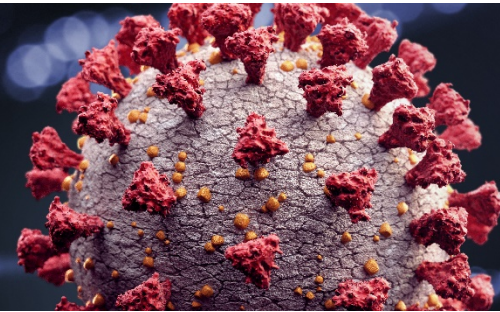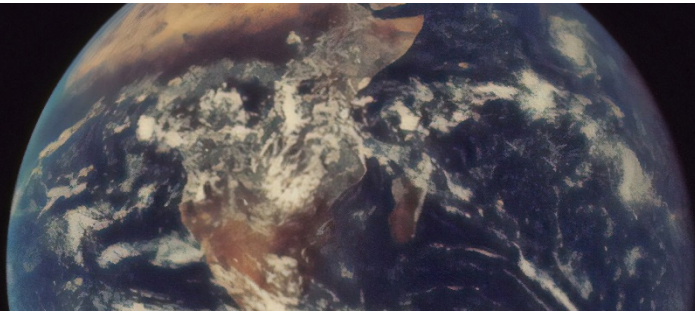# OLIVER WYMAN

RESPONDING TO COVID-19

Almanac Highlights

June 4, 2020 update

INTRODUCTION: OLIVER WYMAN COVID-19 ALMANAC

Context and purpose

The **novel coronavirus has infected hundreds of thousands of people globally and is taking a severe toll on individuals, families, and economies** as productivity drops and stock markets reflect increased global uncertainty

This document provides **a sample of available baseline facts and guidance for business leaders as to critical questions to address in the immediate and near-term** to ensure the continuity of their business and the safety, health, and wellbeing of their workforce and customers

What is it?

COVID-19 is the name for the illness caused by the novel coronavirus that originated in Wuhan, China in December 2019

It is from the **same family of viruses that cause some common colds**, as well as Severe Acute Respiratory Syndrome (**SARS**) and Middle East Respiratory Syndrome (**MERS**)

It is considered **similar to other respiratory infections such as influenzas**; symptoms range from fever, cough, shortness of breath to more severe cases of pneumonia and organ failure

OUR DETAILED ALMANAC CONTAINS THE LATEST PERSPECTIVES ON KEY AREAS RELATED TO THE COVID-19 PANDEMIC

|	Key Topics	Summary
Epidemiologic perspectives (Sample pages 4-6)	• Epidemiological background • Up-to-date statistics by geography	• Coronavirus, declared a pandemic in March 2020, has infected millions globally • The virus displays unique and deadlier characteristics than other known diseases • The pace and maturity of infection is highly variable by region, largely hinging on speed and strength of government response
First peak suppression and road to re-opening (Sample pages 7-8)	• Current state of suppression by geography • Requirements for re-opening with detail on key capabilities	• Many countries have effectively suppressed the first peak through a range of measures, but re-opening and recovery is just beginning • Health system capacity, testing, tracing, surveillance and social distancing are key tools on the road to re-opening
Re-opening considerations (Sample pages 9-11)	• Strategic framework for re-opening • Economic considerations	• Government policies, which must balance public health with restoring economic health, will shape the next phases of the pandemic
Lessons learned from re-opening (Sample pages 12-13)	• Global lessons learned • US opening approach and risk of disruption • Employer implications	• As countries re-open, we are crystalizing best practices and assessing regions with greatest risk of further disruption
Oliver Wyman Pandemic Navigator (Sample pages 14-18)	• Overview • Example capabilities • Web-based version to explore	• Oliver Wyman has developed a unique time-dependent SIR model to forecast the spread of the virus at the state and county level called the Pandemic Navigator Core Model • Along with a number of methodologies and tools, Pandemic Navigator provides business leaders and policymakers with the data needed to make informed decisions through the crisis • A sample of the Pandemic Navigator is available freely online
Vaccines and therapeutics (Sample pages 19-20)	• Therapeutics in development • Vaccine development timeline and current state • Key considerations and unknowns	• Effective therapies and an eventual vaccine will be critical to bring economies and communities fully "back to normal" - further testing and drug development is to come, and timelines are long • Constantly evolving understanding of the disease and limited understanding of the immune response to it propagates uncertainty around how and when the pandemic will resolve
Macroeconomic outlook (Sample pages 21-22)	• Most recent forecasts of US and global GDP and US unemployment	• Latest GDP forecasts predict a severe shock to the US economy, mirrored by unemployment levels • Return to pre-COVID levels is anticipated early 2022

COVID-19 TRENDS AND SPREAD OF THE DISEASE

Cumulative confirmed cases continue to rise across the world, but the epicenter is beginning to shift away from Europe and towards South Asia, the Middle East, and South America
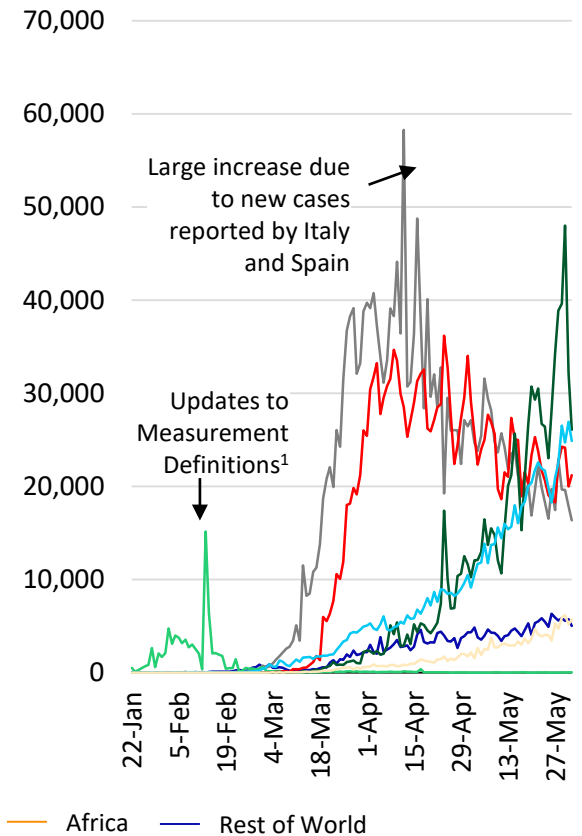

Cumulative Confirmed Cases of COVID-19
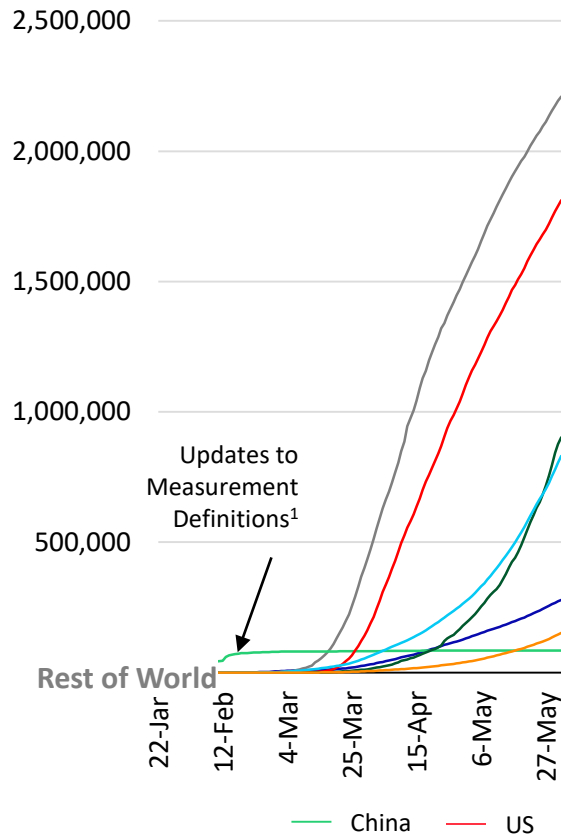
Active cases per day of COVID-19

New Cases Per Day of COVID-19

Legend: China — US — Europe[2] — South America — Asia/Middle East — Africa — Rest of World
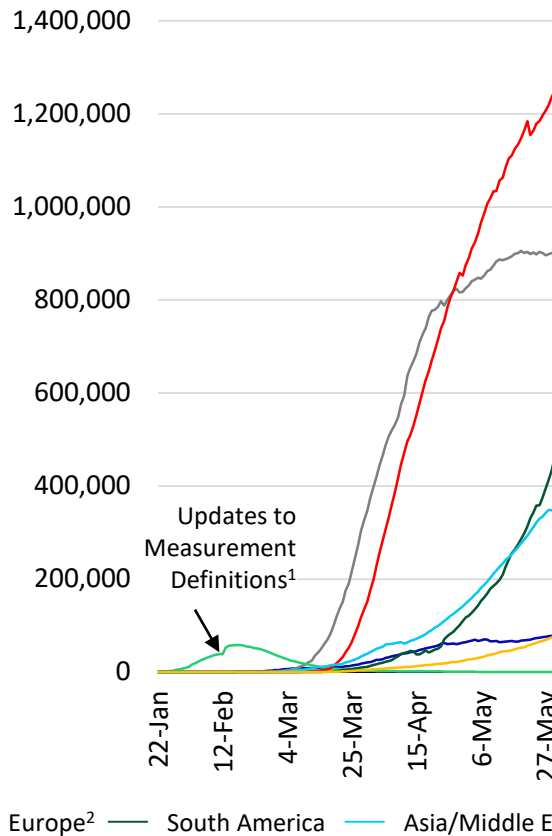
Source: John Hopkins University & Medicine Coronavirus Resource Centre

1. Until February 17, the WHO situation reports included only laboratory confirmed cases causing a spike in total cases. Some sources include this update as of February 13. The jump due to inclusion of non lab confirmed cases is not included in the new cases data in WHO situation reports.; 2. Includes countries categorized under "European region" based off of latest WHO Situation Reports

HOW DOES COVID-19 COMPARE TO OTHER DISEASE OUTBREAKS? (1 OF 2)

COVID-19 is currently more deadly and contagious than the Flu, but the science on transmission and mortality continues to evolve

Case Fatality Rate[1]
Log scale

Chart plotting Case Fatality Rate (y-axis, log scale, from Common cold low to 100% "More Deadly") against Average number of people infected by each sick person (R0) (x-axis, "More contagious", scale 1 to 15).

Plotted points:
- Bird Flu (~90%)
- MERS (~70%, triangle)
- Ebola (~50%)
- Smallpox (~30%)
- 1918 Spanish Flu (~10%)
- SARS (~10%, triangle)
- COVID-19 (Case Fatality Rate & Transmission Range, red triangle)
- H1N1 Swine Flu (~0.2%)
- Seasonal Flu (~0.1%)
- Measles (~0.2%, R0 ~15)
- Chickenpox (~0.05%, R0 ~7.5)
- Common cold (R0 ~1.5, grey triangle)

Legend and key statistics

▲ **SARS**
8,096 infected | 774 deaths

▲ **MERS**
2,494 infected | 858 deaths

● **1918 Spanish Flu**
~500 MM infected | ~50 MM deaths

▲ **COVID-19**
~6.2MM infected | ~375 K deaths

● **H1N1 Swine Flu**
700 MM–1.4 BN infected | 284 K deaths[2]

Average number of people infected by each sick person (R0)

▲ **Denotes Coronaviruses**

Additional details

- R-naught (R0) represents the number of cases an infected person will cause
  - Initial estimates suggested COVID-19 R0 is between 2 and 3 (with edge of range estimates closer to 1.4 and 3.6), which means each person infects 2–3 others[3]; R0 for the seasonal flu is around 1.3[4]
  - New emerging estimates suggest R0 may be closer to 5.7 (edge of range 3.8–8.9)[6]

- Early evidence suggests COVID-19's transmission is highly variable, with most infections resulting in no subsequent infections and a few resulting in many, which should color response[7]

- The global case fatality rate for confirmed COVID-19 cases is currently 6.0%[5] according to WHO's reported statistics versus 0.1% for the seasonal flu; the rate varies significantly by country (e.g. Italy – 14.4%, South Korea – 2.4%[5])

- We expect case fatality rates to fluctuate as testing expands identifying more cases and as existing cases are resolved

1. New York Times (link) for fatality and R-naught comparisons, CDC timelines for case numbers (selected link: CDC SARS timeline); 2. Updated CDC estimates (link); 3. The R0 for the coronavirus was estimated by the WHO to be between 1.4–2.5 (end of January estimate) (link), other organizations have estimated an R0 ranging between 2–3 or higher (link); 4. CDC Paper (link); 5. Calculated as Number of Deaths/Total Confirmed Cases as reported by John Hopkins University. 6. Emerging Infectious Diseases (link) 7. Science (link)

AT A GLANCE: SUMMARY FACTS

	Key facts	Implications
Contagion	• Initial estimates suggested COVID-19 **R0 is between 2 and 3** (with edge of range estimates closer to 1.4 and 3.6), which means **each person infects 2–3 others**[3]; R0 for the seasonal flu is around 1.3[4] • New **emerging estimates suggest R0 may be closer to 5.7** (edge of range 3.8–8.9)[14] • Early evidence suggests COVID-19's transmission is highly variable, with most infections resulting in no subsequent infections and a few resulting in many, which should color response[17]	COVID-19 is at least twice as contagious as the seasonal flu
Current human immunity	• No herd immunity exists yet as the **virus is novel in humans**	Social distancing (quarantines, WFH, school closures) is the **only "brake" to slow spread**
Incubation period	• **The incubation period is a median of 5.5 days (up to 14 days)**[1, 10,] (vs 3-day period for common flu[1)]; data suggests that viral shedding continues beyond symptom resolution[6]	People are contagious for longer periods than the flu or other illnesses, requiring longer bouts of quarantine to suppress spread
Fatality	• **Case fatality rates are trending at 6.0% globally**[8] (vs. 0.1% for flu)[9] • Estimates for **infected fatality rate are 0.3%–1.3%** based on assumptions around the number of undiagnosed individuals[13]	Fatality is orders of magnitude higher than typical influenzas
Portion of cases asymptomatic but contagious	• COVID-19 can be **spread asymptomatically**[5] • In retrospective studies of those people tested and confirmed positive for COVID-19, experts estimate **18–30% are asymptomatic**, with another 10–20% with mild enough symptoms to not suspect COVID-19[11] • Early indicators from point in time comprehensive testing of small populations (e.g. Vo, Italy; Iceland) **suggest as many as 50% of cases could be asymptomatic**[12] • In cohorts of younger individuals (e.g. pregnant woman, sailors on USS Theodore) the proportion of asymptomatics exceeded 60%[15, 16]	People who feel "fine" are capable of – and are – transmitting COVID-19 to others
Portion of cases reaching "critical"/ "severe" infection	• Approximately **19% of confirmed cases are considered "severe" or "critical", requiring hospitalization**; 1/4th of those need ICU beds[7]	Hospital systems risk being overtaxed (ICU beds, ventilators, PPE) meaning case fatality rates could rise further

1. CDC. 3. The R0 for the coronavirus was estimated by the WHO to be between 1.4–2.5 (end of January estimate) (link), other organizations have estimated an R0 ranging between 2–3 or higher (link); 4. CDC Paper (link); 5. JAMA. "Presumed Asymptomatic Carrier Transmission of COVID-19" 6. MedRxIv. "Clinical presentation and virologic assessment of hospitalized cases of coronavirus disease 2019 in a travel-associated transmission cluster". Mar 8. 2020. 7. China CDC, JAMA (link). 8. JHU. 9. CDC. 10. Annals of Internal Medicine (link) 11. Nature (link), Eurosurveillance Paper (link) 12. ZMEScience report (link) 13. SARS-CoV2 by the numbers (link) 14. Emerging Infectious Diseases (link) 15. Business Insider (link) 16. NEJM (link) 17. Science (link)

WHAT DOES IT TAKE TO REOPEN ONCE THE FIRST PEAK IS SUPPRESSED?

Capability[1]	Where are we?
1: Health system capacity The personnel, PPE, beds, and other equipment to sustainably manage normal healthcare needs and a potential new surge	Most countries and US states have sufficient capacity though a few hot spots remain at the margin
2: Testing Sufficient rapid testing to screen essential workers, conduct random testing, effectively contract trace and ID new flareups	US as a whole and many European countries are making progress on building necessary capacity, some European and Asian Countries (Germany, Norway, S. Korea) and specific US States (CA) have adequate supply
3: Contact tracing Identification, testing, and isolation of infected individuals' contacts	Most countries lack adequate capacity; rapid staff up and creation of technological tools are beginning to fill the gap
4: Central surveillance Processes and infrastructure for aggregating an analyzing data to drive decision-making around suppression strategies	Asian countries have led the way, and existing surveillance systems are being adapted elsewhere but face data and lag time issues
5: Social distancing Cultural and infrastructural changes to daily life and work	Businesses and individuals are just beginning to grasp the extent of the new normal
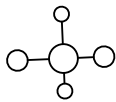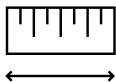
1. CDC has issued guidance on these topics that should be referenced by local authorities
© Oliver Wyman

OUR FACTBASE ON KEY CAPABILITIES REQUIRED FOR REOPENING IS CONSTANTLY EVOLVING TO INCORPORATE THE MOST UP TO DATE INFORMATION

Health system capacity

Testing

Contact tracing

Central surveillance

WE CANNOT AFFORD TO REMAIN SHUT DOWN, BUT IT'S NOT WITHOUT RISK TO RE-OPEN FULLY. WE EXPECT >12 MORE MONTHS OF SOCIAL DISTANCING "CYCLES"

Initial Outbreak

~2 Months

Long Haul of Suppression

12+ Months

Containment

Case growth per day

Cycles of relax/tighten as social distancing remains the only "brake"

Ramp up testing to watch for resurgence of virus and gauge progress to herd immunity[1]

Therapeutic breakthroughs (treatment, vaccine) and/or **scaled public health tools** (testing, tracing, selective quarantine, surveillance) enable exit to New Normal

Mitigation/Economy

- Closure of non-essential businesses
- Community-wide stay-at-home mandates
- Widespread remote work
- Border closures and travel restrictions

- Gradually re-open business with employee testing, social distancing in the workplace and new cleaning protocols *(note: serology testing should not currently be used for immunity passports)*
- Remote work and mask-wearing still the norm
- No large gatherings
- Quarantine for confirmed cases, close associates, and travelers
- Stay-at-home order for elderly, ill, and/or immunosuppressed

- All businesses re-open with safety protocols
- Stay-at-home reinstated in areas with new outbreaks
- Prevalent use of vaccines, perhaps annually

REOPENING PLANS SHOULD BALANCE MOBILITY AND ECONOMIC OPPORTUNITY FOR YOUNGER RESIDENTS WITH PROTECTION FOR VULNERABLE POPULATIONS

While infection is prevalent in those under the age of 60, the risk for hospitalization and death is severely diminished in younger age groups

Case rates by age
New York City, 2020[2]

- ■ Cases per 100k
- ■ Hospitalizations per 100k
- ■ Deaths per 100k

Age group	Cases per 100k	Hospitalizations per 100k	Deaths per 100k
0-17	321	30	0
18-44	2,187	241	20
45-64	3,553	859	184
65-74	3,562	1,666	603
75+	4,301	2,647	1,503
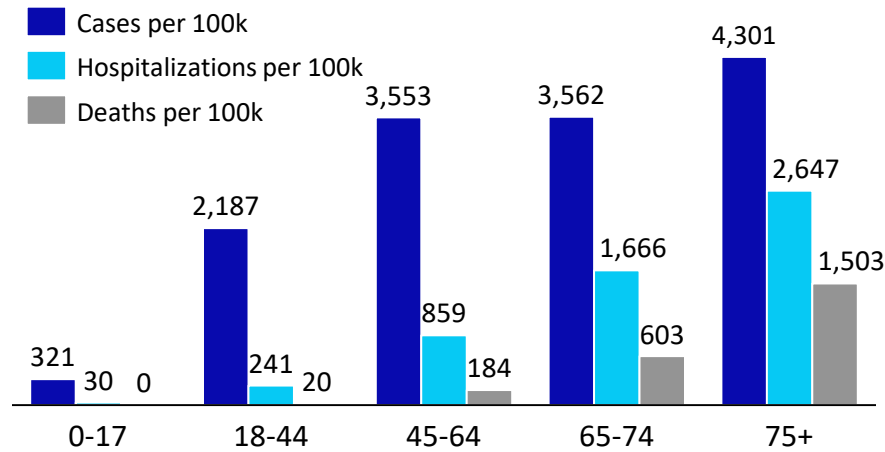
Asymptomatic patients tend to be younger: there is less direct risk to them, but they are more likely to drive unknown community spread

Age distribution of patients, by symptoms
Wuhan, 2020[1]

- ● Median
- | Interquartile Range

(Chart axis: 0, 20, 40, 60; categories: Asymptomatic, Symptomatic)
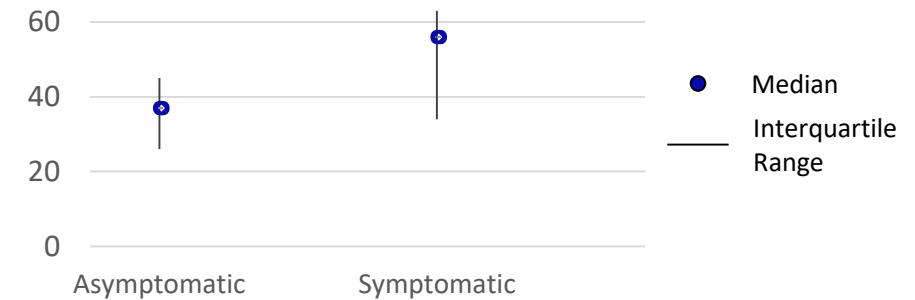
A smart re-opening strategy will allow the less at risk to return to work (safely) to drive economic recovery while carefully protecting the more vulnerable (e.g., elderly, those with co-morbid conditions, residents and workers of long term care facilities)

- Introducing age and health status-differentiated mobility restrictions may reduce infection and fatality risk among the most vulnerable, but governments should have plans in place to ensure those individuals have easy access to supplies and essential items

- Dedicating stocks of tests and PPE to elder care facilities may decrease the risk of outside infection from staffers, as well as allowing for visitation from recently tested friends or family, improving mental health

ILLUSTRATIVE PLAYBOOK COMPONENTS ON WORKFORCE RESILIENCE AND READINESS

Physical work space safety
- Increased ventilation
- Floor layout redesigns and foot traffic guidance to reduce congestion and maintain 6 ft distance
- Comprehensive disinfection practices at appropriate intervals (particularly of high touch surfaces and restrooms)
- Bans on 10+ person meetings
- New behaviors, e.g. masks/gloves at all times in public spaces, frequent hand washing, toilet closure)
- Cafeteria/social space closure
- …

Functional redesigns
- Workflow redesign to reduce hand-offs, complexity, and intensity of rare skills
- Automation of critical processes and processes with higher personnel risks
- Infrastructure and IT configured for enablement of full program portfolio
- No sharing of equipment when possible

Alternative staffing models
- Formal separation of a-teams and b-teams to ensure backup availability
- "Flex pool" or "pool of pools" to plug live gaps
- Reallocation of workforce across sites to mitigate undue risk in one location
- All who can work-from-home do so
- Cross-training of all critical skill sets
- …

Health screening/testing
- Temperature checks or assessments at entry
- Testing (on site or protocol for referral to local public health entity/physician)
- Policies related to health screening/testing (e.g. management of medical data and privacy, payment for testing and time required for testing, reporting of results, policy for use of results in deployment of staff)
- Education of management about disease and control measures

Proactive monitoring and intervention
- Elevation of centralized risk monitoring function
- Real-time tracking and evaluation of all key risks
- SWAT teams for rapid intervention
- Contingency plans for opening/closing/relocating operations based on evolving local risk
- Alerts and compliance monitoring
- …

Scalable employee support
- Expanded communications, e.g. educational campaign on social responsibility
- Managing workforce concerns about returning to work
- Transportation burden assistance (e.g. to avoid subway use)
- Mental wellbeing coaching resources
- Productivity training for remote collaboration
- Policy & technology provision for extended work-from-home for large portions of workforce
- Child care assistance
- …

Management of special people situations
- Formal identification of higher risk employees (demographics, health status, rare skills)
- Alternative work rotations and extended WFH for populations at higher health risk
- Enhanced HR admin capacity for special employee circumstances (e.g. Sick days, PTO, furlough, alternative work arrangements)
- …

Legal and labor agreements
- Managing responsibilities to labor unions with regards to lay offs, reduced work hours, testing, etc.
- Appropriate compliance with wage and hour laws, anti-discrimination laws, health and safety laws, the Americans with Disabilities Act, various new (and old) paid sick and family leave rules, etc.
- Preparation for any potential claims filed by employees as a result of measures undertaken during crisis period
- …

AS US STATES RE-OPEN, WE ARE MONITORING A BROAD ARRAY OF DATA POINTS TO PREDICT REGIONS AT HIGHEST RISK OF ADDITIONAL DISRUPTION

1 — Initial peak experience

- How hard has the region been hit?
- Where is the region on its first outbreak curve (emerging, stabilizing, recovering)?
- How well have hospitals been able to manage the first surge?

2 — Reopening policy

- How broadly and how quickly are businesses being allowed to re-open?
- How stringent are PPE and social distancing requirements?

3 — Public health infrastructure

- Is there sufficient testing capacity to detect patients early?
- Is there sufficient contact tracing capability to identify potential infections early?
- What increased capacity is being planned?

4 — Leading indicators

- How are mobility and social distancing indicators changing?
- How is transmission rate increasing?
- Using OW's boots-on-the-ground Global Sensing Network, how are individuals and businesses behaving and complying?

5 — Population dynamics

- Is the region higher-risk due to age, population density, comorbid conditions, socioeconomic factors?
- Is there a cultural bias toward social distancing, or multi-gen households?

Initial peak experience	Reopening policy	Public health infrastructure	Leading indicators	Population dynamics
New cases trajectory	Reopening timing, policy, stringency, seq.	Testing % positive	Mobility indices (Apple, Google, etc.)	Age, density, % urban
Case fatality rate	PPE/distancing mandate	Tests per day	PPE compliance	Chronic conditions
Cases per capita	Travel restrictions	Contact tracing	OW transmission rate	% essential, % WFH
Impact on hospitals, PPE, vents, workforce		Surveillance	Anecdotal compliance	Household size, x-gen
				Travel exposure

OUR COVID-19 PANDEMIC DATABASE, ARCHETYPE FRAMEWORK AND DETAILED STATE PROFILES PROVIDE AN UP-TO-DATE VIEW OF EVOLVING RISK

OW's pandemic database compiles key Covid-19 information at a country, state, MSA, and county level

Database: Rapid export and visualization of 50+ metrics across several market dimensions

State Archetypes: OW continuously updates archetype view to identify areas with greatest risk

– Current pandemic status
– Reopening policy
– Public health infrastructure
– Leading indicators
– Population dynamics

State profiles: Detailed profiles double click on key issues facing states and MSAs
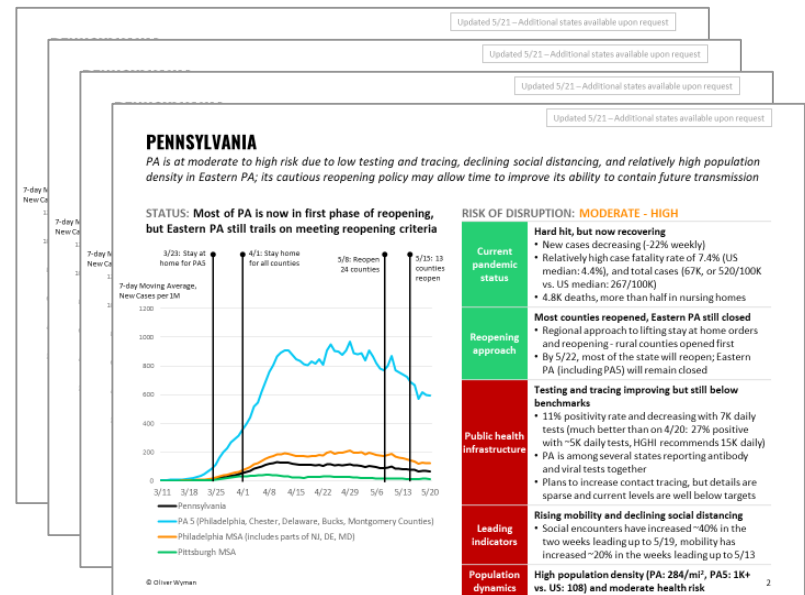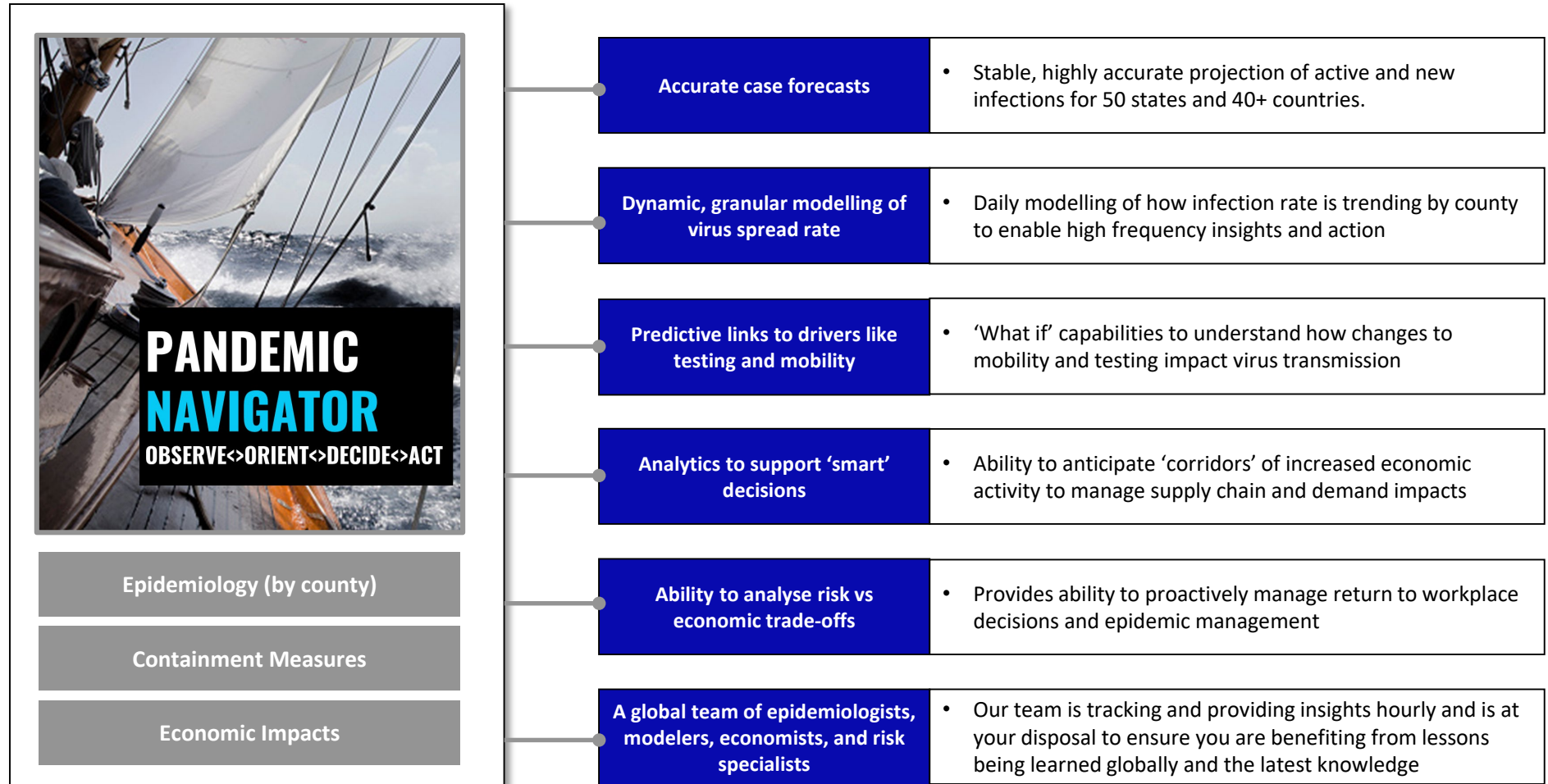

Profiles available upon request

WE HAVE A HIGHLY DEVELOPED TOOLKIT TO SUPPORT MANAGEMENT TEAMS AS THEY NAVIGATE THE CRISIS

**We have developed a sophisticated capability which we call the Pandemic Navigator…**

… to provide business leaders with the tools and support they need to chart a course through the next 18 months

PANDEMIC NAVIGATOR
OBSERVE<>ORIENT<>DECIDE<>ACT

Epidemiology (by county)

Containment Measures

Economic Impacts

Accurate case forecasts	• Stable, highly accurate projection of active and new infections for 50 states and 40+ countries.
Dynamic, granular modelling of virus spread rate	• Daily modelling of how infection rate is trending by county to enable high frequency insights and action
Predictive links to drivers like testing and mobility	• 'What if' capabilities to understand how changes to mobility and testing impact virus transmission
Analytics to support 'smart' decisions	• Ability to anticipate 'corridors' of increased economic activity to manage supply chain and demand impacts
Ability to analyse risk vs economic trade-offs	• Provides ability to proactively manage return to workplace decisions and epidemic management
A global team of epidemiologists, modelers, economists, and risk specialists	• Our team is tracking and providing insights hourly and is at your disposal to ensure you are benefiting from lessons being learned globally and the latest knowledge

OUR PANDEMIC NAVIGATOR ANALYTICS PROVIDE ACTIONABLE INSIGHTS TO EXECS

Accurate case projections: US counties, 50 states, 45+ countries
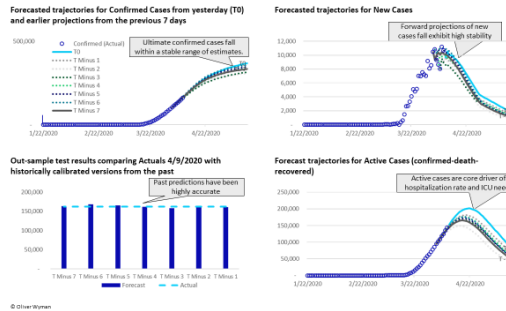
Daily virus infection rates linked to real-time human mobility indices (e.g. Google, Apple)

Detailed local projections to inform re-opening and future lockdown risks
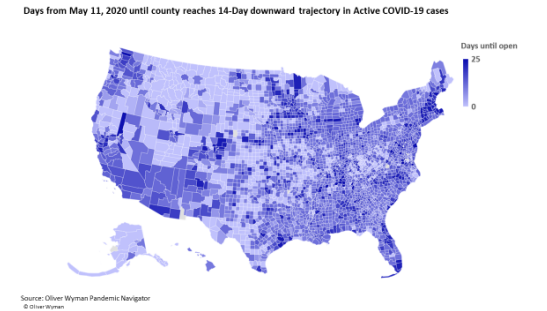
Specific, detailed re-opening policies for high-priority locations – New York example

Predictive analytics linked to testing volumes and lockdown policy changes
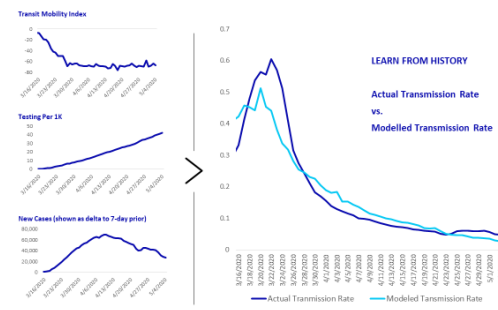
"End-to-end" scenarios to support planning and forecasting applications
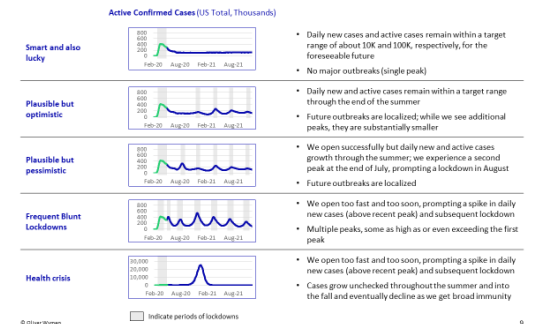
Explore a selection of these capabilities on our website **https://pandemicnavigator.oliverwyman.com/**

OUR TRANSMISSON RATE MODEL IS LINKED TO INDEPENDENT, OBSERVABLE METRICS FOR HUMAN INTERACTION: GOOGLE'S MOBILITY INDICES

Example outputs for New York

Similar outputs are available for all U.S. States

Comparison of COVID-19 Transmission Rate with changes in mobility and stringency

Explore this view and more on our website **https://pandemicnavigator.oliverwyman.com/**
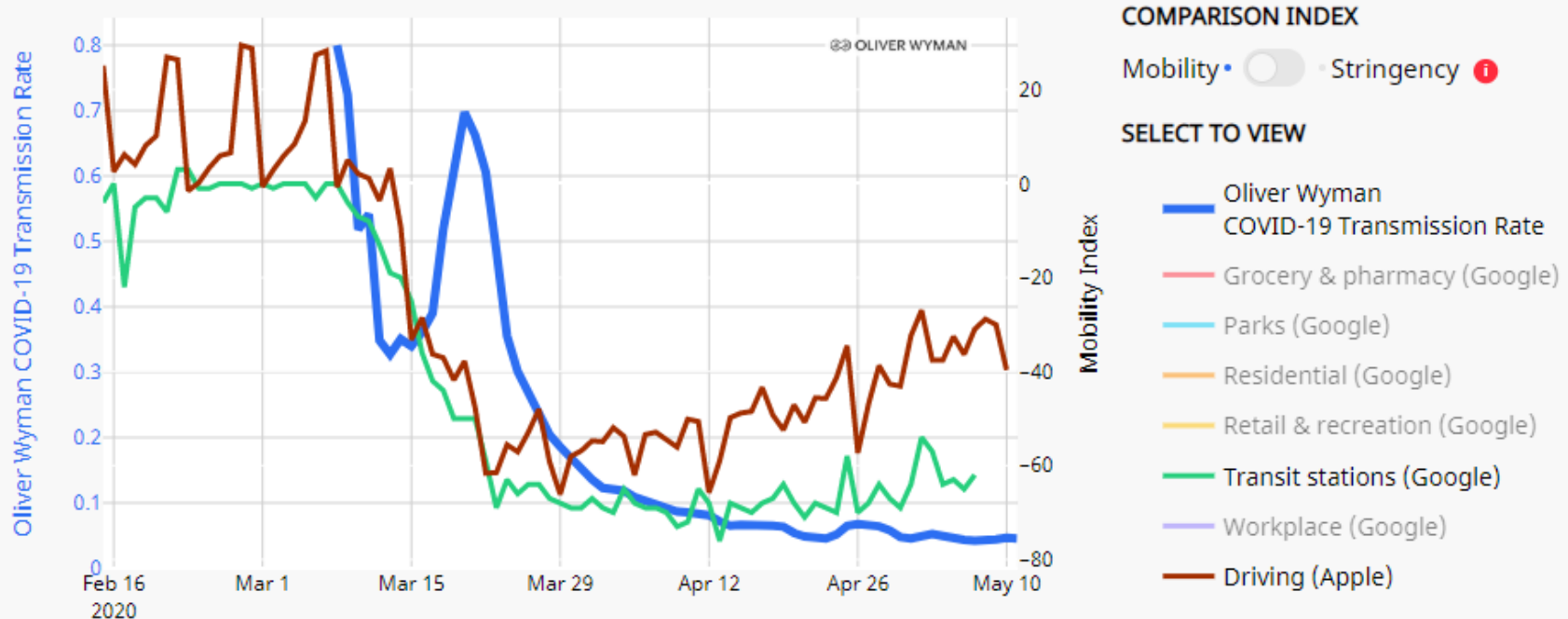
WE CAN ALSO ASSESS THE IMPACT OF HOW CHANGES IN MOBILITY AND TESTING IMPACT VIRUS SPREAD

Example outputs for United States
Similar outputs are available for all U.S. States

Select how mobility and testing changes…

…and see how virus spread evolves
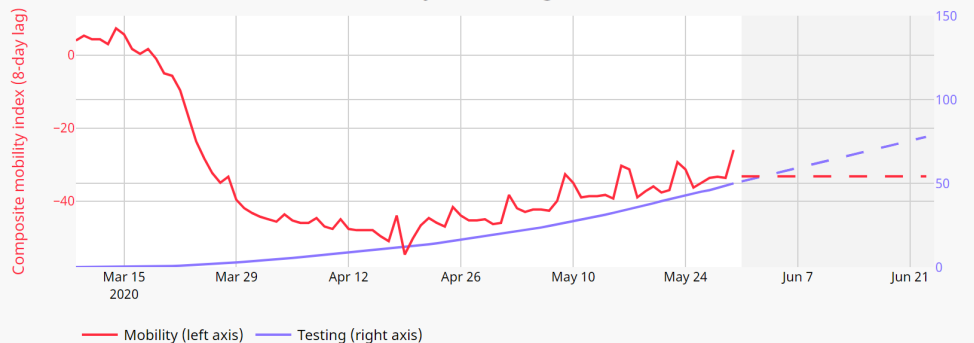
Explore this view and more on our website **https://pandemicnavigator.oliverwyman.com/**
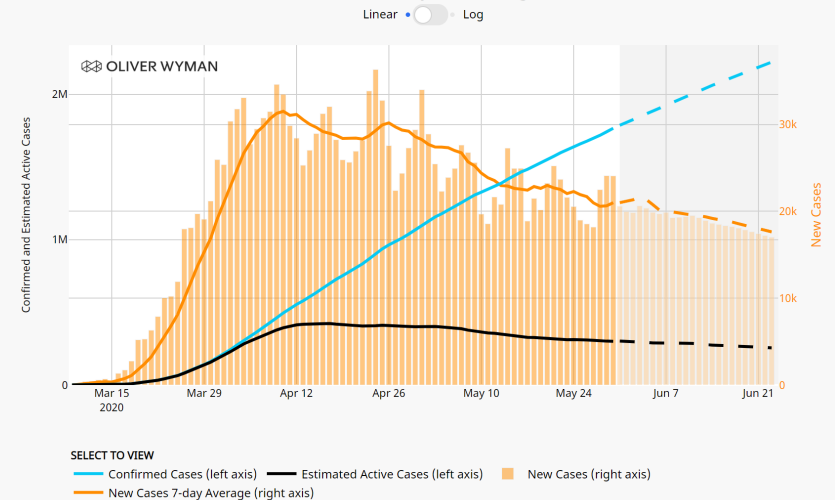
LEVERAGING PANDEMIC NAVIGATOR OUTPUT, WE HAVE IMPLEMENTED A RECOVERY INFORMATION SYSTEM THAT INTEGRATES WITH CORPORATE MIS AND ENABLES EFFECTIVE DECISION MAKING DURING THE LONG HAUL OF SUPPRESSION

OW Pandemic Navigator

Containment measures by geo

John Hopkins/ External sources

The hub

RECOVERY TOWER

Governance and oversight team

Covid companion Mobile app

- Corporate MIS
- Internal programs

Social media Listening tool
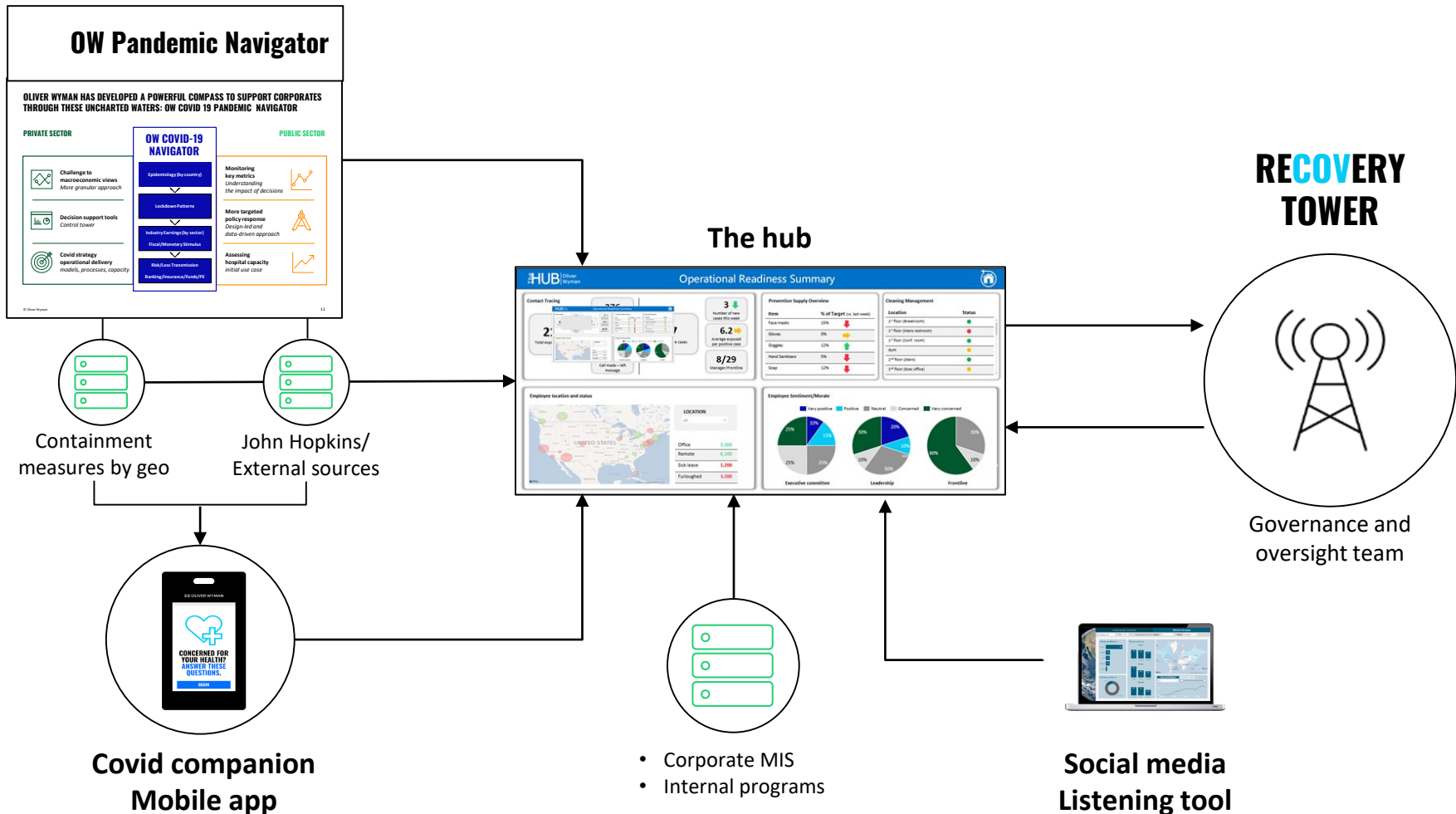
HOW AND WHEN WILL WE RECOVER COMPLETELY?

A successful vaccine manufactured and deployed at scale is the only certain path to eradication

How long could that take?

- In short, 18+ months is likely for development, trials, approval and mass production

- The best comparison we have is the development of H1N1 vaccines under similar circumstances:

H1N1[1]

6 months until vaccine approval; 12 months critical conditions; 18 months until end of pandemic

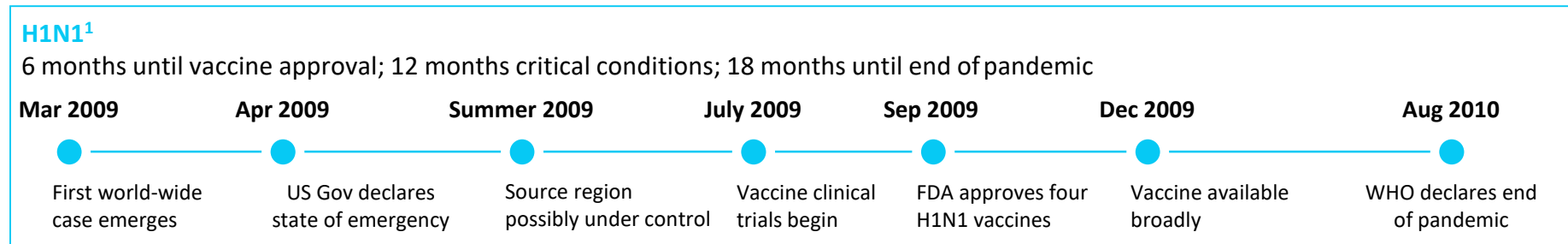| Mar 2009	Apr 2009	Summer 2009	July 2009	Sep 2009	Dec 2009	Aug 2010
First world-wide case emerges	US Gov declares state of emergency	Source region possibly under control	Vaccine clinical trials begin	FDA approves four H1N1 vaccines	Vaccine available broadly	WHO declares end of pandemic

What is the current status?

- As of 5/26, there are 113 vaccine programs, with 15 in a clinical stage

- Two broad categories of vaccine are under development:

  - **Traditional, protein-based:**

    - Inactivated vaccine or proteins from it are grown in animal cells and then injected into the human body

    - Category has been proven to work and will rely on existing infrastructure, however will take longer to develop

    - Efforts of note: Partnership between GSK and Sanofi, Novanax

    - Potential timeline – Phase I trials to start later this year, vaccine wouldn't be approved and available until 2021

  - **Modern, nucleotide-based:**

    - mRNA, DNA or inactivated virus is injected into the human body, so that its cells can make viral proteins

    - Category has not been proven, but has a much more rapid timeline to development

    - Efforts of note: Moderna, Pfizer, AstraZeneca – J&J – Oxford University partnership, Innovio

    - Potential timeline – Phase II and III trials have started or planned to start by summer with limited availability of doses potentially available this fall for high risk individuals and frontline workers
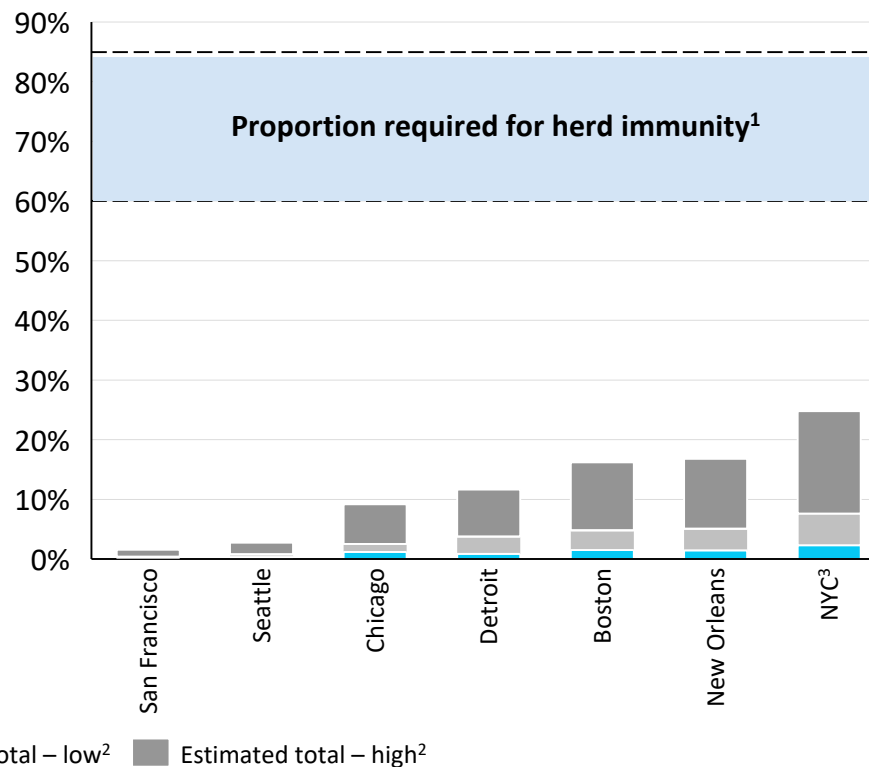
WHAT ABOUT HERD IMMUNITY – CAN THAT HELP?

Herd immunity is a long way off, even in heavily affected epicenters like NYC

Infected proportion of population, by country
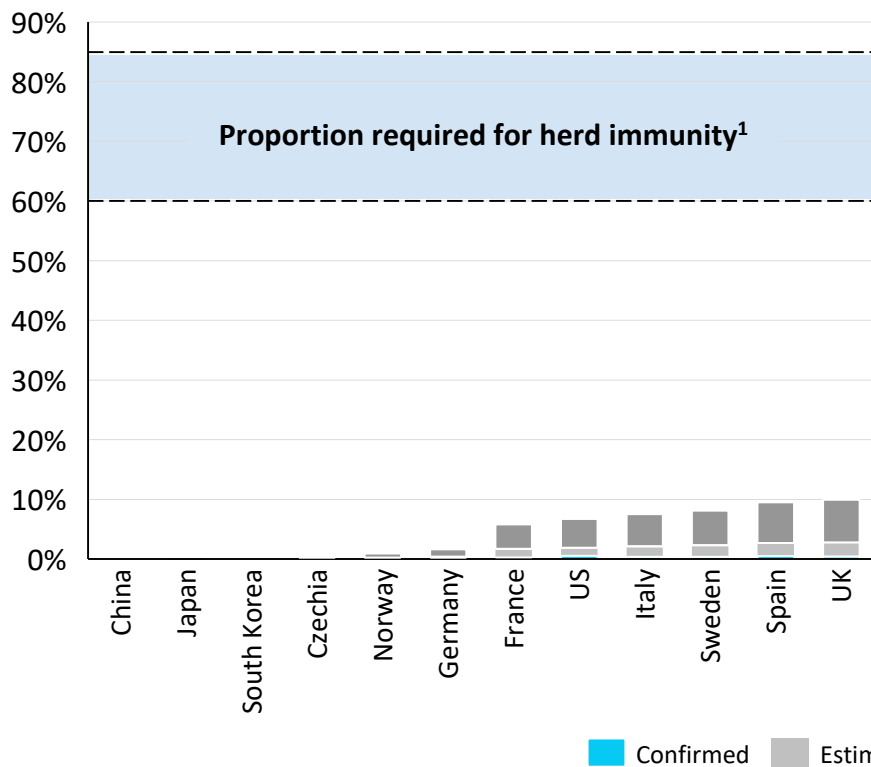
Infected proportion of US population, by MSA

	CN	JP	SK	CZ	NO	DE	FR	US	IT	SE	ES	UK
Deaths per 1M[4]	3	7	5	29	43	100	440	320	550	430	580	570
Total Deaths[4]	5K	900	270	320	240	9K	29K	104K	33K	4K	27K	39K

	San Fran	Seattle	Chicago	Detroit	Boston	NOLA	NYC
Deaths per 1M[4]	60	200	540	1,000	990	960	1,880
Total Deaths[4]	270	790	5K	4K	5K	5K	36K

Sources: Total confirmed cases by country as reported by Johns Hopkins University as of 5/21/2020; total confirmed cases by US county as reported by US facts as of 5/21/2020; world population as reported by link; total population for MSAs as reported by Claritas.

1. Estimates for herd immunity for COVID based on R0 of 2–5.7 and a target of R0<1 (link) and (link) 2. Estimated total infected based on Oliver Wyman Pandemic Navigator Model 3. NYC includes 5 boroughs only, not full MSA 4. Oliver Wyman Pandemic Database[4]

LATEST GDP FORECASTS INDICATE A SEVERE SHOCK IN THE U.S. ECONOMY

The escalation of the COVID-19 crisis has lead to significant downward revisions in GDP forecasts globally

U.S. Real GDP Growth Forecasts – Q1, Q2, Q3, Q4, and annual

Annualized growth rate, by select economic analysts (9) [1,2]
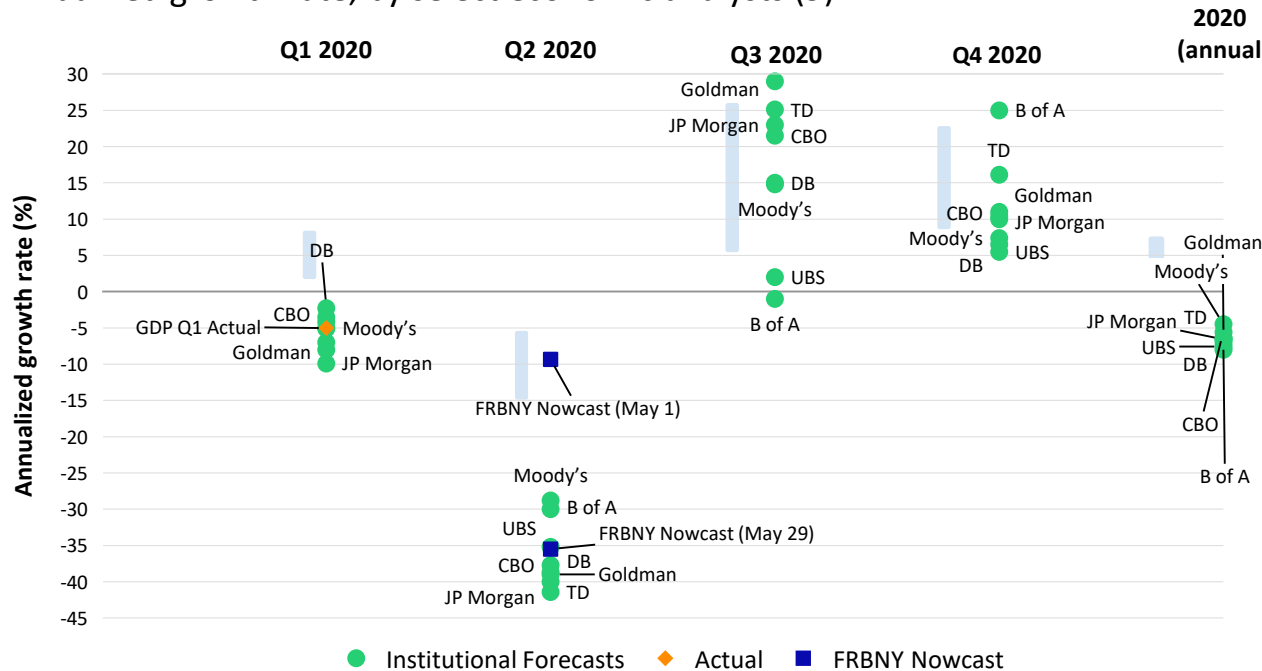
Key observations from estimates

- Forecast updates have been frequent and sizable – Consensus is that bad news on the virus continues to outweigh good news on policy actions

- Forecasted Q2 qoq annualized growth rate in the US (~30–40% drop) will be the worst since we have quarterly data available

- Key indicators to track include:
  - Trend for percent of U.S. population infected (scenarios ranging up to 80%)[3]
  - Reliance on "smart" mitigation strategies (e.g., mass testing, use of analytics)

	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2020 (annual)
Median	-3.9%	**-38.2%**	18.3%	10.2%	-6.6%
Average	-5.2%	**-36.4%**	16.2%	11.5%	-6.5%
Max/Min	-2.3%/-9.9%	**-28.8%/-41.4%**	29.0%/-1.0%	25.0%/5.5%	-4.5%/-8.0%
Actuals	-5.0%				

THE DOWNWARD SHOCK TO GDP IS MIRRORED IN UNEMPLOYMENT

The escalation of the Covid-19 crisis has lead to significant bearish revisions unemployment forecasts globally

U.S. Unemployment Forecasts – Q1, Q2, Q3, and Q4

Quarterly unemployment rate, by select economic analysts (5) [1]

Chart — Unemployment rate (%) by quarter:

- Q1 2020: March Actual — CBO, JP Morgan, Moody's, Deutsche (~3.8%)
- Q2 2020: Goldman (25.0), JP Morgan (~16.5), Deutsche, CBO (~14.7), April Actual, Moody's (~13.7)
- Q3 2020: Goldman (~18.5), CBO (~15.7), Deutsche, JP Morgan (~13.3), Moody's (~11)
- Q4 2020: Goldman, Deutsche, CBO, JP Morgan (~11), Moody's (~9.1)

Peak unemployment during financial crisis[2] — dashed line at ~10%

● Institutional forecasts
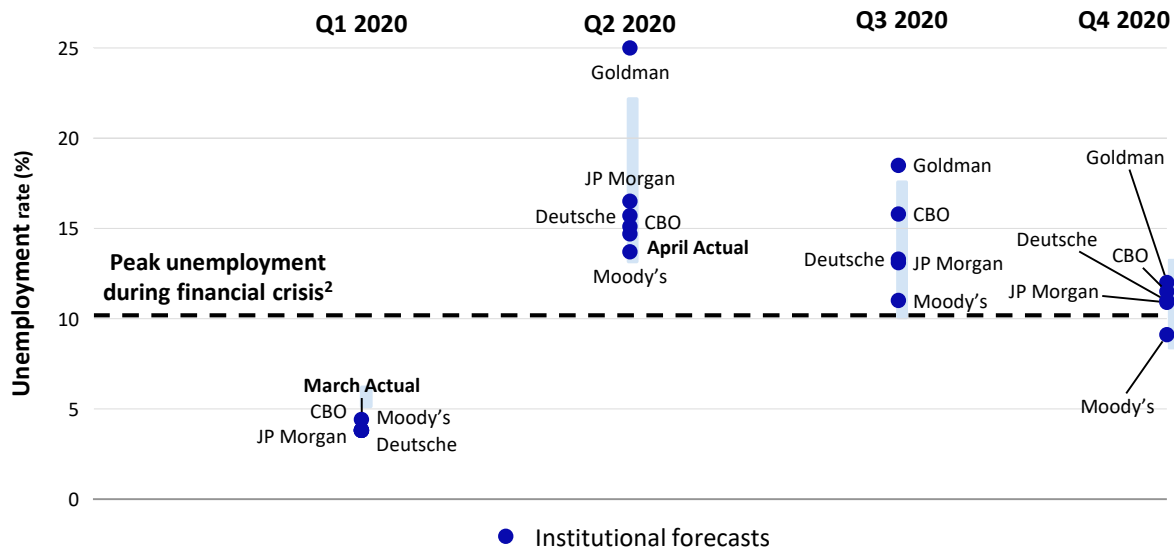
	Q1 2020	Q2 2020	Q3 2020	Q4 2020
Median	3.8%	**15.5%**	13.3%	11.0%
Average	3.8%	**16.7%**	13.6%	10.7%
Min/Max	3.8%/3.8%	**13.7%/25.0%**	9.1%/18.5%	7.1%/14.0%
Actuals[2]	4.4% (Mar)	14.7% (Apr)		

Key insights

- Most annual unemployment forecasts assume a steady economic recovery starting in June, and do not account for the possibility of subsequent significant waves of infection

- 41.1 million unemployment claims filed since start of the COVID-19 lockdown, wiping out the last eleven years of job gains[2,3]

- Congressional Budget Office forecasts a slower employment recovery than most major banks

- The CARES Act has allocated ~$660B in forgivable loans to cover small business payroll expenses, padding against additional job losses in the short term

1. Sources: 1. Sources: Bank of America (May 15), Moody's (May 15), UBS (May 15), Goldman Sachs (May 12), TD (May 15), JP Morgan (May 29), CBO (May 19), Deutsche Bank (May 15), FRBNY Nowcast (May 1, May 29)
2. Sources: U.S. Bureau of Labour Statistics
3. Tracking unemployment forecasts against unemployment reports may be misleading – unemployment reports only record jobless workers actively searching for employment

READ OUR LATEST INSIGHTS ABOUT COVID-19 AND ITS GLOBAL IMPACT ONLINE

Oliver Wyman and our parent company Marsh and McLennan (MMC) have been monitoring the latest events and are putting forth our perspectives to support our clients and the industries they serve around the world. Our dedicated COVID-19 digital destination will be updated daily as the situation evolves.

Visit our dedicated COVID-19 website
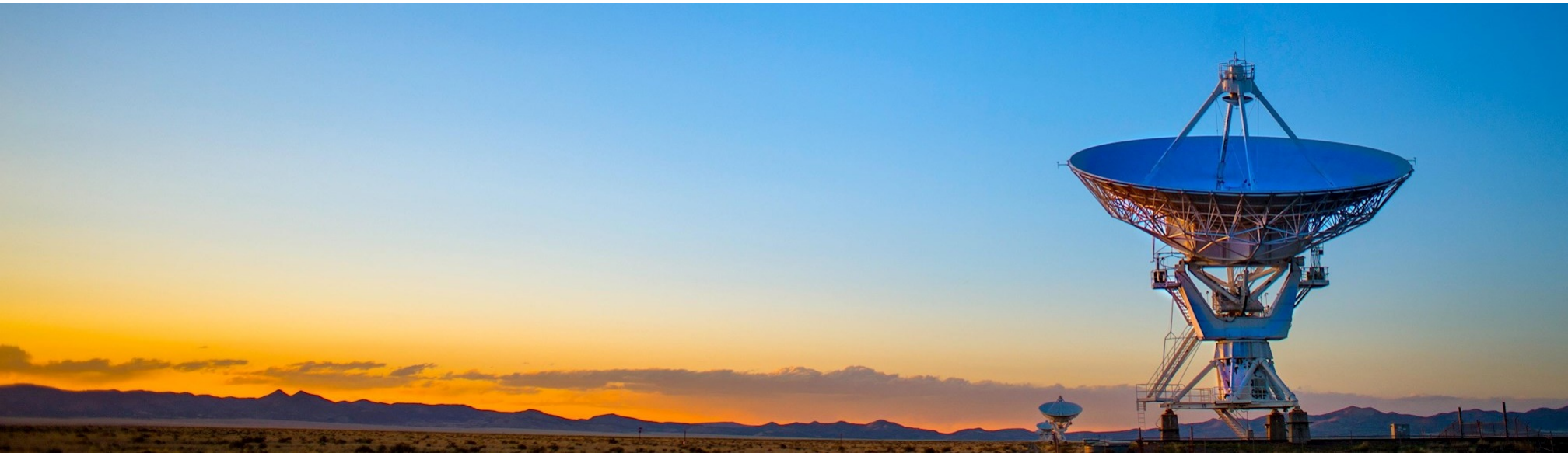
QUALIFICATIONS, ASSUMPTIONS, AND LIMITING CONDITIONS

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