

Estimating Online Worship Attendance

Clif Guy, Director of Information Technology
The United Methodist Church of the Resurrection
April 27, 2020

Estimating attendance for your online worship services is challenging. Metrics produced by Google Analytics, Facebook, and others are confusing and seem to suggest you have way more online worshippers than you can talk yourself into believing. Intuitively you know the numbers are high, but high by how much?

First, I will provide a little background and then give you a simple formula for estimating your online attendance.

Background. Have you ever counted the people in your sanctuary and then recounted and gotten a different number? I have, many times. Years ago, I got curious about this and started counting heads from the balcony of my normal-sized mainline church. I discovered that on average it was 10 minutes after the service start time before the attendance got within 90% of the highest attendance and the earliest I got my highest attendance count was 12 minutes after the start time. On average, attendance kept creeping up until 20 minutes into the service. (See my chart in the appendix.)

Bottom line: even in-person, our counts are only approximate. Worshippers are entering and leaving the worship space throughout the service – going to the restroom, taking a phone call, checking on a kid in the nursery, and so on. If you asked an analytical thinker to tell you the worship attendance at the 11:00 service last Sunday, she would reply, “When during the service do you mean?”

Online attendance is similar. Worshippers arrive late, leave early, have tech trouble halfway through, get interrupted by the same things that interrupt when they are with you in person, and so on. Worshippers start on one device and then switch to another; or start on Wi-Fi, switch to cellular data, and then switch back. All these worshipper actions during the service create records that drive the reports from your streaming provider. As this happens, the same worshipper can get counted multiple times, inflating the counts. As inflated as this is, Facebook is much worse because it starts playing your service video as users scroll through their news feeds. If a video plays for 1 second as the user scrolls by, Facebook counts it.

Estimating principle. In principle, I want the online attendance estimate to be as equivalent to an in-person count as possible. Bearing firmly in mind that online attendance can never be exact, I would like the estimate to be within a few percent of the real number, if that number could ever be known precisely and accurately.

Method. If you could count in-person heads many times during your services, I think most people would agree that the highest count is the one you would record as your attendance for that service. This leads to two starting points for counting online attendance.

1. If your streaming provider reports the **peak number of streams**, I recommend you start with that. Facebook recently added this to their analytics report for each video. (Click on *Showing All*, which will flip the report to *Showing Live*. The top metric is *Peak Live Viewers*. At a recent service, Facebook reported 8,867 *People Reached* for a service that had 185 *Peak Live Viewers*. I mean, that's crazy!)

2. If your streaming provider does not report peak live, then **a good substitute is 30-minute views.** If your service averages 70 minutes, or 80 with the prelude and postlude included, most worshippers who watch 30-minutes or more will overlap at some point in the middle of the service and give you something very close to peak live. At Resurrection, we have found this to be within 2-3% of peak live.

The next step is to **estimate the number of worshippers per video stream** (many households have multiple people worshipping together around a single screen). Churches across the country have estimated this various ways over the years, typically through surveys or online worship attendance registration forms. A decade ago, enough churches found a ratio around 1.7 worshippers per stream that it became a good rule-of-thumb if you did not have another way to estimate it. Over time, that ratio declined as more people worshipped individually using a cell phone or tablet. At Resurrection, the ratio declined from 1.7 in 2008 to 1.55 in 2020 pre-pandemic.

We estimate the ratio using worship attendance forms – total number of people reported on the forms divided by the number of forms. Though it varies week-to-week, we find that approximately 55% of online worshippers register their attendance. We cannot be sure that the 45% who do not register also have the same number of people per stream, but that is our assumption. Since the pandemic led us to have online worship only, we have seen the ratio rise from 1.55 quickly to 1.68 and now settling in at 1.82. More larger groups are gathering around larger screens, driving the ratio up. On Easter, our ratio was an eye-popping 2.15. **If you do not have a good way to estimate worshippers per stream, use 1.6 in non-pandemic times and 1.8 now.**

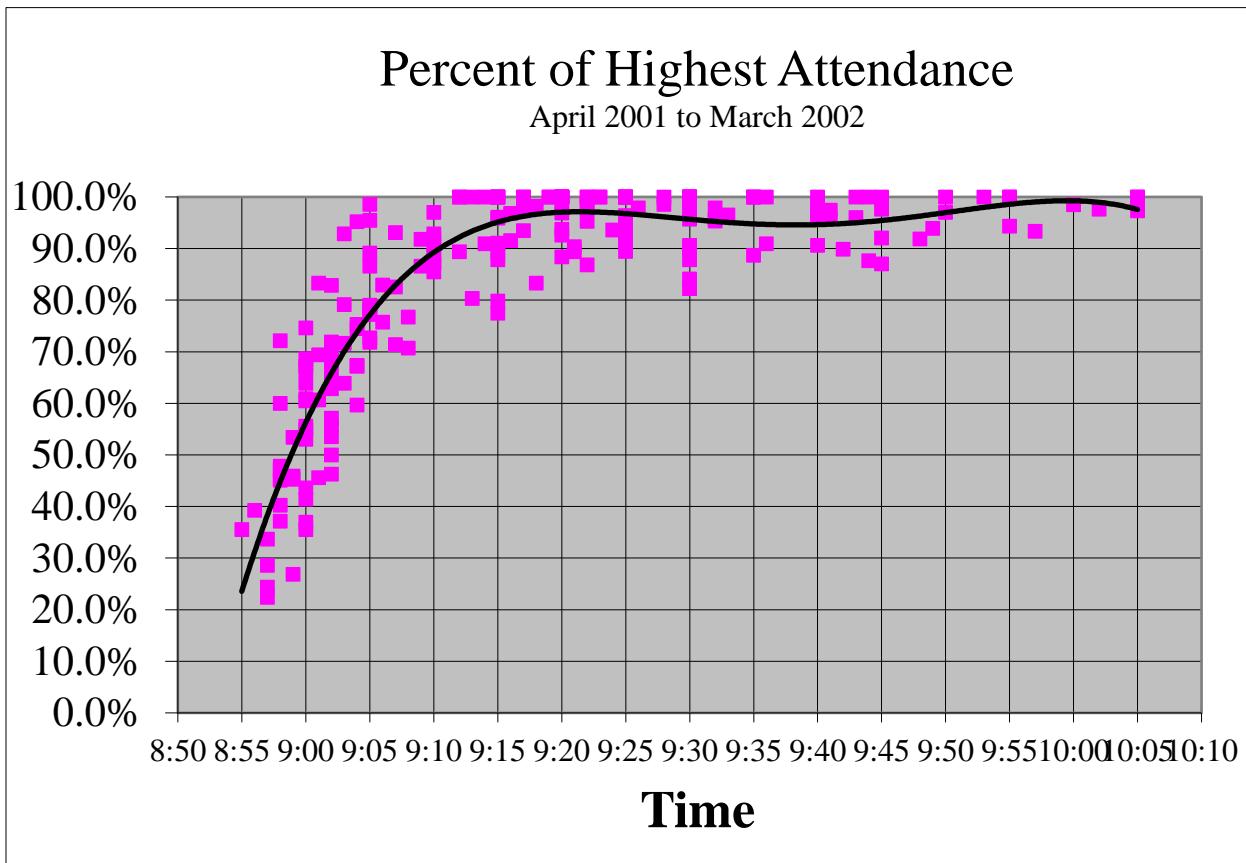
The above leads to this simple formula for estimating worship attendance.

$$\text{Estimated attendance} = \text{Peak Live Streams} \times \text{Worshippers per Stream}$$

(rounded to the nearest whole person)

Replays. If your worship video is posted somewhere for on-demand replays, then I recommend using the number of *Plays* or *30-Minute Views* as the count, with no multiplier. We believe replays are much more often a single individual, rather than a group gathered around a large screen. Also, since there is no equivalent to *Peak Live* for on-demand replays, the count will already be inflated from people who watch only a brief portion of the video. For Facebook, we use a more complicated algorithm based on the total minutes viewed (subtracting out the live minutes).

Appendix Figure 1. Here is my graph of in-person worship attendance over time during the 9:00 service as a percent of the highest count at that service.



Appendix Figure 2. Here are similar graphs of Facebook's live simultaneous streams from a couple of recent services.

