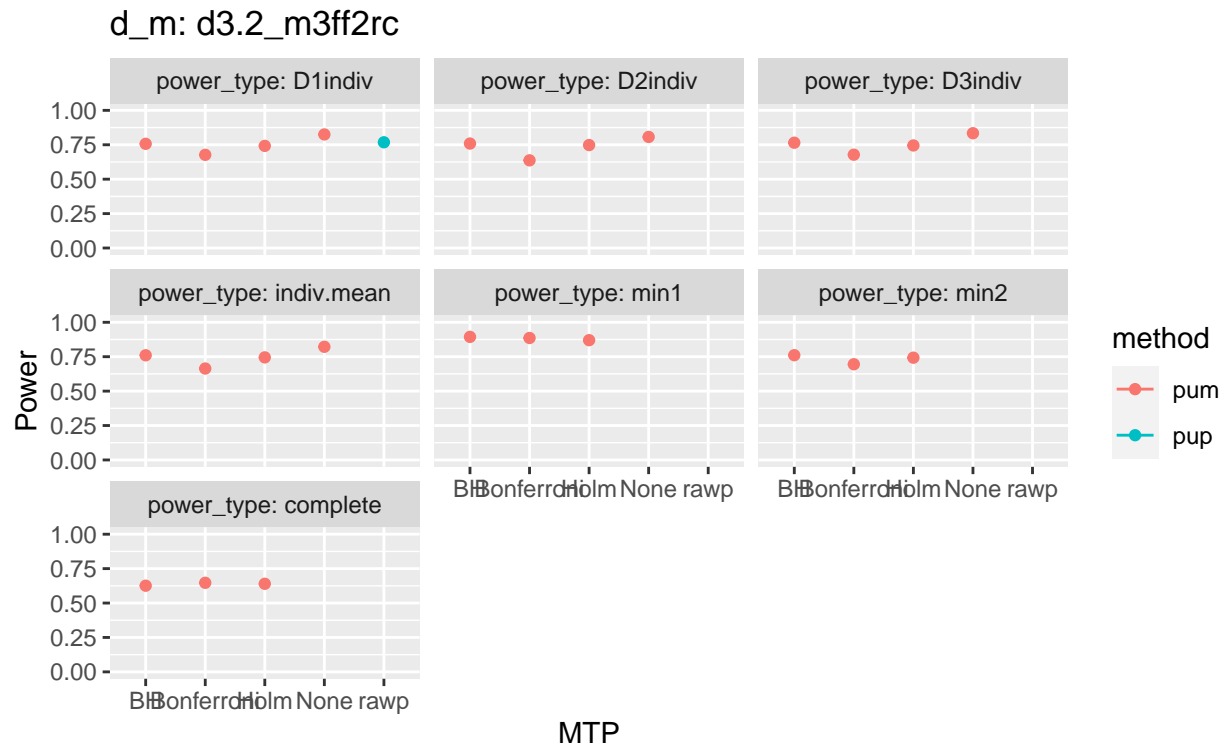
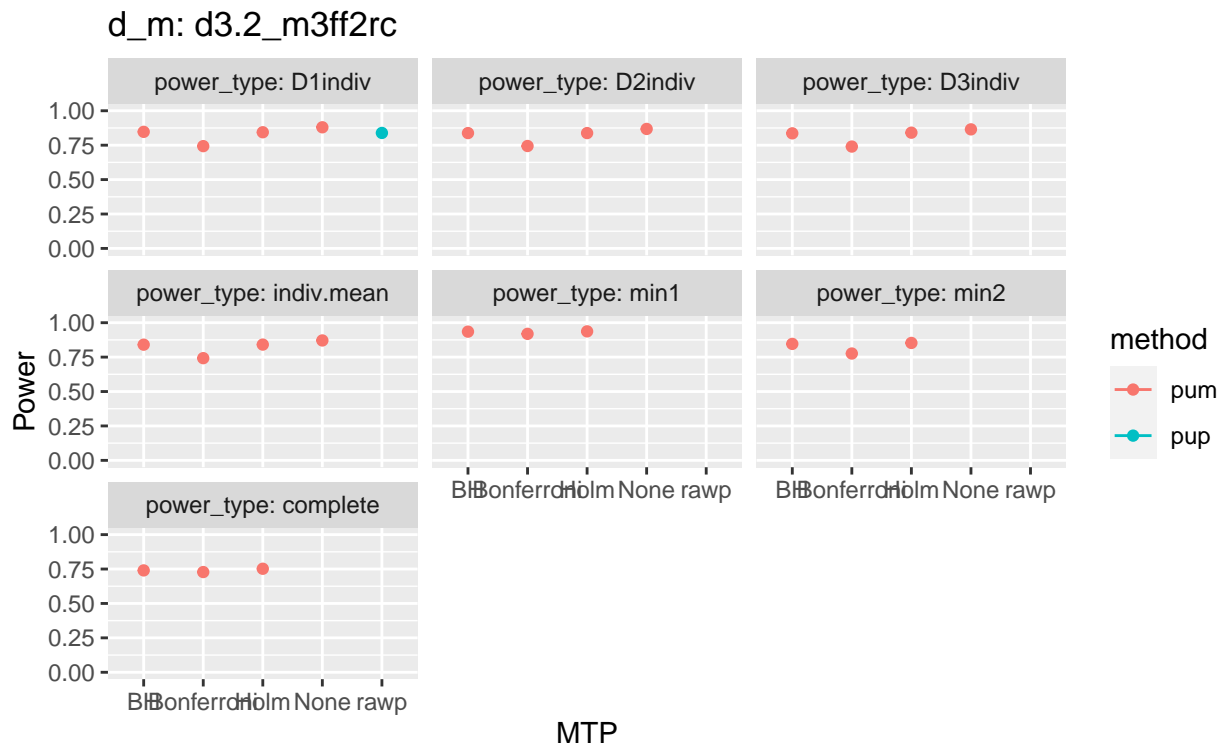
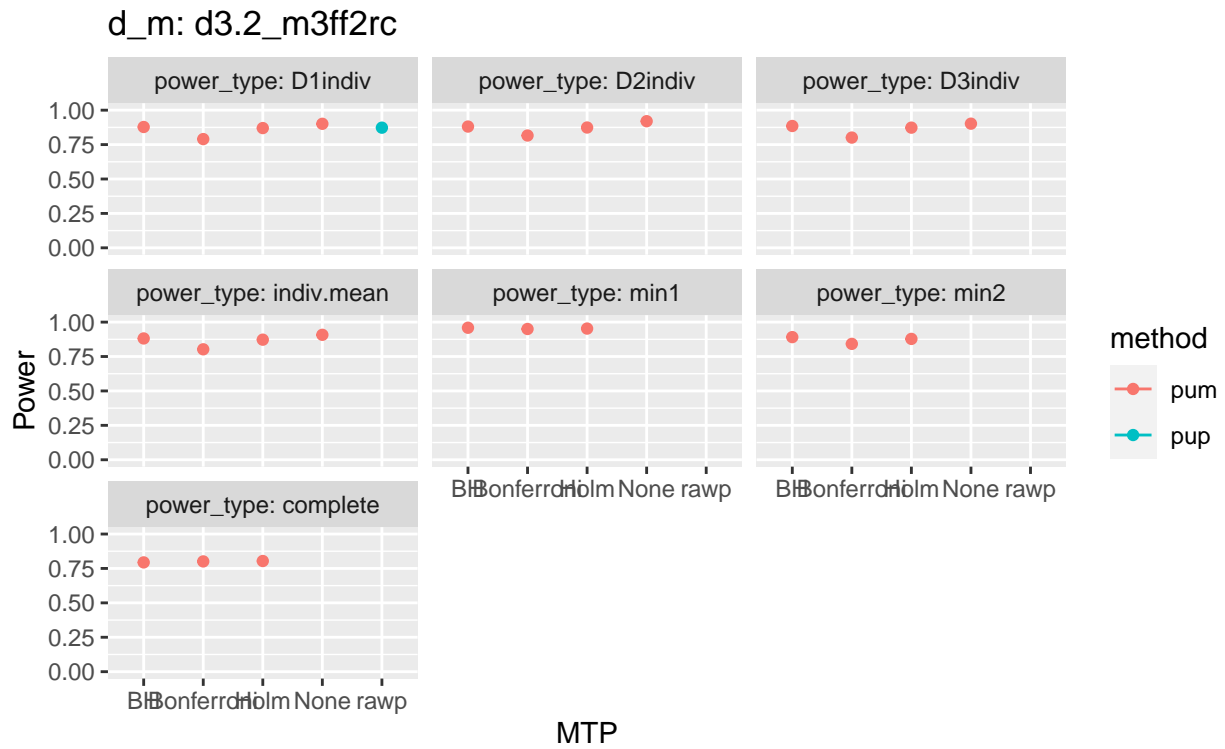


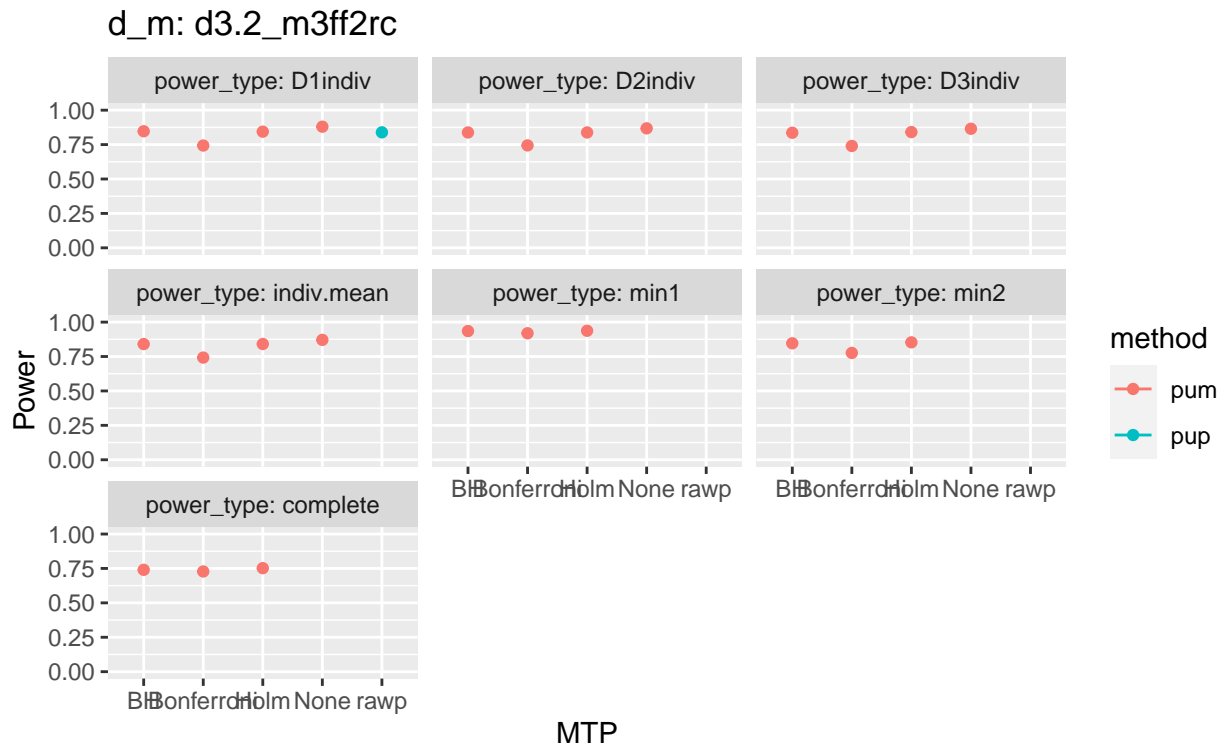
Validate Power: MDES and SS power definitions

December 25, 2021

Power Validation







MDES

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | D1indiv Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.25      |      0.213     |      0.25     |
## +-----+-----+-----+-----+
## |      BH      |      0.249     |      0.277     |      0.25     |
## +-----+-----+-----+-----+
## |      Holm     |      0.257     |      0.272     |      0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.246     |      0.394     |      0.25     |
## +-----+-----+-----+-----+
## |      BH      |      0.256     |      0.443     |      0.25     |
## +-----+-----+-----+-----+
## |      Holm     |      0.25      |      0.408     |      0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min2 Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.244     |    0.164    |      0.25    |
## +-----+-----+-----+-----+
## |      BH      |      0.26      |    0.287    |      0.25    |
## +-----+-----+-----+-----+
## |      Holm     |      0.254     |    0.239    |      0.25    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.241     |    0.145    |      0.25    |
## +-----+-----+-----+-----+
## |      BH      |      0.249     |    0.162    |      0.25    |
## +-----+-----+-----+-----+
## |      Holm     |      0.262     |    0.189    |      0.25    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

Sample Size

Sample Size J

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | Dlindiv.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      44     |      0.213    |
## +-----+-----+-----+-----+
## |      BH      |      J      |     225     |      0.29     |
## +-----+-----+-----+-----+
## |      Holm     |      J      |     1500    |      0.268    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      13     |      0.382    |
## +-----+-----+-----+-----+
```

```
## |      BH      |      J      |      2250      |      0.433      |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      NA      |      NA      |
## +-----+-----+-----+-----+
```

```
##
```

```
## Table: d3.3_m3rc2rc
```

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      107      |      0.18      |
## +-----+-----+-----+-----+
## |      BH      |      J      |      NA      |      NA      |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      11391     |      0.235      |
## +-----+-----+-----+-----+
```

```
##
```

```
## Table: d3.3_m3rc2rc
```

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      15      |      0.1515      |
## +-----+-----+-----+-----+
## |      BH      |      J      |      102      |      0.167      |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      NA      |      NA      |
## +-----+-----+-----+-----+
```

```
##
```

```
## Table: d3.3_m3rc2rc
```

Sample Size K

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | D1indiv.power |
## +-----+-----+-----+-----+
## | Bonferroni |      K      |      20      |      0.213      |
## +-----+-----+-----+-----+
## |      BH      |      K      |      20      |      0.2781      |
## +-----+-----+-----+-----+
## |      Holm     |      K      |      22      |      0.2849      |
## +-----+-----+-----+-----+
```

```
##
```

```
## Table: d3.3_m3rc2rc
```

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
```

```
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      20      |      0.3881   |
## +-----+-----+-----+-----+
## |      BH      |      K      |      22      |      0.4494   |
## +-----+-----+-----+-----+
## |      Holm      |      K      |      21      |      0.4104   |
## +-----+-----+-----+-----+
##
```

Table: d3.3_m3rc2rc

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      20      |      0.1764   |
## +-----+-----+-----+-----+
## |      BH      |      K      |      22      |      0.2839   |
## +-----+-----+-----+-----+
## |      Holm      |      K      |      21      |      0.2414   |
## +-----+-----+-----+-----+
##
```

Table: d3.3_m3rc2rc

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      20      |      0.1545   |
## +-----+-----+-----+-----+
## |      BH      |      K      |      21      |      0.1719   |
## +-----+-----+-----+-----+
## |      Holm      |      K      |      22      |      0.1774   |
## +-----+-----+-----+-----+
##
```

Table: d3.3_m3rc2rc

Sample Size nbar

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | D1indiv.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar    |      156.5   |      0.213     |
## +-----+-----+-----+-----+
## |      BH      |      nbar    |      11      |      0.2796     |
## +-----+-----+-----+-----+
## |      Holm      |      nbar    |      NA      |      NA        |
## +-----+-----+-----+-----+
##
```

Table: d3.3_m3rc2rc

##

```
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar      |      6      |    0.3939    |
## +-----+-----+-----+-----+
## |      BH      |      nbar      |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      Holm     |      nbar      |    75938    |    0.4071    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar      |    15000    |    0.1766    |
## +-----+-----+-----+-----+
## |      BH      |      nbar      |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      Holm     |      nbar      | 14778919    |    0.2316    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar      |      4      |    0.1505    |
## +-----+-----+-----+-----+
## |      BH      |      nbar      |    33750    |    0.1652    |
## +-----+-----+-----+-----+
## |      Holm     |      nbar      |      NA     |      NA     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

Changing correlation

correlation = 0

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |    0.2459     |    0.3937   |    0.25     |
## +-----+-----+-----+-----+
## |      BH      |    0.2564     |    0.443    |    0.25     |
## +-----+-----+-----+-----+
```

```

## +-----+-----+-----+-----+
## |      Holm      |      0.2503      |      0.4077      |      0.25      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.2408      |      0.1447      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.2494      |      0.162       |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.2618      |      0.1887      |      0.25      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      13      |      0.3818  |
## +-----+-----+-----+-----+
## |      BH      |      J      |      2250     |      0.4333  |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      NA      |      NA      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      107     |      0.1801  |
## +-----+-----+-----+-----+
## |      BH      |      J      |      NA      |      NA      |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      11391    |      0.2349  |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

```

correlation = 0.8

```

##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +-----+-----+-----+-----+

```



```

## | Bonferroni |    0.2459    |    0.3937    |    0.25    |
## +-----+-----+-----+-----+
## |      BH      |    0.2564    |    0.443     |    0.25    |
## +-----+-----+-----+-----+
## |      Holm     |    0.2503    |    0.4077    |    0.25    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |    0.2408    |    0.1447    |    0.25    |
## +-----+-----+-----+-----+
## |      BH      |    0.2494    |    0.162     |    0.25    |
## +-----+-----+-----+-----+
## |      Holm     |    0.2618    |    0.1887    |    0.25    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      13     |    0.3818   |
## +-----+-----+-----+-----+
## |      BH      |      J      |     2250    |    0.4333   |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      NA     |      NA     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      107    |    0.1801   |
## +-----+-----+-----+-----+
## |      BH      |      J      |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      Holm     |      J      |     11391   |    0.2349   |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

```

correlation = 1

```

##
##

```

```

## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |    0.2459    |    0.3937   |    0.25     |
## +-----+-----+-----+-----+
## |      BH      |    0.2564    |    0.443    |    0.25     |
## +-----+-----+-----+-----+
## |      Holm     |    0.2503    |    0.4077   |    0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |    0.2408    |    0.1447    |    0.25     |
## +-----+-----+-----+-----+
## |      BH      |    0.2494    |    0.162     |    0.25     |
## +-----+-----+-----+-----+
## |      Holm     |    0.2618    |    0.1887    |    0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      13     |    0.3818   |
## +-----+-----+-----+-----+
## |      BH      |      J      |     2250    |    0.4333   |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      NA     |      NA     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      107    |    0.1801   |
## +-----+-----+-----+-----+
## |      BH      |      J      |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      Holm     |      J      |     11391   |    0.2349   |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

```