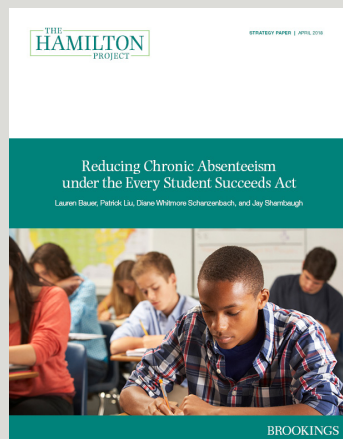# THE HAMILTON PROJECT

Reducing Chronic Absenteeism under the Every Student Succeeds Act

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WEB APPENDIX

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Reducing Chronic Absenteeism under the Every Student Succeeds Act

The Every Student Succeeds Act (ESSA) requires states to broaden school accountability beyond achievement on standardized tests and high school graduation rates. In this Hamilton Project strategy paper, we articulate a framework for states as they oversee implementation of statewide accountability plans under ESSA and describe how states differ in their approaches. We review the literature and present novel analyses of the factors at the school and student levels that relate to chronic absenteeism. Our analysis shows that health problems and socioeconomic status predict poor attendance, and that chronic absenteeism among students and schools is strongly persistent over time. We describe evidence-based strategies for schools as they work to reduce rates of chronic absence among students.

Technical Appendix

FIGURE 1. NATIONAL DISTRIBUTION OF SCHOOL RATES OF CHRONIC ABSENTEEISM, 2015–16

In the 2015–16 wave of the Civil Rights Data Collection, chronic absenteeism is defined as a student missing 15 or more days of school in a school year. Data on school chronic absenteeism rates from the Civil Rights Data Collection are matched with the U.S. Department of Education's Common Core of Data (CCD) for 2015–16. Schools are identified by their National Center for Education Statistics (NCES) identification number, so schools that lack the correct NCES identification number are dropped from the sample. Virtual, juvenile justice, vocational, special education, and alternative schools are excluded. Schools where the reported total enrollment numbers in the two datasets differ by more than 101 students are also excluded. A school's rate of chronic absenteeism is calculated by dividing the number of students reported chronically absent by the total number of students. The histogram shows the distribution of the rate of school-level chronic absenteeism in five percentage point bins. We separately calculate the share of schools with a chronic absenteeism rate of exactly 0 percent; this group is distinguished with its own bar.

FIGURE 2. DEFINITIONS OF CHRONIC ABSENTEEISM IN STATE ESSA PLANS

We review the most recent version of each state's plan—that was either submitted to or has been approved by the U.S. Department of Education—if the state selected chronic absenteeism as a metric for school accountability. Interested readers should contact The Hamilton Project for additional information about state definitions of chronic absenteeism.

FIGURE 3. NUMBER OF SQSS INDICATORS AND WEIGHT OF CHRONIC ABSENTEEISM IN ELEMENTARY SCHOOL SUMMATIVE SCHOOL RATING

We examine state ESSA plans to determine the number of metrics in the "School Quality or Student Success [SQSS] Indicator(s)" section of the accountability plan as well as the weight of chronic absenteeism in the overall school accountability rating. Since many states have different metrics for elementary schools as compared to high schools, we limit the figure to elementary schools. We then plot states according to the number of distinct SQSS metrics on the x-axis and the weight given to chronic absenteeism in the school summative rating on the y-axis. The states listed in the "no weight given" box failed to delineate the unique weight for chronic absenteeism in a school's summative rating. Interested readers should contact The Hamilton Project for additional information about the weight of chronic absenteeism in a school's summative rating for high schools.

FIGURE 4. SCHOOL DAYS MISSED IN NEW JERSEY, BY GRADESPAN

The New Jersey Department of Education 2016–17 School Year data consolidates the percent of students in each school who miss zero days, 1–5 days, 6–10 days, 11–15 days, and more than 15 days of school throughout the year. Schools are matched with the U.S. Department of Education's Common Core of Data for 2016–17 using their NCES state school ID number; schools that cannot be linked with the CCD as well as virtual, juvenile justice, vocational, special education, alternative, preschools, and charter schools are excluded. The NCES definition of school gradespans is that elementary schools are those in which the lowest grade offered is preschool through grade 3 and the highest is preschool through grade 8; middle schools are those in which the lowest grade offered is grade 4 through grade 7 and the highest is grade 4 through grade 9; and high schools are those in which the lowest grade offered is grade 7 through grade 12 and the highest is grade 12. We use enrollment data and the NCES gradespan definition to convert shares of students in each absence bin into statewide totals by gradespan.

FIGURE 5. SCHOOL DAYS MISSED IN NEW JERSEY HIGH SCHOOLS, BY ABSENTEEISM QUINTILE

This figure uses the same data and methods described in the technical appendix entry for figure 4, restricted to high schools. Schools are grouped into five equally-sized bins based on quintile of chronic absenteeism.

FIGURE 6. COMPOSITION OF CREDIT FOR CHRONIC ABSENTEEISM RATES, CONNECTICUT

The Connecticut Department of Education provides public data on school rates of chronic absenteeism by subgroup. Schools are matched with the U.S. Department of Education's Common Core of Data for 2016–17 using their NCES state

school ID number; schools that cannot be linked with the CCD as well as virtual, juvenile justice, vocational, special education, alternative, preschools, and charter schools are excluded. Where overall or high-needs attendance data are missing from this data source, we replace the missing data with chronic absenteeism data from Connecticut's Next Generation accountability data. A school is considered below the threshold for its racial categories if any one racial subgroup (American Indian or Alaska Native, Asian, Black or African American, Hispanic/Latino of any race, Native Hawaiian or Other Pacific Islander, White, Two or more races) has an absenteeism rate of 5 percent or more.

FIGURE 7, 8A, AND 8B. RATES OF CHRONIC ABSENTEEISM BY GRADESPAN IN CALIFORNIA AND NEW JERSEY

In both the data provided by the California Department of Education and the New Jersey Department of Education, chronic absenteeism is defined as a student missing 10 percent of school days or more in a school year. Schools are matched with the U.S. Department of Education's Common Core of Data for 2016–17 using their NCES state school ID number; schools that cannot be linked with the CCD as well as virtual, juvenile justice, vocational, special education, alternative, preschools, and charter schools are excluded. We calculate univariate kernel density estimates to show rates of chronic absenteeism by gradespan across schools in the respective states.

FIGURE 9 AND APPENDIX FIGURES 1–3. YEARS OF HIGH CHRONIC ABSENTEEISM IN MARYLAND (2002–03 THROUGH 2016–17), CONNECTICUT (2011–12 THROUGH 2016–17), UTAH (2011–12 THROUGH 2016–17), OR RHODE ISLAND (2010–11 THROUGH 2016–17)

Data from each state's Department of Education are merged with the U.S. Department of Education's Common Core of Data for 2016–17 using each school's NCES state school ID number; schools that cannot be linked with the CCD as well as virtual, juvenile justice, vocational, special education, alternative, preschools, and charter schools are excluded. We limit our sample to high schools utilizing the NCES definition of high schools (schools in which the lowest grade offered is grade 7 through grade 12 and the highest grade offered is grade 12). Only high schools without missing chronic absenteeism data are included. For figure 9, a student has high chronic absenteeism if they are truant more than 20 days. For appendix figures 1 through 3, a student is chronically absent if that student missed more than 10 percent of school days in Connecticut, Utah, and Rhode Island respectively. Schools were considered to have a high rate of chronic absenteeism if at least 10 percent of their students were chronically absent according to the respective state definition. The thresholds delineated in these figures are not meant to reflect chronic absenteeism definitions in statewide accountability plans. We then calculate the share of schools by the number of years in which each school demonstrated a high rate of chronic absenteeism.

FIGURE 10. STUDENT CHRONIC ABSENTEEISM, BY HEALTH LIMITATION AND FAMILY INCOME

We use the Centers for Disease Control and Prevention's nationally-representative, self-reported National Health Interview Survey from 2012–16. We group students into eight categories based on parental reports of the student's health status:

(1) Chronic disability: students with congenital heart disease, cerebral palsy, cystic fibrosis, muscular dystrophy, seizures, or downs syndrome;

(2) Serious diseases: students with a non-congenital heart condition, diabetes, anemia, or sickle cell anemia;

(3) Hearing and vision problems: students with vision problems even while wearing glasses or contacts, students that have "a lot of trouble hearing," or students who are deaf or blind;

(4) Developmental disability: students with ADHD/ADD, autism, a learning disability, another developmental delay, an intellectual disability, or a stuttering problem;

(5) Asthma/allergies: students with asthma, hay fever, a respiratory allergy, a food allergy, or a skin allergy;

(6) Poor emotional health: students that have "definite" or "severe" emotional difficulties, or for whom it is "certainly true" that they are unhappy or worried;

(7) Common illness: students with a cold or intestinal pain in the last two weeks, students with chicken pox, an ear infection, or frequent headaches in the last year; and

(8) No limitations: the remaining students who did not have any of the above stated conditions, including those with missing information regarding emotional health.

Each category is mutually exclusive, and students with disabilities across multiple categories are placed in the lowest numerical group. We identify students as being poor or nonpoor based on whether their family income was below or above the federal poverty line.

FIGURE 11. TOPICS OF TEACHER–PARENT ENGAGEMENT IN THE EARLY TRUANCY PREVENTION PROGRAM

Data obtained from figure 4 of the following paper:

Cook, Philip J., Kenneth A. Dodge, Elizabeth J. Gifford, and Amy B. Schulting. 2017. "A New Program to Prevent Primary School Absenteeism: Results of a Pilot Study in Five Schools." *Children and Youth Services Review* 82: 262–70.

Appendix Tables: Connecticut

APPENDIX TABLES 1–4. PERSISTENCE OF CHRONIC ABSENTEEISM AT THE SCHOOL LEVEL IN CONNECTICUT

These tables correspond with the "Persistence in School-Level Chronic Absenteeism" section in the strategy paper. The data are provided by 2016–17 school-level data from the Connecticut Department of Education. Schools are matched with the U.S. Department of Education's Common Core of Data for 2016–17 using their NCES state school ID number; schools that could not be linked with the CCD as well as virtual, juvenile justice, vocational, special education, alternative, preschools, and charter schools are excluded. The NCES definition of school grade levels is that elementary schools are those in which the lowest grade offered is preschool through grade 3 and the highest is preschool through grade 8; middle schools are those in which the lowest grade offered is grade 4 through grade 7 and the highest is grade 4 through grade 9; and high schools are those in which the lowest grade offered is grade 7 through grade 12 and the highest is grade 12. Schools that do not fit any of these definitions are excluded. Where overall or high-needs attendance data are missing from this data source, we replace the missing data with chronic absenteeism data from Connecticut's Next Generation accountability data. District-level controls (percent of adults that are high school graduates or higher, percent of the population who have moved within the past year, and percent of households with one or more members 18 years old or younger) are taken from "Table DP02. Selected Social Characteristics in the United States" of the American Community Survey 5-Year Estimates, and are matched to schools using district ID numbers. School-level controls (title I status; percent of students that have disabilities; that qualify for free and reduced lunch; that are female, white, or Hispanic/Latino of any race) come from the Connecticut Department of Education.

Appendix tables 1–4 show the regression results of school-level analyses of chronic absenteeism in Connecticut. To show the persistence of chronic absenteeism within schools, we look at the effects that a prior history of chronic absenteeism has on a school's likelihood of chronic absenteeism within a given year. The dependent variable is a binary variable where 1 is a school-level chronic absenteeism rate over 5 percent, which is the threshold defined by Connecticut in its consolidated state plan.

First, we run a regression that relates school- and district-level characteristics to chronic absenteeism separately for each school year from 2012–13 to 2016–17 (appendix table 1). We find that schools with a higher prevalence of students that qualify for free and reduced lunches are more likely to be above the chronic absenteeism threshold.

Next we run three regressions to show the relationship between school- and district-level characteristics as well as lagged chronic absenteeism to chronic absenteeism in 2016–17 (appendix table 2). We find that a school's past performance on chronic absenteeism is the largest predictor of being above the chronic absenteeism threshold in 2016–17. We repeat this analysis for high-needs and Hispanic students (appendix table 3) and find that these students groups are respectively 36 and 30 percent more likely to have at least a 5 percent chronic absenteeism rate in the 2016–17 school year if they had done so in the 2015–16 school year.

Finally, we run each model and include between 1 and 5 years of lagged chronic absenteeism (appendix table 4). We find that a history of high chronic absenteeism remains a significant predictor of a school's chronically absent status going back up to three years.

Relationship between School- and District-Level Characteristics and Chronic Absenteeism, Connecticut

Independent variables	School likelihood of being above the chronic absenteeism threshold in a given year (dependent variable)				
	2012–13	2013–14	2014–15	2015–16	2016–17
Middle school	0.219***	0.124***	0.164***	0.140***	0.173***
	(0.0413)	(0.0476)	(0.0465)	(0.0466)	(0.0455)
High school	0.282***	0.268***	0.289***	0.418***	0.389***
	(0.0397)	(0.0412)	(0.0420)	(0.0411)	(0.0408)
% of households with one or more people under 18 years (district)	-0.00916**	-0.0117***	-0.0152***	-0.0117***	-0.00942***
	(0.00384)	(0.00416)	(0.00418)	(0.00365)	(0.00364)
% Moved (district)	0.00673	0.00863*	0.00663	0.00616	0.00931*
	(0.00424)	(0.00500)	(0.00486)	(0.00517)	(0.00476)
% High school diploma (district)	0.00337	0.00740*	-0.00263	0.00125	-0.00444
	(0.00396)	(0.00448)	(0.00397)	(0.00446)	(0.00387)
Title I (school)	0.0309	-0.0707*	0.00890	-0.00731	0.0246
	(0.0371)	(0.0388)	(0.0386)	(0.0385)	(0.0374)
% Free/Reduced lunch (school)	0.442***	1.139***	0.626***	0.596***	0.914***
	(0.151)	(0.162)	(0.145)	(0.162)	(0.137)
% Special education (school)	0.234	-0.0690	0.523	0.637	0.0396
	(0.441)	(0.472)	(0.471)	(0.467)	(0.458)
% Female (school)	-1.019**	-0.135	0.233	-0.207	0.278
	(0.456)	(0.461)	(0.416)	(0.440)	(0.436)
% Hispanic (school)	0.0960	-0.204	-0.163	0.0624	-0.407***
	(0.128)	(0.142)	(0.152)	(0.171)	(0.145)
% White (school)	-0.110	0.0844	-0.307**	-0.231	-0.293***
	(0.138)	(0.140)	(0.137)	(0.144)	(0.112)
Constant	0.929*	-0.101	1.003*	0.602	0.894*
	(0.481)	(0.554)	(0.516)	(0.535)	(0.488)
Observations	628	628	628	628	628
R^2	0.234	0.310	0.338	0.315	0.358

Source: Connecticut State Department of Education 2011–17; National Center for Education Statistics 2011–17; U.S. Census Bureau 2011–16; authors' calculations.

Note: The dependent variable is a dummy where 1 is a school-level chronic absenteeism rate over 5 percent. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Persistence of School-Level Chronic Absenteeism, Connecticut

Independent variables	School likelihood of being above the chronic absenteeism threshold in 2016 (dependent variable)		
	Controls only	Lag only	Full model
Prior chronic absenteeism (1 lag)		0.682***	0.534***
		(0.0323)	(0.0435)
Middle school	0.173***	0.0355	0.103**
	(0.0455)	(0.0372)	(0.0398)
High school	0.389***	0.0459	0.169***
	(0.0408)	(0.0280)	(0.0365)
% of households with one or more people under 18 years (district)	-0.00942***		-0.00653**
	(0.00364)		(0.00307)
% Moved (district)	0.00931*		0.00586
	(0.00476)		(0.00372)
% High school diploma (district)	-0.00444		-0.00353
	(0.00387)		(0.00343)
Title I (school)	0.0246		0.0297
	(0.0374)		(0.0315)
% Free/Reduced lunch (school)	0.914***		0.422***
	(0.137)		(0.125)
% Special education (school)	0.0396		0.0158
	(0.458)		(0.379)
% Female (school)	0.278		0.353
	(0.436)		(0.342)
% Hispanic (school)	-0.407***		-0.306**
	(0.145)		(0.130)
% White (school)	-0.293***		-0.171
	(0.112)		(0.111)
Constant	0.894*	0.222***	0.543
	(0.488)	(0.0296)	(0.427)
Observations	628	628	628
R^2	0.358	0.501	0.557

Source: Connecticut Department of Education 2016–17; National Center for Education Statistics 2016–17; U.S. Census Bureau 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a school-level chronic absenteeism rate over 5 percent. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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Persistence of School-Level Chronic Absenteeism for All, High-Needs, and Hispanic Students, Connecticut

Independent variables	School likelihood of being above the chronic absenteeism threshold in 2016 (dependent variable)					
	All		High-needs		Hispanic	
	Lag only	Full model	Lag only	Full Model	Lag only	Full Model
Prior chronic absenteeism (1 lag)	0.682***	0.534***	0.361***	0.356***	0.329***	0.308***
	(0.0323)	(0.0435)	(0.128)	(0.126)	(0.0885)	(0.0895)
Middle school	0.0355	0.103**	0.0338	0.0632	0.0556	0.0536
	(0.0372)	(0.0398)	(0.0385)	(0.0490)	(0.0387)	(0.0423)
High school	0.0459	0.169***	0.0576***	0.107**	0.0785***	0.0800**
	(0.0280)	(0.0365)	(0.0212)	(0.0445)	(0.0293)	(0.0335)
% of households with one or more people under 18 years (district)		-0.00653**		-0.00174		-0.00506
		(0.00307)		(0.00281)		(0.00344)
% Moved (district)		0.00586		0.00565*		-0.00136
		(0.00372)		(0.00317)		(0.00370)
% High school diploma (district)		-0.00353		-0.000986		-0.00444
		(0.00343)		(0.00340)		(0.00379)
Title I (school)		0.0297		0.0285		-0.0141
		(0.0315)		(0.0422)		(0.0301)
% Free/Reduced lunch (school)		0.422***		0.192		0.0770
		(0.125)		(0.161)		(0.118)
% Special education (school)		0.0158		-0.285		0.420
		(0.379)		(0.374)		(0.496)
% Female (school)		0.353		-0.0103		-0.0277
		(0.342)		(0.378)		(0.262)
% Hispanic (school)		-0.306**		-0.0623		-5.30e-05
		(0.130)		(0.114)		(0.140)
% White (school)		-0.171		0.0302		0.0589
		(0.111)		(0.119)		(0.0873)
Constant	0.222***	0.543	0.587***	0.570	0.587***	1.082**
	(0.0296)	(0.427)	(0.127)	(0.361)	(0.0896)	(0.535)
Observations	628	628	235	235	330	330
R^2	0.501	0.557	0.167	0.194	0.178	0.209

Source: Connecticut Department of Education 2016–17; National Center for Education Statistics 2016–17; U.S. Census Bureau 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a school-level chronic absenteeism rate over 5 percent.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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Long-Term Persistence of Chronic Absenteeism, Connecticut

Independent variable	School likelihood of being above the chronic absenteeism threshold in 2016 (dependent variable)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chronically absent in 2015 (1 lag)	0.682***	0.584***	0.534***	0.465***	0.460***	0.451***	0.452***
	(0.0323)	(0.0400)	(0.0435)	(0.0509)	(0.0514)	(0.0519)	(0.0521)
Chronically absent in 2014 (2 lags)				0.169***	0.133**	0.123**	0.115**
				(0.0507)	(0.0550)	(0.0562)	(0.0573)
Chronically absent in 2013 (3 lags)					0.0818*	0.0606	0.0509
					(0.0474)	(0.0497)	(0.0495)
Chronically absent in 2012 (4 lags)						0.0764	0.0525
						(0.0501)	(0.0550)
Chronically absent in 2011 (5 lags)							0.0657
							(0.0537)
Middle school	0.0355	0.0864**	0.103**	0.0840**	0.0799**	0.0689*	0.0599
	(0.0372)	(0.0369)	(0.0398)	(0.0394)	(0.0396)	(0.0394)	(0.0407)
High school	0.0459	0.124***	0.169***	0.148***	0.138***	0.129***	0.117***
	(0.0280)	(0.0305)	(0.0365)	(0.0367)	(0.0373)	(0.0374)	(0.0384)
% of households with one or more people under 18 years (district)		-0.00986***	-0.00653**	-0.00550*	-0.00520*	-0.00495*	-0.00475
		(0.00283)	(0.00307)	(0.00301)	(0.00299)	(0.00294)	(0.00296)
% Moved (district)		0.0110***	0.00586	0.00544	0.00500	0.00492	0.00439
		(0.00360)	(0.00372)	(0.00362)	(0.00361)	(0.00360)	(0.00365)
% High school diploma (district)		-0.0101***	-0.00353	-0.00268	-0.00278	-0.00299	-0.00280
		(0.00274)	(0.00343)	(0.00338)	(0.00333)	(0.00334)	(0.00328)
Title I (school)			0.0297	0.0277	0.0293	0.0242	0.0213
			(0.0315)	(0.0309)	(0.0309)	(0.0312)	(0.0316)
% Free/Reduced lunch (school)			0.422***	0.336***	0.294**	0.289**	0.263**
			(0.125)	(0.122)	(0.124)	(0.124)	(0.121)
% Special education (school)			0.0158	0.0506	0.0734	0.0608	0.0508
			(0.379)	(0.361)	(0.363)	(0.362)	(0.358)
% Female (school)			0.353	0.391	0.378	0.421	0.382
			(0.342)	(0.334)	(0.329)	(0.326)	(0.324)
% Hispanic (school)			-0.306**	-0.256**	-0.248*	-0.253*	-0.244*
			(0.130)	(0.129)	(0.128)	(0.130)	(0.129)
% White (school)			-0.171	-0.124	-0.123	-0.112	-0.121
			(0.111)	(0.112)	(0.113)	(0.114)	(0.114)
Constant	0.222***	1.342***	0.543	0.350	0.345	0.307	0.311
	(0.0296)	(0.307)	(0.427)	(0.429)	(0.420)	(0.418)	(0.410)
Observations	628	628	628	628	628	628	628
R^2	0.501	0.540	0.557	0.572	0.575	0.578	0.580

Source: Connecticut State Department of Education 2011–17; National Center for Education Statistics 2011–17; U.S. Census Bureau 2011–16; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a school-level chronic absenteeism rate over 5 percent.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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Appendix Tables: ECLS-K

APPENDIX TABLES 5–8. PERSISTENCE OF CHRONIC ABSENTEEISM AT THE STUDENT LEVEL

These tables correspond with the "Persistence in Student-Level Chronic Absenteeism" section of the strategy paper. Data come from the U.S. Department of Education National Center of Education Statistics Early Childhood Longitudinal Study Kindergarten Class of 2010–11 (ECLS-K): 2011 Kindergarten–Third Grade restricted-use dataset. We weight the data to address nonresponse using the W7C27P_2T270 variable.

"Full-day kindergarten" indicates that a child's teacher taught full-day kindergarten and did not teach half-day kindergarten that year. "Parent engaged with school" indicates that the parent reported doing three or more of the following activities since the beginning of the school year: initated contact with the school; attended an open house or back-to-school night; attended a PTA/PTO meeting; attended a parent advisory group or policy council meeting; attended a parent–teacher conference; attended a school or class event such as a play, sports event, or science fair; served as a volunteer in the classroom or school; served on a school committee; or participated in school fundraising. "Parent did activity with child" indicates that the parent reported doing at least one of the following activities with the child in the past 30 days: visited a library; visited a bookstore; went to a play or show; went to an art gallery or museum; visited a zoo or aquarium; or attended a sporting event. "Parent depressed" indicates that the parent reported feeling any degree of depression in the past week. Finally, "poor health" indicates that the child had one or more chronic illnesses or disabilities.

Appendix tables 5-8 show the regression results of student-level analyses of chronic absenteeism in the ECLS-K: 2011 Kindergarten–Third Grade restricted-use data. To show the persistence of chronic absenteeism within student over time, we look at the effects that a prior history of chronic absenteeism has on the likelihood a student is chronically absent in a later school year. The dependent variable is a binary variable where 1 is a student who is absent for more than 11 days. Appendix table 5 summarizes the results explained in the main text across seven model specifications; appendix tables 6-8 show detailed regression results. We find that, after controlling for student-, parent-, and school- characteristics, a student's history with chronic absenteeism predicts later chronic absenteeism in every grade.

Persistence of Student-Level Chronic Absenteeism, Third Grade

Independent variables	Chronically absent in third grade (dependent variable)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chronically absent, second grade	0.256***	0.206***	0.211***	0.202***	0.132***		
	(0.009)	(0.018)	(0.009)	(0.010)	(0.020)		
Chronically absent, first grade			0.164***	0.139***	0.140***		
			(0.010)	(0.010)	(0.021)		
Chronically absent, kindergarten				0.094***	0.090***		
				(0.009)	(0.016)		
Chronically absent, kindergarten, first, and second grade						0.193***	
						(0.061)	
Chronically absent kindergarten, not chronically absent first or second grade							0.102***
							(0.019)
Constant	0.047***	-0.116	0.037***	0.029***	-0.115	-0.057	-0.067
	(0.003)	(0.091)	(0.003)	(0.003)	(0.092)	(0.095)	(0.095)
Observations	8,970	2,290	8,430	8,050	2,080	2,080	2,080
R^2	0.083	0.074	0.112	0.126	0.100	0.027	0.036
Student characteristics		X			X	X	X
Attend full-day kindergarten/ preschool		X			X	X	X
Student health		X			X	X	X
School transportation		X			X	X	X
Parental characteristics		X			X	X	X
School characteristics		X			X	X	X

Source: National Center of Education Statistics 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a student missing more than 11 days of school.
*** p<0.01, ** p<0.05, * p<0.1

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Persistence of Student-Level Chronic Absenteeism, First Grade (Detailed)

Independent variables	Chronically absent in first grade (dependent variable)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chronically absent, kindergarten	0.243***	0.187***	0.160***	0.137***	0.137***	0.133***	0.122***
	(0.008)	(0.011)	(0.013)	(0.015)	(0.015)	(0.015)	(0.016)
Female		0.013*	0.020**	0.026***	0.026***	0.027***	0.027***
		(0.007)	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)
Hispanic		0.010	-0.006	-0.021*	-0.020*	-0.018	0.024
		(0.008)	(0.010)	(0.012)	(0.012)	(0.012)	(0.017)
White		0.006	-0.017	-0.018	-0.016	-0.004	0.022
		(0.015)	(0.018)	(0.020)	(0.020)	(0.020)	(0.024)
Black		-0.011	-0.036**	-0.046**	-0.043**	-0.030	0.000
		(0.015)	(0.018)	(0.020)	(0.020)	(0.020)	(0.025)
Asian		-0.030	-0.046*	-0.058**	-0.055**	-0.045*	-0.008
		(0.020)	(0.024)	(0.026)	(0.026)	(0.027)	(0.032)
Free/reduced price lunch		0.025***	0.026***	0.044***	0.048***	0.041***	0.052***
		(0.007)	(0.009)	(0.010)	(0.010)	(0.010)	(0.013)
Full-day kindergarten			0.010	0.014	0.011	0.009	0.000
			(0.017)	(0.020)	(0.020)	(0.020)	(0.023)
Attended preschool			-0.014	-0.018	-0.020	-0.023	-0.036**
			(0.013)	(0.015)	(0.015)	(0.015)	(0.017)
Poor health				0.015	0.013	0.019	0.027
				(0.021)	(0.021)	(0.022)	(0.023)
Rides bus to school					0.036**	0.035*	0.029
					(0.018)	(0.018)	(0.022)
Parent drives to school					0.046***	0.043**	0.036*
					(0.017)	(0.018)	(0.021)
Nonparent drives to school					-0.009	-0.010	-0.018
					(0.030)	(0.031)	(0.037)
Carpools to school					0.029	0.029	0.048
					(0.041)	(0.042)	(0.048)
Parent engaged with school						-0.003	-0.015
						(0.019)	(0.021)
Parent did activity with child						-0.017	-0.039**
						(0.018)	(0.020)
Parent depressed						0.002	-0.008
						(0.012)	(0.013)
Parent not in labor force						0.186***	0.194***
						(0.043)	(0.043)
School % Hispanic							-0.001
							(0.001)

Persistence of Student-Level Chronic Absenteeism, First Grade (Detailed)

Independent variables	Chronically absent in first grade (dependent variable)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
School % Native American							0.002**
							(0.001)
School % Asian							0.000
							(0.001)
School % Black							0.000
							(0.001)
School % White							0.000
							(0.001)
School % Hawaiian/Pacific Islander							0.003
							(0.005)
Public school							0.014
							(0.042)
Private school							0.010
							(0.045)
Charter school							-0.009
							(0.052)
School % free/reduced price lunch							0.000
							(0.000)
Constant	0.060***	0.034**	0.055**	0.044	0.006	0.019	0.034
	(0.003)	(0.016)	(0.027)	(0.032)	(0.035)	(0.042)	(0.093)
Observations	11,880	5,610	3,480	2,770	2,770	2,680	2,200
R^2	0.078	0.057	0.049	0.047	0.051	0.055	0.07

Source: National Center of Education Statistics 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a student missing more than 11 days of school.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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Persistence of Student-Level Chronic Absenteeism, Second Grade (Detailed)

Independent variables	Chronically absent in second grade (dependent variable)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chronically absent, first grade	0.284***	0.246***	0.236***	0.238***	0.214***	0.216***	0.225***	0.249***
	(0.011)	(0.011)	(0.014)	(0.019)	(0.021)	(0.021)	(0.022)	(0.022)
Chronically absent, kindergarten		0.116***	0.112***	0.082***	0.073***	0.070***	0.074***	0.082***
		(0.010)	(0.012)	(0.015)	(0.017)	(0.017)	(0.017)	(0.017)
Female			0.001	-0.006	-0.011	-0.011	-0.013	-0.016
			(0.007)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Hispanic			0.003	-0.010	-0.012	-0.017	-0.018	0.006
			(0.009)	(0.011)	(0.013)	(0.013)	(0.014)	(0.018)
White			0.030*	0.038*	0.059***	0.058***	0.053**	0.013
			(0.016)	(0.019)	(0.022)	(0.022)	(0.022)	(0.025)
Black			0.018	0.023	0.033	0.034	0.033	0.041
			(0.016)	(0.020)	(0.022)	(0.022)	(0.023)	(0.026)
Asian			0.019	0.048*	0.052*	0.047	0.049*	0.041
			(0.021)	(0.026)	(0.029)	(0.029)	(0.030)	(0.033)
Free/reduced price lunch			0.017**	0.020**	0.033***	0.033***	0.032***	0.013
			(0.008)	(0.010)	(0.011)	(0.011)	(0.012)	(0.013)
Full-day kindergarten				0.012	0.015	0.016	0.017	0.019
				(0.018)	(0.022)	(0.022)	(0.022)	(0.024)
Attended preschool				-0.040***	-0.050***	-0.050***	-0.048***	-0.060***
				(0.014)	(0.016)	(0.016)	(0.017)	(0.017)
Poor health					0.050**	0.053**	0.057**	0.058**
					(0.023)	(0.023)	(0.024)	(0.025)
Rides bus to school						-0.057***	-0.062***	0.014
						(0.020)	(0.020)	(0.023)
Parent drives to school						-0.025	-0.028	0.047**
						(0.019)	(0.019)	(0.021)
Nonparent drives to school						-0.029	-0.033	0.051
						(0.033)	(0.034)	(0.038)
Carpools to school						-0.055	-0.075*	0.004
						(0.044)	(0.045)	(0.049)
Parent engaged with school							0.014	0.004
							(0.021)	(0.022)
Parent did activity with child							-0.007	-0.017
							(0.020)	(0.021)
Parent depressed							0.011	0.015
							(0.013)	(0.013)

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Persistence of Student-Level Chronic Absenteeism, Second Grade (Detailed)

Independent variables	Chronically absent in second grade (dependent variable)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parent not in labor force							0.005	-0.031
							(0.047)	(0.046)
School % Hispanic								-0.002**
								(0.001)
School % Native American								-0.003***
								(0.001)
School % Asian								-0.002**
								(0.001)
School % Black								-0.003***
								(0.001)
School % White								-0.002**
								(0.001)
School % Hawaiian/ Pacific Islander								-0.007
								(0.006)
Public school								-0.081*
								(0.045)
Private school								-0.098**
								(0.048)
Charter school								0.012
								(0.055)
School % free/ reduced price lunch								0.000
								(0.000)
Constant	0.068***	0.057***	0.021	0.039	0.017	0.053	0.050	0.306***
	(0.003)	(0.003)	(0.017)	(0.029)	(0.035)	(0.039)	(0.047)	(0.100)
Observations	8,650	8,260	5,390	3,350	2,670	2,670	2,580	2,130
R^2	0.073	0.087	0.081	0.071	0.066	0.071	0.076	0.106

Source: National Center of Education Statistics 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism are dummies where 1 is a student missing more than 11 days of school.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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Persistence of Student-Level Chronic Absenteeism, Third Grade (Detailed)

Independent variables	Chronically absent in third grade (dependent variable)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Chronically absent, second grade	0.256***	0.211***	0.202***	0.217***	0.205***	0.190***	0.189***	0.195***	0.132***
	(0.009)	(0.009)	(0.010)	(0.012)	(0.016)	(0.018)	(0.018)	(0.018)	(0.020)
Chronically absent, first grade		0.164***	0.139***	0.167***	0.160***	0.142***	0.143***	0.134***	0.140***
		(0.010)	(0.010)	(0.013)	(0.018)	(0.019)	(0.020)	(0.020)	(0.021)
Chronically absent, kindergarten			0.094***	0.084***	0.107***	0.106***	0.105***	0.090***	0.090***
			(0.009)	(0.011)	(0.014)	(0.015)	(0.015)	(0.015)	(0.016)
Female				0.003	0.003	0.002	0.003	0.001	-0.002
				(0.007)	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)
Hispanic				0.007	0.003	-0.004	-0.004	-0.001	0.002
				(0.008)	(0.011)	(0.012)	(0.012)	(0.012)	(0.017)
White				0.015	0.002	0.011	0.010	0.003	-0.001
				(0.014)	(0.018)	(0.019)	(0.020)	(0.020)	(0.023)
Black				0.001	-0.004	-0.014	-0.016	-0.018	-0.030
				(0.015)	(0.018)	(0.020)	(0.020)	(0.020)	(0.024)
Asian				-0.013	-0.023	-0.003	-0.006	-0.009	-0.028
				(0.019)	(0.024)	(0.026)	(0.026)	(0.027)	(0.030)
Free/reduced price lunch				0.006	0.007	0.027***	0.024**	0.021**	0.011
				(0.007)	(0.009)	(0.010)	(0.010)	(0.010)	(0.012)
Full-day kindergarten				0.026	0.035*	0.037*	0.039*	0.038*
				(0.017)	(0.020)	(0.020)	(0.020)	(0.022)
Attended preschool				0.006	0.003	0.005	0.005	0.007
				(0.013)	(0.015)	(0.015)	(0.015)	(0.016)
Poor health					0.019	0.020	0.008	0.041*
					(0.021)	(0.021)	(0.022)	(0.023)
Rides bus to school						-0.031*	-0.034*	0.000
						(0.018)	(0.019)	(0.021)
Parent drives to school						-0.041**	-0.044**	-0.007
						(0.017)	(0.018)	(0.020)
Nonparent drives to school						-0.057*	-0.062**	-0.039
						(0.030)	(0.031)	(0.035)
Carpools to school						-0.012	-0.028	-0.044
						(0.040)	(0.041)	(0.044)
Parent engaged with school							0.003	0.006
							(0.019)	(0.020)
Parent did activity with child							0.021	0.003
							(0.018)	(0.019)

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Persistence of Student-Level Chronic Absenteeism, Third Grade (Detailed)

Independent variables	Chronically absent in third grade (dependent variable)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Parent depressed								0.015	0.025**
								(0.012)	(0.012)
Parent not in labor force								0.014	0.032
								(0.043)	(0.042)
School % Hispanic									0.001
									(0.001)
School % Native American									0.000
									(0.001)
School % Asian									0.002*
									(0.001)
School % Black									0.001
									(0.001)
School % White									0.000
									(0.001)
School % Hawaiian/ Pacific Islander									0.009*
									(0.005)
Public school									0.039
									(0.041)
Private school									0.026
									(0.044)
Charter school									0.062
									(0.050)
School % free/ reduced price lunch									0.000
									(0.000)
Constant	0.047***	0.037***	0.029***	0.014	-0.003	-0.029	0.005	-0.010	-0.115
	(0.003)	(0.003)	(0.003)	(0.015)	(0.027)	(0.032)	(0.035)	(0.043)	(0.092)
Observations	8,970	8,430	8,050	5,270	3,270	2,610	2,610	2,520	2,080
R-squared	0.083	0.112	0.126	0.137	0.124	0.119	0.121	0.116	0.100

Source: National Center of Education Statistics 2016; authors' calculations.

Note: The dependent variable and lagged chronic absenteeism is a dummy where 1 is a student missing more than 11 days of school.

*** p<0.01, ** p<0.05, * p<0.1

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