
36-463/663: Multilevel and Hierarchical Models

More Examples in lmer and jags

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11/15/2016

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Outline

- Example 1: Continuing the CD4 example
 - Model building and correlated random effects
- Example 2: Logistic regression:
 - Mothers' decisions to have hospital births
 - Using Bayes to tweak model in ways that lmer can't
- Example 3: Poisson regression:
 - Cockroach eradication!
 - Building models that can't be built in lmer
- Other news:
 - Extra office hour at noon on Thursday!

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Example 1: Continuing the CD4 Example...

- See R handout/demonstration
 - `cd4.r`

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Example 2: Deliver babies in a hospital or at home?

- `hosp.txt` contains data from Lillard & Panis (2000)'s study of the decisions of 501 mothers to give birth in a hospital or elsewhere, for 1060 births:

```
'data.frame': 1060 obs. of 6 variables:
 $ hospital: int 0 0 1 0... 1 = hospital birth, 0 = elsewhere
 $ loginc : num 4.33 5.62... Log_e of family income (log dollars)
 $ distance: num 1.7 7.9... distance (miles) to nearest hospital
 $ dropout : int 0 0 0 0 0... 0 = mom completed hs , 1 = did not
 $ college : int 1 0 0 0 0... 1 = mom attended coll, 0 = did not
 $ mom : int 1 2 2 2 2... unique identifier for each mother
```

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Example 2: Hospital Birth Choices

- See R handout/demonstration

- hosp-births.r

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Example 3: Cockroach Eradication

- `roachdata.csv` contains data from an experiment on the effectiveness of an "integrated pest management system" in apartment buildings in a particular city (from G&H).

```
# $ X      : int  1 2 3 4 5 6 7 8 [observation number]
# $ y      : int  153 127 7 7 0 0 [# of roaches trapped
                                after expmt]
# $ roach1  : num  308 331.25 1.67 [# of roaches before
                                experiment]
# $ treatment: int  1 1 1 1 1 1 1 1 [pest mgmt tx in this
                                apt bldg?]
# $ senior  : int  0 0 0 0 0 0 0 0 [apts restricted to
                                sr citzns?]
# $ exposure2: num  0.8 0.6 1 1 1.14 [avg # of trap-days per
                                apt for y]
```

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Example 3: Cockroach Eradication

- See R handout/demonstration
 - roachdata.r

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Summary

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