

# 'The Cocked Hat'

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As a long-time admirer of the expertise of J. E. D. Williams, I enjoyed his contribution which demonstrated that the probability of being within a cocked hat is only 25 percent.

His submission amused, in the way which he predicted it would, and I'm sure that what he said is true. But was it the whole truth?

Does the Williams argument hold up if the cocked hat is a shallow isosceles, rather than being an equilateral triangle? If the cocked hat is extremely small, does the likelihood of the true position being outside it become more than 75 percent? Or less? And if the cocked hat is very large, will it remain statistically correct to say that the chance of the position being within it is still as low as 25 percent? And does the argument allow for the fact that in some cases the errors will all be haphazard, but not in others? And if, on the scale plotted, each of the position lines is known to be accurate to a distance equal to one side of the cocked hat, would it not be remarkable if the real position lay outside the cocked hat?

Let me admit to being superstitiously suspicious of statistical mathematicians. They tell me that if I toss a coin repeatedly, and in 19 successive throws it comes down heads, the chances of it coming down heads on the twentieth throw remain evens. They're right of course, but I still don't believe it.

J. E. D., could we have more on cocked hats please?

## REFERENCE

- <sup>1</sup> Williams, J. E. D. (1991). The Cocked Hat. *This Journal*, 44, 269.

## KEY WORDS

1. Errors. 2. Statistics.