



Executive
Perspectives



Omicron | What We Know, What We Don't Know, Scenarios, and Implications

December 2021



BCG Executive Perspectives

IN THIS DOCUMENT

OMICRON A CAUSE OF CONCERN, ON TOP OF DELTA SURGE IN EUROPE

Vaccine inequity has persisted throughout 2021 – only 7.5% of Africa's population has been double-vaccinated (versus 44% globally and 90%+ for some developed countries). In areas with low vaccination rates and high numbers of immunocompromised people (e.g., sub-Saharan Africa), the opportunity for viral mutation is highest.

Omicron, which seems to have emerged from an immunocompromised host, has a staggering number of mutations. Many of these mutations suggest the ability to reduce antibody efficacy, and early data on reinfection rates appear to be confirming this. It is rapidly outcompeting Delta in South Africa and is now present in all corners of the globe.

Omicron is emerging at a time when we see Delta surging in Europe, which is likely to have severe impact, especially among unvaccinated individuals. Response to the surge is varied and reinforces the critical importance of boosters in saving lives.

LIMITED CONCLUSIONS SO FAR, BUT WE CAN TAKE ACTION ALREADY

The best-case scenario is that Omicron is not severe and even supplants Delta with something milder, but the worst case is that Omicron is both more transmissible and more deadly than Delta. We already believe it is capable of driving more reinfections.

We must act now while we wait for more information. Strengthening booster programs will help raise antibody levels. Vulnerable communities should be prioritized – with vaccines, diagnostics, and antiviral treatments ready for use – and leaders should continue to focus on the unvaccinated. Sensible containment measures may slow the spread, while leaders support acceleration and deployment of testing, vaccines, and treatments, including the new generation of antivirals, especially in less developed countries.



BCG Executive Perspectives

AGENDA

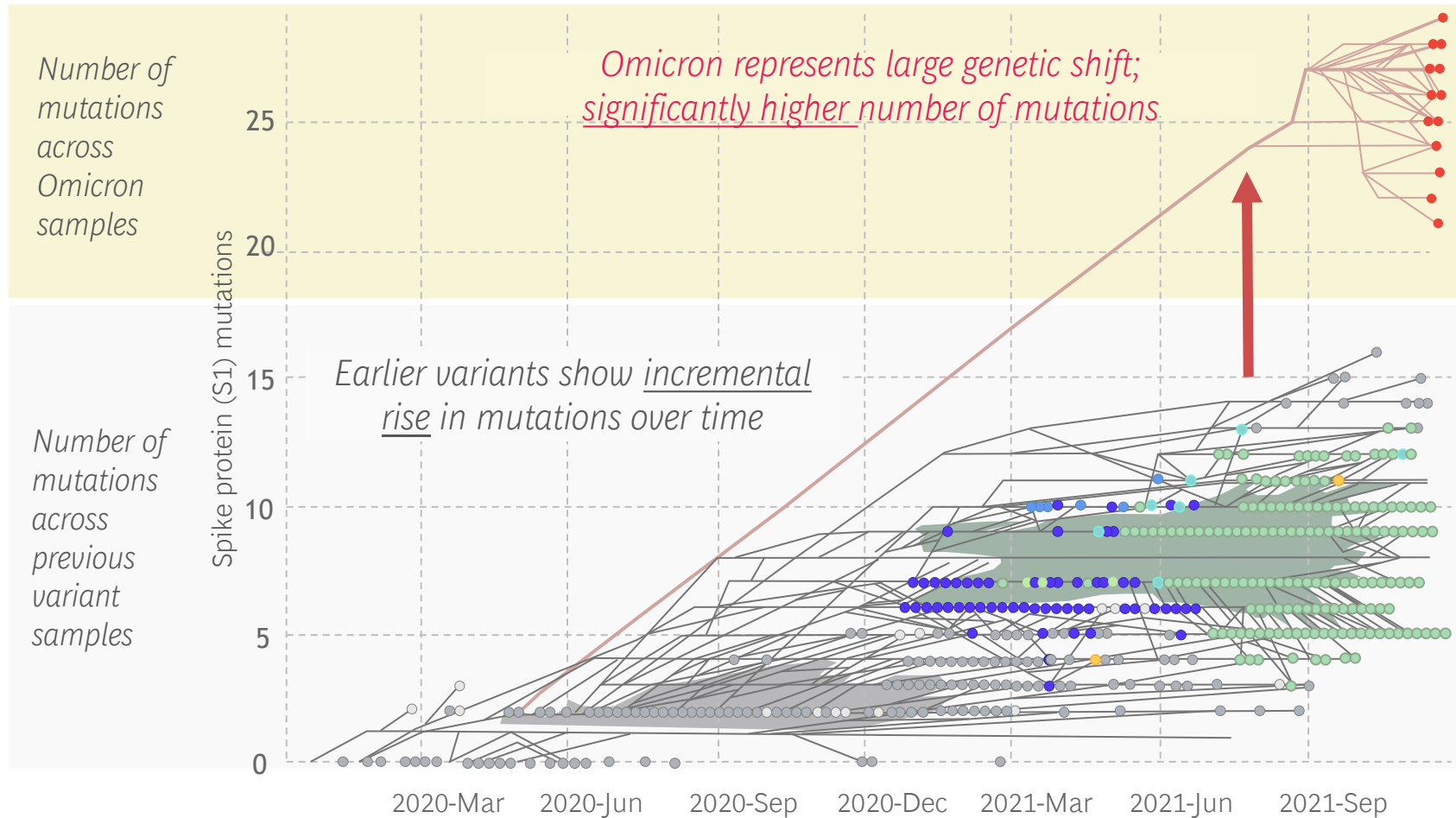
OMICRON | WHAT WE KNOW, WHAT WE DON'T

- ✓ Areas of concern: Omicron and Delta surge in Europe
- ✓ Questions and scenarios on Omicron
- ✓ Implications for leaders and areas to watch

UPDATED ANALYSES AND IMPACT

COVID-19 economic and business impact

Why Omicron is a cause of concern | Staggering number of mutations, some of which suggest an ability to neutralize protections



Sources: Nextstrain (Genomic epidemiology of Omicron Variant), MedRxiv preprint study titled "Increased risk of SARS-CoV-2 reinfection associated with emergence of the Omicron variant in South Africa (2021-1-01)"

~50 mutations in Omicron alone...

...far more than we have seen in other variants

Some of these associated with **increased transmissibility and antibody resistance**

Emerging real-world evidence suggests much **higher Omicron reinfection risk** vs. Delta

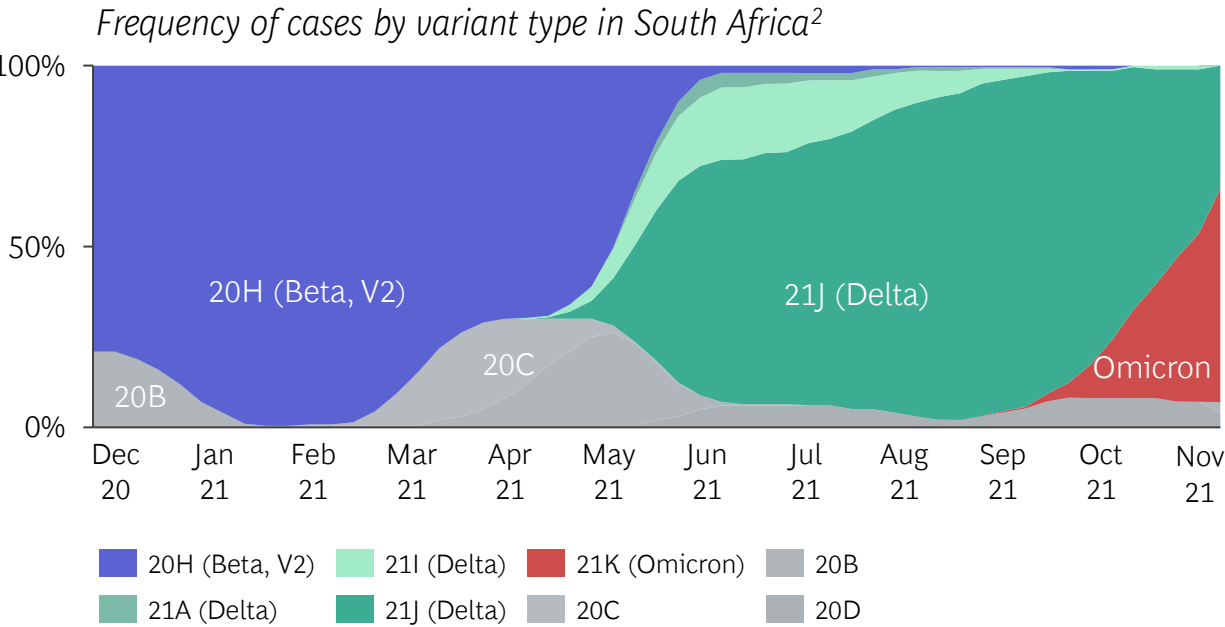
Vaccines still our best defense but no scientific evidence yet on their effectiveness versus Omicron

Why Omicron is a cause of concern | Rapidly outcompeting Delta in South Africa and now present in all corners of the globe

As of 6 Dec 2021

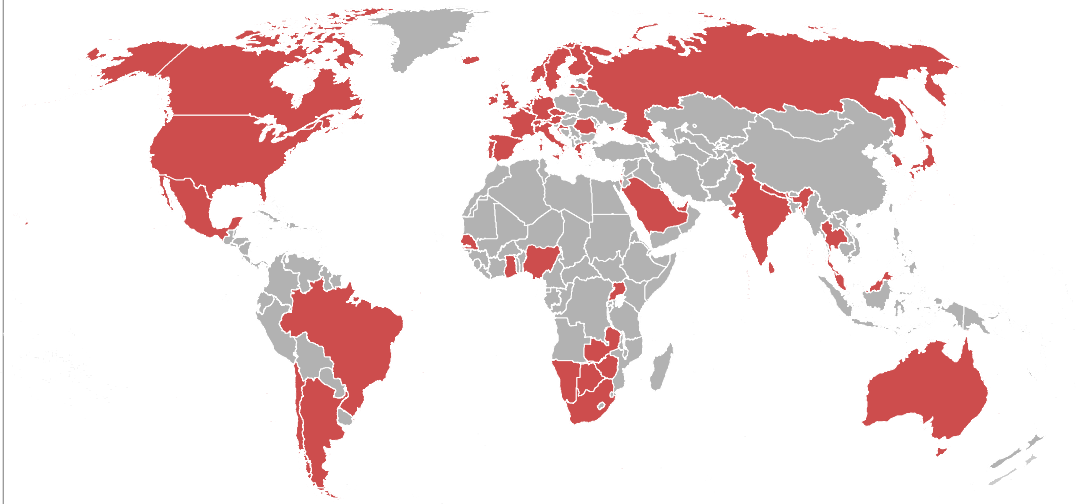
In South Africa, Omicron now accounts for ~60%¹ of cases...

Frequency of Omicron cases jumped from **<1% in September to ~60% by end of November**



...and is already in 50+ countries globally

Community transmission detected in at least 20 countries
US reported its **first case on December 1** in California



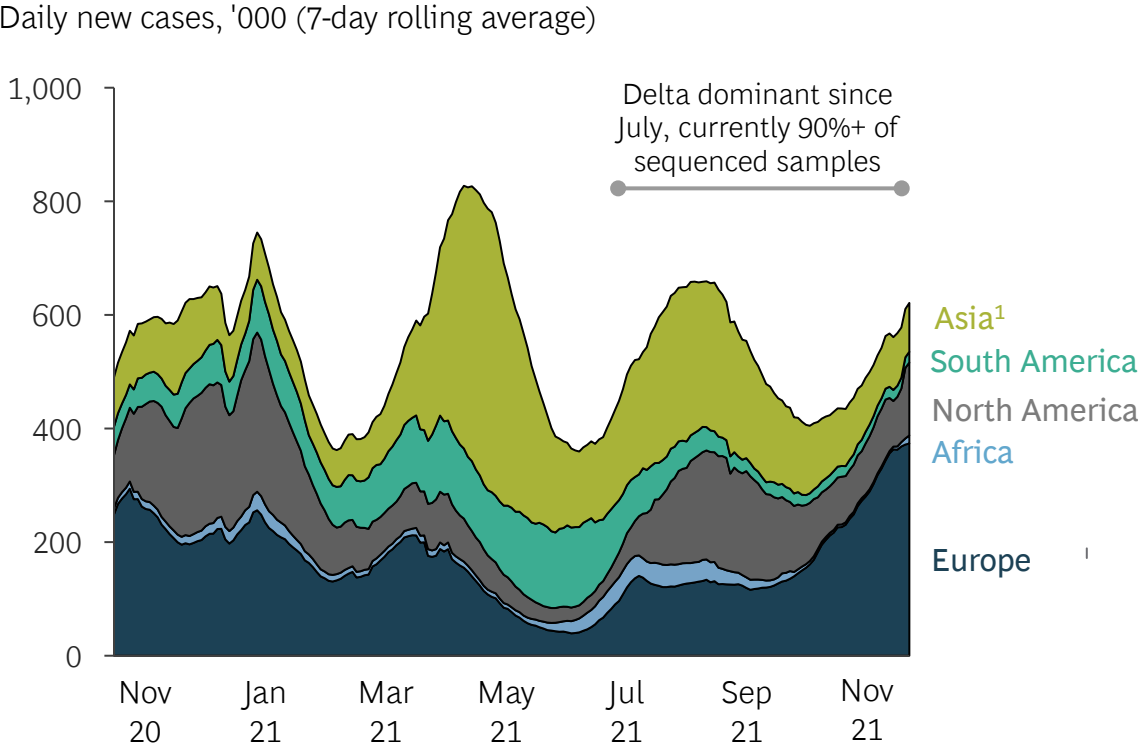
What remains to be determined: Will Omicron outcompete Delta as it emerges in other locations?

1. Precise frequency numbers subject to change during early detection periods (next 1-2 weeks). 2. Frequencies normalized to 100% at each time point for 360 out of a total of 3,670 tips.
Sources: Nextstrain (Genomic epidemiology of Omicron Variant), Mint, New York Times Omicron Tracker

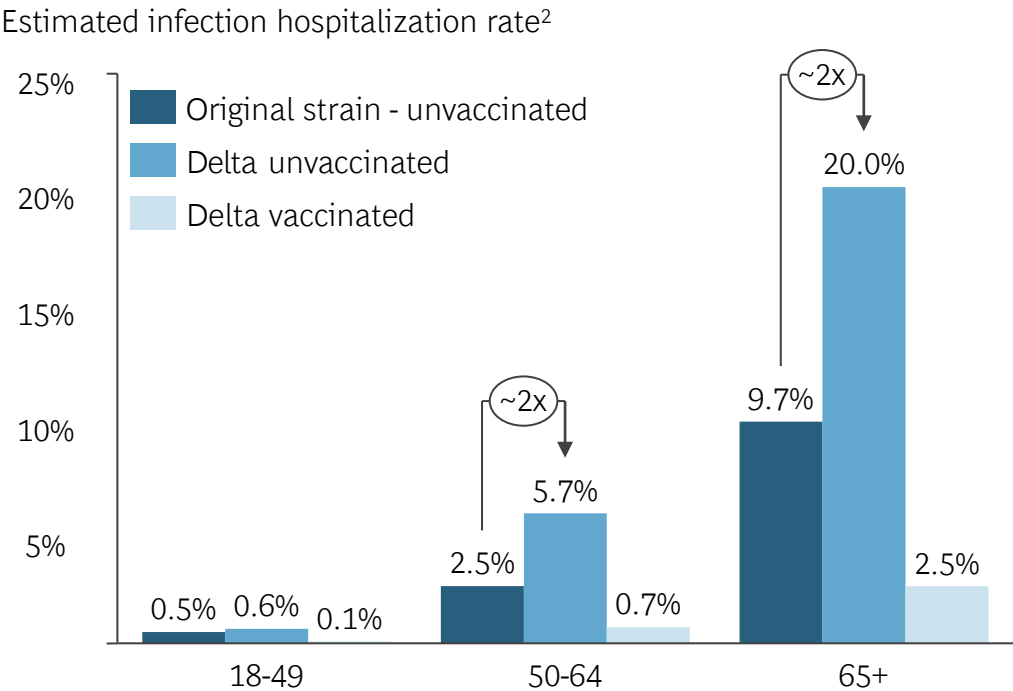
Delta remains a threat | Severe variant remains dominant, with Europe experiencing a Delta surge as it approaches winter

As of 6 Dec 2021

Delta surging in Europe over the past month



Delta twice as severe for unvaccinated over age 50



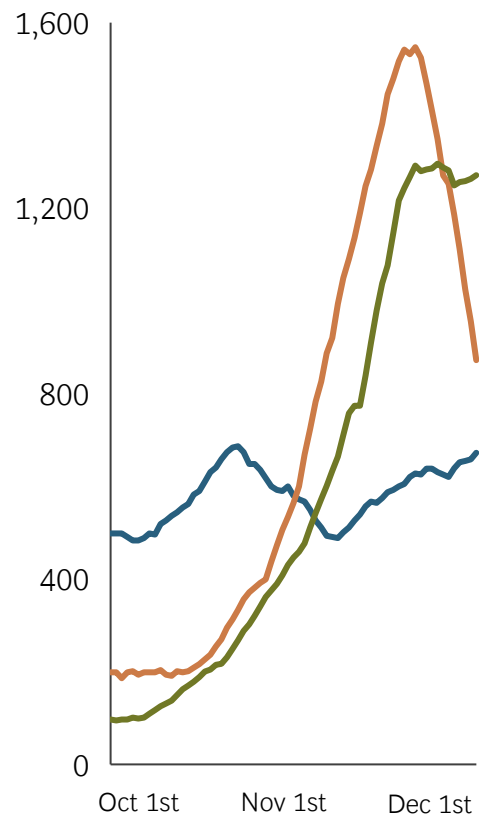
1. Includes Oceania (Australia, New Zealand, Papua New Guinea, and surrounding island nations of the Pacific ocean). 2. Estimate based on composite of UK hospitalization rates and observed vaccine efficacy data across multiple US states. Sources: Johns Hopkins CSSE; Our World in Data; Worldometer; press search; BCG analysis of UK household infection surveillance & hospitalization, CDC, and state-specific vaccine efficacy (IL, other) datasets

Delta response varies across Europe, with Austria imposing lockdowns, Netherlands rolling out boosters, and UK reducing booster waiting time

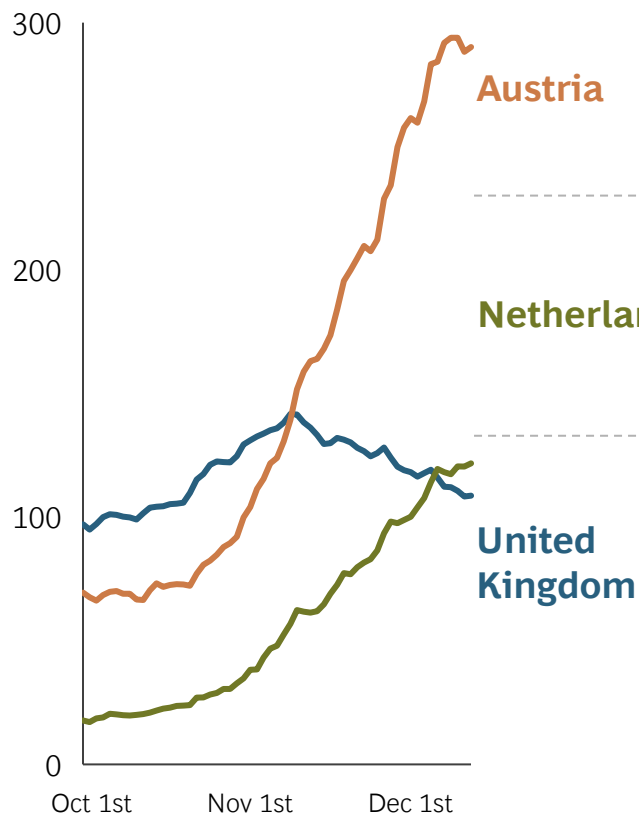
As of 6 Dec 2021

Cases and hospitalizations spiking in Austria and Netherlands

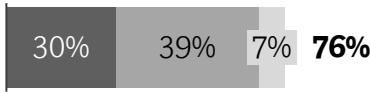
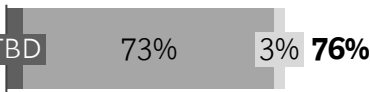
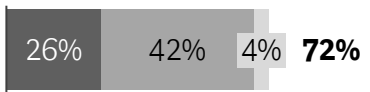
7-day rolling average of daily new COVID-19 cases per million people¹



7-day rolling average of daily COVID-19 hospitalizations per million people²



Vaccination rates³



- First, second, and booster dose
- First and second dose only
- First dose only

Key actions countries are taking

First country to introduce **lockdown** this winter (currently 22 Nov – 11 Dec) – **seeing case reduction**

Compulsory vaccination from Feb 2022

High vaccination rate but **limited booster uptake**

Booster campaign only begun in mid-November

Some restrictions imposed (e.g. nonessential shops closed after 5pm, hospitality capacity limits)

High vaccination rate with significant booster uptake

Very few social measures in place (masks required)

Recently recommended boosters 3 months after second dose, open for all adults

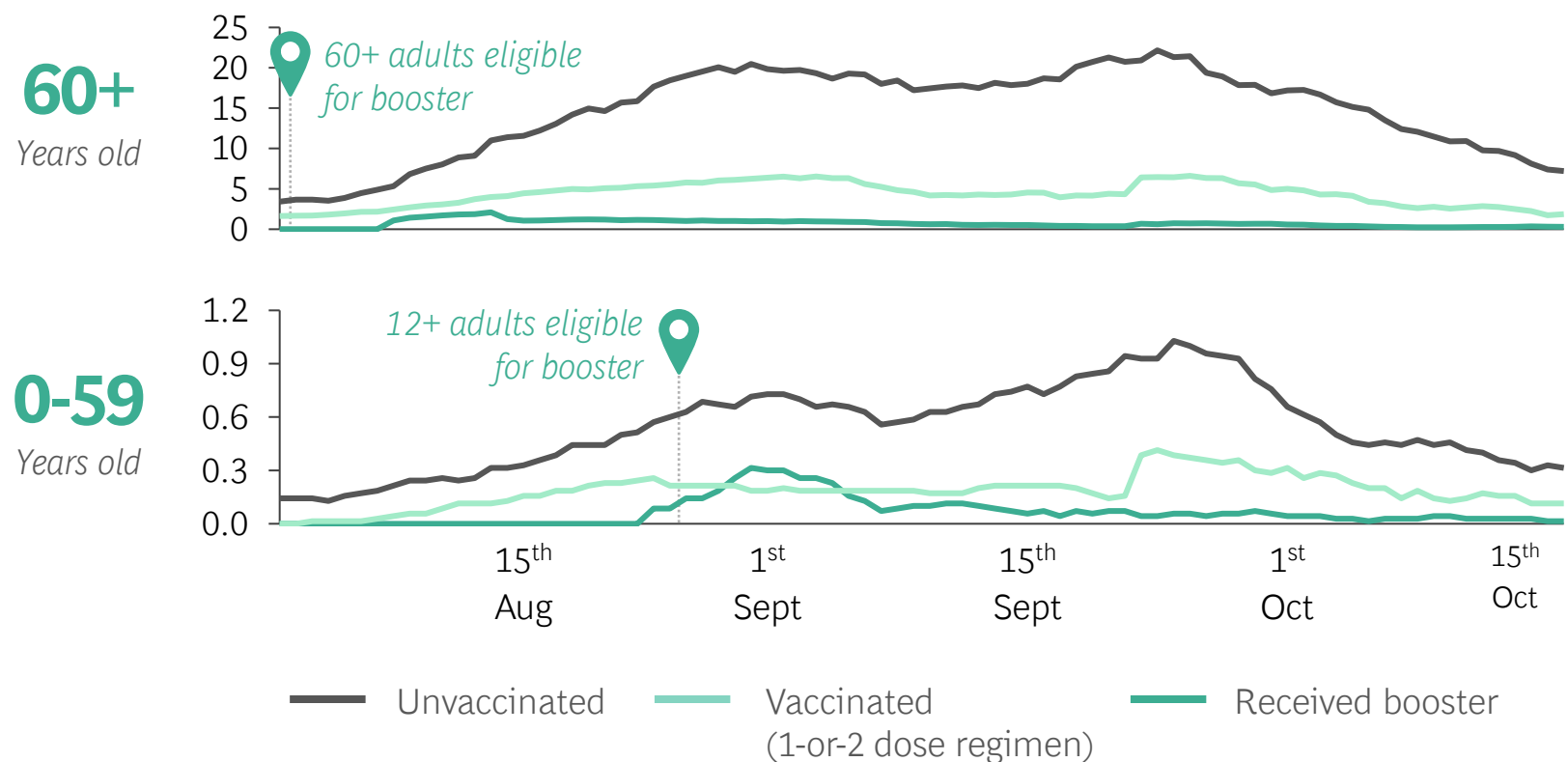
1. Data until 5th December 2021; 2. Data until 1st Dec 2021 due to lack of data for Austria and the Netherlands thereafter 3. As a % of total population – Austria (December 5, 2021), Netherlands (November 28, 2021), UK (December 4, 2021)
Source: Our World in Data, John Hopkins University CSSE COVID-19 Data

Data shows clear benefit of booster program for all ages

Findings from Israel

As of 18 Oct 2021

7-day average of new daily severe cases per 100K, 2021



Risk of severe outcomes between boosted and fully vaccinated almost as great as between vaccinated and unvaccinated

Boosters reduce risk by ~10x¹ for ages 60+ vs. a 1- or 2-dose vaccine regimen

Boosted individuals ages 0-59 face ~10x reduced risk compared to individuals 60+ with booster¹

Definition of fully vaccinated will likely evolve to include boosters, especially as virus continues to mutate – critical to enable access

During September 15- October 15 time period; Delta variant accounted for 98% of Israeli cases over this timeframe.
1. New daily severe cases are patients in severe condition who weren't in this condition in the previous day; Boosters reflect people who got 3rd dose and 7-days have passed since receiving the 3rd dose; Vax no boosters reflect people who received 3 doses but 7 days haven't passed since 3rd dose, or people received 2 doses and 7 days have passed since 2nd dose, or people who had COVID-19 and received at least 1-dose and 7 days have passed since the dose; Non-vax are people who didn't receive any shot.
Source: Israel Ministry of Health's public dashboard

The big questions with Omicron

A

How well will our vaccines and antivirals work against this variant to prevent infections, transmission, or severe outcomes?

Almost certain to have some loss in infection protection, but we don't know extent
Unknown how protection against infections or severe cases will vary by vaccine
Expectation that vaccines will continue to protect well against severe cases
New antivirals from Pfizer and Merck likely to remain effective

B

Will this variant outcompete Delta? If so, is this due to transmissibility or breakthrough infections?

Since October, Omicron has gone from <1% to ~60% of cases in South Africa
Will take a few weeks to sequence variants in more countries and inform how widespread it is
Early indications suggest Omicron is highly transmissible and has a substantially higher reinfection risk than seen with Delta

C

Is it more severe?

No clear view – need to wait for firm data rather than anecdotal evidence to draw conclusions
It took time to understand that Delta is 2x as severe for unvaccinated individuals >50

Several scenarios for how Omicron could unfold in the coming months

	BULL	BASE	BEAR
	<i>Omicron supplants Delta with a milder virus that builds population immunity</i>	<i>Mild to moderate setback but no major deviations necessary in response</i>	<i>Omicron is "Delta squared" – more transmissible and lethal</i>
 Disease risk	Milder virus outcomes , even among most vulnerable (despite high transmission)	Similar disease & transmission risk as Delta; critical to protect the most vulnerable	Significantly more severe and transmissible than Delta
 Immunity benefits	Current vaccines confer significant protection ; boosters less critical going forward	Vaccines still offer protection against severe outcomes ; boosters even more vital	Variant evades vaccines and recovered immunity, requiring new formulations
 Societal impact	Improved conditions ; progressive easing of restrictions with little sign of recurrence	Mostly status quo with some more restrictions (e.g., mask and testing mandates)	Increased restrictions required to maintain health system capacity ; significant economic drag possible
		 Current estimate of most likely outcome (Dec. 6)	

Endemic COVID-19: New variants will continue to appear over time. Delta variant likely to be a prominent variant for 7-9 months based on current patterns.

Looking ahead | The data we receive over the next few weeks will tell us which scenarios are most likely

As of 27 Nov 2021

Vaccine efficacy



Neutralization assays¹ will provide first real data on Omicron's ability to resist immunity

Likely known in coming days

Transmissibility and reinfection



Early data suggests that Omicron outcompetes Delta and has substantially higher reinfection levels

Will know more as countries increasingly report Omicron seroprevalence levels, **likely within the next week**

More time required to understand transmission rates among vaccinated

Severity

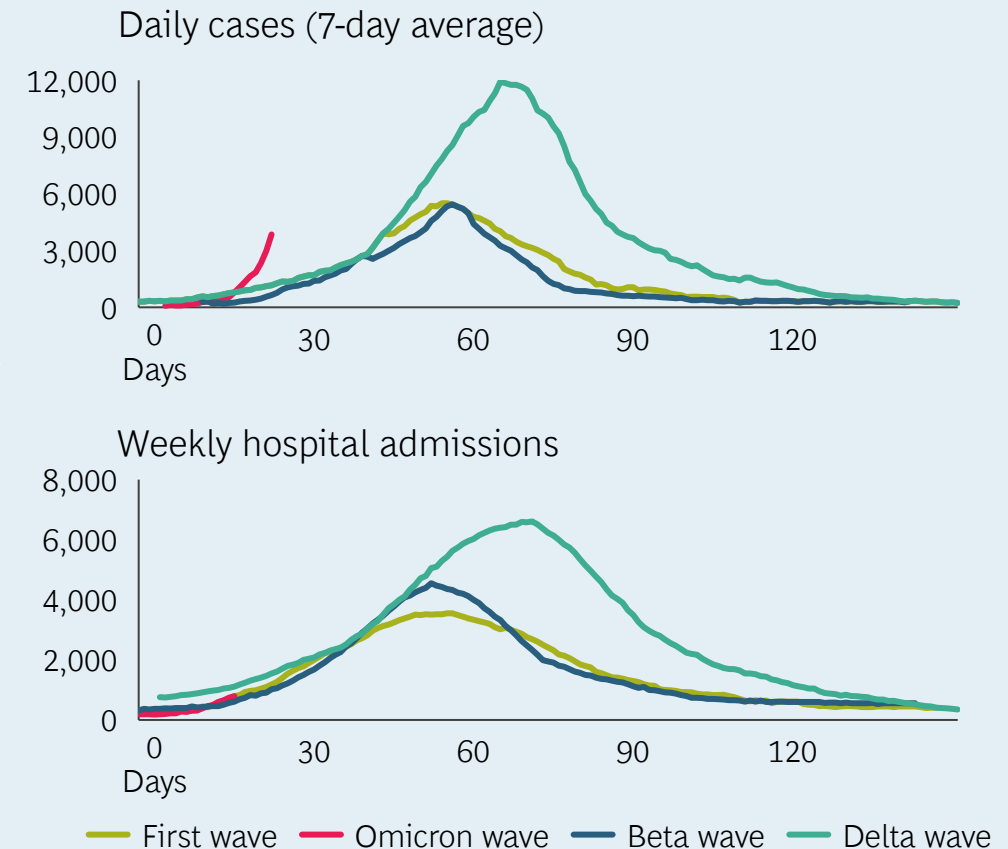


Hospitalization & fatality data always lags cases 2-4 weeks

Additionally, will take time to de-average cases, hospitalizations, and deaths by age and vaccination status (including vaccine type, timing, and number of doses)

If leaders provide this data proactively, **we can start to get a good understanding within the next month;** if not, it could take much longer

Early picture in Gauteng Province, South Africa: Cases outpacing, hospitalizations on trend



'No regrets' actions to take while we wait for answers

- 1 Focus on vaccinations, our best weapon** | Make boosters a priority for the vaccinated and continue to focus on the unvaccinated – across both communities and individual organizations.
- 2 Containment may slow the spread** | Travel restrictions & quarantines may buy some time in the near-term, but a robust surveillance system is needed (using the PCR tests that can identify Omicron). Leverage epinomically¹ optimized public health measures (e.g., masks, testing, contact tracing) to minimize harm.
- 3 Protect the vulnerable** | Ensure measures in place to keep the virus out of our most vulnerable settings (e.g., long-term care facilities). Consider vaccine mandates for the most vulnerable.
- 4 Support South Africa** | Any travel restrictions in South Africa and elsewhere must be equitable and based on science, not purchasing power
- 5 Accelerate vaccines and treatments** | Governments must do everything possible to accelerate the development of new vaccines, boosters, and antiviral drugs – and need to make sure these are accessible in all communities. New formulations are probably ~100 days away; need to be prepared to scale manufacturing and distribution globally.

1. An epinomic strategy is one that integrates epidemiological and socioeconomic imperatives. Sources: BCG analysis and case experience.



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UPDATED ANALYSES AND IMPACT

- ✓ COVID-19 economic and business impact

Summary dashboard

As of 29 Nov 2021

To be updated in forthcoming editions

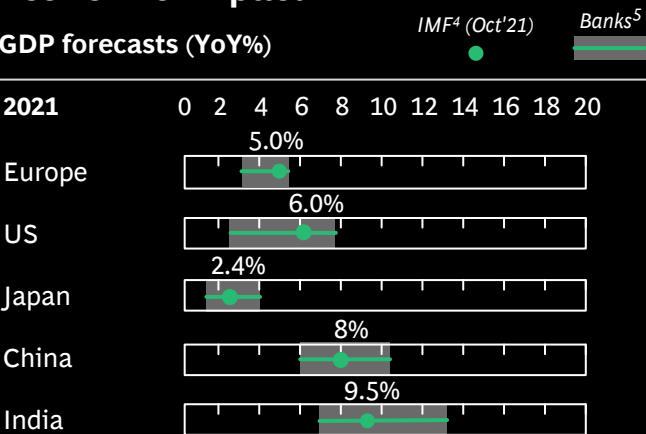
Epidemic Progression

Global epidemic snapshot

		262M	20.2M	5.2M	7.9B	
		# of cases	# of active cases ¹	# of fatalities	Vaccine doses administered	
			Jul	Aug	Sep	Oct
Month-on-month growth of new cases ²	Americas		0.9x	1.4x	0.9x	0.6x
	Europe		2.5x	1.1x	1.0x	1.4x
	Asia ³		1.3x	1.3x	0.7x	0.6x

Economic Impact

GDP forecasts (YoY%)



Consumer Activity

Mobility

		Aug	Sep	Oct
Mobility ⁶ (month vs. Jan '20)	US	-11%	-12%	-11%
	Europe	-7%	-2%	-5%
	Japan	-15%	-14%	-8%
Domestic air travel tickets booking ^{7,8} (YoY)	US	103%	72%	81%
	UK	101%	116%	133%
	China	-32%	-9%	-9%

Sales

Retail goods sales ⁹ (excl. auto & fuel, YoY)	US	15%	13%	
	Europe ¹⁰	2%	3%	
	China ¹¹	1%	7%	6%
Passenger vehicle sales ¹² (YoY)	US	-17%	-25%	-23%
	Germany	-23%	-26%	-35%
	China	-15%	-17%	-6%

Business Impact

Stock market performance

	02 Jan '20 vs month end	Aug	Sep	Oct
S&P500		39%	32%	41%
FTSE100		-6%	-7%	-5%
CHN SSE		15%	16%	15%
Volatility Index (S&P500) ¹³		1.3x	1.9x	1.3x

International trade

Trade value ¹⁴ (YoY)	US	23%	18%	
	France	22%		
	China	29%	23%	

Industrial production

Purchasing manager's index ¹⁵ (base = 50)	US	61	61	58
	Germany	63	58	58
	China	50	50	49

Steel production (YoY) ¹⁶	-3%	-9%	-11%
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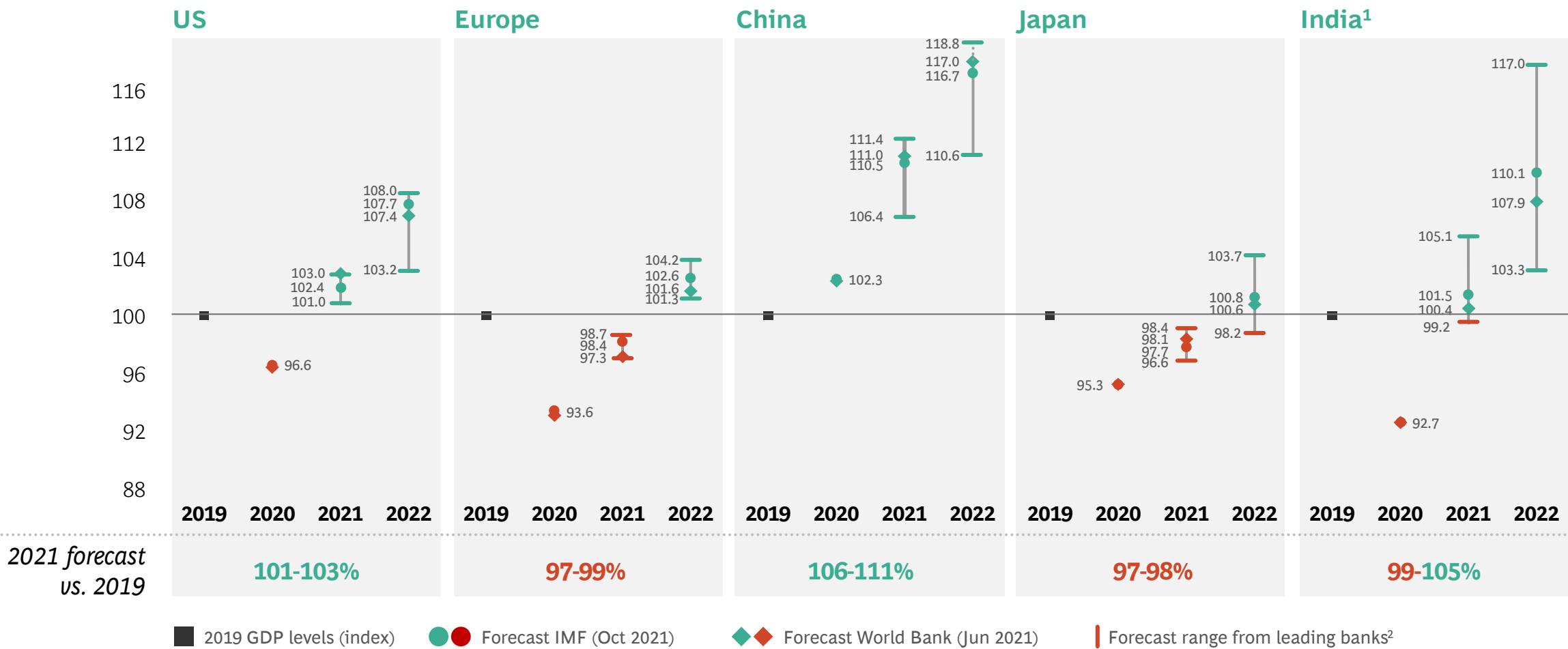
1. Total cases less deaths and recovery; 2. Calculated as monthly average of daily cases vs. previous month; 3. Includes Middle East and Oceania; 4. IMF Oct 2021 forecast; 5. For India, forecast is for financial year; for others, it is for calendar year; YoY forecasts; range from forecasts (where available) of World Bank, International Monetary Fund, JP Morgan Chase, Morgan Stanley, Bank of America, Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; As of reports dated Sep and Oct 2021; 6. Mobility values are calculated as the average of mean monthly mobilities in workplace, public transit, retail and recreation, and grocery and pharmacy and compared with a baseline from 03 Jan – 06 Feb 2020; Europe mobility values are calculated as the average of Germany, France, UK, Spain, and Italy; 7. Calculated as change in last 14 days rolling average value as compared with same period last year; 8. Domestic tickets by ticketing; 9. Retail goods sales include online and offline sales and comprise food and beverages, apparel, cosmetics and personal care, home appliances, general merchandise, building material; do not include auto, fuel and food services; 10. Europe includes 27 countries currently in EU; 11. For China, total retail sales displayed (including automobiles and petroleum and related products) and compares 2021 to 2019; 12. Figures represent passenger vehicle (including sedan, hatchback, SUV, MPV, van and pickup) sales data for over same month in previous year; Europe value calculated as cumulative sales in Germany, France, UK, Spain, and Italy; 13. Underlying data is from Chicago Board Options Exchange Volatility Index (VIX); Volatility Index is a real-time market index that represents the market's expectation of 30-day forward-looking volatility and provides a measure of market risk and investors' sentiments; 14. Calculated as sum of imports and exports, measured in USD and compared with previous year period; EU trade values between EU and all outside countries; 15. PMI (Purchasing Manager's Index) is a diffusion index that summarizes whether market conditions, as viewed by purchasing managers, are expanding (>50), staying the same (50), or contracting (<50); 16. Data corresponds to G-20 countries (minus Indonesia). Sources: JHU CSSE, Our World in Data, WHO, World Bank, IMF, Bloomberg, Google Mobility, US Census Bureau, Eurostat, PRC National Bureau of Statistics, ACEA actuals, Marklines, ARC ticketing data, STR, Statista, CBOE, OECD, BEA, GACC (customs) China, ONS, BCG.

Many large economies expected to continue recovery and reach 2019 GDP levels between 2021 and 2022

As of 29 Nov 2021

Economic Impact

GDP forecast levels indexed to 2019 value (base: 100)



1. For India, forecast is for financial year; for other countries, the forecast is for calendar year. 2. Range from forecasts (where available) of JPMorgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC. Note: As of reports dated Oct 2021; YoY forecasted 2020 values are estimated actual GDP. Sources: Bloomberg; World Bank; IMF; BCG.

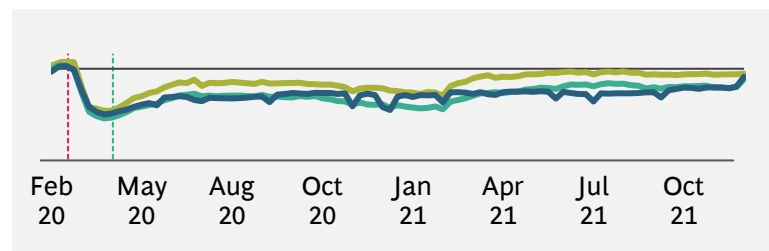
Retail and recreation mobility recovered fastest; public transit and workplace mobility remains lower in most countries – but signs of rebounding to normal levels across the board

As of 29 Nov 2021

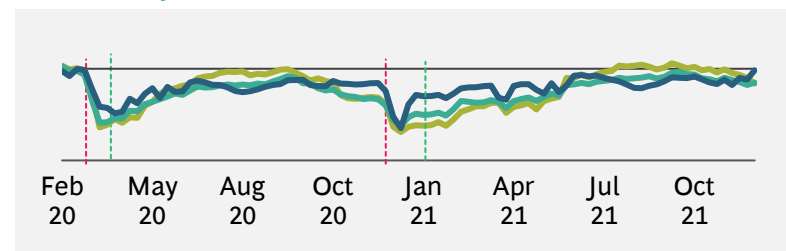
Economic Impact

Workplace¹, public transit², and retail and recreation³ mobility compared with baseline of January 2020 to February 2020

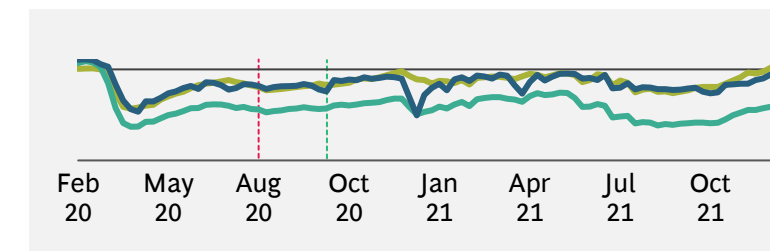
US



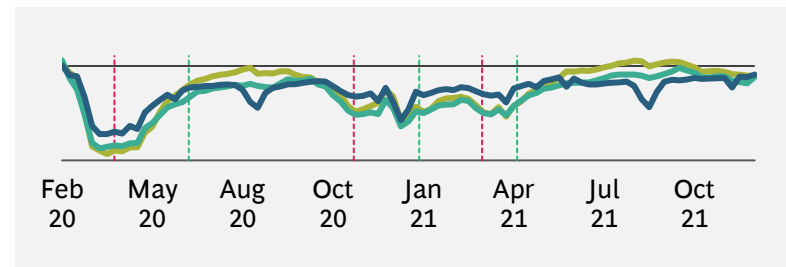
Germany



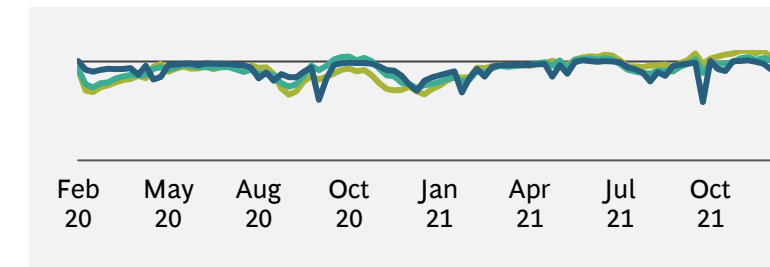
Australia



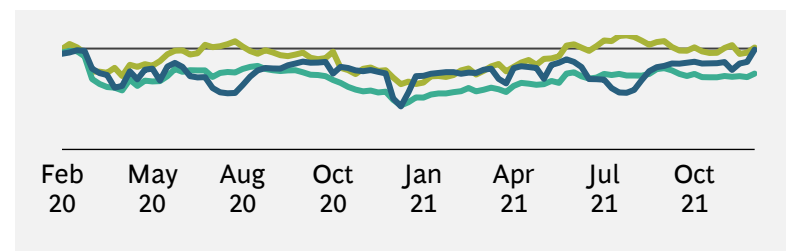
Italy



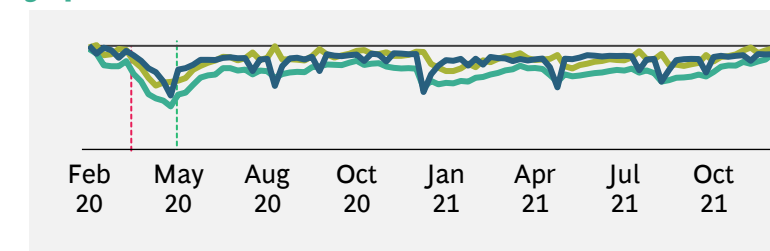
South Korea



Sweden



Japan



— Public transit mobility
— Workplace mobility
— Retail and recreation mobility

- - - Lockdown easing⁴
- - - Lockdown started⁴

1. Tracked as changes in visits to workplaces. 2. Tracked as changes in visits to public transport hubs, such as underground, bus and train stations. 3. Tracked as changes for restaurants, cafés, shopping centers, theme parks, museums, libraries, and cinemas. 4. Refers to average lockdown start and easing dates for larger lockdowns. Note: Data taken as weekly average compared with baseline (average of all daily values of respective weeks during Feb 15 2020–Feb 28 2021). Sources: Google LLC “Google COVID-19 Community Mobility Reports.” <https://www.google.com/covid19/mobility/>; press search; BCG.

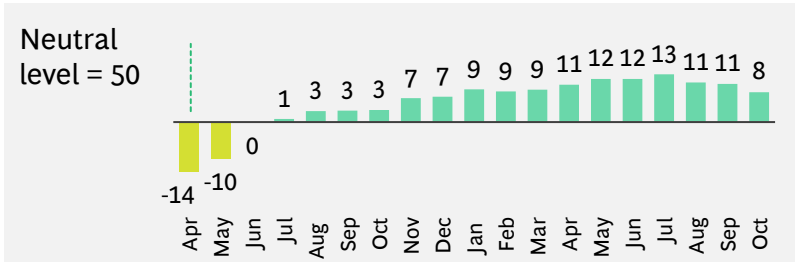
Manufacturing PMI global recovery indicates positive momentum with some signs of a slowdown in recent months

As of 29 Nov 2021

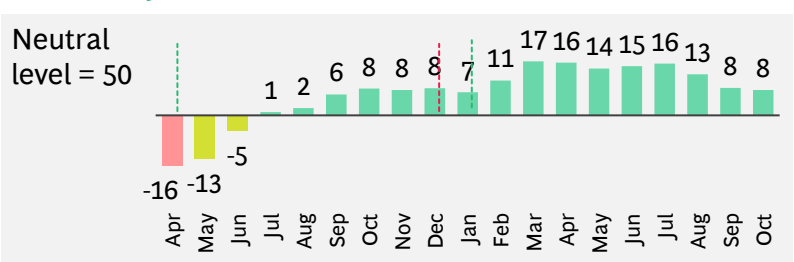
Economic Impact

Manufacturing PMI before, during, and after the crisis

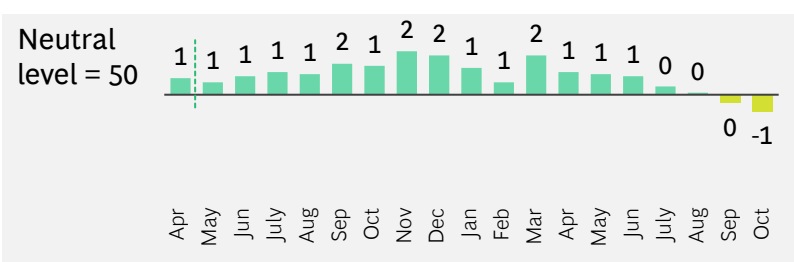
US



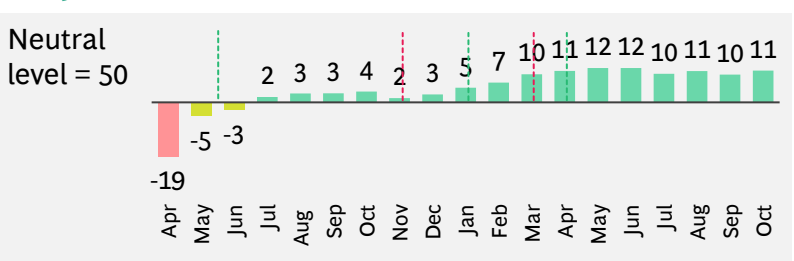
Germany



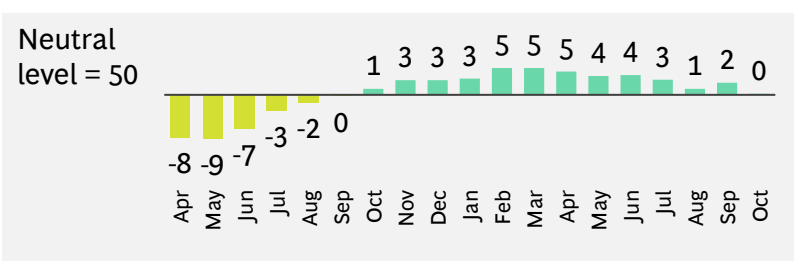
China¹



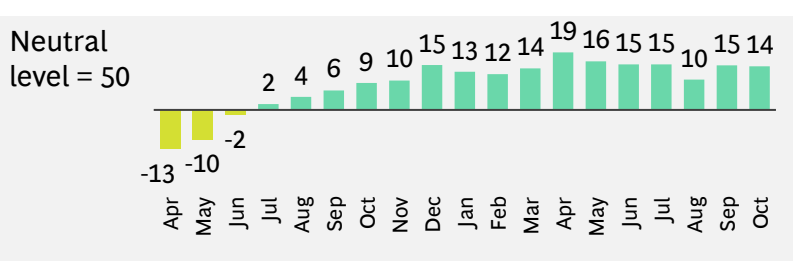
Italy



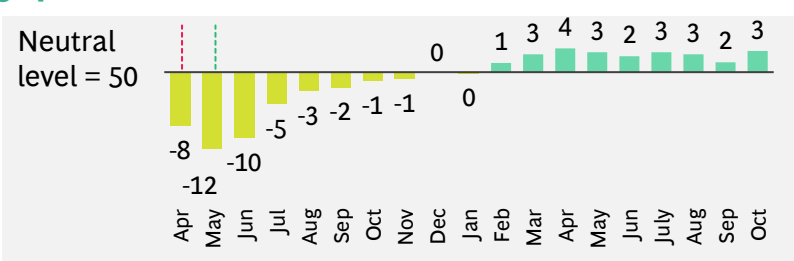
South Korea



Sweden



Japan



Lockdown started Lockdown easing

1. Lockdown dates are pertaining only to Hubei province. Note: PMI (Purchasing Manager's Index) is a diffusion index that summarizes whether market conditions, as viewed by purchasing managers, are expanding, staying the same, or contracting. 50 is neutral, >50 is considered to be positive sentiment, and <50 is considered to be negative sentiment. Sources: Markit South Korea Manufacturing PMI SA; Jibun Bank Japan Manufacturing PMI SA; China Manufacturing PMI SA; Swedbank Sweden PMI SA; Markit/BME Germany Manufacturing PMI SA; Markit Italy Manufacturing PMI SA; Markit US Manufacturing PMI SA; EIKON.

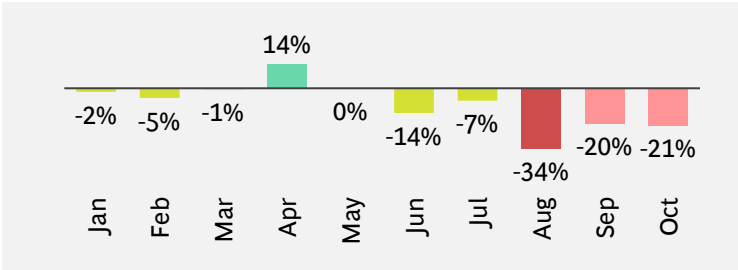
Passenger vehicle sales had started to return to prepandemic levels in some markets but dropped again as supply constraints continue

As of 29 Nov 2021

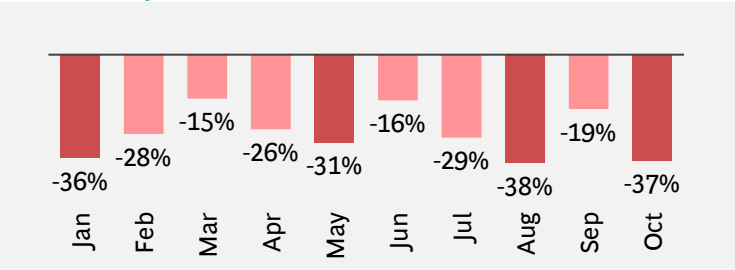
Economic Impact

2021 monthly passenger vehicle¹ sales, % change vs. same month in 2019

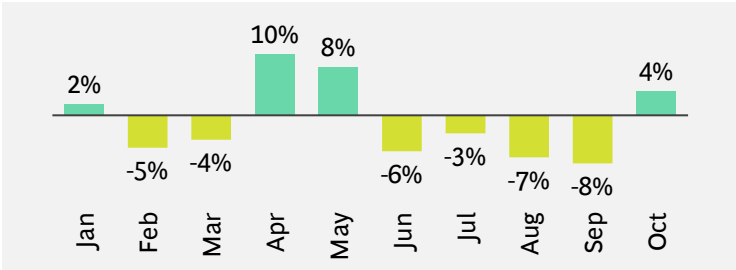
US



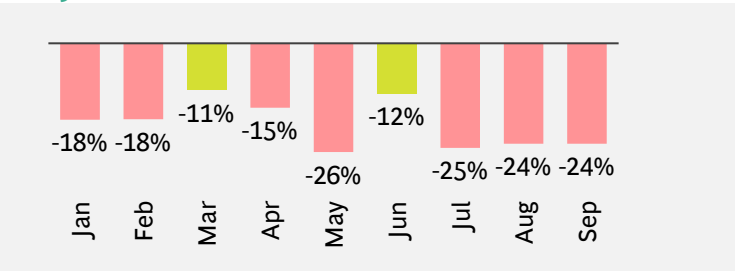
Germany



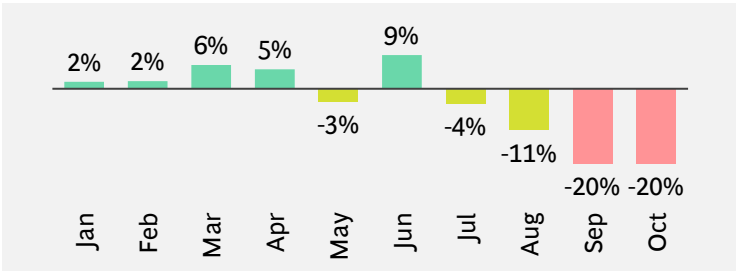
China²



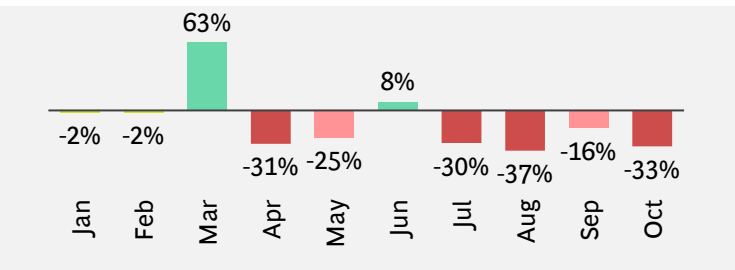
Italy



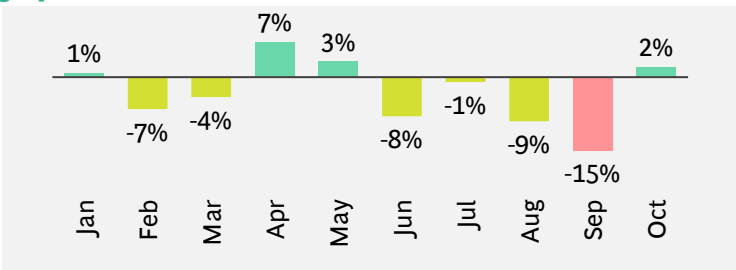
South Korea³



Sweden



Japan



1. Passenger vehicle sales include data on, where available, hatchback, MPV, pickup, sedan, SUV, mini trucks, light trucks, and vans. 2. Stimulus policies: Launched subsidies for car purchases in 10 cities, lessened purchase restriction in high-tier cities, and extended NEV subsidies. 3. South Korea's growth in auto sales from Mar through June 2020 is supported by recent tax cuts for individual consumption goods (e.g., cars), several carmakers (e.g. Audi, VW) launching new models, and the increased appreciation by the Koreans of cars as a safe mode of transport and as a travel alternative for camping during COVID-19, supported by recently passed legislation to allow a variety of different cars to be modified into "camping cars." Sources: Marklines; BCG.

Retail store sales in China and US have rebounded across categories; apparel sales continue to be impacted in other countries

As of 29 Nov 2021

Economic Impact

Retail store sales breakdown by category, % change vs. same month in 2019

Food and beverage stores

	Apr '21	May '21	Jun '21	Jul '21	Aug'21	Sep'21	Oct '21
US	15%	16%	16%	14%	17%	18%	
UK	10%	4%	8%	3%	2%	2%	2%
Spain	0%	-3%	-1%				
Sweden	0%	5%	6%	3%	4%	5%	4%
France	8%	8%	5%	7%	7%	9%	
China ¹	20%	18%	23%	15%	11%	15%	15%
Japan	-2%	0%	1%	2%	-1%		

Personal care and cosmetics stores

	Apr '21	May '21	Jun '21	Jul '21	Aug'21	Sep'21	Oct '21
US	14%	15%	14%	14%	15%	14%	
UK ²	-6%	-7%	-7%	-19%	-16%	-10%	-4%
Spain	1%	-1%	2%	1%	1%	0%	
Sweden	4%	10%	13%	10%	11%	12%	9%
France	7%	10%	15%	24%	15%		
China ¹	30%	36%	43%	18%	27%	24%	32%
Japan	42%	38%	46%	42%	43%		

Apparel stores³

	Apr '21	May '21	Jun '21	Jul '21	Aug'21	Sep'21	Oct '21
US	10%	13%	18%	14%	15%	17%	
UK	-5%	-2%	-6%	-11%	-8%	-7%	-1%
Spain	-23%	-21%	-14%	-19%	-17%	-11%	
Sweden	-27%	-15%	-11%	-14%	-11%	-17%	-11%
France	-63%	-17%	-3%	-8%	-7%		
China ¹	3%	8%	8%	1%	-5%	0%	6%
Japan	-30%	-29%	-23%	-22%	-33%		

Home appliance stores⁴

	Apr '21	May '21	Jun '21	Jul '21	Aug'21	Sep'21	Oct '21
US	13%	8%	14%	11%	7%	7%	
UK	30%	30%	19%	12%	13%	-2%	12%
Spain	7%	17%	10%	8%	9%	10%	
Sweden	18%	27%	22%	18%	16%	16%	14%
France	4%	11%	22%	10%	11%		
China ¹	-7%	3%	15%	4%	-1%	1%	8%
Japan	5%	11%	1%	11%	-15%	-36%	

≤ -30%	-29% to -15%	-14% to 0%	> 0%
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□ To be updated in forthcoming editions

1. For China, Jan and Feb 2021 are reported together due to national holidays; food and beverages category includes only food and grains; 2. UK data set switched over from Eurostat to Office for National Statistics following Brexit. 3. Includes clothing accessories, shoes, etc. 4. Includes audio video and home appliances stores. Note: For US, share in retail store sales in Q4 2019: F&B ~25%, personal care and cosmetics ~12%, apparel ~6%, home appliances ~3%, general merchandising ~25%, and building material and gardening equipment ~13%. Sector classification and mix may be different across countries. Sources: US Census Bureau; PRC National Bureau of Statistics; Eurostat; Office for National Statistics United Kingdom; Ministry of Economy Japan.

China and US have seen **strong rebounds in almost all categories**, even above 2019 levels

Retail store sales recovery driven by **food and beverage** across almost all countries. **Home appliance** also seeing growth, except for Japan

Apparel category continues to see decline compared with 2019, except for US and China

Personal care and cosmetics has seen strong recovery through August 2021, except for UK

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