

COVID-19 BCG Perspectives Series
Facts, scenarios, and actions for leaders

Ensuring an Inclusive Recovery

30 June 2020

COVID-19 BCG Perspectives

Objectives of this document

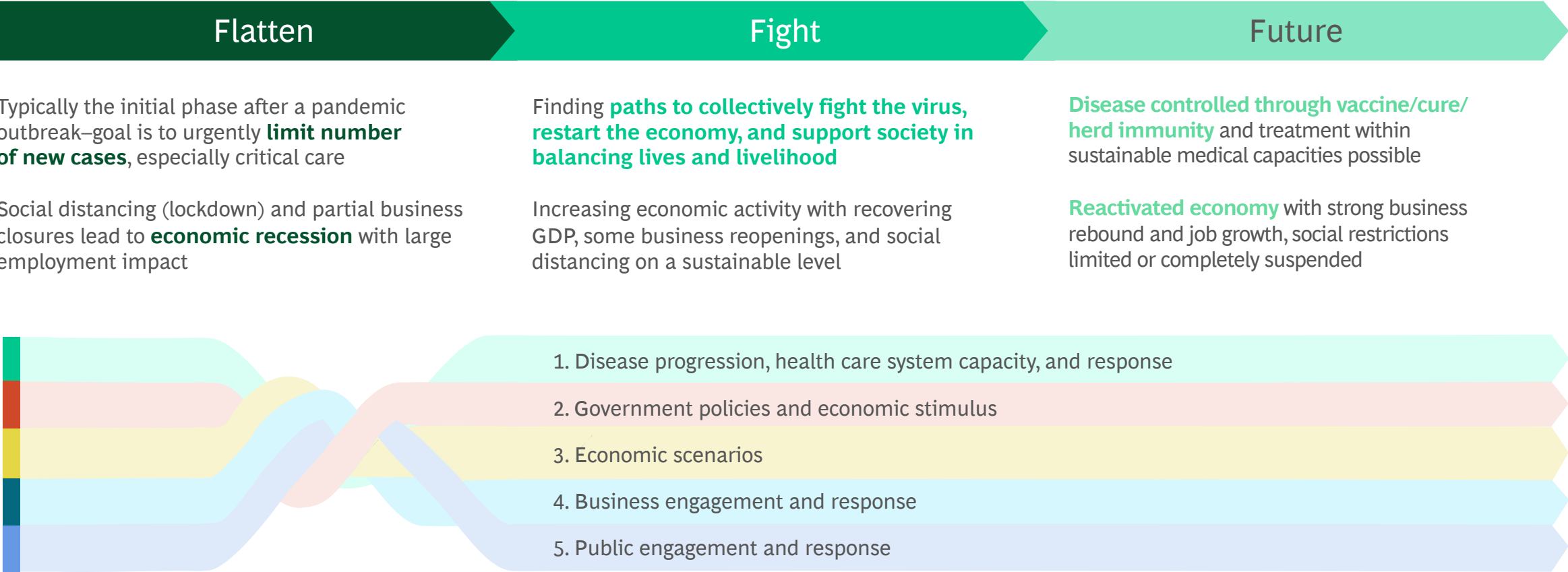
COVID-19 is a global societal crisis

We at BCG believe that the COVID-19 outbreak is first and foremost a societal crisis, threatening lives and the well-being of our global community. Society now, more than ever, needs to collaborate to protect people's lives and health, manage mid-term implications, and search for lasting solutions.

Leaders need to drive an integrated response to navigate the crisis

It is the duty of health, political, societal, and business leaders to navigate through this crisis. A complex interplay of epidemic progression, medical response, government action, sector impact, and company action is playing out. This document intends to help leaders find answers and shape opinions to navigate the crisis in their own environments. It encourages thinking across the multiple time horizons over which we see the crisis manifesting itself.

COVID-19 will be a journey with three distinct phases, requiring an integrated perspective



All of the above five factors result in specific economic and social outcomes in each phase

Executive Summary | COVID-19 BCG Perspectives

COVID-19 is disproportionately affecting the disadvantaged; a successful recovery must be inclusive and can set up a better future for all

- COVID-19 has created a humanitarian crisis and disproportionately affects the lives of the disadvantaged/vulnerable in our society
- The impact on health, education, food security, and livelihood outcomes is staggering; those that were struggling already are hit hardest
- Protecting the disadvantaged helps flatten the curve for all and is critical for maintaining social stability across the globe
- A successful and inclusive response now can set us up for a better future: (i) health care preparedness for future pandemics, (ii) new models of high-value and low-cost learning, (iii) a more resilient food system, and (iv) a reskilled and diverse workforce
- There is a clear imperative for private, public, and social sector leaders to take concrete action for an inclusive recovery

Several countries are witnessing a rapid increase in daily cases; a severe global economic downturn is expected for 2020

- Globally, 50% of patients have recovered from COVID-19; the growth rate of daily new cases is about 2.0%¹
- Daily new cases are increasing rapidly, with cases in June² being ~1.5x those in May and ~1.7x those in April
- Vaccine and therapeutics development continues to move at an unprecedented pace; 16 vaccine candidates are currently in phases I, II and III
- Latest economic forecasts from IMF point to a 4.9% decline in global GDP in 2020; it's expected to rebound to 5.4% growth in 2021
- Only the pharma sector is currently at pre-crisis TSR³ levels; 8 (out of 24) sectors have a significant share⁴ of companies with >15% default risk

We believe during this crisis leaders need to think along two dimensions:

Taking an integrated perspective on health/medical progression, governmental responses, societal reactions, and economic implications to understand business/sector impacts

Thinking multi-timescale in a Flatten-Fight-Future logic

1. Daily new case growth rate is calculated based on 7-day rolling average; 2. Calculated as monthly average of daily new cases; 3. Total Shareholder Return; compared with 21 Feb 2020; 4. Retailing, Materials, Transport, Auto, Real Estate, Energy, Hospitality with > 10% of companies with probability of default > 15% as of 18 June 2020; based on top S&P Global 1200 companies; sectors based on GICS definitions
Source: BCG

Guide for leaders

Disproportionate impact of COVID-19 crisis on the disadvantaged
Inclusive solutions for a reimagined future

Updated analyses and impact

Epidemic progression and virus monitoring
Economic, business, & societal impact

COVID-19 impact dashboard

As of 26 June 2020

Epidemic Progression

9.8M

of cases

4.9M

of recoveries

494K

of fatalities

Recent developments

Daily new cases in June¹ are **~1.5x** May, **~1.7x** April

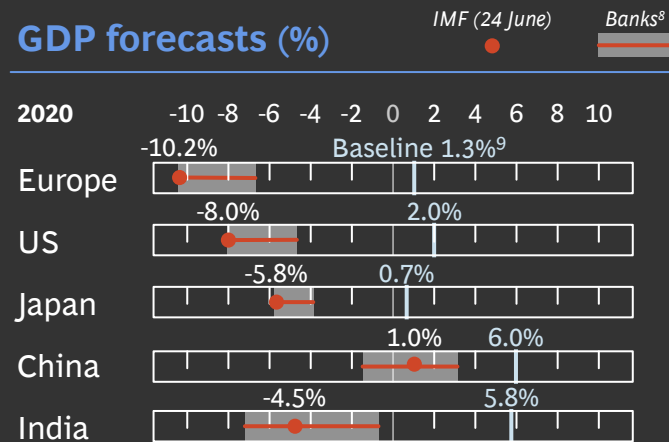
South America driving **~32%** of global daily new cases¹

	12 June	26 June
# of daily new cases ²	125K	161K
# of reported recoveries as % of total cases	47%	50%
# of tests / cases ³	19	19

	Vaccine	Treatment
Trials in pre-clinical stage and beyond ⁴	172	139
Trials in Phase 1 and beyond ⁵	16	58
Current est. timeline for approval & scale-up	9-33 months⁶	6-21 months⁷

Economic Impact

GDP forecasts (%)



Estimated employment impact

	Total employment 2019 (M)	Employees impacted ¹⁰ (M)	% of employees impacted
US	159	47	30%
UK	33	11	32%
Germany	45	12	26%
France	28	14	49%
Italy	23	8	35%
Spain	20	4	22%

Business Impact

Stock market performance¹¹

20 Mar vs 21 Feb	-31%	-28%	-30%	-34%	-10%
26 June vs 21 Feb	-10%	2%	-17%	-11%	-2%
	S&P500	NASDAQ	FTSE100	DAX	CHN SSE

Total Shareholder Returns (S&P1200)¹¹

First column: 21 Feb to 20 Mar; Second column: 21 Feb to 26 June

	Americas		Europe		Asia	
Pharma	-19%	1%	-20%	-3%	-22%	8%
F&B ¹²	-26%	-13%	-24%	-12%	-12%	-4%
Telecom	-17%	-12%	-20%	-15%	-14%	-6%
Software	-30%	-4%	-32%	-8%	-28%	7%
Retail	-42%	-11%	-36%	-13%	-24%	15%
Capital goods	-38%	-16%	-35%	-17%	-29%	-8%
Auto	-47%	-25%	-45%	-19%	-32%	-12%
Real Estate	-42%	-31%	-26%	-31%	-22%	-18%
Energy	-56%	-33%	-45%	-31%	-41%	-24%
Banks	-41%	-31%	-44%	-38%	-26%	-15%

1. Calculated as monthly average of daily new cases; 2. Calculated as 7-day rolling average of daily cases; 3. Median of values for top 15 countries by nominal GDP (except China); 4. Ongoing trials including pre-clinical, Phase 1 (first trial in humans), Phase 2, Phase 3, Phase 4; 5. Ongoing trials including Phase 1 (first trial in humans), Phase 2, Phase 3, Phase 4; 6. 9-month development current "best case" for first supply (12 months since Apr 2020), then likely to require time for scale-up and continuing to prepare for populations; 7. Remdesivir is approved now, could be more widely available by Jul-Sep 2020. For the next wave, estimated timeline is Oct '20 – April '22 (3-21 months). If first round of drugs being tested succeeds – then 6-9 months; if not – substantially longer; 8. 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; Goldman Sachs, Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; As of reports dated 12 April 2020 to 26 June 2020; 9. IMF June 2020 forecast; 10. Available cumulative data as of 26 June 2020 from mid-March 2020; includes increase in unemployment & employees covered by gov. wage support programs; US: unemployment insurance claims (data as of 25 June); UK no self-employment (data as of April) active & inactive unemployment; Germany: short-time work requests, may not actually utilized (data as of May); France: (data as of June); Spain: (data as of May); figures are changing rapidly and often being reported with a lag from the current date; 11. Sectors are based on Global Industry Classification Standard (GICS) definitions; Performance is tracked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 20 March 2020 (trough of the market) and from 21 February 2020 through 26 June 2020; 12. Food & Beverage. Source: WHO, World Bank, JHU CSSE, Our World in Data, IMF, Bloomberg, Reuters, Eurostat (Europe), Gov't Wage Support & Unemployment figures & comments: UK Gov't 5/12, Bloomberg 6/16 (UK), ISTAT 4/30 & Fitch Ratings 5/18 (Italy), U.S. Department of Labor 5/21 (US), Ministerio de Trabajo 6/2 (Spain), Ministère du Travail 6/5 (France), Arbeitsagentur 6/3 (Germany), BCG

COVID-19 is creating an unprecedented humanitarian crisis; there is a moral imperative to act

As of 26 June 2020

Health

>494K

reported deaths due to
COVID-19 globally;
with >9.8M confirmed
cases

(JHU CSSE)¹

Education

~50%

of 1.6B+ students affected
by school closures lack a
computer at home to
participate in digital learning

(UNESCO, ITU)²

Food security

~265M

people could face acute
food insecurity by end of
2020, up from 135M pre-
crisis

(World Food Program)

Livelihoods

~650M

workers from the informal
sector estimated to be
driven into relative poverty³
due to the crisis

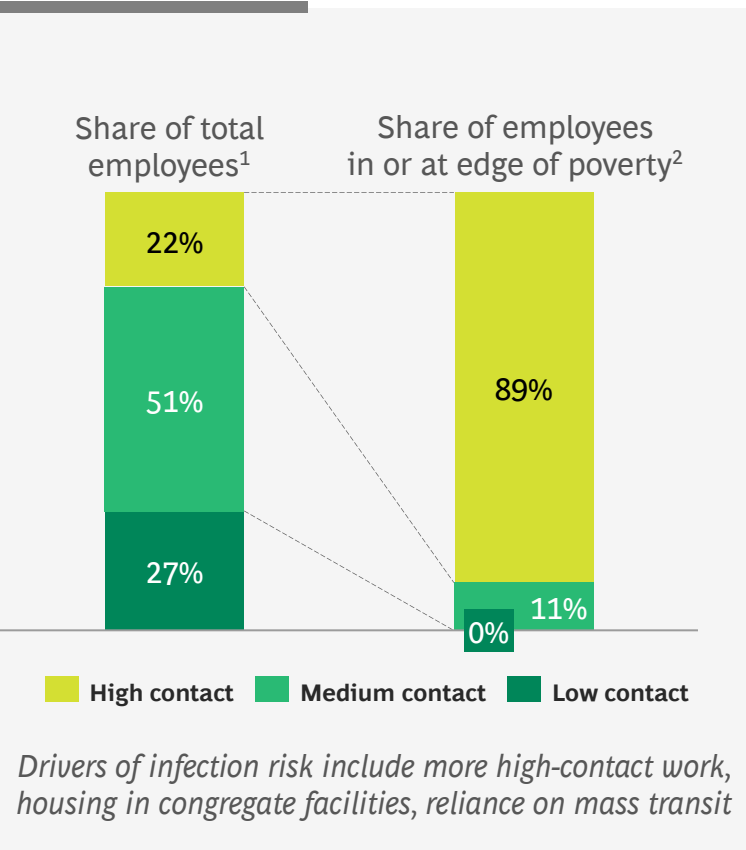
(International Labor Organization)⁴

1. As of 21 June 2020; 2. As of 21 April 2020; 3. Relative poverty value is defined as income of <50% of country's median monthly earnings; 4. As of 29 April 2020
Sources: JHU CSSE, UNESCO, International Telecommunication Union (ITU), WFP, ILO

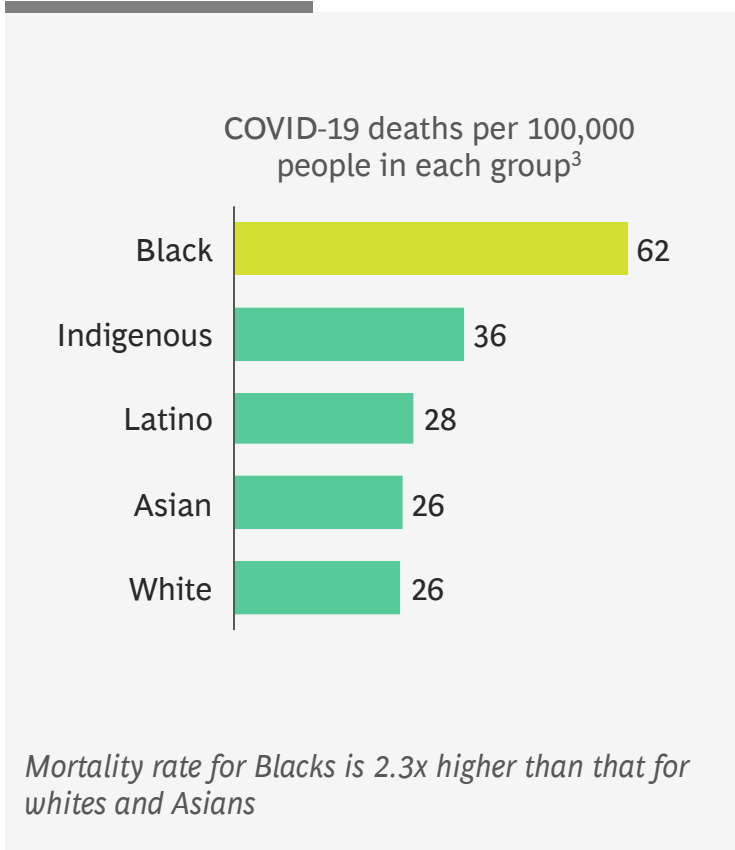
Health | COVID-19 disproportionately impacts the disadvantaged* and creates cascading health outcomes beyond the direct effects of the virus

As of 10 June 2020

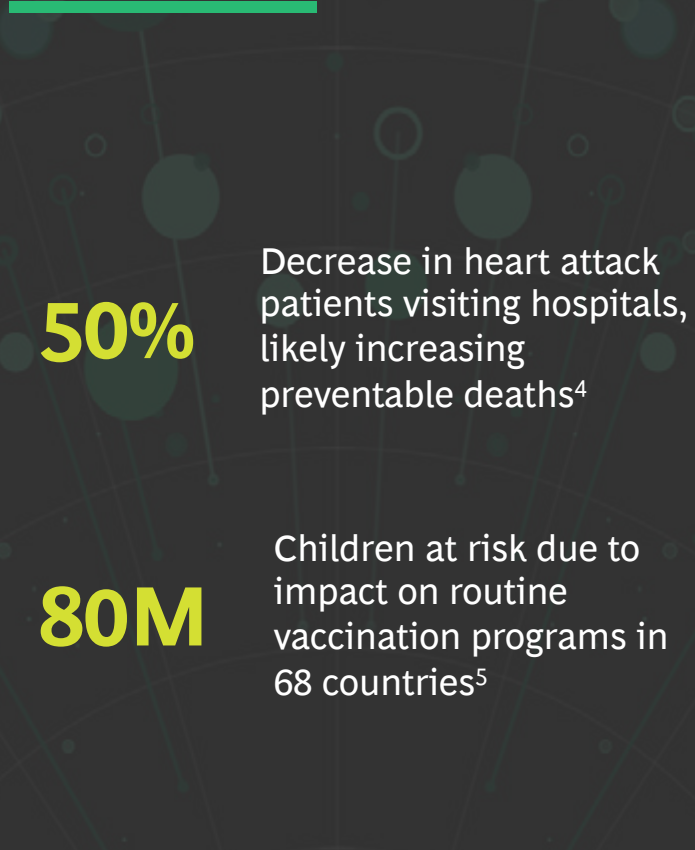
US example
Those at higher risk of infection are disproportionately low income



US example
Higher COVID-19 mortality rate for racial minorities



Global examples
Cascading health outcomes

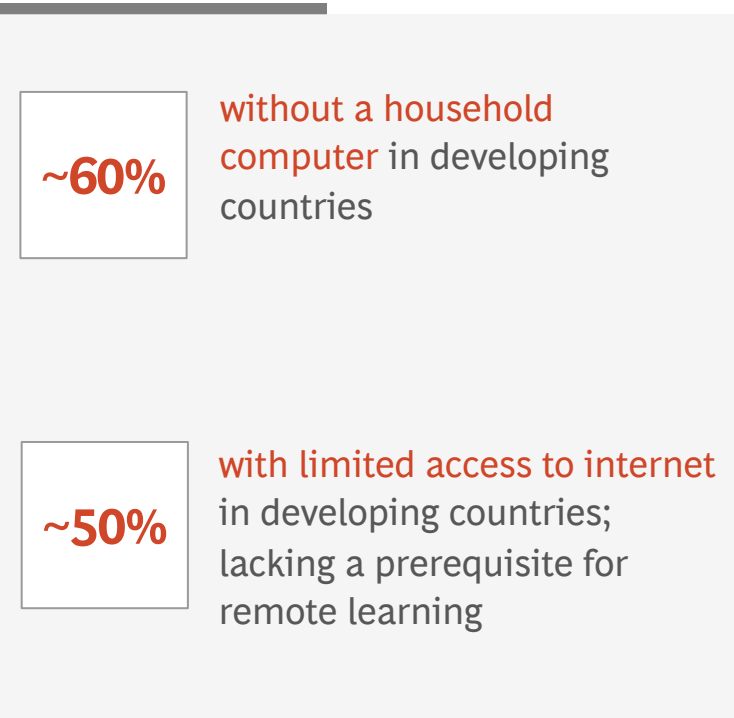


*Disadvantaged refers to low-income populations and populations facing discrimination
1. Federal Reserve Bank of St Louis, American Community Survey; 2. Income below 150% of the poverty level for individuals (WHO); 3. APM Research Labs; 4. Becker's Hospital Review; 5. Warning from WHO, UNICEF, & Gavi

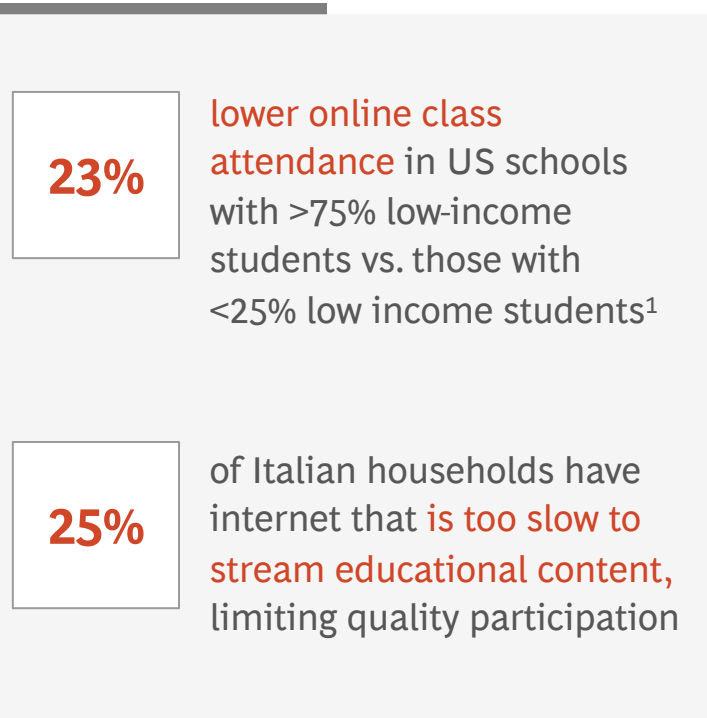
Education | COVID-19 is disrupting learning for an entire generation; school closures affect disadvantaged populations much more severely

As of 26 May 2020

Digital divide exacerbating accessibility issues



Reduced participation by disadvantaged groups



Cascading social consequences



1. Attendance rate for virtual classes is 68% in schools with >75% low-income students vs 88% in schools with <25% low-income students; as of 10 April 2020; 2. 32% of largest non-CGCS (Council of the Great City Schools) districts vs 19% of largest CGCS districts have a distance learning plan; as of 26 May 2020; 3. Estimated by Malala Fund based on percentage of dropouts during Ebola; as of 2 Apr 2020
Source: ITU, WFP, Bill & Melinda Gates Foundation, Education Week, Malala Fund, UNESCO

Food security | Hunger is growing rapidly, driven by a declining ability to afford food and a disruption in the food supply chain

COVID-19 is expanding global hunger

135M

people facing acute food insecurity¹, pre-crisis

>820M food insecure² globally;
> 70% in sub-Saharan Africa or South Asia

Impact of COVID-19 on ability to **afford food**

Loss of livelihoods expanded number of people who could not afford food

Scarcity of public transit makes it prohibitively expensive for people living in food deserts to access food

Increase in food prices driven by supply shocks

Impact of macro-ecosystem shock on **food accessibility**

Reduced food imports (e.g., rice) in sub-Saharan Africa

Increased food waste due to disruption in food transportation

Delay in channeling food to new demand (e.g., hospitality to grocers)

265M

people expected to face acute food insecurity¹ by end of 2020

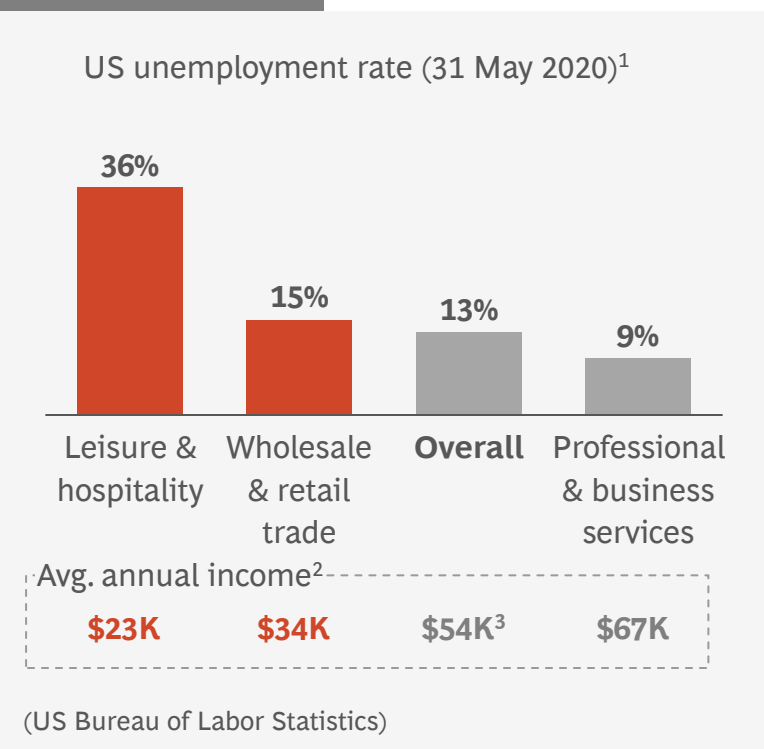
Food insecurity expanding significantly globally

1. Acute food insecurity is "any manifestation of food insecurity at a specific point in time of a severity that threatens lives, livelihoods or both, regardless of the causes, context or duration"; 2. Food insecurity is defined as a long-term or persistent inability to meet dietary energy requirements (lasting for a significant period of time during the year); Source: WFP, UN, Feeding America, BCG

Livelihoods | Job and income losses are concentrated in sectors where workers earn the least, and exacerbate challenges that low-skilled workers are facing

As of 09 June 2020

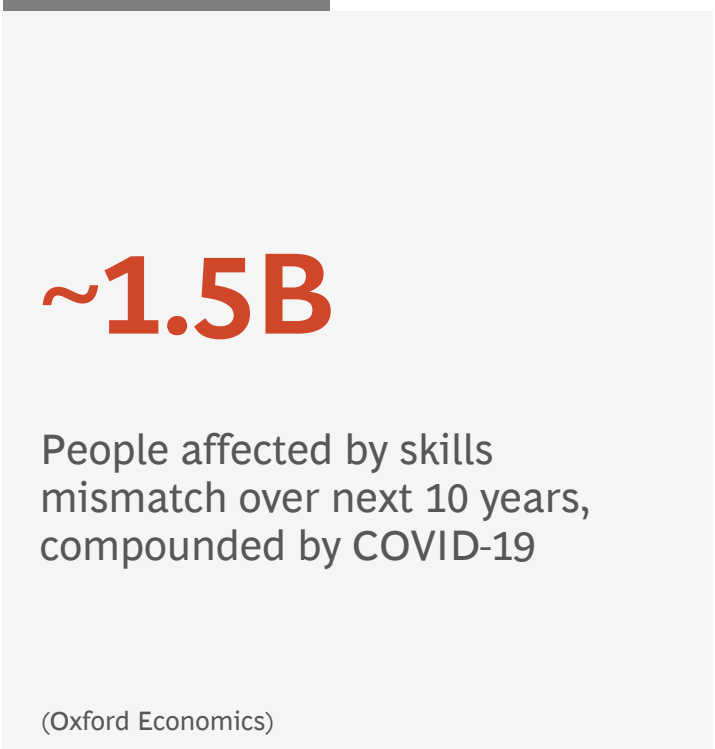
Sectors hit hardest by COVID-19 have lower-income workers



Informal sector globally (~2B people) threatened by poverty⁴



COVID-19 will increase the already widening skills mismatch⁶



1. Represented only for select sectors; 2. Average weekly earnings by sector * 52, 31 May 2020; 3. Average private sector earnings; 4. As of 29 Apr 2020; 5. Relative poverty defined as income of <50% of country's median monthly earnings; 6. As of 27 Apr 2020; skills mismatch impact quantified using BCG's Future Skills Architect methodology, based on capabilities (relevance of skill inventory to current and future economic needs), motivation (an environment that attracts talent and encourages self-realization through work), and access (availability of efficient skill matching mechanisms in the labor market)
Source: US Bureau of Labor Statistics, Oxford Economics, EIU, ILO, BCG

Protecting the most disadvantaged helps flatten the curve for all and is also critical for social stability

As of 26 June 2020

Prevent new waves of COVID-19



German region in new lockdown after slaughterhouse outbreak
Thousands of workers, many of them migrants from Eastern Europe, & family members have been put under quarantine



Leaving lockdowns in Latin America: Many informal workers—street vendors, cleaners, and the like—must work to eat



They came to Canada as essential workers. Hundreds were infected with the coronavirus on the job



Reverse migration of India's laborers provided a passage for the virus to spread to the poorest hinterlands

Ensure social stability



Bangladesh's vulnerable garment workers protest for food and pending wages



Nigerian doctors stage “indefinite” walk-out over lack of “hazard” pay, crippling coronavirus response



Workers march after virus outbreak at Utah meatpacking plant



Protesters demand Guatemala ease coronavirus lockdown rules

Our response can accelerate us toward a better, more inclusive future for all

Health

Better preparedness for future pandemics and accelerated access to health care for the underserved

Education

High-value, low-cost learning models that meaningfully advance learning and achievement for students who are traditionally underserved

Food security

More resilient food system, with less food waste and more innovative “last mile” solutions for reaching the most disadvantaged

Livelihoods

A massive investment in reskilling capacity coupled with a strong commitment to diversity and equity to build a **workforce of the future**

Actions required now for a successful and inclusive recovery

	Health	Education	Food security	Livelihoods
All	Protect health-vulnerable and disadvantaged to improve overall societal outcomes & ensure open economies			
Private sector	Ensure employees are safe at work , with tailored solutions for the health-vulnerable			
	Leverage digital capabilities to close gaps in essential services, particularly health care and education			
	Strengthen supply chain resilience to the last mile for essential goods, particularly food and medicine			
	Invest in reskilling & redeployment of workers, with a commitment to diversity & equity			
Public sector	Prioritize protecting, testing, & treating the disadvantaged and health-vulnerable			
	Reopen public services such as education with prioritization for the disadvantaged			
	Ensure robust social & financial safety nets			
Social sector	Shape stimulus packages to drive reskilling, job programs, small-enterprise support			
	Provide financing that attracts and catalyzes private sector investment			
	Innovate & demonstrate models for reaching the most vulnerable in collaboration with private & public sectors			

Health | Prioritize health-vulnerable and disadvantaged in response & recovery

Select examples

Prioritize prevention & ensure access for the vulnerable

Beyond general guidelines, **make workplaces, schools, and transport safe**; expand medical coverage, shelter-in-place for high-contact workers

Speed and scale testing, tracking & quarantining solutions, especially for the health-vulnerable and high risk communities¹

Reduce risks in residential settings particularly for high-risk exposure individuals; provide facilities for medical staff to isolate



April 2020

\$20M Hotels for Heroes program launched in Australia for **medical workers to help them isolate in hotels for free**

Ensure rollout of therapeutics & vaccine

Prioritize access for health-vulnerable and the disadvantaged; accelerate country-readiness (specifically developing countries) for therapeutic & vaccine rollout



June 2020

Gavi launched \$2B COVID-19 vaccine initiative to **ensure affordable doses to developing countries**²

Minimize indirect health effects

Prioritize support for **health systems that serve the disadvantaged & health-vulnerable**

Innovate and scale digital models and new sites of care that are designed for low-resource settings



May 2020

Médecins Sans Frontières³ is increasing **access to telemedicine and health information on social media**

1. High-risk communities include people living in high density, with limited in-home water & sanitation; those exposed to higher risks at work or home; 2. Gavi is a global vaccine alliance catering to children and those living in world's poorest countries; 3. International humanitarian medical non-government organization; Source: Bloomberg, Henry Ford, Lancet, BCG

Education | Focus on solutions for disadvantaged and health-vulnerable in order to ensure continuity of learning for all

Select examples

Enable remote learning solutions for all

Partner to **bridge the digital divide**, e.g. provide internet access, devices, and tech support to underserved groups

Develop high-quality **innovative digital learning solutions** for students and educators in low-resource settings / without broadband connection

Develop **alternatives for essential school-based services**, e.g. partnerships to deliver meals to students, parent counseling



April 2020

Indian remote learning start-up **delivering content to students, parents, and teachers via WhatsApp**; targeting 10M students across 3 states

Take an inclusive approach to reopening schools

Safely reopen schools¹; create **teaching and learning alternatives** especially for the students and staff who are health-vulnerable

Prioritize the **needs of those who have fallen furthest behind** and offer remediation programs

Ensure all students, especially low-income students and girls, return to school by addressing **financial and gender-specific barriers**



June 2020

French schools remained partly open to **care for more than 28,000 children of frontline and other affected workers**, ensuring health protocols from local health department were followed

Food security | Efforts to ensure food security for the disadvantaged could translate into a more resilient food system for all

Select examples

Strengthen food supply chain resilience

Strengthen¹ and adapt² to fill **gaps in supply chains**

Support **last-mile delivery** to quarantined or disadvantaged groups

Review **regulations and trade bans** to prevent unintended disruption

Shift mix of goods to **priority SKUs** to ensure availability of staples



Asian food tech start-up **partnered with hospitals to deliver food to quarantine facilities**

April 2020

Ensure access to food for all

Use **direct cash transfers** as simple and most impactful lever to support low-income households & workers

Distribute food in-kind to disadvantaged households; scale up platforms to connect excess commercial supply with donation centers

Manage / differentiate **prices and discounts on staples** for increased accessibility to food



Global food-processing conglomerate partnered with social organizations to provide **food and medical nutrition products to the vulnerable**; deployed available logistics capacities to support relief operations

April 2020

1. Classify food supply chain workers as essential; public support for farmers, food processors, and food businesses; 2. Repackaging of wholesale and food service excess supply for consumers
Source: Gentilini, USDA, Press search, BCG

Livelihoods | Address COVID-19's disproportionate impact on lower-paid workers through safety nets, reskilling, and public-works job creation efforts

Select examples

Ensure reach of liquidity & safety nets to the most affected

Scale financial inclusion efforts to increase reach & efficiency of social safety nets; target low-income families, informal sector, health-vulnerable

Provide tailored support to small businesses that lack formal banking relationships or resources to go digital



June 2020

CDFIs² in the US work to **ensure small/micro businesses were able to access federal aid**

Invest in a massive, inclusive¹ reskilling effort

Launch large-scale reskilling efforts like entrepreneurship programs & digital literacy; provide technical scholarships for displaced workers

Rapidly redeploy labor force, balancing supply and demand; launch PPP to retrain furloughed employees



April 2020

Scandinavian airline partnering with a foundation to **retrain its 10k furloughed employees to assist in hospitals**

Focus on sustainable job creation measures

Leverage stimulus packages to **drive job creation in areas that will strengthen inclusiveness and sustainability**, e.g., green recovery, infrastructure



May 2020

130K+ jobs expected to be created by 2022, as part of the **~\$10B green stimulus measures** by South Korean government

Agenda for CEOs | Building total societal impact into your COVID-19 response plan

Support stakeholders and society

Actions will be remembered for decades

- 1 Care for your employees by ensuring workplace safety, restructuring for longevity as needed, and reskilling and accelerating hiring where feasible
- 2 Support customer and supplier resilience and recovery
- 3 Be part of the COVID-19 solution for immediate response and economic rebound

Innovate and build back better

Businesses must adapt

- 4 As you transform your strategy, portfolio, and business models, add a societal impact lens
- 5 When adapting supply chains for resilience, improve climate, environmental, & social impact
- 6 When reimagining customer journeys and offers, build in societal benefits
- 7 Retain new ways of working to reduce climate impact and enhance employee well-being
- 8 Increase public and social sector partnerships to accomplish for society what you cant achieve alone

Communicate to capture value

Investors' & other stakeholders' expectations are changing

- 9 Communicate actions and live your purpose to engage your people, strengthen your brand, and deepen relationships with customers
- 10 Reorient your approach to investor engagement, renew your understanding of material environmental, social, and governance (ESG) issues, and adopt integrated ESG reporting



Companies with higher ESG performance continue to outperform market benchmarks during the crisis

Guide for leaders

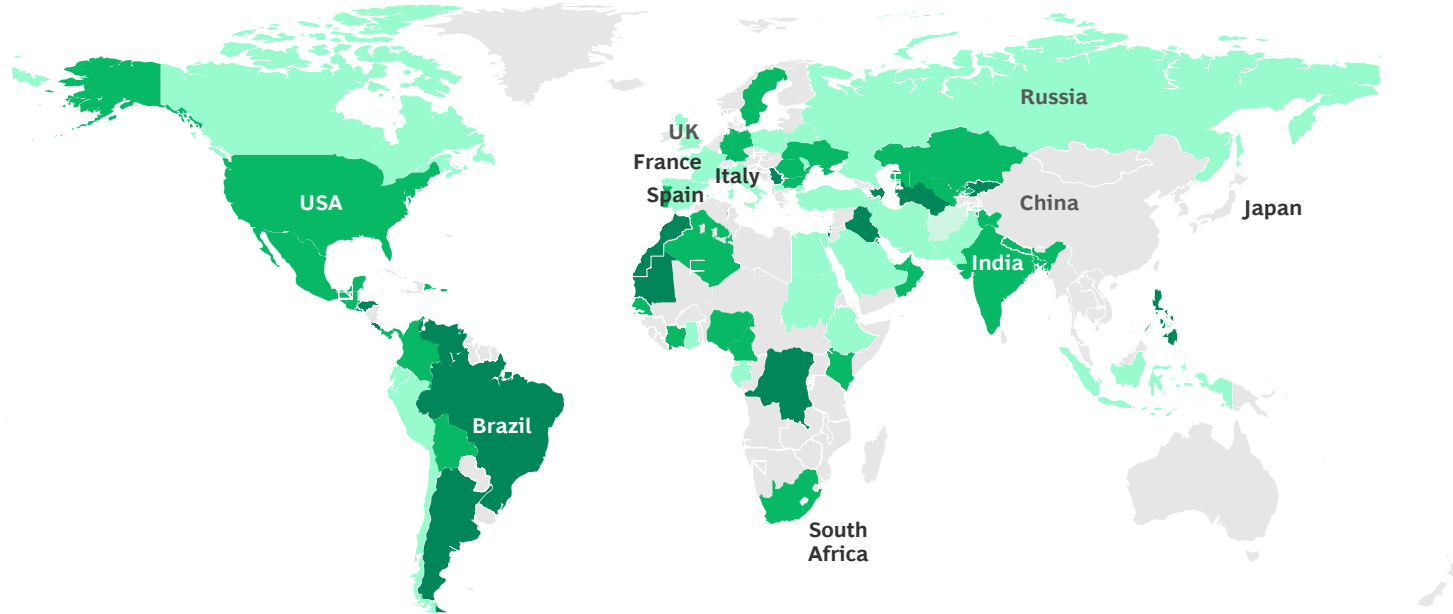
Disproportionate impact of COVID-19 crisis on the disadvantaged
Inclusive solutions for a reimagined future

Updated analyses and impact

Epidemic progression and virus monitoring
Economic, business, & societal impact

~4.9M reported recoveries so far;
growth rate of daily new cases at ~2%¹

As of 26 June 2020



Less than 100
daily cases¹

Daily cases' growth (≥ 100 daily cases)¹

< -5%

-5%-0%

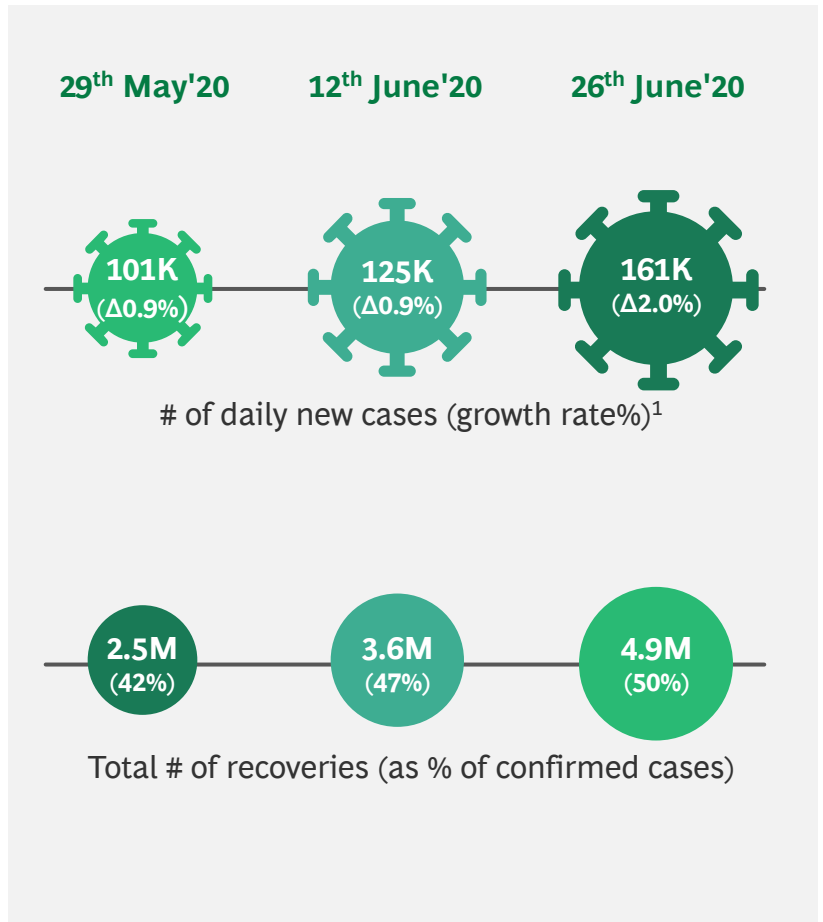
0-5%

> 5%

185
Countries with cases²

9.8M [$\Delta 1.8\%$]³
Confirmed cases globally

494k [$\Delta 1.0\%$]³
Fatalities globally



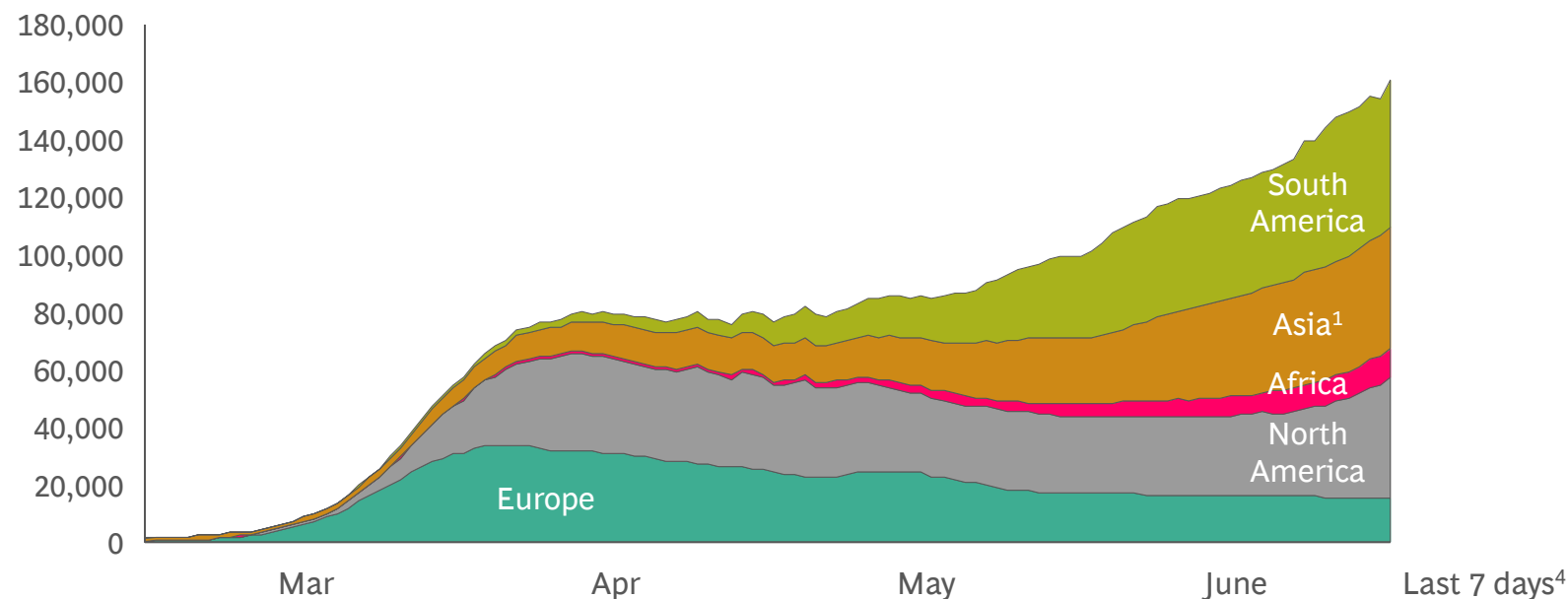
Note: Continued cases and fatalities are subject to different testing, propensity, reporting standards, and hence are imperfect measures

1. # of daily new cases calculated as 7-day rolling average; growth rate calculated basis 7-day average; 2 Basis Johns Hopkins CSSE; 3. Daily growth rate basis 7-day average

Source: Johns Hopkins CSSE; Our World in Data; BCG

As of 26 June 2020

Daily new cases (seven-day rolling average)



Average daily cases
in the month²

17k

76k

89k

131k

161k

Month on month
growth rate of
new cases³

343%

17%

47%

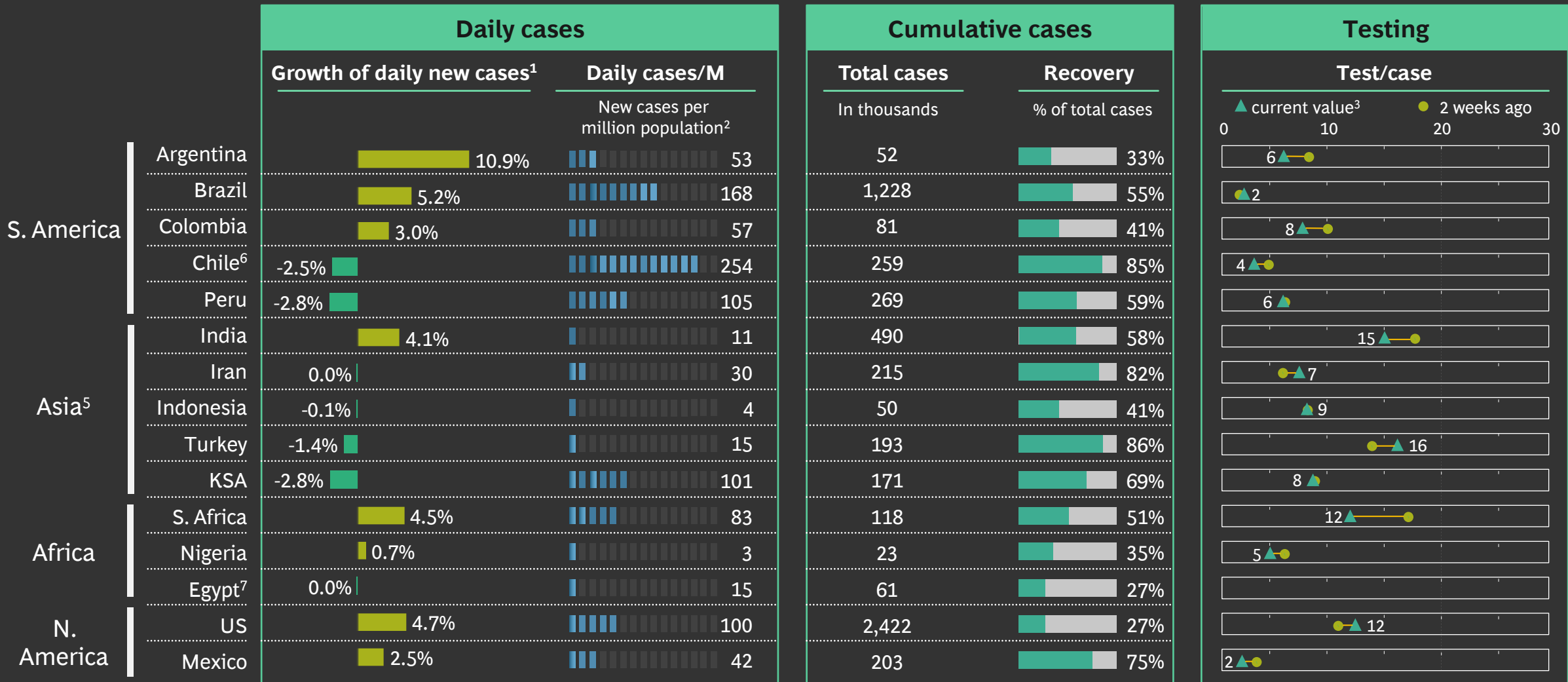
62%

1. Includes Middle East & Oceania; 2. Calculated as monthly average of daily new cases except in for the last 7 days; 3. Calculated as growth in month's average as compared to previous month; 4. Average daily case is 7-day average and growth rate is calculated basis last 7-day average as compared to 7-day average of equivalent week in May; Source: Johns Hopkins CSSE; Our World in Data; BCG

Daily new cases
increasing globally;
new cases in June
are already ~1.5X
those in May³

Epidemic progression snapshot

As of 26 June 2020



1. Growth rate calculated basis 7-day rolling average of new cases; 2. 7-day rolling average; represented scale rounds up daily case/m to next 20th place; 3. Test/case data is not updated daily for few countries, data represented is within last 1 week; 4. European countries data not shown as Europe is seeing decline in daily cases; 5. Includes Middle East & Oceania; 6. Data of 18th June excluded for Chile as ~36k cases were added on one day due to correction in reporting; 7. Recent test per case data not available for Egypt; Source: Our World in Data, John Hopkins, Worldometers, BCG

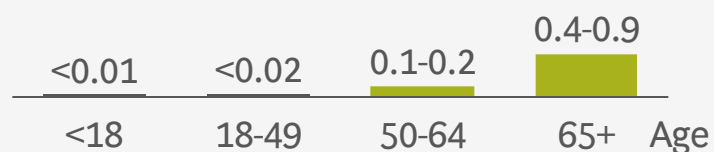
As of 04 June 2020

**5-10x higher
COVID-19 fatality
rate for those
older than 50
years and those
with medical pre-
conditions**

**1.6B people at relatively
higher risk globally**

Fatality rate w/o underlying conditions¹

Estimated COVID-19 fatality rate² in the US
without medical pre-conditions² (%)



Corresponding global population

2.3B

2.9B

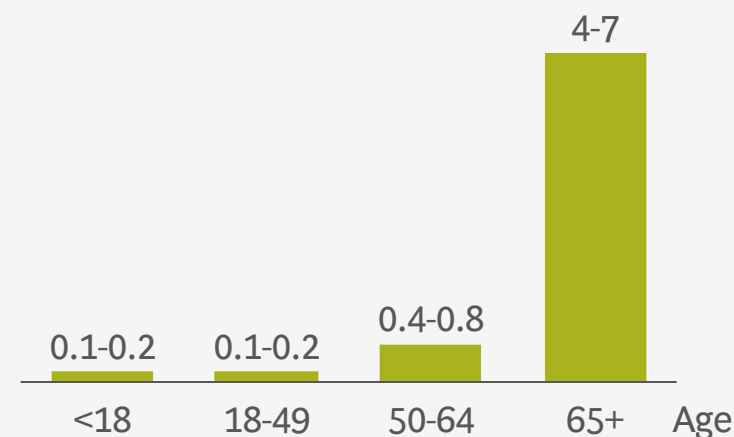
0.6B

0.2B

xx Low fatality rate <0.02 (baseline³) xx Increased fatality rate compared to baseline³

Fatality rate with underlying conditions¹

Estimated COVID-19 fatality rate² in the US
with medical pre-conditions² (%)



Corresponding global population

0.1B

0.7B

0.5B

0.5B

1. Underlying conditions are those identified by the CDC as making people more vulnerable to COVID-19, including severe obesity (Body Mass Index >40), diabetes, chronic heart disease, respiratory disease, kidney & liver disease; 2. US numbers estimate based on data from the New York City Department of Health and Mental Hygiene. Fatality rate is defined as ratio between number of deaths and number of infected; 3. Baseline defined as fatality rate of infected people <50 years old without pre-conditions; Source: Centers for Disease Control (CDC); Kaiser Family Foundation; PLOS One; The Lancet, Clark et al., Global, regional, and national estimates of the population at increased risk of severe COVID-19 due to underlying health conditions in 2020: a modelling study, June'20; BCG

Vaccine fast movers | 16 vaccine candidates already in clinical trials

EPIDEMIC PROGRESSION
& VIRUS MONITORING

As of 26 June 2020

1 Phase III

Oxford Univ. & AstraZeneca

Phase III recruitment underway; planned supply build-up of 400M+ doses by end of year (if approved)

2 Phase II

CanSino Biologics

Phase II advancement since Apr 2020; follow-up expected by Oct 2020

Moderna

FDA fast track designation in May 2020; Phase III on 30,000 patients planned for July 2020

5 Phase I/II

BioNTech & Pfizer



Phase I/II data exp. by July 2020, with start of Phase III; distribution possible by Dec 2020 (if approved)

Novavax

Phase I/II started in May 2020; data expected in July 2020 and final completion by Nov 2021

WIPB² & Sinopharm



Phase I/II started in May 2020; Phase III trial approved (in June 2020) to start in UAE

BIPB¹ & Sinopharm



Phase II trial in June 2020; expected completion of final trials by Nov 2021

Sinovac



Phase II trial in June 2020; expected completion by Aug 2020

8 Phase I

Anhui Zhifei³



Chinese AMS⁴



Clover, GSK, Dynavax⁵



CureVac⁶



Imperial College London⁷



Inovio⁸

Gamaleya Institute⁹



Genexine¹⁰



156 Pre-clinical

172 Total

1. Beijing Institute of Biological Products; 2. Wuhan Institute of Biological Products; 3. Anhui Zhifei Longcom Biopharmaceutical & Institute of Microbiology, Chinese Academy of Sciences; Phase I started in China in June 2020; 4. Institute of Medical Biology, Chinese Academy of Medical Sciences; Phase II recruitment in June 2020 with final completion expected by Apr 2021; 5. Phase I trial started June 2020, preliminary results expected Aug 2020; 6. Phase I starting in June 2020; 7. Phase I funded by UK government started in June 2020; 8. Phase I initial data expected in June 2020; Phase II/III trials to start July/August 2020; 9. Called Gamaleya Research Institute; trial started in June 2020 on 76 patients in Russia; 10. Trial started in June 2020 in South Korea; Source: WHO (June 24th), Citeline Pharma Project (June 26th), Milken Institute (June 23th), Bloomberg, BCG



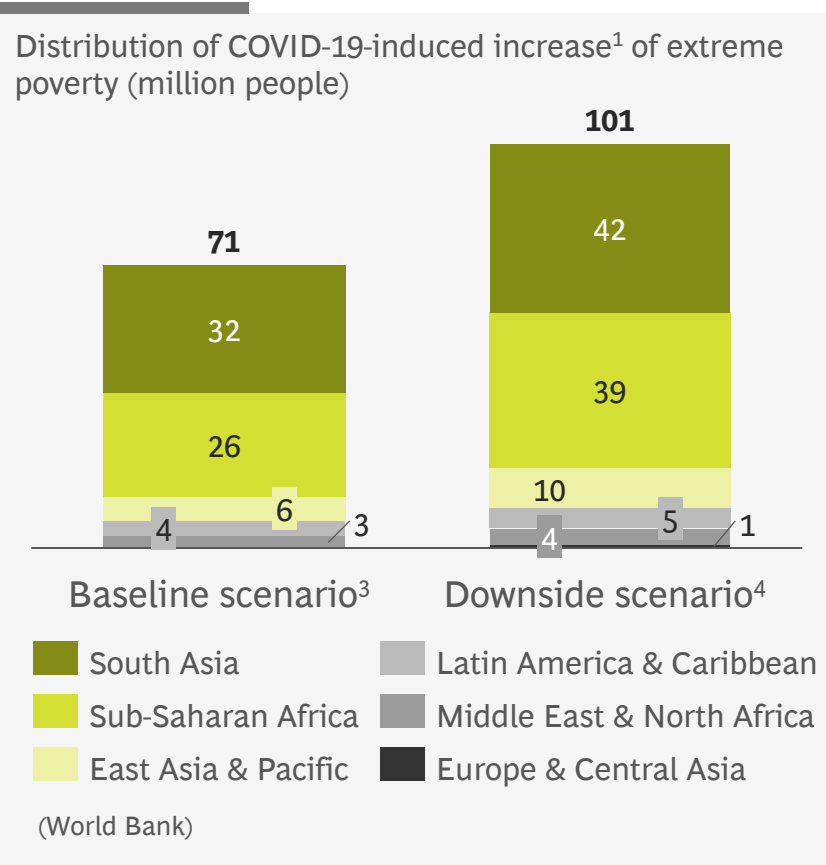
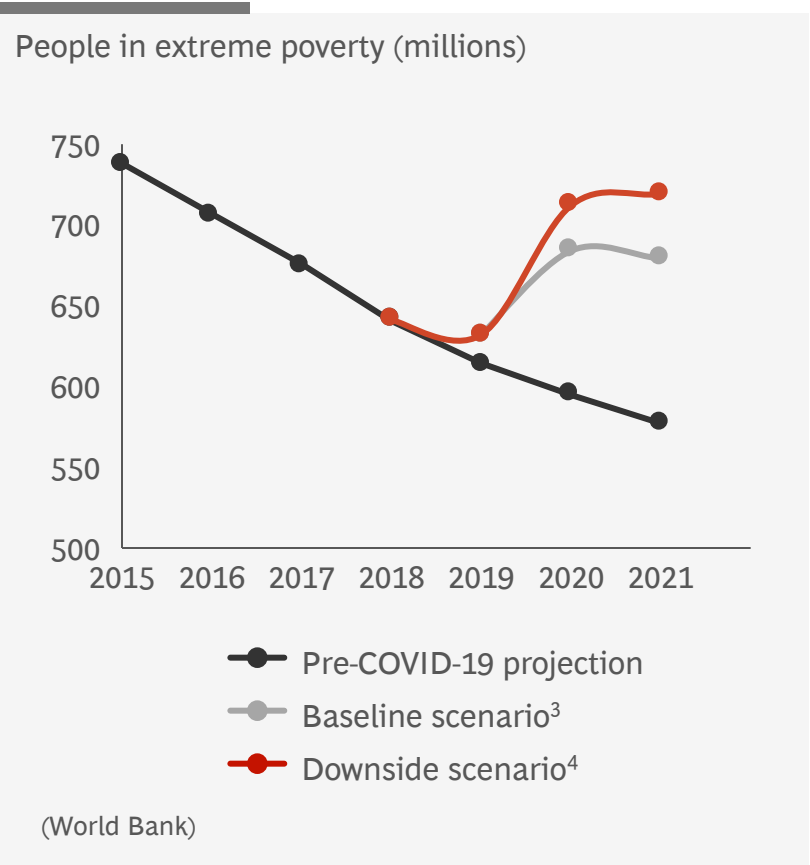
Movement across phases, or update on on-going trial; in the last two weeks

COVID-19 is likely to push ~70-100M people into extreme poverty; South Asia and sub-Saharan Africa to be most impacted

As of 08 June 2020

COVID-19 crisis expected to increase¹ number of extreme poor² in 2020 by 70 to 100 million

Largest increase in number of extreme poor in South Asia and sub-Saharan Africa



Increase of extreme poverty likely to persist beyond 2020 since the most impacted regions are also expected to have low per capita GDP growth rates⁵

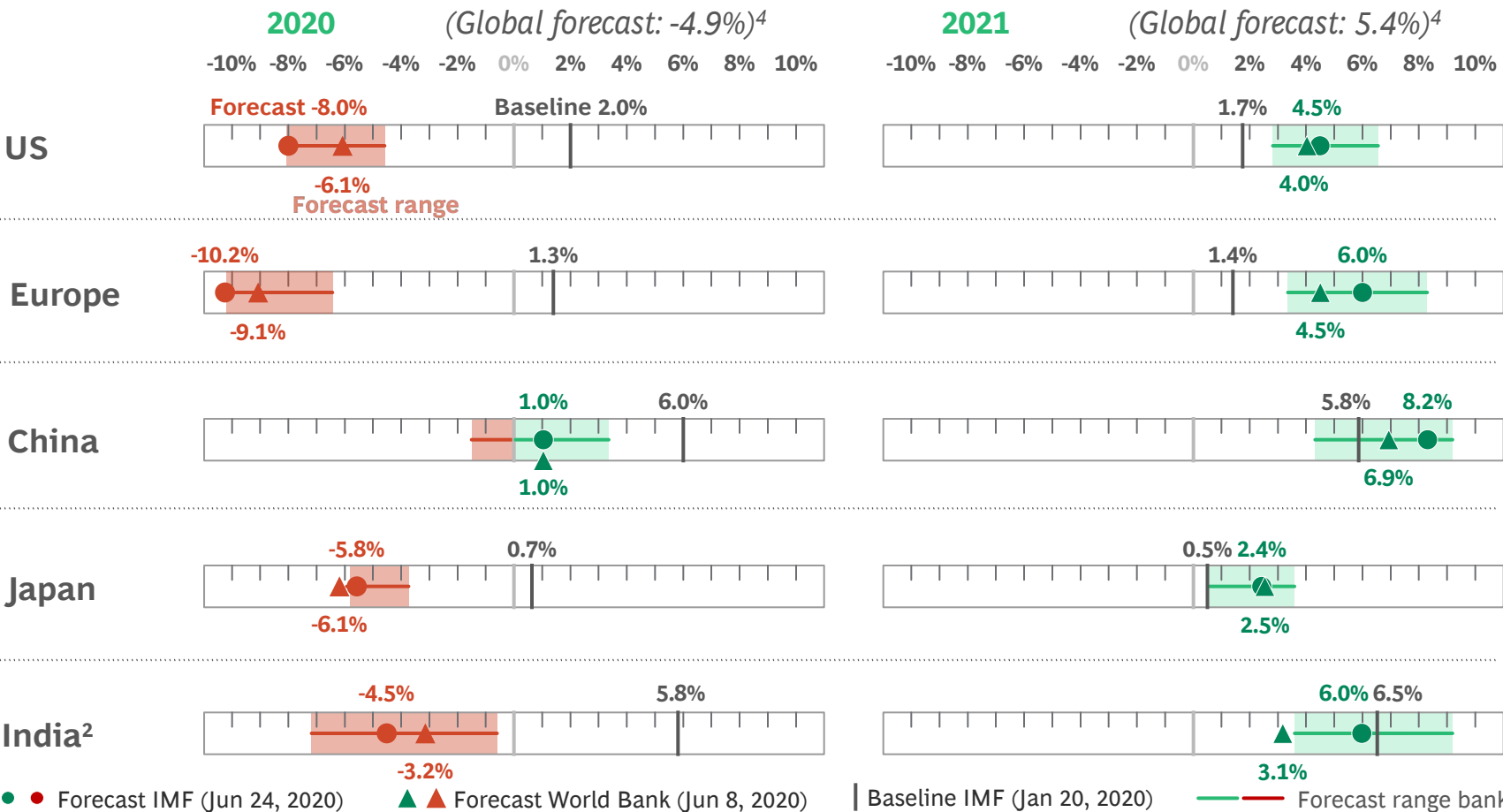
1. COVID-19 induced increase defined as 2020 difference between scenarios and pre-COVID-19 projection minus 2019 difference between scenarios and pre-COVID-19 projection (as 2019 GDP estimates changed for non-COVID-19 reasons for some countries); 2. Extreme poverty is measured as the number of people living on less than \$1.90 per day; 3. Baseline scenario assumes the outbreak remains at levels currently expected and activity recovers later; 4. Downside scenario assumes outbreak to persist longer than expected, forcing lockdown measures to be maintained or reintroduced; 5. Nigeria, India, and the Democratic Republic of Congo, home to >1/3 of the world's poor, are predicted to have per capita growth rates in real GDP of -0.8%, 2.1%, and 0.3%, respectively

Source: Lakner et al (2020), PovcalNet, Global Economic Prospects, World Bank, BCG

Economic forecasts point toward severe downturn in 2020; rebound of global GDP not expected before 2021

As of 26 June 2020

GDP growth forecast vs. baseline



GDP level forecast¹

EOY 2021 vs. EOY 2019

97-100%

96-99%

107-112%

96-99%

101-108%

Note: As of reports dated 31 March 2020 to 24 June 2020, YoY forecasts; 1. Range calculated with 25th & 75th percentile values of forecast range; 2. For India, forecast is for financial year; for other countries, the forecast is for calendar year; 3. Range from forecasts (where available) of Goldman Sachs, JP Morgan Chase; Morgan Stanley; Bank of America; Fitch Solutions; Credit Suisse; Danske Bank; ING Group; HSBC; 4. Based on IMF forecast 24 June 2020; Source: Bloomberg; World Bank; IMF; BCG

Only pharma is currently at pre-crisis TSR level; 8 sectors have a significant share¹ of companies with >15% default risk

ECONOMIC, BUSINESS,
& SOCIETAL IMPACT

As of 26 June 2020

Based on top S&P
Global 1200 companies

Categories based on TSR & net debt/enterprise value²

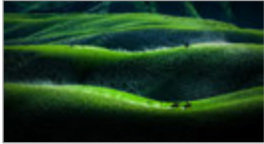
		TSR performance ³			Companies with probability of default >15% ⁴		
		21 Feb 2020 - 20 Mar 2020	21 Feb 2020 - 26 June 2020	12 June 2020 - 26 June 2020	21 Feb 2020	26 June 2020	12 June 2020 - 26 June 2020
Healthier sectors	Pharma	-20%	0%	↗	0%	11%	→
	Semiconductors	-30%	-2%	↗	0%	0%	→
	Household Products	-16%	-3%	↗	0%	0%	→
	Retailing	-40%	-4%	→	0%	41%	→
	Software	-30%	-5%	↗	9%	8%	→
Pressured sectors	Food/staples Retail	-10%	-6%	→	0%	0%	→
	Tech Hardware	-26%	-7%	→	0%	0%	→
	Materials	-32%	-10%	→	4%	13%	↘
	Health Equipment	-31%	-10%	→	0%	0%	→
	Food & Beverage	-23%	-11%	→	0%	0%	→
	Telecom	-17%	-12%	→	0%	8%	→
	Prof. Services	-30%	-13%	→	0%	0%	→
	Financials	-35%	-15%	→	0%	0%	→
	Capital Goods	-35%	-16%	→	2%	7%	→
	Transport	-34%	-16%	↘	0%	36%	→
Vulnerable sectors	Utilities	-30%	-17%	↘	0%	3%	↘
	Auto	-41%	-17%	↘	0%	29%	→
	Media	-36%	-19%	↘	0%	8%	→
	Durable Goods	-39%	-20%	↘	0%	0%	→
	Insurance	-39%	-23%	→	0%	0%	→
	Real Estate	-39%	-29%	↘	0%	17%	→
	Banks	-39%	-31%	↘	0%	4%	→
	Energy	-52%	-32%	↘	0%	21%	→
	Hospitality	-44%	-35%	↘	7%	36%	→

Note: Based on top S&P Global 1200 companies; Sectors are based on GICS definitions; 1. Retailing, Materials, Transport, Auto, Real Estate, Energy, Hospitality with > 10% of companies with probability of default > 15%; 2. Net debt & enterprise value from latest available balance sheet; Categories defined based on comparison with S&P Global 1200 median: healthy = TSR & debt/EV > median, pressured = TSR or debt/EV < median, vulnerable = TSR & debt/EV < median; 3. Performance is tracked for two periods, first from 21 February 2020 (before international acceleration of outbreak) to 20 March 2020 (trough of the market) and from 21 February 2020 through 26 June 2020 based on median; 4. Implied by 5-year Credit Default Swap based on median
Source: S&P Capital IQ; BCG ValueScience Center; BCG

↗ Pos. trend ≥ 2%
→ No sig. change
↘ Neg. trend ≥ 2%

Additional perspectives on COVID-19

COVID-19 BCG Perspectives



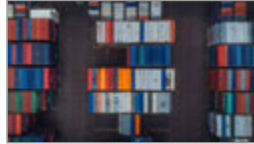
Edition #11

Accelerating Climate Actions in the New Reality



Edition #10

Value Protection & Acceleration Roadmap to Win in the New Reality



Edition #9

Future of Global Trade and Supply Chains



Edition #8

Galvanizing Nations for the New Reality



Edition #7

Sensing Consumer Behavior & Seizing Demand Shifts



Edition #6

Restructuring Costs, and Managing Cash and Liquidity



Edition #5

Revamping Organizations for the New Reality



Edition #4

Accelerating Digital & Technology Transformation



Edition #3

Emerging Stronger from the Crisis



Social Impact

Protect the Vulnerable – Protect Us All



Social Impact

ESG Commitments Are Here to Stay



Social Impact

A Recipe to Reduce Food Loss and Waste



Public Sector

Border Biosecurity Must Be Reinvented to Restart Economies



Public Sector

Learning from COVID-19 to Transform Global Health Systems



Climate & Environment

Climate Should Not Be the Virus's Next Victim



People & Organization

Restarting Work Safely and Under Control



Strategy

Why Do Most Business Ecosystems Fail?



Health Care

The Promise and the Perils of Contact Tracing

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