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12th April 2019

Dear Cath,

Mathematical Skills Working Group Report

The Royal Statistical Society welcomes the recent publication of the *Ofqual Mathematical Skills Working Group report: The assessment of mathematical skills in AS/A level business and AS/A level psychology*¹.

We are pleased that this Ofqual report echoes the recommendations of the Royal Statistical Society (RSS) and the Advisory Committee on Mathematics Education (ACME) report, *'Embedding Statistics at A level'*²:

Recommendation 2 of the RSS ACME report states that: "Awarding organisations should be required to establish robust quality assurance processes for the mathematical and statistical strands of live papers. These should guarantee that the statistical content is authentic, embedded, appropriate, accurate and examined at the correct level. Within-subject and between-subject scrutiny should also take place to ensure consistency and high quality. Examiners should be supported to develop expertise in setting high-quality statistics questions."

This Ofqual report is a welcome first step. We note however that it has been developed at a particular stage and time. We envisage a future with increasing focus and content on statistics and data in teaching practice and assessment *across the curricula*. This is essential to meet the needs of individual learners, employers and the economy.

We recommend that Ofqual see this publication as the first in a dynamic process: changing over time by building upon best practice; using statistical advice from experts to support the delivery of assessments; and helping teachers and students develop their statistical and data skills in a wide range of subjects.

¹Ofqual: Mathematical Skills Working Group Report: The assessment of mathematical skills in AS/A level business and AS/A level psychology: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793002/Mathematical_Skills_ReportFINAL1.pdf

² Recommendations 3, 4 and 5 of the RSS ACME report are also relevant. Royal Statistical Society and the Advisory Committee on Mathematics Education: Embedding Statistics at A level: a report on statistical requirements and assessment across A level courses in Biology, Business, Chemistry, Geography, Psychology and Sociology: <https://www.rss.org.uk/Images/PDF/publications/embedding-statistics-at-a-level.pdf>



While many AS and A level qualifications require the use of mathematical or quantitative skills, and for some reformed A levels this has been formalised for the first time, we believe that increasingly statistical and data skills will need to be part of a range of subjects. These are not part of 'mathematics' as a stand-alone discipline, but about the skills needed to understand data across a range of areas within school subjects. The Royal Geographical Society (with the Institute of British Geographers) has shown that this is possible³.

We see the specified minimum per cent of assessment marks (10% of the total marks) of mathematical skills, notably statistics and data skills, and at a prescribed level (level 2 or above), for some reformed A levels, as a *floor and not a ceiling*. We would encourage moving this goal over time towards higher levels of teaching content and assessment of statistics and data skills to equip learners with the skills needed for further and higher education, employment and to compete in the global economy.

In the Society's *Data Manifesto*⁴, we envisage data as a key driver of prosperity. As part of this vision, to prepare for the data economy and to upskill the nation, we call upon data handling and quantitative skills to be integral parts of the taught curriculum. We recommend that all students learn to handle and interpret real data. In the Society's report *A world full of data*⁵, we explore the applicability and opportunities of statistics across A level subjects before these reforms. While the theory of statistics is deeply rooted in mathematics, particularly understanding probability, we illustrate how statistics is relevant across a wide range of subjects and informs a wider understanding of data.

Skills such as evidence-based decision-making, problem-solving, understanding risk and exploring certainty, which are inherent to the study of statistics, are particularly relevant to business. Skills such as understanding and analysing data to draw meaningful interpretations in real-life contexts and within research, are pertinent to psychology and other social sciences. Ethical considerations related to data handling are also increasingly important to society.

We are pleased that the *Ofqual Mathematical Skills Working Group* report references the relevance and the importance of statistics and data skills. At the Royal Statistical Society, we continue to work on a range of exciting education initiatives to address the challenges outlined in this report. For instance, we have recently launched a Special Interest Group in Teaching Statistics⁶ to promote good teaching and assessment practice.

We would be delighted to support Ofqual in any future work to provide expertise on how to continuously improve standards of qualifications and assessments of statistical and data skills across the curriculum.

Yours sincerely,

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Vice President for Education and Statistical Literacy

³ Royal Geographical Society (with the Institute of British Geographers): www.rgs.org/dataskills

⁴ Royal Statistical Society Data Manifesto: https://www.rss.org.uk/Images/PDF/influencingchange/2016/RSS_Data%20Manifesto_2016_Online.pdf

⁵ Royal Statistical Society and the Institute and Faculty of Actuaries: A world full of data: <https://www.rss.org.uk/Images/PDF/influencing-change/A-world-full-of-data.pdf>

⁶ Royal Statistical Society's StatsLife: <https://www.statslife.org.uk/news/4120-new-rss-special-interest-group-on-teaching-statistics>