

Scheduling Principles and Problems

Call Center Scheduling -- The art and science of getting the just right number of people in their seats at precisely the right times to handle the calls. Too many at one time of day and you're paying needless dollars for staff when they're not needed. Then at peak times, when there aren't nearly enough people to go around, service level suffers (not to mention the poor souls that are logged in and facing a never-ending queue of calls). If only you could get to that "just right" balance . . .

This article will outline the steps of effective scheduling, discuss the most common problems call centers face with the delicate balance between service and efficiency, and offer some tips on getting that elusive "just right" set of schedules in place.

First Things First

The last three articles in this series have outlined how to get to a schedule requirement by half-hour. Once a "bodies in chairs" number has been determined by half-hour, the next step is to translate this staff requirement into a schedule requirement number.

Calculating Schedule Requirements

Let's say we're staffing for 450 calls between 10:30 – 11:00 and average handle time (AHT) is 270 seconds (or 67.5 erlangs of workload). For a service objective of 70% of calls answered in 30 seconds, we'd need 72 staff to meet our goals (see table below)

Number of Staff	Service Level	ASA
71	61	44
72	71	29
73	78	20

So, if 72 people are needed for the peak calling time between 10:30 and 11:00, does that mean you schedule 72 people to work the 8:00 – 5:00 shift?

Oh, if only it were that easy! The problem is that if you have a group of agents that started at 8:00, naturally they're going to want to take a break around 10:30. And then a few will be calling in sick today. Perhaps another group is out in a training session. And don't forget the handful that need that time to do off-phone work.

What has just happened to the workforce? It shrunk, didn't it? And you have to account for this "shrinkage" or "overhead" when you calculate how many people to schedule on certain shifts. You have to schedule enough staff so that when the workforce shrinks, there will still be enough bodies in chairs to handle the calls.

Factoring in Shrinkage

Shrinkage is any time that you're paying staff to be there that they aren't available to handle calls. Include paid breaks, paid vacation or sick days, training time, team meetings, and off-phone project time, as well as the "where are they?" category of unexplained unavailable time.

While shrinkage is low in some centers at about 20%, it can be extremely high in others (over 50%). It's important to measure it regularly and use a number that reflects reality. Use the actual number, not the goal.

Let's say your shrinkage is 35%. In our original staffing problem where 72 bodies in chairs are needed, we would calculate the actual schedule requirement by dividing 72 by the productive percentage of 65% ($72/.65 = 111$ staff). This calculation gives us the 100% number we need to schedule for this half-hour so that when the workforce shrinks by 35% we end up with 72 people on the phones.

Coverage Objective

Once you've calculated a schedule count requirement, the first step in creating the actual schedules to be worked is to decide upon a coverage objective. Will you create schedules so that the requirement is covered every single half-hour of the day? The benefits of a full coverage plan are obvious – it provides the best possible service to callers, and gives you the most room for forecasting error. It also provides some windows of "overstaffed" time during which meetings or off-phone work can be scheduled. The drawback of full coverage scheduling is obvious too --- it's the most expensive route, and one many call centers today can't afford.

The other option is to schedule so that the overstaffed periods and understaffed periods balance out – what we call a "balance over/under" scheme where net staffing over the day is zero. This is a more reasonable approach from a cost and service perspective, with the key being to keeping the amount of understaffing and overstaffing minimized each half-hour. (In other words, we want to only be balancing out + 1s and – 1s, not + 20s and – 20s!) Consistency of the service callers get regardless of time of day or day of week is a key objective here, so periods of 98% in 20 seconds followed by periods of 10% in 20 seconds are bad even if they average out to the goal across the day or week. Getting close to this "just right" number is a product of efficient scheduling, and brings us to the next step in the schedule creation process.

Defining Schedules

Now that we've arrived at a schedule count for each half-hour, it's time to decide how to define the actual schedules. This is the step where the length of shifts are defined, as well as the scheme of days on/off. Will you have mostly 8 x 5 schedules where each person works five consecutive days? Or try some variations such as four 10-hour days or even three 13-hour days (as one call center has surprisingly found to be a favorable

combination!) Think about varying the full-time definition further and try out three 10-hour days and two 5-hour days. Split the days off so they don't have to come together sometimes. There are dozens of possible schedule definitions, even within the restriction of full-time schedules.

Expanding the schedule mix further to include part-time schedules will have tremendous payback in terms of increased schedule flexibility. Four-hour or six-hour schedules give you so much more flexibility in matching the workforce to the workload that it's typically well worth the extra effort it takes to employ a part-time workforce. While part-time staff generally have higher turnover and are more expensive to train (since we have to expend the same training effort on twice as many employees), keep in mind that sometimes the part-timers may be less expensive in terms of benefit costs, and may actually be more productive employees given their shorter exposure each day. In evaluating the many tradeoffs, the biggest one that you can't ignore is how much better a fit of schedules to requirements you'll have with part-time staff.

Think of the schedule definition process as building a structure with Lego blocks. You probably start with the bigger blocks on the bottom, and then as you build and fine-tune the structure, you'll be able to get a more precise model if you have lots of different sizes and shapes of blocks. It's the same with work schedules. The more schedule options you have, the closer the fit of workforce to the workload half-hour by half-hour.

Obviously, the absolute best fit of schedules would be if all staff worked part-time and we had lots of small blocks with which to build our model. Having all part-timers is probably not realistic for most call centers, despite its efficiency. But having just a small percentage of part-timers can help.

Let's take a look at an example of just how powerful schedule variety can be. The table below illustrates a call center scenario where schedules are created to deliver an 80% in 20 seconds service level. You can see the results of a schedule that uses only traditional, 8-hour schedules. Now compare that to a set of schedules that includes 10% part-time schedules and then 50% part-time schedules. It's easy to see the power of part-time employees.

Schedule Mix	FTE Required	Annual Overstaffing Cost
All full-time schedules	185 FTE	\$876,000
90% full-time;10% part-time	170 FTE	\$512,000
50% full-time;50% part-time	129 FTE	\$ 67,000

Start Times

Another definition in creating work schedules is the start time interval. Some call centers have staff start "on the hour", while others have staff starting every half-hour. These start time intervals are another factor in determining the best fit of schedules to match the workload, with half-hour start times being more effective in coverage as seen in the table below.

60-Minute Start Times	30-Minute Start Times	15-Minute Start Times
132 FTE	124 FTE	114 FTE

By staggering start times to the half-hour or quarter-hour, you will naturally be staggering break times and other activities throughout the day. And if you're willing to split your staff into four starting intervals within the hour and use 15-minute start times, the savings can be substantial. In this example, switching from 30-minute start times (the most common call center scenario) to 15-minute intervals saves 8% total headcount. So go ahead...have your staff "stagger" into work!

Preferences Versus Requirements

Another issue plaguing workforce schedulers is whether employee preferences should drive schedule definitions or whether the service requirement is the primary driver. In today's world of high staff turnover, many call centers are doing whatever it takes to keep their staff happy, including pick of schedules. But beware! Giving all employees their first pick of schedule can be extremely expensive in terms of both service and cost.

One call center that recently evaluated the staffing implications of preference-based versus requirements-based schedules found that 162 FTE would be required for preference-based scheduling, while only 139 FTE were actually required based on workload requirements. This call center settled on a "happy medium" of guaranteeing each agent one of their top four choices of schedules (so still meeting a preference) while getting a much better match to the actual requirements. The increased flexibility of this intermediate solution required 152 FTE and managed to meet service goals while still giving staff some say about work schedules.

Schedule Horizon

A question we're frequently asked is "How often should a call center create schedules or go through the bidding process?" The frequency of schedule creation and bidding is mostly a function of how volatile your workload is. For a call center whose volume and patterns don't change all that much, creating schedules once every three to six months may be just fine. And a longer schedule horizon certainly has its advantages in terms of more stability for the staff and less work for the workforce scheduler.

On the other hand, in an environment that is changing rapidly or is affected by many outside business drivers, forecasting and scheduling need to happen more often. Some call centers will need to schedule week by week, or at least once a month. And while frequent changes are tough on the workforce and the scheduler, a more frequent forecasting and scheduling cycle will result in a better match of workforce to workload and lower costs overall.

The approach that makes the most sense is one where a base or foundation of schedules is in place and doesn't change much weekly or even monthly. Then the variations in

workload each week can be met by a flexible set of schedules that change as needed to meet caller demands. These base schedules are generally the most desirable ones, and typically belong to the more senior staff. However, more and more call centers are beginning to use performance scores as a method to assign schedules to staff, since pick of schedules is a huge motivator. You may want to think about a scheme where pick of schedules is assigned based on a weighed factor of seniority, attendance, and performance to get the best of both worlds.

Next Steps

Now that we've discussed the many factors that go into defining and assigning workforce schedules, the next step is managing the schedules on a daily basis and making needed adjustments. In the next article in this series, we'll discuss the basics of day-to-day management of schedules and service level.

About the Author....

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