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## Heads or tails? The Royal Statistical Society puts the statistical skills of the public to the test

***One in four of the public are able to answer a simple probability question correctly, according to a survey by the Royal Statistical Society, published on World Maths Day.***

As statistics and data have been such a key focus of the pandemic, the Royal Statistical Society (RSS) decided to put the public's statistical skills to the test. A total of 2,001 UK adults were surveyed by the learned society and asked the multiple-choice question: if you toss a fair coin twice, what is the probability of getting two heads? One in four gave the correct answer of 25%.

In the survey, conducted by Opinium on behalf of the RSS, the most popular answer from the options available to respondents was 50%, which two in five incorrectly gave as the answer.

The RSS also posed the question recently to MPs, and just over half (52%) were able to answer the question correctly.

People were also tested on their knowledge of averages and asked: if you roll a six-sided die, if the rolls are 1,3,4,1 and 6, what are the mean and mode values? One in four people correctly identified the mean as three and just under one in four (23%) gave the correct answer of one for the mode. Just under two-thirds of respondents (64%) said they didn't know.

With lateral flow tests having been a key part of day-to-day life for many, the RSS also wanted to gain a view on people's knowledge of how the results from them should be viewed – a question that tests the understanding of what statisticians call Bayesian statistics.

Those surveyed were asked: suppose there was a diagnostic test for a virus. The false-positive rate (the proportion of people without the virus who get a positive result) is one in 1,000. You have taken the test and tested positive. What is the probability that you have the virus? Of those surveyed, 15% gave the correct answer that there was not enough information to know. This comes close to the response from MPs, where 16% gave the correct answer.

**Prof Christl Donnelly, RSS Vice-President for External Affairs, said:** "The last two years have shown how important it is for us all to have a basic grasp of numbers and perception of risk and these survey results are worrying. It's for statisticians like us to keep raising awareness of the importance of these skills, for our economy and society."

**Dr Sophie Carr, RSS Vice-President for Education and Statistical Literacy, said:** "I'm pleased to see that our survey suggests that the public are more comfortable in saying when they don't know the answer than when we surveyed MPs. Knowing when to ask for more information is a very important statistical skill and the UK public needs to improve their confidence in understanding when to ask questions about the data they have."

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### Notes to editors:

- The Royal Statistical Society (RSS), founded in 1834, is one of the world's most distinguished and renowned statistical societies. It is a learned society for statistics, a professional body for statisticians and a charity which promotes statistics, data and evidence for the public good. Today the RSS has around 10,000 members around the world. [rss.org.uk](https://rss.org.uk) [@RoyalStatSoc](https://twitter.com/RoyalStatSoc)
- Surveys provide estimates, and the true values could be somewhat higher or lower. For further context on the survey results, read this blog by RSS Statistical Ambassador, Dr Anthony Masters: [https://rss.org.uk/news-publication/news-publications/2022/general-news/behind-the-numbers-the-rss-puts-the-statistica-\(1\)/](https://rss.org.uk/news-publication/news-publications/2022/general-news/behind-the-numbers-the-rss-puts-the-statistica-(1)/)
- Opinium surveyed 2,001 UK adults between 17<sup>th</sup> and 21<sup>st</sup> December 2021. All results are weighted to be nationally representative criteria; gender, age, region, social grade and employment status. Responses are collected over a 72-hour period and the results are reviewed by an in-house data quality team.
- The RSS recently surveyed MPs with the same questions, read the results here: <https://rss.org.uk/news-publication/news-publications/2022/general-news/new-rss-survey-tests-statistical-skills-of-mps/>
- World Maths Day is an online international mathematics competition, open to all school-aged students across the world. [@WorldEduGames](https://www.worldmathsgames.com)