

Aligning Learning Incentives of Students and
Teachers: Results from a Social Experiment
in Mexican High Schools

(**ALI**neando Incentivos para el Aprendizaje)

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Overview

Study the effects of a performance incentive program aimed at improving mathematics knowledge in Mexican high schools.

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ALI program designed to promote mathematics achievement through monetary incentives for performance on curriculum-based tests.

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➤ Effect sizes on test scores generally .10-.25 sd.

Some Facts About Education in Mexico

School Completion Rates (1996 1st grade entry cohort):

87% complete 6th grade – 82% enter 7th grade

65% complete 9th grade – 62% enter 10th grade

47% complete 10th grade

39% complete 11th grade

38% complete 12th grade

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Federal high schools (1,000 schools):

Per-pupil expenditure - 21,000 pesos

Average teacher monthly salary - 20,000 pesos

Pct. of high school students attending - 25%

Average annual tuition – 1,200 pesos

ALI Program

Pilot program period: AY 2008/09, 2009/10 and 2010/11.

Program participants: all students in 88 Federal high schools in Mexico – 24 of 31 states.

Overall design: Random assignment to three treatment groups of 20 schools each and 28 control schools

School Selection

From the set of Federal high schools, 167 were selected that satisfied the following criteria: (i) not in first year of operation; (ii) only had one session; (iii) only morning session; (iv) technically-oriented schools with either an agricultural or industrial focus; (v) located 10 miles or more from another Federal high school.

Original design was 120 schools, 4 treatment groups (20 schools each) and a control group (40 schools).

After administering a baseline survey to those schools, it was discovered that 32 of the schools had multiple locations, some with as many as 8 sites and some 50 or more miles apart. Dropping those schools left 88, which were then re-randomized into the three treatment and one control group.

Treatments

Treatments:

T1 (20 schools)

Payment provided to students related to their individual performance.

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2. Payment to mathematics teachers based on performance of students in their classes and of students in all other mathematics classes.
3. Payment to non-mathematics teachers based on performance of students in all mathematics classes.
4. Payment to principals and other administrators based on performance of students in all mathematics classes.

Randomization

School-based block randomization design.

Nine blocks characterized by school size and graduation rates prior to the initiation of the program.

Within each block, schools are allocated randomly to the three treatment groups and the control group.

Comparison of Treatment, Control and other Federal Non-Ali Schools (2007-2008)

	C ¹	T1 ²	T2 ³	T3 ⁴	Non-ALI ⁵
Blocking Variables					
Mean Number of Students	582 (0.77)	632 (0.61)	609 (0.36)	550 (0.49)	773 (0.00)
Mean Graduation Rate (Percent)	58.3 (0.74)	60.4 (0.54)	56.2 (0.61)	57.9 (0.94)	54.7 (0.04)

Non-Blocking Variables

Pct. Oportunidades	40.3 (0.99)	39.5 (0.90)	40.6 (0.97)	40.1 (0.97)	25.5 (0.00)
Mean Class Size	35.8 (0.42)	41.0 (0.15)	39.0 (0.41)	35.7 (0.97)	39.6 (0.17)
Pct. Teachers with University Degree	82.3 (0.67)	79.4 (0.74)	81.7 (0.16)	84.8 (0.66)	81.3 (0.63)
Mean Distance (Km.) to Closest Fed. Upper Secondary School	32.9 (0.99)	32.8 (0.97)	31.4 (0.81)	32.4 (0.91)	17.4 (0.06)

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¹ P-value for test C=T1=T2=T3 in parentheses.

² P-value for test C=T1 in parentheses.

³ P-value for test C=T2 in parentheses.

⁴ P-value for test C=T3 in parentheses.

⁵ P-value for test C=Non-ALI schools in parentheses.

Table 3
Ninth Grade ENLACE: Treatment and Control Schools at Baseline

Variables	C ¹	T1 ²	T2 ³	T3 ⁴
9 th Grade ENLACE Mean Test Score in Mathematics – Fall term enrollees ⁵				
10 th grade class	515.9 (0.86)	519.6 (0.81)	512.6 (0.68)	522.6 (0.57)
11 th grade class	516.0 (0.91)	516.6 (0.96)	517.4 (0.86)	524.7 (0.47)
Pct. with ENLACE Score				
10 th grade class	90.6 (0.30)	88.7 (0.23)	88.8 (0.44)	86.8 (0.08)
11 th grade class	78.3 (0.62)	74.0 (0.25)	75.2 (0.37)	75.3 (0.39)

1. P-value for test C=T1=T2=T3 in parentheses; corrected for school-level clustering.
2. P-value for test C=T1 in parentheses. ; corrected for school-level clustering.
3. P-value for test C=T2 in parentheses. ; corrected for school-level clustering.
4. P-value for test C=T3 in parentheses. ; corrected for school-level clustering.
5. National mean is 500 and standard deviation 100.

ENLACE scores are reported both standardized (mean=500, sd=100) and in four categories.

Spring 2008 and 2007 9th Grade Mathematics ENLACE Scores:
Categorical (percent) and Standardized Score

	2008 9 th Grade ENLACE		2007 9 th Grade ENLACE	
	National	Controls (current 10 th grade students)	National	Controls (current 11 th grade students)
Pre-Basic	55.1	52.6	57.1	52.3
Basic	35.7	38.2	37.3	42.7
Proficient	8.3	8.6	5.1	4.6
Advanced	0.9	0.6	0.5	0.4
Standardized Score-Mean	500	525	500	521

National figures include students who never attended high school.

ALI Tests

The tests are based on the standardized curriculum for each grade and were produced especially for this project by a Mexican educational testing service (CENEVAL).

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Grade 10: Algebra, Geometry and Trigonometry (class hours - 4hrs/wk) – 2.5 hour ALI examination

Grade 11: Analytical Geometry, Calculus (class hours - 4hrs/wk) – 2.5 hour ALI examination

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The tests are based on the standardized curriculum for each grade and were produced especially for this project by a Mexican educational testing service (CENEVAL).

Grade 10: Algebra, Geometry and Trigonometry (class hours - 4hrs/wk) – 2.5 hour ALI examination

Grade 11: Analytical Geometry, Calculus (class hours - 4hrs/wk) – 2.5 hour ALI examination

Grade 12: Probability and Statistics, Applied Statistics (class hours - 5hrs/wk) – 2.5 hour examination on 12th grade material, 1.25 hours each on 10th and 11th grade material.

Incentive Schedules : Teachers (T2, T3)

Table 4
Schedule of Incentive Payments (Pesos) for Student Achievement

	End of Grade			
	Pre-Basic	Basic	Proficient	Advanced
Start of Grade				
10 th Grade				
Pre-Basic				
Basic				
Proficient				
Advanced				
11 th Grade				
Pre-Basic				
Basic				
Proficient				
Advanced				
12 th Grade				
Pre-Basic				
Basic				
Proficient				
Advanced				

Incentive Schedules

Incentive schedules are based on the categorical scores on an initial test (grades 10 and 11) and on the end-of-year ALI test (grades 10,11,12).

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The initial test score for the tenth grade is the national 9th year mathematics ENLACE (curriculum-based test).

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Incentive schedules are based on the categorical scores on an initial test (grades 10 and 11) and on the end-of-year ALI test (grades 10,11,12).

The initial test score for the tenth grade is the national 9th year mathematics ENLACE (curriculum-based test).

The initial test score for the eleventh grade is the 10th grade ALI curriculum test (except in first year – 9th grade ENLACE).

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The 11th grade test score cutoffs mimic the control group's distribution on the 9th grade ENLACE in year 1 and on the 10th grade ALI test in years 2 and 3.

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The 10th grade test score cutoffs mimic the control group's distribution of categorical scores on the 9th grade mathematics ENLACE.

The 11th grade test score cutoffs mimic the control group's distribution on the 9th grade ENLACE in year 1 and on the 10th grade ALI test in years 2 and 3.

The 12th grade test score cutoffs mimic the control group's distribution on the 12th grade mathematics ENLACE.

Incentive Schedules

Mapping Between Raw and Standardized Scores: SAT and ALI (Year 2) Tests					
Standardized	Raw Score				
Score	SAT (Math)	ALI-10	ALI-11	ALI-11	
≥ 800	100	83	72	81	
720	93	68	57	67	Advanced
660	83	60	52	60	Proficient
620	74	56	47	55	
580	65	51	43	50	Proficient
535	56	45	38	45	Basic
495	46	39	34	41	
455	37	34	30	36	Basic
415	28	30	27	32	Pre-Basic
370	19	24	21	26	
310	9	16	15	19	
240	0	10	8	12	
≤ 200	-5	0	0	0	Pre-Basic
Number of Questions	54	74	60	63	
Mean Score ¹	47.3	40.2	34.5	41.1	

1. Mean raw scores are for the control group students.

Incentive Schedules: Students (T1, T3)

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10 th Grade Pre-Basic	\$0	\$4000	\$9000	\$15000

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Proficient	\$0	\$0	\$6000	\$12000

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11th Grade				
Pre-Basic	\$0	\$4000	\$9000	\$15000
Basic	\$0	\$0	\$7500	\$13500
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Proficient	\$0	\$0	\$6000	\$12000
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Pre-Basic	\$0	\$4000	\$9000	\$15000
Basic	\$0	\$0	\$7500	\$13500
Proficient	\$0	\$0	\$6000	\$12000
Advanced	\$0	\$0	\$4500	\$10500
12 th Grade				
Pre-Basic	\$0	\$0	\$5000	\$10000
Basic	\$0	\$0	\$5000	\$10000
Proficient	\$0	\$0	\$5000	\$10000
Advanced	\$0	\$0	\$5000	\$10000

Incentive Schedules : Teachers (T2, T3)

Table 5
Schedule of Incentive Payments Per-Student for Mathematics Teachers

	End of Grade			
	Pre-Basic	Basic	Proficient	Advanced
Start of Grade				
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Pre-Basic	0	\$200	\$450	\$750

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	End of Grade			
	Pre-Basic	Basic	Proficient	Advanced
Start of Grade				
10 th Grade				
Pre-Basic	0	\$200	\$450	\$750
Basic	-\$125	\$125	\$375	\$675
Proficient	-\$125	-\$125	\$300	\$600
Advanced	-\$125	-\$125	\$225	\$525

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12 th Grade				
Pre-Basic	0	0	\$250	\$500
Basic	0	0	\$250	\$500
Proficient	0	0	\$250	\$500
Advanced	0	0	\$250	\$500

Incentive Schedules: Performance of Others (T3)

In addition to the incentives based on own performance,

Students receive an additional payment of one percent of the total amount received by all of the students in their class.

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The principal of the school receives a payment of 50 percent of the average (FTE) amount earned by the mathematics teachers.

Attrition

- Attrition from the fall to spring terms and from year to year was not selective with respect to treatment status

There are existing incentive programs that pay students for attendance and the bonus from the ALI program is uncertain.

- Among students who enroll in both semesters, rates of ALI test-taking were highest in T1 and T3

For example, in year 2 among 11th grade students:

C: 87.9%, T2: 89.2%, T1: 92.7%, T3: 94.0%

Testing Protocol

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- Test answer sheets and test booklets collected by monitors at the end of the exam and returned to testing agency for scoring.
- Despite these measures, we found evidence that led to a suspicion of student cheating.
 - In some treatment schools, students and teachers received unusually high levels of incentive payments.
 - Some answer sheets of students within the same classroom exhibited strings of matching correct and incorrect answers.

Analysis of Student Copying

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4. Choose a critical value for the number of observed matches. Reject the null of no copying if the number of matches exceeds the critical value. A Bonferroni correction is used with a critical value such that the probability is one that at least one pair of students is falsely accused.

Table 6

Percentage of Students with Non-Independent Test Scores by Year, Grade and Treatment

	Grade 10		Grade 11		Grade 12	
	Percentage Copiers	Percentage Cheaters	Percentage Copiers	Percentage Cheaters	Percentage Copiers	Percentage Cheaters
Year 1						
C	3.7	6.4	4.5	7.8	5.7	9.3
T1	5.1	9.1	10.9	14.9	5.2	8.4
T2	3.4	5.8	3.9	6.5	3.7	6.5
T3	3.7	6.7	10.1	14.9	2.7	4.7
Year 2						
C	3.5	6.1	3.6	6.2	2.4	4.5
T1	6.4	11.0	19.1	27.6	12.7	17.3
T2	4.3	7.4	6.2	9.8	3.4	5.5
T3	6.6	10.6	17.2	23.9	10.6	16.0
Year 3						
C	3.1	5.7	4.6	7.8	2.5	4.7
T1	8.1	13.2	19.8	28.2	17.5	24.7
T2	4.2	7.3	4.1	7.1	4.0	6.8
T3	10.3	16.2	23.8	31.3	15.4	21.3

Concentration of Copying Across Schools by Treatment in Grade 10

		T1		T3
	Cum. Fraction of Copiers	Cum. Fraction of Students	Cum. Fraction of Copiers	Cum. Fraction of Students
Top Three Schools				
Year 1	.506	.220	.519	.187
Year 2	.530	.250	.614	.174
Year 3	.468	.242	.578	.178

Difference Between the ALI Test Score and the Ninth Grade ENLACE Score
Given Cheating Status: Grade 10

	Year 1	Year 2	Year 3
C			
Non-Cheaters	-27.5	-28.0	-32.1
Cheaters, Non-Copiers	-32.2	-34.1	-59.4
Copiers	52.1	58.4	28.4
T1			
Non-Cheaters	-13.4	-0.2	3.9
Cheaters, Non-Copiers	-45.5	-7.7	-7.6
Copiers	44.1	77.2	97.9
T2			
Non-Cheaters	-23.6	-24.0	-19.8
Cheaters, Non-Copiers	-39.9	-24.0	-40.8
Copiers	42.5	43.8	54.2
T3			
Non-Cheaters	-2.1	18.2	10.7
Cheaters, Non-Copiers	21.8	6.0	12.2
Copiers	63.6	136.1	151.8

Table 7

Average Treatment Effects (ATE) with and without Adjustments for Copiers: All Program Years^{a,b,c}

Grade	Year One			Year Two			Year Three		
	AY: 2008/2009			AY: 2009/2010			AY: 2010/2011		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
<u>With Copying Adjustment</u>									
Tenth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Eleventh Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Twelfth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
<u>No Copying Adjustment</u>									
Tenth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Eleventh Grade									
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Twelfth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									

Table 7

Average Treatment Effects (ATE) with and without Adjustments for Copiers: All Program Years^{a,b,c}

Grade	Year One			Year Two			Year Three		
	AY: 2008/2009			AY: 2009/2010			AY: 2010/2011		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
<u>With Copying Adjustment</u>									
Tenth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Eleventh Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Twelfth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
	9.63	4.71	28.8	21.9	-4.46	34.8	22.7	3.99	56.7
	(6.85)	(6.58)	(6.36)	(5.04)	(6.10)	(6.46)	(7.49)	(7.54)	(15.1)
	.010	<.001	-	.078	<.001	-	.015	<.001	-
<u>No Copying Adjustment</u>									
Tenth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Eleventh Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
Twelfth Grade									
ATE									
(s.e.)									
P-value: TJ = T3									
	9.73	4.73	29.3	36.0	-1.81	44.6	42.3	7.33	90.2
	(7.04)	(6.62)	(6.67)	(7.32)	(6.30)	(7.99)	(8.15)	(7.98)	(21.3)
	.011	<.001	-	.400	<.001	-	.022	<.001	-

Table 7

Average Treatment Effects (ATE) with and without Adjustments for Copiers: All Program Years^{a,b,c}

Grade	Year One			Year Two			Year Three		
	AY: 2008/2009			AY: 2009/2010			AY: 2010/2011		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
<u>With Copying Adjustment</u>									
Tenth Grade									
ATE	16.9	1.27	31.4						
(s.e.)	(4.90)	(5.74)	(5.79)						
P-value: TJ = T3	.010	<.001	-						
Eleventh Grade									
ATE				29.7	2.11	43.7			
(s.e.)				(4.89)	(6.05)	(8.33)			
P-value: TJ = T3				.098	<.001	-			
Twelfth Grade									
ATE							22.7	3.99	56.7
(s.e.)							(7.49)	(7.54)	(15.1)
P-value: TJ = T3							.015	<.001	-
<u>No Copying Adjustment</u>									
Tenth Grade									
ATE	18.5	1.11	32.3						
(s.e.)	(5.02)	(5.35)	(6.18)						
P-value: TJ = T3	.025	<.001	-						
Eleventh Grade									
ATE				55.5	6.17	67.4			
(s.e.)				(7.51)	(6.91)	(12.7)			
P-value: TJ = T3				.382	<.001	-			
Twelfth Grade									
ATE							42.3	7.33	90.2
(s.e.)							(8.15)	(7.98)	(21.3)
P-value: TJ = T3							.022	<.001	-

Table 8

Average Treatment Effects by Gender and by 9th Grade ENLACE: 2008-09 Tenth Grade Cohort

	Tenth Grade (Year 1)			Eleventh Grade (Year 2)			Twelfth Grade (Year 3)		
	T1-C	T2-C	T3-C	T1-C	T2-C	T3-C	T1-C	T2-C	T3-C
Adjusted Score									
Gender									
Female	18.7 (5.65)	1.51 (6.39)	35.8 (5.30)	33.8 (5.62)	4.71 (6.40)	51.0 (7.43)	28.8 (7.85)	6.72 (7.57)	63.9 (15.8)
Male	15.0 (5.91)	1.32 (6.42)	33.0 (7.48)	25.3 (5.79)	-0.32 (6.64)	45.5 (9.98)	14.7 (7.84)	-1.10 (9.03)	63.7 (14.9)
9th Grade ENLACE									
Pre-Basic	15.0 (4.07)	1.95 (4.49)	26.8 (4.84)	24.4 (3.59)	2.11 (4.79)	33.4 (5.98)	23.6 (6.28)	4.75 (6.32)	50.7 (12.7)
Basic	18.2 (5.92)	-1.70 (7.43)	30.8 (7.71)	35.3 (5.95)	-0.15 (7.32)	48.9 (9.54)	22.5 (8.87)	2.72 (8.76)	57.4 (16.6)
Proficient or Advanced	28.0 (12.5)	1.19 (16.1)	45.3 (17.5)	47.3 (13.5)	-2.12 (16.1)	58.1 (19.8)	45.6 (16.1)	17.9 (17.7)	70.2 (23.7)

Table 9
Student and Teacher Effort Measures by for Controls and Treatment/Control Difference: Year 3

	Grade	C			T1 - C			T2 - C			T3 - C		
		10	11	12	10	11	12	10	11	12	10	11	12
Student:													
Avg. hrs/wk study math	4.68	4.45	4.53	.199	.408	.385	-.138	-.070	-.097	.397	.301	.370	
				(.095)	(.135)	(.124)	(.091)	(.182)	(.165)	(.112)	(.135)	(.127)	
Avg. hrs/wk study non-math subjects	5.56	5.48	5.32	.109	.189	.250	-.161	-.134	-.040	.152	.074	.168	
				(.122)	(.122)	(.156)	(.129)	(.168)	(.153)	(.122)	(.134)	(.127)	
Frac. pay attention >75% of time	.473	.479	.481	.070	.048	.042	.015	.007	-.006	.101	.070	.050	
				(.022)	(.021)	(.024)	(.028)	(.030)	(.026)	(.028)	(.023)	(.032)	
Frac. never or almost never text while doing homework	.423	.429	.415	.109	.093	.056	.023	.004	-.007	.126	.097	.061	
				(.023)	(.028)	(.027)	(.026)	(.028)	(.028)	(.024)	(.022)	(.022)	
Frac. never or almost never watch TV while doing homework	.493	.517	.498	.077	.075	.066	-.021	-.010	-.010	.088	.093	.060	
				(.028)	(.018)	(.024)	(.025)	(.022)	(.020)	(.026)	(.022)	(.027)	
Frac. Gave Help to Classmates	.599	.608	.643	.055	.058	.026	-.017	-.014	-.041	.086	.087	.026	
				(.020)	(.022)	(.023)	(.020)	(.019)	(.028)	(.020)	(.022)	(.028)	
Frac. Report Putting Much Effort	.466	.489	.486	.077	.090	.087	-.039	-.029	-.017	.114	.093	.092	
				(.022)	(.026)	(.028)	(.021)	(.030)	(.025)	(.022)	(.021)	(.037)	

Table 9
Student and Teacher Effort Measures by for Controls and Treatment/Control Difference: Year 3

Grade	C			T1 - C			T2 - C			T3 - C		
	10	11	12	10	11	12	10	11	12	10	11	12
Teacher:												
Frac. prepared students for ALI test	.167	.260	.241	.202 (.103)	.181 (.121)	.211 (.107)	.182 (.091)	.155 (.106)	.111 (.114)	.412 (.106)	.256 (.110)	.176 (.098)
Frac. helped students outside of class to prepare for ALI test	.241	.220	.204	.338 (.104)	.339 (.126)	.453 (.102)	.341 (.103)	.390 (.111)	.391 (.122)	.435 (.098)	.554 (.092)	.482 (.103)
a. Standard errors, in parentheses, corrected for clustering at school level												

A Caveat: Lack of Test-Taking Effort by Control Students

Assumption 1:

- a. test-taking effort of T1 students no less than that of T3 students
- b. T1 effect is *zero* in all years

A Caveat: Lack of Test-Taking Effort by Control Students

Assumption 1:

- a. test-taking effort of T1 students no less than that of T3 students
- b. T1 effect is *zero* in all years

Lower Bound Estimate of Treatment Effect in Year 3:^a

T3:

- 31.1 standardized points for 10th grade
- 16.9 for 11th grade
- 34.0 for 12th grade

a. Adjusted for copying.

A Caveat: Lack of Test-Taking Effort by Control Students

Assumption 2:

- a. test-taking effort of C students same in all years.
- b. T1 effect is *zero* in year one only

A Caveat: Lack of Test-Taking Effort by Control Students

Assumption 2:

- a. test-taking effort of C students same in all years.
- b. T1 effect is *zero* in year one only

Lower Bound Estimate of Treatment Effect in Year 3^a:

- T3: 46.5 standardized points for 10th grade
28.5 for 11th grade
47.1 for 12th grade
- T1: 15.4 standardized points for 10th grade
11.6 for 11th grade
13.1 for 12th grade

- a. Uses treatment effects adjusted for copying.

Payment Outcomes

Table 10
Pct. Receiving Payment and Incentive Payment Cost (Pesos) – Year Two

	Treatment 3	Treatment 1	Treatment 2
Pct. of Students Receiving Payment			
Grade 10			
For Own Performance	64.6	58.8	
For Class Performance	100.0	-	
Grade 11			
For Own Performance	41.3	38.8	
For Class Performance	99.4	-	
Grade 12			
For Own Performance	17.3	15.3	
Mean Student Payment:			
Grade 10			
For Own Performance	2,991	2,515	
For Class Performance	1,108	-	
Total	4,099	2,515	
Grade 11			
For Own Performance	2,679	2,541	
For Class Performance	861	-	
Total	3,540	2,541	
Grade 12			
For Own Performance	991	915	

Table 10
Pct. Receiving Payment and Incentive Payment Cost (Pesos) – Year Two

	Treatment 3	Treatment 1	Treatment 2
Pct. of Teachers Receiving Payment			
For Own Performance	97.2		93.5
For Class Performance	100.0		-
Mean Math Teacher Payment (FTE):			
For Own Performance	15,330		6,332
For Other Teacher	3,779		-
Performance			
Total	19,109		6,332
Mean Non-Math (NM) Teacher and			
Assistant Director (AD) Payments			
Payment per FTE	3,872		-
Mean Director Payments:			
Payment per Director	7,744		-
Incentive Payment Cost Per-	3,303	2,080	43
Student			
Amount controls would receive	1,643	1,163	44
Pct. of total	49.7	55.9	100

Conclusions

- Find large treatment effects for T1 and T3, which are treatments where incentives are also paid to students.
- Some adjustments were needed to account for greater cheating in the presence of monetary incentives
- Providing ALI incentives to students along increases test scores 0.2-0.3 std deviations.
- Providing incentives to students and teachers increases test scores by 0.3-0.6 std deviations
- Positive impacts across entire baseline test score distribution, similar impacts for males and females
- More evidence is needed on effectiveness of alternative incentive schedules.

Table 24
 Transition Rates Between 9th Year Mathematics ENLACE and ALI Tests:-Year 2
 Control Group

10 th Grade				
ENLACE Cat. Score	Pre- Basic	ALI Categorical Score		Advanced
		Basic	Proficient	
Pre-Basic	74.9	24.0	1.1	0.0
Basic	30.4	62.1	7.3	0.2
Proficient	11.4	43.1	41.7	3.7
Advanced	0.0	16.2	54.1	29.7
11 th Grade				
10 th Grade ALI Categorical Test Score				
Pre-Basic	65.2	33.2	1.7	0.0
Basic	32.4	56.3	11.0	0.3
Proficient	15.9	43.2	38.4	2.5
Advanced	6.0	20.7.7	58.6	20.7

