

Measures of WFM Success: Four Critical Metrics for the WFM Scorecard

There are many different key performance indicators (KPIs) in the contact center. Most centers have scorecards detailing performance objectives and results for frontline staff and supervisors. This article will explore what numbers point to success for the workforce management team.

There are essentially four measures of workforce management success. These measures are ones for which the WFM team can and should be held accountable.

- Forecast Accuracy
- Scheduling Efficiency
- Operational Effectiveness
- “Customer” Satisfaction

You will note here that one of the key metrics for most contact centers is speed of service, measured either as service level or average speed of answer (ASA). While the WFM team is certainly involved in making sure speed of answer goals are met by getting the right number of people in seats, there are many factors outside the control of the WFM team that can impact whether the center meets that goal or not. So, this article will focus on four of the measures that are more directly under the control of the WFM team. If these objectives are met, particularly the first two, then WFM has done what it can do to impact the service level numbers.

Forecast Accuracy

Let’s start with the forecast since it is the foundation of all of the planning in the WFM process. It is important to measure the accuracy of the forecasting process and that is comprised of two main elements – data usage and match of forecast to actual.

Data Usage:

- Was representative data used?
- Were aberrations identified and adjusted?
- Were business drivers identified and applied properly?

Match of Forecast to Actual:

- Was there a match of call volume, AHT, and actual staffing numbers?
- If not a match, where did the process go wrong?

One of the most critical measures of success for anyone on the workforce planning team is forecast accuracy. Accuracy of forecast should be a primary goal. There are several ways to measure how accurate your forecasts are. Generally, the primary measure of forecasting success is how closely the actual workload matches up to for forecast. This metric is straightforward to measure from a numbers perspective, unlike the data usage piece which involves more judgment about the degree to which

aberrations were identified and business drivers were applied in the forecasting process.

There are actually several ways to measure the match-up between forecast and actual workload. Here are the three most common approaches:

- Percent Difference – the easiest math approach, but problematic in application where averages over time can conceal wide variations
- Standard Deviation – a little more complex math, but a single number that shows how much variance occurs over a large group of numbers
- Correlation Analysis – more involved math, but a great way to determine the effectiveness of history as a predictor when looking at distribution patterns

Percent Differences

Calculating percentage change is the easiest way to look at forecast versus actual numbers. In this first example, you see the forecast volume for each day of week, along with the actual volume.

	Forecast Volume	Actual Volume	% Difference
Monday	1598	1645	-2.9%
Tuesday	1290	1301	-0.9%
Wednesday	1056	1198	-13.4%
Thursday	980	1020	-4.1%
Friday	1345	1398	-3.9%
Saturday	659	482	+26.9%
Sunday	347	350	-0.9%
Total	7275	7394	-1.6%

The percent difference for Monday is calculated by taking the difference between the two numbers and dividing the difference by the forecast volume. For example, the difference between forecast and actual is 47 calls for Monday. Dividing that difference by the forecast of 1598 results in a percentage difference (under-forecast in this case) of 2.9%.

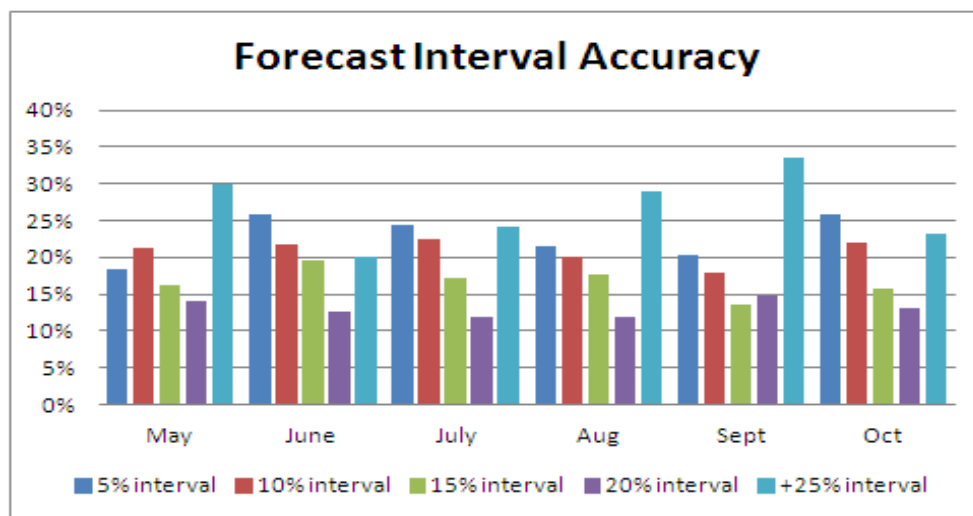
Notice that the final result for the week was an under-forecast of only 1.6%, which at first look seems very accurate. However, Wednesday was under by 13.4% and Saturday was over by 26.9%. It is very difficult for the operations team to add enough staff on one day to cover a 13% shortage, and some of the associates are going to wonder why they have been asked to work the unpopular Saturday shift when they really weren't needed.

The problem here is the timeframe over which these numbers were calculated. Over a week, there will likely be some highs and lows, and in this case the high forecasts averaged out with the low forecasts to hit a number that looks like the week was right on target. Looking at each day of the week would have been a better approach. But

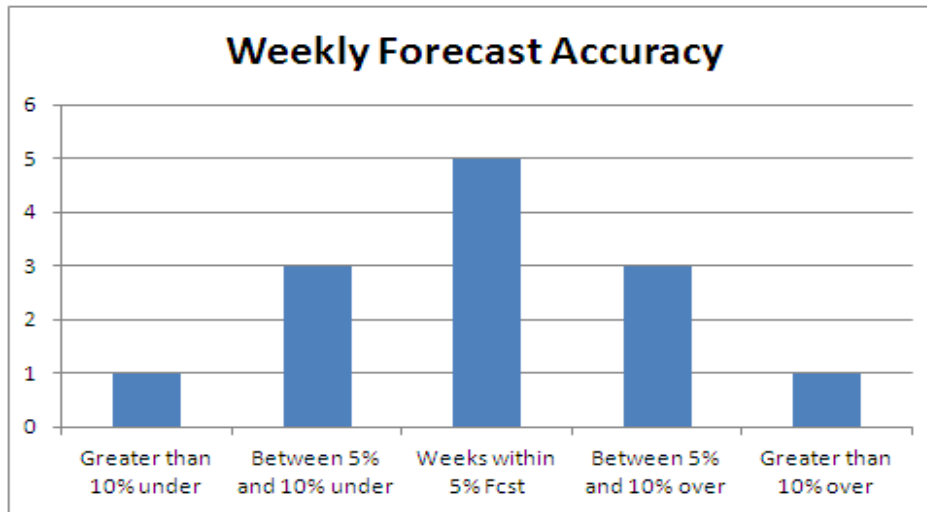
even reviewing daily totals provides the same over and under averaging that might show a daily forecast right on target when there were actually big differences between actual and forecast numbers throughout the half-hours of the day.

In reality, percent difference calculations should be done on an interval basis within each day. This can be easily supported in an Excel spreadsheet (or similar tool) by copying the end-of-day interval reports from the WFM system that should show the forecast and actual volume, AHT, and staffing. With large quantities of data, a pivot table analysis can help to identify opportunities for improvement. For example, if Wednesdays between 10:00 and 11:30 seem to have a higher level of variance than other times, you now have a real clue to drive research for the cause of this inconsistency. If all you know is that Wednesdays overall are off, it is hard to know what to look for to find the cause.

Creating a visual representation of the forecast versus actual can provide good insight into where forecasts are going wrong. Here are some examples of ways to graphically display the results of variation analysis. The first chart looks at the weekly results and displays the interval accuracy for each within set levels including 5%, 10%, 15%, etc. Tracked over several months (or over weeks), it can reveal a trend and help to identify recurring challenges. For example, the last week of every month in this graph seems to have a bigger variance that other weeks.



The second chart is simply tracking the weekly total accuracy and showing if the actual workloads are within 5% of the forecast, between 5 and 10% of the forecast or over that. Higher bars in the middle of this type of chart would be desirable as they indicate better levels of accuracy.

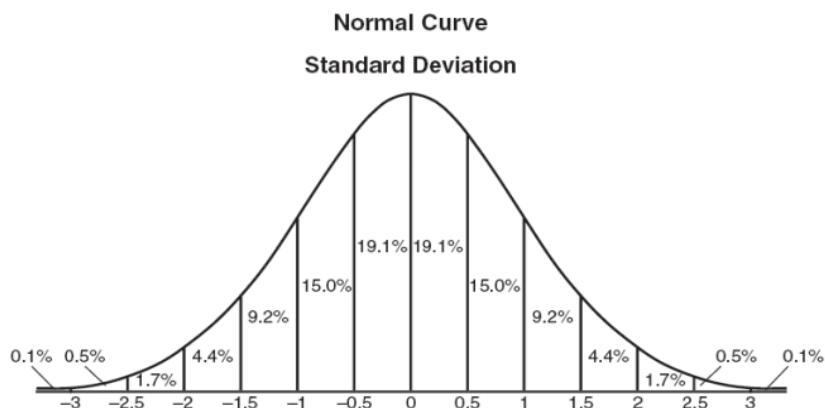


Standard Deviation

Another “mathematical” approach involves doing some simple standard deviation calculations to see if an acceptable amount of variation is occurring or there is enough to cause concern.

Standard deviation is simply a measure of variation away from the “norm” or average. There is no set standard deviation which is acceptable versus non-acceptable but tracking the trends to see where the biggest variances occur can be helpful.

A standard deviation distribution is often referred to as a bell curve because of its shape. On either side of the mean (or average) is a percentage distribution of all the data points in the analysis. By adding one-half of a standard deviation to the mean, and then subtracting one-half of a standard deviation from the mean, 38.2% of all the data points in the analysis should be captured. One full standard deviation on either side of the mean results in 68.2% of all the data points. Note the percentage spread with 2, 2.5, and 3 deviation points. Therefore, the larger the standard deviation is, the more variation there is in the data.



Calculating Standard deviation in Excel is easy. Just enter forecast data in one column and actual numbers in another. Calculate the difference in the two columns. Next compute the Percent Difference by taking the difference computed and dividing it by the forecast. It is this Percent Difference that is used to compute the standard deviation.

Select any open cell and then go to the Σ at the top where Excel hides the formulas (Σ = autosum). Use the down arrow key to see more and click "More Functions" and look for "STANDEV". Highlight the Percent Difference column of numbers.

Using the Standard Deviation function with the previous example where the Percent Difference overall was a 2% variation, the standard deviation is 12.53%. This is a huge swing from low to high, representing a very volatile situation and an unstable forecast resulting in mismatched staffing across the intervals.

Correlation Analysis

Correlation is all about the pattern and whether one pattern matches another. A correlation coefficient is a numerical value that identifies the strength of relationship between variables, which in this case represents two ranges of numbers. The higher the correlation coefficient, the better the "fit" between the two ranges or the match of the pattern.

A perfect match of patterns results in a correlation coefficient of 1.0 and a perfect opposite in patterns results in -1.0. If the correlation coefficient is positive, it means that as one variable gets larger the other gets larger. If correlation coefficient is negative it means that as one gets larger, the other gets smaller (often called an "inverse" correlation).

When applying correlation analysis to forecasting accuracy, one distribution of call volumes for a month might be compared to the average of the last 6 months to see if there has been a significant change in the arrival pattern. It would be important in this case to either focus on same day of week patterns within the month or on date of month but mixing the two could distort the results.

Once again, this analysis and the calculations can be done easily in a spreadsheet. The function in Excel is CORREL. Once the coefficient is calculated, recognize that the stronger the pattern match is, the closer the result will be to 1.0. Anything lower than .8 is not a very good match.

The next example shows two sets of data. Notice that the totals for the two weeks are very different. But an analysis of the patterns of the numbers shows an exact match or a correlation coefficient of 1. That is because each day in the second week is exactly

three times the same day in the first week. The point here is to look for the *pattern*, not the numbers themselves.

	Week 1	Week 2
Monday	4600	13800
Tuesday	4230	12690
Wednesday	3895	11685
Thursday	3947	11841
Friday	4300	12900
Saturday	2156	6468
Sunday	543	1629
Total	23,671	71,013

In the second set of data, notice that the totals for these two weeks are the same, which might indicate one is a good predictor or match for the other. However, in these two weeks the patterns of call arrivals on the days of the week are quite different. There isn't a very good match between these patterns, thus a correlation coefficient of 0.81. So averaging these two weeks together to get an upcoming pattern would probably introduce a fair amount of error into the forecast.

	Week 1	Week 2
Monday	4600	3852
Tuesday	4230	5621
Wednesday	3895	4100
Thursday	3947	2645
Friday	4300	4023
Saturday	2156	2101
Sunday	543	1328
Total	23,671	23,670

There are many ways to measure and evaluate forecast accuracy. This article has examined three of these approaches – Percent Difference, Standard Deviation, and Correlation Analysis. Each has an important story to tell, so a combination of these would be useful tools to measure the accuracy of the forecasting and planning process. Also be aware that while the examples have used contact volume, the same process can be applied to AHT and percentage of shrinkage to search for issues there.

Measuring Scheduling Efficiency

Now let's switch to the second measure of WFM success – scheduling efficiency. This is a measure of how well the center is utilizing staff resources through the creation of schedules that best match the workforce to the planned workload.

Once again, the purpose of doing this analysis is in the interest of continuous improvement and identifying opportunities for changes. There might be a poor match of schedules to needs because there are few options in the schedules such as fixed shifts, limited break placement, all same lunch period, etc. This lack of flexibility can be a function of hiring methods, employment agreements, union contracts, past history, or simply a lack of understanding of the options and how they might be modified for a better fit.

There are many strategies for getting a better schedule fit. But the first step to improvement is to determine how well the current schedules “measure up” in terms of coverage. This is the calculation of schedule efficiency.

To begin the calculation, start with the bodies-in-chairs requirement determined by the forecast and service goal. There is an assumption that the forecast is totally accurate at this point yielding a required staff number.

It is important to account for shrinkage in this calculation. There are two ways of dealing with the shrinkage. It can be added to the forecasted staff requirement or alternatively, it can be subtracted from the scheduled staff number. It is also critical to ensure that the shrinkage percentage used here reflects only that which has not already been accounted for in the schedules. For example, if this schedule is a long time into the future, then we may need all of the shrinkage assumptions except breaks, but one nearer-term might already have plans for vacations, training, etc. in the actual schedules.

Once the adjustment has been made one way or the other, compare Required to Scheduled and calculate the over-staffing numbers and under-staffing numbers. Since both are equally inefficient, add all of these together as positive numbers.

Using the total of the Over + Under, divide by the total requirement. This will produce the schedule inefficiency or inflexibility percentage. Some automated workforce management systems produce this statistic as part of the reports.

Time of Day	Required Staff	Scheduled Staff	Shrinkage Adjust	Scheduled Staff (BiC)	Variance	% Variance
9:00	152	198	.27	145	-7	- 4.6%
9:30	154	211	.27	154	0	0
10:00	158	210	.24	160	+2	+1.2%

A few selected intervals are shown here to illustrate the calculations for schedule efficiency.

The Scheduled Staff is adjusted for Shrinkage to get an Adjusted Scheduled Staff or Bodies in Chairs (BiC) number. This number is compared to the Required Base Staff from the forecast. The difference in staff is noted, along with the percent variance.

At 9:00 there are 198 staff scheduled to be in their seats in an available state with shrinkage of 27%. The 198 scheduled staff is multiplied by .73 (the productive factor left by shrinkage), resulting in 145 adjusted scheduled staff (bodies in chairs expected based on the schedule). That is 7 less than the requirement based on the forecast need of 152 or a 4.6% difference in staffing expected. At 9:30 the staffing matches the requirement, but at 10:00 it is 1.2% higher than required.

This type of analysis would generally be done for at least a full day but could be for a week, month, or even longer period. Given only 3 data points in this example, the total of the 3 variances in this example is 9. The total of the 3 forecast staff numbers is 464. Comparing the variance to the forecast ($9/464$) results in a schedule inefficiency of 1.9%. Once again, be aware that the calculation over time can conceal the intervals with the biggest variances.

Another scheduling efficiency analysis applies to those centers that use skill-based routing. In those cases, agents are generally assigned multiple skills or types of contacts they should handle and they will get a mix of these different types throughout the day or week. Typically, one or more skills is ranked higher than the others and the rest are considered secondary or lower.

It is important to determine if the scheduling that has been done utilizes the personnel working in their primary skills as much as possible. Depending on the workforce management software in place, this may be possible at the planning stage, or may only be possible after the work has been done. One measure should determine if customers have been connected to agents with the right primary skill while another measure determines if agents are receiving a high percentage of calls in their primary skills. Both are important to the efficiency of the center.

Better matching agent skills to the contacts they handle can result in higher levels of customer satisfaction, higher first call resolution, fewer errors, shorter AHT, and generally higher levels of employee satisfaction.

Operational Effectiveness

The next measure of workforce management performance leaves the plan behind and analyzes how well both WFM and Operations adjust to reality when the day arrives. The call volume, AHT, and shrinkage may not be what was planned and certain changes to staffing may be required to achieve a consistent service result.

In this case, it is necessary to know the actual staffing requirement based on the actual contact volume and AHT. Compare that to the bodies in chairs that the center achieved and is reported by the ACD as Average Positions Staffed. Shrinkage is no

longer part of the computation as it is a planning placeholder for actual losses of staff and both of the numbers in this case are actual post-shrinkage numbers.

Once again, standard deviation is a good measure to use in analyzing operational effectiveness over a period of time. While there may be some periods of better efficiency than others, it is important to look at the consistency or variance in the numbers as well.

With a look at three sample intervals, the chart calculates how effective the WFM team was in working with Operations to get the required staff in place.

Time of Day	Actual Workload	Required Staff	Actual Staff	Variance	% Variance
1:30	140	152	155	+3	+ 1.9%
2:00	141	154	157	+ 3	+ 1.9%
2:30	143	158	162	+4	+ 2.5%

At 1:30, the actual call volume multiplied by the actual AHT revealed an actual workload of 140 erlangs of work to be done, needing 152 bodies in chairs to deliver the desired service level. This number is compared to the 155 staff actually in place (Average Positions Staffed) for a variance of 3 staff or a 1.9% variance.

To determine the operational effectiveness, compute the standard deviation of the variance percentages for an entire day, week, month or longer period.

Customer Satisfaction

A final measure of WFM success is how the team is serving its customers. Here “customers” can have many different definitions, including external customers, frontline associates, and the management team. It’s important for the WFM team to regularly survey its stakeholders to see how these groups view the work done by the WFM team.

Most organizations perform employee satisfaction surveys. However, it is more rare for the call center to do its own surveys even though there are many issues in the contact center that impact employee satisfaction that may not be relevant elsewhere in the organization. Therefore, it’s important for the center to regularly ask questions of the frontline staff. Since their satisfaction and well-being are impacted a great deal by staffing and scheduling processes, include these questions. Responses to these questions can be used to gauge how well the WFM team is performing its job, not just to make sure forecasts are accurate and schedules are efficient, but also that the schedules and processes are serving the internal customer – the frontline agent.

Here are some suggested categories to break down questions related to workforce scheduling:

- Schedule Fit – How well do schedules fit employee needs
- Scheduling Components – Availability of various components to fit needs
- Scheduling Process – How the process works
- Schedule Adherence – Individual goals and reporting

Here are some sample questions that can be posed to frontline agents and supervisors to gauge satisfaction with the WFM process.

1. In terms of schedule fit, how satisfied are you with...

- Schedule predictability
- Days of week worked
- Daily start times
- Lunch length
- Placement of lunch
- Placement of breaks
- Length of shift

2. In terms of Schedule Components, how satisfied are you with...

- Availability of trades
- Availability of overtime
- Availability of time-off
- Availability of part-time work
- Variety of shifts
- Work at home options

3. In terms of the Scheduling Process, how satisfied are you with...

- Defining shift preferences
- Frequency of shift bid
- Vacation request process
- Time off request process
- Schedule assignment process

4. Related to Attendance and Adherence...

- How reasonable is adherence goal?
- How clearly is adherence explained?
- Is feedback about adherence readily available?
- How appropriate are adherence consequences?
- Is the attendance policy administered fairly?

The WFM team has much control over how employee-friendly the scheduling process can be. Regularly polling and incorporating employee feedback ensures that not only external customers are well served by the schedule plan in terms of service, but also that the internal customers are happy with the work of the WFM team.

It is important to note that there must be a plan of action that comes out of the survey process for it to be effective. In fact, if the survey input is largely ignored, it would be better not to have done the survey at all.

Industry Standards

This article has examined ways to measure the success of WFM practices and procedures. A typical question at this point might be to ask what the goal should be for all these measures. It's natural to want to compare your "score" on these measures to other operations.

Alas, there is no industry standard or preset goal for any of these measures. While you may see in some benchmarking studies or surveys some numbers from other organizations, it is important to understand that your goals should be set by where you are today and what can be realistically accomplished moving forward. Look for small improvements at each measurement interval.

This article has examined four ways to measure the success of the WFM team:

- Forecast Accuracy
- Scheduling Efficiency
- Operational Effectiveness
- "Customer" Satisfaction

It is important to measure these on a regular basis, not just to provide a scorecard for performance evaluation of the WFM team, but also to serve as a tool for continuous improvement. Diving deep into these measures will provide much needed insight into problem areas and provide a roadmap to make changes for better forecasting and scheduling.

About the Author...

Maggie Klenke was a Co-Founder of The Call Center School and is a popular speaker and writer in the area of call center operations. Recently retired, she serves as an Educational Advisor to SWPP, continuing to provide thought leadership and training to the workforce management community.