

ANALYZING POTENTIAL PMF BIASES: AT RISK



DRAFT AND DELIBERATIVE

Question of Interest

Does the 2015-2016 PMF unfavorably bias campuses with higher at risk populations?



Findings

- Generally, there appears to be a **weak unfavorable bias** for campuses with higher at risk populations
 - Increases in at risk populations result in lower overall PMF scores, and that effect is statistically significant at conventional levels of confidence
 - The effect of at risk on growth is statistically insignificant at conventional levels of confidence, and thus indifferent from 0
 - At risk is moderately correlated with ELA achievement and weakly correlated with Math achievement
 - The effect of at risk on 3rd Grade Gateway scores is indifferent from 0, while the effect of at risk on 8th Grade Gateway scores is statistically significant at conventional confidence levels
 - Increases in at risk populations result in lower 8th Grade Gateway scores



Outline

- I. Overview of At Risk at the Charter Level
- II. Overview of At Risk at the Campus Level
- III. Examine bias between At Risk and Overall PMF Score
- IV. Examine bias between At Risk and PMF Measures
 - A. Growth
 - B. Achievement
 - C. Gateway
 - D. School Environment
 - E. CLASS
- V. Summary



AT RISK AT THE CHARTER SECTOR LEVEL



Summary of At Risk Students in SY 2015-2016

Campus Level At Risk Descriptive Statistics

Min.	25 th Percentile	Median	75 th Percentile	Max.	Mean	Std. Dev.	N
3.6	39.6	51.3	60.2	75.8	48.0	18.4	73

Breakdown of At Risk by Category

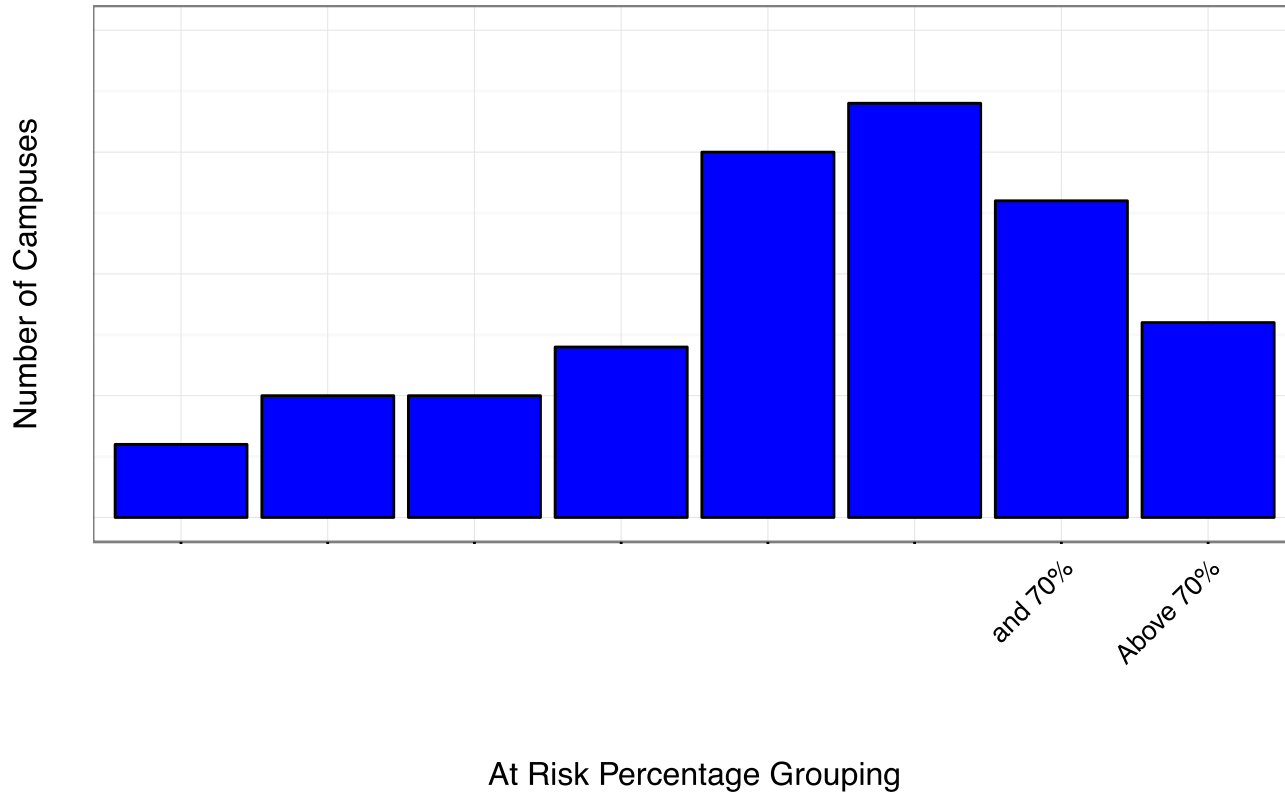
Category	Count	Percent of At Risk Students
CFSA	166	1.1
SNAP	14268	95.4
TANF	7629	51.0
Homeless	1512	10.1
Overage	261	1.7

NOTES: The above statistics include PK-8, tiered campuses. They exclude PK only campuses, HS campuses, new campuses, and un-tiered campuses. The At Risk categories are not mutually exclusive.



Summary of At Risk Students in SY 2015-2016

Breakdown of At Risk Populations by Campus



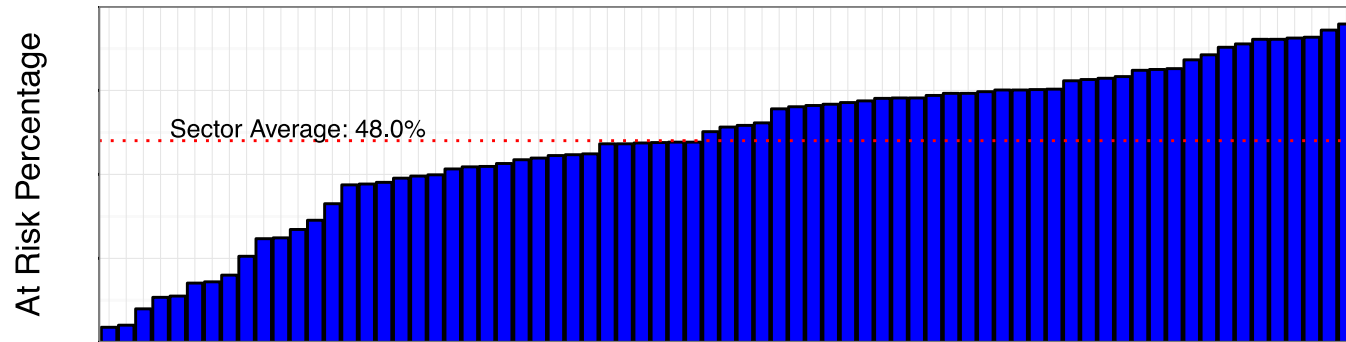
NOTE: The above graphic includes PK-8, tiered campuses. It excludes PK only campuses, HS campuses, new campuses, and un-tiered campuses.



AT RISK AT THE CAMPUS LEVEL



Percent of At Risk Students Enrolled in Public Charter Schools



5

Campus

NOTE: The above graphic includes PK-8, tiered campuses. It excludes PK only campuses, HS campuses, new campuses, and un-tiered campuses.



Highest and Lowest At Risk Populations in the Charter Sector

Lowest Percent At Risk	Percent
Washington Yu Ying PCS	3.6%
Washington Latin PCS – Middle School	4.1%
Latin American Montessori Bilingual PCS	8.0%
BASIS DC PCS – Middle School	10.7%
Creative Minds International PCS	11.0%
Mundo Verde Bilingual PCS	14.1%
Inspired Teaching Demonstration PCS	14.4%
Elsie Whitlow Stokes Community Freedom PCS	16.0%
District of Columbia International School	20.5%
Capital City PCS – Lower School	24.7%

Highest Percent At Risk	Percent
Democracy Prep Congress Heights PCS	75.8%
Early Childhood Academy PCS	74.4%
Friendship PCS – Blow Pierce Middle	72.7%
Friendship PCS – Blow Pierce Elementary	72.5%
Friendship PCS – Southeast Academy	72.2%
Ingenuity Prep PCS	72.2%
Friendship PCS – Technology Preparatory Middle School	71.1%
Somerset Preparatory Academy PCS	70.3%
Cesar Chavez PCS for Public Policy – Parkside Middle	68.5%
KIPP DC – Discover Academy PCS	67.3%

NOTE: The above tables include PK-8, tiered campuses. They exclude PK only campuses, HS campuses, new campuses, and un-tiered campuses.

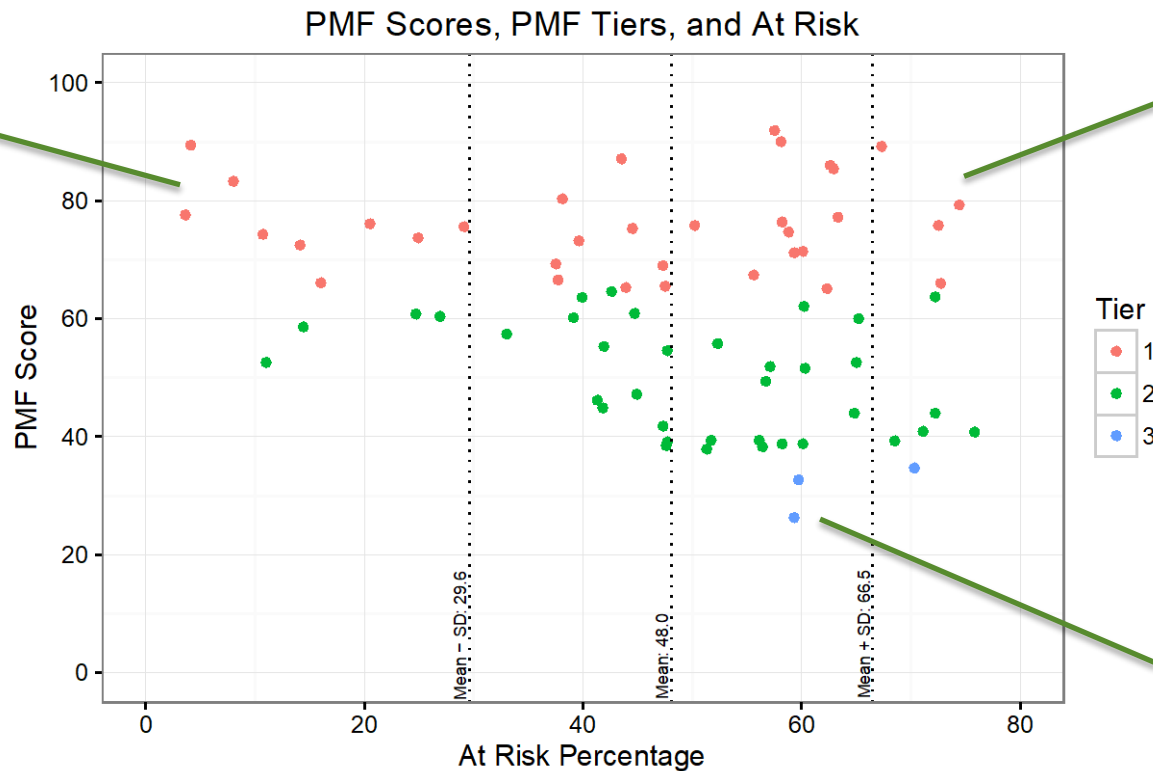


DETERMINING BIAS: A COMPARATIVE OVERVIEW OF THE PMF AND AT RISK



Comparing PMF Scores, Tiers, and At Risk Populations by Campus

9 Tier 1 Schools have an at risk population less than one standard deviation below the mean



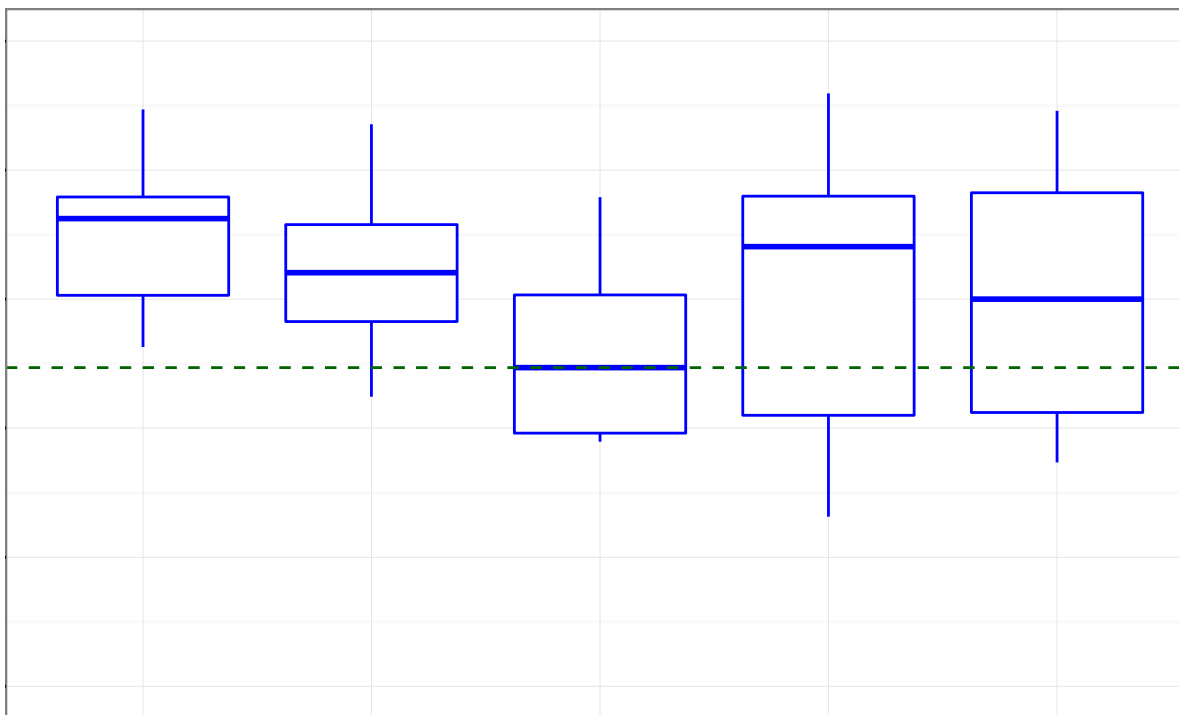
4 Tier 1 Schools have an at risk population greater than one standard deviation above the mean

2 of the 3 Tier 3 Schools have an at risk population that falls within one standard deviation of the mean

NOTE: The analysis and above graphic include PK-8, tiered campuses. They exclude PK only campuses, HS campuses, new campuses, and un-tiered campuses.



Variation in Median PMF Score across At Risk Quintiles



Quintile of School	At Risk Percent
1	Up to 37.6%
2	37.6% to 46.8%
3	46.8% to 57.2%
4	57.2% to 62.8%
5	62.8% and above

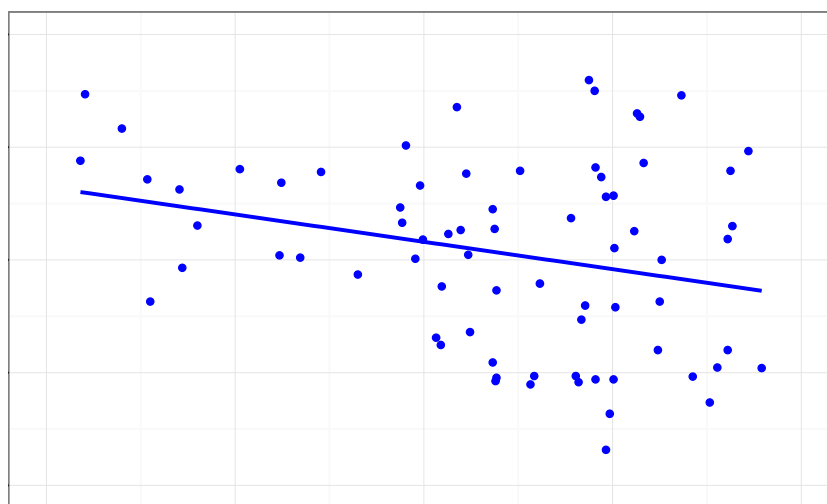
Compared to the 3rd quintile, all other quintiles have higher median PMF scores. Additionally, the 4th quintile has a higher median PMF score than the 2nd quintile.

NOTE: The analysis and above graphic include PK-8, tiered campuses. They exclude PK only campuses, HS campuses, new campuses, and un-tiered campuses.



Analyzing Correlation Between Overall PMF Score and At Risk

At Risk Coefficient	P-value	R-squared	Correlation
-0.24	0.02	0.07	-0.27



On average, when not controlling for other factors, increases in at risk percentages result in decreased overall PMF scores. In other words, campuses with larger at risk populations have lower predicted PMF scores.

NOTES: The analysis includes only PK – 8, tiered campuses. Green dots indicate no correlation; blue dots indicate a weak correlation between 0.10 and 0.39; yellow dots indicate a moderate correlation between 0.40 and 0.69; and red dots indicate a strong correlation between 0.70 and 0.99. Category for strength of correlation refers to Dancey C., & Reidy J. (2004). *Statistics Without Maths for Psychology*, London: Prentice Hall.

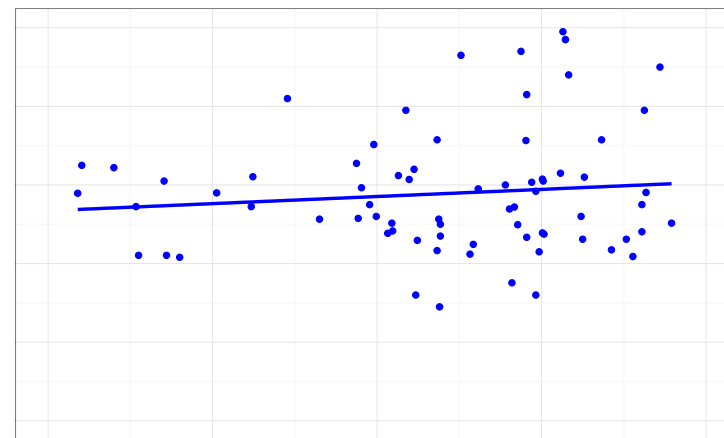
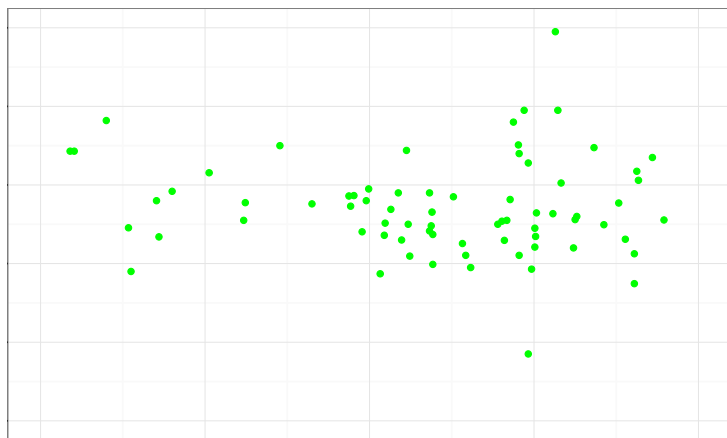


DETERMINING BIAS: AN IN-DEPTH COMPARISON OF PMF MEASURES AND AT RISK



Analyzing Correlation Between Growth and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
ELA	-0.05	0.51	0.01	-0.08
Math	0.09	0.37	0.01	0.11



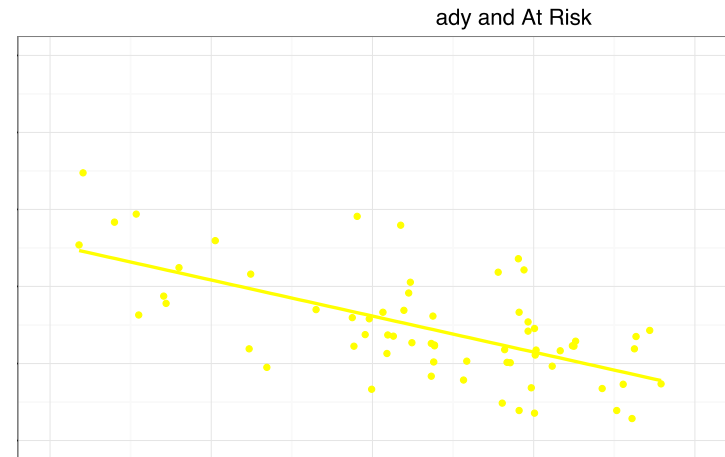
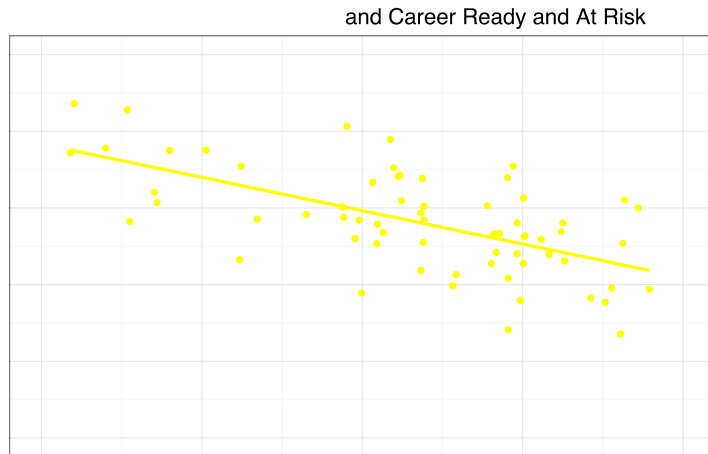
At risk is not correlated with ELA growth, while it is very weakly correlated with Math growth. Furthermore, due to significantly high p-values, the effect of at risk on both ELA and Math growth is indifferent from 0 at the conventional confidence level.

NOTES: The analysis includes only PK – 8, tiered campuses. Green dots indicate no correlation; blue dots indicate a weak correlation between 0.10 and 0.39; yellow dots indicate a moderate correlation between 0.40 and 0.69; and red dots indicate a strong correlation between 0.70 and 0.99. Category for strength of correlation refers to Dancey C., & Reidy J. (2004). *Statistics Without Maths for Psychology*, London: Prentice Hall.



Analyzing Correlation Between ELA Achievement and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
ELA Levels 3+	-0.44	< 0.01	0.38	-0.61
ELA Levels 4+	-0.47	< 0.01	0.40	-0.64



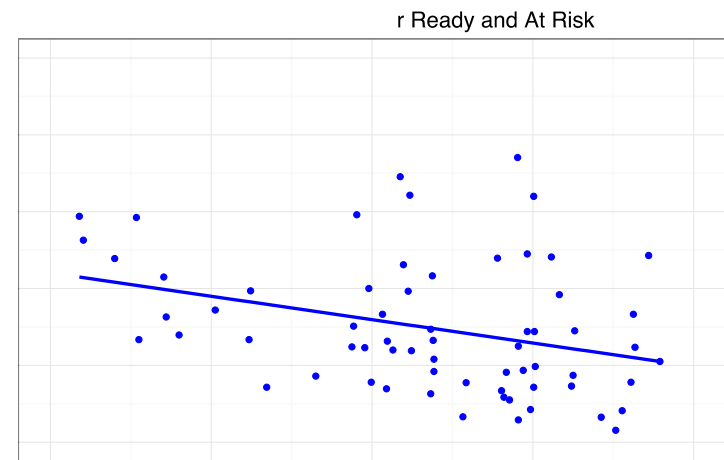
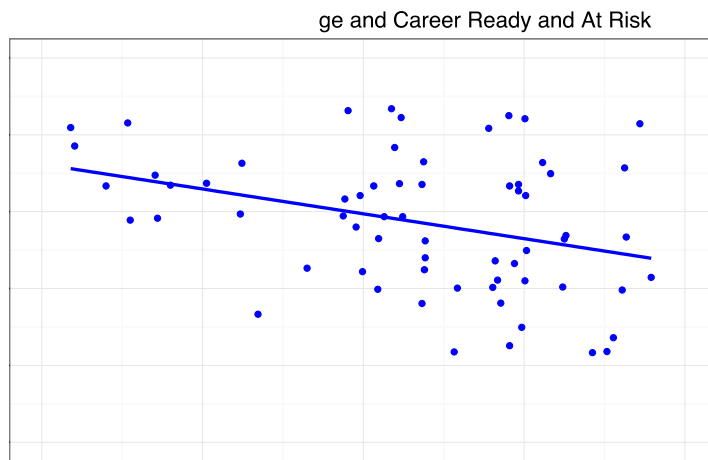
On average, when not controlling for other factors, increases in at risk percentages result in decreased ELA achievement rates for Levels 3+ and 4+. In other words, campuses with larger at risk populations have lower predicted ELA achievement scores.

NOTES: The analysis includes only PK – 8, tiered campuses. Green dots indicate no correlation; blue dots indicate a weak correlation between 0.10 and 0.39; yellow dots indicate a moderate correlation between 0.40 and 0.69; and red dots indicate a strong correlation between 0.70 and 0.99. Category for strength of correlation refers to Dancey C., & Reidy J. (2004). *Statistics Without Maths for Psychology*, London: Prentice Hall.



Analyzing Correlation Between Math Achievement and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
Math Levels 3+	-0.32	< 0.01	0.12	-0.34
Math Levels 4+	-0.30	< 0.01	0.11	-0.33



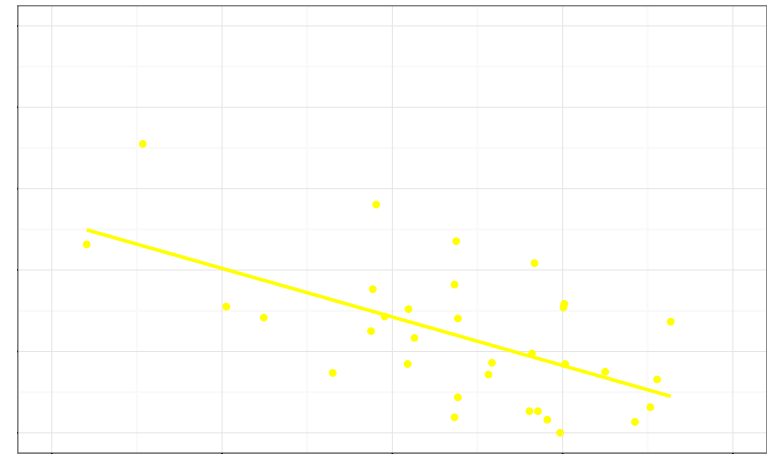
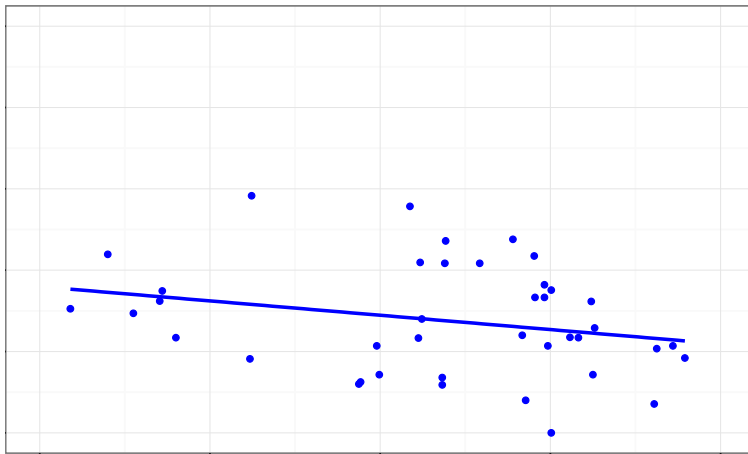
On average, when not controlling for other factors, increases in at risk percentages result in decreased Math achievement rates for Levels 3+ and 4+. In other words, campuses with larger at risk populations have lower predicted Math achievement scores.

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Analyzing Correlation Between Gateway Scores and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
Gateway ELA	-0.18	0.12	0.06	-0.25
Gateway Math	-0.60	< 0.01	0.35	-0.59



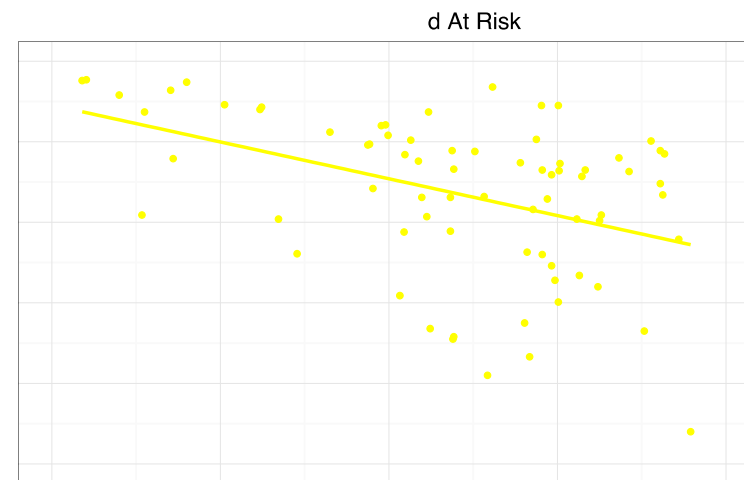
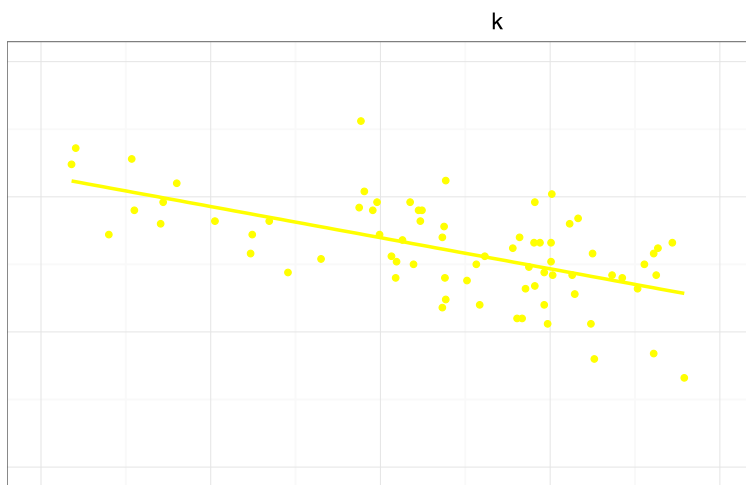
The effect of at risk on 3rd Grade Gateway scores is indifferent from 0 at the conventional confidence level. Contrarily, on average, when not controlling for other factors, increases in at risk percentages result in decreased 8th Grade Gateway scores. In other words, campuses with larger at risk populations have lower predicted 8th Grade Gateway scores.

NOTES: The analysis includes only PK – 8, tiered campuses. Green dots indicate no correlation; blue dots indicate a weak correlation between 0.10 and 0.39; yellow dots indicate a moderate correlation between 0.40 and 0.69; and red dots indicate a strong correlation between 0.70 and 0.99. Category for strength of correlation refers to Dancey C., & Reidy J. (2004). *Statistics Without Maths for Psychology*, London: Prentice Hall.



Analyzing Correlation Between School Environment and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
Attendance	-0.06	< 0.01	0.35	-0.59
Reenrollment	-0.23	< 0.01	0.18	-0.43



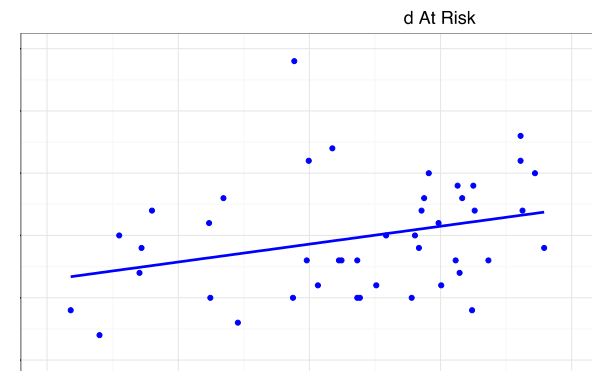
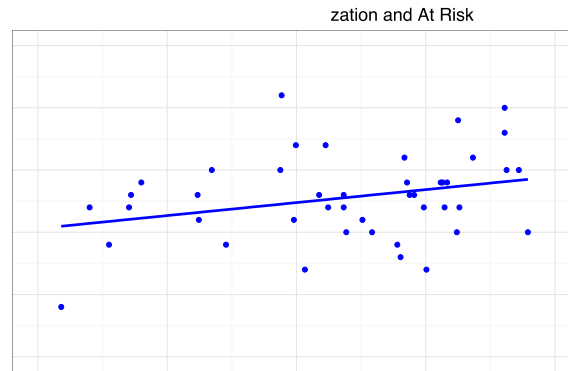
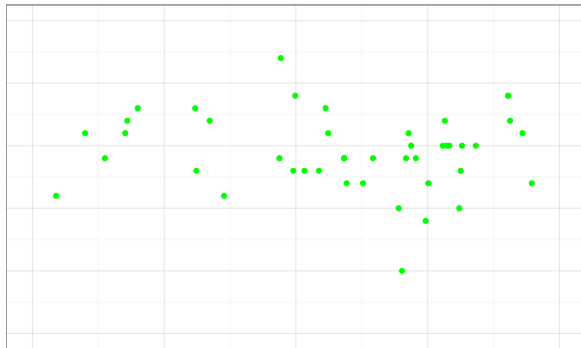
On average, when not controlling for other factors, increases in at risk percentages result in decreased attendance and reenrollment rates, although the effect of at risk on attendance is marginal. Stated differently, campuses with larger at risk populations have lower predicted attendance and reenrollment rates.

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Analyzing Correlation Between CLASS Measures and At Risk

	At Risk Coefficient	P-value	R-squared	Correlation
Emotional Support	0.00	0.56	0.01	-0.09
Classroom Organization	0.01	0.05	0.09	0.29
Instructional Support	0.01	0.04	0.09	0.31



The effect of at risk on Emotional Support is indifferent from 0 at the conventional confidence level. Contrarily, on average, when not controlling for other factors, increases in at risk percentages result in higher Classroom Organization and Instructional Support scores, but the effects are marginal. Still, campuses with larger at risk populations have higher predicted Classroom Organization and Instructional Support scores.

NOTES: The analysis includes only PK – 8, tiered campuses. Green dots indicate no correlation; blue dots indicate a weak correlation between 0.10 and 0.39; yellow dots indicate a moderate correlation between 0.40 and 0.69; and red dots indicate a strong correlation between 0.70 and 0.99. Category for strength of correlation refers to Dancy C., & Reidy J. (2004). *Statistics Without Maths for Psychology*, London: Prentice Hall.



SUMMARY



Summary of Findings

- Generally, there appears to be a **weak unfavorable bias** for campuses with higher at risk populations
 - Increases in at risk populations result in lower overall PMF scores, and that effect is statistically significant at conventional levels of confidence
 - The effect of at risk on growth is statistically insignificant at conventional levels of confidence, and thus indifferent from 0
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APPENDIX



PK – 8 Campuses Excluded from the Analysis

- AppleTree Early Learning Center PCS – Columbia Heights
- AppleTree Early Learning Center PCS – Lincoln Park
- AppleTree Early Learning Center PCS – Oklahoma Ave.
- AppleTree Early Learning Center PCS – Southeast
- AppleTree Early Learning Center PCS – Southwest
- Bridges PCS
- Briya PCS
- DC Prep PCS – Anacostia
- Friendship PCS – Armstrong
- Friendship PCS - Online
- KIPP DC – LEAP Academy PCS
- KIPP DC – Valor Academy PCS
- Lee Montessori PCS
- The Children’s Guild DC PCS
- Two Rivers PCS – Young
- Washington Global PCS



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