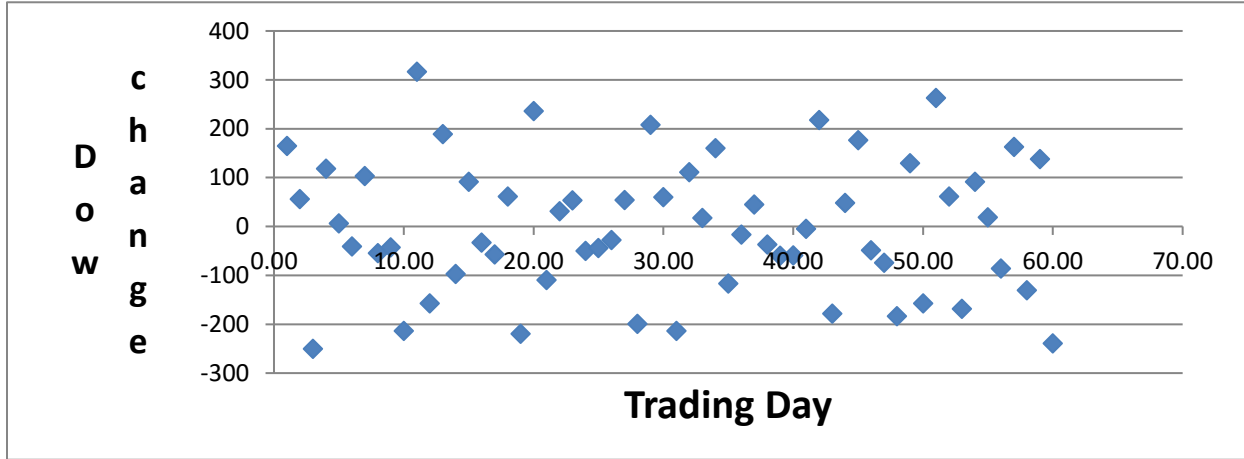
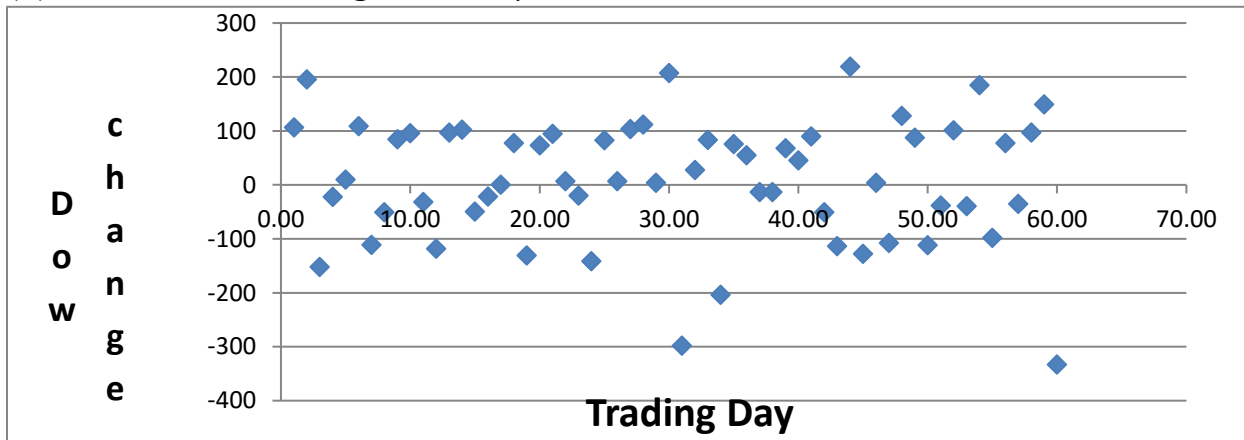


**“HOW TO TELL THE TRUTH WITH STATISTICS USING GRAPHS
THREE PLOTS SHOWING THAT THE DAILY CHANGE IN THE DOW IS RANDOM”
DR. JOHN STEDL, PSTAT®, (drstedl@yahoo.com)**

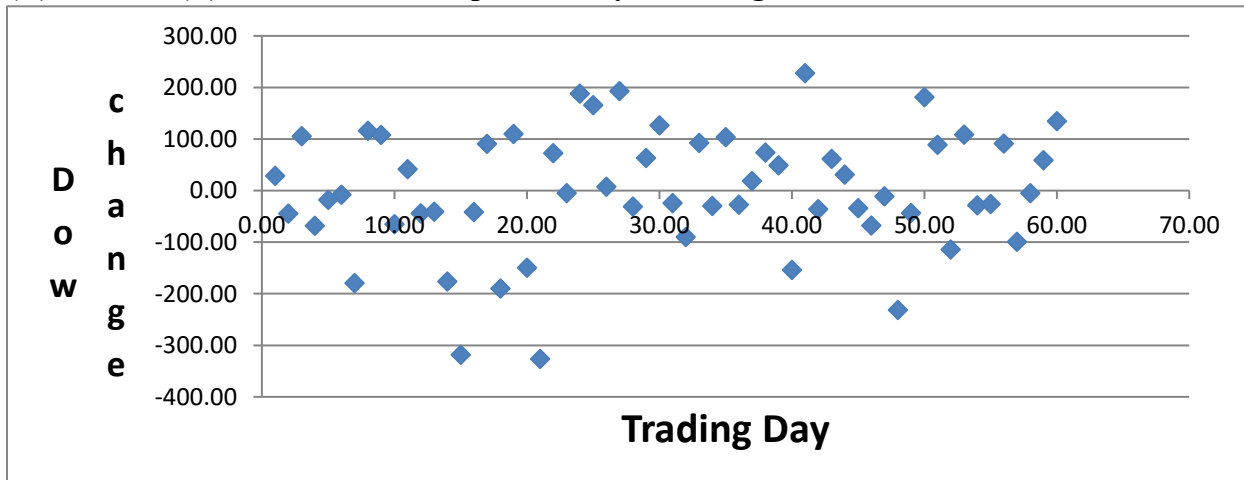
(A) Actual Dow closings, 1st Qtr, 2014



(B) Simulated Dow closings, normal: $\mu=16000$, $\sigma=90$



(C) Same as (B) above but add 10 points daily to closing

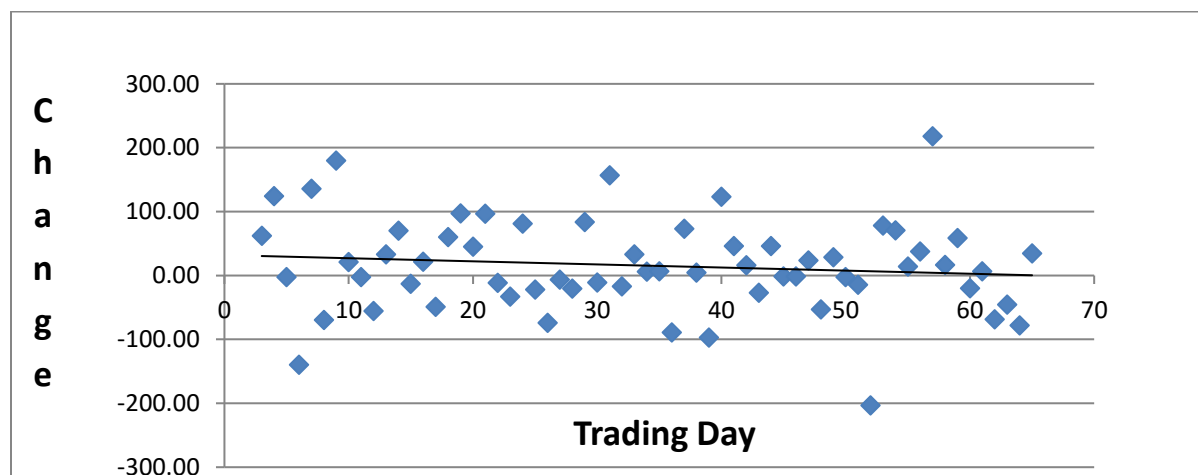


REFERENCE: Stedl, J., “Yet Another Reason To Modify Reporting the Daily Change In the Dow”, MBAA International annual meeting, Chicago, March 2014.

NOW WITH WORDS:

Note that the three plots on the other side look random and the same; below is the analysis. The Dow Jones Industrial Average (DJIA or simply the Dow) is the preeminent indicator of the stock market and the US economy. The daily change in the Dow is widely reported in the media: TV, radio, press and of course the internet. Usually an up or down change is accompanied with a cause; i.e., unrest in the Middle East, unemployment numbers, Federal Reserve action, etc. But as is shown in this study, the daily change is essentially random and hence of no predictive or explanatory value. If the change is random, the reason for it is moot.

The hypothesis of randomness of the daily change in the Dow was approached in two steps. First, the daily changes were plotted for each quarter for the years 2000 to 2011. Perusal of the 48 scatterplots showed lack of any pattern, i.e., they looked random. Below is a typical plot.



The null hypothesis of randomness using the runs test (2-sided) was rejected ($p < 0.05$) in just 3 of the 48 quarters. Note that by chance alone the expected number of rejections is $0.05 * 48 = 2.4$.

Conclusion: The daily change in the Dow is Random. Note: A possible statistical use of the daily changes in the Dow might still exist: when viewed as a control chart, statistically significant large absolute changes can be flagged. Generally, daily changes in the Dow exceeding a rise or fall of 250-300 points are in this category, which would be newsworthy because it rarely happens. **Statistical Significance: Too often, there is an attempt by many to explain the natural variation a process when randomness is the only explanation. Of course, cause and effect must be avoided when randomness is the explanation. The statistical community, especially business schools, needs to educate the public, the media, the experts, and their students as to what randomness looks like. If statisticians were convinced that the daily change in the Dow is essentially random, it could (and should) vanish from the daily news, except when the change is large enough, hence newsworthy.**

REFERENCE: Stedl, J., "Yet Another Reason To Modify Reporting the Daily Change In the Dow", MBAA International annual meeting, Chicago, March 2014.