Apples to Apples: Using Autobenchmarking to Measure Productivity

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Autobenchmarking allows HIM managers to develop individualized internal productivity standards. Here's how it works.

HIM managers and supervisors are continually faced with pressure to improve work quality and productivity. Developing ways to measure quality and productivity, however, is sometimes difficult. This article will show you how to develop individualized productivity standards that can be applied in any health information setting to implement an internal benchmarking program via what we call "autobenchmarking."

Why Develop Your Own Standards?

Developing your own productivity standards is a solution to a perennial problem. The other solution, applying benchmark standards used by other institutions, is often problematic. Depending on the degree of detail, productivity standards and productivity benchmarks are not easily transferable between institutions, because, as one author notes, there are "many difficulties associated with identifying a meaningful basis of comparison."[1]

Even within institutions under the same corporate umbrella, sharing and comparing productivity standards may be deceiving. Each HIM department, no matter how similar, has unique operational characteristics that may appear to be the same. Yet each department is significantly different when specific work processes are analyzed. In 2001, *Journal of AHIMA* author Rose Dunn, CPA, RHIA, FACHE, described factors such as length of a coder's day, other duties performed, and nature of the records that made it difficult for managers to blindly adopt coding productivity standards from other facilities.[2] Each of these factors can impact the time and effort required to produce the same work outcome in different environments.

In contrast, autobenchmarking offers a method for HIM professionals to use their respective departments' productivity data to monitor and improve employee productivity.

Defining Our Terms

The first step is to establish a standardized definition of productivity. The Bureau of Labor Statistics of the United States Department of Labor defines "labor productivity" as output per hour of labor. Therefore, if this definition is accepted, productivity measurements must be documented as output per hour of employee labor.

The next step is to define the characteristics of "output." In this article, output will be referred to as completed work and defined as any work that meets "task specifications"—the exact and complete measurements of a task that result in a product or service produced by a department or an organization. When work output does not meet the exact task specifications, it is considered "defective work." Defective work must be "reworked" until it meets task specifications, at which point it becomes completed work. The figure "Formulas," below, provides two simple formulas that accurately calculate labor productivity.

Formulas

Completed work = Total work output - Defective work

Labor productivity = Completed work / hours worked to produce total work output

Capturing the total work output and hours worked is relatively easy and straightforward. Capturing completed and defective work output data through auditing is more difficult and complex.

Strategies to Audit Work Output

It's important to select a work audit method that is valid, accurate, time efficient, and cost effective. There are three basic approaches to auditing employees' work output:

- A total work audit (auditing all work performed to determine if the work meets task specifications)
- A random sample audit (using statistical techniques to determine sample size and selection)
- A fixed percent random sample audit with expansion

The third approach is the simplest and most cost-effective audit to implement. Here's how it works:

A fixed-percent random sample audit with expansion is achieved by first selecting a fixed percent of total work output for each employee. The sample of work output for each employee is audited in accordance with the task specifications. Audited work is considered either completed work or defective work and becomes a percentage of the work audited. When the results of the audit fail to meet the manager's predetermined quality standard, then an additional fixed percent is audited. Additional samples are audited until the manager can determine the type of defects or until all work output is reviewed.

Fixed random sampling is less resource intensive than performing a total audit. This audit method is simpler to implement than the statistical random sampling audit technique because the manager does not need to be knowledgeable about statistical analyses. See below for an example of fixed percent random sample audit.

Fixed Percent Random Sample Audit Example

Coder	**Work Output**	**Records for 5% Audit**
A	500	25
B	475	24
C	300	15
D	350	18

Application of Audited Results to Work Output Measurement

How to apply audited results to actual work productivity? Here's an example:

Individual employee productivity data are used to calculate departmental inpatient coding productivity as illustrated for a one-month period in "Inpatient Coding Productivity Calculation," below. This chart provides a clear illustration of the impact of identifying completed work versus total work output when used for the analysis of work productivity.

Inpatient Coding Productivity Calculation for One Month

Coder	Work Out-put (all records coded)	Total Hours Worked	Average Work Out-put per Hour	Completed Work Percentage	Completed Work Output (records coded accurately)	Completed Work per Hour Worked
A	500	140	3.57	91%	455	3.25
B	475	140	3.39	96%	456	3.26
C	300	80	3.75	85%	240	3.00
D	350	80	4.69	70%	245	3.06
Department Average			**3.69**			**3.17**

Work Output: number of work units as recorded by the employee or the process
Total Hours Worked: number of hours worked by the employee to produce work, which does not include time on meals, breaks, and meetings
Average Work Output per Hour: work output divided by total hours worked
Completed Work Percentage: percentage of completed work from audit
Completed Work Output: work output multiplied by completed work percentage
Completed Work per Hour Worked: completed work output divided by total hours worked

For Coder A, total work productivity is 500 records, or 3.57 records per hour, prior to auditing the work output. After determining completed work through auditing, Coder A's completed work per hour is now 3.25 records per hour worked. The productivity adjustment determined through work auditing shows the impact of identifying the difference between work output and completed work output when determining individual employee productivity and departmental productivity.

Application of Autobenchmarking

Benchmarking is a management strategy employed to improve processes and increase productivity. Managers compare the internal performance of a departmental process, such as assigning diagnoses and procedure codes, to exemplary performance of a similar process in an external organization. This comparison involves similar settings, organizations, and work loads in addition to the comparison of raw data, such as the number of medical records coded per hour.[3]

With autobenchmarking, managers benchmark the performance of their individual employees against their own departmental work output. The performance of the department and its employees is simply measured against itself. Therefore, "apples" are compared to "apples" when using autobenchmarking to measure productivity.

The manager must determine the frequency of productivity data collection. Hourly or daily data collection may be too labor intensive and too detailed, while monthly data collection may lack adequate detail. Depending on the nature of the work, weekly data collection is cost effective and provides accurate data.

It is important to capture the data over an extended length of time before analyzing it. At least six months of data should be used for establishing the initial and continuing autobenchmarking levels. Once it is entered into a spreadsheet, the data are used to calculate the completed work per hour variable.

Since the individual employee's work output and quality output data have been summarized into a single variable, completed work per hour, these data can be analyzed using the graphing capabilities of spreadsheet software. The graphs are used to visually present and analyze employee productivity data to establish autobenchmarked productivity levels.

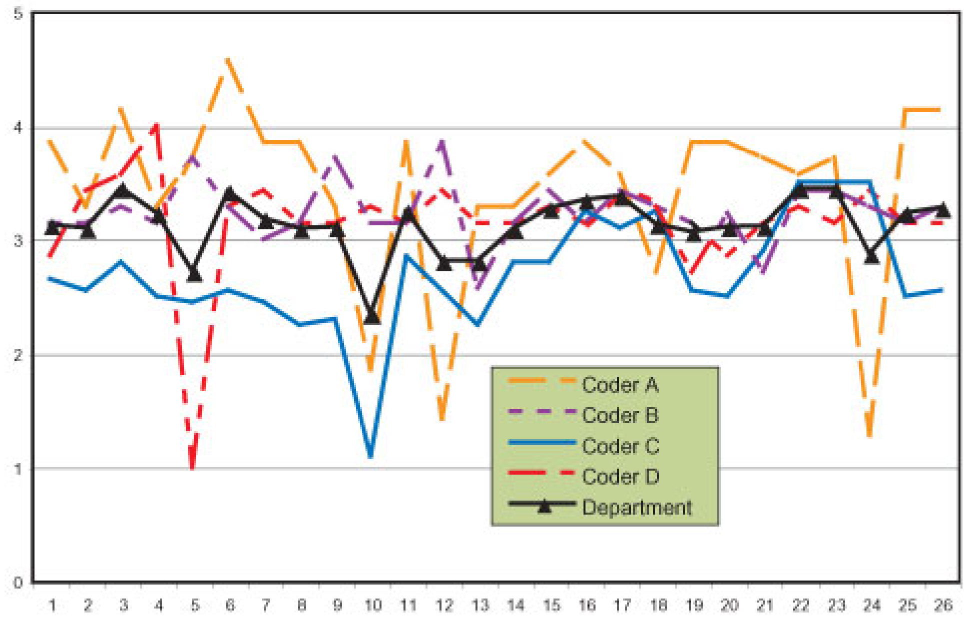
The Next Step: Data Smoothing

Autobenchmarking analysis is performed by developing a simple line graph that compares individual employee complete work per hour data to other employees performing the same work and to the departmental average. When graphing small units of quantitative data, small variations can result visually in large variations in a line graph.

"Coder Completed Work Trendlines," below, gives an example of the weekly completed work per hour average for four employees as well as the departmental completed work average. Note that small changes in productivity make it difficult to visually compare and interpret the employee productivity using a simple line graph over time.

Coder Completed Work Trendlines
Weekly Productivity Data

January 2003–December 2003



These large variations, which result from small numbers of work units, can be resolved by using a mathematical concept called "data smoothing." Data smoothing has been effectively used in the financial industry to perform and predict trend analysis over extended periods of time.[4] Rather than graphing the individual data points, data averages are calculated for several given time periods, and then the averages are graphed.

Data smoothing simplifies the visual analysis of performance data over time. The comparative analysis of performance data over time is more valuable to a manager than analyzing individual daily performances because trends can be more easily identified. Data smoothing gives the manager a tool to easily identify long-term trends.

It is important to remember that on a given day an employee's performance, the work flow, or the work itself may vary due to uncontrollable or unforeseen circumstances. By using a moving average the manager can focus on the employee's and the department's overall performance trend over a given period of time rather than the employee's performance on a single day.

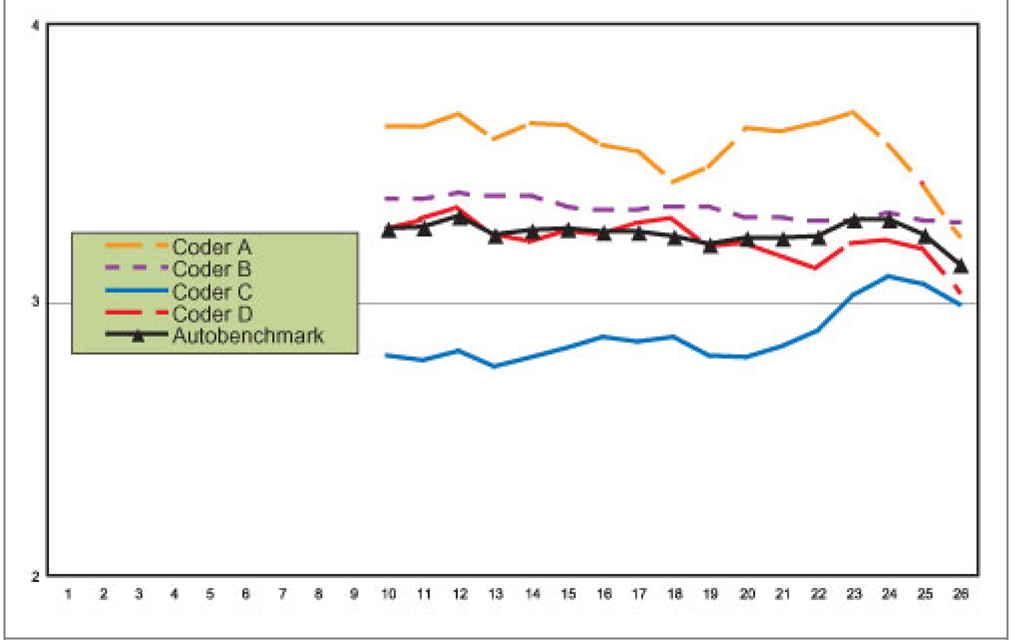
Data smoothing is accomplished by averaging productivity data over a given time period, such as 10 periods of time. Averaging productivity over 10 periods creates a 10-week moving average. To develop a moving average analysis, the most recent time period data is added to the summed data and the oldest time period data is eliminated from the analysis, so only the most recent 10 time periods are used for analysis, hence the term "moving average."

The use of moving averages "smooths" out the peaks and valleys in the autobenchmarking graph lines. The resulting graph lines are smoother and present a clearer picture of the productivity trend. "Coder Autobenchmarking Trendlines," below, provides an example of the smoothed data. Spreadsheets provide a convenient method for calculating moving averages.

Coder Autobenchmarking Trendlines

Ten Week Moving Average

January 2003–December 2003



Taking a Closer Look: Analyzing Smoothed Data

The actual analysis of smoothed data is quite simple. The department's moving average trend line, which is derived from the employees' completed work data, becomes the autobenchmark to which each individual employee's performance is compared. Since the completed work per hour variable is calculated for each employee, the trend lines are simply compared to each other in the graph. There are no other factors or other variables to complicate or confound the analysis. The analysis compares one employee's completed work to another employee's completed work and all the employees to the department average—the autobenchmark line.

Using Autobenchmarking to Improve Productivity

Managers can use the autobenchmarking strategy to monitor productivity. Autobenchmarking provides a manager with a tool to establish a moving average productivity baseline and a method to monitor productivity that does not require a reanalysis of the work processes every time there is a change in the work processes.

The process of routinely collecting productivity data over time and using a moving average continuously adjusts the department productivity level. Therefore, when processes are improved, the department productivity level will gradually increase. Implementation of a new computer-based encoding system may initially reduce productivity, but over time, productivity will increase as the coders become more proficient with the software. This improvement will be reflected when the upward movement of the autobenchmarking trending is noted.

With this approach, a manager is not required to continually reassess productivity standards. Autobenchmarking provides a self-adjusting productivity level that can be continually used to establish productivity levels.

For example, in the "Coder Autobenchmarking Trendlines" graph above, it is clearly evident that two employees are performing above the autobenchmark average. One employee is at the autobenchmark average (but performance is dropping), and another employee is below the autobenchmark average. Since the employees are performing the same type of coding work, employing the same technology, and using the same medical record resources, the productivity results can be directly compared to each other. Therefore, the performance of three employees is acceptable, and the fourth employee is performing below average.

The analysis does not conclude at this point. This is just the preliminary analysis step.

The manager needs to investigate the possible reasons for Coder C's below average performance. Is Coder C a new employee? Is Coder C having problems adapting to a new computer program? Maybe Coder C is facing personal problems that can be resolved through the employee assistance program. Does Coder C need retraining or should the disciplinary process be initiated? Maybe Coder C simply talks too much. It is important to realize that the information provided through this productivity analysis does not answer those questions. The analysis simply provides the manager with the information to ask more focused and detailed questions regarding coder C's performance.

Autobenchmarking can also be used to support a quality management program. Since quality is already factored into the completed work variable, additional quality monitoring processes and data collection are not required. The data captured in this method reflect work output that meets all the defined task specifications. Therefore, any increases in productivity also reflect increases in quality work produced.

Autobenchmarking provides a simple tool for managers to monitor and evaluate productivity. By integrating auditing of work to determine quality work for the productivity model, using a moving average method to smooth the data, and applying simple line graphing techniques to the productivity data, the HIM manager has a powerful tool to monitor and improve employee productivity using internal productivity data.

Six Steps to Implementing a Productivity Management Program

To implement a successful productivity management program, a manager must:

1. Identify specific tasks that contribute to completed work output
2. Determine the task specifications required to produce completed work output
3. Audit the individual employee's work output using task specifications
4. Classify the work output as either completed work or defective work
5. Tally total hours necessary to perform all work, both completed and defective
6. Use completed work and total hours worked data to determine productivity

Notes

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