

# Longitudinal Changes in Discipline Disparities within Three Variations of SW-PBIS

Kristen Figas<sup>1</sup>, Katherine Perkins<sup>1</sup>, Mark Weist<sup>1</sup>, Joni Splett<sup>2</sup>,  
Colleen Halliday<sup>3</sup>, Kelly Perales<sup>4</sup>, & Elaine Miller<sup>5</sup>

<sup>1</sup> University of South Carolina

<sup>2</sup> University of Florida

<sup>3</sup> Medical University of South Carolina

<sup>4</sup> Midwest PBIS Network

<sup>5</sup> University of Kansas

# Objectives

1. Describe the trajectory of disparities in office discipline referrals across the elementary years.
2. Identify individual and school-level predictors of disparities in office discipline referrals.
3. Articulate how different variations of SW-PBIS implementation relate to disparities in office discipline referrals.

# The Problem: Discipline Disparities

- Well established for:<sup>1</sup>
  - Sex
  - Sexual orientation and gender identity
  - Socioeconomic status
  - Ability status
  - **Race**
- Racial disparities documented in preschool through high school settings<sup>2</sup>

<sup>1</sup>Welsh & Little, 2018

<sup>2</sup>Zinsser et al., 2022; Fadus et al., 2021; Heilbrun et al., 2018; Bottiani et al., 2017

# The Problem: Discipline Disparities

- Most research has focused on exclusionary discipline, but disparities also exist earlier in process (e.g., for discipline **referrals**)

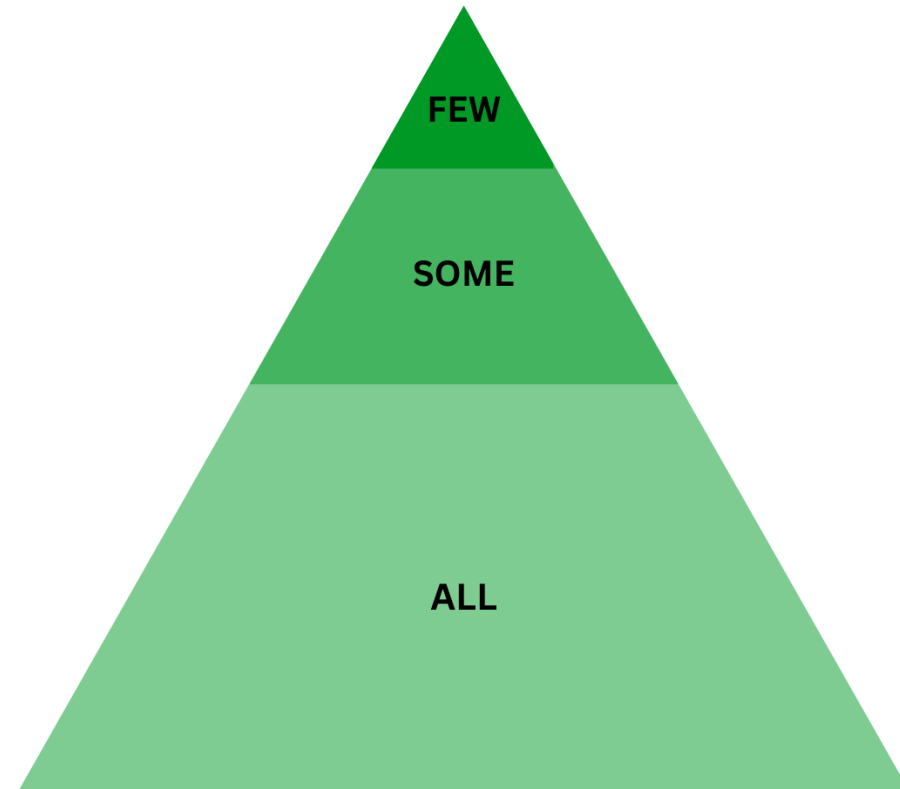


- Associated with a variety of **negative outcomes** (e.g., loss of instruction, lower school attachment, poorer mental and physical health)<sup>1</sup>
- **Limited longitudinal research** for understanding when and how disparities emerge

<sup>1</sup>Chen et al., 2021; Losen & Martinez, 2020; Perryman et al., 2022

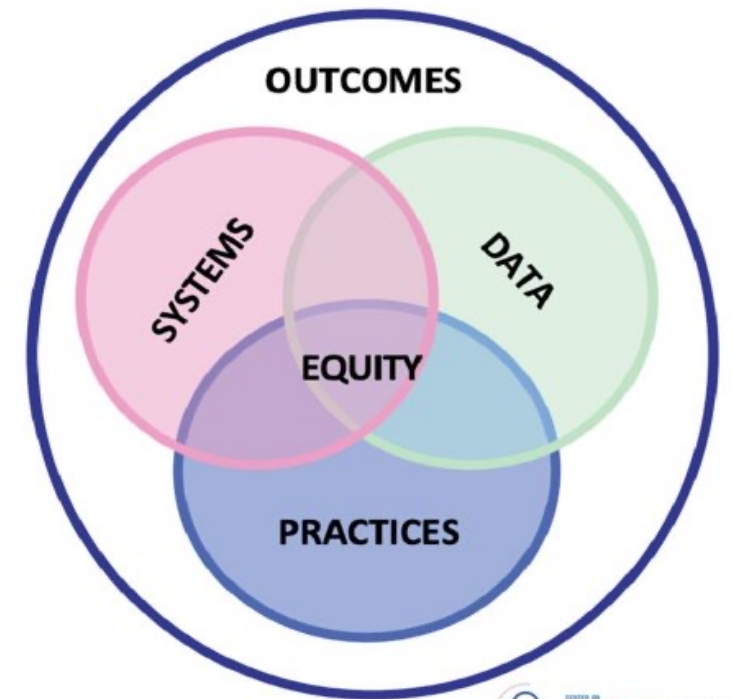
# School-Wide PBIS (SW-PBIS)

- **Multi-tiered framework** for supporting students' social, emotional, behavioral, and academic development
- **Continuum of support**
  - Tier 1: universal practices that support **ALL**
  - Tier 2: targeted supports for **SOME** students
  - Tier 3: intensive and individualized supports for **FEW** students



# School-Wide PBIS (SW-PBIS)

- More than the pyramid: SW-PBIS includes **systems, data, and practices** to improve student, staff, and school functioning
  - Teaming, staffing, scheduling, training and coaching
  - Data-based decision making
  - Evidence-based practices (e.g., teaching and practicing expectations, recognition and feedback, continuum of supports/interventions)
  - Associated with reductions in discipline disparities<sup>1</sup>
- Common challenges: implementing services at higher tiers, addressing internalizing behaviors



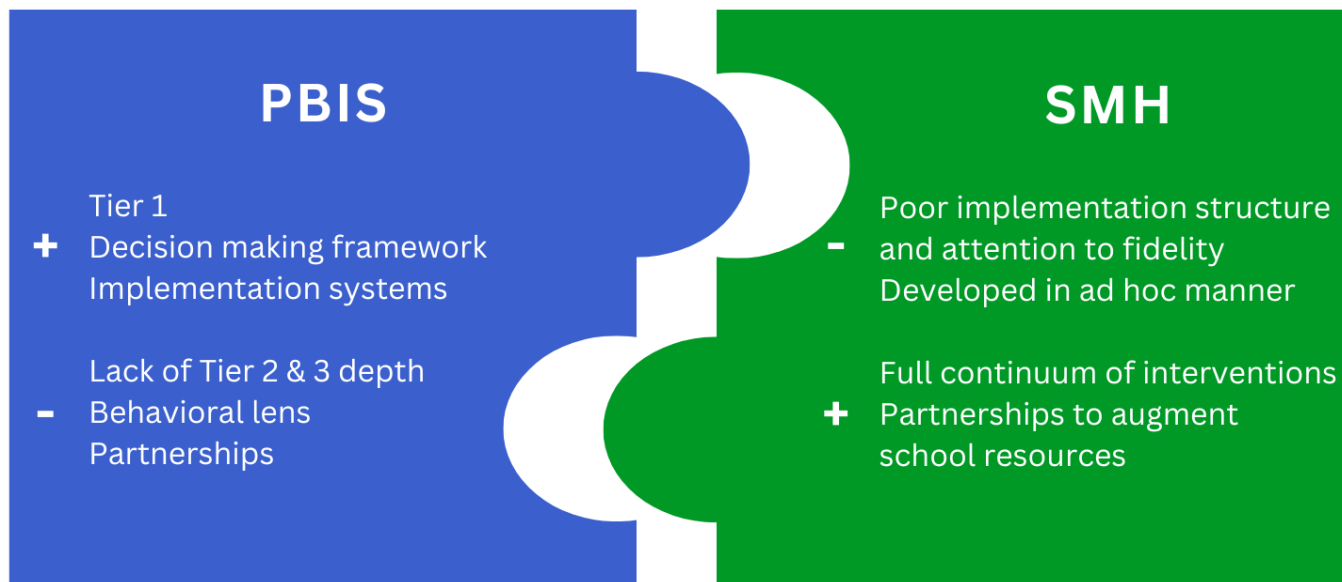
# School Mental Health (SMH)

- Mental health clinicians providing services within schools
- Increases **accessibility** of mental health services
- Improves **early identification/intervention**
- Associated with **positive outcomes**
  - Social-emotional well-being, behavior, attendance, attitudes (e.g., self-efficacy), mental health, academic performance<sup>1</sup>
- Lack of implementation structure leads to challenges with integration

<sup>1</sup>Ballard et al., 2014; Suldo et al., 2014

# Interconnected Systems Framework (ISF)

- One cohesive framework integrating education and mental health systems
- Enhances **depth** and **quality** of prevention and intervention



Barrett et al., 2017; Eber et al., 2020



# Interconnected Systems Framework (ISF)

Critical elements:

Partnerships & Teaming

Data-Based  
Decision Making

Evidence-  
Based Practices &  
Interventions Across Tiers

Comprehensive  
Screening

Progress Monitoring  
(Fidelity & Effectiveness)

Implementation Support  
(Training & Coaching)

# Interconnected Systems Framework (ISF)

- Teaming & Partnerships:

## District-Community Leadership Team

- Systems leaders (e.g., District leadership, MH Agency Leader)
- ISF coaches
- Educators, administrators, and clinicians
- Family members and older youth
- Representatives from youth-serving systems (e.g., child welfare, juvenile justice, disabilities, primary healthcare)
- Government officials
- University staff and researchers

## Multi-sector Partnerships

- Youth and Families
- Government
- Education
- Child and Adolescent Mental Health
- Juvenile Justice
- Child Welfare
- Primary Healthcare
- Allied Health Services
- Vocational Rehabilitation
- Universities and Colleges
- Faith
- Business
- Disabilities

# Interconnected Systems Framework (ISF)

- Data-based Decision Making
  - School data (beyond discipline), community data
- EBP Selection & Implementation
  - Behavior, social-emotional skills, and mental health
- Screening & Progress Monitoring
  - Internalizing and externalizing concerns
  - Fidelity and effectiveness
- Implementation Support
  - Coaching across levels (systems through individual practices)

# Aims

1. Examine longitudinal trajectories of racial disparities in ODRs of elementary students
2. Compare trajectories across three different variations on SW-PBIS: SW-PBIS, SW-PBIS + SMH, and ISF

# Parent Study

- Multi-year RCT examining the effectiveness of the ISF
  - 2 states, 24 schools in the southeast
  - Randomized to three conditions:

## **PBIS**

- No additional training or support

## **PBIS + SMH**

- PBIS
- Clinician assigned to school 2.5 days/week

## **ISF**

- PBIS
- Clinician 2.5 days/week
- Teaming
- PD and coaching
- Universal screening
- Leadership Teams

- Five years of student records (2013 – 2018)
  - 3 years preceding conditions, 2 years with conditions

# Building upon Parent Study

- All conditions were associated with a reduction in schoolwide ODRs<sup>1</sup>
  - Greater reduction associated with ISF vs. PBIS or PBIS + SMH
  - Black/African American students less likely to receive ODR in ISF schools
- In the current study, we build upon these findings by examining **within person longitudinal trajectories** in the odds of receiving an ODR across all schools and conditions by demographic characteristics  
  
and
- Describe risk ratios and risk differences within a single school district in the southeastern United States

<sup>1</sup>Weist et al., 2022

# Variables

- **Office discipline referrals (ODRs):**
  - Whether student received at least one ODR in a given school year (yes/no)
- Student demographics:
  - **Race** (Black, Hispanic/Latinx, White)
  - Sex (male, female)
  - Ability status: whether student was identified as having an educational disability
- School variables:
  - **Condition:** PBIS, PBIS + SMH, ISF (4th – 5th grade only)
  - Percent of students receiving free or reduced-price lunch

# Analyses

Aim 1: Multilevel logistic models

- Level 1: **time**
- Level 2: student level (**race**, sex, ability status)
- Level 3: school level (**condition**, % FRPL)\*

Aim 2: Descriptive analysis of school-level disparities

- Multiple metrics to avoid misinterpretation<sup>1</sup>
  - Risk Ratio, Risk Difference

\*did not converge due to sample size

<sup>1</sup>Curran, 2020; Girvan et al., 2019



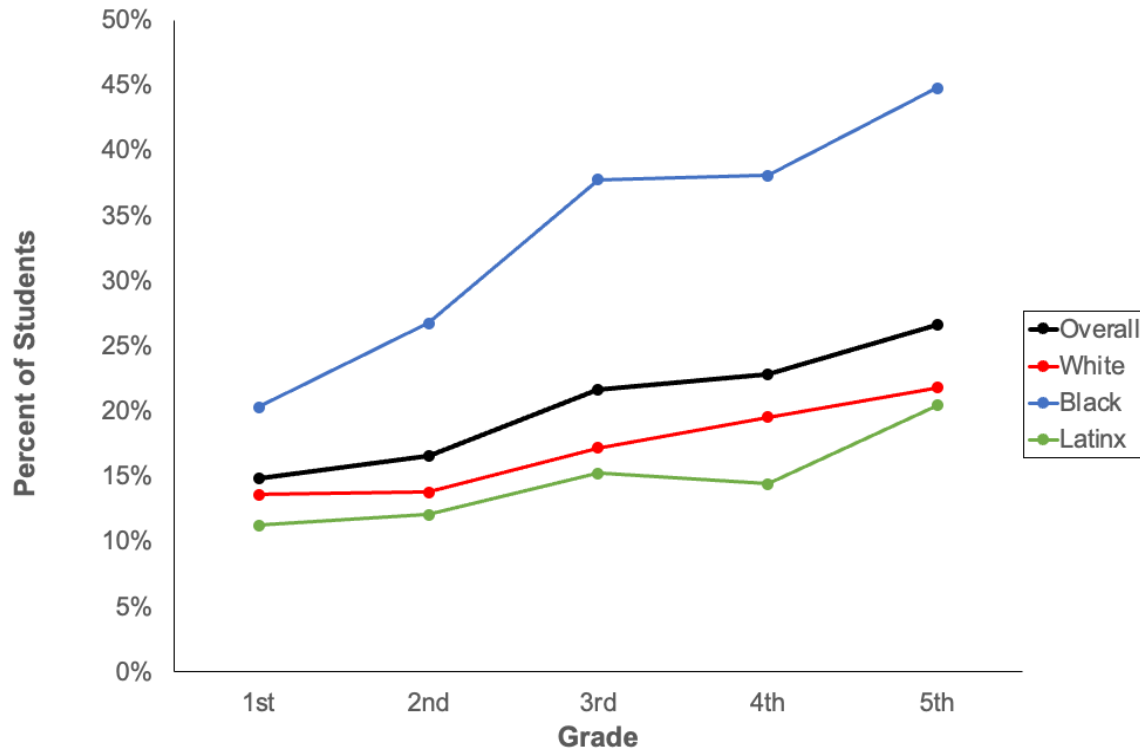
# Aim 1: Racial Disparities in ODRs

- **Sample:** 2,250 children from 12 elementary schools in the southeast

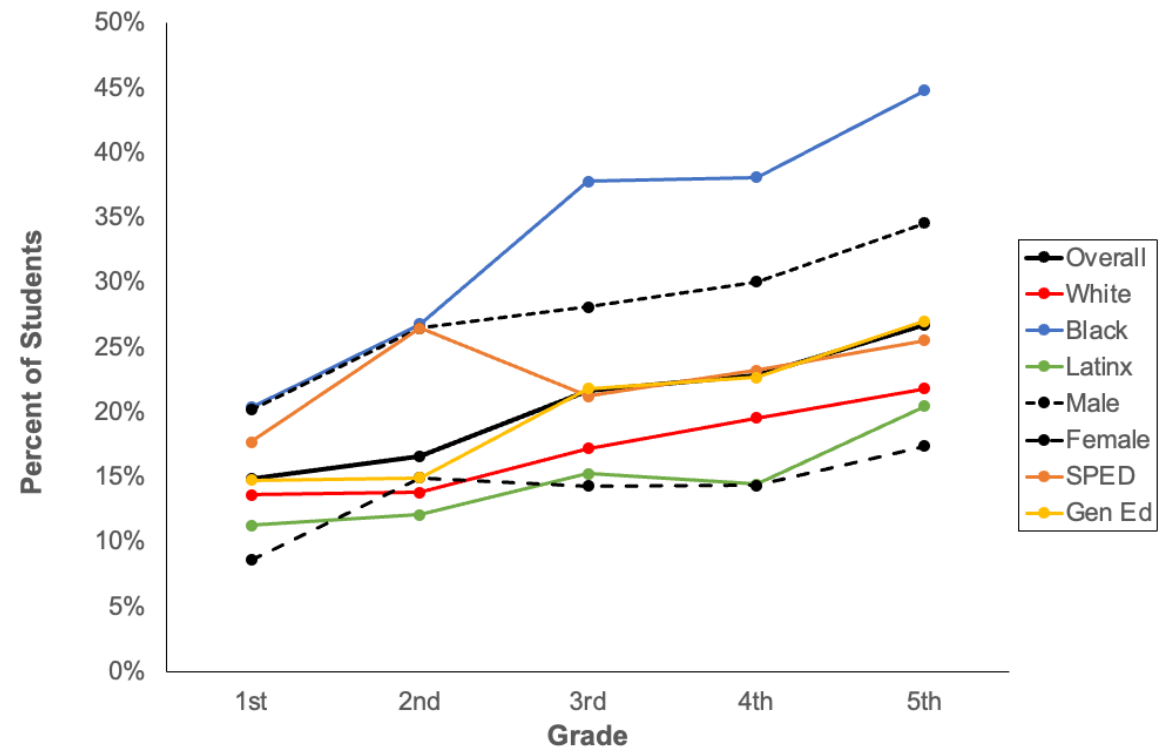
	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade
N	1268	1302	1252	1215	1069
Race					
White	57.33%	57.45%	57.67%	56.87%	57.06%
Black	24.45%	24.12%	23.48%	23.13%	22.36%
Latinx	18.22%	18.43%	18.85%	20.00%	20.58%
Sex					
Male	53.94%	53.69%	53.51%	53.99%	54.16%
Female	46.06%	46.31%	46.49%	46.01%	45.84%
Disability Status					
SPED	4.02%	14.52%	23.72%	26.26%	22.73%
Gen Ed	95.98%	85.48%	76.28%	73.74%	77.27%

# Aim 1: Trajectories of ODRs by Group

## By race



## All student demographics



ODRs significantly associated with race and sex within each grade ( $p \leq .005$ ).

ODRs significantly associated with ability status in 2nd grade only ( $p < .001$ )

# Aim 1 Results: Multilevel Models

Nesting of ODRs	ICC	ODR Variance explained within “group”
Within student Grade 1-5	0.380	38% variance within person
2013-14 SY	0.006	<1% variance within school
2014-15 SY	0.029	3% variance within school
2015-16 SY	0.060	6% variance within school
2016-17 SY	0.060	6% variance within school
2017-18 SY	0.040	4% variance within school

About 38% of the variance in ODRs can be explained within person (e.g., having a history of ODRs). Some significant variability explained by within school factors (e.g., general use of ODRs within a school).

# Aim 1 Results: Multilevel Models

*Multilevel Logistic Regression: Odds of Office Disciplinary Referral in School*

Effect	Log Odds Estimate	Odds	SE	<i>p</i>
Fixed effects				
Intercept***	-4.404		.226	<.001
Time***	.256	1.28	.034	<.001
Race Black**	.787	2.20	.266	.003
SPED	.108	<i>ns</i>	.153	.481
Sex Male***	1.54	4.66	.146	<.001
Time*Race Black***	.245	1.28	.073	<.001
Random effects				
	Variance		Std. Dev.	
Individual intercept variance	4.431		2.105	<.001

\*\*\*  $p < .001$ , \*\* $p < .01$

*Due to convergence issues when adding random slope effect and only slight model fit differences, the random intercept only model was retained*

# Aim 1 Results: Multilevel Models

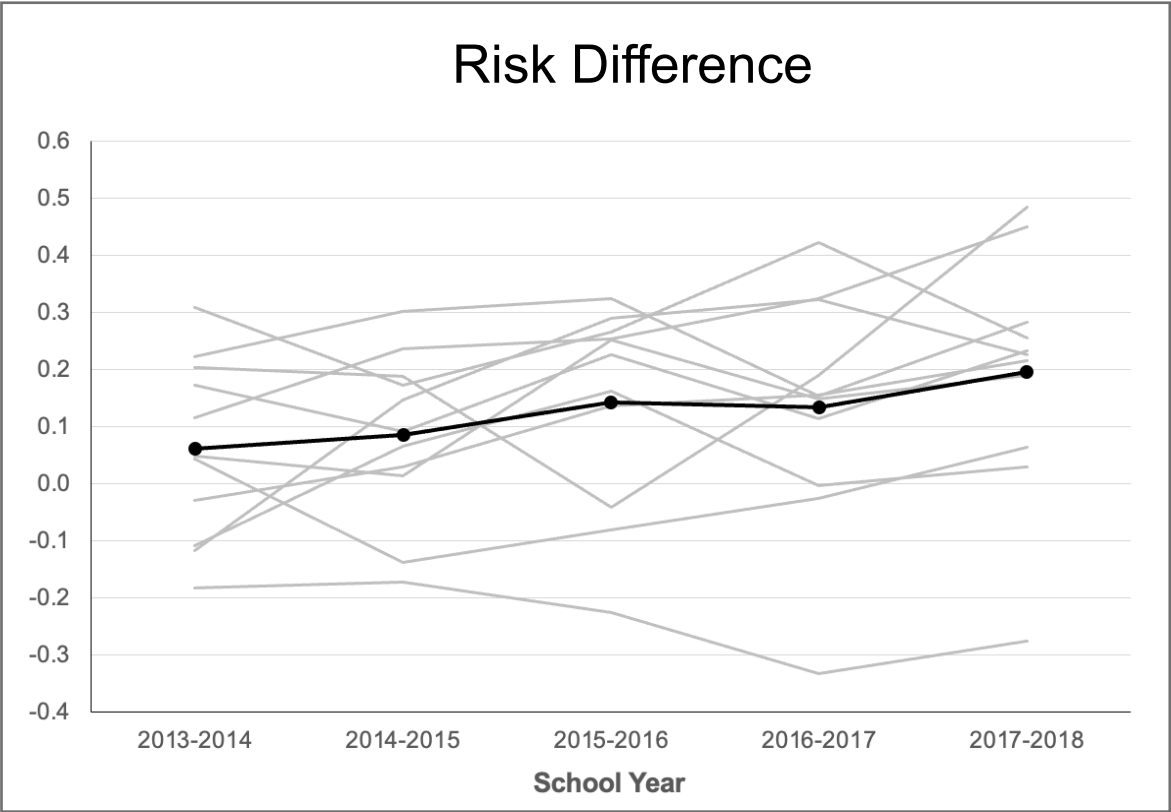
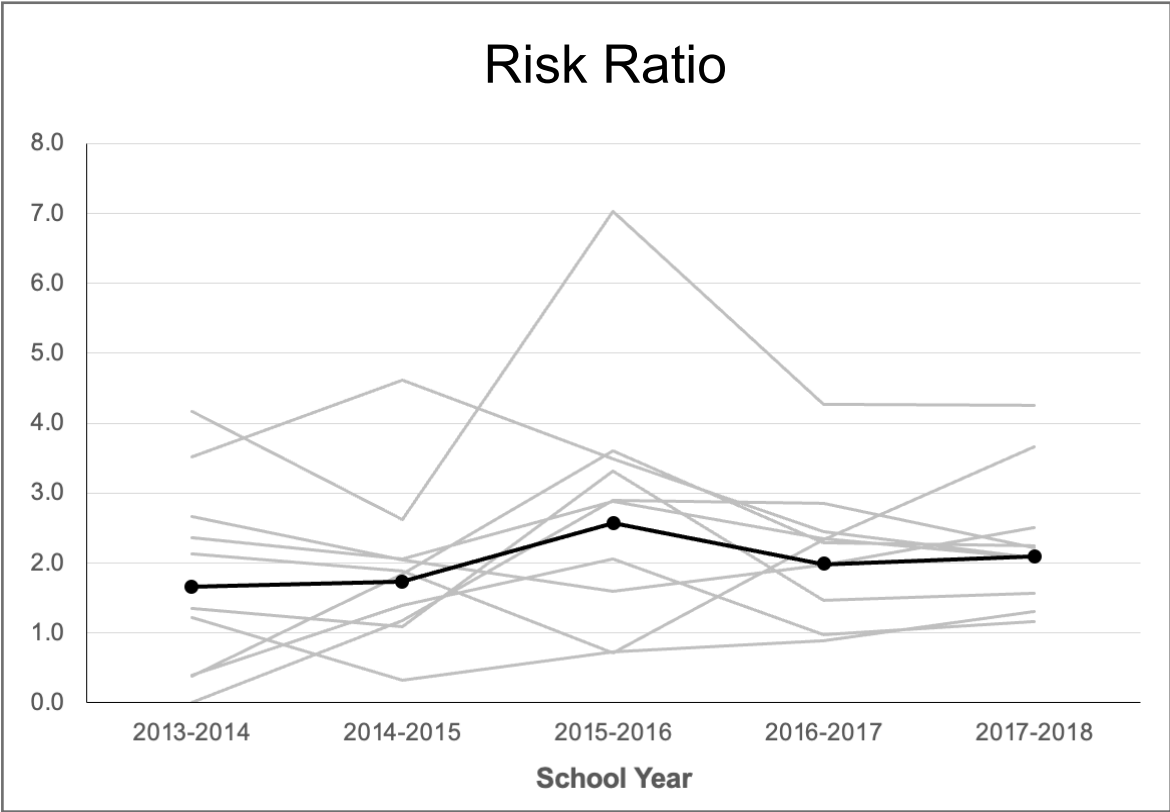
*Multilevel Logistic Regression: Odds of Office Disciplinary Referral in School*

Effect	Log Odds Estimate	Odds	SE	<i>p</i>
Fixed effects				
Intercept***	-4.160		.215	<.001
Time***	.331	1.39	.034	<.001
<u>Latinx</u> ***	-.691	.501	.266	<.001
SPED	.061	<i>ns</i>	.387	.698
Sex Male***	1.54	4.66	.150	<.001
Random effects				
Individual intercept variance	Variance		Std. Dev.	
	4.431		2.105	<.001

\*\*\*  $p < .001$ , \*\* $p < .01$

# Aim 2 Results: School-level Disparities

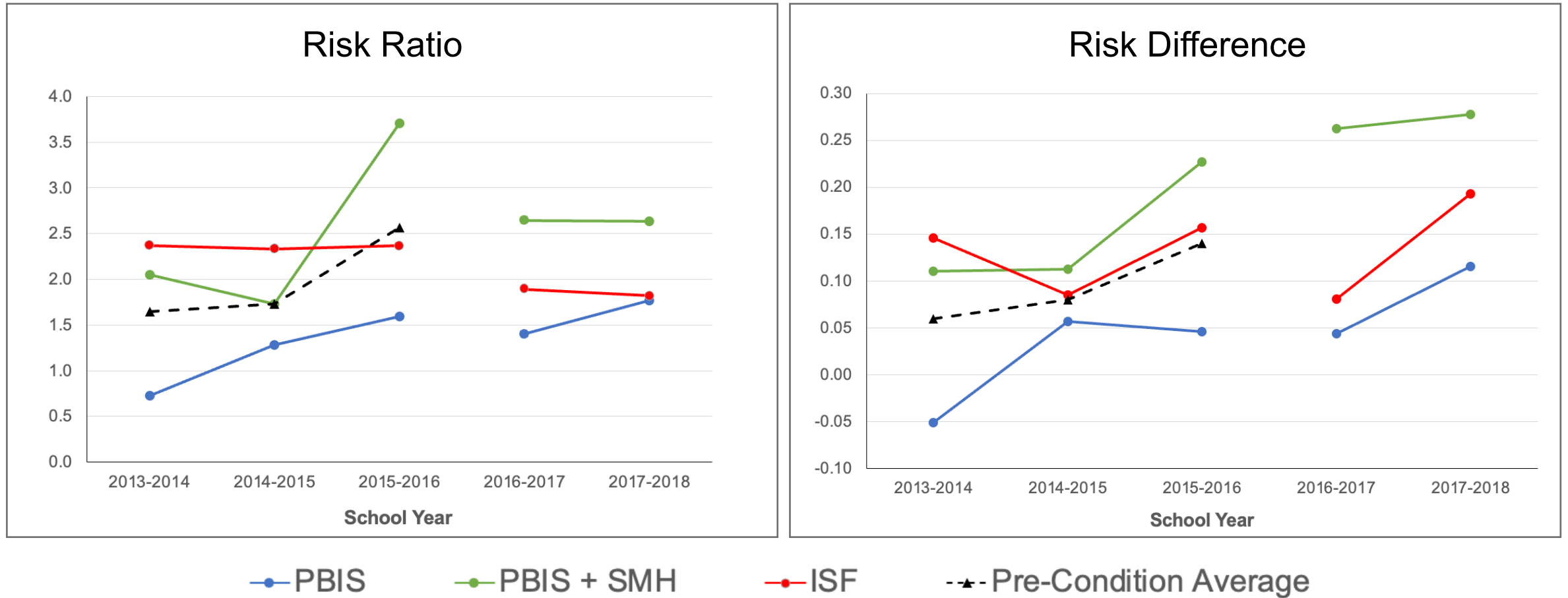
## *Black/White Disparities by School*



● Average

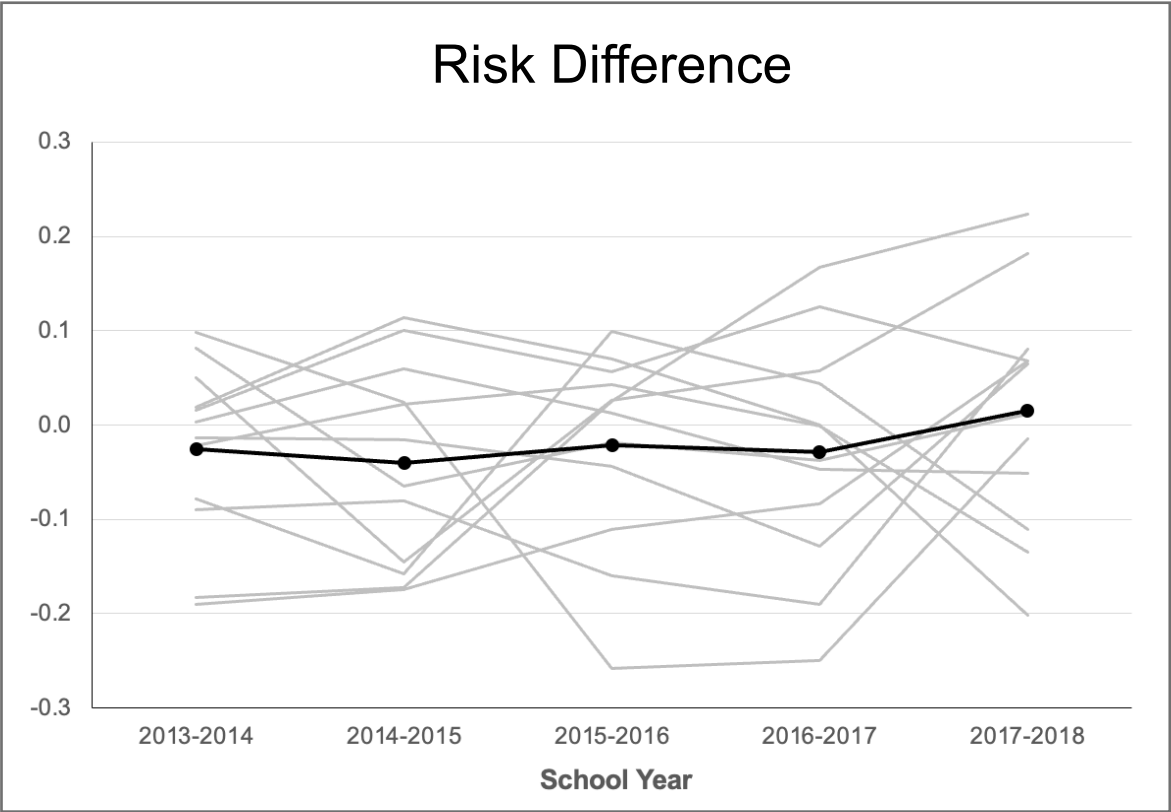
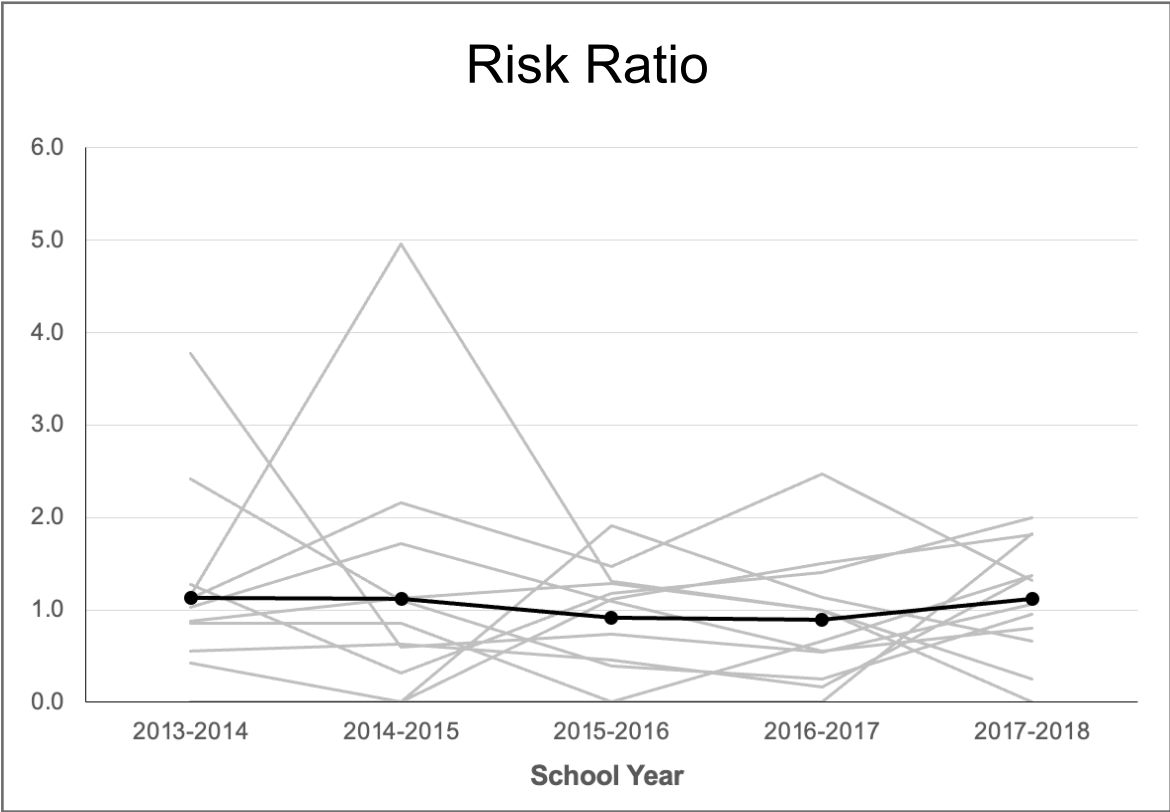
# Aim 2 Results: School-level Disparities

## *Black/White Disparities by Condition*



# Aim 2 Results: School-level Disparities

## *Latinx/White Disparities by School*

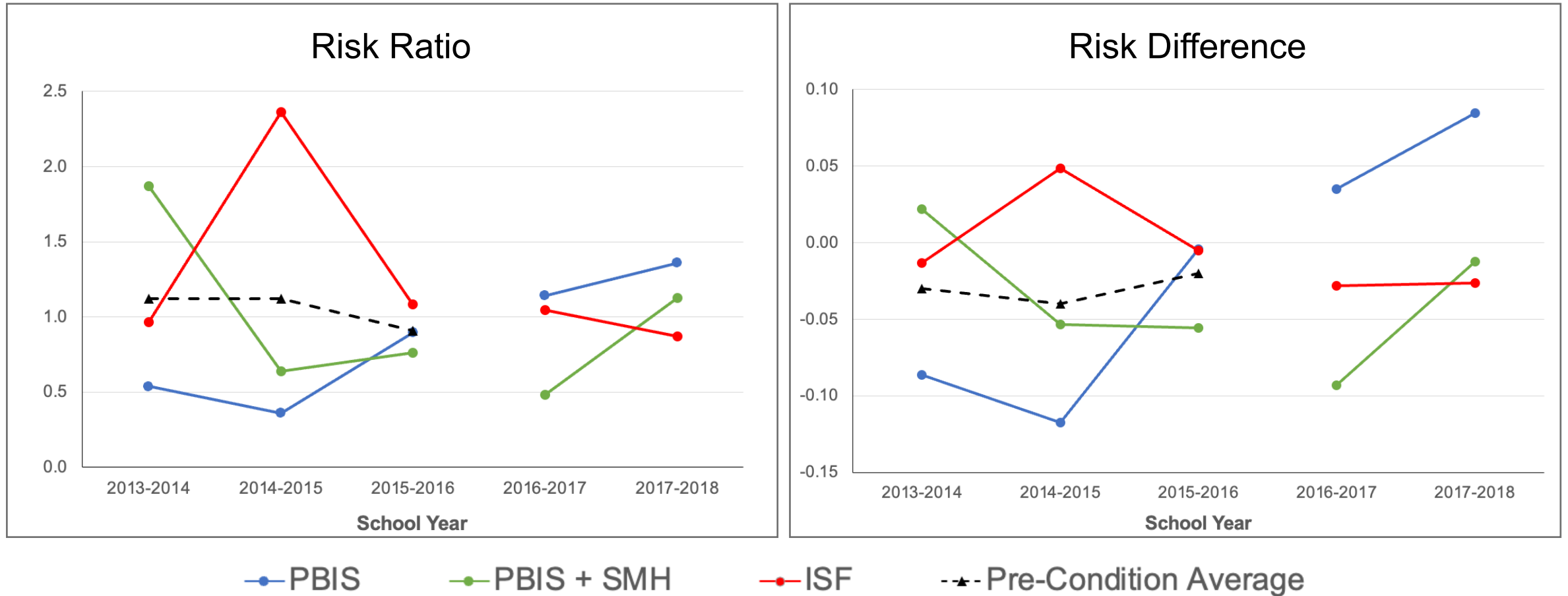


● Average



# Aim 2 Results: School-level Disparities

## *Latinx/White Disparities by Condition*



# Discussion

- Black/White disparities already exist in 1st grade and widen over time
  - MLM results support descriptive analyses suggesting that the likelihood of receiving an ODR accelerates at a steeper rate for Black students than White students
- Latinx/White disparities are negligible throughout elementary school (and favor Latinx students generally), but may emerge later
- Integrated systems of PBIS and SMH may help disrupt concerning trajectories in school discipline

# Caveats

- Disparities varied substantially between schools
- Unable to account for SES at individual level due to changes in how variable was measured
- Convergence issues with 3-level MLM (sample size limitations)
- Cautions about generalizability (small number of schools in only one state in the Southeastern US)

# Implications

- Early identification and intervention
  - Systemic discipline data should be analyzed early and often (*and before elementary school*) to mitigate and prevent the exacerbation of disparities
  - Disaggregating discipline data by multiple subgroups is essential to identifying and addressing disparities
- Screening and progress monitoring
  - ODRs are an imperfect measure of behavior and progress
  - Importance of recognizing context of disparities and triangulating data in decision making

# Implications

- Prevention
  - Promote expected behavior for all (SW-PBIS)
  - Design systems that promote supportive (vs. punitive) approaches
  - Consider the whole child (look beyond behavior)
  - Bias reduction practices<sup>1</sup>
    - Develop policy/accountability for equity
    - Examine disaggregated data
    - Identify vulnerable decision points
    - Clearly define behavior and discipline procedures

<sup>1</sup>McIntosh et al., 2014

# Where do we go from here?

- Identify **drivers** of discipline disparities
- Explore **intersectionality** in discipline disparities more deeply
- Explore contributions of **equity enhancements**
  - Culturally responsive school mental health<sup>1</sup>
  - Equity-focused PBIS<sup>2</sup>
- Design **systems** to reduce experiences of stereotyping, racial and ethnic aggression, and stigma from peers, teachers, and other school staff
- Strengthen **systemic** support for communities and families before school entry and during the early care to school transition

<sup>1</sup>Clauss-Ehlers et al., 2013

<sup>2</sup>McIntosh et al., 2021

**Conversation!**

# References

- Audigier, V., White, I. R., Jolani, S., Debray, T. P., Quartagno, M., Carpenter, J., van Buuren, S., & Resche-Rigon, M. (2018). Multiple imputation for multilevel data with continuous and binary variables. *Statistical Science*, 33(2), 160-183. <http://dx.doi.org/10.1214/18-STS646>.
- Ballard, K. L., Sander, M. A., & Klimes-Dougan, B. (2014). School-related and social-emotional outcomes of providing mental health services in school. *Community Mental Health Journal*, 50, 145-149. <https://doi.org/10.1007/s10597-013-9670-y>
- Barrett, S., Eber, L., & Weist, M. (2017). *Advancing education effectiveness: Interconnecting school mental health and school-wide positive behavior support*. Center on Positive Behavior Interventions and Supports. <https://iod.unh.edu/sites/default/files/media/2021-10/isfmonographfordistribution.pdf>
- Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1), 1-48. <https://doi.org/10.18637/jss.v067.i01>
- Bottiani, J. H., Bradshaw, C. P., & Mendelson, T. (2017). A multilevel examination of racial disparities in high school discipline: Black and white adolescents' perceived equity, school belonging, and adjustment problems. *Journal of Educational Psychology*, 109(4), 532-545. <https://doi.org/10.1037/edu000155>
- Carpenter J.R., Kenward M.G. (2013). *Multiple Imputation and its Application*. Wiley.
- Chen, E., Brody, G. H., Yu, T., Hoffer, L. C., Russak-Pribble, A. & Miller, G. E. (2021). Disproportionate school punishment and significant life outcomes: A prospective analysis of black youths. *Psychological Science*, 32(9), 1375-1390. <https://doi.org/10.1177/0956797621998308>
- Clauss-Ehlers, C. S., Serpell, Z. N., & Weist, M. D. (2013). *Handbook of culturally responsive school mental health: Advancing research, training, practice, and policy*. Springer.
- Curran, F. C. (2020). A matter of measurement: How different ways of measuring racial gaps in school discipline can yield drastically different conclusions about racial disparities in discipline. *Educational Researcher*, 49(5), 382-387. <https://doi.org/10.3102/0013189X20923348>
- Eber, L., Barrett, S., Perales, K., Jeffrey-Pearsall, J., Pohlman, K., Putnam, R., Splett, J., & Weist, M.D. (2020). *Advancing education effectiveness: Interconnecting school mental health and school-wide PBIS, volume 2: An implementation guide*. Center on Positive Behavior Interventions and Supports. [https://global-uploads.webflow.com/5d3725188825e071f1670246/5f6914a88117c9834d0638f8\\_ISF%20v2%20Implementation%20Guide.pdf](https://global-uploads.webflow.com/5d3725188825e071f1670246/5f6914a88117c9834d0638f8_ISF%20v2%20Implementation%20Guide.pdf)
- Fadus, M. C., Valadez, E. A., Bryant, B. E., Garcia, A. M., Neelon, B., Tomko, R. L., & Squeglia, L. M. (2021). Racial disparities in elementary school disciplinary actions: Findings from the ABCD study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 60(8), 998-1009. <https://doi.org/10.1016/j.jaac.2020.11.017>



# References

- Gage, N. A., Whitford, D. K., Katsiyannis, A. (2018). A review of schoolwide positive behavior interventions and supports as a framework for reducing disciplinary exclusions. *The Journal of Special Education*, 52(3), 142-151. <https://doi.org/10.1177/0022466918767847>
- Girvan, E. J., McIntosh, K. & Smolkowski, K. (2019). Tail, tusk, and trunk: What different metrics reveal about racial disproportionality in school discipline. *Educational Psychologist*, 54(1), 40-59. <https://doi.org/10.1080/00461520.2018.1537125>
- Heilbrun, A. Cornell, D., & Konold, T. (2018). Authoritative school climate and suspension rates in middle schools: Implications for reducing the racial disparity in school discipline. *Journal of School Violence*, 17(3), 324-338. <https://doi.org/10.1080/15388220.2017.1368395>
- Losen, D. J., & Martinez, P. (2020). *Lost opportunities: how disparate school discipline continues to drive differences in the opportunity to learn*. Learning Policy Institute. <https://learningpolicyinstitute.org/product/crdc-school-discipline-report>
- McIntosh, K., Girvan, E. J., Fairbanks Falcon, S., McDaniel, S. C., Smolkowski, K., Bastable, E., Santiago-Rosario, M. R., Izzard, S., Austin, S. C., Nese, R. N. T., & Baldy, T. S. (2021). Equity-focused PBIS approach reduces racial inequities in school discipline: A randomized controlled trial. *School Psychology*, 36(6), 433-444. <https://doi.org/10.1037/spq0000466>
- McIntosh, K., Girvan, E. J., Horner, R. H., & Smolkowski, K. (2014). Education not incarceration: A conceptual model for reducing racial and ethnic disproportionality in school discipline. *Journal of Applied Research on Children: Informing Policy for Children at Risk*, 5(2), 4. <http://digitalcommons.library.tmc.edu/childrenatrisk/vol5/iss2/4>
- Quartagno M, Carpenter J (2022). jomo: A package for multilevel joint modelling multiple imputation. <https://cran.r-project.org/package=jomo>.
- Perryman, C., Platt, S., & Ishino, F. M. (2022). Identifying the mental health profiles of black adolescents who experience school policing and school discipline: A person-centered approach. *Journal of the American Academy of Child & Adolescent Psychiatry*, 61(8), 1034-1040. <https://doi.org/10.1016/j.jaac.2021.11.029>
- Suldo, S. M., Gormley, M. J., DuPaul, G. J., & Anderson-Butcher, D. (2014). The impact of school mental health on student and school-level academic outcomes: Current status of the research and future directions. *School Mental Health*, 6, 84-98. <https://doi.org/10.1007/s12310-013-9116-2>
- Weist, M. D., Splett, J. W., Halliday, C. A., Gage, N. A., Seaman, M. A., Perkins, K. A., Perales, K., Miller, E., Collins, D., & DiStefano, C. (2022). A randomized controlled trial on the interconnected systems framework for school mental health and PBIS: Focus on proximal variables and school discipline. *Journal of School Psychology*, 94, 49-65. <https://doi.org/10.1016/j.jsp.2022.08.002>
- Welsh, R. O., & Little, S. (2018). The school discipline dilemma: A comprehensive review of disparities and alternative approaches. *Review of Educational Research*, 88(5), 752-794. <https://doi.org/10.3102/0034654318791582>
- Zinsser, K. M., Silver, H. C., Shenberger, E. R., & Jackson, V. (2022). A Systematic Review of Early Childhood Exclusionary Discipline. *Review of Educational Research*, 92(5), 743-785. <https://doi.org/10.3102/00346543211070047>