

Tools of the Trade:

OCCUPANCY RATES in HEALTH FACILITIES

The occupancy rate is a calculation used to show the actual utilization of an inpatient health facility for a given time period. It is expressed as a percent and other terms which are often used synonymously include "percent occupancy," "percentage of occupancy," or "occupancy ratio." In the Bureau of Health Statistics, occupancy rates are routinely calculated for hospitals and nursing homes and aggregated at the facility, county and state level. This information is very useful for health planning purposes and is requested from the Bureau frequently.

To calculate the average occupancy rate for a typical one-year reporting period, two data items are needed. These include "Inpatient Days of Care" and "Bed Days Available." Definitions of these two items are as follows:

INPATIENT DAYS OF CARE - Sum of each daily inpatient census for the year. To arrive at this total, you would simply add together each daily census for the 365 days in the year. Other synonymous terms include "total inpatient service days," "occupied bed days," or "census patient days of care."

BEDS DAYS AVAILABLE - The maximum number of inpatient days of care that would have been provided if all beds were filled during the year. If 50 beds were available for use each day during the year, bed days available would be $50 \times 365 = 18,250$. If the number of beds fluctuated throughout the year, bed days available should reflect this and the calculation would be more complicated. This will be discussed in more detail in the following paragraphs. Other terms used for bed days available include "potential days," "maximum patient days," or "total inpatient bed count days."

To calculate occupancy rate, use inpatient days of care and bed days available in this formula:

$(\text{Inpatient Days of Care} / \text{Bed Days Available}) \times 100$

The calculation of occupancy rates is not limited to the facility as a whole. Occupancy rates are often calculated to determine the utilization of a specific inpatient unit such as obstetric, psychiatric, medical/surgical, etc.

The occupancy rate is a valuable statistical measurement and is usually calculated for a certain period of time (month, year, etc.) as opposed to calculating for one particular day. Determining the occupancy for a longer time period reflects the degree to which hospital beds have been utilized even though the number of beds may have changed during the reporting period. For the purposes of this article, the time period for calculating occupancy rate will be a typical fiscal year (July through June).

For the occupancy rate to be a true utilization indicator, bed days available must be calculated to correctly reflect changes in the number of beds available for use during the year. If "bed days available" are calculated incorrectly (for instance, the number of beds in service at the end of the

year are multiplied by the number of days in the year even though the number of beds in service was considerably lower for several months), the resulting occupancy rate will be much lower than actual. The following examples show how the result could differ if bed days available are not calculated correctly:

A hospital had 300 beds in service from July 1 through February 28. The number of beds in service then increased to 350 beds from March 1 through June 30. Bed days available should be calculated as follows:

EXAMPLE 1 (Accurately reflects changes in bed capacity):

300 beds x 243 days = 72,900 (July 1 - February 28)
350 beds x 122 days = 42,700 (March 1 - June 30)
72,900 + 42,700 = 115,600 (Total Bed Days Available)

If bed days available were calculated based on the number of beds on the last day of the year multiplied by the number of days in the year, the bed days available would be as follows:

EXAMPLE 2 (Does not reflect changes in beds during the year):

350 x 365 = 127,750

Following are occupancy rates based on the two different bed days available.

EXAMPLE 3 (Occupancy rate accurately reflects bed fluctuations):

(Inpatient Days of Care 98,560) / (Bed Days Available 115,600) = .853 x 100 = 85.3%

EXAMPLE 4 (Occupancy rate does not reflect lower number of beds available for use during the first eight months of the fiscal year):

(Inpatient Days of Care 98,560) / (Bed Days Available 127,750) = .772 x 100 = 77.2%

The occupancy rate in Example 4 is much lower and not truly representative of bed utilization during the year since the bed days available are calculated on 350 beds. The bed days available (127,750) are inflated since the calculation (Example 2) assumes that all 350 beds were available for use each day during the year. The inflated bed days available figure results in a lower percentage of occupancy. Although it is simpler to calculate the bed days available using number of beds in service on the last day of the year multiplied by the number of days in the year, this is only accurate if there were no changes in the number of beds available for use. If there were changes in the number of beds, the method of calculating bed days available must follow Example 1.