Sway

Lobby | Rooms | Quizzes | Reports

Edit Quiz

Save and Exit

Quiz name

Weekly quiz 7 (DUE: Sep 8 10am)

1 **MULTIPLE CHOICE** Edit

A mixed effects model is the term for a model with both fixed and _____ effects?

Answer choices

A	linear
B	random
C	contrast
D	nonlinear

2 MULTIPLE CHOICE

Edit

In a _____ linear model the different types of distributions for the response variable can be fitted using link functions.

Answer choices

A	generalised
B	mixed effects
C	random
D	classical

3 MULTIPLE CHOICE

Edit

What are the two packages for fitting mixed effects models in R?

Answer choices

A	nlme
B	lme4
C	glm
D	lm

4 | **MULTIPLE CHOICE** Edit

The advantages that lme4 has over nlme are _____ (choose all that apply)

Answer choices

A	more efficient linear algebra tools, giving improved performance on large problems
B	simpler syntax and more efficient implementation for fitting models with crossed random effects
C	the implementation of profile likelihood confidence intervals on random-effects parameters
D	the ability to fit generalized linear mixed models
E	a user interface for fitting models with structure in the residuals (various forms of heteroscedasticity and autocorrelation) and in the random-effects covariance matrices (e.g., compound symmetric models)

5 | **MULTIPLE CHOICE** Edit

The advantages that nlme has over lme4 are _____ (choose all that apply)

Answer choices

A	more efficient linear algebra tools, giving improved performance on large problems
B	simpler syntax and more efficient implementation for fitting models with crossed random effects
C	the implementation of profile likelihood confidence intervals on random-effects parameters
D	the ability to fit generalized linear mixed models
E	a user interface for fitting models with structure in the residuals (various forms of heteroscedasticity and autocorrelation) and in the random-effects covariance matrices (e.g., compound symmetric models)

6 **MULTIPLE CHOICE** Edit

In a data set on the average reaction time per day for subjects in a sleep deprivation study (Belenky et al. 2003). On day 0 the subjects had their normal amount of sleep. Starting that night they were restricted to 3 hours of sleep per night. The response variable, Reaction, represents average reaction times in milliseconds (ms) on a series of tests given each Day to each Subject. Which of these is correct?

Answer choices

A	Day is a fixed effect, and Subject is a random effect. The reason is that days after the sleep deprivation is still the same if we want want to generalize the results to a broader population, but the subjects in this study are a sample of the broader population, and we would like to understand the distribution of response times over days of sleep deprivation for all the population based on the distribution of this sample of people.
B	Day is a random effect, and Subject is a fixed effect. The reason is that days after the sleep deprivation is are always changing and we might want to generalize the results to a different set of days, and the subjects in this study are the only people that we want to know about.
C	Day is a fixed effect, and Subject is a fixed effect. The reason is that days after the sleep deprivation is still the same if we want want to generalize the results to a broader population, and the subjects in this study are the only people that we want to know about.
D	Day is a random effect, and Subject is a random effect. The reason is that days after the sleep deprivation is are always changing and we might want to generalize the results to a different set of days, and the subjects in this study are a sample of the broader population, and we would like to understand the distribution of response times over days of sleep deprivation for all the population based on the distribution of this sample of people.

7 MULTIPLE CHOICE

Edit

What type of mixed effects model does this syntax fit? (Days is the fixed effect, and Subject is a random effect)

lmer(Reaction ~ Days + (Days | Subject), sleepstudy)

Answer choices

A	Intercepts change across subjects, but the slopes stay the same
B	Intercepts and slopes change across subjects
C	Intercept and slope is the same for all subjects, because the model is effectively the average reaction time over days
D	Slopes change across subjects, but the intercepts stay the same

8 MULTIPLE CHOICE

Edit

Each _____ term is of the form (expr | factor).

Answer choices

A	linear effects
B	normal effects
C	fixed effects
D	random effects

9 MULTIPLE CHOICE

Edit

The **bootMer** function estimates confidence intervals for the model fit parameters by parametric _____

Answer choices

A	bootstrapping
B	sampling
C	simulation
D	permutation

10 TRUE/FALSE

Edit

The hat matrix to measure leverage of any observations can be computer for the mixed effects model.

Answer

True

11 | **MULTIPLE CHOICE** Edit

In the lmer model fit output, this is the summary of the fixed effects:

```
Fixed effects:
            Estimate Std. Error t value
(Intercept) 251.405  6.825      36.84
Days         10.467  1.546       6.77
```

What would the equation of the resulting linear model?

Answer choices

A	$\hat{y} = 36.84 + 6.77\ Days$
B	$\hat{y} = 6.825 + 1.546\ Days$
C	$\hat{y} = 251.405 + 10.467\ Days$
D	None of these

12 MULTIPLE CHOICE

Edit

In the lmer model fit output, this is the summary of the random effects:

```
Random effects:

 Groups Name        Variance Std.Dev. Corr

Subject (Intercept) 612.09 24.740

     Days         35.07  5.922 0.07

Residual             654.94 25.592

Number of obs: 180, groups: Subject, 18
```

The distribution of the intercepts across subjects has mean equal to 251.405, and variance equal to ____ ?

Answer choices

A	612.09
B	24.740
C	35.07
D	5.922

13 TRUE/FALSE

Edit

The REML criterion at convergence is a summary of how well the model fits, similar to the deviance.

Answer

True

14 | **TRUE/FALSE** Edit

It is important to diagnose the mixed effects model fit using a plot of fitted values vs residuals

Answer

True

15 | **MULTIPLE CHOICE** Edit

Mixed modeling is an extremely useful but _____ technique

Answer choices

A	complicated matrix
B	complex algebra
C	computationally intensive
D	very limited

+ Multiple Choice + True/False + Short Answer