

Power Validation

MDES validation

Sample size validation

Validate Power: blocked_i1_3r

Code ▼

Kristin Porter, Zarni Htet, Kristen Hunter

May 28, 2021

Design: Blocked RCT, with 3 levels, and randomization done at level 1 (individual level).

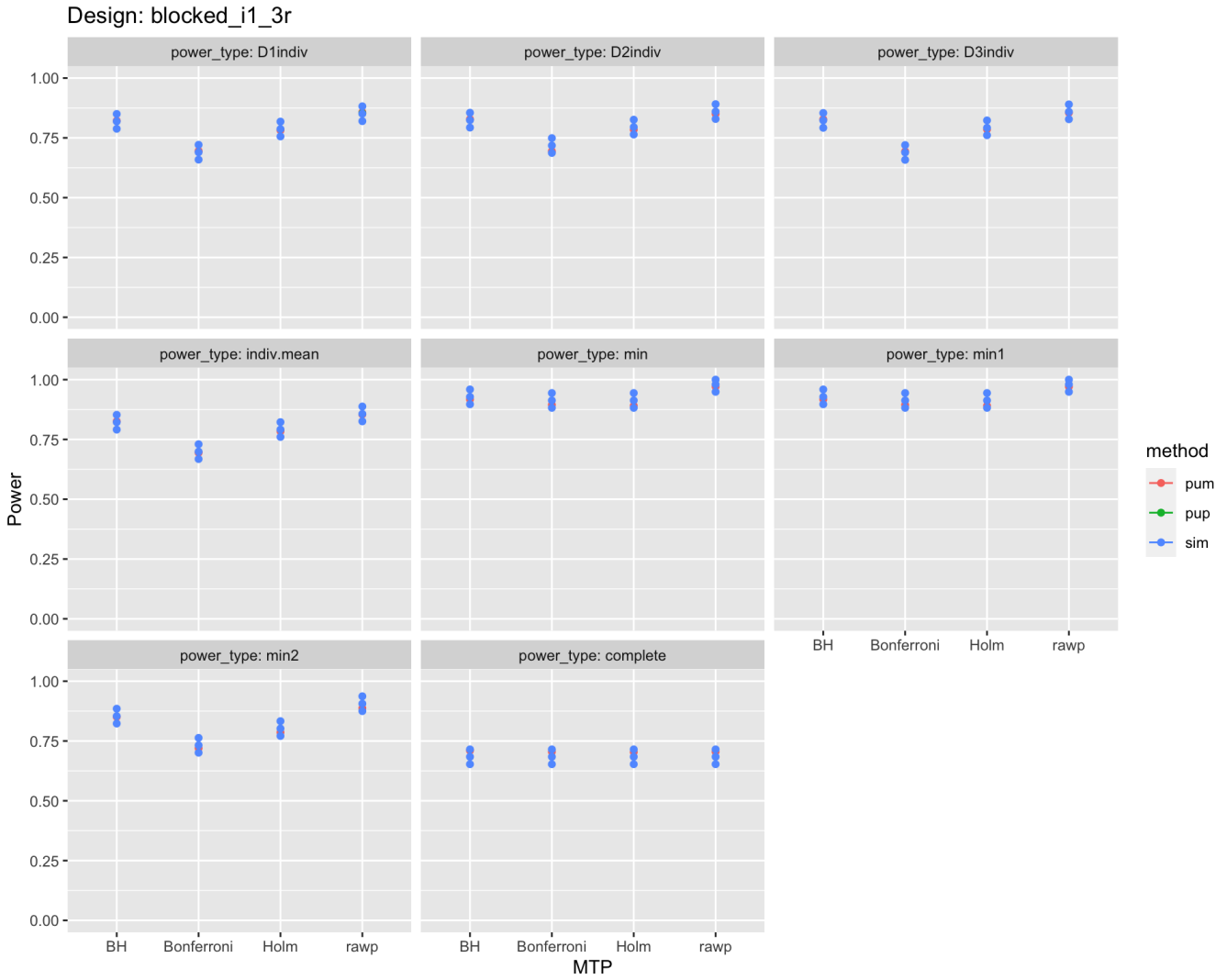
Models: random treatment effects.

- $M = 3$
- $J = 20$
- $K = 15$
- $\bar{n} = 100$ (unless otherwise noted)
- rho: $\rho = 0.5$
- ATE ES = 0.125, 0.125, 0.125
- R^2 : $R_1^2 = 0.1, 0.1, 0.1$, $R_2^2 = 0.1, 0.1, 0.1$, $R_3^2 = 0.1, 0.1, 0.1$
- ICC: $ICC_2 = 0.2, 0.2, 0.2$, $ICC_3 = 0.2, 0.2, 0.2$
- Omega: $\omega_2 = 0.1$, $\omega_3 = 0.1$

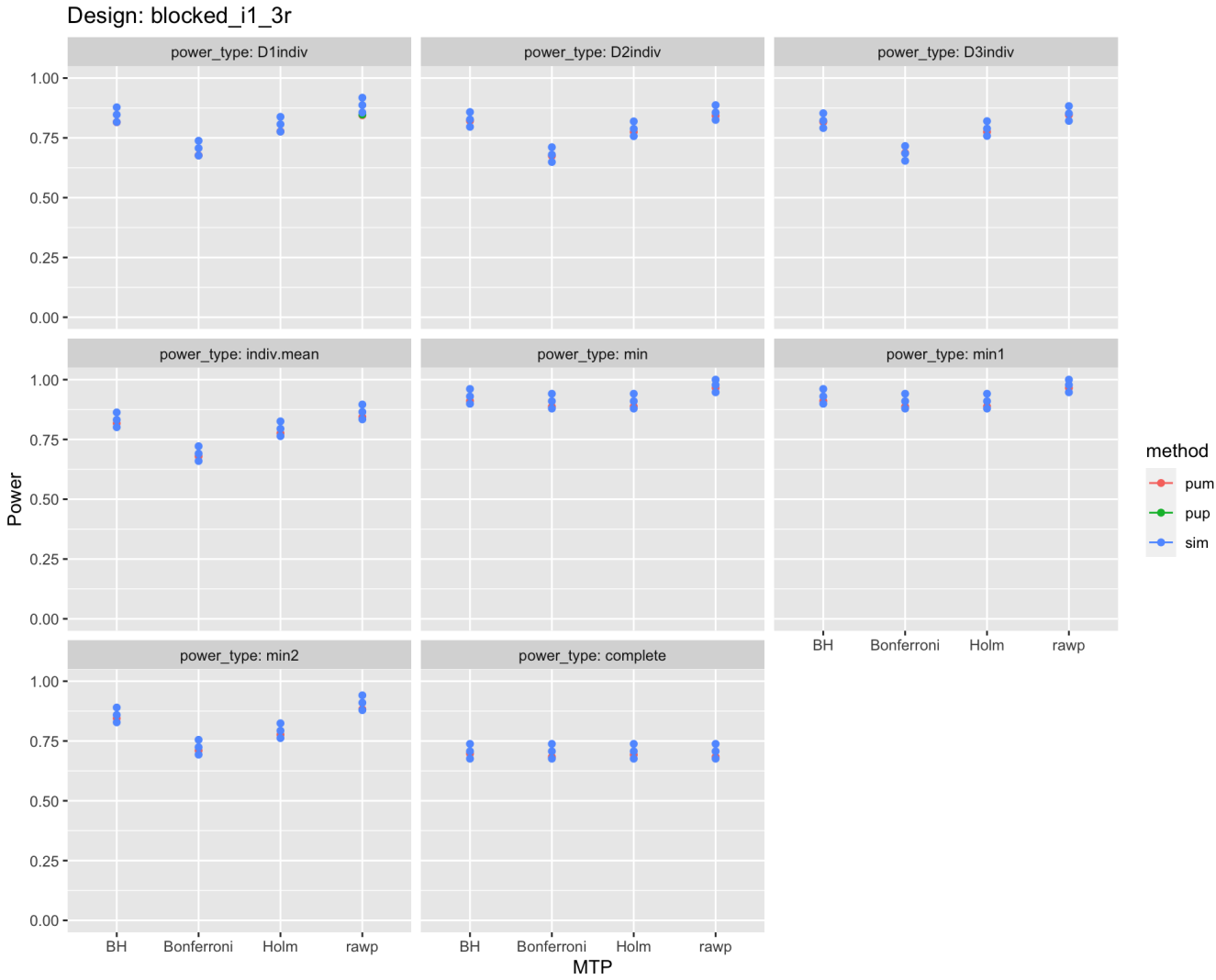
Power Validation

Varying school size

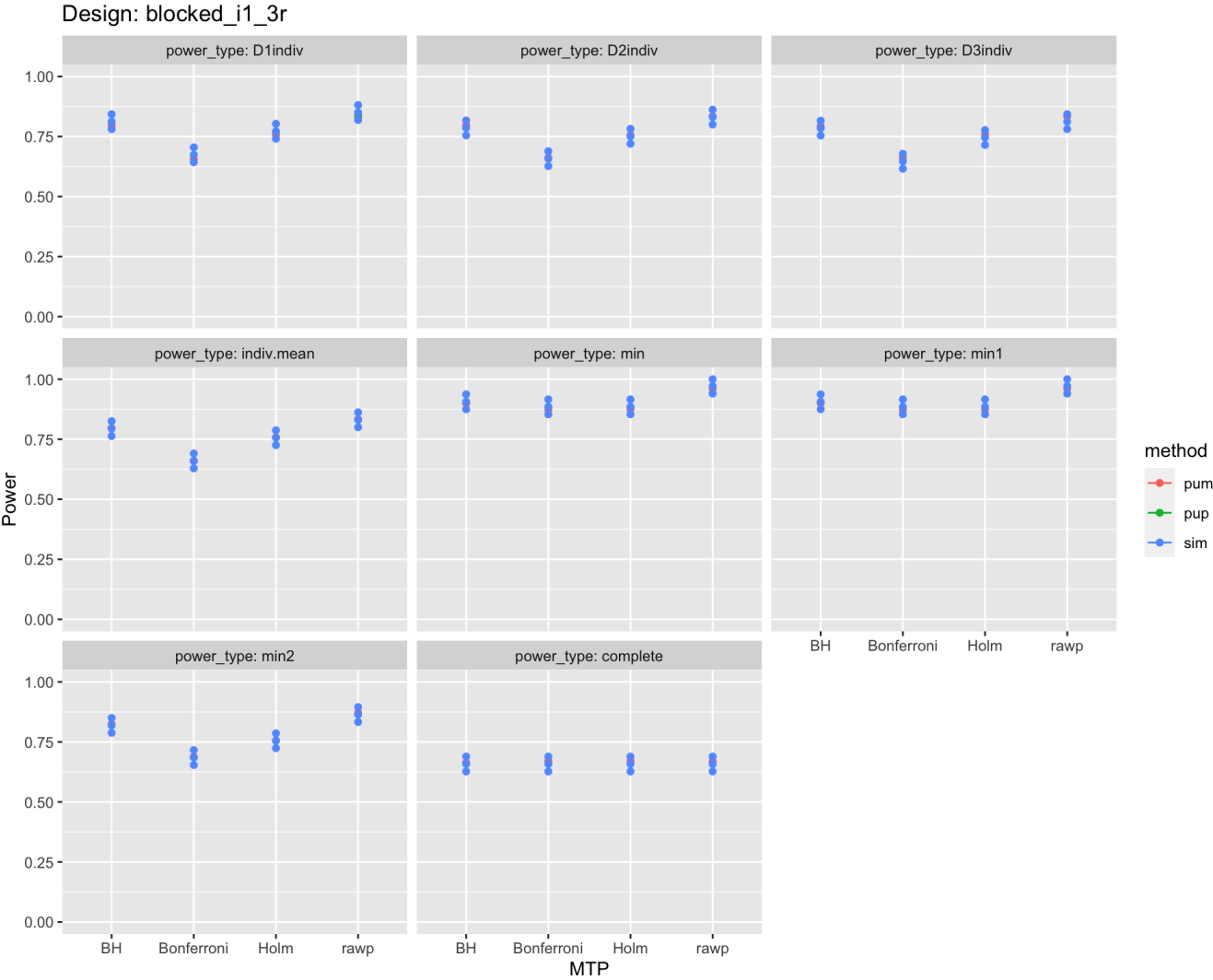
 $\bar{n} = 100$



$\bar{n} = 75$

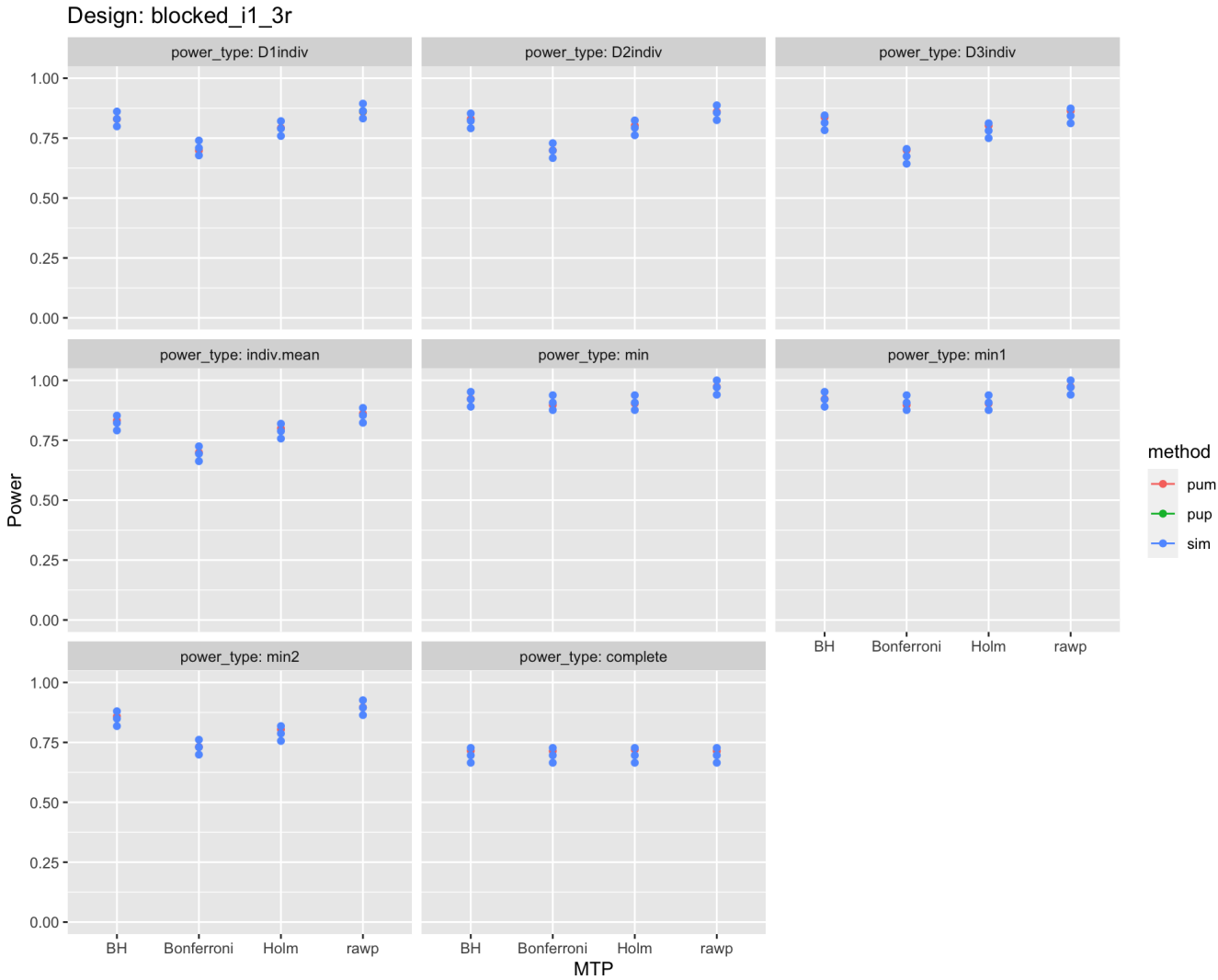


$\bar{n} = 50$

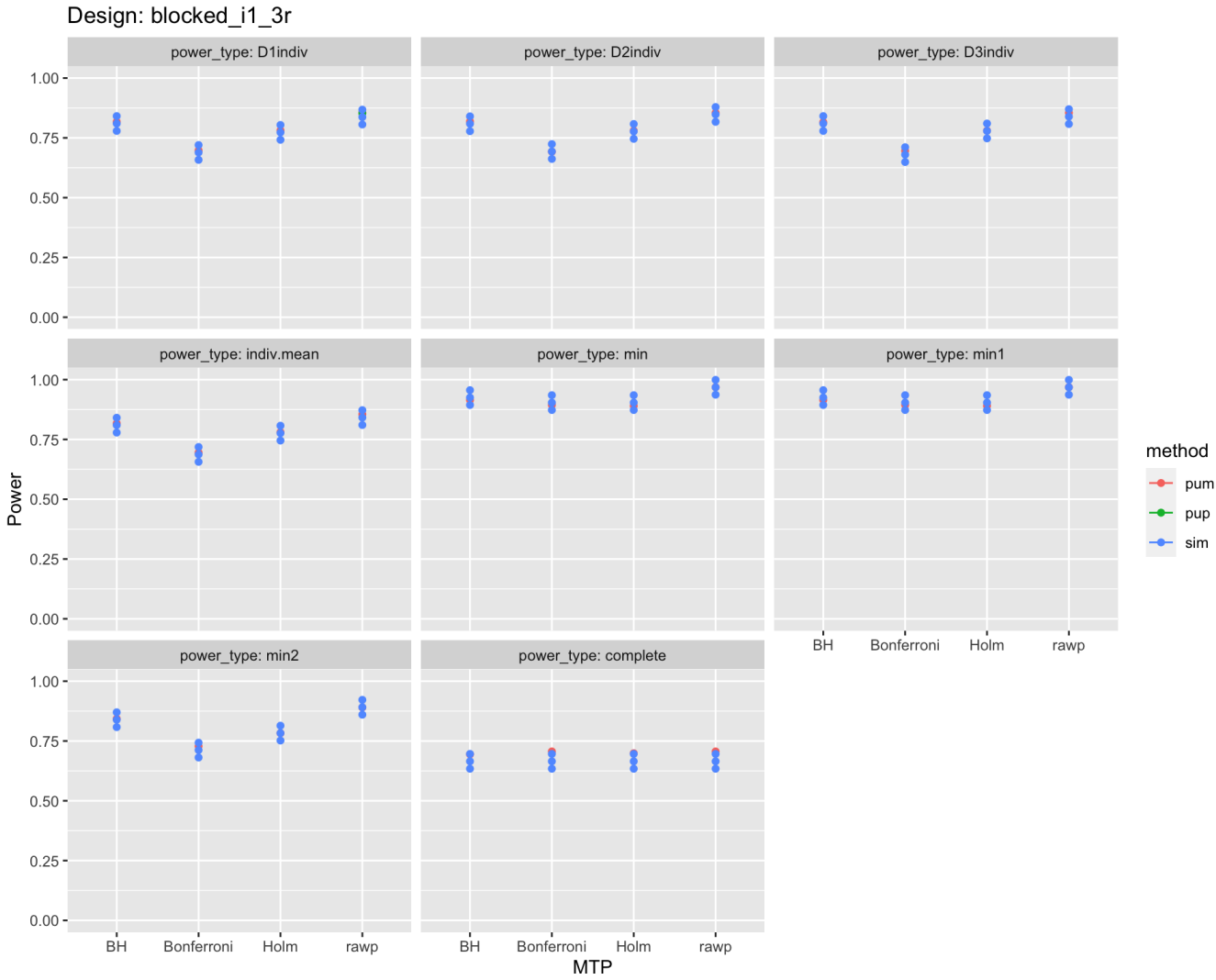


Varying R2

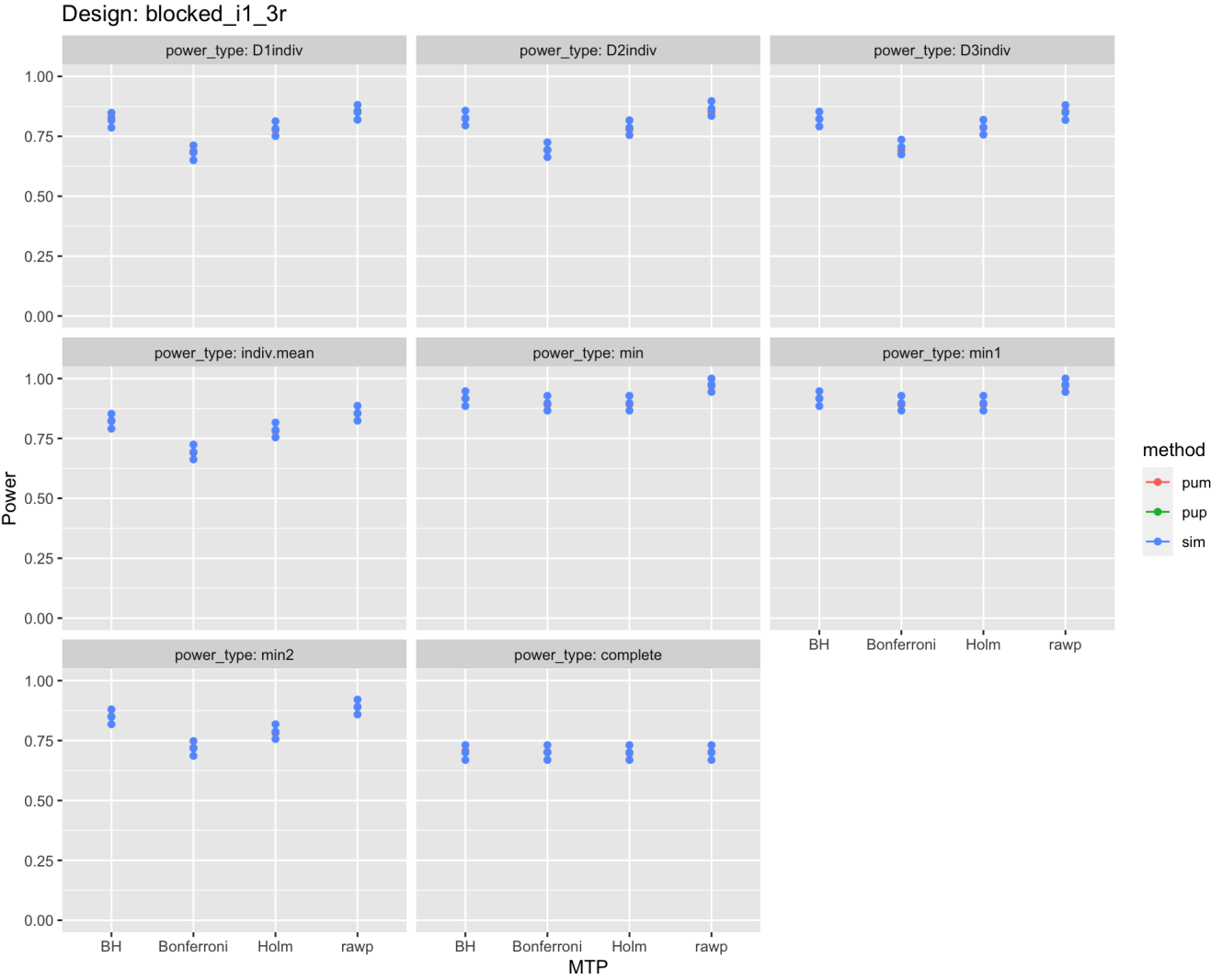
$R^2_1 = 0.6, 0.6, 0.6$



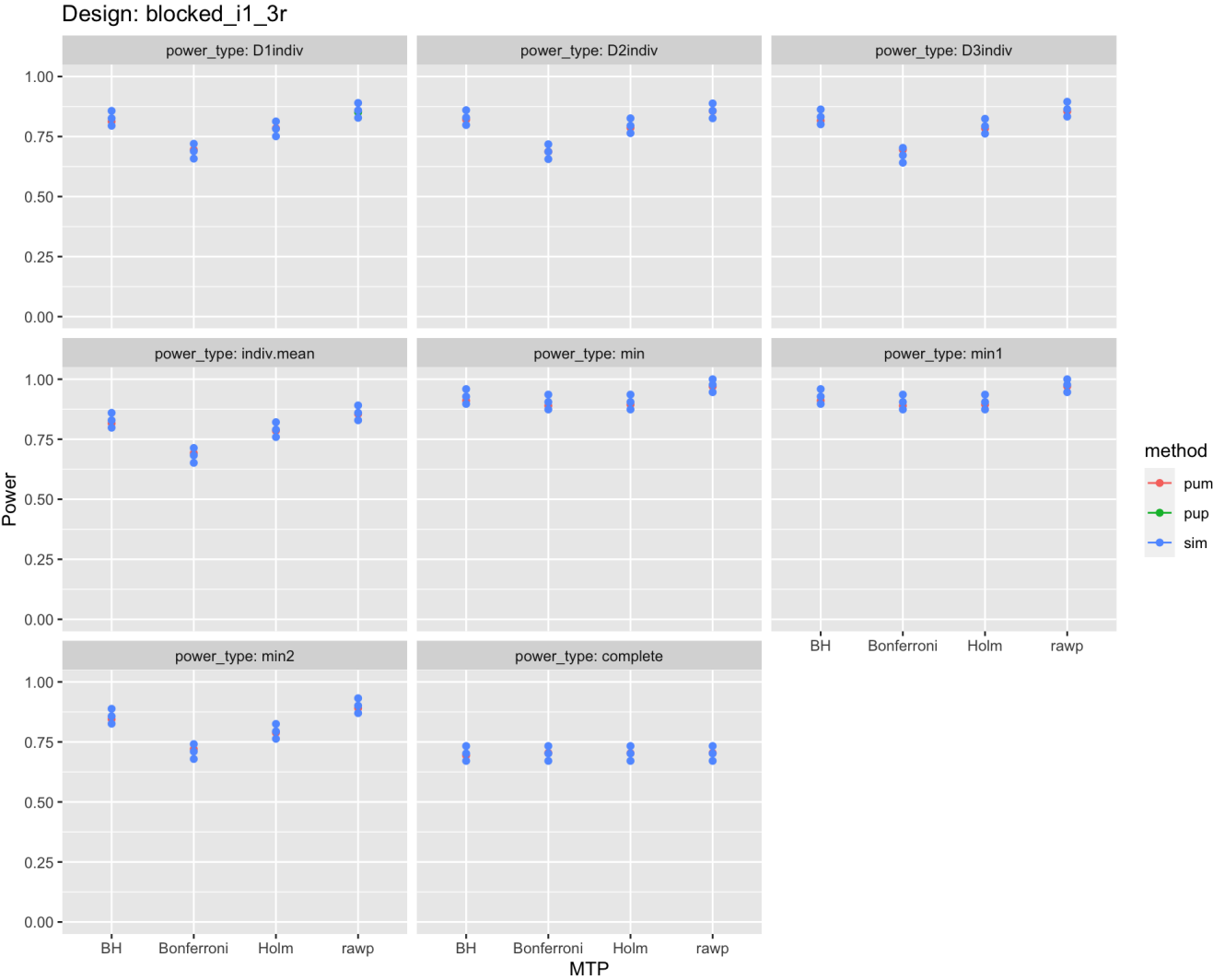
$R_2^2 = 0.6, 0.6, 0.6$



$R_3^2 = 0.6, 0.6, 0.6$

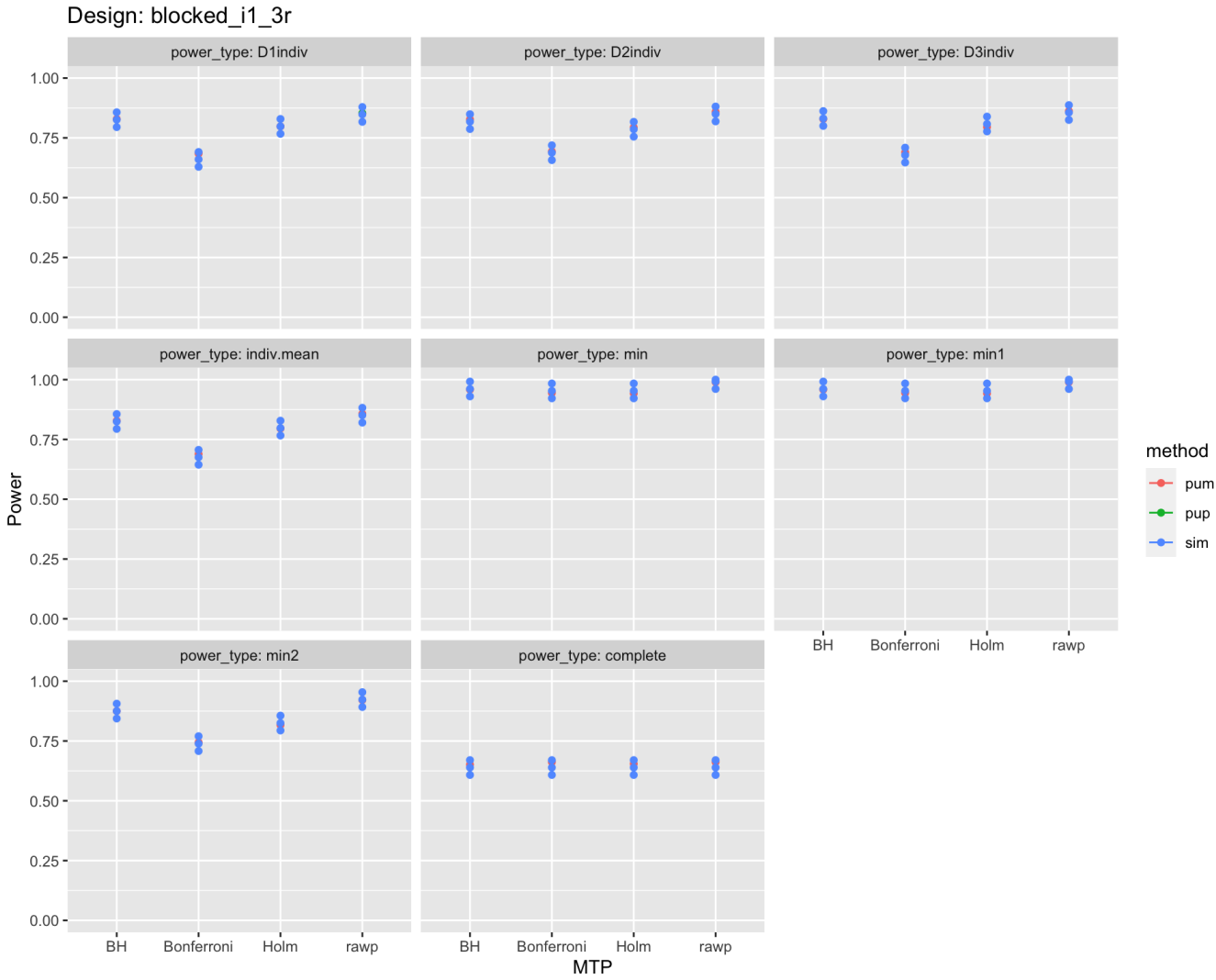


$R_1^2 = 0, 0, 0$ $R_2^2 = 0, 0, 0$ $R_3^2 = 0, 0, 0$

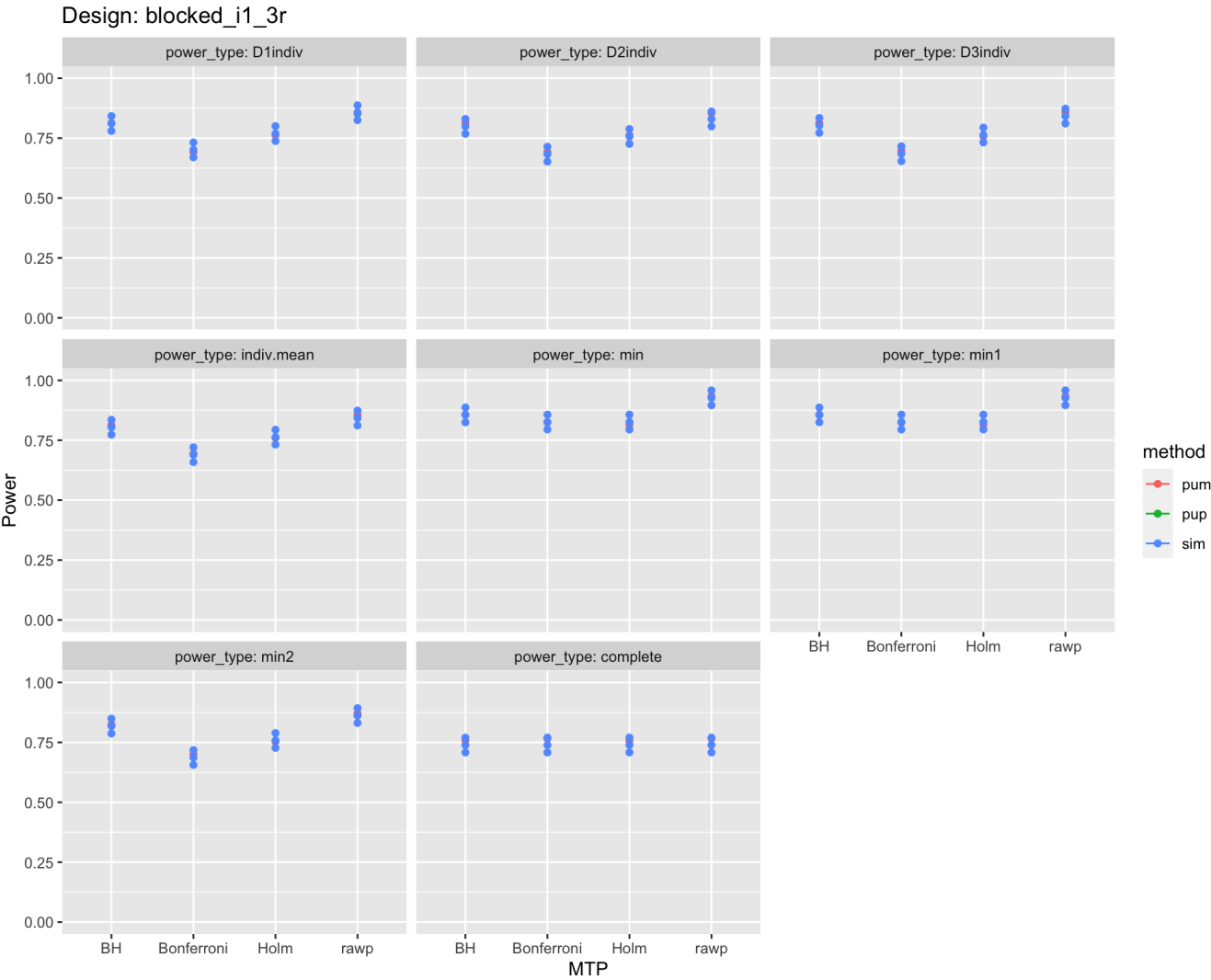


Varying rho

$\rho = 0.2$

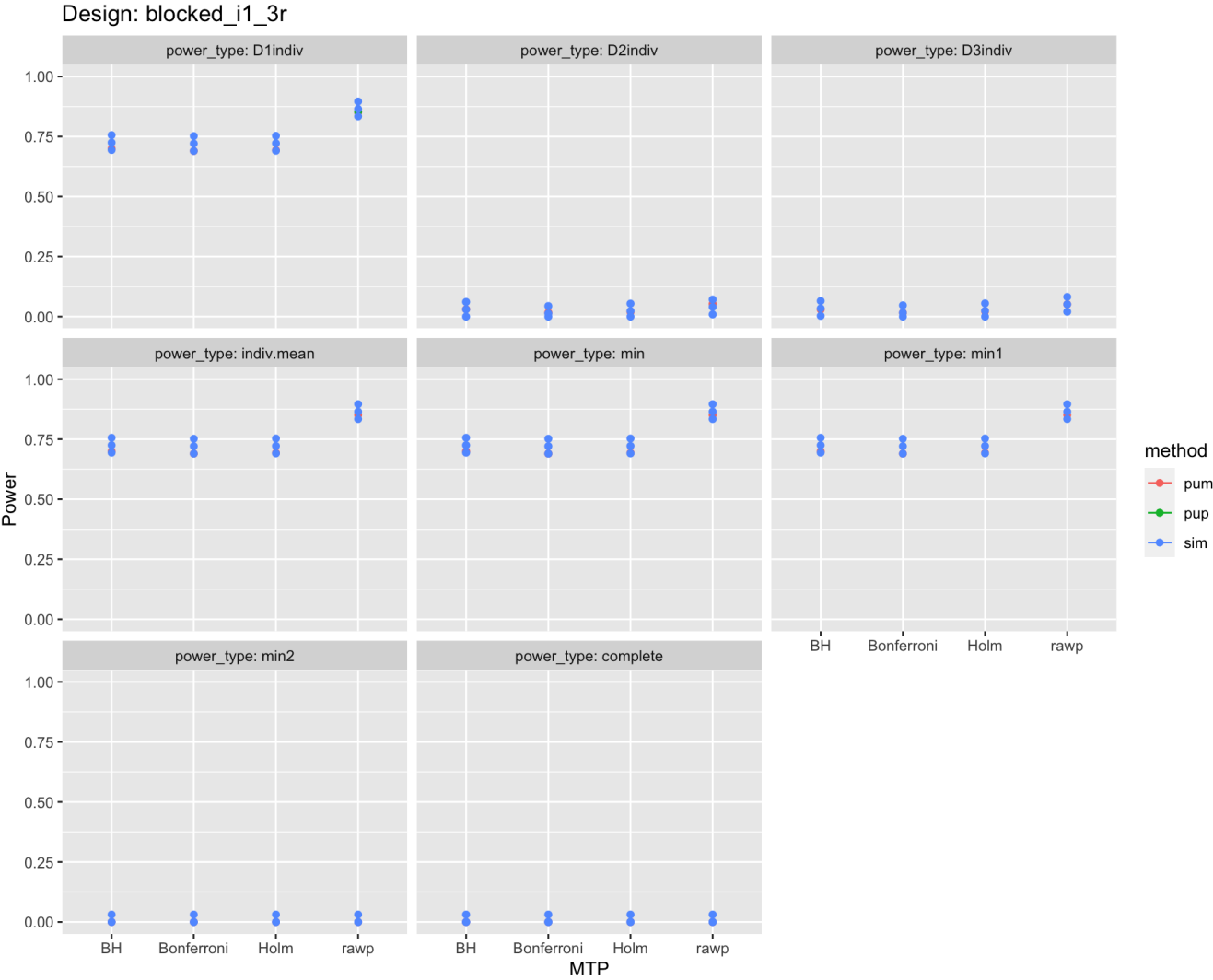


$\rho = 0.8$



Varying true positives

ATE (ES) = 0.125, 0, 0

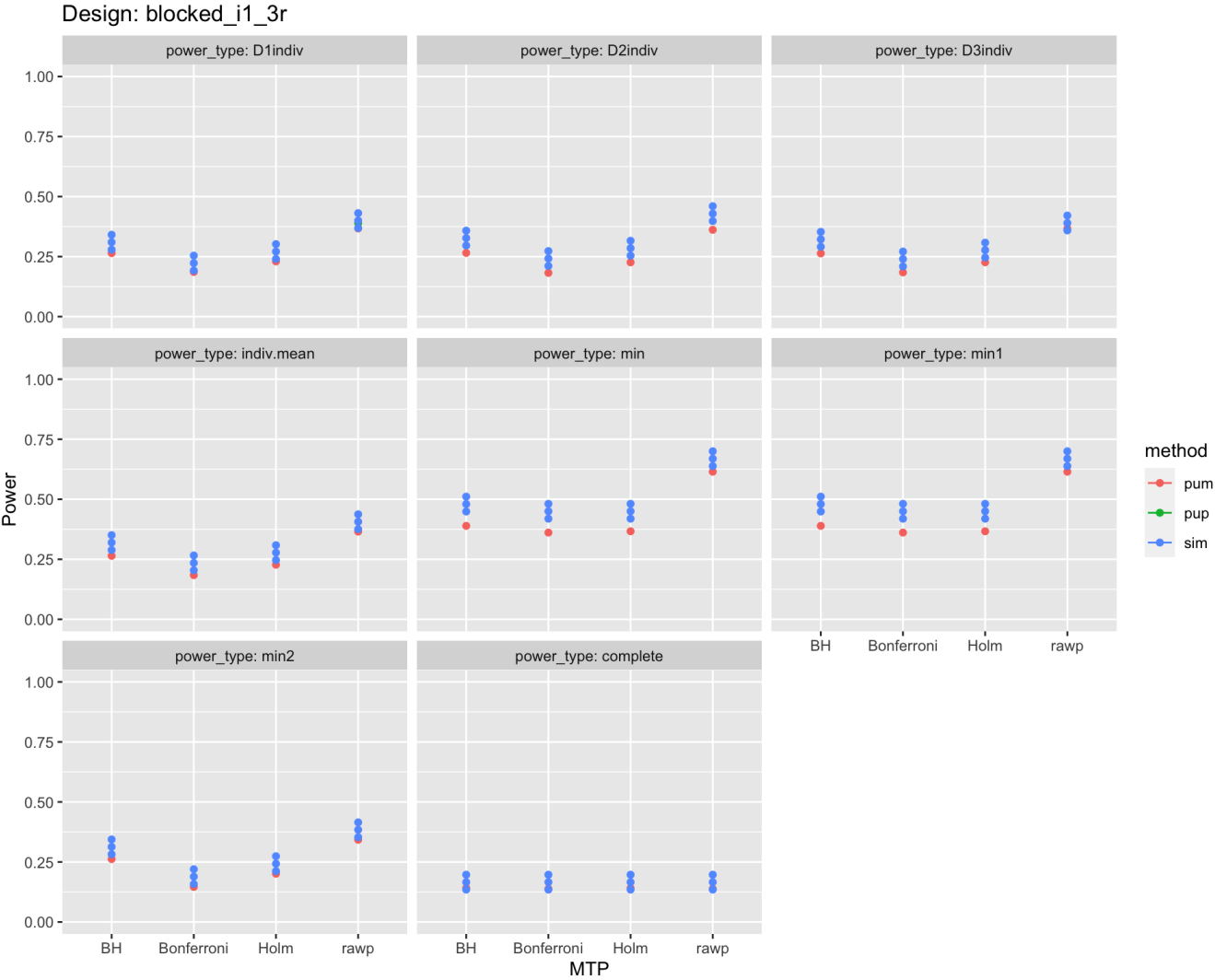


Varying ICC

ICC₂ = 0.7, 0.7, 0.7

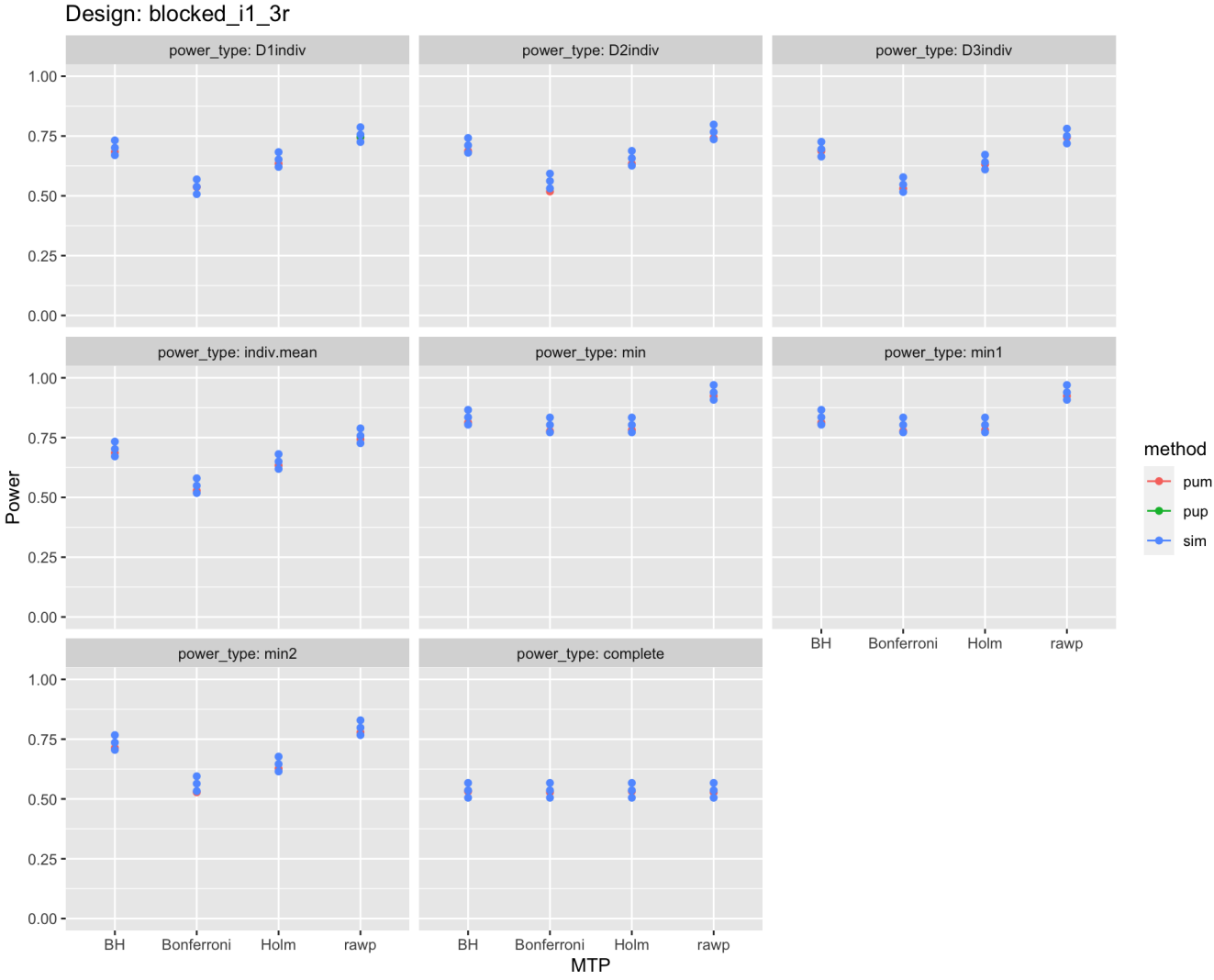


ICC₃ = 0.7, 0.7, 0.7

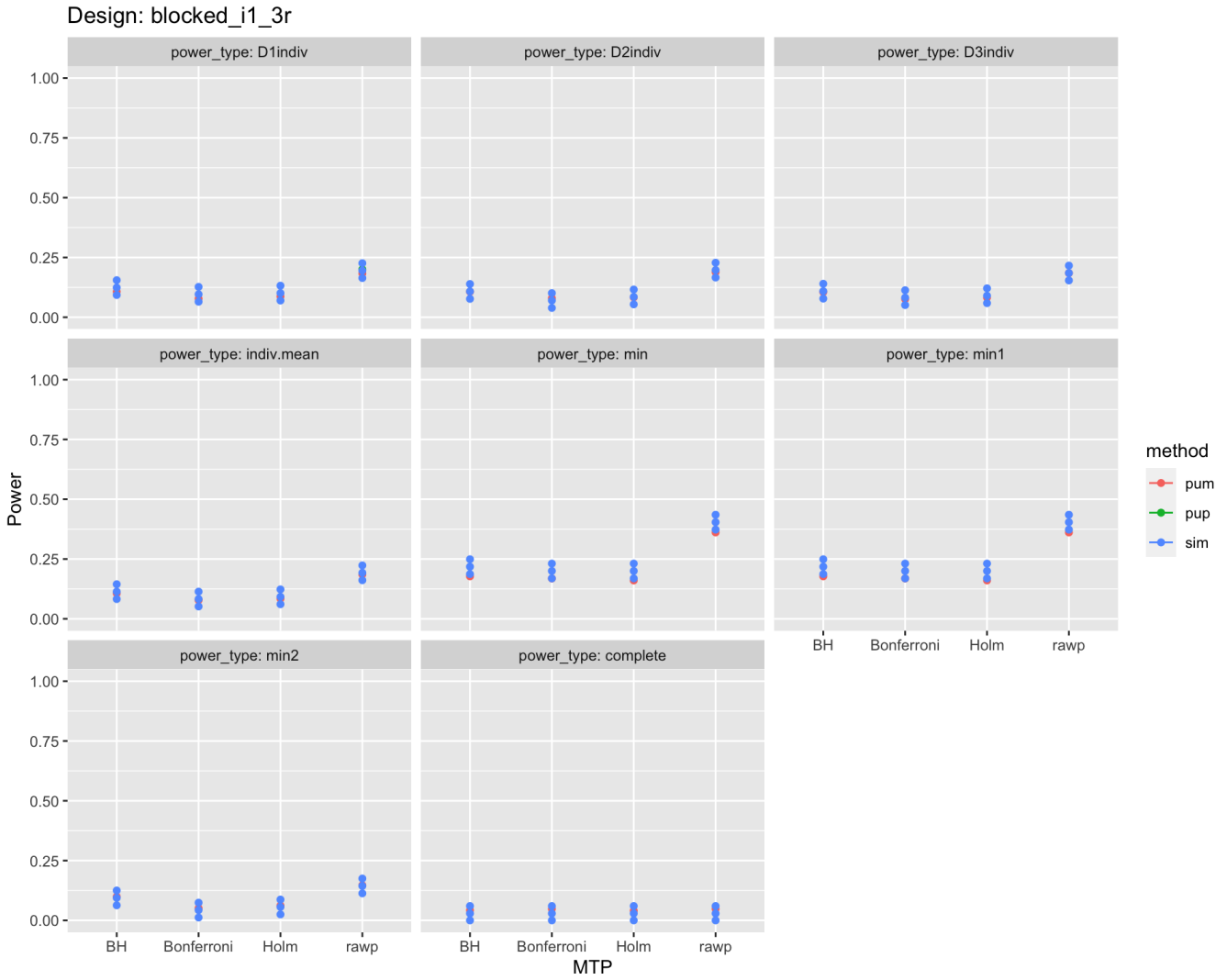


Varying Omega

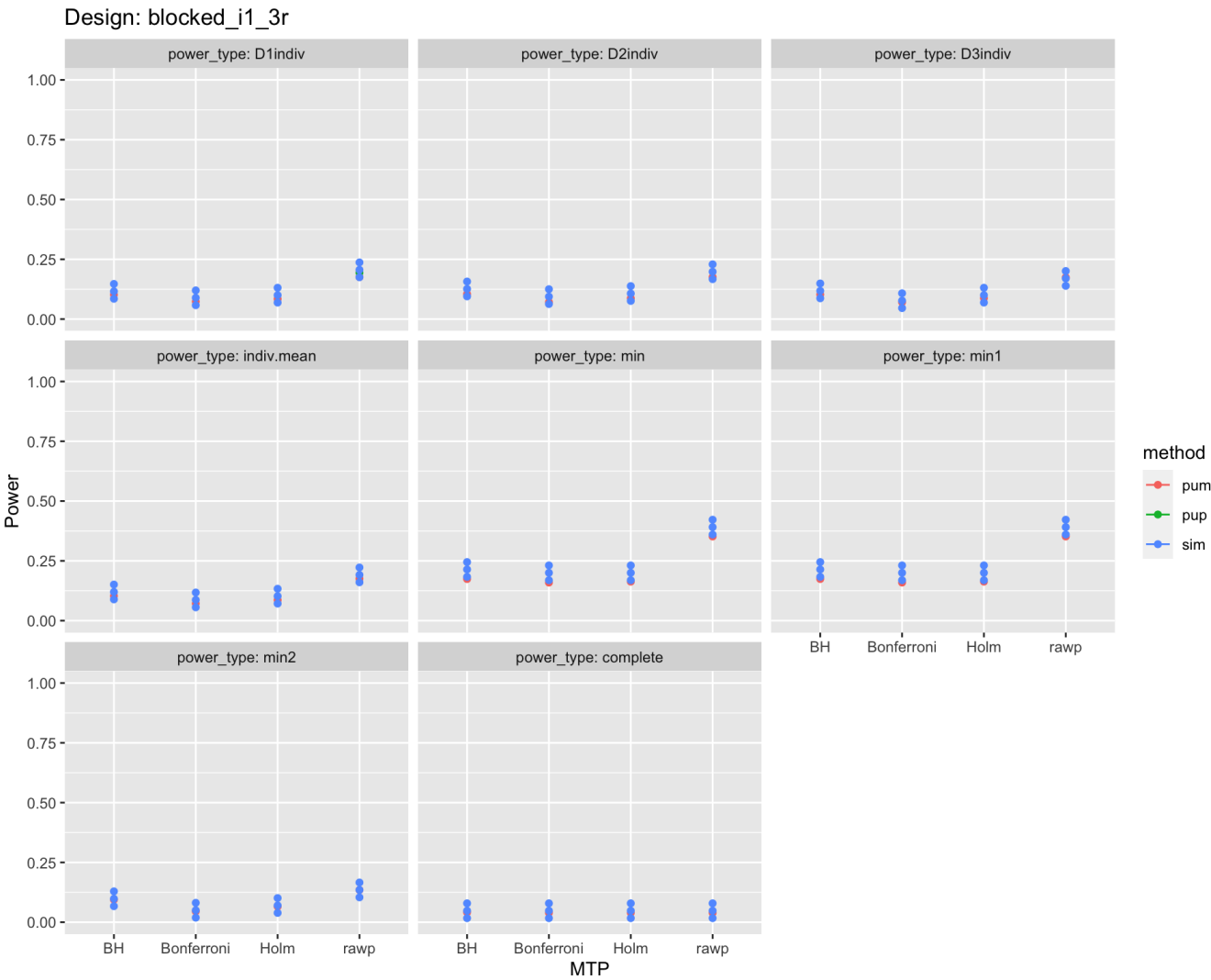
$\omega_2 = 0.8, \omega_3 = 0.1$



$\omega_2 = 0.1, \omega_3 = 0.8$



$\omega_2 = 0.8, \omega_3 = 0.8$



MDES validation

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | D1indiv Power | Target MDES |
## +=====+=====+=====+=====+
## |      rawp      |      0.126    |      0.858    |      0.125    |
## +-----+-----+-----+-----+
## | Bonferroni    |      0.125    |      0.695    |      0.125    |
## +-----+-----+-----+-----+
## |      BH       |      0.125    |      0.824    |      0.125    |
## +-----+-----+-----+-----+
## |      Holm     |      0.125    |      0.788    |      0.125    |
## +-----+-----+-----+-----+
##
## Table: blocked_i1_3r
```

Sample size validation


```
##
##
## +-----+-----+-----+-----+-----+
## | MTP   | Sample type | Sample size | Dlindiv power | Target sample size |
## +=====+=====+=====+=====+=====+
## |  BH   |      K      |      15      |      0.818      |      15      |
## +-----+-----+-----+-----+-----+
## | Holm  |      K      |      15      |      0.782      |      15      |
## +-----+-----+-----+-----+-----+
##
## Table: blocked_i1_3r
```