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Comparing Simulations with Solutions for Classical Differential Equation Models.

Students often have difficulty understanding the role of the parameters in classical interaction models like the SIR infectious disease model. At the North Carolina School of Science and Mathematics, we have found that simulating the process defined by the DE first by using dice and then with agent-based models helps clarify probabilistic assumptions built into the model. By comparing the deterministic results to those generated by the simulations, students can see the standard "solution" to the differential equations as an averaging of the different possible actual paths. (Received September 26, 2017)