# Supplementary Material to "A comparative study of Bayesian optimal interval (BOIN) design with interval 3+3 (i3+3) design for phase I oncology dose-finding trials"

## S.1 A subset of random scenarios when comparing BOIN to i3+3

Figure S.1 shows a random sample of the 1000 random scenarios used for comparing BOIN and i3+3 design under each target DLT probabilities.
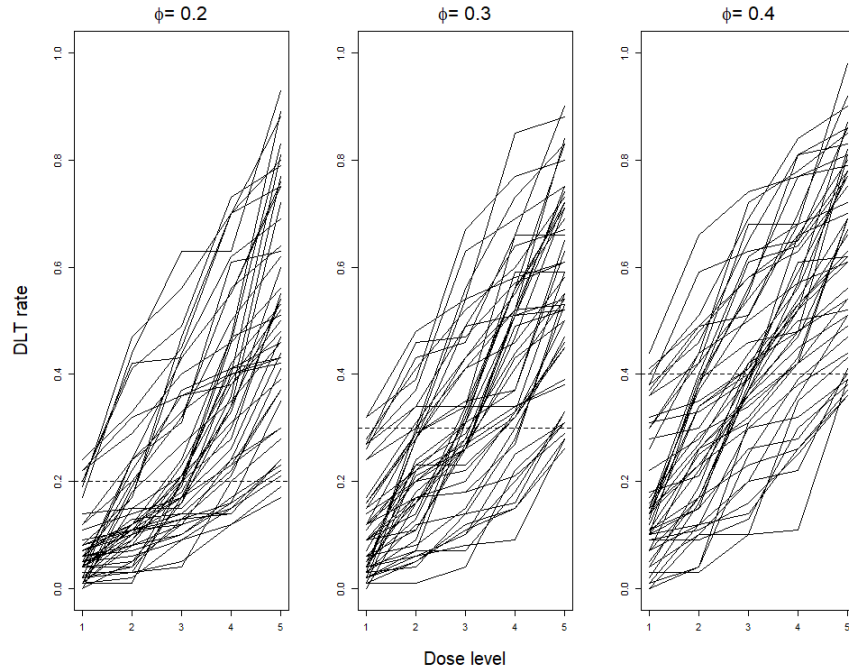


Figure S.1: A sample of 50 randomly generated scenarios given the target DLT probability $\phi$=0.2, 0.3 or 0.4.

# S.2 The simulation results for BOIN and i3+3 designs under 1000 random scenarios
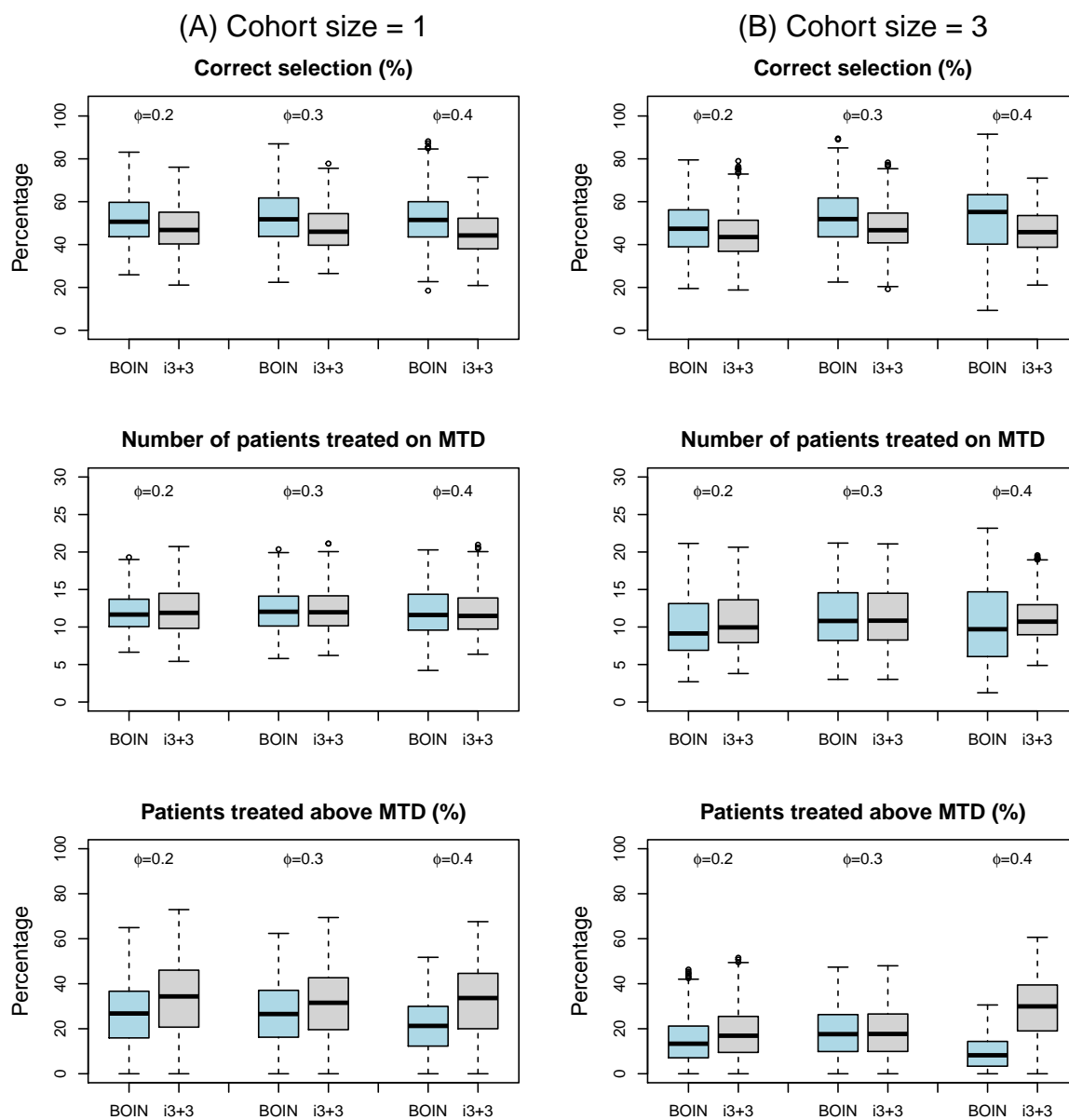


Figure S.2: Performance of BOIN and i3+3 designs under 1000 randomly generated scenarios given different target DLT probability ($\phi$) and cohort size.

Figure S.2 shows the simulation results for BOIN and i3+3 designs under 1000 random scenarios, under different target DLT probabilities. Both designs were implemented under their default/recommended settings. As shown, BOIN has larger probability of correctly identifying the MTD and is safer in that it assigns less patients on doses above MTD. The number of patients treated on MTD is comparable between the two designs, but i3+3 is still more aggressive than BOIN and assigns more patients on doses above MTD, an undesirable consequence caused by i3+3's "de-escalation modification rule".