

1. Women who have worked on farms are up to nine times as likely to develop breast cancer as those who have never been employed in agriculture, says a new study that is one of the first in Canada to look at the job histories of women who develop cancer (Martin Mittelstaedt in the Globe and Mail, Friday, Nov 22, 2002) .The increase cannot be explained by well-known risk factors, such as high lifetime exposure to estrogen.

Define symbols then write a model for Odds of cancer in relation to occupation (farm or not), age (born before or after 1947), and high lifetime exposure to estrogen (ratio scale). Assume interactive effects between occupation and age. Assume 2000 cases in the study. Complete the first two columns of the analysis of deviance table.

| Variable Name | Symbol |
|---------------|--------|
| ___Odds___ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

| Source | df |
|-----------|----|
| intercept | 1 |

GzLM Odds(Cancer) = e^μ + error

μ = _____

If the interaction term is significant, what does that mean?

2. Distinguish the following studies as retrospective (case-control) or prospective.

A. Cancer risk in women (above) retrospective prospective study.

B. Natural selection on snails, as measured from shells gathered on the beach, either killed by predators or not.

3. Organize the following data (D = dead, L= Live) into three columns, Nsurviving, Ntrial, treatment. Compute the odds of survival of animals with and without a particular trait.

Animals with a phenotypic trait: D, L, D, D, D, D, D, L, L, D, L, D, D, D, L

Animals without the trait: D, D, D, L, L, D, L, D, D, D, L, D, L, D, D

| Phenotype | Nsurviving | Ntrial | Odds of Survival | Odds Ratio |
|-----------|------------|--------|------------------|------------|
|-----------|------------|--------|------------------|------------|
