Nuclear data are vital to transport simulations made by predictive simulation codes, like the Monte Carlo N-Particle (MCNP) transport code, across the nuclear community. MCNP utilizes nuclear data to predict individual particle-nuclide interactions. There is a constant effort to improve the accuracy and precision of nuclear data so that simulations can better represent reality. Integral benchmark experiments, in which measured and simulated results are compared, play a vital role in the validation and adjustment of nuclear data. Past benchmark experiments have primarily focused on the effective multiplication factor (keff). Broadening the purview of benchmark experiments beyond keff-dependent nuclear data and examining multiple responses at a time addresses nuclear data deficiencies. Different responses and experiment types are dependent on different areas of nuclear data. Nuclear data dependence is quantified with nuclear data sensitivities, which is the change in response due to a perturbation of a contributing parameter. A larger nuclear data sensitivity means that nuclear data uncertainties have more influence on the response; therefore, the impact of an integral benchmark experiment can be optimized by maximizing the nuclear data sensitivities for an area of interest. Currently, the nuclear data sensitivity capabilities of MCNP are limited to tallied values and keff. Additional sensitivities can be calculated with deterministic tools; however, these tools greatly limit the complexity of experiment geometry. This work presents the preliminary results of a tool that obtains central-difference-based nuclear data sensitivities for multiplicity responses outside of those capable with MCNP. Additionally, a detailed perturbation size or step size dependance study for fixed-source simulations of a 4.5-kg sphere of alpha-phase, weapons-grade plutonium surrounded by differing amounts of copper and polyethylene is presented to support the algorithm written into the tool. The script will introduce a simplified manner of obtaining nuclear data sensitivities for multiplicity experiments.