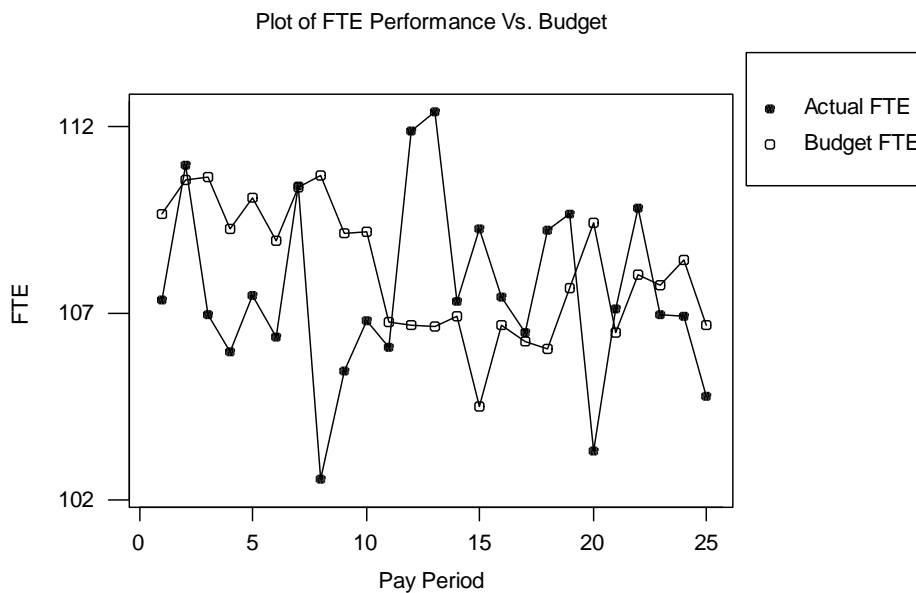


## Scenario 1: The “All-too-familiar” Budget Meeting Scenario

[Treating common cause as special cause]

Ah, yes...the bi-weekly discussion of the budget (You’d rather be in a dental chair!) Times are “tight” and “accountability” is in the air. Once again, conversational snippets of “It’s not my fault!”, “You have to understand that something happened that we didn’t plan for,” etc. (*ad nauseum*) permeate the air as well as the predictable promises to “get right on it” (Yawn!).

A manager previously on the “hot seat” for budget performance regarding her paid FTE time (See the recent string of 10 out of 11 periods being above budget?) showed how the last three two-week periods have been below budget. Cries of “Well done” fill the room and she is asked to share how she did it.



Did you know that approaching the budget in this manner is a total waste of time?—Of course you do, but, the problem is, it’s not your fault. You have never been taught what to do differently and *are actually already doing the best you can!*

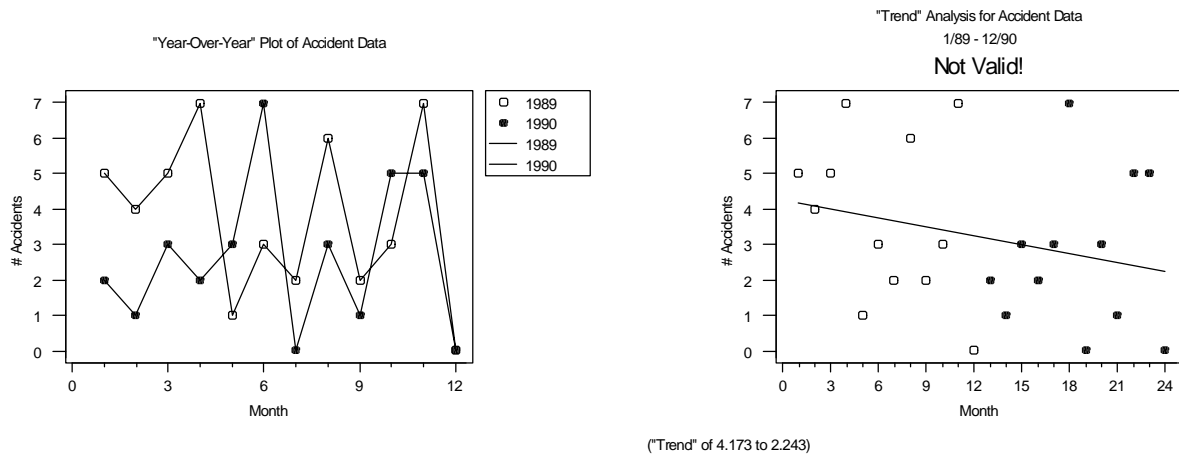
Wouldn’t you like a “saner” approach that gives *real* insight?

## Scenario 2: The “Safety Reward” Luncheon Scenario

[Treating individual incidents as unique when a process is *designed* to produce them!]

You have been invited to attend a free pizza lunch in celebration of meeting a safety goal. Two years ago, your organization had 45 undesirable “incidents” and set a goal the past year of reducing them by at least 25%. The December data is in, and the yearly total was: 32 “incidents”—a 28.9% decrease! Also, look—Eight months were lower than the corresponding months in the previous year!

In fact, the “resident statistical expert” did a trend analysis and demonstrated that the decrease was more on the order of 46.2%! At this rate, 20 “incidents” are predicted for this year.



You think of all the hard work that takes place at the monthly safety meetings where each individual event is dissected and discussed to come up with a new safety policy. Then there are the months where you have zero accidents and the reasons for this are discussed and implemented.

***Congratulations! All this hard work has paid off!***

⇒ Well, actually, it hasn't...but, like they say, you can prove anything with statistics!

**Well...that isn't necessarily true, either.**

⇒ *Did you know that you can probably expect anywhere from 20-57 incidents in the next year if you continue this process with your hard-working people?!*

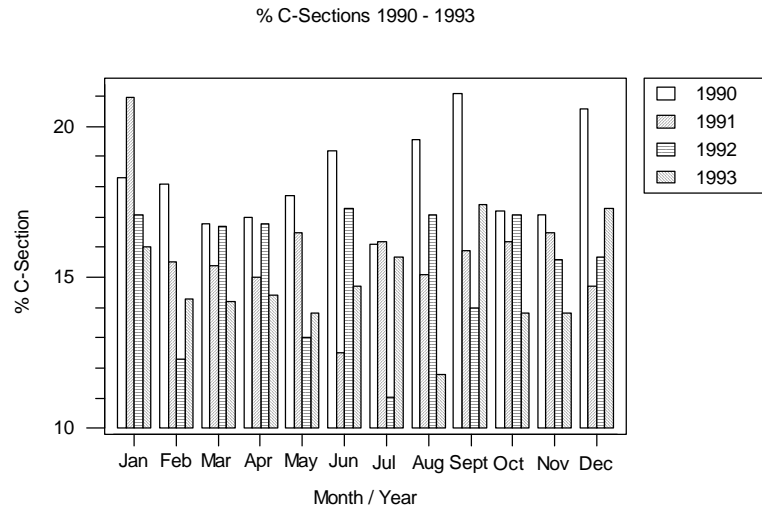
⇒ Did you also know that a different, *simpler*, analysis of this data contains enough information to *immediately* reduce the rate of these incidents by *half*?

### Scenario 3: “Oh, no...! The dreaded monthly C-Section meeting”

[Internal statistical “gurus” inappropriately massaging data to within an inch of their life!]

#### Part 1: “The control chart shows no special causes, so a standard can be established.”

Your next meeting concerns a disturbing “trend” in C-sections...AGAIN!...(You’d rather be getting a cavity filled). JCAHO or NCQA also want you to establish a “standard.” The all-too-familiar bar graph display is shown below.



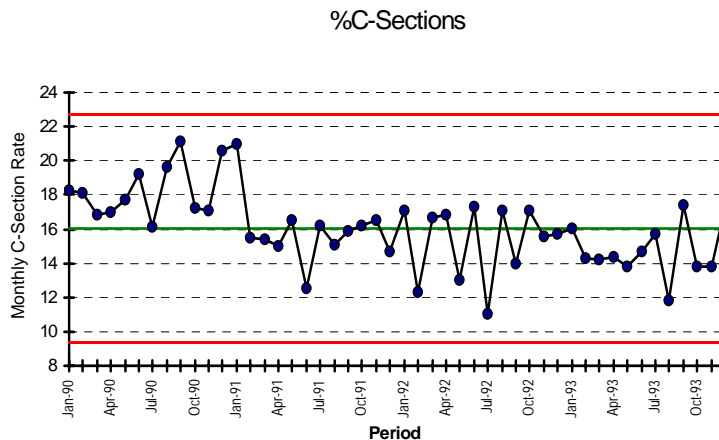
The “stats” are below, and, yes, the data are “normally distributed.”

#### The “Stats”

	N	Mean	Median	TrMean	StDev	SE Mean	Min	Max	Q1	Q3
% C-Sect	48	16.046	16.150	16.030	2.230	0.322	11.000	21.100	14.475	17.175

⇒ So, what should the goal or standard be?

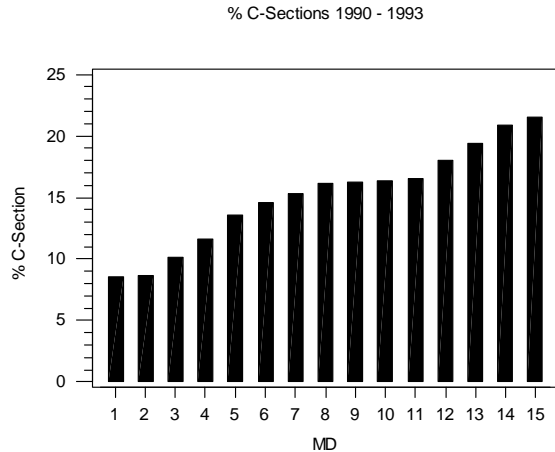
An analyst thought the control chart below might be useful and concluded: “Since all the points are within the three sigma limits, there are no special causes. Nothing’s really changed in four years.”



### Scenario 3: “Oh, no...! The dreaded monthly C-Section meeting”

#### Part 2: “Let’s look at the individual physicians and find the outliers.”

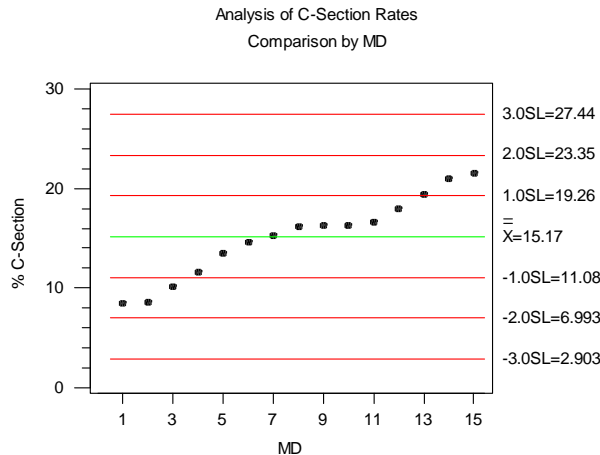
This analyst also had some data on each of the 15 physicians who practice at the hospital: The individual rates are shown in ascending order in the bar graph below. How does this data factor in to the setting of the goal/standard? Should any of these physicians be investigated?



The “analyst” decides to do a more “statistical” analysis on this individual physician data. He adapted the previous protocol used by the pharmacy utilization committee:

1. “Data will be tested for the normal distribution,”
2. “If the distribution is normal, physicians whose C-section rate deviates greater than one or two standard deviations from the mean are identified as outliers,”
3. “If the distributions is not normal, examine the distribution of data and establish an arbitrary cutoff point above which physicians should receive feedback (this cutoff point is subjective and variable based on the distribution of ratio data),”
4. “Anyone identified as an outlier will be reported to the medical director and given current literature on C-section research and published CQI projects from ‘gold standard’ benchmarked organizations.”

The 15 physicians’ data were tested for normality and “passed” (p-value = 0.584). This analysis is shown graphically below with “one,” “two,” and “three” standard deviation lines drawn in.

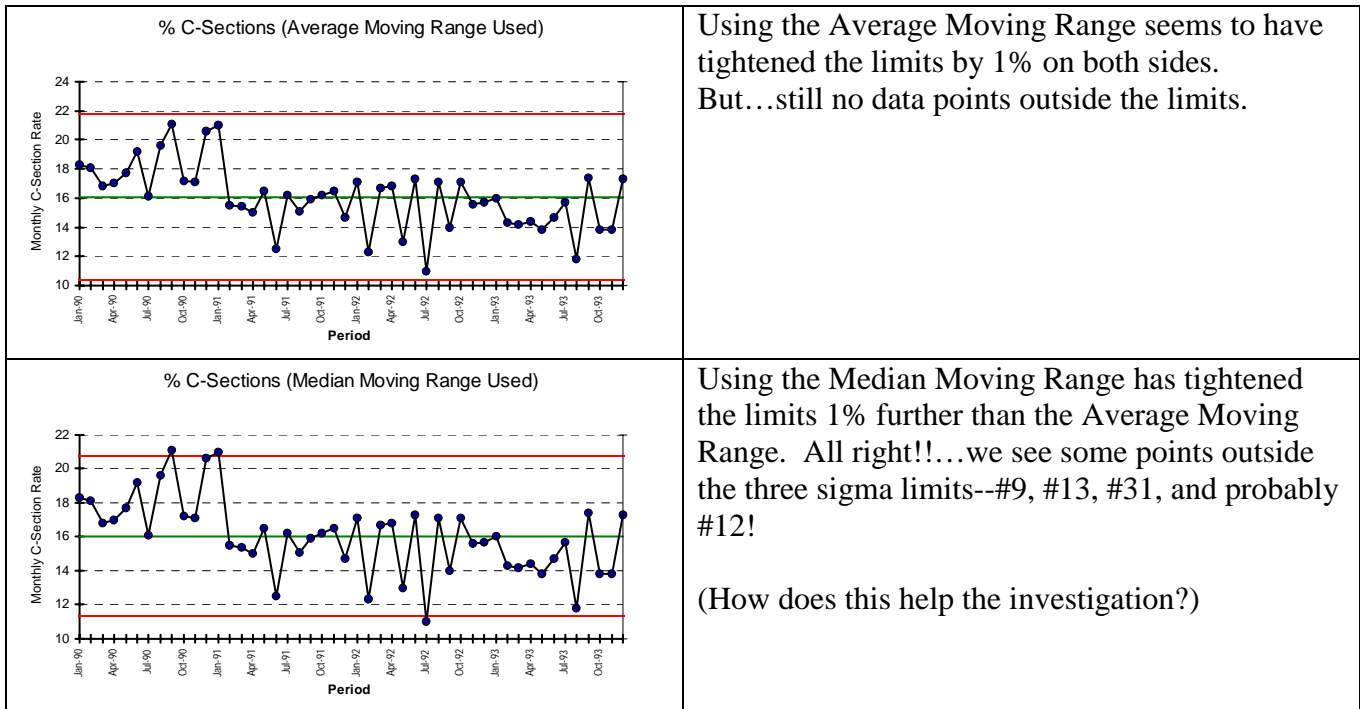


### Scenario 3: “Oh, no...! The dreaded monthly C-Section meeting”

#### Part 3: “Guru” vs. “Guru”—“That’s not how *I* was taught to calculate control limits.”

Another analyst noticed that the control chart limits on the first control chart were calculated using the overall standard deviation of the data ( $3 \times 2.23$ ). He was taught to use the *average* moving range. Another person argued that his “guru” said to always use the *median* moving range.

So, charts were generated using the average and median moving ranges. It’s obvious that these are more “accurate,” and, what do you know, some special cause opportunity was exposed...or was it?



We are drowning in statistics! The answer must be in here somewhere! (*Well...actually, it isn't.*)

#### What usually happens now?

⇒ Did you know that all this discussion is moot?

What is proposed is “*simple...obvious...and WRONG!*”

## Scenario 4: The Pharmacy Protocol:

[Percentages are tricky...especially when used with arbitrary goals—and they cannot be analyzed by “traditional” methods: “When you mess with people’s minds, it makes them crazy!”]

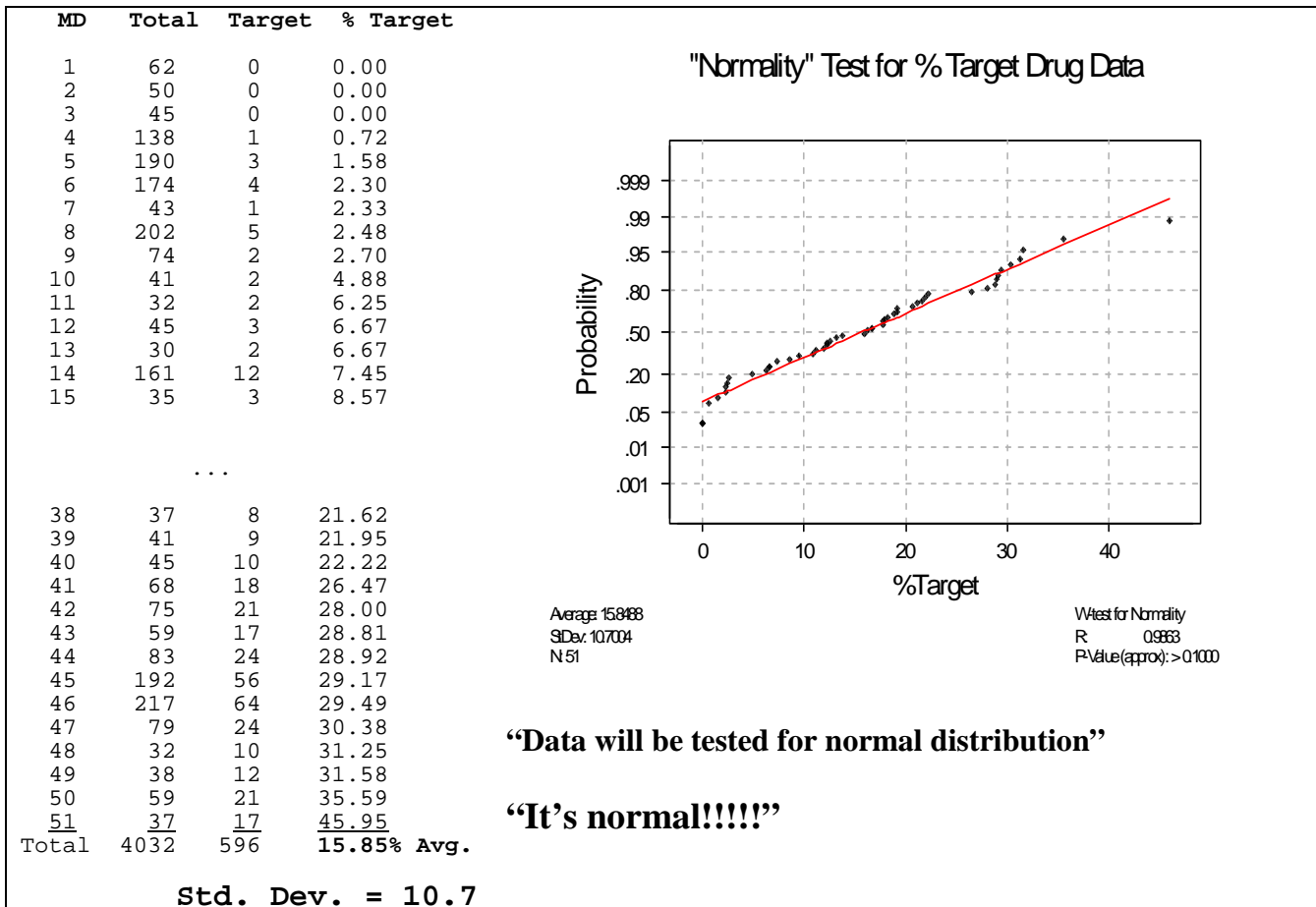
You have been invited to a meeting on pharmacy costs. Your MDs have been told to reduce prescribing a particular name brand drug within a class of drugs. They can prescribe it—it’s just that they can’t prescribe it “too much”—and your pharmacy utilization plan’s manager will be “happy” to tell you what “too much” is (Usually an arbitrary percentage ending in a “0” or a “5”). Your data is shown below by MD.

The meeting was called because someone has covertly received the proposed process for detecting “outliers.”

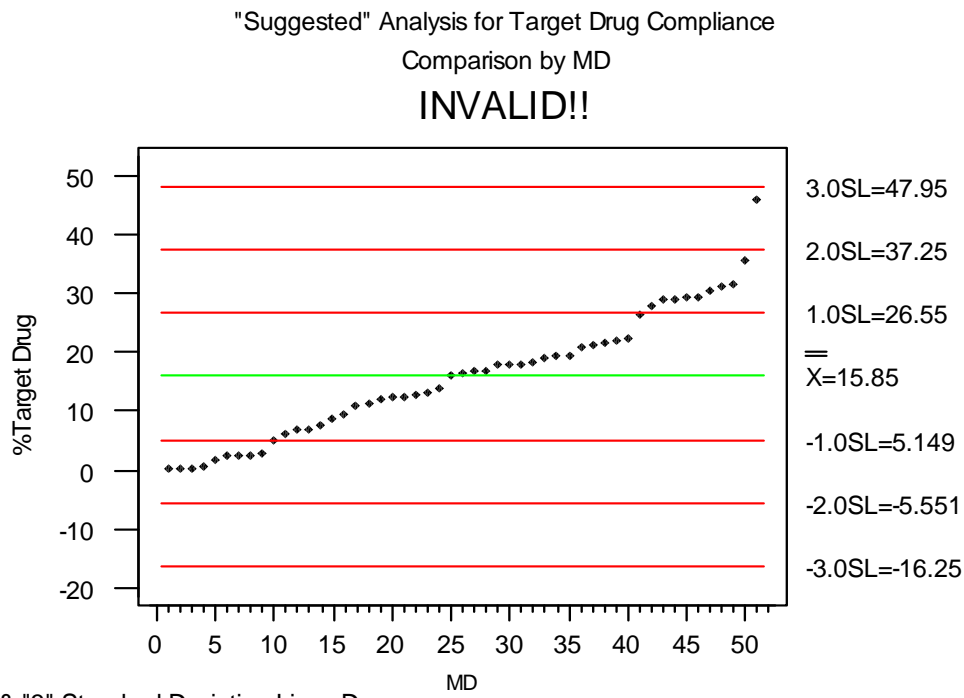
⇒ “Data Will Be Tested for the Normal Distribution”

*“If distribution is normal—Physicians whose prescribing deviates greater than one or two standard deviations from the mean are identified as outliers.”*

*“If distribution is not normal—Examine distribution of data and establish an arbitrary cutoff point above which physicians should receive feedback (this cutoff point is subjective and variable based on the distribution of ratio data).”*



You see the graph corresponding to this (alleged) analysis: The overall average with “one,” “two,” and “three” standard deviations drawn in and compared to actual physician performance:



"1," "2," & "3" Standard Deviation Lines Drawn  
"Standard Deviation" = 10.7

1. Who should get “feedback?”
2. Suppose the managing company decided that 15% should be the “upper limit” for the target drug? Who should receive feedback then?
3. What if the “goal” were 10%? Who should receive feedback?

Well, actually...all this discussion is moot. What is proposed is “*simple...obvious...and WRONG!*”

So...how much time are you wasting in routine meetings because of such “**Data INsanity?**”

## Scenario 5: A Typical QA Report Meeting

[“The current number is different from the previous number. *Please do something about it!!!!*”]

Monthly Data			12-Month Period Summaries		
Arrests	Vfib	Mo/Yr	Tot_Arr	Tot_Vfib	Period
18	6	6/94	261	81	6/94-5/95
17	8	7/94			
15	6	8/94	275	71	6/95-5/96
19	6	9/94			
21	6	10/94			
21	8	11/94			
23	7	12/94			
25	7	1/95			
21	1	2/95			
30	9	3/95			
27	8	4/95			
24	9	5/95			
24	9	6/95			
19	2	7/95			
14	2	8/95			
21	7	9/95			
32	5	10/95			
19	4	11/95			
28	9	12/95			
28	10	1/96			
28	8	2/96			
17	5	3/96			
21	7	4/96			
24	3	5/96			

*Note: Vfib is a term for ventricular fibrillation*

*“We are running a slightly higher number of cardiac arrests per month. The total amount of cardiac arrests has risen from a mean of 21.75 (June 94- May 95), to 22.92 (June 95- May 96). This is an increase in 14 cardiac arrests in the last 12 months.”*

⇒ So...what are you going to do about it?!

*“Next we interpreted the data relating to Vfib Cardiac Arrests...This could be significant to our outcome, and...indicates a need for more sophisticated statistical analysis. It was already shown that the number of cardiac arrests has increased by a mean of 1.17 per month. Now we are adding to that increase, a decrease of times we are seeing Vfib as the initial rhythm. From June 1994 to May 1995 we arrived on scene to find Vfib as the initial rhythm with an overall mean of 6.75 times. That gave us a capture rate of 32.03%. This last year, June 1995 - May 1996, we are arriving to find Vfib as the initial rhythm with an overall mean of 5.92, and a capture rate of 25.81%. This obviously means that over the last year, we have responded to more cardiac arrests and found them in more advanced stages of arrest.”*

⇒ From this, one could conclude that since 275 is greater than 261, AND 71 is less than 81, there is some kind of crisis! Well...“Don’t just stand there...DO something!”

What usually happens next?