

Pathways to (Re)Opening Exhibitions

A Resource Guide
for Museums

 DLR Group

Executive Summary

DLR Group and our collaborative partners have been studying many facets surrounding reopening places of public assembly during and post the COVID-19 pandemic. As most states are implementing their phased reopening plans, museums present many challenges as, by nature, they are spaces where people typically gather in close proximity to view curated works of art or historical objects and to interact with interpretive content related to the theme of the exhibit or museum.

Based on decades of award-winning cultural arts design work, we have developed a guide that presents opportunities and considerations for the reopening of museums and interpretive centers. The guide is organized in three main categories – financial, operational, and facilities – each with observations and recommendations for potentially reopening with safety and success in mind.

Financial Considerations

The impact of COVID-19 has brought about significant financial challenges to organizations that operate museums and interpretive centers during and after the pandemic. The following options can improve financial performance despite the challenges include: extended hours of operation; alternate pricing models; alternative or new revenue production; improving exhibit touring and rental stock; improving outreach for underserved communities; leveraging digital platforms and new media technologies; and maximizing exterior and ancillary spaces for revenue generation

Operational Considerations

Operational expenditures and processes directly impact of how successfully venues can return to a new normal of stability while offering visitors and staff, and in some cases artists, a measure of assurance that it is safe to return to facilities. All considerations regarding operations should be reviewed based on an individual museum or interpretive center's specific challenges and mandated requirements for a safe opening by any and all authorities. Guidelines

to consider when making the choices appropriate to each specific circumstance include: social distancing at points of gathering from arrival and queuing, ticketing, concessions/retail, restrooms, VIP patron amenities, classrooms and education spaces; within the exhibit halls and any auditoria or lecture halls; and back-of-house curatorial prep and collections storage areas, research areas, exhibit fabrication spaces, office space, and exhibit load-in; handwashing, PPE, and patron touchpoints; health and safety screening; staff, visiting artists, and volunteer safety; and messaging and communication to all visitors and staff.

Facilities

Accommodating visitors, staff, and artists through well thought out facility changes will have a direct impact on their safety and whether they choose to return to the museum or interpretive center. The following considerations should be evaluated for effectiveness in COVID-19 mitigation, maintenance and operations, and any financial implications from first cost to cost of ownership: reduce touchpoints and hard to clean surfaces; concessions, bar, and food service patron and staff flow, cleaning, and types of offerings; merchandise, ticketing, security, health screening, and other potential bottlenecks; interiors and finishes; technology integration and improvement; emergency management; exhibit, auditoria, and lecture hall seating and movement of patrons; and back-of-house, ancillary, and exterior spaces.

Developed and prepared by consortium of specialists within DLR Group:

Museum architects and planners
Mechanical engineers
Theater technical planners
Audiovisual designers

Experiential content creators
Low voltage system designers
Lighting designers
Healthcare specialists
Education specialists

And in outside collaboration with:

Cleveland Museum of Natural History
Cleveland Museum of Art
Museum of Contemporary Art, Cleveland
Rock & Roll Hall of Fame

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Preliminary Considerations

The coronavirus pandemic has catalogued many aspects of our daily lives and routines under nostalgia. How we move through a space and interact with our environment has been altered for the foreseeable future. The museum industry, which accounts for over 10,000 institutions in the United States generating over \$15 billion in revenue annually, has been significantly impacted.

To help museum leaders, curators, and staff develop plans and strategies to return to the U.S. economy, DLR Group created a response guide that examines three elements: finances, operations, and the physical environment. With this approach in mind, we offer the following preliminary considerations for context:

- This evolution will not be immediate. There is a need to be adaptable and fluid as circumstances are changing daily in the progression of the pandemic.
- There are no one-size-fits-all recommendations, but rather a hybrid approach and multi-pronged efforts based on empirical facts and science.
- Even while deploying a host of strategies, patron confidence and communication will be critical to any success.
- Being allowed to open doors does not mean your patrons, volunteers, or staff will return unless they feel comfortable and confident in their health and safety. The importance of staff or volunteers feeling safe in their work environment is integral to a successful operation.
- A clear message about new policies and procedures will be required to be successful, especially if changes are required due to evolving responses to the pandemic.
- Clear messaging should be coupled with a thoughtful education communication program.
- A percentage of your museum's occupants may be in high-risk categories.
- Some patrons may not have access to or be comfortable with new requirements such as wireless technology or app purchases for gallery guides, retail, and concessions.
- There are opportunities to test-fit strategies that may work for your organization.
- Balancing operational and production costs with projected reduced revenue as patrons slowly return is critical.
- Contractual obligations, including special exhibits, touring exhibits, and new media strategies, will be an important consideration.
- There is a potential impact of virtual reality and other distance technologies, as well as a need for careful, considered messaging of these presentation opportunities to audiences.

The following guide includes financial, operational, and physical environment considerations. Not all will be applicable to every museum or circumstance, and some considerations may have legal implications for your organization. Please consult your organization's legal counsel and liability insurance carrier to determine all risks.

Financial Considerations



Shelter-in-place orders and the required closing of non-essential business operations forced museum leaders and building owners into an all-stop mode, which has impacted museum revenue across the country. A reduction of staff, postponed/canceled special exhibits, or outright closed doors have required refunds of essential ticket revenue. The traveling exhibit industry has greatly scaled back or suspended most programs of any significant scale leaving host museums with limited programming options and lost revenue. For organizations with significant financial reserves, the current situation has forced prioritization of essential services and a shift toward digital outreach to current patrons while leveraging social media to continue public engagement. Other organizations without the financial resources beyond general operating costs have had to curtail most, if not all, of their programming.

The academic arts culture has also been impacted as many colleges and universities move classes to an online format for the foreseeable future, reducing or eliminating whole department budgets and, in some cases, suspending entire academic units. Campus arts education is challenged as many forms and disciplines require in-person, one-on-one training, plus showing work in shows and gallery format to in-person audiences. Having college and university museums eliminate or limit access to their collections to campus staff, students, and the public eliminates this vital educational experience.

Financial implications include academic and professional arts organizations finding a reduction in their in-kind and endowment donations, due to the already limited donor resources being stretched thin by COVID-19 relief efforts. Grant makers unrelated to the novel coronavirus have reduced acceptance of new applications and COVID-19 relief funds have been challenging to obtain.



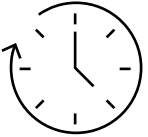
A soft opening of smaller exhibits with fewer attending patrons will most likely be the normal operating mode until such a time that patrons and staff feel safe to do more.


A soft opening of smaller exhibits with fewer attending patrons will most likely be the normal operating mode until such a time that patrons and staff feel safe to do more. Social distancing guidelines set out by the Centers for Disease Control and Prevention and local authorities will have a negative impact on revenue as museums will almost certainly have reduced occupancy limits. The visitor capacity to meet distancing guidelines of approximately six feet may result in higher ticket prices to offset loss of revenue, putting attendance out-of-reach for younger or new patrons who may have less disposable income. Group tours will more than likely be on pause for the foreseeable future. Ticket sale losses notwithstanding, other direct revenue sources are expected to also decline sharply, including rental income and on-premise education programs. Museums that do not currently charge an entrance fee but rely on entrance donations may see more of an impact in the donation amounts over set ticket pricing models reducing overall revenue.

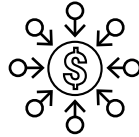
Small museums, such as house museums, historical societies, or those co-located within another facility, face a bigger challenge in that often their physical space is not conducive to social distancing or other accommodations more easily handled in larger museums.

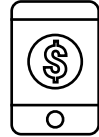
This situation has also impacted potential expenditures beyond normal operating costs as the museum community looks for ways to re-engage with their patrons and living artists in a safe and productive way with minimal compromises to the quality of their offerings. Additional costs may include extended hours of operation to allow adequate time to move patrons in and out of the venue; increased staffing requirements in both front- and back-of-house operations to manage and implement new policies and procedures related to operational strategies for an effective COVID-19 response; increases in production costs, staffing, insurance, and other operational expenditures; and the costs incurred for foundational facility changes, improvements in technology, and material cost of hygienic supplies above what has been the prior standard

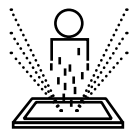
With these challenges defined, we have identified the following key financial opportunities:

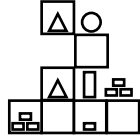
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Extended Hours of Operation
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Alternate Pricing Models
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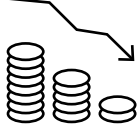
Alternative/New Revenue Sources
- 


Monetize Artists on a Digital Platform
- 

Develop New Media Technologies and Experiential Design
- 

Rental Stock Improvements
- 

Maximize Exterior Spaces
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Flexibility in Using Ancillary Spaces within Your Venue
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Reduce Operating Expenses
- 

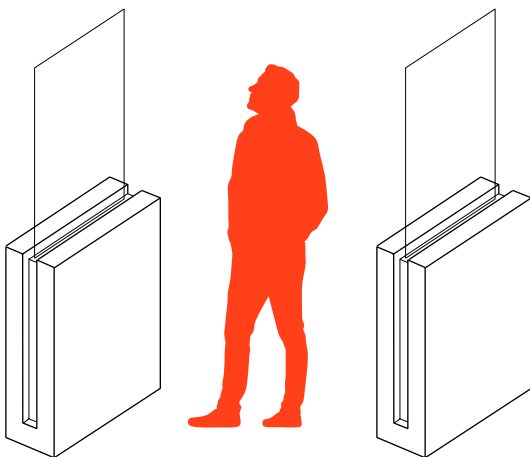
Human Resource Expenditures

Extended Hours of Operation

Although offering extended hours could be a potential negative, the opportunity exists to entertain, inform, and engage museum visitors in a meaningful way. This level of commitment to your patrons encourages repeat visits for future exhibits or showcases other revenue-generating occasions such as educational classes, special all-access passes, concessions or retail merchandise, venue or exhibit rental opportunities, and promotion for upcoming events such as galas, fundraisers, or meet-and-greets with artists, educators, and curators.

Alternate Pricing Models

Many venues are exploring how best to restructure exhibit configurations to maximize the visitor experience, even at reduced capacity. Our recommendation is a fluid approach based on demand and grouping sizes. Dynamic exhibition advertising and signage can positively influence demand pricing and special access, which could include special pricing for family groups, thereby mitigating social distancing rules. Other tiers of special pricing that allow a museum to maximize the quantity of visitors would include a willingness to attend solo at an appropriate distance from neighboring patrons, and VIP and VVIP pricing models as seen in Asian and European markets. The fluidity comes with exhibits that fluctuate as sales come in, which would suspend walk up sales unless they can be accommodated in a safe manner. Offering this flexibility, whether by exhibit or in a season subscription, can have positive impacts on earned revenue.



Digital Projection Podium: Digital podiums offer opportunities for real-time admission pricing, special event information, and other news.

Alternative/New Revenue Sources

The pandemic has created an out-of-the-box opportunity to expand museum revenue generation through sales. Expanded outreach and educational programming, including use of technology to reach more patrons, can become revenue streams that are either advertised during extended hours or even provided during those hours. Through thoughtful planning, rental opportunities for non-traditional uses not only provide income, but also introduce new potential audiences by showcasing your museum and highlighting the safety precautions put in place. These events may include hosting corporate meetings or educational seminars, book signings, small weddings, or conferencing events as examples.

Monetize Original Content on a Digital Platform

While there may be legal and contractual issues regarding displaying works of art involving distribution in a digital format, this can be significantly easier to navigate when original content is developed. For example, new artist showings, owned collections, public art works, and other sources can be coupled with new digital formats for subscription-based delivery. These can also be combined with live audiences to enhance the immediacy of virtual productions. Additionally, virtual tours of facilities or behind-the-scenes access to the inner workings of a museum – including interviews with exhibit designers, curatorial staff, and researchers – add a new and exciting level of engagement. Effective social media campaigns can be deployed to direct digital traffic to the virtual venue and newly created content. Use of app-based interactivity for collections or interactive museums can be duplicated for remote use to expand engagement. This same content can be provided to patrons on-premises; however, current social distancing guidelines would result in longer wait times.

Equity and Inclusion

While the pandemic is a test for museums, it is also a test for each museum's local community: businesses have closed, jobs have been lost, incomes have diminished. The need for a museum to pursue its mission has, perhaps, never been so clear or so vital. At the same time, the pressures to reach financial benchmarks have never been so dire. This leaves museums in a challenging, contradictory, and hopefully not impossible position: earn revenue but serve your communities well. As museums across the country have begun the reopening process, the baseline, mission-driving action has been to offer free admission to hospital and healthcare workers or pay-what-you-can admission days / weeks. Moving further into 'living with COVID-19' mode, perhaps the former could be extended to all essential workers (grocery store employees, funeral directors, construction workers, and the like). Perhaps the latter could become norm.

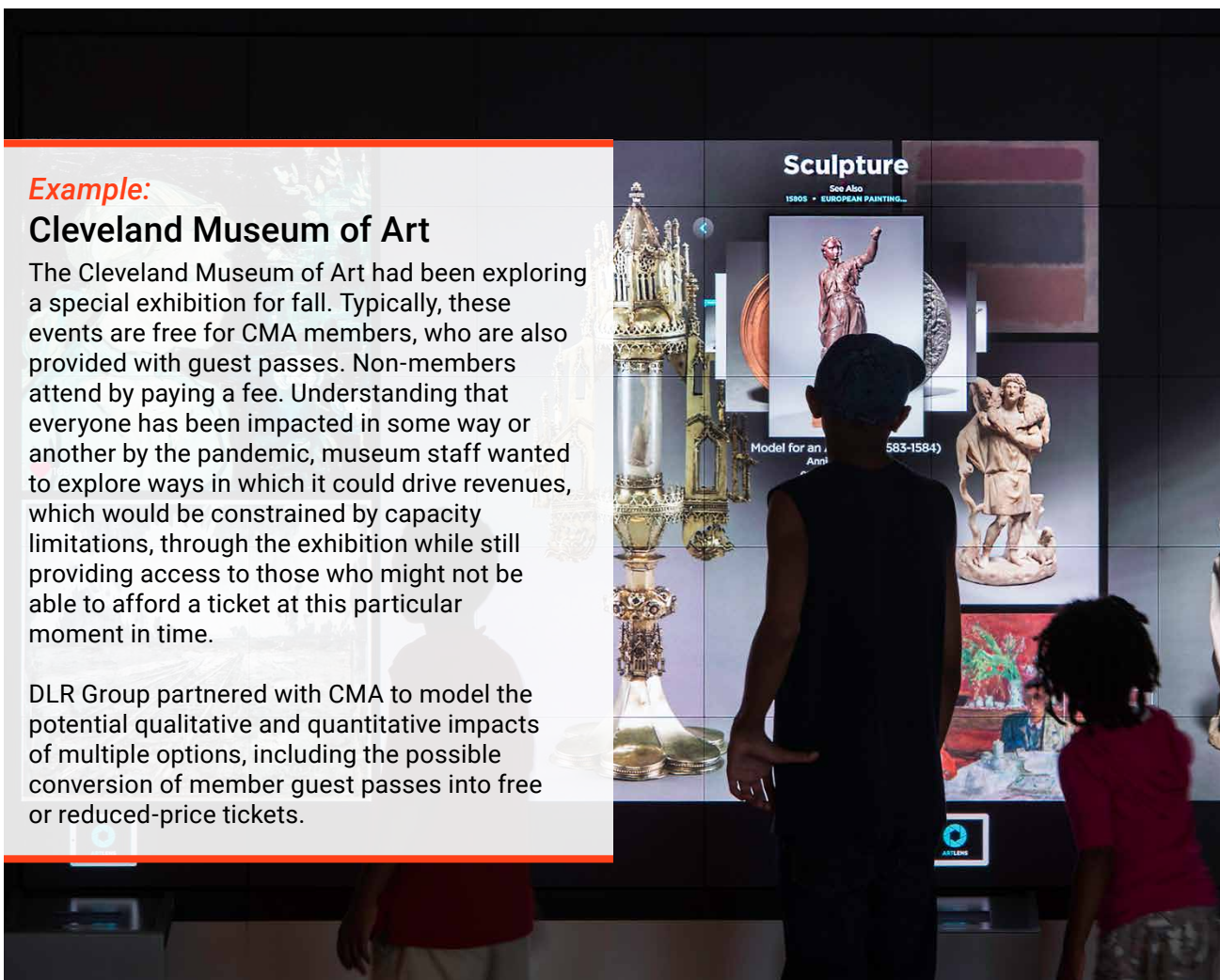
In the meantime, museums across the country have begun to demonstrate what the 'above baseline' might look like. Prior to reopening, many provided access to their collections and educational programs through free, virtual programming. Others—understanding that internet access is not ubiquitous—found new and creative ways to connect with their communities. At Colonial Williamsburg, for example, restaurants were converted into meal distribution sites for community members, who were invited to eat, at a distance, in the institution's gardens. At KidsQuest Children's Museum, staff worked to curate 600 hands-on art/science and music/movement/math resource kits that were distributed to those in need by the museum's community partners. In New Orleans, the Museum of Art mailed coloring books to families and staff made regular check-in calls to members.

Example:

Cleveland Museum of Art

The Cleveland Museum of Art had been exploring a special exhibition for fall. Typically, these events are free for CMA members, who are also provided with guest passes. Non-members attend by paying a fee. Understanding that everyone has been impacted in some way or another by the pandemic, museum staff wanted to explore ways in which it could drive revenues, which would be constrained by capacity limitations, through the exhibition while still providing access to those who might not be able to afford a ticket at this particular moment in time.

DLR Group partnered with CMA to model the potential qualitative and quantitative impacts of multiple options, including the possible conversion of member guest passes into free or reduced-price tickets.





Projection Mapping: New technologies like projection mapping bring building facades to life with artwork, exhibition news, or museum branding.

Develop New Media Technologies and Experiential Design

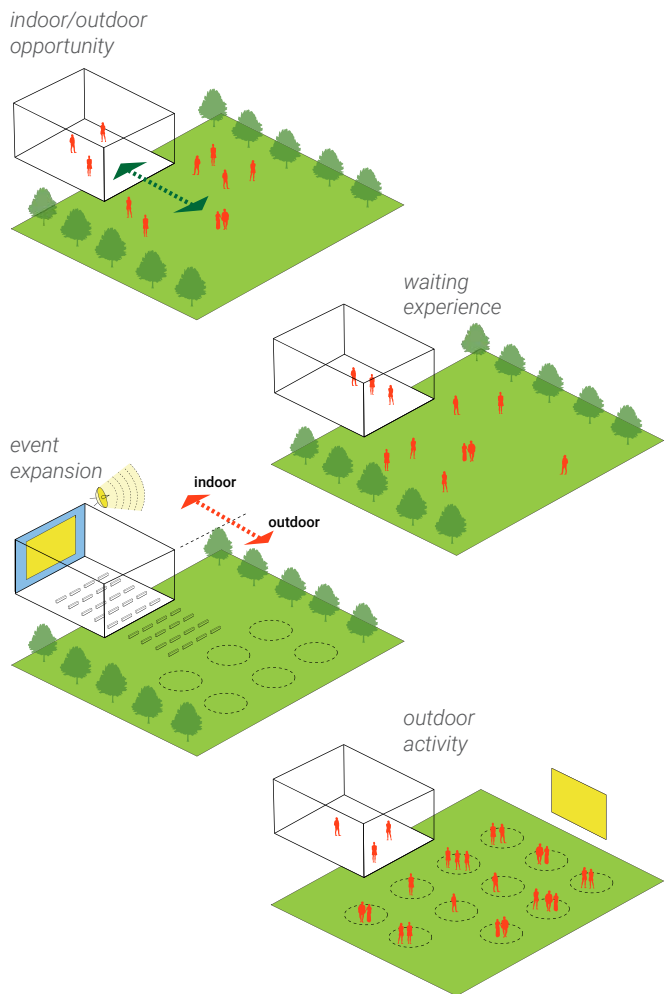
New media technologies and architecture could provide immersive experiences, creating potential revenue generating sources. Holographic imaging, projection mapping, and augmented and mixed reality systems have been gaining traction in museums to accentuate artifacts and overlay contextual information. This same level of technology can work in branding, messaging, and storytelling beyond the artifact and artwork to attract visitors. It can also be a stand-alone experience or part of museum visitor management before and after showings and/or during off-peak hours.

Rental Stock Improvements

Now is the perfect time to take a true inventory of your museum’s assets, including not only your collection but also other assets that can help reduce future expenditures and generate revenue through potential rental programs or sales. Properly managing inventory could also reduce storage needs and free up space that could otherwise generate income or eliminate unused square footage and operational costs. Leftover storage space could be leased to other organizations as an additional revenue source. Alternatively, these newfound spaces could be used for required COVID-19 related isolation rooms, health monitoring and check-in spaces, janitorial closets for additional sanitization supplies, or for patron amenities such as additional coat-check and storage.

Maximize Exterior Spaces

Many museums have outdoor assets that are significantly under used and can provide opportunities to increase visitor event participation. For example, they can be used as ancillary spaces where digital art shows are broadcast to outside areas, allowing patrons to maintain distance from others while still enjoying a premiere show. This concept is similar to an amphitheater model with fixed seating close to the stage and lawn seating beyond the bowl. Projection systems or large-format LED video walls can provide outdoor seats with a view of the collection. These spaces can also be repurposed for opening receptions, festivals, markets, or other activities that are conducive to the outdoor environment. Small adjacent spaces, such as alleyways, can be blocked off for VIP receptions, meet and greets, or other focused group options either related to the event inside the venue or as a stand-alone gathering.



Nature & Expansion Opportunity: Using outdoor environments in creative ways offers opportunities for larger group activities.

Flexibility in Using Ancillary Spaces within Your Venue

Ancillary spaces such as staging rooms, conference rooms, and donor lounges can be converted to house smaller exhibits, overflow, or other non-exhibit related events. Permanent and portable technologies can transform these areas into viable spaces to generate revenue when otherwise unoccupied, if their size allows for social distancing while achieving the desired capacity.

Reduce Operating Expenses

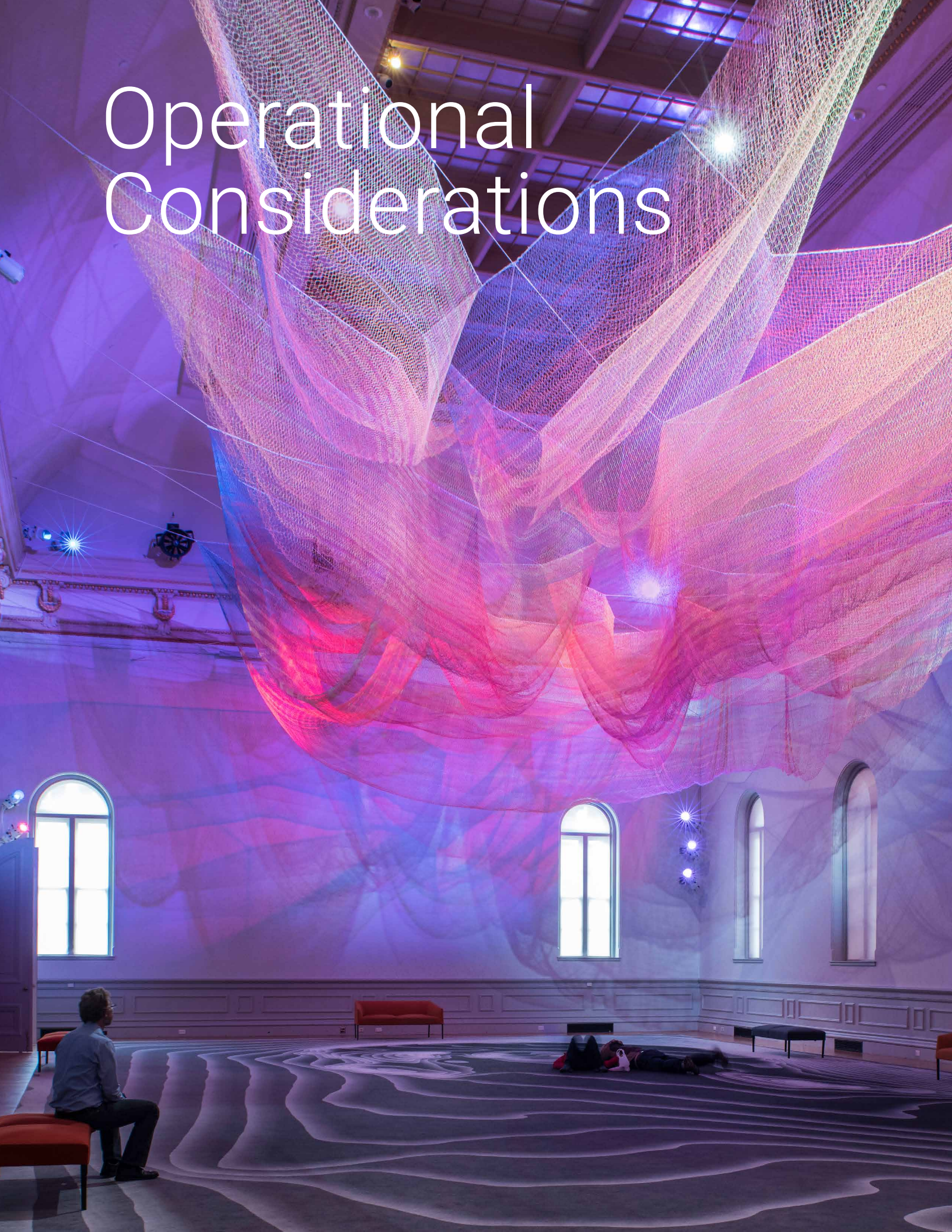
Strategies to reduce operating expenses include a materials analysis to find the most frequently used materials and efficiencies in construction methods for building maintenance and exhibits. This can result in the reduction of production elements or, through partnerships with allied organizations, reduce expenditures through bulk purchasing. Common purchases between departments could be shared or resourced. Another strategy is to analyze building systems for savings. Implementing smart building controls such as on-demand control ventilation, occupancy sensors, and retrofitting facility lighting to LEDs all while reducing plug loads and systems demand will reduce operating expenditures.

Strategies for front-of-house may include app development that allows for touchless ticketing while also providing opportunities to improve revenue streams by allowing in-app purchases for concessions, merchandise, and future exhibit tickets in real time. Apps also provide the benefit of data analytics that allow museums to better target audiences with custom-tailored content for more personalized experiences. Rethinking concessions and price points that align with what is being offered may also reduce overhead and operating costs for outside vendors who may operate the concessions.

Human Resource Expenditures

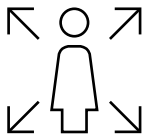
Outside of exhibit budgets and overall museum operating costs, museum staff are the largest expenses and assets. The quality of exhibits is heavily dependent on the quality of the people who produce the exhibits museum visitors want to see. Involving core employees in any cost reductions or growth opportunities will not only provide them with a sense of ownership but also inform strategies for cost reduction policies and procedures for implementation. This level of engagement will improve culture within the organization and make it a desirable place to work. Compensation is a large part of this consideration, but just as important are clear and direct communication, employee involvement, and their feeling that their health and safety are being carefully considered. This may include flexibility in work schedules or exhibit schedules, as well as holding everyone accountable to each other. More often than not, volunteers outnumber paid staff. They are also typically an older demographic and in a higher risk for COVID-19, which may reduce their participation and require staff to cover the tasks done by volunteers.

Operational Considerations



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As a result of the current pandemic, many museum owners and operators are rethinking business models as the inherent nature of their business is gathering people in closed quarters for extended periods of time. Many factors will go into the decisions to open a museum or attend an event based on the ever-evolving situation, as well as the rules and guidelines issued by local, state, and federal agencies. Each individual arts organization will need to determine what level of measures need to be implemented to create a safe environment for patrons, volunteers, and employees. While each museum is unique and there is not a one-size-fits-all solution, **we've identified the following operational considerations to assist in your decision-making process:**



**Social
Distancing**



**Hand
Washing**



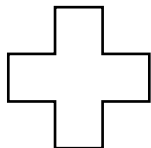
**Personal
Protection
Equipment**



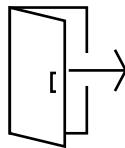
**Reducing Visitor
Touchpoints**



**Reduce or
Clean Back-of-
House/Office
Touchpoints**



**Health and Safety
Screening**



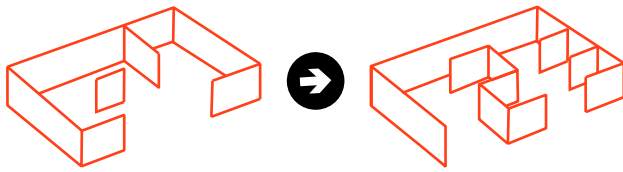
**Emergency
Egress**



**Staff and
Volunteer
Accommodations/
Teaming**



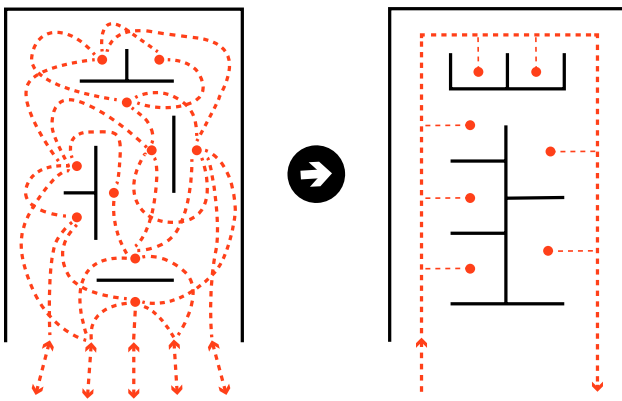
**Policy Signage
and Messaging**



Reduce Large Exhibition Space: Temporary walls provide clear routes through galleries.

Social Distancing

The current federal guidelines include maintaining a minimum of six feet between parties that are not currently cohabitating. This requirement provides the biggest challenge for museums that typically have patrons, volunteers, and staff members in intimate proximity with each other depending on exhibit layout and attendance. The following observations and opportunities related to social distancing are broken down by front-of-house and back-of-house.

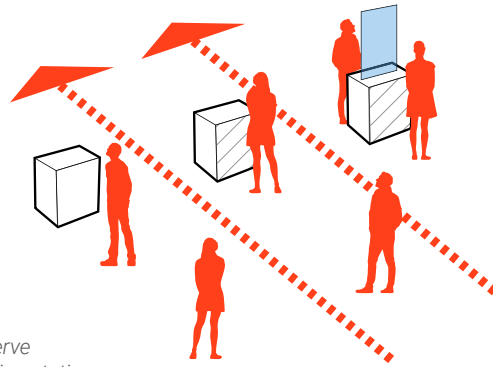


Free Flow vs. Linear Flow: Clear signage and one-way paths preserve social distancing.

FRONT-OF-HOUSE

Museums can reorganize entry/exit sequences to reduce potential contact in linear, sequenced, and orchestrated pathways, a strategy similar to the amusement park “fast-pass” scheduled entrances. In this case, patrons would stagger arrival times, wait in a designated area at a safe distance from each other, or wait in their vehicle until it is their time to enter the venue. Once in the museum, visitors would be placed in a segmented queuing system—six feet apart per patron or group—that directs them along a clearly marked path through the exhibit to reduce crossover and congregating. In addition, limits could be placed on the number of visitors in each gallery.

For museums with auditoriums or lecture halls, a similar queuing system would load the auditorium from the front to the back and from the center of rows out. Exiting the auditorium would reverse the procedure in which the back of the house exits first, moving toward the front in a timed sequence. Outdoor environments may need to be leveraged due to unique lobby sizes and access points.



self-serve scanning stations

Counter Service: Timed entry and thoughtful queuing reduce overcrowding.

For auditoriums, seating arrangements could be assigned by a tiered ticketing system that gives preferred seating to single seats and groups that do not need to follow the socially distanced guidelines due to cohabitation. Because this is a dynamic seating approach, guaranteed seating locations would most likely not be possible and must be taken into consideration. This may include an every-other-row scenario or a minimum of three empty seats between groupings. Strategies that allow patrons to exit from the center of a row while passing other patrons must be devised and may require wider back-to-back spacing between rows or the removal of seats between occupied rows. An individual assessment and strategy can be developed based on the unique design and needs of each museum.

Food and beverage or concessions should eliminate the exchange of cash or credit card touch screens, and transition to touchless pay points. In this scenario, waste management would need to be orchestrated differently and may require more staff to accommodate. Other options include eliminating food and beverage options altogether.

FRONT-OF-HOUSE (CONTINUED)

Front-of-house staff and volunteers should be provided with personal protective equipment and be properly trained in its use. Staff would function as the on-the-ground guardians of the facility's safety and hygiene policies, including maintaining social distancing for themselves and visitors.

All docent-led tours should be suspended or limited.

Hands-on activities should be eliminated altogether, or at a minimum limited, with a docent available to clean and sanitize after each use.

BACK-OF-HOUSE:

Quite often the nature of museums positions staff and volunteers in tight quarters with each other. Providing safety measures between them is crucial and will be best achieved through stringent health-check protocols. Careful consideration must be taken in maintaining social distancing and any required face masks. Allowing remote work, using smaller staff numbers combined with, or eliminating live volunteers altogether may be better options for the quality of workplace.

Hand Washing

One of the most effective methods of preventing the spread of the coronavirus is hand washing. Hand washing and/or sanitizing stations should be placed at all entrances, concessions, ticketing kiosks, restrooms, and other high-traffic public areas where there may be points of contact on surfaces. These stations should preferably be the touchless variety and be checked often to assure batteries are charged and clean water reservoirs are full.

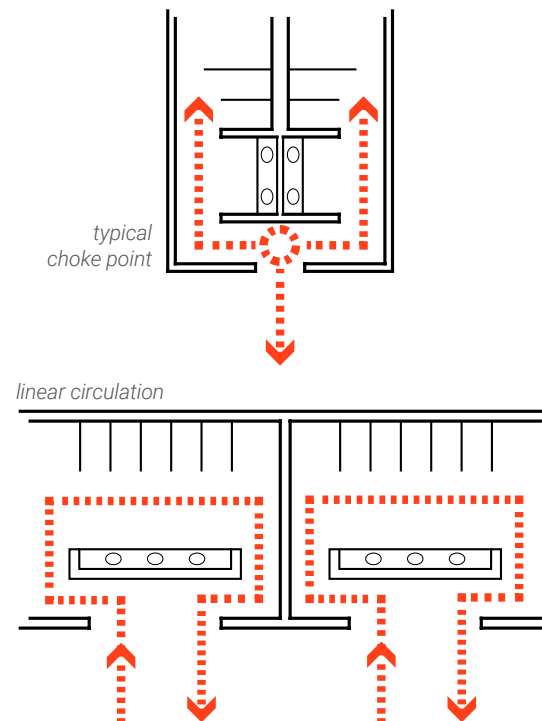
Personal Protection Equipment (PPE)

Signage should be prominently located to illustrate the museum's policy on face masks, which would be monitored by front-of-house staff. This can also be a branding opportunity: for a small fee, provide patrons with masks that have the venue logo or branding related to a special or prominent exhibit. Inform visitors before arrival that this will be the policy through social media campaigns, agreement forms when purchasing tickets, website notices, and any other touchpoint with patrons prior to their arrival. On site signage should be visible in multiple places before patrons enter the venue, at the entrance point, throughout the lobby and restrooms, in any (digital) program, and as part of any pre- or post-show speech.

Front-of-house staff should wear masks as the patrons do. Depending on their proximity to patrons as required for their function, these masks should meet the minimum N95 standards. An example would be a docent who is taking patron' temperatures or checking bags prior to entering the building. Face shields may be required in this scenario as well.

Back-of-house staff should wear face masks, as should volunteers when in prep rooms, storage, or other common spaces.

There is debate regarding gloves and their effective usage. Per current healthcare guidelines and requirements, gloves should be changed out after each interaction which can make them impractical in many situations. For example, a nurse may use a pair of gloves during a procedure with a patient, then immediately dispose of the gloves and wash or sanitize their hands to prevent spread of disease. When patrons or employees wear gloves and do not change them with each interaction, they effectively spread the virus around more than simply washing their hands or using a hand sanitizer. Therefore, gloves should be discouraged for general use by visitors and staff unless proper changing can be adhered to. Cleaning staff who will be disinfecting the venue should have a supply of gloves to change after each cleaning exercise.



Restroom Circulation: Restrooms with one-way entrance and exit limit crowding in confined spaces.

Reducing Visitor Touchpoints

People touch more than they realize. Deciding how people move through an environment and what is commonly touched should be assessed and mitigated at any reasonable cost. Of course, a deep clean and sanitization should happen before and after each extended use. To relieve any visitor concerns, the cleaning staff should be clearly recognizable

through a uniform or other distinguishing indicator to aid patrons in identifying them should a need arise. Proper disposal of all cleaning supplies, masks, and gloves should be clearly marked. The following high-touch areas should be eliminated or cleaned on a predetermined schedule:

All exhibit items should be prohibited from being touched unless they can be safely cleaned and sanitized after each interaction.

Access to collections that cannot be cleaned by trained professionals should be restricted.

Vitrines and similar surfaces should be cleaned by approved cleaners such as soap and water and disinfectant spray, with careful application to plexiglass and shellac varnishes.

Disposable stylus touch pens should be provided for interactive activities.

Plexiglass partitions should be added between exposed art pieces such as sculptures where appropriate.

Venues should reduce contact in high-touch areas like door handles and push plates through automated door openers or door stops to prop open doors in a manner that does not violate fire codes.

While handrails along stairs, ramps, and escalators cannot be eliminated per most building codes, every effort should be made to sanitize these during potential interaction with patrons.

Elevator buttons must be cleaned continuously. One solution is to provide an elevator operator who is responsible for pushing all buttons. This strategy requires one operator in the cab and one on each floor to interact with the outside buttons and may be a good repurposed task for volunteers.

Countertops and information counters should be disinfected after each transaction by the designated staff at that location. Social distance markings on the floor should be clearly visible to prevent congregating too close at a counter. Plexiglass shields should also be installed to appropriately separate staff from each other as well as staff from patrons.

Point-of-sale card readers should only use nearfield communication for reading chips in cards or personal payment apps via smart phone to eliminate contact.

Merchandise and concessions should be as touchless as possible, with only the retailer allowed to handle the merchandise.

Self-serve beverage stations and water fountains should be eliminated or taken out of service and marked as such to prevent use.

Bike racks, stanchions and ropes, barricades, and other crowd control devices should be cleaned on a regular schedule.

Restroom sink faucets, counters, toilet handles, baby-changing stations, and other receptacles should be cleaned after each use either by dedicated and visible cleaning staff, or by a restroom attendant. Automated touchless soap and paper towel dispensers following the WELL Building Standard guidelines should be used with adequate trash receptacles that should also be cleaned on a frequent basis.

Containers for injectables and women's sanitary products should be sanitized after each use.

Horizontal surfaces should be filled or covered with items that discourage people from touching or setting things down on them. Any surfaces that are touched should be sanitized regularly.

Reduce or Clean Back-of-House/Office Touchpoints

Back-of-house and administrative areas should be handled differently than those at front-of-house, as most often it is a known staff person who is involved with specific areas. Surfaces should be cleaned based on the number of distinct people who come in contact with these areas. A record log should be kept indicating cleaning times, the surface cleaned, the cleaning/disinfectant agent used, and the name of the cleaner. Offices should be cleaned and disinfected throughout the work period, especially if there is a shared office space that has a shift change. Other recommendations include:

A quarantined area should be created for objects including shelves, cabinets, and boxes to separate objects from the main collection with a clear marking system to identify dates, who touched it, and when it was cleaned and how.

The handling of collections should be limited.

Light switches, thermostats, intercom wall plates, and other frequently touched infrastructure connectivity locations should be cleaned and disinfected regularly.

All cabinet handles and doors should be wiped down and disinfected, including exhibit props and cabinets.

Stationary and portable power tools, sewing machines, washing machines, refrigerators and all other exhibit shop surfaces should have a thorough cleaning at least twice daily. Surrounding surfaces should be cleaned after each use during working times. Machines should be unplugged prior to cleaning to prevent electrical shock.

Paint sinks and dye vats should be cleaned and disinfected regularly.

All computers, keyboards, mice, printers, and plotters should be cleaned in a manner that is not detrimental to the internal electronics.

Microphones--stationary, handheld, and lavalier--belt packs, headsets, and mic stands should be cleaned so as not to damage the electronics. Another strategy could include assigning some of these items on an extended check-out basis to individual employees or volunteers to avoid having different people use the same equipment.

Lecture hall control consoles for audio, lighting, and projection systems and control booth counter tops should be cleaned regularly.

Portable lighting fixtures for exhibits or lecture halls should be cleaned before, during, and at light-focus.

Loudspeakers that are installed for a lecture or presentation or come in contact with staff should be cleaned regularly.

Back-of-house restrooms or prep rooms should be cleaned at a similar schedule to public restroom cleaning.

Back-of-house and administrative areas should be handled differently than those at front-of-house, as most often it is a known staff person who is involved with specific areas.

Health and Safety Screening

EMERGENCY EGRESS

Combining social distancing and pre-planned visitor access into and out of the museum or lecture spaces is the best-case scenario. Procedures should be documented and communicated to front-of-house staff, event management, and all staff and volunteers as to what to do in an emergency. This holds true for outdoor and indoor events. Incidents such as fire, an active shooter, a tornado, or other natural disaster that require visitors to evacuate from where they are to where they can be safe should have a plan of action. Moving patrons away from imminent danger should always be the priority with a clear pathway that minimizes pinch points or overlap.

STAFF AND VOLUNTEER ACCOMMODATIONS/TEAMING

Because volunteers and staff are typically in close proximity during an exhibit run, it may be necessary to identify a unified team that only works with each other to mitigate the potential spread of the virus by limiting those with whom they are in close contact.

Early testing is still the best course of action as recommended by the CDC, pending availability. A negative test would be required before anyone could begin work, followed by regularly scheduled testing per CDC guidelines.

Load-in and load-out of temporary exhibits would only be done by designated staff with no volunteers present.

POLICY SIGNAGE AND MESSAGING

Information provided to patrons, staff, and volunteers that is clear, consistent, and visible will go a long way to successfully reopening and operating your museum. Messaging must start before the patrons, staff, or volunteers even arrive at the museum.

Managing a change in expectations from how a venue has operated in the past will be challenging for some. Most museums already have policies in place, and visitors are used to the information. New policies and procedures such as wearing masks, temperature taking, and security measures need to be communicated in a front-and-center approach and then reinforced. This message should be updated based on any new information received by state authorities, and changes should be communicated promptly. Avenues to communicate include the following:



Digital Signage: Digital signage for touchless ticketing, museum policies, and special events can be changed frequently.

Use the museum website and any websites where the organization is featured, including civic arts and culture sites, ticket sales sites, and other places of advertisement. All websites should feature the same message or have a direct link to a common webpage. The information should provide the most recent date the information was updated.

Social media channels are also an effective way to communicate information. Posts should point to the museum website and feature a consistent message. Email campaigns and mail flyers are still effective in message distribution.

Mobile applications, either your organization's or one your organization is featured on, can supply users with notifications of new information regarding policy and procedures.

On-premise signage, from traditional print media to digital signage in strategic locations, reinforces policies within the museum. The same messaging should also be deployed to back-of-house for staff and delivery teams. Digital signage has an added benefit of immediate updates and can become a revenue generator through the sale of advertising space. Since the pandemic is a fluid situation, digital signage can adapt to fast-changing messaging. These devices can also be used in ancillary locations on-the-fly for other messages.

Touchless ticketing check-in kiosks are a good way to reiterate policy. Once a ticket is scanned in, the display can list the rules that visitors need to acknowledge before entering the facility.

Your staff may be the best opportunity to communicate the rules and policies through a consistent message, education, and a friendly voice.

The message is entirely dependent on which policies and procedures your organization decides to implement. Being in the museum industry, where creativity abounds, is an opportunity to present this in a fun, creative, and branded manner.

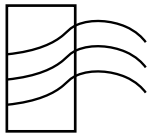
Facilities Considerations



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Financial challenges and opportunities, coupled with operational changes as described earlier, will inform key changes in architecture and building systems within a museum to maximize the potential for success of any

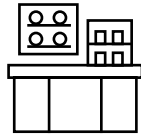
planned strategy. Each measure should include a full analysis to determine the return on the investment, any impact on the museum's schedule, and whether it is a permanent or temporary change. It is anticipated that building codes will have foundational changes such as indoor air quality, egress, and other life safety concerns as a result of this pandemic. **The following are facility recommendations:**



**Indoor
Air Quality**



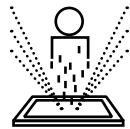
Touchpoints



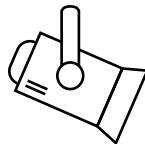
**Concessions / Bar
/ Food Service**



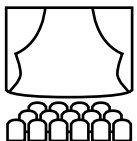
Merchandise



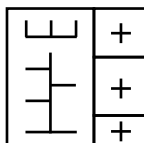
Technology



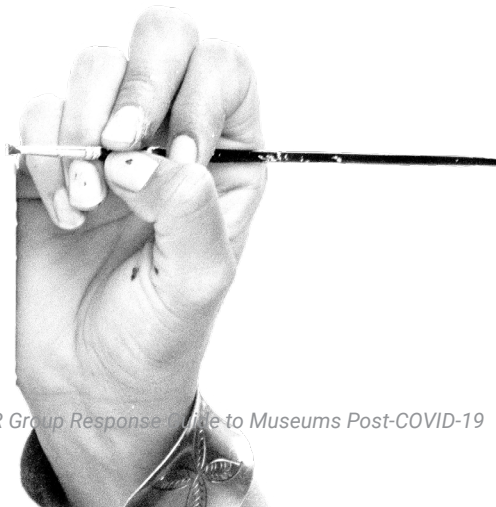
**Interiors and
Finishes**



**Auditoria /
Lecture Halls**



**Ancillary /
Back-of-House
Spaces**



Indoor Air Quality

Significant attention is being paid to building systems, including their impact on operating costs, air quality, and other health and safety issues.

HEATING, VENTILATION, AND AIR-CONDITIONING SYSTEMS:

Museum HVAC systems have traditionally been a strong point of focus, given the need for a stable indoor environment for the safety of collections. Many of the requirements for environmental control have a potential synergy with airborne transmission risk reduction measures that are a current focus of research globally. We breakdown points of focus into the six overall topic areas, with an emphasis on conservation and public gallery spaces. ASHRAE has developed a compendium of research references that has informed this high-level overview.

Relative Humidity: For museums that currently maintain an active humidity control framework, there is positive alignment with research that a relative humidity range of 40-to-60% RH, compared to drier conditions, supports respiratory immune system efficiency, and reduces the potential airborne time of the coronavirus and its survival time. An RH below 40% increases travel distance for the coronavirus due to its impact on droplet size and impacts the actual stability of the virus. Relative humidity, beyond consideration of COVID-19 alone, also addresses the transmission of other common concerns, like influenza.

Ventilation: Modern ventilation standards, such as ASHRAE 62.1, address the delivery of outdoor air, to dilute carbon dioxide, odors, and volatile organic compounds. Museums that target ASHRAE Applications Chapter 23 Class AA and A classes, have traditionally tried to avoid airside economizer capability due to potential impacts on humidity control stability and introduction of outdoor pollutants. With COVID-19, we have seen a wide range of building operators look at ways to increase ventilation air delivery, whether in quantity or time of delivery. For museums considering an increase in rates, study of impacts on energy use, filter media loading, and peak cooling and heating demand is needed. During this time, we recommend performance testing to ensure dampers and control systems are in a state of good repair.



Filtration: Modern museum HVAC systems already incorporate a high baseline level of filtration—MERV 13 to 14—due to a desire to control indoor particulate levels for both the safety of collections and wellness of occupants in a public assembly environment. Museums in environments with poor outdoor air quality may also incorporate gas-phase filtration media. With coronavirus, air treatment has been a great point of concern, with efforts to translate standards normally used in healthcare settings to the commercial and institutional building sector. Changes in filtration can result in additional media replacement and energy impacts. A system not originally designed for additional media may see a negative impact on air distribution effectiveness within spaces, driven by lower flow at equivalent system pressure.

Alternative air treatment technologies, such as UVGI or Bi-Polar Ionization, have received significant attention, but should be considered with care in all applications. These technologies can offer benefits separate from airborne transmission reduction. For example, UVGI has traditionally been utilized to reduce biofouling at chilled water coils. As existing technology is shifted to a new application (airborne instead of surface treatment, for example), proper application in a retrofit setting may not be feasible. Emerging research indicates that mandatory mask policies are significantly more effective than relying on HVAC air treatment alone.

Air Distribution: The proper design of air delivery requires an integrated design approach. Two types of distribution commonly used are mixed air and displacement. Mixed-air diffusers are designed to rapidly induce room air with treated air from an air-handling unit or fan coil unit. Air can promote transfer of the coronavirus from person to person within the direction of air movement. Domestic and international research organizations continue to study this transmission pathway.

Displacement systems use another approach to air distribution that supplies cool air at low speed from floor level, allowing heat from occupants to naturally drive air upwards, where it is captured at ceiling level. This approach is also being studied specific to the transmission of COVID-19. Museums often utilize higher nominal minimum air change rates, to ensure adequate air distribution. This is a positive overall characteristic and should not be adjusted without additional consideration. Excessive turndown of airflow can affect diffuser performance, resulting in unpredictable air patterns and inadequate delivery of ventilation air to the breathing zone.

ENERGY:

As many facilities have had to stop operations, facility owners have communicated their curiosity about and interest in energy usage and reduction. For museums, major changes in conditions may not be possible for spaces occupied with collections. Changes in operation of non-critical systems can still have an impact on critical areas, due to changes in building pressurization or additional vapor drive between zones. It is important that an integrated team approach is used before making adjustments, as environmental stability may be compromised with changes.

WATER:

As potable water systems see low or no demand, stagnant water has raised concern over bacterial growth, including increased potential for Legionnaires Disease. Adequate flushing of potable water systems is particularly important.

Touchpoints

As noted in the Operational section, touchpoints should be minimized wherever possible and those that cannot be eliminated should be cleaned and sterilized often. To augment that strategy, anti-microbial, easy-to-clean materials should be considered. This may include using solid surface materials that do not have complex geometry on edges and can be installed without visible seams or joints which can trap microbes and viruses; temporary or disposable seating covers within any lecture hall to minimize contact with fabrics; or use of stainless steel on railings and counter surfaces that are easier to maintain and clean.

Automation is one of the most effective ways to minimize touchpoints within a facility, including the installation of automatic door openers/closers, faucets, soap and paper towel dispensers, toilet flushers, ticketing kiosks, and pay points. Proximity sensors could be employed to maintain and control access points without the need to touch. All current life safety codes should be researched to determine the best-case use of these devices while maintaining life safety requirements.

A major place where visitors tend to touch is in line. Line queuing should be analyzed to determine the best crowd control method that discourages visitors from touching barriers, stanchions, or ropes.

Virtual queuing would support this goal by staggering ingress and relieving potential crowding during extended health and security checks. This could include scheduled times of arrival with a plan of action should a patron miss their scheduled time of arrival due to traffic or other unforeseen circumstance. Based on the six-foot guidelines of social distancing, spacing between unrelated groups would be at a minimum of 36 SF. Adequate spacing and location within existing portico and lobby space should be analyzed, and additional covered areas should be provided either temporarily or permanently. Other ingress areas that would not normally be used should also be examined for efficiency while minimizing touchpoints; however, urban density and site constrictions may preclude additional space options to be explored.

Concessions/Bar/Food Service

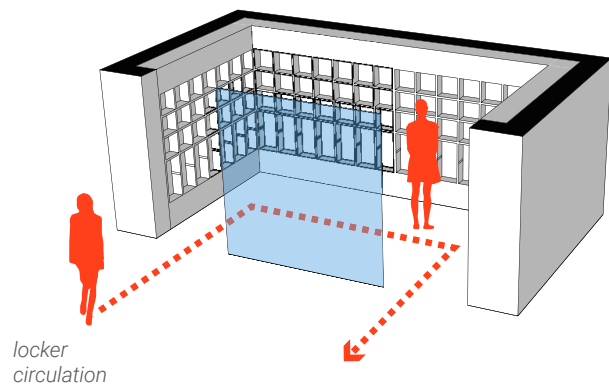
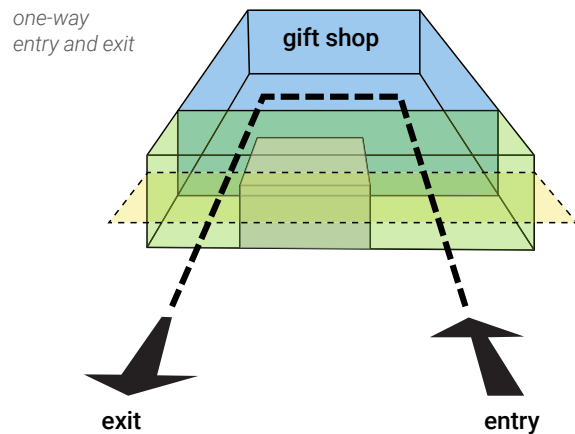
Some museums may have food service either on the premises or as part of a reception; however bar service and traditional concessions are more standard. Because these spaces traditionally congregate patrons during meal hours, attention needs to be paid to the location of queuing lines, food/beverage pickup and disposal, and surfaces on which these items may be placed to consume. Additionally, the food prep/kitchen/bar back area should follow recommended guidelines for restaurants and bars based on the latest government and health department directives. These services should be relocated where best able to adhere to the recommended guidelines. Limiting offerings or other changes in the menu may be in order, as well as how food and beverages are delivered to visitors in effort to minimize potential exposure for the food service workers/bartenders. As described previously, ordering could be done through a patron's personal phone using a dedicated app or as part of the ticket purchasing process through pre-order. Counter service should be evaluated to adhere to social distancing requirements. Plexiglass shields should be integrated into the counter service with either a rotating tray delivery method or sliding partition. All points of sale should be touchless or removed in favor of phone-based apps for payment. Separate entrance and exit points should be considered for patrons and food service workers to move the flow of people away from the food and maintain social distancing, which may necessitate new partitioning or expansion of spaces.

Technology

Due to the extensive use of technology to implement touchless devices, added messaging options, expanded viewing options (as discussed in the financial section of this paper), and to maintain social distancing, a robust data and audiovisual network must be evaluated and augmented. Providing a robust virtual footprint for recording, broadcasting, distance learning, and communication through enhanced media spaces will require upgrades to most spaces. These systems should be developed as mission critical with redundancy and strategies for network outages and equipment failures. Help desk features and response times will need to be included in any strategy that is deployed. To incorporate many of the proposed audiovisual features in the best way possible may require changes to finishes, lighting, and color choices so as not to conflict with the technology, as well as a designated area to maximize the efficiency and quality of any produced exhibitions.

Merchandise

Merchandise spaces should be examined for traffic patterns and visitor flow throughout a space to maintain social distancing guidelines. Opportunities for pre-purchase or app purchase should prevent potential cash wrap counter issues. All merchandise should be displayed behind a counter with a plexiglass shield to prevent patrons from handling merchandise. Staff should bag merchandise and place it on the counter for the patron to pick up or offer to ship direct, for a fee, to a patron's home.



One-way Circulation: One-way access and direction within the gift shop and locker area limit crowding.

Interiors and Finishes

Finishes and lighting will be critical to the perception of a great experience. A well-lit space with the proper color temperature and high attention given to touchpoints will give patrons a sense of security. Switching out lights to LED fixtures will also help to reduce operating costs while improving lighting quality through smart lighting controls. Special care in fixture selection must be made to meet all conservation requirements of artifacts in the museum's collection.

It is not recommended to deploy or install permanent or portable ultraviolet-C sterilization lighting systems to disinfect surfaces based on the costs of the systems, misuse, and unreliable efficacy as indicated through multiple peer reviewed studies by major infectious disease journals.

With a better lit space, a focus on finishes will be more prevalent. Lighter value finishes make it easier to see if they need cleaning and can provide a calming effect with the right color palette. Providing views to the exterior and carrying that into the finishes can also provide a sense of cleanliness. Staying away from hard-to-clean fabrics and other soft surfaces with potential for crevasses and folds that can trap pathogens should be considered, especially in high-touch situations.

Auditoria / Lecture Halls

Rethinking seating configurations may help accommodate more patrons while maintaining social distancing guidelines. Strategies may include banquettes covered in anti-microbial material with eight seats in lieu of individual fixed seats. Two adjoining banquettes can seat two couples each for four persons within 16 lineal feet. Additionally, a family of four could also occupy a banquette, skip the adjoining banquette, and have another family of four in a third banquette. As discussed previously, dynamic seating will allow the maximum number of patrons in the audience chamber while maintaining social distancing, which could potentially accommodate up to 40-to-50% capacity.

Ancillary/Back-of-House Spaces

Analyzing and developing ancillary spaces as potential overflow or income generating opportunities will most likely require some modification architecturally and technologically to manage visitor capacity and ingress/egress requirements, lighting, acoustics, and electrical/HVAC needs. A clear program of functions should be developed and explored to discover what your organization may want to undertake. These spaces may include donor lounges, prep rooms, courtyards, ancillary lobby spaces, and exterior courtyards to name a few. Each of these new and repurposed areas will have the same considerations for ingress/egress, ticketing, and social distancing as the main exhibit areas.

Back-of-house areas such as break rooms and prep and staging rooms may need to be reconfigured to allow for social distancing. This may include being able to sub-divide spaces to create additional space that can be used as overflow or an emergency isolation room for sick patrons, staff, or volunteers. Collections areas should ensure a limited number of people working in the same room to maintain social distancing. Alternating workdays, creating consistent teams, and finding alternate space for work tasks will be crucial to maintaining safety, as will adding appropriate handwashing and disinfectant stations in each space.

Additional Resources





Resources

The following is a list of the most relevant resources for more information on status of the COVID-19 pandemic. This is not a complete list. Local resources and government websites are continuously updated and should be frequently checked:

Federal Emergency Management Administration

<https://www.fema.gov/coronavirus>

Centers for Disease Control and Prevention

www.cdc.gov

<https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/mass-gatherings-ready-for-covid-19.html>

<https://www.cdc.gov/coronavirus/2019-ncov/community/reopen-guidance.html>

<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html>

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html>

<https://www.cdc.gov/handwashing/when-how-handwashing.html>

<https://www.cdc.gov/coronavirus/2019-ncov/php/principles-contact-tracing.html>

<https://www.cdc.gov/coronavirus/2019-ncov/downloads/sick-with-2019-ncov-fact-sheet.pdf>

https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fspecific-groups%2Fguidance-business-response.html

<https://www.designbyccd.com/wp-content/plugins/pdfjs-viewer-shortcode/pdfjs/web/viewer.php?file=https%3A%2F%2Fwww.designbyccd.com%2Fwp-content%2Fuploads%2F2020%2F05%2FCCD-x-Smartify-Re-mobilising-Museums-White-Paper-1.pdf&dButton=true&pButton=true&oButton=false&v=1.5.1#zoom=auto>

U.S. Department of Health & Human Services

<https://www.hhs.gov/>

Health Insurance Portability and Accountability Act

www.hhs.gov/sites/default/files/february-2020-hipaa-and-novel-coronavirus.pdf

World Health Organization

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

https://apps.who.int/iris/bitstream/handle/10665/331764/WHO-2019-nCoV-Mass_Gatherings_Sports-2020.1-eng.pdf

<https://www.who.int/publications-detail/key-planning-recommendations-for-mass-gatherings-in-the-context-of-the-current-covid-19-outbreak>

<https://www.who.int/publications-detail/key-planning-recommendations-for-mass-gatherings-in-the-context-of-the-current-covid-19-outbreak>

<https://www.who.int/gpsc/5may/resources/posters/en/>

Coronavirus Resource Center - NAIC

content.naic.org/naic_coronavirus_info.htm

The U.S. Department of Labor

www.dol.gov/coronavirus

https://www.dol.gov/sites/dolgov/files/WHD/posters/FFCRA_Poster_WH1422_Non-Federal.pdf

Occupational Safety and Health Administration

<https://www.osha.gov/SLTC/covid-19/>

Equal Employment Opportunity Commission/Americans with Disabilities Act

<https://www.eeoc.gov/wysk/what-you-should-know-about-ada-rehabilitation-act-and-coronavirus>

Food and Drug Administration

<https://www.fda.gov/food/food-safety-during-emergencies/best-practices-retail-food-stores-restaurants-and-food-pick-up-delivery-services-during-covid-19>,

<https://www.fda.gov/food/food-safety-during-emergencies/food-safety-and-coronavirus-disease-2019-COVID-19>

<https://www.fda.gov/media/136533/download>

American Meteorological Society

<https://www.ametsoc.org/index.cfm/ams/about-ams/ams-statements/statements-of-the-ams-in-force/tornado-sheltering-guidelines-during-the-covid-19-pandemic/>

National Restaurant Association

<https://restaurant.org/Downloads/PDFs/business/COVID19-Reopen-Guidance.pdf>

National Conference of State Legislatures

<https://www.ncsl.org/research/health/ncsl-coronavirus-covid-19-resources.aspx>

The Council of State Governments

<https://web.csg.org/covid19/state-covid-19-websites-and-related-resources/>

Harvard Business Review

<https://hbr.org/2020/04/what-makes-an-office-building-healthy>

WELL Building Standard

<https://v2.wellcertified.com/v/en/water/feature/8>

Workflow Recommendations for Reopening Museums

https://westmuse.org/sites/westmuse.org/files/documents/WMA2020/WMA_Workflow_Recommendations.pdf

California Department of Public Health

<https://covid19.ca.gov/pdf/guidance-outdoor-museums.pdf>
<https://covid19.ca.gov/pdf/checklist-outdoor-museums.pdf>

American Association of Museums

<https://www.aam-us.org/programs/about-museums/preparing-to-reopen/>
<https://www.aam-us.org/wp-content/uploads/2020/05/Face-Masks-5.28.20.pdf>

ICOM

<https://icom.museum/en/news/museums-and-end-of-lockdown-ensuring-the-safety-of-the-public-and-staff/>
<http://www.icom-cc.org/>

International Committee for Museums and Collections of Modern Art

<https://cimam.org/news-archive/precautions-museums-during-covid-19-pandemic/>

Cultural Heritage Collection Care

<https://www.culturalheritage.org/resources/emergencies/collections-care-amid-covid-19>

Who We Are

DLR Group is a global integrated design firm with 1,200 employee-owners in 29 offices around the world. Our Cultural+Performing Arts Studio specializes in projects that enrich communities and empower creative expression. We bring a multi-disciplinary approach to arts projects. Our in-house team includes architects, engineers, technology

designers—acoustics, audiovisual, digital media, lighting, and theatrical systems—and specialists in business and operations planning, grant writing, and fundraising support. DLR Group is 100 percent employee-owned; we are committed to developing a diverse, next generation of leaders who are the vanguard of a more inclusive workforce.