In Depth COVID Considerations

How will we be church in this unusual time? You have been enlisted to help us consider keeping people safe and healthy while providing creative opportunities for nurturing community. We want to create opportunities that honor the church’s dedication to faithfulness, caring, diversity, generosity, and gratitude.

I am concerned that we have a relatively small pool of volunteers already taxed with the numerous jobs of church leadership, ministry, and mission tasks. To that we add the considerations inherent in this new crisis: Who decides? Who communicates? Who enforces? Who cleans? Who takes on new tasks and technologies? Who provides ongoing care?

With this in mind, I recommend we choose options that, to the best we can determine, require minimal revisiting of decisions and effort of starting up, closing, and re-opening. I want to limit the stress and anxiety involved in making the “right” decisions and the need to revisit them time and again, making time instead for celebrating the wonder and awe we experience as God in the world and ministering to the needs of the community in this time.

In this document I pose some questions and provide resources for your consideration.

Please give the following questions your consideration.

1. What have we learned about ourselves?
2. What are the reasons given for gathering again in person outdoors and/or in the sanctuary?
3. How is the current model of worship via Zoom working?
4. What alternative models might we consider instead of or in addition to the current one?
5. How do we honor feelings of isolation and grief in this time?
6. Considering the known and presumed risks and dramatic increase in cases where precautions have been relaxed, why should we open?
7. Who will come? Make a list of those you believe are ready to attend without reservations?
8. Who will be at risk? Who would not attend in person?
9. How would we include those who cannot or choose not to meet in person?
10. Will people feel pressured concerning their personal decisions?
11. Will our decision be a source of building community or might it cause more grief?
12. What precautions will we take and who will enforce them?
13. How do you feel about that word, enforce, in the context of church? How will others?
14. What logistics and additional technology strategies are required? Who would do the work?
Please watch these two videos as you think about what worshipping together with precautions in place would entail….and how it would be very different.

The first, Reopening Guidance by Bishop James Hazelwood, New England Synod ELCA, summarizes the real challenges of practicing distancing in congregations.


In the second video, Marcia McFee, who is well known for her consulting service for music and worship, reflects on how and why churches might choose to do something other than traditional worship. She shares her thoughts on this video:

https://www.youtube.com/watch?v=bXToAksDgF4&feature=youtu.be&fbclid=IwAR3M55jLKu2BKFscSCdHmLF8qBpKJOVeHdN27Z-41XfJUEj9nG2GK_yw98

McFee and many others met in consultation with infectious disease experts to develop guidelines that are being used by many churches in mainline denominations. This article introduces their work and the document follows.

“When churches reopen, don’t sing or shake hands, do make sermons short, says new guide”

https://religionnews.com/2020/06/09/skip-singing-shake-hands-short-sermons-ecumenical-guide-on-reopen-church-covid19/?fbclid=IwAR1uV8v9ZGlgP0zxziH9P6ST6NPZbj7tGqS7xad1co8PXGhX1DWlbVksCeE

This is the document referenced by the above article:

https://drive.google.com/file/d/1DhfgclYRUomeWApWtRGPr_tZJ4pe5ew6/view

You may find the format of following article to be a bit more concise and user-friendly.

17 FAQs for Houses of Worship Considering Reopening Amid the Coronavirus Crisis


The PNEC has issued the following for outdoor gatherings. Please note that although this document suggests allowing singing with a mask, many sources from the UCC and other denominations prohibit singing indoors or outdoors.

PNEC Outdoor Gathering Guidelines

The holding of outdoor services, vigils or other events on the church’s or pre-approved public property can be held provided the appropriate social distancing and masking guidelines are followed. There is a limit of up to 100 individuals, provided you have the social distancing space to hold that many individuals, for each event.

- Social distancing requirements require a minimum six-foot separation between all individuals in all interactions and at all times. The exception to this is that families may be closer to one another provided the family grouping maintains the six-foot separation with others.
- All employees, members, and visitors in attendance shall wear face coverings before, during, and after the service (whether indoor or outdoor).
- There may be no direct physical contact between servers and members or visitors.
- No choirs shall perform during the service. Singing is permitted, but individuals must not remove their face coverings to sing – it must stay on for the duration of the service.
Organizations are strongly encouraged to keep a log of attendees at each gathering, and to retain that log for at least two weeks. If an outbreak occurs, this information may be critical to help save lives.

All organizations (including religious and faith-based organizations) have a general obligation to keep a safe and healthy facility in accordance with state and federal law, and comply with the following COVID19 organization-specific safety practices.

Another primary source that churches have used is the studies and guidelines for church gatherings has been prepared by the Wisconsin Council of Churches. The following article and video address singing in groups.

Church Music in the Age of Covid 19
https://www.wichurches.org/2020/05/08/church-music-covid19/?fbclid=IwAR1MbBqCRFcQmjHng1MCN18-i7i7A_kXKsiCLn1A94AfaHx72iyUIFwXMwI

Praise the Lord! Praise God in his sanctuary; praise him in his mighty firmament!
Praise him for his mighty deeds; praise him according to his surpassing greatness!
Praise him with trumpet sound; praise him with lute and harp!
Praise him with tambourine and dance; praise him with strings and pipe!
Praise him with clanging cymbals; praise him with loud clashing cymbals!
Let everything that breathes praise the Lord! Praise the Lord!
~ Psalm 150 (NRSV)

INTRODUCTION
As churches evaluate their plans for resuming worship in public space as a gathered community, it is important to weigh the risks and benefits of various activities that are elements of common worship. The Wisconsin Council of Churches has consulted with public health experts, other scientists, and church musicians in developing this brief outline. We hope this will assist you in creating – and communicating about – church music plans which continue the long history of music that soothes and inspires the soul, while still keeping parishioners reasonably safe in the time until a vaccine for COVID-19 is widely available.

RISK ASSESSMENT
Medical, science and public health experts have offered us these reflections, grounded in scientific literature:

- Coughing and sneezing create relatively larger droplets which settle to the ground or surfaces more rapidly and don’t travel far (<6 feet). The vibrations of speaking and singing create aerosols: super-fine droplets which hang in the air for much longer, and can travel longer distances.
- Compared to just breathing (which does produce a certain level of aerosols), talking produces about 10x more aerosols, and singing about 60x more. Wind instruments also generate aerosols; a 2011 paper suggested that a vuvuzela might create 100x the aerosols of just breathing.
- Volume matters. The quantity of aerosols generated when talking depends on how loud the speech is (the louder, the more aerosols). This may be one of many factors that makes singing more dangerous. Another factor may be that the deep breathing of singing inhales these aerosols deeper into the lungs.
- Cloth face coverings are important general protection, because they are reasonably good at blocking larger droplets from escaping the immediate area of the wearer’s mouth and nose – thus providing some protection to other people in the area. They are less effective at protecting the wearer from inhaling those droplets, and they are much less effective at blocking
fine-particle aerosols in either direction (being exhaled from the wearer, or being inhaled by the wearer from someone else’s exhalations). Cloth face coverings should not be relied upon to be protective in the case of singing.

THE BOTTOM LINE
- There seems to be ample evidence to suggest that singing creates a quantity of fine aerosols that can stay suspended in the air for long periods of time, move with air currents, and stay infectious for many hours, exposing virtually everyone in a building. Our sources strongly recommend against singing indoors in public until a vaccine is widely available and widely used. For similar reasons, the use of wind instruments should also be avoided.

SO…WHAT CAN WE DO?
- Piano, electronic keyboard, organ, stringed or percussion instruments should all be fine for use in the sanctuary as we gather. Remember to have members of an ensemble keep space between themselves on the platform.
- Use recorded music played over the sound system rather than live music. Be creative: apply technology to do things in new ways. Just remember – no sing-alongs by the congregation, for safety’s sake!
  - If your church has some musically inclined family members who are already living together, they could record their singing from home, and it could be played during the service, either audio or audio-video.
  - Remotely record individual choir members with a sync track to create a virtual choir video. (Give yourself time – it’s a complex project, but exciting to see the finished product.)
- Outdoor worship allows for greater social distancing than indoor worship, and it would be possible to have a cantor sing a greater distance away from the people, with particles dispersing more widely rather than hanging in the air inside a building. Having the congregation sit in household groups at least six feet apart, and using face masks would continue to be essential. We would still recommend no congregational singing, even outdoors. Be aware that this is a calculated risk, and raises other logistical issues such as crowd control.
- Some pastors have suggested the idea of congregations humming along to music. While our experts haven’t found anything in the scientific literature, they infer that the risk is likely to be intermediate between talking and singing. Loud humming seems unwise; soft humming with a face covering might represent a reasonable risk. Set a policy for your church, educate the congregation, and adhere to it. Again, be aware that this is a calculated risk to which you are obligating the entire body.
- Encourage singing sacred music in the home. It can be a judgment free environment! Send hymnals or songbooks home temporarily; offer PDFs of a weekly or monthly song if your copyright licenses allow; send links to Youtube videos, or a recording of your worship leaders; create themed playlists of sacred music using online platforms such as Spotify or Youtube.

We recognize the deep emotional pain this may cause as we further delay beloved ways of being the church together. It does not escape notice that the faithful have received the wisdom that “he who sings, prays twice.” We make these recommendations prayerfully, with pastoral consideration in our minds and our hearts. Even as we grieve the loss, we suggest that people of faith temporarily set aside singing when we gather, order to serve the greater calling of keeping each other safe until a vaccine is available.

REFERENCES
“A Conversation: What Do Science and Data Say About the Near Term Future of Singing”, National Association of Teachers of Singing
#officialnats [https://youtu.be/DFl3GsVzj6Q](https://youtu.be/DFl3GsVzj6Q) [https://nats.org/cgi/page.cgi/_article.html/Featured_Stories/NATS_COVID_Resources_Page](https://nats.org/cgi/page.cgi/_article.html/Featured_Stories/NATS_COVID_Resources_Page)


Email Correspondence and phone conversations with Dr. Geof Swain, MD, MPH, Retired public health physician (26+ years), Founding Director of WI Center for Health Equity, volunteer with WI Department of Health Services.

Email Correspondence with Charles Luebke, Engineer & Musician, active member of Divine Redeemer Lutheran Hartland (LCMS).

This document was developed by Wisconsin Council of Churches staff with input from religious leaders, local church pastors, church musicians, and public health experts. This is not a formal policy statement of the Council. We recommend that you consult your ecclesiastical authorities for final guidance. Released 5/8/2020.

Each of the conferences of the United Church of Christ has issued guidelines for the churches’ consideration. [https://www.ucc.org/news_conference_ministers_urge_caution_prayer_as_churches_create_processes_to_discern_when_to_reopen_05192020](https://www.ucc.org/news_conference_ministers_urge_caution_prayer_as_churches_create_processes_to_discern_when_to_reopen_05192020)

The Risks - Know Them - Avoid Them [https://www.erinbromage.com/post/the-risks-know-them-avoid-them?campaign_id=9&emc=edit_nn_20200511&instance_id=18384&nl=the-morning&regi_id=103547074&segment_id=27239&te=1&user_id=798921589500c0bf312c1d7ce56e5840&fbclid=IwAR3n2nBe_E3Glnp8hQw7aF73B0Uo4ysKLsPiYZcHdMqW98Spne3M9oVBKNs](https://www.erinbromage.com/post/the-risks-know-them-avoid-them?campaign_id=9&emc=edit_nn_20200511&instance_id=18384&nl=the-morning&regi_id=103547074&segment_id=27239&te=1&user_id=798921589500c0bf312c1d7ce56e5840&fbclid=IwAR3n2nBe_E3Glnp8hQw7aF73B0Uo4ysKLsPiYZcHdMqW98Spne3M9oVBKNs)

The Risks - Know Them - Avoid Them Updated: May 20

Please read this link to learn about the author and background to these posts.

This is from the linked info: I am a Comparative Immunologist and Professor of Biology (specializing in Immunology) at the [University of Massachusetts Dartmouth](https://www.umassd.edu). I balance Teaching, Research and Public Service (that is, when we are allowed in our labs).

This past semester, I taught a class on Ecology of Infectious Disease to undergraduate students. I always like to have a current disease example as a common thread throughout the course. So in January, when I was putting the syllabus for my course together, I saw a pathogen emerging in China
and decided to incorporate it. Since early January my students and I have been developing and updating a huge notice board of information outside my laboratory on the new research findings to track the pathogen’s progression.

Updated: May 20

It seems many people are breathing some relief, and I’m not sure why. An epidemic curve has a relatively predictable upslope and once the peak is reached, the back slope can also be predicted. We have robust data from the outbreaks in China and Italy, that shows the backside of the mortality curve declines slowly, with deaths persisting for months. Assuming we have just crested in deaths at 70k, it is possible that we lose another 70,000 people over the next 6 weeks as we come off that peak. That's what's going to happen with a lockdown.

As states reopen, and we give the virus more fuel, all bets are off. I understand the reasons for reopening the economy, but I've said before, if you don't solve the biology, the economy won't recover.

There are very few states that have demonstrated a sustained decline in numbers of new infections. Indeed, as of May 3rd the majority are still increasing and reopening. As a simple example of the USA trend, when you take out the data from New York and just look at the rest of the USA, daily case numbers are increasing. Bottom line: the only reason the total USA new case numbers look flat right now is because the New York City epidemic was so large and now it is being contained.

So throughout most of the country we are going to add fuel to the viral fire by reopening. It's going to happen if I like it or not, so my goal here is to try to guide you away from situations of high risk.

Where are people getting sick?

We know most people get infected in their own home. A household member contracts the virus in the community and brings it into the house where sustained contact between household members leads to infection.

But where are people contracting the infection in the community? I regularly hear people worrying about grocery stores, bike rides, inconsiderate runners who are not wearing masks.... are these places of concern? Well, not really. Let me explain.

In order to get infected you need to get exposed to an infectious dose of the virus; based on infectious dose studies with other coronaviruses, it appears that only small doses may be needed for infection to take hold. Some experts estimate that as few as 1000 SARS-CoV2 infectious viral particles are all that will be needed (ref 1, ref 2). Please note, this still needs to be determined experimentally, but we can use that number to demonstrate how infection can occur. Infection could occur, through 1000 infectious viral particles you receive in one breath or from one eye-rub, or 100 viral particles inhaled with each breath over 10 breaths, or 10 viral particles with 100 breaths. Each of these situations can lead to an infection.

How much Virus is released into the environment?

**A Bathroom:** Bathrooms have a lot of high touch surfaces, door handles, faucets, stall doors. So fomite transfer risk in this environment can be high. We still do not know whether a person releases infectious material in feces or just fragmented virus, but we do know that toilet flushing does aerosolize many droplets. Treat public bathrooms with extra caution (surface and air), until we know more about the risk.
A Cough: A single cough releases about 3,000 droplets and droplets travels at 50 miles per hour. Most droplets are large, and fall quickly (gravity), but many do stay in the air and can travel across a room in a few seconds.

A Sneeze: A single sneeze releases about 30,000 droplets, with droplets traveling at up to 200 miles per hour. Most droplets are small and travel great distances (easily across a room). If a person is infected, the droplets in a single cough or sneeze may contain as many as 200,000,000 (two hundred million) virus particles which can all be dispersed into the environment around them.

A breath: A single breath releases 50 - 5000 droplets. Most of these droplets are low velocity and fall to the ground quickly. There are even fewer droplets released through nose-breathing. Importantly, due to the lack of exhalation force with a breath, viral particles from the lower respiratory areas are not expelled.

Unlike sneezing and coughing which release huge amounts of viral material, the respiratory droplets released from breathing only contain low levels of virus. We don't have a number for SARS-CoV2 yet, but we can use influenza as a guide. Studies have shown that a person infected with influenza can releases up to 33 infectious viral particles per minute. But I'm going to use 20 to keep the math simple.

Remember the formula: Successful Infection = Exposure to Virus x Time

If a person coughs or sneezes, those 200,000,000 viral particles go everywhere. Some virus hangs in the air, some falls into surfaces, most falls to the ground. So if you are face-to-face with a person, having a conversation, and that person sneezes or coughs straight at you, it's pretty easy to see how it is possible to inhale 1,000 virus particles and become infected.

But even if that cough or sneeze was not directed at you, some infected droplets--the smallest of small--can hang in the air for a few minutes, filling every corner of a modest sized room with infectious viral particles. All you have to do is enter that room within a few minutes of the cough/sneeze and take a few breaths and you have potentially received enough virus to establish an infection.

But with general breathing, 20 viral particles minute into the environment, even if every virus ended up in your lungs (which is very unlikely), you would need 1000 viral particles divided by 20 per minute = 50 minutes.

Speaking increases the release of respiratory droplets about 10 fold; ~200 virus particles per minute. Again, assuming every virus is inhaled, it would take ~5 minutes of speaking face-to-face to receive the required dose.

The exposure to virus x time formula is the basis of contact tracing. Anyone you spend greater than 10 minutes with in a face-to-face situation is potentially infected. Anyone who shares a space with you (say an office) for an extended period is potentially infected. This is also why it is critical for people who are symptomatic to stay home. Your sneezes and your coughs expel so much virus that you can infect a whole room of people.

What is the role of asymptomatic people in spreading the virus?

Symptomatic people are not the only way the virus is shed. We know that at least 44% of all infections--and the majority of community-acquired transmissions--occur from people without any
symptoms (asymptomatic or pre-symptomatic people). You can be shedding the virus into the environment for up to 5 days before symptoms begin.

Infectious people come in all ages, and they all shed different amounts of virus. The figure below shows that no matter your age (x-axis), you can have a little bit of virus or a lot of virus (y-axis). (ref)

The amount of virus released from an infected person changes over the course of infection and it is also different from person-to-person. Viral load generally builds up to the point where the person becomes symptomatic. So just prior to symptoms showing, you are releasing the most virus into the environment. Interestingly, the data shows that just 20% of infected people are responsible for 99% of viral load that could potentially be released into the environment (ref)

So now let’s get to the crux of it. Where are the personal dangers from reopening?

When you think of outbreak clusters, what are the big ones that come to mind? Most people would say cruise ships. But you would be wrong. Ship outbreaks, while concerning, don’t land in the top 50 outbreaks to date.

Ignoring the terrible outbreaks in nursing homes, we find that the biggest outbreaks are in prisons, religious ceremonies, and workplaces, such as meat packing facilities and call centers. Any environment that is enclosed, with poor air circulation and high density of people, spells trouble.

Some of the biggest super-spreading events are:

Meat packing: In meat processing plants, densely packed workers must communicate to one another amidst the deafening drum of industrial machinery and a cold-room virus-preserving environment. There are now outbreaks in 115 facilities across 23 states, 5000+ workers infected, with 20 dead. (ref)

Weddings, funerals, birthdays: 10% of early spreading events

Business networking: Face-to-face business networking like the Biogen Conference in Boston in late February.

As we move back to work, or go to a restaurant, let’s look at what can happen in those environments.

**Restaurants**: Some really great shoe-leather epidemiology demonstrated clearly the effect of a single asymptomatic carrier in a restaurant environment (see below). The infected person (A1) sat at a table and had dinner with 9 friends. Dinner took about 1 to 1.5 hours. During this meal, the asymptomatic carrier released low-levels of virus into the air from their breathing. Airflow (from the restaurant's various airflow vents) was from right to left. Approximately 50% of the people at the infected person’s table became sick over the next 7 days. 75% of the people on the adjacent downwind table became infected. And even 2 of the 7 people on the upwind table were infected (believed to happen by turbulent airflow). No one at tables E or F became infected, they were out of the main airflow from the air conditioner on the right to the exhaust fan on the left of the room. (Ref)

**Workplaces**: Another great example is the outbreak in a call center (see below). A single infected employee came to work on the 11th floor of a building. That floor had 216 employees. Over the period of a week, 94 of those people became infected (43.5%: the blue chairs). 92 of those 94 people became sick (only 2 remained asymptomatic). Notice how one side of the office is primarily infected, while there are very few people infected on the other side. While exact number of people infected by respiratory droplets / respiratory exposure versus fomite transmission (door handles, shared water
coolers, elevator buttons etc.) is unknown. It serves to highlight that being in an enclosed space, sharing the same air for a prolonged period increases your chances of exposure and infection. Another 3 people on other floors of the building were infected, but the authors were not able to trace the infection to the primary cluster on the 11th floor. Interestingly, even though there were considerable interaction between workers on different floors of the building in elevators and the lobby, the outbreak was mostly limited to a single floor (ref). This highlights the importance of exposure and time in the spreading of SARS-CoV2.

**Choir:** The community choir in Washington State. Even though people were aware of the virus and took steps to minimize transfer; e.g. they avoided the usual handshakes and hugs hello, people also brought their own music to avoid sharing, and socially distanced themselves during practice. They even went to the lengths to tell choir members prior to practice that anyone experiencing symptoms should stay home. A single asymptomatic carrier infected most of the people in attendance. The choir sang for 2 1/2 hours, inside an enclosed rehearsal hall which was roughly the size of a volleyball court.

*Singing, to a greater degree than talking, aerosolizes respiratory droplets extraordinarily well. Deep-breathing while singing facilitated those respiratory droplets getting deep into the lungs. Two and half hours of exposure ensured that people were exposed to enough virus over a long enough period of time for infection to take place. Over a period of 4 days, 45 of the 60 choir members developed symptoms, 2 died. The youngest infected was 31, but they averaged 67 years old. (corrected link)*

**Indoor sports:** While this may be uniquely Canadian, a super spreading event occurred during a curling event in Canada. A curling event with 72 attendees became another hotspot for transmission. Curling brings contestants and teammates in close contact in a cool indoor environment, with heavy breathing for an extended period. This tournament resulted in 24 of the 72 people becoming infected. (ref)

**Birthday parties / funerals:** Just to see how simple infection-chains can be, this is a real story from Chicago. The name is fake. Bob was infected but didn't know. Bob shared a takeout meal, served from common serving dishes, with 2 family members. The dinner lasted 3 hours. The next day, Bob attended a funeral, hugging family members and others in attendance to express condolences. Within 4 days, both family members who shared the meal are sick. A third family member, who hugged Bob at the funeral became sick. But Bob wasn't done. Bob attended a birthday party with 9 other people. They hugged and shared food at the 3-hour party. Seven of those people became ill.

But Bob’s transmission chain wasn’t done. Three of the people Bob infected at the birthday went to church, where they sang, passed the tithing dish etc. Members of that church became sick. In all, Bob was directly responsible for infecting 16 people between the ages of 5 and 86. Three of those 16 died.

The spread of the virus within the household and back out into the community through funerals, birthdays, and church gatherings is believed to be responsible for the broader transmission of COVID-19 in Chicago. (ref)

Sobering right?

Commonality of outbreaks

The reason to highlight these different outbreaks is to show you the commonality of outbreaks of COVID-19. All these infection events were indoors, with people closely-spaced, with lots of talking, singing, or yelling. The main sources for infection are home, workplace, public transport, social
gatherings, and restaurants. This accounts for 90% of all transmission events. In contrast, outbreaks spread from shopping appear to be responsible for a small percentage of traced infections. (Ref)

Importantly, of the countries performing contact tracing properly, only a single outbreak has been reported from an outdoor environment (less than 0.3% of traced infections). (ref)

So back to the original thought of my post.

Indoor spaces, with limited air exchange or recycled air and lots of people, are concerning from a transmission standpoint. We know that 60 people in a volleyball court-sized room (choir) results in massive infections. Same situation with the restaurant and the call center. Social distancing guidelines don't hold in indoor spaces where you spend a lot of time, as people on the opposite side of the room were infected.

The principle is viral exposure over an extended period of time. In all these cases, people were exposed to the virus in the air for a prolonged period (hours). Even if they were 50 feet away (choir or call center), even a low dose of the virus in the air reaching them, over a sustained period, was enough to cause infection and in some cases, death.

Social distancing rules are really to protect you with brief exposures or outdoor exposures. In these situations there is not enough time to achieve the infectious viral load when you are standing 6 feet apart or where wind and the infinite outdoor space for viral dilution reduces viral load. The effects of sunlight, heat, and humidity on viral survival, all serve to minimize the risk to everyone when outside.

When assessing the risk of infection (via respiration) at the grocery store or mall, you need to consider the volume of the air space (very large), the number of people (restricted), how long people are spending in the store (workers - all day; customers - an hour). Taken together, for a person shopping: the low density, high air volume of the store, along with the restricted time you spend in the store, means that the opportunity to receive an infectious dose is low. But, for the store worker, the extended time they spend in the store provides a greater opportunity to receive the infectious dose and therefore the job becomes more risky.

Basically, as the work closures are loosened, and we start to venture out more, possibly even resuming in-office activities, you need to look at your environment and make judgments. How many people are here, how much airflow is there around me, and how long will I be in this environment. If you are in an open floorplan office, you really need to critically assess the risk (volume, people, and airflow). If you are in a job that requires face-to-face talking or even worse, yelling, you need to assess the risk.

If you are sitting in a well-ventilated space, with few people, the risk is low.

If I am outside, and I walk past someone, remember it is “dose and time” needed for infection. You would have to be in their airstream for 5+ minutes for a chance of infection. While joggers may be releasing more virus due to deep breathing, remember the exposure time is also less due to their speed. Please do maintain physical distance, but the risk of infection in these scenarios are low. Here is a great article in Vox that discusses the low risk of running and cycling in detail.

While I have focused on respiratory exposure here, please don't forget surfaces. Those infected respiratory droplets land somewhere. Wash your hands often and stop touching your face!

As we are allowed to move around our communities more freely and be in contact with more people in more places more regularly, the risks to ourselves and our family are significant.
Even if you are gung-ho for reopening and resuming business as usual, do your part and wear a mask to reduce what you release into the environment. It will help everyone, including your own business. This article was inspired by a piece written by Jonathan Kay in Quillette

**COVID-19 Superspreader Events in 28 Countries: Critical Patterns and Lessons**

**About the author**

**Erin S. Bromage, Ph.D.,** is an Associate Professor of Biology at the [University of Massachusetts Dartmouth](https://www.umassd.edu/). Dr. Bromage graduated from the School of Veterinary and Biomedical Sciences James Cook University, Australia where his research focused on the epidemiology of, and immunity to, infectious disease in animals. His Post-Doctoral training was at the College of William and Mary, Virginia Institute of Marine Science in the Comparative Immunology Laboratory of late Dr. Stephen Kaattari.

Dr. Bromage’s research focuses on the evolution of the immune system, the immunological mechanisms responsible for protection from infectious disease, and the design and use of vaccines to control infectious disease in animals. He also focuses on designing diagnostic tools to detect biological and chemical threats in the environment in real-time.

Dr. Bromage joined the Faculty of the University of Massachusetts Dartmouth in 2007 where he teaches courses in Immunology and Infectious disease, including a course this semester on the Ecology of Infectious Disease which focused on the emerging SARS-CoV2 outbreak in China.

These two articles might help us as we consider options for gathering outdoors.

**What We Know About Your Chances of Catching the Virus Outdoors**


**Evaluating Risk: What the experts recommend and say they will do…**


When 511 Epidemiologists Expect to Fly, Hug and Do 18 Other Everyday Activities Again

[https://www.nytimes.com/interactive/2020/06/08/upshot/when-epidemiologists-will-do-everyday-things-coronavirus.html?fbclid=IwAR1IxCF1n8kvegySYeYMueHELq3wzf3s3y66wWW9Olsbb0HxtV3gdM8j6o](https://www.nytimes.com/interactive/2020/06/08/upshot/when-epidemiologists-will-do-everyday-things-coronavirus.html?fbclid=IwAR1IxCF1n8kvegySYeYMueHELq3wzf3s3y66wWW9Olsbb0HxtV3gdM8j6o)

From hair salons to gyms, experts rank 36 activities by coronavirus risk level

[https://www.mlive.com/public-interest/2020/06/from-hair-salons-to-gyms-experts-rank-36-activities-by-coronavirus-risk-level.html?fbclid=IwAR1IxCF1n8kvegySYeYMueHELq3wzf3s3y66wWW9Olsbb0HxtV3gdM8j6o](https://www.mlive.com/public-interest/2020/06/from-hair-salons-to-gyms-experts-rank-36-activities-by-coronavirus-risk-level.html?fbclid=IwAR1IxCF1n8kvegySYeYMueHELq3wzf3s3y66wWW9Olsbb0HxtV3gdM8j6o)

Finally, here is a reflection offered by Peter Sykes who has been the organist and Director of Music for First Church Cambridge, MA since 1985.

**ON SINGING TOGETHER**
By the rivers of Babylon we sat and wept
when we remembered Zion.
There on the poplars
we hung our harps -
How can we sing the songs of the Lord
while in a foreign land?
(Psalm 137)

The world we live in - for now - is a foreign land indeed. The pandemic has brought devastation and calamity on many fronts, and one casualty – for now - is singing together. It’s been well established that choir rehearsals and congregational singing are among the riskiest activities for infection; singers, even amateurs, are ‘super spreaders’ because of their athletic breathing and projection.

Simply put, as long as we must have social distancing we cannot have ensemble singing. This is a tragedy for now – but it is for now.

Nothing keeps us from singing together in family circles. Nothing keeps us from singing along to recordings, or on Sundays to the organ accompaniment on our livestreamed services. Nothing keeps us from singing when on our walks outside.
Singing will continue, and when we come together again there will be a joyful noise of gratitude heard all over the world as we blend our voices in a chorus of wonder, love and praise.

These words were never more true…

My life flows on in endless song;
Above earth's lamentation,
I hear the sweet, though far-off hymn
That hails a new creation.
Through all the tumult and the strife,
I hear that music ringing
It finds an echo in my soul
How can I keep from singing?
No storm can shake my inmost calm
While to that rock I'm clinging
Since Love is Lord of heaven and earth
How can I keep from singing?

I love you all. We will sing together again.

Peter Sykes. Cambridge, MA--