# REAL STATISTICAL EDUCATION FOR REAL PEOPLE

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*Because even introductory statistics involves concepts and structures and tools, and because so many different students need at least an introduction to statistics, statistical education is vulnerable to diversion along a number of paths. These paths may be pleasant for theorists to wander, whether in education, psychology or statistics, or in a particular area of application of statistics, but it is essential to remember that real people need their statistical education for real problems. Thus statistical education must be enabling, honest and representative of the statistical profession. This paper looks at some pitfalls and positives in statistical education for real people.*

There would tend to be general consensus that course planning requires identification of statistical content and contexts of current and future relevance to the students taking the course. It is sometimes advocated by those in other areas, that contexts be the sole driving force, with the statistical aspects disguised within the contexts, and with understanding occurring by some osmosis mechanism. Unfortunately the results of this philosophy are often a conditioned response to limited contextual stimuli and an inability to progress, although this effect may be confounded by downright inaccuracies in the statistical content. For example, students who are told they are testing that ? = x, or that $x_1 = x_2$ are likely to need a long period of convalescence before being able to progress. Students introduced to jargon in hypothesis testing without the core practical concept stated simply and directly, will need rehabilitation. On the other hand, using contexts of relevance merely to provide words for examples is tackling only part of the needs of the students. A key aspect is to consider, from the students' viewpoint, what types of situations the students will be likely to meet, and what the students will need to be able to *do*. Such considerations affect teaching and course construction in a number of ways. They raise consciousness of problem-tackling from the setting up stage, with consequent emphasis on identifying types of situations, data and variables. They help focus the ordering of the content, and the choice of activities, to reflect this emphasis without sacrificing the underlying connectedness of the logic. And they help focus on providing a set of tools with simple explanation for use, but with honesty and statistical accuracy about assumptions and limitations. The honesty and accuracy are crucial, as false simplicity, including pseudo-jargon, is more misleading than no simplicity. "Laying down the law" statements that sacrifice subtleties for definiteness are also not honest, and can

cause lasting confusion. To focus on both current and future student needs, lecturers need true statistical understanding, the ability to step outside their own learning history, and to capture and communicate the core of any statistical method simply but honestly, accurately and fully.