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Efficient utilization of room capacity: Putting the "Flex" back in HyFlex teaching

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Summary

In HyFlex teaching, classes are conducted with some students attending physically, and some attending online. This project compares the top-down allocation of physical attendance rights (used in KU in Fall 2020) with a self sign-up system, in which students can choose their format freely. The latter led to higher utilitzation of limited room capacity, better class participation, and garnered positive comments from students, but raises possible concerns about students who consistently self-select into online lectures.

Background

HyFlex teaching

- Due to COVID-19, 1m social distancing rule was in place during Fall 2020, which severely limited the available classroom capacity.
- It was decided that HyFlex teaching approach should be adopted: as much teaching as possible should be delivered on campus, while also being available online for the remaining students.
- This project compares different ways to allocate students between the physical and the digital classrooms.

Course

- The project was run within a Mechanism Design course (MA in Economics program) with 50 registered students.
- Room capacity was limited to 38 seats due to COVID-19 restrictions.
- Since designing a seat allocation mechanism fit the topic of the course quite well, students were also asked to propose possible mechanisms as part of their homework.

Considered mechanisms

Top-down allocation (first 4 weeks of teaching)

- Mechanism imposed by the Study Administration on most SAMF courses.
- Students can attend physical classes every second week based on DoB, must attend online otherwise.
- Some students choose to attend online regardless, leading to underutilized room capacity.
- Students have no opportunity to coordinate attendance with their study groups, harming in-class participation.

Student-driven allocation (weeks 5-13 of teaching)

- Students can sign up for seats as they wish.
- Students bid weekly for seats using fiat "tokens". If seats are scarce, bids allow students to express the strength of their willingness to attend a given class.
- All students are endowed with the same number of tokens to provide equal opportunities.
- Students who prefer attending together can coordinate their attendance formats better. Allowing study groups to coordinate makes in-class groupwork more comfortable for students.

Expected impact of SDA

- Students who prefer attending online no longer implicitly claim any room capacity.
- Students who prefer attending physically have more opportunities to do so.
- Students prone to asking questions likely select into attend physically (format more welcoming to questions) and ask more questions, which often benefits everyone, including other students and the lecturer.
- SDA would lead to more active students selecting into the physical classroom, rendering the virtual classom into a low-activity environment. This may legitimize non-participation among online-only students.

Results

The student response and the observed statistics appear to favor the SDA system over TDA (assuming in-person attendance maximizes the learning outcomes). However, SDA requires more effort to engage and activate the online students.

Top-down allocation



Student-driven allocation







lectures attended

- Under the top-down ("every second week") system, physical attendance was highly volatile, and a significant share of room capacity was underutilized, see attendance statistics below.
- Both physical and total attendance have improved under the student-driven system.
- Room capacity constraint was never binding.
- Class participation got shifted from online classroom
- Attendance: Student-driven allocation
- 0 5 10 15 20 25 30 35 40 45

In a survey, 25 of 38 students who responded (66%) said that they suffered the precedents of wanting to attend the class in person, but being precluded from doing so by the rules.

Attendance: Top-down allocation



to the physical classroom. I.e., online classroom became significantly less active.

- There was substantial variance in numbers of lectures attended physically (see the figure). This suggests significant preference heterogeneity among students.
- On average, there is no autocorrelation in physical attendance – students *do not* sign up for attending every other week, in spite of other SAMF courses following TDA.
- Overall, students expressed approval of the new system (verbal feedback, survey responses).

Week 40				
Week 41				
vveek 43				
Week 44				
Week 45				
Week 46				
Week 47				
Mook 49				
VVEEK 48				
Week 49				

physical zoom