## Class Notes (Logistic Regression) –7<sup>th</sup> & 12<sup>th</sup> February

## **Reminders:**

- (1) Homework 2 on Regression is due tomorrow;
- (2) Homework 3 on Design due in two weeks (Friday);
- (3) First Exam is three weeks from today.

## <u>Today's Class (pp. 1 – 9)</u>

- GdLM's: distribution and link function for logistic, binomial distribution and logit link gives equation (4.3)
- E.g. 4.1 Polish girls odds ratio, LD50, scale, residual plot.
- E.g. 4.2 ECMO and respiratory illness in children odds ratio, LD50 makes no sense here, model fits data exactly (no LOF test)
- E.g. 4.3 Tobacco budworms get the X scale right first, then compare two groups (M vs F), like ANOCOV, test of one common line for both genders not a Full-and-Reduced-F-test, but a -2ΔLL test.

## Tuesday 12<sup>th</sup> February's Class (pp. 9-17)

- E.g. 4.4 proteins when we use only p<sub>1</sub>, residuals tell us others may be important; stepwise tells us proteins p<sub>1</sub>, p<sub>2</sub>, and p<sub>4</sub> (but not age and p<sub>3</sub>) are significant; just for fun, dropping p<sub>2</sub> and p<sub>4</sub> is tested using a -2ΔLL test on p.12;
- E.g. 4.5 lung disease demonstrates how to interpret OR's;
- E.g. 4.6 pups, wish to see if treatment differs from control, wrong analysis (p = 0.004) collapses over (ignores) litter-to-litter variability and therefore overstates the case; two choices for correct analysis: d-scale approach (p = 0.0855) and mixed approach (p = 0.0928) find no significant difference.

Thursday 14<sup>th</sup> February's class: log-linear models Tuesday 19<sup>th</sup> February's class: proportional odds model for ordinal logits