

# TRAJECTORY INDICATORS REPORT

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### **1** Introduction

Data management systems in universities are highly developed and are able to quickly provide relevant information for decision-making. When quality assessment and accountability policies are in place, information on how the system is working becomes central. It is for this reason that there is already an important set of indicators to account for this system's functioning; indicators that, over time, have become standardised throughout the world, although there is still much work to be done.

The three most widely used referents in our context are linked to different territories and groups of nations. On the one hand, the UNeix data integration and processing service of the Department of Research and Universities of the Generalitat de Catalunya, which produces public reports, provides data for quality processes, etc., but above all disseminates key indicators through the EUC-AQU portal. The equivalent service in the Spanish Ministry of Universities is the Integrated University Information System (SIIU), which collects data from the entire Spanish system. In turn, data from OECD countries are collected to provide indicators that are as comparable as possible and constitute a good benchmark for international benchmarking.

Obviously, these resources of official data are complemented by more or less extensive studies that are often based not on registry data, but on surveys produced ad hoc, which makes them somewhat weaker for using in evaluation processes. This is the case of the Via Universitària survey, or the Eurostudent survey itself, which, in any case, are not produced with the initial intention of serving as a basis for evaluation, but rather to provide information on much broader aspects of university students' lives.

The types of indicators that are produced can be classified according to the moment they deal with. Thus, we can see that there is a set of indicators on access to university, another on progress and, finally, on labour market entry. In the context of this project, we are interested in focusing on the progress indicators. What we see is that the resulting sets of indicators depend not only on the issue on which they are focused, but also on the time in which they are produced.

Thus, a first set gives an account of the progress that the student follows while studying, a computation that is carried out the following academic year of the one being analysed. This set includes, for example, the performance rate, the grade average, etc. A second set provides information on the decisions students make during the course of their studies and the trajectory they build up. The clearest example of this type is the transfer rate (which is one of the data selected for the EUC-AQU), but there is not much use and dissemination of other indicators in this category. The third group of indicators require a certain amount of waiting before being produced, namely those that refer to the final result of the student's trajectory. Thus, in order to report a dropout, it is necessary to wait two years, which is defined as the period of non-enrolment that makes us consider that the student has dropped out; or in order to report graduation, it is necessary to wait until the theoretical time of completion of studies is completed, plus one more



year. Persistence indicators over specific periods of years are not usually provided. Finally, and this is very characteristic of the OECD, indicators are calculated that compare the attainment of university degrees (Bachelor's and Master's) by generations of different ages.

The Erasmus+ Complex Trajectories project in which this report is framed focuses on the trajectories that students build as they progress through their studies. In this sense, the indicators that will be proposed are of the second kind described in the previous paragraph, which could be called "progress indicators". This project proposes to address the question of progress in studies by introducing two aspects that provide a new perspective.

The first aspect is to take into account the issue of equity, in particular that which takes into account inequality by social class, gender, origin and age. We stress the importance of adopting this perspective, especially after international emphasis has been placed on widening policies, i.e. extending access to university to groups that have traditionally been excluded. The logical continuation of the actions that have been taken to open up access must be to promote policies that help to navigate and complete university studies.

This is where the second aspect of the project emerges, that of complexity (Troiano, 2023). The indicators that have been developed by public administrations and universities themselves tend to fall within the logic of efficiency evaluation applied to an institution. It is for this reason that it is of central importance that the institution manages to retain the students who initially enrolled there, so that a well-assessed trajectory will always be that of the student who enters, continues in the same place and graduates on time, or close to it. Evidently, this responds to the need to justify that the public resources invested are well used, but there is a part that is partially absent in this way of considering and measuring: the student.

A person who enters university does so with a specific motivation and set of expectations. Sometimes, the tools they have in their bag don't quite match what the path requires of them, or the expectations they had set for themselves are dashed, or they simply come across unforeseen events that upset their plans. For whatever reason, there are many of these people who adapt or decide to redirect the path they have started, to slow down for a while, to change the pace, etc. And the redirection sometimes leads to a final abandonment of studies, but sometimes it leads to a deviation, or to a subsequent slowdown, which ends up leading to a graduation. Any of these paths, with the traditional indicators from the institution's perspective, would have been considered a failure. But, from the student's perspective, is it? Tinto (2017), one of the world references in research on university dropout, and we, like him, believe it is not. The trajectory that this student outlines is complex, but clearly not unsuccessful.

In this report you will find research results on the progress of university students. The ultimate aim is to draw attention to how this progress is made in order to help establish the basis for deciding which indicators of achievement are the most appropriate from the point of view of equity and complexity.



### 2 Status evolution: Sequence Analysis.

The first approach we take to the students' trajectories is through the analysis of sequences. This analysis allows us to represent these trajectories together over a period of time (in our case, seven years), taking as a unit of analysis the status at each observation point, i.e., what the student does each academic year. Another function of the analysis of sequences through which the results are presented is the construction of trajectory indicators that characterise the continuity of enrolment and retention in the degree for each student.

#### 2.1 Trajectories of status.

For the representation of the trajectories using sequence analysis, the statuses we consider are being enrolled in a bachelor's degree, not being enrolled, having graduated, and being enrolled in a master's degree. We divide the results between all the face-to-face universities in the Catalan university system and the Catalan online university, the UOC.

It is well known that the most common trajectory among students is the traditional one, that is, continuous enrolment and graduation within the expected time (4-5 years), or within the expected time plus one year. Figure 1 shows that, after five years of university entrance, over 60% of the cohort has graduated.

Figure 1. Analysis of sequences. Trajectories in higher education, onsite Catalan universities. Cohort of the 2012 year.





Source: Complex Trajectories Project. Example of Sequence Analysis: Comparative Report.

However, these results differ from those of the online university which, as we know, has a student profile that is very different from that of face-to-face universities. As we can see in Figure 2, the way in which these students study, at a slower pace and with many other responsibilities to attend



to in their day-to-day lives, is reflected in the set of trajectories that they draw during their time at university. Basically, we can see that the graduation rate is much slower, while the dropout rate is much more frequent.

As part of the Complex Trajectories project, we have been able to see that the British Open University has similar graduation rates, although with higher dropout rates, while the Portuguese Universidade Aberta has higher graduation rates, but also lower persistence rates. Therefore, the profile of careers presented by the UOC are also the most common in other European distance learning universities. This leads us to raise the issue of the setting of the theoretical years of duration for online universities, a reference that is often used in the construction of indicators of study completion.

Figure 2. Analysis of sequences. Trajectories in higher education, online Catalan university. Cohort of the 2012 year.



Source: Complex Trajectories Project. Example of Sequence Analysis: Comparative Report.

#### 2.2 Trajectory indicators.

The grouped representation of the trajectories that makes it possible to analyse sequences summarises very clearly what happens in different types of university. However, the possibility of analysing in more detail the relationship between the trajectory and the final status of the student requires the construction of indicators that can be used as variables.

There are R modules that allow this construction. After examining the data, we have summarised the six trajectories and the four results that are collected in the following tables 1 and 2.



Table 1. Table 1. Final status (7 years of observation) for each type of trajectory. Cohort2012. Catalan University System, on-site universities.

Final status for each trajectory – onsite universities of the Catalan University System							
	Graduation	Graduation with delay	Persistence	Drop-out	Total		
					%	n	
Trajectories*** [0.305]							
Continuity	74.3	9.9	4	11.8	100%	26109	
Change in the 2 <sup>nd</sup> year	41.7	29.4	12.2	16.7	100%	2463	
Change in the 3 <sup>rd</sup> year onwards	22	37.6	18.4	22	100%	2337	
Stop-out	11.2	29.3	32.6	27	100%	663	
Change + Stop-out	0.9	30.9	46.4	21.8	100%	1685	
Total	63.3	14.7	8.3	13.7	100%	33257	
Early leavers	0	0	0	100	100%	2307	
Total with early leavers	59.1	13.8	7.8	19.3	100%	35564	

Note: \* \*  $p \le 0.01$  for the chi2 test | \*  $p \le 0.05$  for the chi2 test

Square brackets: V Cramer as a measure of the intensity of the association between variables. Bold: Values greater than 1.96 for standardised and corrected residuals as a measure of the intensity of positive association between categories.

The presentation of these data allows us to confirm that the least complex trajectory -without changes and stop-outs- is the one that produces the best final result. However, new information emerges about what happens to the rest of the students according to what they do along their itineraries. Thus, we see how changing between first and second year delays the moment of graduation, but does not reduce the probability of graduation. Similarly, the results obtained in the other types of trajectories, once those who drop out in the first year are excluded, entail delays and a certain increase in the probability of dropping out, but the latter does not increase as much as we might have expected.



Table 2. Table 1. Final status (7 years of observation) for each type of trajectory. Cohort2012. Catalan University System, online university.

Final status for each trajectory – online university of the Catalan University System							
	Graduation	Graduation with delay	Persistence	Drop-out	Total		
					%	n	
Trajectories*** [0.151]	Trajectories*** [0.151]						
Continuity	13.9	11.7	21.2	53.2	100%	4163	
Change in the 2 <sup>nd</sup> year	23.4	18.2	22.6	35.8	100%	137	
Change in the 3 <sup>rd</sup> year onwards	14.4	24.9	26.4	34.3	100%	201	
Stop-out	1.3	3.7	40.9	54.1	100%	706	
Change + Stop-out	1.7	11.6	46.5	40.2	100%	301	
Total	11.9	11.3	25.4	51.5	100%	5508	
Early leavers	0	0	0	100	100%	1740	
Total with early leavers	9	8.6	19.3	63.1	100%	7248	

Note: \* \*  $p \le 0.01$  for the chi2 test | \*  $p \le 0.05$  for the chi2 test

Square brackets: V Cramer as a measure of the intensity of the association between variables. Bold: Values greater than 1.96 for standardised and corrected residuals as a measure of the intensity of positive association between categories.

In the case of the distance learning university, the results are even more surprising because, although it is true that the number of cases is much lower, it can be observed that here students achieve even better results when they follow changing trajectories than when they continue with their initial studies. The stop-outs from studies lead to a lot of drop-outs, but not more than those who follow continuity trajectories and, on the other hand, the likelihood of staying on studying rises a lot.

### 3 Analysis of early changing

### 3.1 Results of the trajectory of early changing

It is evident that the frequency of change will be higher in the case of people who are not satisfied with the first option they chose, because they do not like it, or they do not succeed, or they have discovered a better alternative. The suspicion that the performance obtained during the first year may be having an important influence on the decision to change studies (as an alternative to continuing or dropping out), leads us to analyse the result obtained by the first-year change trajectory, after the first year, according to the performance that has been achieved during this first year.

Firstly, we can see how many people continue, change or drop out in the second year depending on the performance they have obtained in the first year, for on-site and online universities.



Figure 3. Proportion of students who drop out, change or continue in the 2nd year of studies, according to percentage of credits passed in the 1st year. Cohort 2012. Catalan University System, on-site universities.



Figure 4. Proportion of students who drop out, change or continue in the 2nd year of studies, according to percentage of credits passed in the 1st year. Cohort 2012. Catalan University System, online university.



Note: less than 10 cases in the "have passed 10% of credits" group. In the case of the UOC, with a regular annual enrolment of approximately 30 credits, this corresponds to 3 credits, i.e. half a standard course, which does not exist.

The option of changing studies when they perform badly is followed by a significant proportion of students at on-campus universities. In these, among those who only pass 10% of credits, the



same proportion decide to change rather than drop out. Also, a not inconsiderable percentage of UOC students opt to change when they obtain a low achievement (20-30%), but we can see that this is not a strategy that is followed so often in this type of university.

Once we know what is the structure of the decisions that are taken in the transition from the first to the second year of studies, we focus on examining what is the final result -at the end of the 7 years that we observe- of the strategy followed. Evidently, we aim to answer the question of whether one or the other strategy has been worthwhile.

In the case of on-campus universities, Figure 5 shows that there is a significant proportion of students who, after seven years, have already graduated or are still studying, but have not dropped out, even though they started their first year with low performance. This tendency is even more marked for students who, in the second year, opted to change the degree they had initially enrolled for.

Figure 5. Graduation or persistence for students 7 years after starting their studies, according to whether they continue or change when entering the second year, and according to their performance in the first year. Catalan University System – Onsite universities. Cohort 2012.



UOC students (Figure 6) also obtain better final results when they follow the option of changing studies and this includes the case of those who have done well in first year. The behaviour of this group seems more erratic, which may be due to the smaller sample available (although it meets the minimum of 120 cases in each category), or it could be due to the fact that the UOC is a university with a wide range of profiles and circumstances.



Figure 6. Graduation or persistence for students 7 years after starting their studies, according to whether they continue or change when entering the second year, and according to their performance in the first year. Catalan University System – Online university (UOC). Cohort 2012.



Note: less than 10 cases in the "have passed 10% of credits" group. In the case of the UOC, with a regular annual enrolment of approximately 30 credits, this corresponds to 3 credits, i.e. half a standard course, which does not exist.

Later on, we will see that the option of changing when one does badly in the first year is more frequently taken by students who have university-educated parents. That is why here we look at whether the effect of the change in the final result obtained is different depending on the family's level of education. We do this only for on-campus university students.



Figure 7 and Figure 8. Graduation or persistence for students with university and nonuniversity family's level of education, 7 years after starting their studies, according to whether they continue or change when entering the second year, and according to their performance in the first year. Catalan University System – Onsite universities. Cohort 2012.



We can see that the results obtained after 7 years are very similar regardless of the family's level of education. This means that, when the results are poor, it is worth trying to change qualifications and it seems to be a good strategy, even when the student comes from a family with a family that does not have a university education.

#### 3.2 Inequality in the early changing trajectory

It is at this point that it is important to examine whether the decisions that students make when the results they obtain at first year are not good are influenced by their family background. If this is the case, we are looking at an inequality in the opportunities available according to social origin, because we have just seen that staying on at university and, especially, changing studies, often offers the possibility of improving a trajectory that has begun with some difficulties.

And indeed, the results show that there are differences in the decisions taken by students from different social backgrounds when they get bad grades. If we compare students with university and non-university family education, who have achieved between 0 and 40 per cent of credits in their first year, we see that they follow very similar patterns of continuing in the same degree that they started. Obviously, the proportion of credits achieved is a fundamental variable in explaining this decision.



Figure 9. Proportion of students who continue in the 2nd year of studies in the same degree, according to percentage of credits passed in the 1st year. Cohort 2012. Catalan University System - On-site universities.



However, it is important to pay attention to what happens to those students who do not continue in the same degree. Is their option to continue at university by choosing other studies, or do they decide to leave the university system? The meaning of one option and the other is very different, because the first refers to the idea of trying it again, of trying to improve the situation without giving up, of having a second chance, while the second option does not.



Figure 10 and Figure 11. Proportion of students who change and drop out in the 2nd year of studies, according to percentage of credits passed in the 1st year. Cohort 2012. Catalan University System - On-site universities.



And indeed, we see that this is where the differences between students from families with different educational backgrounds emerge. The performance obtained at first year continues to be a key variable in explaining the decision taken, but there is a persistent tendency for students with low performance in university families to drop out less and to change more than their peers in families without university studies.

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### 4 Analysis of the evolution of performance: GBTM

A different way of observing the trajectories of students is by looking at their progress, not by looking at the transition from status to status, but by looking at the evolution of their level of achievement. The analysis tools available are of a diverse nature. We have opted for a tool that aims to classify students' trajectories into groups that are as internally homogeneous as possible and as heterogeneous as possible in comparison with the rest: Group Based Trajectory Modelling.

#### 4.1 The trajectories of performance types

The variable we work with to examine the evolution of performance is the performance rate. This consists of calculating the ratio between the credits that students successfully achieve and the credits for which they have enrolled, expressed as a percentage.

The analysis procedure results in typical trajectories, which group together people who have followed similar trajectories.







Table 3. Final status (in 7 years) for each performance trajectory. Cohort 2012. CatalanUniversity System, on-site universities.

Final status for each trajectory. Catalan University System – onsite universities.								
	Graduation	Graduation with delay	Persistence	Drop-out	Total			
					%	n		
Trajectories*** [0.732]								
G1: Early drop-out	0.5	0	2	97.5	100%	4965		
G2: Low perf. + improvement	0	13.7	77.1	9.2	100%	2420		
G3: Good perf. + late drop-out	1.1	13	12.1	73.8	100%	2415		
G4: Good perf. + improvement	20.4	72.8	6.3	0.6	100%	10873		
G5: Very good performance	77.9	21.4	0.5	0.2	100%	16234		
Total	40.4%	32.6%	8.2%	18.8%	100%	36907		

Note: \* \*  $p \le 0.01$  for the chi2 test | \*  $p \le 0.05$  for the chi2 test

Square brackets: V Cramer as a measure of the intensity of the association between variables. Bold: Values greater than 1.96 for standardised and corrected residuals as a measure of the intensity of positive association between categories.

Each of the trajectories tells a story of progress in studies. The first three are much less common. Group 1 includes people who have passed less than half of the credits in the first year and who, persisting more or less, end up dropping out. This group is traditionally the one that has attracted most attention from university managers and administrators.

Group 2 maintains a performance rate for almost the whole period that reflects the acquisition of about half of the credits enrolled, improving somewhat at the end of the period, when we see that the majority of the group persists at university. Group 3 maintained a good performance in the first years, but the trajectory then spurs off and we see that a large percentage end up dropping out. These last two groups are probably the ones that reflect the average progress of people who describe complex trajectories and where there is more scope for intervention by student support policies.

The last two groups are clearly predominant. Group 4 began their university trajectory with some faltering, but as the years went by, their performance improved and, although many of them were delayed, most of them ended up graduating. While group 5 is the group that remains at an almost maximum level of success in their studies throughout the years and, obviously, a large part of them graduate within the expected time. Although policies can certainly be put in place to improve student welfare and, especially in the case of group 4, rapid adaptation, it seems clear that the people who enter these two models do not require a great deal of attention in terms of monitoring and support.



Figure 13. Seven-year trajectory based on the student performance rate. Cohort 2012. Catalan University System, online university (UOC).



Table 4. Final status (in 7 years) for each performance trajectory. Cohort 2012. CatalanUniversity System, online university.

Final status for each trajectory. Catalan University System – online university (UOC).								
	Graduation	Graduation with delay	Persistence	Drop-out	Total			
					%	n		
Trajectories*** [0.519]								
G1: Medium performance	4.6	21.2	53.1	21.1	100%	1389		
G2: Early drop-out	0.7	0.1	4.4	94.9	100%	2924		
G3: Good perf. + late drop-out	2.4	0.1	3.5	94	100%	1534		
G4: Very good performance	20.3	44.3	32.2	3.1	100%	1527		
Total	5.8%	13.2%	19.2%	61.8%	100%	7374		

Note: \* \* p  $\leq$  0.01 for the chi2 test | \* p  $\leq$  0.05 for the chi2 test

Square brackets: V Cramer as a measure of the intensity of the association between variables. Bold: Values greater than 1.96 for standardised and corrected residuals as a measure of the intensity of positive association between categories.

In the case of the UOC, the group with the highest number of students is the one that drops out in the first stages of their pathway, group 2. Group 3 accompanies them from a trajectory that is maintained for several years at a high or medium level of performance, but which also ends up in a final situation of very high dropout.



In this same situation of medium performance, we find group 1, which progresses more or less slowly until reaching a final situation in which we see that most of the group persists, while about fifty have graduated and another fifty have dropped out.

Finally, the group that used to be the most numerous in on-site universities, group 4, with almost maximum performance every year, represents here almost 20% of the sample. It is worth noting that, following the distance education modality, this group is in a final situation, after 7 years of having entered, of two thirds who have graduated, and a third of students who persist in their studies at the UOC.

In short, as could not be otherwise, the analysis of trajectories, also from the point of view of the evolution of performance, paints very different pictures for universities depending on whether they are on-site or online. On the other hand, each analysis in its own context provides us with an overview of the volume of students following each type of trajectory and allows us to identify those that may require more help from the institution.

### 4.2 Probability of belonging to a performance trajectory

The types of trajectories we have just described provide very good information on how students progress from year to year from the point of view of the credits they achieve. A further step in our exploration leads us to try to understand what are the factors that explain the probability of belonging to one or another of the groups we have identified. It is with this aim in mind that we have carried out a multivariate analysis, in order to control for the influence of covariates on the final result. The results are offered in graphical form in the most summarised way possible. Only the probabilities of relevance that show significant differences are plotted.





#### Figure 14. Probability of belonging to each performance trajectory group Cohort 2012. Catalan University System – onsite universities.











As we pointed out earlier, groups 2 and 3 are the ones that would probably benefit most from an intervention to accompany the trajectory, because they are the ones that are in between performing in a very different way from one year to the next. Multivariate analysis would help us to identify the factors that best explain the belonging to these groups.

In the case of group 2, we can see that gender and entry grade have a slight influence and make small differences in the probability of being in this group. But it is the trajectory that has been followed that makes the probability vary greatly. Specifically, it is a trajectory to which people who have made a stop-out along the way are more likely to end up. We recall that, of this group, 10% were dropouts at the end of the period observed, but three quarters continued studying and more than one in every ten had managed to graduate.

On the other hand, we have not been able to clarify the specific profile of the students who end up in group 3. This group describes a trajectory of good performance over a number of years, but which suddenly begins to have serious problems in passing credits and ends up with a very high probability of dropping out. There is nothing that characterises this group beyond the fact that men are slightly more likely to drop out than women. Perhaps there are critical incidents in a person's life, totally unexpected, located in other areas such as family life, personal life, work, etc., which make it totally unpredictable to foresee them and identify a greater probability associated with certain personal or academic characteristics.

We can also analyse the other groups and perhaps they bring something new to the ideas we already know. We begin with group 1, that of early leavers, which shows a well-known profile: higher probability among men, high ages, low entrance grades, in science, humanities and engineering, among those who already have a degree and those who come from vocational training (CFGS), and students enrolled on longer degree programmes.

Group 4, which starts with good performance and improves even more over the course of the year, is very much concentrated in areas of high difficulty, such as STEM courses and degrees that last more than 4 years. Also, there is a strong presence of people who have made some kind of change during their studies, which reinforces the result that we have already observed in section 3 of this report.

Finally, group 5, which let us remember that it is the group with the best performance throughout the period and which has by far the highest number of students, allows us to identify a profile that is already well known and which would be the reverse of the early dropout profile (group 1). The only small surprise is to find that, once all the other variables are controlled for, students who come from families without university studies are slightly more likely to belong to this group than those who have a university-educated parent. It seems that, keeping the other variables the same, those from lower social backgrounds are more likely to progress at a good pace throughout the courses.



In the case of the UOC, we do not have enough social and academic variables to be able to carry out such a detailed exploration. However, some of these factors are included and we have tried to clarify their importance.



**GROUP 1: Medium performance GROUP 2: Early drop-out** 0 0,1 0,2 0,3 0,5 0,7 0,8 0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 0,8 0,4 0,6 Sex Sex Woman Woman Man Man <26 <26 Age Age 26-35 26-35 >35 >35 Hum. Hum. Sos FoS Health Health Social Social Eng. Eng. Traject. Traject. Non Complex Non Complex Change Change Stop-out Stop-out **GROUP 3: Good performance + late drop-out GROUP 4: Very good performance** 0 0,1 0,2 0,3 0,4 0,5 0,6 0,7 0,8 0 0,3 0,5 0,1 0,2 0,4 0,6 0,7 0,8 Sex Woman Sex Woman Man Man <26 Age <26 Age 26-35 26-35 >35 >35 Hum. Hum. FoS Health FoS Health Social Social Eng. Eng. Traject. Traject. Non Complex Non Complex Change Change Stop-out Stop-out







The few socio-demographic and academic variables available to us make very small differences in the likelihood of belonging to one or another performance trajectory group. Moreover, the differences that are observed have been known for a long time and have to do above all with the greater difficulty of progressing within engineering degrees.

However, the novelty that we have introduced, taking into account some of the characteristics of the options for the status trajectory, such as the possibility of having made a change or a stopout in studies on the path followed, does seem to have some impact on the probability of following a particular performance trajectory or another. Thus, we see that switching or stopping-out is associated with following a medium-performance trajectory, and also that changing is associated less than the rest with the early drop-out trajectory, and, at the other extreme, more than the rest with the very good performance trajectory. These results reinforce the idea that we have already seen in section 2.2 on the normality, and even better results, of the transfer trajectory in the case of UOC students.

### **5** Conclusions: Indicators Proposal

Up to this point, we have presented some of the main results obtained in the Erasmus+ Complex Trajectories project, which we believe reveal important characteristics of the trajectories that students describe during their time at university. However, it seems clear that neither the university data offices nor the centralised UNeix can commit themselves to replicating these analyses every year. The reports of these services cannot include in-depth analyses that contrast hypotheses; this is the task of research. However, we believe that research can inform us of trends in inequality that make it relevant and advisable to establish systematic indicators that allow us to monitor specific aspects of the trajectories. It is with this aim in mind that we suggest here some indicators and recommendations for taking into account student progress a little further than is currently the case.

The first recommendation is to take equity into account when presenting indicators in reports. Once the indicators are constructed, it is possible to check systematically whether they behave differently according to gender, social origin or age; and the historical perspective will allow us to observe the evolution.

With regard to the indicators of the trajectory of status, although it is true that the indicator of change of studies has been used for some time as a complement to the drop-out indicator, it is recommended here to calculate, in the transition from the first to the second year of the cohort of students, three indicators together, as a proportion of those who drop out in the second year, continue in the same studies, or change studies. It seems very important to have this record at this time, because we have seen that it shows inequalities of opportunity and points of inflexion

in the trajectories. Furthermore, giving relevance to this calculation does not discriminate between the degrees organised into groups of studies in first year and makes them more comparable with the rest.

Alongside the change indicator, the stop-out indicator has proved to be very relevant. We have seen that the trajectory that includes a situation of stopping-out during some periods is associated with the trajectory of medium performance, but the former is easier to identify and it is not necessary to distinguish between a situation of stopping-out and a situation of stopping-out plus change, because the former is clearly the one that prevails (at least in on-site universities) in terms of predicting final results.

Without moving away from the topic of trajectories, late dropout may be of interest in itself because, although we have not been able to associate it with any socio-demographic or academic characteristic, it seems a problematic enough situation to keep a record of it. Perhaps in the future, we will be able to better clarify the causes and plan appropriate interventions as a result.

Let us now make a few considerations regarding the "final" situations. We have taken a period of seven years of observation, which is three years longer than the theoretical duration of most CUS degrees, which is four years. The decision was taken because graduating in the theoretical time plus one year is considered to be completely within the "adequate" time, almost equivalent to the theoretical time, and graduating three years later is a measure that the OECD has standardised. The problem arises in the consideration of the degrees that do not have a theoretical time of four years, but of 5, 6 or even 7 years. Moreover, when the student changes degree and the two degrees they have passed through do not have the same theoretical duration, ¿what is the theoretical time of graduation that is attributed to them? We have calculated the average and it seems a reasonable solution, but what we want to point out is that the concept of theoretical time implies a calculation for each student and, therefore, the theoretical time plus 1 or plus 3 will be a varying waiting time that will imply having incomplete indicators over the years until, finally, we have the complete indicator for the whole cohort at the end of 10 years.

Therefore, not only because there are complex trajectories, but also for this reason it is interesting to use the indicator of persistence in studies. Alongside the graduation rate, the persistence rate gives us an idea of the progress of the cohort at different distances in time from the start of their studies.

Finally, a complicated issue is the setting of the theoretical time for the case of the degrees that are taken in distance learning mode. In this project, we have not had enough years of observation to explore possible equivalences and contrasted solutions. Nevertheless, the rate of progress that we have been able to detect leads us to believe that the solution adopted by the UOC is entirely reasonable. At the UOC they calculate, and they have to do it periodically, the ratio between the



number of students enrolled in any one year and the number of full-time students in that year. While enrolled students are real people, full-time students are total enrolled credits divided by 60 (equivalent to the full dedication to the course being studied). The last time it was calculated, the ratio was 2.1. Therefore, the theoretical time for a degree course taken at the UOC is 2.1 times the theoretical time stipulated for the same study in face-to-face modality.

### **6** References

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