

Regulating AI and statistical models: why assessing quality in isolation is not enough

UNECE Machine Learning for Official Statistics Workshop 2023

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Today's topics of discussion

Introduction

1. Who the Office for Statistics Regulation (OSR) are
2. How we regulate
3. Statistical models: why and how we regulate

Discussion points

1. The importance of context when assessing trustworthiness, quality and value
2. Quality cannot be considered in isolation when designing and building AI models to build public confidence

Office for Statistics Regulation (OSR)

- **The regulatory arm of the UK Statistics Authority** – we regulate official statistics across the UK Statistical System
- **Promote and safeguard the production and publication of official statistics**
- **Independent of official statistics producers** - we do not produce statistics and are separate from the Office for National Statistics (ONS)

UK Statistics Authority
(UKSA)

Office for
National
Statistics
(ONS)

Office for
Statistics
Regulation
(OSR)

Our vision and role

Statistics that serve the public good

How statistics are produced

We uphold the trustworthiness, quality and value of statistics and data used as evidence

How statistics are used

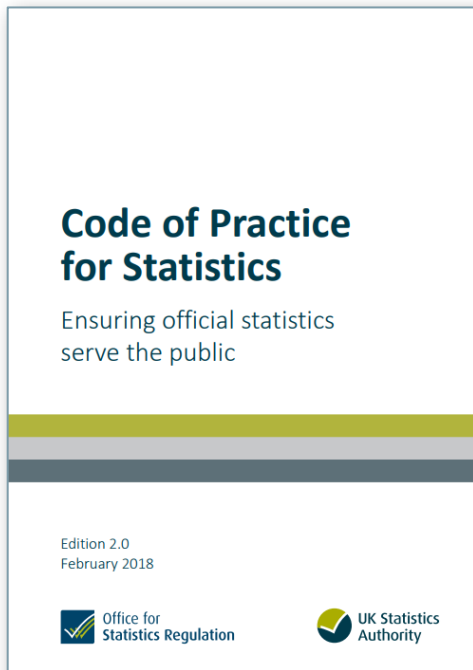
We protect the role of statistics in public debate

How statistics are valued

We develop a better understanding of the public good of statistics

Our Code of Practice

Statistics should be produced in a **trustworthy** way, be of high **quality**, and provide **value** by answering people's questions



Trustworthiness

Confidence in the people & organisations producing statistics

Quality

Data and methods that produce assured statistics

Value

Statistics that support society's needs for information

UK Headlines in 2020



Boris Johnson blames 'mutant algorithm' for exams fiasco



A-levels: 'Dreams ruined by an algorithm'

Futures sacrificed for the sake of statistics



Exams model

Learning lessons from the approach to developing models for awarding grades in the UK in 2020



The screenshot shows the top navigation bar with links for 'UK Statistical System', 'UK Statistics Authority', and 'Code of Practice'. Below this is the Office for Statistics Regulation logo and a search bar. A main navigation menu includes 'Home', 'Talk to Us', 'About us', 'Regulatory work', 'News', 'Blog', and 'Policies and Guidance'. The main content area features the title 'Ensuring statistical models command public confidence' and the subtitle 'Learning lessons from the approach to developing models for awarding grades in the UK in 2020'. A 'Executive Summary' link is visible. On the right, a metadata box lists the publication date (2 March 2021), last updated date (2 March 2021), and the producer (Office for Statistics Regulation). Social media icons for Twitter, LinkedIn, and RSS are also present.

UK Statistical System [↗](#) UK Statistics Authority [↗](#) Code of Practice [↗](#)

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Ensuring statistical models command public confidence

Ensuring statistical models command public confidence

Learning lessons from the approach to developing models for awarding grades in the UK in 2020

[Executive Summary](#)

Published
2 March 2021

Last updated on
2 March 2021

Produced by
Office for Statistics
Regulation

[Link to report](#)

Development of model guidance

Office for Statistics Regulation Guidance

Guidance for Models: Trustworthiness, Quality and Value.



Guidance for Models: Trustworthiness, Quality and Value



Part I: Planning and designing a model that serves the public good

What is the question you are trying to answer?

- After considering the purpose and context of this work, the chosen approach is appropriate and warranted.
- Time has been put aside to regularly assess aims and return to your question.
- Any foreseen tensions between aims and uncontrollable factors have been clearly communicated and are expected.

What is the user need?

- A range of users have been engaged with and their requirements have been considered.

What ethical and legal issues do you need to consider?

- For models using personal data. The data subject's identity (whether person or organisation) is protected, information is kept confidential and secure, and the issue of consent is considered appropriately. No data subject should be unfairly disadvantaged by the model.
- The model and data used in the model are consistent with legal requirements such as [Data Protection Legislation](#), the [Human Rights Act 1998](#), the [Statistics Registration and Service Act 2007](#) and the [common law duty of confidence](#).
- When working with data you are clear what legal role you have in its use and comply with the requirements under the [GDPR](#).
- Safeguards have been put in place to allow checks for model fairness.

Are the roles and responsibilities clear?

- A clear chain of model accountability has been established with clear roles and responsibilities at every level, including the role of the senior leader.
- If the developing and implementing teams are the same:
- There is clarity of roles and sufficient resilience and skill within the team to build and manage the ongoing maintenance of the model
- If the developing and implementing teams are different:
- Handover of knowledge, risks and limitations is given full priority when it is needed, and the skills needed to maintain the model are considered prior to handover.

[Link to Guidance](#)

Applying TQV to models

Trustworthiness

- Those affected by the model need to trust that the teams building the model are properly skilled.
- There needs to be transparency over the methods used to allow for proper scrutiny

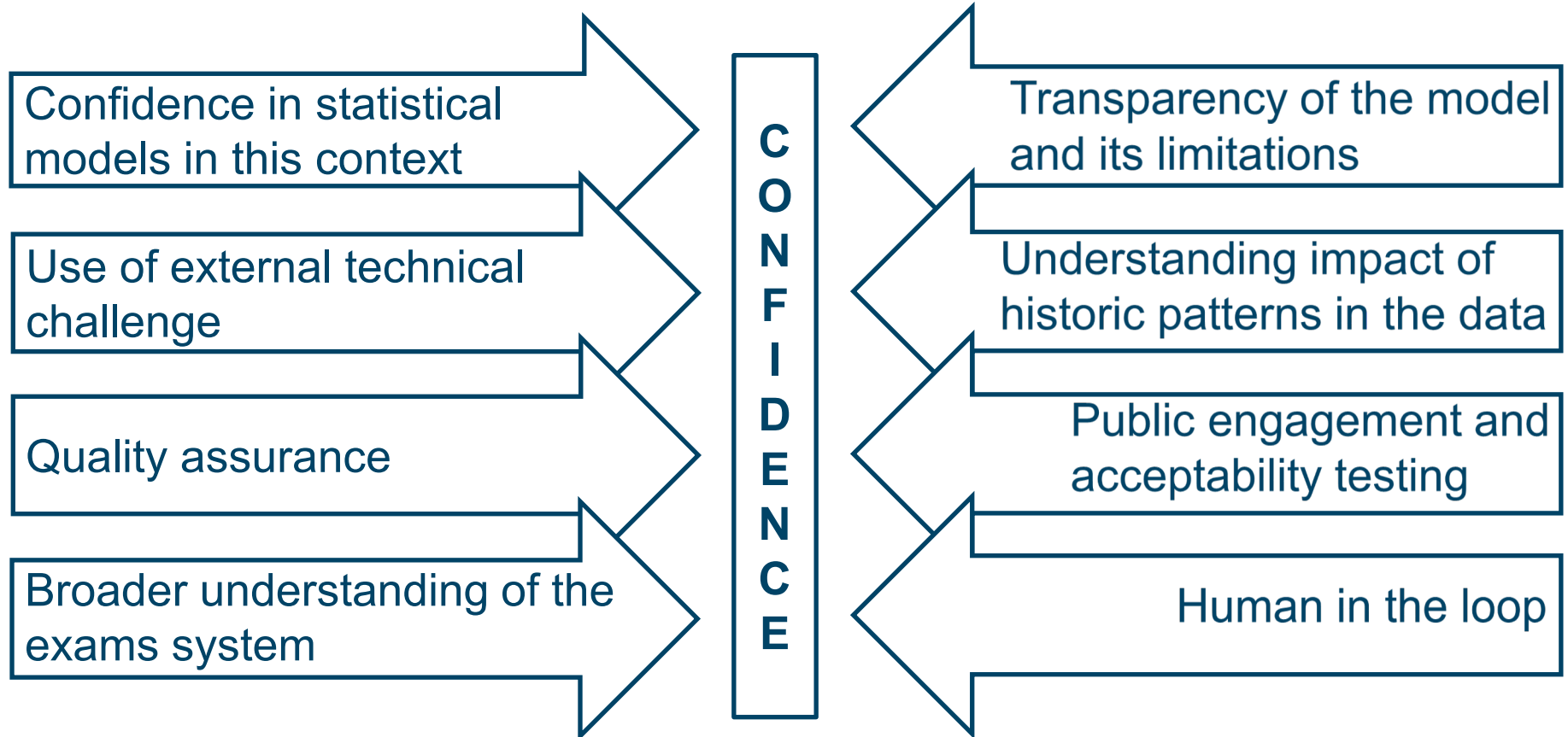
Quality

- The methods used need to be appropriate for the application of the model.
- The data needs to be clear and there should be full consideration of any limitations or potential biases.

Value

- The model should always be designed to meet the user need (includes need for quality and transparency)
- It should be accessible to all who wish to understand it at both the expert and novice level

What influenced public confidence in the exam models?



Lessons for others developing models

We found that **ensuring public confidence is not just about the technical design or quality assurances** – it is supported throughout the whole end to end process

Learning points for those using data-driven approaches to support decisions in the public sector.

Be open and trustworthy
Be rigorous and ensure quality throughout
Meet the need and provide public value

Lessons for those commissioning models

A statistical model might not always be the best approach to meet your need

Statistical models used to support decisions are more than just automated processes

The development of a statistical model should be regarded as more than just a technical exercise

In summary

**Think Trustworthiness, Quality and Value
and don't simply rely on Quality if you want
your model to be publicly accepted!**

We are here to help:

- If you have any questions, we'd be pleased to hear from you via regulation@statistics.gov.uk
- You can read more about OSR and our work on our website [Office for Statistics Regulation](#) and follow us on Twitter [@StatsRegulation](#)
- You can find our Code of Practice here [Code of Practice for Statistics](#)