



# *The Math Gym*

**To be on top of your game you have to workout!**

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# Inspiring Examples

- Dean LaCourse (Discovery Center)
- Provost Rouse (CASTLE)
- President Hrabowski
- My colleagues Bonny, Liz, and Raji for their tireless work and continuing innovations with our service courses

# Paradigm Shift



[Video Clip](#)

# A Typical Visit to the Math Gym

- A student coach is at the reception desk
- Enthusiastic coaches are walking around
- Students walk up to the reception desk and show IDs
- Based on the Personalized Workout Plan (PWP) look up chart, students obtain the appropriate worksheets from a coach
- Students join one of the round tables designated for that particular worksheet/topic, and start working out
- Students ask for help as needed by flagging for a coach
- Students turn in completed worksheets to the reception desk
- Worksheet is graded, data is entered and transmitted to the appropriate instructors



Math Gym Enthusiasts  
spilling into the hallway

SPRING 2013

Getting a few hours of work out  
just before the finals week





A Math Gym coach with a student

FALL 2013

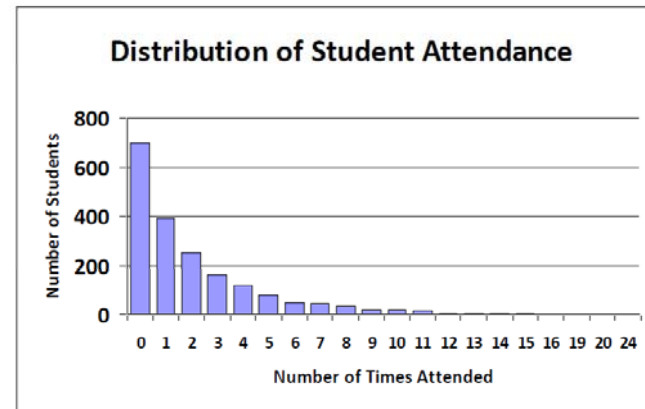
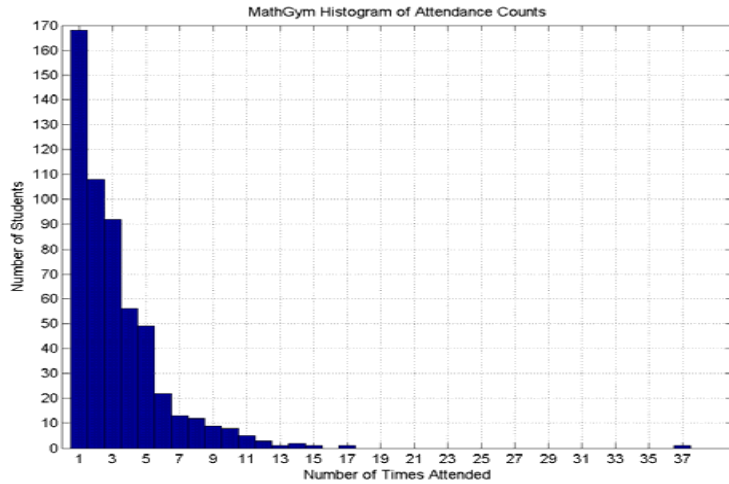
Workout in progress



# Math Gym Attendance

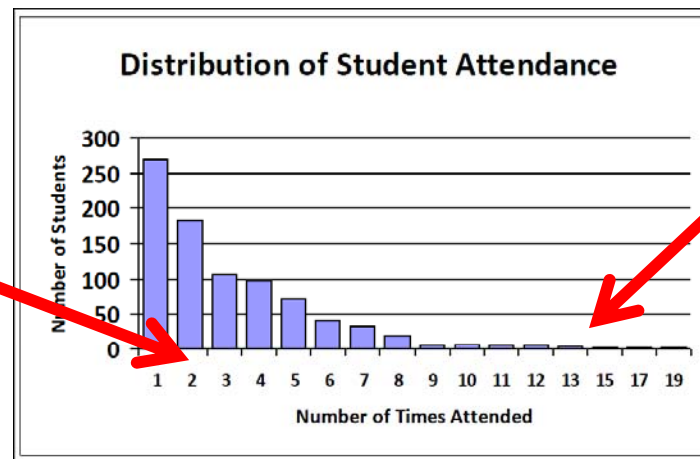
Spring 2013

Fall 2013



Spring 2014 so far

We have a lot of students attending once or twice



We have several frequent attendees



# Math Gym Usage in Spring 2013

- Target foundational courses
  - Math 150, Math 155, Math 151, Math 152
  - Total enrollment: 1562
  - Number invited: 781 (50%)  
(Based on the QuizZero performance)
- All faculty involved
  - Bonny, Liz, Raji, Kale, Brian K, Brian D
- 551 students visited TMG at least once
- There were a total 1810 visits. An average of 3.3 (or 2.3) visits per student



# Math Gym Usage in Fall 2013

- Target foundational courses
  - Math 150, Math 155, Math 151, Math 152, Math 251
  - Total enrollment: 1904
  - Number invited: 903 (47% )  
(Based on the QuizZero performance)
- All faculty involved
  - Bonny, Liz, Raji, Kale, Brian K, Brian Brian K, John, Jyoti, Kalman, Tatjana, Thomas, Liz, and Raji
- 1207 students visited TMG at least once
- There were a total 4203 visits. An average of 3.5 visits per student

# Math Gym Usage 2013

	SPRING 2013	FALL 2013
Target Math Courses	155,150,151,152	155,150,151,152,251
Total Enrollment	1562	1904
Number invited to MG (Based on QZ Alerts)	781 (50%)	903 (47%)
Number of students with at least one MG visit	551	1207
Total number of MG visits	1810	4203
Average visit per student	3.3	3.5

# QuizZero

- Created by the instructors
- Has 25 multiple choice questions
- Each question is matched to specific sections from the pre-requisite material
- Questions are grouped by competencies as they are needed in the current course
- Held in the first week of classes, proctored by TAs—anywhere with WiFi access!

# QuizZero Hallway Jam

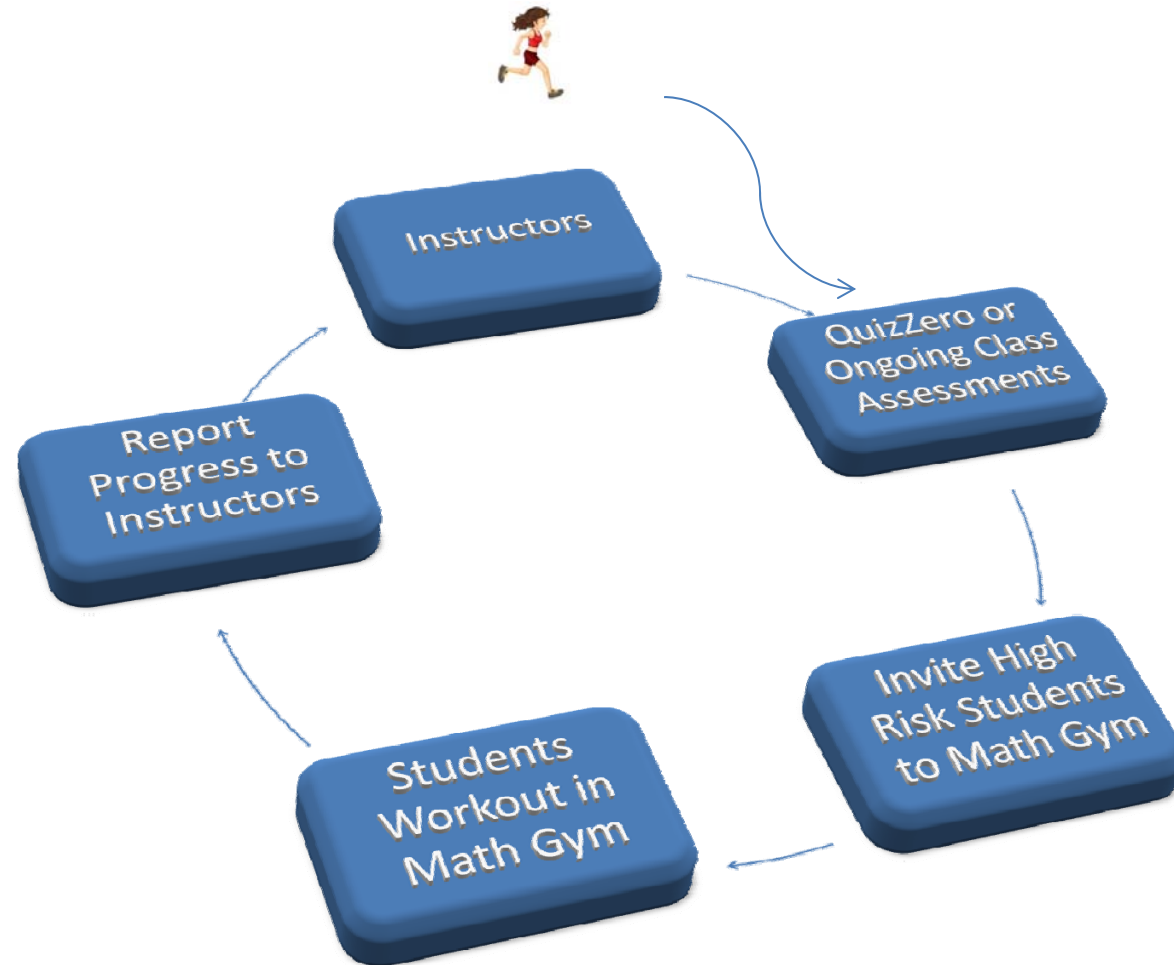


Picture texted by Dr. Mike Carlin, Deputy CIO, on Sept 7, 2012

**QuizZero is an early indicator of the @Risk group  
Spring (SP) and Fall (FA) 2013**

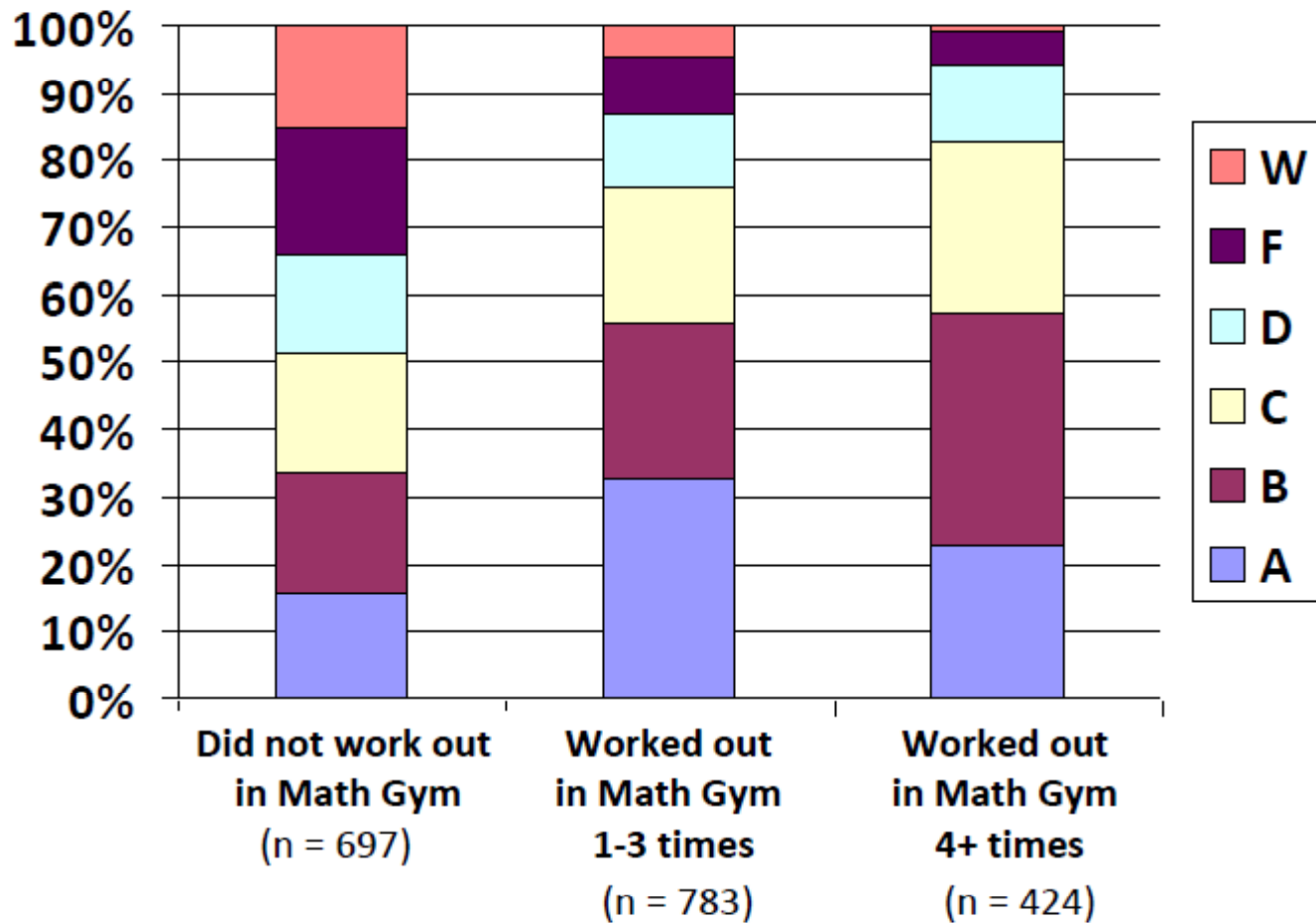
	MATH 155		MATH 150		MATH 151		MATH 152	
	SP	FA	SP	FA	SP	FA	SP	FA
%ABC   QZA	54%	52%	40%	56%	44%	53%	58%	52%
%ABC   No QZA	75%	80%	65%	77%	75%	72%	89%	82%

# The Math Gym Loop



# Fall 2013: Impact of Math Gym

Number of Students = 1904



# QuizZero correlates with FYI

(Fall 2011, Spring 2012, Fall 2012,  
Spring 2013, Fall 2013)

QuizZero Alert?	FYI ALERT?		Total
	YES	NO	
YES	923	1149	<b>2072</b>
NO	477	1829	<b>2306</b>
<b>Total</b>	<b>1400</b>	<b>2978</b>	<b>4378</b>

Not getting an QZ Alert is  
a good predictor for not  
getting an FYI Alert

QuizZero Alert?	FYI ALERT?		Total
	YES	NO	
YES	45%	55%	<b>2072</b>
NO	21%	79%	<b>2306</b>
<b>Total</b>	<b>1400</b>	<b>2978</b>	<b>4378</b>



# QuizZero correlates to FYI (Spring 2013)

QuizZero Alert?	FYI ALERT?		Total
	YES	NO	
YES	184	142	326
NO	176	438	614
<b>Total</b>	<b>360</b>	<b>580</b>	<b>940</b>

QuizZero Alert?	FYI ALERT?		Total
	YES	NO	
YES	56%	44%	100%
NO	29%	71%	100%
<b>Total</b>	<b>360</b>	<b>580</b>	<b>940</b>

SPRING 2013

	MATH 155	MATH 150	MATH 151	MATH 152
%ABC	66%	54%	64%	76%
%ABC   MG	72%	53%	65%	81%
%ABC   No MG	56%	56%	63%	73%

	MATH 155	MATH 150	MATH 151	MATH 152
%ABC   QZA	54%	40%	44%	58%
%ABC   QZA, MG	65%	42%	55%	74%
%ABC   QZA, No MG	27%	38%	35%	45%

	MATH 155	MATH 150	MATH 151	MATH 152
%ABC   No QZA	75%	65%	75%	89%
%ABC   No QZA, MG	81%	62%	73%	94%
%ABC   No QZA, No MG	69%	67%	77%	87%

FALL 2013

	MATH 155	MATH 150	MATH 151	MATH 152	MATH 251
%ABC	67%	66%	63%	69%	85%
%ABC   MG	75%	78%	77%	75%	92%
%ABC   No MG	52%	48%	47%	51%	72%

	MATH 155	MATH 150	MATH 151	MATH 152	MATH 251
%ABC   QZA	52%	56%	53%	52%	85%
%ABC   QZA, MG	61%	69%	66%	65%	92%
%ABC   QZA, No MG	35%	31%	39%	16%	69%

	MATH 155	MATH 150	MATH 151	MATH 152	MATH 251
%ABC   No QZA	80%	77%	72%	82%	84%
%ABC   No QZA, MG	87%	87%	87%	83%	91%
%ABC   No QZA, No MG	67%	62%	55%	77%	74%

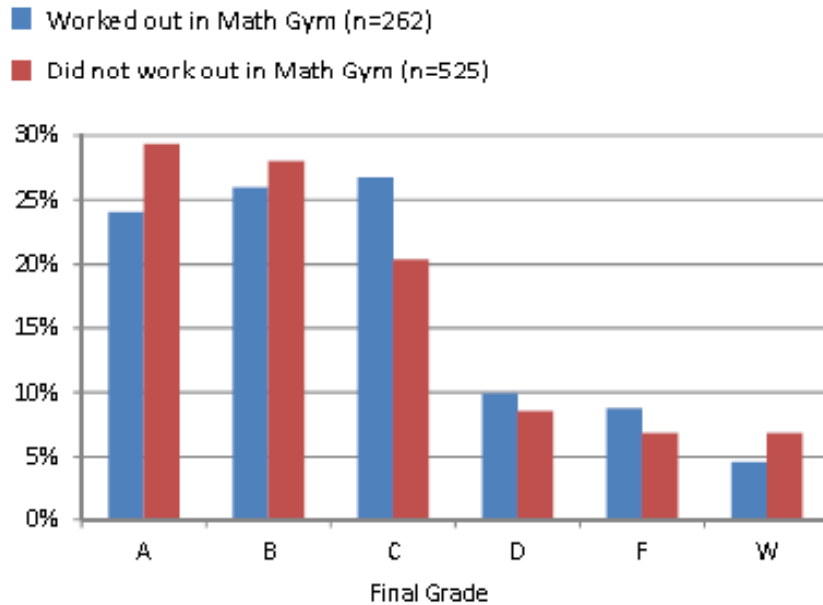
## Impact of Math Gym in light of QZ performance Spring (SP) and Fall (FA) 2013

	MATH 155		MATH 150		MATH 151		MATH 152	
	SP	FA	SP	FA	SP	FA	SP	FA
%ABC	66%	67%	54%	66%	64%	63%	76%	69%
%ABC   MG	72%	75%	53%	78%	65%	77%	81%	75%
%ABC   No MG	56%	52%	56%	48%	63%	47%	73%	51%
%ABC   QZA	54%	52%	40%	56%	44%	53%	58%	52%
%ABC   QZA, MG	65%	61%	42%	69%	55%	66%	74%	65%
%ABC   QZA, No MG	27%	35%	38%	31%	35%	39%	45%	16%
%ABC   No QZA	75%	80%	65%	77%	75%	72%	89%	82%
%ABC   No QZA, MG	81%	87%	62%	87%	73%	87%	94%	83%
%ABC   No QZA, No MG	69%	67%	67%	62%	77%	55%	87%	77%

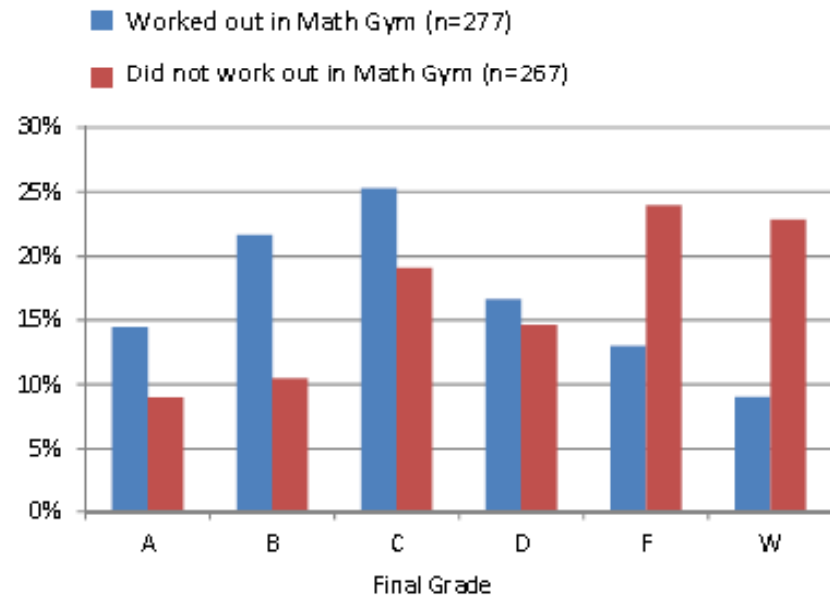
**In the @RISK MG participants are doing better.**

# IMPACT OF WORKING OUT IN THE MATH GYM: FINAL GRADE DISTRIBUTION IN SPRING 2013 MATH 150,155, 151, 152

**Students who did not receive QZA\***  
**Number of students=787**



**Students who received QZA\***  
**Number of students=544**

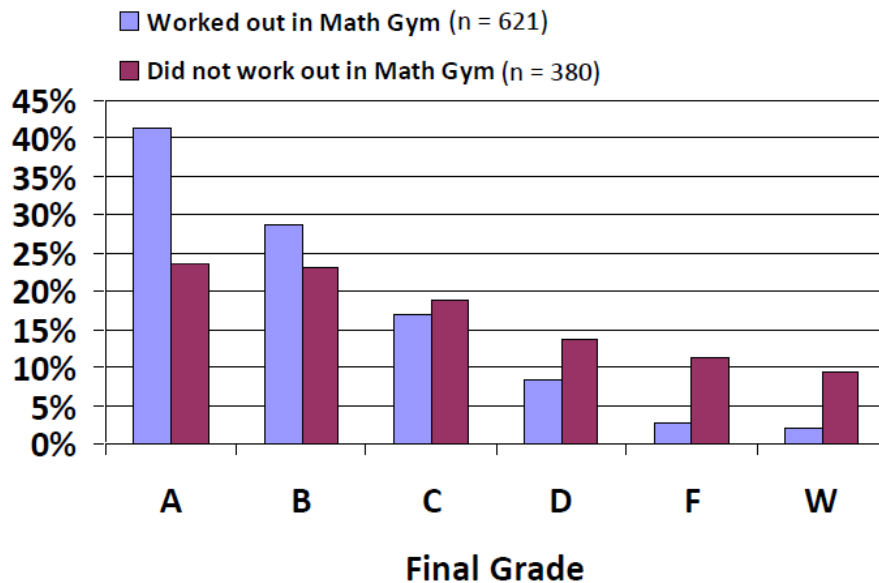


**\*QuizZero Alerts (QZA) are sent to students scoring low in a test of preparedness given in each class during the add-drop period**

# IMPACT OF WORKING OUT IN THE MATH GYM: FINAL GRADE DISTRIBUTION IN FALL 2013 MATH 150,155, 151, 152, 251

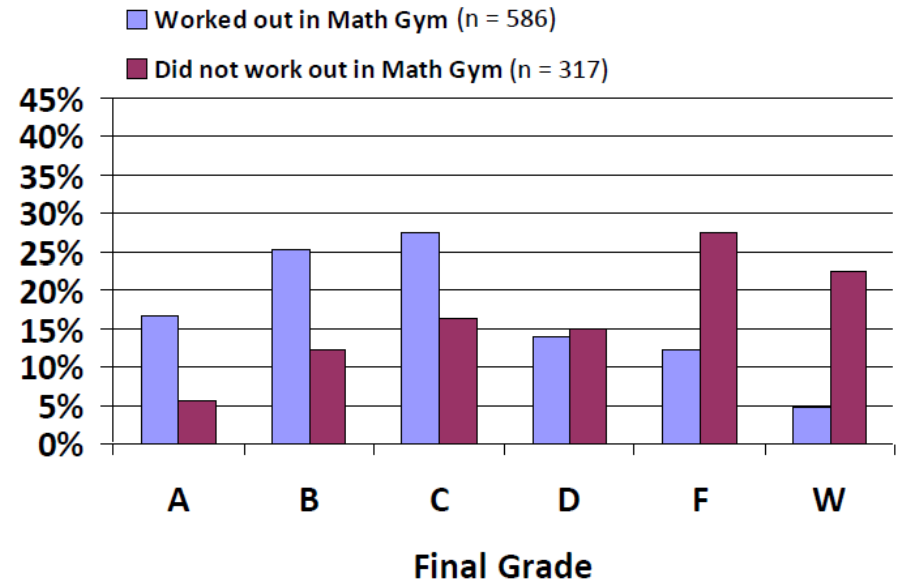
**Students that did not receive a QZ Alert**

Number of Students = 1001



**Students that received a QZ Alert**

Number of Students = 903

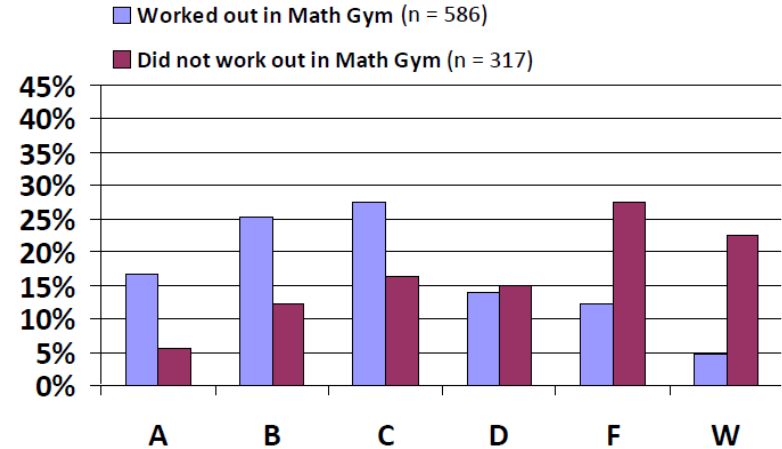
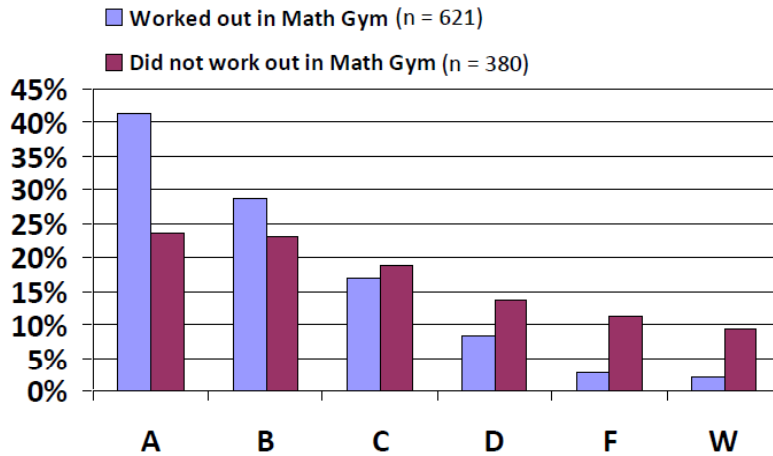


QZ (Quiz Zero) Alerts are sent to students scoring low in a test of preparedness given in each class during the add-drop period

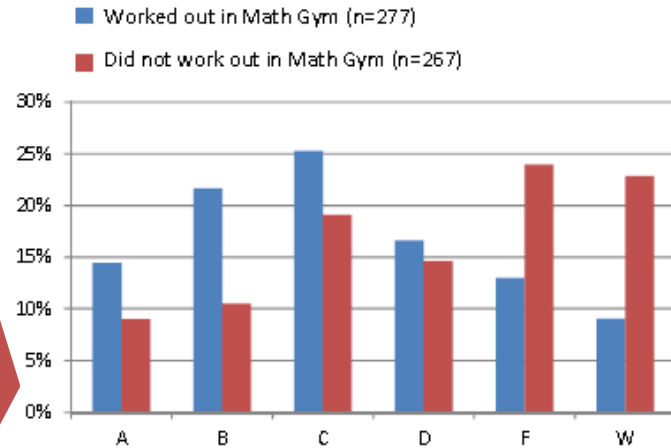
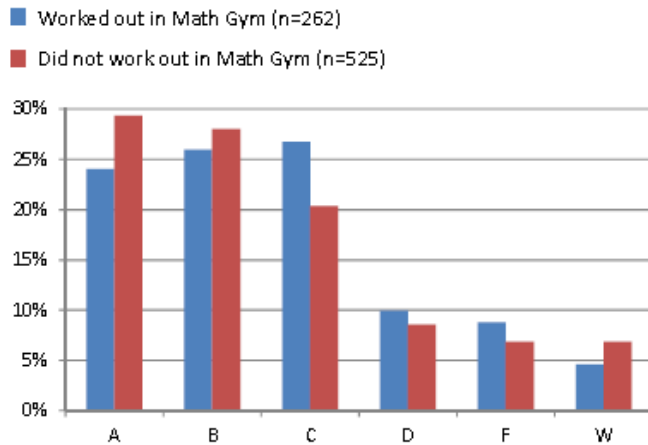
## STUDENTS WHO DID NOT RECEIVE QUIZ ZERO ALERTS

## STUDENTS WHO RECEIVED QUIZ ZERO ALERTS

SPRING 2013



FALL 2013



@Risk

# Repeat Attendance has an Impact

Percentage of Students with a Passing (A, B or C) Final Grade, given their Quiz Zero Grade and Math Gym Attendance

QZ Score	Number of times Attended Math Gym					
	0		1-3		4 +	
$0 \leq \text{QZ} < 5$	21%	(126)	51%	(70)	71%	(35)
$5 \leq \text{QZ} < 10$	31%	(102)	63%	(118)	78%	(94)
$10 \leq \text{QZ} < 15$	54%	(175)	72%	(242)	85%	(146)
$15 \leq \text{QZ} < 20$	64%	(200)	86%	(270)	84%	(121)
$20 \leq \text{QZ} \leq 25$	78%	(105)	95%	(76)	100%	(24)
<b>Total</b>	51%	(708)	76%	(776)	83%	(420)

\* 17 out of the 1904 students had missing QZ scores, these students were given a zero %



# Conclusions

- Working out in MG helps all students improve their chances of passing
- Impact of working out in MG is much higher for the students who received alerts based on their performance in QuizZero
- Repeat visits to MG seem to be also very helpful: DFW rates of 51% for those who never visited, 27% for 1-3 visits, and 18% for those visited 4 times or more.