CEC 2020 results

Contents

Benchmark & algorithms setup

- $N = 10,\ 20$
- $\lambda = 4$ * N
- $\sigma_0 = 1$
- `max_restarts` $= 100$
- budget:
  - $N = 10 \implies 200000$
  - $N = 20 \implies 1000000$
- $x_0 = \texttt{runif}(N, -100, 100)$

Stop conditions:

```
Maximal number of function evaluations reached.
```

Restart triggers:

```
- Standard deviation below tolerance in all coordinates.
- Condition number of covariance matrix exceeds 1e14
- Covariance matrix is not numerically positive definite.
- Addition of 0.1 times sigma does not change mean value.
- Addition of 0.2 times sigma in any coordinate does not change mean value.
```

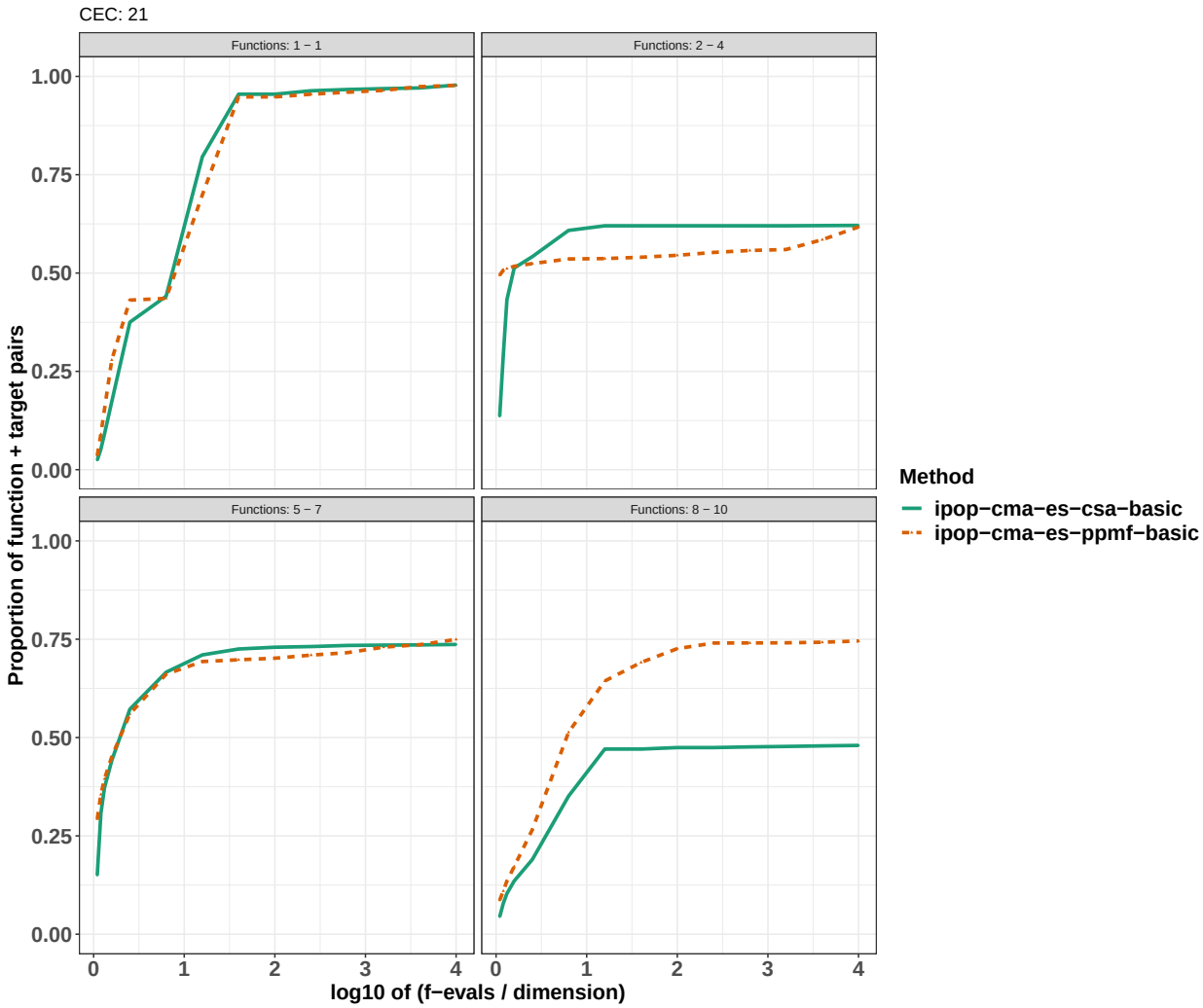
Results

```
library(cecb)
library(tidyverse)

knitr::opts_chunk$set(fig.width=12, fig.height=10)

"%+%" <- function(str1, str2) {
  paste0(str1, str2)
}
prefix = "../data/"

csa = list(
    basic = prefix %+% "csa/ipop-cma-es-csa-basic",
    rot = prefix %+% "csa/ipop-cma-es-csa-rot",
    shift = prefix %+% "csa/ipop-cma-es-csa-shift",
    bias = prefix %+% "csa/ipop-cma-es-csa-bias",
    bias_shift_rot = prefix %+% "csa/ipop-cma-es-csa-bias-shift-rot",
#    shift_rot = prefix %+% "csa/ipop-cma-es-csa-shift-rot",
#    bias_rot = prefix %+% "csa/ipop-cma-es-csa-bias-rot",
    bias_shift = prefix %+% "csa/ipop-cma-es-csa-bias-shift"
)
ppmf = list(
    basic = prefix %+% "ppmf/ipop-cma-es-ppmf-basic",
    rot = prefix %+% "ppmf/ipop-cma-es-ppmf-rot",
    shift = prefix %+% "ppmf/ipop-cma-es-ppmf-shift",
    bias = prefix %+% "ppmf/ipop-cma-es-ppmf-bias",
    bias_shift_rot = prefix %+% "ppmf/ipop-cma-es-ppmf-bias-shift-rot",
#    shift_rot = prefix %+% "ppmf/ipop-cma-es-ppmf-shift-rot",
#    bias_rot = prefix %+% "ppmf/ipop-cma-es-ppmf-bias-rot",
    bias_shift = prefix %+% "ppmf/ipop-cma-es-ppmf-bias-shift"
)
config = list(dim = 10, problems = 1:10, repetitions = 30)
```

1. Basic

ECDF curves

```
cecb::cec_class_grid(c(csa$basic, ppmf$basic), 10, 21, 30)
```




```
#cecb::cec_problem_grid(c(csa$basic, ppmf$basic), 21, config)
```

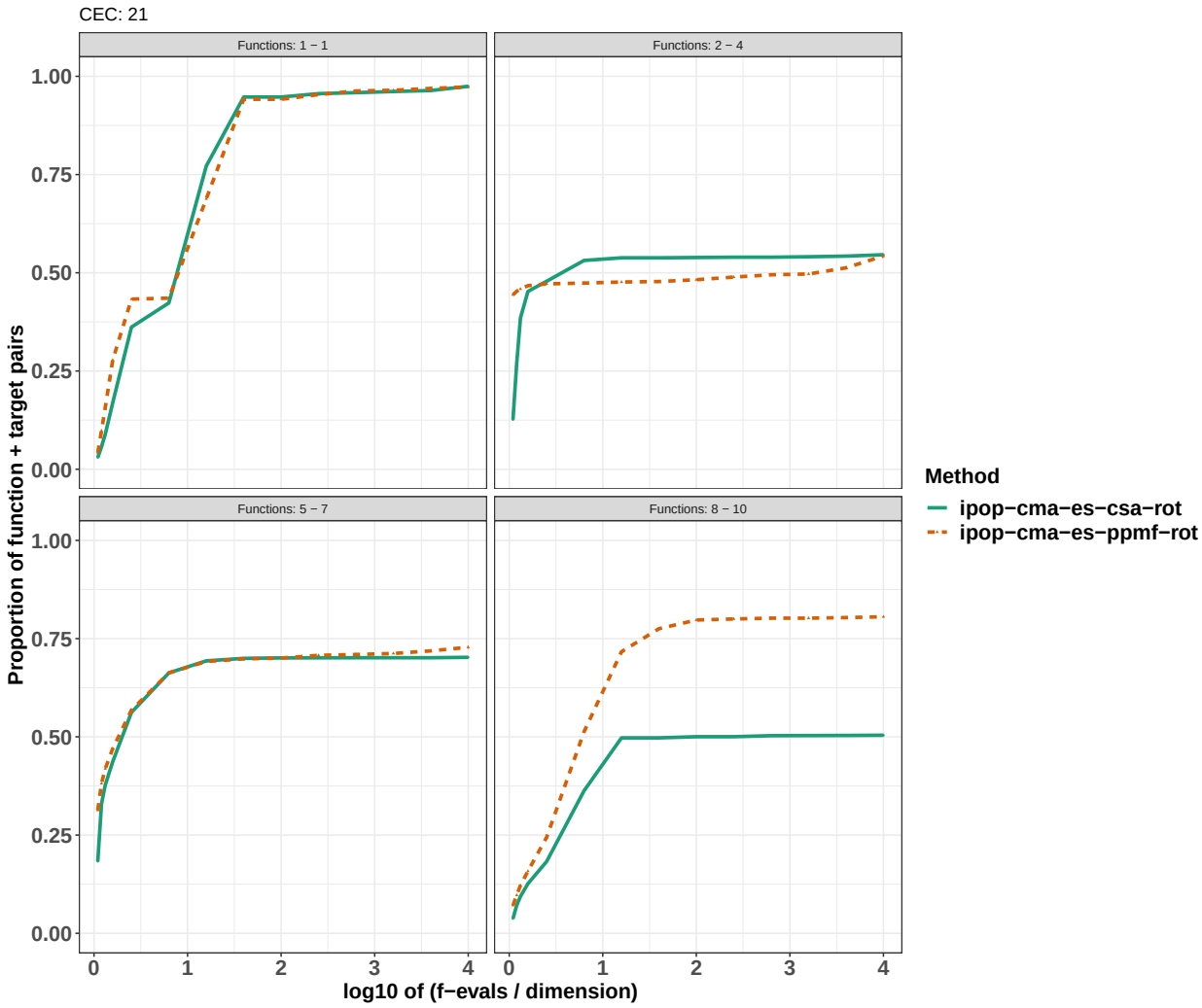
CEC's tables

```
#TODO
```

2. Rot

ECDF curves

```
cecb::cec_class_grid(c(csa$rot, ppmf$rot), 10, 21, 30)
```




```
#cecb::cec_problem_grid(c(csa$rot, ppmf$rot), 21, config)
```

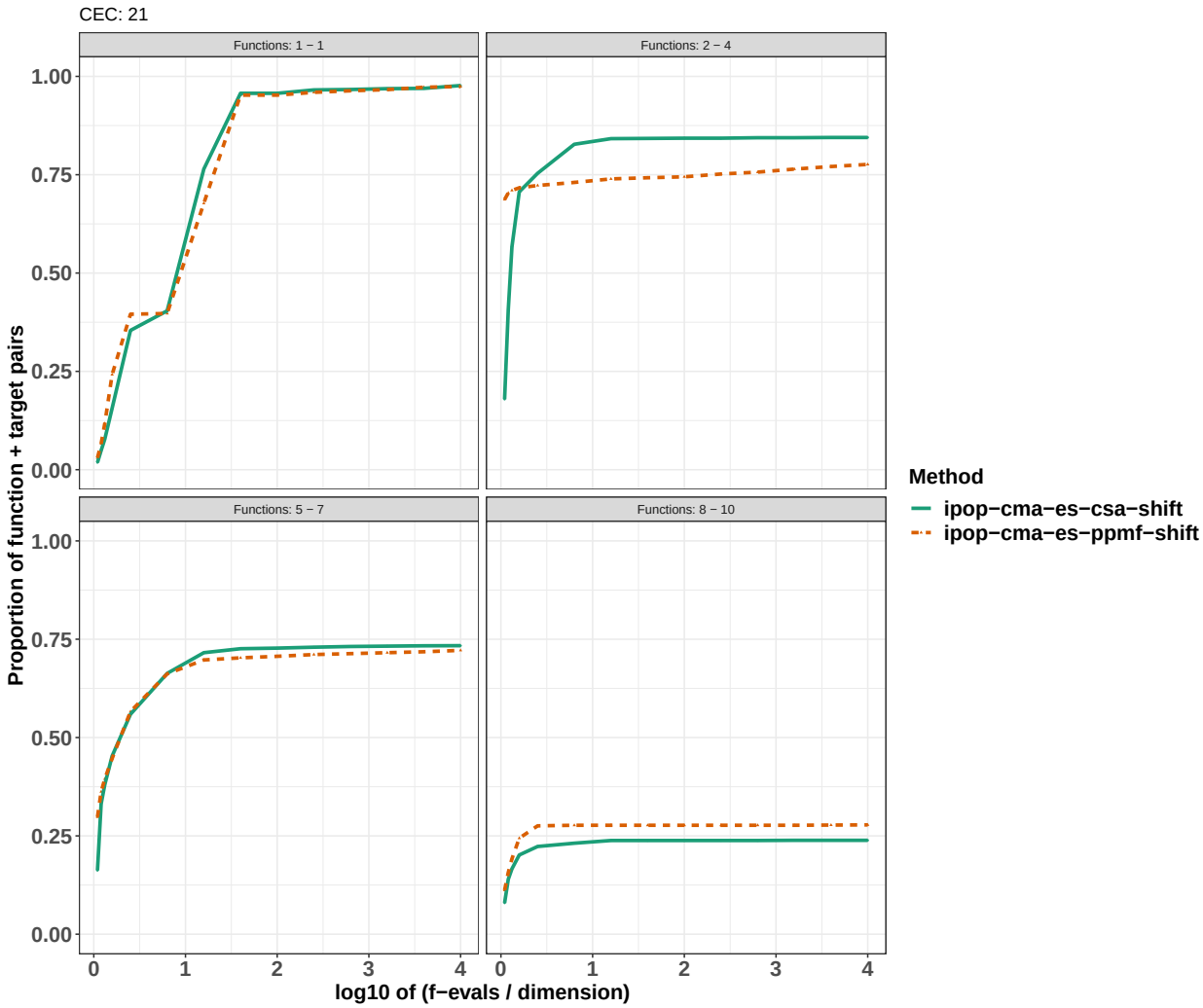
CEC's tables

```
#TODO
```

3. Shift

ECDF curves

```
cecb::cec_class_grid(c(csa$shift, ppmf$shift), 10, 21, 30)
```




```
#cecb::cec_problem_grid(c(csa$shift, ppmf$shift), 21, config)
```

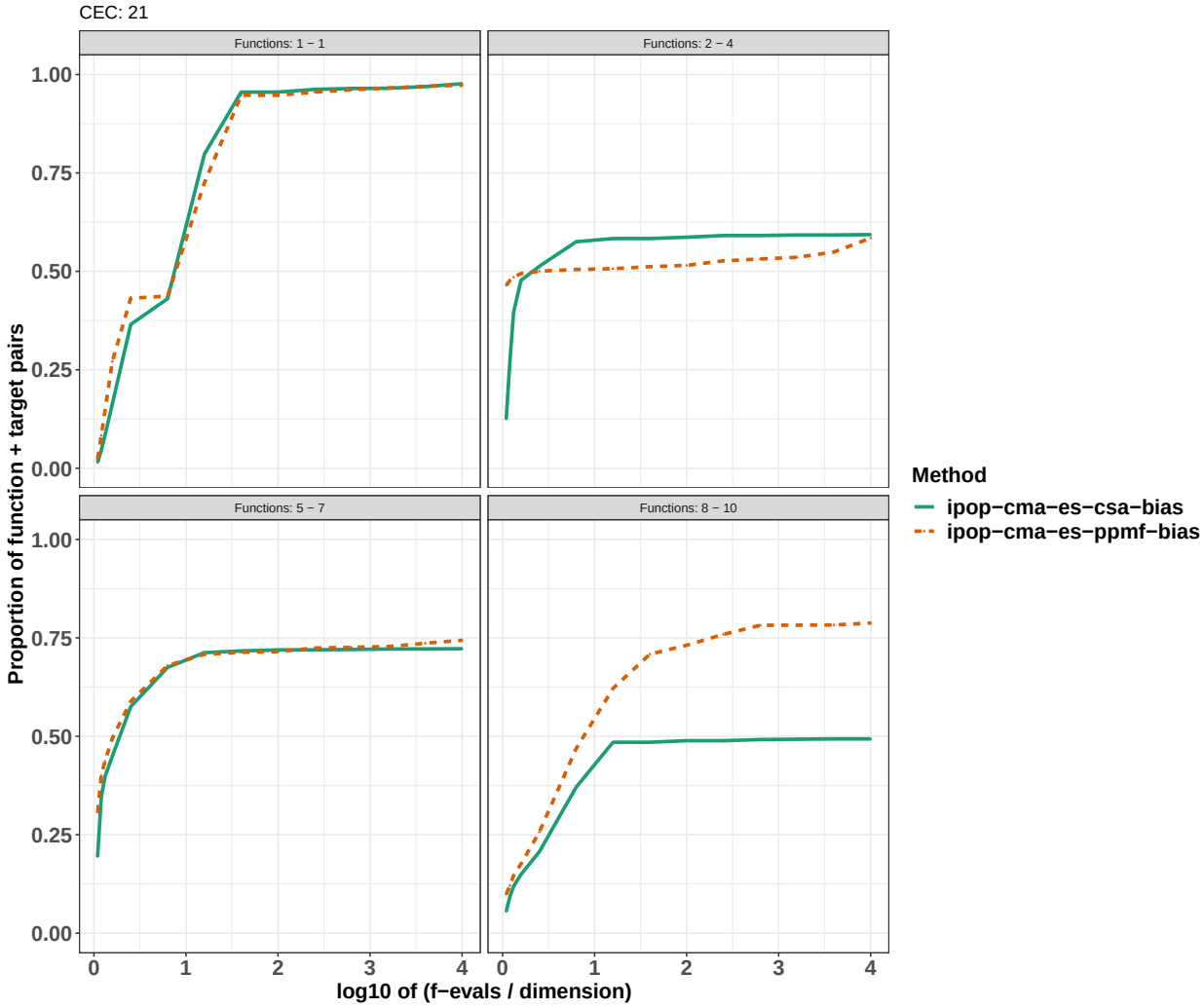
CEC's tables

```
#TODO
```

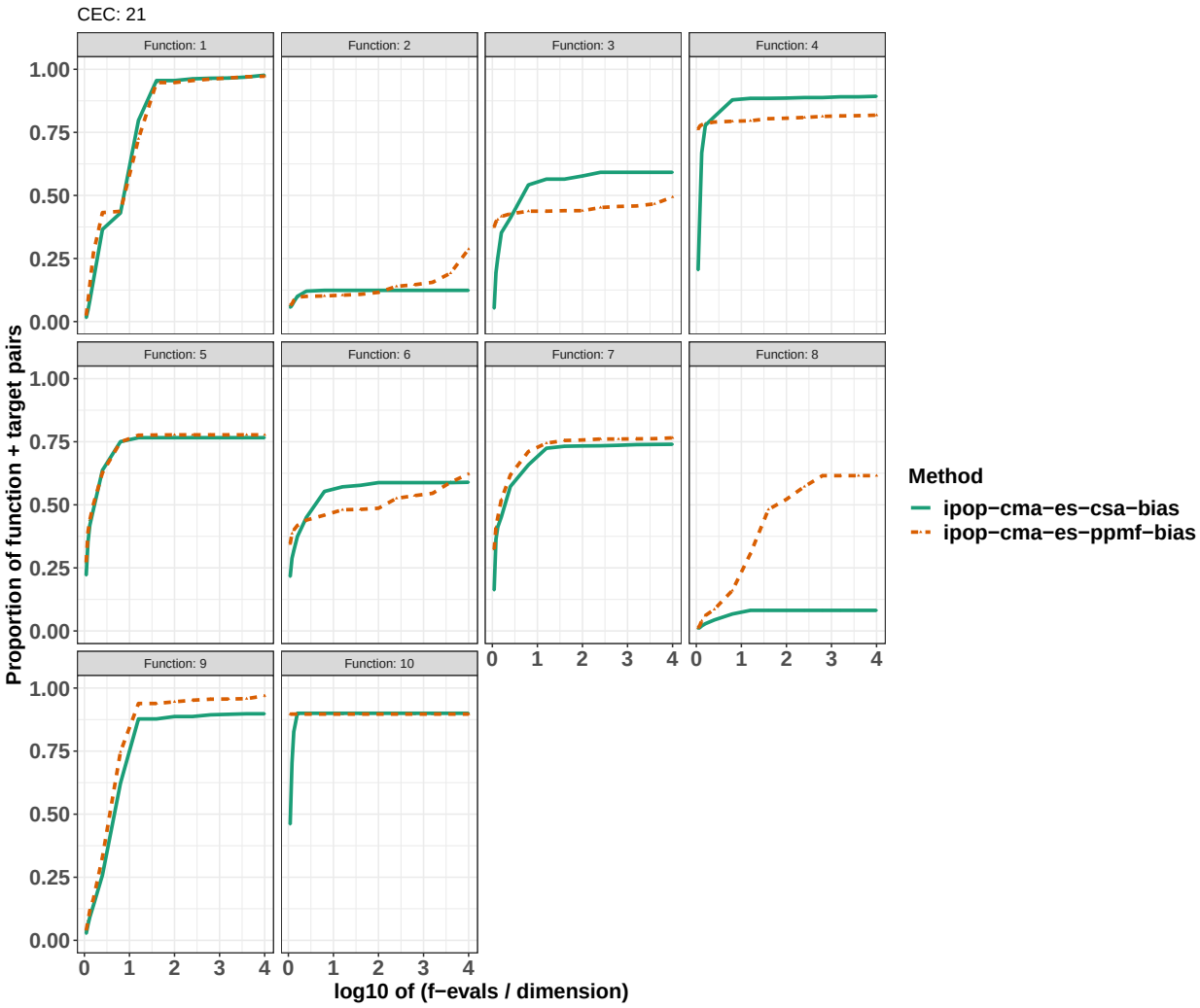
4. Bias

ECDF curves

```
cecb::cec_class_grid(c(csa$bias, ppmf$bias), 10, 21, 30)
```




```
cecb::cec_problem_grid(c(csa$bias, ppmf$bias), 21, config)
```



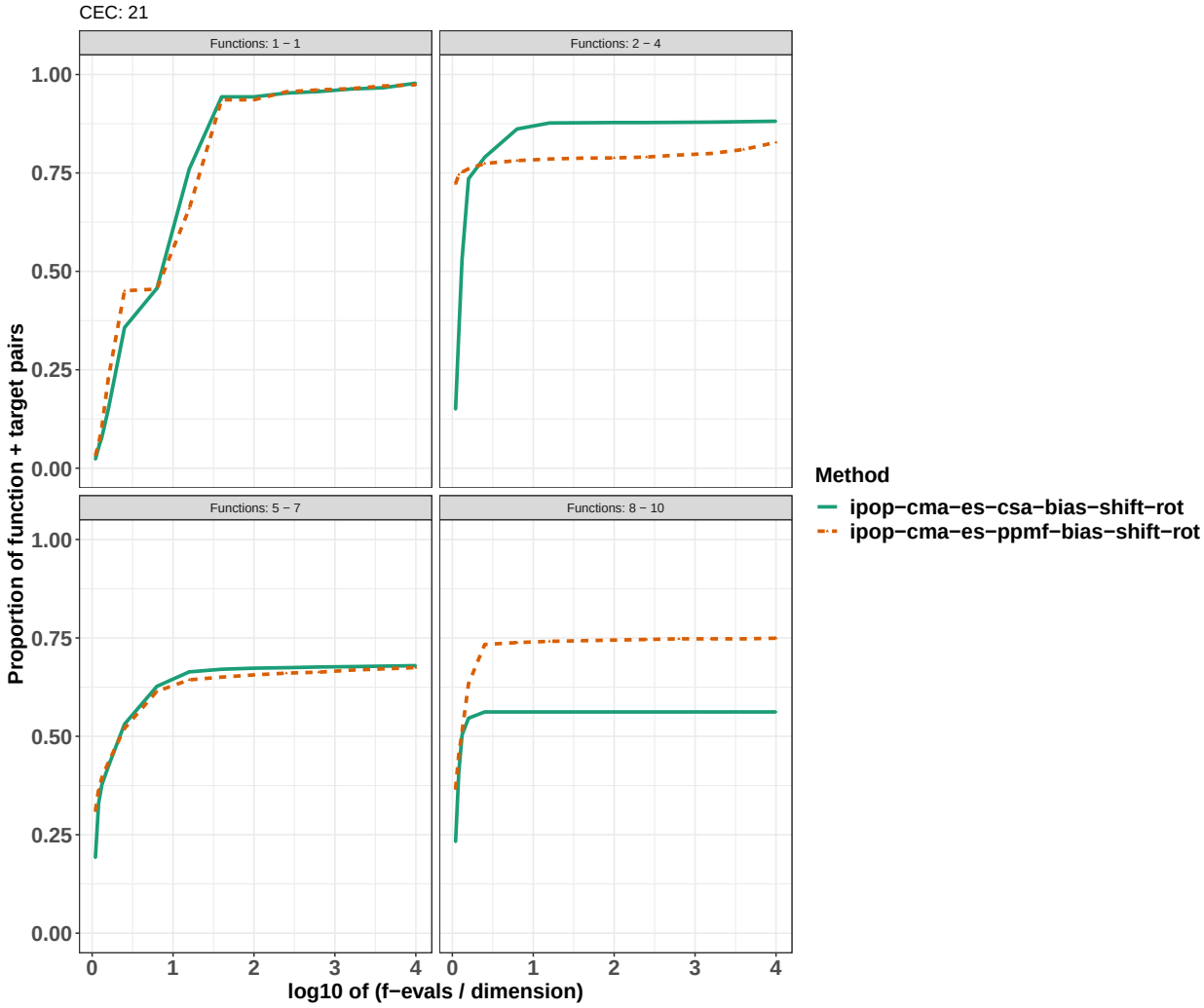
CEC's tables

```
#TODO
```

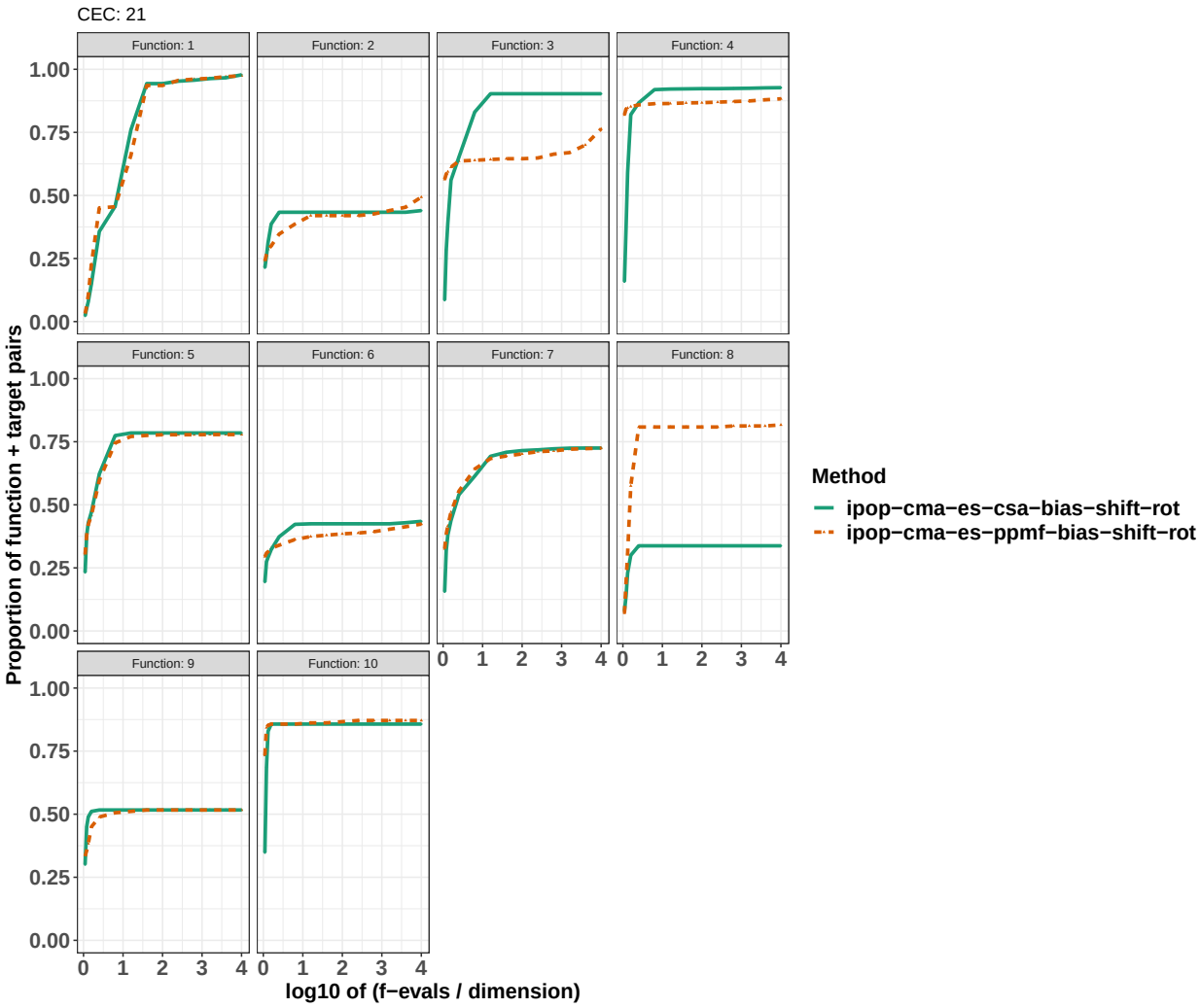
5. Bias-shift-rot

ECDF curves

```
cecb::cec_class_grid(c(csa$bias_shift_rot, ppmf$bias_shift_rot), 10, 21, 30)
```




```
cecb::cec_problem_grid(c(csa$bias_shift_rot, ppmf$bias_shift_rot), 21, config)
```



CEC's tables

```
#TODO
```

6. Shift-rot

ECDF curves

```
#In progres....
```

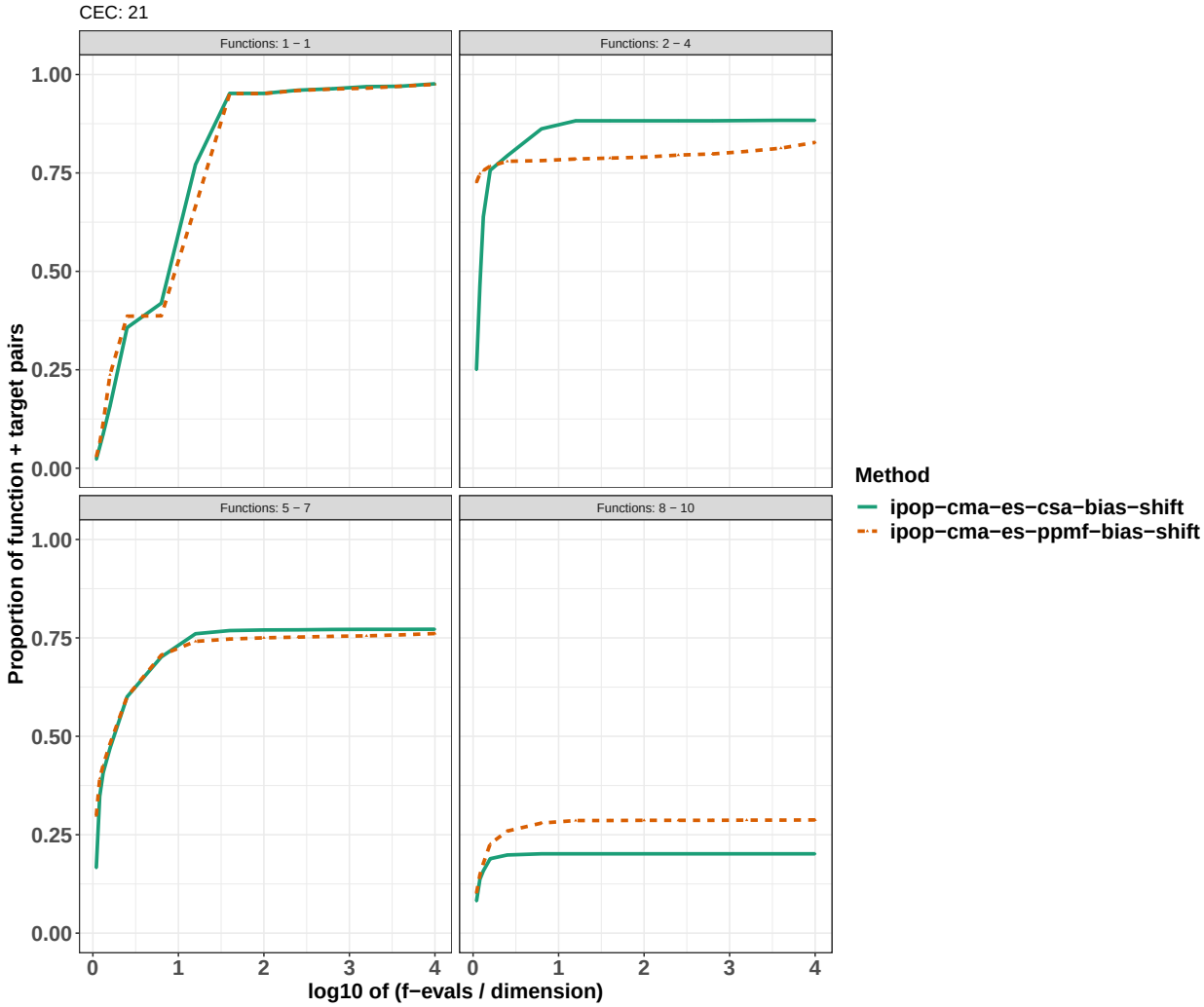
CEC's tables

```
#In progres....
```

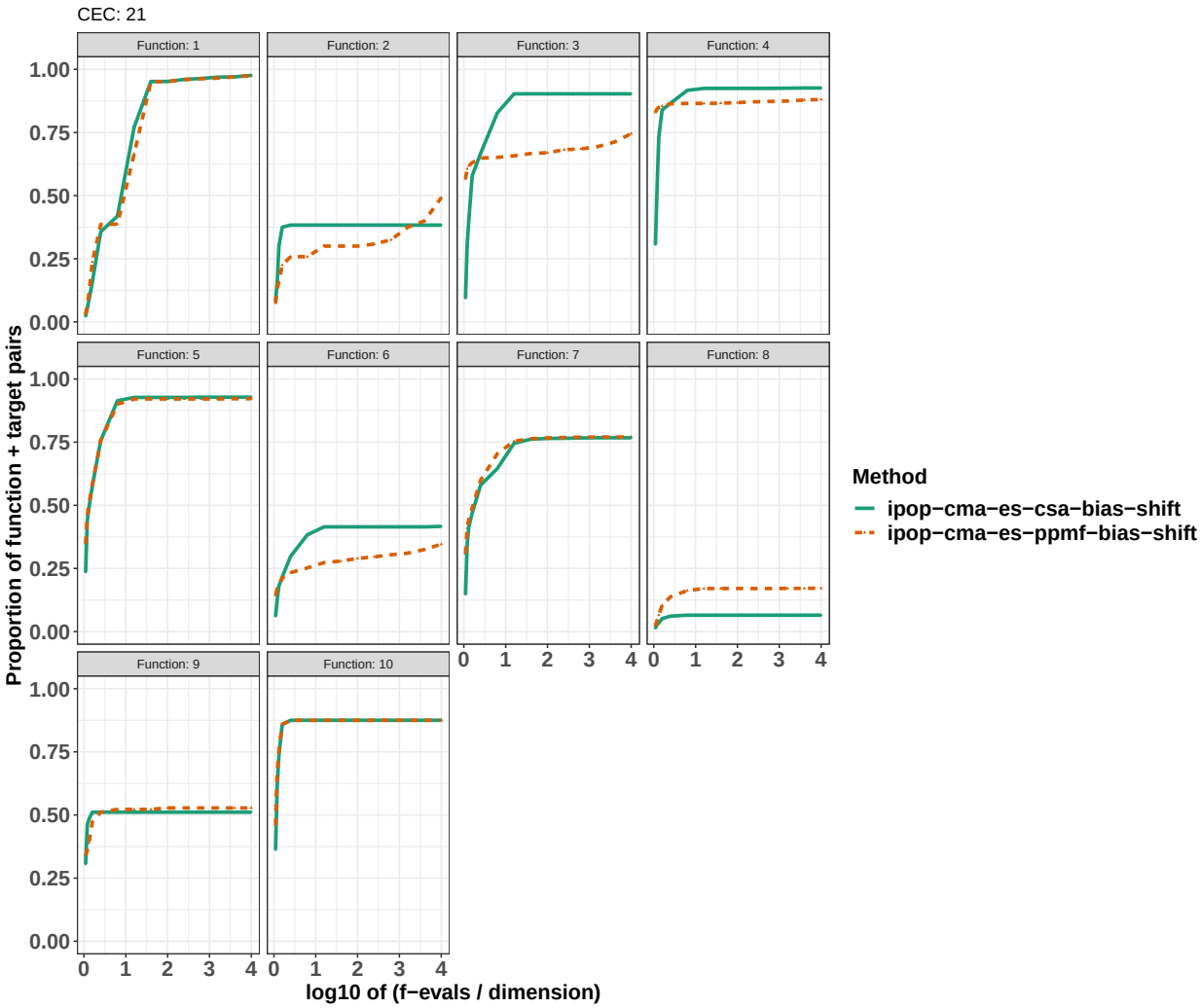
7. Bias-shift

ECDF curves

```
cecb::cec_class_grid(c(csa$bias_shift, ppmf$bias_shift), 10, 21, 30)
```




```
cecb::cec_problem_grid(c(csa$bias_shift, ppmf$bias_shift), 21, config)
```



CEC's tables

```
#TODO
```

8. Bias-rot

ECDF curves

```
#In progres...
```

CEC's tables

```
#In progres...
```