

Use the following format to write generalized linear models (GzLM)

Response = μ + normal error	μ = list of explanatory variables
Odds[...] = e^μ + binomial error	μ = list of explanatory variables
N[...] = e^μ + Poisson error	μ = list of explanatory variables
N[...] = e^μ + Negative Binomial error	μ = list of explanatory variables

[...] means fill in the blank, e.g. Odds[survival] and N[soldiers]

Distinguish categorical variables by circling the symbol for that variable.

Data from Y. Bishop, S. Feinberg, P. Holland *Discrete Multivariate Analysis* 1975 MIT Press

1. BFH (1975 p98) report counts of women from England and Wales according to age (8 categories) and marital status (single, married, widowed/divorced). The counts range from zero to 4100. We expect the proportion of women in each marital status category to depend on age over the entire range. Does the proportion change from age 30 to age 40?

Yr08Quiz12

2. BFH (1975 p184) report counts of the American Bladder Nut *Staphylea trifolia* according to locular composition (4 categories) and radial symmetry (ranging from 0 to 1.89). The counts range from 0 to 614.

3. BFH (1975 p 224) report counts of meadow spittlebug *Philaenus spumarius* L. in 6 colour morphs at two locations, for both females and males. Does the proportion of the *populi* morph, relative to the *typica* morph, depend on location? *marginella*

3. BFH (1975 p 224) report counts of meadow spittlebug *Philaenus spumarius* L. in 6 colour morphs in three habitats for both females and males. Does the proportion of the *populi* morph, relative to the *typica* morph, depend on habitat? *marginella*

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4. BFH (1975 p284) report counts of unaided distance vision in 4 categories of visual acuity of women aged 30-39 employed in ordnance factories in Britain during World War II. 7477 women were scored for both the left and the right eye. Is visual acuity in the right eye independent of acuity in the left eye?

5. BFH (1975 p288) report the number of ewes having 0, 1, or 2 lambs in 1952 and in 1953. Does the proportion among lamb categories depend on year?

Is the number of lambs born in 1953 related to the number in 1952?

6. BFH (1975 p328) report Gregor Mendel's garden pea data for two traits (A=smooth, a = wrinkled, B = yellow, b = green). The cross AABB with aabb resulted in 4 phenotypes (315 round yellow, 101 wrinkled yellow, 108 round green, 32 round green). Show the data in a two way table. Then show it in model format with clearly labelled columns.

7. BFH (1975 p328) report Gregor Mendel's garden pea data for two traits (A=smooth, a = wrinkled, B = yellow, b = green). The cross (AA Aa aa) with (BB Bb bb) resulted in 9 genotypes among offspring. Are traits inherited independently? Ie are the proportions for trait A independent of the proportions for trait B ?

7. BFH (1975 p328) report Gregor Mendel's garden pea data for two traits (A=smooth, a = wrinkled, B = yellow, b = green). When hybrids AaBb were crossed with other hybrids the results were AABb=38, AaBB=60 AABb=6, AaBb=138. Show the data in a two way table. Then show it in model format with clearly labelled columns.

AABb=38 AaBB60, Aabb=35 Aabb=67

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