Understanding Variation: The Key to Managing Chaos

Book Review by Mike Taigman

"Our crews are not getting signatures on their patient care reports….This laziness trend is a real problem."

"If your IBIT drops for three consecutive months you can expect a call form corporate."

"Teen drug use is on the rise."

"Our average response time is 6.2 minutes on life threatening emergencies."

When you were in school, did statistics make you feel like you'd just chugged a bottle of Ipecac? For a person like me who has a left brain the size of a walnut, statistics was no fun. EMS leaders and managers use numbers all day to guide them in their decision making. They analyze reports and then recommend action. Essentially they are using statistics whether they like it or not. The problem is that most of them do not understand the consequences of not understanding the basics of statistics as they apply them to business decision making.

In his book *Understanding Variation: The Key to Managing Chaos*, Donald J. Wheeler calls this "numerical illiteracy." This is not a failure with arithmetic, but it is instead a failure to know how to use the basic tools of arithmetic to understand data. Unfortunately this is not addressed by traditional courses in school, nor is it addressed by advanced courses in mathematics. Fortunately the cure for numerical illiteracy is simple, easy to grasp (even by those of us without much left-brain function), and the techniques are easy to implement. This book is written for managers, not statisticians or computer programmers. It's easy to read and once you "get it" you'll never accept the inaccurate discussion of numbers that plagues most EMS organizations.

Does this section from the introduction sound familiar? "Business professionals are finding that while they have more numbers than ever before, they still do not know what these numbers mean. If the numbers changed for the better compared to last month, then just wait, they will change for the worse soon enough. If the numbers actually changed for the worse compared to last month, then the apocalypse is at hand and all are doomed! The boss is in despair—don't just stand there, do something! You have to come up with an explanation of why the numbers were so bad, or else find a scapegoat, by 10:30

tomorrow morning. Moreover—how are you going to keep these bad numbers from happening again? How are you going to get the workers to work harder?"

One of the most common symptoms of numerical illiteracy is the tendency to compare two numbers and draw a conclusion. As one educator once said, "given two numbers one will be higher than the other." Wheeler says, "While it is simple and easy to compare one number with another number, such comparisons are limited and weak. They are limited because of the amount of data used and they are weak because both of the numbers are subject to the variation that is inevitably present in real world data. Since both the current value and the earlier value are subject to this random variation, it will always be difficult to determine just how much of the difference between the values is due to random variation, and how much, if any, of the difference is due to real changes." This understanding of variation should be the core of any EMS quality improvement system. It's the key to Japan's turnaround after World War Two.

This book is the clearest and easiest way to achieve data sanity that I've ever found. I'm sure that my statistics professor would hate it.