

Problem Set 6

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1 References and License

We are answering questions in the material from MIT OpenCourseWare course 18.05, Introduction to Probability and Statistics.

In this document we are answering questions Orloff and Bloom ask in [1].

Please see the references section for detailed citation information.

The material for the course is licensed under the terms at <http://ocw.mit.edu/terms>.

We use documentation in to write the L^AT_EXsource code for this document.

Note: we find the material in this section of the course extremely difficult we are relying heavily on the solutions posted to write our answers; we are really not coming up with these solutions.

2 Beta try again

2.1 Bayes factor

We define the hypothesis H_0 as, "the coin is fair." Then the likelihood of H_0 , which is the probability of the data for this problem, given H_0 is the ratio of the probability of spinning heads 140 out of 250 times to the probability of spinning heads with a fair coin in 250 trials:

$$p(x \mid H_0) = \frac{\binom{250}{140}}{0.5^{250}} \quad (1)$$

References

- [1] Jeremy Orloff and Jonathan Bloom. *18.05 Problem Set 6, Spring 2014*. Available at https://ocw.mit.edu/courses/mathematics/18-05-introduction-to-probability-and-statistics-spring-2014/assignments/MIT18_05S14_ps6.pdf (Spring 2014).