

Forecasting PIT During the Pandemic

Presented to the FTA Revenue Forecasting Conference
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Forecasting PIT During the Pandemic

How did our forecast evolve through COVID-19?

What did we get wrong?

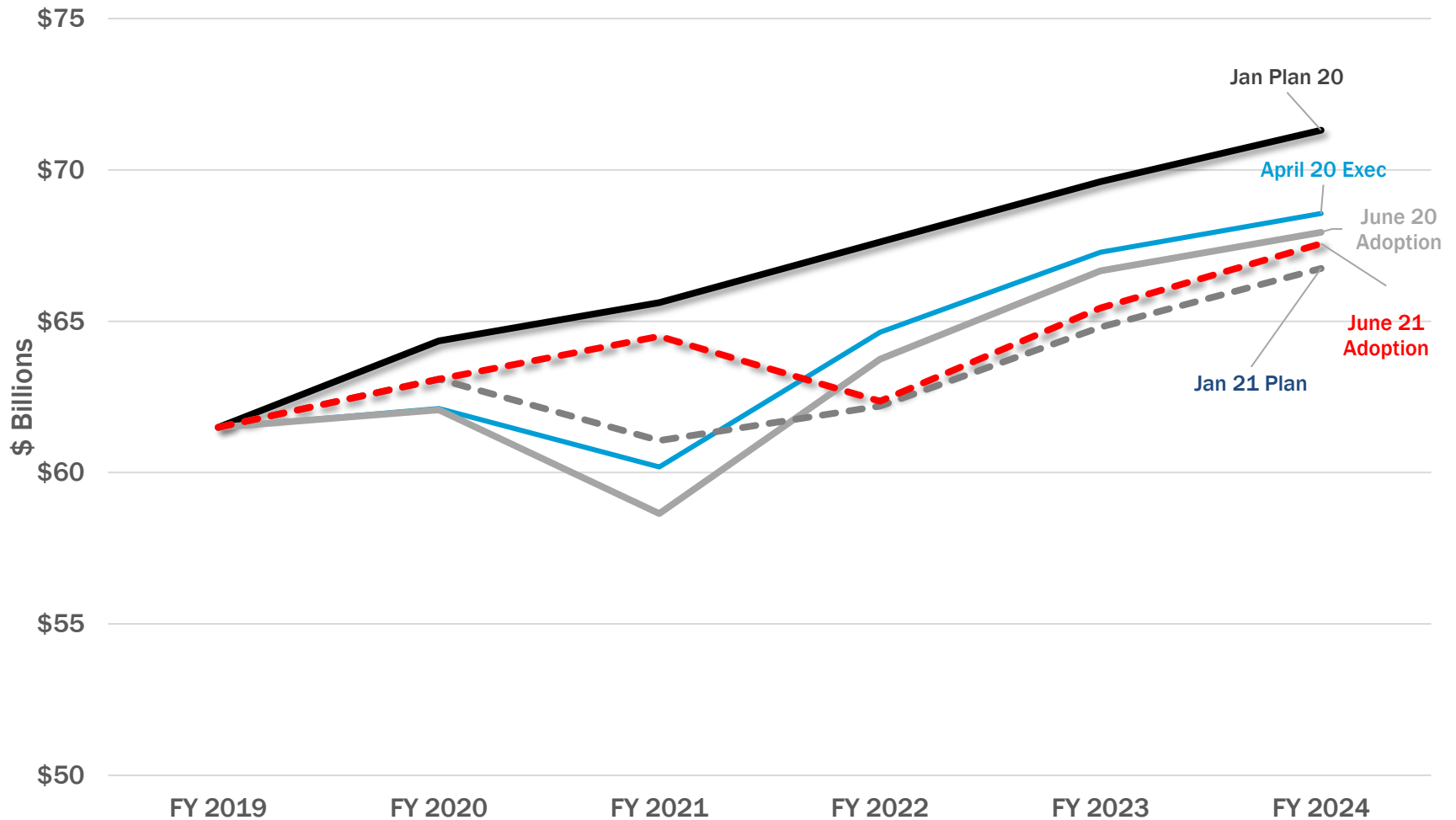
Why did we get it wrong?

Did we get it wrong because our model was correct, but our exogenous variables were incorrect?

Or

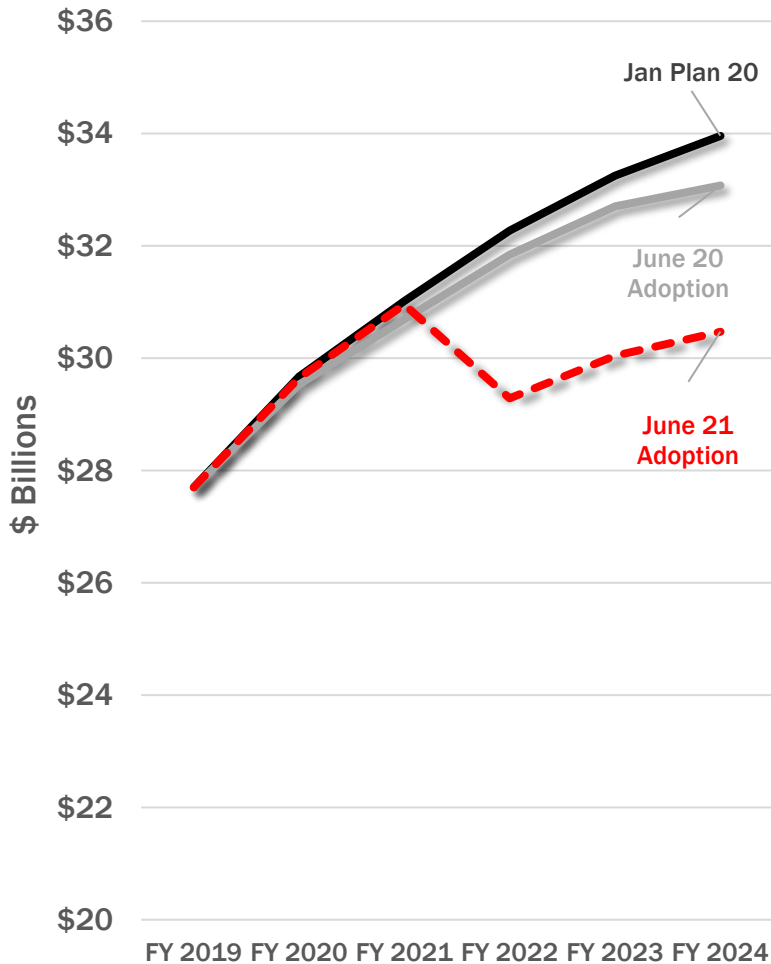
Did we get it wrong because our model was incorrect, but our exogenous variables were correct?

NYC Tax Revenue Forecast From January 2020 through June 2021

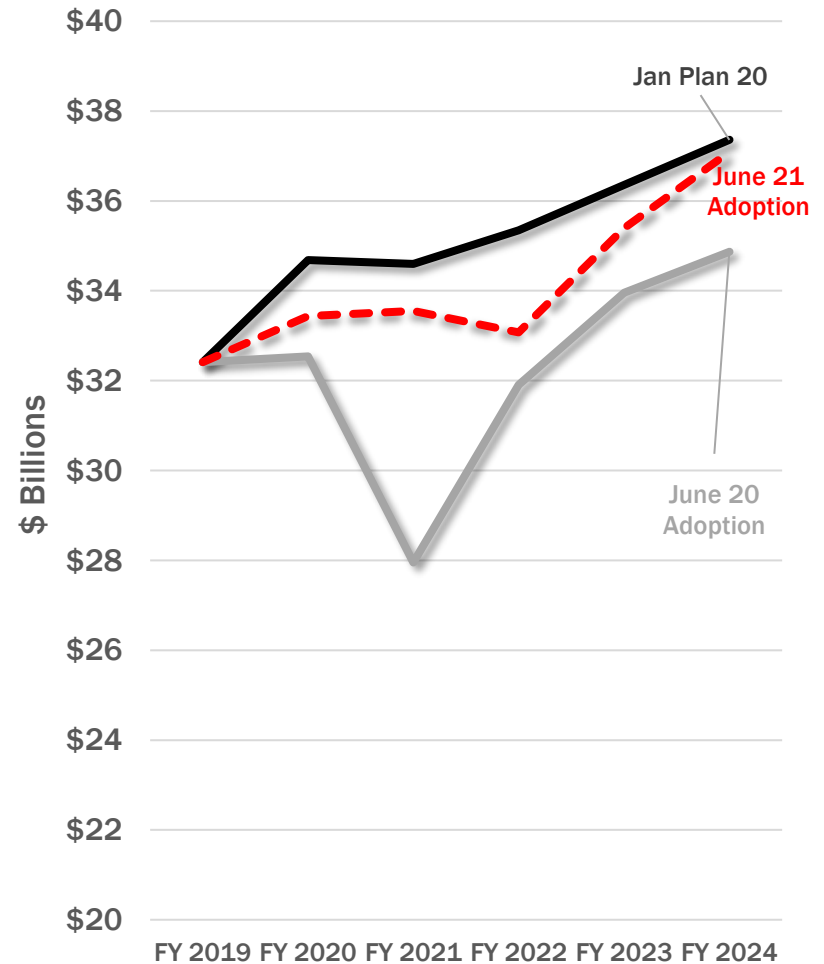


Property Taxes Vs Non-Property Taxes

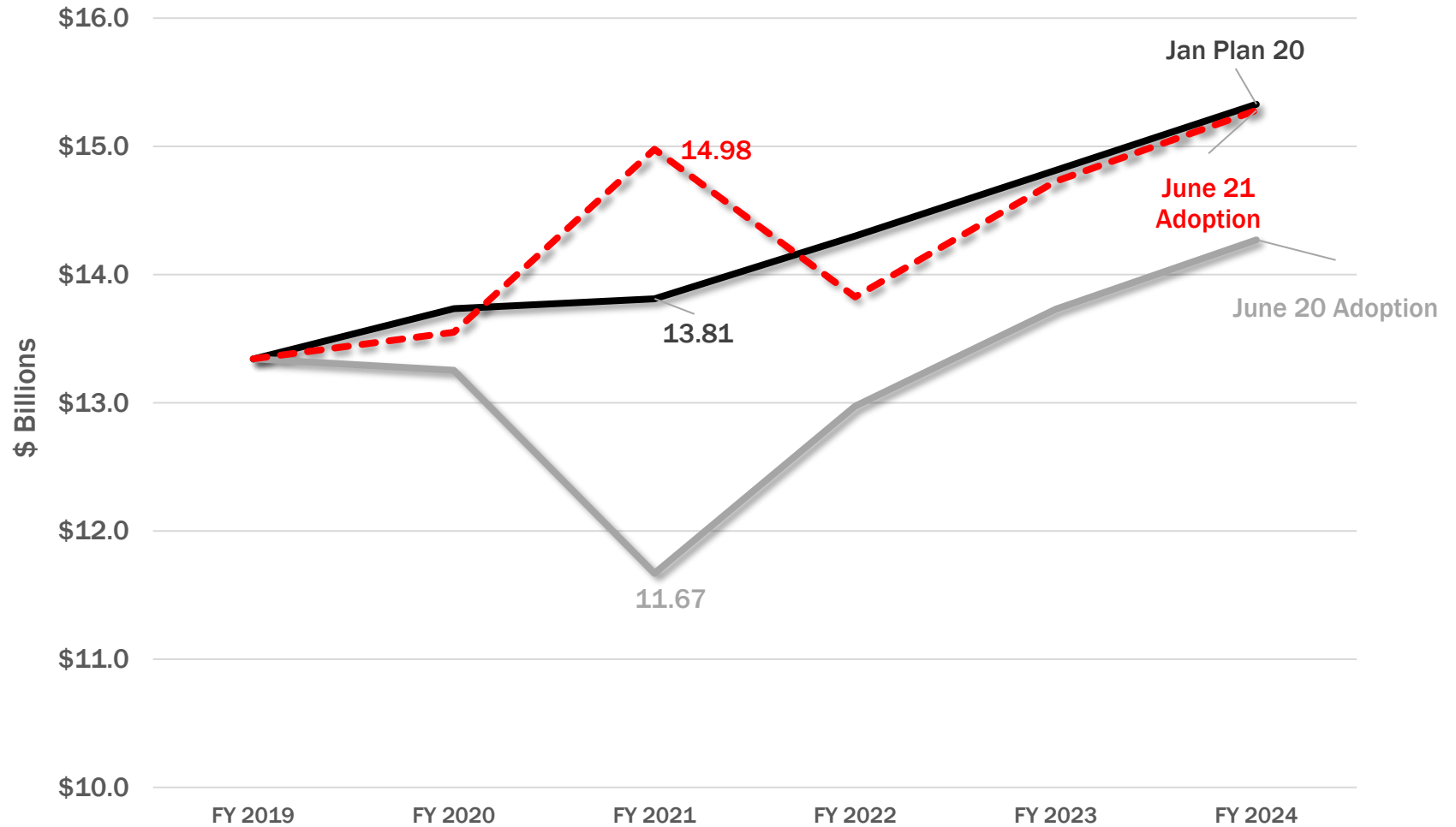
Property Taxes



Non-Property Taxes

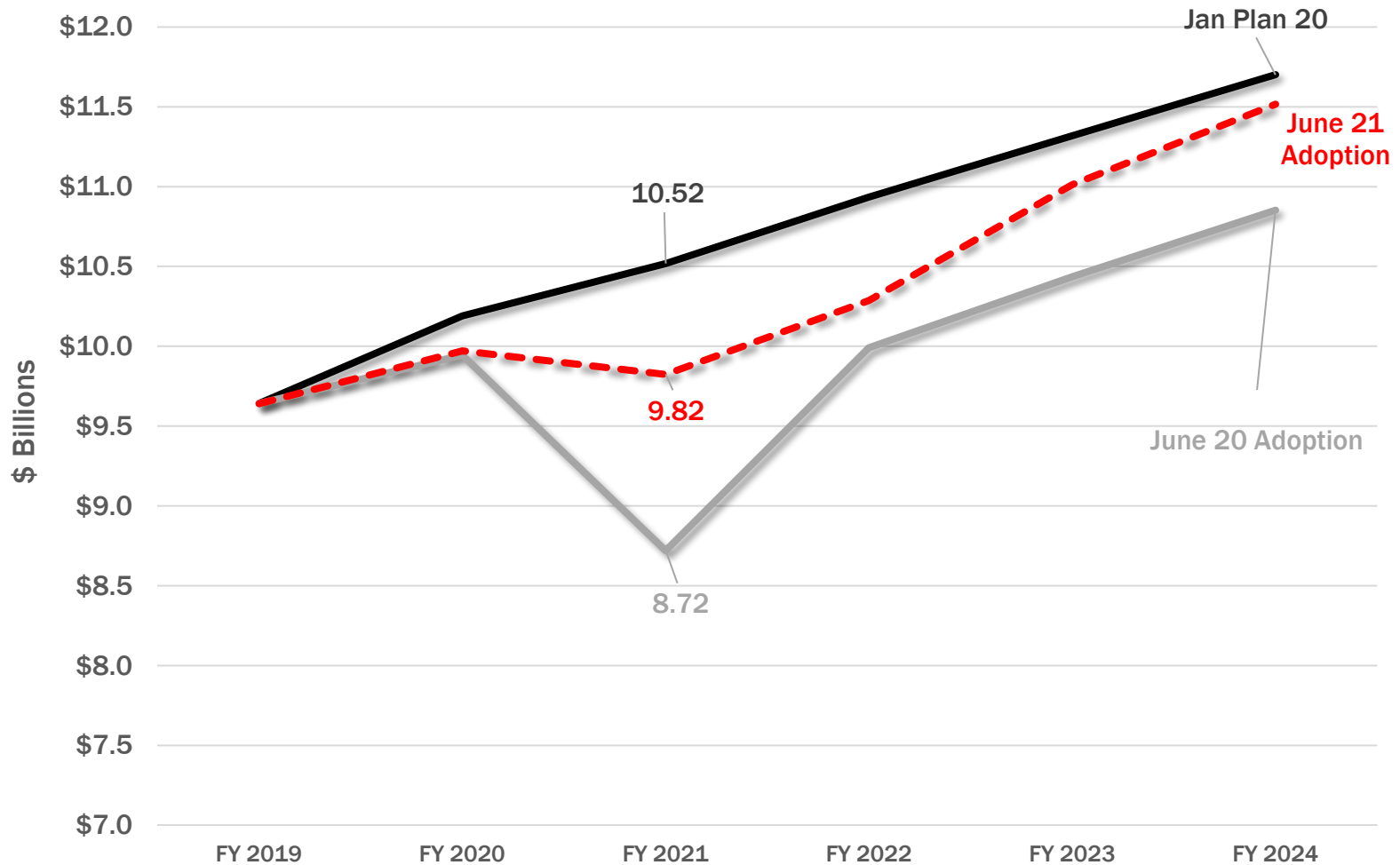


Personal Income Tax: Total



PIT Withholding

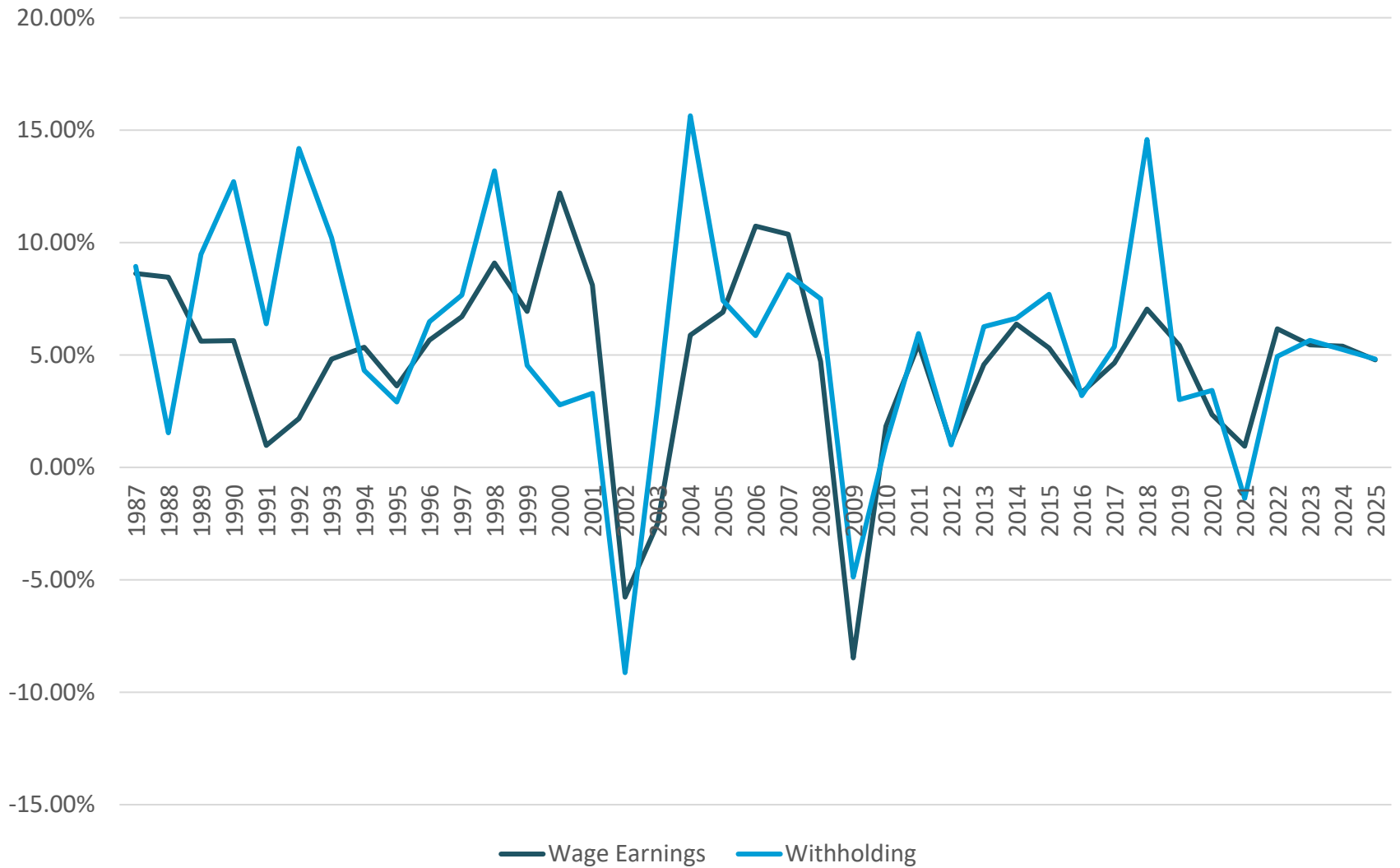
Personal Income Tax- Withholding



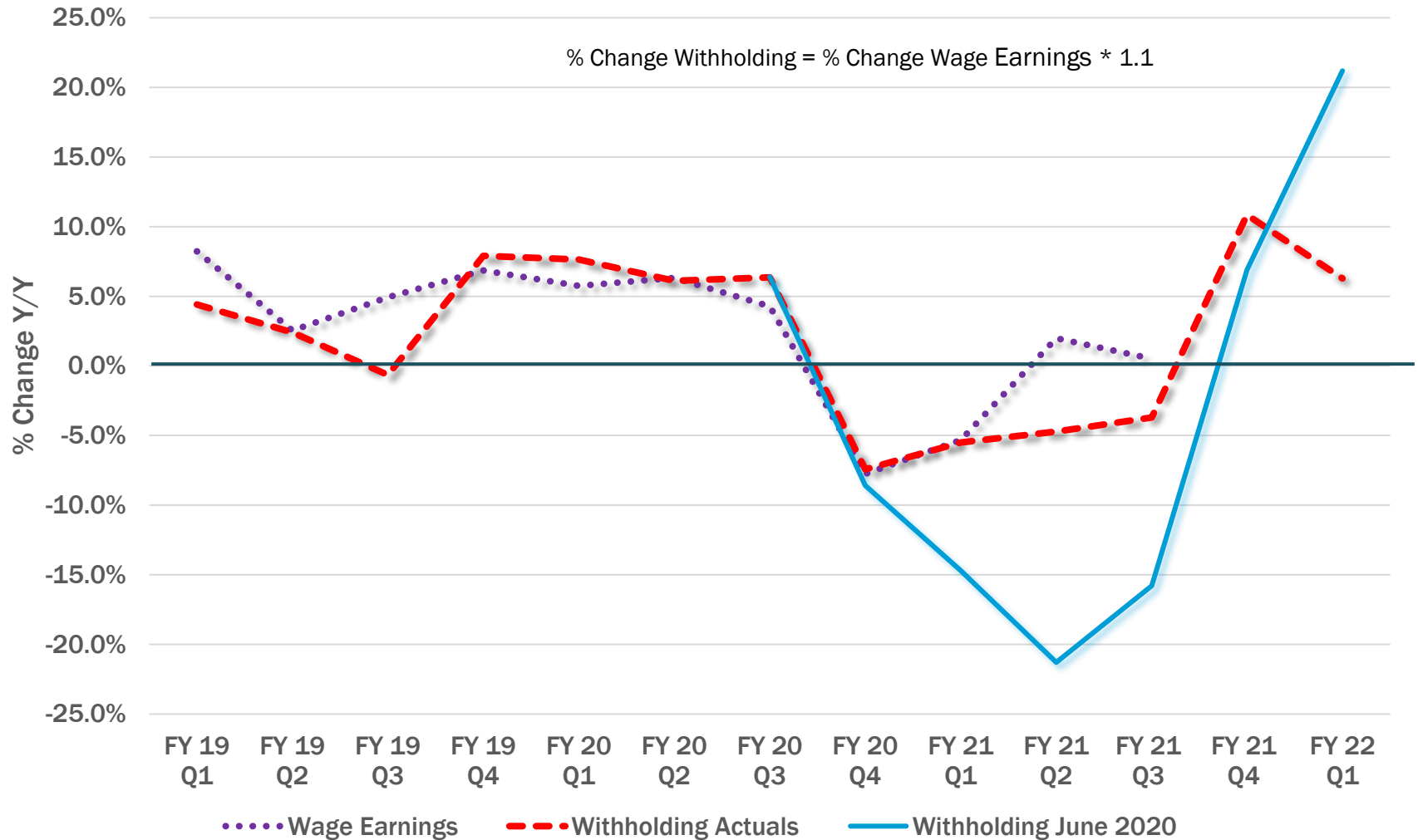
A few things to note about NYC PIT

- NYC Personal Income top tax rate is 3.876% (\$50k for single & \$90k for Joint).
- NYS's top tax rate was increased in 2021 to 10.9% (\$25m)
- NYC Personal Income top is only levied on RESIDENTS.
- NYC Wage Earnings (QCEW) is by place of work and includes non-residents.
- NYC taxes unemployment insurance, but does not withhold unemployment insurance. NYS offers recipients the option to withhold for the State and the Federal Government, just not the City.

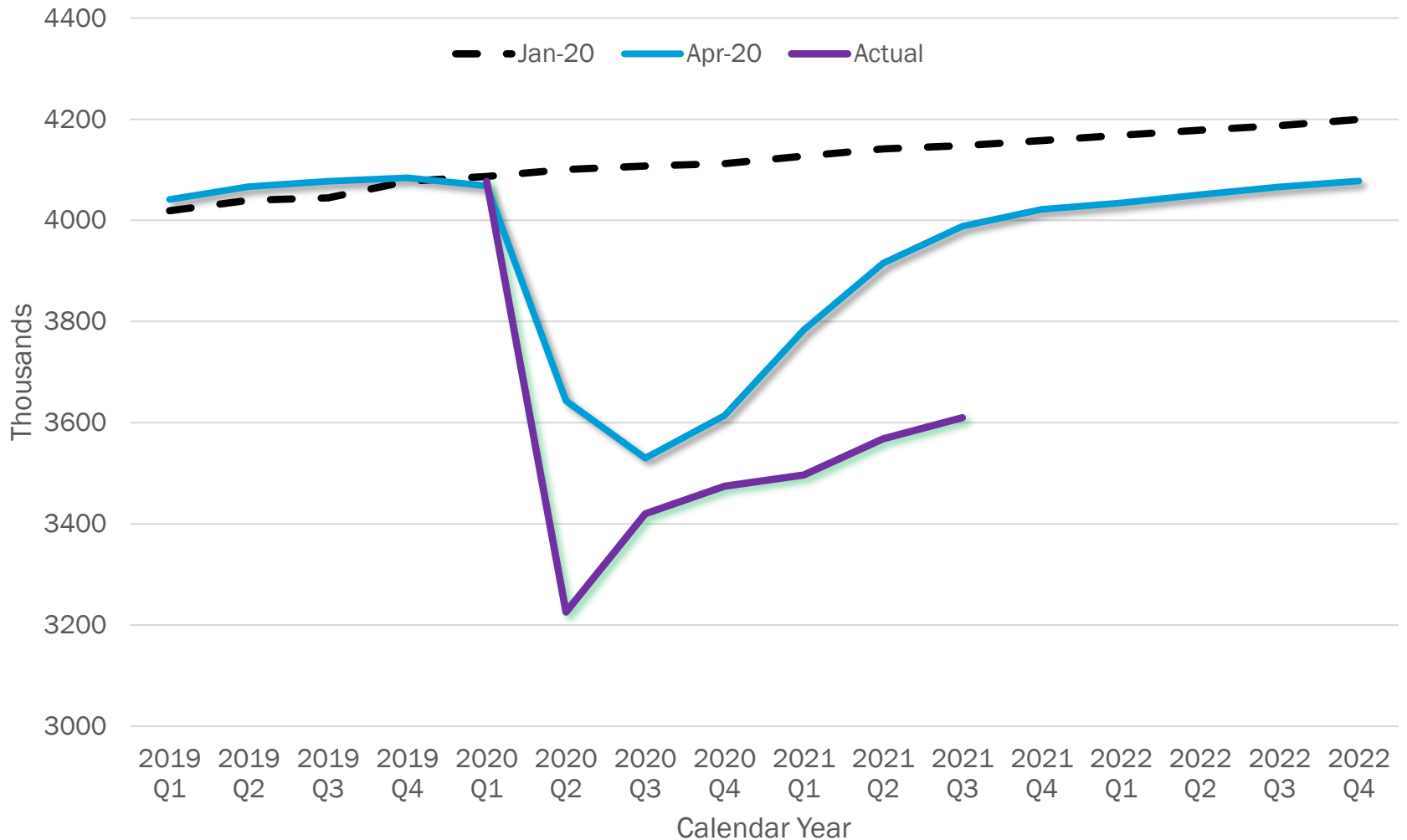
Withholding & Wage Earnings



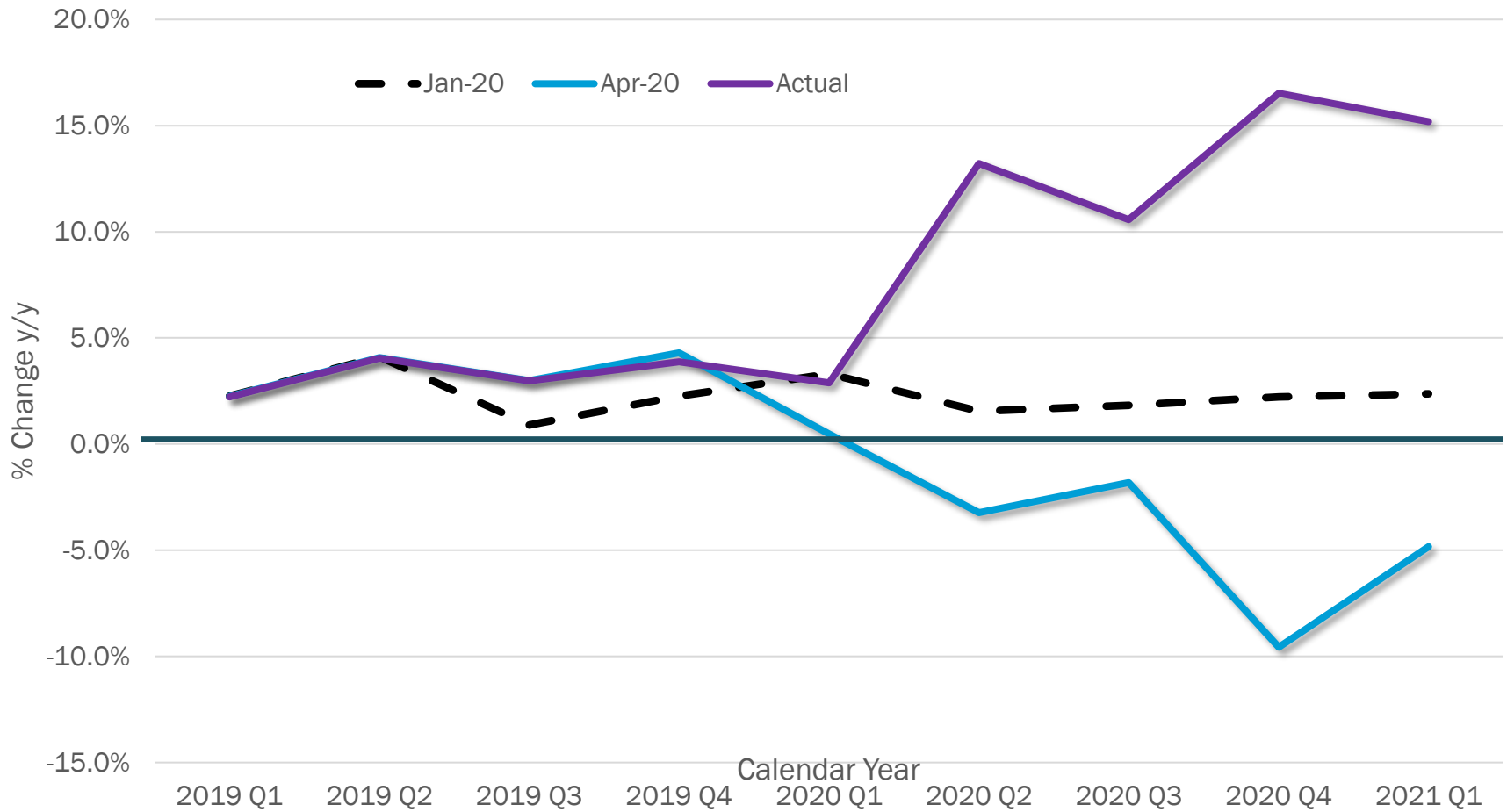
Withholding & Wage Earnings



NYC employment fell by 20 percent



Average Wages (QCEW) grew by 10 percent in 2020.



Average Wage by Sector and Employment

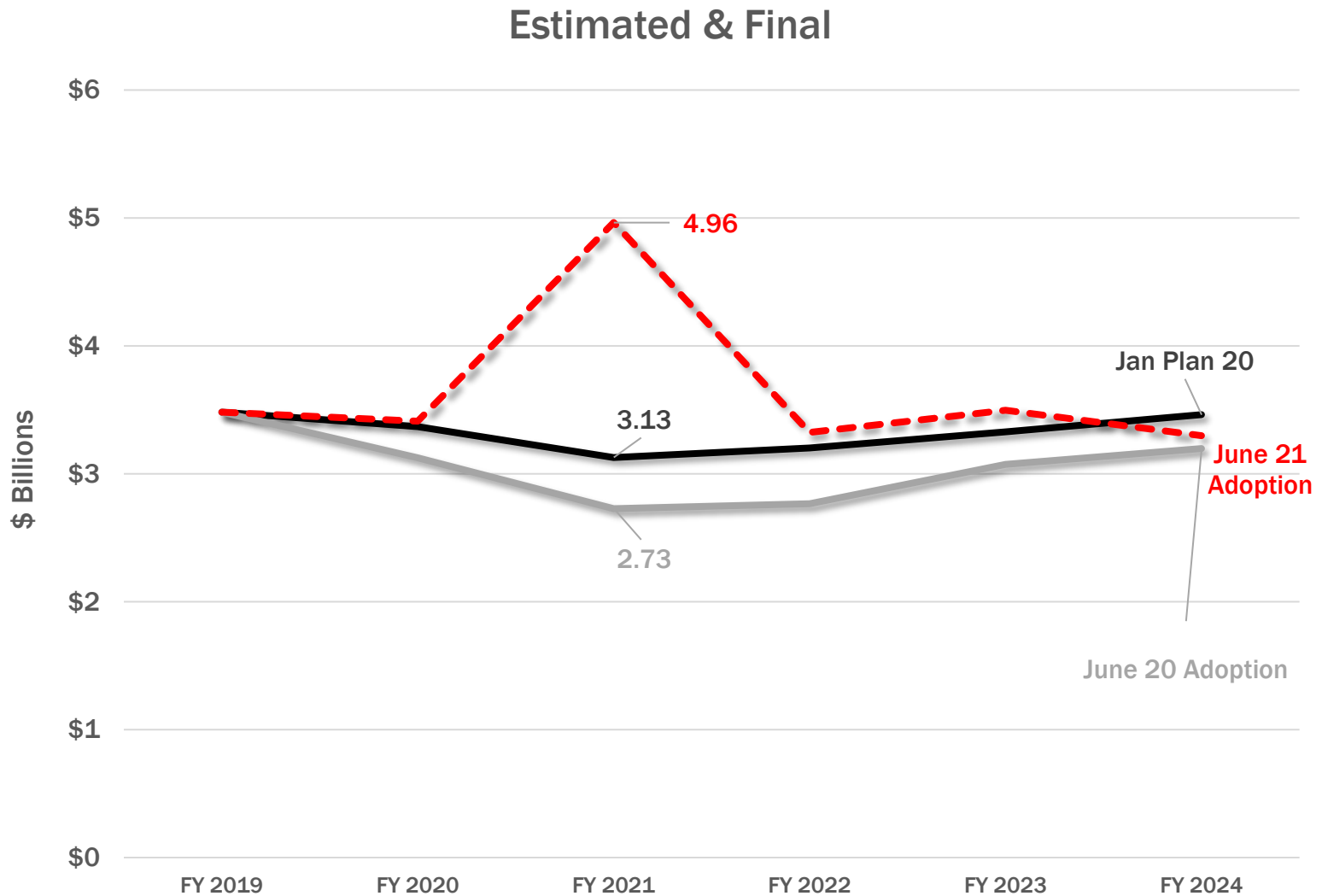
Sector	2020 Wage Growth	2020 Average Wage	2020 Job losses
Construction	3.6%	\$87,000	-23,000
Education	9.3%	84,000	-21,000
Finance	6.1%	325,000	-6,000
Health	6.8%	55,000	-30,000
Information	12.1%	174,000	-14,000
Leisure & Hospitality	6.7%	50,000	-196,000
Manufacturing	6.2%	68,000	-15,000
Professional & Business Service	10.6%	134,000	-63,000
Retail	9.5%	51,000	-63,000
Wholesale	7.3%	105,000	-19,000
Government	2.4%	83,000	1,000
Private	11.7%	109,000	-518,000
Total	10.4%	105,000	-517,000

Model Fixes

- Is there a structural shift between Withholding & Wage Earnings?
- Do we add dummies for 2020-2021
- Should we disaggregate employment by sector to better control for the wage distribution.
 - Will we gain more accuracy by forecasting smaller subsectors or does that simply add more uncertainty.
 - Will the survivor bias reverse as employment for low wage jobs or will other economic factors impact wages.

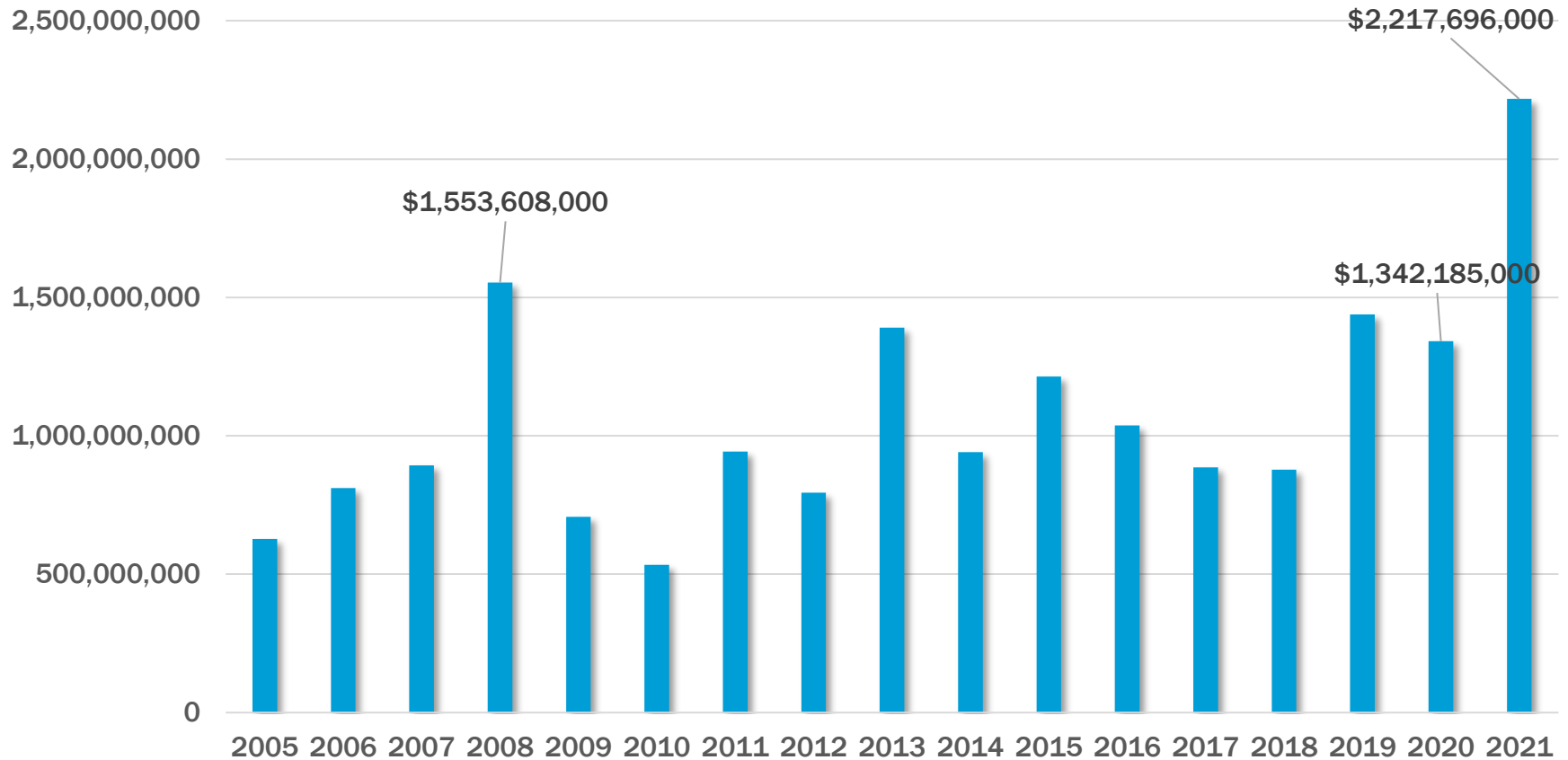
PIT Estimated

Personal Income Tax: Estimated & Final



Spring (April & May) estimated payments (Installments and Extension) are nearly \$1 billion above previous record levels.

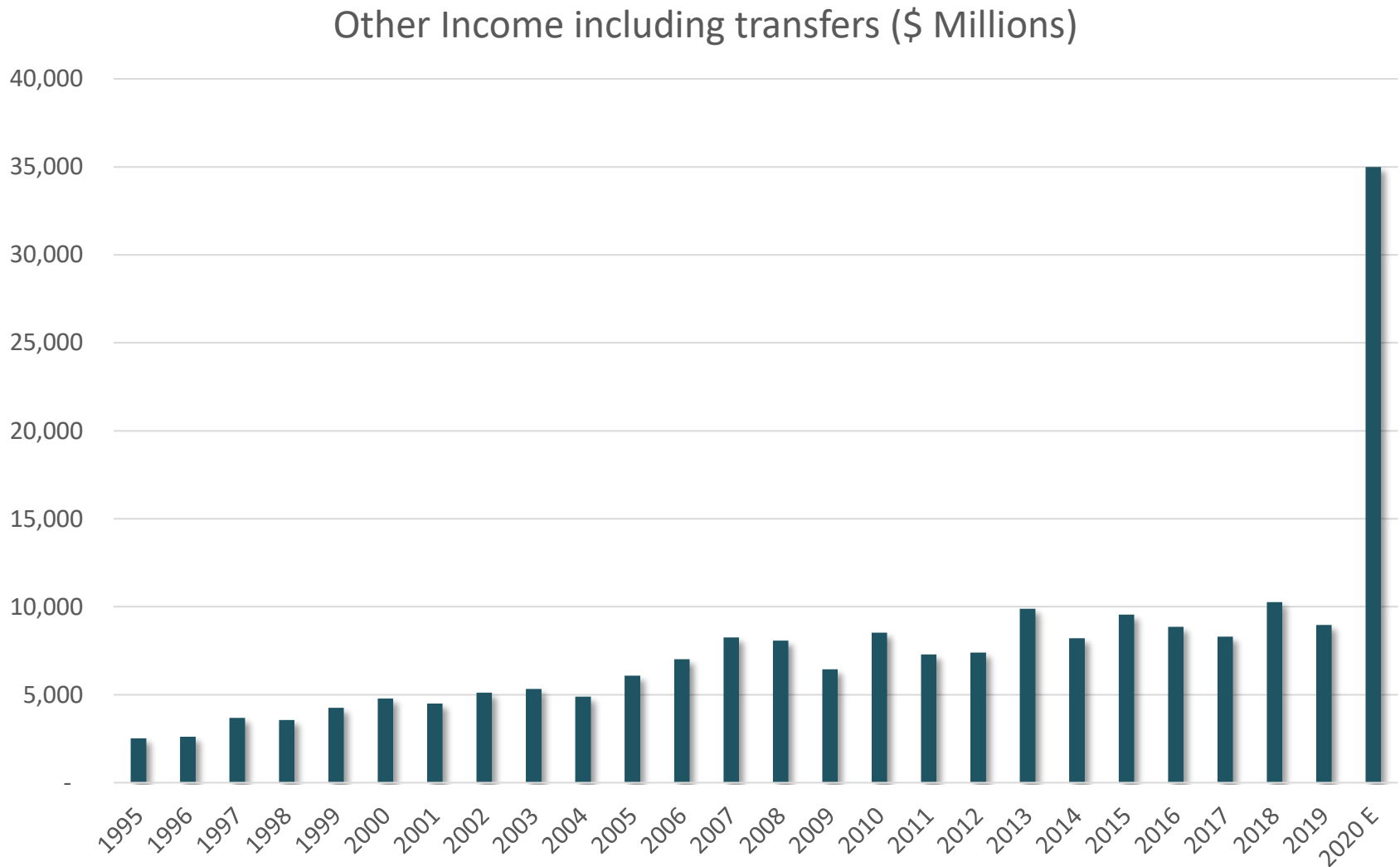
April + May Estimated



NYC Forecasts PIT liability and non-wage income by component

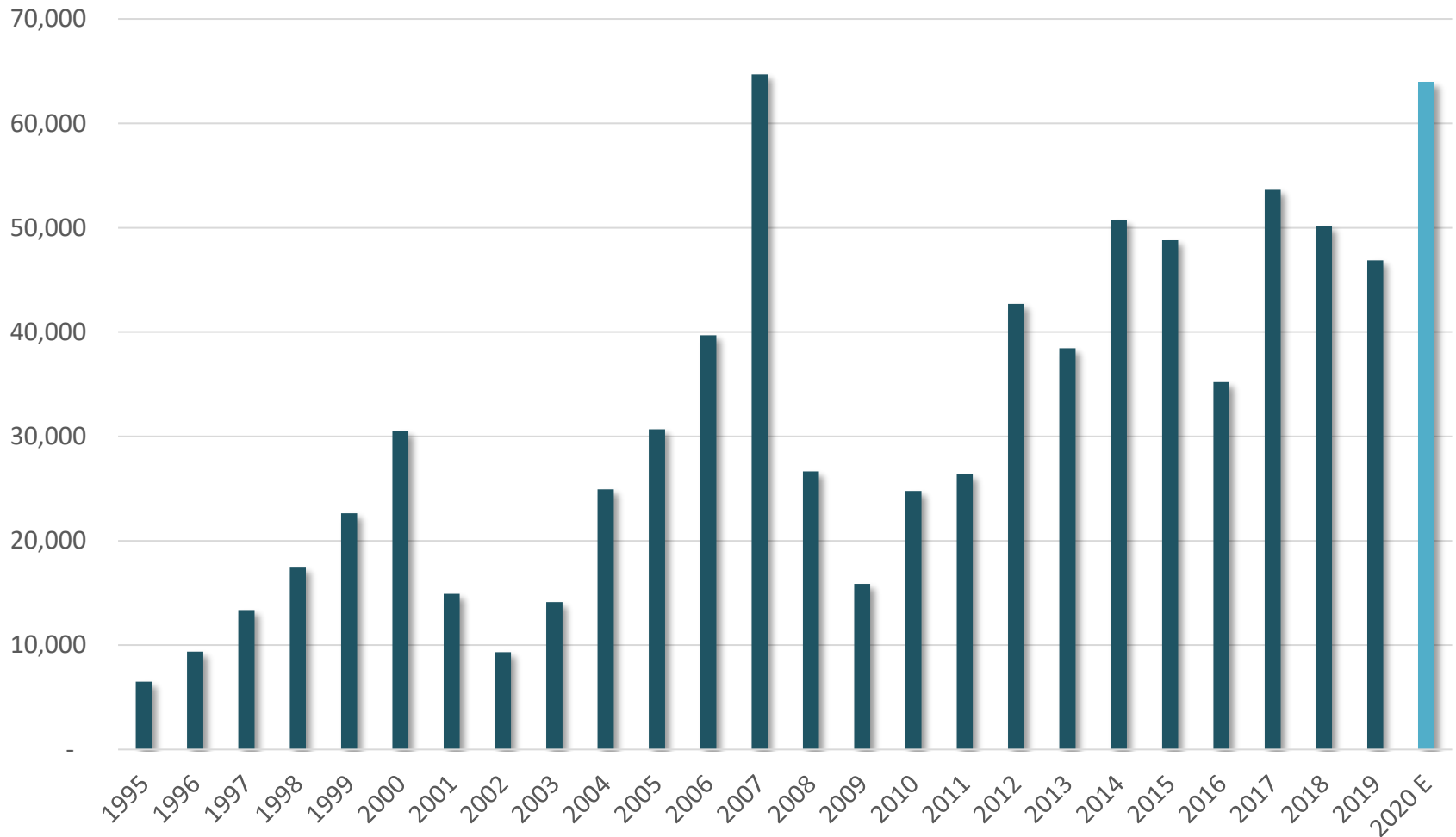
Non-Wage Income	Share of Total Income 2019
Capital Gains	11.5%
Net Business Income	3.5%
Dividend Income	4.1%
Interest Income	2.5%
Rent Royalty	5.6%
Taxable Pension	5.0%
Other (including transfers)	2.2%

Is it necessary to build a new model to predict other income, which typically comprises only 2 percent of total income?



Capital Gain NYC

Capital Gains (\$ Millions)

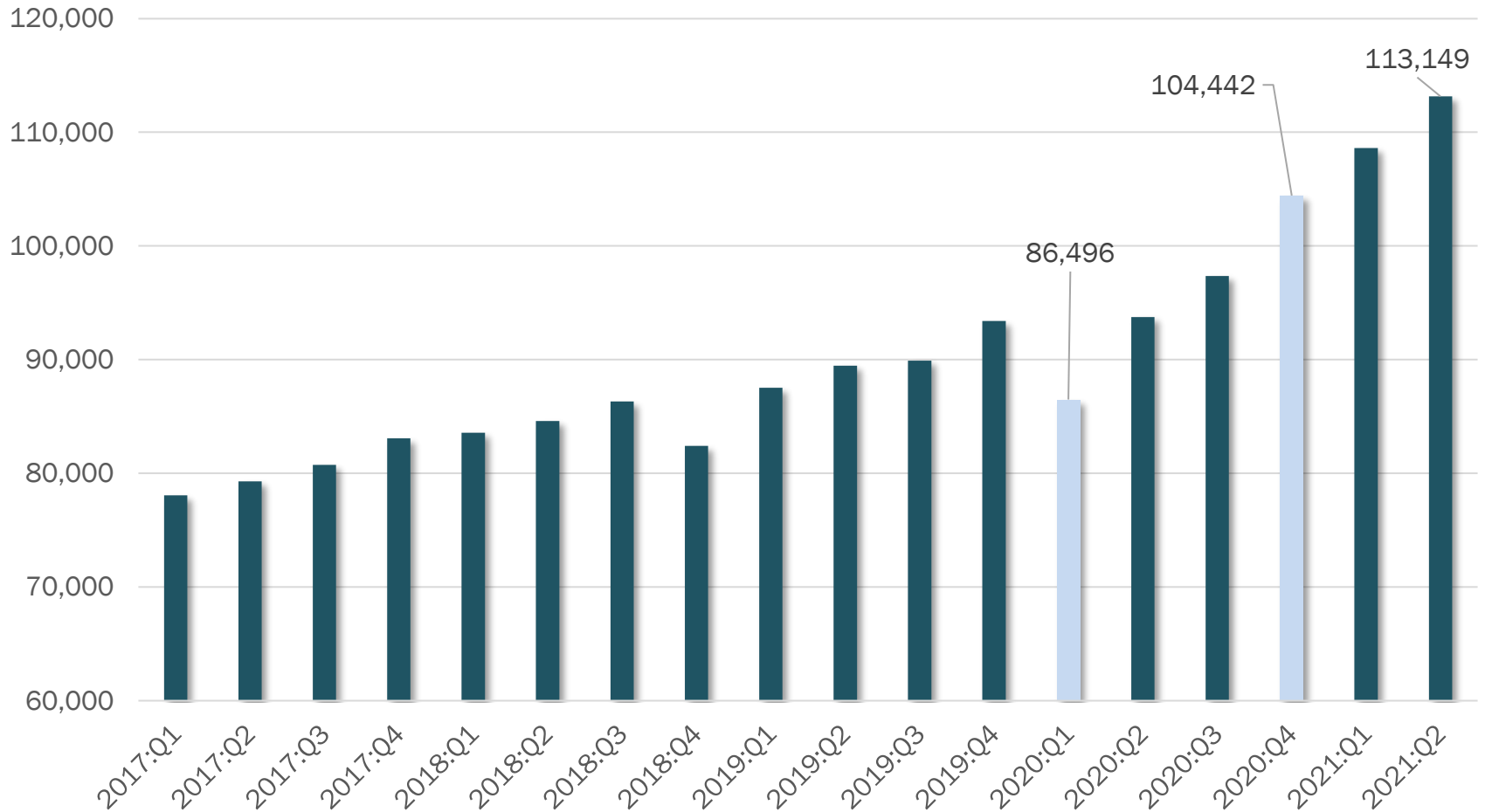


SP500 Markets have dropped by 33 percent in Feb 2020, but then increased 67 percent by the end of the 2020.

SP500 Daily Close



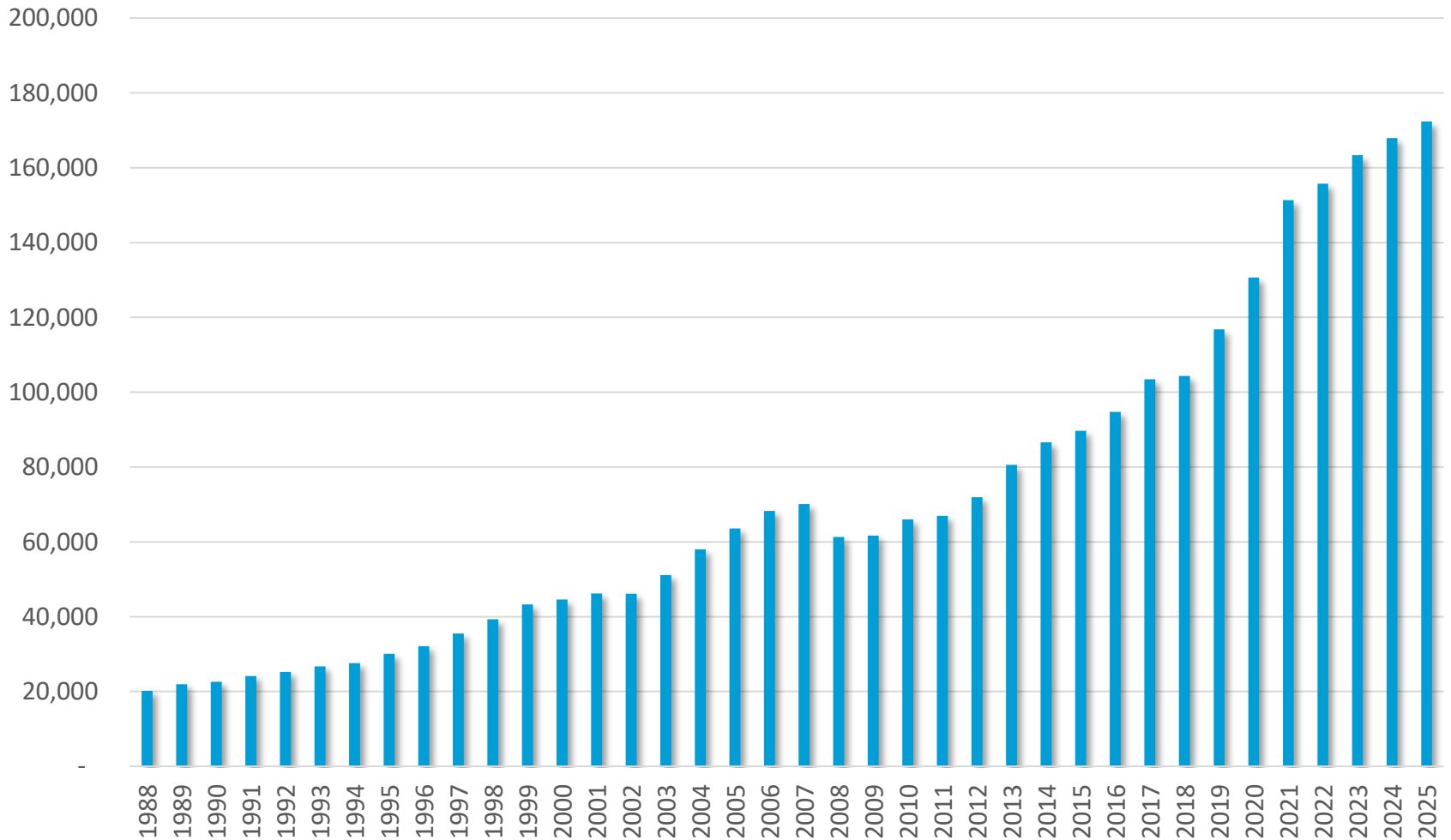
Total U.S. Financial Assets increased by nearly \$20 TRILLION from Q1 2020 to Q4.



The Fed - Table: Balance Sheet of Households and Nonprofit Organizations, 1952 - 2020 ([federalreserve.gov](https://www.federalreserve.gov))

U.S Net Worth has increased significantly

US. Household Net Worth (\$ Billions)



Testing New Relationships. NYC capital gains vs. 3-year Change in Household Net Worth

