NORTH CAROLINA
Department of Transportation

Revenue Outlook

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COVID-19 Economics Outlook

Unknown at this time:

- Magnitude
  - Changes in GDP, unemployment rate, fuel consumption, car sales, etc.
- Time Horizon
  - When will economic recovery start
  - Shape of recovery (V, U, W, or Hockey Stick)
  - Time to return to pre-COVID-19 level
- Fiscal Policies
  - Further local, state or federal Directives

Known at this time:

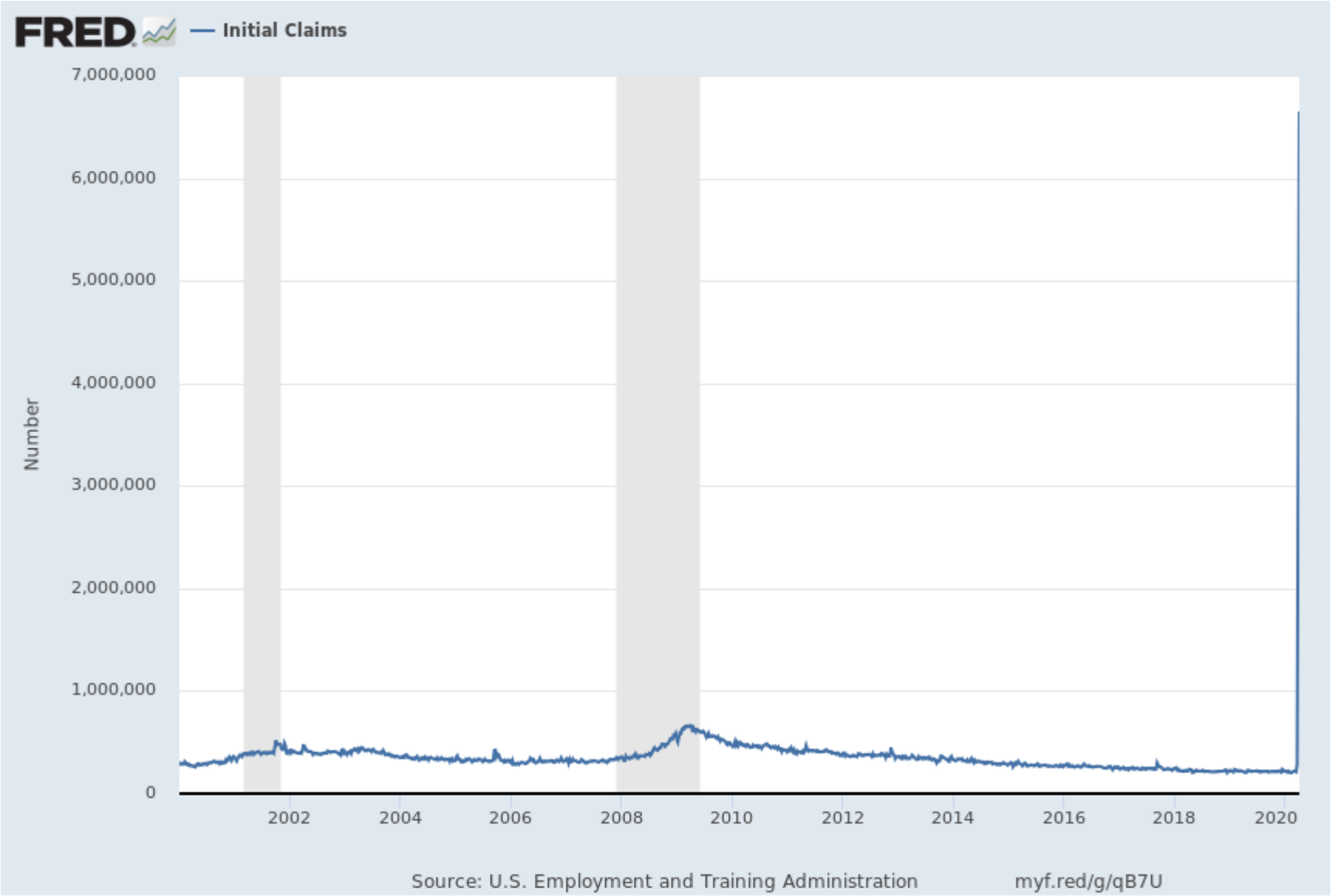
- Agreement of major economic contraction

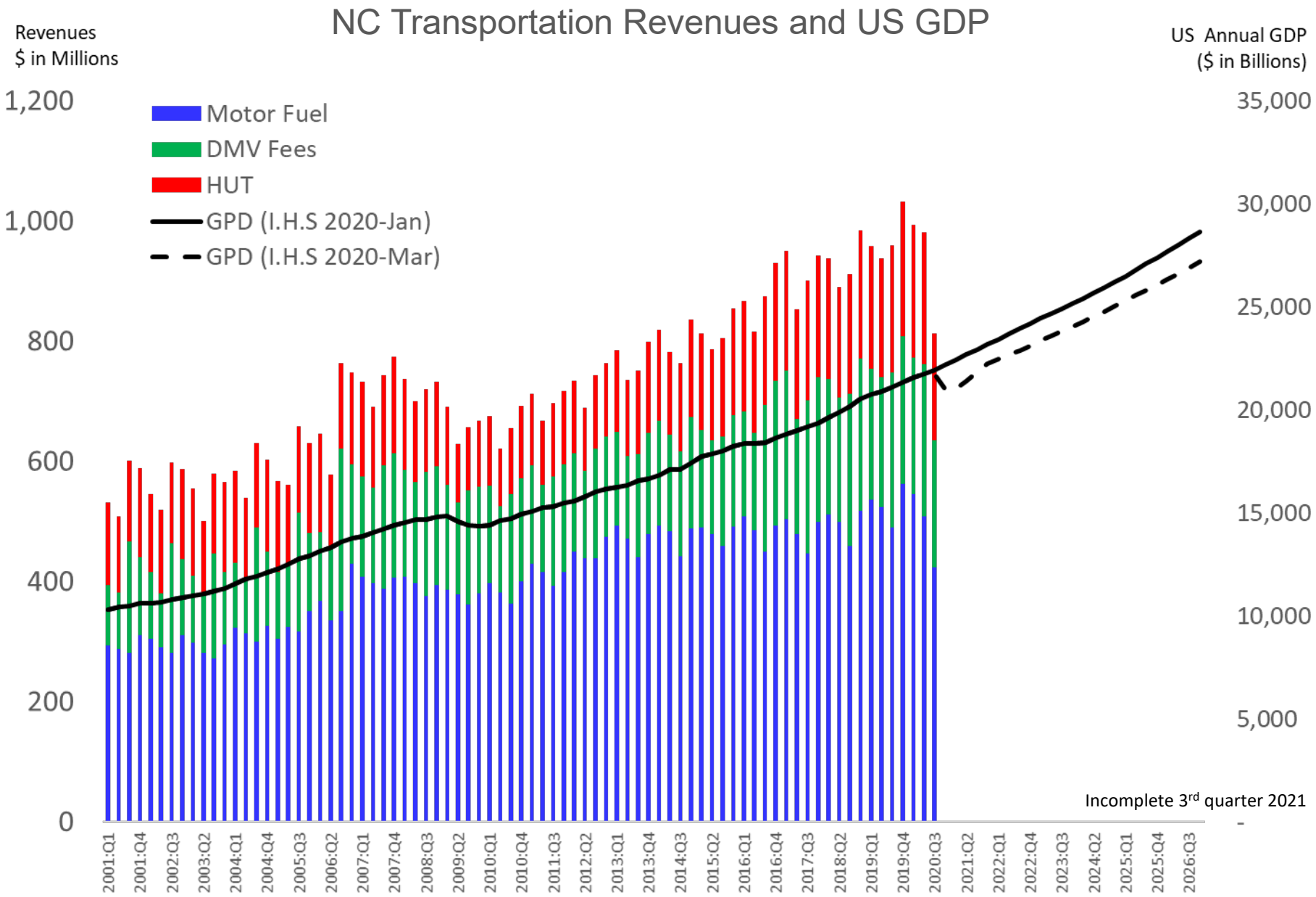
Revenue Model - Variables

Source	Share of Revenue	Variables	Variables
Motor Fuel Tax	40%	Rate	General Statute Formula $\text{Rate}_{X} = \text{Rate}_{X-1} \times \frac{75\%\ \Delta(\text{Population}_{x \text{ and } x-1})}{25\%\ \Delta(\text{CPI-E}_{x \text{ and } x-1})}$
		Fuel Consumption	Employment and economic activity
DMV Fees	20%	Rate	General Statute Formula Quadrennial CPI Adjustment
		Transactions	Employment and economic activity
Highway Use Tax	15%	Rate	General Statute
		Transactions	Employment and economic activity
Federal	25%	Revenue	Congressional Budget Office

Unemployment Rate – March 2020 (4.4%)

Unemployment Insurance Weekly Claims – 3/28 (6.7M)




NC Transportation Revenues and US GDP
Revenues
$ in Millions
US Annual GDP
($ in Billions)
Motor Fuel
DMV Fees
HUT
GPD (I.H.S 2020-Jan)
GPD (I.H.S 2020-Mar)
1,200
1,000
800
600
400
200
0
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
Incomplete 3rd quarter 2021
2001:Q1
2001:Q4
2002:Q3
2003:Q2
2004:Q1
2004:Q4
2005:Q3
2006:Q2
2007:Q1
2007:Q4
2008:Q3
2009:Q2
2010:Q1
2010:Q4
2011:Q3
2012:Q2
2013:Q1
2013:Q4
2014:Q3
2015:Q2
2016:Q1
2016:Q4
2017:Q3
2018:Q2
2019:Q1
2019:Q4
2020:Q3
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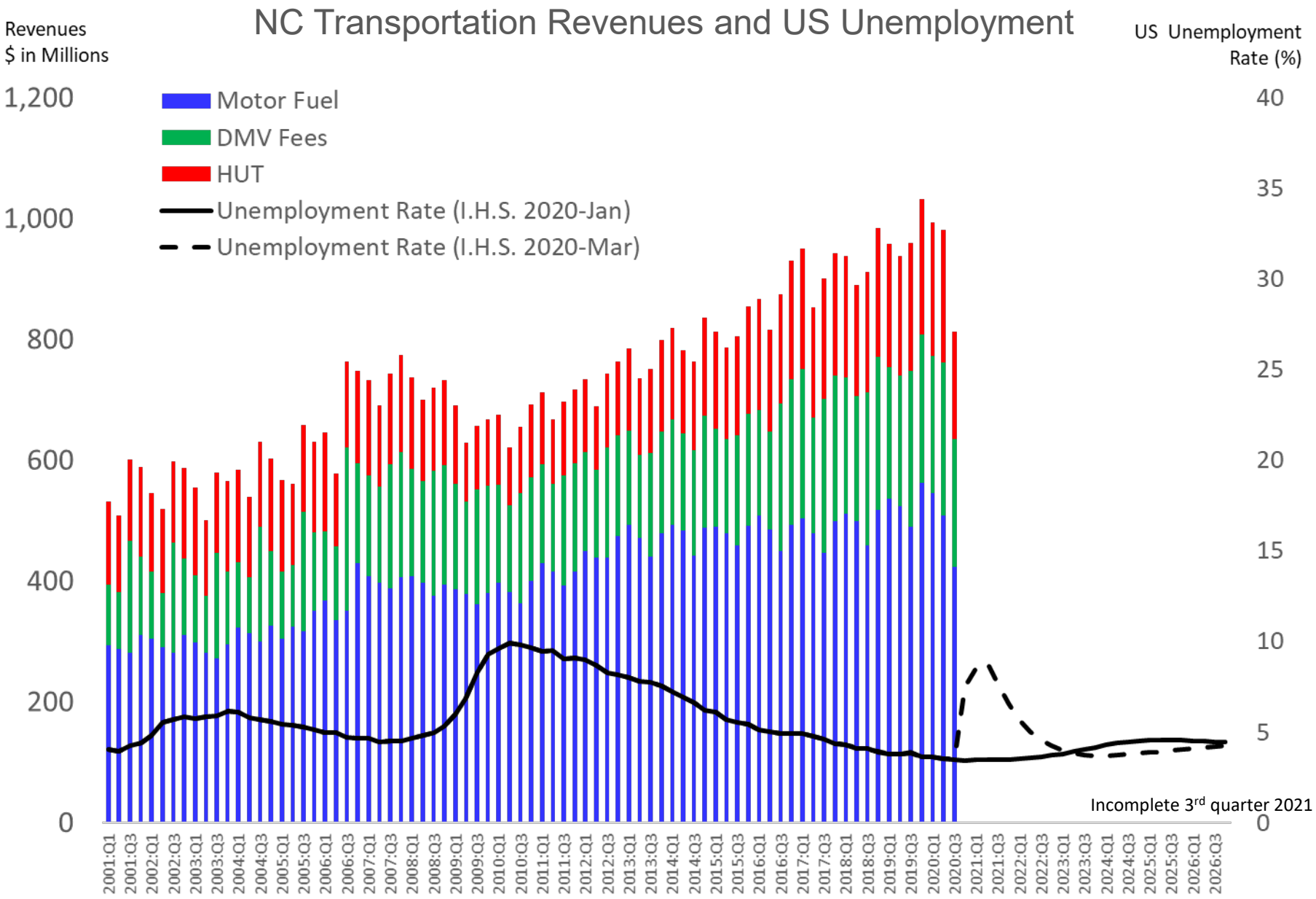
2022:Q1
2022:Q4
2023:Q3
2024:Q2
2025:Q1
2025:Q4
2026:Q3


NC Transportation Revenues and US Unemployment
Revenues
$ in Millions
US Unemployment
Rate (%)
Motor Fuel
DMV Fees
HUT
Unemployment Rate (I.H.S. 2020-Jan)
Unemployment Rate (I.H.S. 2020-Mar)
1,200
1,000
800
600
400
200
0
40
35
30
25
20
15
10
5
0
Incomplete 3rd quarter 2021
2001:Q1
2001:Q3
2002:Q1
2002:Q3
2003:Q1
2003:Q3
2004:Q1
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2021:Q1
2021:Q3
2022:Q1
2022:Q3
2023:Q1
2023:Q3
2024:Q1
2024:Q3
2025:Q1
2025:Q3
2026:Q1
2026:Q3

US GDP Forecast for 2020

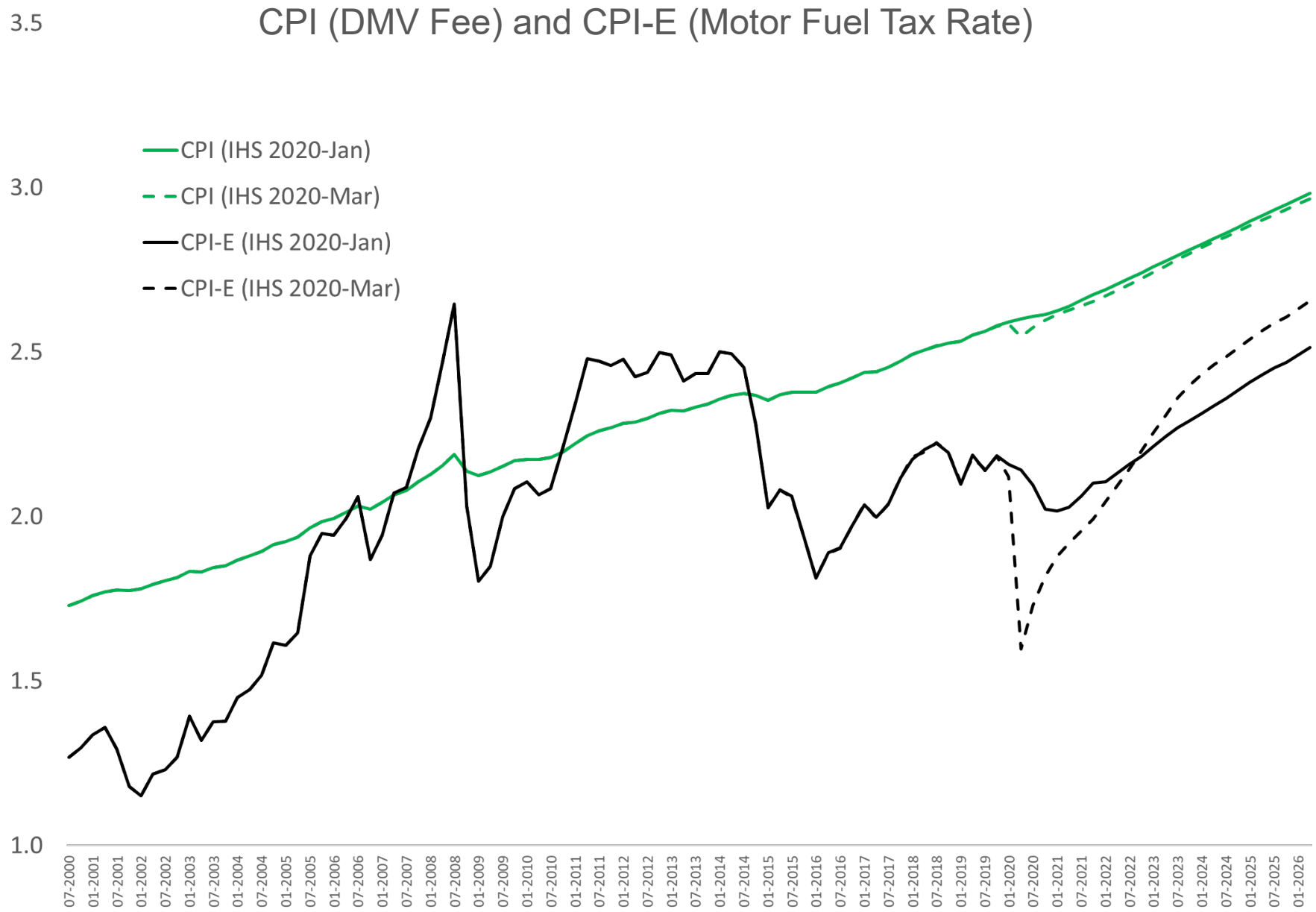
Source	Forecast date	Q1	Q2	Q3	Q4	Annual
Goldman Sachs (revised)	20-Mar	-6.0%	-24.0%	12.0%	10.0%	NA
Morgan Stanley (revised)	21-Mar	NA	-30.1%	NA	NA	NA
Bank of America (revised)	20-Mar	NA	-25.0%	rebound 2021		NA
Deutshe Bank	20-Mar	0.6%	-12.9%	rebound 2020		NA
UBS	20-Mar	-2.1%	-10.0%	rebound 2020		NA
JPMorgan Chase	20-Mar		-25%	rebound 2021		NA
Information Handling Services (HIS)	20-Mar	0.8%	-12.6%	-1.1%	6.0%	NA
For comparison last time technical recession largest drop -8% Q4 2008 (+18 months Q2) Information as of March 31, 2020						

GDP (Gross Domestic Product) is how much a country produces over a given period, i.e., all its goods and services

Calculating Second-Quarter Unemployment Rate

1. Civilian labor force in February 2020 = 164.5 million (BLS via FRED)
2. Unemployment rate in February 2020 = 3.5% (BLS via FRED)
3. Unemployed persons in February 2020 = 5.76 million (#1 * #2)
4. Workers in occupations with high risk of layoff = 66.8 million (Gascon blog post)
5. Workers in high contact-intensive occupations = 27.3 million (Famiglietti/Leibovici/Santacreu blog post)
6. Estimated layoffs in second quarter 2020 = 47.05 million (Average of #4 and #5)
7. Unemployed persons in second quarter 2020 = 52.81 million (#3 + #6)
8. Unemployment rate in second quarter 2020 = 32.1% (#7 / #1)

Source: Federal Reserve Bank of St Louis (3/24/2020)


CPI (DMV Fee) and CPI-E (Motor Fuel Tax Rate)
CPI (IHS 2020-Jan)
CPI (IHS 2020-Mar)
CPI-E (IHS 2020-Jan)
CPI-E (IHS 2020-Mar)
3.5
3.0
2.5
2.0
1.5
1.0
07-2000
01-2001
07-2001
01-2002
07-2002
01-2003
07-2003
01-2004
07-2004
01-2005
07-2005
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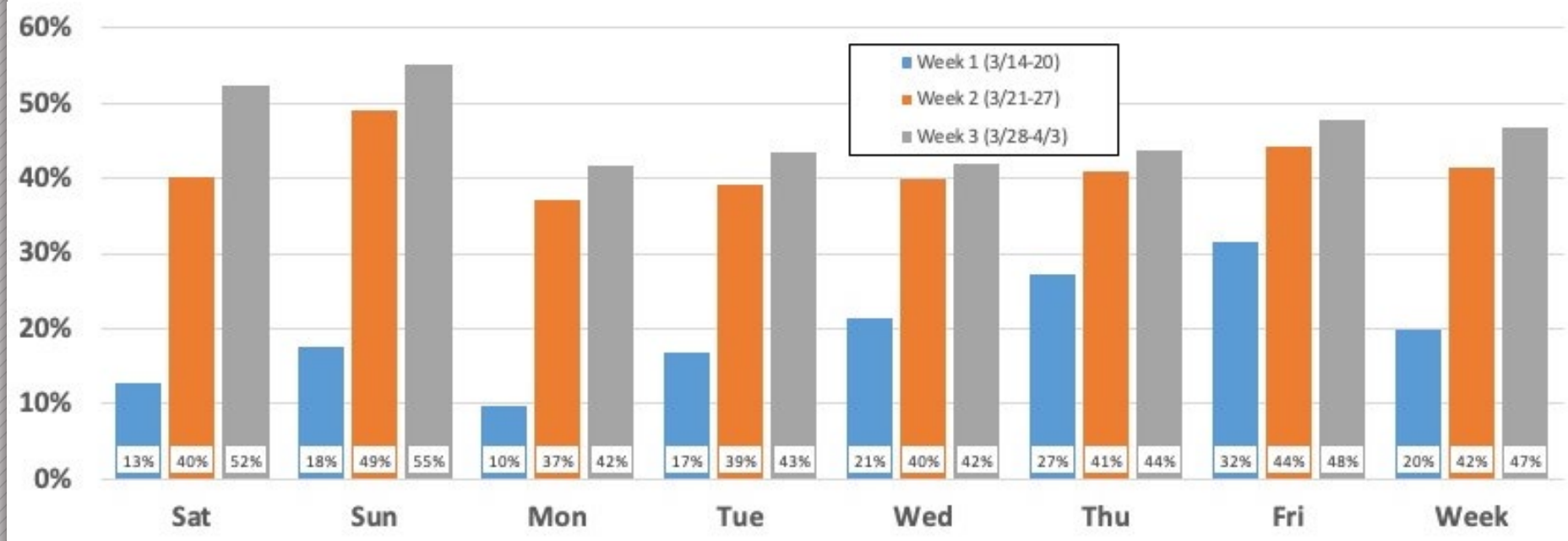
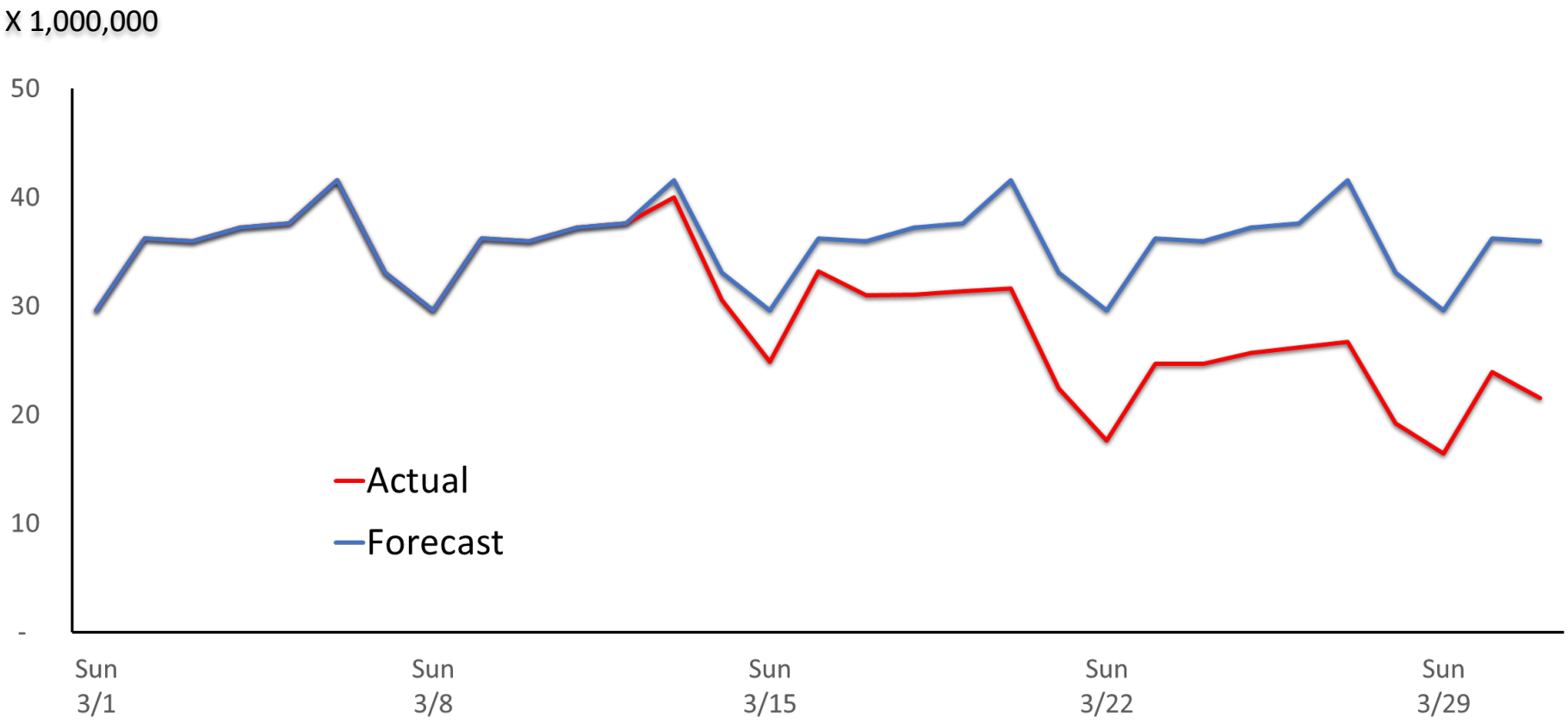
07-2021
01-2022
07-2022
01-2023
07-2023
01-2024
07-2024
01-2025
07-2025
01-2026

Daily Reduction in Nationwide Passenger Travel (Compared to Same Day of the Week of February 22, 2020)



Source: Inrix

NC Estimated VMT – March 31, 20202 (16% Reduction)

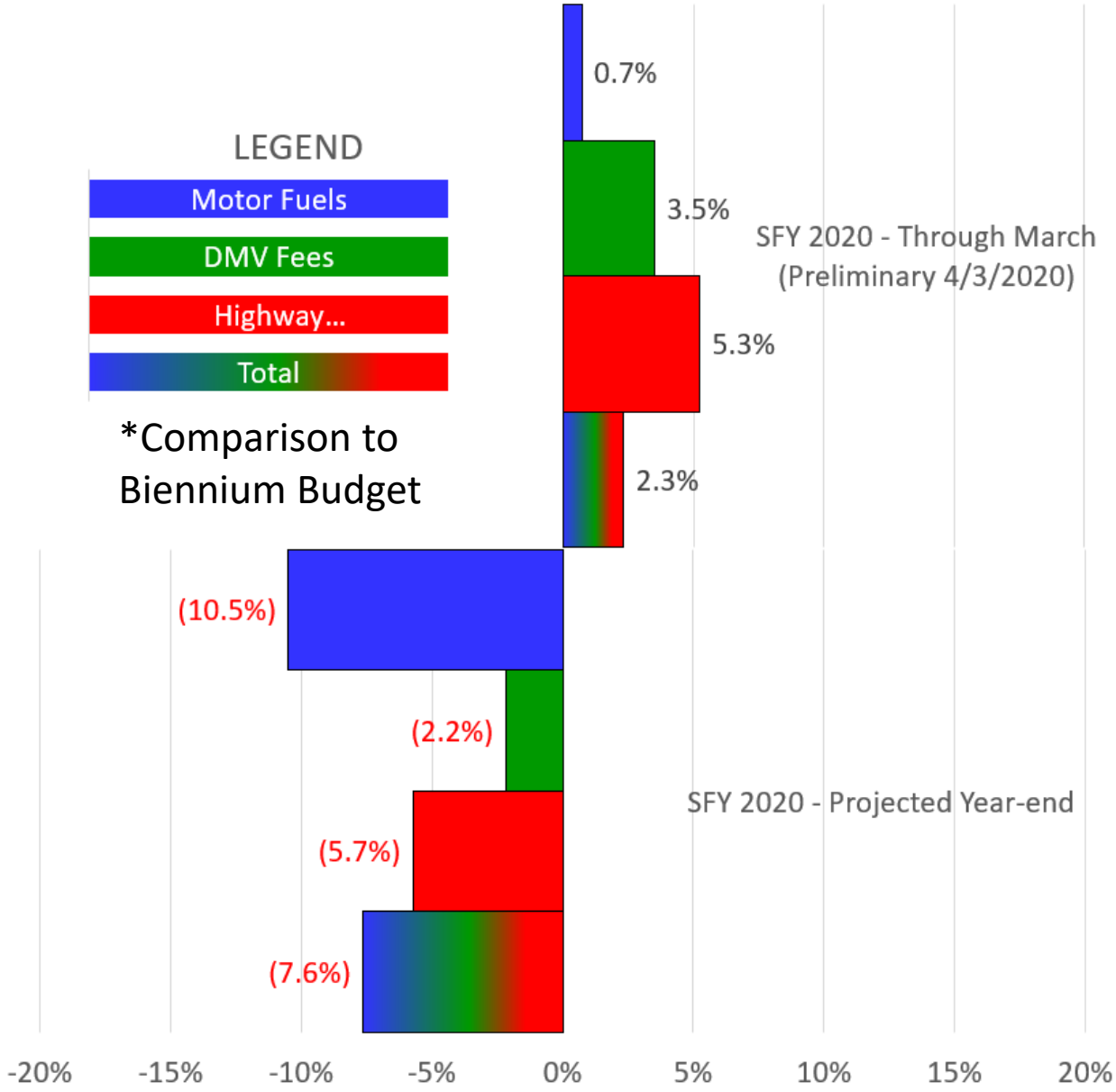


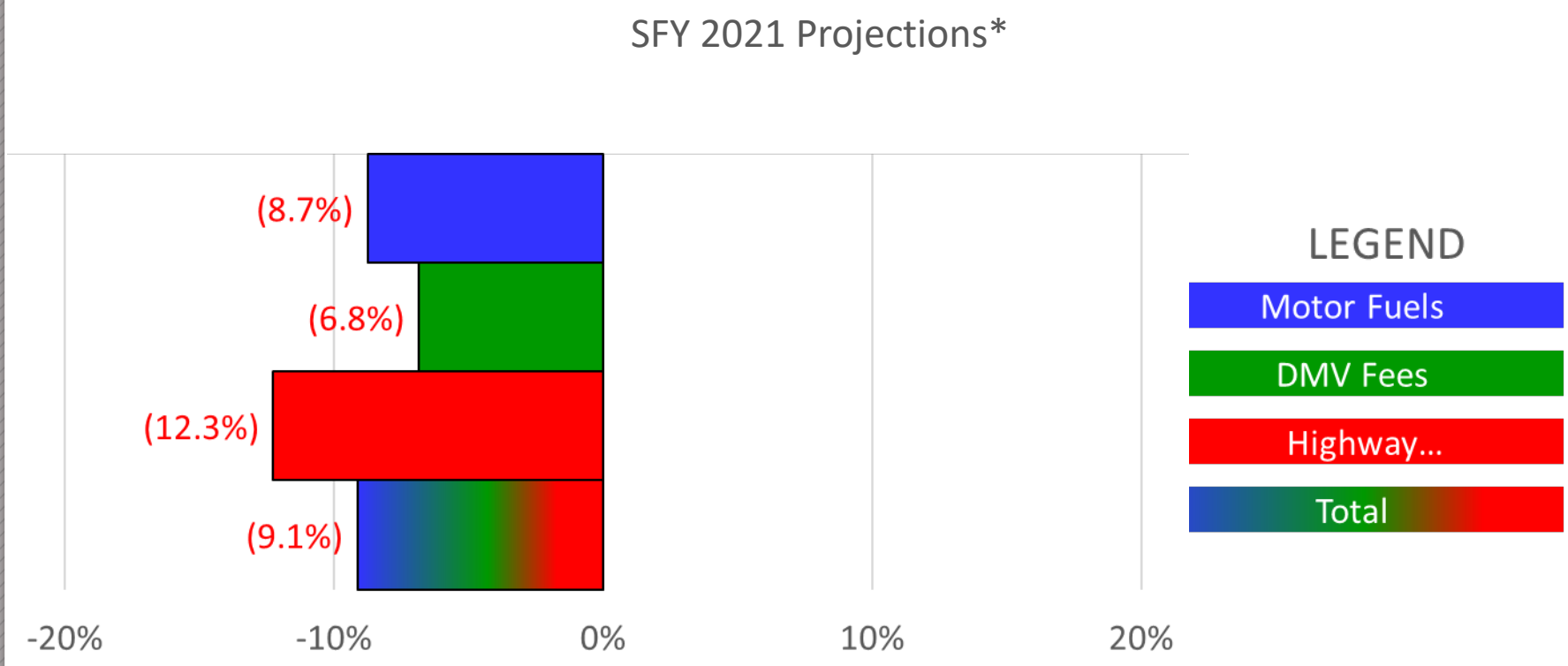
COVID-19 Economics Outlook Assumptions

- COVID-19 Preventive measures lifted by August
- Things will get worse before improving
- Time-line
  - April to June CY 2020 worse
  - July to September CY 2020 - minor improvement
  - October to December CY 2020 - rebounding 2020

- Continuous Revenue Updates

SFY 2020 Projections* – Year to date (March) and Year-end





Assumes a 1.5 cpg reduction in MFT rate

Post Presentation Note: Chart revised to reflect shares of total annual budget

*Comparison to Biennium Budget

Comparison to Previous Event

The Great Recession (Dec/2007 to June/2009)

Comparison Time Interval	1st Quarter	Next 4 Quarters	Total Recession 12/07 to 6/2009
Fuel Consumption	-1.8%	-4.3%	-4.9%
Total Revenues	-3.1%	-7.3%	-6.5%
Recovery Time*			57 Months

COVID-19 Impact (Mar/2020 to ????)

Comparison Certified Budget	Quarter (Apr – June/2020)	SFY 2020	SFY 2021	COVID Impact ?? to ??
Fuel Consumption	-38% to -42%	-7% to -11%	-2% to -6%	???
Total Revenues	-32% to -36%	-6% to -10%	-7% to -11%	???
Recovery Time*				???

*Recovery Time to Pre-recession levels