



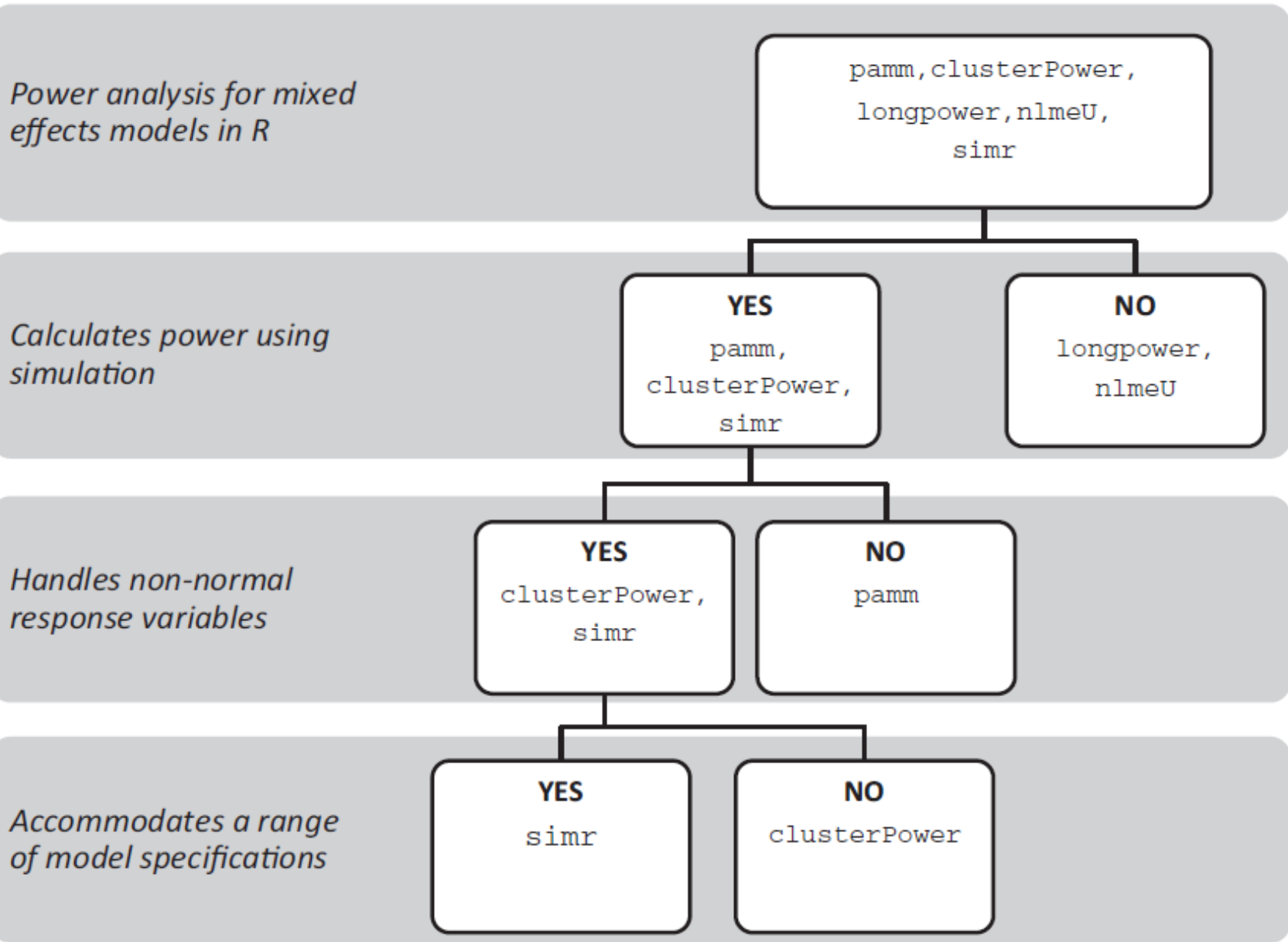
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R101: Praktický úvod pro používání statistického programu R

simr

power analýzy pro MLM (v rámci lme4) za
užití simulace dat

Green, P., MacLeod, C., & Alday, P. (2019). *Package 'simr': Power analysis for generalised linear mixed models by simulation*. R package verze 1.0.5. Dostupné z: <https://cran.r-project.org/web/packages/simr/simr.pdf>



pamm, clusterPower,
longpower, nlmeU,
simr

YES
pamm,
clusterPower,
simr

NO
longpower,
nlmeU

YES
clusterPower,
simr

NO
pamm

YES
simr

NO
clusterPower

Přehled funkcí

makeGlmmer a makeLmer

modify (+ extend)

powerSim

powerCurve

doSim

+ další

makeGlmmer a makeLmer

`makeGlmmer(formula, family, fixef, VarCorr, data)`

`makeLmer(formula, fixef, VarCorr, sigma, data)`

formula jako u `lmer()` nebo `glmer()`

fixef jako vektor

rozptyl a kovariance random efektů; pokud víc -> parametry jako list

sigma – reziduální SD

modify a extend

```
fixef(object_model)[“x”] <- value
```

```
extend(object, along, within, n, values)
```

powerSim

odhad založen na Monte Carlo simulaci
(defaultní počet simulací 1000)

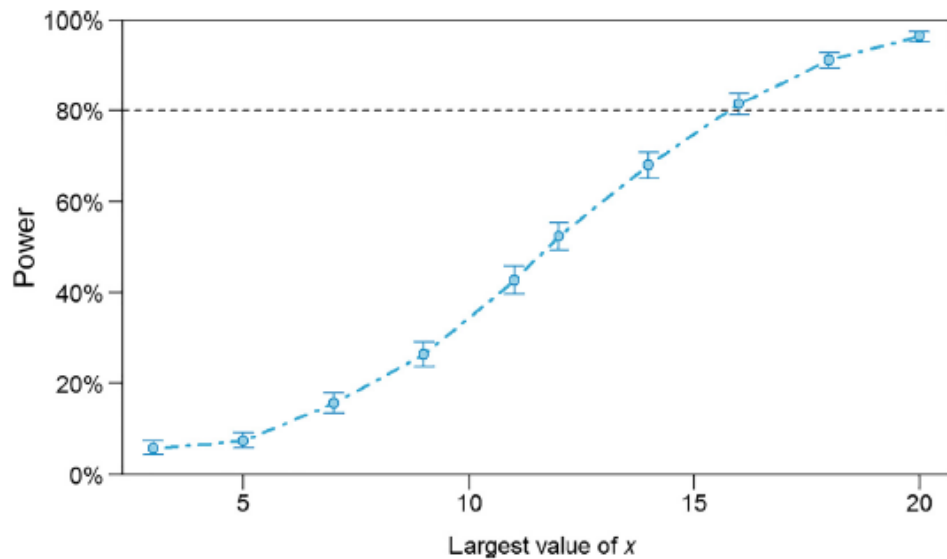
`powerSim(object_model, nsim)`

% v kolika případech vyšla simulace jako
signifikantní (nulová hypotéza byla
zamítnuta) při dané velikosti účinku

```
powerSim(model1)
## Power for predictor 'x', (95% confidence interval):
## 33.40% (30.48, 36.42)
##
## Test: z-test
##      Effect size for x is -0.05
##
## Based on 1000 simulations, (5 warnings, 0 errors)1
## alpha=0.05, nrow=30
##
## Time elapsed: 0 h 3 m 6 s2
```

powerCurve

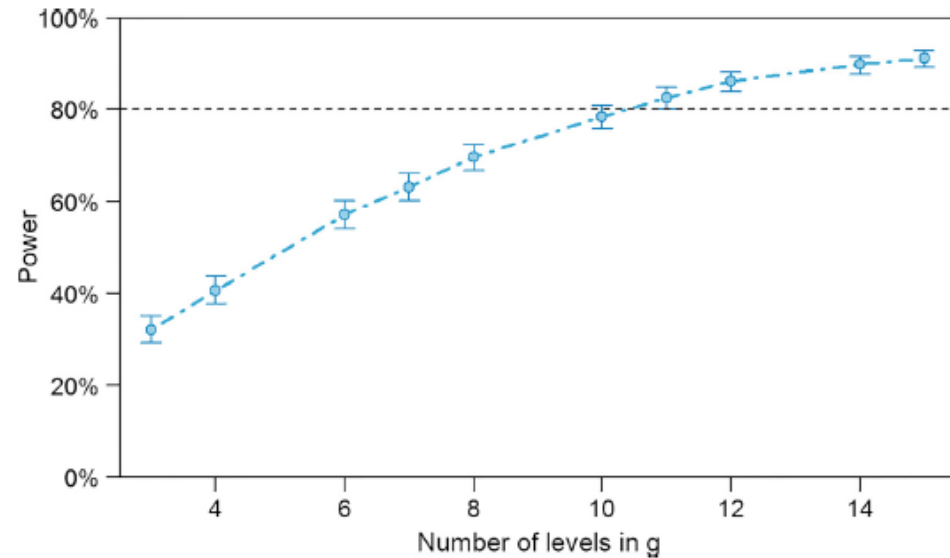
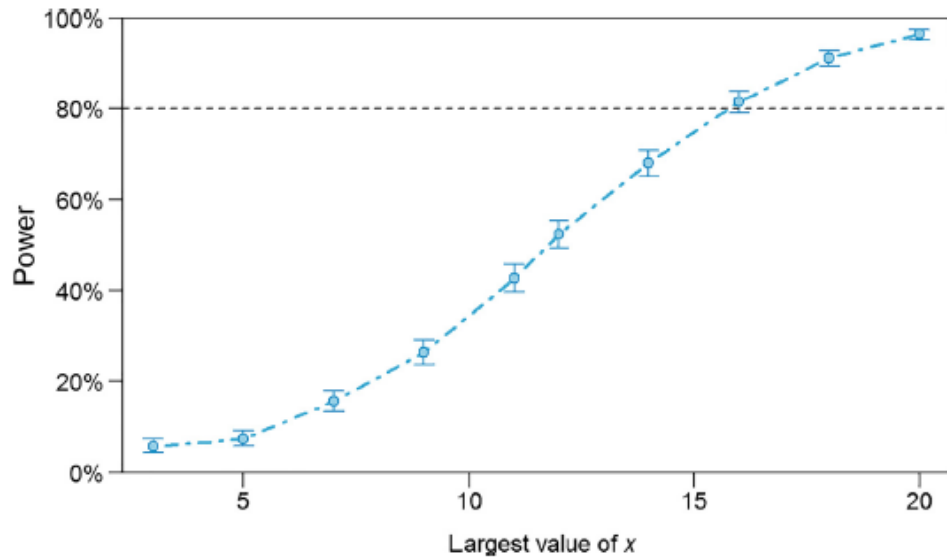
powerCurve(object_model)



```
## Power for predictor 'x', (95% confidence interval),  
## by largest value of x:  
##      3: 5.70% ( 4.35,  7.32) - 9 rows  
##      5: 7.40% ( 5.85,  9.20) - 15 rows  
##      7: 15.60% (13.40, 18.00) - 21 rows  
##      9: 26.30% (23.59, 29.15) - 27 rows  
##     11: 42.70% (39.61, 45.83) - 33 rows  
##     12: 52.30% (49.15, 55.44) - 36 rows  
##     14: 68.00% (65.01, 70.88) - 42 rows  
##     16: 81.60% (79.06, 83.96) - 48 rows  
##     18: 91.30% (89.38, 92.97) - 54 rows  
##     20: 96.60% (95.28, 97.63) - 60 rows
```


powerCurve

`powerCurve(object_model, along = „y“)`



Zdroje

Green, P., MacLeod, C., & Alday, P. (2019). *Package 'simr': Power analysis for generalised linear mixed models by simulation*. R package verze 1.0.5. Dostupné z: <https://cran.r-project.org/web/packages/simr/simr.pdf>

Green, P., McLeod, C. J. (2016). SIMR: an R package for power analysis of generalised linear mixed models by simulation. *Methods in Ecology and Evolution*. 7, 493-498. Dostupné z: <https://doi.org/10.1111/2041-210X.12504>

Děkujeme za pozornost.