NYC Department of Education
Cathie Black, Chancellor

MSPinNYC

CUNY The City University of New York

Math Science Partnership in New York City

Targeted Project focused on student success in mathematics and science in high schools in Manhattan and the Bronx

The Use of New York State Regents Exams to Guide MSPinNYC Decision-Making to Build an Effective Model of the Urban STEM Classrooms

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Guiding Question

Can student performance data, particularly high stakes data, be used effectively to change practice and guide policy?

Defining Success

Primary metric of student success used in MSPinNYC is end-of-course, state-mandated exams, called Regents exams.

Regents

New York State is guided by the University of New York with a Chancellor and a Board of Regents. The state administers Regents exams in high school at the end of courses in mathematics, science, history, foreign language, and English.

The Regents landscape has shaped New York State (and NYC) high school education for more than 100 years and defines the standards for high school graduation.

HS Graduation Requirements

- All students must graduate with one of two types of Diplomas – Regents or Regents with Advanced Designation (Local Diploma phased out for students entering 9th grade in 9/2008)
- Students must complete a standard set of coursework (3 years math, 3 years science)

Diplomas

Regents diploma –

Five required Regents exams:

- Integrated Algebra
- Living Environment
- US History
- Global History
- English/Language Arts

With Advanced designation –

Eight required exams:

- Advanced Math (Geometry, Adv Algebra)
- Science (Chemistry, Earth Science, Physics)
- 3 yrs second language and Regents exam

Regents Exams

- Scores are scaled to 100 and are used for graduation and college acceptance
- 65 required for passing – very low standard (35-45% correct); students rarely pass advanced Regents exam & will likely require remediation at CUNY
- 75 required for admission to CUNY senior college
- 85 "meeting standards with distinction" (state Ed), "mastery level"

Regents Passing Rates by Borough

High School District	Passing Rate (65) Percentage		
	9th grade Algebra	9th grade Biology	10th or 11th grade Chemistry
Brooklyn district	51	64	40
Queens district	59	70	50
Bronx district	48	57	38
Manhattan district	62	71	61
Staten Island district	64	67	56

The Achievement Gap in High School Graduation Rates in NYC

Evidence of Achievement Gap in NYC –
2009 Graduation Data by Percent of Subgroup

Asian	White	Black	Hispanic	ELLs
80.1%	76.5%	57.8%	55.9%	44.4%

Calibrating the Regents Standard – The 2009 Profile of Students Earning Advanced Diploma

3 Sample Schools

	Testing	Selective	Regional
Enrollment	1000	400	2300
%free lunch	55	54	49
%graduating with Adv. Design.	100	22	8
%Black	6	22	55
%Hispanic	12	39	41
%White	28	10	1
%Asian	53	29	2

The Challenge

Like every urban center we have severe differences in student performance across racial and ethnic lines, with African American and Hispanic students shouldering the burden.

We must find a way to reach more kids, to get more kids to graduate and better prepare them for college; to close the Achievement Gaps.

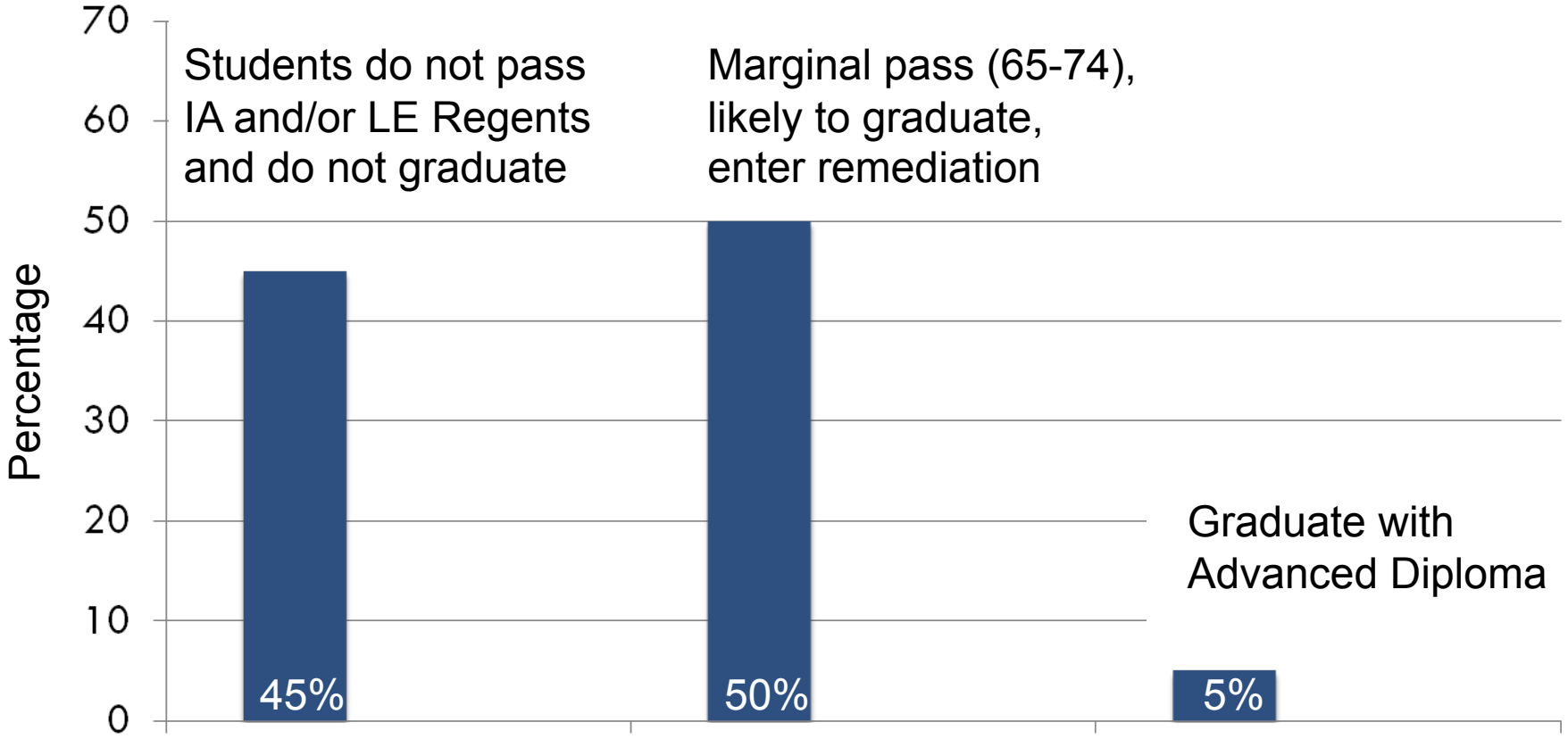
Model:
The Peer Enabled Restructured Classroom (PERC)

Restructuring 9th and 10th grade Integrated Algebra and Living Environment classrooms by making use of collaborative strategies and peer instruction.

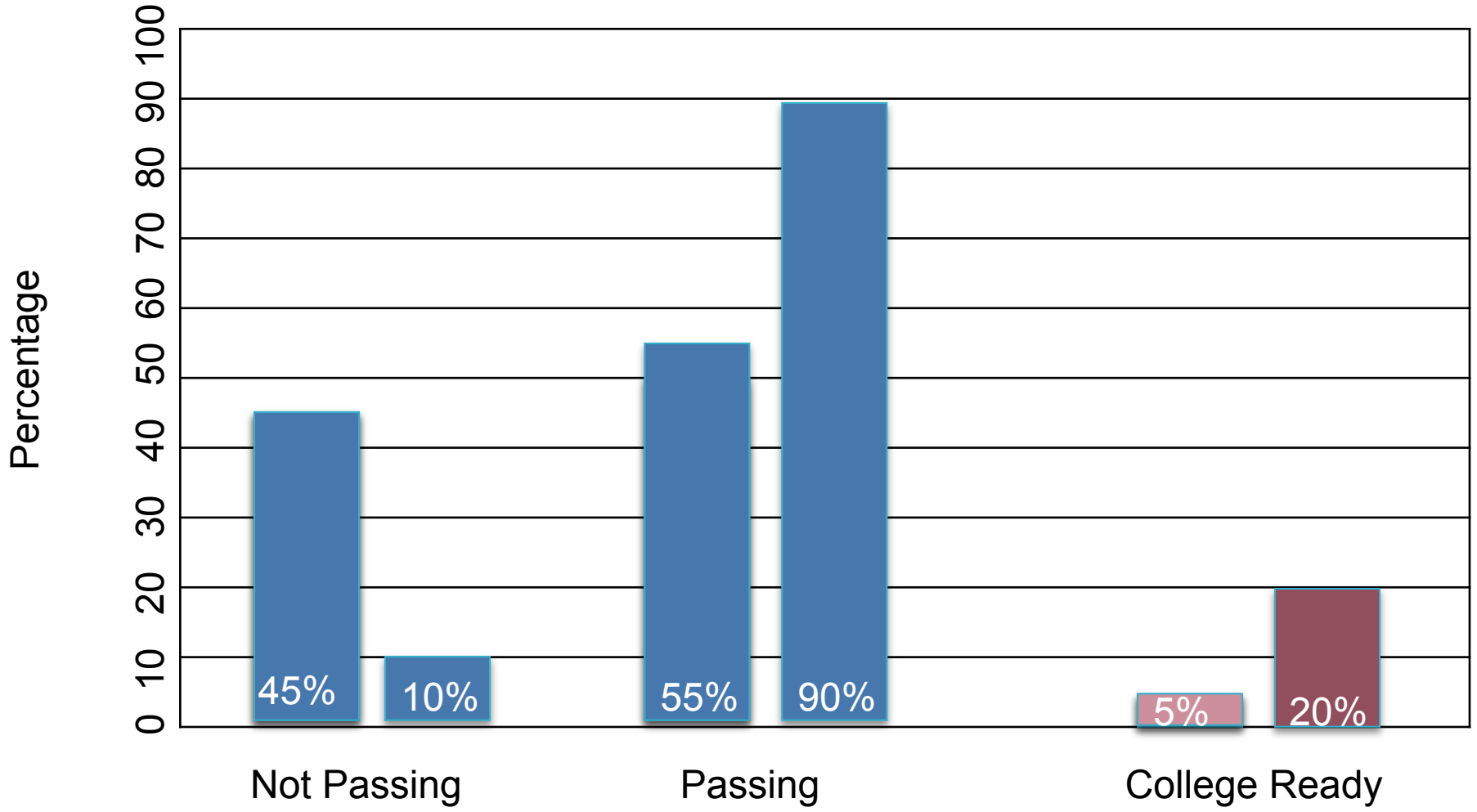
Name: PERC

We will talk briefly about PERC at the end; for now think of this as the "model" or the "intervention".

The Context
Student Profile in Target Schools



MSPinNYC Goals

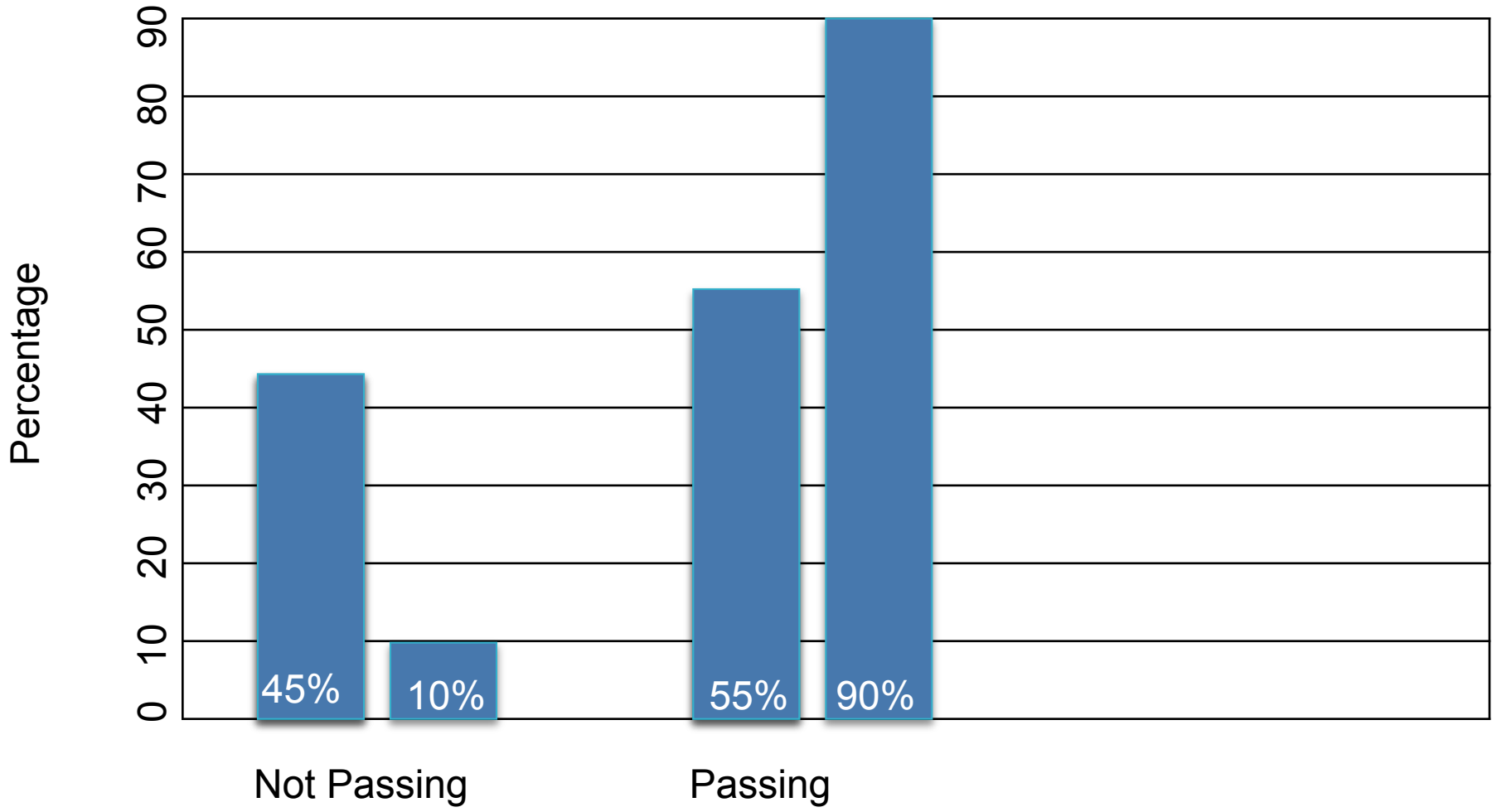


How MSPinNYC Uses Regents Data

- PRIMARY USE: Assess the effectiveness of the PERC model
- Additional Use:

  Setting benchmarks to establish a climate of high expectations and a culture of college-readiness

Assessing the Effectiveness of the Model -- Improving Passing Rates



Empirical Evidence – Pilot Field Trials 2008-2010

OPERATING CONDITIONS

- Enrolled 7 schools, 24 different teachers
- Used 5 schools in data analysis, 20 different teachers
- Two subject areas: 9^{th} grade/10^{th} grade mathematics (Integrated Algebra) or 9^{th}/10^{th} grade biology (Living Environment) – required for graduation

GOAL

- Compare student performance on state-mandated (Regents) exams of the intervention and comparison groups

Schools' Student Characteristics

School	Enroll	Grad	Poverty	ESL	African American	Hispanic	Asian	White
A	2372	66%	41%	6%	55%	41%	2%	1%
B	522	49%	79%	12%	36%	59%	3%	1%
C	274	81%	83%	70%	8%	73%	6%	12%
D	1507	49%	64%	22%	29%	58%	8%	3%
E	1491	75%	49%	7%	19%	51%	17%	12%

PERC Teacher Characteristics

12 males, 8 females
15 White, 3 Asian, 2 African American
17 with less than 5 years experience
All certified in subject area

Comparison Groups

1) Other non-PERC classes taught by same or different teacher with student characteristics matched in intervention and comparison groups.
2) Historic passing rates (same teacher's previous history)
3) School's historic passing rates (different teacher)
4) A priori cohort matching based on particular student characteristics (grades, ELL, IEP, 8th grade level)

Robust Model

		PERC Group		Comparison Group	
Teacher/School	Course	N	65-100	N	65-100
#1/ School A—Large Bronx	IA	89	64.0%	199	42.7%
#2	IA	82	67.1%	199	42.7%
#3	IA	116	53.0%	23	30.0%
#4	IA	93	52.0%	23	30.0%
#5/School B—Small Bronx	LE	30	96.7%	68	76.5%
#6/School C—Small ELL Bronx	LE	88	69.3%	69	42.0%
#7	IA	18	88.9%	43	76.7%
#8	IA	40	47.5%	14	50.0%
#9	IA	44	47.7%	72	38.9%
#10/School D– Large Manhattan	IA	58	46.6%	193	19.7%
#11	IA	37	40.5%	193	19.7%
#12	IA	66	30.3%	193	19.7%
#13	LE	71	66.2%	212	49.0%
#14	LE	40	77.5%	212	49.0%
#15/School E– Large Manhattan	LE	47	82.0%	37	88.1%
#16	IA	45	82.0%	214	68.0%

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Problem with Sit Rates

		PERC Group		Comparison Group	
#15/School E	Course	N	65-100	N	65-100
Teacher #15	LE	47	82.0%	37	88.1%

Regents results reported statewide as %passing *of those students sitting for the exam.*

		PERC Group		Comparison Group	
#15/School E	Course	N	65-100	N	65-100
Teacher #15	LE	63	60.3%	68	47.0%

When every student is counted, PERC students pass at higher rates.

Regents Data Suggest Limitations

		PERC Group		Comparison Group	
Teacher/School	Course	N	65-100	N	65-100
#17/School A Repeater	LE	50	56.00%	95	62.00%
#18/School A Repeater	LE	84	62.00%	95	62.00%
#19/School C Repeater	IA	43	51.2%	24	50.00%
#20/School C Repeater	IA	36	55.5%	43	44.00%

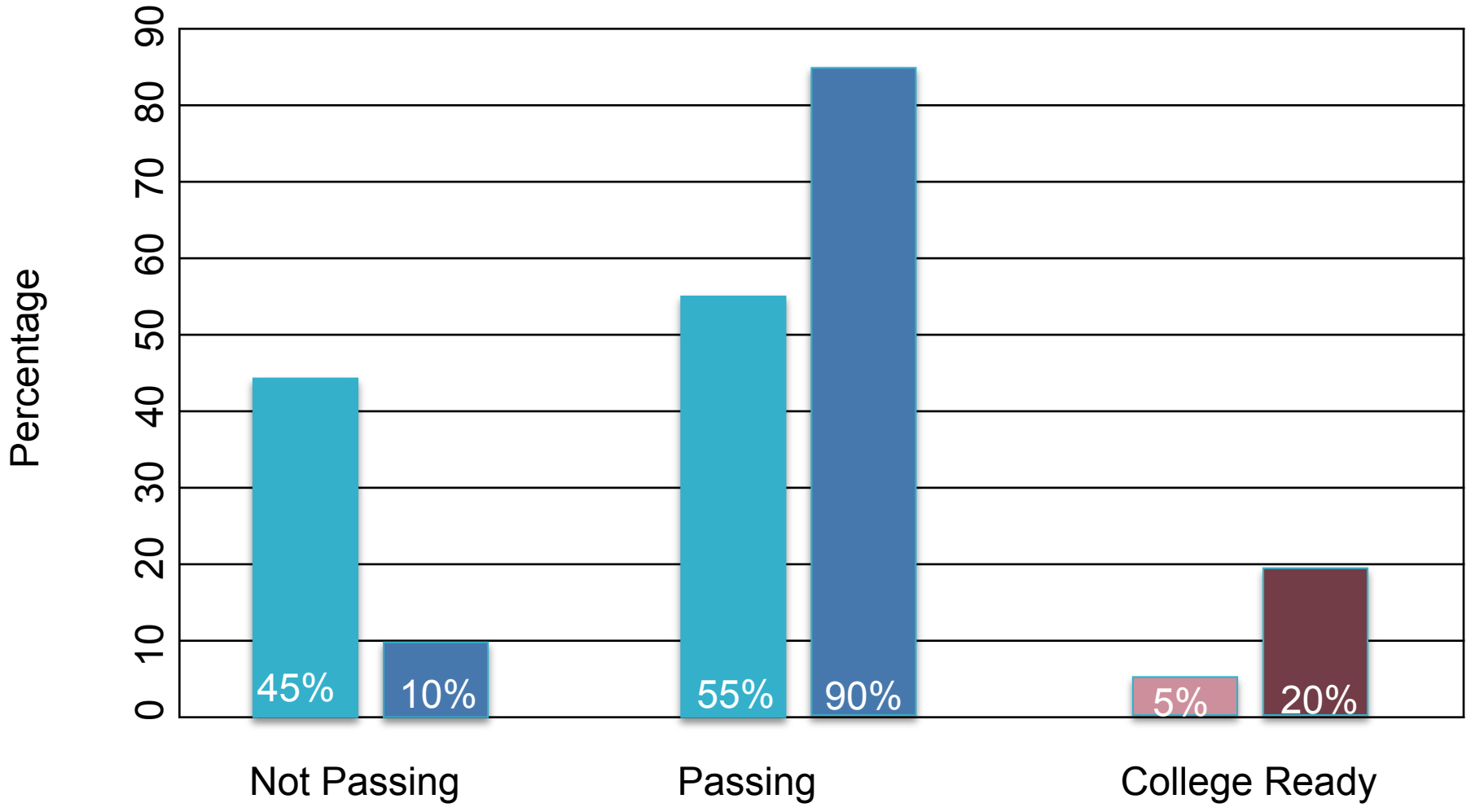
Why are one semester repeater courses less effective?
(Regents data highlights problem but does not solve it.)

Summer courses (5 week “repeater” courses) have dramatic increases in Regents performance (40-60% increase).

Other Uses of Regents Data in MSPinNYC

Setting Benchmarks and Program Parameters

Setting Benchmarks for College Readiness



The Teaching Assistant Scholars

- In PERC Integrated Algebra and Living Environment classes, TA Scholars work *daily* with small groups of students to facilitate learning.

- TA Scholars have successfully passed and completed the course in a prior year.

- Average Regents score is 74 (N=262)

A Climate of Success

TA Scholars are expected to retake Regents exams and earn an 85 or better.

This expectation can change the culture of the school:

- Number is perceived among Scholars and Teachers as high.
- College-ready expectation indicates exceeding standards
- By using this number as an expectation we are helping to establish a culture of a climate of success

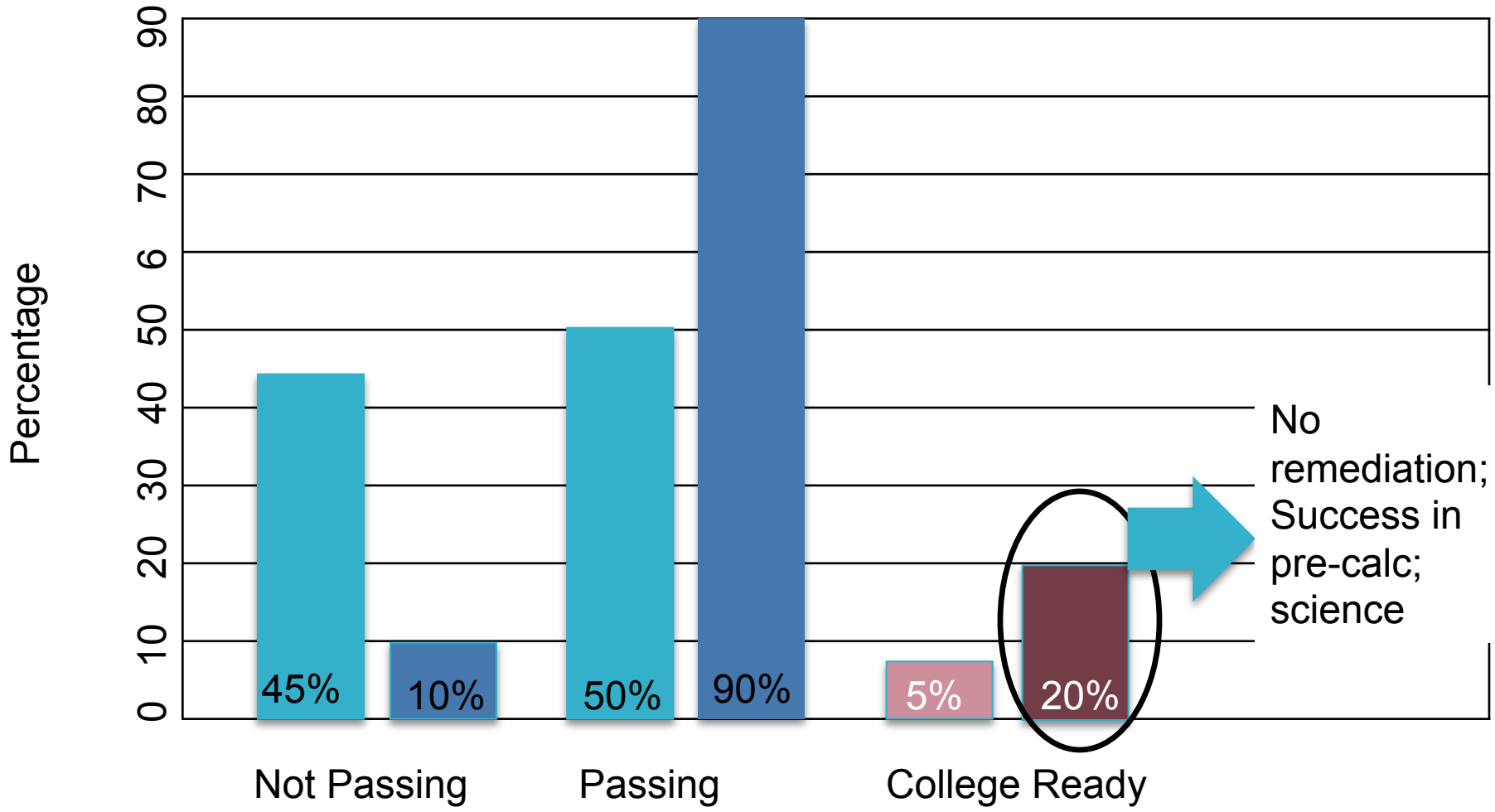
Average increase year, 2008-2010: +8 (74⟶ 82)

The Future

The TA Scholar to College Pipeline

- Students prepared for college
- Students entering college passing 1st year math/science courses

TA Scholar to College Pipeline



How do we know our TA Scholars are succeeding in the Pipeline?

10th grade Profile

Passes one additional math or science Regents exam;

Average retake score 85+;

Attendance improves

11th grade Profile

Completes Regents requirements for advanced diploma;

Good attendance

12th grade:

Takes advanced courses;

Takes CUNY mathematics placement exam;

Places OUT OF mathematics remediation;

Graduates with Regents Diploma with Advanced Designation

1st year college:

Take pre-calculus, or an introductory-level science course and succeed

Guiding Question

Can student performance data, particularly high stakes data, be used effectively to change practice and guide policy?

The Answer is Yes.

But other measures provide a deeper and richer understanding of why and what is happening.

Other Studies

- Case studies on the impacts of PERC on teachers and teacher practice
- Ethnographic studies on the impacts on particular sub-groups – ELL students
- Quantitative survey data on student motivation and learning using a theory-based framework
- Mixed methods (surveys, focus groups, observations) on TA Scholars' perceptions and attitudes
- Website: www.mspinnyc.org

Challenges (Past and Future)

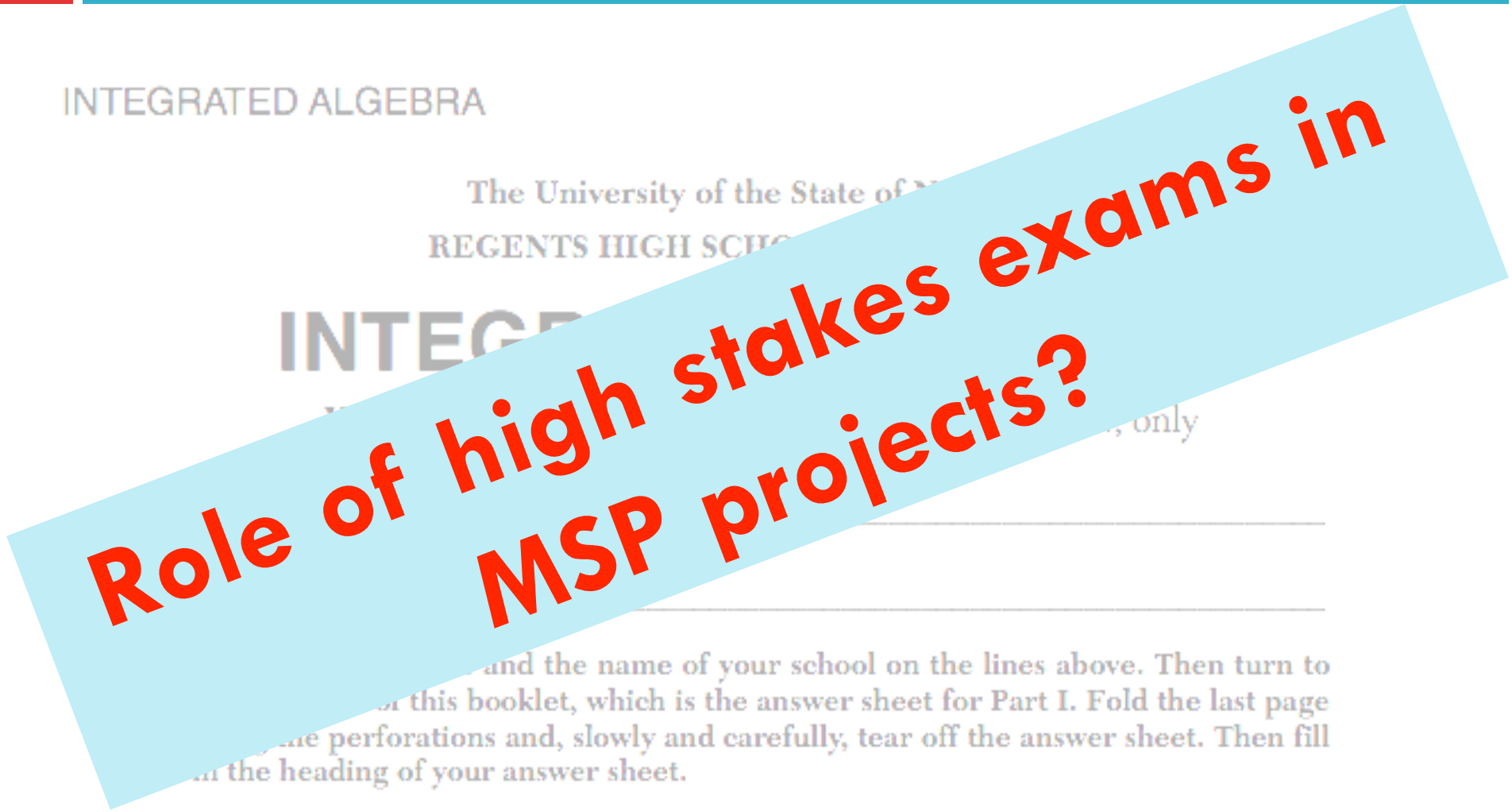
1) Data gathering (notoriously difficult in NYC) – although this is getting easier due to new data-sharing agreements
2) Establishing comparison classes
    a) Belief that PERC is better for weaker students
    b) Small schools, small Ns
    c) Creating matched student cohorts
3) Sit rates vs. real passing rates on Regents exams
4) Measuring implementation: fidelity of implementation will be measured using teacher logs, structured observations, archival data (lesson plans), etc.

MSPinNYC K-12 school-based partners

- The Principals, Assistant Principals, Guidance Counselors, Programmers who took risks in setting up PERC in the schools.
- The Teachers who stepped way, way outside their comfort zone in the PERC Professional Development program.
- The Students and TA Scholars who were eager to try something new.
- Denise McNamara and the NYC DOE (Central) who publicize PERC and navigate the political waters of NYC.

Thanks to the NSF for funding us and then letting us search for a model that impacts NY schools.

Discussion Break



Role of high stakes exams in MSP projects?

The PERC Film

Click here to watch the PERC film:
Something's Happening Here

The Teaching Assistant Scholar

The Student

The Teacher