



THIRD GRADE READING AND ATTENDANCE IN DETROIT





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RESEARCH NOTES

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DETROIT EDUCATION RESEARCH PARTNERSHIP

The Detroit Education Research Partnership is a collaboration between researchers at Wayne State University's College of Education and a constellation of community partners interested in improving Detroit schools. We orient our work around the pressing policy needs of the Detroit education community, and we seek to inform improvement in the stability and engagement of school experiences for Detroit youth. We believe that education reform in other places has important lessons for our collective work in Detroit, but that any solution for Detroit will have to respond to the unique strengths and needs of our community. Using continuous improvement methods, we work in partnership with schools, community organizations, and policymakers to identify the key problems that impede improvement in Detroit schools. We then collaboratively determine what stakeholders need to know to solve those problems and design research studies to collect, interpret, and disseminate that information to the audiences that need it most. Learn more about our work and provide your input at <https://education.wayne.edu/detroit-education-research-partnership>.

REFERENCE FOR THIS REPORT

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THIRD GRADE READING AND ATTENDANCE IN DETROIT

In October 2016, the Michigan state legislature enacted a law intended to better support students who are one or more grade level(s) behind their peers, colloquially known as the Third Grade Reading Law.¹ The Michigan State University's Educational Policy Innovation Collaborative (EPIC) estimated that approximately 4.1% of all third grade students across the state could be retained under this law.² Retention in this context means that the student would repeat a grade in the following school year (aka, "be held back").

Detroit has the highest chronic absenteeism rates in the country, as well as the lowest reading scores among urban school districts in the United States. Our previous research has shown that Detroit has uniquely challenging conditions for school attendance, including extreme levels of poverty, unemployment, segregation, crime, and cold weather. Absenteeism and student achievement are inextricably related. If early elementary chronic absenteeism can be reduced, then third grade reading scores will likely improve and fewer students will be subject to retention, both of which will improve later outcomes in students' academic careers and beyond.

The Third Grade Reading Law:

- Third graders in Detroit have historically been held back at higher rates than their suburban peers.
- If the Third Grade Reading Law had been in effect in 2018-19, then 14.5% of third graders in Detroit traditional public and charter schools (over 1,000 students) would have been identified for possible retention.
 - Since the law was not yet in effect, only 3.2% (or 229 students) were actually retained; therefore,
 - The Third Grade Reading Law could more than quadruple the number of Detroit third graders retained.

¹ Formally known as Public Act 306 of 2016 (now referred to as MCL 380.1280f)

² https://epicedpolicy.org/wp-content/uploads/2020/01/RBG3_cutpoint_analysis_updated_1-30-20.pdf



Third Grade Reading Test Scores and Demographics:

- Across the tri-county Detroit metro area, there are strong statistical relationships between the state standardized test scores and student demographic characteristics, such as race and socio-economic status (i.e., there are large Black-White achievement gaps resulting from inequities in opportunity).
 - Black and Hispanic students score lower than their Asian and White peers;
 - Female students score higher than male students; and
 - Economically disadvantaged students have lower test scores than wealthier peers.
- **Note: Black non-economically disadvantaged students have lower average test scores than White economically disadvantaged students.**

Third Grade Reading Test Scores and Attendance:

- Being chronically absent lowers expected reading test scores by approximately one-third of a standard deviation or about 9 points on the M-STEP, where 1300 indicates proficiency and 1252 is the threshold for retention eligibility.
- Chronic absenteeism becomes a weaker predictor of standardized test scores when controlling for the students' school, which suggests that school-level personnel and policy can influence the effect of chronic absenteeism on reading scores.
- Although demographics are very strong predictors of a student's standardized test scores, **being chronically absent is a stronger predictor than demographics in Detroit.**
- Being chronically absent in earlier grades is predictive of being chronically absent in later grades and being chronically absent in all grades K-3 is associated with lower test scores.

The Probability of Being Retained and Chronic Absenteeism:

- Each year of being chronically absent in grades K-3 is associated with a 26% increase in the probability of being eligible for retention under the Third Grade Reading Law.
 - To put that into context, being economically disadvantaged is associated with a 58% increase in the probability of being eligible for retention;
 - These are additive, so being chronically absent for all four years (i.e., $4 \times 26\% = 104\%$) increases the risk of being eligible for retention nearly twice as much as being economically disadvantaged; and
 - Being chronically absent in kindergarten or third grade increases the likelihood of being eligible for retention by as much as being economically disadvantaged



Policy Recommendations:

- This analysis overall supports the theory of change that reducing chronic absenteeism is associated with improvements in third grade reading proficiency.
 - Many risk factors (e.g., being economically disadvantaged) for being chronically absent and/or retained will require major investment and changes in structural conditions that sustain poverty, segregation, and inequitable access to school. These investments are critical and policymakers and school leaders should be strategizing about how to make them happen in the medium and long term.
 - In the short term, there are opportunities for educational and other public policies to better support families directly (e.g., improve transportation) as well as potential school-level policies that increase the likelihood of student attendance.
- In particular, chronic absenteeism in kindergarten should be a focal point for policy interventions designed to improve early literacy and reduce third grade retention because:
 - Kindergarten chronic absenteeism occurs early in a student's academic career which presents an opportunity to both identify the students most at-risk and provide interventions to mitigate the direct effects of having been chronically absent as well as reduce future absenteeism;
 - Kindergarten chronic absenteeism is predictive of future chronic absenteeism and the negative effects of chronic absenteeism over multiple years is additive; and
 - There is likely a causal relationship between attendance and third grade reading proficiency (although these analyses were not designed to establish causation), so improving early elementary attendance is likely to positively impact early literacy achievement.
 - In order to improve kindergarten attendance, policymakers may want to consider proposals that require kindergarten enrollment and/or expanding state-funded pre-K programming.

1.



OVERVIEW OF THE THIRD GRADE READING LAW

The Third Grade Reading Law specifies that all students in Kindergarten through Grade 3 take an annual assessment to identify reading deficiencies within 30 days of the start of the school year. Districts can administer any number of reading assessments to make this determination, such as Curriculum Associates' i-Ready or NWEA's MAP assessments. If a student is identified as having a reading deficiency, then an Individualized Reading Improvement Plan must be developed within 30 days to help the student become grade-level proficient and resources are provided to families to help them read at home with their child to reinforce in-school instruction. Additional assessments during the Kindergarten through Grade 3 school years are administered to monitor progress and the Improvement Plan may be modified as deemed necessary by school staff in collaboration with the student's parents or guardians.

At the end of their Grade 3 school year, students take their first state standardized test, the Michigan Student Test of Educational Progress (M-STEP).³ Students who receive a scaled score of 1252 or below are considered to be reading one or more grade level(s) below the third grade reading level, which corresponds to approximately 2 standard deviations below the state mean. Families whose students score at or below 1252 are notified that the student may be retained under the Third Grade Reading law by June 1st. If the parents or guardians do not wish for their child to be retained, they can request a "Good Cause Exemption" within 30 days of receiving notice. The district and/or school personnel will review the petition and make a final decision with respect to retention no later than 30 days before the start of the following school year. If the student is retained, then they will receive additional support to help them improve their reading level in the following school year, such as extra instruction, regular checks on reading progress, an at-home reading plan, and/or participation in a summer reading program.

³ Technically the M-STEP is an English Language Arts (ELA) assessment; however, because the law is popularly known as the Third Grade Reading Law, the term "third grade reading" will be used to describe test scores in this report.



The COVID-19 public health crisis prevented the administration of the 2019-20 M-STEP, so the 2019-20 Grade 3 cohort was not subject to retention. However, current federal guidelines will require the administration of the 2020-21 M-STEP, suggesting that the Third Grade Reading Law will go into effect in 2021, if the legislature does not amend the law.

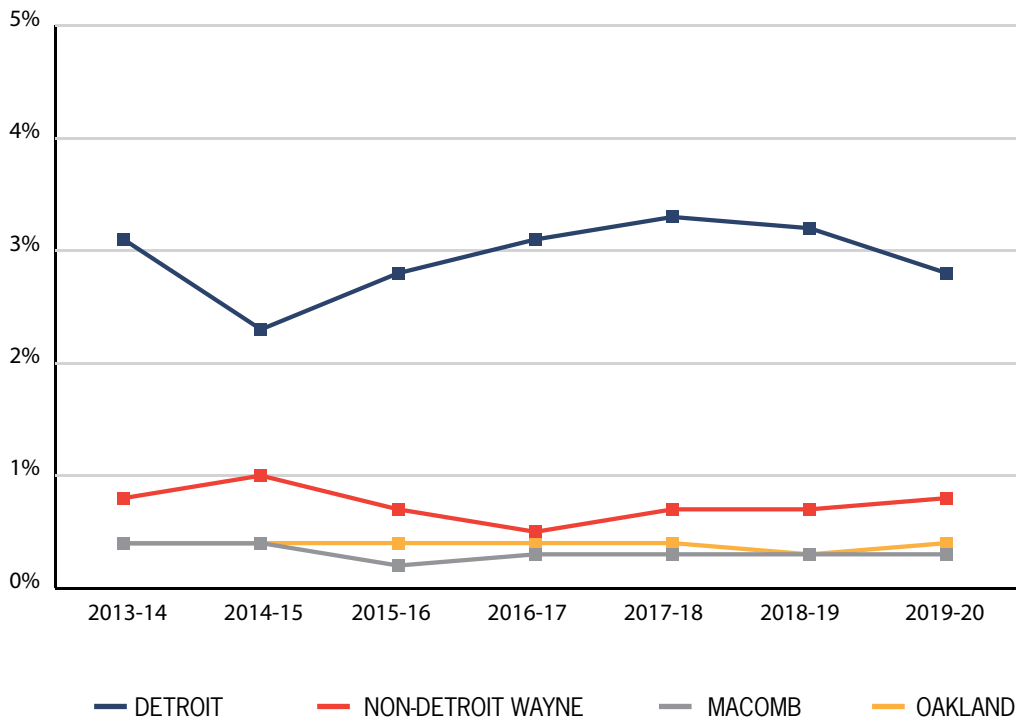




HISTORY OF GRADE 3 RETENTION IN DETROIT

Historically, students in Detroit have been retained at much higher rates than their suburban peers. As shown in Figure 1, each year approximately 3% of Detroit third graders have been retained (about 200 students in the most recent year), compared to less than 1% of suburban Wayne County third graders and less than 0.5% in Macomb and Oakland Counties.⁴ Prior to the Third Grade Reading Law, these students were retained for locally determined reasons related to concerns about academic performance and/or behavioral or social issues.

Figure 1: Percent of Third Graders Retained Over Time



⁴ See Table A1 of the Appendix for exact numbers.

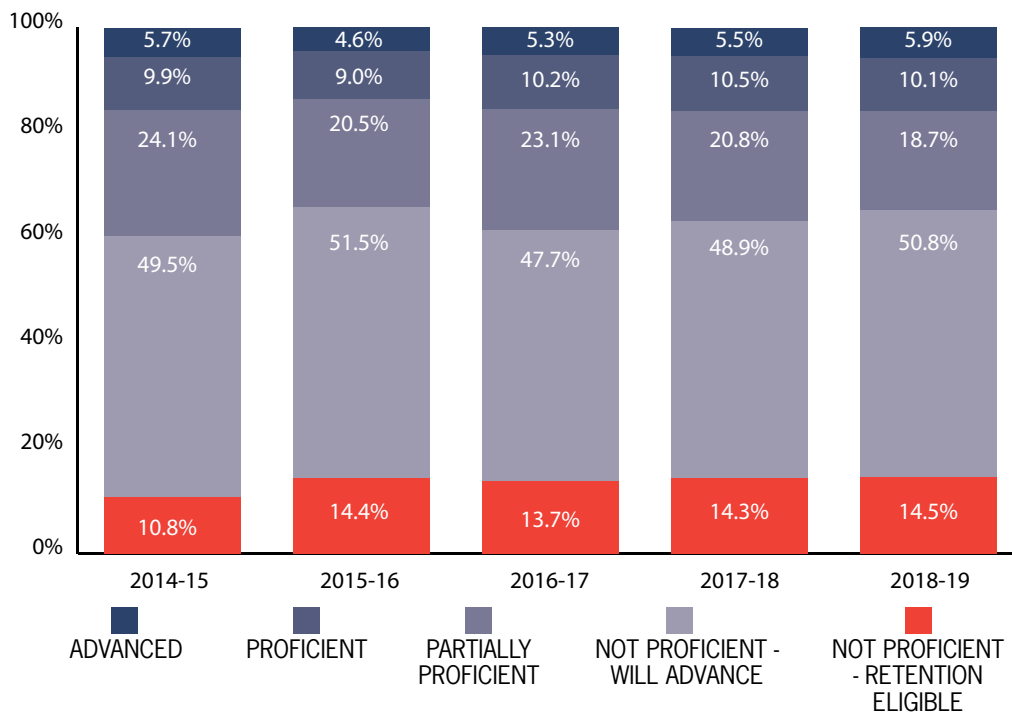


NUMBER OF STUDENTS WHO WOULD HAVE BEEN RETAINED UNDER THIRD GRADE READING LAW

The Michigan Department of Education released a memo in late 2019 specifying that third graders scoring 1252 or below on M-STEP would be subject to possible retention under the Third Grade Reading Law. To estimate the potential impact on Detroit students, the past test scores of Detroit third graders were analyzed to identify students who may have been subject to retention had the Third Grade Reading Law been in effect.

In Michigan, each student is assigned a performance level (Advanced, Proficient, Partially Proficient, and Not Proficient) based on their reading test score. Figure 2 shows the percent of students at Detroit schools in each

Figure 2: Detroit Third Grade Reading Score by Performance Level (All Detroit Schools)



Note: Universe is students who attend school in Detroit regardless of resident district



performance level, with “not proficient” being divided into “not proficient – retention eligible” and “not proficient - will advance.”

While the majority of Detroit students were considered “not proficient” (approximately 65% in 2018-19), not all “not proficient” students scored below the 1252 threshold that would have subjected them to potential retention. Indeed, only about one-fifth of “not proficient” students in Detroit scored low enough where they would have been subject to retention. Please note that not all of these students would have ultimately been retained, as families could petition for a “Good Cause Exemption,” as described in the previous section.





RELATIONSHIPS BETWEEN THIRD GRADE READING AND STUDENT DEMOGRAPHICS

While certainly not determinative of test score, there are strong statistical associations between student characteristics such as race and socio-economic status and third grade reading test scores. While these findings are not novel, they are presented in order to put into context the disparate impact of the Third Grade Reading Law on Black and economically disadvantaged students.

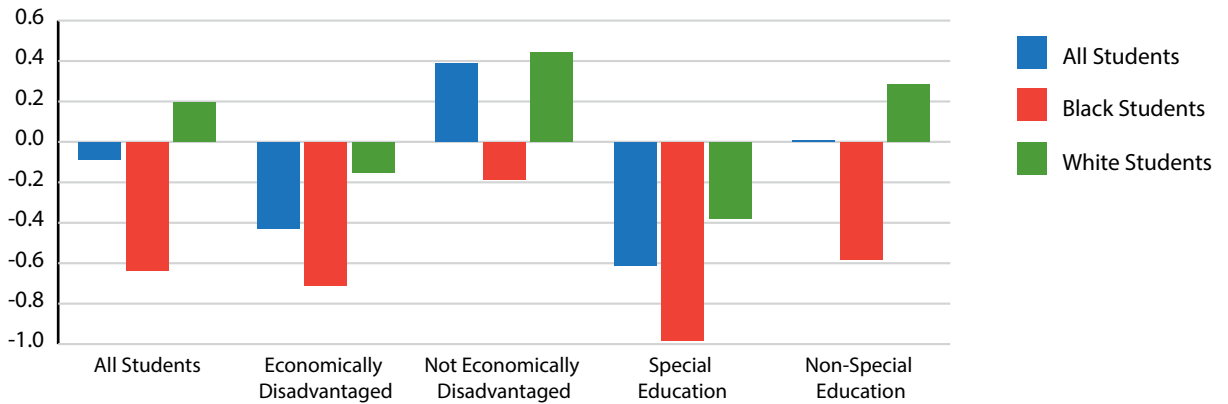
First, please note that the reading scores used in this analysis were standardized from the raw scaled scores (i.e., the statewide mean scaled score was subtracted from each student's scaled score and then that difference was divided by the statewide standard deviation). These standardized scores, or z-scores, allow for an easier interpretation since coefficients now represent a standard deviation difference (e.g., a z-score of 1 indicates a full standard deviation above the statewide mean while a z-score of -0.50 represents a half standard deviation below the mean).

Table 1 compares the average z-scores by cross-tabulation of economically disadvantaged as well as Black versus white students.⁵ Within the full tri-county sample, the average z-score for all students was -0.0850 (i.e., tri-county students are slightly below the state average). The average third grade reading z-score of Black students was -0.63 compared to 0.20 of white students. In other words, the Black-white achievement gap in the tri-county sample was 0.83 standard deviations. Similarly, the average z-score of an economically disadvantaged student was -0.43 compared to non-economically disadvantaged students' 0.39, which represents a difference of 0.82 standard deviations.

⁵ See Table A2 of the Appendix for summary statistics for the tri-county sample.



Figure 3: Mean Third Grade Reading Z-Score by Demographic Subgroup (Full Tri-County Sample)



Note that the average z-score of Black non-economically disadvantaged students (-0.18) was approximately the same as the z-score of white economically disadvantaged students (-0.15). That is, Black students scored lower than their white peers even after controlling for economically disadvantaged status.

Next, Table 2 presents linear regressions of third grade reading z-scores controlling for these student characteristics (note that the baseline race

Table 2: Linear Regression of ELA Z-Score on Student Demographics

Variable	All Tri-County Students	Detroit Students ⁷
Asian	0.3614***	0.2690
Black	-0.6616***	-0.1967**
Hispanic	-0.1499***	0.0584
Other Race	-0.0977***	0.0484
Female	0.1202***	0.1296***
Economically Disadvantaged	-0.4994***	-0.3808***
Special Education	-0.5347***	-0.3030***
English Language Learner	-0.3400***	-0.0611
Constant	0.4662***	-0.2881***
N	40,350	6,440
R-Squared	0.2688	0.0401

* indicates $p < 0.05$; ** indicates $p < 0.01$; *** indicates $p < 0.001$

⁷ Includes both DPSCD and Detroit charter school students (i.e., any public school within the city of Detroit).



category is white).⁶ Data are from the 2018-19 school year and separate models were run with all tri-county students and Detroit residents who go to school in Detroit (hereafter referred to as “Detroit students”).

In both samples, Black students have lower test scores than their white peers. Similarly, economically disadvantaged students, special education students, and English language learners all have lower scores. Female students score higher than their male peers. All of these findings are consistent with prior literature that has examined the relationships between student characteristics and academic achievement.

Note that the R-squared measure in the tri-county residents model indicates that approximately 27% of the variation in third grade reading z-scores is explained by student characteristics for all tri-county students while only 4% of the variation is explained for just Detroit students. This decrease in explained variation is due to the lack of variation within the Detroit sample (i.e., 83% of Detroit student sample is Black and 93% is economically disadvantaged). In addition, the relative strength of the coefficients is weaker in the Detroit student sample compared to the tri-county sample (e.g., Black coefficient of -0.20 is less than a third of the -0.66 of the tri-county sample). This loss of explanatory power is due to there being less variation in many of these variables in Detroit compared to the tri-county.

⁶ See Table A2 and A3 for summary statistics of the tri-county and Detroit samples, respectively.



RELATIONSHIPS BETWEEN THIRD GRADE READING AND CHRONIC ABSENTEEISM

Michigan currently defines chronic absenteeism as a student who misses 10% or more school days in an academic year (i.e., 18 days absent in a full 180 day school year). While it is intuitive that chronically absent students would have lower reading scores, we included the binary variable (0=not chronically absent, 1=chronically absent) in order to test that hypothesis.

Table 3 presents a set of linear regressions similar to those presented in Table 2 in order to account for the effect of being chronically absent while controlling for student demographics.

After controlling for student demographics, being chronically absent is associated with a decrease in third grade reading z-score of approximately one-third of a standard deviation. Please note that in the Detroit student sample, being chronically absent is associated with a lower reading score than either being economically disadvantaged, special education status, or an English language learner. Furthermore, by construction in a linear model, these coefficients are additive. That is, on average a Black, economically disadvantaged Detroit student will have a z-score that is -0.68 standard deviations (-0.37 plus -0.31) lower than a white, non-economically disadvantaged student.

“ In the Detroit student sample, being chronically absent is associated with a lower reading score than either being economically disadvantaged, special education status, or an English language learner.



Table 3: Linear Regression of ELA Z-Score on Student Demographics and Chronically Absent Status

Variable	All Tri-County Students	Detroit Students
Chronically Absent	-0.3327***	-0.3668***
Asian	0.3796***	0.3162*
Black	-0.5919***	-0.1796*
Hispanic	-0.1287***	0.0799
Other Race	-0.0802***	0.0603
Female	0.1147***	0.1128***
Economically Disadvantaged	-0.4490***	-0.3268***
Special Education	-0.5238***	-0.2977***
English Language Learner	-0.3648***	-0.1725**
Constant	0.4764***	-0.1702*
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N	40,350	6,440
R-Squared	0.2824	0.0813

* indicates $p < 0.05$; ** indicates $p < 0.01$; *** indicates $p < 0.001$

In addition, as can be seen from the R-Squared values, the inclusion of whether a student is chronically absent or not nearly doubles the explanatory power of the model relative to the model with just student characteristics. As before, the model with just Detroit residents has considerably less explanatory power, due in large part to there being relatively less variation in the demographic covariates.

One might wonder if school-level characteristics might have additional explanatory power. Using a fixed effects model where students are grouped within schools, we control for the effect of these school-level variables. For example, school-level variables that might affect attendance could be the quality climate and culture of the school, effectiveness of the administrators and teachers, or peer effects. Note that the fixed effects model allows for the statistical control of all of these school-level variables, including unobservables.



Table 4: Fixed Effects Regression of ELA Z-Score on Student Demographics and Chronically Absent Status

Variable	All Tri-County Students	Detroit Students
Chronically Absent	-0.1963***	-0.2138***
Asian	0.2874***	0.0415
Black	-0.3863***	-0.3210***
Hispanic	-0.0010	-0.0379
Other Race	-0.438*	-0.1664
Female	0.1138***	0.1130***
Economically Disadvantaged	-0.2992***	-0.2074***
Special Education	-0.5314***	-0.3234***
English Language Learner	-0.3686***	-0.1407*
Constant	0.2973***	-0.2153*
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N Students	40,350	6,440
N Schools	634	121
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R-Squared Overall	0.2720	0.0738
R-Squared Between	0.7211	0.2257
R-Squared Within	0.1153	0.0493

* indicates p<0.05; ** indicates p<0.01; *** indicates p<0.001

Table 4 presents these regression results. Controlling for school-level effects reduces the magnitude of the chronic absence coefficient to approximately one-fifth of a standard deviation in the tri-county and Detroit student samples, compared to over one-third of a standard deviation in the earlier models. That is, controlling for school-level characteristics may moderate the effect of chronic absence on third grade reading achievement. Also, note that most of the explanatory power is between schools rather than within schools (i.e., the R-squared between is greater than the R-squared within). This further suggests that school-level characteristics—including those that can be affected by personnel and policy—can attenuate the relationship between academic achievement and chronic absenteeism.



RELATIONSHIPS BETWEEN THIRD GRADE READING Z-SCORE AND YEARS OF CHRONIC ABSENTEEISM

The prior analyses found a statistically significant relationship between chronic absenteeism and third grade reading achievement. The next analysis examines the association between all prior years' attendance (i.e., chronic absenteeism in grades K-2 as well as Grade 3) and third grade reading z-scores.

The analytic sample (summarized in Table A5 of the Appendix) was necessarily restricted to students for whom complete attendance data for all K-3 grades were available. As before, the sample was restricted to Detroit residents who attended school in Detroit. Note that because the sample was restricted to students with full attendance records, they were slightly higher performing than the average of Detroit students who reside in Detroit. Similarly, chronic absenteeism rates are lower than a sample that included only a single year's worth of attendance data. For example, the Grade 3 chronic absenteeism rate for students with just Grade 3 attendance data is 44% compared to 40% in this analytic sample.

Table 5 presents a set of linear regression models that examine the associations between the variables where White is the excluded racial category. Model 1 presents a linear regression with third grade reading z-score as the outcome and controlling for student demographics. Model 2 has the same covariates in addition to chronic absenteeism by grade. Model 3 includes student demographics in addition to total years of chronic absenteeism. Model 4 includes student characteristics in addition to average daily attendance across all four years. Finally, Model 5 is identical to Model 4 except that it includes a quadratic on average daily attendance in order to test whether the relationship is non-linear.

Table 5: Third Grade Reading Linear Regressions for the Multiyear Models (2018-19 Grade 3 Cohort, Detroit Residents Who Attend School in Detroit)

Covariate	Model 1	Model 2	Model 3	Model 4	Model 5
Female	0.1378***	0.1240***	0.1277***	0.1270***	0.1262***
Asian	-0.0169	0.1207	0.1276	0.1302	0.1601
Black	-0.2117*	-0.1843	-0.1898	-0.1805	-0.1694
Hispanic	-0.0047	0.0260	0.0208	0.0166	0.0307
Other Race	-0.0485	-0.07629	-0.0828	-0.0820	-0.8030
Econ Dis	-0.4309***	-0.3326***	-0.3308***	-0.3198***	-0.3099***
Special Ed	-0.3495***	-0.3399***	-0.3340***	-0.3295***	-0.3262***
ELL	0.0106	-0.1414	-0.1364	-0.1293	-0.1470
K Chron Abs		-0.0844**			
G1 Chron Abs		-0.0829*			
G2 Chron Abs		-0.1315***			
G3 Chron Abs		-0.2321***			
Total Chron Abs			-0.1307***		
Overall Avg Daily Attend				2.7227***	-4.3283
Overall Avg Daily Attend^2					4.2100**
Constant	-0.1781	-0.0242	-0.0309	-2.6994***	0.1983
N	4,159	4,159	4,159	4,159	4,159
R-Squared	0.0474	0.1009	0.0982	0.1043	0.1062

* indicates $p < 0.05$; ** indicates $p < 0.01$; *** indicates $p < 0.001$

Note: "Total Chronically Absent" is defined as the total years that a student was chronically absent (e.g., if a student is chronically absent every year in K-3, then they will have a value of 4). Likewise, the "Overall Avg Daily Attendance" is defined as the student's average daily attendance across all K-3 years. Since most of the variables are binary (i.e., 0 or 1), their means represent the percentage of Black, economically disadvantaged, etc.

Table A4 of the Appendix presents the summary statistics for the analytic sample used in these regressions. Please note that because these regressions required attendance data for all four years of early elementary school, the sample decreased in size from the previous regressions.

The results of Model 1 are consistent with well-established findings in third grade reading achievement: female students score higher than males (0.14 standard deviations), Black students score worse (-0.21), economically disadvantaged students score worse (-0.43), as do special education students (-0.35). In combination, these covariates explain approximately 5% of the variation in third grade reading scores.



Model 2's results indicate that while chronic absenteeism covariates are significant predictors across all grades of students' third grade reading z-scores, the association is strongest with third grade (-0.23) followed by second grade (-0.13), first grade (-0.08), and finally kindergarten (-0.08). That is, while chronic absenteeism is a negative predictor for all grades, third grade is by far the strongest predictor. Note that there is a moderate degree of correlation between chronic absenteeism rates by year, as Table A5 of the Appendix shows. Approximately 10% of the variation in third grade reading scores is explained by chronic absenteeism by grade compared to 5% of the baseline model, which indicates that chronic absenteeism has consequential explanatory power.

Model 3's results indicate that each year of being chronically absent lowers students' third grade reading z-scores by about one-eighth of a standard deviation. By construction, this effect can be considered to be additive (e.g., a student who is chronically absent two years is associated with a decrease of approximately one-fourth of a standard deviation). As with Model 2, approximately 10% of the variation in third grade reading test z-scores can be attributed to total years of chronic absenteeism and other student characteristics.

Model 4's results indicate that there is a statistically significant relationship between average daily attendance across all four years and third grade reading z-scores. Specifically, a 1% change in overall average daily attendance is associated with a 0.027 standard deviation change in third grade reading score. Similar to Model 3, Model 4 explains approximately 10% of the variation in third grade reading z-score when controlling for other student characteristics.

Finally, Model 5 is nearly identical to Model 4 except that it includes a quadratic term for overall average daily attendance (i.e., the overall average daily attendance is squared). The reason for inclusion of this term is to



test whether there is a nonlinear relationship between overall average daily attendance and third grade reading z-score. The positive and significant coefficient for the quadratic indicates that there are increasing returns to overall average daily attendance. That is, daily attendance has a larger effect on third grade reading as students advance in school. As with Models 2-4, approximately 11% of the variation in third grade reading z-scores is explained by the attendance variables when controlling for other student characteristics.

In summary, student demographics explain approximately 5% of the variation in third grade reading z-scores. However, an additional 5-6% of the variation is explained by an attendance measure, whether chronic absenteeism by grade (K-3), total years of being chronically absent, or overall average daily attendance across all years of early elementary school.





RELATIONSHIPS BETWEEN PROBABILITY OF BEING RETAINED UNDER THIRD GRADE READING LAW AND CHRONIC ABSENTEEISM

To examine the probability of being retained, a binary outcome variable was constructed (i.e., 0=not subject to retention; 1=subject to retention) in order to run a logistic regression to estimate odd-ratios for being subject to retention. Table 6 presents these odds ratios from that logistic regression while Table A4 of the Appendix includes the summary statistics for this sample.

Many expected relationships were found (e.g., economically disadvantaged students were more likely to be retained than non-economically disadvantaged students). But there were three notable findings: First, after controlling for

Table 6: Third Grade Reading Logistic Regressions for Probability of Being Retained (2018-19 Grade 3 Cohort, Detroit Residents Who Attend School in Detroit)

Covariate	Odds-Ratio
Female	0.8428
Asian	0.6452
Black	0.8535
Hispanic	0.4476*
Other Race	0.8706
Economically Disadvantaged	1.5823*
Special Education	1.6018***
English Language Learner	1.0461
Chronically Absent in Kindergarten	1.5993***
Chronically Absent in First Grade	1.0094
Chronically Absent in Second Grade	1.0685
Chronically Absent in Third Grade	1.4989***
Constant	0.0787***
N	4,159
Pseudo R-Squared	0.0381

* indicates p<0.05; ** indicates p<0.01; *** indicates p<0.001



chronic absenteeism (either with binaries by grade or total years of chronic absenteeism), the Black-White “retention gap” was eliminated in the Detroit sample (but not the tri-county sample). Part of this may be from lack of racial variation in the sample (i.e., 81% of the sample is Black, although with over 4,000 observations there is sufficient statistical power to detect such an effect), but it was still notable that chronic absenteeism was such a powerful predictor.

Second, each year of being chronically absent in K-3 is associated with an additional 26% increase in the probability of being retained, which is additive. To put that into context, being economically disadvantaged is associated with a 58% increase in the probability of being retained. That is, being chronically absent for all four years increases the probability of being retained by almost twice as much as being economically disadvantaged (i.e., $4 \times 26\% = 104\%$ versus 58%).



Being chronically absent for all four years increases the probability of being retained by almost twice as much as being economically disadvantaged



Third, when the model with grade binaries for Detroit (i.e., 0 or 1 for chronic absenteeism for each of K, G1, G2, and G3) was run, being chronically absent in K and G3 (but not Grades 1-2) is associated with a higher probability of being retained. Specifically, being chronically absent in K and G3 increases the likelihood of being retained by 60% and 50%, respectively. To put that into context, an economically disadvantaged student is 58% more likely to be retained, which is similar to the relative magnitude of the results discussed in the previous paragraph. These findings are important because while economically disadvantaged status is relatively immutable by policy (or at least by policies that are politically feasible at this time), chronic absenteeism can be impacted by policies to either better support families (e.g., safe and reliable transportation) and/or school-level practices that encourage regular attendance.





POLICY RECOMMENDATIONS

Potential student retention under the Third Grade Law is a critically important issue to better understand and address in Detroit. Detroit students have historically been retained at much higher rates than their suburban peers (Figure 1). Nearly 15% of Detroit third graders would have been subject to retention under the Third Grade Reading law had it been in effect in previous years (Figure 2). This policy places critical urgency to better understand the factors that are associated with lower academic achievement. As our findings have shown, there is a significant relationship between third grade reading scores and chronic absenteeism.

To briefly summarize our findings, there are strong associations between student characteristics and third grade reading z-scores (Tables 1-2). Furthermore, chronic absenteeism is as strong a predictor of those z-scores as student demographics (Table 3). Also, the school-level fixed effects regression suggests that school-level policies moderates the association between students' z-scores and chronic absenteeism (Table 4). In addition, chronic absenteeism throughout early elementary school years has a cumulative relationship on academic achievement regardless of how one measures intertemporal chronic absenteeism (Table 5). Finally, the associations between third grade reading and being chronically absent is greatest in Kindergarten and Third Grade (Table 6).

“ This policy places critical urgency to better understand the factors that are associated with lower academic achievement. ”



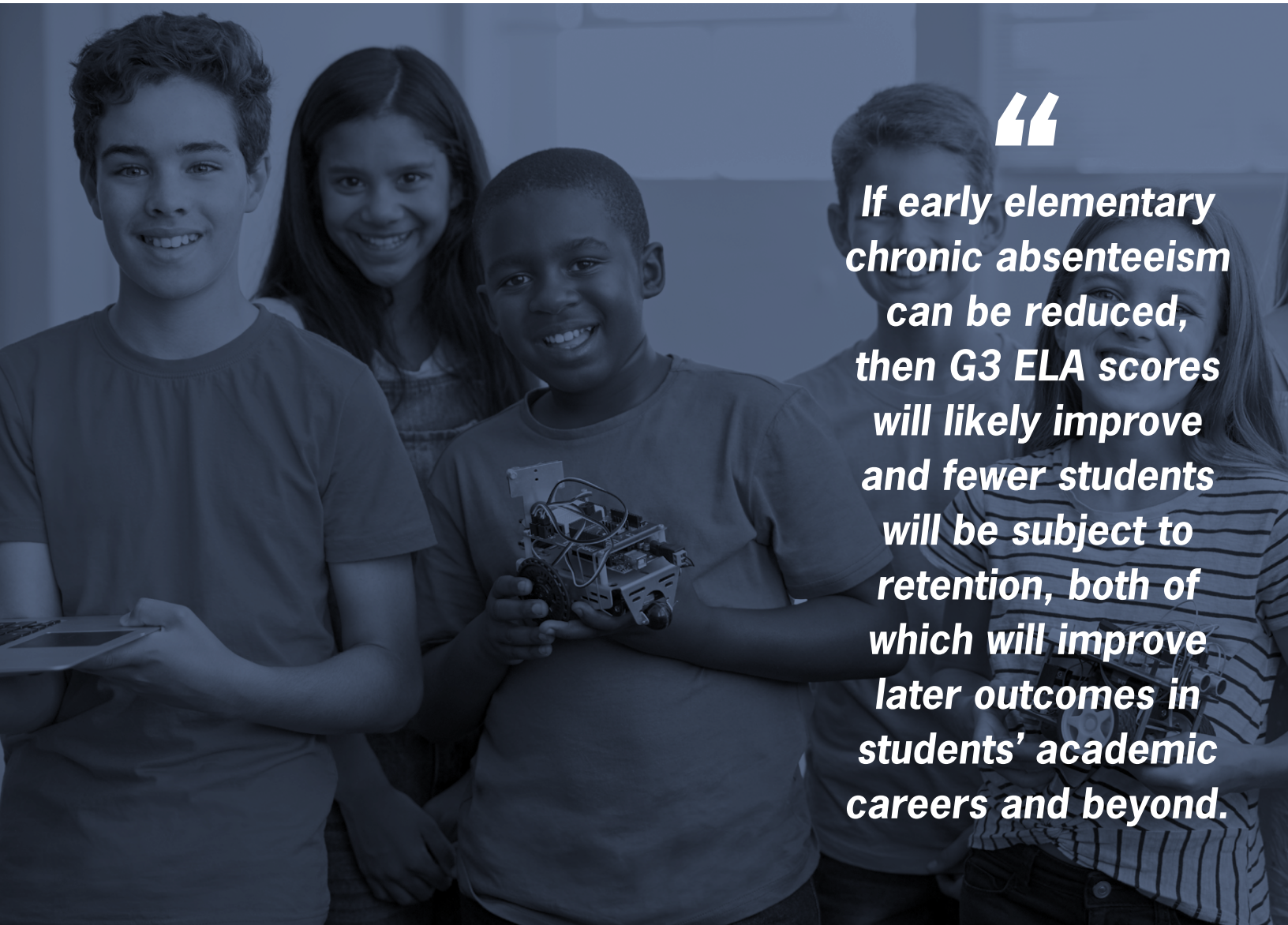
Of particular policy relevance are the results presented in Table 6, which suggest that chronic absenteeism in Kindergarten may be a leading indicator of potential third grade retention for at least three reasons. First, there is likely a causal relationship between chronic absenteeism and G3 ELA performance, even if these analyses were insufficient for establishing such a relationship. Logically, a student who is not present in school cannot benefit from in-school instruction, so any investments made to improve the classroom experience (e.g., curriculum improvements, higher quality teachers, smaller class size, etc.) will not benefit students who are not present, with the possible exception of students actively engaged in distance learning. Second, Kindergarten chronic absenteeism predicts chronic absenteeism in later grades, which is important because the negative effects of chronic absenteeism across multiple grades are additive. Finally, Kindergarten chronic absenteeism occurs early in a student's academic career, which allows for the opportunity to implement interventions to both mitigate the direct negative effects of having been chronically absent as well as reduce the likelihood of future chronic absenteeism.

These results support a theory of change that addressing chronic absenteeism in early grades will lead to improvement in third grade reading performance, which itself is a leading indicator for future academic and post-secondary outcomes. This theory of change is supported by the data in several ways. First, as previously stated, many of the risk factors for being chronically absent or subject to retention (e.g., being economically disadvantaged) cannot be directly changed by politically feasible public policies. Addressing chronic absenteeism is indeed difficult but represents a more tractable challenge. That is, there are opportunities for educational and other public policies to better support families directly as well as opportunities to implement policy improvements at the school-level that increase the likelihood of student attendance. In addition, policymakers may want to consider proposals that expand learning opportunities to students in early childhood, such as requiring kindergarten enrollment or expanding state-funded pre-K programming.

⁷ <https://nces.ed.gov/nationsreportcard/tuda/>



Detroit has the highest chronic absenteeism rates in the country, as well as the lowest reading scores among urban school districts in the United States according to the national fourth grade reading assessment.⁷ Previous research has also shown that Detroit is uniquely disadvantaged with respect to ecological issues that are associated with chronic absenteeism (Singer et al., 2019). These two are inextricably related. If early elementary chronic absenteeism can be reduced, then G3 ELA scores will likely improve and fewer students will be subject to retention, both of which will improve later outcomes in students' academic careers and beyond.



If early elementary chronic absenteeism can be reduced, then G3 ELA scores will likely improve and fewer students will be subject to retention, both of which will improve later outcomes in students' academic careers and beyond.



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Table A1: Percent and Numbers of Third Graders Retained in Detroit vs Suburban Tri-county

Percent Retained	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Detroit	3.1%	2.3%	2.8%	3.1%	3.3%	3.2%	2.8%
non-Detroit Wayne	0.8%	1.0%	0.7%	0.5%	0.7%	0.7%	0.8%
Macomb	0.4%	0.4%	0.2%	0.3%	0.3%	0.3%	0.3%
Oakland	0.4%	0.4%	0.2%	0.3%	0.3%	0.3%	0.3%

Number Retained	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Detroit	230	176	204	216	234	229	204
non-Detroit Wayne	108	134	96	74	101	91	112
Macomb	40	36	23	31	25	24	25
Oakland	50	56	55	48	53	37	52

Table A2: Summary Statistics for the Third Grade Tri-County Sample for Tables 2-4 (All Students Who Live in Tri-County)

Variable	N	Mean	Std. Dev.	Min	Max
ELA Z-Score	40,350	-0.0800	1.0112	-2	2
Asian	40,350	0.0587	0.2350	0	1
Black	40,350	0.3154	0.4647	0	1
Hispanic	40,350	0.0692	0.2537	0	1
White	40,350	0.5152	0.5000	0	1
Other Race	40,350	0.0416	0.1997	0	1
Female	40,350	0.4920	0.4920	0	1
Economically Disadvantaged	40,350	0.5792	0.5792	0	1
Special Education	40,350	0.1263	0.1263	0	1
English Language Learner	40,350	0.1519	0.1519	0	1

Table A3: Summary Statistics for the Third Grade Detroit Resident Sample for Tables 2-4 (All Students Who Live and Go to School in Detroit)

Variable	N	Mean	Std. Dev.	Min	Max
ELA Z-Score	6,440	-0.7763	0.8763	-2	2
Asian	6,440	0.8297	0.3760	0	1
Black	6,440	0.0073	0.0851	0	1
Hispanic	6,440	0.1250	0.3307	0	1
White	6,440	0.0312	0.1739	0	1
Other Race	6,440	0.0068	0.0824	0	1
Female	6,440	0.4904	0.5000	0	1
Economically Disadvantaged	6,440	0.9322	0.2513	0	1
Special Education	6,440	0.1157	0.3199	0	1
English Language Learner	6,440	0.1329	0.3395	0	1

Table A4: Summary Statistics for the Multiyear Absenteeism Sample for Tables 6 and 8 (2018-19 Grade 3 Cohort, Detroit Residents Who Attend School in Detroit)

Variable	N	Mean	Std. Dev.	Min	Max
ELA Z-Score	4,159	-0.7190	0.8750	-2	2
Female	4,159	0.5059	0.5000	0	1
Asian	4,159	0.0063	0.0788	0	1
Black	4,159	0.8170	0.3867	0	1
Hispanic	4,159	0.1450	0.3521	0	1
White	4,159	0.0250	0.1562	0	1
Other Race	4,159	0.0067	0.0818	0	1
Economically Disadvantaged	4,159	0.9329	0.2502	0	1
Special Ed	4,159	0.1034	0.3045	0	1
English Language Learner	4,159	0.1486	0.3557	0	1
Chronically Absent in K	4,159	0.4761	0.4995	0	1
Chronically Absent in G1	4,159	0.4552	0.4980	0	1
Chronically Absent in G2	4,159	0.4898	0.5000	0	1
Chronically Absent in G3	4,159	0.3967	0.4893	0	1
Total Years Chronically Absent	4,159	1.8177	1.5696	0	1
Overall Avg Daily Attendance	4,159	0.8861	0.0797	0.4207	1.0000
Student Subject to Retention	4,159	0.1332	0.3398	0	1

Table A5: Correlations Between Chronic Absenteeism Across Grades

	K Chron Abs	G1 Chron Abs	G2 Chron Abs
G1 Chronically Absent	0.5586*		
G2 Chronically Absent	0.4789*	0.5562*	
G3 Chronically Absent	0.4177*	0.4678*	0.5121*

