Homework 1: Subjective Prior for Grades

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Q1. Construct a subjective prior density and explain your choice.

Average grades $\mathcal{G}$ in this class can range between 0 and 100, but we will consider instead the distribution of $\theta = \frac{\mathcal{G}}{100}$, which has a support of [0,1]. This support coincides with that of a Beta distribution. Based on my experience in other courses, professors design exams such that the average grade for a course is around 75%, the lowest grade is around 50%, and the highest grade is about 100%. I hypothesize that the likelihood of the average grade being less than 60% or over 85% is near-0. After tuning the scaling and shape parameters of the Beta distribution, I believe a Beta(18, 6) distribution is a valid subjective prior for average grades. Additionally, the Beta-Binomial conjugacy simplifies futher0oo

Q2. Plot this density & provide some summaries

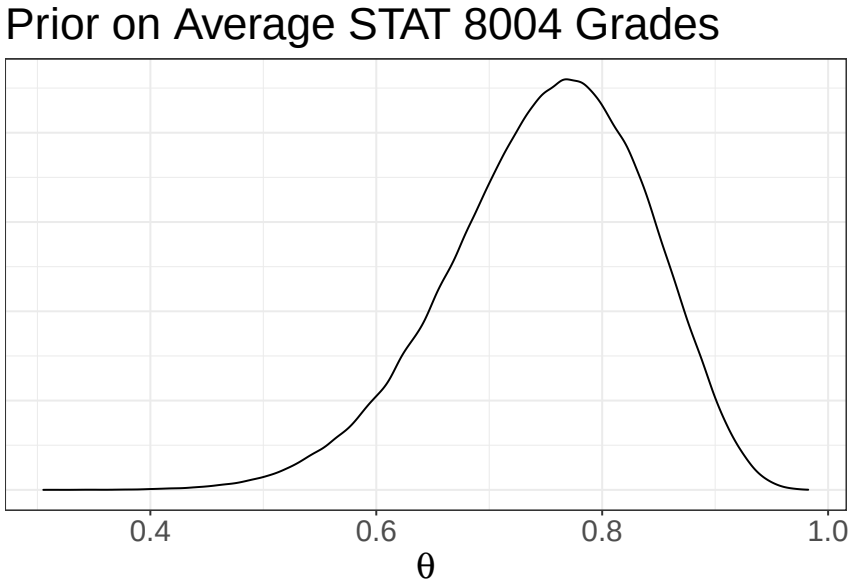

Table 1: Prior Summary Statistics

Mean	25 %tile	Median	75 %tile	95% Credible Interval
0.7499	0.6943	0.7568	0.8131	[0.58, 0.91]