HW 7 additive = no $\alpha\beta_{ij}$ factor Lecture 16

1) a) $y_{ijk} = \mu + \alpha_i + \beta_j + E_{ijk}$ i.i.d $N(0, \sigma^2)$

b) $\bar{y}_{1..} = \frac{1}{7}\sum_{j=1}^{2}\sum_{k=1}^{n_{1j}} E(y_{ijk}) = \mu + \alpha_1 + \frac{1}{7}(6\beta_1 + \beta_2)$

$\bar{y}_{2..}$ = old w/ 7 female & 1 male $= \mu + \alpha_2 + \frac{1}{8}(\beta_1 + 7\beta_2)$

$\bar{y}_{\cdot 1\cdot}$ = men w/ 6 young and 2 old $= \mu + \frac{1}{8}(6\alpha_1 + 2\alpha_2) + \beta_1$

$\bar{y}_{\cdot 2\cdot}$ = women w/ 1 young & 7 old $= \mu + \frac{1}{8}(\alpha_1 + 7\alpha_2) + \beta_2$

age: 1 : Jr, 2 : Sr

gender: 1 : m, 2 : w

marginal means *see hw7-1b

$\bar{y}_{1..}^{young} = mean(c(162, 271, \ldots, 236)) = 212.3$

$\bar{y}_{2..}^{old} = 226.67$

$\bar{y}_{\cdot 1\cdot}^{men} = 235$

$\bar{y}_{\cdot 2\cdot}^{women} = 205.75$

$S.E. = \frac{\sigma}{\sqrt{n}}$

c) *see other side

cell or lsmeans?

		S.E.
younger men	220.67	14.80
older men	270.67	41.99
younger women	162.0	36.26
older women	212.0	13.70

$\mu \pm$ Multiplier $\times$ Std. Dev.

$Var = \frac{\sum (y - \hat{y})^2}{n}$

old: $\mu + \alpha_2 + \beta_2$

shift 221.9 213.7 251.88

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- use estimate line to get means
- add /solution to model

ctrl + /

flip order of class / density loc;

/lsmeans loc*density /slice=loc tests for density effect @ each location