



SIMON
BUSINESS
SCHOOL

Cobblestone Learning Center Case

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Highlights

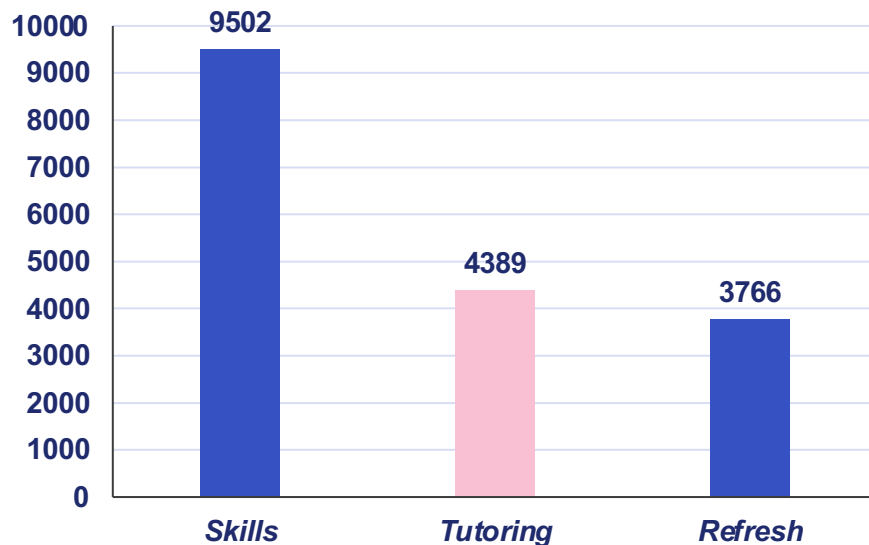
- Student engagement and trajectory
 - Cobblestone market share and program enrollment
 - Crosstabs for program utilization
- Student performance and outcomes
 - Histograms of students average overall improvement
 - Recommendations in choosing programs
- Effectiveness in center-based vs. online delivery modality
 - A/B test to find effects of online class on students' outcomes
 - Advised Expository Techniques: Surveys

Overview of Data

Market Share of Cobblestone Learning Center in 2018

2018 Student Population	Number of Student in CLC	Market Share
135000	8910	6.6%

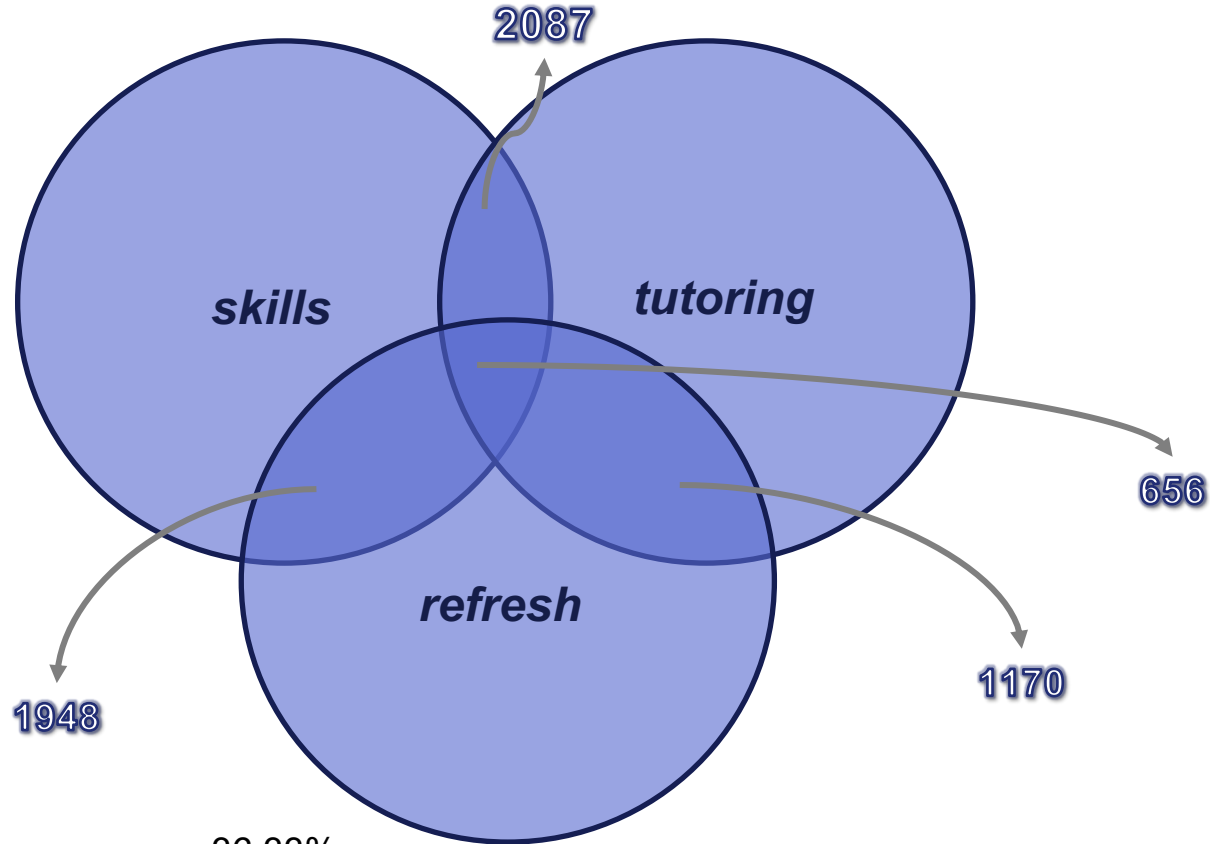
Total Amount of Each Program Be Taken



- Largest market share in St. Paul: 7.835%; Smallest market share in Ridgefield: 4.473%
- Total unique students: 8910 (evals_data)
- Assume students from 2016 to 2017 are still our clients in 2018. The number of unique student_id in 2018 equals to sum of unique student from 2016 to 2018.



Crosstabs for Students Taking Multiple Programs

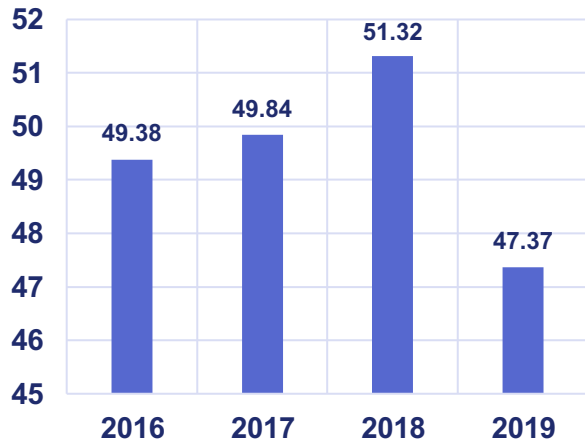


- % of student taking two program: 36.33%
- % of student taking three program: 7.36%

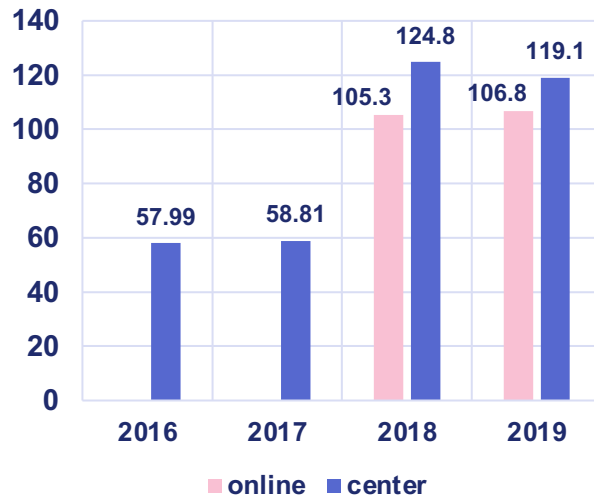


Average Overall Improvement Since Last Quiz

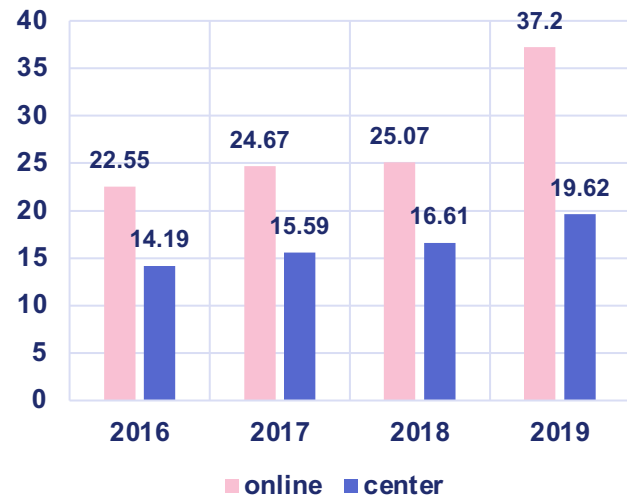
Skills



Tutoring



Refresh



- For duplicated student_id in each program, only using the first appearance score. In order to get students' performance when they first take that program; Calculate whole_score improvement based on last quiz score. No matter if student have taken other programs before.
- Average score improvement rate: {Skills:3%} (2016-2019) {Tutoring: online 6% | center 7%} (2018 - 2019) {Refresh: online 2% | center 1%} (2016-2019)



How to better serve our clients?



- Time and Duration
 - Skills: 2hrs/week, 6 weeks; M,W,F,S
 - Refresh: 4hrs; W, Weekends
 - Tutoring: 1hr/1-2 weeks, 1-4 weeks; *
- Cost
 - Personalization is most expensive
- Program Purpose
- Benefit
 - Skills: 3%
 - Refresh: 2% (online); 1% (center)
 - Tutoring: 6% (online); 7% (center)

* : Based on schedule



A/B Test

Whether Online Format Has a Causal Effect on Score

```
model <- lm(improve ~ isOnline, data = OnlyTutorAfter2018)
```

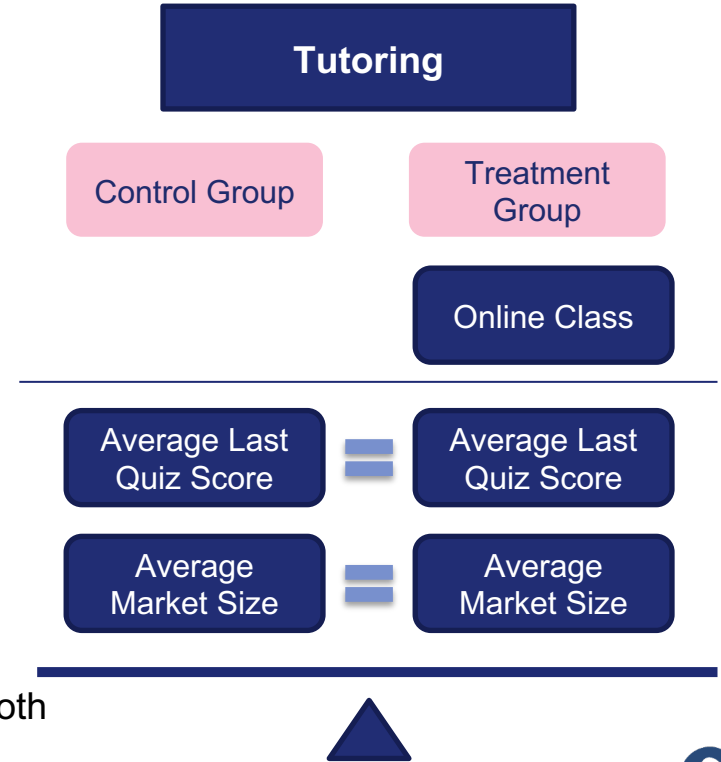
$$Y_i = \beta_0 + \beta_1 X_1 + u_i$$

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	124.5947	0.8148	152.92	<2e-16 ***
isOnline1	-19.1767	1.1535	-16.62	<2e-16 ***

- ✓ **The coefficient 'isOnline1' shows how the expectation changes if 'isOnline1' is set to 1. The coefficient -19.1767 shows that students will have more significant score improvement if they study at the center.**

- Assume students in *Tutoring Program* are randomly selected in both control group and treatment group after 2018.
- Amount of online class: 720; Amount of center class: 723
- Dummy variable "isOnline": online -> 1; center -> 0



A/B Test

Whether Online Format Has a Causal Effect on Score

```
model <- lm(improve ~ isOnline, data = OnlyRefresh)
```

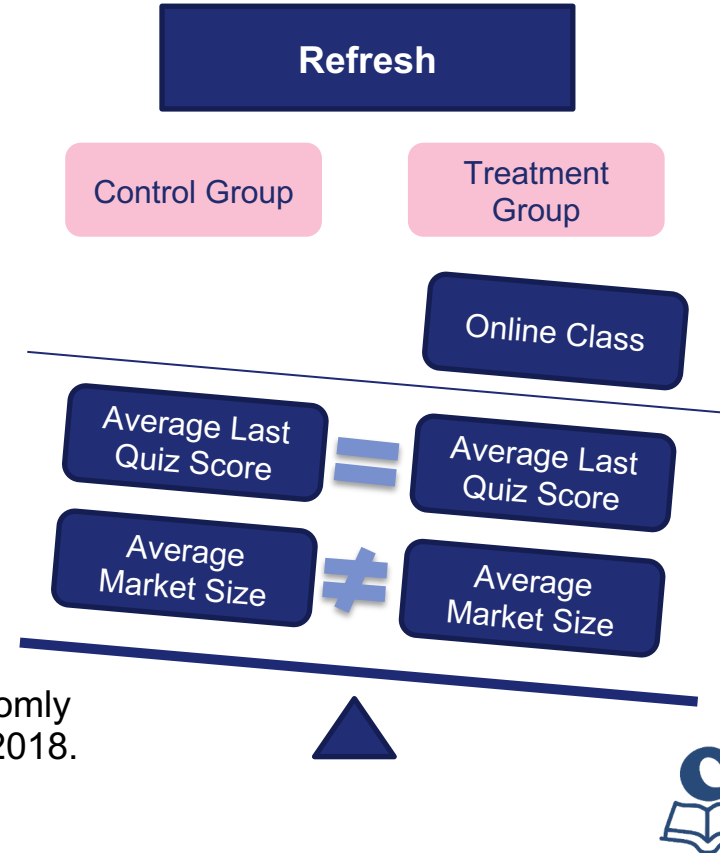
$$Y_i = \beta_0 + \beta_1 X_1 + u_i$$

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	15.5639	0.5260	29.59	<2e-16 ***
isOnline1	8.9848	0.6246	14.38	<2e-16 ***

- ✓ **The coefficient 'isOnline1' shows how the expectation changes if 'isOnline1' is set to 1. The coefficient 8.9848 shows that students will have more significant score improvement if they study online.**

- Randomization Check: students in *Refresh Program* are not randomly selected in both control group and treatment group from 2016 to 2018.
- Amount of online class: 2670; Amount of center class: 1096
- Dummy variable "isOnline": online -> 1; center -> 0



Analysis and Further Research

- No obvious effectiveness on online modality
- Negative impact in *Tutoring Program*
- ✚ Higher overall improvement in *Refresh Program*
- Further survey (usage, attitudes and satisfaction)
 - Time conflict problem
 - Review recording options
 - Commuting time

Students Attitude towards Online Skills Program

Now I would like to find out your impressions about Skill Program online. As I read each characteristic, please tell me, using the statements on this card, where: 1= Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, and 5 =Strongly Agree.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Time Flexibility	1	2	3	4	5
Extensive Resources	1	2	3	4	5
Review Recording	1	2	3	4	5
Focused	1	2	3	4	5
Highly interactive	1	2	3	4	5



Picture 1





Q & A



Thank you for watching