

MATH 2131 homework
March 4th, 2011

- (1) London Life, an insurance company, wants to understand the risk it has taken on for its term life policy products. The company has a large number of policies in force, and does the analysis in two different ways.
- (a) They estimate that the number of claims per year is Poisson with rate 600. They also estimate that the size of each individual claim is \$100,000 on average, with a standard deviation of \$30,000. Assuming that the individual claims and the number of claims are independent, what is the mean and standard deviation of the total claims in one year?
 - (b) They currently have 1,000,000 policies in force, and every year they will see 600 claims (thus, the probability of a claim for each policy is estimated as $600/1,000,000$). They assume that whether or not a claim is made is independent for each policy. Assuming also that each claim is of size \$100,000, what is the mean and standard deviation of the total claims in one year?
 - (c) Explain in detail the difference in the two approaches.