Validate Power: blocked_c2_3fr

Code ▾

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Design: Blocked Cluster RCT, with 3 levels, and randomization done at level 2 (school level).

Models: random and fixed treatment effects.

Default parameters:

- M = 3
- J = 20
- K = 10
- rho: ρ = 0.5
- ATE ES = 0.125, 0.125, 0.125
- R21, R22: R_1^2 = 0.1, 0.1, 0.1, R_2^2 = 0.1, 0.1, 0.1
- ICC2: ICC_2 = 0.2, 0.2, 0.2
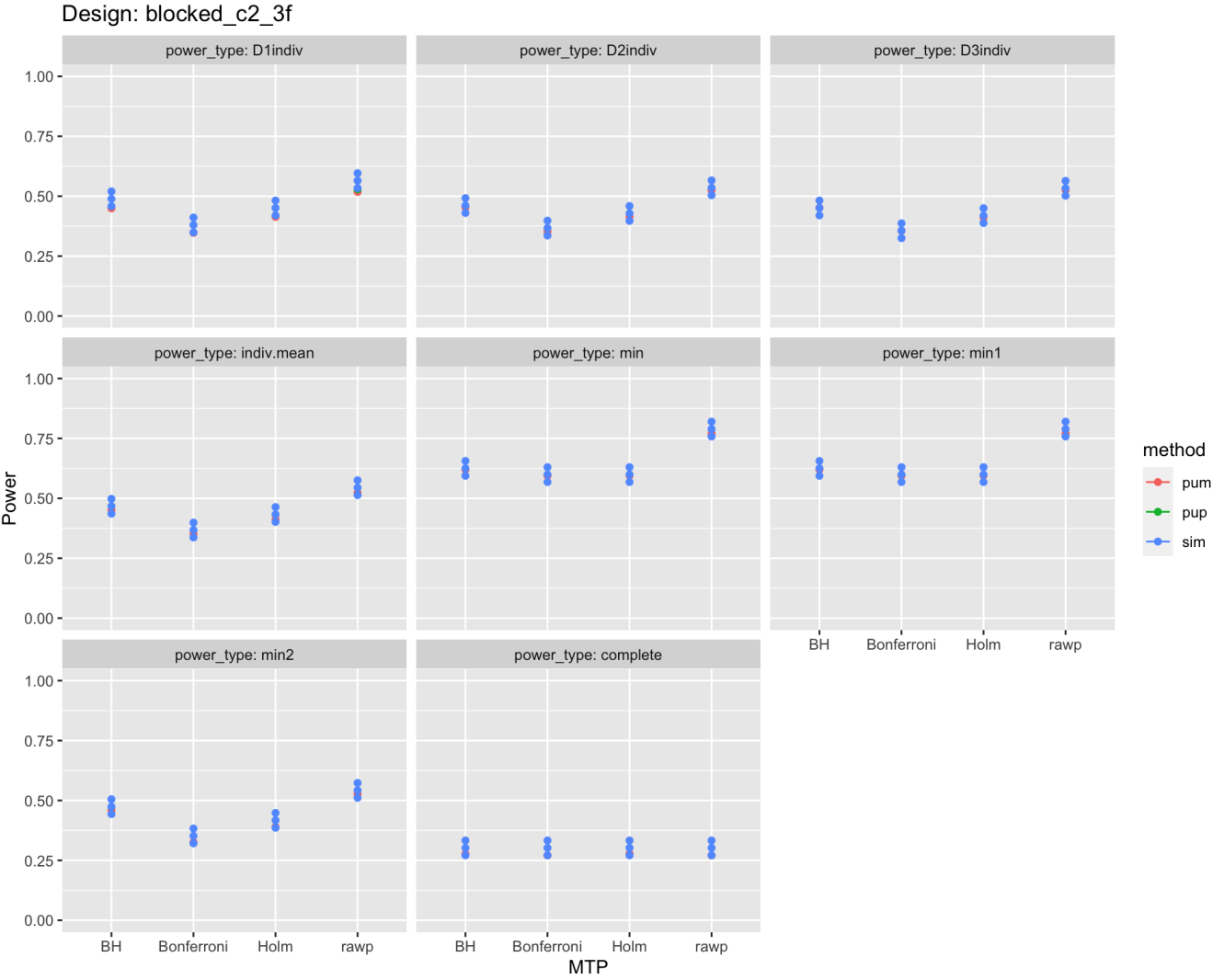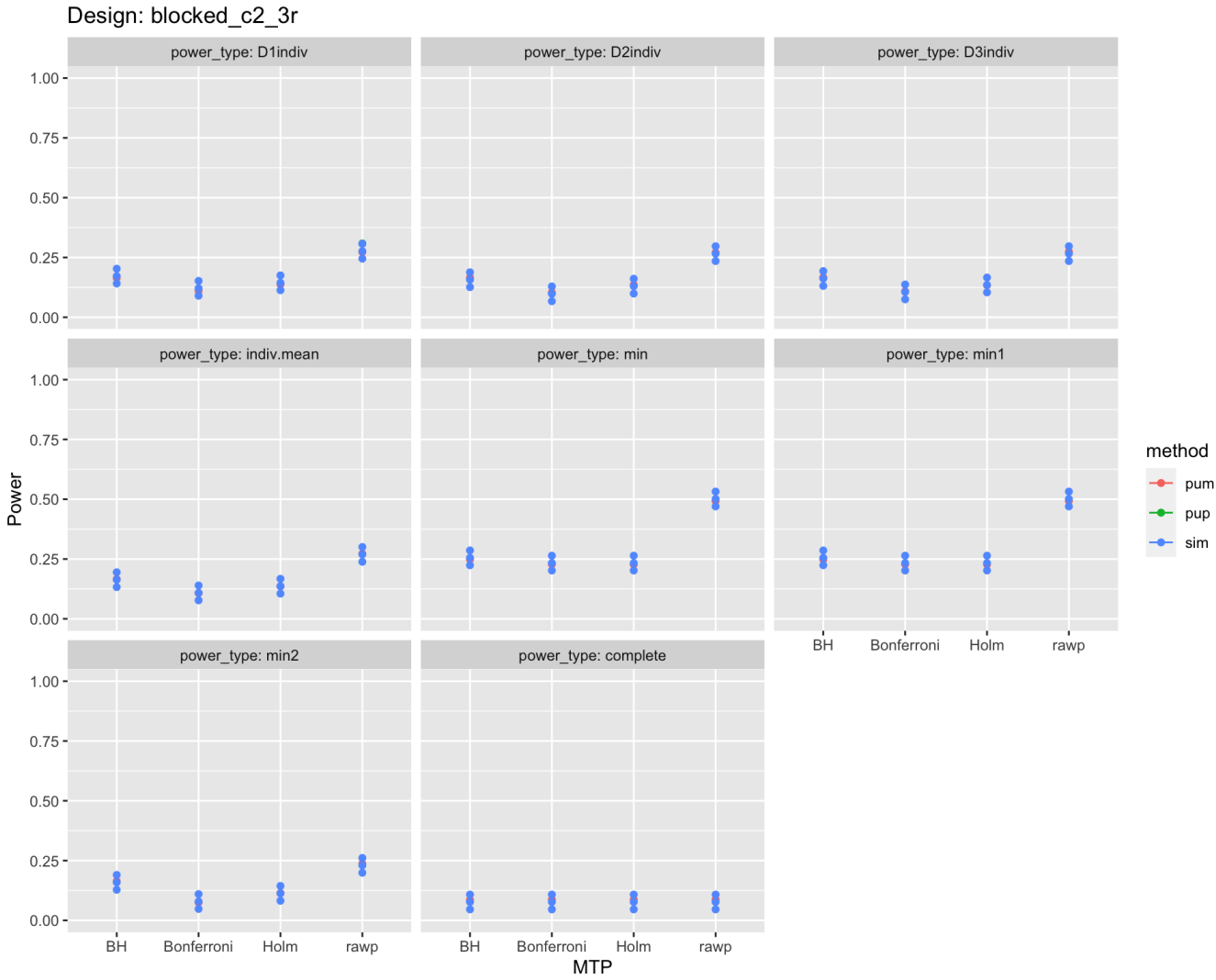- Omega: ω_2 = 0, ω_3 = 0.1

Parameters by model type:

- R23: $R_3^2 = 0$ for fixed effects model, R_3^2 = 0.1, 0.1, 0.1 for random effects model
- ICC3: $\mathrm{ICC}_3 = 0$ for fixed model, ICC_3 = 0.2, 0.2, 0.2 for random effects model
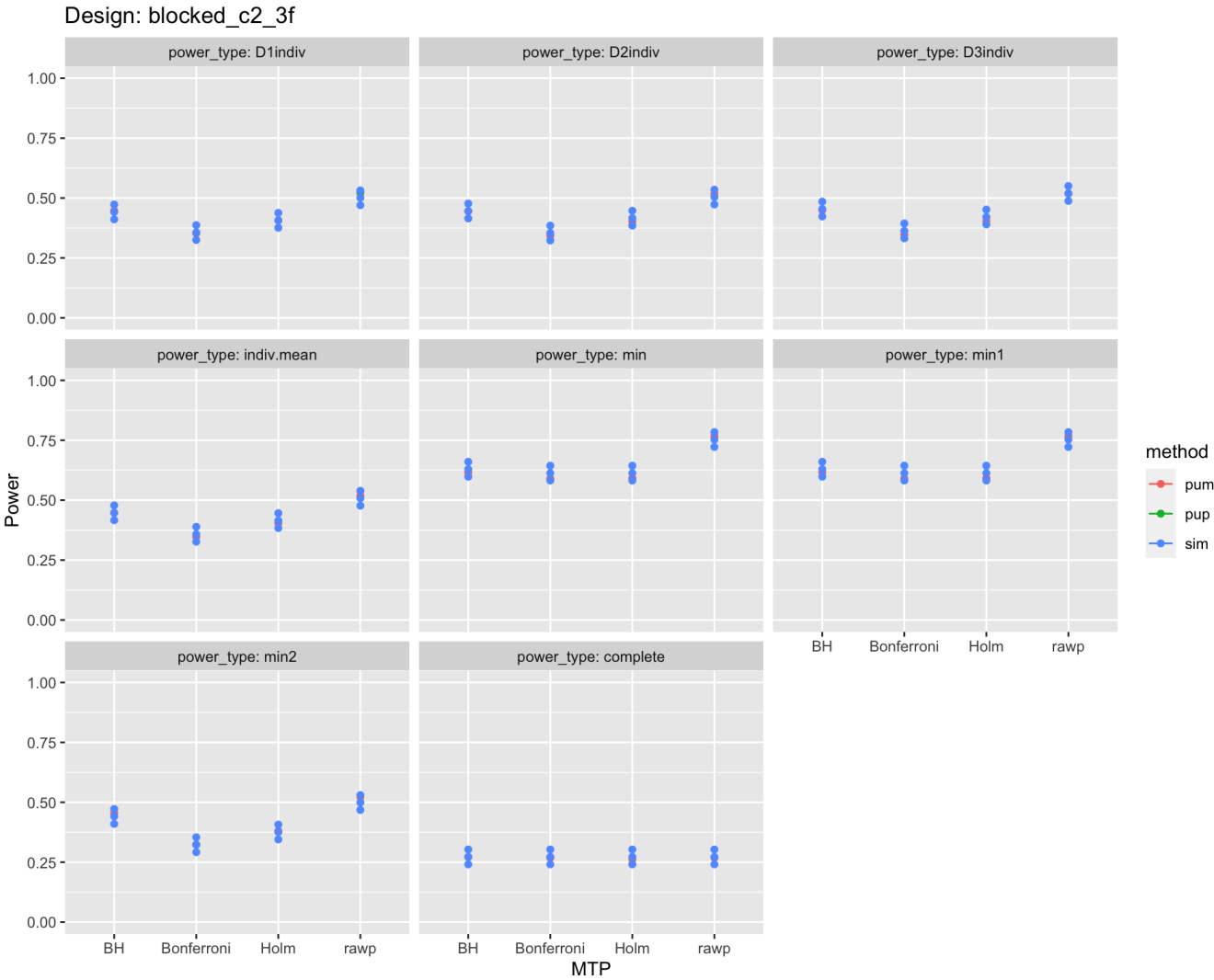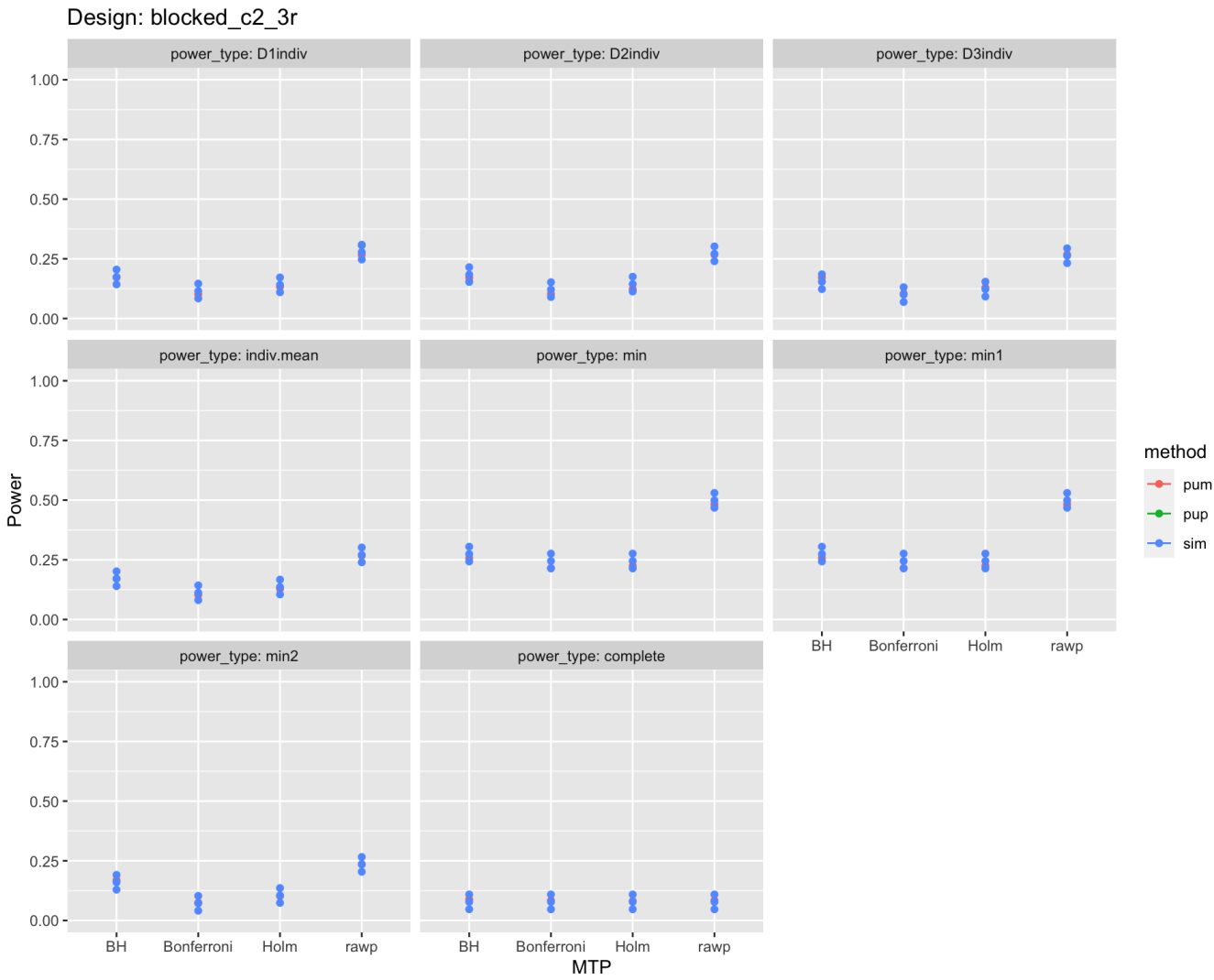
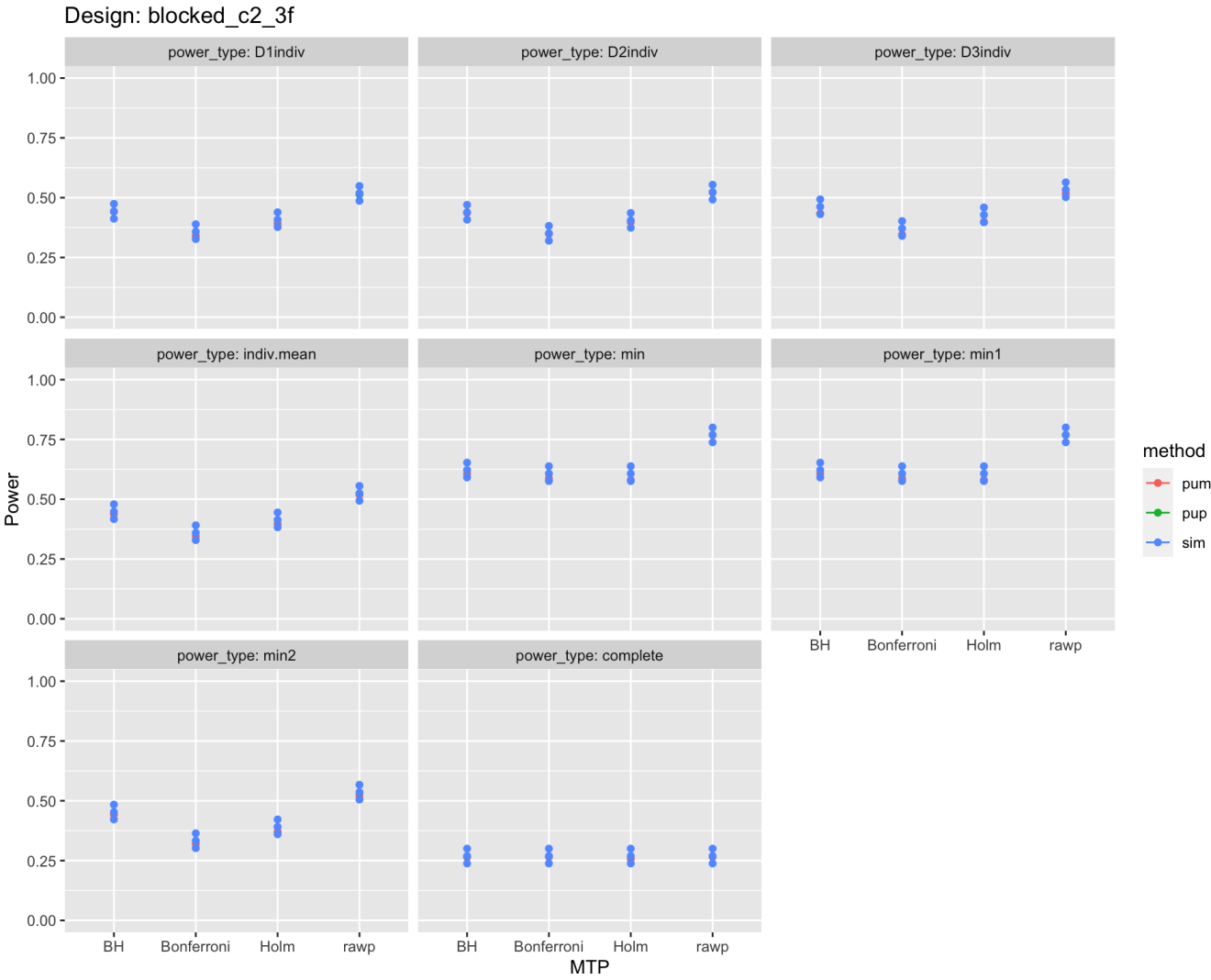# Power Validation

Varying school size

$\bar{n}$ = 100
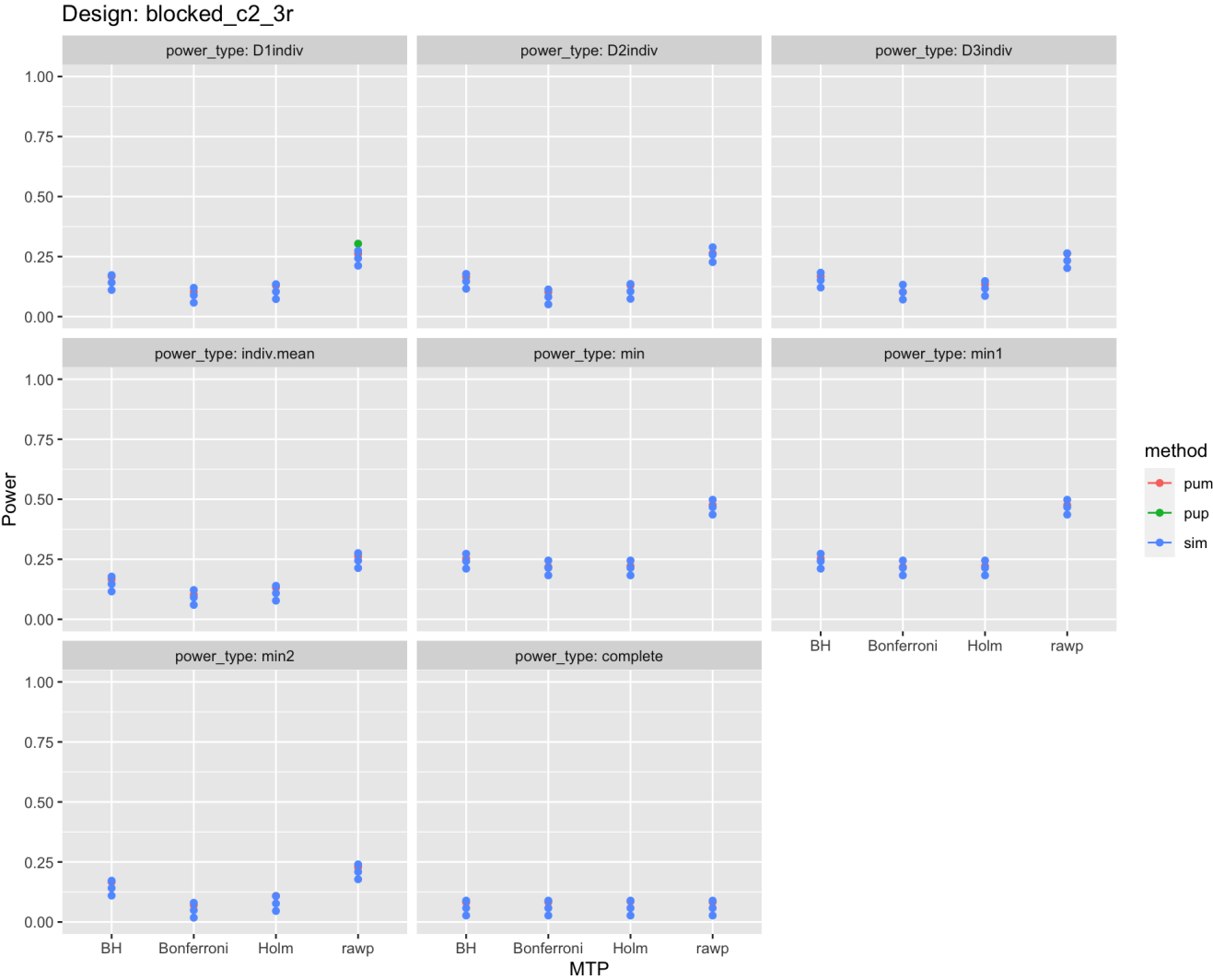
Design: blocked_c2_3f

Design: blocked_c2_3r

$\bar{n} = 75$

Design: blocked_c2_3f

Design: blocked_c2_3r

$\bar{n}$ = 50

Design: blocked_c2_3f

Design: blocked_c2_3r

Varying R2

$$R_1^2 = 0.6, 0.6, 0.6$$

Design: blocked_c2_3f

Design: blocked_c2_3r

$R_2^2 = 0.6, 0.6, 0.6$

Design: blocked_c2_3f

file:///Users/khunter/Dropbox/mordred/Power-Under-Multiplicity/Validation/rendered_docs/June 2021/validate_blocked_c2_3fr.html

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Design: blocked_c2_3r

$R_3^2 = 0.6, 0.6, 0.6$

Design: blocked_c2_3r

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

Design: blocked_c2_3f

Design: blocked_c2_3r

Varying rho

$\rho = 0.2$

Design: blocked_c2_3f

$\rho = 0.8$

Design: blocked_c2_3f
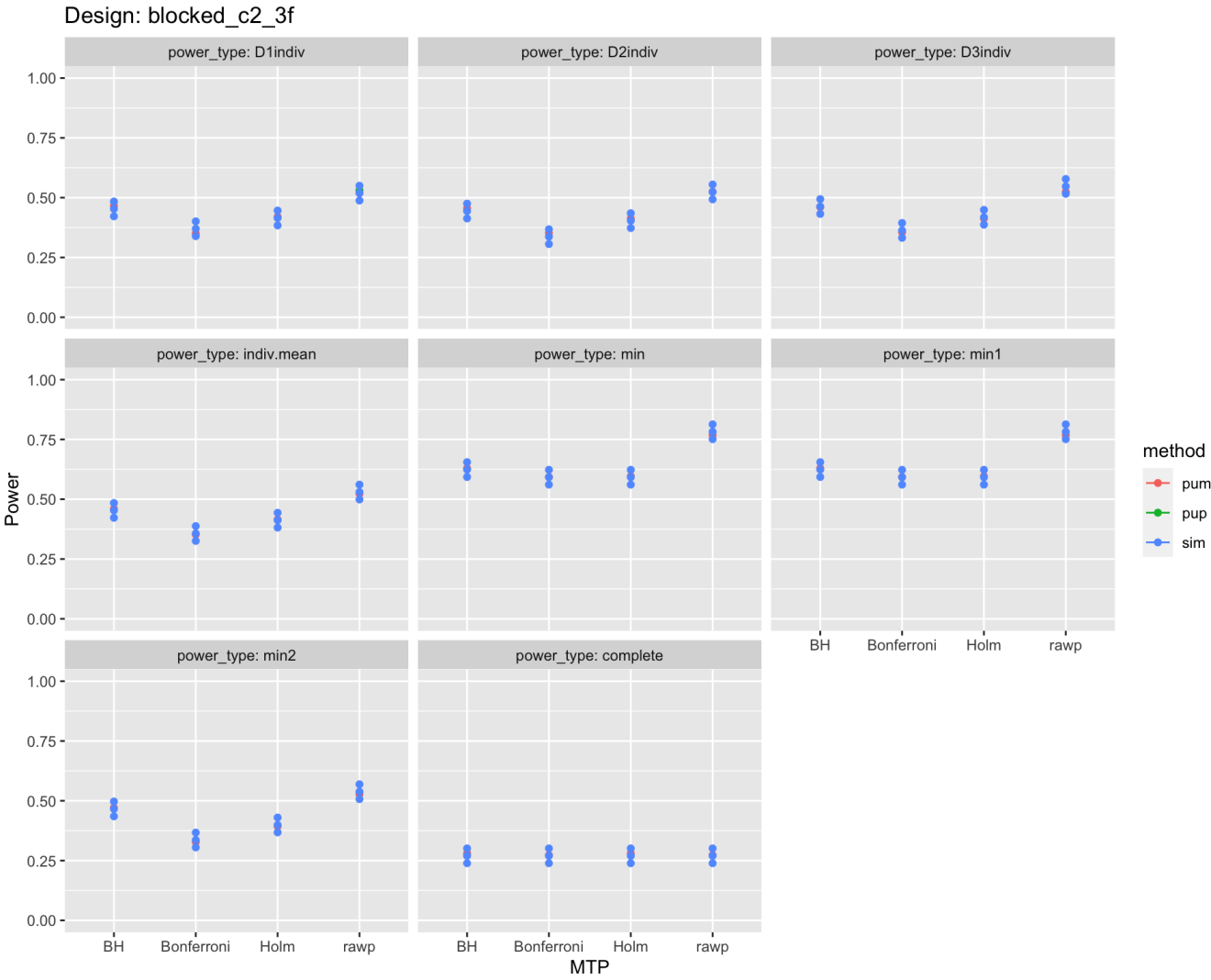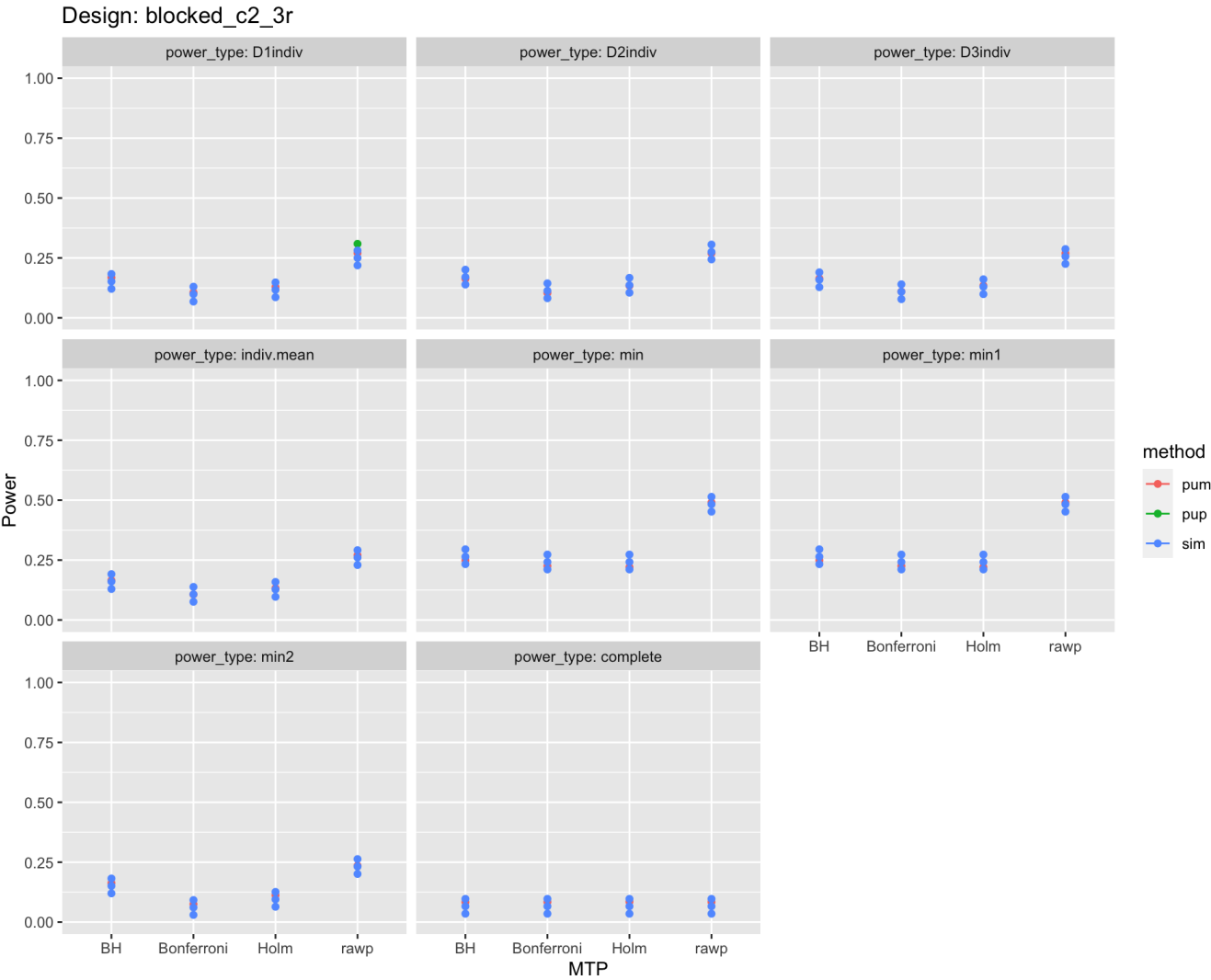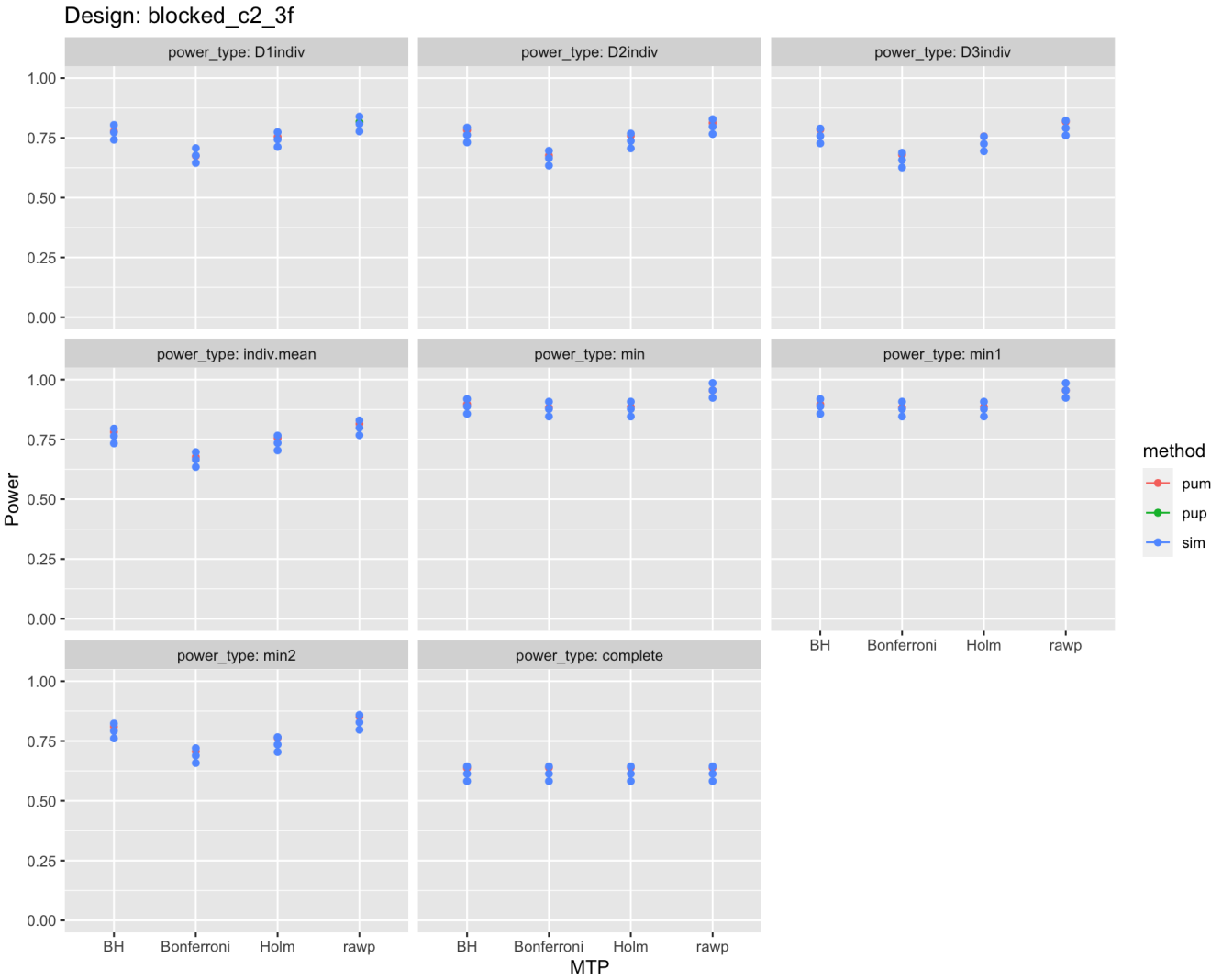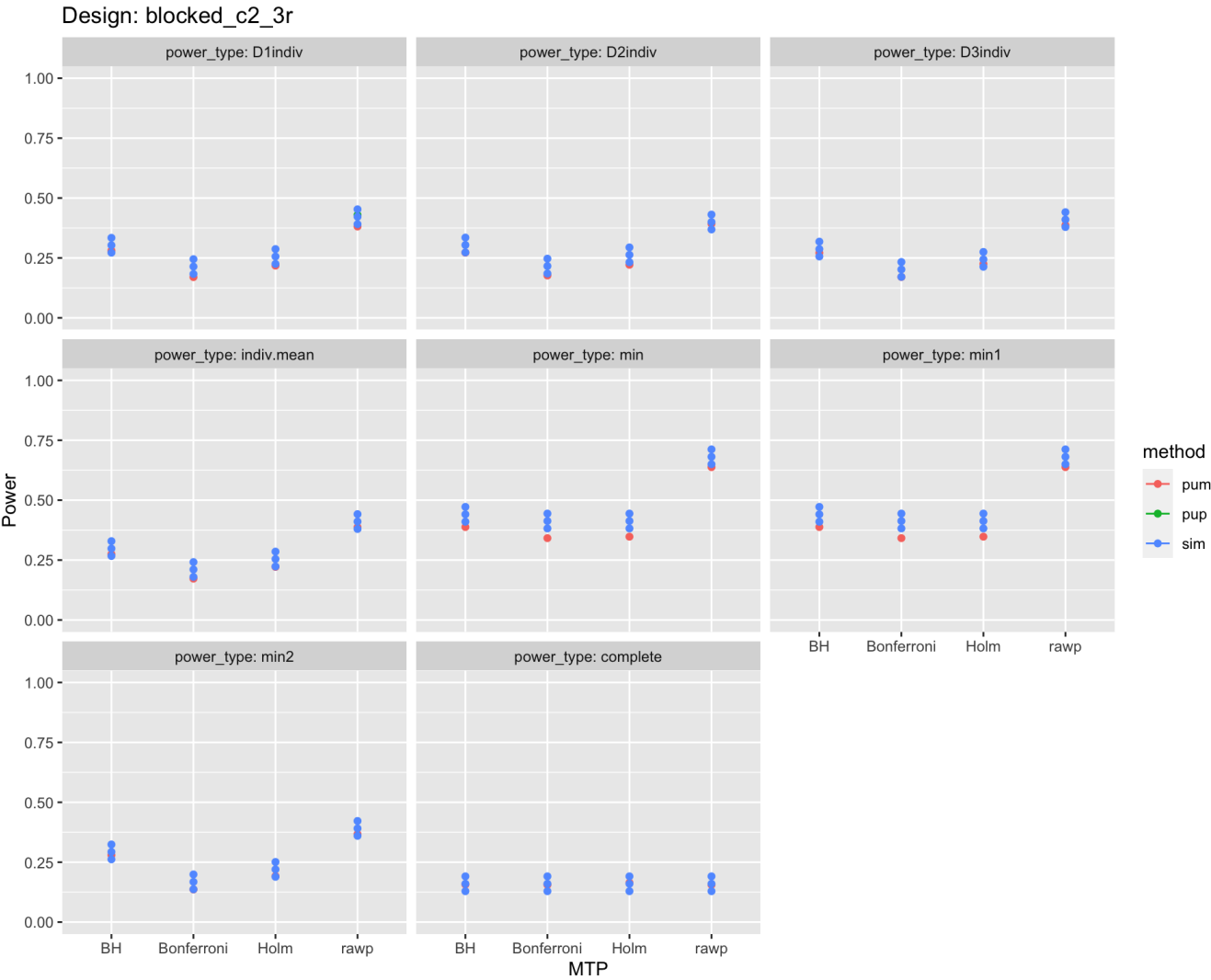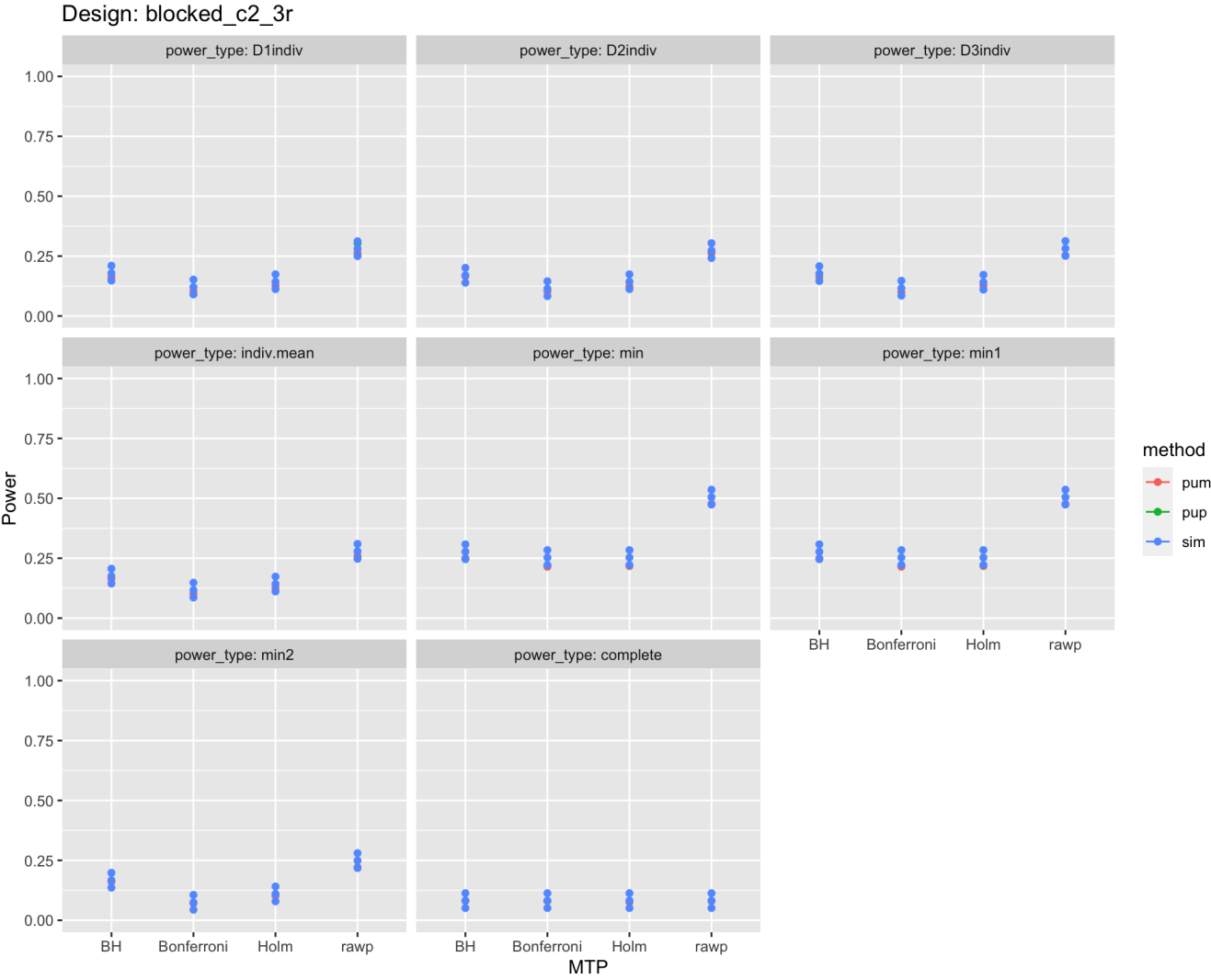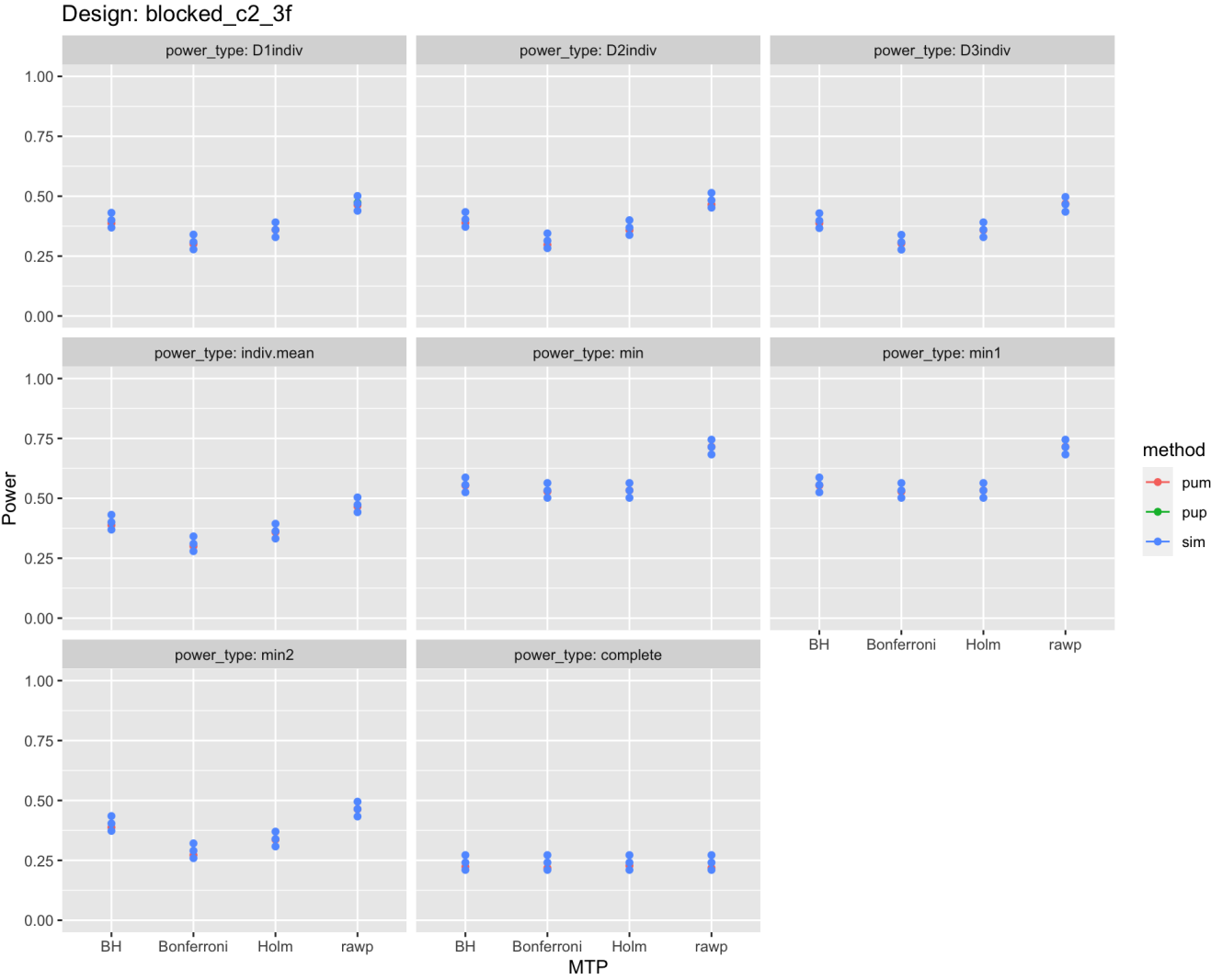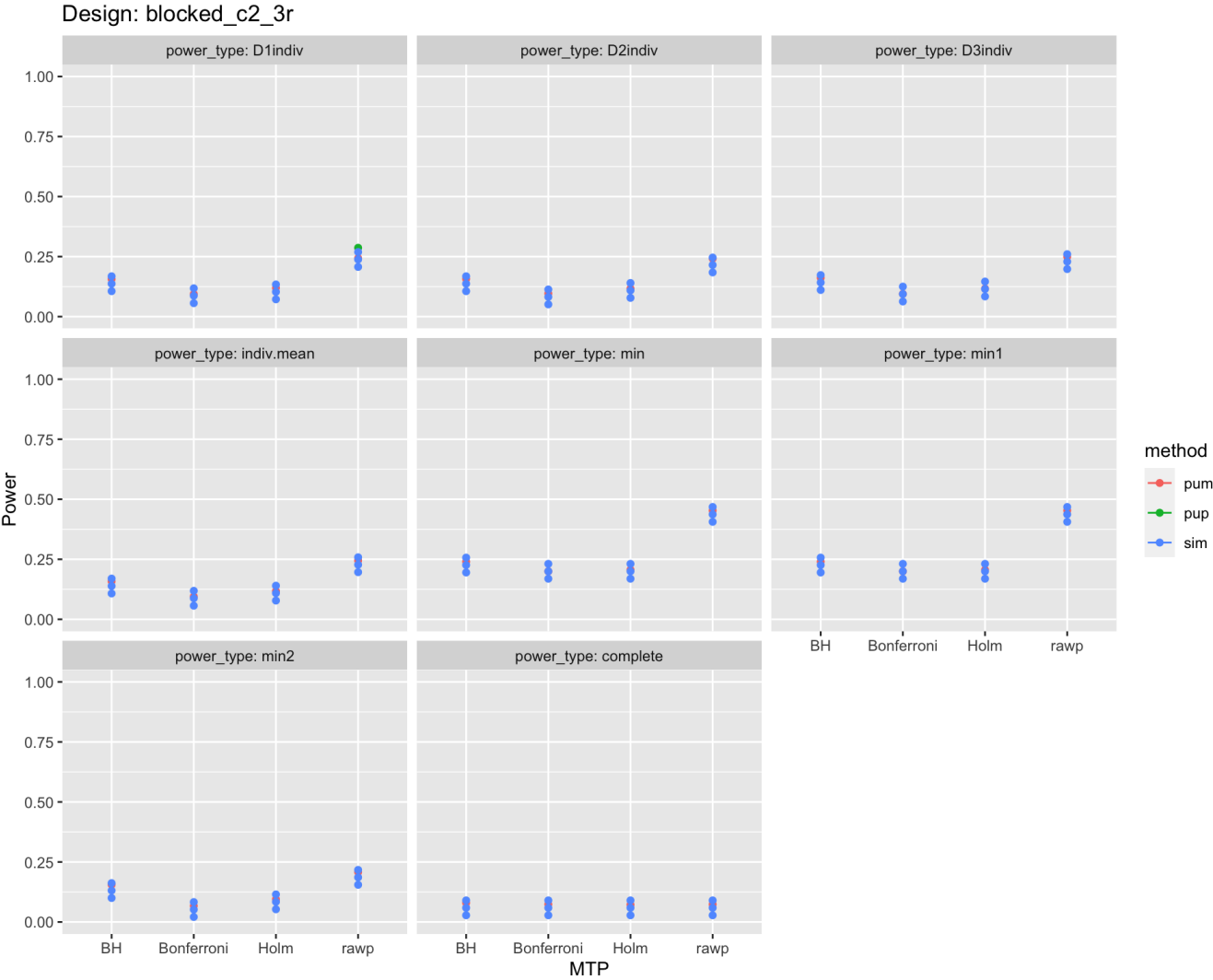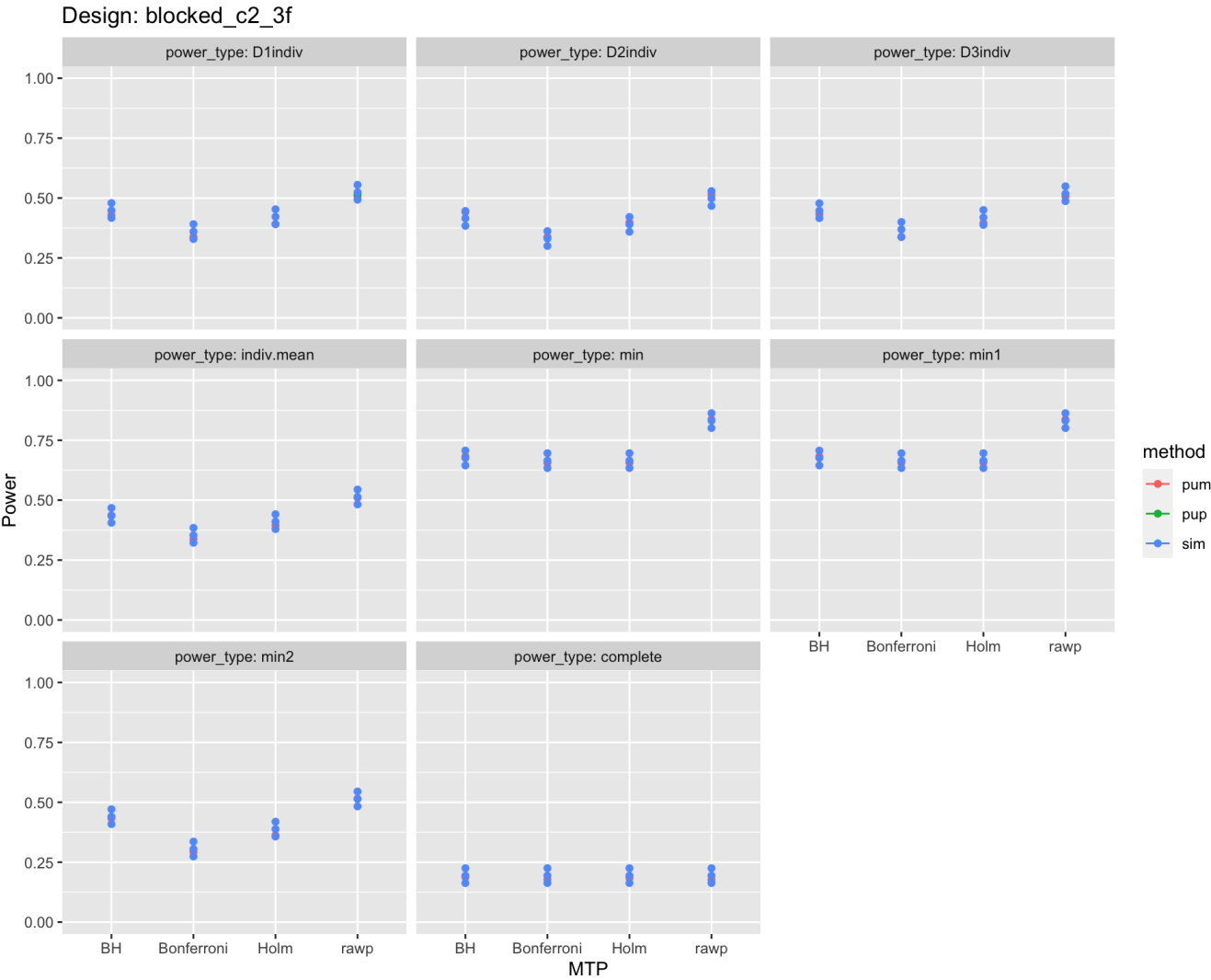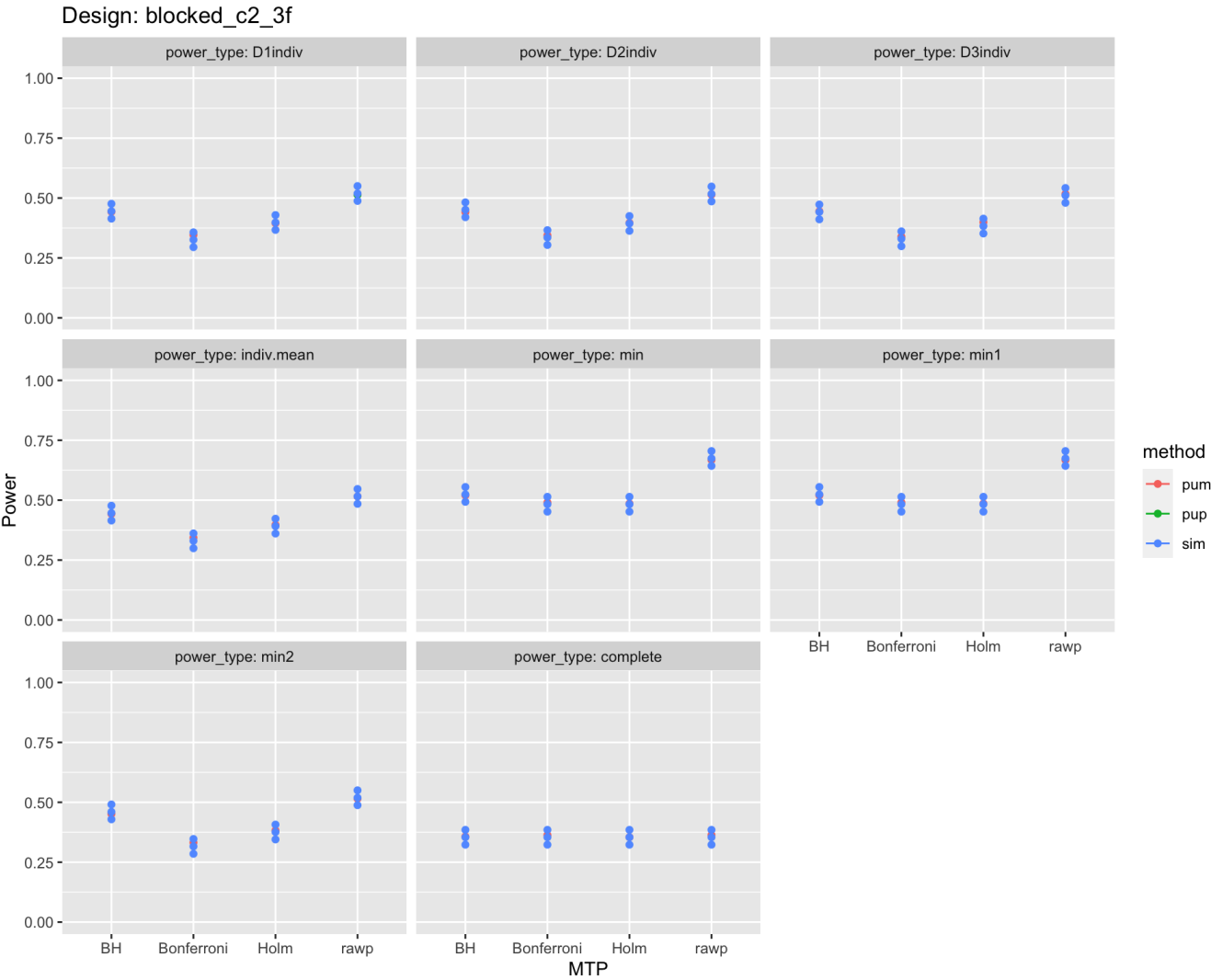
Varying true positives

ATE (ES) = 0.125, 0, 0

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Design: blocked_c2_3f

Varying ICC

ICC_2 = 0.7, 0.7, 0.7

Design: blocked_c2_3f

Design: blocked_c2_3r

ICC_3 = 0.7, 0.7, 0.7

Design: blocked_c2_3f

Design: blocked_c2_3r

Varying Omega

$\omega_3 = 0.8$

Design: blocked_c2_3f

Design: blocked_c2_3r

$\omega_3 = 0.8 \; \text{ICC}_3 = 0.7, 0.7, 0.7$

Design: blocked_c2_3f

Design: blocked_c2_3r
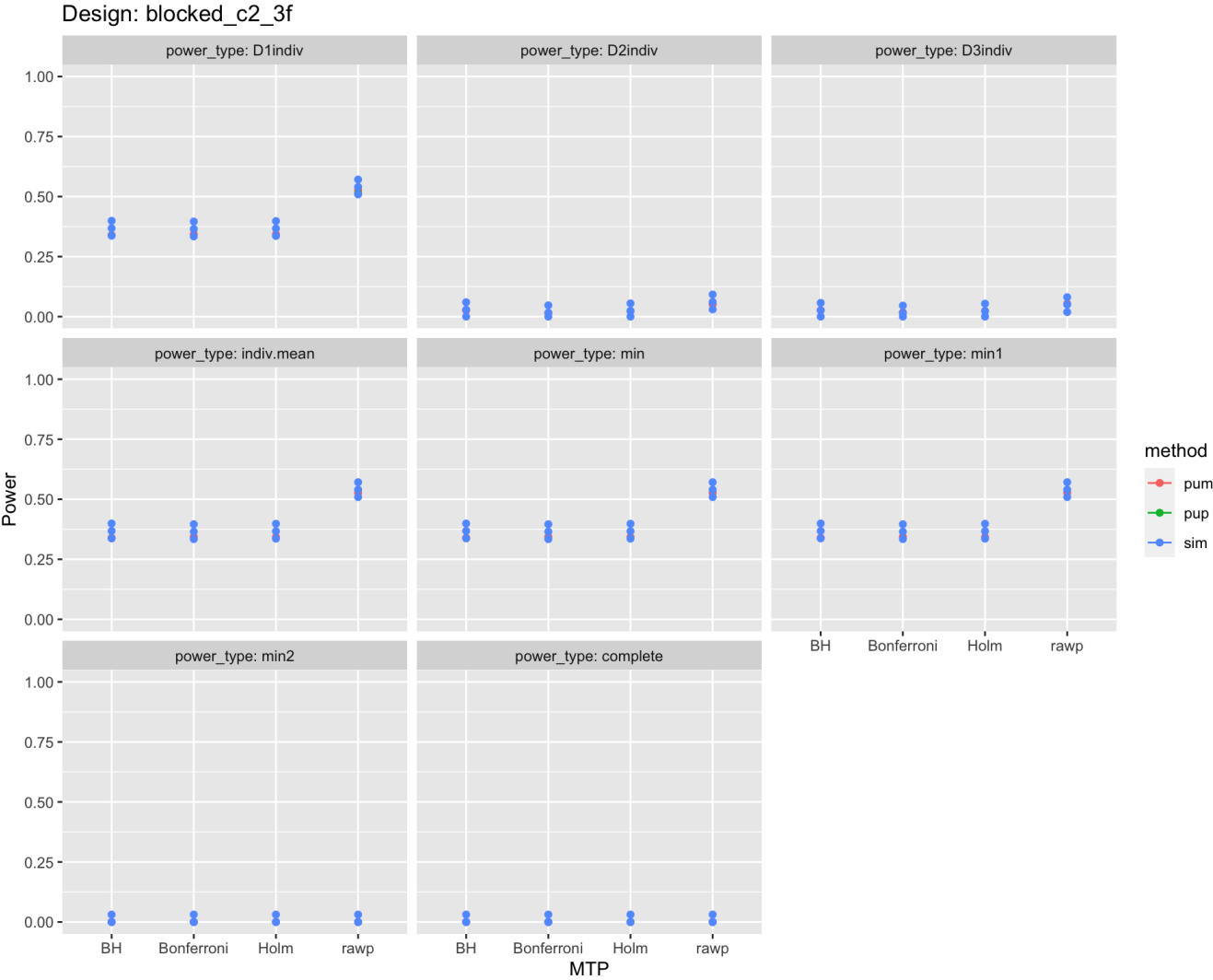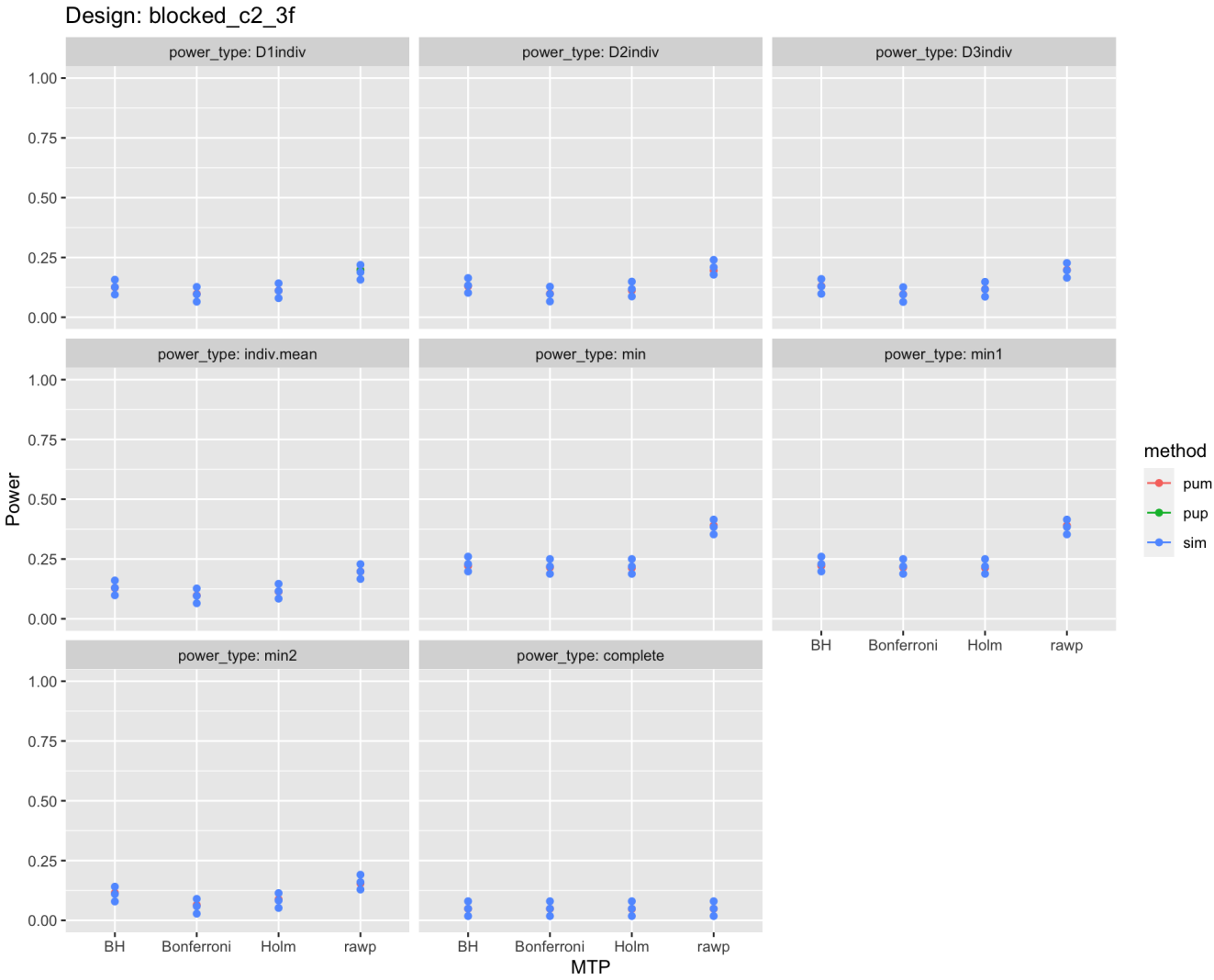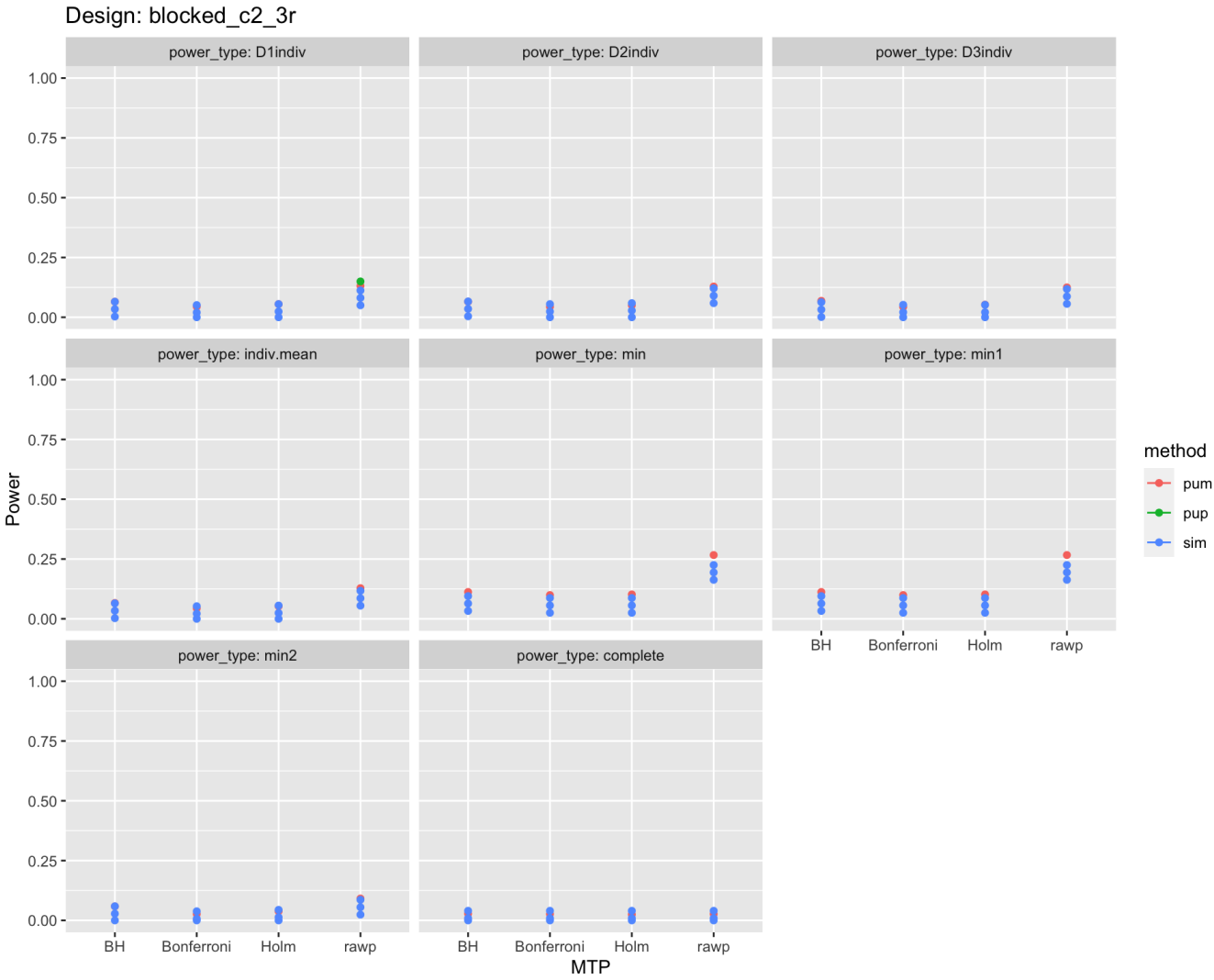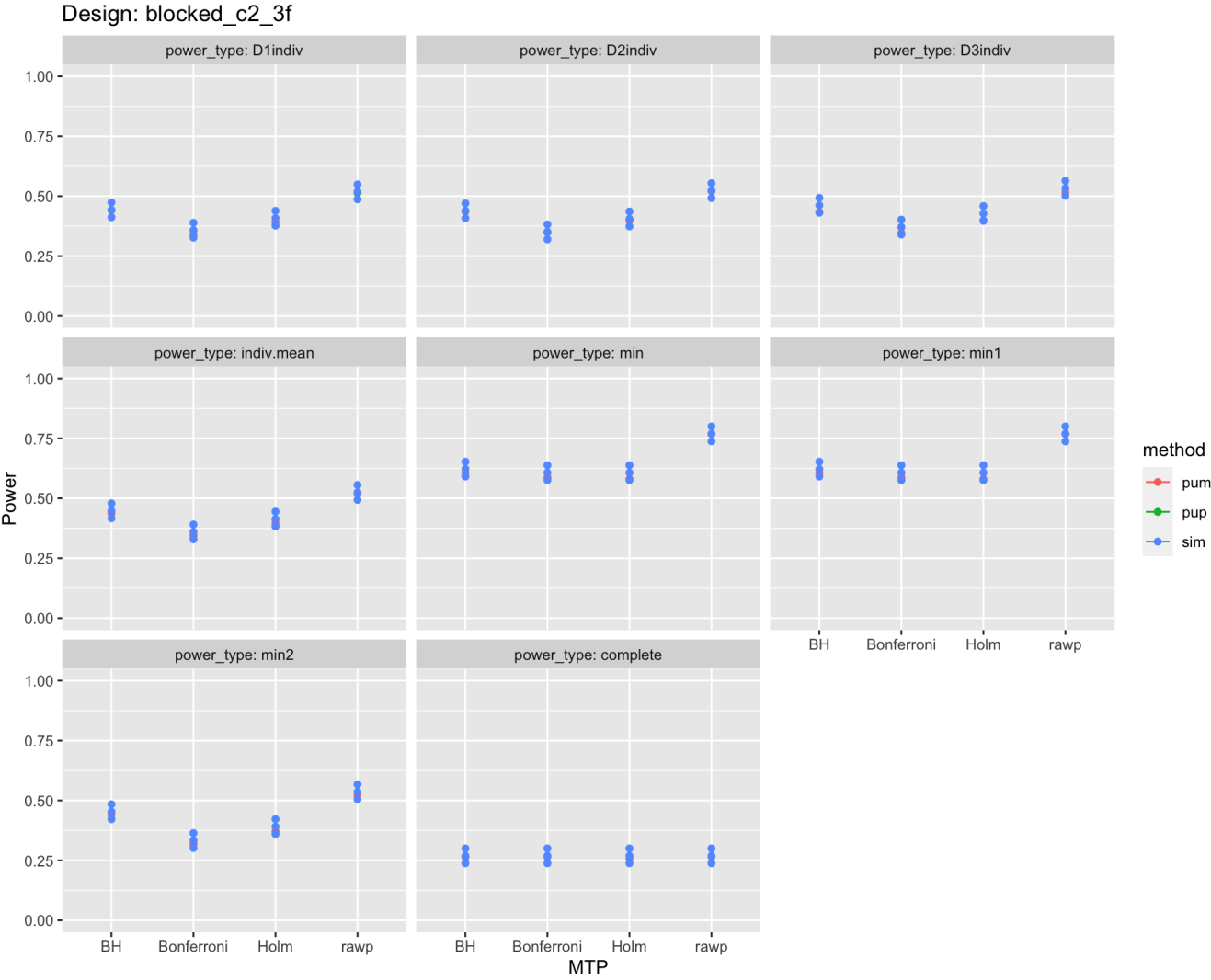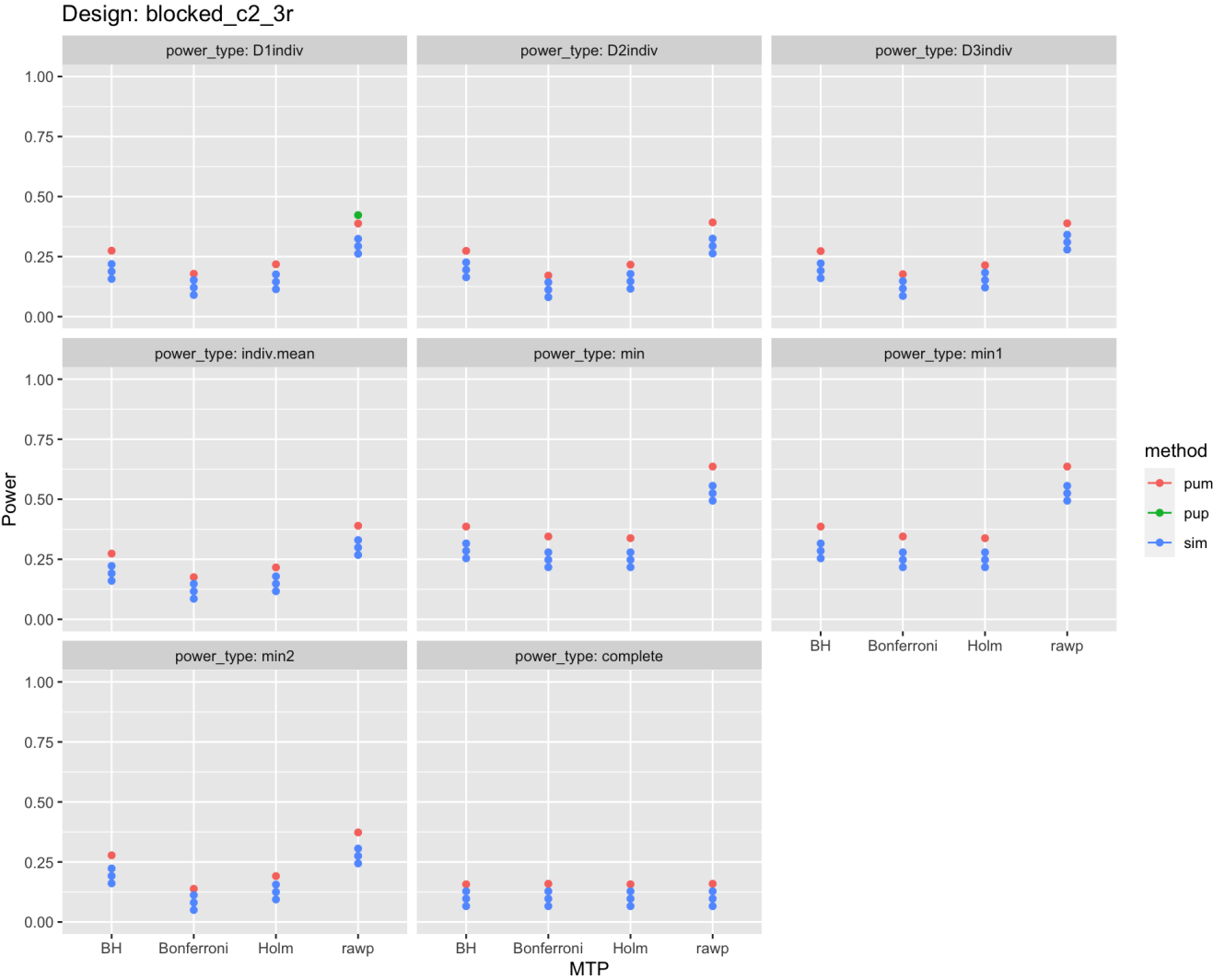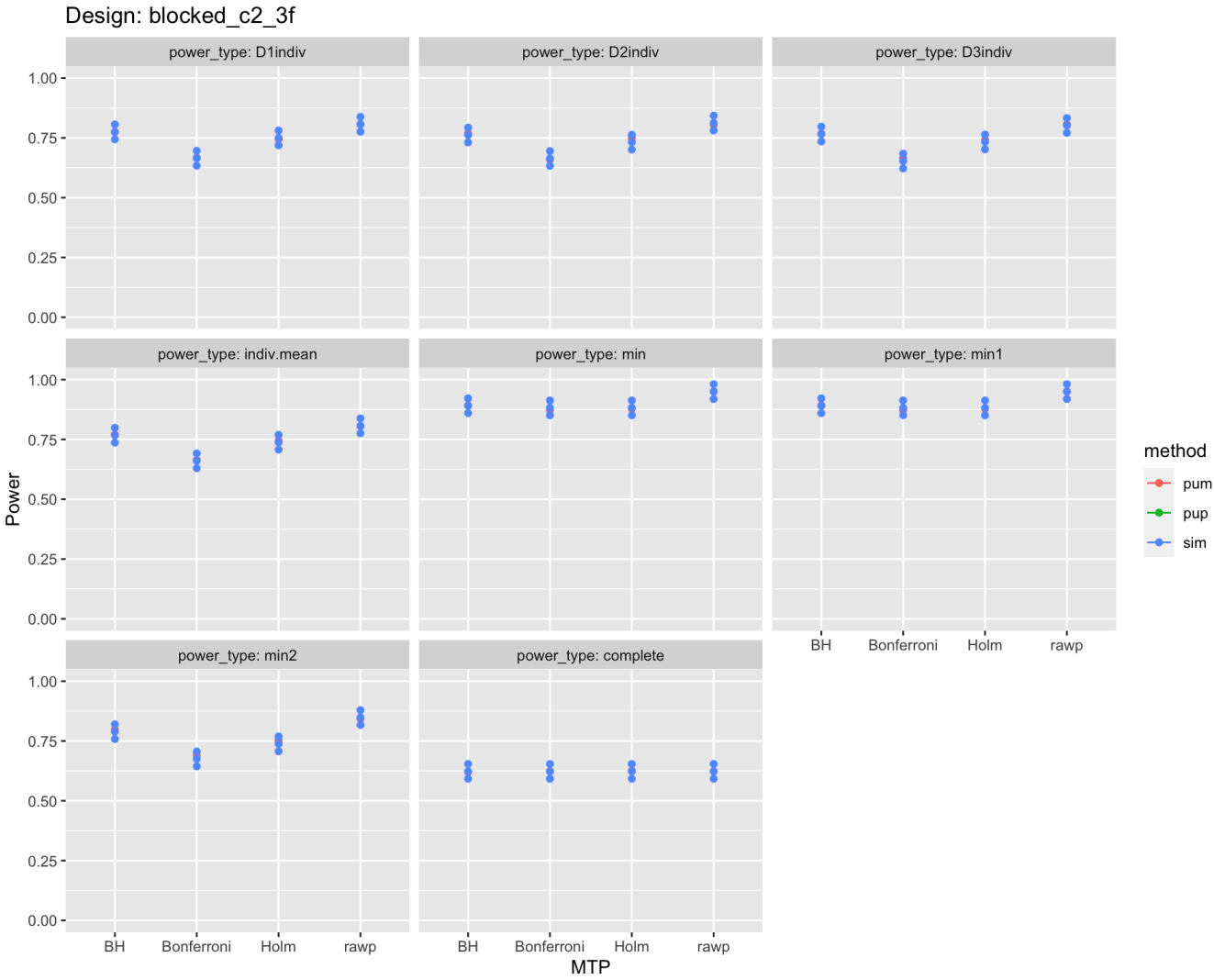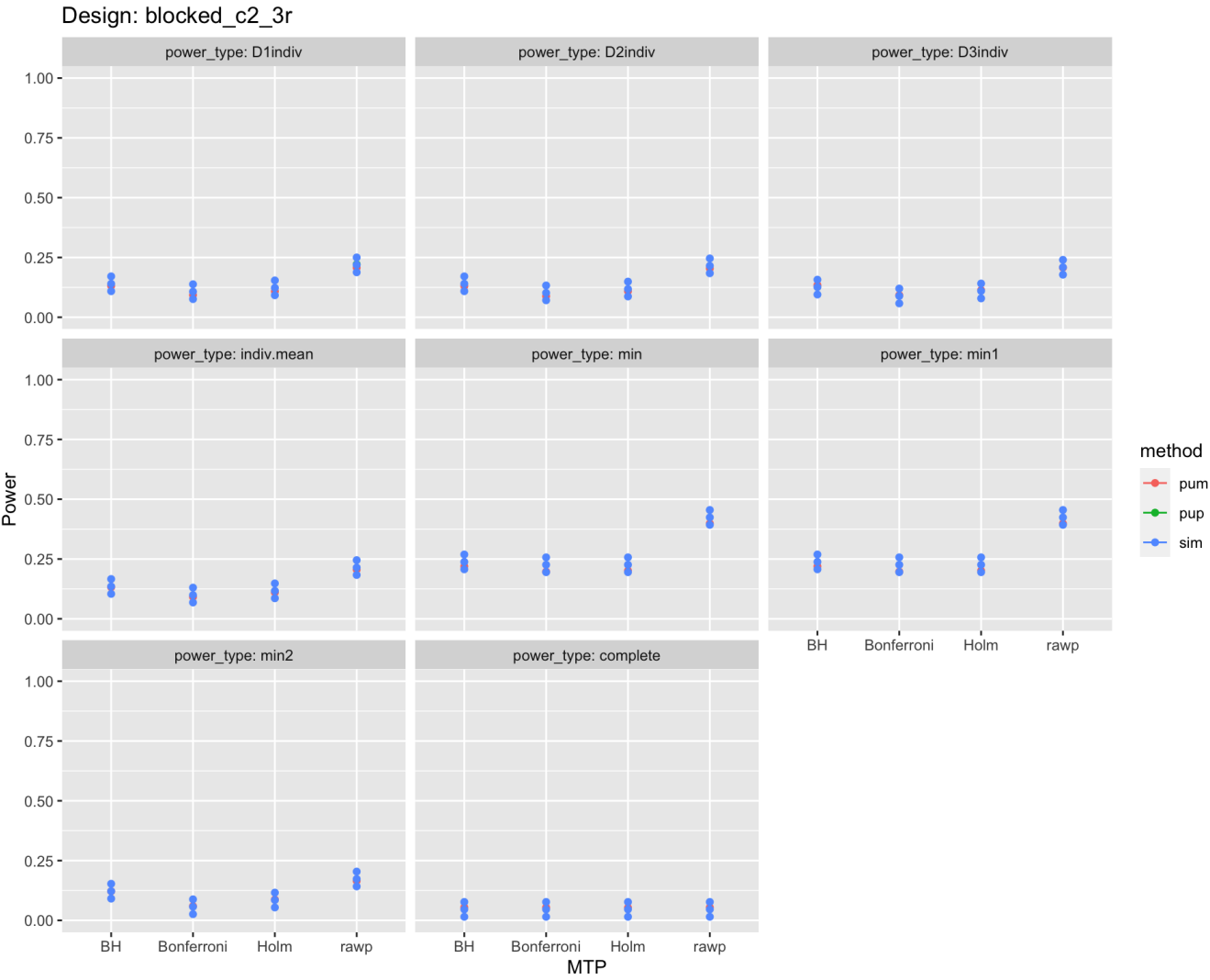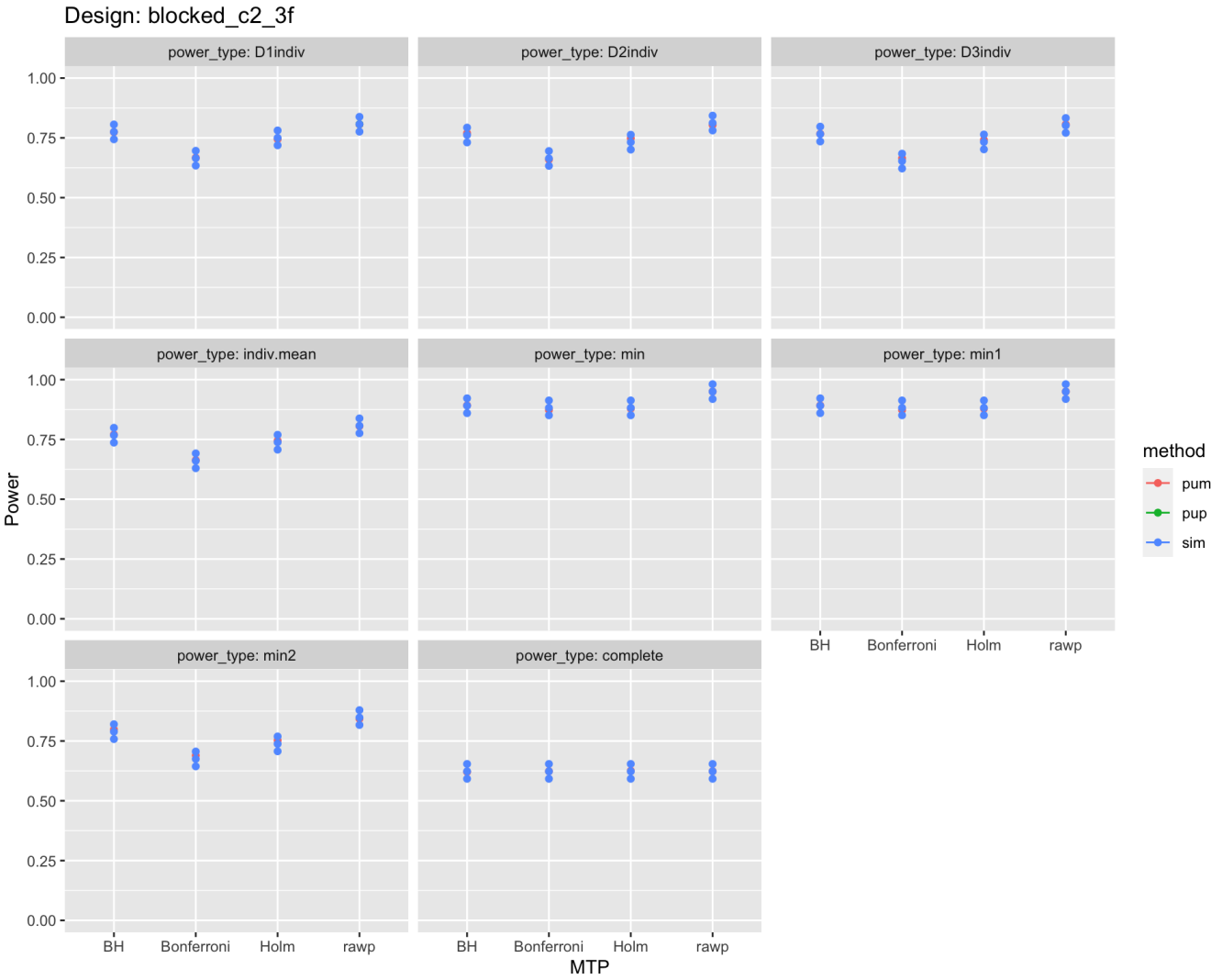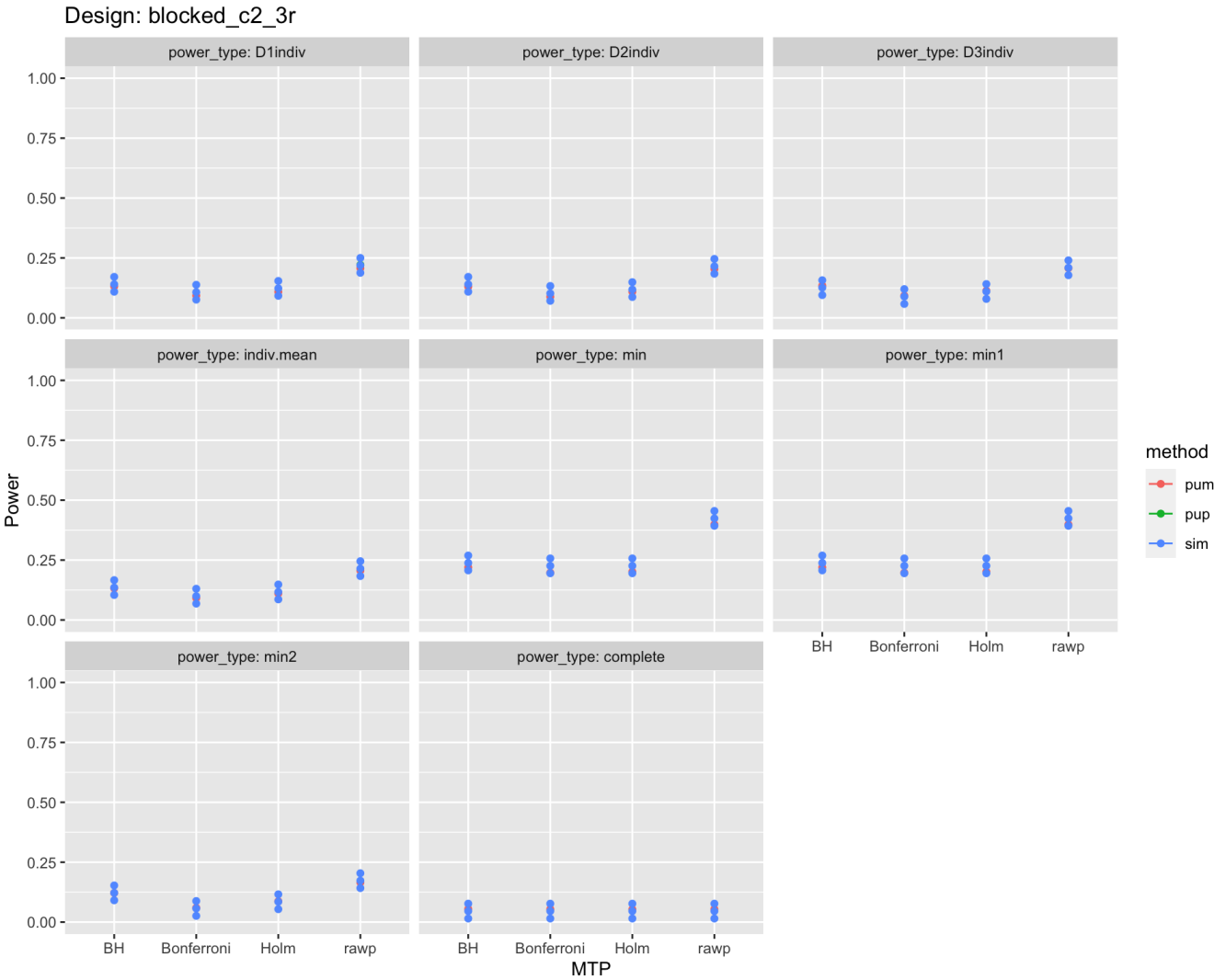
MDES validation

```
##
##
## +------------+---------------+---------------+-------------+
## |    MTP     | Adjusted MDES | D1indiv Power | Target MDES |
## +============+===============+===============+=============+
## |    rawp    |     0.126     |     0.517     |    0.125    |
## +------------+---------------+---------------+-------------+
## | Bonferroni |     0.125     |     0.34      |    0.125    |
## +------------+---------------+---------------+-------------+
## |     BH     |     0.127     |     0.447     |    0.125    |
## +------------+---------------+---------------+-------------+
## |    Holm    |     0.125     |     0.398     |    0.125    |
## +------------+---------------+---------------+-------------+
##
## Table: blocked_c2_3f
```

```
##
##
## +------------+---------------+---------------+-------------+
## |    MTP     | Adjusted MDES | D1indiv Power | Target MDES |
## +============+===============+===============+=============+
## |    rawp    |     0.125     |     0.261     |    0.125    |
## +------------+---------------+---------------+-------------+
## | Bonferroni |     0.125     |     0.104     |    0.125    |
## +------------+---------------+---------------+-------------+
## |     BH     |     0.124     |     0.161     |    0.125    |
## +------------+---------------+---------------+-------------+
## |    Holm    |     0.129     |     0.139     |    0.125    |
## +------------+---------------+---------------+-------------+
##
## Table: blocked_c2_3r
```

Sample size validation

```
##
##
## +------+-------------+-------------+---------------+-------------------+
## | MTP  | Sample type | Sample size | D1indiv power | Target sample size |
## +======+=============+=============+===============+===================+
## |  BH  |      K      |     11      |     0.441     |        10         |
## +------+-------------+-------------+---------------+-------------------+
## | Holm |      K      |     10      |     0.386     |        10         |
## +------+-------------+-------------+---------------+-------------------+
##
## Table: blocked_c2_3f
```

```
##
##
## +------+-------------+-------------+---------------+-------------------+
## | MTP  | Sample type | Sample size | D1indiv power | Target sample size |
## +======+=============+=============+===============+===================+
## |  BH  |      K      |     10      |     0.168     |        10         |
## +------+-------------+-------------+---------------+-------------------+
## | Holm |      K      |     10      |     0.125     |        10         |
## +------+-------------+-------------+---------------+-------------------+
##
## Table: blocked_c2_3r
```