Summary results – simulation with 90 groups, 5 of each type.

Types include the full factorial design of sample size (n = 25, 50, 100), probability of outylingness (p = .1, .2, .3) and size of outliers (m = 9, 25, multiple of variance). Sigma\_i^2 = 4 for all groups.

Prior distributions as in John’s description, except for distribution for the sigma\_i^2. Informative prior is used. An inverse gamma with parameters a, and b=4a. The corresponding gamma would have a mean of 1/sigma\_i^2, so the prior does shrink toward the truth. The parameter a is twice the degrees of freedom. Bigger a means a more informative prior. B is set to shrink toward the truth.

A = 0.5 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17347 0.11192 0.12374 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.28452 0.07931 0.08065 0.07789 0.07888

A = 1 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17352 0.11204 0.12368 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27978 0.07617 0.07783 0.07789 0.07888

A = 1.25 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17268 0.11218 0.12425 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27756 0.07484 0.07622 0.07789 0.07888

A = 2.5 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17278 0.11100 0.12431 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.26669 0.06862 0.07008 0.07789 0.07888

A = 5 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17023 0.11123 0.12351 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.24777 0.05933 0.06049 0.07789 0.07888

A=10 case.

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.16836 0.11119 0.12324 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.21832 0.04739 0.04860 0.07789 0.07888

A = 1.25, b = 1.25 sigma^2 \* 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17303 0.11245 0.12434 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.28256 0.08119 0.08279 0.07789 0.07888

A = 2.5, b = 2.5 sigma^2 \* 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17337 0.11154 0.12440 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27633 0.08150 0.08314 0.07789 0.07888

A = 5, b = 5 sigma^2 \* 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17097 0.11177 0.12366 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.26556 0.08325 0.08478 0.07789 0.07888

A = 10, b = 10 sigma^2 \* 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.16887 0.11172 0.12316 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.24881 0.08689 0.08826 0.07789 0.07888

A = 1.25, b = 1.25 \* sigma^2 \* sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17282 0.11232 0.12432 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27961 0.07727 0.07874 0.07789 0.07888

A=2.5, b=2.5 sigma^2 \* sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17300 0.11116 0.12430 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27061 0.07335 0.07492 0.07789 0.07888

A=5, b=5 sigma^2 \* sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17048 0.11131 0.12345 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.25497 0.06808 0.06935 0.07789 0.07888

A = 10, b = 10 \* sigma^2 \* sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.16841 0.11108 0.12283 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.23060 0.06163 0.06287 0.07789 0.07888

A = 1.25, b = 1.25 \* sigma^2 / 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17252 0.11210 0.12426 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27516 0.07247 0.07381 0.07789 0.07888

A = 2.5, b = 2.5 sigma^2 / 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17254 0.11103 0.12430 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.26217 0.06447 0.06582 0.07789 0.07888

A = 5, b = 5 sigma^2 / 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17004 0.11148 0.12380 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.23971 0.05314 0.05412 0.07789 0.07888

A = 10, b = 10 sigma^2 / 2

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.16863 0.11200 0.12436 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.20531 0.04087 0.04203 0.07789 0.07888

A = 1.25, b = 1.25 \* sigma^2 / sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17259 0.11213 0.12426 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.27615 0.07336 0.07473 0.07789 0.07888

A = 2.5, b = 2.5 sigma^2 / sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17263 0.11102 0.12425 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.26401 0.06596 0.06733 0.07789 0.07888

A = 5, b = 5 sigma^2 / sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.17011 0.11137 0.12358 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.24293 0.05490 0.05594 0.07789 0.07888

A = 10, b = 10 sigma^2 / sqrt(2)

> round(apply(mseDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.16847 0.11158 0.12379 0.12789 0.14360

> round(apply(klDf,2,mean),5) # SteveMod

p n m sig2 Full RestHuber RestTukey RlmHuber RlmTukey

0.20000 58.33333 17.00000 4.00000 0.21034 0.04141 0.04258 0.07789 0.07888