

Fox Module 22 Generalized linear models discrete and continuous data

- Poisson GLMs for count data
- Gamma GLMs for continuous data

Read the bullet point for the Poisson distribution on page 383. Figure 15.2 on page 384 shows graphs of the Poisson distribution for six values of the mean.

Read Section 15.2, “Generalized linear models for counts,” on pages 387-391. You can not work out a Poisson GLM with pencil and paper, and the final exam does not ask to form GLMs. Section 15.1.1, “Estimating and testing GLMs,” on pages 385-387, explains the statistical tools used in the example in section 15.2. You will not be tested on the material in Section 15.1.1, since it requires computer software.

GLMs are used extensively in insurance class ratemaking and pricing, and GLM software is available on R, SAS, and many other packages. You may want to do a student project using GLMs for insurance work, which you might also use as a project at work.

The Gamma distribution is used for continuous data. You might use a Poisson GLM for claim frequency and a Gamma GLM for claim severity. The final exam will not test the Gamma distribution or Gamma GLMs. It uses instead the exponential distribution, which is a one parameter Gamma distribution.

The discussion forum postings show the intuition for GLMs. From three observed points, normal, Poisson, and Gamma GLMs fit straight lines with different slopes. The homework assignment reviews the concepts, and the final exam problems use similar scenarios.