$\tau$he line at the restroom-ah, how well we women know it! Do you dash from seat to line, bowling over older and smaller folk, entertaining the vain hope that you might also get a beverage before intermission is over? Or do you use tactical preplanning-no beverages for at least two hours before showtime? No matter how flippantly described, these are only two of the strategies women contemplate before nearly every public performance event. And we've all heard stories of women storming the men's restrooms. We'd love to be in one of those lines now, wouldn't we? No, of course not! But it would mean that live events were on again and we felt safe enough to attend them. But why is this still happening after so many years, even in new facilities? How will the pandemic change it, during and after?

Pre-pandemic, it happened because building codes do not require enough women's stalls to accommodate the demand in assembly spaces. Despite improvements over the last 30 years, codes still ignore the following key issues:

- More women attend group cultural events than men, at about a 65/35 ratio (depending on what research is used; the number can drop to 56/44). Codes presume a 50/50 ratio.
- Women tend to take longer in the restroom than men.
- Restroom load is concentrated at certain times: intermission, half-time, seventh-inning stretches.

Some venues, such as The Berliner Ensemble (https://www. timeout.com/news/this-berlin-theatre-has-nailed-socially-distant-seating-052920), are experimenting with no-intermission events so that the restroom load is spread out and lines are short or nonexistent, but I think that audiences will not embrace this solution long-term. No one wants to miss anything, just like no one wants to go to the restroom during a movie. There could be a huge new market for that app that tells you the best time to go during a movie, but I won't endorse it by naming it here.

Right now, very few public events of the type that require large public restrooms are happening, and operators are working incredibly hard to develop opening plans that are safe for patrons
and will stave off financial collapse for these institutions. These places will reopen, slowly, partially, at first, but they must return to a capacity that works financially. Both partial and full reopening will revive this issue.

Limiting attendance will reduce the demand temporarily, but social distancing will increase the physical space that lines require. The increasing understanding of the importance of thorough handwashing will slow passage through restrooms even further, so it's possible the line time required to use the facilities will not shorten with fewer users; and as capacity increases, the problems may be worse than before.

Developing information about possible spread by blow dryers and toilet flushing seems to call for some remodeling of facilities immediately, to include toilet lids and to remove dryers. Providing and stocking toilet seat covers will be more important than ever, as will thorough and regular cleaning and disinfecting, but that presumably does not take place at intermission and is a separate issue from stall count. However, an employee stationed in the restroom continually disinfecting faucets, door handles, etc., could greatly reassure patrons and provide a few extra paid hours to casual front-of-house employees in tough times-if the venue can find the dollars.

The long-term solution, of course, is more women's stalls. But why is it so hard to implement? The obstacles are easily identified: Problem number one is money-plumbing is expensive, and toilets produce no revenue-generating floor space; therefore owners, developers, and architects are strongly incentivized to minimize them. In a for-profit world, building-code updates would be considered the logical mechanism for change, but building-code changes are too slow and too incremental to address pandemic issues in the short or medium term, so local solutions will have to be created, either by county health officials or venue operators themselves.

In the nonprofit world, primarily arts venues, money is also an issue, but operators generally have more power to demand higher women's toilet counts. Theatre managers are asking for more stalls during design, but they also lack solid data on which
to base the numbers. Enlightened architects proclaim, "We've provided twice as many women's stalls as men's!" without considering the attendance ratio and without considering whether that is a meaningful reference. Other than the women still standing in line, who cares how many more women's stalls there are than men's? The valid question is, "How many are needed?" Or rather, "How many more?" What do we need to know to get it right, and how do we apply this information to a concrete solution?
I suggest the following steps: First, define the goal-is it to have no line at all at the women's restroom? Limited lines? Or do you really want to provide only the code minimum for some reason and let the owner deal with the complaints?
Second, do some research; when you go to an event, pay attention to the number of stalls, the length of the line, and the actual time of intermission. I have been to older facilities where intermission stretches to 25 minutes or more to accommodate the restroom line. This is not good for maintaining the emotional flow of an event and audience engagement. It's also hard on folks paying babysitters or counting on public transportation when shows go too long. (But it does provide time to sell more drinks, so there is a small silver lining.)

Poll other facilities: Talk to house managers and staff to determine the ratio of seats to fixtures and their experience with lines. Do not expect exact answers. You will be surprised how few staff members can tell you how many stalls their building has.

Analyze the results against whatever benchmarks you can, including perhaps, the goal to provide enough fixtures so that a person of either gender can get in and out of the restroom and still have time to get a snack during a 15 -minute intermission. Of course, this also assumes enough concessions service, but that's another story. It does not necessarily mean no line at all.

The formula we have settled on is as follows: Given a gender attendance ratio of $65 / 35$, we multiply seat count by the appropriate percentage, and allow 1 fixture for every 35 women and 1 for every 45 men. Ideally, provide a sink for every 2 fixtures, each with its own soap dispenser. Provide a towel dispenser for every 2 sinks (see above; no more blow dryers, please). Place trash cans at exits (which allows for using the towel for grasping the door handle, then dropping the towel in the trash, which is good practice in these times). Mind you, budgets seldom allow for actually meeting that count, but it's a good target.
Let's compare results between the

Figure 1: Code comparisons for restroom fixtures

| Source | Women's Fixtures | Lavatories | Men's* | Lavatories |
| :--- | :---: | :---: | :---: | :---: |
| CBC | 15 | 9 | 12 | 6 |
| IPC | 19 | 6 | 10 | 6 |
| Double CBC | 24 | 18 | 12 | 6 |
| 1/35-1/45 | 35 | 17 | 28 | 14 |
| *Total of stalls and urinals |  |  |  |  |

Results at 50/50 gender split
CBC
1 stall per 83 women
IPC 1 stall per 66
Double CBC $\quad 1$ stall per 52
1/35-1/45 1 stall per 35

Results at 65/35 gender split
CBC
1 stall per 108 women
IPC
1 stall per 85
Double CBC 1 stall per 67
$1 / 35-1 / 45 \quad 1$ stall per 46
code, the "double-the-men's count" idea, and our suggested formula, using a 2,500 -seat civic theatre as an example; this is a fairly typical size for a concert hall or touring house. Pay atten-tion-the math is easy but there are a lot of variations.
I compared the 2019 California Building Code (CBC) and the 2018 IPC (International Plumbing Code, part of the International Building Code), doubled the CBC men's count and applied my $65 / 35$ ration with 1 fixture for 35 women and 1 for 45 men. The results are shown in Figure 1.

The 2019 California Building Code (which is based on the Uniform Building Code, Table 422.1) requires fixtures on a graduated scale; I will not quote it here, but it is easily available to review.
The 2018 IPC simply requires 1 fixture per 125 men and 1 per 65 women, and only 1 lavatory per 200 persons and 6 sinks for each gender!
Using the 65/35 gender ratio and allowing more stalls for women at $1 / 35$ versus $1 / 45$ for men, the resulting fixture count is 46 women's stalls and 19 men's fixtures. As you can see, the code isn't even adequate for men in our formulae above-which suggests that $1 / 45$ may be rather generous in the men's department.
In analyzing, researching, and developing fixture counts, remember that the size of the venue and the number and location of restrooms must also be considered. Code requirements are better for venues of around 500 seats, but still stingy. Smaller venues tend to have smaller lobbies, too, which means less space
to keep restroom lines unobtrusive. Sports arenas are presumed to have a higher male-to-female attendance ratio, but every story I have heard about women storming the men's room has been at a sports stadium. It is far from an exact calculation!

If individual restrooms are very large, then for large concert venues or stadiums, consider lights or other indicators to identify vacant stalls. At one concert venue in my area, restrooms are so large that a staff member directs patrons to open stalls, which prevents patrons from losing their place in line while checking for open stalls but requires a paid employee.

Depending on overall venue capacity and configuration, consider restrooms in multiple locations, but do not provide too many options-women won't risk moving from a 5 -stall restroom on the chance that the next one has a shorter line.

Definitely consider gender-neutral facilities-increasingly it seems both practical and equitable. Full-door stalls with goodquality locks and a generously sized circulation area can provide an appropriate level of privacy as well. This may be an especially good option for facility renovations, where new restrooms are cost prohibitive or impossible due to site conditions. Full-size doors and toilet lids may also help contain the spread of viruses and bacteria during this pandemic and the inevitable next one, and alleviate opposite-gender concerns for parents. And this downtime may provide opportunities for remodeling that would ordinarily be extremely disruptive to the event calendar, as suggested by an excellent article by Howard Glickman of Auerbach-Pollock-Friedlander consultants (https:// www.auerbachconsultants.com/wp-content/uploads/APF_Thoughtful_Performance_Space_Improvements.pdf).

Some theatre managers worry that their older audiences will be uncomfortable with this, and although examples are still rather limited, anecdotal reports indicate this is not the case in practice. Family restrooms with sinks, babychanging stations, and adequate size for an attendant can still be separate or incorporated within the larger restroom. This solution has everything to recommend it-it is bias-free, eliminates the concern about the gender of the cleaning staff when the facility is open, and allows the most efficient use of existing or new stalls. Urinals can be eliminated or shielded as needed for the desired level of privacy.

Don't forget the backstage facili-ties-most performers will also have to use the restrooms at intermission, especially bands and orchestras; 2 stalls


Sample design showing an in/out arrangement that's good for managing lines and social distancing.


Only 4 stalls in this restroom at a 324 -seat theater.
Why so few? I can only speculate of course, but the likely answer is that they provided something like the code-mandated number, then made the assumption-correctly-that audiences would put up with it to see the acts on the bill. However, there are a few restrooms in the fine-dining and VIP areas for top patrons. This is, of course, a for-profit venue.
I will close with a happy story. A nonprofit touring house on
a major university campus recently upgraded their 3,000-seat facility with a major restroom addition that increased their fixture count from 22 women's fixtures to 110 (a ratio of 1 stall to 17 women at $65 / 35$ ), with a sink and paper-towel dispenser for each 2 fixtures as well as indicator lights for occupied and open fixtures. (The men's count remained at 40 total, which was and is adequate.) It was costly, but the lack of women's stalls had been the number one complaint in this facility, which originally opened in 1964.
So, there is some progress and some hope. Due to the number of historic and older theatres in North America, change will come slowly. But switching to gender-neutral facilities could greatly reduce the problem, or at least spread it equally among all patrons. Furthermore, those of us in design and construction industries must tell the code-writing bodies to reassess the plumbing-fixture requirement in assembly venues, and we must take seriously the very real plight of female patrons in the buildings we design. (5)

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