REALM
PROJECT
REopening Archives, Libraries, and Museums

oc.lc/realm-project
#REALMproject
Panelists

29 January 2021

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This project was made possible in part with support from the Institute of Museum and Library Services, the Library of Congress, The Andrew W. Mellon Foundation, and the Carnegie Corporation of New York.
Project activities

- Review and summarize SARS-CoV-2 research
- Gather input from practitioners and subject experts
- Design, execute, iterate laboratory testing
- Develop and deliver toolkit resources
- Ongoing discussions with libraries, archives, museums
- Listen, learn, adapt
REALM is...
providing data that helps us better understand the virus. You can use that data to inform your practices and policies.

REALM is not...
making recommendations. Every institution is different and will need to develop policies that work for their local context.
Urgency + complexity + uncertainty

Transmission
- Surfaces
- Airborne

Science
- Test results
- Complex accumulating variables

Decisions
- Answers
- Contributions to decision-making
Online polling

Open a web browser to:
pollev.com/oclc
STATUS OF COVID-19 RESEARCH
Known unknowns

1. Unknown: How much virus an infected person will leave on an object
2. Unknown: How much virus someone can pick up from an object
3. Unknown: How much virus is needed to cause infection
Literature research questions

- How might the virus spread through general operations?
- How long does the virus remain active on surfaces?
- How effective are prevention and decontamination measures?
How the virus spreads

Most likely / dominant
• Direct contact between people
• Droplets passed between people

Possibly
• Aerosol particles
• Contaminated objects (*fomites*)
• Other body fluids, excretions
Environmental conditions are a factor

- Temperature
- Relative humidity
- Air quality
- Air flow

Photo by Liam Briese on Unsplash
LAB TESTING
Research question

How long does the virus remain active on materials commonly found in archives, libraries, and museums?

Active… viable… infectious… “alive”
Testing: Prepping the materials
Testing: Hold inside the chamber

- Biohazard Level 3 lab
- Environmentally controlled
  - Relative humidity: 30-50%
  - No outside air
  - No light

<table>
<thead>
<tr>
<th>Test 1-6</th>
<th>Test 7</th>
<th>Test 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.1 ±3.6°F</td>
<td>35.6 ±3.6°F</td>
<td>84.2 ±3.6°F</td>
</tr>
</tbody>
</table>
Testing: Measuring the virus

• At each preselected timepoint, add infected coupons to cell culture
• Based on level cellular infection, use equation to measure amount of infectious virus present
  – Limit of quantitation (LOQ): presence/absence only
  – Limit of detection (LOD): no virus found
# Test 6 – Hard surfaces

<table>
<thead>
<tr>
<th>Item</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>Windows, doors, display cases</td>
</tr>
<tr>
<td>Marble</td>
<td>Flooring, counters, columns</td>
</tr>
<tr>
<td>Laminate</td>
<td>Countertops</td>
</tr>
<tr>
<td>Brass</td>
<td>Fixtures, railings</td>
</tr>
<tr>
<td>Powder-coated steel</td>
<td>Lockers, shelving, book trucks, exhibit elements</td>
</tr>
</tbody>
</table>
Test 6 SARS-CoV-2 Natural Attenuation

- Glass
- Marble
- Laminate
- Powder-coated steel
- Brass
- LOQ

Viable SARS-CoV-2 Log_{10}

- Inoculum
- 0 Day
- 2 Day
- 4 Day
- 6 Day
- 8 Day

LOQ

LOD
How long the virus survives on commonly used library, archive, and museum materials

- Item tested in a **stacked** configuration.
- Item tested in an **unstacked** configuration.
- Item showed **trace amount** of virus after testing.
- Item was **above LOQ** after testing.

<table>
<thead>
<tr>
<th>ITEM / MATERIAL*</th>
<th>DAYS OF VIRUS SURVIVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD case</td>
<td>6</td>
</tr>
<tr>
<td>Softback book cover</td>
<td>6</td>
</tr>
<tr>
<td>Hardback book cover</td>
<td>6</td>
</tr>
<tr>
<td>Archival folders</td>
<td>2</td>
</tr>
<tr>
<td>Brass</td>
<td>2</td>
</tr>
<tr>
<td>Marble</td>
<td>2</td>
</tr>
<tr>
<td>Plain paper pages</td>
<td>3</td>
</tr>
<tr>
<td>Plastic protective cover</td>
<td>6</td>
</tr>
<tr>
<td>Braille paper</td>
<td>4</td>
</tr>
<tr>
<td>Glossy pages</td>
<td>4</td>
</tr>
<tr>
<td>Children’s board book</td>
<td>4</td>
</tr>
<tr>
<td>Magazine pages</td>
<td>4</td>
</tr>
<tr>
<td>DVD disc</td>
<td>5</td>
</tr>
<tr>
<td>Storage bag</td>
<td>5</td>
</tr>
<tr>
<td>Storage container</td>
<td>5</td>
</tr>
<tr>
<td>Plexiglass</td>
<td>5</td>
</tr>
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<td>USB cassette</td>
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<td>Storage foam</td>
<td>6</td>
</tr>
<tr>
<td>Leather book cover</td>
<td>8</td>
</tr>
<tr>
<td>Synthetic leather</td>
<td>8</td>
</tr>
</tbody>
</table>
THE BUFFALO HISTORY MUSEUM

Robin Foley
Director of Operations
These guidelines apply to all indoor museums, historical sites, aquariums, and other related institutions or activities that have been permitted to reopen. See “Interim COVID-19 Guidance for Low-Risk Indoor Arts and Entertainment” for full details.

During the COVID-19 public health emergency, all owners/operators of indoor museums, historical sites, aquariums, and other related activities should stay up to date with any changes to state and federal requirements related to low-risk indoor arts and entertainment activities and incorporate those changes into their operations. This guidance is not intended to replace any existing applicable local, state, and federal laws, regulations, and standards.

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Recommended Best Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Distancing</strong></td>
<td>Limit the workforce and patron/visitor presence to no more than 25% of maximum occupancy, inclusive of patrons/visitors, who must only be permitted entry into the institution if they wear an acceptable face covering, avoid congregating, and practice physical distancing.</td>
</tr>
</tbody>
</table>
Pandemic Aware Procedures

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Cleaning Protocol
Preparing for Reopening
Since Reopening
Looking Forward

All photos courtesy of The Buffalo History Museum
COUNTIES

California has 58 counties. There are 3,141 counties in the United States. Counties are the primary legal divisions of most states and generally are functioning governmental units. They are known as "parishes" in Louisiana. In Alaska, Census Areas are used for statistical purposes, while the principal governmental units are boroughs. Maryland, Missouri, Nevada, and Virginia also have independent cities, government units outside the jurisdiction of any county.
Humboldt County Library Branches

Eureka  Arcata
Blue Lake  Ferndale
Fortuna  Garberville
Hoop a  McKinleyville
Rio Dell  Trinidad
Willow Creek

AND A BOOKMOBILE THAT SERVES SMALLER COMMUNITIES
Humboldt County Library

By the Numbers

- **489,936** Physical items checked out
- **44,757** Items downloaded on Libby/OverDrive
- **1,060** Library programs
- **22,873** Visits per month

2018-2019 Statistics
Effects of COVID-19 on Library Services
Libby/Overdrive
E-Books & Audiobooks

Get e-books and audiobooks instantly and easily, right onto your device.

- All you need is a library card and device (smartphone, tablet, etc.)
- Items download directly onto your device.
- No late fees - items return automatically.

E-Account Eligible
Community Events

- Humboldt County Historical Society: Lecture Series
- Family Literacy Zoom Night: Sponsored by the Humboldt Literacy Project
- Sequoia Park Zoo
- Vote Smarter: Online programs to help you get informed and prepared before you vote
- Drive-Thru Community Flu Vaccine Clinic: Free for all ages 6 months and up! Walk-ins welcome.

Humboldt County Library 1213 Third St. Eureka
Wednesday, Nov. 18 11 a.m. to 2 p.m.

Facial coverings required. Flu shots will be available on a first come, first served basis, rain or shine. Vaccines are limited. Children must be accompanied by an adult or guardian.
Clever & Smart!
I love Art!
i am born to be AWESOME!

CAREFREE!
Zip & ILL

Helping you find your book

- Zip Book program allows you to order books not in our collection
- ILL (Inter Library Loan) allows you to borrow books from other libraries around the country
- Request online via form
Curbside Pickup

Get physical items like books, DVDs, books on CD and magazines

- Place up to four items on hold online or by phone
- Library will notify when item is available.
- Drive to the front of your local branch and call the number posted out front.
- Library staff will bring items out on a cart.
Humboldt County Library
Main Branch

CURBSIDE PICKUP

PLEASE STAY IN YOUR VEHICLE AND CALL US AT
707-269-1940

LIBRARY STAFF WILL BRING OUT YOUR MATERIALS FOR PICKUP.
YOU MUST BE WEARING A MASK AND MAINTAIN A DISTANCE OF 6 FEET OR MORE AT ALL TIMES.
Humboldt County COVID-19 Plan Approval Certificate for Retail Employers

This business:

- Has an approved worksite plan
- Conducts COVID-19 training for all employees
- Has implemented individual control measures and screening
- Follows state-approved cleaning and disinfecting protocols
- Observes all physical distancing guidelines.

COMPLIANCE LINE: 707-441-3022
Grab Bags

- Items selected for you by library staff
- 8-10 items per grab bag
- Staff will discuss what you like/dislike
- Available through at any branch
- Online form available soon
COVID-19 HEALTH CHECK!
Before you report to work, keep your coworkers safe by self-screening for COVID-19 symptoms:

- Fever (over 100° F) or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

IF YOU ARE EXPERIENCING THESE SYMPTOMS, DO NOT CONTINUE INTO THE BUILDING. GO HOME AND CALL IN SICK!

HOW TO USE THE INFRARED THERMOMETER
Please take your temperature as soon as you arrive at work, before leaving the white-board area.

1. Place the sensor 2" to 4" away from your dry forehead, moving any hair out of the way.
2. Press the trigger to start the measurement and wait for the "beep."
3. The thermometer defaults to Celsius, compare the reading to this table to find your temperature in Fahrenheit:

<table>
<thead>
<tr>
<th>Celsius</th>
<th>Fahrenheit</th>
</tr>
</thead>
<tbody>
<tr>
<td>36.1°</td>
<td>96°F</td>
</tr>
<tr>
<td>36.6°</td>
<td>99°F</td>
</tr>
<tr>
<td>37.2°</td>
<td>99°F</td>
</tr>
<tr>
<td>37.8°</td>
<td>100°F</td>
</tr>
</tbody>
</table>

If the handle and trigger of the device are wet with a sanitizing wipe, DO NOT USE.

TEMPERATURE IS 100°F OR HIGHER, DO NOT ENTER THE BUILDING. RETURN TO WORK AND CALL IN SICK!
Humboldt County COVID-19 Dashboard
Printable Dashboard (PDF)

State of California Data and Tools

**Community Risk Level**

**Widespread**

<table>
<thead>
<tr>
<th>Tier</th>
<th>Community Risk</th>
<th>Individual Risk</th>
<th>Adjusted Case Rate</th>
<th>Positivity Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widespread</td>
<td></td>
<td>Widespread outbreak that is growing with many undetected cases. Take strong measures to limit all contact.</td>
<td>More than 7 daily new cases (per 100k)</td>
<td>More than 8% positive tests</td>
</tr>
<tr>
<td>Substantial</td>
<td></td>
<td>Many cases with conditions for community spread, with many undetected cases likely. Limit everyday activities to increase safety.</td>
<td>4 - 7 daily new cases (per 100k)</td>
<td>5 - 8% positive tests</td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td>Moderate number of cases with majority of cases from a known source. Increase efforts to limit personal exposure.</td>
<td>1 - 3.9 daily new cases (per 100k)</td>
<td>2 - 4.9% positive tests</td>
</tr>
<tr>
<td>Minimal</td>
<td></td>
<td>Cases are somewhat sporadic, and contact tracing can be used to control the virus. Take everyday enhanced precautions.</td>
<td>Less than 1 daily new cases (per 100k)</td>
<td>Less than 2% positive tests</td>
</tr>
</tbody>
</table>

Source: covid19.ca.gov/safer-economy

Follow local and state health orders and guidance.
Current tier assignments as of January 26, 2021

Tier assignments may occur any day of the week and may occur more than once a week. Select a county to see what region it’s in.

STATEWIDE METRICS
- 71.6 New COVID-19 positive cases per day per 100K
- 12.4% Positivity rate (7-day average)
- 0.0% ICU availability

Find a county
[Highlight County]

Click on the map for updated metrics

COUNTY RISK LEVELS

- Widespread: 54 Counties, Population 40,093,779
- Substantial: 3 Counties, Population 32,260
- Moderate: 1 County, Population 3,115

Last Updated 1/26/2021
Welcome to the Children's Room
REALM 101: A PROJECT OVERVIEW

For libraries

For museums
# How long the virus survives on commonly used library, archive, and museum materials

<table>
<thead>
<tr>
<th>Item / Material</th>
<th>Days of Virus Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVD case</td>
<td>6</td>
</tr>
<tr>
<td>Softback book cover</td>
<td>6</td>
</tr>
<tr>
<td>Hardback book cover</td>
<td>6</td>
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<tr>
<td>Archival folders</td>
<td>6</td>
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<tr>
<td>Brass</td>
<td>2</td>
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<td>Marble</td>
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<td>Plain paper pages</td>
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<td>Plastic protective cover</td>
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<td>Braille paper</td>
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<td>Magazine pages</td>
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</tr>
<tr>
<td>DVD disc</td>
<td>5</td>
</tr>
<tr>
<td>Storage bag</td>
<td>5</td>
</tr>
<tr>
<td>Storage container</td>
<td>5</td>
</tr>
<tr>
<td>Plexiglass</td>
<td>5</td>
</tr>
<tr>
<td>USB cassette</td>
<td>5</td>
</tr>
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<td>Laminate</td>
<td>6</td>
</tr>
<tr>
<td>Glass</td>
<td>6</td>
</tr>
<tr>
<td>Powder-coated steel</td>
<td>6</td>
</tr>
<tr>
<td>Storage foam</td>
<td>6</td>
</tr>
<tr>
<td>Leather book cover</td>
<td>8</td>
</tr>
<tr>
<td>Synthetic leather</td>
<td>8</td>
</tr>
</tbody>
</table>

1 Total number of virus applied to each material
2 Total number of virus recovered after **1st dry period

---

**Figure 2**: Total Log$_{10}$ SARS-CoV-2 Recovered at days 1, 2, 3 and 4

**Table 2**: Test 3 total Log$_{10}$ SARS-CoV-2 recovered at days 1, 2, 3 and 4

<table>
<thead>
<tr>
<th>Description</th>
<th>Inoculum$_1$</th>
<th>0 Day$_2$</th>
<th>2 Day</th>
<th>3 Day</th>
<th>4 Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking book, USB cassette</td>
<td>4.70</td>
<td>3.24</td>
<td>1.45</td>
<td>1.12</td>
<td>0.97</td>
</tr>
<tr>
<td>DVD</td>
<td>4.70</td>
<td>3.24</td>
<td>1.28</td>
<td>1.55</td>
<td>1.39</td>
</tr>
<tr>
<td>Storage bag (flexible plastic)</td>
<td>4.70</td>
<td>3.47</td>
<td>1.76</td>
<td>1.77</td>
<td>0.52</td>
</tr>
<tr>
<td>Storage container (rigid plastic)</td>
<td>4.70</td>
<td>3.16</td>
<td>1.26</td>
<td>0.85</td>
<td>0.78</td>
</tr>
<tr>
<td>Plexiglass</td>
<td>4.70</td>
<td>3.24</td>
<td>1.41</td>
<td>0.52</td>
<td>0.52</td>
</tr>
</tbody>
</table>

1 Total number (Log$_{10}$) of virus applied to each material
2 Total number (Log$_{10}$) of virus recovered after **1st dry period**
MATERIAL COMPARISONS

How long the virus survives on commonly used library, archive, and museum plastics

**ITEM / MATERIAL** | **DAYS OF VIRUS SURVIVAL**
--- | ---
Polypropylene tested as DVD case | 1
Biaxially oriented polyester film tested as protective book cover | 3
Polycarbonate tested as DVD disc | 5
LDPE plastic tested as storage bag | 5
HDPE plastic tested as storage container | 5
Plexiglass | 5
ABS plastic tested as USB cassette | 5
Expanded polystyrene foam | 6
Expanded polyvinyl chloride "vinyl" tested as audiocassette | 8

---

How long the virus survives on books & paper

**ITEM / MATERIAL** | **DAYS OF VIRUS SURVIVAL**
--- | ---
Softback book cover | 1
Hardback book cover | 6
Archival folders | 6
Plain paper pages | 3
Plastic protective cover | 3
Braille paper | 6
Close-up pages | 6
Children's board book | 6
Magazine pages | 6
Leather book cover | 6
Synthetic leather | 6

---

How long the virus survives on media

**DAYS OF VIRUS SURVIVAL**
---
"Unplugged" configuration | 1
"Unplugged" configuration after drying | 5
"Unplugged" configuration | 6
"Plugged" configuration | 5
"Plugged" configuration after drying | 5
"Plugged" configuration | 6
"Plugged" configuration after drying | 8
LIT REVIEW

- How the virus spreads
- Decontamination strategies
- Prevention strategies

TAKEAWAYS

Key takeaways from Phase 2 literature review:

The Phase 2 literature review analyzed and summarized available scientific literature on SARS-CoV-2 (the virus that causes COVID-19) from mid-May through mid-August 2020. The review included studies on how the virus spreads, virus attenuation on materials, and effectiveness of prevention and decontamination strategies.

**HOW THE VIRUS SPREADS**

The SARS-CoV-2 virus is transmitted through respiratory droplets expelled by an infected person during coughing, sneezing, singing, or speaking. Other pathways of spreading the virus also include:

- **Environment**: Higher temperatures, higher humidity, and increased intensity of UV light can increase the survival of the virus on surfaces.
- **Ventilation**: Air-handling systems and other air-conditioning mechanisms can contribute to the spread of the virus through the air.

**Facets**

-**Facets**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cleaning hands</strong></td>
<td>- Wash hands for 20 seconds from fingertip to forearm with soap and warm water - Rub hands with 60-60% ethanol hand sanitizer for 30 seconds - Rub hands with 75% 2-propanol hand sanitizer for 30 seconds</td>
</tr>
<tr>
<td><strong>Mask wearing</strong></td>
<td>- Wear face masks that cover the nose and mouth, such as surgical and triple-layer cotton masks - Provide masks to all guests and staff</td>
</tr>
<tr>
<td><strong>Social distancing</strong></td>
<td>- Maintain a physical distance of at least 5.2-9.8 ft - Implement intermittent occupancy - Schedule visits</td>
</tr>
<tr>
<td><strong>Disinfecting</strong></td>
<td>- Refer to list of disinfectants and surface cleaners that meet the EPA's criteria for use against SARS-CoV-2</td>
</tr>
<tr>
<td><strong>Heating and cooling systems</strong></td>
<td>- Use continuous air renewal from fresh outdoor air - Use HVAC energy with HVAC systems - Use MERV 14 filters</td>
</tr>
<tr>
<td><strong>Ventilation</strong></td>
<td>- Use local exhaust - Use high-efficiency particulate air (HEPA) and MERV 14 filters - Mix fresh outdoor air with existing air - Ensure cool air enters the room at floor level and exhausts at ceiling level - Use stand-alone air purifiers</td>
</tr>
</tbody>
</table>

**UV light**

- **Exposure to combined UVA/UVB light for 9 minutes**
- **Exposure to pulsed-wavelength UV for 1 minute**

*UV light is known to cause damage to collections materials.*

For more information, see theREALM website: Collections and Environment Care for Your Museum During COVID-19.
CHECKLISTS

• Decision-making considerations
• Cleaning considerations
• Other topics coming soon
MORE COMING SOON:

- Visual aids for new test results
- More literature review takeaways
- More checklists and decision-making tools
- Resources related to vaccine issues, virtual programs, social distancing modifications, etc.
CHAT question:

What feels most urgent to you now?
For more information

• Visit oclc.org/realm
  – Research
  – Resources (toolkit)
  – Question submission form
  – FAQ

• Join mailing list (10,000+ subscribers)
  – Generally every two weeks
  – First to hear the news
Questions for REALM?

#REALMproject  oc.lc/realm-project