

Handy Definitions and Formulae

- **Adherence Percentage** - The percentage of adherence is typically a measure of the percentage of time that an agent is doing exactly what the schedule dictates. This includes logging in and out on time at the beginning of the day, at break and lunch times and any other times when required. It may also measure time the agent is working in the scheduled work type or skill. (Not all vendors or centers define this the same way.)
 - **Example = Schedule is 8AM to 4:30 PM with 30-minute lunch at 12:30 PM and 15-minute breaks at 10AM and 3 PM. The agent logs in on time but goes to break at 10:10AM, takes 45 minutes at lunch and takes the afternoon break on time. The agent is 10 minutes out of adherence in the morning and 15 minutes at lunch for a total of 25 minutes out of the 8 hours scheduled = 25 minutes / 480 minutes = 5% out of adherence or achieving a 95% adherence.**
- **AHT** - Average Handle Time is the total amount of time an agent is actively involved in the completion of the work for a single call. It starts when the agent answers the call and includes the talk time, any time the caller is placed on hold during the call, and the after call work or wrap up time. Be aware that some ACDs include hold time in the talk time reported while others report it separately. It is an average calculated for a single agent, a team, a call type, or a period of time.
 - **AHT = (talk time + hold time + after call work) / # of calls**
 - **Example = 14 minutes of talk time + 8 minutes of hold time + 6 minutes of after call work by an agent = 28 total minutes of work / 8 calls = 3.5 minutes AHT**
- **Average Speed of Answer or ASA** – ASA is the average wait in queue that callers experience before their call is answered. It is generally measured for a single call type over a period of time such as half-hour, day, shift, week or longer. The average is calculated using the wait of all the callers in the queue (both those who were answered immediately and those who were not) divided by all the calls offered. There are variations of ASA that discard the wait of

calls that abandon or only those that abandon before a set period of time such as the goal. Some calculations may also ignore some set number of seconds at the beginning of the call (perhaps to leave out the time listening to the answering announcement).

- **ASA = Total wait in queue of all callers / total number of offered calls**
- **Example = 93 calls in an hour wait a total of 27.3 minutes = $27.3 / 93 = .294$ minutes or 17.6 seconds**

- **Average Trunk Hold Time** - Average trunk hold time measures the average amount of time that telephone trunks are utilized over a period of time. It is used to determine the number of trunks that are needed to avoid busy signals to incoming callers. Trunk hold time begins when the incoming call starts to ring and includes the recorded announcement time, queue time, IVR interaction time, talk time and time the caller is placed on hold during conversation. It does not include the after call work time of the agent as the caller has already been disconnected during that period. If a caller abandons or is totally satisfied with the IVR process and disconnects without talking to an agent, the time on the trunk is still counted.
 - **ATHT = total ringing + announcement + IVR + queue + talk + hold time / total number of calls**
 - **Example = 75 calls were received during an hour. The total time in ringing is 4 minutes, announcement is 32 minutes, and IVR time is 173 minutes. Only 43 calls required agent assistance and those added 190 minutes of talk time. $4 + 32 + 173 + 190 / 75 = 399 / 75 = 5.32$ minutes ATHT**

- **Compliance** – The percentage of time that an agent works compared to the total time that was scheduled. This does not measure if the agent adheres to the exact times scheduled for log in/out, breaks, etc. It focuses on whether the agent put in the total amount of time that was scheduled. This is sometimes referred to as conformance. Not all vendors or centers define this in the same way.
 - **Example = The agent is schedule 8AM to 4:30 PM with a 30-minutes lunch and 2 15-minute breaks or a total of 7.5 hours of logged in time. The agent arrives late and logs in at 8:15AM but stays until 4:45PM in the afternoon. This**

would be counted as 100% compliance because 7.5 hours was worked even though it was not the exact times scheduled.

- **Erlang** – An erlang is a measure of traffic density or utilization of a telecommunications trunk, an agent or other server. It is used to calculate the number of servers required to meet a specific service goal. It is named after a Danish mathematician, Dr. Agner Erlang, who created a group of formulas for the Copenhagen telephone company around 1920.
 - **Erlang = 15 hours of workload during a single hour of time = 15 erlangs**
 - **Example = 75 calls at 300 seconds of average handle time in one hour = $75 \times 300 = 22,500$ seconds / 3600 seconds in an hour = 6.25 hours or erlangs of workload**
- **Full-Time Equivalent** – Full-time equivalent or FTE is a calculation that adjusts part-time workers into portions of full-time workers. This is often used in capacity planning to identify total work hours needed rather than total head count when part of the staff is not full-time.
 - **FTE = total work hours of a team of staff / the number of hours that constitute full-time such as 40 hours per week**
 - **Example = 120 staff work 40 hours per week and 32 staff work an average of 24 hours each week = 4800 hours for full-time staff + 768 hours for part-time staff = 5568 total hours worked / 40 hours per week = 139.2 FTE (even though there are 152 total head count)**
- **Longest Delay in Queue** – LDQ measures a period and isolates the single caller that waited the longest. There are two versions of LDQ. One identifies the caller who waited the longest to be answered by an agent and the other identifies the caller who waited the longest before abandoning the call.
 - **Example = During a half-hour the average wait in queue for callers was 35 seconds, but one caller waited 4.5 minutes to be answered = LDQ is 4.5 minutes**

- **Occupancy** – Occupancy is a measure of how busy agents are during the time that they are logged in and available to handle incoming calls. It includes the talk time, hold time and after call work (workload) but does not include the time that the agent is idle waiting for another call. Workload is expressed as man-hours of work to be done in an hour of time or Erlangs. In some centers occupancy may also include some of the auxiliary work that an agent may do that directly serves the customers such as outbound calls, emails, chats etc. It does not include time the agent spends in non-working states such as not ready, on break, etc.
 - **Occupancy = Workload / total time logged in**
 - **Example = 37 hours of workload / 40 hours of time staff are logged in and available (or Average Positions Staffed) = 92.5% occupancy**

- **Response Time** – Response time is generally used to measure the delay experience of non-call work such as emails, faxes, and white mail. The measurement begins when the item is received by the center and continues until the response has been completed by the agent and sent back to the customer. This makes is somewhat different from inbound calls in that call service is measured only up to the point that the call is answered by the agent, but does not include the time during the call handling.
 - **Example = an email is sent to the call center by a customer and is received in the email box at the company at 10AM. The agent opens the email at 2:30 PM the same day, composes an answer that takes 5 minutes and hits the send key at 2:35PM. The total response time is 10AM to 2:35PM or 4 hours and 35 minutes.**

- **Service Level or Telephone Service Factor** - Service level of TSF is the percentage of calls that were answered within a defined number of seconds/minutes in a period. The goal includes both a percentage and a time period such as 85% of calls to be answered in 30 seconds or less. The total number of calls that are answered in the 30 seconds or less is divided by the total number of offered calls. It does not matter to the formula how long calls wait when it is longer than the goal – the call misses the goal if it waits 1 second longer or 5 minutes longer. There are variations of service level that discard the

calls that abandon or abandon before a set period of time such as the goal. Some calculations may also ignore some set number of seconds at the beginning of the call (perhaps to leave out the time listening to the answering announcement).

- **Service Level – Total number of calls answered within the goal number of seconds / total number of offered calls.**
- **Example = 83 calls answered within 20 seconds (goal) out of 110 calls offered = 75% service level**

- **Shrinkage** – Shrinkage is the time agents are paid but are not available to handle customer work. This is primarily used on incoming phone call work but can be applied in other types of work as well. Shrinkage includes such things as breaks, training, coaching, illness, tardy, vacation, non-call work such as research and call backs, and other activities that make the agent unavailable to take calls. It is expressed as a percentage of loss and is used to calculate the total staffing requirement when the workload and service goal are known.
 - **Shrinkage = Total time unavailable for incoming calls per person / total paid hours per person**
 - **Example = Assume a person works 40 hours per week or 2080 hours per year. Breaks are 30 minutes per day of 6.25% of an 8 hour day. The agent takes 17 days of paid time off (including sick days, holidays, and vacation) per year or 136 hours or 6.5% of the year. Coaching and training = 3% and team meetings are another hour per week or 2.5%. Missing time (or failure to adhere to the planned schedule) is 15 minutes per day or 3.125%. The total shrinkage = 21.375 %**

- **Workload** – Workload is the total amount of work that is measured over a defined period of time. In the case of incoming calls, it is the total talk time plus hold time during conversation plus after call work time. For outbound calls it is the time preparing for the specific call, dialing, listening to busy, ring no answer or ringing that is answered, conversation time and after call work.
 - **Workload = (Average Talk time + hold time + after call work) X total number of incoming calls in a period (such as a half-hour)**

- **Example = average talk time is 85 seconds, hold time is 10 seconds and after call work is 22 seconds or a total of 117 seconds per call. 230 calls in a half-hour multiplied times 117 seconds each = 26,910 seconds of work / 1800 seconds in a half-hour = 14.95 hours (or erlangs) of workload.**

Note: While these are standard definitions in the industry, there are variations that are widely accepted or unique to a particular vendor or call center operation. It is important to ensure that your definitions and calculations are clearly defined, and that all systems and processes are using the same formulae.