



CSU, CHICO BY THE NUMBERS – May 2021

A publication of the Chico State Office of Institutional Research

Effect of Covid-related Changes on Freshmen Classroom Success in Fall 2020

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The Covid epidemic forced multiple changes to instruction, grading and withdrawal policies, and student behavior that might have affected how well students did in their courses during the Fall 2020 (F20) semester. While the switch of most classes from in-person to either synchronous (30% of all enrollments in F20) or asynchronous (66%) online instruction was probably most consequential, other changes such as many students being at a distant location, faculty and staff not being available for in-person meetings, illness, stress caused by the epidemic, loss of jobs, etc., all probably also contributed to making F20 a particularly difficult semester. To compensate for these issues, grading and withdrawal policies were modified to make withdrawals much easier and available through dead week, all WU (unauthorized withdrawals) and F grades were automatically converted to No Credit (NC), and students had the option to convert any grades to NC – this was primarily used to convert ~20% of Ds to NC. As the youngest and least experienced learners are most likely to be harmed by these Covid-related effects, in this month's *By the Numbers* report, we look at how well students in different class levels did academically in the F20 semester compared to earlier terms. To do so, we compare the percentage of D, F, WU, NC, and W grades (DFW rate) for the F13 to F20 semesters. These data are derived from the faculty grade data dashboards developed by the Office of Institutional Research.

Importance of DFW Rates

DFW rates are a commonly-used measure of student success as they capture two different types of harm caused by poor classroom performance: decreases in GPA and the loss of units. Students whose overall GPAs fall below 2.0 go on probation, and if they are unable to raise their GPA in subsequent semesters they can be disqualified from the University. This is particularly a problem for first-time freshmen, as they don't have a buffer from earlier semesters with higher GPAs, so getting a GPA below 2 in their first semester immediately puts them on probation. Thus, high DFW rates are strongly associated with students not persisting and this is a primary cause of most of the equity gaps in graduation (see [Effect of Covid-related Changes on Student Success for Fall 2020](#) (2021) for further discussion).

In addition, withdrawals (W), F, and NC grades result in no units being gained, requiring students to repeat courses (this is also true for some Ds). This delays student progress towards a degree and increases the cost of completing a degree, both of which can result in a failure to graduate.

The unusual grading policies in S20 and F20 decouple these two effects, as some D and all F grades were converted to NC grades and are not used in the computation of GPAs. Thus, most students will have GPAs over 2.0, avoiding probation and disqualification. However, the units are still lost and DFW rates will still be a good measure to how well students succeeded in passing their courses, though high DFW rates won't be as harmful as in normal semesters. GPA will be a poor measure of student success in these semesters as GPAs will be higher than usual, even if students do worse than normal.

DFW Rates by Term from F13 to F20

Since F13 the percentage of DFW grades has been ~11%, varying in a tight range between 10.4% and 11.4%, Fig. 1A. Over the 15 terms from F13 to F20, there has been no evidence of either improving or declining trends in DFW rates, but there have been two outlier terms in the last several years: F18 and F20, as shown in Fig. 1B. In F18, the Camp Fire caused the cancellation of over a week of classes and changes to most final exams. Surprisingly, this resulted in a 14% decrease in the DFW rate to only 9.5%, either because of easier finals or because faculty lowered their grading criteria to compensate for the interruption and extreme stress many students had been under. In F20, however, the switch to almost exclusively online instruction and the effects of Covid on students and instructors led to a 36% increase in DFW rates, from ~11% to 15%, as shown in Figures 1A and 1B. The 15% DFW rate in F20 is over three standard deviations from the normal range, making it an extreme outlier. Thus, over 3,000 additional DFW grades were given to students in F20 than would be expected in a normal term (4% more of the 79,000 grades in F20 were DFW). The increased DFW grades came from a higher rate of F grades, which increased by over 50%, from a normal 3.9% of all grades to 5.7% in F20, and a more than four-fold increase in Ws, from a normal 1.4% of all grades to 6.2% in F20 (data not shown). In the official grades, all of the Fs and some Ds were converted to NC grades, so the NC category grew from a

normal 0.7% to 6.4% of all grades in F20, while the number of Fs dropped to zero and the number of Ds declined from 3% to 2.5%, so students converted 17% of their D grades to NC.

Surprisingly, while the second half of S20 was also taught almost entirely online and the modified grading policies were introduced then, there was no increase in DFW rates. This suggests that the change in grading policies did not cause an increase in DFW rates, and, thus, that the change to all online instructions for the whole term and/or the effects of Covid caused the large increase in DFW rates in F20.

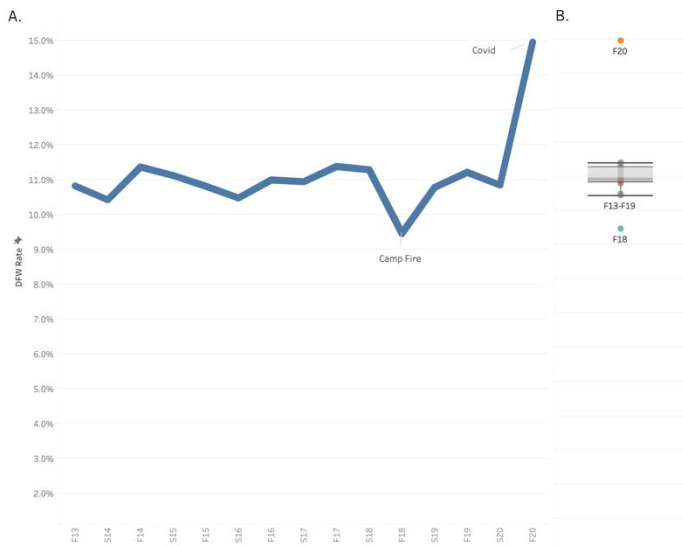
DFW Rates by Class Level from F13 to F20

Figure 2 shows the average DFW rate by term for each class level for the F13 to F20 semesters. The first and most obvious result is that for all terms before F20 the DFW rate is highest for freshmen, averaging a DFW rate of 16.1%, and decreases for each class level with sophomores at 13.6%, juniors at 11.3%, seniors at 8.3% and post-bacc and grad students down at around 2%. This downward trend could be from a selection effect where students with poorer academic performance are more likely to drop out or be disqualified as freshmen, and their absence in later levels leads to a lower percentage of students who get DFW grades. Another explanation could be that as students take more college classes, they get better at passing college classes. It is also possible that upper divisions classes are easier to pass than lower division classes due to smaller class sizes, better instruction, etc.

graduate students had no increase in their low DFW rates. Thus, as expected, the greatest harm to student success occurred amongst the youngest and least-experienced students.

As students likely had similar Covid-related challenges outside the classroom – illness, family members getting ill or dying, lockdown stress, etc. – the most likely explanation for the much poorer performance of freshmen and sophomores is that they had a harder time coping with having all instruction online than the juniors and seniors. Hopefully, either they will have learned how to better deal with online education or the online instruction and support will have improved, or both, so that students will have more success in the S21 semester. In addition to the measurable effect on their grades, there is also a possibility that, despite the large increase in As, even students who passed their courses learned less than in normal terms. If so, this may result in increased DFW rates in later terms, especially for the F20 freshmen cohort.

As F21 will also have a significant amount of online instruction, better support for the freshmen and sophomores is needed to prevent large losses from these classes.



Figures 1A and 1B. Percentage of grades that are DFW (D+, D, F, WU, W, or NC grades) by term, Panel A, or in a box plot, Panel B.

Figure 2 also shows that the Covid-related increase in DFW rates in F20 was much worse for the youngest students, with DFW rates for freshmen students increasing in F20 by a large 48%, from 16.1% to 23.6%. Sophomores had almost as large of an increase, going from a DFW rate of 13.6% to 19% in F20, a 40% increase. Juniors had a smaller 33% increase, from 11.3% to 15%. Meanwhile seniors had their DFW rate increase by only about 29%, from 8.3% to 10.6% in F20, and post-baccalaureate and

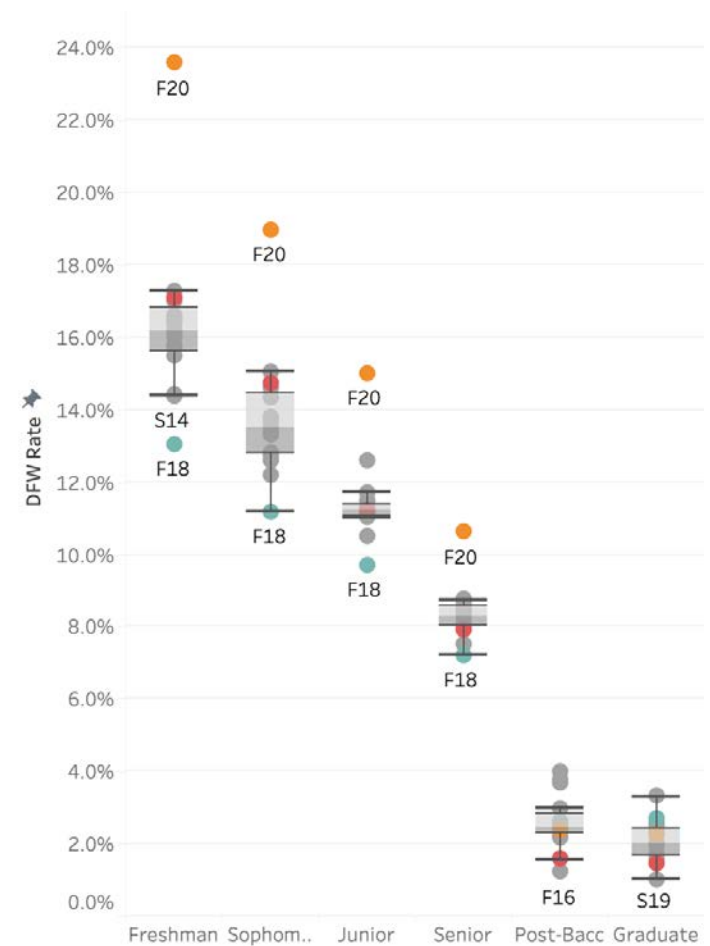


Figure 2. DFW rates for the F13 to F20 semesters by student level.