Soc 756
Problem Set 3

1. Approximately 85,000 adolescents turn 16 each year in Wisconsin. Data from Fohr et al., 2005 suggest that the probability of being involved in a non-fatal motor vehicle accident among Wisconsin 16-year-olds is roughly 0.0486. The authors find that the probability declines dramatically with age, reaching 0.0145 by age 30.

Assume that, in each year of life, the probability of experiencing a non-fatal motor vehicle accident is equal to
$0.062 - 0.000053*(age^2)$, where age is defined in discrete one-year intervals.

Acquire an account with the Human Mortality Database and the Human Fertility Database. Use the HMDHFDplus package in R to obtain the 2005 single year age-specific death probabilities from the Human Mortality Database. Answer the following questions:

A. What proportion of Wisconsinites who live to age 16 will live to age 31 without experiencing a motor vehicle accident?
B. Among those who live to age 25 accident-free, what is the probability of experiencing an accident by age 31?
C. Among those who survive to age 16, what is the probability of dying without experiencing an accident by age 31?
D. If the experience of accidents and the probability of dying are process-dependent, is your estimate for C an overestimate or an underestimate of the true probability?
E. **Extra Credit:** Push your code to GitHub and share the link with someone from class. Answer here the name of the person(s) to whom you shared the link.