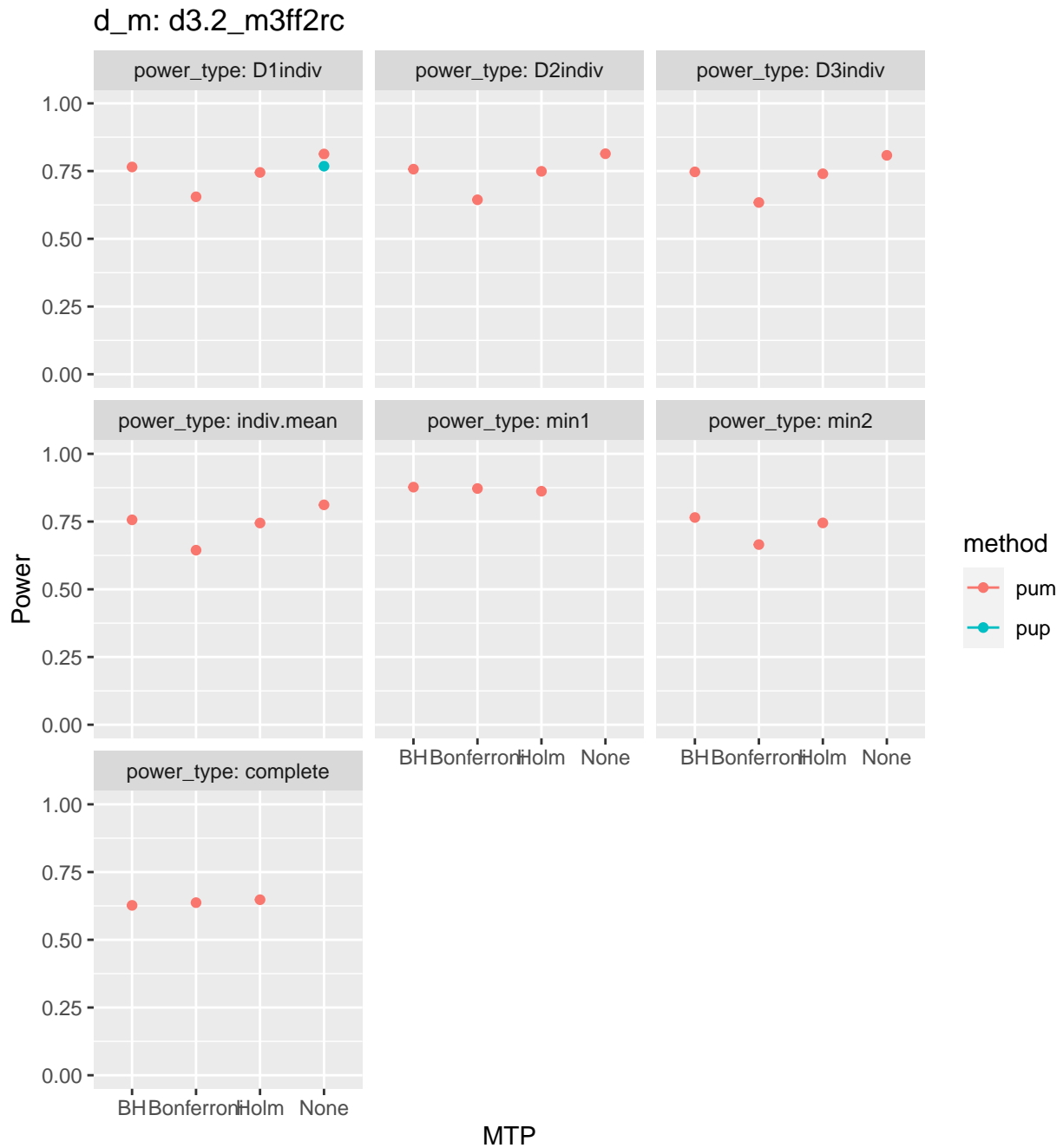
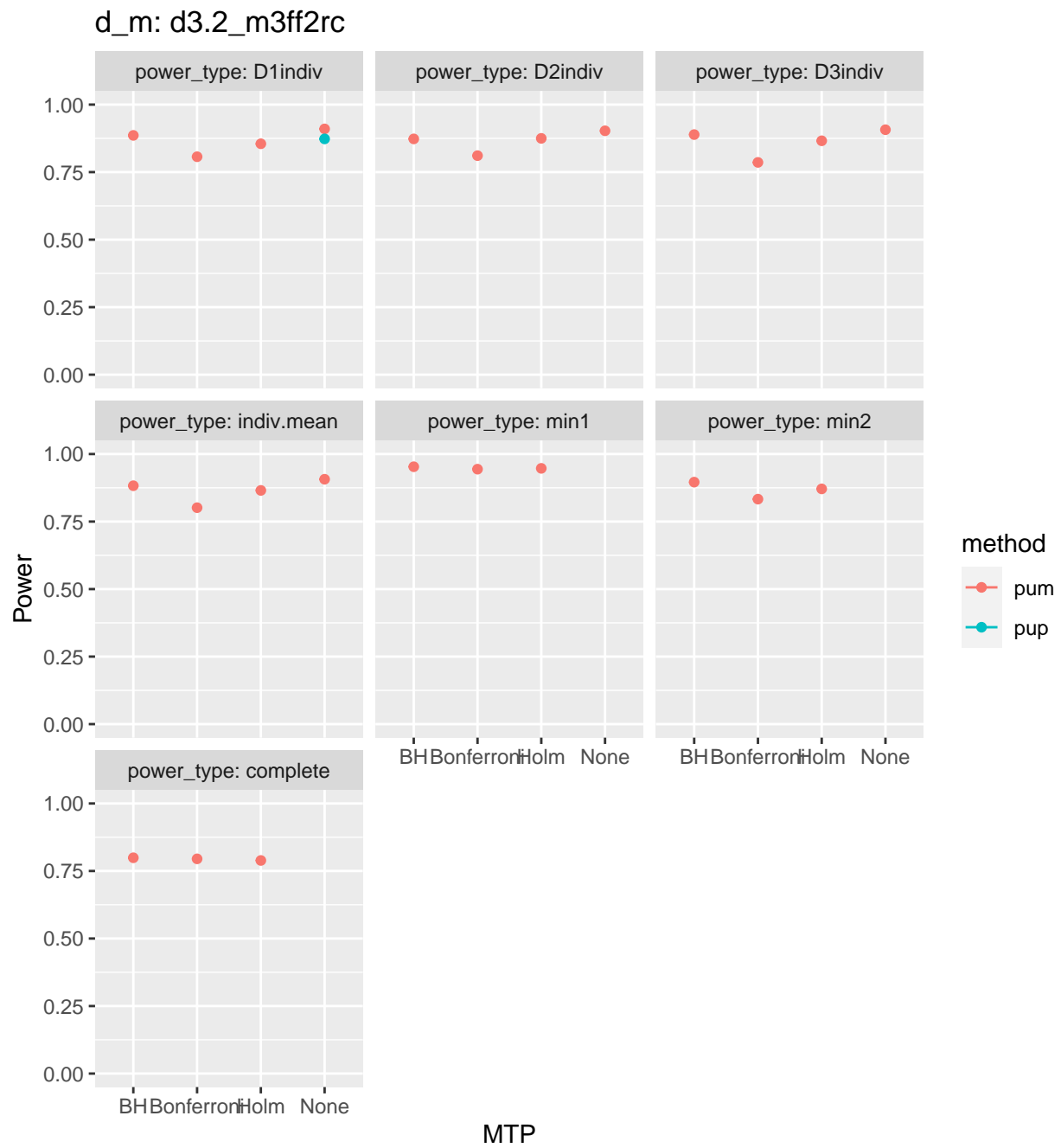


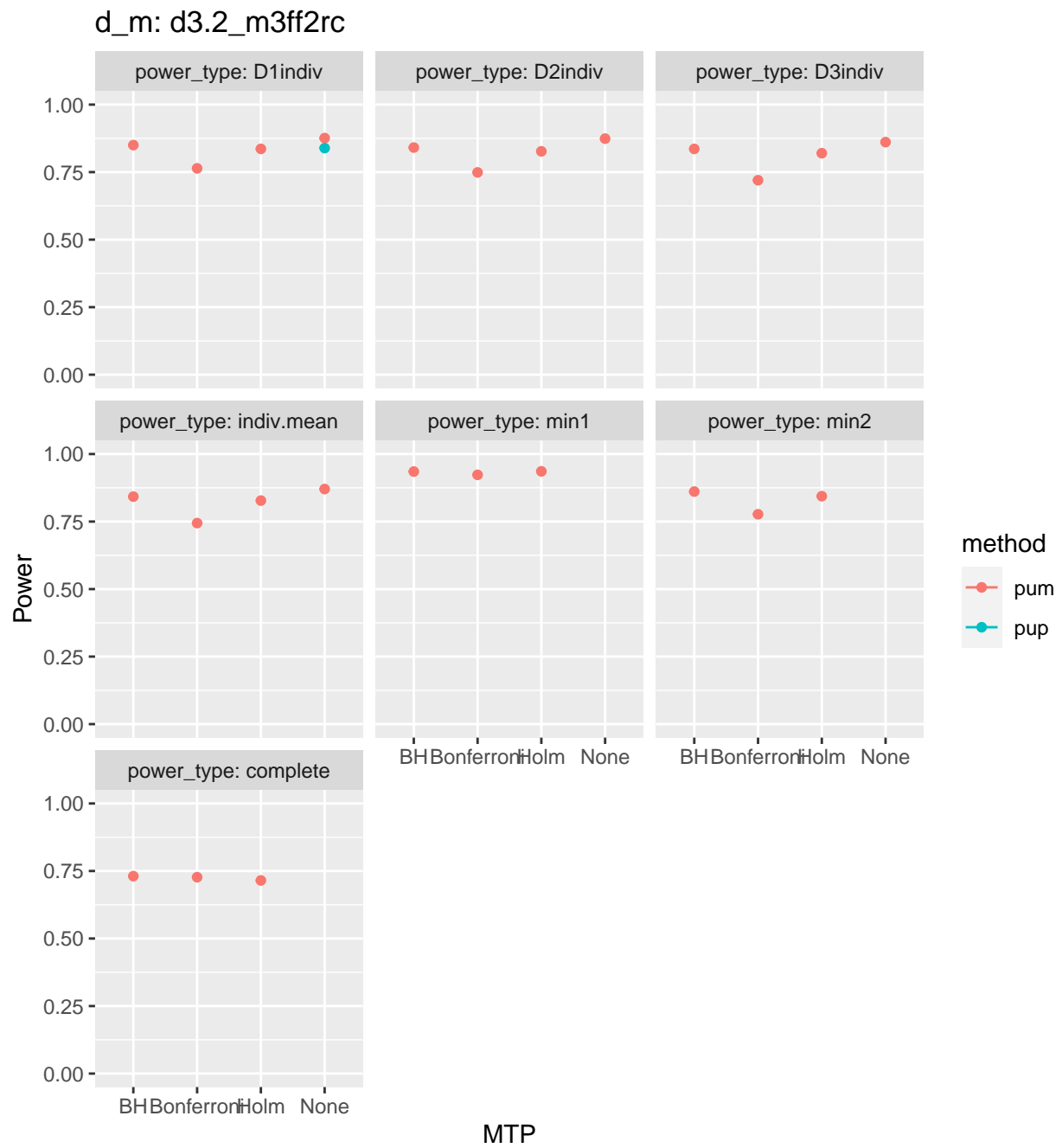
Validate Power: MDES and SS power definitions

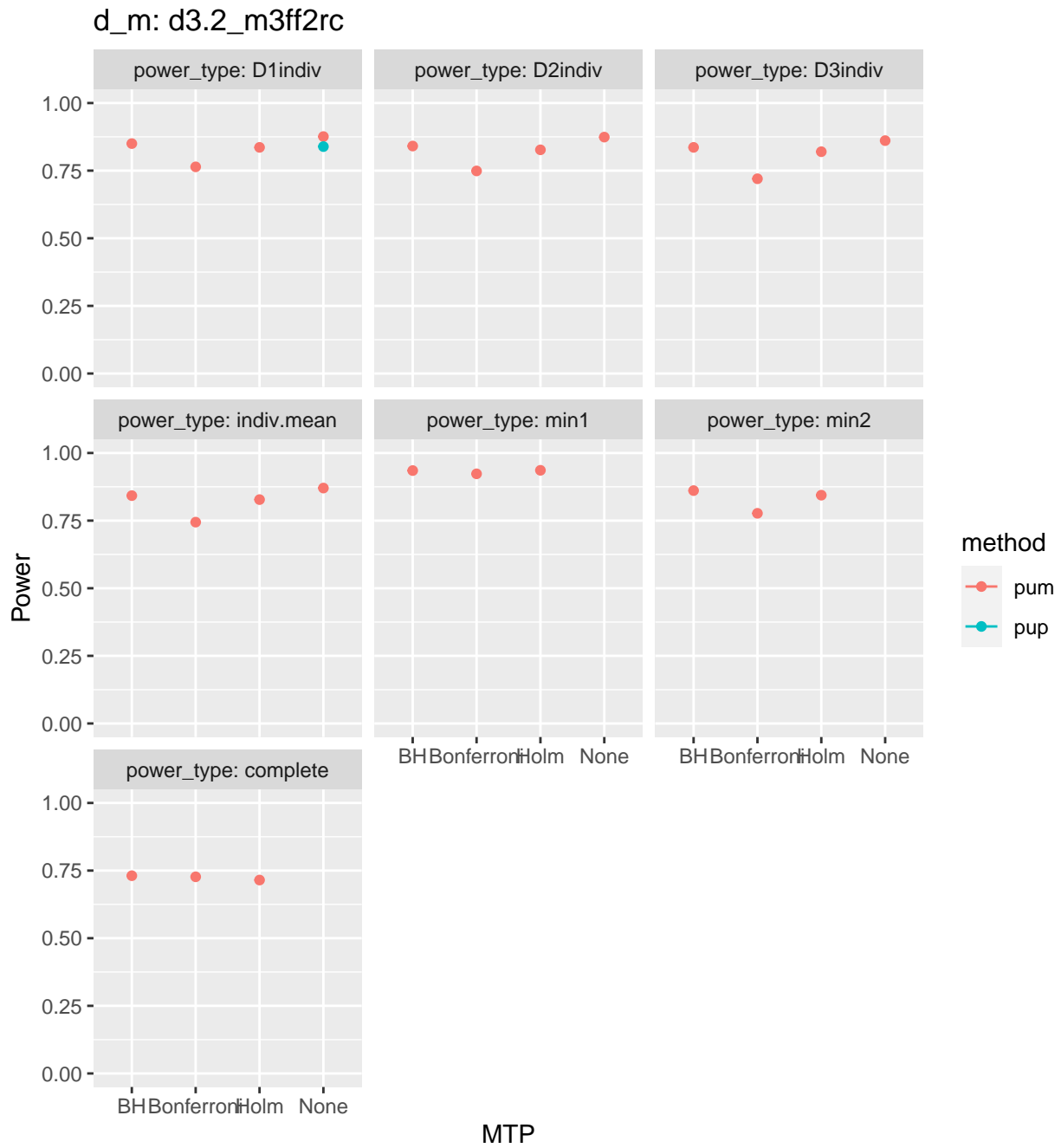
December 27, 2021

Power Validation









MDES

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | D1indiv Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.259    |      0.231    |      0.25    |
## +-----+-----+-----+-----+
## |      BH      |      0.247    |      0.274    |      0.25    |
```

```
## +-----+-----+-----+-----+
## |      Holm      |      0.245      |      0.245      |      0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.252      |      0.411      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.247      |      0.416      |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.25      |      0.405      |      0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min2 Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.259      |      0.194      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.236      |      0.222      |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.252      |      0.234      |      0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.249      |      0.161      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.245      |      0.154      |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.253      |      0.17      |      0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

Sample Size

Sample Size J

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | D1indiv.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      NA      |      0.231      |
## +-----+-----+-----+-----+
## |      BH      |      J      |      2      |      0.152      |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      11      |      0.236      |
## +-----+-----+-----+-----+
```

##

Table: d3.3_m3rc2rc

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |     2250     |     0.416     |
## +-----+-----+-----+-----+
## |      BH      |      J      |      17      |     0.406     |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      21      |     0.396     |
## +-----+-----+-----+-----+
```

##

Table: d3.3_m3rc2rc

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      260     |     0.183     |
## +-----+-----+-----+-----+
## |      BH      |      J      |      15      |     0.242     |
## +-----+-----+-----+-----+
## |      Holm      |      J      |     1500     |     0.236     |
## +-----+-----+-----+-----+
```

##

Table: d3.3_m3rc2rc

##

##

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      27      |     0.161     |
## +-----+-----+-----+-----+
## |      BH      |      J      |      13      |     0.148     |
## +-----+-----+-----+-----+
## |      Holm      |      J      |     752      |     0.169     |
## +-----+-----+-----+-----+
```

##

Table: d3.3_m3rc2rc

Sample Size K

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | D1indiv.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      21      |      0.231      |
## +-----+-----+-----+-----+
## |      BH      |      K      |      21      |      0.288      |
## +-----+-----+-----+-----+
## |      Holm     |      K      |      20      |      0.25       |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      21      |      0.412      |
## +-----+-----+-----+-----+
## |      BH      |      K      |      20      |      0.418      |
## +-----+-----+-----+-----+
## |      Holm     |      K      |      20      |      0.403      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      21      |      0.189      |
## +-----+-----+-----+-----+
## |      BH      |      K      |      19      |      0.227      |
## +-----+-----+-----+-----+
## |      Holm     |      K      |      21      |      0.248      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +=====+=====+=====+=====+
## | Bonferroni |      K      |      20      |      0.154      |
## +-----+-----+-----+-----+
## |      BH      |      K      |      20      |      0.158      |
## +-----+-----+-----+-----+
## |      Holm     |      K      |      21      |      0.17       |
## +-----+-----+-----+-----+
```

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

Sample Size nbar

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | D1indiv.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar   |      NA     |      0.231     |
## +-----+-----+-----+-----+
## |      BH      |      nbar   |    13539    |      0.279     |
## +-----+-----+-----+-----+
## |      Holm     |      nbar   |      1      |      0.226     |
## +-----+-----+-----+-----+
```

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

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar   |     3013    |      0.41     |
## +-----+-----+-----+-----+
## |      BH      |      nbar   |     459     |     0.423     |
## +-----+-----+-----+-----+
## |      Holm     |      nbar   |     911     |      0.41     |
## +-----+-----+-----+-----+
```

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

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar   |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      BH      |      nbar   |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      Holm     |      nbar   |    6171    |     0.233     |
## +-----+-----+-----+-----+
```

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

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | complete.power |
## +=====+=====+=====+=====+
## | Bonferroni |      nbar   |      NA     |      NA     |
## +-----+-----+-----+-----+
## |      BH      |      nbar   |      NA     |      NA     |
## +-----+-----+-----+-----+
```



```
## +-----+-----+-----+-----+
## |      Holm      |      nbar      |      3702      |      0.165      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

Changing correlation

correlation = 0

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.252      |      0.411      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.247      |      0.416      |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.25      |      0.405      |      0.25      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +-----+-----+-----+-----+
## | Bonferroni |      0.249      |      0.161      |      0.25      |
## +-----+-----+-----+-----+
## |      BH      |      0.245      |      0.154      |      0.25      |
## +-----+-----+-----+-----+
## |      Holm      |      0.253      |      0.17      |      0.25      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +-----+-----+-----+-----+
## | Bonferroni |      J      |      2250      |      0.416      |
## +-----+-----+-----+-----+
## |      BH      |      J      |      17      |      0.406      |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      21      |      0.396      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

##
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      260    |    0.183    |
## +-----+-----+-----+-----+
## |      BH      |      J      |      15     |    0.242    |
## +-----+-----+-----+-----+
## |      Holm     |      J      |     1500    |    0.236    |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

correlation = 0.8

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.252    |    0.411    |    0.25     |
## +-----+-----+-----+-----+
## |      BH      |      0.247    |    0.416    |    0.25     |
## +-----+-----+-----+-----+
## |      Holm     |      0.25     |    0.405    |    0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |      0.249    |    0.161    |    0.25     |
## +-----+-----+-----+-----+
## |      BH      |      0.245    |    0.154    |    0.25     |
## +-----+-----+-----+-----+
## |      Holm     |      0.253    |    0.17     |    0.25     |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
```

```
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |     2250    |    0.416    |
## +-----+-----+-----+-----+
## |      BH      |      J      |      17     |    0.406    |
## +-----+-----+-----+-----+
## |      Holm     |      J      |      21     |    0.396    |
## +-----+-----+-----+-----+
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      260    |    0.183    |
## +-----+-----+-----+-----+
## |      BH      |      J      |      15     |    0.242    |
## +-----+-----+-----+-----+
## |      Holm     |      J      |     1500    |    0.236    |
## +-----+-----+-----+-----+
```

```
##
```

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

correlation = 1

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | min1 Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |    0.252      |    0.411    |    0.25      |
## +-----+-----+-----+-----+
## |      BH      |    0.247      |    0.416    |    0.25      |
## +-----+-----+-----+-----+
## |      Holm     |    0.25       |    0.405    |    0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Adjusted MDES | complete Power | Target MDES |
## +=====+=====+=====+=====+
## | Bonferroni |    0.249      |    0.161    |    0.25      |
## +-----+-----+-----+-----+
## |      BH      |    0.245      |    0.154    |    0.25      |
## +-----+-----+-----+-----+
## |      Holm     |    0.253      |    0.17     |    0.25      |
## +-----+-----+-----+-----+
```

```
##
```

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

```
##
```

```
##
```

```
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min1.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |     2250    |    0.416    |
## +-----+-----+-----+-----+
## |      BH      |      J      |      17     |    0.406    |
## +-----+-----+-----+-----+
```

```

## |      Holm      |      J      |      21      |      0.396      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc
##
##
## +-----+-----+-----+-----+
## |      MTP      | Sample.type | Sample.size | min2.power |
## +=====+=====+=====+=====+
## | Bonferroni |      J      |      260      |      0.183      |
## +-----+-----+-----+-----+
## |      BH      |      J      |      15      |      0.242      |
## +-----+-----+-----+-----+
## |      Holm      |      J      |      1500      |      0.236      |
## +-----+-----+-----+-----+
##
## Table: d3.3_m3rc2rc

```