

UNIVERSITY OF TEXAS AT AUSTIN

Problem Set 9The normal approximation to the binomial.

Problem 9.1. According to the Pew research center, 64% of Americans say that social media have a mostly negative effect on things (see <https://pewrsr.ch/3dsV7uR>). You take a sample of 1000 randomly chosen Americans. What is the approximate probability that at least 650 of them say that social media have a mostly negative effect on things?

Problem 9.2. According to a Gallup survey, only 22% of American young adults rate their mental health as *excellent*:

<https://www.gallup.com/education/328961/why-higher-education-lead-wellbeing-revolution.aspx>.

You sample 6000 randomly chosen American young adults. What is the approximate probability that at most 1400 of them rate their mental health as *excellent*?

Problem 9.3. You toss a fair coin 10,000 times. What is the approximate probability that the number of *Heads* exceeds the number of *Tails* by between 200 and 500 (inclusive)?