■ TIRF Conclusion

The clearest evidence of a possible effect due to May 1996 legislation in the TIRF data we modelled seems to be with the TIRF late-night all fatalities data.

The Traffic Injury Research Foundation, provided data on all car accidents in Ontario from January 1,1992 to December 31, 1998 in which the driver was killed. Our objective is to see if there has been any change since May 1996 when new legislation extending bar closure time to 2AM came into effect. Drunk driving is known to be more common during the early morning hours on Fridays, Saturdays, and Sundays than other weekdays so the data was aggregated into two week groups, denoted by S and T. Two hourly windows from 2AM to 3AM and 3AM to 4AM were compared. The time series in this windows do not exhibit significant autocorrelation or over-dispersion relative to the Poisson distribution so a Poisson distribution with mean function,

$$\lambda_t = \begin{cases} \lambda, & t = 1, \ ..., \ 52 \\ \lambda + \delta, & t = 53, \ ..., \ 84 \end{cases}$$

was fit to the data by exact maximum likelihood. According to the *temporal shift hypothesis*, the extended bar hours may be expected to have caused a shift in drunk driving from the 1AM to 2AM window to the 2AM to 3AM window. In the plot below the observed fatalities per month for the T weekgroup are shown by vertical lines equal to the number of fatalities which is either 0, 1 or 2 for this data. The shaded area indicates the pre-May 1996 period and the blue horizontal line is the estimated mean. The drop in T2 is significant at the 10% level and increase in T3 is significant at 5% level.