

## A logit multilevel model for the analysis of exam success probability in the remote teaching era

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## Abstract:

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Remote teaching has become popular over the course of the last year and a half due to the COVID-19 pandemic. In this work we aim at investigating whether remote teaching has significantly affected the students' performance at academic level, measured through the probability of passing exams. For this purpose, we consider data on exam success observed on students enrolled in some bachelor degree programs at the University of Florence. In particular, we focus on cohorts of freshmen enrolled in academic years 2018/2019 and 2019/2020. In fact, these two groups of students experimented different modalities of attending university courses: students enrolled in 2018 regularly attended courses in both semesters, whereas freshmen of a.y. 2019 experimented remote teaching during the second semester classes. The variable of our interest is represented by the student's outcome at the second semester in terms of passed or failed exams. As data have a hierarchical structure, we estimate a logit random intercept model with exams nested within students, separately for each bachelor degree program, controlling for the first semester performance of each student. Preliminary results show that remote teaching has affected students' performance in different ways: in fact, in any degree program there is a lot of heterogeneity, so that we found both courses with a significant positive effect and courses with significant negative effect.

## Keywords:

remote teaching; logit multilevel model; exam success probability