CDL Rapid Screening Consortium

Final Report - Phase 4 Summary

JANUARY 31, 2023

About CDL RSC

The Creative Destruction Lab Rapid Screening Consortium (CDL RSC) is a private-led, not-for-profit initiative formed in August 2020 with the goal of establishing a robust rapid screening system and operational implementation strategy to be delivered as a public good to Canada and then the world. The consortium was led by Creative Destruction Lab.

This was an unprecedented collaboration among businesses, researchers, and government working together on a singular public-interest **mission**: To develop a cost-effective system for reopening the economy during the COVID-19 pandemic.

About this Report

The Phase 4 CDL RSC Final Report is the culmination of a monumental effort to develop, implement, and scale a rapid antigen screening (RAS) program across and beyond Canada during the COVID-19 global pandemic.

The CDL RSC project was delivered in four phases, allowing the operational structure to evolve at different points in time. Throughout the phases, project scope complexity decreased while the number of Participating Organizations increased, as Standard Operating Procedures (SOPs) were developed, tested, and scaled, all while operating under a unified project mission.

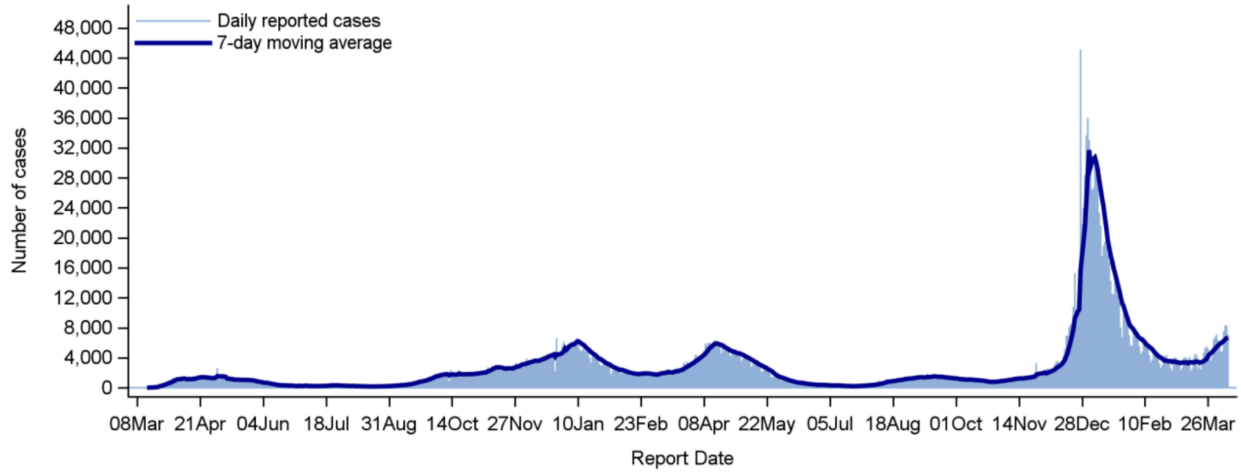
This Report covers **Phase 4 - CDL RSC's Implementation Phase**, which spanned from **April 16, 2021 to March 31, 2022**.

Rationale for Rapid Antigen Screening during Phase 4

Phase 4 (Implementation) of the CDL RSC program roughly overlapped with COVID-19 waves 3-5 in Canada. Despite an increasing proportion of fully-vaccinated individuals, new variants continued to emerge into 2021. The new variants posed new challenges in being more contagious than original SARS-CoV-2 strains, and for certain variants more virulent. This influenced the risk of hospitalizations, ICU admissions, and death was higher, with unvaccinated people being at greatest risk.[1] In fall 2021, businesses within most regions in Canada were reopening, and the paediatric COVID-19 vaccine was approved as the school year commenced. However, the more transmissible Omicron (B.1.1.529) variant then emerged and spread rapidly throughout the country, becoming the dominant strain by December 2021, and leading to an unprecedented spike in infections (approximately 40,000 daily cases by January 2022). While vaccines protect against severe outcomes, breakthrough infections were occurring. In response, many regions saw a re-introduction of public health restrictions including online schooling or indoor capacity limits.

[1] CDC. Variants of the Virus. Retrieved from: https://www.cdc.gov/coronavirus/2019-ncov/variants/index.html

Figure 1. Daily number of COVID-19 cases in Canada (and seven-day moving average), as of April 9, 2022



Note: Cases during the fifth wave may be underestimates due to reduced PCR testing capacity
Source: Public Health Agency of Canada. COVID-19 Weekly Epidemiology Report (April 3-9, 2022). https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html

COVID-19 outbreaks were prevalent in Canada, particularly in closed and crowded settings, including long-term care facilities, workplaces and schools. From a public health perspective, one of the primary challenges in managing the pandemic was the difficulty identifying and isolating all infected individuals, since it is possible to be infectious but asymptomatic. One consequence of this information problem was the enactment of strict policies, including stay-at-home orders and business/school closures which came at a high economic cost.[2,3] As such, quickly identifying asymptomatic cases to prevent onward spread was an important layer of protection in order to keep the economy open.[2] **CDL RSC aimed to reduce the likelihood of workplace transmission and outbreaks by systematically screening individuals before they entered the workplace**. Rapid antigen screens (RAS) help by providing a method to prevent individuals from unknowingly infecting their coworkers or bringing the virus home to their families and loved ones. The large number of infections due to omicron led to the expanded scope of Rapid Antigen Tests (RATs) such as the development of "Test-to-Stay" programs around the world, which allowed students to stay at school after an in-school exposure, requiring a RAT every day for a week.[4] Reliance on polymerase chain reaction (PCR) for diagnostic confirmation also posed a greater challenge due to long turnaround times for test results and lack of test availability during the Omicron-dominant wave. During this time, RAS continued to support employers to quickly identify and isolate infected individuals before they entered the workplace.

[2] Gans JS. The Pandemic Information Gap: The Brutal Economics of COVID-19. 2020, *MIT Press: Cambridge*.
[3] Oran DP, Topol EJ. The proportion of SARS-CoV-2 infections that are asymptomatic: a systematic review. *Ann. Intern. Med*. 2021;174(5):655-62.
[4] Young BC, Eyre DW, Kendrick S, et al. Daily testing for contacts of individuals with SARS-CoV-2 infection and attendance and SARS-CoV-2 transmission in English secondary schools and colleges: an open-label, cluster-randomized trial. *The Lancet.* 2021;398(10307):1217-29.

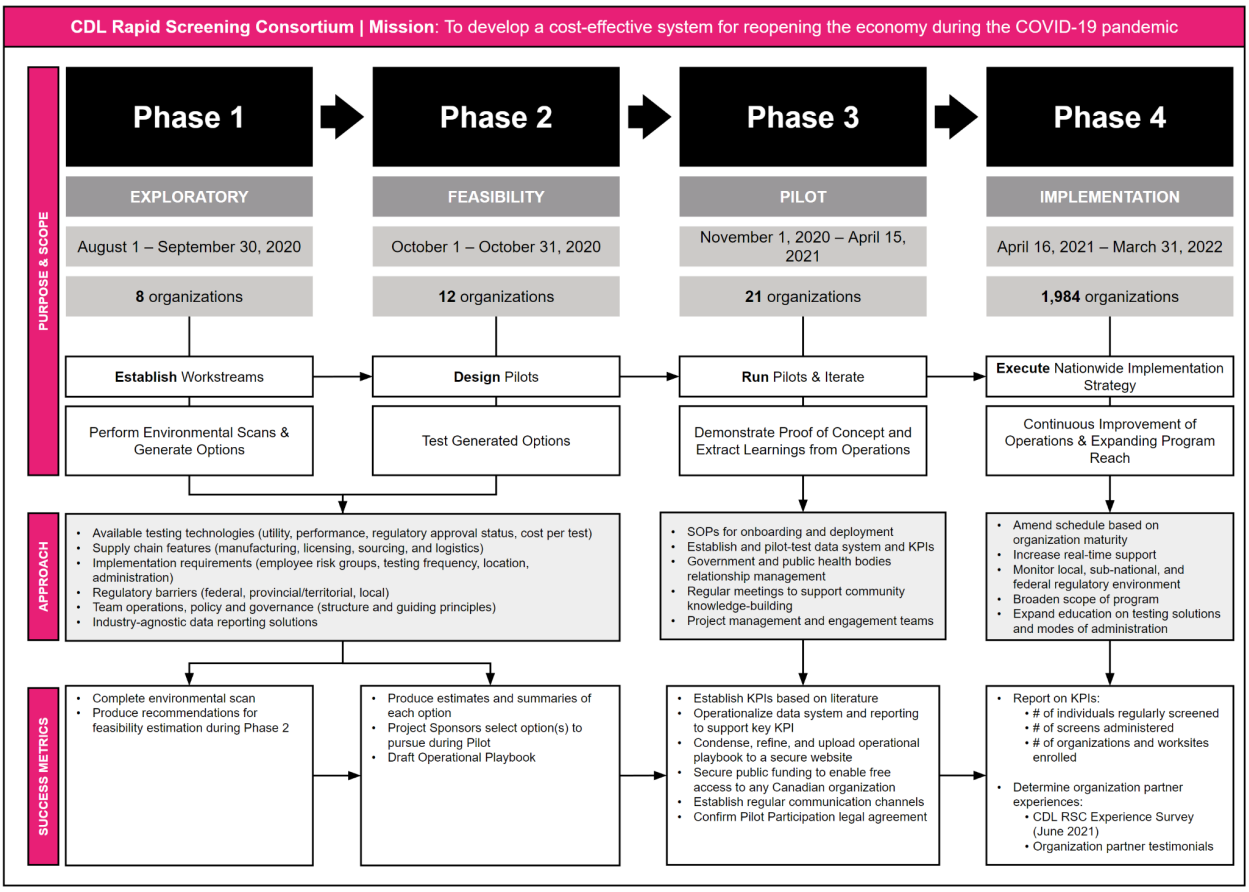
Phase 4 (Implementation) at a Glance

The CDL RSC project was delivered in four phases (**Figure 2**). In the Exploratory phase (Phase 1), CDL RSC established specifications for potential pilot options. The Feasibility phase (Phase 2) then provided Consortium members with the necessary information on operational effectiveness and efficiency to design pilots and later facilitate full-scale deployment. In the Pilot Phase (Phase 3), CDL RSC designed, tested, and iterated on a scalable central data system that satisfied mandatory case reporting to all federal, provincial and territorial (P/T), and regional authorities. In the Implementation Phase (Phase 4), Consortium Members continued delivering high-quality asymptomatic workplace screening programs to keep the economy open during COVID-19.[5] Building upon Phase 3 (Pilot) learnings, organizations continued sharing best practices, and the CDL RSC team provided data-driven insights to drive policy innovation, engaging with governmental agencies. CDL RSC delivered on its **Mission** of a cost-effective pandemic response in two critical ways:

1. **Making the program available to any Canadian organization or school:** CDL RSC obtained support from the Safe Restart Program (Health Canada) for onboarding, project management, and building and maintaining a central data system.
2. **Expanding the national reach of the program to every P/T:** When Phase 4 started, CDL RSC had pilot operations in five regions (British Columbia, Alberta, Ontario, Quebec, and New Brunswick), and by March 31, 2022, CDL RSC had scaled nationally, including approximately 2,000 organizations of all types and sizes, including non-profits, schools, small- and medium-sized businesses, and large corporations.

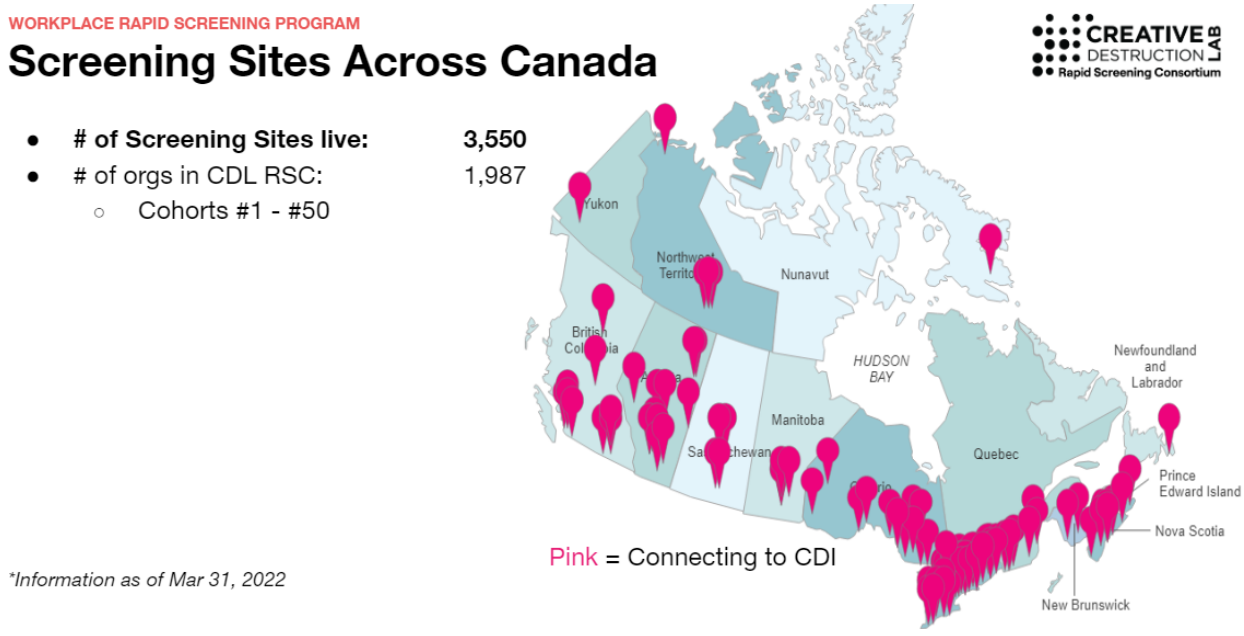
[5] Rosella LC, Agrawal A, Gans J, Goldfarb A, Sennik S, Stein J. Large-scale implementation of rapid antigen testing system for COVID-19 in workplaces. Science advances. 2022 Feb 25;8(8):eabm3608.

Figure 2. Phased implementation of the CDL RSC project



During Phase 4, CDL RSC saw considerable growth in terms of the number and types of participant organizations. Companies were admitted in weekly cohorts over the duration of the project to enable them to learn together. Over time, cohort sizes grew and evolved to speciality cohorts that grouped similar organizations facing unique industry-specific constraints (e.g. a cohort encompassing the non-profit sector, cohorts specific to schools/child care, school boards, and post-secondary institutions), as well as unique regional regulatory environments (e.g. cohorts supporting Ontario Ministries, Nova Scotia provincial cohorts, and a collaboration with the Calgary Chamber of Commerce). Each new cohort brought its own unique contextual considerations and insights, allowing CDL RSC to refine its processes further.

Figure 3. Number of sites participating in CDL RSC as of March 31, 2022



While CDL RSC played an initial key communication role with each new company, as companies progressed, they were embedded in networks that facilitated cross-organizational learning. Importantly, CDL RSC created a pay-it-forward model among Consortium members, whereby new and existing organizations were matched with a Mentor (or "Buddy") organization whose screening sites were already operational. This allowed companies to access peer-to-peer support, accelerate knowledge sharing, and minimized onboarding time. As the program scaled, the 1:1 matching was replaced with an open "Buddy Directory", allowing all organizations to openly contact mentors in the program. During Phase 4, the data collection and reporting system, and the privacy and security framework achieved maturity, and continued producing valuable insights both internally (for organizations) and externally (for Public Health entities).

Clear and consistent project management and support infrastructure were key during organizational onboarding, with the CDL RSC offering a set of streamlined resources, including a Standard Operating Procedures (SOP) manual and a variety of digital tools. Communication in the Consortium relied heavily on online instant messaging on the Slack communications platform, with CDL RSC staff monitoring the chat to answer questions in real time and provide IT support for any of the manual or app-based Data

Solutions. Taken together, the resources provided by CDL RSC ensured that each organization was successful, regardless of the differences in their program maturity or internal processes.

Additionally, the CDL RSC project management team led weekly operations meetings, with organizational Project Leads providing verbal updates on their site performance and sharing best practices, including pictures, training videos, infographics, and sample employee communications. Staff also regularly provided updates on the regulatory environment in each Canadian P/T, including new COVID-19 test kits approved by Health Canada, regions where at-home RAS was becoming acceptable, and mandates around testing in particular settings (e.g. schools). Additional regular meetings included Knowledge Shares and Town Halls, where a relevant academic expert provided updates and answered questions on the evolving epidemiology of COVID-19 and testing practices, including test performance and considerations around vaccination and variants of concern.

In the spirit of transparency, meetings featured organizational leaderboards that showcased key performance indicators (e.g. number of screens deployed, number of individuals regularly screening). Meetings were enthusiastically attended by Consortium members, and served to reinforce the messaging around the value of RAS as an additional layer of protection. This clarity of messaging was reflected more broadly in a changing public perception and increased demand for RAS across Canada.[6] Throughout the entire project, CDL RSC prioritized deliberateness, accuracy, and clarity in all of its communications with participating organizations and partners, thereby building a community of stakeholders based on integrity and trust.

[6] CBC News. 'Absolute frenzy' as Ontarians face long lines to get free COVID-19 rapid tests. Dec 16, 2021. Retrieved from: https://www.cbc.ca/news/canada/toronto/absolute-frenzy-as-ontarians-face-long-lines-to-get-free-covid-19-rapid-tests-1.6288461

Figure 4. Total # of screens and regularly screened (≥2x/week), February 6, 2021 to March 31, 2022

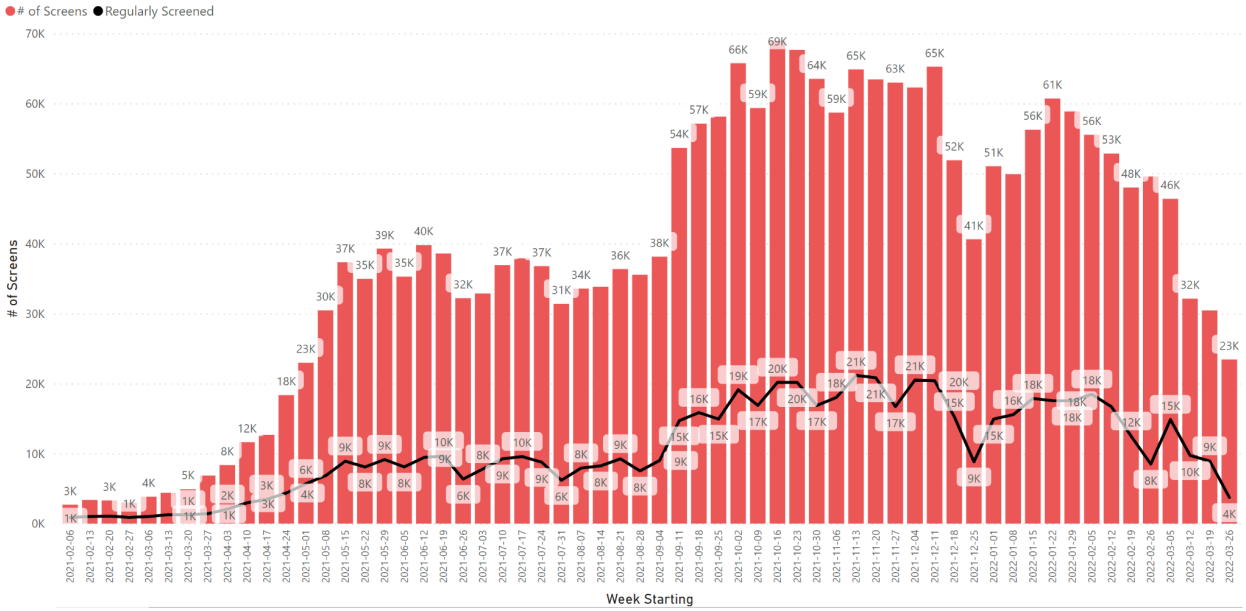


Figure 5. Cumulative # of participants screening, weekly, February 13, 2021 to March 31, 2022