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Gregory V. Bard* (bardg@uwstout.edu), Dept of Math Stat & Comp Sci, Jarvis Hall Science Wing, University of Wisconsin—Stout, Menomonie, WI 54751. *Realistic Yet Comprehensible Models of Applied Problems using Monte-Carlo Simulations in Discrete Mathematics*. Preliminary report.

As enthusiasm about data-science spreads among the student population, it is convenient for the topic of Monte-Carlo Simulations to be injected into courses that undergraduates take in the first two years. Not only are Monte-Carlo Simulations a good tool for modeling complex phenomena, they are also a necessary prerequisite for the relatively new statistical technique of “bootstrapping.”

In this talk, the presenter will discuss three examples of realistic and relevant (but comprehensible), applications of Monte-Carlo simulation, for three minutes each. These are taken from a course in discrete mathematics, aimed at computer-science, cybersecurity, and computer-engineering majors in their third semester. They are for (1) the introduction to polling error in political science, including a first glimpse at confidence intervals; (2) for the famous observation about Archibald Wald regarding armor plating on allied bombers in WWII; (3) for the unfair impact of attendance policies of a famous grocery store on employees of differing socio-economic classes. These are demonstrated using the computer-algebra system Sage. While political science, aeronautical engineering and sociology are distant from the computing disciplines, students have reacted favorably to these extended examples. (Received September 15, 2020)