

Are There Leaks in Your Product Pipeline?

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Successful businesses move new products through the development pipeline swiftly and efficiently. An integral part of this process is the research design and execution. The field of statistics can provide knowledge and guidance that aides a successful flow through the developmental pipeline. The involvement of a professional statistician as a team member can help plug potential leaks and increase your probability of success.

It pays to consider all sources of measurement variation in the design of an experiment and to account for them in the data analysis. Randomly assigning subjects to treatments reduces bias and controls for important, but unknown, factors. Various randomization strategies differ in their time and cost.

More powerful analyses are possible when subjects are matched so that when different treatments are compared, other sources of variation are controlled. More powerful experiments are more sensitive at the same cost as less powerful experiments.

When baseline measurements are incorporated into data analysis, treatment effects beyond baseline can be identified. Sample sizes should be large enough to detect real differences, yet small enough to be manageable and cost effective.

New technology allows the measurement of many variables at many time points. The skills of a statistician can be useful in collaboration with the scientist to find the best way to transform large amounts of data into useful information.

Finally, the presentation of study results needs to include the relevant statistical methods. Potential investors want to see data and be confident it has been subjected to the appropriate analysis. Meeting the requirements of regulatory agencies (FDA and EPA) will proceed more quickly if the analysis has been conducted by a professional statistician.

The University of Missouri System has statisticians on several campuses. There are graduate programs at the University of Missouri, UMKC and Missouri University of Science and Technology. Graduate students are available for internships and/or summer employment. Graduate student support often leads to long term collaborations with statistics faculty.