

Factors influencing success

Anna Quagliari

30/05/2019

Socio-demographic factors impacting students dropout and success

Understanding the reasons behind the dropout and success of students is fundamental to put resources into action. The final results for a student attending a module could be: *Distinction* and *Pass* if they succeeded, *Fail* and *Withdrawn*.

Higher wealth and education positively influence the success of students (Figure 1). The proportion of students who succeeded (Pass/Distinction) has a stable increase as the wealth and the level of education increases, while the Dropout and Failure rates decrease. As expected, the level of education is higher in wealthier areas (Figure 2, left). The majority of students without a formal qualification come from poorer areas while more than 40% of the students with a Post Graduate qualification come from the areas with highest Index of Multiple Deprivation (IMD) band (IMD 90-100%).

Even though there are regional differences in success and dropout rates (Figure 3, left), they seem to be less extreme than educational disparities. Most regions have a success and dropout rates close to the overall average rates (dotted lines). Success and dropout rates across regions also depend on wealth, with higher dropout of students and lower success rate occurring in more deprived areas (Figure 3, left). Interestingly, Wales and Ireland behave differently from the rest of the UK. They both fall in the average wealth band (IMB 40-50%), but while they both have the lowest dropout rates (~ 20%), Wales is the region with the lowest level of success and Ireland success rate is higher than the overall average.

The heterogeneity in the success and dropout rate across different modules (Figure 3, right) seems to be only slightly impacted by wealth with modules AAA and EEE having the highest success rates (larger than 70%) and module DDD the lowest. It is likely that differences between modules are also to be attributed to the difficulty of the modules itself.

Gender by itself didn't appear to affect the success or dropout of the students (Figure 1, right). However, when taking all the other information into account, like regional, educational, and module differences, males show a lower risk of dropout while having a similar success to females. Females are 4 times more likely to dropout than males when controlling for socio-economic and course-related differences.

Positive impact of the VLE to the success rate of students

Success due to demographic and socio-economic disparities could be improved by stimulating the use of online resources. Interaction with the VLE (Virtual Learning Environment) has shown to be beneficial impact on students' success. Only two students, among the 13,801 who succeeded, never interacted with the VLE (Figure 4, B). On the other hand a larger number of students who failed or withdrew from a module never used the VLE. This result holds true even after taking into account socio-economical and demographical differences as well as module differences. The top 5 most used pages in the VLE are, the *oucontent*, the *forum*, *quizzes* and as expected the *homepage* and *subpage* whose maintenance and improvement will be definitely beneficial to students' success.

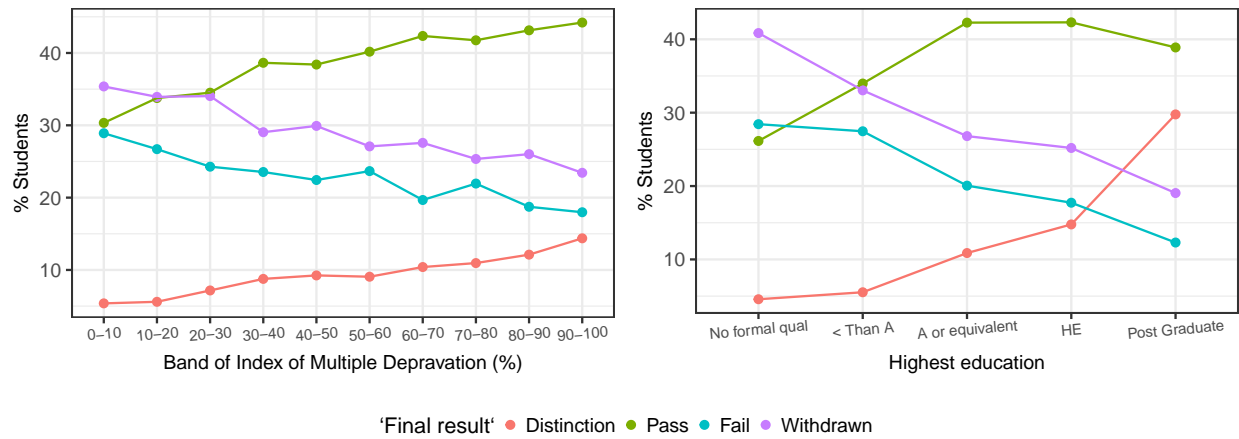


Figure 1: **Top plot.** Proportion of students by IMD band by final result. **Bottom plot.** Proportion of students by higher education by final result.

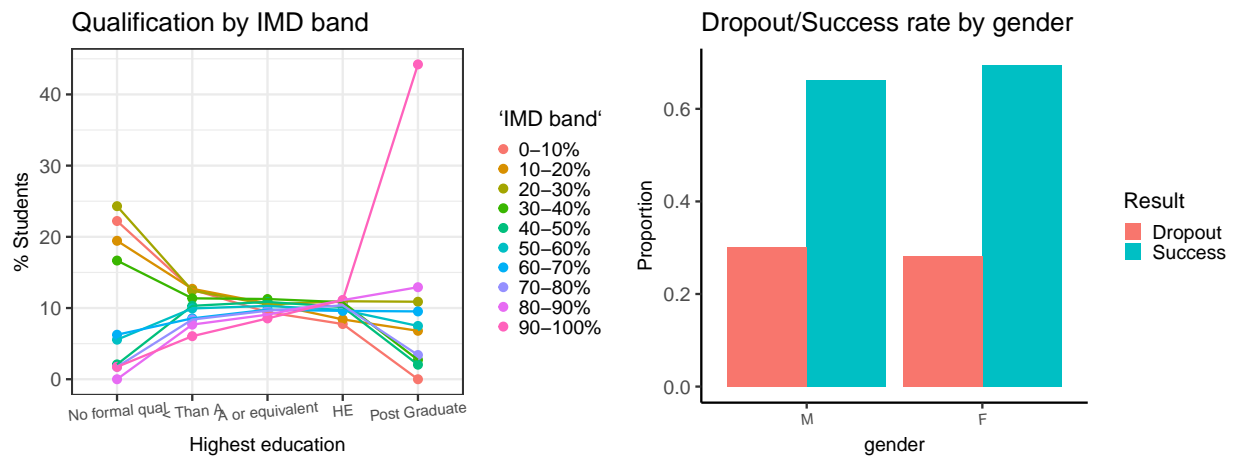


Figure 2: **Left plot.** proportion of students by highest qualification and IMB band. **Right plot.** Success/Dropout rate by gender.

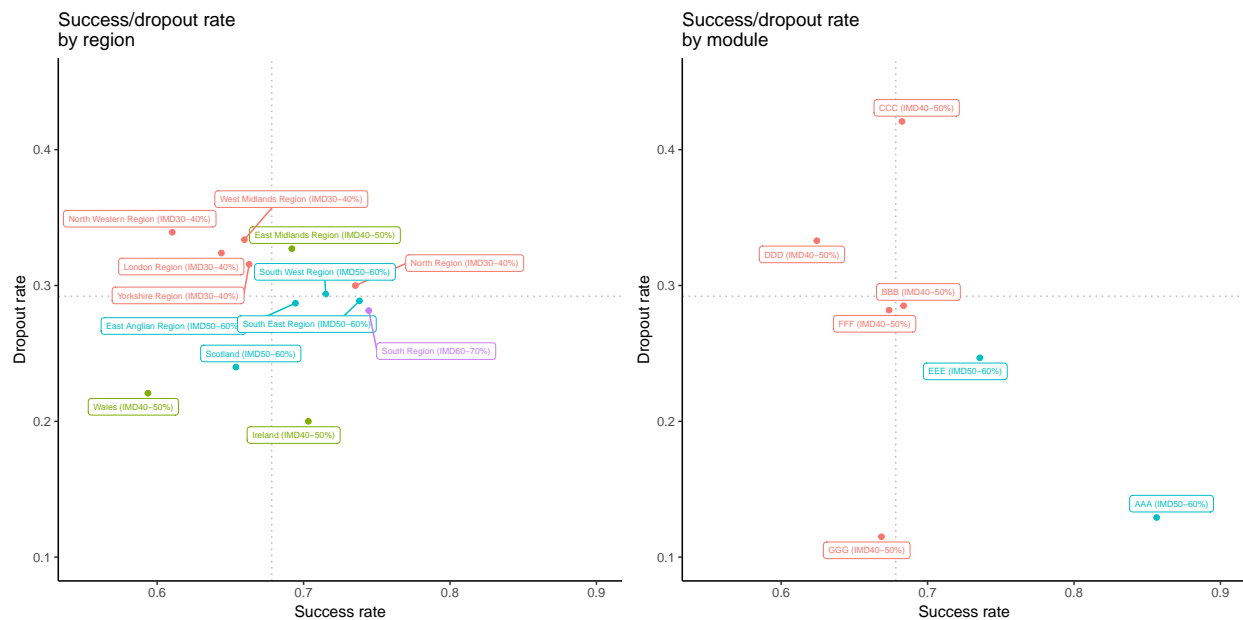


Figure 3: Success rate by dropout rate per region (left plot) and module (right plot). The grey dotted line represent the average dropout and success rates across all the students available.

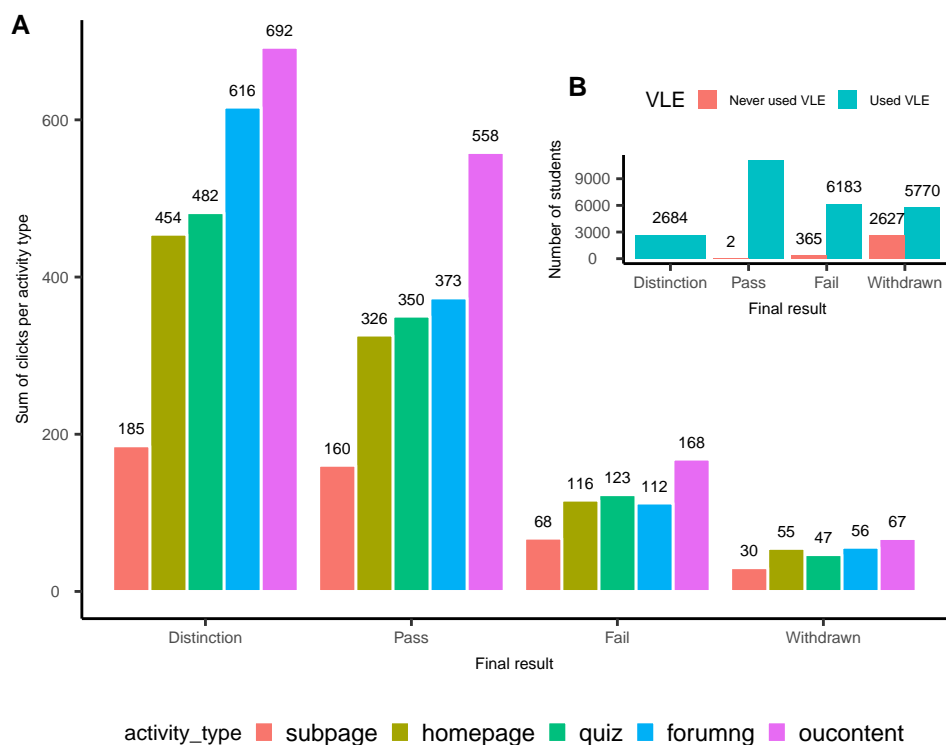


Figure 4: **Plot A.** Number of clicks across modules and semesters for the top 5 most used activities in the VLE by the final result of the students. **Plot B** Number of student who used or never used the VLE by their result.

Data used: student's information available

The Open University Learning Analytics dataset contains information for 28785 students including: the course module that they attended; information about the course module (length, credit, etc. . .); their final results and student interaction with the virtual learning environment (VLE). Every student can either **Withdrawn**, **Fail**, **Pass** or **Pass with distinction** a module that they attended. 3523 students enrolled in more than one module (either the same or a different one). Given the large amount of student available, only one entry per student was included in this study. If a student enrolled in the same module multiple times, either for initial failure or withdrawal, we kept their most recent entry. If a student enrolled in different modules we randomly selected one of them. This step removed roughly 12% of the initial student's entries. In addition, in order to avoid mis-reporting bias, we excluded students who appeared to have never registered into a module (registration date was unavailable) and students who unregistered from a module but their final result was not, **Withdrawn**, as expected.

Table 1 shows the students available in the study by their final result.

Table 1: Number of students by registration date, unregistration date and final result.

Registered	Unregistered	Final result	Number of students
registered	in course	Distinction	2684
registered	in course	Fail	6548
registered	in course	Pass	11119
registered	in course	Withdrawn	91
registered	unregistered	Withdrawn	8306