

Playing The Numbers: Using ACD Statistics For Workforce Management

BY OFER MATAN, PH.D. AND ILLAH NOURBAKSH, PH.D., BLUE PUMPKIN SOFTWARE

There are lies, damned lies, and statistics.
— Benjamin Disraeli

The call center ACD supplies a potpourri of statistics. Used properly, ACD statistics can be a boon for workforce management forecasting and scheduling. However, the ACD provides so much detail that interpreting the

information can be like drinking water from a fire hydrant. In this article, we outline some relevant ACD statistics and the proper way to use them. We also point out some common pitfalls to avoid when working with call center statistics.

Workforce Management: *The Big Picture*

There are two key requirements for making a call center excel:

- 1) Achieve the best possible customer service; and
- 2) Make the best possible use of your employees, your most valuable and costly resource.

Workforce management can accomplish these objectives by building a model of your call center. We have divided the modeling task into four basic steps, as illustrated by the flowchart in Figure 1.

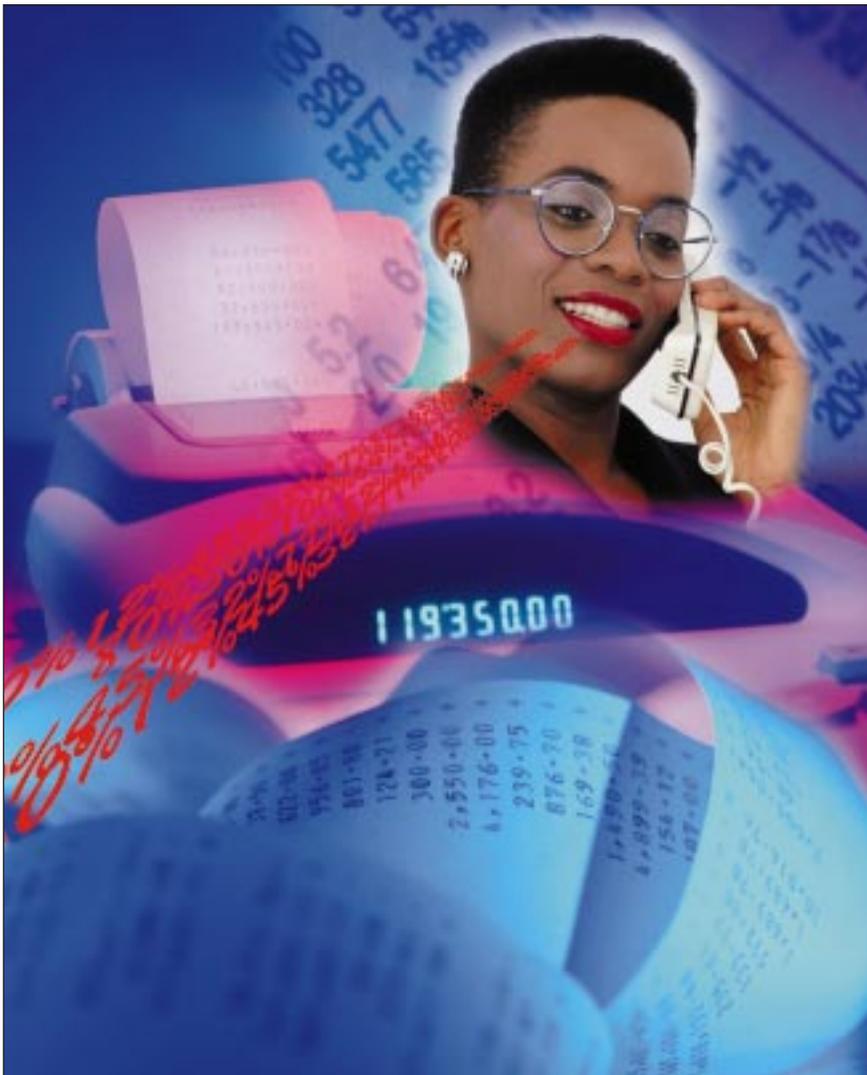
Let's take a look at each of the steps shown in Figure 1.

- **Forecast Call Volumes** — The first step is to create a realistic forecast of the number of calls expected at the call center. Historical and current call volume data will be invaluable in this process.

- **Calculate Agent Requirements** — Use your conclusions from step 1 to calculate how many agents are needed at different times of the day.

- **Build A Workforce Schedule** — Construct a workforce schedule that matches your needs.

- **Compare Results With Expectations** — Finally, and perhaps most important, you must compare the sched-



ule's results with expectations. This necessary learning step allows you to adjust the forecasting and scheduling process to continuously improve your call center's performance.

Throughout these steps, ACD statistics have an important role to play. As we will demonstrate, using the wrong statistics, or using statistics in the wrong way, will have a serious negative effect on the quality of your call center model.

Forecasting Call Volumes

To create accurate forecasts of future call volumes, call center managers must fuse together many sources of information, ranging from marketing predictions to catalog drops and the airing times of commercials. However, some of the most important information comes from historical call volume statistics. Usually, historical call volume statistics can be adjusted for current or expected trends.

Historical call volume statistics need to be accurate. A common mistake is to use **calls handled** as the past call volume. But beware: Calls handled only accounts for calls that were successfully answered by agents!

The following example illustrates this problem. Suppose the TeleGift company is forecasting calls for the week-long Christmas season using last year's statistics. Last year, they received 3,000 calls per day, out of which 8 percent were abandoned. This year, they expect business to grow by 10 percent. If they use last year's calls-handled statistic ($3,000 \times 92\% = 2,760$) and apply a 10% growth rate, they will plan for 3,036 calls. This forecast will be considerably less than the correct forecast: $3,000 \times 110\% = 3,300$ calls. Thus, by using the incorrect statistic, they underestimate their weekly holiday call volume by $264 \times 7 = 1,848$ calls.

TeleGift's call center manager ignored abandoned calls, and the cost of this mistake was accentuated because call volume was growing. The correct statistic for forecasting is **calls offered**. If your ACD does not report calls offered, you can add **calls abandoned** to calls handled from the ACD reports. This will provide an accurate measure of call volume.

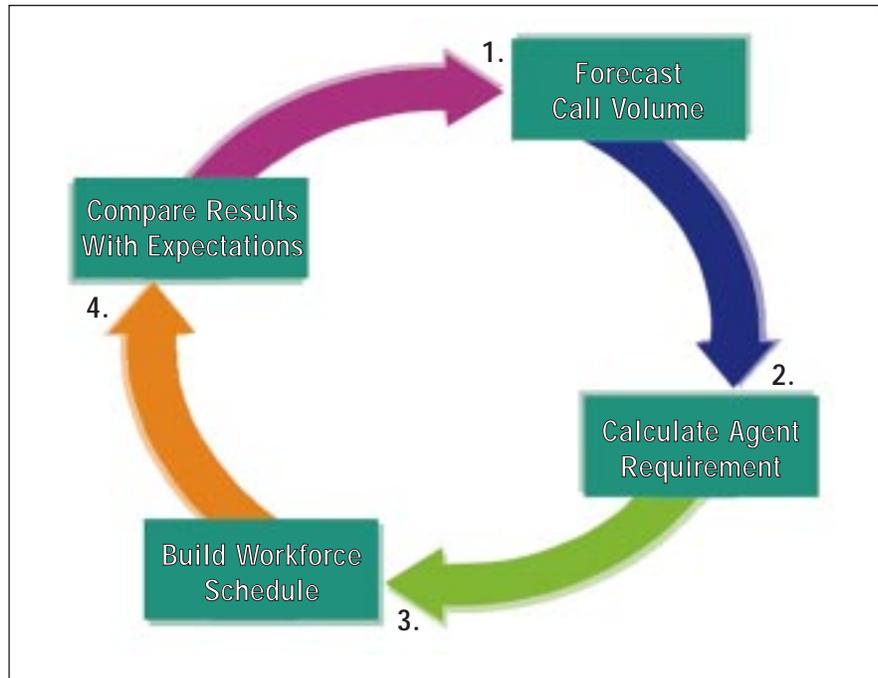


Figure 1. The Workforce Management Cycle. ACD statistics play a part in each of the tasks.

A pitfall that can cause overestimation of the call volume involves the use of multiple queues and overflow. For example, suppose TeleGift has two queues: one for sales and one for customer service. If the sales queue overflows to the customer service queue, then the same call might be tallied up on the ACD as a call offered on each queue. Thus, each call will be counted twice, which will result in an overestimate of the total call volume. If you have multiple queues or overflow, it is important to understand exactly how calls flowing to multiple queues are counted in the ACD reports.

Computing Agent Requirements

A common misconception is that Erlang C is a method for forecasting call volumes. In fact, as we show in Figure 1, proper forecasting is actually a *prerequisite* to using Erlang C. The Erlang C equation and its derivatives are the standard methods for calculating agent requirements. While this topic is outside the scope of this article, calculation of agent requirements via Erlang C is an important subject for call center professionals to explore.

Here again, the call center manager will depend on several crucial ACD statistics since the accuracy of these statistics (and the call volume forecast!) will

have a direct impact on the calculation of the agent requirement. One such statistic is **handling time**, the average amount of time from the moment an agent starts to handle a call until the agent is available to take another call. It is important to avoid using **talk time** as the handling time. The handling time should include *all* the time an agent is busy handling the call, including any time the agent puts the customer on hold and any wrap-up time after the customer hangs up.

Even if your ACD supports recording of wrap-up time, you should make sure your agents are using this feature properly. If agents are hitting the incorrect key sequence, they may be switching to an auxiliary or idle state instead of wrap-up, thereby throwing off the statistics.

Errors of this type can throw off the agent requirement calculation. For example, let's assume TeleGift receives 600 calls an hour and wishes to answer 90% of calls in 30 seconds. If TeleGift uses the talk time of 3 minutes and fails to account for a 20 second wrap-up time, Erlang C will compute a staffing requirement of 36 agents when TeleGift really needs 40 agents. Staffing at the 36-agent level, TeleGift will answer only 63% of calls in 30 seconds, significantly lower than their 90% target —

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Workflow Is Workforce Management

BY BETTY ZAKHEIM, INCONCERT, INC.

Competing successfully in today's markets requires much more than excellence in products and services — it demands high-quality, efficient customer service. By implementing an adept workflow-based call center solution, a company not only improves productivity and profitability, but enhances customer service and retention.

When phoning into a company's call center, a customer typically requests additional information, an answer to a question or a response to a problem. Each of these requests becomes an action item for someone within the company. In order to manage the complexity of these actions and ensure that they are completed in a timely manner, a solution is needed that increases call-handling efficiency while guaranteeing that the call center requests can be easily integrated with the departments best able to meet the customer's needs.

Workflow software provides this solution. As the foundation for a complete business solution, workflow automates, manages and monitors the complexity of a call-initiated action between call center agents and other departments within a company. In essence, workflow captures the procedures, policies and techniques that are characteristic of the way a particular company conducts its day-to-day business. To increase productivity and performance, workflow-enabled applications analyze, model and coordinate an organization's employees, business rules and documents. As an enterprisewide solution, workflow applications allow managers to track a call to ensure appropriate action has been taken and to create detailed reports on all call center activity.

Integrating And Monitoring The Enterprise

One of workflow's greatest strengths lies in managing the corporate enter-

prise. Within a call center, there are a number of departments that may be involved in completing or providing information for customer care. Although the call center may be responsible for entering the order and responding to customer inquiries only, it is dependent on the other departments for the order being completed and recorded within the company's database system. Workflow automates, coordinates and streamlines the processes that are triggered by incoming calls and ensures they are completed in the right order, by the right person and in the right time-frame.

Not only does workflow unify departments within a company, it unites systems. For example, by integrating the company's billing and inventory systems with customer databases, workflow enables customer care representatives (CCRs) to easily access all related information and to quickly answer customers' inquiries. If a customer calls to check the status of an order or payment, the call center representative has all the information necessary to promptly answer the customer's questions and move to the next call.

In some cases, the CCR must provide a customer with additional information, such as faxes, e-mails, videos and documents that must be mailed. Workflow not only automates these processes and accompanying materials, it monitors each one. Using workflow's critical monitoring capabilities, a company can detect a bottleneck within a process and can identify its location and its cause, so it may be solved quickly. This increases efficiency, reduces time and costs associated with completing a task and promotes organizationwide collaboration that ensures that no steps are missed. A robust workflow solution manages and monitors any accompanying data, documents and associated media to ensure that each department receives the nec-

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all because wrap-up time was not taken into account.

Once an agent requirement is calculated, an overhead factor needs to be added to account for absenteeism due to sickness, bathroom time, etc. For example, let's assume that TeleGift's calculated agent requirement is 72 agents at 10:00 a.m. If the effective work ratio is 90%, then 80 agents should be scheduled to work at 10:00 a.m. to guarantee that at least 72 agents will actually be on the phone.

The work-loss information may need to be collected from sources such as the time-clock or payroll systems. However, ACD data can shed light on what percentage of log-in time agents actually are talking, doing wrap-up or available to take calls. The effective work ratio can be calculated in the following manner:

Effective Work Ratio = $(1 - \text{absenteeism}) \times [(\text{talk time} + \text{wrap-up time} + \text{available time}) \div \text{planned phone time}]$.

To calculate the effective work ratio at TeleGift, let's assume absenteeism is 5% percent and that 10 full-time equivalents are scheduled for 8½ hour shifts. Out of a 8½ shift, an agent typically spends 7½ hours on the phone. This translates into 75 hours of planned work hours. From the ACD, we collect the following data:

- Cumulative talk-time: 49 hours,
- Cumulative wrap-up: 16½ hours,
- Cumulative agent available time: 6½ hours.

We can calculate that the effective work ratio is 91.2 percent.

$$(1 - 0.05) \times [(49 + 16 \frac{1}{2} + 6 \frac{1}{2}) \div 75] = 0.95 \times 0.96 = 0.912$$

This ratio is quite high. A typical ratio is anywhere between 80 percent and 90 percent.

Creating A Schedule

ACD statistics play a relatively small part in the scheduling step. The primary data needed to schedule are: agent skills, availabilities and the rules that govern work hours, assignment of shifts and breaks. Manually creating a call center schedule can be a tedious and time-consuming process. Researching the countless number of configurations

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essary information, completes its tasks in a certain timeframe and maintains the company's quality standards.

Extending The System

The real power of a workflow solution becomes evident when a company needs to add a new product, feature or service, or to support a new customer or vendor. A flexible workflow solution easily supports additions simply by modeling the process by which the request is fulfilled, rather than "hard coding" the behavior of the call center solution. Unlike a "hard coded" or pre-defined support system where altering a process involves writing additional software modules, a flexible workflow solution will not hold up the system with painstaking alterations because it enables you to use graphical tools to draw a new workflow map. Fulfillment processes are created as "mini-flows" to ensure all sub-tasks are completed. Consequently, this solution decreases the time needed to introduce or alter new products, services and features, which, in turn, increases the available time for CCRs to focus on enhancing customer service.

Workflow In The Call Center

For instance, a call center may handle customer problem queries and reports. Initially, a CCR answers a call and "kicks off" the process within the workflow manager that represents this customer's case. The first step the CCR undertakes is to verify the customer's identity and to query about his or her problem. Since it is integrated with the customer database, the workflow manager, without any manual intervention, verifies the caller is a legitimate customer, presents alternative actions for establishing the caller's identity, or provides "pay as you go" options for the caller to pay for this service call. In either case, the actions and information provided to the CCR are direct results of the workflow that is mapped within the system, rather than "hard coded" system behavior.

Once the customer's identity has been validated, the real business of the call begins. The nature of the call is

determined by the CCR and the appropriate steps to fulfill the customer's request are initiated. If the customer is logging a problem report, the workflow manager supplies the "corporate problem" database with the appropriate information and forwards the responsibility for resolving this problem to the correct department or person. After the first step is completed, the workflow manager makes certain all steps are performed until the problem is resolved and the customer is notified of the resolution.

Using the workflow manager's monitoring capabilities, a company assures that the CCR can readily access an in-progress problem report to answer a customer query as well as automatically launch escalation procedures to ensure outstanding problem reports are completed. This guarantees that steps don't remain unresolved and that all problems are documented, allowing management to locate bottlenecks in the problem resolution process that might require reallocating resources or modifying the process. In fact, workflow's simulation tools can be used to proactively model the problem resolution and resource allocation processes before bottlenecks are created and customers are affected.

Using workflow to integrate the call center with the rest of the enterprise will not only improve a company's quality of customer service, it will shorten the time a call center agent is on the phone with each customer. This, of course, improves productivity and efficiency, enabling call centers to assist more customers, process more orders and respond to customer inquiries in a more timely, competent manner.

Betty Zakheim, the director of marketing for InConcert, Inc. in Cambridge, Massachusetts, has over 14 years' experience in the high-technology industry. InConcert, Inc., a Xerox New Enterprise Company, develops and markets sophisticated work and process management software applications.

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of shifts and breaks becomes quite difficult when the size of the scheduled group is 20 or more. A workforce management tool will help by quickly exploring all relevant scenarios and returning the best answer.

Comparing Call Center Performance To Expectations

Perhaps the most important step in workforce management is learning from what actually transpires. In this step, you need to evaluate the accuracy of all the previous steps, compensate appropriately, and then repeat the whole process. ACD statistics are important along every step of the way during this learning and adjustment process.

- First, check the accuracy of your predictions. **Calls offered** can be compared to the call volumes that you forecast for the same time period to assess the accuracy of those predictions. If these numbers disagree seriously, then you can expect to find a discrepancy between the service level goal and the service level achieved, since steps 2 and 3 depend on the results of step 1.

- Another important check is to compare the ACD's reported **handling time** results to the predicted call handling times. If wrap-up time or talk time has changed significantly, then call handling time will disagree with earlier predictions. Since Erlang depends on call handling time, its results will be inaccurate if there is a significant discrepancy between expected and actual call handling times.

- Now that you have assessed the accuracy of the inputs into Erlang C, you can begin to evaluate the call center's performance using the ACD statistics of **service level** and **average speed to answer (ASA)**. The **service level** statistic reports the percentage of calls answered within the **service time**. The **service time** should be the time from entering a queue until an agent answers the call. This number should not include the time spent in IVR or during ring (unless your technology hides some queue time within the ring). Also, when comparing the final service level to your projected service level, check to see whether service level is a percentage of calls offered or calls handled. In step 2,

Erlang C computes desired staffing levels based on service level percentages from calls offered.

If you use average speed to answer as your standard service metric, you should measure it as the time from entering a queue until an agent answers the call. For the majority of cases, using a service level within a service time is a better measure of service than ASA. For example, the ASA goal of 40 seconds conveys no information about the quality of service customers receive. With an ASA of 40 seconds, 50 percent of calls could be answered immediately while the other 50 percent of calls could be answered within 80 seconds.

Using a service level within a service time as your goal gives you better control of the service you provide your customers. For example, 95 percent calls answered in 40 seconds gives assurance that no more than 5 percent of customers will wait more than 40 seconds.

● Finally, you can compare the staffing levels the call center achieved with the agent requirement. In general, you should only include agents:

- Handling a call,
- Wrapping up, or
- Available to take a call.

In general, agents who are logged-in, but are in any other ACD state should not be counted toward the staffing level totals.

Summary

Using the right ACD statistics helps tremendously because it allows you to identify which predictions and assumptions are at fault when the call center's performance falls short of goals. Even when your call center performs well, ACD statistics will help fine-tune inputs into the forecasting and scheduling process to achieve optimal efficiency within the resource constraints. The old adage "You can prove anything with the right statistics" warns that statistics can be easily misconstrued. But used correctly, ACD statistics are one of the most powerful tools at your disposal.

Ofer Matan is chief technology officer at Blue Pumpkin Software, a provider of workforce management software. He has previously worked at Bell Laboratories and received his Ph.D. in

Computer Science from Stanford University. Illah Nourbakhsh is chief scientist at Blue Pumpkin Software and assistant professor of Robotics at Carnegie Mellon University. He received his Ph.D. in Computer Science from Stanford University. Shannon Hughes contributed to the preparation of this article.

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