Discussion (and demonstration) of the safety loading calculation.

The risk premium of a policy can be split up in two main parts, a pure premium and a risk loading. The pure premium which is calculated in the previous part, is used to pay the future losses of the policy. The risk loading which will be discussed in this part, has the purpose of covering excess future losses that are not covered by the pure premium. (Yang et al., 2020)

The most used approach for calculating the risk premium is by separately analysing the pure premium and the risk loading. Traditionally generalized linear models or GLMs are used for this analysis. Risk loadings can be derived in this traditional way by using the expected value premium principle or standard deviation premium principle. (Yang et al., 2020) (insert formulas) GLMs are considered the industry standard (Baione & Biancalana, 2019) although there are some downsides. Traditional regression models often have to rely on assumptions (Kudryavtsev, 2009). According to Kudryavtsev the following problems can occur with GLMS. An Inaccurate estimate of loss distribution may occur. This estimation of the loss distribution could be very different from the real one. It could be difficult to give larger weights to extreme values, thus making it difficult to work with loss distributions that have heavy tails. Working with a number of outliers in the sample and dependence structure of the data also could cause problems.

From the previous part there can be concluded that traditional regression methods like GLMs are not always the ideal match for real word situations. Therefore there should be looked at (to?) some alternative approaches (Kudryavtsev, 2009). Kudryavtsev and Yang both propose a quantile regression method. (maybe state advantages of Kudryavstev paper) But because GLMs are well known and frequently used in actuarial sciences this will be used for calculation of the safety loading (Baione & Biancalana, 2019). Keeping in mind the criticism on these GLMs.