

Impact Learning for Mid-Career Adult Learner Graduate Students in Public  
Administration and Public Health Programs

A Modified Approach to Teaching Statistics

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In any era of evolving change (and what era isn't), it is often difficult to conceptualize new concepts, new approaches, new processes, etc. Why this difficulty exists remains within the scope of psychologists and organizational developers, however, for the rest of us, it is important to stop and constantly reconsider, reevaluate how we do things and why. For decades the development of the pedagogy of statistical education has remained largely the same; present statistical analytical processes from a mathematical perspective. Yet, with the advent of modern desktop computers and powerful software programs, how imperative is it today to teach everyone statistics from the mathematical perspective?

It seems important we consider diversifying graduate education based somewhat on the majority of the audience we are teaching. We can retain the theory based, mathematical applications of statistics courses presented to statistics and research majors, and of course, doctoral students whose job it will be ultimately to design research, collect and analyze data, and write reports. This, however, is not often the task of the public service professional.

Today's mid-career, adult learner students demand different outcomes from their educational experiences than that which we would have expected from other more traditional students. Mature students are often less interested in theory, and much more interested in results oriented "news they can use" information that have potentially

immediate high impact in their careers. Few of them are seeking an MPA as a springboard to a Ph.D. or even a research oriented job in public service. Indeed, many already hold a management position in public service and the MPA is more a capstone degree than preparation for an administrative career.

Most of the MPA students are mid-30s to mid-40s and are seeking to better themselves technically (skills) and economically by going back to school. However, based on their experiences, they seek less theory and demand more practice orientation in their course work leading to their making better decisions on the job. For this reason, some of the approaches we take in developing the next generation of curricula for MPA programs must consider the audience—the graduate students and their expectations as they evolve.

One of the first reality checks that should be made is in how tools courses such as statistics are taught to this new demographic of students in graduate public administration and public health programs. Virtually everywhere, statistics is taught the way it has always been taught and that is as an applied mathematics course with students expected to work analytical case problems using the accepted formulas being taught. Too often, however, the course is taught the way the professor was taught in a previous generation which was to work the formulas, often by hand, to arrive at the correct answer.

Good statistical professors and methodologists were careful to ensure that each student had a solid grounding in the statistical theory which required a substantial knowledge of the mathematical foundations. Good statistical textbooks reflected this approach by teaching each statistical analysis with well grounded applied mathematics complete with complex formulas for students to work out.

But, for the changing demographics of today's adult, mid-career learner; is this the best pedagogical approach? We should be considering their demands for immediate answers using modern readily available decision support systems represented by fast, powerful desktop computers and software capable of handling sophisticated analysis that required a room size mainframe computer not too many years ago.

Also, how many public administrators or public health workers are actually required to design studies and apply statistical analysis to captured raw data? In recent surveys, the answer is virtually none. This means that most public service professionals are consumers of statistical analysis not producers of the analytical work. They demand to know more about interpretation of output and how that influences expected outcomes than about working the math problem. Further, they have zero tolerance for dedicating time to learning theories they do not need or will use in their immediate work environment.

In pedagogy, one has to close the gap between what the statistician does and what the decision maker needs. If the decision maker has confidence in the work of the statistical analyst, then the painful details of the "theoretically correct" process is not needed, and indeed, may not be well understood anyway. The analytical details may complicate further an already complex decision. The decision maker needs an answer to the raw quantitative data collected, and a clearly understandable interpretation in order to inform the decision. Although, once data is collected and analyzed appropriately, even the interpretation may be left up to the decision maker if people in those positions are well prepared to understand and interpret statistical output.

The next issue is how to best train this current generation of administrators who have come back to school as well as the next generation of administrators yet to arrive? In

examining several textbooks on statistics, it is easy to adopt a book for future statisticians, researchers, and doctoral candidates while at the same time adopting another textbook that is more useful to the adult, mid-career learner.

In the training of adult, mid-career, administrative graduate students, who are most often already well established in their careers as public decision makers, the faculty focus may too often be on the process, and too seldom on how the results of the process will be utilized. Indeed, the training and background of the faculty teaching statistics may be the determining factor in how graduate courses are taught—applied mathematics statisticians will most likely focus on process (equations and the mathematics process), whereas the applied decision maker will most likely focus on interpretation of the analytical outputs allowing the computer program to crunch the numbers based on the data collected by the analyst.

Hawk and Shaw (2007) write, “We believe that most faculty in higher education initially adopt a teaching style that merges (1) the ways they prefer to learn and (2) approaches to teaching they saw as effective for their own learning in higher education programs” (p.1). Consequently, Hawk and Shaw propose that faculty are either unfamiliar with learning style methods or are uncomfortable experimenting learning styles other than their own preference because it “takes them out of their own comfort zone” (p.1).

It is possible that the mathematical processes are continuing to be taught both in the classroom and in the textbooks mainly because the current generation of textbook writers and university faculty learned statistics themselves prior to the development of sophisticated computer programs that do all the hard, time consuming computational

work. Teachers may teach the way they were taught (the old school) rather than adapting their pedagogy to the new demands of modern administrative managers and the tools that are now available as desktop decision support systems.

The question of the pedagogical approach in the curriculum may focus on whether it is critical or how important it is to the quality of the decision that the decision maker must comprehend the exquisitely complex mathematical processes when in reality it is the outcome of the decision that is most important to the decision maker in public administration (and public health). Are we emphasizing the wrong things for the wrong audience based on what that particular audience may need? Are we emphasizing the wrong things based on how today's teachers were taught by yesterday's teachers?

Another issue of consideration in graduate education is how long, once learned, will the detailed statistical analytical (mathematical formula based) processes be retained by decision makers who are not normally expected to perform the analysis themselves as part of their daily responsibilities? Would it be more probable that decision makers, who are not analysts working daily with the numerical aspects of analyses; retain more of some ideas of interpretation longer than they would the mathematical processes that they do not use and have not seen since taking the required graduate course?

I examined three textbooks for public administration which include Kenneth J. Meier and Jeffrey L. Brudney's Applied Statistics for Public Administration, 4<sup>th</sup> edition and Lawrence L. Giventer's Statistical Analysis for Public Administration, 2<sup>nd</sup> edition. Meier and Brudney use less mathematics and more clear expository explanation, whereas, Giventer's approach is far more mathematical in terms of working out formulas by hand since there are no computer software applications.

Finally, Brian P. Macfie and Philip M. Nufrio's Applied Statistics for Public Policy (2006) uses minimal mathematical formulas while emphasizing the use of Polystat (provided with the textbook as a CD). Many exercises are provided that demonstrate how Polystat works and how to interpret the output to apply to public policy and public administration case problems. This minimal use of mathematics while emphasizing problem solving with Polystat seems appropriate for use with the adult learners as opposed to the more mathematical presentations above.

One other book, for those interested in doing health policy and health administration analyses using Excel is James E. Veney's book, Statistics for Health Policy and Administration Using Microsoft Excel (2003). Here again, like Macfie and Nufrio, there is virtually no mathematical formulas to work out since the emphasis is on clear expository explanation with emphasis on how to enter, compute and interpret statistical analyses using Microsoft Excel. There are also many case examples to work with that are focused on health policy and health administration environments.

As public administration education evolves, pedagogy must evolve in step to keep up with the current and future demands of students based on their experiences and motives for investing in furthering their education. It is not something the faculty can dictate for them even as painful as it may seem to alter our curricula and teaching strategies. But, it is essential so that curricula remain relevant to the needs of the students and faculty evaluations from students remain positive as these needs are perceived as being met.