

# Visualising Risk

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Winton Programme for the Public  
Understanding of Risk  
University of Cambridge

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# What is the Winton programme trying to do?

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Improve the public handling of quantitative aspects of risk and uncertainty, through

- Educational lectures, workshops
- The 'Risk Roadshow'
- Website
- Engagement with media
- Working with people who want to communicate risk
- Inter-disciplinary research



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## Understanding Uncertainty

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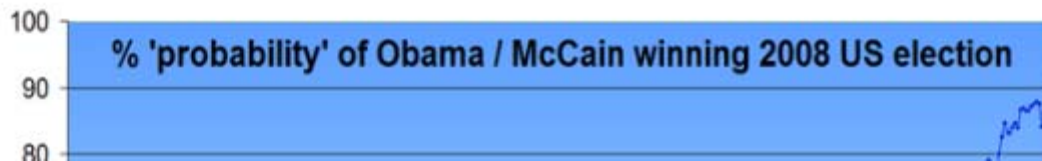
### What was the probability that Barack Obama would win the US election?

- View**
- Edit
- Revisions
- Workflow
- Clone

Posted December 1st, 2008 by [David Spiegelhalter](#) in level 1, [probability betting](#)

*On the face of it this seems an odd question. After all, he won. But before the election it was uncertain whether Obama would win, and probability is the way that uncertainty is quantified, so maybe it is reasonable to ask what that probability was.*

We know that there were betting odds – a betting exchange such as Intrade allows people both to accept or make bets and so converges, at any point in time, to a certain set of odds at which people are willing to be either the better or the bookmaker. This prediction market provides a ‘probability’ on Obama winning that kept changing for the year before the election – this is shown in Figure 1 with some of the main events of the year marked in.



#### Featured Content

- One game to play!
- 2845 ways to spin the Risk
- A predictable pattern of murder?
- Nightingale's 'Coxcombs'
- What was the probability that Barack Obama would win the US election?
  - Laplace's law of succession
- Coincidences
- National Lottery
- Premier League
- What is Probability?
- Risk in the media
- How long are you going to live?

#### Pending Content

- Baves' Theorem

- Recently I went to see my family doctor ...



## Coronary Heart Disease Risk Calculator

Risk Factor	Your Answer	Points	Relative Risk
Sex:	<input checked="" type="radio"/> Male <input type="radio"/> Female		
Age:	54 years	3	
Smoker:	<input type="radio"/> Yes <input checked="" type="radio"/> No	0	Low
Diabetes:	<input type="radio"/> Yes <input checked="" type="radio"/> No	0	Low
Blood Pressure:	148 / 94 mm Hg	2	High
Total Cholesterol:	224 mg/dl	1	Moderate
HDL Cholesterol:	54 mg/dl	0	Low
<input type="button" value="Calculate, with Incomplete Values"/> <input type="button" value="Calculate"/>			
<b>Total Points:</b>		6	= 10 % risk of heart disease in 10 years
<b>Average 10-year risk</b>		= 14 %	(for others in your age group)
<b>Low 10-year risk</b>		= 6 %	(for others in your age group)

Information for this Coronary Heart Disease Risk Calculator comes from the Framingham Heart Study. The results are applicable *only* for the ages of 30 to 70 years. Please refer to:

Wilson, PW, et. al. **Prediction of Coronary Heart Disease Using Risk Factor Categories.** *Circulation* 1998 97 (18): 1837-1847.

My doctor quoted me a 10% risk of heart attack or stroke in 10 years

# How to communicate this risk?

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- Absolute / relative risks /NNT?
- What interpretation of probability?
- 0.8, 80% or 80 out of 100?
- Positive or negative frame?
- Pie chart, bar chart, smilies etc?



# How long are you going to live?

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# Data source

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- Human Life Table Database
- Max-Planck Institute
- <http://www.lifetable.de/>



# Some Conclusions

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- No 'correct' format, but known biases to avoid
- Personal preference for 'possible futures' as a story
- Aiming for adaptable, embeddable animations for support groups etc