Biology 4605/7220   Worksheet for Exam 2 Part 2

     30-Oct-19

For the following analyses construct a variable table

Name	Symbol.	Scale	Response or Explanatory	Factor or Covariate	Two or more explanatory		
					Random Fixed, Mixed	Crossed or Nested	
1 Runners							
Heart rate	HR	Ratio	Response	N/A	N/A	N/A	
Race Type	RT	Nominal	Explanatory	Factor	Fixed	N/A	
Weight	Wt	Ratio	Explanatory	Covariate	Fixed	N/A	
Race x Wt	Omitted. Assumed to be small with statistical control				N/A	N/A	
	Alternative: Add interaction term to test this assumption				Fixed	Crossed	Overlapping wt ranges
						Nested	Non-overlapping
2 Babies							
Number of babies	Nbaby	# yr^{-1} $country^{-1}$	Response	N/A	N/A	N/A	
Number of storks	Nstork	# yr^{-1} $country^{-1}$	Explanatory	Covariate	Fixed	N/A	
Land area	A	km^2	Explanatory	Covariate	Fixed	N/A	
Nstork x A	Omitted. Correl(A, Nstork) = 0 by assumption				N/A	N/A	
	Alternative: Add interaction term to test this assumption				Fixed	Crossed	
3 Wheat Yields							
Wheat Yield	WY	tonne/ha	Response	N/A	N/A	N/A	
Farm	Farm	3 units	Explanatory	Factor	Random	N/A	
Field	Fld	Units/Farm	Explanatory	Factor	Ran(Ran)	Nested	
Farm x Fld	Cannot be estimated. Fields not matched across Farms				N/A	N/A	
4 Lobster eggs							
Egg number	Negg	# $lobster^{-1}$	Response	N/A	N/A	N/A	
Carapace length	CL	mm	Explanatory	Covariate	Fixed	N/A	
Location	Loc	4 jurisdictions	Explanatory	Factor	Fixed	N/A	
Loc x CL	Focus of the observational study				Fixed	Crossed	
5 Bicycling patients							
Max Power	MO	Ratio scale	Response	N/A	N/A	N/A	
Patient gender	PG	Female, Male	Explanatory	Factor	Fixed	N/A	
Staff gender	SG	Female, Male	Explanatory	Factor	Fixed	N/A	
PG x SG	Focus of the observational study, Gender haphazard				Fixed	Crossed	

5 Bicycling patients, random hospitals

Max Power	MO	Ratio scale	Response	N/A	N/A	N/A	
Patient gender	PG	Female, Male	Explanatory	Factor	Fixed	N/A	
Investigator	IG	Female, Male	Explanatory	Factor	Fixed	N/A	
Hospital	H	Nominal, 4 units	Explanatory	Random	Random	N/A	
PG x IG		Focus of the observational study, Gender haphazard			Fixed	Crossed	
PG x H					Mixed	Crossed	
IG x H					Mixed	Crossed	
PG x IG x H		56 /16 = 2 . N = 55 hence 1 missing value			Mixed	Crossed	
= 2 x 2 x 4 = 16		82/16 = 5.2 hence unbalanced design					