Contact Tracing and Case Identification

Contact Tracing

Testing

Data

Awareness

Technology

Key elements of Mathematica's contact-tracing approach

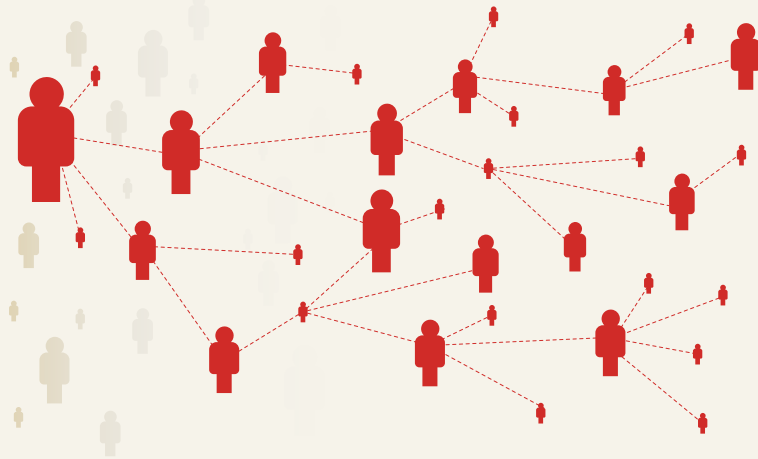- Seamless collaboration with public health agencies and social and human services departments across jurisdictions
- Sophisticated data infrastructure collecting data from phone calls, surveys, apps, and other data sources
- Behavioral science-informed expertise with hard-to-reach, diverse, and underserved populations

- Responsive project management and data-driven ability to identify and rapidly address evolving and complex needs
- Evidenced-based decision making and planning; transparent community information sharing through real-time data dashboards that feature state and municipal-level data.

Rapid response to the COVID-19 crisis

Managing the spread of COVID-19 must go beyond social distancing and small-scale testing as we wait for a vaccine or effective antiviral treatment. Contact tracing is an essential part of a comprehensive public health and human services response to the pandemic. To be effective, contact-tracing programs must respond to the unique circumstances of state and local jurisdictions, integrating behavioral science approaches, cutting-edge technology, innovative data collection and analytics, and stringent information security practices.

Mathematica's mission—to improve public well-being—drives everything we do. We work at the intersection of data science and social science, and our team of survey experts, technologists, and health researchers is exceptionally well suited to partner with state and local agencies on reducing the spread of COVID-19. Our team will extend the tireless efforts of frontline workers, collaborating with local boards of health

to assess their needs; help with heavy caseloads; and build capacity to scale contact-tracing efforts quickly, accurately, and effectively. Mathematica can build technological solutions to reach identified cases, trace contacts, guide additional actions for cases and contacts, and understand community risk.

Deep subject-matter expertise in disease surveillance, including experience in COVID-19 and H1N1 contact tracing.

We have demonstrated expertise managing large-scale, high quality data collection, often involving sensitive health or personal information. Members of our team worked on prior H1N1 efforts and have international epidemiological experience. We know that contact tracing requires a wide range of expertise because we are on the ground where it is unfolding: a health policy expert from our staff is deeply engaged in the Massachusetts COVID-19 Community Tracing Collaborative (CTC), helping launch the innovative,

emergency effort. Through this rapid-response support, we have learned critical operational lessons and helped develop the full-systems vision of the surveillance, reporting, and data-flow processes. Working hand-in-hand with state and local officials involved in CTC, we have gained invaluable COVID-specific experience supporting local boards of health, cocreating solutions, and building human and technological systems to reach vulnerable populations and address the crisis. Our experts can apply this experience and lessons learned to the scenarios confronting your state, working across systems and jurisdictions to identify and address emerging issues.

Evidence-based and human-centered.

Successful contact tracing must account for the complexity of people's lives: where they live and work, how many jobs they hold, and the social networks and support structures that are integral to their well-being. We understand that when people are sick, scared, and worried about their ability to provide for themselves and their families, open and honest disclosure can be difficult to achieve. Our multilingual, culturally competent interviewers are trained to do more than simply collect accurate and complete data. They use behavioral science-informed practices that build trust and ensure that interviewees fully engage in the process. Mathematica's behavioral science and human-centered design expertise, coupled with our experience designing technology approaches that meet complex needs, will expedite identifying those with COVID-19 and those who might have been exposed.

Track record of reliable, secure, complete, and efficient data collection through innovative and adaptive technologies.

We take a respondent-first approach to designing instruments and developing protocols, minimizing burden wherever possible. Leveraging human interviewers and technological innovations, we have an outstanding record of locating respondents and achieving high response rates across a wide variety of populations—including those in urban and rural settings and hard-to-reach and vulnerable

populations, such as older Americans, people experiencing homelessness, or people with disabilities. Our data collection capabilities span multiple platforms and include phone call and text data and social media analytics, supporting timely tracing. In addition, our expertise in cleaning and organizing data from disparate sources enables you to surface and tap imperative insights. We rigorously train our teams to safely and properly handle personal information and sensitive data, and we employ stringent processes to protect the data we collect and maintain. Our meticulous attention to data security is essential for gaining broad participation and support of contact-tracing programs and for seamlessly integrating data sets from multiple sources.

Expertise deploying advanced analytics and effective management tools in high-stakes, complex, and rapidly evolving situations.

Our team brings expertise in managing large, operationally complex efforts but also offers tailored solutions for smaller initiatives. Our staff's global epidemiological work, and our COVID-19 contact-tracing work in Massachusetts, will help you apply important lessons learned to your contact-tracing initiative. We have a strong track record of partnering with federal, state, and local governments and private-sector organizations. We are experts in developing clear and detailed processes that streamline involvement, requirements, and systems of numerous agencies at all levels of government. We understand that your COVID-19 situation can change quickly and might require prioritizing case and contact interviews in hot spots. The Mathematica team is prepared to address these evolving needs and to scale efforts systematically. We can stage processes—that is, test in smaller teams and then broaden to prevent error, confusion, wasted resources, and public relations issues. Through tools such as real-time data dashboards, we can offer user-friendly and intuitive displays of key community data trends. These tools support monitoring of disease progression, data-driven planning, and resource allocation.

Learn how to partner with Mathematica to chart a path to progress together against COVID-19.

COVID-19 Tips for establishing an effective contact tracing program

By **Candace Miller**

Any successful strategy for addressing the COVID-19 pandemic is built on three principles:

1. Prevention through social distancing and the use of personal protective equipment

2. Sufficient testing of people with COVID-19 symptoms or exposure

3. Contact tracing to block further transmission.

To stop outbreaks and limit the spread of COVID-19, an effective contact tracing program must respond to the unique circumstances of state and local health departments. It must also incorporate cutting-edge technology, innovative data collection and analytics, and stringent information-security practices. Positive cases must safely isolate at home until they are no longer symptomatic and have shed the virus. Contacts should get tested if possible or otherwise stay home until the symptoms or the 14-day quarantine period has passed.

Five-step contact tracing

1. Identify the right platform for data collection, analysis, and reporting; such platforms should have industry-standard data security controls and produce actionable information.

2. Using data from health departments and testing facilities, a case investigator calls a COVID-positive case to make sure that they are isolating and have the care and supports they need to make it through the illness.

3. The case investigator asks the positive case about whom he or she has been in contact with and where they met. The case investigator records the answer.

4. Next, a contact tracer notifies the contacts that they have been exposed to COVID-19 and advises them to stay home or quarantine elsewhere for 14 days.

5. Stronger contact tracing programs will connect cases and contacts to social services and supports, if necessary, so that they can stay home safely and recover.

Tips to ensure success

- **Prepare for difficult discussions**. Case investigators and contact tracers are calling people during some of the most vulnerable days of their lives, when both their health and economic security is at risk. Positive cases may be symptomatic or asymptomatic. Some cases will be recovering, so the conversation will be positive, but others will be extremely anxious about testing positive. Still others will have painful symptoms and trouble breathing. Many people will be emotionally and physically

exhausted and facing financial ruin. They may not have enough food, medicine, or adequate health care. They may feel stigmatized or guilty for exposing others. They could be experiencing violence in their home, or they could be suicidal. Only well-trained and -prepared interviewers should make these calls.

- **Collect information on social services.** This information is critical because the pandemic has further exposed and worsened health and economic disparities. To be prepared, collect information on services, including local food and medicine delivery. Remember, positive cases will need help to isolate at home. They and their contacts will need information on testing sites. Be sure to also have information on domestic violence and child protective services. Know the numbers of local and national hotlines, including those for people at risk for suicide or violence. Many cases and contacts are out of work and may need help with rent, a mortgage payment, or utilities, so make sure that local, state, and national resources are available.

- **Ensure that your technology, data platforms, and systems fit their purpose.** Your systems should simplify the process of capturing and reporting data. An effective contact tracing program will capture only the information that is essential to local and state health departments—no more, no less. To earn public trust and ensure broad participation in your contact tracing program, personal and sensitive information should be handled according to the stringent processes that protect it. Data should also be reported in a manner that is actionable; that is, it should be presented to health departments with recommendations designed to help them care for residents, stop outbreaks, and anticipate and prevent further transmission. Mapping capabilities are helpful as well because they can show community leaders and residents the clusters of outbreaks. Whether an outbreak occurs at a nursing facility, a grocery store, or a public beach, the data should help health departments understand who and how many people were affected, where the high-risk locations are, and how to prevent further transmission.

- **Collect information to identify the behaviors and conditions linked to outbreaks.** When investigating cases and tracing contacts, it may be possible to ask people about their behaviors and the behaviors of others at the time of exposure. This information will help public health experts to better understand what led to the outbreak, such as whether an event was indoors or outdoors, whether people were practicing social distancing, or whether there was access to personal protective equipment. As different types of businesses and public areas open, it be important to understand the patterns in outbreaks so that we can anticipate and prevent them.

- **Stay with your cases and contacts.** Contact tracing requires public support and trust. One way to build both is for case investigators and contact tracers to continue to communicate with their cases and contacts until symptoms have resolved or the isolation and quarantine period has ended. People appreciate hearing from someone who cares. Staying in touch is also an important way to collect critical information on symptoms and time to recovery.

- **Engage your community, built trust, and partner closely with local organizations.** Contact tracing programs will be most effective and efficient if they are built in close partnership with local organizations, which know their communities best. From health care to social service networks, these organizations have a keen sense of a community's strengths and vulnerabilities across every population that call the community home. Successful programs will blend this comprehensive understanding with expert contact tracers and advanced data platforms to mount the best possible defense against COVID-19.