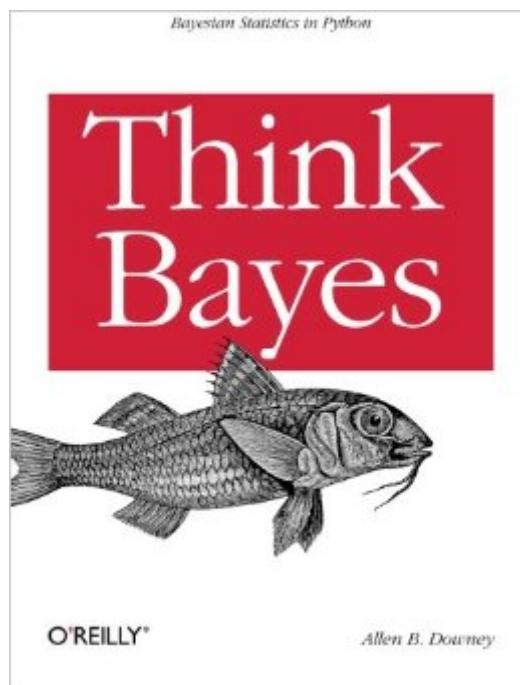


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# Think Bayes



## Synopsis

If you know how to program with Python and also know a little about probability, you're ready to tackle Bayesian statistics. With this book, you'll learn how to solve statistical problems with Python code instead of mathematical notation, and use discrete probability distributions instead of continuous mathematics. Once you get the math out of the way, the Bayesian fundamentals will become clearer, and you'll begin to apply these techniques to real-world problems. Bayesian statistical methods are becoming more common and more important, but not many resources are available to help beginners. Based on undergraduate classes taught by author Allen Downey, this book's computational approach helps you get a solid start. Use your existing programming skills to learn and understand Bayesian statistics. Work with problems involving estimation, prediction, decision analysis, evidence, and hypothesis testing. Get started with simple examples, using coins, M&Ms, Dungeons & Dragons dice, paintball, and hockey. Learn computational methods for solving real-world problems, such as interpreting SAT scores, simulating kidney tumors, and modeling the human microbiome.

## Book Information

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## Customer Reviews

Should you buy this book given that the only other review as of this time is a negative review (based on the lack of a table of contents)? Hmm, that is exactly the sort of decision analysis that is covered by this book. Should you wait for the next train or catch a taxi instead? Or what about the classic Monty Hall problem where there is a car hidden behind one of three doors in a TV game show? The contestant picks a door, but prior to opening it, the host opens another door which does not contain

the car and then offers the contestant the opportunity to 'stick' to his current selection or 'switch' to the other door. Should the contestant 'stick' or 'switch'? Bayes's Theorem provides a rationale for making this decision and this book covers all of this and more. This is a great book and a good introduction to the application of Bayes's Theorem in a number of scenarios. The theoretical aspects are well accessible and the Python code is sufficiently clear. This is not an introduction to Python and readers should be relatively familiar with Python or other high level languages to make the most out of this book. The PDF for the book is freely available from Green Tea Press. If you are concerned about the lack of a table of contents in the mobi version, get the paper copy until this is resolved... I would highly recommend it.

Great book to simplify the Bayes process. It goes into basic detail as a real how-to. This is not an academic text but a book to teach how to use Bayes for everyday problems.

The book has really interesting problems and solutions to them, but since solutions are given in Python code form, it is really hard to comprehend new concepts sometimes. It would be much better if the author explain it via simpler example (and sometimes he does) or via pure math and only then jump to the code part. Also this book contains amazing exercises, but unfortunately no solutions to them. The code is well written, but structured poorly - huge files (1800 lines long) are really difficult to examine and learn from. Overall the book is super interesting, although explanation style could be better.

This is a nice book with some really neat examples. What makes it unusual is that where a conventional math stats book would use math notation to help explain the ideas, this book tries to do that with Python code. It's an interesting idea; I imagine the author thought there was a market among engineers comfortable reading code but intimidated by math. So if you're such a person, this could be a really good book for you, just the thing to introduce you to an interesting area of practical...um...math! On the other hand, if you do relate well to math notation, you might find the computer code a distraction.

This is one of several introductory level books written by Dr. Downey recently. All of them are excellent. In this book, he gives a clear introduction to Bayesian analysis using well through out examples and Python code. There is a small amount of math. He makes very effective use of probability density functions, cumulative distribution functions, and simulations. He provides multiple

examples of model development, including design, testing, and analysis. The book is appropriate and effective for self study. Highly recommended.

I used the greenteapress version to teach an intro class on Bayes before this paper version was released. It worked great (but PayPal rejected my donation). Straightforward understandable examples allowed me to keep more complicated examples in context. This in conjunction with CamDavidsonPilon's excellent community book really gave a well-rounded class.

Very good book. I wished I had a better understanding of python. If that were the case I would have probably given this book a 5 star rating. Aside from that, I liked the way the author presented the material. It was practical and easy to understand.

On pg. 8 the Monty Hall problem:Likelihood  $p(D|H)$ , author "scared me a little" describing and explaining it. After rereading:Definitions:D (as author stated in paragraph above) means: "Monty chooses Door B and there is no car there."H means: Car is actually behind particular door. For example: H means: car is behind door B; D is impossible because it contradicts itself D so  $p(D|H)$ , that is why we have probability  $p(D|H)$  (likelihood) equal 0 (in the Likelihood column). The same logic, which author explains goes for H: meaning A and H: meaning C (in the book) I hope someone will find this helpful, and author forgive me this explanation(He uses this type of reference/definition himself as a comment, inside of the code: Cookie2.py) I found above very interesting because it is generalization of the know problem, where usual explanation was that after doors are open we have different probability to choose (before we pick 1/3 probable door, so now it is time to change to 1/2 probable door) . Also as birds and dogs were showing us they were already aware of it. (from some other book about statistics, I for got the title) For Windows users - please get Free ActivePython (use pypm to install required modules numpy, scipy etc...) use  
C:\Python27\Lib\site-packages\pythonwin\pythonwin to run it and enjoy

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