

TOPIC: What should the future of testing look like?

With special thanks to [Jeff Huber](#) and [Paul Romer](#) for contributions and guidance.

STOP THE SPREAD KEY TAKEAWAYS

- To enable a return to work and school, future testing technologies will need to be frequent, fast turn-around, cheap, easy to use, and sufficiently accurate.
- The social return on testing investments is high, and the federal government has a major role to play in ensuring ongoing access and affordability.
- Multiple investments are needed across a range of testing technologies to de-risk supply chains and to serve individuals in a variety of testing settings (cities, schools, at-home).

STATE OF PLAY: WHAT'S THE LATEST

The U.S. testing landscape is rapidly evolving. Since May, U.S. [daily test counts](#) have doubled and over 40 [new FDA Emergency Use Authorizations \(EUAs\)](#) have been granted. Commercial labs, existing players, research and academic institutions and startups are all driving innovation.

Deep nasal collection methods are being replaced by less intrusive anterior nasal and saliva-based methods. Test sample processing is shifting from distant labs to the point-of-need, decreasing result turnaround times. Experts believe that a steady-state testing rate of [30 million per week](#) will be necessary to maintain economic activity while COVID risk continues.

THE BIG PICTURE: WHY IT MATTERS, WHAT MIGHT BE NEXT?

Testing expansion and innovation is critical to enable a return to economic activity. Economists estimate that testing investments have a 100-fold social return due to their role in preventing outbreaks and safely opening the economy. While Congress initially allocated \$25B to testing in the HEROES Act, eyes should be on the upcoming July package to include significant funds.

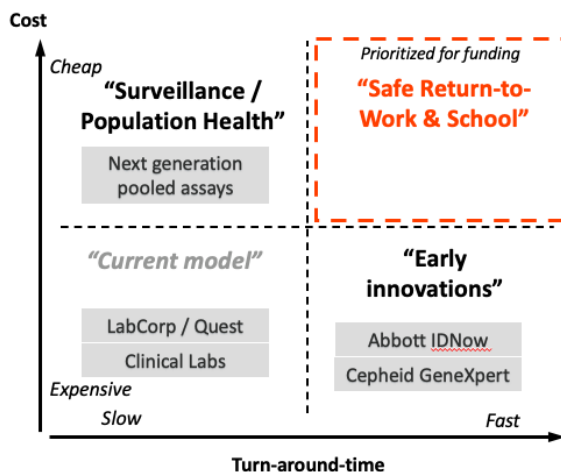
Stop the Spread believes that a mix of centralized laboratory tests, targeted point-of-need and at-home tests, and population surveillance technologies will all be necessary in the ongoing fight against COVID. There is no single testing solution that will meet the wide spectrum of needs across schools, businesses and vulnerable hot-spot sites (i.e., [nursing homes](#), [prisons](#), [meat-packing plants](#)). Further, a diversified supply of testing technologies is beneficial, as diversification de-risks critical supply chain shortages. Novel tests will have meaningful impact in shaping return to work and school if they meet a set of key criteria:

- **Fast Turnaround:** The need for 'next-morning' turnaround for results.
- **Low Cost:** The need for affordable tests (<\$20 per test).
- **Frequent:** The need for sufficiently frequent testing. For certain employers and schools, weekly or more frequent testing will likely be required.
- **Easy:** The need for simple and safe sample collection (i.e., anterior nasal, saliva-based).
- **Accurate:** The need for sufficiently accurate test results.

Tests available today meet some criteria, but there is no ‘silver-bullet’. Point-of-care tests like the Abbot ID Now and Cepheid GeneXpert turn results fast, but at a high cost and controversial [accuracy](#), limiting usefulness in discrete settings. Commercial lab-based PCR tests are highly accurate, but expensive, and can take a week to get results. Legacy models have been a critical part of the nation’s reaction to COVID-19, but they are insufficient to safely return the broader population to work and school. Solutions are just as likely to come from outside the traditional healthcare system, and it is imperative that we remove barriers and bottlenecks to allow for success in these innovative settings. Promising options for the future, in which testing is widespread and accessible, include:

- **Continued innovation to lower the cost profile of core diagnostic technologies including LAMP, PCR, CRISPR, and Sequencing:** Many new technologies have drastically reduced turnaround times but are too costly for scaled workplace applications.
- **Investment in initial surveillance testing tools to rapidly identify likely positive subjects for clinical testing/follow-up:** Asymptomatic and pre-symptomatic surveillance/screening tests, discussed in [OpenCovidScreen’s white paper](#), can be implemented at a lower cost and higher distributed scale than traditional clinical testing.
- **Leverage accurate antibody tests as a supplement to diagnostic tests:** While frequent viral testing enabling early detection is the gold standard, antibody tests can play a role as a low-cost, scalable supplement to a limited supply of diagnostic tests and provide valuable insights on prior infection rates in a given population.

COVID-19 Testing Landscape



POTENTIAL IMPACT FOR YOUR ORGANIZATION / THE QUESTIONS WE’RE ASKING

Philanthropists and Investors

- Where can investments and philanthropic dollars bridge the gap to commercialize testing technologies that are affordable and scalable?
- What criteria is your organization using to prioritize funding for the most impactful testing companies moving forward?

Organization and Workers

- For employers starting up a testing program, do you have clear guidelines on the price point and who is paying, sample collection method, frequency of testing and turnaround times needed for your program to be successful?
- How will you catch inevitable occurrences before they become outbreaks? What is the cost to your business / organization of a shutdown caused by an outbreak?
- In absence of a 'silver-bullet' diagnostic test, what alternative low-cost screening measures can be leveraged to enable return to work (i.e. environmental controls)?

WHAT STS IS DOING ABOUT IT

- Stop the Spread is collaborating with [OpenCovidScreen](#), an organization launching a testing competition to promote low-cost, easily implementable COVID-19 surveillance tests. The competition aims to provide a high quality COVID-19 screening test protocol, playbook for implementation, and essential training materials so that COVID-19 screening can be implemented successfully nearly anywhere.
- Stop the Spread is also partnering with testing companies that are bringing low-cost, fast-turnaround saliva-based tests and point-of-need diagnostic tests to market.
- In partnership with ImpactAssets, Stop the Spread is evaluating companies focused on testing with ~\$40M in identified investment need. Our organizations will be deploying capital to promising, high-impact testing solutions ([ImpactAssets Stop the Spread Fund](#))

LEARN MORE: OTHER EXPERTS AND SOURCES

- OpenCovidScreen: ['Waldo Test' White Paper](#)
- Paul Romer: [Roadmap to Reopening the Economy](#)
- Gingko Bioworks: [How to Deploy Millions of Tests Per Day](#)
- ImpactAssets Case Study: [Bridging Funding Gap for Early Stage Biosciences Company](#)
- Rockefeller Foundation: [Testing Action Plan](#)