

REALM PROJECT

REopening Archives, Libraries, and Museums

oc.lc/realm-project

#REALMproject



Panelists

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We want to hear from you!



- We'll use chat in Webex and YouTube for those watching livestream
- To access Poll Everywhere, open a new browser and go to: PollEv.com/oclc

Live poll results

Where are you today?



REALM Project overview

OCLC, IMLS, and Battelle formed a partnership to conduct research on how long the COVID-19 virus survives on materials that are prevalent in libraries, archives, and museums.

The project will draw upon the research to produce authoritative, science-based information on how—or if—materials can be handled to mitigate exposure to staff and visitors.



- Project funder
- Consult on project goals and activities
- Formed and convenes the project steering committee and working groups

The Institute of Museum and Library Services is the primary source of federal support for the nation's libraries and museums. We advance, support, and empower America's museums, libraries, and related organizations through grantmaking, research, and policy development. Our vision is a nation where museums and libraries work together to transform the lives of individuals and communities.

- **REALM Project steering committee**

Comprised of leaders from across the archive, library, museum, and scientific fields that are meeting regularly to provide guidance through the duration of the research study.

- **REALM working groups**

- REALM Operations Working Group
- REALM Scientific Working Group

Bringing in the perspectives, needs and interpretations from across consortial and individual institutions as well as member organizations.



- Nonprofit contract research institute headquartered in Columbus, Ohio
- Research and development across public health, consumer, industrial, medical, energy, national security
- Division of biodefense & emerging infectious diseases including a biosafety Level (BSL)-3 laboratory
- SARS-CoV-2 Critical Care Decontamination System



- Charged with executing and management of the project deliverables
- Coordinating with Battelle on the testing and literature review research
- Collecting information from the project steering committees and working groups to inform decisions
- Communicating the research and information produced by the project to the archives, libraries and museums communities

Project activities

- Review and summarize relevant authoritative research (literature reviews)
- Ongoing engagement with representatives and subject matter experts from archives, libraries, and museums
- Laboratory testing of materials
- Synthesize the above inputs into toolkit resources
- Share project information and toolkit resources

REALM Project research

- Battelle is conducting laboratory studies of how long SARS-CoV-2 survives on materials commonly found in libraries, archives, and museums.
 - The results of test 1 were published on June 22, 2020.
 - The results of test 2 were published on July 20, 2020.
- Materials testing continues in sets of five items per test. Results of test set 3 are expected to be published by the end of August 2020.
- Battelle reviewed SARS-CoV-2 literature available as of May 2020. The resulting Systematic Literature Review was published on June 17, 2020.
- A second literature review in Phase 2 of the REALM project.

PHASE 1

**MAY –
AUGUST 2020**

**Preparing for
reopened libraries:
Research on high-priority
materials and workflows**

PHASE 2

**JUNE –
OCTOBER 2020**

**Additional research
to support operations
of libraries, archives,
and museums**

PHASE 3

**OCTOBER 2020 –
SEPTEMBER 2021**

**Monitor, update,
and, communicate**

LITERATURE REVIEWS



Phase 1 literature review questions



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How might the virus spread through public library general operations?



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How long does the virus survive on material surfaces through environmental attenuation? (Virus dying naturally, without intervention.)

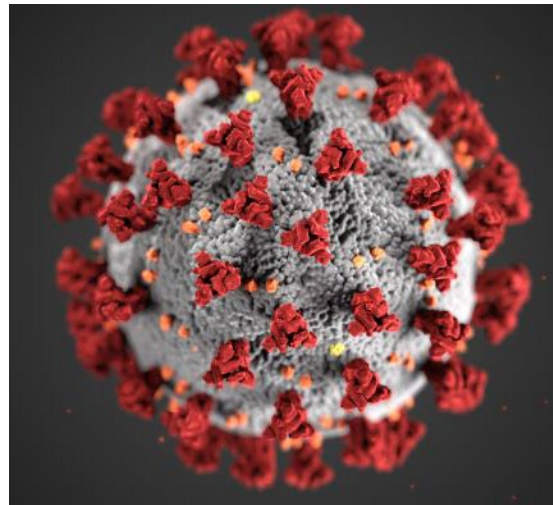


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How effective are various prevention and decontamination measures that are readily available to public libraries in the near term? (Cleaning agents, PPE, shields, etc.)

State of COVID-19 research

- Because SARS-CoV-2 is emerging, knowledge about it is a work in progress; scientists are actively working to study and understand the virus.
- **The human infectious dose is still unknown.** Studies of other viruses (e.g. SARS-CoV, MERS, influenza) have shown a wide range.
- More empirical studies and peer-reviewed publications are needed to verify, expand, correct, and refute results from early work and fill in gaps in the research.
- First literature review was completed in May.
- A second review will be conducted this month.



Literature Review Process



Search term development



Relevancy review of search results



QC of relevancy reviews



Abstracting and summarizing relevant articles



Writing the first draft



Revising/finalize draft

How the virus spreads

From the review of published scientific literature:

- SARS-CoV-2 is generally thought to spread via:
 1. Direct transmission: virus-containing water droplets expelled from infected persons
 2. Indirect transmission: Objects, or fomites, can harbor the virus for an extended period of time after being contaminated by an infected individual.
- Other areas that require more exploration are aerosol particle transmission and human matter (in solid and aerosol).
- Environmental factors such as humidity, temperature, ventilation/air flow, and air conditioning may also affect the spread of SARS-CoV-2.



Survival of virus on surfaces

From the review of published scientific literature:

- If SARS-CoV-2 is transferred to a physical surface, its survival time appears to vary based on material composition and roughness, before dying off on its own through natural attenuation.
- A few early studies (not peer-reviewed) reported that the virus may survive longer on plastics and stainless steel than on paper products and other metals, such as copper.
- However, it is not possible to draw firm conclusions from the results:
 - Small number of studies
 - Inconsistent experimental design



Prevention and decontamination

Researchers suggested several feasible, low-cost options for reducing the presence of SARS-CoV-2, which may help keep prevent spread:

- **Clean surfaces often**
- **Practice social distancing**
- **Wash hands frequently**
- **Wear personal protective equipment (PPE)**

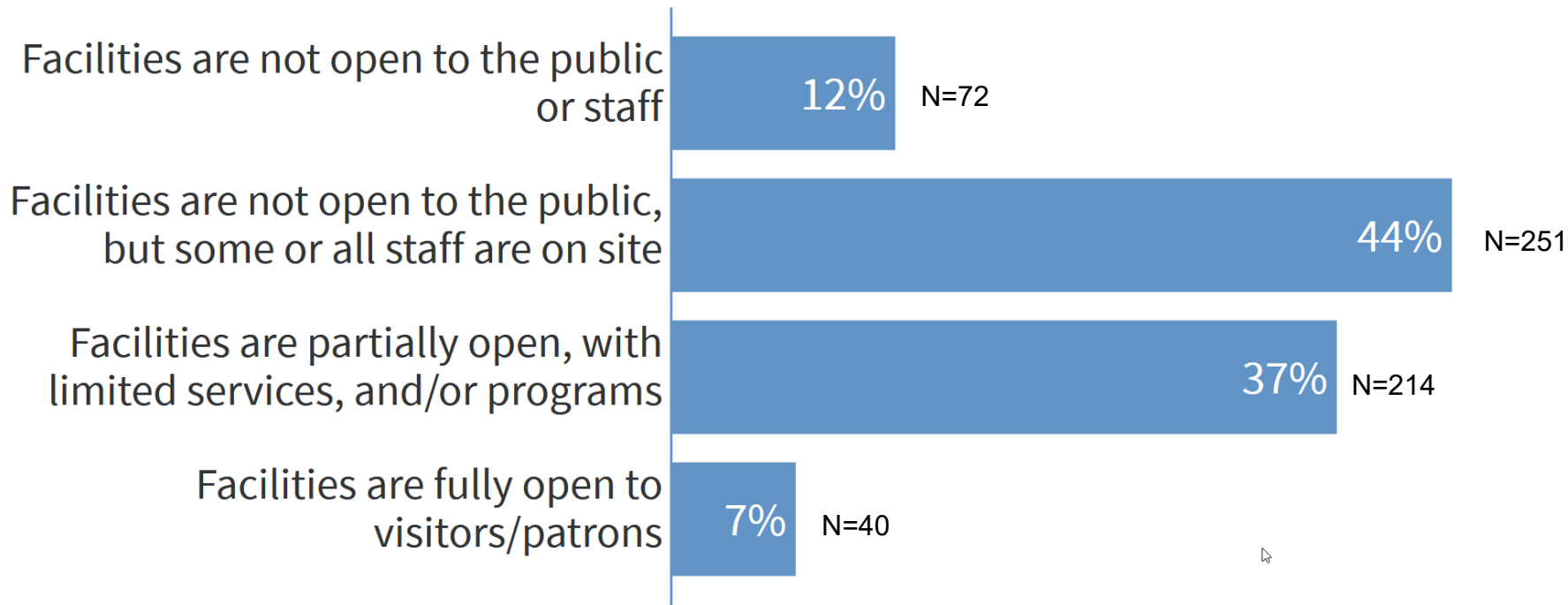
Other factors that may impact survivability and help control spread may be ways that need more studies to find out if they work are:

- **Heat treatment**
- **Sunlight and other light-based treatments**
- **Ventilation systems**
- **Open spaces**



Live poll results

What is the current state of facilities operations at your organization?



LAB TESTING



Testing overview

Objectives

- Determine the affect of ambient environmental conditions on the SARS-CoV-2 virus when applied to common materials found in libraries, archives and museums
- Provide data to OCLC/IMLS for selecting potential quarantine durations before materials can return to public circulation

Experimental design

- 5 test rounds, 5 material types per round
- Droplets of live virus applied to material surface via 'fake spit'
- Materials stored in stacked or unstacked configurations
- Quantity of viable virus was measured at selected time points to capture the attenuation or drop in total virus

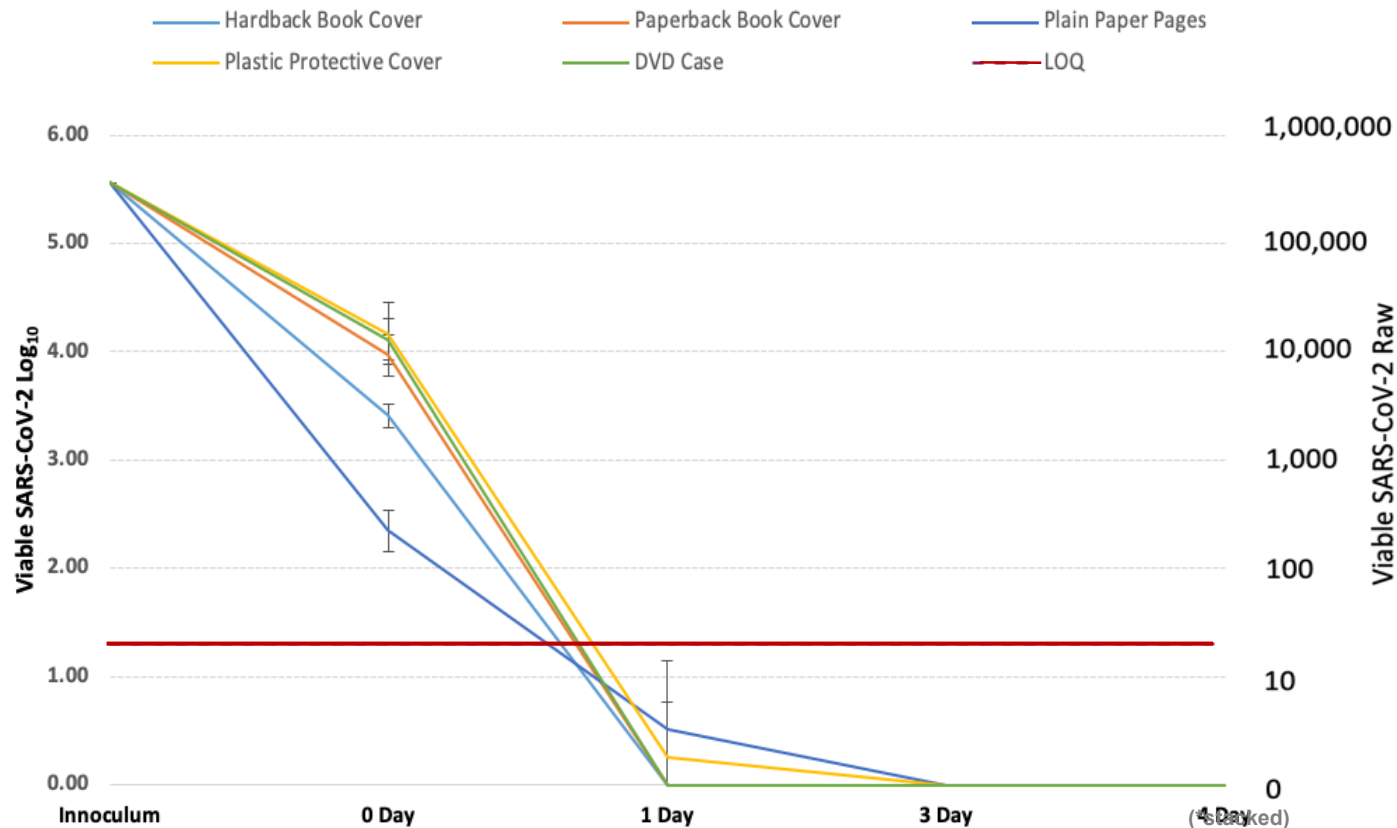


Testing walkthrough

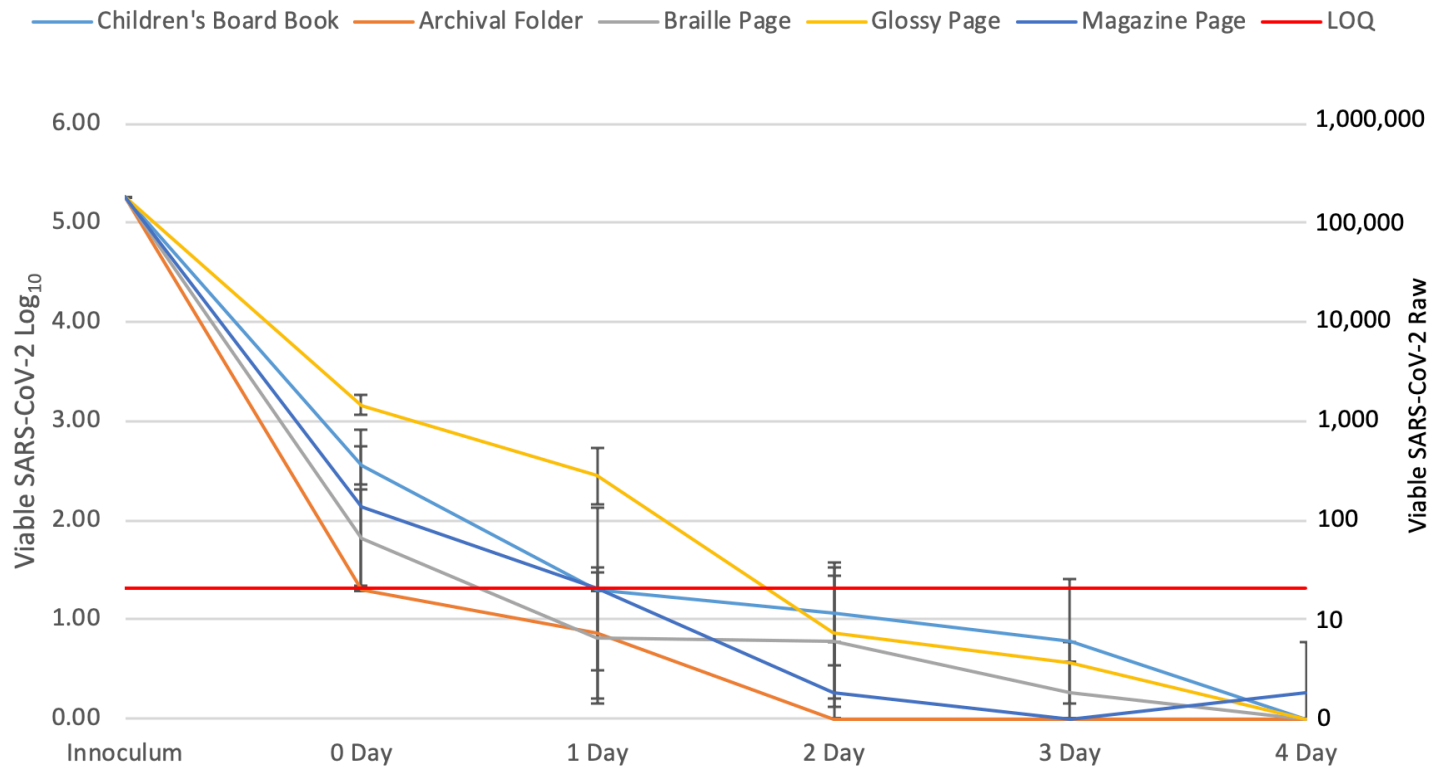
- Material prep:
 - Cut each material type into rectangular coupons
- Material inoculation:
 - Apply droplets of virus stock solution with a known starting concentration of virus.
- Environmental testing and analysis:
 - At each timepoint, a set of coupons are removed and processed to measure the quantity of virus, typically on a Log scale (e.g. 5 Log = 100k virus count).
- Limit of quantification (LOQ):
 - Once the virus count drops below 13.1, researchers can only determine the presence or absence of virus, manually under the microscope.
- Limit of detection (LOD):
 - Absence of virus in material sample or complete attenuation.



Test 1 SARS-CoV-2 natural attenuation (unstacked*)



Test 2 SARS-CoV-2 natural attenuation (stacked)



LAB TESTING - QUESTIONS

Test 1 and Test 2 results (10 items)

Test #	ITEM	ATTENUATION DAYS	CONFIGURATION
1	Hardback book cover	1	Not stacked
1	Softback book cover	1	Not stacked
1	Plain paper pages	3	Inside closed book
1	Plastic book covering	3	Not stacked
1	DVD case	1	Not stacked
2	Braille paper pages	4	Stacked
2	Glossy pages in coffee table book	4	Stacked
2	Children's board book (inside)	4	Stacked
2	Magazine pages	4*	Stacked
2	Archival folders	2	Stacked

* The magazine pages showed a *trace* amount of virus at four days. Day four was the final timepoint tested.

Test 3 on plastic materials

- Talking book cassettes (ABS)
- DVD (polycarbonate)
- Acrylic sheet (Plexiglass)
- Low-density polyethylene (LDPE) bag
- High-density polyethylene (HDPE) container



Test 4, stacked materials

- Hardcover books, stacked
- Trade paperback books, stacked
- Plastic protective covering, stacked
- DVD cases, stacked
- Expanded polyethylene foam

- Testing began July 31
- Test dates 0-2-3-4-6
- Results expected in early September

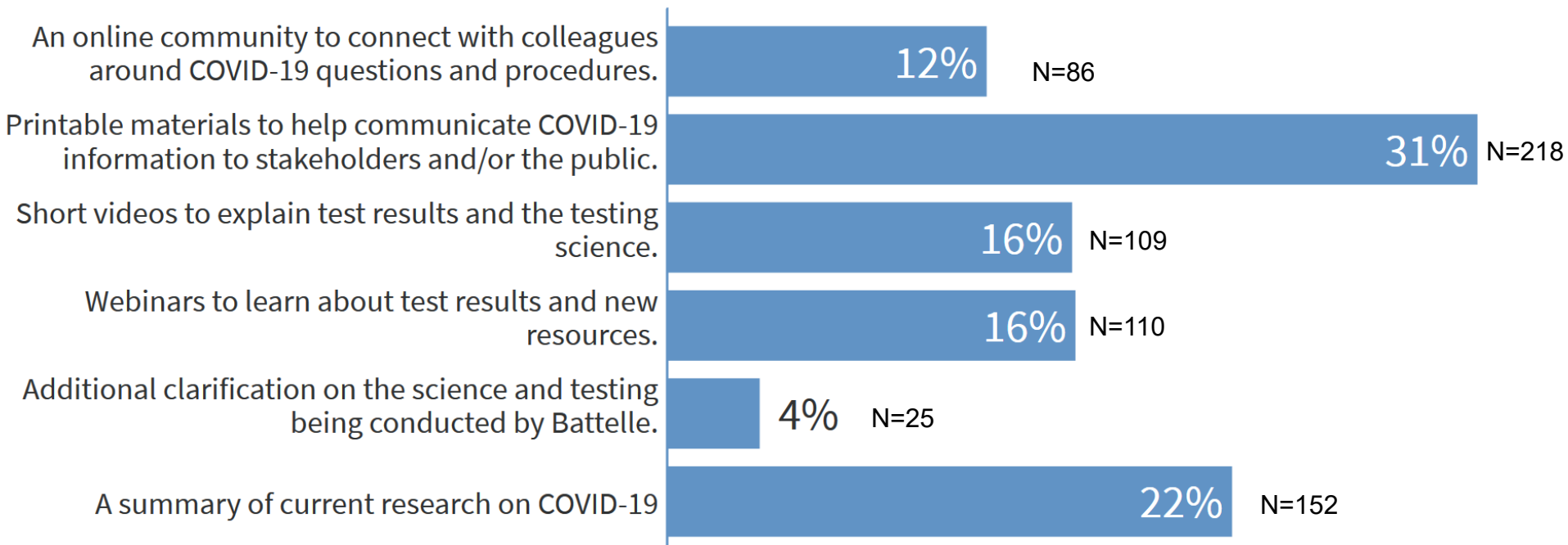
Coming soon

- Phase 2 lab testing (10 items total)
 - Test 4 results in late August; Test 5 in September
- Phase 2 literature review complete in September.
- New project website.
- Shareable resources in a variety of formats that will apply the research.
- Continuing to learn from archives, libraries and museums during their reopening to gain real-world perspectives.



Live poll results

What type of information would help you the most in the coming months? (Choose TWO.)



Questions?

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REALM
PROJECT

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