Elk crossing: Gagnon et al. (2007) studied elk use of wildlife underpasses on a highway in Arizona. Using video surveillance cameras, they recorded each elk that started to cross under the highway. When a car or truck passed over while the elk was in the underpass, they recorded whether the elk continued through the underpass (crossing) or turned around and left (retreat). Overall traffic volume was categorized as low (fewer than four vehicles per minute) or high.

The data are the following:

Location	Vehicle	Car	Truck
Low traffic	Crossing	287	40
	Retreat	57	42
High traffic	Crossing	237	57
	Retreat	52	12

The goal of the experiment is to determine how the odds of crossing (Y) changes from car to truck (X), adjusting for low vs. high traffic (Z).

1. Obtain the estimated odds ratio and confidence intervals of crossing for car vs. truck at each traffic location. Interpret them and use the fourfold display to help you understand the output. Use also the mosaic function to interpret partial tables.

2. Obtain the estimated odds ratio of crossing vs. retreat without taking into account the third (control) variable. Would it be correct to exclude the effect of that third variable?

3. Test the homogeneous association between X and Y controlling for Z (function woolf_test).

4. Are X and Y conditional independent given Z?