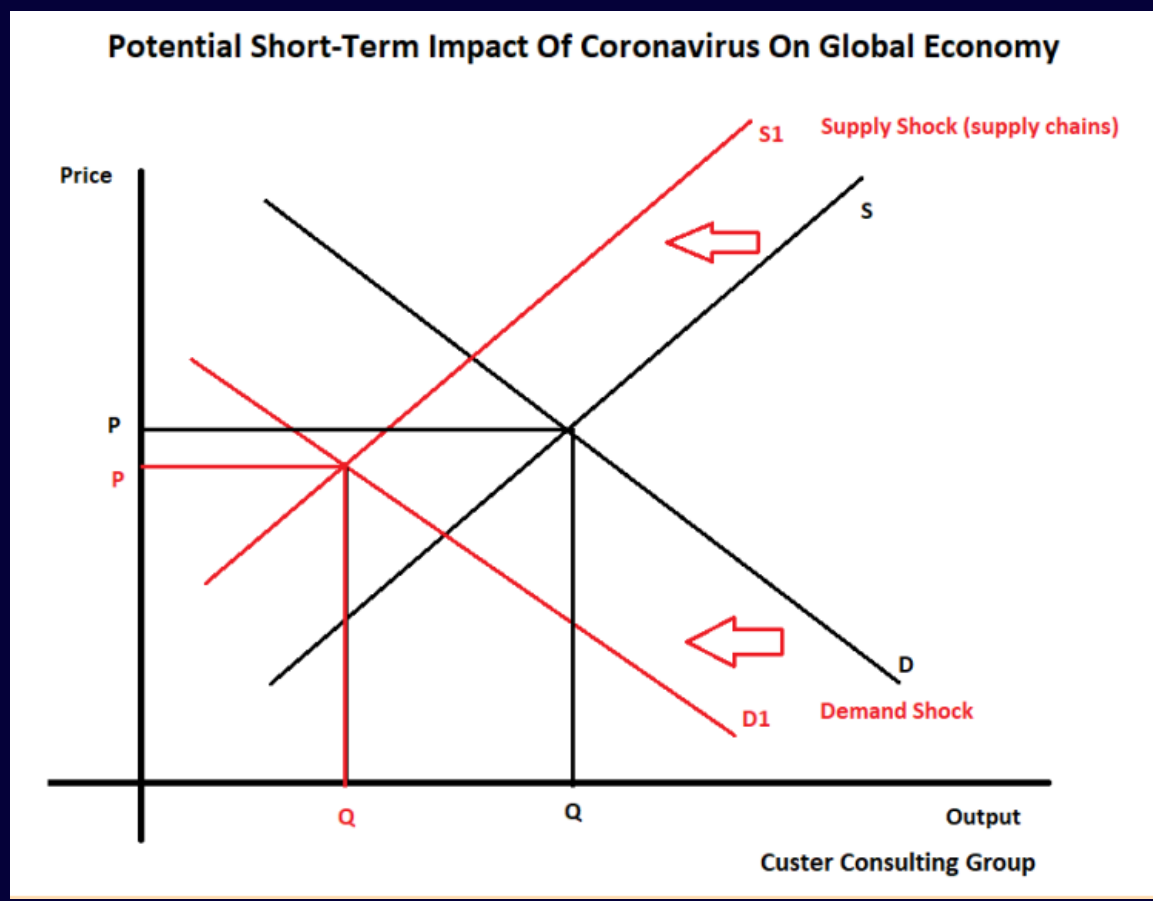


Market Comments

May 23, 2021

Custer Consulting Group
www.custerconsulting.com

Pandemic's Initial Economic Shock



U.S. GDP Growth

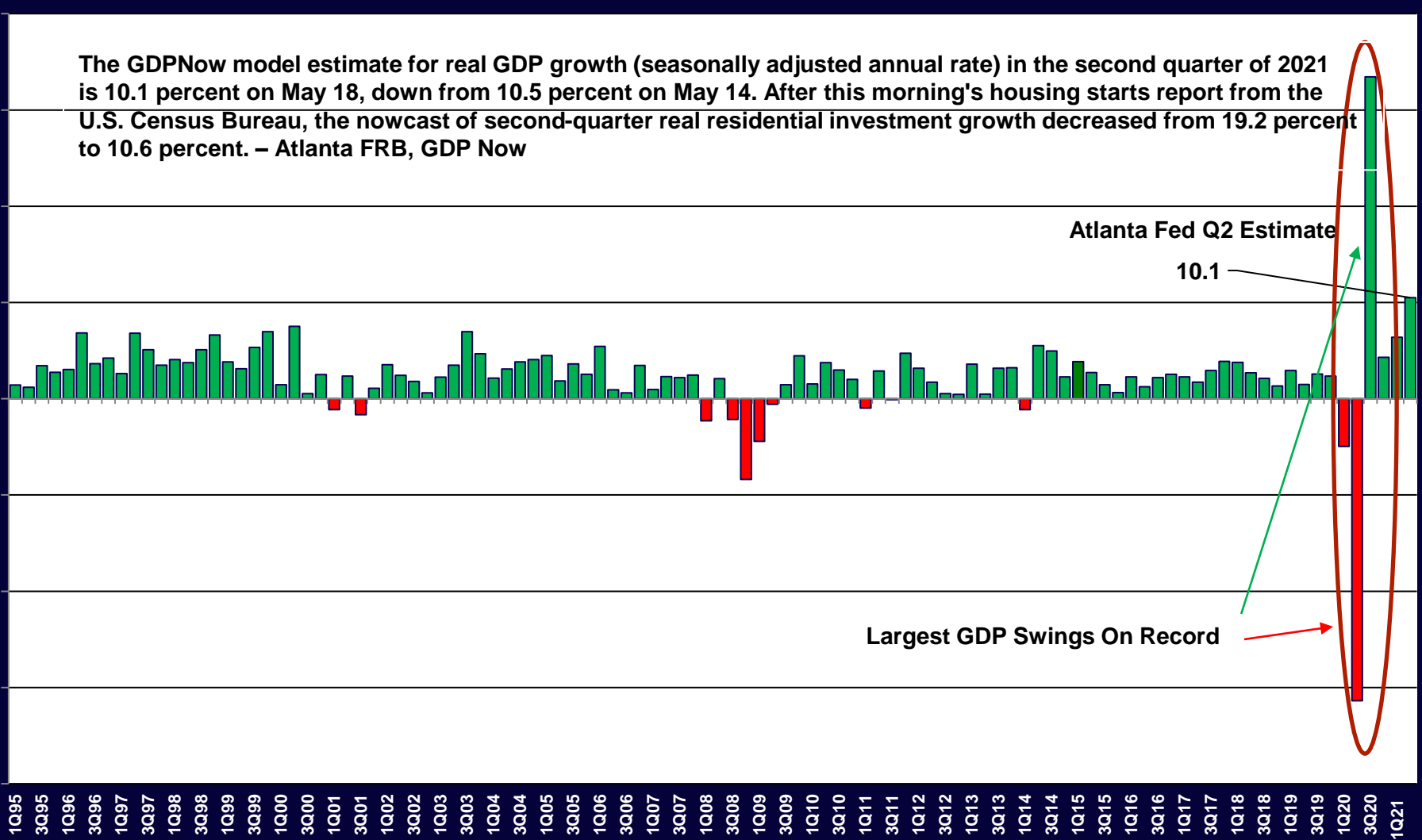
% Annualized Change vs. Prior Quarter (2012 \$)

The GDPNow model estimate for real GDP growth (seasonally adjusted annual rate) in the second quarter of 2021 is 10.1 percent on May 18, down from 10.5 percent on May 14. After this morning's housing starts report from the U.S. Census Bureau, the nowcast of second-quarter real residential investment growth decreased from 19.2 percent to 10.6 percent. – Atlanta FRB, GDP Now

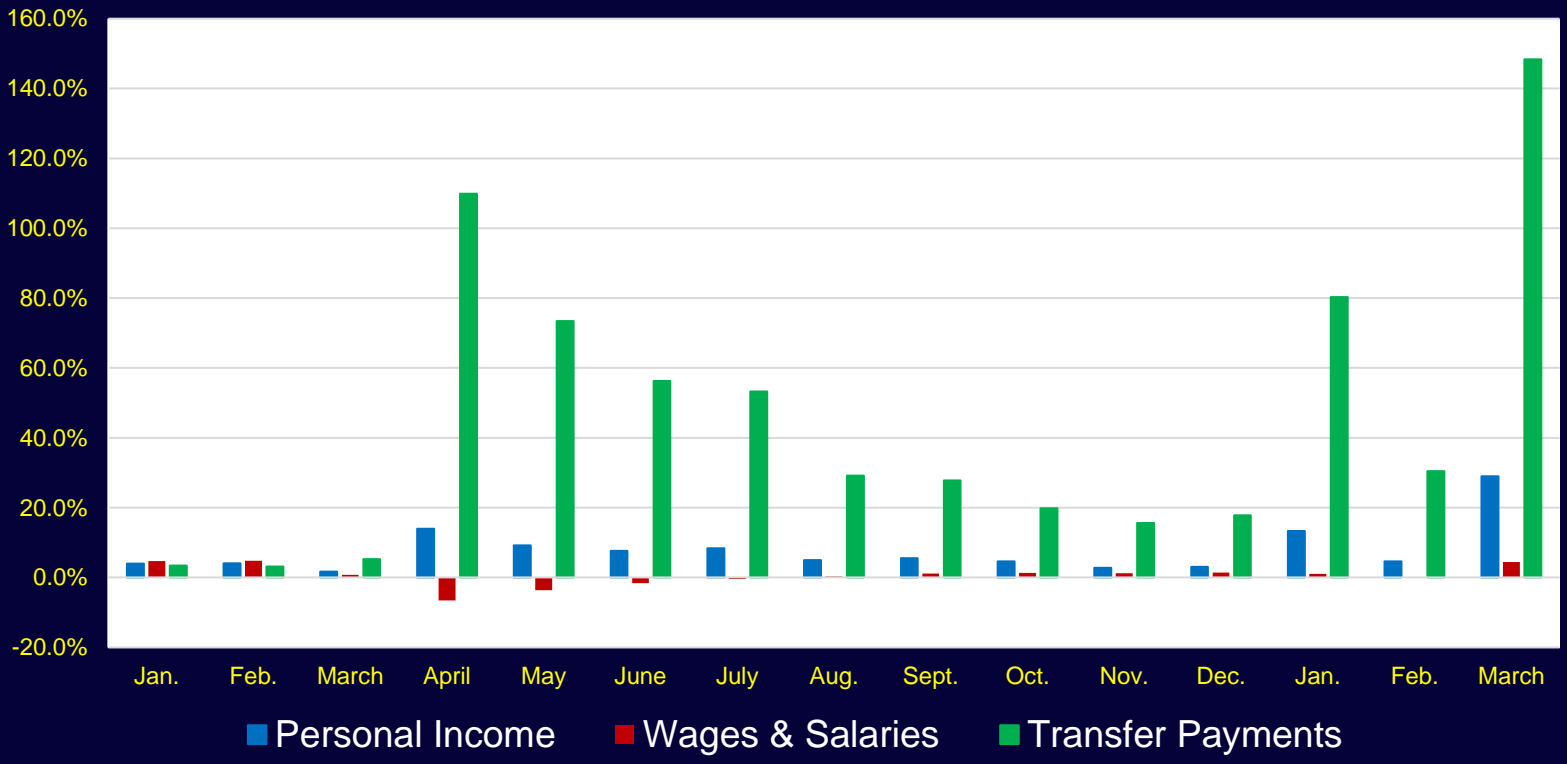
Atlanta Fed Q2 Estimate

10.1

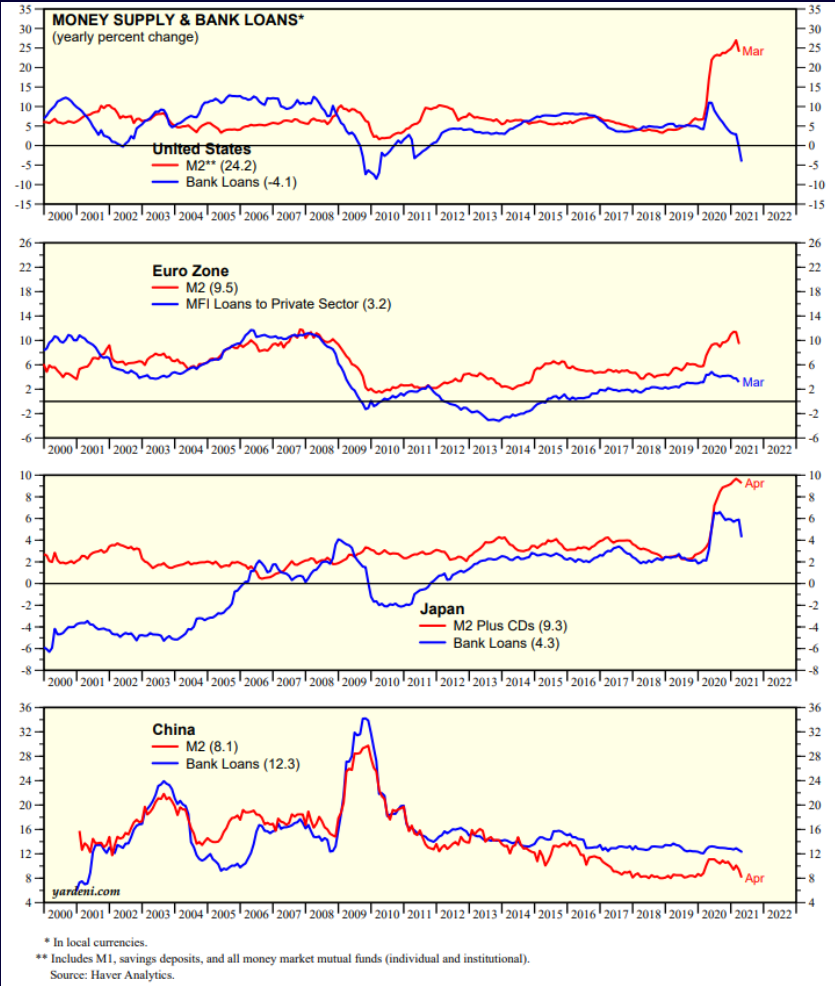
Largest GDP Swings On Record



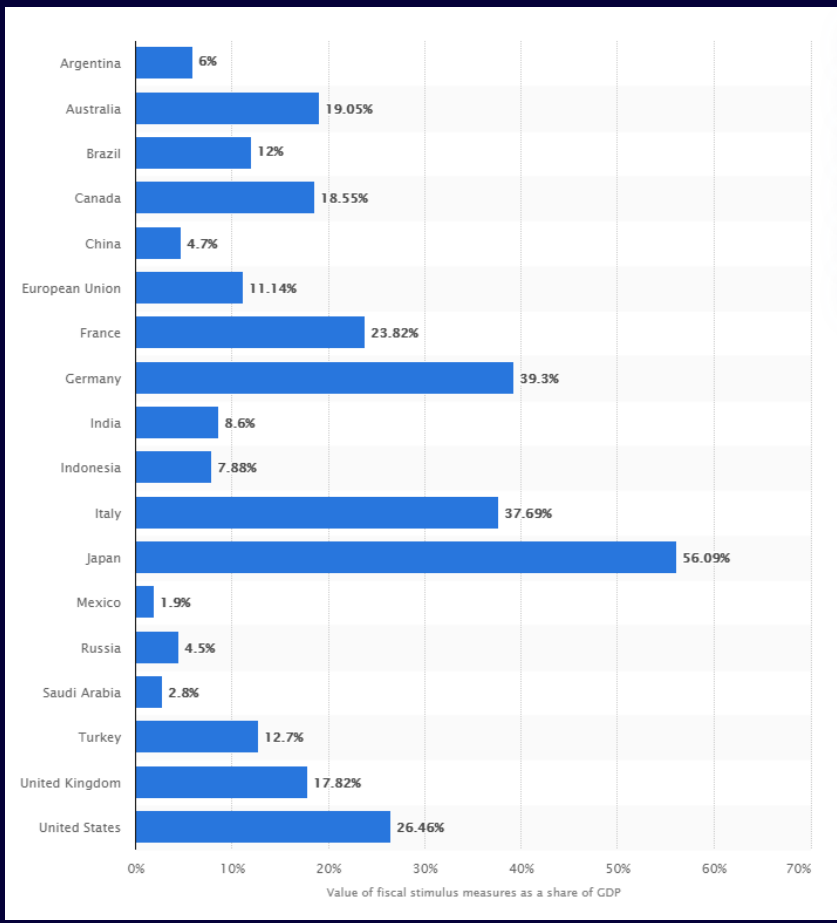
U.S. Personal Income (PI) Monthly Y/Y Growth



Global M2 Growth & Bank Lending

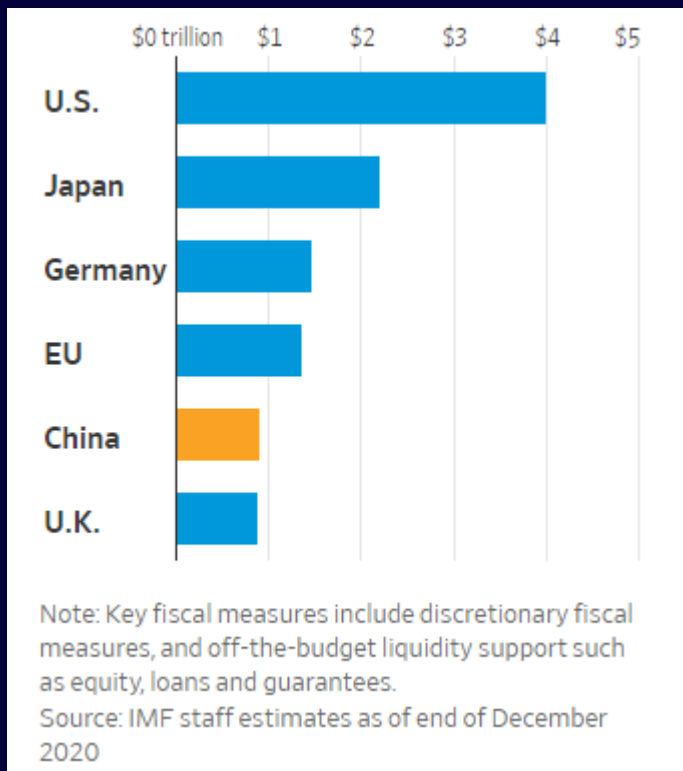


Size Of COVID-19 Fiscal Measures (% of GDP)



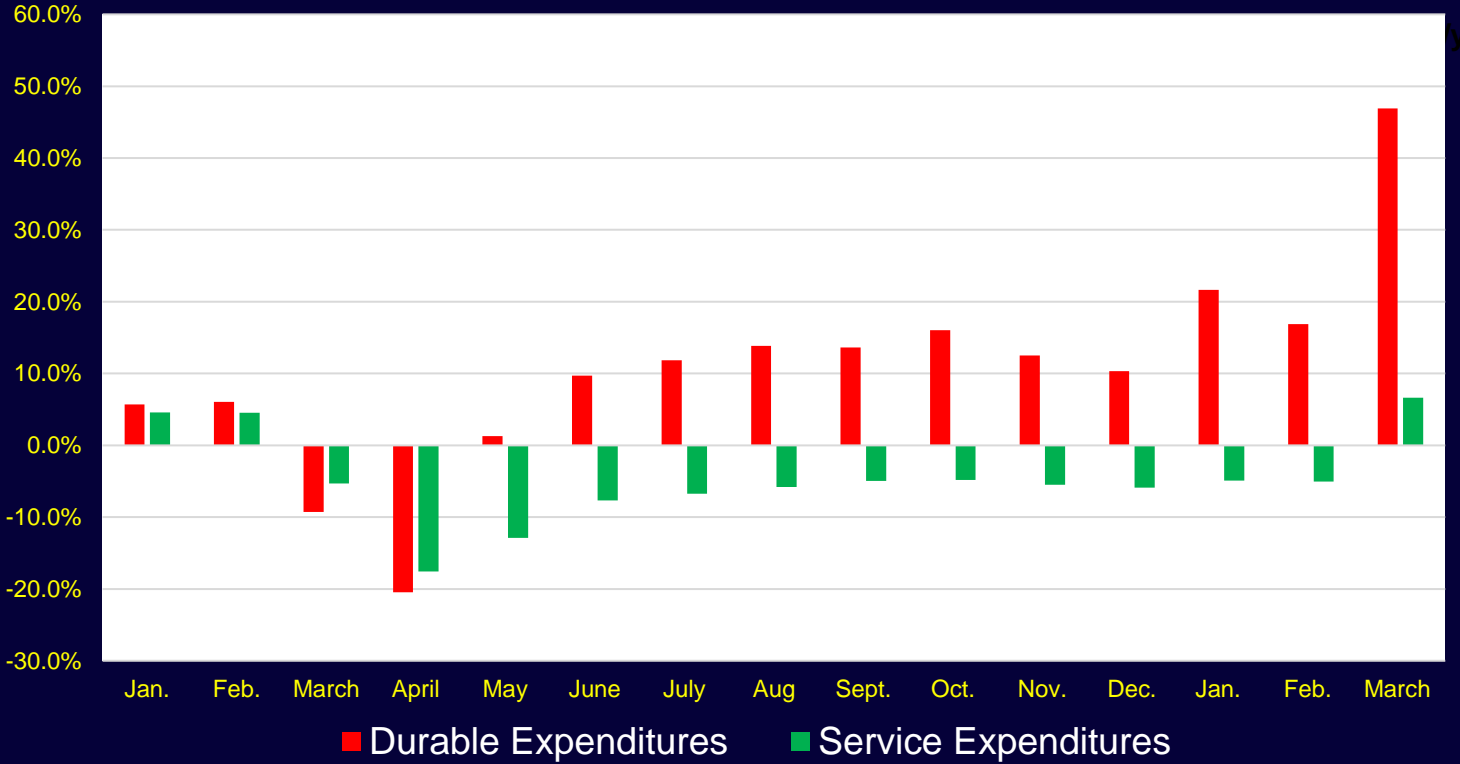
9.12% y/y

Total Size Of COVID-19 Fiscal Measures (\$ trillions)



9.12% y/y

Personal Expenditures on Durables & Services (Monthly Y/Y Growth)



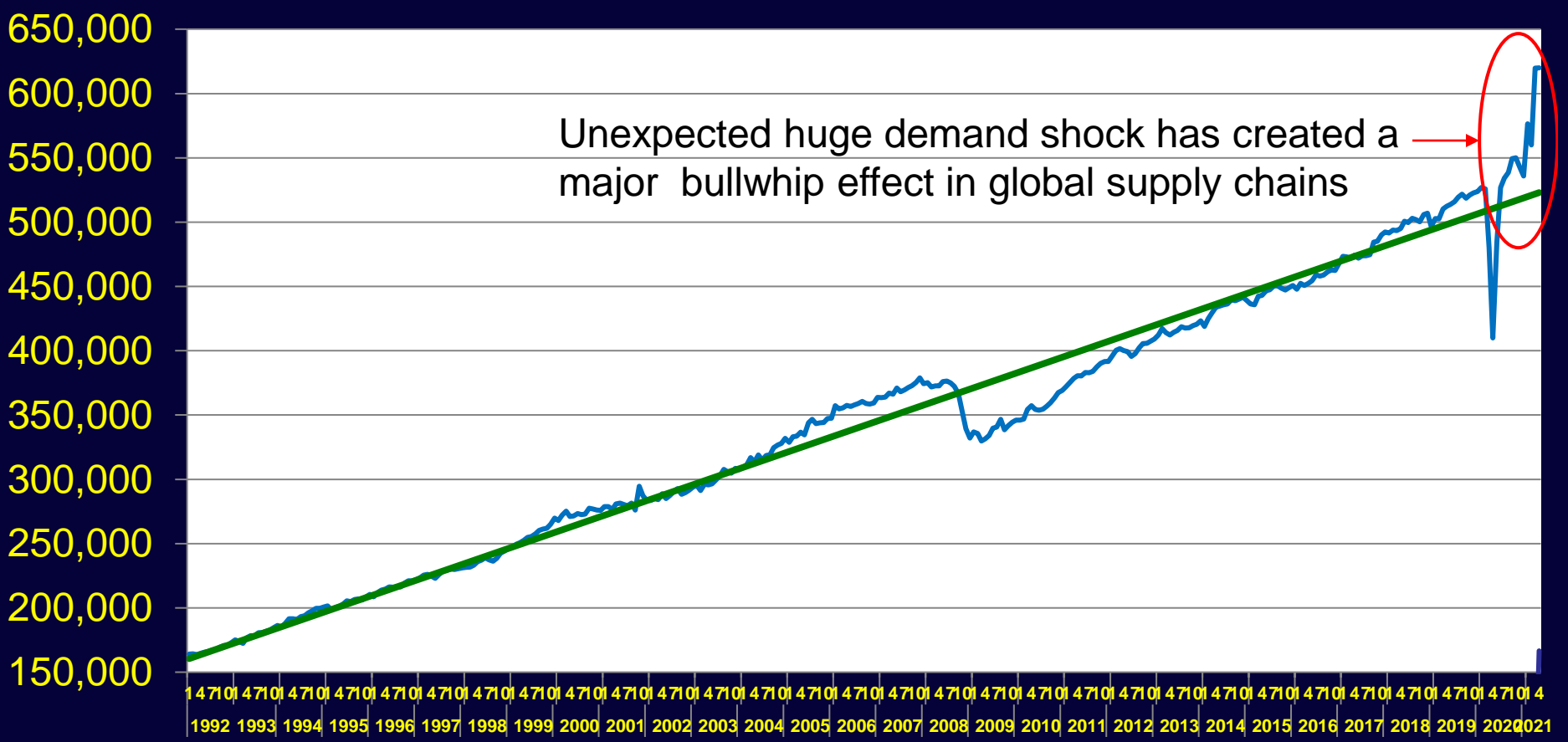
Spending On Goods & Services

(% Of Personal Consumption Expenditures)

| | As Of January 2020 | As Of March 2021 |
|---|--------------------|------------------|
| 1) Goods | 30.9% | 35.1% |
| 2) o/w Durables | 10.4% | 13.1% |
| 3) Nondurables | 20.3% | 22.0% |
| 4) Services | 69.2% | 64.9% |
| Personal Consumption Expenditures (billions) | 14,881 | 15,866 |

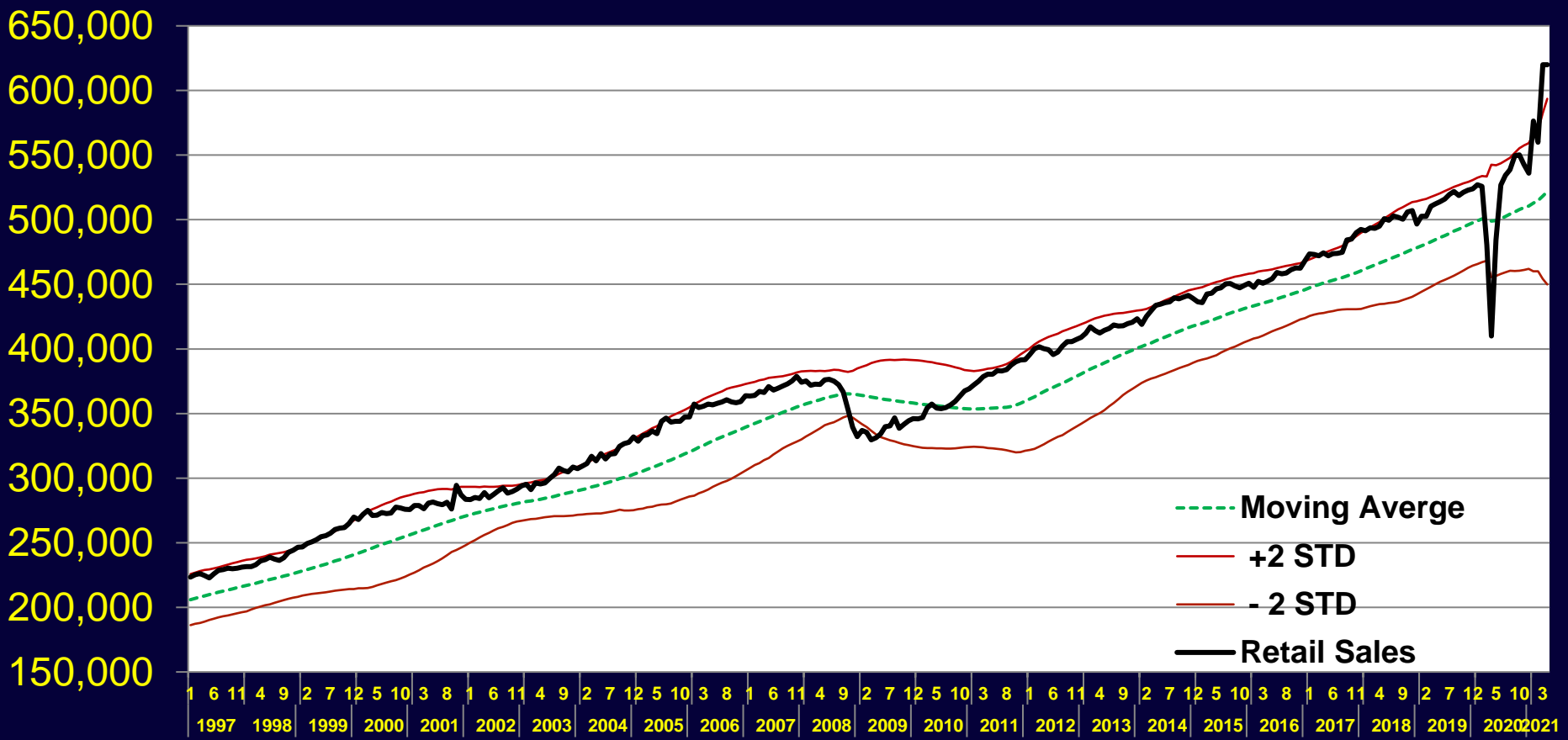
U.S. Retail Sales

\$ Millions



U.S. Retail Sales – Bollinger Bands

3-Year Moving Average +/- 2 Standard Deviations



--- Moving Average
— +2 STD
— -2 STD
— Retail Sales

Supply Chain & Bullwhip Effect

- The **bullwhip effect** is a distribution channel phenomenon in which demand forecasts yield supply chain inefficiencies.
- It refers to increasing swings in inventory in response to shifts in consumer demand as one moves further up the supply chain.
- The bullwhip effect was named by analogy with the way in which the amplitude of a whip increases down its length;^[3] the further from the originating signal, the greater the distortion of the wave pattern. In a similar manner, forecast accuracy decreases as one moves upstream along the supply chain. For example, many consumer goods have fairly consistent consumption at retail, but this signal becomes more chaotic and unpredictable as the focus moves away from consumer purchasing behavior.
- Research indicates that a fluctuation in point-of-sale demand of +/- five percent will be interpreted by supply chain participants as a change in demand of up to +/- forty percent. Much like cracking a whip, a small flick of the wrist (a shift in point-of-sale demand) can cause a large motion at the end of the whip (manufacturer's response).

Bullwhip Effect



https://en.wikipedia.org/wiki/Bullwhip_effect#:~:text=The%20bullwhip%20effect%20is%20a,further%20up%20the%20supply%20chain.

Flash Manufacturing PMIs

U.S. Manufacturing PMI – vs. 61.5 vs. 60.5 (April)

The uptick in the headline figure was supported by faster expansions in output and new orders, with 1 Please note that IHS Markit's PMI data, flash and final, are derived from information collected by IHS Markit from a different panel of companies to those that participate in the ISM surveys. No information from the ISM survey is used in the production of IHS Markit's PMI. new orders also rising at the sharpest rate on record. Nonetheless, a further marked deterioration in vendor performance limited operating capacity and reportedly held back output growth– U.S. Flash PMI, May 21

Eurozone Manufacturing PMI – 62.8 vs. 62.9 (April)

By sector, the upturn continued to be led by manufacturing, where output grew for an eleventh straight month with the rate of expansion easing only modestly further from March's all-time high. Factories also reported that new order growth waned slightly for a second month running, but remained the third-highest in the survey's history – and strong enough to generate a new record rise in uncompleted backorders for a third straight month. Inventories of finished goods stock fell at a rate not seen since 2009 as firms increasingly met demand from existing stock. - Eurozone Flash PMI, May 21

Japan Manufacturing PMI – 52.5 vs. 53.6 (April)

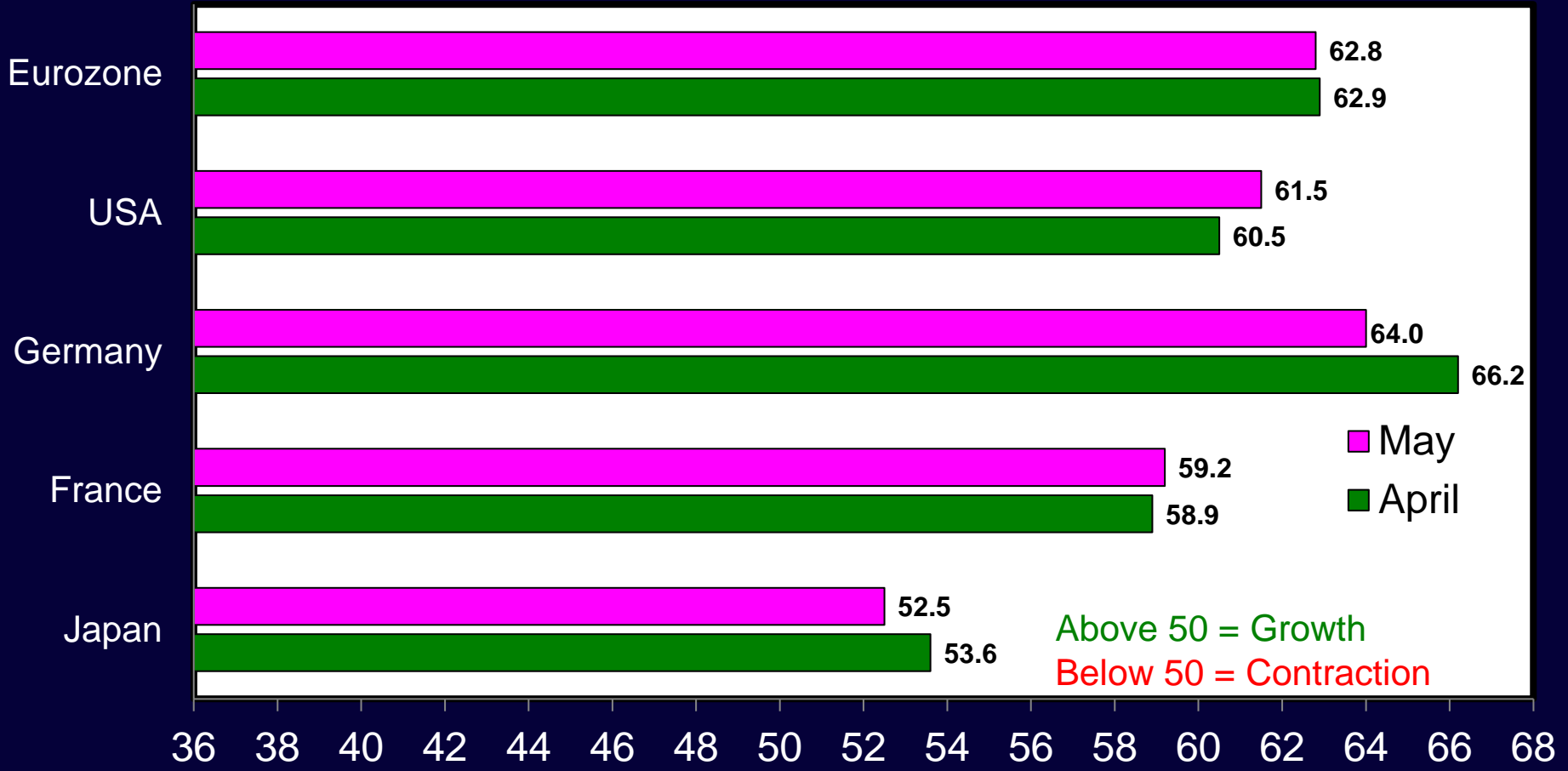
Both output and new order growth eased in the latest survey period. That said, manufacturers remained confident in taking on additional staff as job creation continued for the second successive month. Moreover, positive sentiment picked up in May, with the level of optimism the joint-strongest since the survey began posing the question in July 2012. - Japan Flash PMI, May 21

Understanding **Flash** Manufacturing PMI

The Flash Manufacturing PMI is an early indicator of where the final PMI figure may settle. The flash reading of PMI is an estimate of the Manufacturing Purchasing Managers' Index (PMI) for a country, based on about 85% to 90% of the total PMI survey responses each month. Its purpose is to provide an accurate advance indication of the final PMI data.

Because flash PMIs are among the first economic indicators released each month and provide evidence of changing economic conditions ahead of comparable government statistics, they can have a significant effect on markets, particularly the foreign exchange market. Any reading of the index above 50 indicates improving conditions, while readings below 50 indicate a deteriorating economic climate.

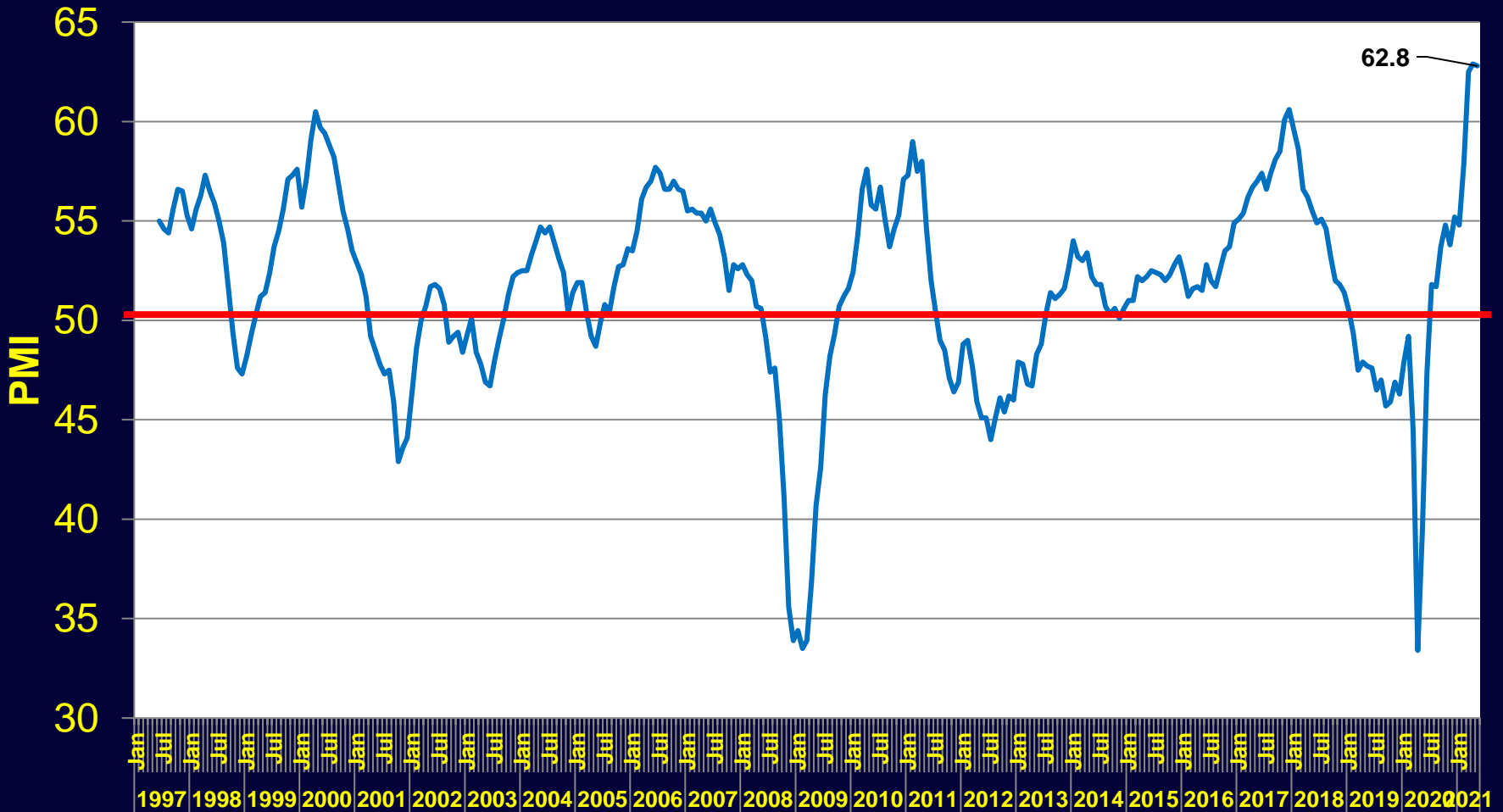
Flash Purchasing Managers' Indices February vs January 2021



Eurozone Manufacturing

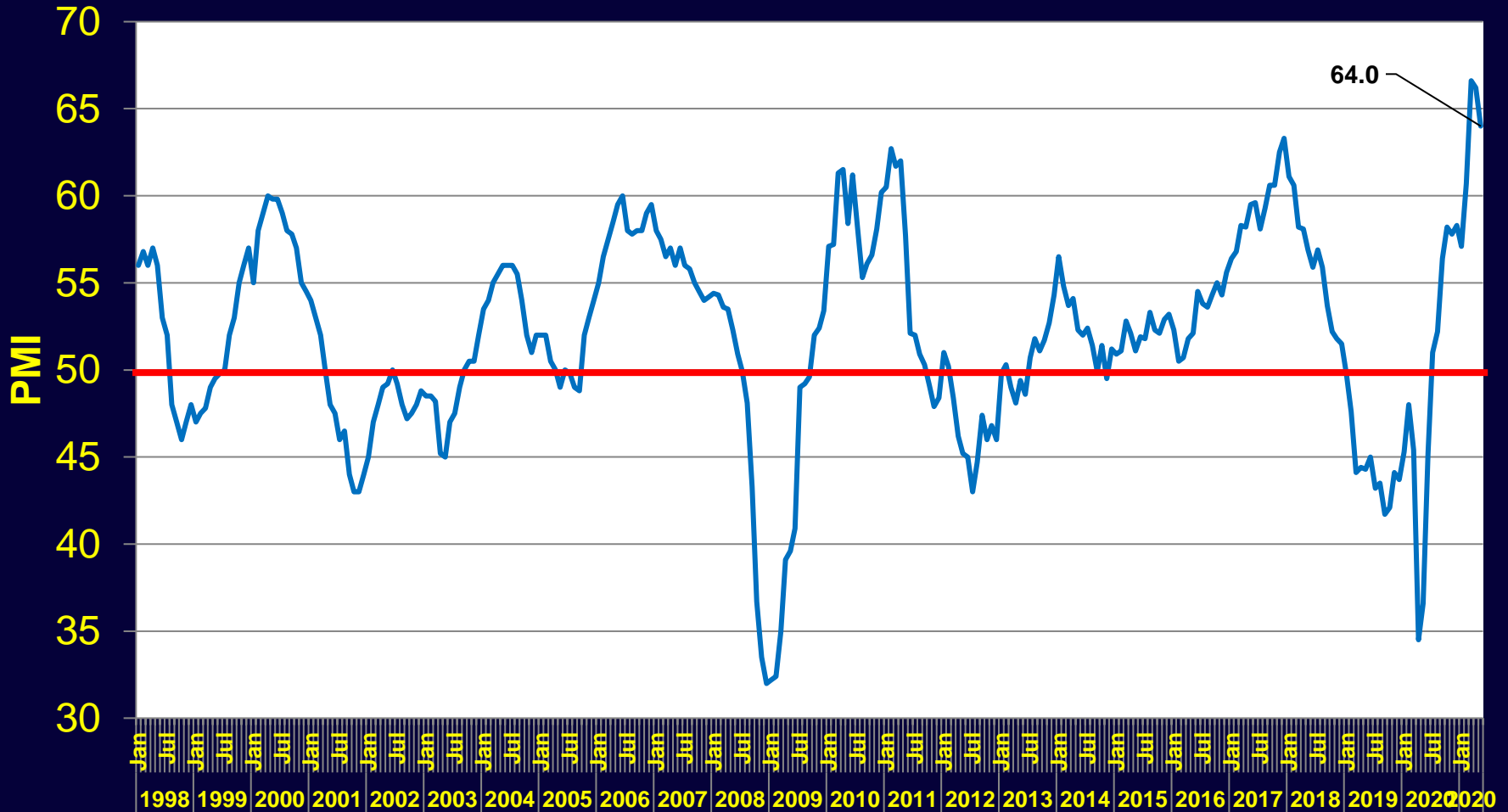
Flash "Purchasing Managers" Index

Diffusion Index, >50 = Growth



Germany Manufacturing Flash "Purchasing Managers" Index

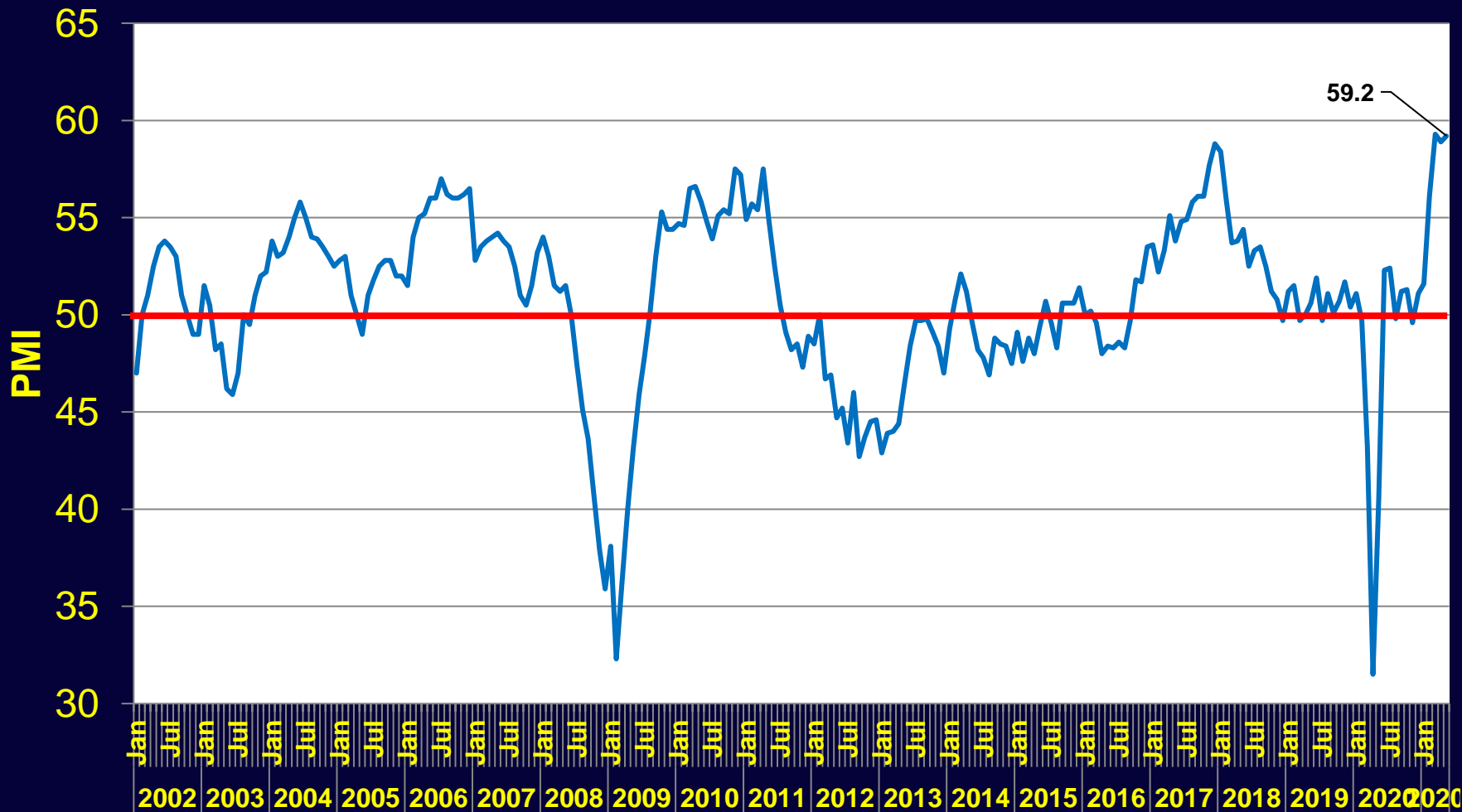
Diffusion Index, >50 = Growth



France Manufacturing

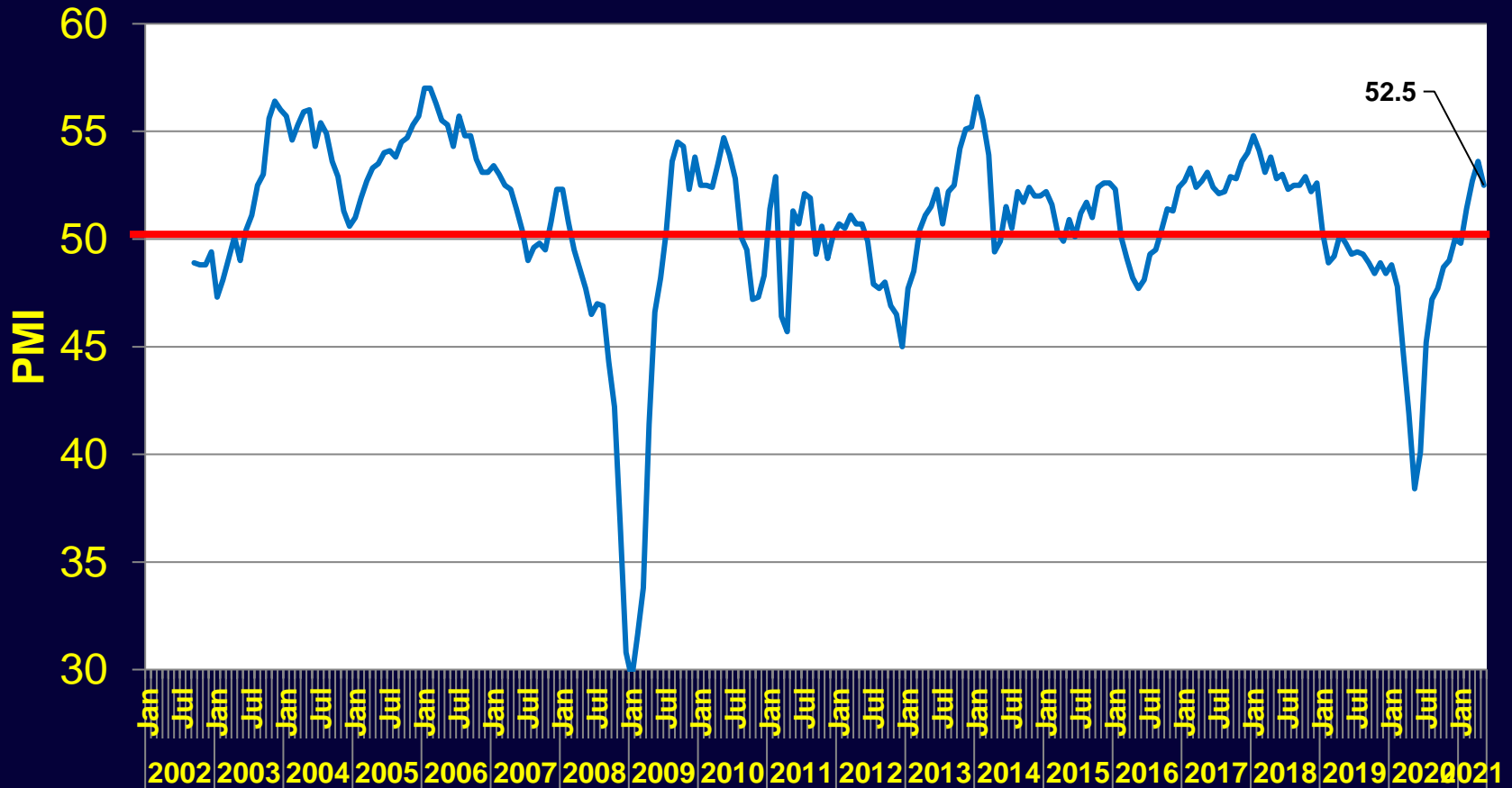
Flash "Purchasing Managers" Index

Diffusion Index, >50 = Growth



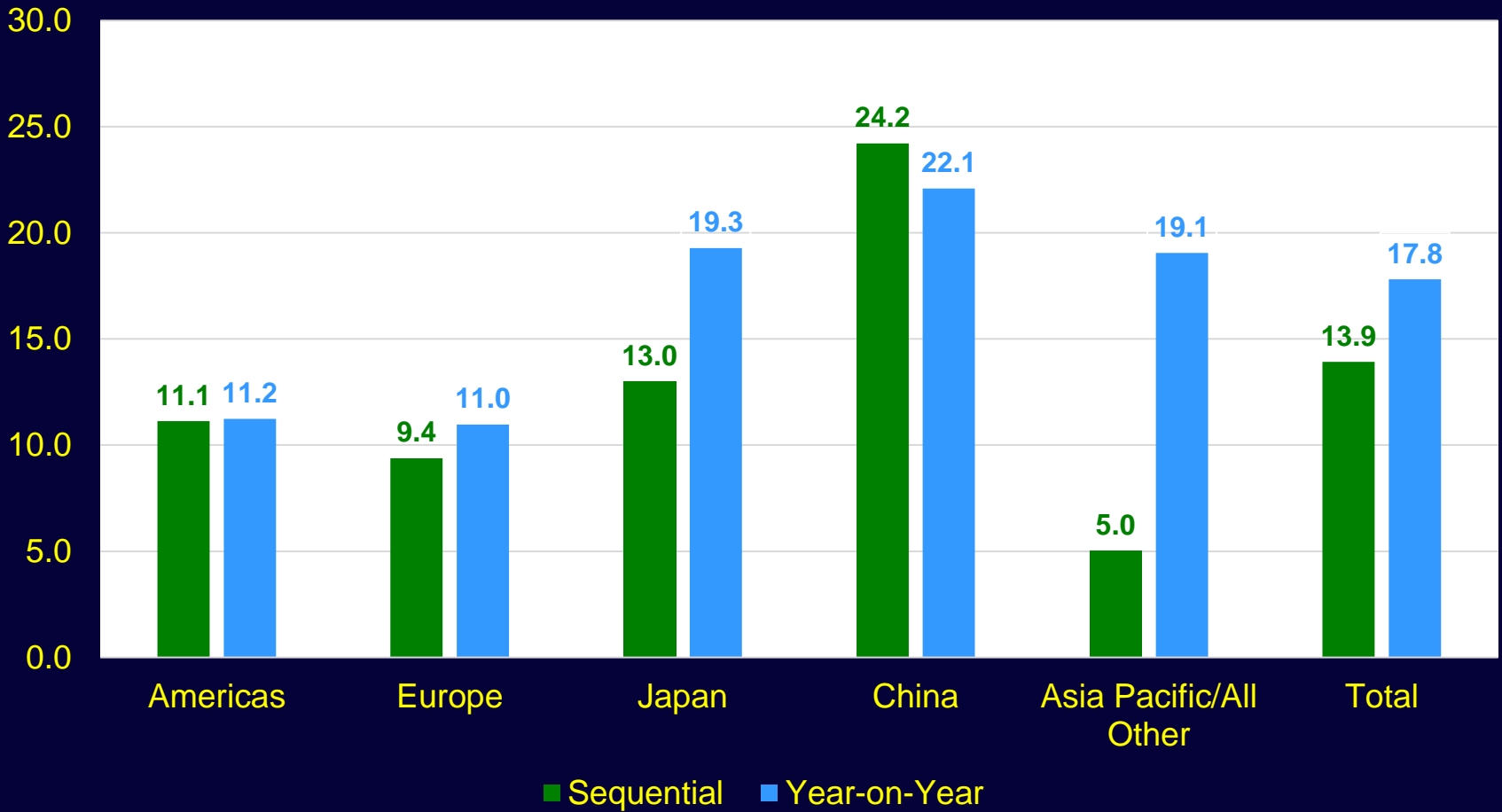
Japan Manufacturing Flash "Purchasing Managers" Index

Diffusion Index, >50 = Growth
PMI



Global Semiconductor Sales By Region

March '21 monthly y/y % Change

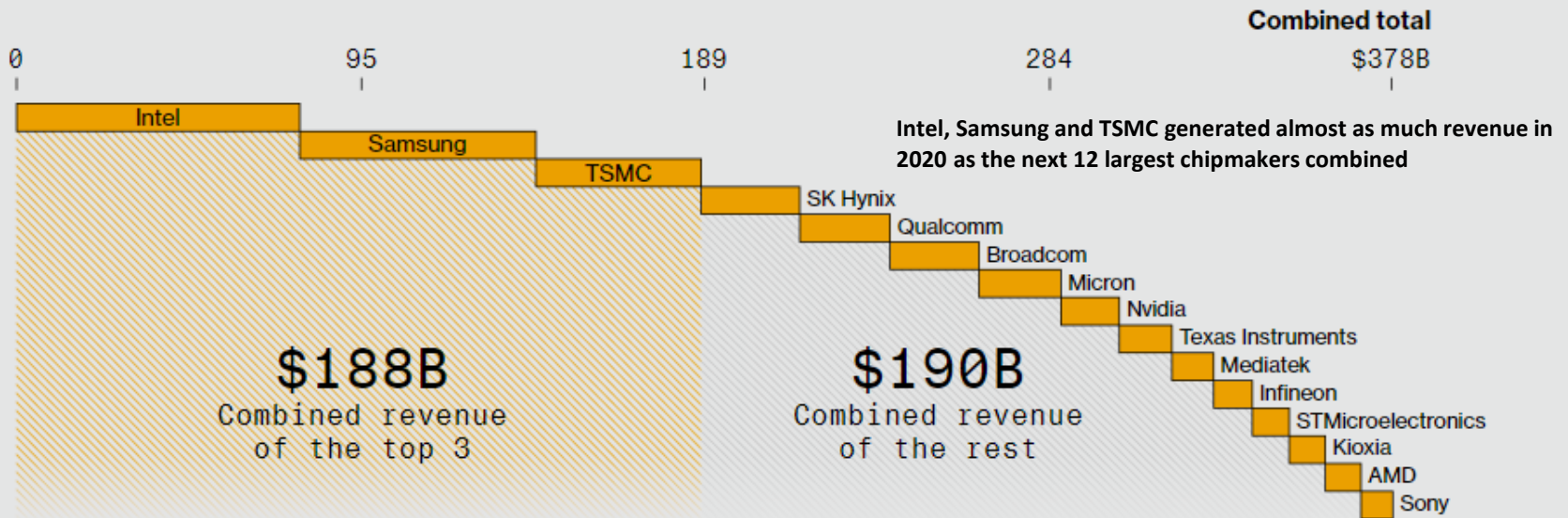


Revenue Of Top Chipmakers - 2020

\$ billions

Big-Fish Industry

Intel, Samsung and TSMC generated almost as much revenue in 2020 as the next 12 largest chipmakers combined

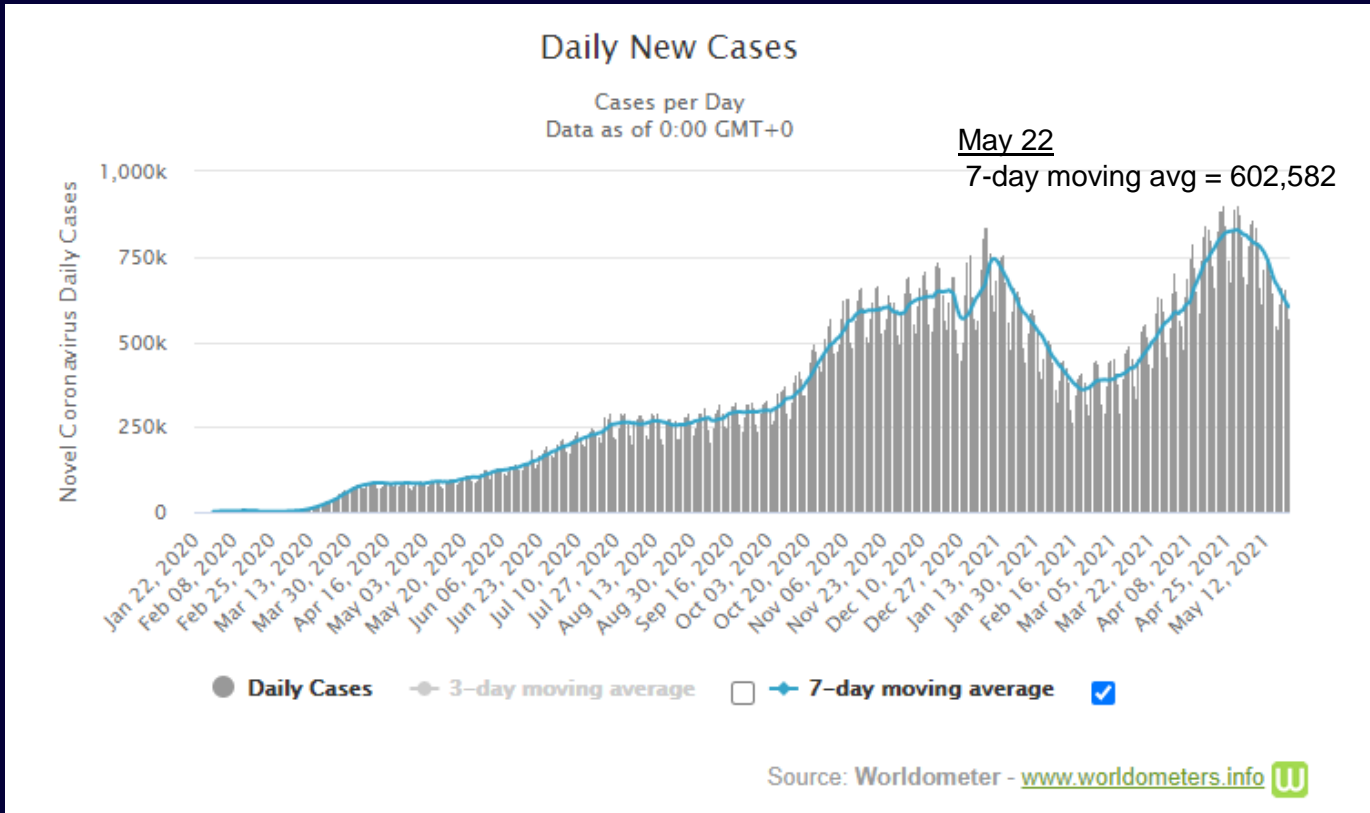


Note: Figures for Samsung and Sony include their chipmaking businesses only.
Sources: Company data compiled by Bloomberg; IDC

COVID Tracker

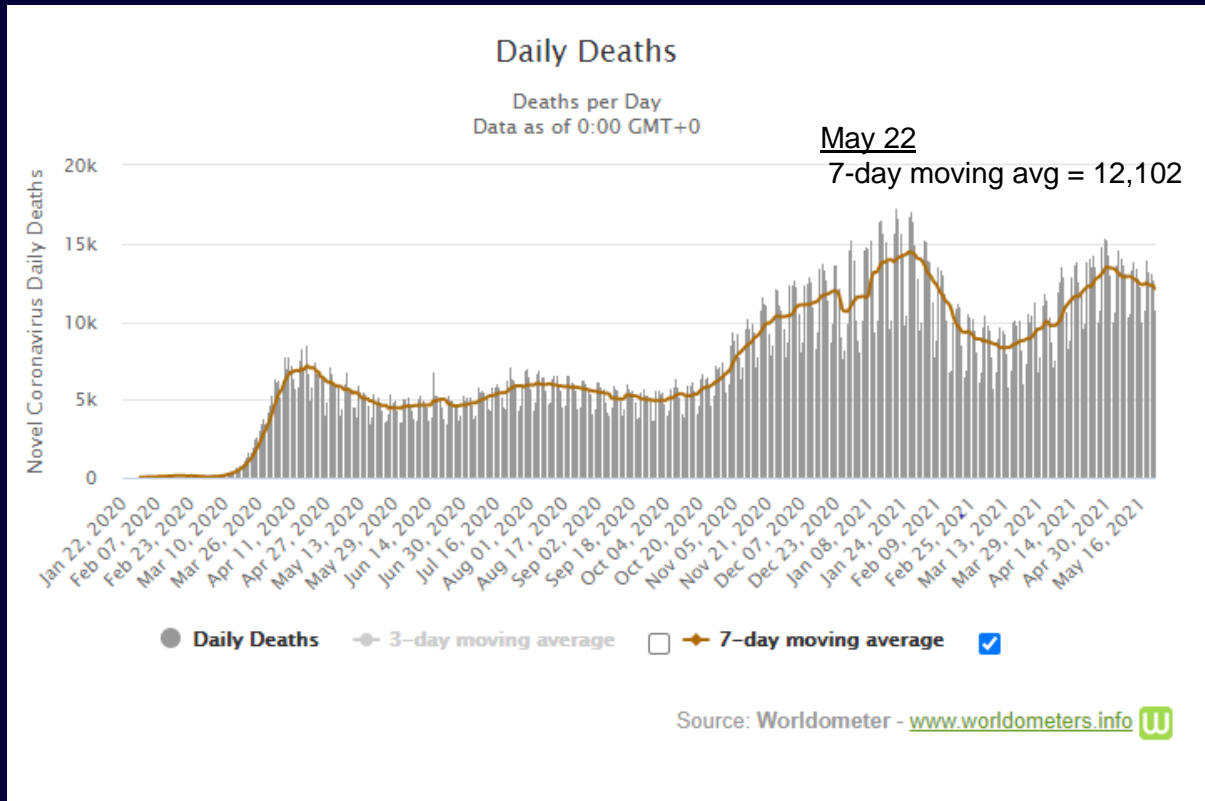
Daily New Case (Worldwide)

Cases per Day



Daily New Deaths (Worldwide)

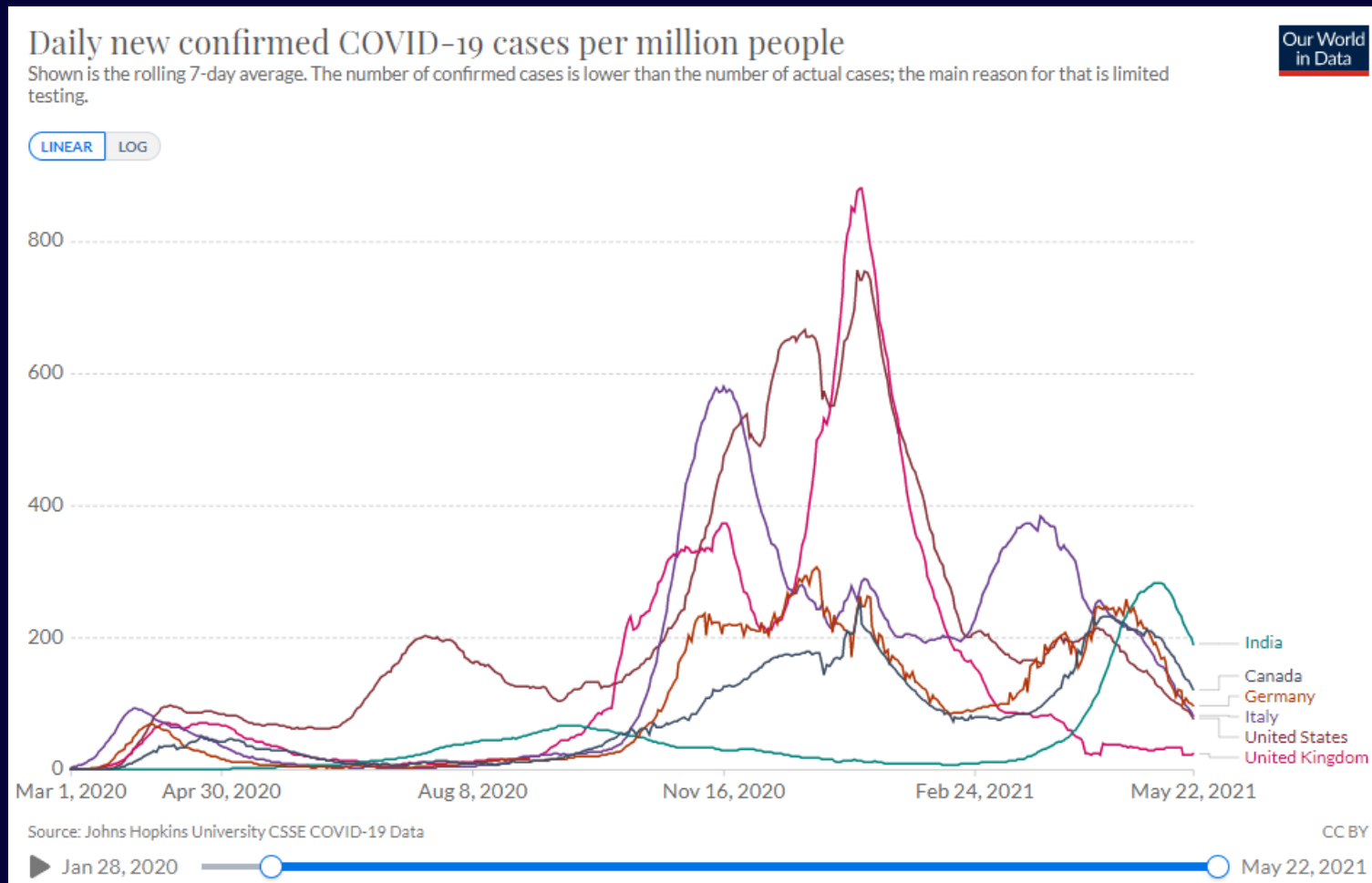
Deaths per Day



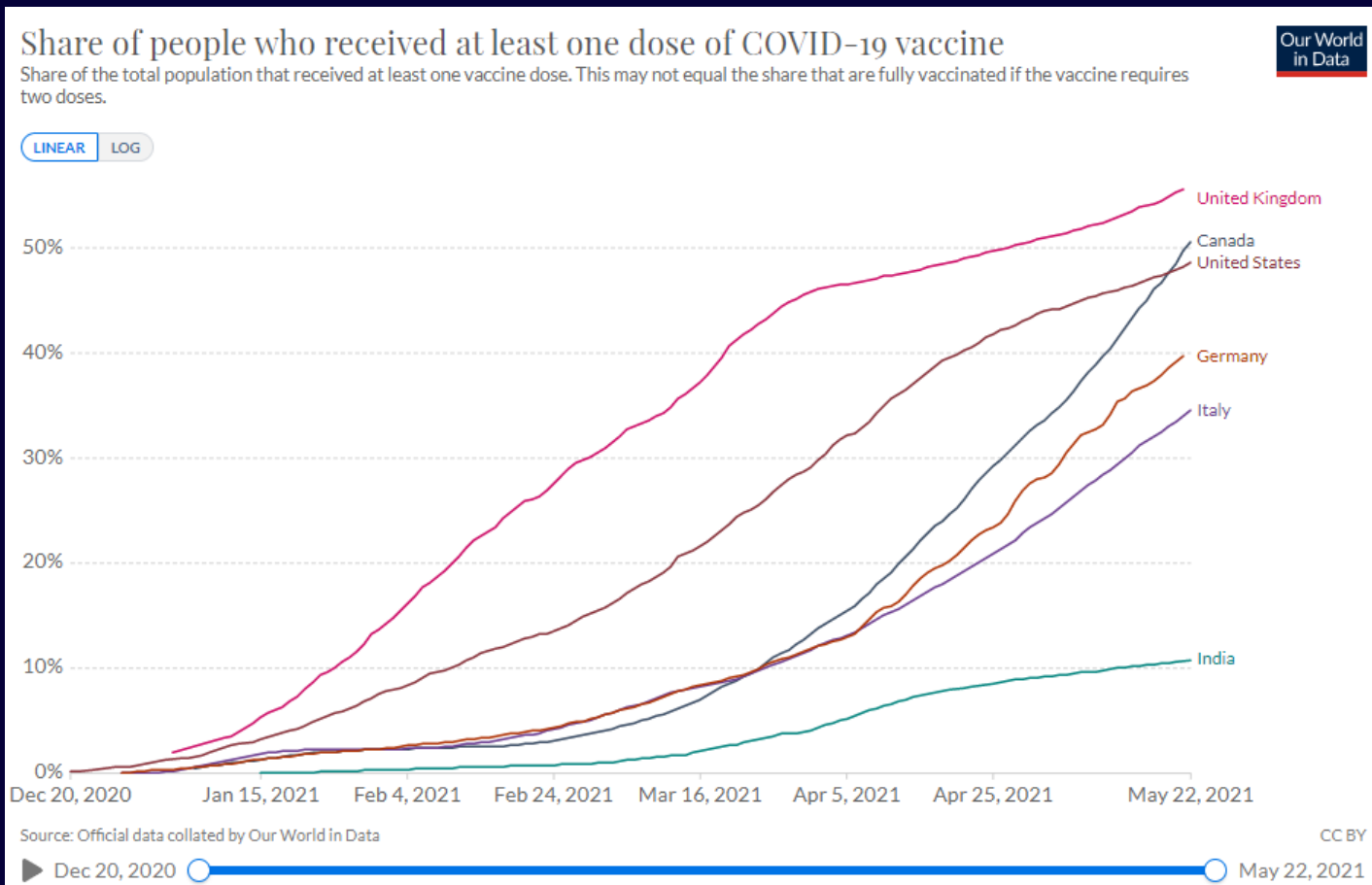
20210523

Daily New Cases Per Million People

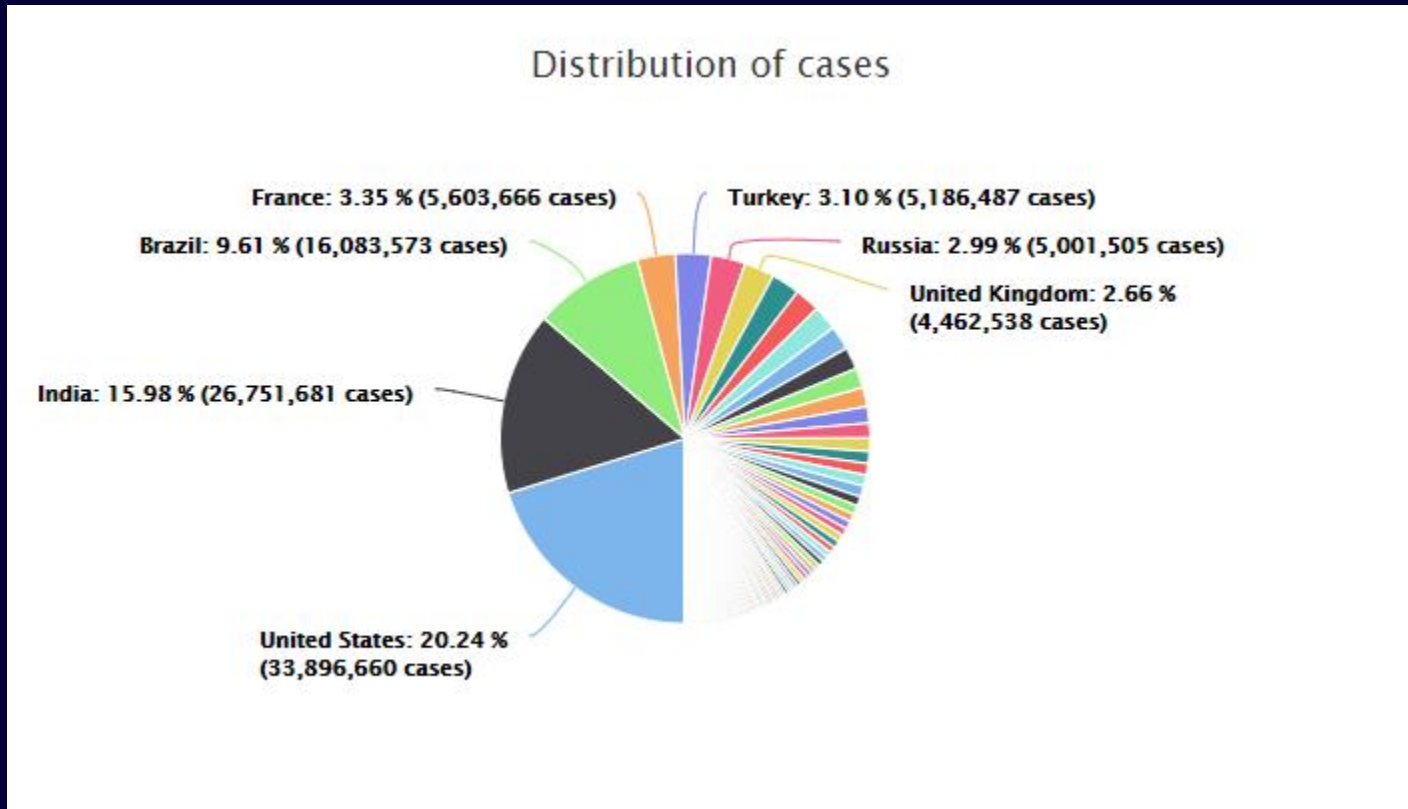
7-Day Moving Average



Share Of Population Vaccinated With At Least One Dose



Distribution Of Cases



Source: [Worldometers.info](https://www.worldometers.info)