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Giving Presentations

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Before the Presentation

- Before the Presentation
  - Practice - get the timing right
  - Don't give a handout
  - Be prepared for trouble
    - Have your talk on laptop, CD, memory key
    - Have a copy on the web, in your email
    - Hardcopy to be faxed

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Notice the nice use of colors

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But don't do this

During the Presentation

- During the Presentation
  - Keep pointer (regular or laser) steady - - don't waggle
  - Talk slowly and clearly and avoid colloquialisms
    - "the results are inconclusive" NOT "the bottom line is crazy"
    - "the derivation is straightforward" NOT "it is easy as pie"
    - "relaxing at home" - NOT - "chillin in my crib"

During the Presentation

- ▶ During the Presentation
  - ▷ Move around, look at people, modulate your voice
  - ▷ Get excited about your results!!!!
  - ▷ Don't cram the slide
    - ▷ use big fonts
    - ▷ only a small amount of info per slide
  - ▷ Use lots of figures
  - ▷ Don't use lots of tables

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This is the previous two slides on one - don't do this!

Bad Slide

For example, if $S_1 = \{3,4,6\}$, $S_2 = \{1,2\}$, $S_3 = \{5\}$,

$$\begin{pmatrix} \psi_1 \\ \psi_2 \\ \vdots \\ \psi_6 \end{pmatrix} = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \end{pmatrix}. \tag{1}$$

We then have

$$\begin{aligned} &\sum_{C:|C|=k} \prod_{j=1}^{k} \Gamma(n_j) \int f(\mathbf{y}_{(j)} \mid \theta, \psi_j)\phi_0(\psi_j)\, d\psi_j \\ &= \sum_{A \in \mathcal{A}_k} \prod_{j=1}^{k} \Gamma(n_j) \int f(\mathbf{y} \mid \theta,\ A\eta)\phi_0(\eta)\, d\eta, \end{aligned}$$

where $\mathcal{A}_k$ is the set of all matrices A and $\eta_j \sim \phi_0$, independent. If we define

$$\boldsymbol{f(\mathbf{y}|\theta, A) = \int f(\mathbf{y} \mid \theta, A\eta)\phi_0(\eta)\, d\eta,} \tag{2}$$

the likelihood function is

$$L(\theta \mid \mathbf{y}) = \frac{\Gamma(m)}{\Gamma(m+n)} \sum_{k=1}^{n} m^k \sum_{A \in \mathcal{A}_k} \prod_{j=1}^{k} \Gamma(n_j) f(\mathbf{y}|\theta, A). \tag{3}$$

Note that if the integral in (2) can be done analytically, as will happen in the normal case discussed next, we have effectively eliminated the random effects from the likelihood, replacing them with the A matrices, which serve to group the observations.

Good Slide

A Mixed Dirichlet Random Effects Model – Underlying Random Effects

$$C = \{S_1, S_2, S_3\} = \{\{3,4,6\},\{1,2\},\{5\}\} \leftrightarrow A = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix}$$

- Matrix Representation

$$\boldsymbol{\psi} = A\boldsymbol{\eta} \quad \text{where } A = \begin{pmatrix} a_1 \\ a_2 \\ \vdots \\ a_n \end{pmatrix} \text{ so } \begin{pmatrix} \psi_1 \\ \psi_2 \\ \vdots \\ \psi_6 \end{pmatrix} = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \end{pmatrix}.$$

- Only need to generate three random variables

Using Colors Wisely

- Color key a formula

Our chain

$$P(a_j = 1|A_{-j}) \propto \begin{cases} \left(\frac{n_j}{n-1+m}\right) \left(\frac{q_j}{n_j+1}\right) & j = 1, \ldots, k \\ \frac{m}{n-1+m} q_{k+1} & j = k+1, \ldots, n \end{cases}$$

Stick-breaking chain

$$P(a_j = 1|A_{-j}) \propto \begin{cases} \frac{n_j}{n-1+m} & j = 1, \ldots, k \\ \frac{m}{n-1+m} & j = k+1 \end{cases}$$

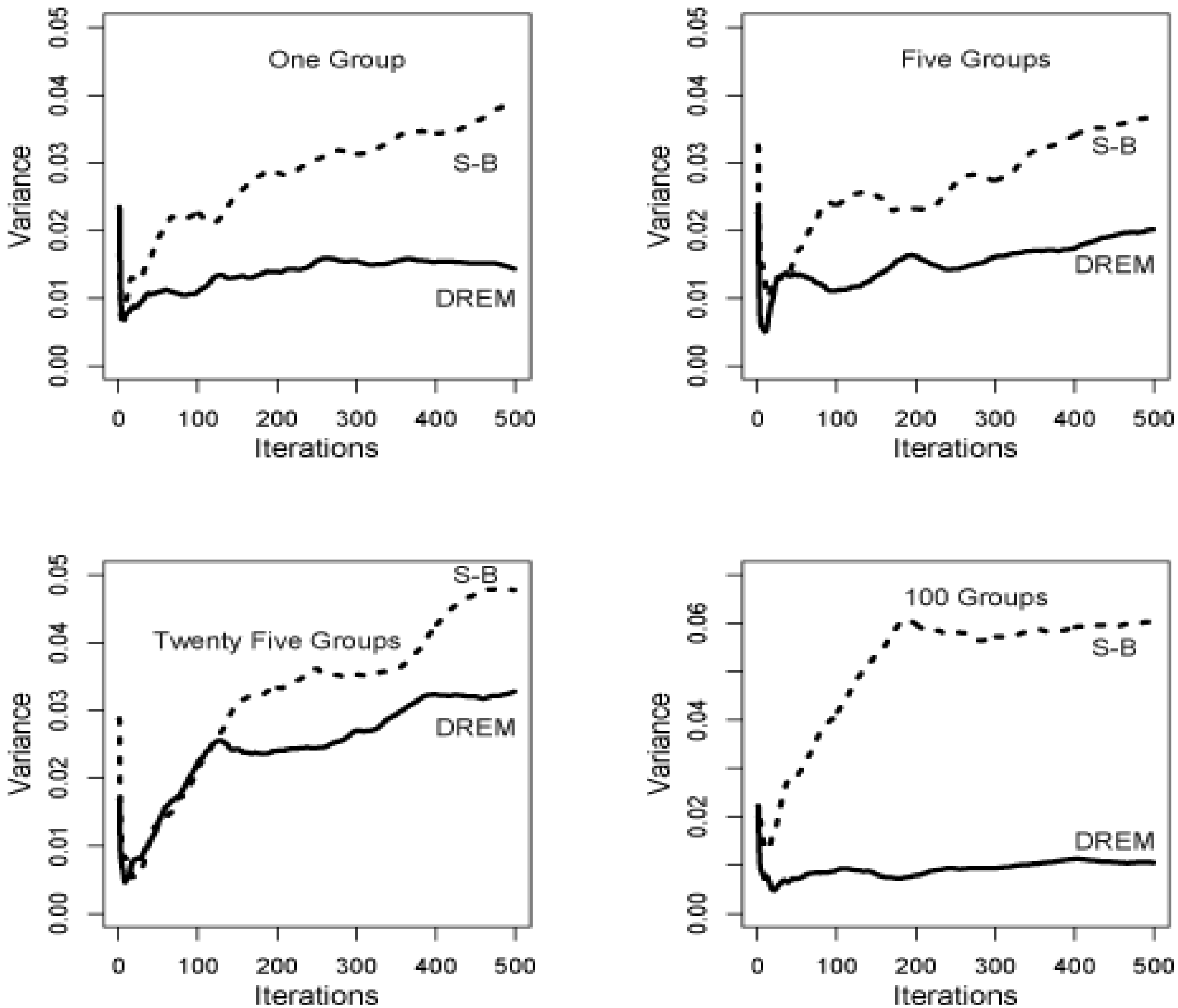
- This is a Parameter Expansion (Liu/Wu 1999JASA, vanDyk/Meng 2001 JCGS)

Bad Slide

The estimated means of family effects for the data set without missing values and for data sets with different percentages of missing values. There are 6 families and 5 SNPs in the data sets. This methodology gives accurate estimates as the percentage of missing values goes up 5 to 20%.

Estimated means	family1: β_1	family 2: β_2	family3: β_3
Actual values:	15	20	25
No missing SNPs	15.45	20.65	25.48
5% missing SNPs	15.16	20.74	25.46
10% missing SNPs	16.18	21.38	25.65
15% missing SNPs	15.45	19.63	24.59
20% missing SNPs	14.87	20.18	24.68
Estimated means	family 4: β_4	family 5: β_5	family 6: β_6
Actual values:	30	35	40
No missing SNPs	29.84	34.76	40.40
5% missing SNPs	28.29	33.43	38.62
10% missing SNPs	30.71	35.86	40.81
15% missing SNPs	30.18	35.38	40.18
20% missing SNPs	30.08	34.88	40.13

Good Slide


One Group
Five Groups
Twenty Five Groups
100 Groups
S-B
DREM
Variance
Iterations
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
100
200
300
400
500

During the Presentation

- During the Presentation
  - Have one slide with impressive formulas - to show that you can do it!
  - Take your time - don't rush through the material
  - Talk ABOUT the slide - don't read the slide to the audience
  - Simple equations only (don't give an "Appendix" talk)
  - END ON TIME - Even if you don't cover everything
    - Be prepared to edit as you go

The content of the talk

- ▶ The content of the talk
  - ▷ Motivate the problem - why is it important?
  - ▷ Simplify your results
  - ▷ Simple Examples get the point across
  - ▷ Highlight what YOU have done!
  - ▷ Summarize

The Ending

Thank You for Your Attention

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University of Florida Gators