Targeting degree-awarding gap across ethnicities through means of OUAnalyse predictions

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TARGETING DEGREE-AWARDING GAP ACROSS ETHNICITIES THROUGH MEANS OF OU ANALYSE PREDICTIONS

INTRODUCTION
- Universities UK and AdvancingE report a 13% degree-awarding gap for Black, Asian and Minority Ethnic (BAME). This degree-awarding gap is also present at The Open University.
- OU Analyse generates predictions aiming to identify students at-risk of not submitting their assignments. Last year pilot showed 7% higher chances to pass modules for students when their tutors used OU Analyse.
- We investigate if the predictions provided by existing Learning Analytics (LA) models are fair and serve the majority and minority ethnic groups with the same effectiveness.

METHODOLOGY
- Analysis of predictions made by LA models in the 14 largest modules from the year 2019/20.
- Evaluation (Baseline) made on data of 32,538 unique students. When disaggregated by ethnicity: White (28,535), Black (1,078), Asian (1,195), Rest (Mixed, Other, Refused, Unknown) (1,730).

METRICS
- False Positive Rate (FPR) - students erroneously predicted to Not Submit (NS).
- False Negative Rate (FNR) - students erroneously predicted to Submit (NS), more severe error as students most likely don’t receive needed support.
- AUC - model’s overall accuracy.

RQ1: Do existing LA prediction models work equally effectively for all ethnicities?
- A separate evaluation of each ethnicity is made.

RQ2: Fairness through unawareness
- The “ethnicity” protected attribute is excluded during the model training process.

RQ3: Do the LA population-specific prediction models perform better?
- The models are trained and evaluated only on a specific population of students, then compared to evaluation of corresponding Baseline pop.

Existing LA models contain inequalities in accuracy and error rates across different ethnicity groups. Different methods can help to reduce inequalities on different levels, but the solution is not systematic, and therefore, different adaptations and definitions of fairness are needed.

Black, Asian and Minority Ethnic (BAME) students at the Open University put more effort and spend more time studying, they are, however, less likely to complete, pass or achieve an excellent grade compared to White students.

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