# **Supplement II: Analysis code**

\* AUSWERTUNG\_SIMULATION\_FEW\_STUDIES.SAS

Date: 27.02.2017

;

libname results "H:\Biometrie Studium\Masterarbeit\Simulationen FEWSTUDIES\Results";

options pagesize=**120** linesize=**160**;

/\*

\* Shwowing elements (in LOG), that can be changed with PROC TEMPLATE;

proc template;

list styles;

source styles.default;

define style Styles.Custom;

parent = Styles.Default;

end;

run;

\*/

\* Definition of ODS Templates FEWSTUDIES fort the analysis;

**proc** **template**;

define style styles.FewStudies;

parent = styles.default;

class graphbackground / color=white;

style GraphValueText from GraphValueText / font=('Arial',**10**pt, Bold);

style GraphLabelText from GraphLabelText / font=('Arial',**10**pt, Bold);

end;

**run**;

**proc** **format**;

value treatf **1**=" Treatment" **0**="Control";

value eventf **1**=" Yes" **0**="No";

value $ident\_t 'H0'='No treatment effect' 'H1'='Medium treatment effect';

value $ident\_largestudy 'E'='Equel sized studies' 'L'='One large study';

**run**;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Analysis H0 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

Merging datasets from the different simulation scenarios under H0;

/\*

data eins\_h0;

set results.result\_h0feme02 results.result\_h0feme03 results.result\_h0feme04 results.result\_h0feme05 results.result\_h0feme10 results.result\_h0feme15

results.result\_h0feme20 results.result\_h0feme30 results.result\_h0feme50 results.result\_h0feml02 results.result\_h0feml03 results.result\_h0feml04

results.result\_h0feml05 results.result\_h0feml10 results.result\_h0feml15 results.result\_h0feml20 results.result\_h0feml30 results.result\_h0feml50

results.result\_h0reme02 results.result\_h0reme03 results.result\_h0reme04 results.result\_h0reme05 results.result\_h0reme10 results.result\_h0reme15

results.result\_h0reme20 results.result\_h0reme30 results.result\_h0reme50 results.result\_h0reml02 results.result\_h0reml03 results.result\_h0reml04

results.result\_h0reml05 results.result\_h0reml10 results.result\_h0reml15 results.result\_h0reml20 results.result\_h0reml30 results.result\_h0reml50;

run;

proc contents data=eins\_h0 position;run;

proc sort data=eins\_h0;by ident simruns;run;

data results.gesamt\_FEW\_STUDIES\_H0;set eins\_h0;run;

\*/

\* Description of simulation scenarios;

**proc** **sort** data=results.gesamt\_FEW\_STUDIES\_h1;by Ident;**run**;

**data** deskription\_FEW\_STUDIES\_H0;

set results.gesamt\_FEW\_STUDIES\_H0;

by Ident;

if first.Ident;

if substr(Ident,**1**,**2**) = 'H0' then Ident\_t='H0'; if substr(Ident,**1**,**2**) = 'H1' then Ident\_t='H1';

if substr(Ident,**3**,**3**) = 'FEM' then Ident\_REM='FEM'; if substr(Ident,**3**,**3**) = 'REM' then Ident\_REM='REM';

if substr(Ident,**6**,**1**) = 'E' then Ident\_largestudy='E'; if substr(Ident,**6**,**1**) = 'L' then Ident\_largestudy='L';

if substr(Ident,**7**,**2**) = '02' then Ident\_nstudy='02'; if substr(Ident,**7**,**2**) = '03' then Ident\_nstudy='03';

if substr(Ident,**7**,**2**) = '04' then Ident\_nstudy='04'; if substr(Ident,**7**,**2**) = '05' then Ident\_nstudy='05';

if substr(Ident,**7**,**2**) = '10' then Ident\_nstudy='10'; if substr(Ident,**7**,**2**) = '15' then Ident\_nstudy='15';

if substr(Ident,**7**,**2**) = '20' then Ident\_nstudy='20'; if substr(Ident,**7**,**2**) = '30' then Ident\_nstudy='30';

if substr(Ident,**7**,**2**) = '50' then Ident\_nstudy='50';

**run**;

**proc** **sort** data=deskription\_FEW\_STUDIES\_H0;

by Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

**run**;

**proc** **print** data=deskription\_FEW\_STUDIES\_H0 noobs;

**run**;

\* Analysis bias;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H0 n nmiss median maxdec=**5**;

by ident;

var bias\_LogOR\_BBIN bias\_LogOR\_BBFM bias\_LogOR\_BB1N bias\_LogOR\_BB2N bias\_LogOR\_BBMP bias\_LogOR\_BBQD bias\_LogOR\_BBQL

bias\_LogOR\_MaHa bias\_LogOR\_YPET bias\_LogOR\_DLRE bias\_LogOR\_HKSJ bias\_LogOR\_mKH\_ bias\_LogOR\_PMRE bias\_LogOR\_PMHK;

output out=Temp\_Median\_Bias

median(bias\_LogOR\_BBIN)=LogOR\_BBIN\_Median\_Bias

median(bias\_LogOR\_BBFM)=LogOR\_BBFM\_Median\_Bias

median(bias\_LogOR\_BB1N)=LogOR\_BB1N\_Median\_Bias

median(bias\_LogOR\_BB2N)=LogOR\_BB2N\_Median\_Bias

median(bias\_LogOR\_BBMP)=LogOR\_BBMP\_Median\_Bias

median(bias\_LogOR\_BBQD)=LogOR\_BBQD\_Median\_Bias

median(bias\_LogOR\_BBQL)=LogOR\_BBQL\_Median\_Bias

median(bias\_LogOR\_DLRE)=LogOR\_DLRE\_Median\_Bias

median(bias\_LogOR\_HKSJ)=LogOR\_HKSJ\_Median\_Bias

median(bias\_LogOR\_mKH\_)=LogOR\_mKH\_\_Median\_Bias

median(bias\_LogOR\_MaHa)=LogOR\_MaHa\_Median\_Bias

median(bias\_LogOR\_PMRE)=LogOR\_PMRE\_Median\_Bias

median(bias\_LogOR\_PMHK)=LogOR\_PMHK\_Median\_Bias

median(bias\_LogOR\_YPET)=LogOR\_YPET\_Median\_Bias

;

title"Analyse all Biases";

**run**;

/\*proc contents position data=Temp\_Median\_Bias;run;\*/

/\*proc print data=Temp\_Median\_Bias;run;\*/

/\*proc means data=results.gesamt\_FEW\_STUDIES\_H0 n nmiss median min q1 q3 max;

var bias\_LogOR\_BBIN bias\_LogOR\_BBFM bias\_LogOR\_BB1N bias\_LogOR\_BB2N bias\_LogOR\_BBMP bias\_LogOR\_BBQD bias\_LogOR\_BBQL

bias\_LogOR\_MaHa bias\_LogOR\_YPET bias\_LogOR\_DLRE bias\_LogOR\_HKSJ bias\_LogOR\_mKH\_ bias\_LogOR\_PMRE bias\_LogOR\_PMHK;

title"Median Bias H0 from all 360.000 scenarios/simruns";\*/ run;

\* Analysis coverage;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H0 n nmiss mean maxdec=**5**;

by ident;

var coverage\_LogOR\_BBIN coverage\_LogOR\_BBFM coverage\_LogOR\_BB1N coverage\_LogOR\_BB2N coverage\_LogOR\_BBMP coverage\_LogOR\_BBQD coverage\_LogOR\_BBQL

coverage\_LogOR\_MaHa coverage\_LogOR\_YPET coverage\_LogOR\_DLRE coverage\_LogOR\_HKSJ coverage\_LogOR\_mKH\_ coverage\_LogOR\_PMRE coverage\_LogOR\_PMHK;

output out=Temp\_Mean\_Coverage

mean(coverage\_LogOR\_BBIN)=LogOR\_BBIN\_Mean\_Coverage

mean(coverage\_LogOR\_BBFM)=LogOR\_BBFM\_Mean\_Coverage

mean(coverage\_LogOR\_BB1N)=LogOR\_BB1N\_Mean\_Coverage

mean(coverage\_LogOR\_BB2N)=LogOR\_BB2N\_Mean\_Coverage

mean(coverage\_LogOR\_BBMP)=LogOR\_BBMP\_Mean\_Coverage

mean(coverage\_LogOR\_BBQD)=LogOR\_BBQD\_Mean\_Coverage

mean(coverage\_LogOR\_BBQL)=LogOR\_BBQL\_Mean\_Coverage

mean(coverage\_LogOR\_DLRE)=LogOR\_DLRE\_Mean\_Coverage

mean(coverage\_LogOR\_HKSJ)=LogOR\_HKSJ\_Mean\_Coverage

mean(coverage\_LogOR\_mKH\_)=LogOR\_mKH\_\_Mean\_Coverage

mean(coverage\_LogOR\_MaHa)=LogOR\_MaHa\_Mean\_Coverage

mean(coverage\_LogOR\_PMRE)=LogOR\_PMRE\_Mean\_Coverage

mean(coverage\_LogOR\_PMHK)=LogOR\_PMHK\_Mean\_Coverage

mean(coverage\_LogOR\_YPET)=LogOR\_YPET\_Mean\_Coverage

;

title"Analyse all Coverages";

**run**;

/\*proc print data=Temp\_Mean\_Coverage;run;\*/

/\*proc means data=results.gesamt\_FEW\_STUDIES\_H0 n nmiss mean;

var coverage\_LogOR\_BBIN coverage\_LogOR\_BBFM coverage\_LogOR\_BB1N coverage\_LogOR\_BB2N coverage\_LogOR\_BBMP coverage\_LogOR\_BBQD coverage\_LogOR\_BBQL

coverage\_LogOR\_MaHa coverage\_LogOR\_YPET coverage\_LogOR\_DLRE coverage\_LogOR\_HKSJ coverage\_LogOR\_mKH\_ coverage\_LogOR\_PMRE coverage\_LogOR\_PMHK;

title"Empirical Coverage H0 from all 360.000 scenarios/simruns";

run;\*/

\* Analysis converged runs;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H0 nmiss maxdec=**0**;

by ident;

var LogOR\_BBIN LogOR\_BBFM LogOR\_BB1N LogOR\_BB2N LogOR\_BBMP LogOR\_BBQD LogOR\_BBQL LogOR\_MaHa LogOR\_YPET LogOR\_DLRE LogOR\_HKSJ LogOR\_mKH\_

LogOR\_PMRE LogOR\_PMHK;

output out=Temp\_N\_Est

n(LogOR\_BBIN)=LogOR\_BBIN\_N\_Est

n(LogOR\_BBFM)=LogOR\_BBFM\_N\_Est

n(LogOR\_BB1N)=LogOR\_BB1N\_N\_Est

n(LogOR\_BB2N)=LogOR\_BB2N\_N\_Est

n(LogOR\_BBMP)=LogOR\_BBMP\_N\_Est

n(LogOR\_BBQD)=LogOR\_BBQD\_N\_Est

n(LogOR\_BBQL)=LogOR\_BBQL\_N\_Est

n(LogOR\_DLRE)=LogOR\_DLRE\_N\_Est

n(LogOR\_HKSJ)=LogOR\_HKSJ\_N\_Est

n(LogOR\_mKH\_)=LogOR\_mKH\_\_N\_Est

n(LogOR\_MaHa)=LogOR\_MaHa\_N\_Est

n(LogOR\_PMRE)=LogOR\_PMRE\_N\_Est

n(LogOR\_PMHK)=LogOR\_PMHK\_N\_Est

n(LogOR\_YPET)=LogOR\_YPET\_N\_Est

;

title"Analyse number of missings";

**run**;

/\*proc print data=Temp\_N\_Est;run;\*/

\* This macro prepares the results data for plotting;

**%macro** preparegraph(Outcome=);

\* Split the IDENT variable to refer to the different scenarios;

title;

data &Outcome;

set Temp\_&Outcome;

drop \_TYPE\_ \_FREQ\_;

if substr(Ident,**1**,**2**) = 'H0' then Ident\_t='H0'; if substr(Ident,**1**,**2**) = 'H1' then Ident\_t='H1';

if substr(Ident,**3**,**3**) = 'FEM' then Ident\_REM='FEM'; if substr(Ident,**3**,**3**) = 'REM' then Ident\_REM='REM';

if substr(Ident,**6**,**1**) = 'E' then Ident\_largestudy='E'; if substr(Ident,**6**,**1**) = 'L' then Ident\_largestudy='L';

if substr(Ident,**7**,**2**) = '02' then Ident\_nstudy='02'; if substr(Ident,**7**,**2**) = '03' then Ident\_nstudy='03';

if substr(Ident,**7**,**2**) = '04' then Ident\_nstudy='04'; if substr(Ident,**7**,**2**) = '05' then Ident\_nstudy='05';

if substr(Ident,**7**,**2**) = '10' then Ident\_nstudy='10'; if substr(Ident,**7**,**2**) = '15' then Ident\_nstudy='15';

if substr(Ident,**7**,**2**) = '20' then Ident\_nstudy='20'; if substr(Ident,**7**,**2**) = '30' then Ident\_nstudy='30';

if substr(Ident,**7**,**2**) = '50' then Ident\_nstudy='50';

run;

proc print data=&Outcome;

title"&Outcome";

run;

proc contents position data=&Outcome;run;

\* Prepare the data set for explosion;

data Temp2\_&Outcome;

set &Outcome;

do i=**1** to **14**;

output;

end;

run;

\* Define the new variables EFFECT\_ESTIMATOR, METHOD and &OUTCOME in the exploded data set;

data Temp\_Exploded\_&Outcome(drop=LogOR\_BBIN LogOR\_BBFM LogOR\_BB1N LogOR\_BB2N LogOR\_BBMP LogOR\_BBQD LogOR\_BBQL LogOR\_MaHa LogOR\_YPET LogOR\_DLRE LogOR\_HKSJ LogOR\_mKH\_

LogOR\_PMRE LogOR\_PMHK);

set Temp2\_&Outcome;

if i=**1** then do; Effect\_Estimator="LogOR"; Method="BBIN"; &Outcome=LogOR\_BBIN\_&Outcome;end;

if i=**2** then do; Effect\_Estimator="LogOR"; Method="BBFM"; &Outcome=LogOR\_BBFM\_&Outcome;end;

if i=**3** then do; Effect\_Estimator="LogOR"; Method="BB1N"; &Outcome=LogOR\_BB1N\_&Outcome;end;

if i=**4** then do; Effect\_Estimator="LogOR"; Method="BB2N"; &Outcome=LogOR\_BB2N\_&Outcome;end;

if i=**5** then do; Effect\_Estimator="LogOR"; Method="BBMP"; &Outcome=LogOR\_BBMP\_&Outcome;end;

if i=**6** then do; Effect\_Estimator="LogOR"; Method="BBQD"; &Outcome=LogOR\_BBQD\_&Outcome;end;

if i=**7** then do; Effect\_Estimator="LogOR"; Method="BBQL"; &Outcome=LogOR\_BBQL\_&Outcome;end;

if i=**8** then do; Effect\_Estimator="LogOR"; Method="DLRE"; &Outcome=LogOR\_DLRE\_&Outcome;end;

if i=**9** then do; Effect\_Estimator="LogOR"; Method="HKSJ"; &Outcome=LogOR\_HKSJ\_&Outcome;end;

if i=**10** then do; Effect\_Estimator="LogOR"; Method="MKH\_"; &Outcome=LogOR\_mKH\_\_&Outcome;end;

if i=**11** then do; Effect\_Estimator="LogOR"; Method="MaHa"; &Outcome=LogOR\_MaHa\_&Outcome;end;

if i=**12** then do; Effect\_Estimator="LogOR"; Method="PMRE"; &Outcome=LogOR\_PMRE\_&Outcome;end;

if i=**13** then do; Effect\_Estimator="LogOR"; Method="PMHK"; &Outcome=LogOR\_PMHK\_&Outcome;end;

if i=**14** then do; Effect\_Estimator="LogOR"; Method="YPET"; &Outcome=LogOR\_YPET\_&Outcome;end;

run;

proc sort data=Temp\_Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

run;

proc print data=Temp\_Exploded\_&Outcome;

title"Temp\_Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy &Outcome;

run;

\* Define the PSEUDO\_ID that will be plotted on the axis in the graph.

This is complicated due to the breaks in the graphs for which empty (for the outcome) observations

have to be generated;

data Temp2\_Exploded\_&Outcome;

set Temp\_Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

\* PSEUDO\_ID\_TEMP counts the 36 scenarios;

retain Pseudo\_ID\_Temp **0**;

Pseudo\_ID\_Temp=Pseudo\_ID\_Temp+**1**;

if first.method then do;

Pseudo\_ID\_Temp=**1**;

end;

run;

proc print data=Temp2\_Exploded\_&Outcome;

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID\_Temp;

title"Temp2\_Exploded\_&Outcome";

run;

data Temp3\_Exploded\_&Outcome;

set Temp2\_Exploded\_&Outcome;

\* As plots will be alwasy separated for H0 and H1, there are 36 values on the x-axis.

Due to the breaks, the final PSEUDO\_ID has the values

1,2,3,4,5,6,7,8,9, 11,12,13,14,15,16,17,18,19, 21,22,23,24,25,26,27,28,29, 31,32,33,34,35,36,37,38,39;

if Ident\_t='H0' then do;

if Pseudo\_ID\_Temp in ( **36**, **35**, **34**, **33**, **33**, **32**, **30**, **29**, **28**) then Pseudo\_ID=Pseudo\_ID\_Temp+**3**;

if Pseudo\_ID\_Temp in ( **27**, **26**, **25**, **24**, **23**, **22**, **21**, **20**, **19**) then Pseudo\_ID=Pseudo\_ID\_Temp+**2**;

if Pseudo\_ID\_Temp in ( **18**, **17**, **16**, **15**, **14**, **13**, **12**, **11**, **10**) then Pseudo\_ID=Pseudo\_ID\_Temp+**1**;

if Pseudo\_ID\_Temp in ( **9**, **8**, **7**, **6**, **5**, **4**, **3**, **2**, **1**) then Pseudo\_ID=Pseudo\_ID\_Temp;

end;

run;

proc print data=Temp3\_Exploded\_&Outcome;

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID Pseudo\_ID\_Temp;

title"Temp3\_Exploded\_&Outcome";

run;

\* Define a data set with empty observations for the PSEUDO\_IDs 10,29,30;

data Temp4\_Exploded\_&Outcome;

set Temp3\_Exploded\_&Outcome;

if Pseudo\_ID in (**9**,**19**,**29**);

Pseudo\_ID=Pseudo\_ID+**1**;

&Outcome=**.**;

run;

proc print data=Temp4\_Exploded\_&Outcome;

title"Temp4\_Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID;

run;

data Exploded\_&Outcome;

set Temp3\_Exploded\_&Outcome Temp4\_Exploded\_&Outcome;

run;

proc sort data=Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID;

run;

proc print data=Exploded\_&Outcome;

title"Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID &Outcome;

run;

**%mend**;

\* Macros to prepare data for graphics and supplemental outputs;

%***preparegraph***(Outcome=Median\_Bias);

%***preparegraph***(Outcome=Mean\_Coverage);

%***preparegraph***(Outcome=N\_Est);

\* Preparation of the legend.

Exmaple is the bias of the beta-Binomial-Modell (BBFM;

/\*

data legende;

set Exploded\_Median\_Bias(where=(Ident\_t='H0' and Effect\_Estimator='LogOR' and Method="BBFM"));

run;

proc print data=legende;run;\*/

ods listing gpath="C:\Temp" style=DoppelNull sge=on;

ods graphics on / reset=all width=18cm height=8cm imagename='Legende' border=off;

title;

proc sgplot data=legende;

series y=Median\_Bias x=Pseudo\_ID / lineattrs=(pattern=solid thickness=3) break nomissinggroup name='s';

refline 0 / axis=y;

yaxis min=-0.04 max=0.06 display=(nolabel noticks novalues);

xaxis display=(nolabel noticks novalues);

run;

\*/

options mlogic mprint;

**%macro** sgpanel(daten=,rownum=,colnum=,width=,height=,response=,ylabel=,imagename=,titel=,refliney=,ymin=,ymax=);

proc print data=&daten;run;

ods listing gpath="C:\Users\tmathes\temp" style=FewStudies;\* sge=on;

ods graphics on / reset=all width=&width height=&height imagename=&imagename border=off;

title &titel;

proc sgpanel data=&daten;

panelby method / rows=&rownum columns=&colnum novarname;

series y=&response x=Pseudo\_ID / lineattrs=(pattern=solid thickness=**3**) break nomissinggroup name='s';

refline &refliney / axis=y;

rowaxis min=&ymin max=&ymax label=&ylabel grid;

colaxis display=(nolabel noticks novalues);

run;

**%mend**;

%***sgpanel***(daten=Exploded\_Median\_Bias, rownum=**1**,colnum=**5**,width=24cm,height=12cm,response=Median\_Bias,ylabel="Median Bias",imagename="Median\_Bias\_H0\_LogOR",

titel="Bias, H0",refliney=**0**,ymin=-**0.04**,ymax=**0.06**);

%***sgpanel***(daten=Exploded\_Mean\_Coverage, rownum=**1**,colnum=**5**,width=24cm,height=12cm,response=Mean\_Coverage,ylabel="Empirical Coverage to the 95% level",imagename="Mean\_Coverage\_H0\_LogOR",

titel="Empirical Coverage, H0",refliney=**0.95**,ymin=**0.6**,ymax=**1**);

%***sgpanel***(daten=Exploded\_N\_Est(where=(Ident\_t='H0' and Effect\_Estimator='LogOR')),

rownum=**3**,colnum=**4**,width=24cm,height=6cm,response=N\_Est,ylabel="Number of converged runs",imagename="N\_Est\_H0\_LogOR",

titel="Number of converged runs, H0",refliney=**0**,ymin=**8000**,ymax=**10000**);

\* Print results in tables for the online supplement;

**%macro** printres(daten=,response=,formatresp=,titel=);

data temp\_print;

set &daten;

\* A technical thing: data sets for plotting had by definition an empty observation for each 4 values;

if &response=**.** then delete;

keep Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy &response;

format &response &formatresp;

run;

/\* proc print data=temp\_print noobs;

var Method Ident\_REM Ident\_largestudy Ident\_nstudy &response;

title &titel;

run;

\*/

\* Transpose table;

proc transpose data=temp\_print out=temp\_print\_1(drop=\_NAME\_);

by method;

id Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

run;

ods listing close;

ods rtf file="C:\Users\tmathes\temp\t.rtf";

proc print data=temp\_print\_1 noobs;

title &titel;

run;

ods rtf close;

\* Delete temporary datasets;

proc datasets;delete temp\_print temp\_print\_1;run;quit;

**%mend** printres;

/\*%printres(daten=Exploded\_Median\_Bias, response=Median\_Bias, formatresp=5.3, titel="Bias, H0");\*/

/\*%printres(daten=Exploded\_Mean\_Coverage, response=Mean\_Coverage, formatresp=5.3, titel="Empirical Coverage, H0");\*/

/\*%printres(daten=Exploded\_N\_Est, response=N\_Est, formatresp=5.0, titel="Number of converged runs, H0");\*/

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* AUSWERTUNG ALTERNATIVE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

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Merging datasets from the different simulation scenarios under H0;

/\*

data eins\_h1;

set results.result\_h1feme02 results.result\_h1feme03 results.result\_h1feme04 results.result\_h1feme05 results.result\_h1feme10 results.result\_h1feme15

results.result\_h1feme20 results.result\_h1feme30 results.result\_h1feme50 results.result\_h1feml02 results.result\_h1feml03 results.result\_h1feml04

results.result\_h1feml05 results.result\_h1feml10 results.result\_h1feml15 results.result\_h1feml20 results.result\_h1feml30 results.result\_h1feml50

results.result\_h1reme02 results.result\_h1reme03 results.result\_h1reme04 results.result\_h1reme05 results.result\_h1reme10 results.result\_h1reme15

results.result\_h1reme20 results.result\_h1reme30 results.result\_h1reme50 results.result\_h1reml02 results.result\_h1reml03 results.result\_h1reml04

results.result\_h1reml05 results.result\_h1reml10 results.result\_h1reml15 results.result\_h1reml20 results.result\_h1reml30 results.result\_h1reml50;

run;

proc contents data=eins\_h1 position;run;

proc sort data=eins\_h1;by ident simruns;run;

data results.gesamt\_FEW\_STUDIES\_H1;set eins\_h1;run;

\*/

**data** deskription\_FEW\_STUDIES\_H1;

set results.gesamt\_FEW\_STUDIES\_H1;

by Ident;

if first.Ident;

if substr(Ident,**1**,**2**) = 'H0' then Ident\_t='H0'; if substr(Ident,**1**,**2**) = 'H1' then Ident\_t='H1';

if substr(Ident,**3**,**3**) = 'FEM' then Ident\_REM='FEM'; if substr(Ident,**3**,**3**) = 'REM' then Ident\_REM='REM';

if substr(Ident,**6**,**1**) = 'E' then Ident\_largestudy='E'; if substr(Ident,**6**,**1**) = 'L' then Ident\_largestudy='L';

if substr(Ident,**7**,**2**) = '02' then Ident\_nstudy='02'; if substr(Ident,**7**,**2**) = '03' then Ident\_nstudy='03';

if substr(Ident,**7**,**2**) = '04' then Ident\_nstudy='04'; if substr(Ident,**7**,**2**) = '05' then Ident\_nstudy='05';

if substr(Ident,**7**,**2**) = '10' then Ident\_nstudy='10'; if substr(Ident,**7**,**2**) = '15' then Ident\_nstudy='15';

if substr(Ident,**7**,**2**) = '20' then Ident\_nstudy='20'; if substr(Ident,**7**,**2**) = '30' then Ident\_nstudy='30';

if substr(Ident,**7**,**2**) = '50' then Ident\_nstudy='50';

**run**;

**proc** **sort** data=deskription\_FEW\_STUDIES\_H1;

by Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

**run**;

**proc** **print** data=deskription\_FEW\_STUDIES\_H1 noobs;

**run**;

\* Analysis bias;

ods listing close;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss median maxdec=**5**;

by ident;

var bias\_LogOR\_BBIN bias\_LogOR\_BBFM bias\_LogOR\_BB1N bias\_LogOR\_BB2N bias\_LogOR\_BBMP bias\_LogOR\_BBQD bias\_LogOR\_BBQL

bias\_LogOR\_MaHa bias\_LogOR\_YPET bias\_LogOR\_DLRE bias\_LogOR\_HKSJ bias\_LogOR\_mKH\_ bias\_LogOR\_PMRE bias\_LogOR\_PMHK;

output out=H1\_Temp\_Median\_Bias

median(bias\_LogOR\_BBIN)=LogOR\_BBIN\_Median\_Bias

median(bias\_LogOR\_BBFM)=LogOR\_BBFM\_Median\_Bias

median(bias\_LogOR\_BB1N)=LogOR\_BB1N\_Median\_Bias

median(bias\_LogOR\_BB2N)=LogOR\_BB2N\_Median\_Bias

median(bias\_LogOR\_BBMP)=LogOR\_BBMP\_Median\_Bias

median(bias\_LogOR\_BBQD)=LogOR\_BBQD\_Median\_Bias

median(bias\_LogOR\_BBQL)=LogOR\_BBQL\_Median\_Bias

median(bias\_LogOR\_DLRE)=LogOR\_DLRE\_Median\_Bias

median(bias\_LogOR\_HKSJ)=LogOR\_HKSJ\_Median\_Bias

median(bias\_LogOR\_mKH\_)=LogOR\_mKH\_\_Median\_Bias

median(bias\_LogOR\_MaHa)=LogOR\_MaHa\_Median\_Bias

median(bias\_LogOR\_PMRE)=LogOR\_PMRE\_Median\_Bias

median(bias\_LogOR\_PMHK)=LogOR\_PMHK\_Median\_Bias

median(bias\_LogOR\_YPET)=LogOR\_YPET\_Median\_Bias

;

title"Analyse all Biases";

**run**;

ods listing;

/\*proc means data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss median min q1 q3 max;

var bias\_LogOR\_BBIN bias\_LogOR\_BBFM bias\_LogOR\_BB1N bias\_LogOR\_BB2N bias\_LogOR\_BBMP bias\_LogOR\_BBQD bias\_LogOR\_BBQL

bias\_LogOR\_MaHa bias\_LogOR\_YPET bias\_LogOR\_DLRE bias\_LogOR\_HKSJ bias\_LogOR\_mKH\_ bias\_LogOR\_PMRE bias\_LogOR\_PMHK;

title"Median Bias H1 from all 360.000 scenarios/simruns";\*/

**run**;

\* Analysis coverage;

ods listing close;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss mean maxdec=**5**;

by ident;

var coverage\_LogOR\_BBIN coverage\_LogOR\_BBFM coverage\_LogOR\_BB1N coverage\_LogOR\_BB2N coverage\_LogOR\_BBMP coverage\_LogOR\_BBQD coverage\_LogOR\_BBQL

coverage\_LogOR\_MaHa coverage\_LogOR\_YPET coverage\_LogOR\_DLRE coverage\_LogOR\_HKSJ coverage\_LogOR\_mKH\_ coverage\_LogOR\_PMRE coverage\_LogOR\_PMHK;

output out=H1\_Temp\_Mean\_Coverage

mean(coverage\_LogOR\_BBIN)=LogOR\_BBIN\_Mean\_Coverage

mean(coverage\_LogOR\_BBFM)=LogOR\_BBFM\_Mean\_Coverage

mean(coverage\_LogOR\_BB1N)=LogOR\_BB1N\_Mean\_Coverage

mean(coverage\_LogOR\_BB2N)=LogOR\_BB2N\_Mean\_Coverage

mean(coverage\_LogOR\_BBMP)=LogOR\_BBMP\_Mean\_Coverage

mean(coverage\_LogOR\_BBQD)=LogOR\_BBQD\_Mean\_Coverage

mean(coverage\_LogOR\_BBQL)=LogOR\_BBQL\_Mean\_Coverage

mean(coverage\_LogOR\_DLRE)=LogOR\_DLRE\_Mean\_Coverage

mean(coverage\_LogOR\_HKSJ)=LogOR\_HKSJ\_Mean\_Coverage

mean(coverage\_LogOR\_mKH\_)=LogOR\_mKH\_\_Mean\_Coverage

mean(coverage\_LogOR\_MaHa)=LogOR\_MaHa\_Mean\_Coverage

mean(coverage\_LogOR\_PMRE)=LogOR\_PMRE\_Mean\_Coverage

mean(coverage\_LogOR\_PMHK)=LogOR\_PMHK\_Mean\_Coverage

mean(coverage\_LogOR\_YPET)=LogOR\_YPET\_Mean\_Coverage

;

title"Analyse all Coverages";

**run**;

ods listing;

/\*proc means data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss mean;

var coverage\_LogOR\_BBIN coverage\_LogOR\_BBFM coverage\_LogOR\_BB1N coverage\_LogOR\_BB2N coverage\_LogOR\_BBMP coverage\_LogOR\_BBQD coverage\_LogOR\_BBQL

coverage\_LogOR\_MaHa coverage\_LogOR\_YPET coverage\_LogOR\_DLRE coverage\_LogOR\_HKSJ coverage\_LogOR\_mKH\_ coverage\_LogOR\_PMRE coverage\_LogOR\_PMHK;

title"Empirical Coverage H1 from all 360.000 scenarios/simruns";\*/

**run**;

\* Analysis converged runs;

ods listing close;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss maxdec=**5**;

by ident;

var LogOR\_BBIN LogOR\_BBFM LogOR\_BB1N LogOR\_BB2N LogOR\_BBMP LogOR\_BBQD LogOR\_BBQL LogOR\_MaHa LogOR\_YPET LogOR\_DLRE LogOR\_HKSJ LogOR\_mKH\_

LogOR\_PMRE LogOR\_PMHK;

output out=H1\_Temp\_N\_Est

n(LogOR\_BBIN)=LogOR\_BBIN\_N\_Est

n(LogOR\_BBFM)=LogOR\_BBFM\_N\_Est

n(LogOR\_BB1N)=LogOR\_BB1N\_N\_Est

n(LogOR\_BB2N)=LogOR\_BB2N\_N\_Est

n(LogOR\_BBMP)=LogOR\_BBMP\_N\_Est

n(LogOR\_BBQD)=LogOR\_BBQD\_N\_Est

n(LogOR\_BBQL)=LogOR\_BBQL\_N\_Est

n(LogOR\_DLRE)=LogOR\_DLRE\_N\_Est

n(LogOR\_HKSJ)=LogOR\_HKSJ\_N\_Est

n(LogOR\_mKH\_)=LogOR\_mKH\_\_N\_Est

n(LogOR\_MaHa)=LogOR\_MaHa\_N\_Est

n(LogOR\_PMRE)=LogOR\_PMRE\_N\_Est

n(LogOR\_PMHK)=LogOR\_PMHK\_N\_Est

n(LogOR\_YPET)=LogOR\_YPET\_N\_Est

;

title"Analyse number of missings";

**run**;

ods listing;

\* Analysis power;

ods listing close;

**proc** **means** data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss mean maxdec=**5**;

by ident;

var power\_LogOR\_BBIN power\_LogOR\_BBFM power\_LogOR\_BB1N power\_LogOR\_BB2N power\_LogOR\_BBMP power\_LogOR\_BBQD power\_LogOR\_BBQL power\_LogOR\_MaHa

power\_LogOR\_YPET power\_LogOR\_DLRE power\_LogOR\_HKSJ power\_LogOR\_mKH\_ power\_LogOR\_PMRE power\_LogOR\_PMHK;

id true\_LogOR;

output out=H1\_Temp\_Mean\_Power

mean(power\_LogOR\_BBIN)=LogOR\_BBIN\_mean\_power

mean(power\_LogOR\_BBFM)=LogOR\_BBFM\_mean\_power

mean(power\_LogOR\_BB1N)=LogOR\_BB1N\_mean\_power

mean(power\_LogOR\_BB2N)=LogOR\_BB2N\_mean\_power

mean(power\_LogOR\_BBMP)=LogOR\_BBMP\_mean\_power

mean(power\_LogOR\_BBQD)=LogOR\_BBQD\_mean\_power

mean(power\_LogOR\_BBQL)=LogOR\_BBQL\_mean\_power

mean(power\_LogOR\_DLRE)=LogOR\_DLRE\_mean\_power

mean(power\_LogOR\_HKSJ)=LogOR\_HKSJ\_mean\_power

mean(power\_LogOR\_mKH\_)=LogOR\_mKH\_\_mean\_power

mean(power\_LogOR\_MaHa)=LogOR\_MaHa\_mean\_power

mean(power\_LogOR\_PMRE)=LogOR\_PMRE\_mean\_power

mean(power\_LogOR\_PMHK)=LogOR\_PMHK\_mean\_power

mean(power\_LogOR\_YPET)=LogOR\_YPET\_mean\_power

;

title"Analyse all Powers";

**run**;

ods listing;

/\*proc means data=results.gesamt\_FEW\_STUDIES\_H1 n nmiss mean;

var power\_LogOR\_BBIN power\_LogOR\_BBFM power\_LogOR\_BB1N power\_LogOR\_BB2N power\_LogOR\_BBMP power\_LogOR\_BBQD power\_LogOR\_BBQL power\_LogOR\_MaHa

power\_LogOR\_YPET power\_LogOR\_DLRE power\_LogOR\_HKSJ power\_LogOR\_mKH\_ power\_LogOR\_PMRE power\_LogOR\_PMHK;

title"Empirical Power from all 360.000 scenarios";\*/

**run**;

**%macro** preparegraph\_H1(Outcome=);

\* Split the IDENT variable to refer to the different scenarios;

title;

data &Outcome;

set H1\_Temp\_&Outcome;

drop \_TYPE\_ \_FREQ\_;

if substr(Ident,**1**,**2**) = 'H0' then Ident\_t='H0'; if substr(Ident,**1**,**2**) = 'H1' then Ident\_t='H1';

if substr(Ident,**3**,**3**) = 'FEM' then Ident\_REM='FEM'; if substr(Ident,**3**,**3**) = 'REM' then Ident\_REM='REM';

if substr(Ident,**6**,**1**) = 'E' then Ident\_largestudy='E'; if substr(Ident,**6**,**1**) = 'L' then Ident\_largestudy='L';

if substr(Ident,**7**,**2**) = '02' then Ident\_nstudy='02'; if substr(Ident,**7**,**2**) = '03' then Ident\_nstudy='03';

if substr(Ident,**7**,**2**) = '04' then Ident\_nstudy='04'; if substr(Ident,**7**,**2**) = '05' then Ident\_nstudy='05';

if substr(Ident,**7**,**2**) = '10' then Ident\_nstudy='10'; if substr(Ident,**7**,**2**) = '15' then Ident\_nstudy='15';

if substr(Ident,**7**,**2**) = '20' then Ident\_nstudy='20'; if substr(Ident,**7**,**2**) = '30' then Ident\_nstudy='30';

if substr(Ident,**7**,**2**) = '50' then Ident\_nstudy='50';

run;

proc print data=&Outcome;

title"&Outcome";

run;

proc contents position data=&Outcome;run;

\* Prepare the data set for explosion;

data H1\_Temp2\_&Outcome;

set &Outcome;

do i=**1** to **14**;

output;

end;

run;

\* Define the new variables EFFECT\_ESTIMATOR, METHOD and &OUTCOME in the exploded data set;

data H1\_Temp\_Exploded\_&Outcome(drop=LogOR\_BBIN LogOR\_BBFM LogOR\_BB1N LogOR\_BB2N LogOR\_BBMP LogOR\_BBQD LogOR\_BBQL LogOR\_MaHa LogOR\_YPET LogOR\_DLRE LogOR\_HKSJ LogOR\_mKH\_

LogOR\_PMRE LogOR\_PMHK);

set H1\_Temp2\_&Outcome;

if i=**1** then do; Effect\_Estimator="LogOR"; Method="BBIN"; &Outcome=LogOR\_BBIN\_&Outcome;end;

if i=**2** then do; Effect\_Estimator="LogOR"; Method="BBFM"; &Outcome=LogOR\_BBFM\_&Outcome;end;

if i=**3** then do; Effect\_Estimator="LogOR"; Method="BB1N"; &Outcome=LogOR\_BB1N\_&Outcome;end;

if i=**4** then do; Effect\_Estimator="LogOR"; Method="BB2N"; &Outcome=LogOR\_BB2N\_&Outcome;end;

if i=**5** then do; Effect\_Estimator="LogOR"; Method="BBMP"; &Outcome=LogOR\_BBMP\_&Outcome;end;

if i=**6** then do; Effect\_Estimator="LogOR"; Method="BBQD"; &Outcome=LogOR\_BBQD\_&Outcome;end;

if i=**7** then do; Effect\_Estimator="LogOR"; Method="BBQL"; &Outcome=LogOR\_BBQL\_&Outcome;end;

if i=**8** then do; Effect\_Estimator="LogOR"; Method="DLRE"; &Outcome=LogOR\_DLRE\_&Outcome;end;

if i=**9** then do; Effect\_Estimator="LogOR"; Method="HKSJ"; &Outcome=LogOR\_HKSJ\_&Outcome;end;

if i=**10** then do; Effect\_Estimator="LogOR"; Method="MKH\_"; &Outcome=LogOR\_mKH\_\_&Outcome;end;

if i=**11** then do; Effect\_Estimator="LogOR"; Method="MaHa"; &Outcome=LogOR\_MaHa\_&Outcome;end;

if i=**12** then do; Effect\_Estimator="LogOR"; Method="PMRE"; &Outcome=LogOR\_PMRE\_&Outcome;end;

if i=**13** then do; Effect\_Estimator="LogOR"; Method="PMHK"; &Outcome=LogOR\_PMHK\_&Outcome;end;

if i=**14** then do; Effect\_Estimator="LogOR"; Method="YPET"; &Outcome=LogOR\_YPET\_&Outcome;end;

run;

proc sort data=H1\_Temp\_Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

run;

proc print data=H1\_Temp\_Exploded\_&Outcome;

title"Temp\_Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

run;

\* Define the PSEUDO\_ID that will be plotted on the axis in the graph.

This is complicated due to the breaks in the graphs for which empty (for the outcome) observations

have to be generated;

data H1\_Temp2\_Exploded\_&Outcome;

set H1\_Temp\_Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

\* PSEUDO\_ID\_TEMP goes counts the 32 scenarios;

retain Pseudo\_ID\_Temp **0**;

Pseudo\_ID\_Temp=Pseudo\_ID\_Temp+**1**;

if first.method then do;

Pseudo\_ID\_Temp=**1**;

end;

run;

proc print data=H1\_Temp2\_Exploded\_&Outcome;

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID\_Temp;

title"Temp2\_Exploded\_&Outcome";

run;

data H1\_Temp3\_Exploded\_&Outcome;

set H1\_Temp2\_Exploded\_&Outcome;

\* As plots will be alwasy separated for H0 and H1, there are 36 values on the x-axis.

Due to the breaks, the final PSEUDO\_ID has the values

1,2,3,4,5,6,7,8,9, 11,12,13,14,15,16,17,18,19, 21,22,23,24,25,26,27,28,29, 31,32,33,34,35,36,37,38,39;

if Ident\_t='H1' then do;

if Pseudo\_ID\_Temp in ( **36**, **35**, **34**, **33**, **33**, **32**, **30**, **29**, **28**) then Pseudo\_ID=Pseudo\_ID\_Temp+**3**;

if Pseudo\_ID\_Temp in ( **27**, **26**, **25**, **24**, **23**, **22**, **21**, **20**, **19**) then Pseudo\_ID=Pseudo\_ID\_Temp+**2**;

if Pseudo\_ID\_Temp in ( **18**, **17**, **16**, **15**, **14**, **13**, **12**, **11**, **10**) then Pseudo\_ID=Pseudo\_ID\_Temp+**1**;

if Pseudo\_ID\_Temp in ( **9**, **8**, **7**, **6**, **5**, **4**, **3**, **2**, **1**) then Pseudo\_ID=Pseudo\_ID\_Temp;

end;

run;

proc print data=H1\_Temp3\_Exploded\_&Outcome;

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID Pseudo\_ID\_Temp;

title"Temp3\_Exploded\_&Outcome";

run;

\* Define a data set with empty observations for the PSEUDO\_IDs 10,29,30;

data H1\_Temp4\_Exploded\_&Outcome;

set H1\_Temp3\_Exploded\_&Outcome;

if Pseudo\_ID in (**9**,**19**,**29**);

Pseudo\_ID=Pseudo\_ID+**1**;

&Outcome=**.**;

run;

proc print data=H1\_Temp4\_Exploded\_&Outcome;

title"Temp4\_Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID;

run;

data H1\_Exploded\_&Outcome;

set H1\_Temp3\_Exploded\_&Outcome H1\_Temp4\_Exploded\_&Outcome;

run;

proc sort data=H1\_Exploded\_&Outcome;

by Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID;

run;

proc print data=H1\_Exploded\_&Outcome;

title"Exploded\_&Outcome";

var Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy Pseudo\_ID &Outcome;

run;

**%mend**;

\* Macros to prepare data for graphics and supplemental outputs;

%***preparegraph\_H1***(Outcome=Median\_Bias);

%***preparegraph\_H1***(Outcome=Mean\_Coverage);

%***preparegraph\_H1***(Outcome=Mean\_Power);

%***preparegraph\_H1***(Outcome=N\_Est);

options mlogic mprint;

**%macro** sgpanel\_H1(daten=,rownum=,colnum=,width=,height=,response=,ylabel=,imagename=,titel=,refliney=,ymin=,ymax=);

ods listing gpath="C:\Users\tmathes\temp" style=FewStudies;\* sge=on;

ods graphics on / reset=all width=&width height=&height imagename=&imagename border=off;

title &titel;

proc sgpanel data=&daten;

panelby method / rows=&rownum columns=&colnum novarname;

series y=&response x=Pseudo\_ID / lineattrs=(pattern=solid thickness=**3**) break nomissinggroup name='s';

refline &refliney / axis=y;

rowaxis min=&ymin max=&ymax label=&ylabel grid;

colaxis display=(nolabel noticks novalues);

run;

**%mend**;

%***sgpanel\_H1***(daten=H1\_Exploded\_Median\_Bias,

rownum=**1**,colnum=**5**,width=24cm,height=12cm,response=Median\_Bias,ylabel="Median Bias",imagename="Median\_Bias\_H1\_LogOR",

titel="Bias, H1",refliney=**0**,ymin=-**0.04**,ymax=**0.08**);

%***sgpanel\_H1***(daten=H1\_Exploded\_Mean\_Coverage, rownum=**1**,colnum=**5**,width=24cm,height=12cm,response=Mean\_Coverage,ylabel="Empirical Coverage to the 95% level",

imagename="Mean Coverage\_H1\_LogOR", titel="Empirical Coverage, H1",refliney=**0.95**,ymin=**0.7**,ymax=**1**);

%***sgpanel\_H1***(daten=H1\_Exploded\_Mean\_Power,

rownum=**2**,colnum=**4**,width=18cm,height=8cm,response=Mean\_Power,ylabel="Empirical Power",imagename="Mean\_Power\_H1",

titel="Empirical Power, Medium treatment effect",refliney=**0.05**,ymin=**0**,ymax=**1**);

%***sgpanel\_H1***(daten=H1\_Exploded\_N\_Est,

rownum=**3**,colnum=**4**,width=24cm,height=6cm,response=N\_Est,ylabel="Number of converged runs",imagename="N\_Est\_H0\_LogOR",

titel="Number of converged runs, H0",refliney=**0**,ymin=**8000**,ymax=**10000**);

\* Print results in tables for the online supplement;

**%macro** printres\_H1(daten=,response=,formatresp=,titel=);

data temp\_print;

set &daten;

\* A technical thing: data sets for plotting had by definition an empty observation for each 4 values;

if &response=**.** then delete;

keep Method Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy &response;

format &response &formatresp;

run;

/\* proc print data=temp\_print noobs;

var Method Ident\_REM Ident\_largestudy Ident\_nstudy &response;

title &titel;

run;

\*/

\* Transpose table;

proc transpose data=temp\_print out=temp\_print\_1(drop=\_NAME\_);

by method;

id Ident\_t Ident\_REM Ident\_largestudy Ident\_nstudy;

run;

ods listing close;

ods rtf file="C:\Users\tmathes\temp\t.rtf";

proc print data=temp\_print\_1 noobs;

title &titel;

run;

ods rtf close;

\* Delete temporary datasets;

proc datasets;delete temp\_print temp\_print\_1;run;quit;

**%mend** printres\_H1;

/\*%printres\_H1(daten=H1\_Exploded\_Median\_Bias, response=Median\_Bias, formatresp=5.3, titel="Bias, Medium treatment effect");\*/

/\*%printres\_H1(daten=H1\_Exploded\_Mean\_Coverage, response=Mean\_Coverage, formatresp=5.3, titel="Empirical Coverage, Medium treatment effect");\*/

/\*%printres\_H1(daten=H1\_Exploded\_Mean\_Power,response=Mean\_Power,formatresp=5.3, titel="Empirical power, H1, Medium treatment effect");\*/

/\*%printres\_H1(daten=H1\_Exploded\_N\_Est, response=N\_Est, formatresp=5.0, titel="Number of converged runs, Medium treatment effect");\*/