

National Covid-19 Testing & Tracing Action Plan

Update Report

Time to Redouble
Our Efforts on
Covid-19 Testing



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Foreword

America faces an impending disaster. The extraordinary scale of the Covid-19 crisis is evident in the growing deaths and economic losses the pandemic has wrought in every state. Devastated minority and low-income families bore the brunt of those costs. As the virus tore across the country, it exposed the structural inequities that have underpinned and undermined our economy for decades. And it will only worsen during fall's cold and flu season.

This terrifying tragedy was not and is not inevitable. America can function safely, even as we fight Covid-19. Other countries have shown that a better alternative is possible. But as we said in April – when we first released The Rockefeller Foundation's National Covid-19 Testing Action Plan – testing is the only way out of our present disaster, and it will remain the case until a vaccine or effective therapeutics are widely available.

When we were barely a month into this pandemic, we brought together scientists, industry, technologists, economists, and Republicans and Democrats alike to formulate an action plan to expedite the development of our nation's widespread testing and tracing system. We called for rapidly expanded diagnostic testing capacity from 1 million tests per week to 3 million tests per week by June, and to 30 million tests per week by October. Today we're at 4.5 million tests per week, but unfortunately it's taking far too long to get to 30 million tests per week, and communities that most need them – low-income families, minorities, and highly vulnerable essential workers – find it most difficult to gain access, while elite institutions, companies, and enterprises seem to be able to access them on the private market. We need to urgently fix clinical diagnostic testing and accelerate the introduction of faster, cheaper, point-of-care screening tests to prepare for next flu season. Some say it's impossible. Some say America has already given up. But we know it can be done, and we present here a renewed national action plan to help get there.

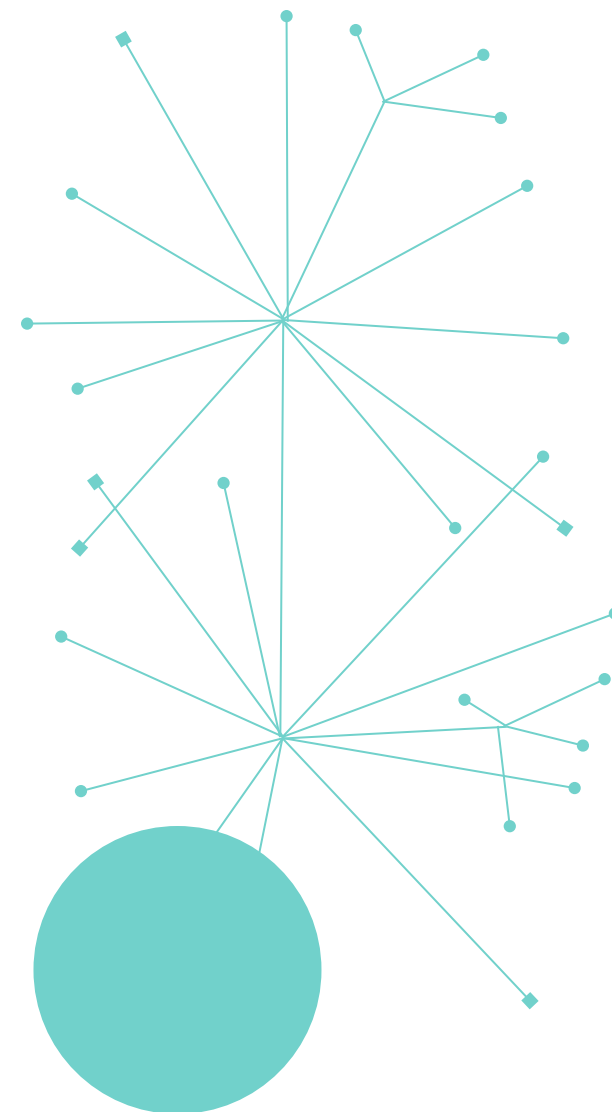
Across the board, federal leadership and genuine public-private partnership will be essential to meeting three key needs identified in this updated plan. First, we need to massively scale up fast, cheap screening tests to identify asymptomatic Americans who are currently infected. Today the country conducts almost zero such tests, and we need at least 25 million per week for schools, health facilities, and essential workers to function safely. Teachers, healthcare workers, grocery store workers: these are the real heroes of this crisis, and they should be able to support our country without the all-consuming fear that they're jeopardizing their lives or the lives of their loved ones.

Second, we need to dramatically reduce the processing time for diagnostic tests, from the current 5-14 days to a 48-hour standard turnaround time that every state and community should meet. Many businesses that are privately contracting with lab companies already meet this standard. We propose a public-private collaboration between government, lab companies, and scientists in order to alleviate the very basic constraints that are leading to these extraordinary delays.

Third, this reinvestment in testing must be tied to the basics of any pandemic response to really work: clear public health communications from trusted community leaders, and robust contact tracing and support for targeted isolation to reduce the contagion of the disease.

The Rockefeller Foundation will invest an additional \$50 million toward realizing the emergency requirements we outline in this updated plan. But make no mistake: this crisis demands immediate federal funding. Congress took a first step by including \$25 billion for testing in the Coronavirus Aid, Relief, and Economic Security (CARES) Act. This plan requires another \$75 billion as soon as possible, because tests should be free and accessible to all who need them – with extra effort to make sure low-income and minority communities, those who are more financially vulnerable and critical institutions like nursing homes, schools, and community centers are supported, and that we address the sharp racial injustices and inequities that plague our country. This represents the single best investment America could make in averting an even more tragic and pending disaster.

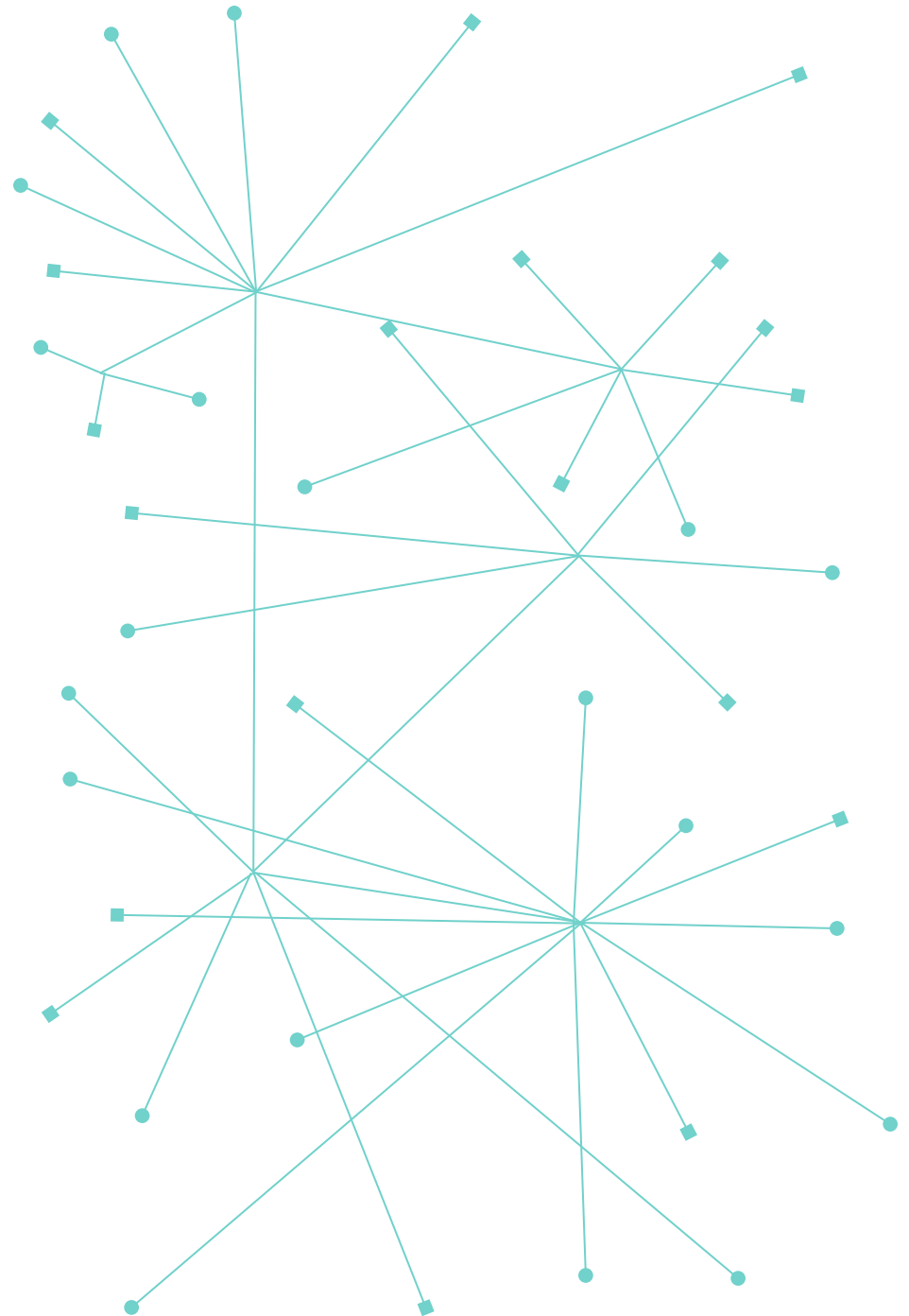
Today Covid-19 cases are spiking, and the trajectory in much of America is rising rapidly. In addition, we will soon enter a new cold and flu season with potentially 100 million cases of flu-like symptoms that stand to overwhelm our current testing capacity. Not only do we need to bend the curve of this epidemic; we need to provide America's essential workers and children with a way to go about their work and lives more safely, so that critical institutions can survive and function during this period of time. The only alternative is more large-scale lockdowns. The price of that is too high to pay when we don't have to, if we make smart, strategic, science-based investments now.



by **Dr. Rajiv J. Shah,**
President of The Rockefeller Foundation

Overview

The nation is clearly falling short of the commitment, focus and initiative needed to defeat Covid-19. Infection rates are hitting record highs nationally and in more than a dozen southern and western states. Tests are still perilously hard to come by in regions where demand is surging. Testing bottlenecks persist in many of the nation's labs. We lack central coordinating authorities even at the state level. In much of the country essential contact tracing systems are nascent at best. The public is still not united in its response to the lethal virus, with large numbers refusing to take precautionary steps and dubious over the need for more testing.



Our failures in the fight against Covid-19 have highlighted our national weaknesses and vulnerabilities. We have 4% of the world's population but around a quarter of all global cases and all deaths. Infections are down to a mere trickle in most of Europe while surging to record highs across the United States.

We can reverse this trend, and prevail over Covid-19, only with a clear, concerted, national plan for testing, tracing and communications. Leaving the fight up to a patchwork of individual states, cities, businesses and school systems will not work.

In late April, The Rockefeller Foundation and its partners proposed the nation rally around a bold but achievable goal of expanding our testing capacity from one to three million tests per week by the middle of June and to 30 million tests per week by the end of October. We also proposed a robust human-centric contact tracing program to ensure that those exposed to the disease self-isolate to stop the spread and that data be on positive cases be collected and shared across the country.

Successful implementation of this 1-3-30 Action Plan would allow the country to reopen and equip businesses, schools and institutions to detect and contain inevitable outbreaks so that they could remain open. The country then was administering an average of around 143,000 tests a day – or 1 million a week – with no appreciable sign of an increase in those numbers.

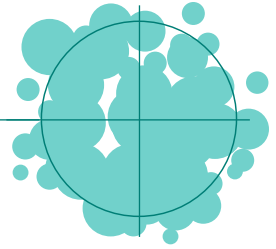
We are now at nearly five times that level – a notable improvement but still not nearly enough. We need to be honest: We have in no way prevailed over Covid-19, and our original plan underestimated the roadblocks to scaling testing, the role of asymptomatic spreaders, and the acceptance of contact tracing.

We need to redouble our efforts to combat Covid-19 and achieve the aims we set out in our first action plan, while also adjusting to new realities.

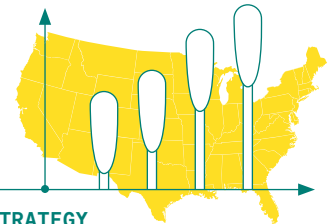
The national testing strategy we need will require the country to ramp up to where it can administer at least five million diagnostic tests and 25 million screening tests a week within three months, with the acknowledgement that we will need still more than that. This must be combined with rigorous and extensive contact tracing and supported isolation.

Tests must be easily available to all our teachers, students, essential workers, nurses and bus drivers – every American, free of charge. Investing in the creation, delivery and administering of these tests will be far cheaper for the nation than the incalculable fiscal and social costs of another economic shutdown.

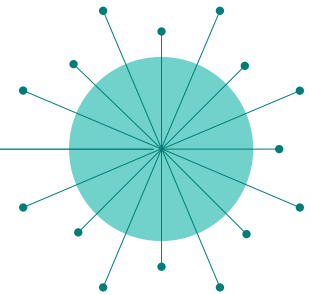
WE HAVE 4% OF THE WORLD'S POPULATION BUT AROUND A QUARTER OF ALL GLOBAL CASES AND ALL DEATHS



THE NATIONAL TESTING STRATEGY WILL REQUIRE THE COUNTRY TO RAMP UP TO AT LEAST FIVE MILLION DIAGNOSTIC TESTS AND 25 MILLION SCREENING TESTS A WEEK WITHIN THREE MONTHS



TESTS MUST BE EASILY AVAILABLE TO ALL OUR TEACHERS, STUDENTS, ESSENTIAL WORKERS, NURSES AND BUS DRIVERS – EVERY AMERICAN, FREE OF CHARGE




We can hit these goals only with concerted national focus and attention. Congress needs to urgently approve the proposed additional \$75 billion for testing as part of the next stimulus bill. Insurers and government agencies must also clarify how the country will pay for this widespread screening program as it is put in place town by town, business by business and school by school. We must assure that sufficient support is flowing to the hardest hit communities, many of them Black and Hispanic, which have been disproportionately hit by Covid-19.

In addition, the administration needs to invoke the Defense Production Act or a similar federal program to oversee and goad the production and distribution of mass quantities of fast, low-cost antigen tests. What we need to implement a mass screening program are simple, quick, easy and inexpensive tests. These sort of tests are on the horizon, but getting them into the hands of everyone who needs them – schools, employers, health providers, public essential workers, vulnerable communities – will require the muscle that only the federal government can provide.

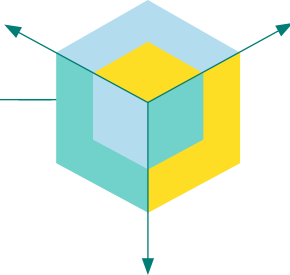
We have made progress in many areas since The Rockefeller Foundation put out its initial report in April.

The country has delivered over 39 million tests and is now averaging well over 600,000 tests a day – or roughly 4.5 million tests a week. Success in exceeding the three-million-tests-a-week goal reflects a surge in testing capacity and noteworthy strides in overcoming some of the barriers to the production, supply and distribution of test kits. It also shows increased resolve at the local and state level to prioritize testing.

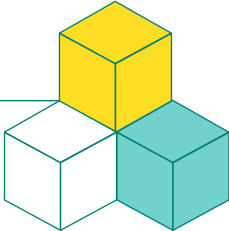
The progress so far is also the fruit of increased cooperation. The Rockefeller Foundation since April has drawn together hundreds of data experts, medical professionals, epidemiologists, business executives, philanthropists and government officials at both the federal, state and local levels. We are in frequent contact with a number of governors' offices. We have launched a pilot tracking and tracing system in Baltimore that holds national promise.



CONGRESS NEEDS TO URGENTLY APPROVE THE PROPOSED ADDITIONAL \$75 BILLION FOR TESTING AS PART OF THE NEXT STIMULUS BILL

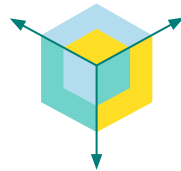


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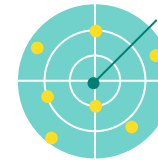


THE PROGRESS SO FAR IS THE FRUIT OF INCREASED COOPERATION

The result of all this is a national network of like-minded specialists devoted to these principal aims:



A dramatic expansion of our testing abilities, with a focus on tests to screen asymptomatic individuals



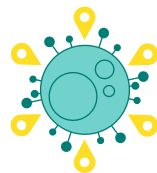
The creation of local systems to track infections and alert those who may be exposed



The development of reliable, simpler, faster and cheaper tests



The need for better data tracking and dissemination



The delivery of these tests to the hardest-hit communities



The launch of a national education campaign to build support for testing and other safety measure



The establishment of a standard set of protocols to assist employers and schools to reopen successfully

But amid the promising signs – increased testing, sharp declines in hospitalization and fatality rates, the uptick in innovation and cooperation – we still see infection rates rising. Just as disturbing is the realization that asymptomatic people are spreading the disease at alarming rates – and perhaps at rates higher than currently understood. That, and the looming specter of seasonal flu in the fall, mean we must strongly demand that we as a country come together to drastically scale up testing for the fall – especially for asymptomatic people.

Chief among our many concerns are:



The inability of key federal institutions like the CDC to keep pace with the scale of the pandemic



Wavering resolve over testing within many state capitals



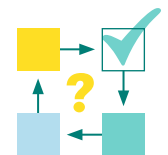
Public confusion over the central role of effective testing and contact tracing



Multiple barriers to developing fast, cheap and easily administered tests



Equity issues in the distribution and availability of tests



The need for wide agreement on who should be tested, and how frequently

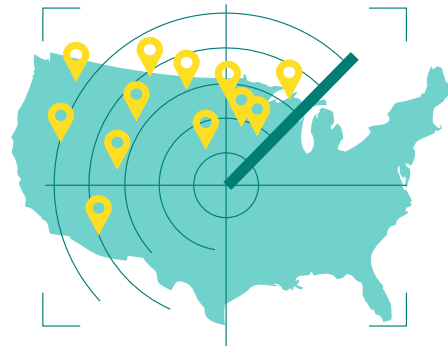
Getting to three million tests a week was essentially a framing exercise. Ramping up to a number 10 times that high and higher will require breakthroughs in testing technology; vast improvements in delivery and logistics; firmer commitments to test among companies, schools and government officials; and a stronger conviction among Americans that a robust national testing and tracing program is vital to our vanquishing the virus and getting fully back to work.

It is one thing to reopen.

It is quite another to remain open.

Keeping America open and operating through the fall will require vigilance, adherence to prevention practices, and a commitment to a vast screening program built around tests of asymptomatic individuals to spot new outbreaks in schools, factories, office, and at-risk populations across the country. Over this next phase, The Rockefeller Foundation and its partners believe it is vital that government and like-minded organizations pool efforts to accomplish a range of critical goals.

To effectively combat Covid-19 and keep our economy running, policy makers, foundations and the private sector must:



Ensure diagnostic and screening testing is free and available to all Americans. Public and private health insurance are already mandated to cover diagnostic testing, but action is required to cover protocol-based screening tests by employers along with further mandates for public and private insurance coverage. Congress needs to approve the proposed \$75 billion in additional federal funds to cover testing costs into next year as well as to incentivize test development and production. The benefits of the resulting reduction in illness, deaths, and economic disruption from preventable outbreaks will far outweigh the costs of widespread screening tests or the burden on labs to increase their turnaround times.



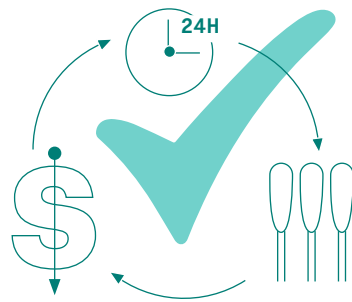
Address the current crisis in lab-based diagnostic testing through wartime like measures by the federal and state governments, manufacturers, laboratories, and others. Collective action is needed to break the existing testing “log jam” of tests so that results of diagnostics testing is reduced from the current 2+days to less than two days nationwide. The Federal government should throw its full weight and massive funding behind expediting the production and distribution of diagnostic and screening tests, including, if necessary, through the Defense Production Act or other appropriate authorities. We proposed \$100 billion for testing through April 2021 in our initial

plan, of which \$25 billion was appropriated in the CARES Act for testing. At least another \$2 billion is necessary to incentivize test development and production, similar to the amounts being spent on vaccine development.



Create and implement test protocols for widespread screening testing of asymptomatic people

to keep our schools, workplaces and communities open. Screening tests are essential to detect and rapidly contain local Covid-19 outbreaks. We urge the CDC, in partnership with the public health community, to put forth risk-based specific protocols for screening tests for K-12 schools, universities, workplaces, nursing homes, vulnerable communities, and other settings based on their individual levels of risk and exposure. National testing capacity should expand to at least 30 million tests a week by November, including at least 25 million screening tests and 5 million diagnostic tests a week.



Support the development and deployment of appropriate, convenient, accurate, affordable and rapid antigen tests required for implementing screening test protocols. Screening tests should point-of-service/point-of-care tests costing \$5 to \$10 per test, with same-day turnaround for schools and workplaces, and even faster turnaround for mobile testing in communities.



Create a broad-based national Covid-19 Communications Coalition to develop and implement ways to promote testing, tracing and safety measures such as masks and social distancing. The coalition should include non-profits, community organizers and alliances of faith leaders as well as governmental leadership at the federal, state and city levels. Communication should be localized to for cultural awareness and linguistic adaptation.



Improve the speed and effectiveness of contact tracing at the local level and make self-isolation and quarantining more practical with proper public support for lost wages and other necessary services.

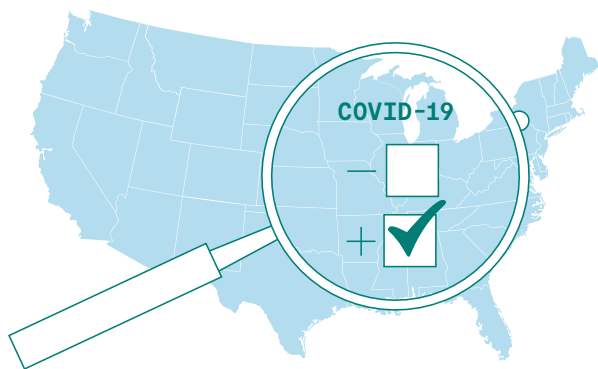


Improve data infrastructure and reporting and expand the utilization of data to drive performance and improve decision-making.

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Covid-19 Testing

Resolve diagnostic testing shortages and implement widespread screening testing



The virus has pivoted.

It is now more contagious and appears to be spreading more aggressively across large swaths of the country.

We must pivot as well.

Since early April, when U.S. Covid-19 viral testing had plateaued at 1.0 million tests per week, considerable progress has been made in testing but clearly not enough given the spread. By the end of June testing had reached 3.5 million tests per week, and by mid-July, over 4.5 million tests a week. Flattening the curve will require going to at least 7 million tests per week just to reach mitigation. But bending the curve for new cases to a much lower suppression level, which must be our focus, will require at least 30 million tests per week, including 25 million weekly screening tests of asymptomatic individuals.¹ Even higher levels of testing may be needed to keep our workplaces, our schools, and our communities open.

This can only be done through a concerted national effort.

Canada, Australia, Germany, France and South Korea – countries that have most successfully combated the coronavirus scourge – each achieved positivity rates less than 1.5%.²

Positivity rates must be under 10% just to flatten the curve and less than 1-3% to bend the curve toward suppression. With much higher outbreak rates, we need a lot more testing just

of symptomatic individuals and contacts to get to this level.

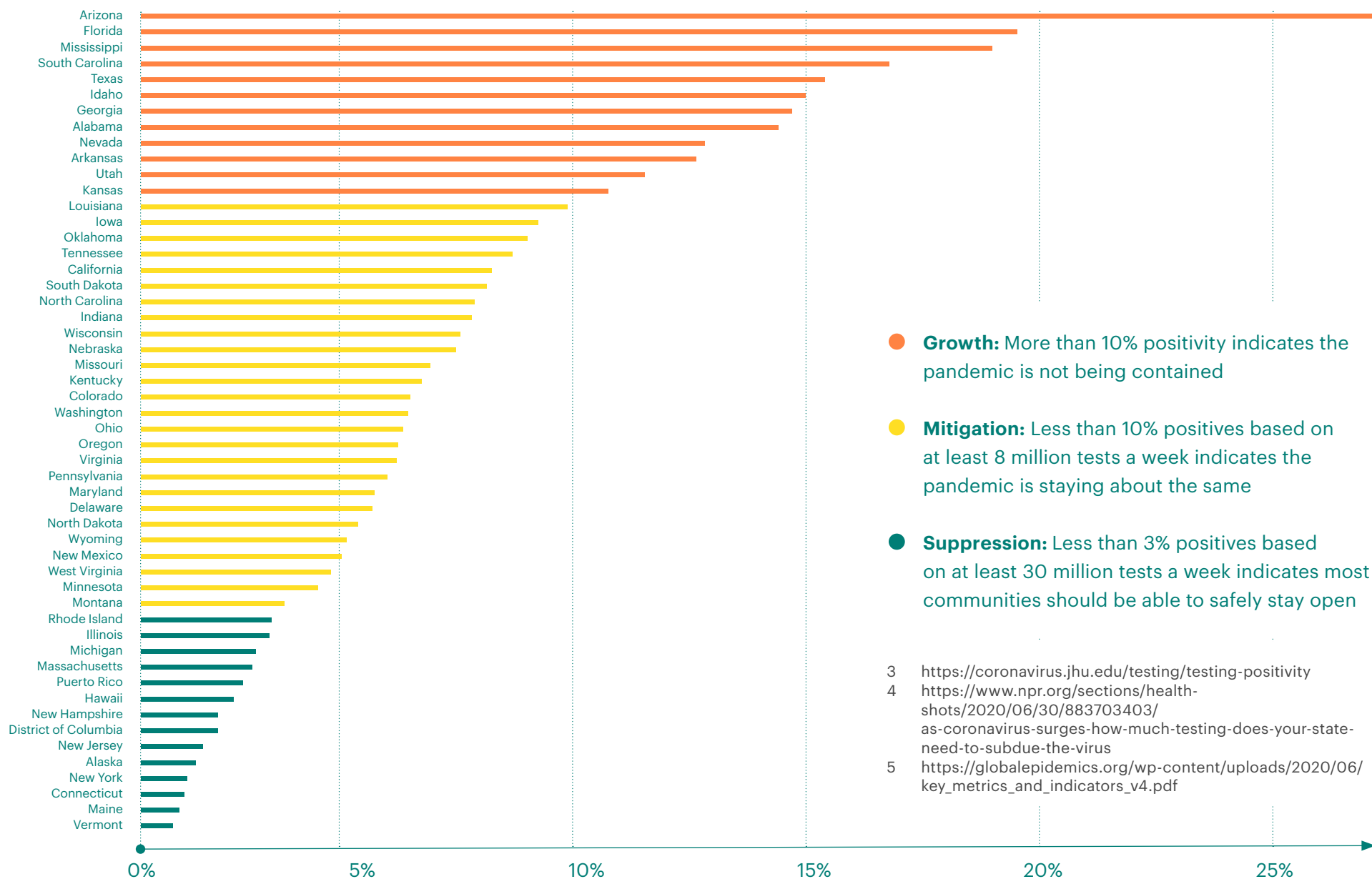
Outbreaks across states will continue to get worse if we don't increase testing to suppress the virus and open safely. As of July 11, only 14 states are doing enough testing to suppress the spread of the virus, while 26 states are achieving mitigation. 12 states have such significant testing shortfalls that the outbreak is growing.

We are also seeing huge disparity among the states, with some states moving fairly aggressively on testing, while entire regions lag far behind. Some outbreak states are increasing testing, just not nearly enough to keep up with the epidemic growth. Many states are seeking to ramp up testing but are constrained by commercial lab capacity and/or limited lab availability of testing supplies.

As of July 12, Massachusetts, New Jersey and New York – all states that had achieved dramatic decreases in new cases – all had positive rates under 3%. At the same time states experiencing overwhelming surges had positivity levels well over 10%, including Arizona, Florida, and Texas, just to name a few.

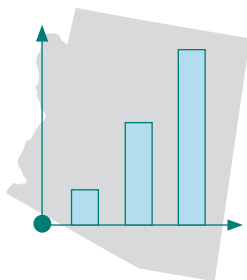
- ¹ <https://www.npr.org/sections/health-shots/2020/06/30/883703403/as-coronavirus-surges-how-much-testing-does-your-state-need-to-subdue-the-virus>
- ² <https://ourworldindata.org/coronavirus-testing>

At least 30 million tests per week nation wide are required to safely open and keep open our workplaces and communities^{3,4,5}



- 3 <https://coronavirus.jhu.edu/testing/testing-positivity>
- 4 <https://www.npr.org/sections/health-shots/2020/06/30/883703403/as-coronavirus-surges-how-much-testing-does-your-state-need-to-subdue-the-virus>
- 5 https://globalepidemics.org/wp-content/uploads/2020/06/key_metrics_and_indicators_v4.pdf

The differences in testing and outcomes are stark across the country.



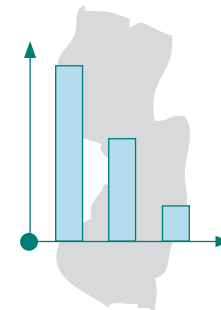
In **Arizona**, the number of positive cases more than tripled over the month of June, a span in which the number of tests administered weekly nearly doubled.

Arizona is now seeing

more than 3,500 new Covid-19 cases every day on average, by far its highest numbers since the start of the pandemic. The state is also seeing a rise in the share of positive cases, from 12.3% of tests at the start of June to 26.9% by mid-July – the highest rate in the country. Health officials on June 9 reactivated the state’s hospital emergency plan to brace for a possible shortage of emergency beds. By the end of the month, the state’s intensive-care capacity was at 90%.⁶ That makes Arizona one of the fastest growing hotspots in the country.

The increase in positive cases in Arizona comes after Gov. Doug Ducey ended the state’s stay-at-home restrictions in mid-May and loosened most restrictions on gyms, pools and restaurants. The famous hotels along the Grand Canyon’s South Rim are open and accepting tourists.

Arizona has administered just 9,331 tests per 100,000 residents as of July 12, putting it near the bottom of the list of states on testing metrics.⁷



New Jersey tells a very different story. One of the hardest hit states early on, with a total of more than 12,600 deaths, New Jersey has seen a sharp decline in new positive cases. The

state’s governor, Phil Murphy, has adhered to a phased plan for reopening built around a sharp increase in testing. The state was testing around 7,000 people a day on average in late April, compared to around 20,000 a day by mid-June. The state has resumed outdoor dining while retaining sharp restrictions on indoor dining.

The rate of positive cases in New Jersey now hovers around 1.26, among the lowest in the country, while its rate of testing, at nearly 17,000 tests per 100,000 residents, puts it 5th highest in the country.⁸

The disparity by region in terms of the actual spread of Covid-19 is also striking. In the South, the percentage of tests coming back positive – at just over 10% in late June – doubled in just two weeks. By comparison, the positive rate in the Northeast was at 1.7%, in the Midwest 3.8% and in the West 7.9%. The sharp uptick in both the South and the West has raised alarms over whether states are reopening too swiftly without proper protocols in place.

6 <https://www.newsweek.com/arizona-icu-91-percent-capacity-1-4-coronavirus-cases-positive-1515436>

7 <https://coronavirus.jhu.edu/testing/states-comparison>

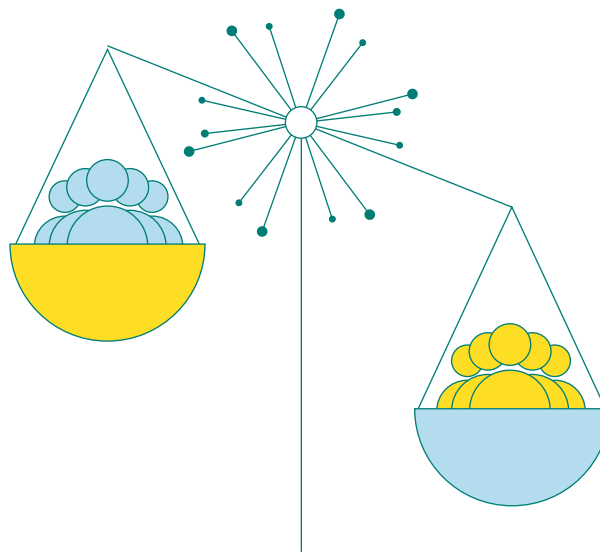
8 <https://coronavirus.jhu.edu/testing/states-comparison>

Pay reasonably now or pay exorbitantly later

Providing the level of testing needed to keep our schools, workplaces, and communities safe from recurrent Covid-19 outbreaks will be costly, even with more affordable screening tests. But the human, social, and economic costs of lockdowns, school closures, and recurrent surges will be far, far greater.

Given the continued threat of Covid-19 diagnostic and screening testing should be available to everyone in the U.S. without cost to the person receiving the test. Governments, health insurers and employers can pay a reasonable price today by covering the cost of both diagnostic and screening testing – or over the coming months and years pay a far more exorbitant price as a result of a sluggish economy, excess healthcare costs, and the potential need for additional bailouts. The cost of inadequate testing has already been vividly proven by the preventable loss of life and the tremendous economic cost of the first pandemic wave.

Diagnostic testing for Covid-19 is generally covered through public and private health insurance. But recent guidance from the Department of Health and Human Services and other federal agencies suggests that screening testing may not be covered.⁹ Combined with the millions of Americans still uninsured or underinsured, this lack of coverage will only prolong our battle against the virus. Already people of color, the elderly, and other vulnerable populations are suffering the greatest loss of life, disability, and economic hardship; the magnitude of these disparities and impacts will only increase if we don't have adequate testing to catch recurrent outbreaks early.



Equitable Testing Funding Recommendation

People across the U.S. are being unequally exposed to the Covid-19. Latino and African American residents are three times as likely as their White counterparts to be infected with Covid-19 and almost two times as likely to die.¹⁰ These disparities are the result of structural racism that have overtly and covertly placed essential services, like quality health care, beyond the reach of our Black and Brown communities.

The Rockefeller Foundation strongly recommends that an additional \$75 billion in federal funds to cover the additional costs of testing and tracing as well as to incentivize test development and production. Federal funding for testing and supportive services should be allocated in proportion to the burden of illness and disease that communities experience. In short, this funding should be used to prioritize testing for racial and ethnic minorities who are more likely to get sick and die of Covid-19 because of underlying conditions, jobs and living situations with higher exposure risk, and inequitable access to quality healthcare.

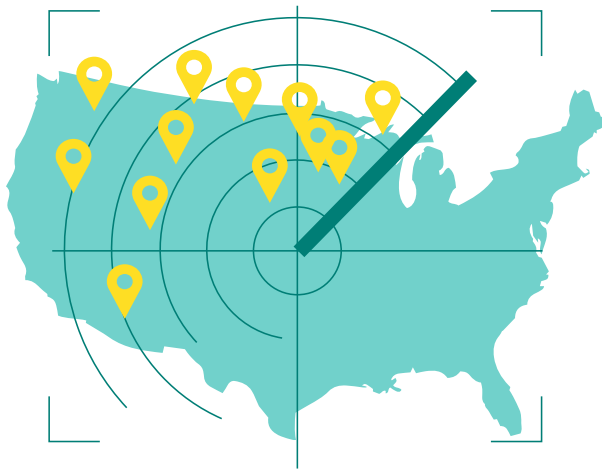
9 <https://www.cms.gov/files/document/FFCRA-Part-43-FAQs.pdf>

10 <https://www.nytimes.com/interactive/2020/07/05/us/coronavirus-latino-african-americans-cdc-data.html>

Screening Tests to keep our schools, workplaces, and communities open

The pandemic coronavirus was deadly and debilitating to begin with but now appears even more contagious, thanks to a recent mutation. More than 90% of Americans thus far have avoided infection and remain vulnerable. The virus is in nearly every part of the country, so recurrent outbreaks are inevitable without further steps to contain the virus. How many, how big and where these outbreaks occur depends on what we do – or do not do – to protect ourselves from infection and rapidly detect new flare ups. Our solutions must be more aggressive if we are going to prevail against this pandemic.

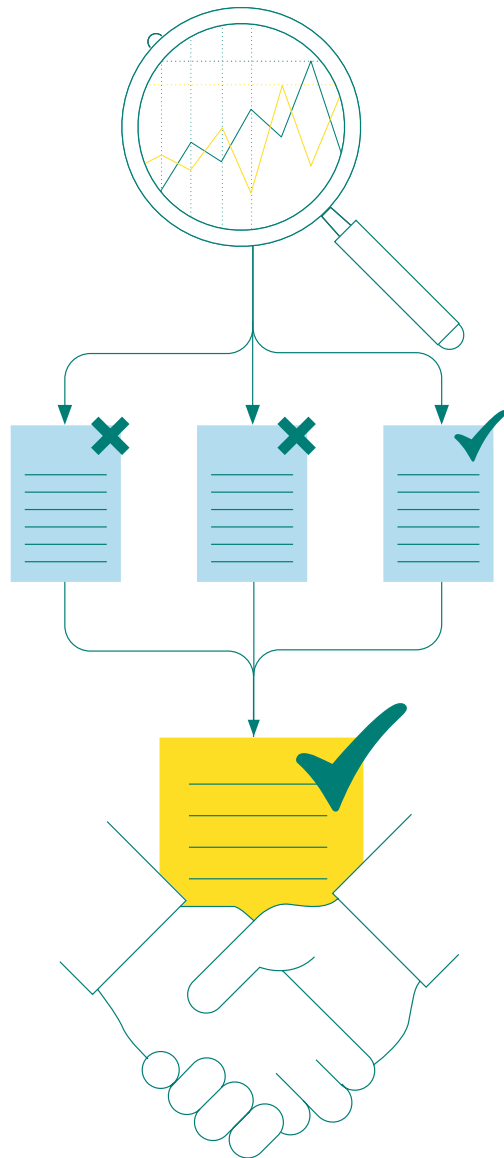
Widespread testing to detect asymptomatic individuals¹¹ is crucial. This sort of mass screening enables early detection and rapid response to both individual cases and local outbreaks. The virus is already doing widespread damage if the first sign of trouble is an overflowing emergency room or a third of a warehouse's or meat packer's workforce out sick with coronavirus.



Implementing large-scale screening will require national commitment and resolve, as well as substantial added funding. The federal government should invoke the Defense Production Act or some similar authority to speed production. We will also need at least \$75 billion in additional funding to pay for the ramped-up testing. Implementation will require a standard set of protocols, a delineation of use cases for specific testing settings, and viral tests appropriate to the large variety of different screening programs.

11 In this report the term “asymptomatic” is used to refer any individual who does not have symptoms or show signs of Covid-19 infection at the time of testing. This includes individuals who have not become infected with Covid-19, individuals who have become infected but will show symptoms during the course of their infections, and “pre-symptomatic” individuals who are infected and will eventually experience Covid-19 symptoms.

A Risk-Based Approach to Protocols for Workplace and Community Testing



Mitigation measures like masking, distancing, and monitoring for symptoms help but have not been able to fully contain the spread of the disease in the US, particularly among essential workers and vulnerable populations. Timely testing of people with symptoms and close contacts is a key part of the containment strategy. Laboratory (PCR) tests are the gold standard for determining whether people with symptoms that could be Covid-19 have been infected with the virus, which triggers the need for continued isolation and contact tracing. Because close contacts are also at high risk of infection, timely laboratory testing is needed for these individuals as well.

In addition, significant Covid-19 spread has occurred through people with no or minimal symptoms; actual cases are estimated to be ten times higher than reported cases, and the virus is increasingly present in communities across the nation. Consequently, screening tests among people who are asymptomatic can help detect cases and contain the spread of the pandemic in workplaces, schools, and communities. For screening, point-of-care tests like antigen tests are needed, potentially along with pooled laboratory tests, to provide much greater testing capacity, speed, and convenience than can be achieved through laboratory testing alone. To date, there has been limited guidance on how to accomplish this in a risk-based way that balances accuracy, timing, and costs. Consequently, there is little guidance available on how to implement

an effective screening test strategy in diverse contexts around the country and considering the limits of laboratory testing and the changing threat of the virus.

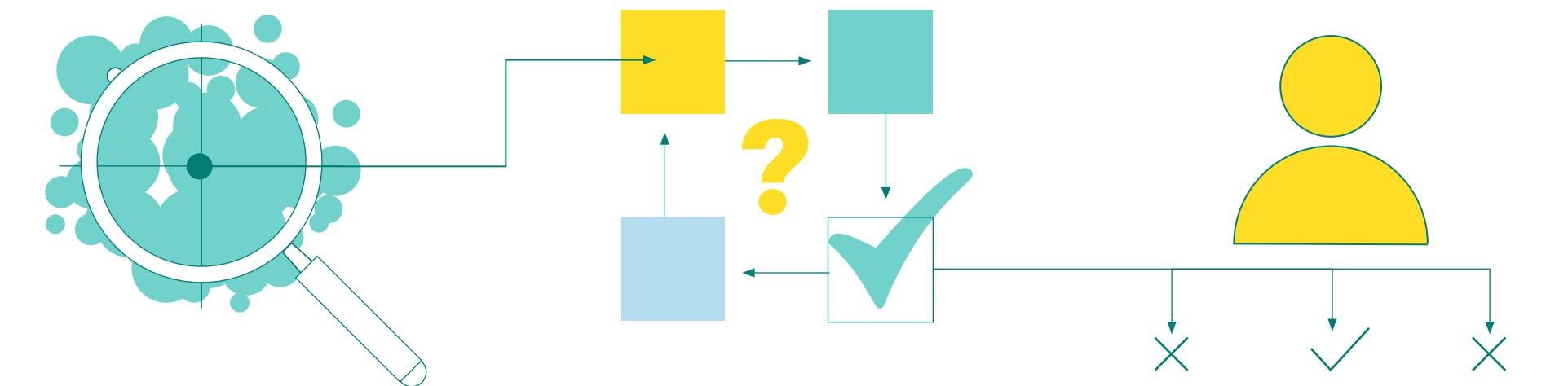
A standardized set of protocols for testing is needed to guide employers, schools, and other institutions as they reopen. Five months into the pandemic, the U.S. has not yet developed specific enough guidelines that states and municipalities might emulate. This is also the case for large-scale employers, public service workers, schools, leading colleges and universities, nursing homes, and other at-risk settings.

In the absence of such guidance, large organizations are moving ahead with a dizzying array of different reopening protocols, some of which emphasize frequent testing, but many others that don't. Uniformity of standards is impossible, but a data-driven set of risk-based protocols would greatly assist administrators and managers establish practices to spot potential outbreaks and keep organizations open.

Protocols are needed to use available tests effectively in a wide range of employment, school and community settings. The protocols should be easy to understand and implement. They should reflect evidence-based risk assessments of the characteristics of that setting, the capabilities of available tests, and the actions required based on the tests. They should allow customization and should be

updated as newer tests come onto the market and relevant evidence on disease transmission becomes available. Public policy should work to support these initiatives, including financial and technical support, particularly at the local level as hotspots develop.

- PROTOCOLS SHOULD CONSIDER THE FOLLOWING:**
- Risk level of the setting (high, medium, low) to set a transmission reduction goal
 - Testing strategies to accomplish transmission reduction goals
 - Processes for acting on the testing results



RISK ASSESSMENT

- Likelihood of infection
- Likelihood of onward transmission
- Consequences of transmission

TESTING STRATEGY

- Test Choice
 - > Accuracy
 - > Convenience
 - > Time to results
 - > Cost
- Who and how often to test
- Advanced strategies

ACTIONABLE RESULTS

- Confirmation
- Individual response
- Environmental response
- Public health notification

Risk Assessment

Symptomatic individuals or people who have been in close contact with a person that has tested positive should always follow CDC guidance to isolate until they have been tested with a highly reliable test and been confirmed negative. For asymptomatic screening, risks should be assessed over categories of people and workflows in a workplace, school, community, or other setting, as shown in Figure 1. This includes considering the risk of infection in those coming in and out of the setting, which in turn depends on the risk level in their communities. It also includes the risk of transmission of the virus given the mitigation steps that are feasible and the severity of consequences of infection transmission in that setting. More intensive testing will generally be optimal in settings that are high-risk; some testing in settings that are medium risk; and no testing in settings that are low risk.

Testing Strategy

The goal of a testing strategy is to identify infected individuals to reduce onward transmission. Any strategy should include a choice of a test or tests, and how to use them. Key factors in test choice include accuracy of the test and the time it takes to get the results, as Figure 2 illustrates, as well as cost and feasibility.

While clinical laboratory tests (rtRNA-PCR) are most accurate, they take time to send out and for the laboratories to run, and the clinical laboratory capacity available is far short of that needed to support large-scale testing, although pooled laboratory testing may be an option in some settings if sufficient capacity is available. Some emerging laboratory tests, for example based on CRISPR technology, may provide a broader option for screening tests in the months ahead in settings that can support rapid access to these laboratory tests, will affect how fast an individual and their contacts are isolated from the rest of the population. While less sensitive (that is, they miss some cases), point-of-care tests have the advantage of convenience, speed, and potentially cost so support large-scale and timely testing. With broader use and faster time to results, this can lead to earlier detection and better containment¹² of outbreaks.

Actionable Results

Protocols should also address how to support individuals during testing and how to act on results. Testing strategies that use less accurate tests may need to confirm positive results with repeat testing or a more accurate test. Procedures will also need to be in place to alert public health authorities about confirmed cases, with mechanisms for notification and testing of close contacts. Supports may be required to help people quarantine until confirmatory test results are received, and to isolate if they are infected. Communication and trust are critical: protocols should be designed to be respectful and supportive of individual concerns and should be clear about why the actions based on the test are important, to maintain engagement in implementing the protocols effectively. This includes clear communication about isolation, cleaning and other mitigation procedures that are implemented when cases are detected.

¹² <https://www.medrxiv.org/content/10.1101/2020.06.22.20136309v2>

Advancing the Use of Effective Testing Protocols

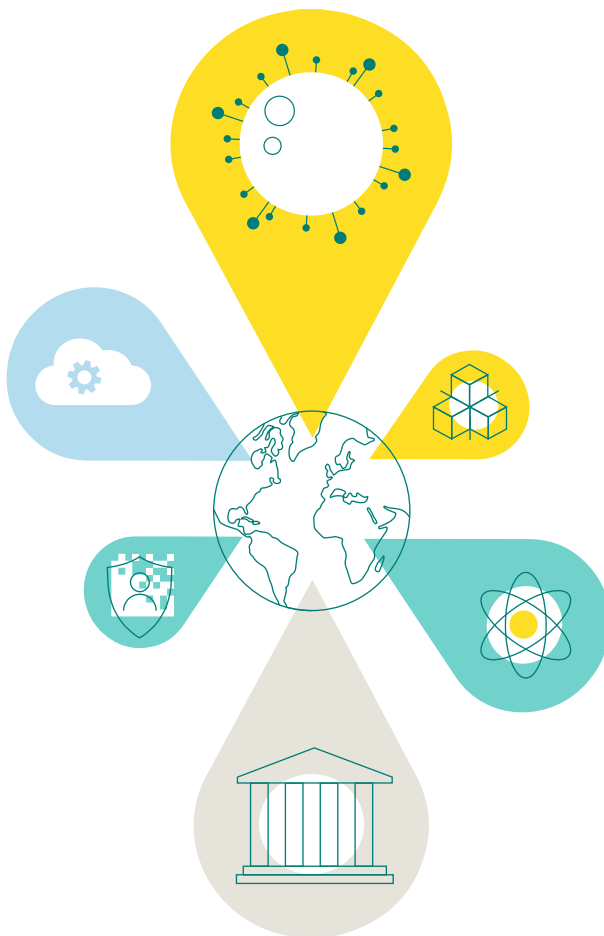
The Rockefeller Foundation is committed to **advancing the use of effective testing protocols**, including by increasing awareness, sharing, and collaboration on protocols in use and in development. To connect employers around the globe as they grapple with the virus, The Rockefeller Foundation is partnering with Arizona State University and the World Economic Forum to launch Covid-19 Workplace Commons, an interactive website that will 1) enable employer networking within and across industries around the globe and 2) support the implementation of best practices in testing for workplace reopening. The website will include an interactive back-to-work data dashboard that employers, policy makers and the public can use to learn about the types of testing and other safety protocols employers are using to reopen and where these strategies are being deployed. The back-to-work data dashboard will be populated with data from a global employer survey, administered to over 10,000 employers at multiple timepoints over the coming year.

Working with its Testing Strategy Group, the Duke-Margolis Center for Health Policy, and other expert advisors and partners, the Rockefeller Foundation will also support awareness and development of protocols in high-need areas from the standpoint of

the Federal, state, and local governments, where employer action alone is likely to be insufficient. Early priority areas for protocol development include higher-risk and vulnerable communities, nursing homes, and public schools.

Especially in areas where Covid-19 has been prevalent and the risk of transmission and health consequences are high, **communities need effective testing protocols** to quickly detect where outbreaks are emerging, with special strategies to work with high-risk populations. This includes those living in low-income groups, small multigenerational housing, and neighborhoods with many essential workers. This also includes communities of color as death rates among Black and Hispanic/Latino people are much higher than for white people across all age categories. Typical settings for community testing centers include shelters, housing complex, churches, community centers, and firehouses. Such testing protocols should be fully aligned with civil liberties, due process, non-discrimination, data and health privacy protections, and health ethics.

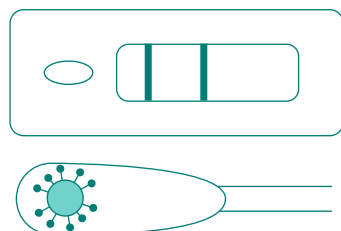
Public agencies and community outreach groups are already using innovative strategies and key partnerships to improve testing for high risk communities. Dr. Jennifer Avegno Director of the New Orleans Health Department and the Community Organized Relief Effort (CORE) are focusing on



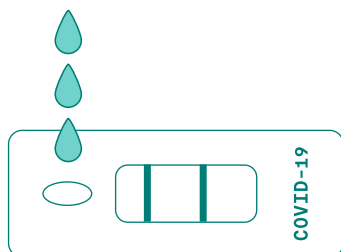
PCR



ANTIGEN



ANTIBODY



hyper-mobile pop-up testing.¹³ Their approach is designed to meet people where they are and reduce barriers to access particularly for people of color, low-income, first responders, and essential workers. Dr. Jill Jim, Executive Director of the Navajo Department of Health, and Dr. Laura Hammitt, Director of Infectious Disease Prevention Programs, at the at the Johns Hopkins Center for American Indian Health, with support from CORE, are increasing testing and contract tracing efforts linked to wrap-around services needed during isolation for the Navajo population as they wait for testing results or if they are confirmed to be infected.¹⁴ Eric Garcetti, Mayor of Los Angeles, the LA Fire Department, CORE, and other collaborators are scaling large testing sites and maximizing testing capacity for the diverse Los Angeles population, and are developing plans for access to testing of asymptomatic individuals in high-risk neighborhoods.¹⁵

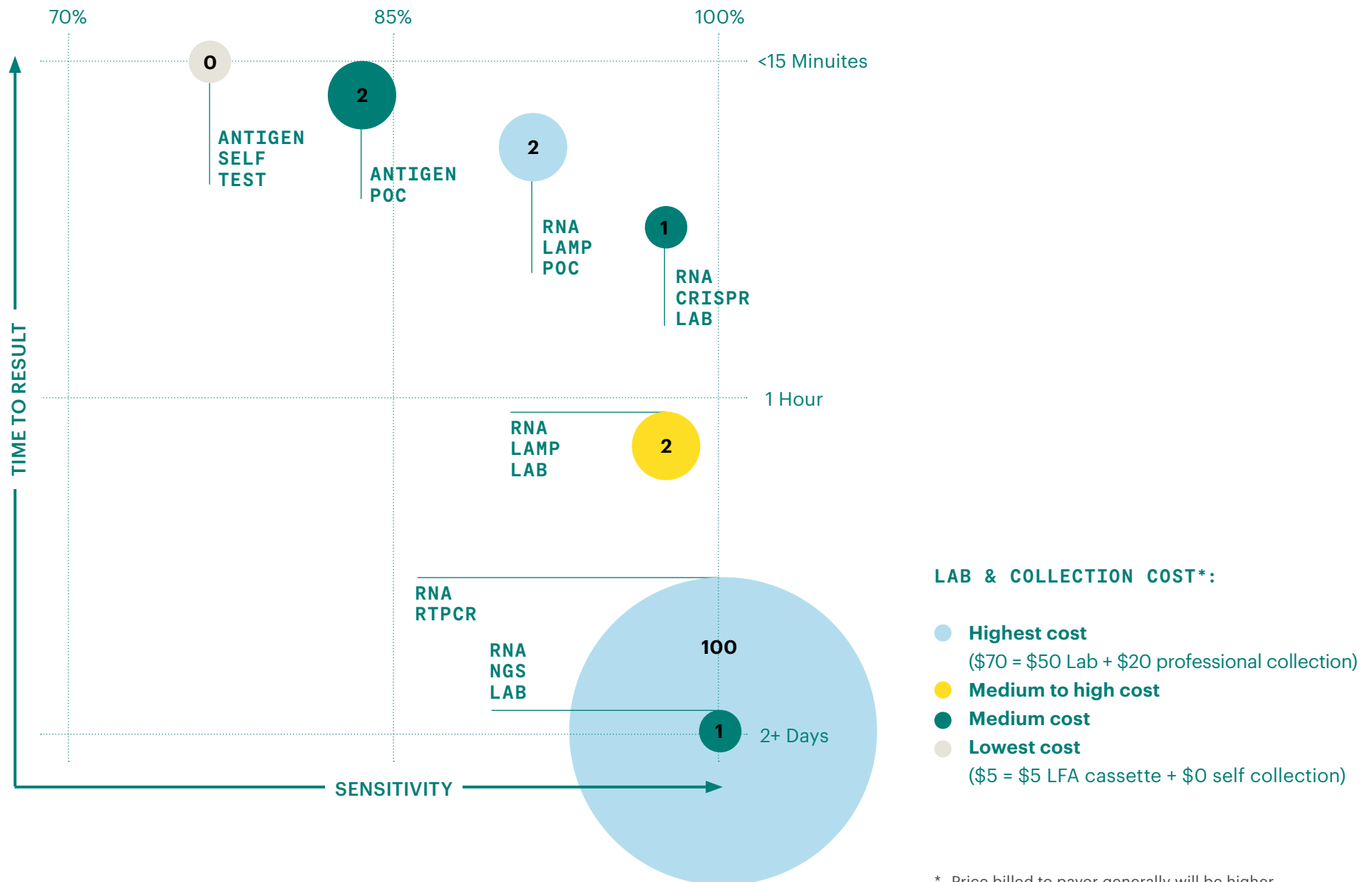
The impact of the pandemic in skilled nursing facilities demonstrates that nursing homes need effective testing protocols. Under 1% of the adult population lives in a skilled nursing facility over 40% of deaths in the United States through June 2020 have been linked to these settings.¹⁶ These vulnerable populations are served by staff that systemically face disproportionate risks in their communities. While there is clear agreement that ongoing testing is needed as an integral part of mitigation strategies for skilled nursing facilities, there is less clarity on what testing should be

undertaken and how it can be implemented effectively. CDC recommends one-time “baseline” laboratory testing of all nursing home residents, and CMS has further “strongly recommended” weekly testing for staff, plus testing of symptomatic workers and residents, and close contacts of cases. Additional testing of asymptomatic individuals may not only help facilities detect and contain outbreaks earlier, but also could support at least limited relaxation of the “no visitor” policies that are challenging for families and the well-being of residents. However, such laboratory testing is very costly and thus hard to sustain for facilities that rely substantially on public funding for their low-income residents, and the large number of laboratory tests required for nursing home screening has strained testing capacity and contributed to overall testing delays.

As a result of these challenges, there is substantial variation in testing protocols among the states. New York state guidelines feature stronger testing requirements: biweekly testing of all residents, staff, and others in contact with residents twice per week. Nursing facilities have a range of options to comply, including referring workers to local or state-sponsored testing sites or to contract with a third party. Workers who test positive must isolate for two weeks and are entitled to paid sick leave. Nursing facilities that do not comply can be fined up to \$2000 per day. The state of North Carolina, supported by CVS Health, has begun testing all residents and

- 13 <https://ready.nola.gov/incident/coronavirus/city-partners-with-core-on-mobile-testing-site-in/>
- 14 <https://www.jhsph.edu/Covid-19/articles/partners-in-fighting-coronavirus-among-native-americans.html>
- 15 <https://www.businessinsider.com/sean-penn-nonprofit-core-provides-coronavirus-testing-in-los-angeles-2020-4>
- 16 <https://www.nytimes.com/interactive/2020/us/coronavirus-nursing-homes.html>

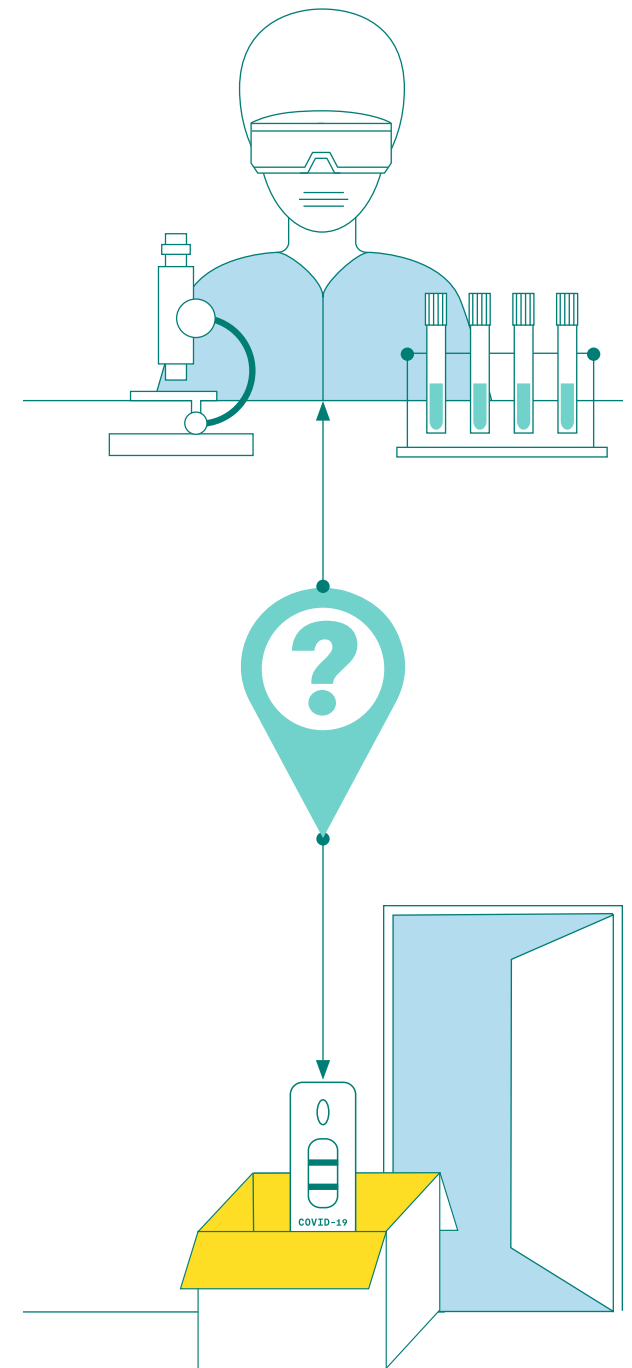
Performance and cost characteristics: 108 Emergency Use Approved (EUA) viral RNA and Antigen tests



staff, and is developing strategies for ongoing testing. NCDHHS will also act as payer of last resort for all screening tests for those without symptoms, removing a key barrier to such testing. This baseline testing is in addition to screening tests in facilities where there is at least one confirmed case of Covid. Rhode Island has also prioritized testing all residents and staff at all nursing homes in the state. Samples from residents were collected on site while staff were sampled off-site. Nursing homes with active infections have been tested more frequently. Testing is occurring every four to seven days to minimize the possibility that pre-symptomatic and asymptomatic individuals can infect other individuals.

Finally, effective testing protocols to support schools have not been developed, even as reopening dates approach and decisions about whether and how to reopen schools are generating controversy and concern. Teachers, students, parents, and policymakers want reopening to occur not only because of the critical importance of education, but also because of the support that schools provide beyond classes, and the impact of school closure on work. At the same time, they are understandably concerned about the potential for undetected spread in schools, which could significantly worsen existing epidemic growth around the country and lead to school re-closing and even more disruption. Most children with Covid-19 have asymptomatic or mild

infections, and while evidence is limited on the extent to which children without symptoms spread the virus, the school environment creates significant opportunities for spread. Thus, especially in communities where Covid-19 is prevalent, schools are potentially at high risk for experiencing significant clusters of cases before detection occurs based on symptoms. Timely testing of asymptomatic or minimally staff and students could address these potentially large risks and help provide much-needed evidence to guide further protocol development. But there are significant operational and cost challenges to implementing testing in the school setting, and as a result, the CDC's general guidance on school reopening recommends against universal screening of all students. Given the high stakes of sustainable school reopening, The Rockefeller Foundation is prioritizing collaborations with leaders in education to address the role of testing in enabling safer and more confident reopening.



**MOST COUNTRIES THAT HAVE
SUPPRESSED THE DISEASE AND ARE
REOPENING SCHOOLS HAVE INSTITUTED
SCHOOL PROTOCOLS THAT INCLUDE:**

Reducing class size and increasing the
physical distance between students in
defined groups

Staggered starts, stop, and
break times within the school

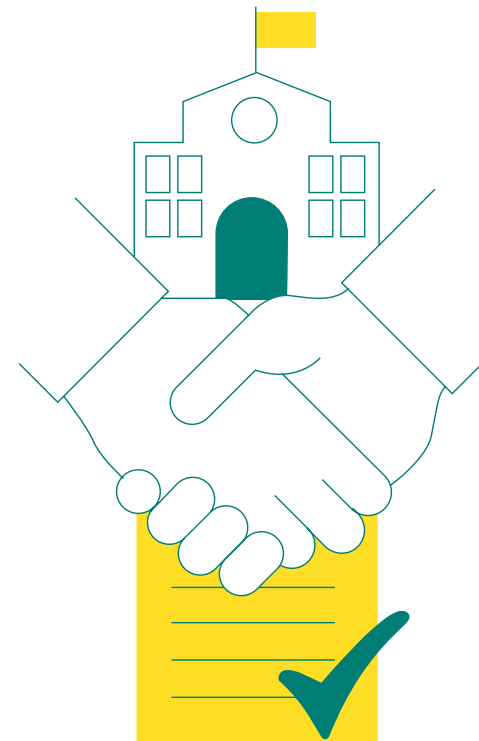
Opened more for younger versus older students

Required face masks for students and/or staff
in schools, with variability for lower ages

Implemented systemic school-based
testing at some level

**Protocols for schools, nursing homes,
and vulnerable groups.**

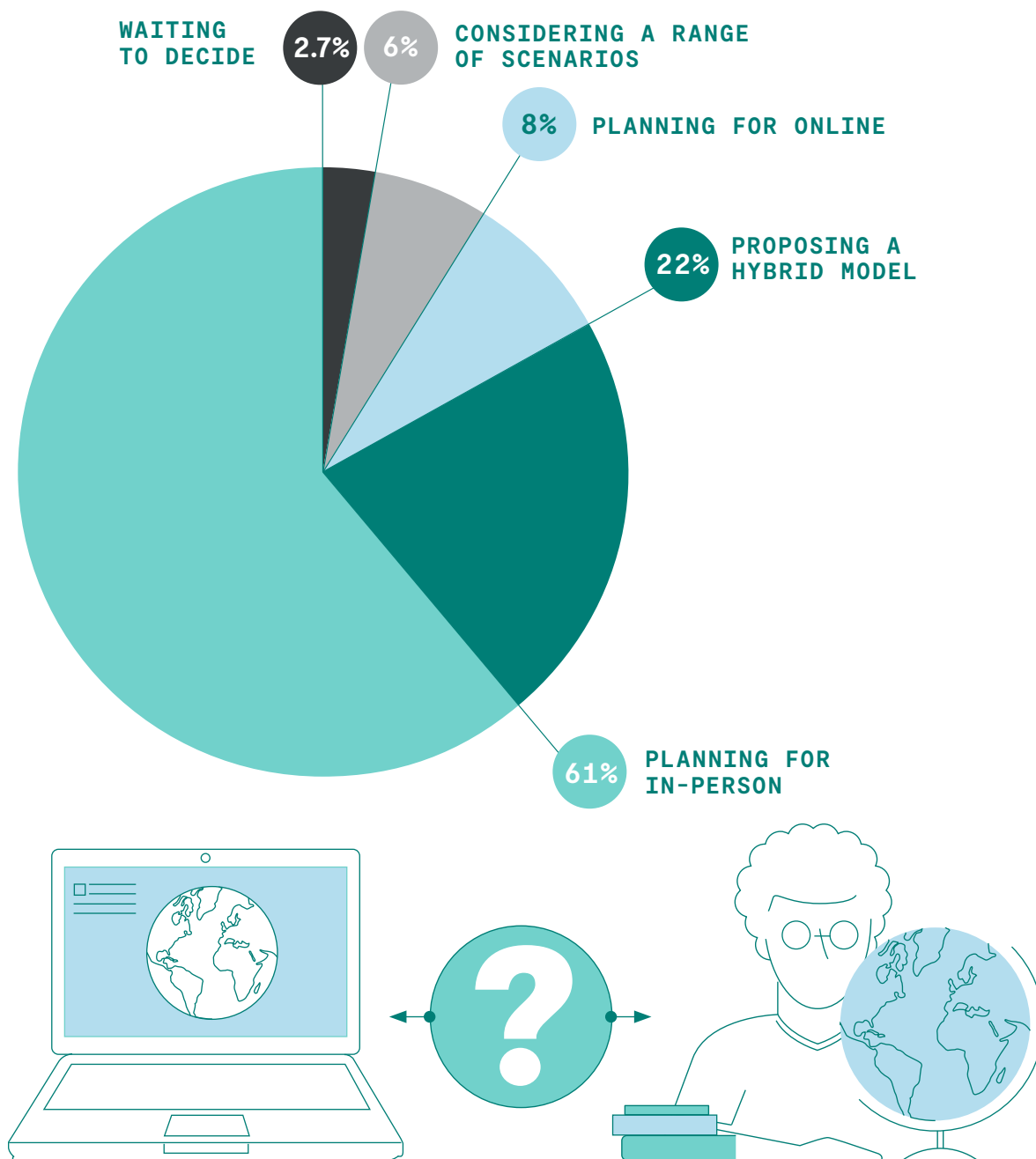
The Rockefeller Foundation is co-developing and supporting the implementation of data driven risk-based protocols on who to test, with what frequency, under what conditions, and with what type of test. While these protocols are under development, and in lieu of other guidance, we recommend the following interim measures. For nursing homes, we endorse the CMS recommendation, including one-time “baseline” testing of all nursing home residents as well as weekly screening tests for staff and workers, including employees, contract staff, medical staff, operators and administrators. We suggest PCR-based diagnostic testing for symptomatic individuals and, particularly if timely PCR testing capacity is limited, screening tests using pooled PCR tests or FDA-approved antigen tests for asymptomatic individuals. For K-12, we suggest at a minimum schools require students and staff to get tested as soon as possible after they develop one or more Covid-19 symptoms or if one of their household members or non-household close contacts tested positive for Covid-19. Additional guidance is in development. These testing approaches should be paired with isolation and quarantine.



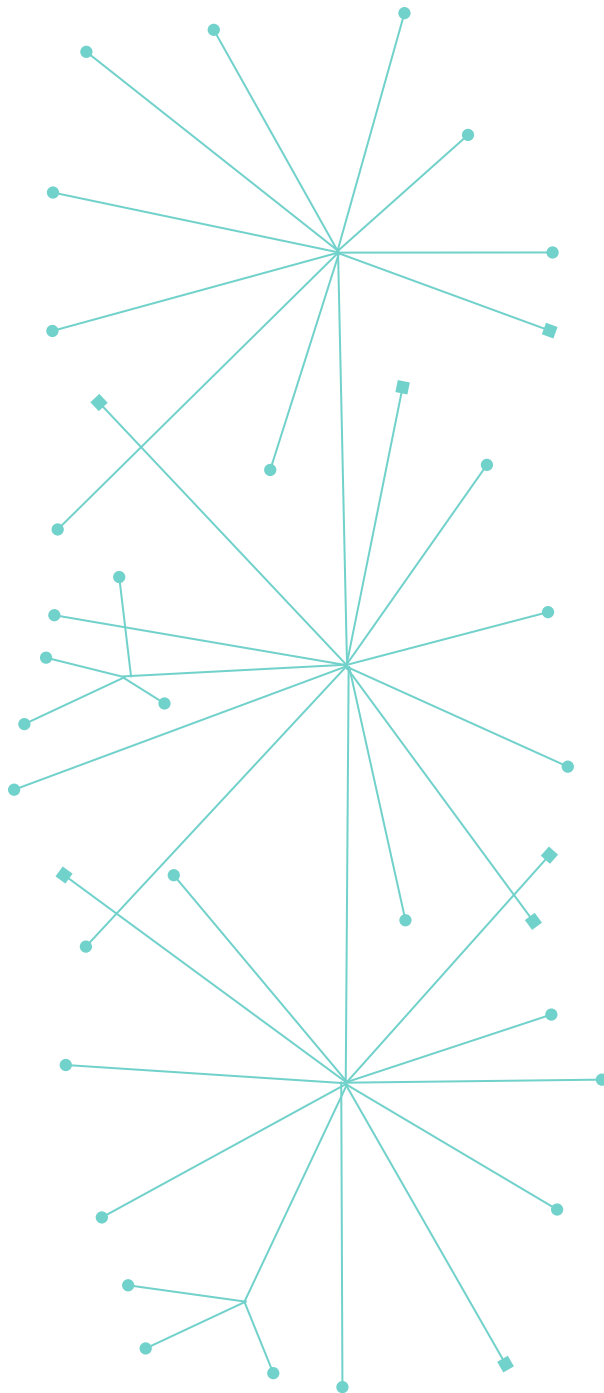
What colleges are doing

By September, some 20 million college students will either return to campus or be ready for another term of distance learning. As of early July, the vast majority of higher-ed institutes – just over 60% – are planning to resume with in-person classes, with another 22% using a hybrid course model in which students can either take courses in person or online.¹⁷

Schools sticking with in-person classes are implementing detailed plans with the standard social distancing, wearing of masks, etc., combined with various apps that can track symptoms. But many also plan to rely on a robust testing and contact tracing network on campus. Ambitious plans have been set forth by institutions such as **Purdue University, Notre Dame University, Indiana University, University of Florida, University of Texas at Austin** and **Boston University**. All are calling for a comprehensive testing and tracing system to protect students and faculty. These systems will screen students upon their return and offer continual Covid-19 testing throughout the semester to guard against outbreaks. These schools, however, remain the outlier rather than the norm. Many other institutions appear reluctant to engage in large-scale testing due to cost concerns. Further, these schools might not be prepared for the significant number of positive student cases they may encounter at the outset of the semester.



17 https://www.chronicle.com/article/Here-s-a-List-of-Colleges-/248626?cid=wcontentgrid_hp_1b



What Companies Are Doing

Delta Air Lines

Plans to test employees for active Covid-19 and antibodies in partnership with the Mayo Clinic and Quest Diagnostics. Will phase to cover all employees over time.

Amazon

Will begin with a self-administered pilot testing program with an aim of testing all employees every two weeks. Plans to spend \$4 billion on Covid-19 -related expenses, including developing its own diagnostic labs.

Apple

Mandating temperate checks and providing optional nasal-swab tests to its employees.

Walmart

Considering diagnostic and antibody testing for its employees.

General Motors

Any employee who shows symptoms of Covid-19 at work will get a nose swab, which will then be sent to a nearby medial lab for rapid processing.

UnitedHealth Group & Microsoft

Both companies are utilizing a coronavirus screening app, dubbed ProtectWell, with a daily symptom screener to clear employees to return to work or direct them to be tested for the virus.

Smithfield Foods Inc.

Offers free tests to all of its workers on a continuing, voluntary basis

10X Genomics Inc.

Administering weekly diagnostic tests for about 180 research, manufacturing, and other employees. They self-report results, which arrive two to three days later.

Wynn Resorts

Partnering with University Medical Center of Southern Nevada to provide free testing to all its Las Vegas employees, either at the work-place or a designated hospital

Risk-based protocols need fast and affordable tests to prevail against Covid-19

The development and deployment of **simpler tests** for employers, healthcare providers, schools, at-risk settings like nursing homes, hard-hit communities of color.

The tests needed for mass screening must be:



RAPID

For screening testing to work effectively in many situations, the speed of reporting, or turnaround time, may be more important than sensitivity. Faster turnaround time means positive individuals can be removed immediately from a setting where transmission to others may occur. Thus, results should ideally be returned within 60 minutes but certainly within 12- 24 hours, for schools and workplaces, and 30-60 minutes for mobile testing in communities.



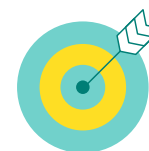
APPROPRIATE

Rapid results mean earlier isolation, less spread while awaiting results, reduction in positive cases lost to follow-up and enable on-the-spot counseling and contact tracing interviews.



CONVENIENT

Easily administered and analyzed outside of a clinical setting using a self-administered nasal swab, toaster-sized analytic device, saliva, breathalyzer-type devices, antigen test strips, or other collection and analytic systems.



ACCURATE

Medium (>70%) sensitivity with frequent testing (at least weekly)



AFFORDABLE

Less than \$5 to \$10 per test.



The development of clear evidence on existing tests and tests imminently coming to market to enable employers, school leaders, policymakers and others to make informed decisions about screening tests in asymptomatic populations, to help contain and avoid outbreaks.

We need a paradigm shift that differentiates screening testing from diagnostic testing. Screening testing of large swaths of the asymptomatic population should be viewed with a pandemic-control lens, rather than a clinical healthcare lens. Clinical diagnostic testing is focused on the appropriate diagnosis and treatment for a specific presenting individual. Today, the best of these tests are highly accurate rtPCR based with sensitivity of more than 98%. They are performed mostly in a laboratory setting and may take two days or more for results. Symptomatic patients are expected to isolate pending test results so that delay in test results does not lead to more infections.

Key Principles and Considerations for Effective Asymptomatic Screening Strategies

To best reduce transmission, screening testing must value speed over sensitivity and be conducted frequently. Achieving high frequency of testing requires a massive increase in test availability, ease of administration, and a significant decrease in per test costs. If this model holds up, then we need to re-think the

FDA sensitivity requirements for approved screening tests, making sure the perfect is not the enemy of the good.

For viruses like SARS-CoV-2, speed of reporting has proven more significant than very high sensitivity in reducing spread – though both are important.¹⁸ For Covid-19, the two days before and after symptoms appear are the days of peak infectivity. Individuals often do not self-quarantine unless symptoms become severe. The three to five-day turn-arounds often experienced with rtPCR testing means that results arrive after most of the infectivity period has passed.

Point of care (POC) or point of services (POS) tests suitable for large-scale screening are beginning to come onto the market. New tests and collection methods often meet initial skepticism, as did saliva testing. Saliva was an unconventional but desirable alternate to the dreaded nasopharyngeal swab. Initially considered unreliable, the saliva test is showing increased reliability and may be superior to the nasal swab, especially in the early stages of the disease.¹⁹ As more saliva tests are developed and validated, it may be an ideal test for hospitality and other settings where non-invasive DIY tests are needed.

¹⁸ <https://www.medrxiv.org/content/10.1101/2020.06.22.20136309v2>

¹⁹ <https://www.sciencedirect.com/science/article/pii/S0163445320302139>

What got us to 3 million won't get us to 30 million tests per week

Endorsement of asymptomatic screening testing by public health officials, insurers and healthcare providers, along with more rapid FDA authorization of the needed tests, will be vital to encourage their development, to secure reimbursement for screening tests, and to protect schools, employers, and other organizations from potential legal concerns. This includes clear regulatory pathways to authorize such screening tests during the public health emergency, and reliable mechanisms for payment for appropriate testing, through employers, health insurers, or government subsidies for priority populations.

Testing capacity has more than tripled since the nationwide clamor for testing in late April. Walk-in, drive-through, and mobile testing facilities are becoming increasingly common across the country. Increased federal funding, action by many states to increase testing, and ramped up production by established diagnostics manufacturers have all contributed to substantial increases in testing.

That's the good news. Remember when the nation doubted whether we could go from one million a week to two or three times that level? We accomplished that goal, but we now must turn to the next critical threshold. Test sample collection has also progressed, with many tests now collecting samples in easier ways, including saliva-based tests and more easily administered nasal swabs.

Despite this progress, the U.S. is far from being on track to reach the 30 million-plus tests it needs by fall. Shortages in test kits, reagents and collective devices continue in many areas. The average cost of a test is too expensive – still around \$100 apiece. Results can still take days to come in. The tests remain uncomfortable, and inconvenient.

Resolving the crisis in lab-based diagnostic testing capacity of manufacturers now appears to outstrip the capacity of labs to process the tests. The combined capacity of manufacturers of diagnostic platforms, test kits, and reagents is estimated at well over 50 million Covid-19 diagnostic tests per week.²⁰ Based on Department of Health and Human services estimates, however, the combined capacity of commercial reference labs, public health labs, hospital and academic labs, and point-of-care (e.g., CVS, Walgreens) to process or administer Covid-19 tests is believed to be around 7.5 million tests per week.²¹ Pooled or batch testing²² can enable commercial, hospitals and university labs to increase their testing capacity. But the vast majority of current tests, nearly 90%, remain lab-based at a time when the market is expected to swing heavily toward on-site point-of-care and at-home testing.

20 Based on HHS May 26th Report to Congress, <https://www.democrats.senate.gov/imo/media/doc/COVID%20National%20Diagnostics%20Strategy%2005%2024%202020%20v%20FINAL.pdf> (assumes 100% utilization of diagnostic platforms for COVID tests, includes EUA commercially authorized diagnostic tests only, and publicly available information provided by Deloitte.)

21 Estimated from HHS May 26th Report to Congress, <https://www.democrats.senate.gov/imo/media/doc/COVID%20National%20Diagnostics%20Strategy%2005%2024%202020%20v%20FINAL.pdf>, CDC, and independent resources provided by Deloitte.

22 http://ctbergstrom.com/publications/pdfs/2020CHE_full.pdf

Pooled testing is critical because it can help us increase our testing capacity by a factor of at least 10.²³ To get this return on investment, we need expert validated guidance on how to conduct pooled testing and guarantees that it will be reimbursed. But pooled testing won't help us achieve suppression, or even mitigation targets, if we don't have enough supplies to collect samples and enough lab capacity to process test results. Testing bottlenecks across the testing lifecycle, from an individual's decision to get tested to lab processing and reporting, are sabotaging our containment efforts.

Urgent collective action is needed to unstick these bottlenecks and scale testing. We call on the federal government to immediately invoke the Defense Production Act to secure necessary supplies for reagents and equipment that labs need to process samples. Reagents are one of the major sticking points in the supply chain. Machines that collect and process samples are also breaking down; they were never designed to run 24/7 and once parts break, we often need to order them from overseas. To address this shortfall and prepare for the next public health crisis, we call for significant investments to enable dramatic increases in U.S.-based manufacturing of reagents for coronavirus test kits and related testing equipment. To guide these investments, we call for the establishment of an emergency lab optimization working group. These collective of industry leaders and subject matter

experts can help us determine how much testing capacity we actually have and identify the levers that we can pull to increase this capacity.

Federal administrators overseeing the distribution of testing and lab supplies need to work with state governments, labs and industry leaders to: ensure that the distribution of supplies is equitable and timely; address shortages in the materials, reagents and consumables needed to collect and process tests; and optimize labs by ensuring timely access to instruments that enable high throughput so the most samples can be processed at the fastest rate possible. These groups also need to ensure that labs are staffed with adequate personnel with experience levels that match the complexity of the systems in which they work. Collectively these changes will increase test-seeking behavior, increase timely processing and reporting, trigger isolation and tracing sooner, and stop the outbreak faster.

23 http://ctbergstrom.com/publications/pdfs/2020CHE_full.pdf

24 www.healthcatalysts.com

Developing and deploying rapid screening tests

Fortunately, convenient, rapid, appropriate, accurate, and affordable tests are on the horizon. For example, there are more than a dozen promising antigen tests in development that will provide results in 30 minutes or less. The good news is that we are in the midst of an unprecedented boom in companies around the world scrambling to design the best test for Covid-19. Worldwide there are now more than 1400 Covid-19 viral and antibody tests are on the market or in development.²⁴ But testing innovations are being developed and deployed at unprecedented rates. This speed, in combination with a lack of coordination across industry, government, and geography, often means a lack of robust and real-time analysis to identify the most promising technologies. To identify and share promising innovations sooner and with more stakeholders, The Rockefeller Foundation is supporting Arizona State University and the Health Catalysts Group to launch a bi-weekly newsletter, "Testing Technology Trends" that will provide analysis of testing innovations in the pipeline. We must work together with these developers in public-private partnerships, backed by significant funding, similar to what the U.S. has done with therapeutic and vaccine developers.

Screening Tests Currently Available and Examples of Tests in Development

Cost estimates are approximate:

LOW = \$5-10

MEDIUM = \$10-40

HIGH = \$40+

Based on cost lab. Does not include collection cost. Price billed to payor generally will be higher. For tests in the U.S. market, estimated cost is the Medicare reimbursement rate.

TEST NAME	POINT-OF-CARE OR CONSUMER DIY	TIME TO RESULT (MINUTES)	SENSITIVITY CLAIMED	ESTIMATED COST	PRODUCTION CAPACITY (TESTS/MONTH)
Currently available on the U.S. Market					
Cue Covid-19	POC	25	75-100%	\$51 ²⁵	Unknown ²⁶
Abbott ID Now	POC	25	75-100%	\$51 ²⁷	1.4-2M ^{28, 29}
BD Veritor Plus	POC	15	80-85%	\$100 ³⁰	8M ³¹
Quidel Sofia 2	POC	15	80-85%	\$100 ³²	6M ³³
Currently approved for use outside the U.S.					
Liming Bio-Products StrongStep SARS-CoV-2 Antigen Rapid Test Midstream	Consumer DIY	15	73%	Low	
SD BIOSENSOR STANDARD Q Covid-19 Ag	POC	15-30	"Higher than 84%"	Medium	
RapiGEN BIOCREDIT Covid-19 Ag	POC	5-8	TBD	Medium	
Kewei Covid-19 Antigen Rapid Test Kit (Fluorescence)	POC	15	85%	Medium	
Coris BioConcept Covid-19 Ag Respi-Strip	POC	15	60%	Low	
SD BIOSENSOR STANDARD F Covid-19 Ag	POC	30	84%	Medium	
Bioeasy 2019-nCoV Fluorescence Antigen Rapid Test	POC	10	TBD	Medium	

TEST NAME	POINT-OF-CARE OR CONSUMER DIY	TIME TO RESULT (MINUTES)	SENSITIVITY CLAIMED	ESTIMATED COST	PRODUCTION CAPACITY (TESTS/MONTH)
In Development					
Pinpoint Science	POC	15 (est.)	TBD	Medium	
Hememix Biotechnologies	Consumer DIY	15 (est.)	TBD	Medium	
Canary Health Technologies	Consumer DIY	5 (est.)	TBD	Low	
E25Bio	Consumer DIY	15 (est.)	TBD	Low	
Sona Nanotech	POC	15 (est.)	96%	Low	
Luminostics	Consumer DIY	5–30	TBD	Low	
Nanomix	Consumer DIY	10	TBD	Low	
Assure Tech Covid-19 Antigen Rapid Test Device	Consumer DIY	15	“High”	Low	
Leadgene® SARS/SARS-CoV-2 Antigen Rapid Test	Consumer DIY	15	TBD	Low	
Orasure Technologies OraQuick	Consumer DIY	20	TBD	Low	
Avacta/Cytiva (ex GE, now Danaher subsidiary)	Consumer DIY	15 (est.)	TBD	Low	
PCL Covid-19 Ag GICA Rapid	POC	10	100%	Medium	

25 <https://www.cms.gov/files/document/mac-Covid-19-test-pricing.pdf>

26 <https://www.cuehealth.com/news-listing/2020/6/9/cue-health-closes-100-million-series-c-financing-to-support-launch-of-rapid-molecular-testing-platform>

27 <https://www.cms.gov/files/document/mac-Covid-19-test-pricing.pdf>

28 <https://www.cuehealth.com/news-listing/2020/6/9/cue-health-closes-100-million-series-c-financing-to-support-launch-of-rapid-molecular-testing-platform>

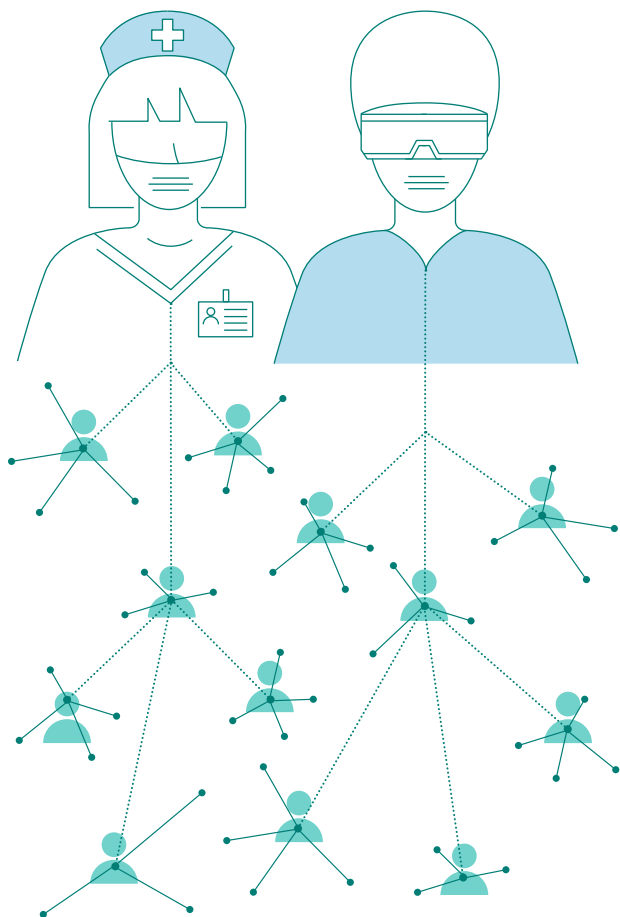
29 Company Financials, CrispIdeaAnalysis, June 2020

30 <https://www.cms.gov/files/document/cms-2020-01-r.pdf>

31 Equity Research, Healthcare, U.S. Medical Supplies & Devices (Rep.) (2000). England: Barclays Bank PLC

32 <https://www.cms.gov/files/document/cms-2020-01-r.pdf>

33 <https://www.cuehealth.com/news-listing/2020/6/9/cue-health-closes-100-million-series-c-financing-to-support-launch-of-rapid-molecular-testing-platform>



Several initiatives are underway to bring needed new and existing Covid-19 tests to market, at scale.

The Rockefeller Foundation-supported Covid-19 Testing Commons, under development by The ASU/ Health Catalysts Group, will help health services, state public health officials, educational institutions, employers, researchers and other buyers of Covid-19 tests make informed selections of Covid-19 viral and antibody tests. Users will be able to query tests according to 30+ parameters including, for example, test type (viral RNA, viral antigen, antibody), test technology (PCR, ELISA, LFA, NGS), specimen collected (saliva, nasal swab, blood), performance indicators (sensitivity, specificity, source data quality), FDA status, EUA date, and analysis location (e.g., self/lab)

The dashboard will be continuously updated with metrics on the 1,400+ (and growing) tests on market or in the pipeline. In lieu of a substantive vetting system, Covid-19 Testing Commons will enable consumers and the general public to shape the testing market by using performance indicators to inform procurement decisions.

The National Institutes of Health (NIH) Rapid Acceleration of Diagnostics (RADx) will bring to market accurate, fast, easy-to-use, and widely accessible Covid-19 testing to enable the nation to safely return to normal life. The goal is to make making millions of tests per week available in time for the 2020–2021 flu season for Americans, particularly those most vulnerable to or disproportionately impacted by Covid-19. The Access to Covid-19 Tools Accelerator (ACT-Accelerator), co-led by FIND and the Global Fund to Fight AIDS, Tuberculosis and Malaria, is working to bring to market two to three high-quality rapid tests, train healthcare professionals across 50 countries, and is establishing testing for millions of people in low- and middle-income countries.³⁴

34 https://www.finddx.org/wp-content/uploads/2020/05/ACT-A-Dx_Investment-Case_FINAL.pdf

Keeping our eyes on the fall

Testing, diagnosis, isolation and appropriate treatment of Covid-19 patients has proven challenging enough even when Covid-19 was the primary source of serious respiratory illness in most parts of the country. We have not seen the much-anticipated summer lull; in fact, we have seen a summer surge. Imagine the situation when the flu season hits in late October, November and through the winter, as it surely will, and our students and workforce are largely indoors. We don't know how the two diseases will interact. And we don't know whether it will be a mild flu season or a severe season as we had in 2017-2018. But we do know that the combination of the Covid-19 pandemic and flu season has the potential to be a perfect storm of two respiratory viruses that have overlapping symptoms, can cause severe illness and death, and together could overwhelm already stretched hospital staff and supplies.³⁵

The combination of millions of flu cases per month on top of hundreds of thousands of Covid-19 cases will create an enormous demand for rapid turnaround testing to separate influenza cases and appropriately isolate, treat, and identify the contacts of coronavirus patients.³⁶ In the record-setting 2017-2018 flu season, the U.S. experienced an estimated 45 million flu cases, 21 million outpatient visits, 810,000 hospitalizations, and 61,000 deaths.³⁷ The influenza vaccine reduces infection rates by 30 to 60 percent, so the annual flu epidemic is less severe in years when the vaccine is more effective and the virus is less aggressive.

Without an already established large-scale national effort for Covid-19 screening testing for asymptomatic individuals, the U.S. faces the very real prospect of recurrent outbreaks remaining hidden within the seasonal flu epidemic until they explode into overwhelming surges. The need for rapid turnaround times with specific tests that distinguish Covid-19 from influenza A and B are likely to become important tools for the differential diagnosis of Covid/flu-like symptoms, and will create a new demand on diagnostic testing in the fall and winter.

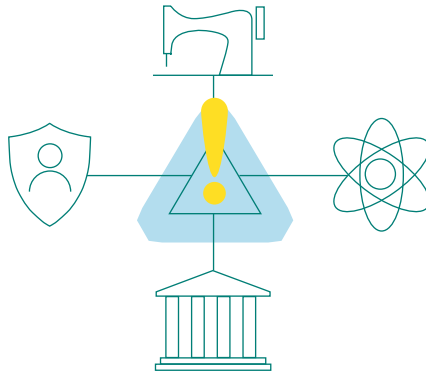
35 <https://science.sciencemag.org/content/sci/368/6496/1163.full.pdf>

36 As of early July, the USFDA had already issued three emergency use authorization (EUA) for combination diagnostics that detect and differentiate both Covid-19 and influenza.

37 <https://www.cdc.gov/flu/about/burden/>

ACTION STEPS

The Rockefeller Foundation is committed to the following urgently-needed actions to ramp up testing and tracing in the face of the accelerating pandemic and the potential for a combined Covid-19 and influenza season this fall:

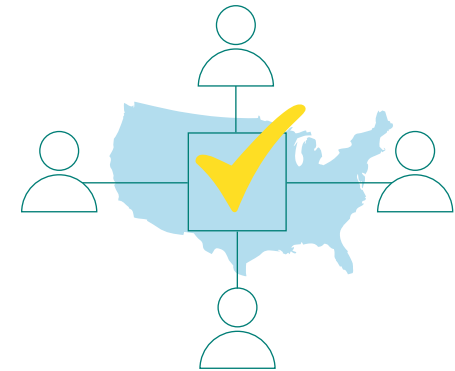


1.
Address the current crisis in lab-based diagnostic testing through urgent action by the federal and state governments, manufacturers, laboratories, and others.

Urgent, collective action is needed to break the existing testing “log jam” of tests so that results of diagnostics testing is reduced from the current 2+ days to less than 2 days nationwide.

The Federal government should throw its full weight behind expediting the production and distribution of diagnostic and screening tests, including, if necessary, through the Defense Production Act or other appropriate authorities.

Appropriation of the proposed \$75 billion in federal funds to cover testing costs through the fall as well as incentivize test development and production.



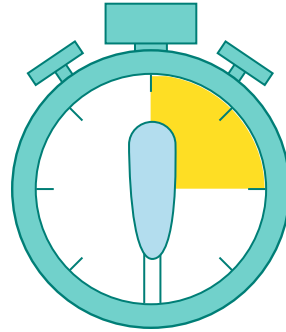
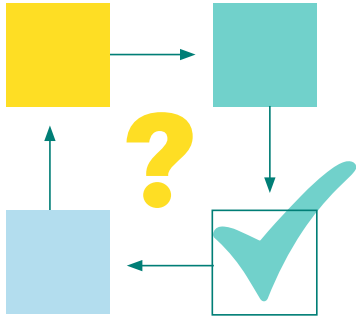
2.
Ensure diagnostic and screening testing is free and available to all Americans.

Public and private health insurance are already mandated to cover diagnostic testing, but action is required to cover protocol-based screening tests by employers along with further mandates for public and private insurance coverage.

We need an additional \$75 billion in federal funds to cover testing costs into next year as well as to incentivize test development and production.

The federal government should commit explicit aid to the communities of color worst hit by the contagion.

The benefits of the resulting reduction in illness, deaths, and economic disruption from preventable outbreaks will far outweigh the costs of widespread screening testing or the burden on labs to increase their turnaround times.



3.
Create and implement test protocols for widespread screening testing of asymptomatic people to keep our schools, workplaces and communities open.

Screening tests are essential to detect and rapidly contain local Covid-19 outbreaks.

We urge the CDC, in partnership with the public health community, to put forth risk-based specific protocols for screening tests for K-12 schools, universities, workplaces, nursing homes, vulnerable communities, and other settings based on their individual levels of risk and exposure.

National testing capacity should expand to at least 30 million tests a week by November, including at least 25 million screening tests and 5 million diagnostic tests a week.

4.
Support the development and deployment of appropriate, convenient, accurate, affordable and rapid antigen tests required for implementing screening test protocols.

Screening should be done with point-of-service/point-of-care tests costing \$5 to \$10 per test, with same-day turnaround for schools and workplaces, and even faster turnaround for mobile testing in communities. They should be easily collected via nasal swab, saliva, breathalyzer-type, or other convenient device. On-site analysis would greatly facilitate immediate counseling on self-isolation, contact tracing, and availability of supportive services.

We need an Operation Warp Speed-like program to supercharge the development process not just of vaccines but of the most promising antigen tests. The National Institutes of Health (NIH) Rapid Acceleration of Diagnostics (RADx), test developers, and other partners should work together to bring to market the 20-plus best antigen screening tests.

The U.S. Biomedical Advanced Research and Development Authority (BARDA) should make large-scale advance purchase commitments to accelerate the scaled manufacturing and introduction of antigen tests.

The FDA must work closely with test developers to ensure fast-track approval of such tests.

2

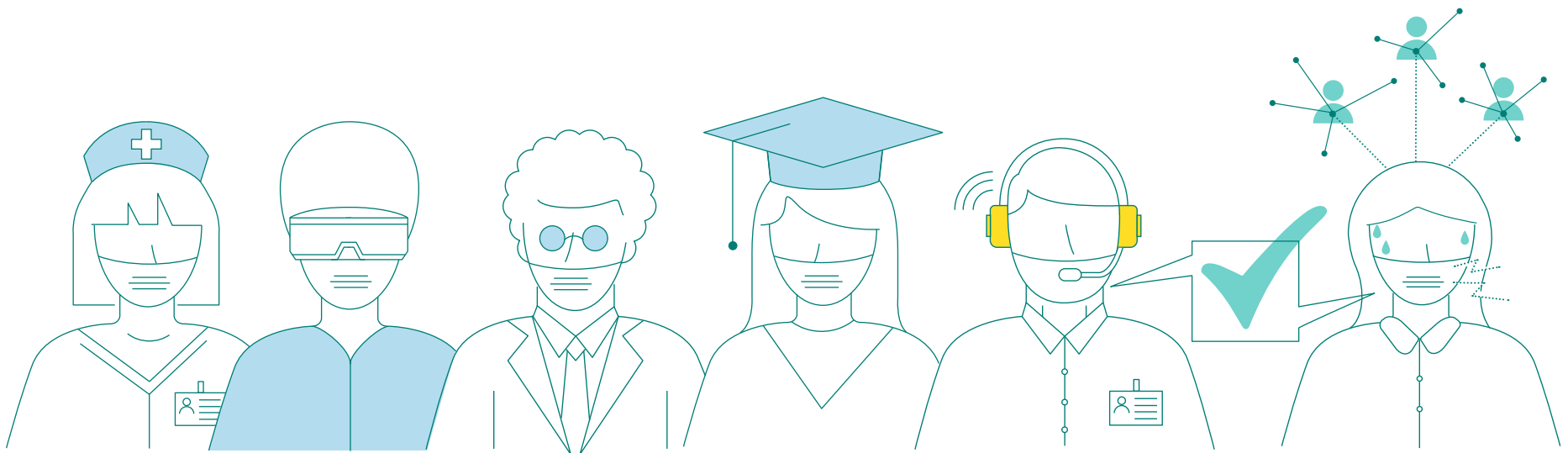
Contact Tracing

Increase the use, speed, public trust, and support services for contact tracing and isolation

Public health officials have widely cited contact tracing as a useful tool in the fight against Covid-19, noting that it is a proven, effective method of general epidemic management used in past outbreaks such as HIV, Ebola and SARS. Contact tracing consists of identifying and then reaching out to those who may have interacted with infected individuals. It aims to both contain the spread of a virus and help potentially infected individuals through supported isolation. But its success depends on the amount of testing in a given population, the time it takes for contact tracers to receive test results, and information from the infected person so they can reach out to those in danger of contracting the virus.

Traditional contact tracing uses in-person notification by a public healthcare worker who arranges for testing, treatment, isolation and quarantine as needed. **Digital** contact tracing, including the use of apps and other technology and challenges that come with it, represent a new, automated approach to tracking disease spread.

Because of the current bottleneck in labs analyzing the tests and due to an attitude that places personal privacy over community health, unlike some other countries the U.S. is not likely to adopt contract tracing on a national level. We must increase the speed of results but also change attitudes so that the health of the community and the economy take precedence over individual fears.



Contact tracing cannot work without a significant investment and public commitment, especially given the scope and speed of transmission of the Covid-19 virus. And it must be coupled with focused efforts to build public trust in the protection of data and supply the essential services required for people to self-isolate. It should also be part of a multi-pronged strategy, as noted in the National Covid-19 Testing Action Plan.

The Rockefeller Foundation, in its 1-3-30 Action Plan in April, envisioned that at least 100,000 people and perhaps as many as 300,000 would be needed nationally to undertake a vigorous campaign of test administration and contact tracing.

We still believe these figures are valid and informed estimates. The National Association of County and City Health Officials projects a need for 30 contact tracing workers per every 100,000 Americans.³⁸ An independent analysis determined that this would cost around \$3.6 billion in emergency funding to state and territorial health departments.³⁹ An NPR survey of state health departments showed that the national coronavirus contact tracing workforce had tripled over the previous six weeks, from 11,142 workers to 37,110, still far less than what is needed.⁴⁰

The same survey found that only seven states and the District of Columbia are staffed to the level that public health researchers say is

needed to contain outbreaks. NPR analyzed each state's need based on the number of positive cases in each state over the previous 14 days, using the Contact Tracing Workforce Estimator developed by the Fitzhugh Mullan Institute for Health Workforce Equity at George Washington University. As of July 13, the Workforce Estimator assesses that the U.S. needs 279,387 contact tracers.⁴¹

The 1-3-30 Action Plan called for a national privacy-protected tracking system which would assign each recipient of a test and eventually a vaccine to a unique patient ID number in an encrypted database. Various experts thought then that this data could be leveraged by individuals to allow them to participate in various societal functions (e.g. work, school) and enter certain high-risk situations (e.g. concerts, planes).

But with regulatory hurdles, lack of progress on such a centralized platform from the federal government, and privacy concerns, such a system is increasingly unlikely to be put into place. Furthermore, with unanswered questions about the role of antibodies and issues with accuracy with antibody tests, the validity of such “immunity passports” has been called into question, even by the WHO.⁴² Exposure notification apps that have been developed have had limited impact, especially in the U.S., where lack of adoption has been the main limiting factor in their utility,⁴³ with the Brookings Institute finding that “just over 30

percent of Americans” indicated they would use such an app.⁴⁴

But the success of these technologies, also, hinges on the speed of testing and the ability to validate the quality of their measure of exposure. Additional research should test the technology in highly saturated pockets of the population with frequent testing before they become the priority of public health departments. In the meantime, technologies that help individuals track their own symptoms, location, and contacts may provide more immediate benefit to public health.

38 https://www.naccho.org/uploads/downloadable-resources/Contact-Tracing-Position-Media-Release_4.16.20.pdf

39 https://www.centerforhealthsecurity.org/our-work/pubs_archive/pubs-pdfs/2020/200410-national-plan-to-contact-tracing.pdf

40 <https://www.npr.org/sections/health-shots/2020/06/18/879787448/as-states-reopen-do-they-have-the-workforce-they-need-to-stop-coronavirus-outbre>

41 <https://www.gwhwi.org/estimator-613404.html>

42 <https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-Covid-19>

43 <https://www.wsj.com/articles/america-is-reopening-coronavirus-tracking-apps-arent-ready-11592845646>

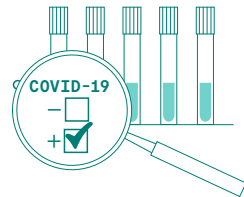
44 <https://www.brookings.edu/techstream/contact-tracing-apps-face-serious-adoption-obstacles/>

HOW CONTACT TRACING WORKS

INFORMATION SOURCED THAT LEAD HEALTH DEPARTMENT TO IDENTIFY A CASE

Case then identifies, for the Health Department, the individuals with whom they have had prolonged interaction (i.e., contacts)

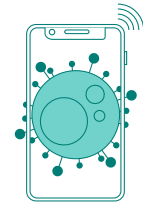
Laboratory
test report



Outbreak
investigations



Case self-reporting
(e. g., via phone app)



CONTACT TRACER INTERVIEWS
THE CONTACTS

+

-

CONTACT HAS SYMPTOMS

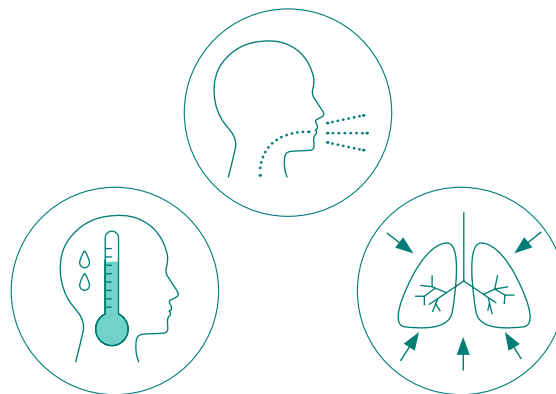
Contact self-isolates and is
tested by a healthcare provider

Contact tests positive for **Covid-19**

Contact self-isolates during infection

Contact returns to normal routine
after criteria are met

CONTACT DEVELOPS SYMPTOMS



CONTACT DOES NOT HAVE SYMPTOMS

Contact self-quarantines for 14 days
from last interaction with case

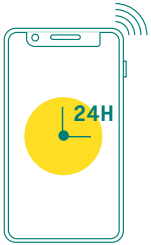
Contact does not
develop symptoms

Contact returns to
normal routine

Adapted from: Fraser, Michael, et al. A Coordinated National Approach to Scaling Public Health Capacity for Contact Tracing and Disease Investigation. Association of State and Territorial Health Officials, 2020.

ACTION STEPS

To improve overall effectiveness, we see the urgent need to:

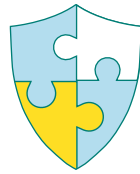


1. Increase the use and speed of contact tracing

Because Covid-19 is fast-moving, timing is of the essence, especially as communities reopen. Several steps must be taken to increase speedy action

Linking both diagnostic and screening testing to contact tracing, whereby people with symptoms are immediately asked for contacts as are those with positive point-of-care tests, even before a positive diagnostic test result is back.

Mandating contact tracers complete all possible exposure notifications within 24 hours after lab results are in before moving on to other cases.



2. Heighten public trust through linking tracers to the community

Contact tracing won't work if exposed citizens don't answer their phone or don't act when warned of possible exposure. As much as possible, contact tracers should be hyper-local. They must be trained in how to relay news of possible exposure and how to follow up with essential services for those who are asked to self-isolate. We also recommend:

Employing (either as hires or as volunteers) contact tracers who come directly from the communities they will work with, and have strong cultural awareness, linguistic abilities and community connections.

Using the existing public health workforce around the country, consisting of about 60,000 individuals prior to the onset of the current Covid-19 crisis.⁴⁵

Encouraging PSAs about contact tracing from trusted messengers, including community and spiritual leaders, and influencers such as performers and sports celebrities. Sharing the PSAs on both traditional and social media.

Repeatedly communicating strong commitment to protecting confidentiality and privacy rights, and that the data being collected will not be used against the patient's wishes.



3. Expand support services for self-isolation

Support services for those who must self-isolate are the cornerstone of disease management. A wide range of concerns people have must be addressed from the initial outreach, and many who have to isolate may require help with essential needs such as:

Access to food and prescriptions.

Financial assistance to cover lost wages.

Childcare or elderly and disability accommodations for themselves or those for whom they care.

45 <https://www.washingtonpost.com/opinions/2020/07/03/community-health-workers-are-essential-this-crisis-we-need-more-them/>

The City of Baltimore is implementing a contact tracing program which works both to improve the public health crisis and alleviate unemployment and persistent inequity. The program, created in partnership with The Rockefeller Foundation, creates solid public health career pathways through training and employment support. It incorporates equity-oriented recruiting and hiring to combat historical discrimination, and simultaneously offers broad care coordination for the community. By utilizing inclusive practices to ensure that recruitment is equitable and representative, contact tracers will have familiarity and cultural literacy with the hardest-hit communities. The Baltimore Health Corps program plans to hire 309 contact tracers or care coordinators and 33 administrative, management and employment development staff over a three-month period. This will expand outreach capacity by over 31,200 individuals over one year. The expected outcomes: a new sustainable career path for hundreds of Baltimoreans, better control of the transmission of Covid-19 through a team of community health care workers and greater focus on addressing the social needs of the city's most vulnerable.

New Orleans offers some key lessons from its own experience in testing and community outreach, which the authorities are applying further as the city incorporates contact tracing in its reopening plans. With some 391,000 residents, New Orleans recorded about 450 new cases per day and led the nation in Covid-19 deaths per capita at the height of the crisis in March and April. It is one of 12 communities where The Rockefeller Foundation initially coordinated with public health authorities and state and local governments to expand testing. Initially offering drive-by diagnostic testing in partnership with the National Guard, New Orleans officials quickly learned from mapping data that critical neighborhoods were going untested. They pivoted to mobile walk-through centers and opted to use fellow New Orleanians to administer the tests while simultaneously offering access to other resources to those in line – steps taken to build residents' confidence, which has persisted into the contact tracing stage.

Contact Tracing Hiring Practices – Benefits and Limitations

Recruiting Personnel Benefits and Limitations

	BENEFITS	LIMITATIONS
Reassigned Government Employees, Public Health Personnel & the National Guard	<ul style="list-style-type: none"> ● Personnel often have experience working in local communities ● Deploy and scale surge workforce within a relatively short time frame to meet contact tracing needs ● Personnel have previous experience with and working knowledge of epidemiology and public health 	<ul style="list-style-type: none"> ● Furloughed civil servants and public health employees eventually return to full-time jobs ● Public health servants and departments already pressed and overwhelmed due to Covid-19 crisis
Direct Hiring	<ul style="list-style-type: none"> ● Hiring directly from communities most impacted by Covid-19 leads to most effective contact tracing due to cultural competency and local community knowledge to identify/provide wrap-around services ● Partnering with a private organization, such as a local university or non-profit organization, to manage hiring and operations, can lead to greater impact 	<ul style="list-style-type: none"> ● Administrative burden to coordinate efforts across different counties in decentralized public health systems ● Higher cost to scale contact tracing workforce
Students and Recruited Volunteers	<ul style="list-style-type: none"> ● Students can benefit from working / volunteering as contact tracers as they gain communication skills, public health knowledge, and course credits ● Lower cost to implement programs ● National service members such as AmeriCorps and Peace Corps volunteers often possess language skills and relevant health program experience 	<ul style="list-style-type: none"> ● Students and volunteers are often short-term and part-time hires ● Primarily short-term hiring requires constant training, hiring and onboarding ● Volunteers and students may lack sustained commitment, which can make accountability and performance difficult to assess ● Coordination and management of volunteers and students still require high effort from state even if most personnel not paid
Overall	<ul style="list-style-type: none"> ● Critical for contact tracers to be trained to provide wrap-around services (e.g., quarantine and isolation support, meal delivery, counseling, etc.) ● Language and culture skills essential for successful contact tracers 	<ul style="list-style-type: none"> ● Sustainable hiring for long term is laborious and is often expensive for states ● Inconsistent hiring criteria and lack of capacity in public health departments to implement effective contact tracing programs



Workforce Development & Economic Recovery Goals






Cost & Funding



Skill-set/ Effectiveness

Types of Contact Tracing Training Resources

 PROGRAM PARTNERS TRAININGS	 ONLINE CERTIFICATION COURSES	 GENERAL RESOURCES
Description Third-party partners who support the state in hiring, training, and management of statewide contact tracing workforce. These organizations usually have specialized public health and/or operational expertise.	Online certification courses that prepare entry-level contact tracers for the position. Contact tracers with various levels of public health experience receive 3-6 hours of training on Covid-19 fundamentals, contact tracing protocols, confidentiality, interview skills, etc.	Brief, targeted webinars and slides on selected topics that can supplement official training for contact tracers. Topics covered include introduction to public health, epidemiology concepts, federal and state laws related to contact tracing, etc.
Sample Resources Partners in Health (PIH) in Massachusetts National Opinion Research Center (NORC) in Maryland	Johns Hopkins University Purdue University ASTHO	CDC's Covid-19 Contact Tracing Training Guidance, Resources, and Sample Training Plan includes comprehensive list of resources

Massachusetts, California and New York City have robust programs for hiring and training of contact tracers. In Massachusetts, a decentralized state with 351 local health departments, the Community Tracing Collaborative is a partnership between the government of Massachusetts and Partners in Health (PIH). The Massachusetts Department of Health manages data, guides activities, and supports oversight of processes. The Commonwealth Health Insurance Connector Authority provides virtual support via a call-center that contacts cases and provides care resource management. PIH hires, trains, and supervises

staff and contributes technical assistance and expertise to community tracing activities. In San Francisco, California, the government assembled a task force to interview and trace the contacts of every individual testing positive for Covid-19. The city-county health department is growing its workforce by adding university staff, medical students and workers from other city departments. Through July 3, the percentages of positive cases and named contacts reached for contact tracing over the prior two weeks in San Francisco were 85%. NYC Health + Hospitals is leading New York's contact tracing program which has seen

an increase from a 35% response rate to 55% in the second month of implementation. Completed interviews with people testing positive for Covid-19 have allowed tracers to identify and reach more than 1,300 symptomatic people and help them quickly isolate, preventing up to 4,000 potential new cases in New York City. To help improve the number of people tracers reach, the city is launching the next phase of the contact tracing program, which involves several hundred community engagement specialists who will be deployed to knock on doors of individuals they could not reach by phone.

3

Data Commons and Digital Platform

Strengthen the data infrastructure and use of data to drive testing and tracing performance

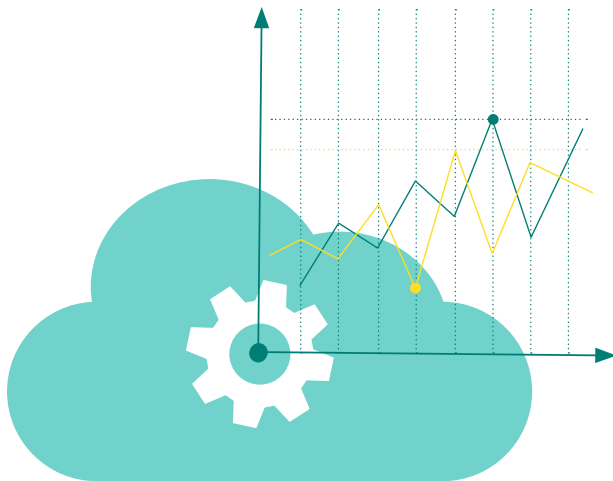
To update an old truism, if you can't measure a pandemic, you can't stop a pandemic. Collecting accurate and reliable data about the spread of Covid-19 has been the foundation of effective response efforts around the world. Across the United States, however, data collection has been stymied by fragmented data systems and a lack of federal leadership on data standards.

In April we outlined three action steps and five principles for the development of a data commons and digital platforms for Covid-19 testing data. In the months since, we've seen uneven progress across the federal and state governments. We've reached important milestones, like the release of test reporting standards by HHS and the launch of user-friendly dashboards to visualize testing data. But there are still concerns about the reliability of data reporting and systemic weaknesses in data infrastructure across the country.

On June 4, the Department of Health and Human Services (HHS) released new guidance mandating how laboratories should report Covid-19 test results and metadata.⁴⁶ This guidance brings needed clarity for actors along the data supply chain and sets a clear August 1 deadline for compliance. Critically, HHS mandated that each test result must be accompanied by demographic metadata including race and ethnicity. These data will help us understand and address alarming gaps in Covid-19 deaths by race.⁴⁷ In addition to

federal data standards, major medical taxonomies like LOINC and SNOMED have released Covid codes and guidance for use across hospitals and testing companies.

Many states can now point to clear examples of effective Covid-19 testing data aggregation and use. Many health agencies across the U.S. are using testing data to inform resource allocation decisions and to target interventions. Successes include using testing data to forecast medical supply needs and allocate limited testing supply.



46 <https://www.hhs.gov/sites/default/files/covid-19-laboratory-data-reporting-guidance.pdf>

47 <https://www.brookings.edu/blog/up-front/2020/06/16/race-gaps-in-Covid-19-deaths-are-even-bigger-than-they-appear/>

At the same time, testing data quality

remains a significant issue. At the most basic level we've seen states and even the CDC conflate different types of tests, artificially increasing the number of tests conducted.⁴⁸ Even more concerning, we have seen data collection and reporting processes come under political pressure in multiple states. This has led to inaccurate data and misleading presentation of testing statistics.⁴⁹ Lack of access to timely and accurate data will only prolong the public health crisis, increase suffering and deaths, and hinder economic recovery.

Without targeted support, it is likely that the data rich will get richer while the data poor will continue to lag behind. States and cities with high technical capacity and strong existing data infrastructure have made fast progress to adapt to Covid-19 while those that were weaker to start have lagged behind. We see a similar pattern at the lab level. Larger hospital networks and lab companies that already use reporting platforms like AIMS or are contributing to Health Information Exchanges have been able to quickly adapt to manage testing data while smaller labs that could be valuable sources of testing capacity have struggled.

Some states and cities have moved from basic analytics to complex modeling to support policy decisions and resource allocation. We've seen progress specifically on integrating mobility data to improve modeling⁵⁰

and the use of agent-based modeling to augment traditional compartmental modeling approaches (e.g. SEIR or SIR). These new data sources and approaches allow analysts to improve the accuracy and subtlety of their recommendations.

There are early signs that high quality wearables will provide a new source of data for monitoring and outbreak detection.⁵¹ While cost and privacy concerns remain significant issues, if resolved these data would be valuable for modeling efforts.

That said, we have not seen a surge in disruptive technologies that are genuinely useful for public health systems. Innovators that promised such tools have largely failed to deliver and have instead fallen back on existing methods with uneven deployment track records.⁵² The basic reality is that most companies knew too little about the needs and baseline operations of the public health sector to be effective.

Issues with underlying data limit our ability to use predictive modeling to improve monitoring and detect reemergence. New tools developed in research settings are proving difficult for public health officials to adapt and deploy. Software that works in one environment often doesn't replicate in other environments, adding burden to already stretched state and local analytics teams.

- 48 <https://www.theatlantic.com/health/archive/2020/05/cdc-and-states-are-misreporting-Covid-19-test-data-pennsylvania-georgia-texas/611935/>
- 49 <https://www.cnn.com/2020/05/20/us/florida-georgia-Covid-19-test-data/index.html>
- 50 <https://www.politico.com/amp/news/2020/04/06/facebook-coronavirus-data-google-168794>
- 51 <https://wvutoday.wvu.edu/stories/2020/04/08/wvu-rockefeller-neuroscience-institute-and-oura-health-unveil-study-to-predict-the-outbreak-of-Covid-19-in-healthcare-professionals>
- 52 <https://www.newyorker.com/tech/annals-of-technology/how-utahs-tech-industry-tried-to-disrupt-coronavirus-testing>

ACTION STEPS

Getting to 30 million tests-per-week and acting on the test results will require continued effort to

- Dramatically improve data infrastructure and reporting and
- Expand use of data to drive performance and improve decision making.

We recommend these steps to achieve both of these goals:



1. Strengthen Data Infrastructure and Reporting

This can happen only if we take the following steps:

Push to open up one of the big commercial platforms, like Amazon Web Services or Palantir, to aid in data collection and distribution.

Ensure every state uploads its data daily and have a point person in charge.

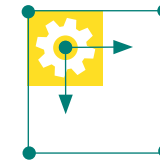
Support under-resourced states, cities, and labs as they work to meet the August 1 deadline for compliance with HHS testing data guidelines.

Improve public trust in testing data by being clear and open about methodology while also building – or re-building – clear firewalls between political and public health processes.

Speed integration of testing and tracing data systems.

Consistently collect and act on racial equity data.

Plan for the arrival of home and employer testing. We'll need these technologies to get to 30 million tests per week, but many states do not have a robust approach to integrating these results into their public health surveillance systems.



2. Expand Use of Data to Drive Performance and Improve Decision Making

This will require:

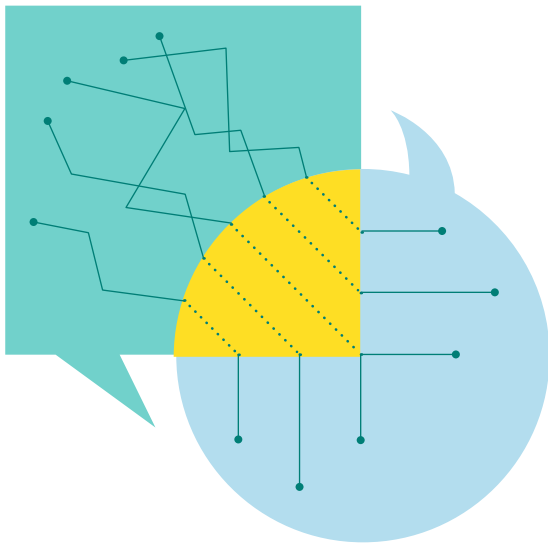
A **behavioral intervention** toolkit to improve testing and tracing participation and adherence. As testing and tracing capacity ramps up and new technologies are built, human behavior will increasingly become the limiting factor in the efficacy of these systems.

Moving from descriptive analytics to **predictive analytics** and **policy modeling**. Most states and cities have been able to stand up basic dashboards to inform decision making. Managing the next phase of the crisis will require these entities to use and present new models to support health and economic policy decisions.

4

Communications

Coordinate and focus public communications on the value of personal safety measures, testing, and contact tracing



The 1-3-30 Action Plan did not focus on communications. The past two months have dramatically underscored the necessity for a consistent, fact-based approach to public health communications. Without clear messaging, health officials will fall short in convincing a sufficient number of Americans to support testing, contact tracing, the use of masks and other precautionary measures. Although New York State has hired 3,000 contact tracers, only 35 percent⁵³ of those tested or presumed positive gave information to tracers about their close contacts. Distrust may be especially high in marginalized communities that have been hard-hit by Covid-19. On top of that, communication that heightens politicization of public health issues has been so rampant that public health leaders across the country are reluctantly quitting their jobs.⁵⁴ We are in a world war against Covid-19 and we can only win, as we have in previous wars, by taking this on as a united front.

The Rockefeller Foundation stands ready to invest in and to partner with HHS, the CDC, the Ad Council, the best and brightest communication experts and advertisers, public health officials, businesses, and cultural and religious leaders in order to devise and implement a comprehensive, national communications strategy that can unite and inspire to fight this disease.

The Rockefeller Foundation calls for the formation of a broad-based national Covid-19 that includes local, state, and federal officials, non-profits, private sector and faith-based community leaders to:

Develop and implement ways to promote safety measures such as masks and social distancing. The coalition should include non-profits, community organizers and alliances of faith leaders as well as governmental leadership at the federal, state and city levels. Communication should be localized to for cultural awareness and linguistic adaptation.

Combat rumors and misinformation by working directly with media and social media to encourage direct and speedy correction of mistakes or falsehoods – and to counter the flood of bad information with a steady stream of stories about communities and individuals taking positive action, which promotes wider adoption of those behaviors.

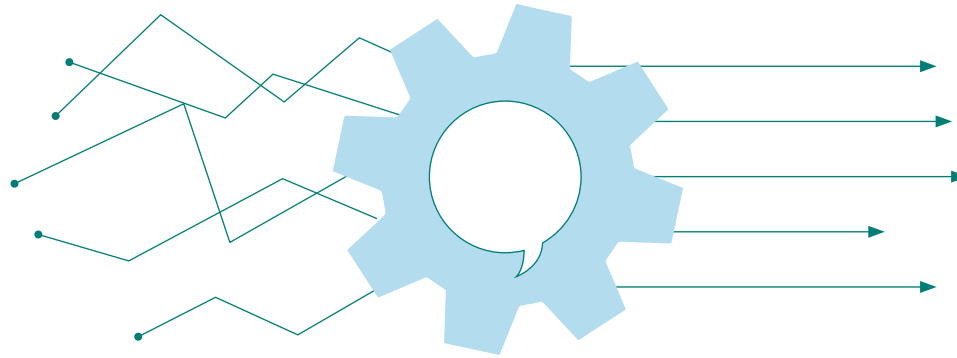
Educate the public about the need for screening tests, treatments and a vaccine as they become available as way of building awareness, self-efficacy and trust.

53 <https://www.nytimes.com/2020/06/21/nyregion/nyc-contact-tracing.html>

54 <https://www.governing.com/now/Why-Public-Health-Officials-Are-Quitting-During-a-Pandemic.html>

The **Covid-19 Communications Coalition** should tackle current Covid-19 communications challenges including: 1) conflicting public messaging from government officials; 2) pandemic fatigue or denialism; 2) lack of public trust and urgency around non-symptomatic testing; 3) lack of trust and privacy concerns impacting contact tracing; and 4) evolving understanding of the virus which makes it appear “facts” are changing when it is our knowledge that is improving.

In order to build trust and support behavior change as we head into what many believe will be a challenging autumn, three key principals must drive the **Covid-19 Communications Coalition’s** efforts.



1. Communications should:

Be consistent. In a crisis, people actively seek to confirm information from multiple sources. All voices at all levels must deliver the same simple message: that testing and contact tracing are necessary for individuals and their friends and loved ones to stay healthy, help contain Covid-19 and safely reopen the economy until a vaccine is found, in addition to continued mask-wearing and social distancing.

Promote simple actions. People are discouraged by complexity. They need to see that the action is straightforward.

Clear away obstacles. Messages should counter resistance to talking to contact tracers such as fear of being forced into self-isolation without support for rent, food, job security by linking contact tracers to those services, which

must be explained.

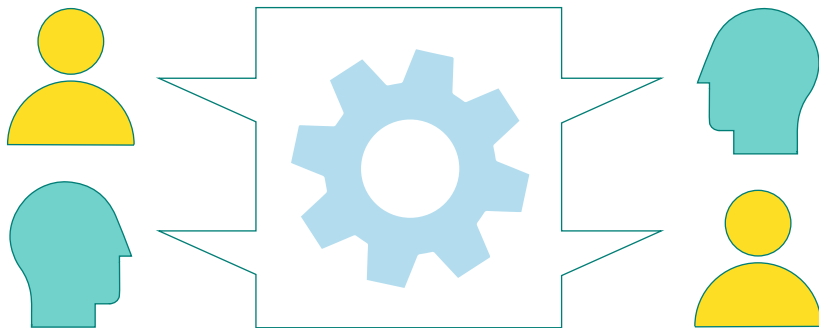
Address privacy concerns with communications that explain the process for protecting information.

Counter skepticism. Public-health messengers must consistently remind the public that information and recommendations will continue change as we learn more about the virus and how to combat it.

Share stories of people taking action.

Ultimately, this is the most powerful form of motivation. People are much more likely to take actions that we see others taking.

Saturate, saturate, saturate. Messages should be available on a variety of formats to reach various demographics. They should be carried by trusted messengers on traditional media, social media, and publicly displayed on billboards and signposts.



2. A wide array of Trusted Messengers should be used...

In addition to municipal officials at all levels, community and faith-based leaders must be called upon to deliver the message about the importance of testing and contact tracing.

Social influencers with networks of followers on social media platforms, as well as cultural influencers such as actors, musicians and sports celebrities, should also be tapped.

Covid-19 survivors should be part of a public campaign to encourage testing and contact tracing.

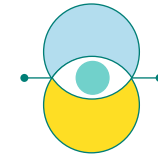
Political leaders should come together across party lines to demonstrate the non-partisan nature of public health and help de-politicize the conversation around the pandemic.

Scientists and medical professionals have long been the most trusted messengers in public health crises. However, a recent cultural trend in the U.S. is to dismiss experts and their expertise. A popular political narrative says that educated people are elitists who look down on everyone else; ignoring them feels like rebelling against an aloof elite. It's important for trusted messengers who are not experts help to amplify the messages of public health officials.

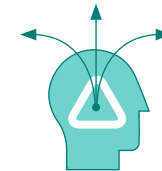
EVALUATION



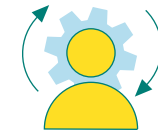
1.
AWARENESS



2.
RELEVANCE



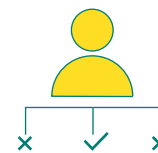
3.
AWARENESS OF SOLUTIONS



4.
CAPACITY TO CHANGE



5.
COST-BENEFIT ANALYSIS



6.
ACTION / DECISION

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The Rockefeller Foundation is grateful to the following people who have contributed to this Action Plan Update through their participation in the Expert Advisory Council for Testing and Tracing video-conference (July 9, 2020), through exchanges following the video-conference or through other collaborations. Some may differ with aspects of it, or have stressed other matters of primary focus. All have contributed with the greatest sense of shared purpose at this time of national need.

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