

Moving Indoors – How Safe Is It?

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The Washington Post recently posted a question:

“How great is the risk of transmission in churches, which are enclosed spaces, when pastors, choir members and speakers disregard safety guidelines and take off their masks when speaking and singing?”
 — Robert in Las Vegas

With Hamden Plains moving indoors November 1st, it’s reasonable to ask how safe we will be?

The Post used this chart from the British Medical Journal to discuss the safety of gatherings. They altered it a bit; I’m sharing the original.

Type and level of group activity	Low occupancy			High occupancy		
	Outdoors and well ventilated	Indoors and well ventilated	Poorly ventilated	Outdoors and well ventilated	Indoors and well ventilated	Poorly ventilated
Wearing face coverings, contact for short time						
Silent	Low	Low	Low	Low	Low	Medium
Speaking	Low	Low	Low	Low	Low	Medium
Shouting, singing	Low	Low	Medium	Medium	Medium	High
Wearing face coverings, contact for prolonged time						
Silent	Low	Low	Medium	Low	Medium	High
Speaking	Low	* Low	Medium	* Medium	Medium	High
Shouting, singing	Low	Medium	High	Medium	High	High
No face coverings, contact for short time						
Silent	Low	Low	Medium	Medium	Medium	High
Speaking	Low	Medium	Medium	Medium	High	High
Shouting, singing	Medium	Medium	High	High	High	High
No face coverings, contact for prolonged time						
Silent	Low	Medium	High	Medium	High	High
Speaking	Medium	Medium	High	High	High	High
Shouting, singing	Medium	High	High	High	High	High

Risk of transmission
 Low ■ Medium ■ High ■

* Borderline case that is highly dependent on quantitative definitions of distancing, number of individuals, and time of exposure

Fig 3 | Risk of SARS-CoV-2 transmission from asymptomatic people in different settings and for different occupation times, venting, and crowding levels (ignoring variation in susceptibility and viral shedding rates). Face covering refers to those for the general population and not high grade respirators. The grades are indicative of qualitative relative risk and do not represent a quantitative measure. Other factors not presented in these tables may also need to be taken into account when considering transmission risk, including viral load of an infected person and people’s susceptibility to infection. Coughing or sneezing, even if these are due to irritation or allergies while asymptomatic, would exacerbate risk of exposure across an indoor space, regardless of ventilation

Hamden Plains is striving for:

Indoors, low occupancy:

The pews will be roped-off so only alternate pews will be used, and individuals or family groups will be spaced >6' apart by the worship host. We plan to manage traffic flow to maintain distancing; we could hardly do worse than any grocery in that regard and I expect we'll do better.

Well ventilated:

We'll have 6-10 air exchanges an hour in the sanctuary. Critical/Intensive care rooms require 2 outdoor/6 total exchanges/h. Our exchanges will be entirely with outside air, since we've no recirculation capability.

Wearing Face Coverings:

With extremely rare exceptions, we've had everyone masked for outdoor services; the exceptions have been addressed and will continue to be.

Prolonged Time:

I assume 45-60 minutes is lengthy; we're certainly assuming it is, and making plans accordingly.

Silent or speaking:

We're not shouters. There'll be no choir and no congregational singing. The song leader to be masked.

That would be a 'low- risk, borderline case' per the chart.

Overall Risk Assessment

In medical settings, it's recognized that risk is a continuum, and **risk mitigation** is what we're striving for. What level of risk reduction should we consider acceptable?

The rule-of-thumb I've been using is what I call the Stop-n-Shop rule. With the measures we'll be taking, does a service create more or less risk than a trip to Stop-n-Shop?

The risk of acquiring COVID-19 in any setting is a function of the number of people present (because each additional person adds a chance of someone being infectious), and the risk level of the interactions in the event. The interaction risk is composed of aerial spread (mitigated by masks, distancing, and ventilation) and contact spread (mitigated by hand hygiene, minimizing common-touch surfaces, and cleaning).

Here's how I parse that using the Stop-n-Shop rule:

Number of exposures: much better. There are more people in S&S at almost any time; and at the times most of us have to shop; than in a HPUMC service. In addition, for surface-transmission, there are a

very large number of people in and out over the course of a day in a store. It's still unclear how much transmission is due to surfaces versus airborne, but the sheer number of contacts are a major risk in stores.

Distancing: comparable to slightly worse. Both environments will make best efforts to manage traffic flow; I think HPUMC will be more successful, simply because it's a simpler environment. But the density of people in S&S is usually somewhat lower; these variables more-or-less cancel out, but with overall lower-density maybe S&S edges out church.

Environment: Significantly better. We'll have as good ventilation as a large store. We'll have fewer opportunities for cross-contamination of touchable objects; there are numerous, frequently-touched surfaces on a store, we'll have one service/week with the same people, decontamination after each use, and few if any common touch surfaces analogous to shelves, checkout belts, and card-key pads in stores.

Interaction risk: comparable to better. Except for signs, there's no symptom screening in a grocery store; we'll have active screening and temperature checks. People talk in church; people talk in stores. We expect to enforce masking; retail notoriously doesn't. We'll have a song leader; a single person, masked, and highly distanced from the others.

Overall, I believe the risk of attending an indoor service at Hamden Plains will be significantly less than a trip to the grocery store.

In addition, risk assessment is a dynamic process. The Re-opening committee will continue to assess our practices in light of the science of COVID-19, and the evolution of the pandemic locally. If local disease rates rise to levels seen in the spring; if school and other institutions close or go heavily virtual, we will reassess our own practices.

References

British Medical Journal article is at:

<https://www.bmj.com/content/bmj/370/bmj.m3223.full.pdf>

Washington Post Article:

<https://s2.washingtonpost.com/camp-rw/?trackId=5e6d88a7ade4e21f5948f933&s=5f8a03469d2fda0efb4b7d9d&linknum=4&linktot=72>

CDC Guidance on air exchanges/hour

<https://www.cdc.gov/infectioncontrol/guidelines/environmental/appendix/air.html#tableb2>