % of monthly budget

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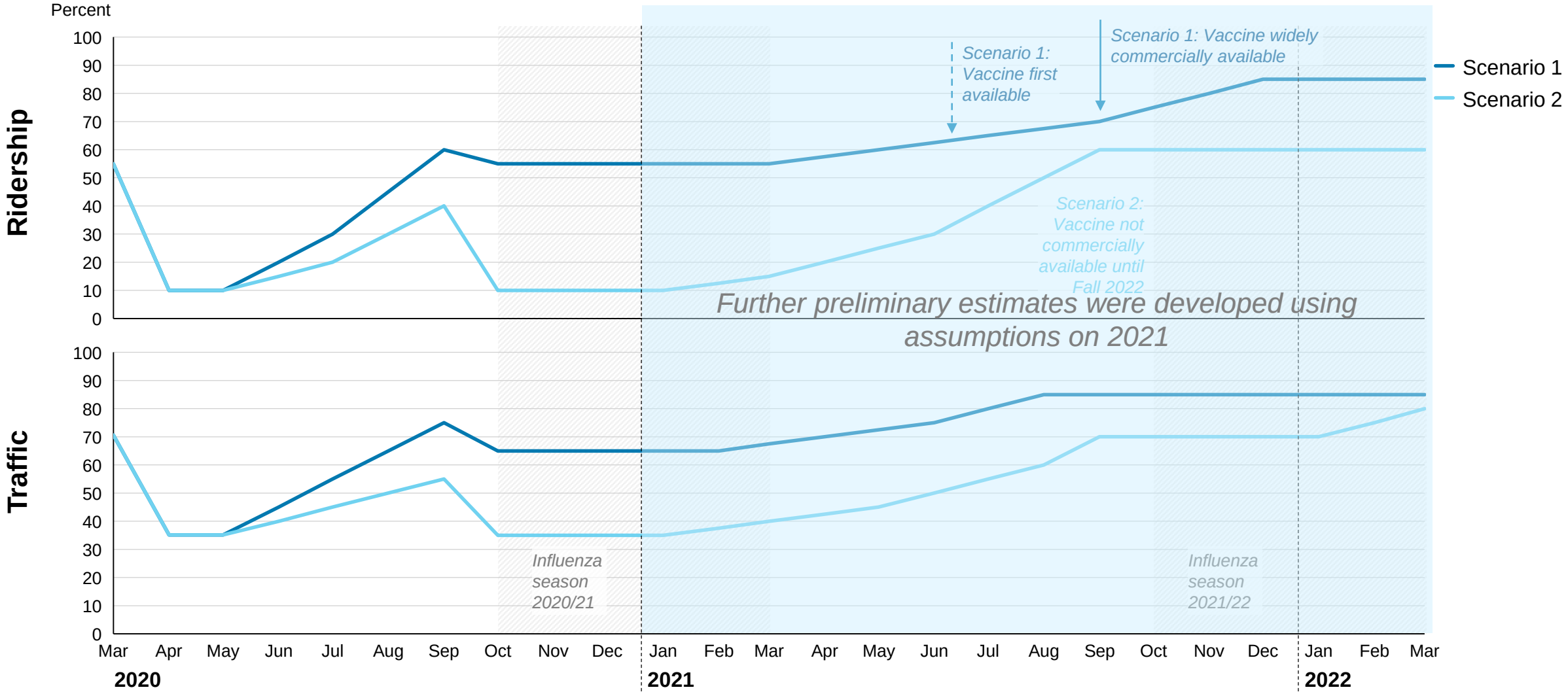

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Overview of revenue components and forecast approach

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Focus of this chapter

Fare and toll revenue

Applied different scenarios of how long the current state of social distancing will last based on actuals, and what ridership/mobility ramp-up might look like after that. For those scenarios, considered the impact of epidemiology, policy effects, and behavioral changes

Ridership/traffic curves

Non-fare revenue

Identified five archetypes of tax or subsidy revenue – Employment, Real Estate and Mortgages, Sales, Business Income, and Mobility – each with a distinct driver. Created a multiplier for each archetype, which was applied to each source to forecast 2020 revenue

Tax-specific change profiles

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Approach to forecasting tax and subsidy revenue (1/2)

Details to follow

Archetype	Methodology for multiplier calculation	Applicable MTA taxes
Employment	Projected changes in wages and salaries from employment for the NY counties served by MTA	Payroll Mobility Tax
Real Estate + Mortgages	Application of historical % change of MRT and Urban tax (40%) during Great Recession	MRT 1 + 2; Urban tax (MRT, Real Property Transfer Tax), Mansion Tax
Sales	% drop of projected 2020 GDP vs. 2019 actuals for sales tax relevant industries (retail and leisure and hospitality)	MMTOA (MTA District Sales Tax, Hold Harmless for Clothing)
Business Income	Used corporate income tax elasticity during the Great Recession applied to % change between forecasted 2020 GDP and 2019 actual GDP	MMTOA (Corp franchise tax, both Corp & utilities taxes, insurance and bank taxes)
Mobility	Calculated based on expected traffic volume, incorporating thinking on epidemiological, behavioral, policy, and economic factors by using forecasted toll revenue as proxy	MMTOA (PBT); PBT (Petroleum business tax, Motor fuel tax, MCTD taxicab tax, MTA passenger car rentals); FHV surcharge
Other	Average of all other tax multipliers	MMTOA (investment income), <1% of 2020 budget
No or minimal anticipated change	*Not determined by underlying policy or economic driver*	*PBT (Motor vehicle fees); MRT adjustments; CBDTP; Internet marketplace tax; State and local subsidies (Local and State operating assistance, Station maintenance); other funding agreements (for MTA bus, SI Railway, Metro North), PMT replacement fund; B&T operating surplus transfer*[1]

1. Non-fare revenue loss does not include the impact of reduced transfers from toll revenue; these are accounted for in the toll revenue losses

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Approach to forecasting tax and subsidy revenue (2/2)

Archetype	Considerations for analysis/methodology	What you need to believe
1 **Employment** 	• Based on overall employment changes by quarter tied to macroeconomic modeling by industry for 12 MTA counties in New York State • Adjustments applied based on an analysis of jobs at risk, reducing the amount of wages and labor beyond employment loss to reflect reality of changing labor patterns (furloughs, loss of hours) by industry • Industries weighted by wage levels in New York State	• Employment is going to track macroeconomic changes and impact the amount of payroll tax collected
2 **Real estate + Mortgages** 	• Based on performance of MRT (MRT-1, MRT-2 and MRT in Urban Tax) and Real Property Transfer Tax during Great Recession • Saw ~40% y.o.y. drop in real estate and mortgage-related taxes 2007-2008, with further declines in 2008-2009 • Applied that initial decline of 40% to each relevant tax, given the forecasting is for the first year of COVID-19 impact (2020)	• There are two opposing forces at play right now: — This recession is likely going to be deeper/longer than the GR — At the same it may not be a housing real estate crisis, i.e. not the same expectations of credit drying up, refinancing going down etc. • Assume that those two effects will roughly offset each other so that using the GR to model the forecast is still applicable
3 **Sales** 	• Apply the % change y.o.y. for the 2020 GDP forecast (inflation adjusted) for MTA NYS counties vs. 2019 data for each quarter to the 2019 tax • Since ~20% of the tax base is from B2B, used weighted average of GDP change for Retail and Leisure/Hospitality (80%) + GDP of remaining industries (20%, proxy for B2B) to reflect underlying tax base	• Sales tax will closely track GDP
4 **Business Income** 	• Assume that the elasticity of corporate income tax to GDP is the same as in the Great Recession and apply that factor to project 2020 data • Many of the considered taxes are surcharges on the State corporate income tax, so apply the same logic as to the tax itself	• Great Recession is a good model for what is happening to the economy right now, i.e. that the elasticity relationship between change in tax and change in GDP during times of crises is constant/very similar
5 **Mobility[1]** 	• Based on projected decrease in toll revenue by month (see details on toll revenue projection and methodology)	• Economic and public health policy decisions (social distancing, business closures etc.) have a large impact on mobility • Even after the crisis, there will likely be a “new normal” – below old levels

1. Mobility assumptions explained in further detail in Fare revenue section

1

Economic scenario for change in employment used in the analysis

Current as of 4/17

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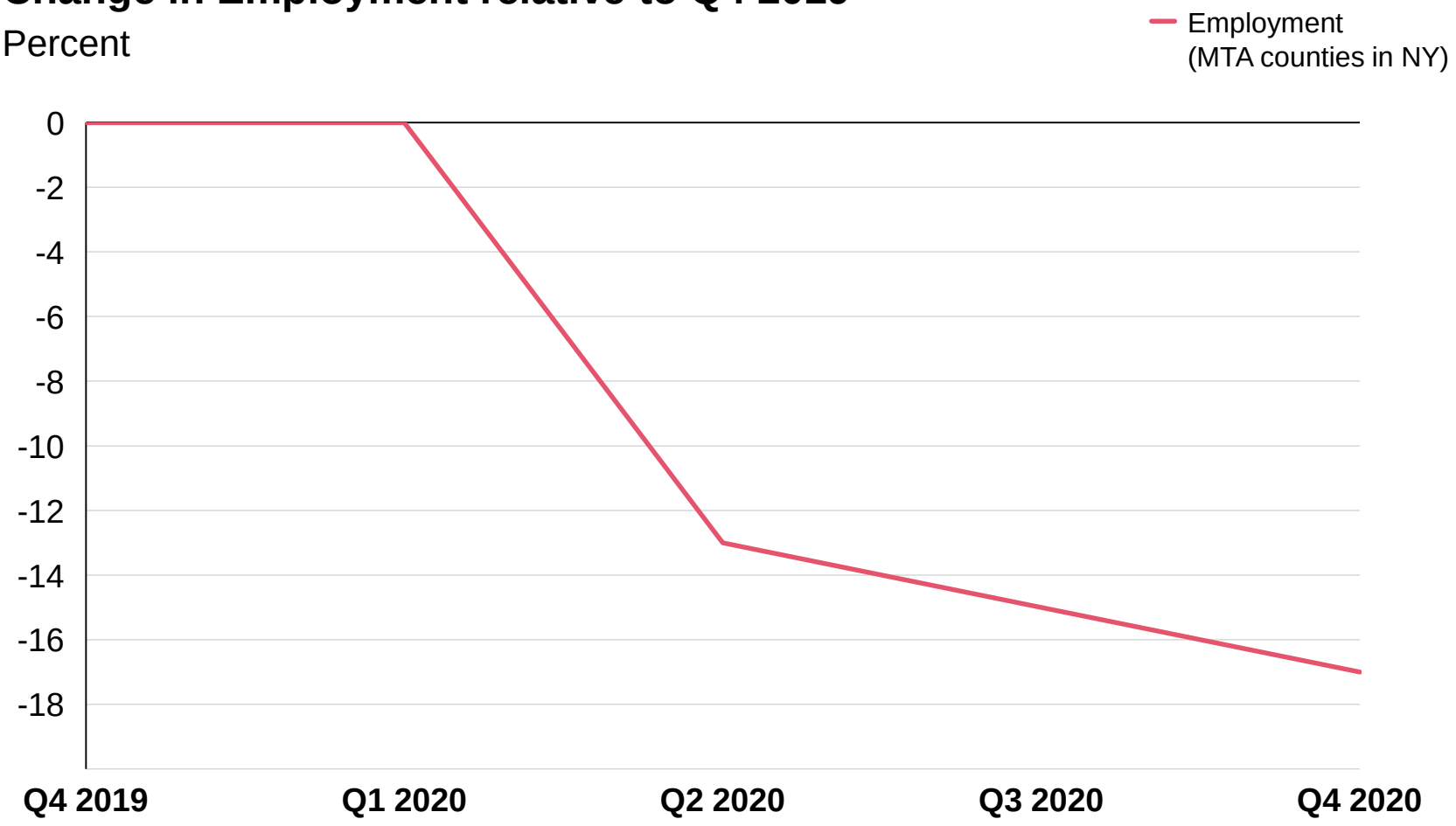
Change in Employment relative to Q4 2019

Percent



Source: Data tied to analysis of A1 scenario – see pages 22 and 23

Changes in employment levels for the NY MTA counties were modified using an analysis of “Jobs at Risk” to capture income impacts beyond just job loss (e.g., furloughs, lost hours)

Industries were also weighted by average income

The modeled change in income across all industries in the NY MTA counties was then used to predict employment-related tax income

2

Historical real estate tax performance in the Great Recession

$ Millions of tax received and % change from previous year

		2007	2008	2009	2010	2011	2012
MRT 1 & 2	MRT-1	460	277	150	147	160	187
	Difference relative to prior year		*-40%*	*-46%*	*-2%*	*9%*	*17%*
	MRT-2	243	142	92	92	85	92
	Difference relative to prior year		*-42%*	*-35%*	*0%*	*-8%*	*9%*
	Total	**703**	**419**	**242**	**239**	**245**	**280**
	Difference relative to prior year		*-40%*	*-42%*	*-1%*	*2%*	*14%*
Urban tax	Real Property Transfer Tax (100%)	664	389	110	138	297	322
	Difference relative to prior year		*-41%*	*-72%*	*25%*	*116%*	*9%*
	Urban Mortgage Recording Tax (100%)	318	193	56	55	95	130
	Difference relative to prior year		*-39%*	*-71%*	*-1%*	*72%*	*36%*
	Less 4% NYC DOT	-39	-23	-7	-8	-16	-18
	Less 6% Paratransit	-59	-35	-10	-12	-24	-27
	Total	**884**	**524**	**150**	**174**	**353**	**407**
	Difference relative to prior year		*-41%*	*-71%*	*16%*	*103%*	*15%*

Source: MTA historical tax data

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The first year of the Great Recession was used to inform analysis of the first year of the current crisis

While the magnitude of this crisis is larger, it is not a housing or liquidity crisis – two counteracting effects which were assumed to roughly balance out

Used the historic performances of the MTA's real estate tax revenue to capture potential differences or similarities between residential and commercial real estate

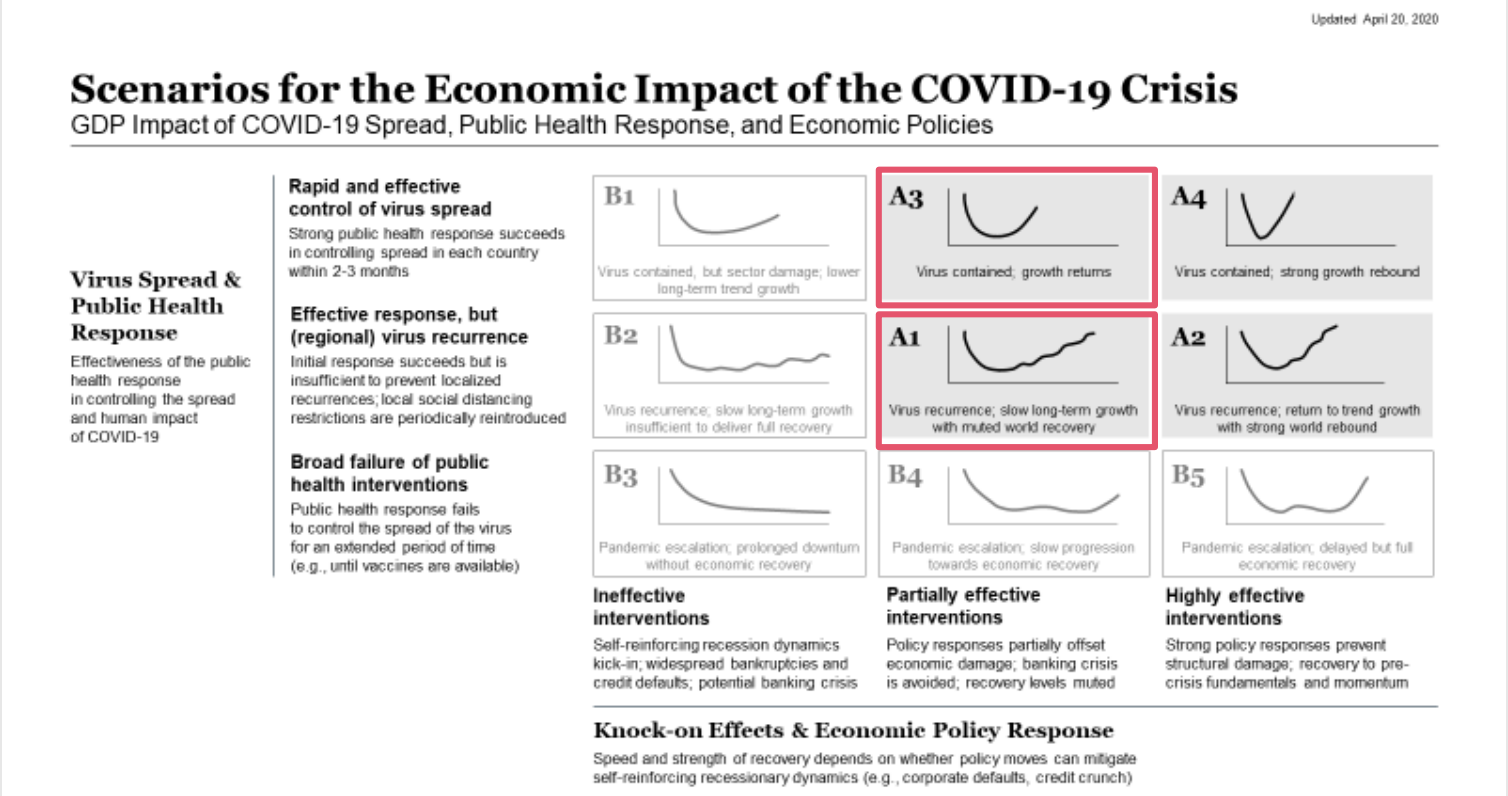
Preliminary

Economic scenario for change in GDP (1/2)

Macroeconomic scenarios

(4/28/20) Please see disclaimer on page 3. These analyses represent only potential scenarios based on discrete data from one point in time. They are not intended as a prediction or forecast, and the situation is changing daily.

☐ Details to follow



Preliminary

Economic scenario for change in GDP (2/2)

Scenario A1 used for analysis

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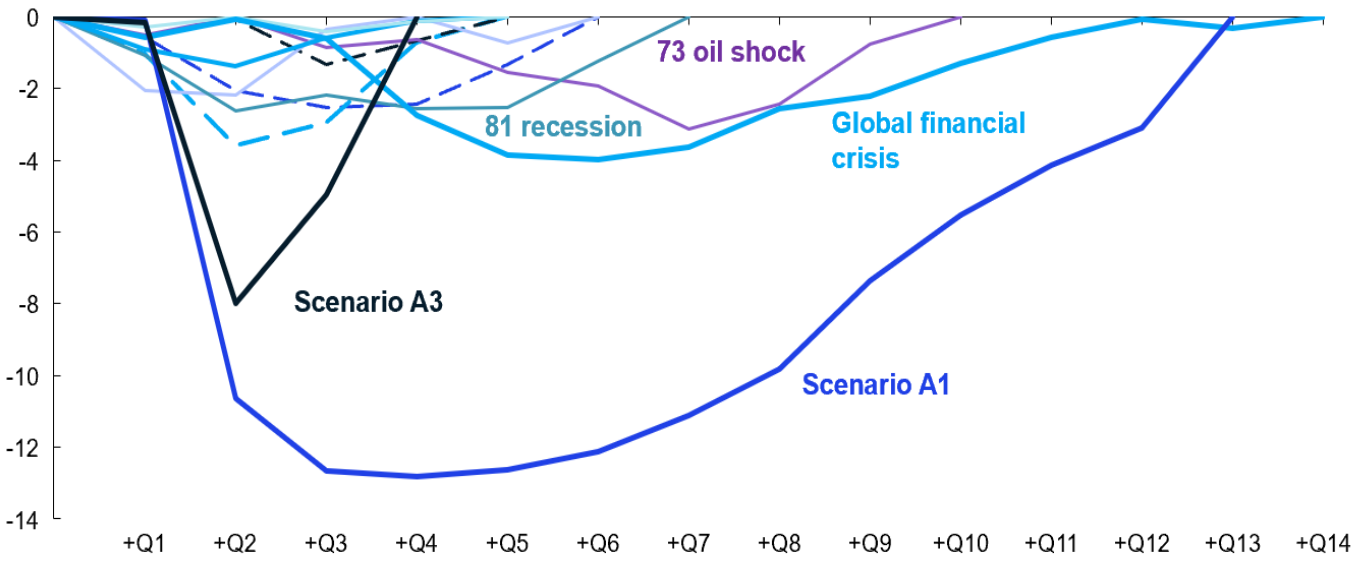
Updated April 20, 2020

Pace of decline of economic activity in Q2 2020 is likely to be the steepest since decline since WWII

High frequency indicators show the drop has already started in Q1

United States, comparison of post-WWII recessions

% real GDP draw-down from previous peak



Source: Historical Statistics of the United States Vol 3, Bureau of economic analysis, McKinsey team analysis, in partnership with Oxford Economics

McKinsey & Company 12

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Mobility-related tax methodology follows toll projections

Current as of 4/17

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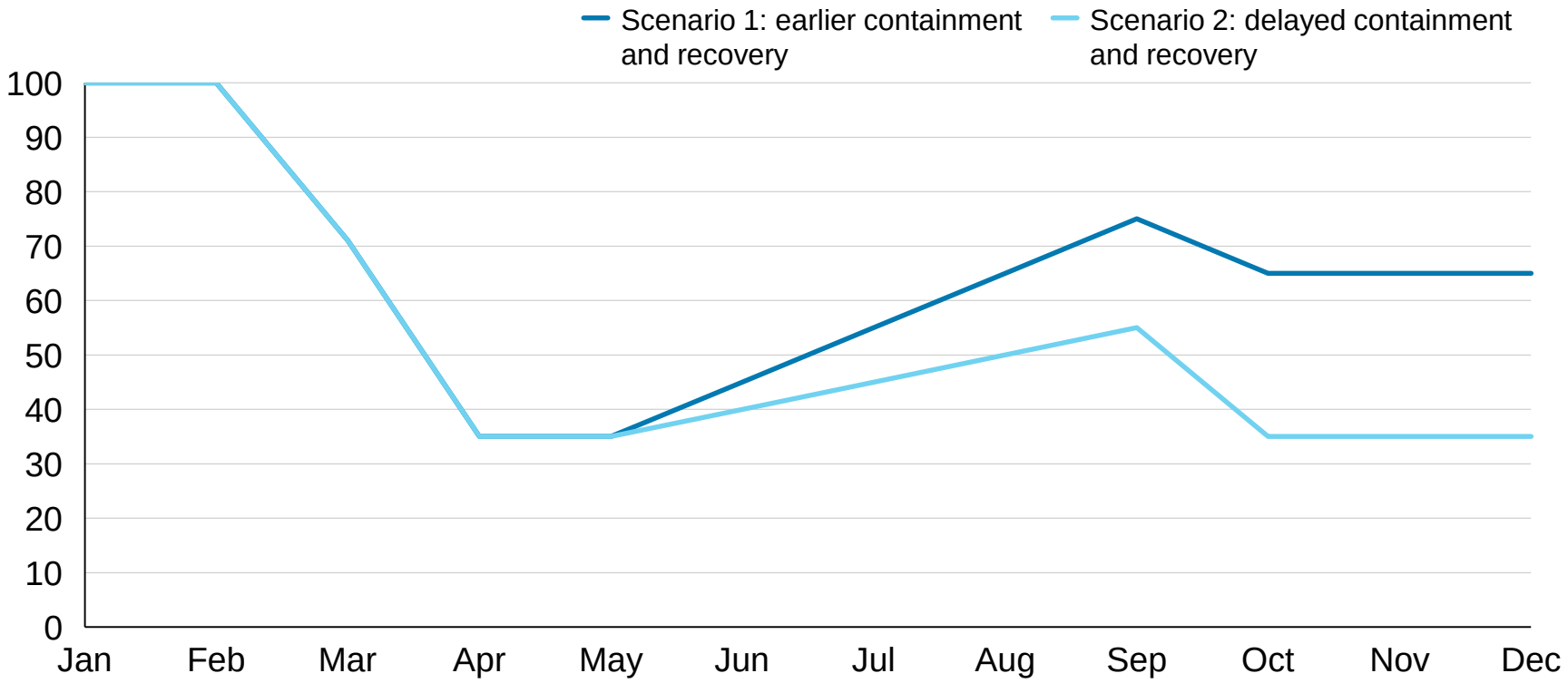
Potential scenarios for traffic development through the end of 2020

% of base level traffic (previous year)



Tolls were assumed to be an indicator for relative performance of mobility-driven taxes (e.g., PMT)

These taxes were modeled using the toll curves developed during the toll revenue analysis

Resulting non-fare revenue modeling for 2020 by groups of taxes

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Tax group	Original 2020 Budget, $B	Projected losses in 2020, $B	Decrease projected for 2020, %
Mobility	1.9	(0.4) - (0.5)	-23 to -29%
Employment	1.6	(0.3)	-17%
Real Estate	1.5	(0.4)	-27%
Business income	1.1	(0.3)	-30%
Sales	0.9	(0.3)	-32%
Other	0.02	(0.0)	-42 to -44%
No change[1]	2.1	-	0%
Total[2,3]	**8.4**	**(1.6) – (1.8)**	**-19 to -21%**

1. 25% of the original 2020 budget was predicted to remain unchanged because it represented legal commitments to provide funds, or because it appeared the underlying drivers were unlikely to shift significantly in 2020 (e.g., Payroll Mobility Tax Replacement Funds, Internet Marketplace Tax, Motor Vehicle Fees for registering vehicles)
2. Non-fare revenue loss does not include the impact of reduced transfers from toll revenue; these are accounted for in the toll revenue losses
3. Totals may not add due to rounding. Total also does not reflect the impact of adjustments (applies to Urban Tax, the “Mansion Tax”, and the Internet Marketplace Tax)

Using similar considerations, the projections for non-fare revenue were extended through 2021

Scenario assumptions and resulting estimate of financial impact

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Approach to estimating non-fare revenue for 2021

Major assumptions for non-fare

Mobility	Mobility will continue to track toll revenue
Employment	Employment will improve from Q4 of 2020 but slowly and will continue to reflect at-risk jobs
Real estate	Second year of this crisis will follow GDP growth; second year of the Great Recession is not a good proxy
Sales	Sales taxes will track GDP growth
Business income	Business income will lag GDP growth (based on historical precedent)

Financial impact on fare and toll revenue, in $B

	Budget[1]	Projected delta
CY 2020	8.4	(1.6) – (1.8)
CY 2021	8.4	(1.8) – (2.0)

Underlying economic conditions could be similar or more severe in 2021 as in 2020 but potentially offset by an improvement in mobility

There are areas where MTA may make decisions that will impact the overall totals (e.g., capital fund allocations)

1. As per the 2020 February Financial plan. 2021 budget deltas do not take into account any revisions to revenue expectations that may have taken place since releasing the plan (e.g., a revised view on revenue from congestion pricing); they are deltas from the plan as-released.

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Methodology for initial estimate of additional operating expenses

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Details to follow

Top-down

Identified the overall operating expenses in the 2020 MTA budget that would be impacted by increased public health measures (e.g., materials) and applied a benchmark of ~6% increase, as determined from the change in Hong Kong MTR financials during the peak month of SARS in 2003

$0.4-0.5B

Bottom-up

Used the existing MTA estimate for COVID-19 related expenses as a base and built in additional expense items or expense increases based upon common policies enacted by transit agencies around the world for responses to COVID-19 and SARS

$0.7-$0.8B

Expenses do not include:

- Any new capex (e.g., ventilation upgrades, thermal imaging, re-furbishing breakrooms, etc.)
- Costs related to further service changes in response to the pandemic

Incremental operating expenses may increase $0.7-$0.8B in 2020

Expense assumptions for 2020 from a “bottom up” perspective

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Preliminary

Descriptions of expenses considered for 2020

	Type	Description	**Examples** (non exhaustive)
Drivers of operating expenses	**“Ongoing”**	Activities already begun by March that are likely to continue through the year	OHS hotline and current level of temperature testing, cleaning, and PPE for employees
	“Expansion”	Extending existing activity to larger populations or additional locations	Additional temperature testing and adding some COVID-19 tests for employees, limited expansion of police presence
	“New”	Net new activity not yet contemplated but seen in peer systems or under active discussion as potential solutions for transit agencies	Daily cleaning of buses and subway and commuter rail cars

Incremental expenses

Lower range for 2020, $M

	Total	**Q1**	**Q2**	**Q3**	**Q4**
Ongoing	**385**	37	112	117	118
Expansion	**67**	4	21	21	21
New	**213**	0	63	88	61
Total	**665**	**41**	**196**	**227**	**201**

Higher range for 2020, $M

	Total	**Q1**	**Q2**	**Q3**	**Q4**
Ongoing	**402**	37	112	120	132
Expansion	**78**	4	25	25	25
New	**297**	0	66	109	123
Total	**777**	**42**	**203**	**253**	**280**

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Summary of financial impacts across revenue streams for 2020

2020 Estimates

(4/28/20) Please see disclaimer on page 3. These analyses represent only potential scenarios based on discrete data from one point in time. They are not intended as a prediction or forecast, and the situation is changing daily.

Preliminary estimates, $ billions

	Earlier containment and recovery	Delayed containment and recovery
Fare revenue	(3.9)	(4.9)
Toll revenue	(0.8)	(1.0)
Non-fare revenue[1]	(1.6)	(1.8)
Additional operating expenses (preliminary)	(0.7)	(0.8)
Total gap	**(7.0)**	**(8.5)**
CARES	3.8	3.8
Additional	**(3.2)**	**(4.7)**

1. Non-fare revenue loss does not include the impact of reduced transfers from toll revenue; these are accounted for in the toll revenue losses

Critical to note about these estimates

Non-fare revenue:

Initial estimates are based on quantitative underlying drivers of various sources of revenue.

- Further reconciliation will be required with the State budget, e.g., MMTOA
- There are also areas where MTA may make decisions that will impact the overall totals (e.g., capital fund allocations)

Fare and toll revenue:

Fare and toll revenue estimates are calculated based on anticipated epidemiological and economic scenarios, including inputs from historical periods and current data

Preliminary summary of initial revenue estimates for out years

2020 and 2021 estimates

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Preliminary estimates of deltas to budget, $ billions

	2020		2021	
	Earlier containment and recovery	**Delayed containment and recovery**	**Earlier containment and recovery**	**Delayed containment and recovery**
Fare revenue	(3.9)	(4.9)	(2.2)	(4.1)
Toll revenue	(0.8)	(1.0)	(0.5)	(1.0)
Non-Fare revenue[1]	(1.6)	(1.8)	(1.8)	(2.0)
Operating expenses (preliminary)	(0.7)	(0.8)	(0.7)[2]	(0.8)[2]
Total revenue gap[3]	**(7.0)**	**(8.5)**	**(5.1)**	**(7.8)**
Size of range		*1.5*		*2.7*

1. Non-fare revenue loss does not include the impact of reduced transfers from toll revenue; these are accounted for in the toll revenue loss
2. Operational expenses may vary in 2021 depending on MTA's decisions on how to respond to the crisis
3. Totals may not add due to rounding

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Estimating potential economic impacts

Possible effects of spending

Rationale

1 **The NYC metro area is an engine of the overall national economy**

NYC metro's GDP of $1.7 trillion in 2017 is the largest of any metro area in the U.S.

In recent years, NYC Metropolitan Statistical Area (MSA) has contributed the greatest share of U.S. and global nominal GDP growth of all metro areas. NYC metro has generated 8.3% of all U.S. nominal GDP growth and 2.6% of all global nominal GDP growth between 2010 and 2017

2 **NY MTA is a critical part of what makes the NYC MSA economy possible**

The MTA carries 8M people every day, allowing a large portion of the NYC MSA to get to work

- 87% of people who enter the Manhattan Central Business District during the peak do so through bus, subway, or railroad
- Every day Manhattan goes from a population of 1.6M residents to a daytime population of nearly 4M people, including nearly 1.6M commuters and 400K day-trippers
- If 1.6M commuters drove in their own automobiles, the parking alone would occupy 520M SF of space, this would require paving over 80% of Manhattan for a parking lot; or replacing Central Park with a 13 story parking garage

3 **NY MTA represents the bulk of losses in transit ridership and fares in the US**

Across the US, major transit systems – CTA, LA Metro, MBTA, WMATA, SEPTA, NJ Transit, and others – have all lost 80-90% of ridership in transit in recent weeks

MTA represents 40-50% of the total loss in ridership in the United States

4 **Spending on the MTA has the potential to drive national economic impact**

Preliminary analysis of impact shows a $3.2-4.7B investment has a $6.2-9.1B total national GDP impact and generates 75-109K jobs

Source: Press search, FTA NTD data, NYMTC data, BEA multiplier analysis

3 MTA carries the most riders with majority of fare revenue

Compared with the Top 12 US transit agencies

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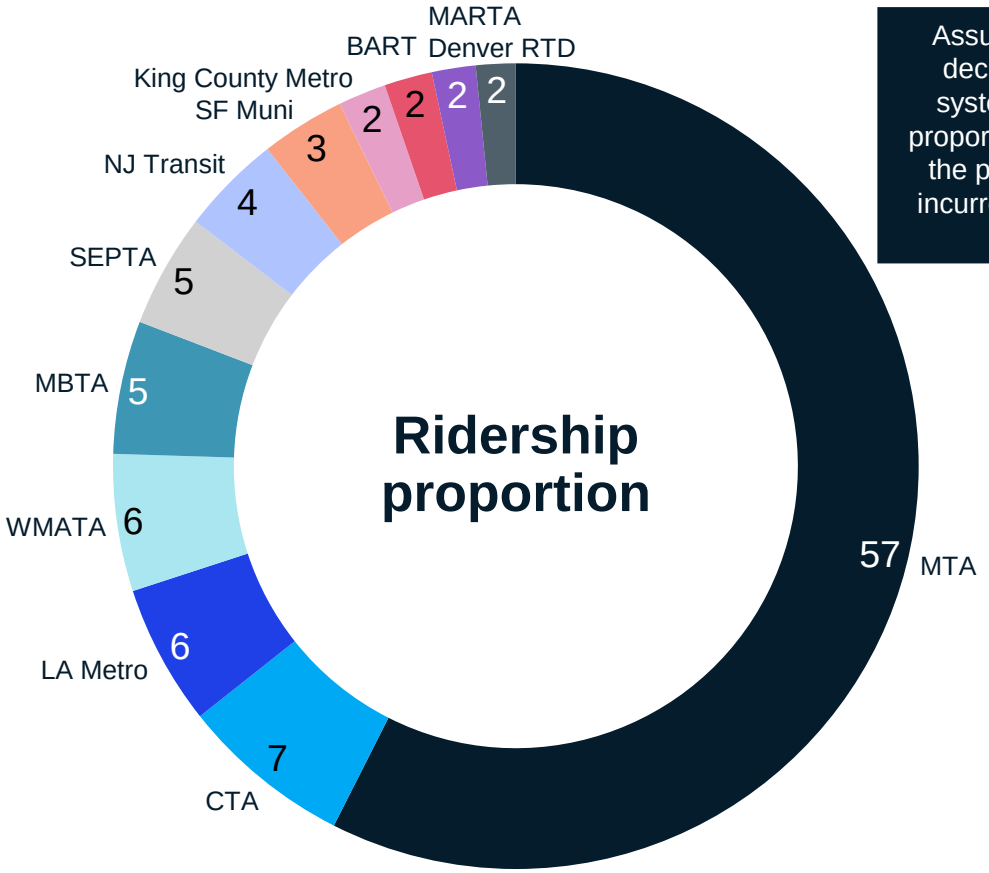
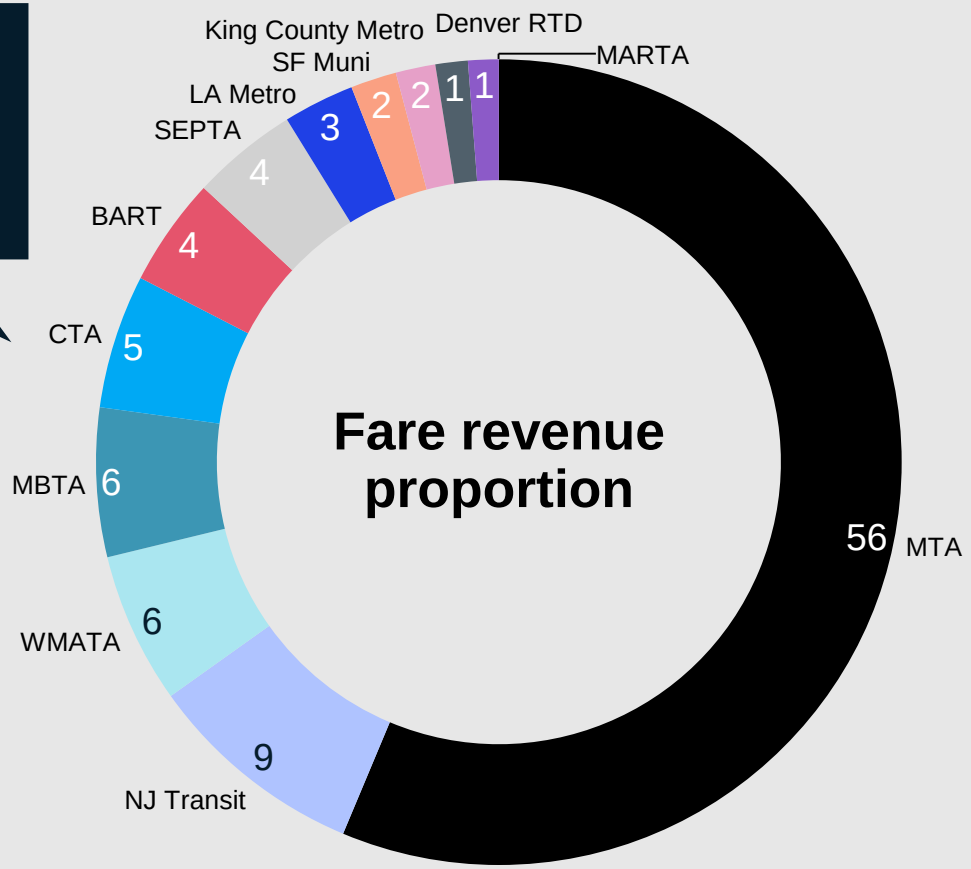
Ridership share among the top 12 US transit agencies[1], Percent



Assuming similar percentage declines in ridership across systems, these fare revenue proportions would also represent the portion of total fare losses incurred by each system during the crisis

Fare revenue share among the top 12 US transit agencies[2], Percent



1. Based on 2019 monthly ridership data
2. Based on 2018 fare revenue data (2017 for MTA MNR)

Source: National Transit Database (NTD)

4 Replacing lost operating funds may create up to $9.1B in GDP impact and 109K jobs

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	Impacts	Net impact	US direct impact	Total value add with Induced
Earlier containment and recovery	**GDP**	$3.18B	$1.93B[1]	$6.17B[3]
	Jobs	$3.18B	31,631[2]	74,648[3]
Delayed containment and recovery	**GDP**	$4.66B	$2.83B[1]	$9.05B[3]
	Jobs	$4.66B	46,352[2]	109,390[3]

1. Conversion to GDP (Value Added) using Valued Added to Sales multiplier for Mixed Mode Transit Systems NAICS code
2. Conversion to Jobs using Job to Sales multiplier for Mixed Mode Transit Systems NAICS code
3. Uses BEA multipliers to translate direct effect into total impact (including indirect and induced)

Source: Bureau of Economic Analysis

Replacing $3.2 to $4.6B in operating funds may translate into a **direct value-add (GDP) impact of between $1.9 and $2.8B and between 32 and 46K jobs**

Using BEA multipliers, this GDP **impact could increase to between $6.2 - $9.1B nationally, and 75 and 109K jobs**, when all indirect and induced impacts are accounted for