

in Schools in Relation to Standardized Test Scores over Time

J. Samantha Warrick, BA¹, Yan Wang, MD, DrPH², Jasmia Shropshire, MPH³, Amelie Hecht, PhD⁴, Lindsey Turner, PhD⁵, Erin Hager, PhD⁶

¹University of Maryland School of Medicine, Department of Epidemiology and Public Health, ²The George Washington University Milken Institute School of Public Health, Department of Prevention and Community Health, ³University of Maryland School of Medicine, Department of Pediatrics, ⁴Institute for Research on Poverty, University of Wisconsin-Madison, ⁵Boise State University College of Education, Center for School & Community Partnerships, ⁶Johns Hopkins Bloomberg School of Public Health, Department of Population, Family and Reproductive Health

BACKGROUND

Importance: Local Wellness Policies (LWP), specifying promotion of healthy eating/physical activity in schools, have been mandated for school districts since 2006.

Implementation of LWP best practices benefits child health, but less is known about the impact on academic outcomes.

Objective: To examine the impact of the implementation of LWP best practices on academic outcomes and the moderating effect of school-level free-and reduced-priced meals (FARMS) eligibility, an indicator of socio-economic status.

METHODS

Design: Longitudinal survey data collected from Maryland schools, biannually, 2012-2019, merged with annual publicly available standardized test data.

Setting: Maryland

Subjects: Public Schools

Predictor: LWP implementation survey data (sum of 17 best practices; 4-item Likert- not implemented to fully implemented) collected from Maryland schools biannually, 2012-2019.

Example items:

- monitors implementation of the local wellness policy
- has activities involving families to support and promote healthy eating and physical activity among students
- organized and held activities for staff members to support and promote healthy eating and physical activity
- restricted staff members from using food and/or beverages as a reward for academic performance or good behavior
- made safe, unflavored, drinking water available throughout the school day at no cost to students

Main Outcomes and Measures: Annual standardized test data (Math and English/Language Arts), % students proficient/advanced or % advanced, by subject.

Demographic covariates: school type

(elementary/middle/high), test type, % special education students, % eligible for FARMS.

Analysis: Linear mixed models adjusting for covariates, accounting for district clustering examined longitudinal associations. Strata effect of FARMS was examined.

CONTACT INFORMATION:

Jamie Samantha Warrick: samantha.warrick@som.umaryland.edu
Erin R. Hager (Principal Investigator): ehager1@jhu.edu
www.marylandschoolwellness.org

RESULTS

Sample Description: Maryland Public Schools		
n = 1246	n (%) or Mean ± SD	
School Type		
	Elementary	846 (67.9)
	Middle	205 (16.5)
	High	195 (15.7)
% Eligible for FARMS		47.6 ± 27.1
	<25%	315 (25.3)
	25-50%	362 (29.1)
	50-75%	309 (24.8)
	75-100%	260 (20.9)
% Special Education		11.4 ± 6.1

Association of LWP Implementation Score with Percentage Point Increase in Students Testing Prof/Adv in Math and ELA		
	Unadjusted	Adjusted
	β	β
ELA proficient or advanced	0.10	0.18
ELA advanced	0.41**	0.24
Math proficient or advanced	0.05	0.51***
Math advanced	0.66***	0.38**

All models are Generalized Linear Models, clustered by school district
Adjusted Models: percent of students eligible for FARMS, percent of students in special education, grades served by school, and standardized testing instrument used

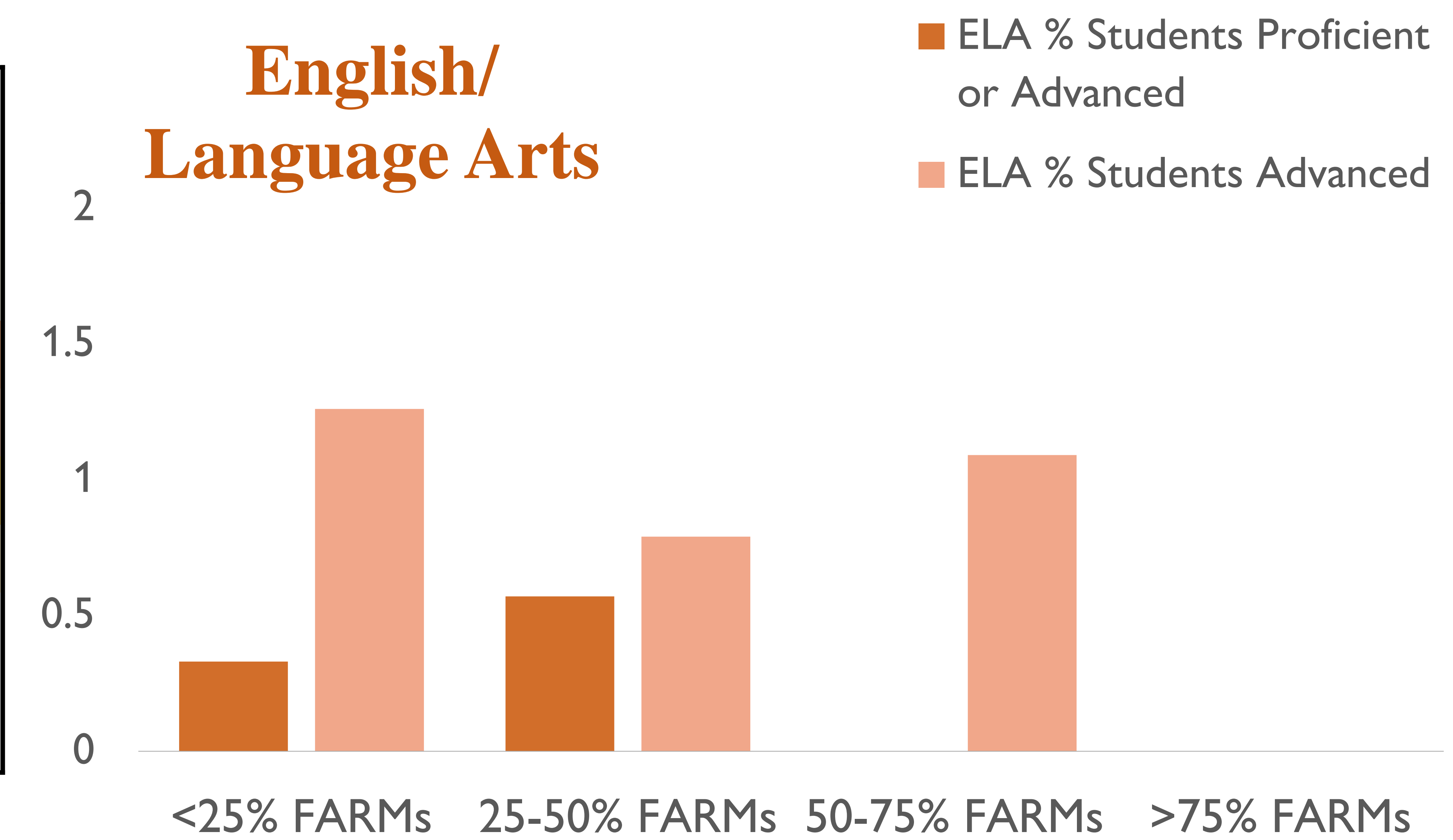
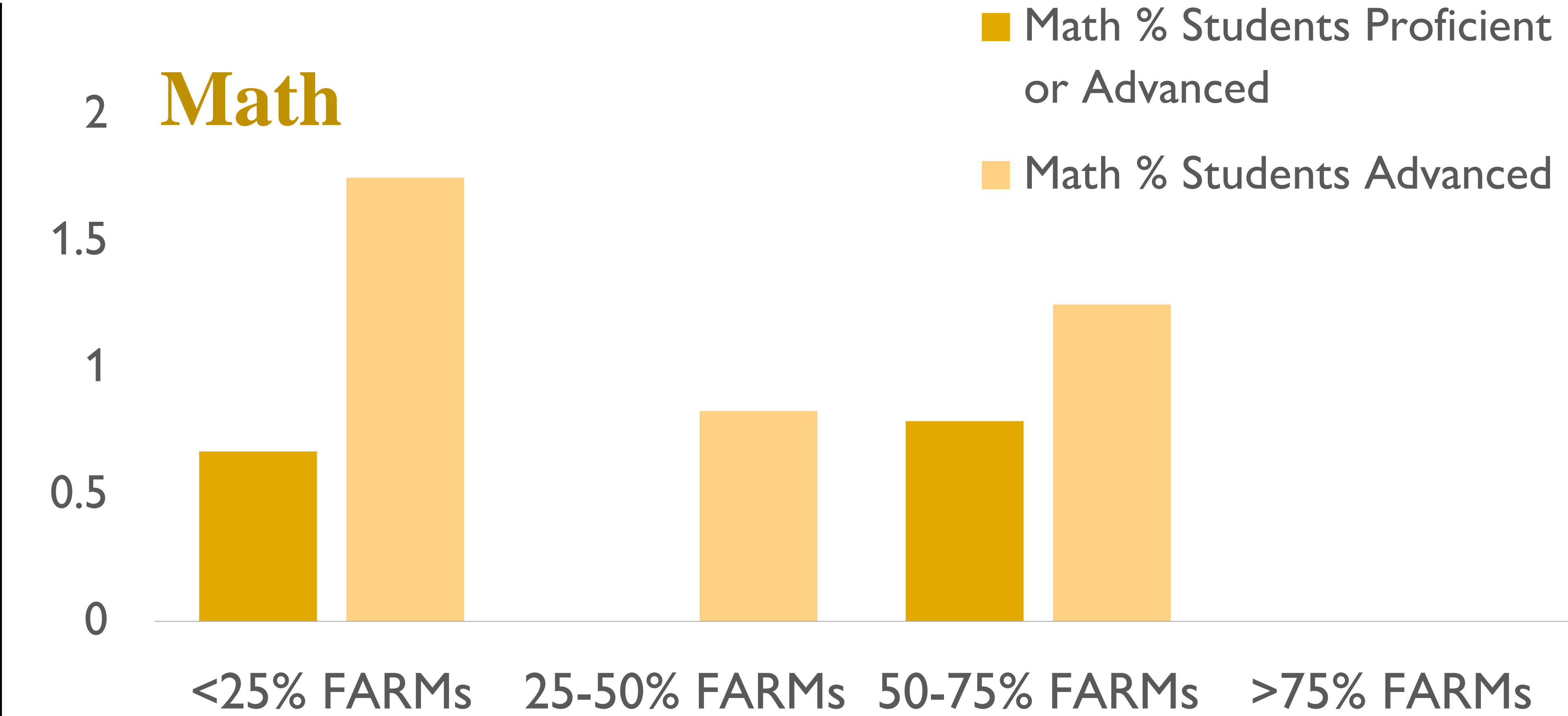
*p<0.05 **p<0.005 ***p<0.0005

Association of LWP Implementation Score with Percentage Point Increase in Students Testing Prof/Adv in Math and ELA by Stratified FARMS Categories (Tabular)					
	Interaction term with FARMS Categories (p-value)	<25% FARMS (β)	25-50% FARMS (β)	50-75% FARMS (β)	>75% FARMS (β)
ELA proficient or advanced	0.025	0.33*	0.57*	0.52	0.17
ELA advanced	0.002	1.26***	0.79**	1.09***	0.17
Math proficient or advanced	0.008	0.67**	0.43	0.79*	-0.05
Math advanced	<0.001	1.75***	0.83**	1.25***	0.26

*p<0.05 **p<0.005 ***p<0.0005

Acronyms: **ELA** (English/Language Arts); **Prof** (Proficient); **Adv** (Advanced); **LWP** (Local Wellness Policy); **FARMS** (Free and Reduced Meals); **β** (Beta coefficient)

RESULTS



LIMITATIONS

- Maryland schools only
- Data collected bi-yearly and imputed (LOCF)
- Test scores are not equal to academic achievement

KEY TAKEAWAYS

- There is evidence for improved academic performance associated with increased implementation of LWPs.
- The effect was larger in schools serving less impoverished populations
- We did not find any evidence that diverting resources toward wellness negatively influenced test scores in Maryland schools.

Funding: This project was supported by T32 AG000262, Centers for Disease Control and Prevention (CDC) Cooperative Agreements #5U58DP003497, 3B01OT009025-14; Prevention Research Centers Program Cooperative Agreement #U48 DP001929 and Special Interest Project #12-062 Nutrition Obesity Policy Research and Evaluation Network with the University of Maryland Prevention Research Center.

United States Department of Agriculture (USDA), Maryland State Department of Education (MSDE)
The contents of this presentation are solely the responsibility of the author and do not necessarily represent the official views of the CDC, USDA, MSDE, or the State of Maryland.