

Online Appendix for
"The Effect of Providing Breakfast on
Student Performance"

Not for Publication

Appendix Table 1: Effect of In-Class Breakfast on 5th Grade Achievement - By Student Characteristics for Above/Below Median 2008-09 Achievement

Category Group	Free Lunch				Ethnicity				LEP Status					
	Not Eligible		Eligible		Black		Hispanic		White		Not Lep		LEP	
Lagged Achievement Relative to Median	Below (1)	Above (2)	Below (3)	Above (4)	Below (9)	Above (10)	Below (11)	Above (12)	Below (13)	Above (14)	Below (15)	Above (16)	Below (17)	Above (18)
A. Math														
Post*Treated	0.096 (0.073)	0.016 (0.058)	0.176** (0.084)	0.103** (0.048)	0.038 (0.093)	0.011 (0.075)	0.162** (0.071)	0.118** (0.053)	0.848 (0.848)	-0.295 (0.222)	0.055 (0.065)	0.038 (0.047)	0.208** (0.103)	0.157 (0.095)
Observations	6,694	6,224	14,402	12,997	5,456	3,968	15,203	14,391	251	400	11,941	13,148	9,155	6,073
B. Reading														
Post*Treated	0.164** (0.067)	0.072* (0.043)	0.109* (0.062)	0.089** (0.043)	-0.089 (0.078)	0.031 (0.048)	0.185*** (0.044)	0.110** (0.046)	1.207* (0.722)	-0.173 (0.142)	0.064 (0.052)	0.067* (0.034)	0.156** (0.072)	0.152 (0.108)
Observations	6,732	6,212	14,676	12,759	5,331	4,115	15,635	13,996	244	410	11,798	13,331	9,610	5,640

in 2009-10 we standardized using raw scores. "Treated" is an indicator for whether a school starts ICB prior to the testing week. "Exposure Time" is the number of weeks between the start of ICB and the testing week. "Treated Early" refers to schools treated in weeks 1 through 4. "Treated Late" refers to school treated in weeks 5 through 8. Schools treated in week 9 are dropped as this is the 5th grade testing week and some schools may have postponed the start of ICB for 5th grade students. Student level covariates include student's race/ethnicity, gender, and economic status along with year and grade level dummies. School level covariates include percent of students who are white, black, Hispanic, Native American, Asian, economically disadvantaged, LEP, in vocational education, in special education, gifted, in bilingual education, in each grade level, referred to an alternative disciplinary program, and school fixed-effects. *, **, and ***

Appendix Table 2 : Achievement Placebo Test - Sample Limited to 2008-09 and Earlier and Set 2007-08
and 2008-09 as "Post" Period
With Controls and School Fixed Effects

	Full Sample	By Above/Below Median Lagged Achievement		By Lagged Achievement Quintiles				
	(1)	Below (2)	Above (3)	Bottom (4)	Second (5)	Third (6)	Fourth (7)	Top (8)
A. Math								
<i>I. Reduced-Form Treatment Effect</i>								
Post*Treated	0.009 (0.042)	0.064 (0.054)	0.004 (0.038)	0.110 (0.086)	0.003 (0.065)	0.042 (0.053)	-0.024 (0.051)	-0.048 (0.040)
Observations	34,409	17,946	16,463	6,537	7,595	7,585	6,974	5,718
<i>II. Treatment Effect & Exposure Time</i>								
Post*Treated	0.002 (0.068)	-0.025 (0.096)	0.002 (0.060)	0.103 (0.163)	-0.090 (0.094)	-0.043 (0.088)	0.008 (0.078)	0.010 (0.055)
Post*Exposure Time (Weeks)	0.001 (0.011)	0.013 (0.014)	0.001 (0.008)	0.001 (0.025)	0.017 (0.014)	0.015 (0.014)	-0.006 (0.010)	-0.011 (0.008)
Observations	34,409	17,945	16,463	6,537	7,595	7,585	6,974	5,718
B. Reading								
<i>I. Reduced-Form Treatment Effect</i>								
Post*Treated	0.025 (0.043)	0.063 (0.057)	0.015 (0.038)	0.069 (0.087)	0.029 (0.060)	0.048 (0.058)	0.008 (0.052)	-0.064 (0.043)
Observations	34,471	18,128	16,343	6,685	7,586	7,631	6,966	5,603
<i>II. Treatment Effect & Exposure Time</i>								
Post*Treated	0.097 (0.076)	0.078 (0.089)	0.082 (0.066)	0.171 (0.162)	0.022 (0.101)	0.066 (0.086)	0.167** (0.079)	0.038 (0.077)
Post*Exposure Time (Weeks)	-0.013 (0.011)	-0.003 (0.011)	-0.013 (0.010)	-0.018 (0.023)	0.001 (0.015)	-0.003 (0.012)	-0.029** (0.012)	-0.019 (0.012)
Observations	34,471	18,128	16,343	6,685	7,586	7,631	6,966	5,603

Data covers the 2003-04 through 2007-08 academic years. Achievement scores are standardized within grade and year. Due to a change in the scaling procedure in 2009-10 we standardize using raw scores. The "Post" indicator is set equal to one in 2007-08. "Treated" is an indicator for whether a school starts ICB prior to the testing week. Schools treated in week 9 are dropped as this is the 5th grade testing week and some schools may have postponed the start of ICB for 5th grade students. Student level covariates include student's race/ethnicity, gender, and economic status along with year and grade level dummies. School level covariates include percent of students who are white, black, Hispanic, Native American, Asian, economically disadvantaged, LEP, in vocational education, in special education, gifted, in bilingual education, in each grade level, referred to an alternative disciplinary program, and school fixed-effects. *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively.

Appendix Table 3: Tests of "Impacts" on Exogenous Covariates - Expanded

	Female	Black	White	Hispanic	Free/Reduced- Price Lunch	LEP	At Risk	Gifted	Special Ed	2008-09 Math	2008-09 Reading	Bottom	Quintile Based on Lagged Math				Quintile Based on Lagged Reading				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
A. Student Level - 5th Grade and Tested Only																					
Post*Treated	-0.003 (0.016)	-0.014 (0.015)	0.004 (0.004)	0.008 (0.017)	0.011 (0.014)	-0.052* (0.028)	-0.020 (0.028)	-0.036* (0.020)	-0.001 (0.008)	-0.049 (0.054)	-0.041 (0.052)	0.017 (0.022)	0.016 (0.016)	-0.016 (0.013)	-0.005 (0.015)	-0.012 (0.019)	0.024 (0.019)	0.009 (0.017)	-0.007 (0.015)	-0.006 (0.016)	-0.021 (0.019)
Treated	-0.001 (0.006)	0.056 (0.072)	-0.008 (0.005)	-0.012 (0.070)	0.033*** (0.009)	-0.012 (0.055)	0.035 (0.029)	-0.039** (0.017)	0.023*** (0.008)	-0.085* (0.047)	-0.075 (0.047)	0.022 (0.018)	0.015 (0.009)	0.009 (0.007)	-0.011 (0.009)	-0.035** (0.015)	0.019 (0.017)	0.014 (0.010)	0.011 (0.008)	-0.007 (0.009)	-0.036** (0.015)
Observations	44,917	44,917	44,917	44,917	44,917	44,917	44,917	44,917	44,917	40,628	40,633	40,628	40,628	40,628	40,628	40,628	40,628	40,628	40,628	40,628	40,628
B. Student Level - All Elementary Grades																					
Post*Treated	0.005 (0.009)	-0.008 (0.012)	0.002 (0.002)	0.004 (0.012)	0.004 (0.008)	-0.014 (0.016)	-0.000 (0.017)	-0.017 (0.014)	0.003 (0.005)	-0.005 (0.052)	-0.024 (0.041)	0.002 (0.020)	0.007 (0.008)	-0.001 (0.010)	-0.009 (0.011)	0.001 (0.016)	0.013 (0.016)	0.013 (0.011)	-0.009 (0.010)	-0.001 (0.009)	-0.016 (0.014)
Treated	-0.003 (0.004)	0.066 (0.068)	-0.007 (0.005)	-0.019 (0.067)	0.032*** (0.009)	-0.050 (0.052)	-0.003 (0.027)	-0.036*** (0.012)	0.011* (0.006)	-0.097** (0.047)	-0.087* (0.046)	0.030* (0.017)	0.013** (0.006)	-0.002 (0.004)	-0.010 (0.008)	-0.031** (0.012)	0.027 (0.017)	0.012* (0.007)	0.000 (0.005)	-0.011 (0.009)	-0.028** (0.012)
Observations	248,951	248,951	248,951	248,951	248,951	248,951	248,951	248,951	248,951	89,351	89,391	89,351	89,351	89,351	89,351	89,351	89,351	89,351	89,351	89,351	89,351
C. School Level - Mean for 5th Graders Only																					
Post*Treated	0.006 (0.016)	-0.011 (0.016)	0.004 (0.004)	0.004 (0.017)	0.006 (0.014)	-0.055* (0.030)	-0.006 (0.028)	-0.024 (0.018)	0.000 (0.011)	-0.070 (0.059)	-0.030 (0.052)	0.025 (0.023)	0.021 (0.017)	-0.022 (0.020)	-0.008 (0.014)	-0.016 (0.021)	0.020 (0.020)	0.001 (0.017)	-0.007 (0.017)	-0.009 (0.017)	-0.005 (0.019)
Treated	-0.003 (0.007)	0.087 (0.081)	-0.008 (0.006)	-0.052 (0.078)	0.032*** (0.011)	-0.023 (0.053)	0.027 (0.027)	-0.052*** (0.018)	0.026** (0.012)	-0.094** (0.046)	-0.084* (0.046)	0.023 (0.017)	0.017** (0.008)	0.010 (0.008)	-0.009 (0.009)	-0.041*** (0.013)	0.021 (0.017)	0.016* (0.009)	0.012 (0.009)	-0.005 (0.009)	-0.043*** (0.014)
Observations	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599	599
D. School Level - Mean for All Grades in School																					
Post*Treated	0.011 (0.010)	-0.006 (0.011)	0.002 (0.002)	0.001 (0.012)	0.003 (0.008)	-0.014 (0.016)	-0.001 (0.016)	-0.008 (0.012)	-0.007 (0.009)	-0.031 (0.063)	-0.031 (0.050)	0.010 (0.023)	0.010 (0.010)	0.001 (0.013)	-0.014 (0.012)	-0.006 (0.020)	0.016 (0.019)	0.008 (0.011)	-0.009 (0.013)	-0.003 (0.010)	-0.013 (0.016)
Treated	-0.007 (0.006)	0.084 (0.079)	-0.006 (0.005)	-0.047 (0.077)	0.031*** (0.011)	-0.057 (0.054)	-0.012 (0.030)	-0.048*** (0.015)	0.023** (0.010)	-0.095* (0.048)	-0.085* (0.047)	0.028 (0.018)	0.014** (0.006)	-0.003 (0.005)	-0.006 (0.008)	-0.033*** (0.011)	0.026 (0.018)	0.012** (0.006)	0.000 (0.006)	-0.008 (0.009)	-0.031*** (0.011)
Observations	612	612	612	612	612	612	612	612	612	607	607	607	607	607	607	607	607	607	607	607	607

Data covers the 2003-04 through 2009-10 academic years. Achievement scores are standardized within grade and year. Due to a change in the scaling procedure in 2009-10 we standardize using raw scores. "Treated" is an indicator for whether a school starts ICB prior to the testing week. Schools treated in week 9 are dropped as this is the 5th grade testing week and some schools may have postponed the start of ICB for 5th grade students. *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively.