# Early Identification of Students at Risk for High School Dropout

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*Honors thesis submitted in partial fulfillment of the requirements for Graduation with Distinction in Economics in Trinity College of Duke University.*

Duke University
Durham, North Carolina
2014

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# I. Acknowledgements

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## II. Abstract

For years, many have hoped to identify why high school students drop out. Typically, studies focus on factors identified in high school or middle school. By tracking a cohort of North Carolina students from third grade onward, we attempt to identify areas for intervention even earlier in order to prevent dropouts. Indeed, we find that variables that can be viewed as indicators of high risk for drop out in middle school are already measurably present as early as third grade. This suggests interventions can begin when students are still very young and when treatment is likely to be more effective.

*JEL classification: I2, I20*

## III. Introduction & Literature Review

Currently, nearly one-third of all students enrolled in public high schools leave the system at some point; they either fail to graduate in four years or fail to graduate at all. Many steps have been taken to attempt to identify students at a high-risk of dropping out. For example, Jessica Heppen and Susan Bowles' "on-track indicators," attempt to track students throughout high school in order to make sure they are on track to graduate in four years.[i] Significant retrospective analysis has been done to evaluate characteristics of students that do eventually drop out in order to get a better handle on which students are no longer "on-track" for graduation. Some analyses are focused on behavioral indicators and characteristics of environments in which students live and go to school, with predictors such as deviant activities, racial and ethnic background, socioeconomic status, etc. Others focus more exclusively on students' achievement and engagement in school with predictors such as grades and attendance rates.

There is considerable consensus that it is often too late to successfully intervene and get students who are not "on-track" back on the path to graduating on time when they are already in high school. In part for this reason, additional research has been done to identify characteristics of at-risk students in middle school, and middle school interventions based on early warning indicators have been piloted.[ii] Although it is potentially more beneficial to intervene and attempt to keep students on track in middle school rather than in high school, we hypothesize that intervening in the years prior to middle school could be even more critical if at-risk students could be identified at these early stages. Through a longitudinal study that tracks students from elementary school through high school, we therefore explore the possibilities of identifying "at-risk" students much earlier, in order to provide more time for successful intervention.

## a. Behavioral & Environmental Indicators

The variables we have grouped as "behavioral & environmental" indicators vary widely, including racial and ethnic background, other external factors such as socioeconomic status and parent-child relationships, and deviant behavior inside and outside of school. While our data precluded us from exploring every possible variable in this set, we found it useful to explore a wide range of studies that included behavioral and environmental indicators to inform the variables and sub-cohorts upon which we focused.

In 2007, the US Department of Education published the report *High School Dropout and Completion Rates in the United States: 2007.*[iii] The study showed great diversity in the likelihood of dropping out based on ethnicity and socioeconomic status. White and Asian/Pacific Islander students were the least likely to drop out. Black students were almost twice as likely to drop out as white students, and Hispanics were nearly four times as likely as white students. Students from low-income families were almost 10 times more likely than those from high-income families to drop out.[1] Additionally, males who are 18-24 were more likely to lack a high school diploma than females.

Russell Rumberger, Professor of Education in the Gevirtz Graduate School of Education at UC Santa Barbara, draws on a 2008 review of about 24 years of research to describe a number of the predictors most commonly explored in hopes of predicting whether or not a student will drop out of high school.[iv] In terms of students' behaviors, Rumberger notes that the literature has explored deviant behaviors as potential predictors of dropouts. Deviant behaviors—in-school misbehavior, drug and alcohol use, sexual activity, teen childbearing, etc.— at both the middle school and high school level have indeed been linked to increased likelihoods for dropout. Related to behavior, the literature also explores students'

[1] Low-income is defined as the lowest 20% of families in terms of income while high-income is defined as the highest 20%.

attitudes (goals, self-perceptions, etc.), but these have little effect on graduation rates until high school and weak predictive power in general.

Beyond deviant behavior and student attitudes, some researchers have studied students' backgrounds with a heavier focus on the parent-child relationship. In a study conducted by Nan Marie Astone and Sara S. McLanahan,[v] several factors regarding parental engagement in their children were examined to see if there was a significant effect on likelihood of high school completion. Their study aimed to control for factors including socioeconomic status, race, income, geographic region, and number of siblings. The results showed that students in single-parent households report less parental supervision outside the home and less parental involvement in schoolwork. Before even accounting for parenting practices, the study found that students in single-parent households are more likely to have lower GPAs, poorer attendance, and lower aspirations in regards to college. The study also concluded that students in households that experience marital disruption are more likely to lose engagement in school and therefore more likely to eventually drop out.

Work has been done to explore the effects of other aspects of students' backgrounds on dropping out as well. For example, Robert Balfanz's research suggests that gender is not a significant factor in predicting dropouts.[vi] However, contrary to the findings by Balfanz, in a study centered on motivation, Robert Vallerand, Frederic Guay, and Michelle Fortier did find gender to be a significant factor related to high school dropout.[vii] Their study, which was conducted on over 4,500 9$^{th}$ and 10$^{th}$ grade French-Canadian students, revealed that girls displayed a more self-determined and motivated profile than boys. Their study subsequently revealed that females are less likely to drop out of school, as only 43% of all dropout students were females. Their findings fell in line with Quebec and Canada as a whole, where 40% of dropouts are females, according to the Quebec Ministry of Education, 1991.

Students with disabilities and/or poor mental health typically have higher rates of dropouts, and student mobility may play a role as well. Rumberger finds that

student mobility is both a symptom of disengagement and a critical risk factor promoting high school dropout. His study—conducted with Katherine Larson—*Student Mobility and the Increased Risk of High School Dropout* found that low engagement, both socially and academically, increased the likelihood of changing schools as well as dropping out.[viii] The study also found that students who made at least one change in schools—not including standard yearly transitions—were more than twice as likely to drop out of high school as were those who remained at the same school.

## b. Achievement & Engagement Indicators

It is clear that a student's unique environment and background can influence his or her behaviors and attitudes, and in turn be useful in predicting the likelihood that he or she will drop out of high school. In addition, records of his or her attendance, grades, test scores, etc. can be very useful in the same predictions. We have grouped such variables into a category of "achievement and engagement" indicators.

Evidence suggests that failed courses in middle and high school, retention in middle school or elementary school, high school and middle school test scores and grades, and elementary reading levels all have predictive power with respect to dropouts.[ii] A study of 1,562 third-graders who later dropped out of school found that low reading marks acted as significant, independent predictors of dropout in both third grade and sixth grade students.[ix]

The literature often uses attendance as a proxy for engagement, and evidence suggests that poor attendance can predict school dropout as well. In *Longitudinal Attendance Patterns: Developing High School Dropouts,* for example, Jason Schoeneberger creates longitudinal cohorts of students based on attendance patterns and explores the relationship between such patterns and dropout rates.[x] He notes two divergent paths, which students aged 6-14 may take: that of "healthy development associated with positive outcomes," or that of "frustration and incompetence associated with disengagement and disinterest in school." An

environment inadequately equipped to handle students on the latter paths leads to increased rates of high school dropouts. Schoeneberger cites a number of factors contributing to poor attendance rates, including a disinterest in the "educational environment," "competing interests outside of schools," and "poor family resources." Those students that have poor attendance rates begin a self-fulfilling prophecy of sorts: destined to underperform due to a lack of attending class, such students become even more disinterested in school on the whole, and attendance further declines.

With his study, Schoeneberger suggests that typical proxies for engagement and achievement (attendance, grades, etc.) may be driven by the behavioral and environmental factors previously discussed (attitudes toward school, socioeconomic status, etc.). Such insights led us to explore the interactions between indicators from both categories in our own research by creating sub-cohorts based upon behavioral and environmental factors and examining the different effects achievement and engagement factors had on each of these cohorts.

### c. Interactions between Variables

Studies like that of Schoeneberger aim for more in-depth approximations of engagement by combining some behavioral and engagement indicators with more objective record-based factors. In *Student Engagement and its Relationship with Early High School Dropout*, the authors take what they call a "multiconceptual" approach to identifying engagement.[xi] This approach surveyed students with questions to gauge attendance records, disciplinary records, and course retention ("behavioral" indicators), in addition to some more personality-based indicators previously discussed, including attitudes toward school ("affective" indicators) and, more specifically, language and math ("cognitive" indicators) coursework. The results of the study show that the biggest forecasters of high school dropout among the three categories were those indicators defined by the authors as "behavioral" (note that for our study, we group attendance as an "engagement" variable)—

attendance and disciplinary records. The study found that the "affective" and "cognitive" indicators had no real predictive power.

Rather than focusing on the individual effects of certain types of indicators, other researchers have explored the interactions of variables we've termed "behavioral and environmental" and those we've termed "academic and engagement" indicators. Sara Battin-Pearson attempted to identify whether or not the effect of certain variables on early high school dropout can be mediated by academic achievement.[xii] Early high school dropout is defined as leaving school before completion of 10th grade. The variables tested in the study were general deviance, poor family socialization, deviant affiliations, sexual involvement, and gender. Battin-Pearson's study showed that while academic achievement is the strongest predictor for dropping out prior to the completion of 10th grade, results differed when academic achievement was modeled as a mediating variable, which suggests that the behavioral and environmental variables in the model influence the students' academic achievement. The study found that, regardless of academic achievement at age 14, general deviance, bonding to antisocial peers, and low socioeconomic status all directly increased the likelihood of dropping out before 10th grade.

We take a similar approach to exploring indicators of high school dropout in that we explore both of the previously discussed categories of indicators in conjunction in hopes of accounting for interactions among a variety of potential forecasters of high school dropout. Battin-Pearson's study helped inform our creation of sub-cohorts along gender and racial lines, as it noted that some factors were not independent of, or mediated by, academic achievement. These factors included showing a low bond to school, being sexually active, low parental educational expectations, parents' lack of education, and—most importantly for us—gender and ethnicity.

### d. Predicting Early: Data at the Elementary School Level

While specific proxies for academic achievement and engagement and student behaviors and environments have varied by researcher, evidence certainly suggests that some factors help predict which students are at risk of dropping out. Balfanz, Herzog, and Mac Iver focus on identifying such factors in Philadelphia middle schools and emphasize that early identification, followed by early intervention, is the most effective way to reduce dropout rates.[xiii] Work at the elementary school level, however, seems limited.

Longitudinal studies on school dropout spanning the entirety of academic careers from elementary to high school emerged relatively recently. In one such study—*Paths to High School Graduation or Dropout: A Longitudinal Study of a First Grade Cohort*—Margaret E. Ensminger and Anita L. Slusarcick examined the developmental paths toward high school graduation for 1,242 black first graders who were at high risk for dropping out of school.[xiv] The results found that several factors witnessed in first grade either directly or indirectly influenced high school graduation. Such factors included maternal education, family poverty, and aggressive behavior. However, early academic success for males did not ensure graduation; only slightly more than half of these males graduated. Finally, the study found that children or adolescents in a situation where jobs are scarce and education does not seem to matter tend to become alienated from school and eventually drop out.

In other research at the elementary level, Karl L. Alexander, Doris R. Entwisle and Carrie S. Horsey conducted a study tracking the educational progress of a cohort of first grade students in Baltimore in the fall of 1982 through the spring of 1996.[xv] By examining factors on a household, personal, and structural level, the study found that parents' attitudes and values, summer child care provisions, children's behavioral and academic adjustment, and facets of their personality were able to forecast dropout. At the time students first enter school, they are most malleable in developing their habits of conduct. Their ideas about themselves and school begin to develop, and other people begin to form impressions of their competence and

character. The "clean slate" begins to fill rapidly. Prospects for reengagement are lower when children are hindered early in their careers by academic alienation, being too old for their grade, being prone to troublemaking behavior, or having academic abilities far lower than the point at which the curriculum is geared. Alexander, Entwisle, and Horsey conclude that a child's first grade profile does not seal a child's fate, but it does have a lasting effect on one's development.

We took such data to heart, as we aimed to identify students at-risk for high school dropout in North Carolina as early as possible. Because different predictors' significance vary widely by study and by the students on which the studies are conducted, we used the literature as a rough guide, but fully expected some variance between published literature and our North Carolina-focused study. We furthermore aimed at finding early at-risk indicators that were readily available so as to facilitate scalable ways to use data to target promising interventions.

### e. North Carolina

North Carolina law requires an annual report of a complete compilation of all students that drop out each year. The dropout rate in North Carolina is defined as the number of students in a particular grade span dropping out in one year, divided by a measure of the total students in that particular grade span[xvi]. The grade span is ninth through twelfth grade. A dropout is defined by State Board Policy as "any student who leaves school for any reason before graduation or completion of a program of studies without transferring to another elementary or secondary school." Any student who is not enrolled on day 20 of the current school year, but was enrolled the previous year, is classified as a dropout if the former student cannot be located in another US school.

For the school year 2012-2013, North Carolina reported a dropout rate of 2.45%, an 18.6% decrease from the previous year, and the lowest rate ever recorded in North Carolina. 11,049 dropouts were reported. Dropout rates declined for all ethnic

groups, and males constituted 61.5% of reported dropouts. The dropout rates for blacks, Hispanics, and American Indians were above the overall average at 2.92%, 3.42%, and 3.11%, respectively.

The dropout rate of 2.45%, however, is misleading. It is calculated by dividing the number of dropouts by *all* students within grades nine to twelve, even though many of those students do not meet the minimum age requirement of 16 at which schooling is no longer mandatory.[xvii] Additionally, we had concerns about the Department of Public Instruction's ability to feasibly find those students who may have transferred schools or transferred out of state by day 20 of the school year during which they were filed as dropouts. We therefore trimmed our data in ways explained in the next section, and also explored a "graduate" variable we created to assuage some of our concerns, as noted in the "Methodology" section.

## IV. Our Data

For our study, we used data compiled by the North Carolina Education Research Data Center (NCERDC) from administrative records kept by the Department of Public Instruction of North Carolina. The data were composed of a cohort of 106,066 students within the North Carolina Public Education System. The NCERDC created this "Cohort 1 longitudinal data," which is defined as students in the North Carolina public school system in the third grade for the school year 2002-2003. These students are followed through 2011-2012, the school year that would be their twelfth grade (and thus their graduation) year if they were not retained in any grade.

The dataset comprises information on student demographics such as ethnicity, gender, birth date and parental education. Additionally, students who were *ever* identified as economically disadvantaged or having limited English proficiency were flagged. Each year, a student was also flagged if he or she left the school system or

switched to a new school or district. These flags were important when we analyzed student mobility, an important indicator in the literature.

Achievement and engagement indicators are also present in the data. Academic achievement level is available in the form of end-of-grade (EOG) tests in math and reading for grades 3 through 8 and specific end-of-course scores for required core subjects in high school. These subjects include specific Math, English, Science and Social Studies classes (e.g. Algebra I, English I, Biology, US History, etc.). Students who were ever identified as academically gifted or disabled in either math or reading were also flagged. Engagement was further monitored via attendance.

Finally, the data notes whether or not a student was retained or if he or she dropped out. Our goal was to use this data to expand upon previous research with a distinct emphasis on early identification at the elementary school level, by exploring the effects of different variables on dropout and graduation probabilities in each year from grades 3 through 8.

### a. Working with the Data

We took a number of steps to ensure that our data was useable for our study. The first thing we had to do was convert (within Stata) several of the variables from the categorical type to numerical type in order to be able to analyze them. We converted gender and race into binary numerical variables that could be analyzed within regressions. A value of "1" denotes a male student for the gender variable, while a value of "0" denotes a female. For each race, a value of "1" is given to those students who identify with that race, while a "0" is given otherwise. All achievement level test scores were converted into numerical variables (ranging from 1 to 4) as well.

One of the variables we wanted to explore to get a sense of each student's mobility was the number of times he or she had changed schools through eighth grade. Each

year, NCERDC provided us with binary variables for each with value "1" if the student changed schools that year and value "0" otherwise. We then generated cumulative variables from third to eighth grade, variables which represented in each grade the number of school changes a student had up to that grade level.

Then, in order to get a sense of which participants were still North Carolina students by the time they were 16, the *legal* age to drop out of school in North Carolina, we decided to ensure that each student retained in our sample had taken a North Carolina state test after he or she was 15.5 years old. By using 15.5 rather than 16, we ensured that the trimmed cohort would include those students who were present in the North Carolina system up until the day they became eligible to drop out at 16. To do this, the test dates, which were originally represented only by year and season, were converted into a specific numerical date. For example, a test date for the "Fall 2010" semester was converted to 12/31/2010. We then calculated the difference between a student's birthdate and the last test he or she took in order to determine whether or not the student was still present by the time he or she was eligible to drop out. The cohort was then trimmed down to only those students that fulfilled these criteria, which resulted in a trimmed cohort of 81,291 students. This initial trim was instrumental in ensuring that our dropout rate was not skewed by those in the data who were never eligible to drop out. By trimming in this manner, we decided to focus on *legal* rather than *early* dropouts.

Due to limitations of the data, there were several problems to only relying on the dropout variable in our analysis. For example, if a student were retained, he or she would still have another year of schooling to complete when the data ended. This student would have an entire year during which he or she could still drop out, but there was no way for us to determine whether or not a dropout occurred. There are also some students who are not listed as dropouts in the data, but who no longer show any evidence (test scores, grades, absence data, etc.) of being present after turning 16. This could be due to a number of reasons, including the possibility that

students left school but completed the graduation requirement in an alternative way (i.e. a GED) or that some student files were simply lost.

In order to account for such flaws, we created and tested an alternative variable called "graduate," which we hope identifies those students who will *likely* graduate high school in the traditional way (i.e. not through an alternative mechanism like the GED). The criteria for a "1" in this binary "graduate" variable was that a student had more than 150 days in membership[2,xviii] during 2011-2012, the last school year of the cohort (senior year for those students who remained on-track to graduate in four years), and that he or she had fewer than 20 absences that year. North Carolina law states that a student can have no more than ten absences per semester in order to pass in to the subsequent grade.[3] While a "1" for this variable cannot ensure that a student graduates, as those students who were retained may not be on track to graduate in 2012, the combination of an adequate number of days in membership (greater than 150) and an adequate number of absences (less than 20) gave us a proxy for continued engagement at year 2012, which we took as evidence of likely graduation regardless of retainment. 56,244 students fit these "graduate" criteria.

Of note is the fact that there is a difference between "graduating" and "not dropping out." The summary statistics in the following subsection will show that these differ in magnitude, with dropout rates that do not exceed 6% and graduation rates that do not exceed 87% for any sub-cohorts. In our own data, we have trimmed our cohort so that the dropouts listed represent documented high school dropouts divided by the number of students still enrolled at age 16, while our graduation variable measures those who are still engaged in school (based on attendance and membership) at the end of the cohort divided by the same number. The students that the Department of Public Instruction did not identify as dropouts but that

[2] According to North Carolina's Department of Public Instruction, a day in membership is simply a day in which a student is enrolled in class, regardless of attendance. See Reference XVII

[3] North Carolina Law states that students can have up to 10 absences per class. See Reference XVI.

pursued alternative graduation certifications likely account for the bulk of the difference. Recent evidence suggests that those who stay in school to graduate have measurably better later outcomes than those who pursued alternative graduation certification (like GEDs) holding constant their cognitive skills as measured by standardized test, and that those who leave high school have similar later outcomes regardless of whether or not they obtained alternative GED certifications. This suggests that our "graduate" variable is of independent interest because staying in school itself appears to be important.

Furthermore, we believe our "graduate" variable captures what typically is used to calculate graduation rates (as opposed to drop out rates) as the difference between our "graduate" variable and our dropout variable mirrors the difference typically observed in aggregate reports of such variables. Generally, there are many recognized reasons why dropout rates are not the same as graduation rates when separately reported by states. The graduation rate is simply the percentage of students who graduate within four years of first entering high school in ninth grade,[xix] while the dropout rate is the percentage of all students in grades 9-12 (a much larger denominator) who left formal school in a given year.[xvi] Given the limitations of a dataset that lacked graduation statistics, we found that our graduate variable, which monitored continued engagement in formal schooling, acted as an acceptable "check" on the dropout variable in the original data. Most of our results from the "graduate" regressions ended up mirroring those of our "dropout" regressions.

## b. Summary Statistics of the Data

The following tables give a bit of context to the original cohort with which we worked:

| Ethnicity | Percent of Population |
|---|---|
| White | 56.79% |
| Black | 30.22% |
| Hispanic | 7.06% |
| Asian | 1.99% |
| American Indian | 1.53% |
| Multi-Racial | 2.42% |

White students made up the majority of our cohort followed by black students and Hispanic students. Asian, American Indian, and Multi-Racial students made up such a small minority of our cohort that we decided to focus our analysis on the former sub-cohorts instead.

| Gender | Percent of Population |
|---|---|
| Male | 51.49% |
| Female | 48.51% |

There is a relatively even split of both females and males in the cohort, and we later explore changes in marginal effects of certain variables on the likelihood of female versus male dropouts in our analysis.

| Ever Identified as: | Percent of Population |
|---|---|
| Academically Gifted, Math | 29.94% |
| Academically Gifted, Reading | 28.42% |
| Exceptional | 21.85% |
| Learning Disabled, Math | 7.04% |
| Learning Disabled, Reading | 11.16% |
| Economically Disadvantaged | 59.52% |
| Limited English Proficiency | 7.93% |
| Retained | 16.50% |

The above variables are binary. For each variable a “1” denotes that a student exhibits the characteristic tested. For example, if a student is academically gifted in

math, he or she receives a "1" for the variable "Academically Gifted, Math." That almost 60% of our cohort is economically disadvantaged, at least at some point, is quite significant. We explore the differences of the marginal effects of independent variables on students who identify as economically disadvantaged versus those who do not in our analysis.

We ended up dropping many of the binary variables as our analysis continued, as achievement-based variables seemed to pick up a great deal of their effects. For example, one could imagine that one with high scores on his or her end-of-grade math test is likely academically gifted in math.

| Grade | Avg. Math Score | Std. Dev. |
|---|---|---|
| 3rd | 3.31 | 0.69 |
| 4th | 3.54 | 0.62 |
| 5th | 3.50 | 0.69 |
| 6th | 2.76 | 0.87 |
| 7th | 2.77 | 0.90 |
| 8th | 2.97 | 0.78 |

| Grade | Avg. Read Score | Std. Dev. |
|---|---|---|
| 3rd | 3.24 | 0.83 |
| 4th | 3.22 | 0.81 |
| 5th | 3.34 | 0.68 |
| 6th | 3.14 | 0.73 |
| 7th | 3.35 | 0.72 |
| 8th | 2.52 | 0.89 |

The above summary statistics describe performance on North Carolina End-of-Grade Tests. Students' scores range from 1-4, with a 3 or 4 being a passing score. According to the North Carolina Department of Public Instruction, those students who receive a "1" have "insufficient mastery" of the subject matter for their grade level; those who receive a "2" have "inconsistent mastery"; those who receive a 3 have "consistent mastery"; and those who receive a "4" demonstrate "superior performance."[xx]

We focused on eight different sub-cohorts in our later analysis of marginal effects of significant predictors of dropout and graduation. Dropout and "graduation" rates for these eight sub-cohorts follow:

| **Sub-Cohort** | **Percent of Trimmed Cohort*** | **Percent Identified as Dropouts** | **Percent Identified as Graduates** |
|---|---|---|---|
| Black Male | 15.14% | 5.84% | 68.61% |
| Black Female | 15.32% | 3.41% | 73.43% |
| White Male | 29.35% | 3.94% | 77.32% |
| White Female | 28.15% | 2.76% | 77.85% |
| Hispanic Male | 3.24% | 5.35% | 65.09% |
| Hispanic Female | 3.19% | 3.39% | 66.38% |
| Economically Disadvantaged | 58.67% | 5.52% | 65.61% |
| Not Economically Disadvantaged | 41.33% | 1.40% | 86.78% |

*Note that because the above summary statistics for each sub-cohort involve dropouts, they were calculated after our aforementioned initial trim to those 15.5 year olds who still showed evidence of engagement in the North Carolina school system.

The statistics for the sub-cohorts give us a few insights about the students in our cohort. Those that have never been identified as economically disadvantaged are most likely to graduate. Females are slightly more likely to graduate than males of their own race. Blacks and Hispanics have less promising dropout and graduation rates than do white students. All these observations are consistent with the previous literature.

# V. Methodology

In order to get an initial idea of which variables would be significant predictors of dropping out, we ran two logistic models. The logistic model is favored for binary dependent variables as it links the dependent variable with its bounds [0,1] to a continuous variable on the logit scale with bounds [-∞, ∞] by working in terms of probabilities that the dependent variable will have outcome 0 or 1.[xxi] We ran a separate logistic model for both dropout and "graduate" as the dependent variable, with the following independent variables: race, gender (a value of "1" indicates that the student is male, while a 0 indicates that she is female), days absent, cumulative school changes, reading and math scores for that year, and binary flags for students ever identified as: academically gifted in either math or reading, exceptional, economically disadvantaged, learning disabled in math or reading, and having limited English proficiency. We explored the significance of each of these variables as predictors of high school dropout and the graduate variable. For illustration, our logistic model with dropout as the dependent variable follows:

$$Prob\{Y = 1 \mid \mathrm{X}\} = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n \,,$$

where $Y = \begin{cases} 1 \; if \; student \; drops \; out \\ 0 \; otherwise \end{cases}$ and $[x_1 \ldots x_n]$ is our vector of independent variables

The following tables report the statistical significance and coefficients of each independent variable on dropout and on our proxy for graduation.[4] We have run a separate regression for each grade in order to highlight the grades in which each predictor may or may not become significant.

[4] Refer to the Appendix for more detailed regression tables.

Dependent Variable: Dropout

| Third Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.577* | 0.098 |
| American Indian Student ("1"=Yes) | -0.582** | 0.029 |
| Black Student ("1"=Yes) | -0.290*** | 0.000 |
| Hispanic Student ("1"=Yes) | 0.056 | 0.809 |
| Multi-Racial Student ("1"=Yes) | -0.228 | 0.282 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.547*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.260* | 0.087 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.150 | 0.320 |
| Ever Identified As Exceptional ("1"=Yes) | 0.352*** | 0.000 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 1.253*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.207 | 0.176 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.121 | 0.400 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.427* | 0.070 |
| Days Absent This Year | N/A | N/A |
| Total Number of School Changes by This Grade | 0.337*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.309*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.062 | 0.206 |
| Constant | -3.883*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Fourth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.468 | 0.179 |
| American Indian Student ("1"=Yes) | -0.637** | 0.017 |
| Black Student ("1"=Yes) | -0.245*** | 0.001 |
| Hispanic Student ("1"=Yes) | 0.109 | 0.635 |
| Multi-Racial Student ("1"=Yes) | -0.203 | 0.338 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.512*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.232 | 0.129 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.173 | 0.259 |
| Ever Identified As Exceptional ("1"=Yes) | 0.283*** | 0.002 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 1.106*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.174 | 0.262 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.174 | 0.229 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.369 | 0.115 |
| Days Absent This Year | 0.050*** | 0.000 |
| Total Number of School Changes by This Grade | 0.282*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.273*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.205*** | 0.000 |
| Constant | -3.752*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Fifth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.375 | 0.263 |
| American Indian Student ("1"=Yes) | -0.523* | 0.051 |
| Black Student ("1"=Yes) | -0.265*** | 0.000 |
| Hispanic Student ("1"=Yes) | 0.081 | 0.720 |
| Multi-Racial Student ("1"=Yes) | -0.222 | 0.296 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.529*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.231 | 0.130 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.187 | 0.221 |
| Ever Identified As Exceptional ("1"=Yes) | 0.257*** | 0.006 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 1.095*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.159 | 0.302 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.117 | 0.415 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.357 | 0.122 |
| Days Absent This Year | 0.042*** | 0.000 |
| Total Number of School Changes by This Grade | 0.356*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.308*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.182*** | 0.002 |
| Constant | -3.978*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Sixth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.293 | 0.384 |
| American Indian Student ("1"=Yes) | -0.610** | 0.022 |
| Black Student ("1"=Yes) | -0.373*** | 0.000 |
| Hispanic Student ("1"=Yes) | 0.044 | 0.849 |
| Multi-Racial Student ("1"=Yes) | -0.243 | 0.257 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.526*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | 0.015 | 0.921 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.244 | 0.117 |
| Ever Identified As Exceptional ("1"=Yes) | 0.165* | 0.081 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 0.958*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.175 | 0.266 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.155 | 0.293 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.333 | 0.157 |
| Days Absent This Year | 0.047*** | 0.000 |
| Total Number of School Changes by This Grade | 0.247*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.513*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.138** | 0.012 |
| Constant | -3.781*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Seventh Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.268 | 0.427 |
| American Indian Student ("1"=Yes) | -0.676** | 0.012 |
| Black Student ("1"=Yes) | -0.392*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.002 | 0.992 |
| Multi-Racial Student ("1"=Yes) | -0.238 | 0.266 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.526*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.030 | 0.848 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.297* | 0.058 |
| Ever Identified As Exceptional ("1"=Yes) | 0.105 | 0.273 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 0.955*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.168 | 0.289 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.126 | 0.397 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.310 | 0.190 |
| Days Absent This Year | 0.048*** | 0.000 |
| Total Number of School Changes by This Grade | 0.247*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.467*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.215*** | 0.000 |
| Constant | -3.689*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Eighth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.157 | 0.640 |
| American Indian Student ("1"=Yes) | -0.770*** | 0.004 |
| Black Student ("1"=Yes) | -0.456*** | 0.000 |
| Hispanic Student ("1"=Yes) | 0.019 | 0.935 |
| Multi-Racial Student ("1"=Yes) | -0.267 | 0.225 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.532*** | 0.000 |
| Ever Identified As Gifted in Math ("1"=Yes) | 0.009 | 0.957 |
| Ever Identified As Gifted in Reading ("1"=Yes) | 0.357** | 0.025 |
| Ever Identified As Exceptional ("1"=Yes) | 0.066 | 0.503 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | 0.878*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | 0.189 | 0.244 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | -0.133 | 0.376 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | -0.385 | 0.114 |
| Days Absent This Year | 0.052*** | 0.000 |
| Total Number of School Changes by This Grade | 0.204*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | -0.666*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | -0.211*** | 0.000 |
| Constant | -3.366*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

Dependent Variable: Graduate

| Third Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | 0.341*** | 0.004 |
| American Indian Student ("1"=Yes) | -0.262*** | 0.003 |
| Black Student ("1"=Yes) | 0.261*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.112 | 0.226 |
| Multi-Racial Student ("1"=Yes) | -0.115 | 0.158 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | -0.004 | 0.875 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.016 | 0.770 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.321*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | -0.135*** | 0.003 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -1.101*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.192** | 0.017 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.140* | 0.051 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.257*** | 0.006 |
| Days Absent This Year | N/A | N/A |
| Total Number of School Changes by This Grade | -0.289*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.115*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.131*** | 0.000 |
| Constant | 1.837*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Fourth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | 0.160 | 0.171 |
| American Indian Student ("1"=Yes) | -0.266*** | 0.003 |
| Black Student ("1"=Yes) | 0.128*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.178* | 0.056 |
| Multi-Racial Student ("1"=Yes) | -0.178** | 0.029 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.001 | 0.980 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.054 | 0.336 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.324*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | -0.107** | 0.020 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -0.958*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.155* | 0.056 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.135* | 0.062 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.152 | 0.103 |
| Days Absent This Year | -0.073*** | 0.000 |
| Total Number of School Changes by This Grade | -0.268*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.121*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.147*** | 0.000 |
| Constant | 2.216*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Fifth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | 0.108 | 0.353 |
| American Indian Student ("1"=Yes) | -0.404*** | 0.000 |
| Black Student ("1"=Yes) | 0.113*** | 0.001 |
| Hispanic Student ("1"=Yes) | -0.184** | 0.047 |
| Multi-Racial Student ("1"=Yes) | -0.160* | 0.053 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.005 | 0.843 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.057 | 0.313 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.346*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | -0.100** | 0.030 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -0.945*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.123 | 0.133 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.136* | 0.062 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.108 | 0.242 |
| Days Absent This Year | -0.078*** | 0.000 |
| Total Number of School Changes by This Grade | -0.312*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.135*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.162*** | 0.000 |
| Constant | 2.430*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Sixth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | 0.048 | 0.684 |
| American Indian Student ("1"=Yes) | -0.300*** | 0.001 |
| Black Student ("1"=Yes) | 0.196*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.172* | 0.067 |
| Multi-Racial Student ("1"=Yes) | -0.165** | 0.049 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | 0.021 | 0.429 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.204*** | 0.000 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.386*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | -0.033 | 0.483 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -0.849*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.095 | 0.255 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.120 | 0.105 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.109 | 0.246 |
| Days Absent This Year | -0.079*** | 0.000 |
| Total Number of School Changes by This Grade | -0.230*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.266*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.127*** | 0.000 |
| Constant | 2.273*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Seventh Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | 0.012 | 0.918 |
| American Indian Student ("1"=Yes) | -0.224** | 0.016 |
| Black Student ("1"=Yes) | 0.195*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.133 | 0.163 |
| Multi-Racial Student ("1"=Yes) | -0.148* | 0.082 |
| White Student ("1"=Yes) | - | - |
| Gender ("1"=Male) | 0.009 | 0.736 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.175*** | 0.003 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.395*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | -0.002 | 0.967 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -0.825*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.115 | 0.176 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.126* | 0.095 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.083 | 0.385 |
| Days Absent This Year | -0.089*** | 0.000 |
| Total Number of School Changes by This Grade | -0.216*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.235*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.146*** | 0.000 |
| Constant | 2.397*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

| Eighth Grade | | |
|---|---|---|
| **Independent Variable** | **Coefficient** | **P-value** |
| Asian Student ("1"=Yes) | -0.097 | 0.411 |
| American Indian Student ("1"=Yes) | -0.189** | 0.048 |
| Black Student ("1"=Yes) | 0.172*** | 0.000 |
| Hispanic Student ("1"=Yes) | -0.204** | 0.036 |
| Multi-Racial Student ("1"=Yes) | -0.170** | 0.049 |
| White Student ("1"=Yes) | OMIT | OMIT |
| Gender ("1"=Male) | -0.031 | 0.255 |
| Ever Identified As Gifted in Math ("1"=Yes) | -0.198*** | 0.001 |
| Ever Identified As Gifted in Reading ("1"=Yes) | -0.440*** | 0.000 |
| Ever Identified As Exceptional ("1"=Yes) | 0.033 | 0.502 |
| Ever Identified As Economically Disadvantaged ("1"=Yes) | -0.752*** | 0.000 |
| Ever Identified As Learning Disabled in Math ("1"=Yes) | -0.192** | 0.028 |
| Ever Identified As Learning Disabled in Reading ("1 "=Yes) | 0.142* | 0.067 |
| Ever Identified As Limited English Proficiency ("1 "=Yes) | 0.117 | 0.228 |
| Days Absent This Year | -0.102*** | 0.000 |
| Total Number of School Changes by This Grade | -0.193*** | 0.000 |
| End-of-Grade Math Test Score (1-4) | 0.323*** | 0.000 |
| End-of-Grade Reading Test Score (1-4) | 0.126*** | 0.000 |
| Constant | 2.532*** | 0.000 |

* = P < 0.1, ** = P < .05, *** = P < .01

These initial results allowed us to gain some perspective about which independent variables would be most useful to focus on based on their statistical significance.

As noted in the literature review, many previous studies have found that certain variables affect certain demographics of students differently. By trimming our data into eight sub-cohorts based on behavioral and environmental factors, we were able to examine the effects of variables on different cohorts we found to be important based on the literature and on significance in our initial regressions. For example, in the trim for the black male sub-cohort, all females and all of those who did not identify as black were dropped to create the sub-cohort.

In all, we created eight sub-cohorts, six of which were along racial and gender lines: black males, black females, white males, white females, Hispanic males, Hispanic females. Additionally, we examined economic backgrounds, creating two more cohorts: one for those identified as "ever economically disadvantaged" and one for those not identified as such.

The independent variables analyzed for all of these cohorts include achievement and engagement indicators, all of which proved significant in a variety of the literature reviewed: days absent, cumulative school changes, and math and reading achievement test scores. These were also consistently significant for all grades throughout our initial regressions. While we initially set out to examine implications of whether or not a student was ever identified as exceptional, learning disabled in math, learning disabled in reading, or having limited English proficiency as well, we found that the binary nature of these independent variables limited the interpretations of their marginal effects (and the marginal effects of continuous variables when evaluated for average values of all variables). Furthermore, they were rarely significant indicators of either dropouts or graduation. The logistic model was run for each grade, from third to eighth, to determine the effects and significance each independent variable had on dropout for the different sub-cohorts.

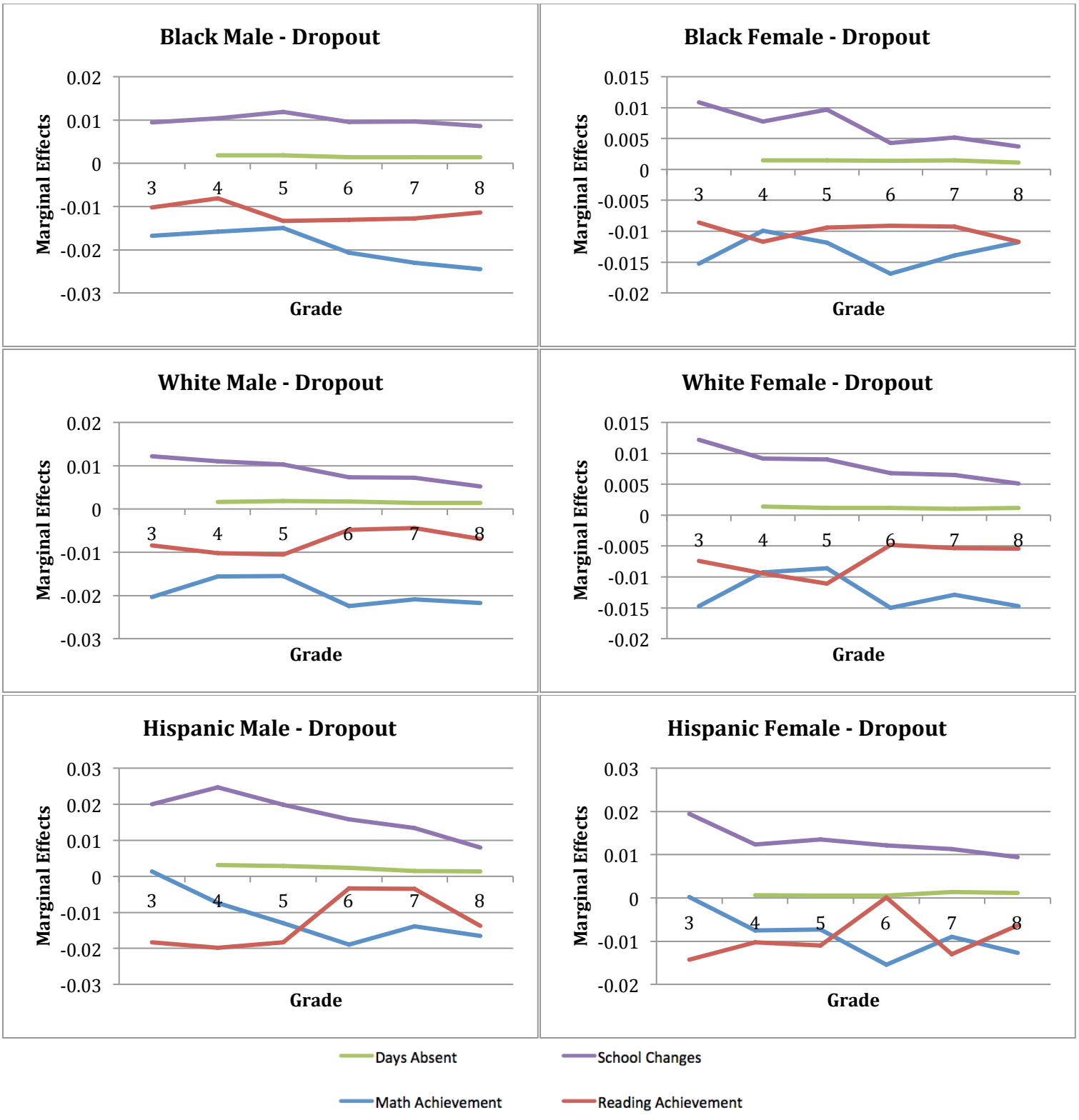
After creating the graduate variable, we then ran the logistic regression on the same eight sub-cohorts as before. The only exception was that the graduate variable was the dependent variable, rather than dropout. The model was run for each grade, from third to eighth, to determine the effects and statistical significance each independent variable had on the graduate variable for the different sub-cohorts.

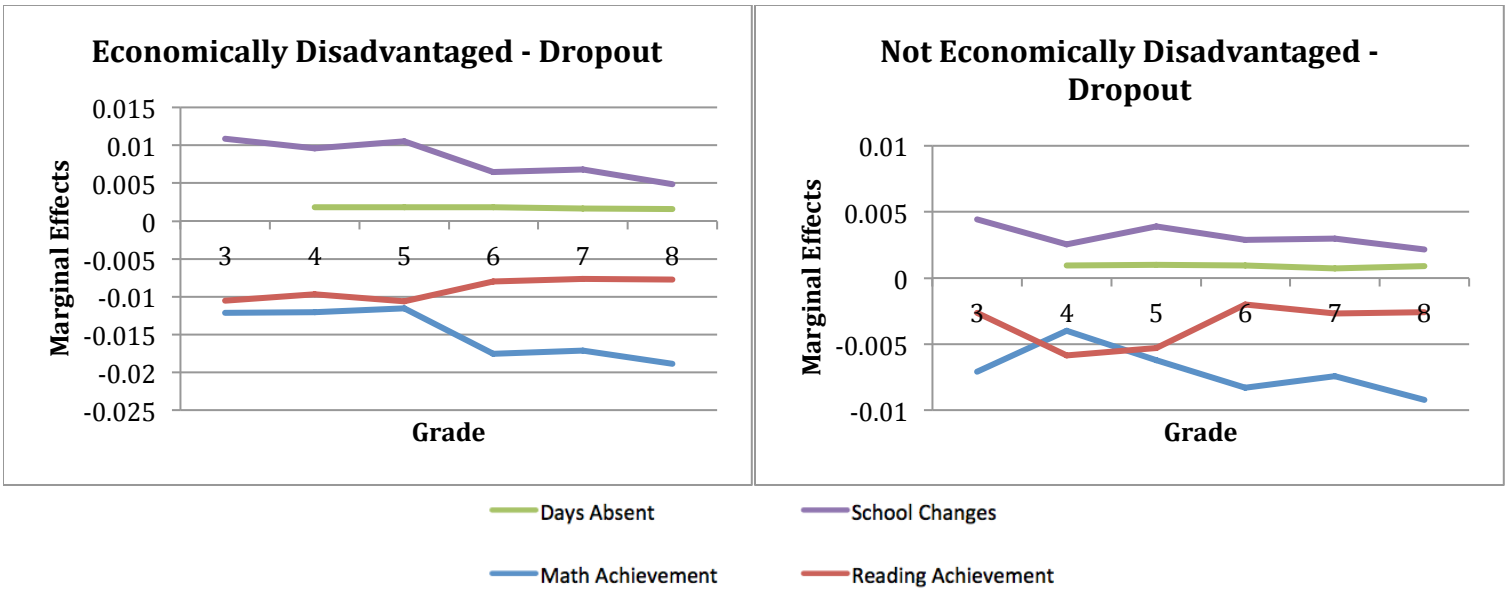
To interpret the coefficient magnitudes for the eight sub-cohorts, we calculated the average marginal effects of the independent variables on the dependent variables. This is because the coefficients for the logistic model do not represent the marginal effects independent variables have on dependent variables. Rather, the coefficient on the independent variable represents the log of the odds ratio—the log of the ratio of the probability that the binary dependent will take value "1" to the probability that the binary dependent variable will take value "0." So, when we take $e^{\beta_1}$ we are able to calculate the odds ratio for coefficient $\beta_1$ on independent variable $x_1$. If we have a one-unit increase in $x_1$, we have an $e^{\beta_1}$ increase in the odds of the dependent variable taking value "1."[xxii] We calculated Average Marginal Effects (AMEs) as opposed to Marginal Effects at the Means (MEMs). MEMs are calculated by setting all but one independent variables at their means and then observing how a one-unit change in the other independent variable changes the probability that the dependent variable takes the value "1."[xxiii] The AME of independent variable is calculated using actual values of the other independent variables in each case and then averaging the resulting marginal effects.

## VI. Results & Analysis

This section begins with average marginal effects of four independent variables (days absent, cumulative school changes, and math and reading achievement scores) for our eight sub-cohorts graphed over time. For example, if one takes a look at the first graph which shows the marginal effects of the independent variables on black males' likelihood to dropout, he or she will note that a one-unit increase in both cumulative school changes and absences increase the likelihood that a black male student will drop out, as the marginal effects on the dropout dependent variable are positive. That the cumulative school changes variable has marginal effects larger in absolute value than those of the variable for days absent suggests that an increase in the number of school changes has a bigger impact on the odds of a dropout than does one additional absence.

Further analysis of average marginal effects follows in the charts below. While we focus our analysis on the marginal effects each independent variable has on a student's likelihood to drop out or graduate, full regressions for each sub-cohort by grade may be found in the appendix.


Black Male - Dropout
Marginal Effects
0.02
0.01
0
-0.01
-0.02
-0.03
3
4
5
6
7
8
Grade
Black Female - Dropout
Marginal Effects
0.015
0.01
0.005
0
-0.005
-0.01
-0.015
-0.02
3
4
5
6
7
8
Grade
White Male - Dropout
Marginal Effects
0.02
0.01
0
-0.01
-0.02
-0.03
3
4
5
6
7
8
Grade
White Female - Dropout
Marginal Effects
0.015
0.01
0.005
0
-0.005
-0.01
-0.015
-0.02
3
4
5
6
7
8
Grade
Hispanic Male - Dropout
Marginal Effects
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
3
4
5
6
7
8
Grade
Hispanic Female - Dropout
Marginal Effects
0.03
0.02
0.01
0
-0.01
-0.02
3
4
5
6
7
8
Grade
Days Absent
School Changes
Math Achievement
Reading Achievement




As one can see in these graphs, the marginal effects of all achievement and engagement independent variables (days absent, cumulative school changes, and math and reading achievement) were relatively consistent among all sub-cohorts created along environmental and behavioral lines. It is the differences in levels of these independent variables across the sub-cohorts that accounts for discrepancies in current dropout rates across them, which we saw in our summary statistics. That the independent variables were significant predictors across the board, even in third grade[5]—with a few exceptions—lends support to our hypothesis that one can begin to see the effects certain variables have on the probability of a student's dropout early on and that intervention as early as elementary school is valuable for the majority of students. We took a look at the trends for each independent variable across the sub-cohorts:

Days Absent

We have data for absences for each student beginning in fourth grade. Days absent had the most consistency in marginal effects on dropout throughout the time period and across the sub-cohorts. For all sub-cohorts, the effect of an additional absence in a single grade on the likelihood of a dropout remained between 0.05% —the

[5] See Appendix for detailed regressions, including significance tests.

minimum for Hispanic female sub-cohort in seventh grade (though, days absent were not significant predictors of dropouts for Hispanic females until seventh grade)—and 0.32%—the max for Hispanic males. Although these marginal effects are the smallest in absolute magnitude among all independent variables, students are more likely to have a higher number of absences than they are cumulative school changes or achievement scores, which range from 1 to 4. Therefore, an individual student would experience the marginal effect for absences more often than he or she would the marginal effect of other variables, which would magnify the overall effect of days absent. Because days absent were significant at the 95% significance level for all sub-cohorts (with the exception of Hispanic Females in grades 4,5, and 6) and because all marginal effects are positive, and therefore contribute to increasing the likelihood of dropping out, it seems worthwhile to ensure good attendance for students as early as 4$^{th}$ grade.

School Changes

We examined the cumulative number of school changes beginning in third grade. So, if a student changed schools in grades 3, 5, and 6, he or she would have a "1" for the cumulative school change variable in grade 3, a "2" in grade 5 and a "3" in grade 6. The variable was a significant predictor of dropout across all sub-cohorts, with a few exceptions. Those students who were not economically disadvantaged had a p-value for cumulative school changes slightly above the 0.05 cutoff in the fourth grade. The variable was also insignificant for Hispanic males in grades 3 and 8.

On the whole, the marginal effects on dropout of cumulative school changes exhibit a downward trend across the sub-cohorts, which suggests that the first school change in a student's early education has the largest effect. With a range of marginal effects between 0.21% and 2.5% in a single grade, cumulative school changes always have effects larger in absolute value than those of days absent. At times in elementary school, the effects of changing schools are even larger than those of achievement levels.

Comparing the different sub-cohorts, the marginal effects are largest among Hispanic males and females, suggesting that continuity early on is especially important for those cohorts. The marginal effects were much smaller for those who were never economically disadvantaged than they were for the other cohorts, suggesting that mobility in these cases is less disruptive to student's engagement in school.

Math Achievement

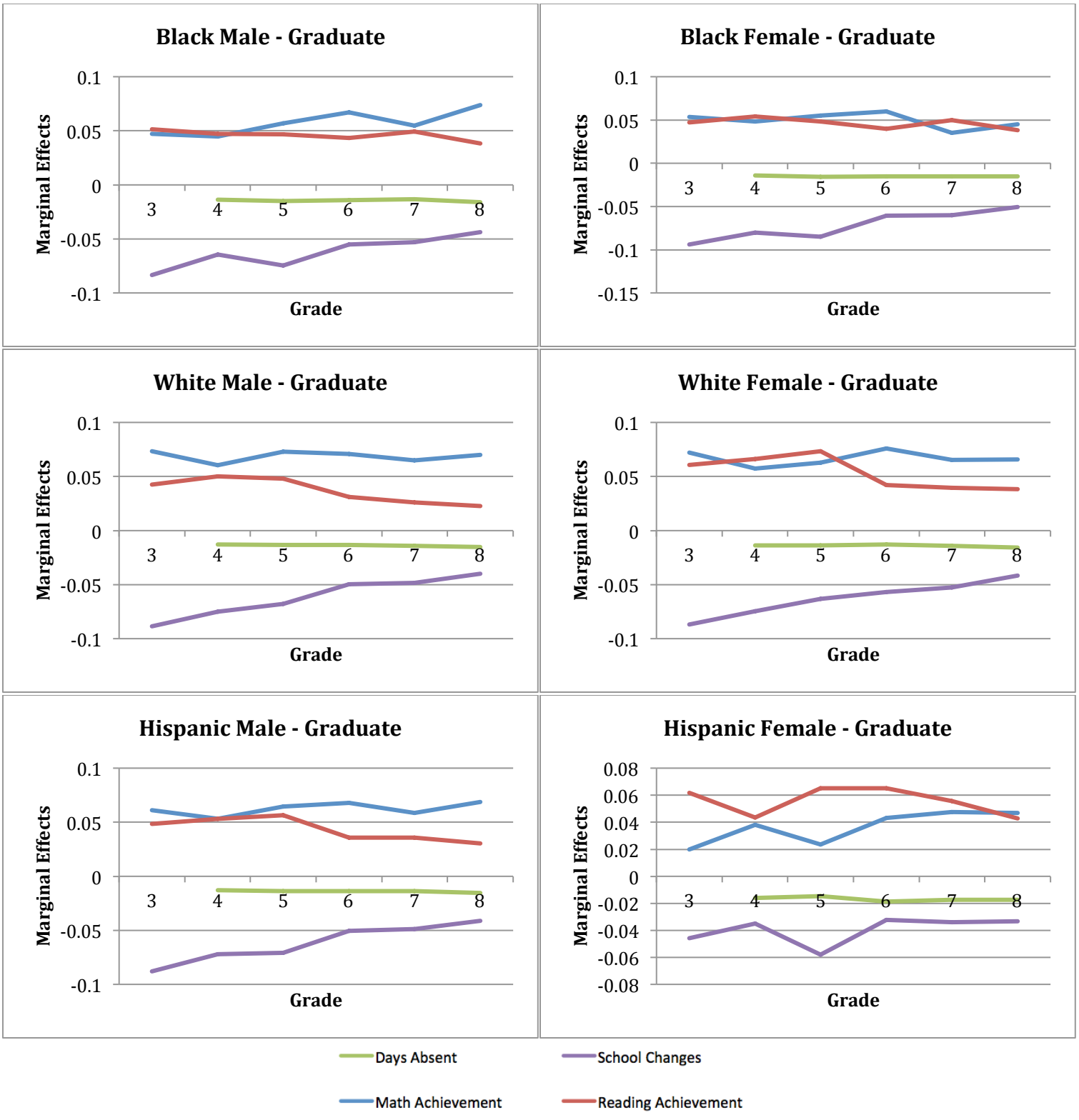
The math achievement variable produced marginal effects on the dropout dependent variable in a single grade in the range of -0.14% to -2.2%. As one would expect, overall, the math achievement variable had a negative effect on dropout rate. As math scores improved, dropout became less likely. For five of the eight sub-cohorts, it can be observed that the predictive power of this variable increased over time. For white males, white females, and black females, however, this was not the case. For these three sub-cohorts, the size of the marginal effects oscillated over time, with no definitive, observable trend. With the exception of seventh and eighth grade for black males and females, the trend in marginal effects of math achievement on males and females was relatively similar across genders. The marginal effects decreased for females during this time, while it continued to increase for males. While the trends over time were relatively consistent, there was a general pattern of stronger marginal effects for males than females in regards to math achievement.

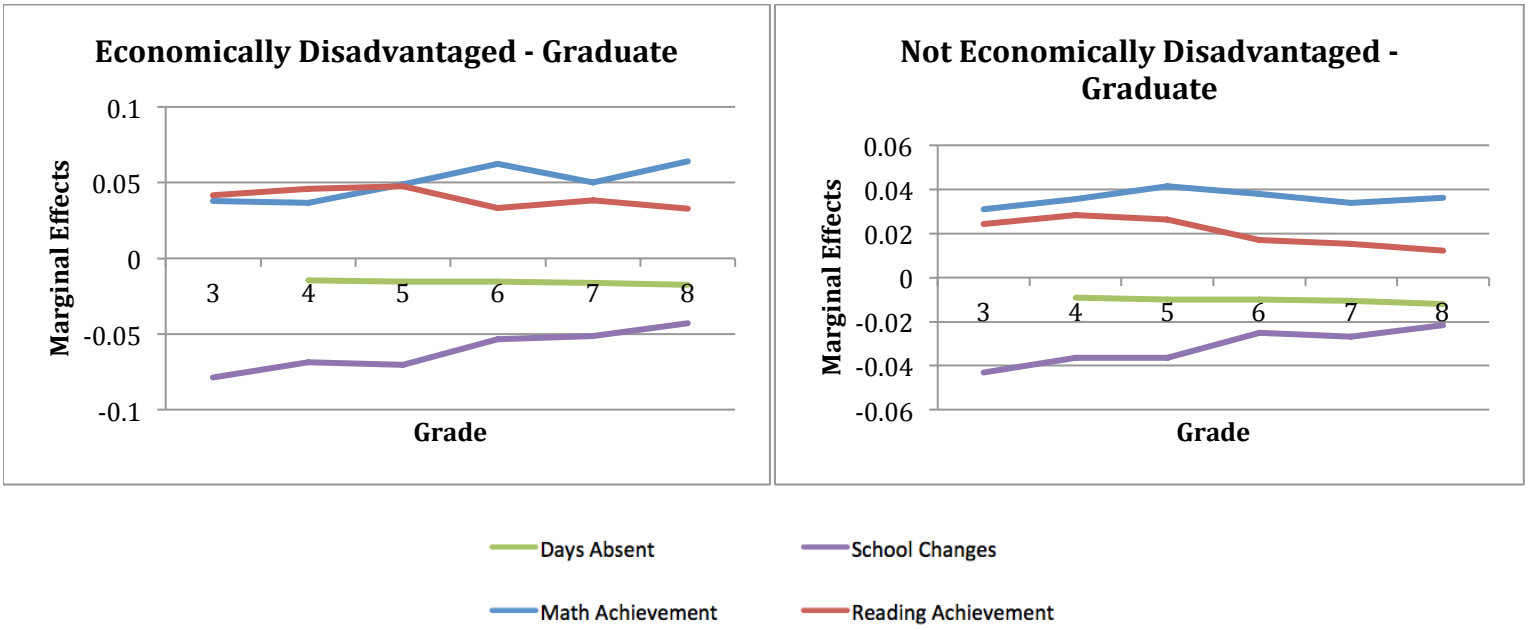
The Hispanic sub-cohorts produced the most variable data. All of the marginal effects for elementary school were insignificant, at the 5% significance level, for both Hispanic males and Hispanic females, and seventh grade also had insignificant marginal effects for Hispanic females. We attribute the variation in significance within the Hispanic sub-cohorts to the smaller sample size, compared to blacks and whites. The increasing signficance over time suggest that it is more beneficial to intervene and improve math scores earlier on, before lower scores have too large of an effect on dropout.

Reading Achievement

Compared to the math achievement variable, overall, the reading achievement variable produced smaller marginal effects for the dependent variable, dropout. The range of the marginal effects for a single grade was approximately between 0% and -1.9%, with the exception of the Hispanic sub-cohorts. Although many of the marginal effects for Hispanics were larger, they were largely not statistically significant at the 5% level. Similar to the math achievement variable, the reading achievement variable produced marginal effects that were in line with expectations. As reading scores improved, dropout became less likely. Unlike math achievement, however, there was no general trend across time that could be attributed to all subcohorts. The marginal effects for reading scores did more closely mirror one another across gender than the marginal effects for math scores did in terms of magnitude and oscillation.

Overall, both the math and reading achievement scores produced results in line with expectations, although the stronger predicitive power of math scores was an unforeseen result. Again, with both achievement scores, we see much smaller marginal effects for those students who were never identified as economically disadvantaged, which suggests that there may be more to the story for these students. One could imagine that parents from less disadvantaged families may be able to spend less time working and more time ensuring their students' engagement in school.


Black Male - Graduate
Black Female - Graduate
White Male - Graduate
White Female - Graduate
Hispanic Male - Graduate
Hispanic Female - Graduate
Marginal Effects
Grade
Days Absent
School Changes
Math Achievement
Reading Achievement




The trends for the marginal effects on the "graduate" dependent variable we created to check for continued engagement in formal schooling in 2012 closely mirrored those of the marginal effects on the dropout variable, as expected. There were a few differences in the significance of the independent variables as predictors. The independent variables predicted "graduate" in slightly more cases than they predicted dropout, though they were most often significant for both dependent variables. However, these effects were much larger. We attribute the relative two to three fold difference in marginal effect size for the graduate variable, compared to the dropout variable, to the difference between the dropout rate of 3.8% for our trimmed cohort and the "graduation" rate of around 75%. When predicting a variable that occupies ¾ of the cohort, it is expected that independent variables will have a larger effect on the dependent variable, since a larger percentage of the subjects fill the criteria. Again, graduating is not the same as "not dropping out."

Similar to the regressions for the dropout variable, the graduate variable regressions produced marginal effects in line with expectations. As with the dropout dependent variable, days absent remained consistent in marginal effects across the time period, ranging from -0.91% to -1.8%. For cumulative school

changes, we observed a similar phenomenon for the graduate variable as well: the first school change early on has larger marginal effects than do later changes. The marginal effects for cumulative school changes on the graduate variable fell between -2.1% to -9.4%. Again those who were never identified as economically disadvantaged were less affected by school changes, and student mobility shows some of the largest marginal effects overall.

Higher math and reading achievement scores indicated that students were more likely to fulfill the criteria for the graduate variable. The range for these math achievement marginal effects was about 2.8% to 7.6%. For reading achievement, the marginal effects ranged from about 2.0% to 7.3%. Again, achievement levels—especially reading achievement—proved to have smaller marginal effects for those students who were never identified as economically disadvantaged than for the rest of the cohort.

One difference between the effects for the graduate and dropout variables was the statistical significance. The only insignificant results for math achievement marginal effects were for grades 3 and 5 for Hispanic females, and all results were statistically significant for reading achievement. Although the two results for math achievement were insignificant, the Hispanic Female sub-cohort overall showed stronger effects for reading achievement than math achievement. This is contrary to not only the overall trend of stronger predictability from math than reading, but it is also contrary to the Hispanic female sub-cohort for dropout, which provides no definitive conclusion on the relative strength of math achievement vs. reading achievement.

## VII. Conclusion

Our analysis shows that there are significant achievement and engagement predictors of those who will drop out from high school, and that their significance and average marginal effects do not vary by much across sub-cohorts created along behavioral and environmental lines. However, the Hispanic sub-cohorts, and that of those who have never been identified as being economically disadvantaged, do vary to some degree from the rest of the group. This overall lack of diversity in marginal effects is heartening in that it suggests intervention methods created to prevent dropout can be used similarly for a wide range of students, at least in North Carolina. The trends in marginal effects on the likelihood of dropout were confirmed with the exploration of the "graduate" variable, as well.

Days absent had the smallest, but most consistent, marginal effects and showed significance throughout time and across sub-cohorts, with the exception of Hispanic females in some cases. It seems clear that no matter at which point one intervenes and encourages students to increase their attendance rates in elementary and middle school, it can have a positive impact on students' chances of graduation.

School changes remained significant throughout all sub-cohorts, with only a few grade years presenting exceptions. That it had the largest marginal effects early on suggests that interventions targeted at high mobility students should be a high priority, even in elementary school. Such mobility may well proxy for other elements of instability in the lives of such children.

Achievement scores presented similar results, relatively in line with expectations, with a few exceptions. Math achievement consistently presented stronger marginal effects than reading achievement, and for a majority of the sub-cohorts, the size of the effect increased over time, whereas there was no general trend over time for reading achievement. Also, the marginal effects for male sub-cohorts were consistently larger than for female in math but not in reading. This suggests earlier

intervention for students, and particularly males displaying underachievement in math is critical. It appears as though intervention in math for white students and black females, and all students in reading, can have consistent, positive effects at any time during a student's elementary and middle school years.

Some cohorts did exhibit some key differences from the rest. Overall, the Hispanic cohorts were the most difficult to pin down, as they presented the most insignificant predictors, most likely due to small sample size. Additionally, those students who were never identified as economically disadvantaged showed, on the whole, smaller marginal effects than the other sub-cohorts. We speculate that while these students certainly have the potential to drop-out, their economic status may encourage them to stay engaged with school for longer. Perhaps their parents were engaged in school in the long run, which has allowed them to reach a higher economic status than some others. Or perhaps their parents may be able to focus more of their time on their students' educations rather than trying to provide for their families than do other families.

Of note is the fact that small marginal effects should not simply be taken at face value. The key here is that we have found a variety of independent variables that significantly affect a student's chances of dropping out to some degree, even as early as 3rd grade. If one waits to intervene until much later than elementary school and a student's behaviors continue as they began, these marginal effects will begin to accumulate for each grade. For this reason, we suggest that educators take the significance of absences, student mobility, and achievement levels as indicators of dropout to heart early on in a student's education.

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# IX. Appendix

Use the following legend for all variables that follow in the tables:

| Variable Name | Description |
|---|---|
| asian | Asian |
| amin | American Indian |
| blck | Black |
| hisp | Hispanic |
| mult | Multi-racial |
| whte | White |
| gender_num | Gender (1=Male) |
| ever_aigm | Ever "Gifted" in Math (1=Yes) |
| ever_aigr | Ever "Gifted" in Reading (1=Yes) |
| ever_ec | Ever "Exceptional" (1=Yes) |
| ever_ed | Ever Economically Disadvantaged (1=Yes) |
| ever_ldm | Ever Learning Disabled in Math (1=Yes) |
| ever_ldr | Ever Learning Disabled in Reading (1=Yes) |
| ever_lep | Ever Changed District (1=Yes) |
| daysabs | Days Absent This Year |
| diffsch_cum0304 | Cumulative School Changes |
| mathach03_num | Math Achievement Score This Year |
| readach03_num | Reading Achievement Score This Year |
| _cons | Constant |

Note: “0304” and “03” represent years 2003-2004 and grade 3, respectively, as these variable names were taken from regression for grade 3. These numbers change for each grade, but the variable description remains consistent.

## a. Initial Logistic Models – Dropout as Dependent Variable

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.5772076 | .348781 | -1.65 | 0.098 | -1.260806 | .1063907 |
| amin | -.5817527 | .2658141 | -2.19 | 0.029 | -1.102739 | -.0607667 |
| blck | -.2904054 | .0725015 | -4.01 | 0.000 | -.4325057 | -.148305 |
| hisp | .0555816 | .2293549 | 0.24 | 0.809 | -.3939458 | .505109 |
| mult | -.2282116 | .2120665 | -1.08 | 0.282 | -.6438544 | .1874311 |
| whte | 0 | (omitted) | | | | |
| gender_num | .547118 | .063145 | 8.66 | 0.000 | .423356 | .67088 |
| ever_aigm | -.2602752 | .1518387 | -1.71 | 0.087 | -.5578736 | .0373232 |
| ever_aigr | .1501883 | .1510867 | 0.99 | 0.320 | -.1459361 | .4463127 |
| ever_ec | .3515881 | .0933828 | 3.77 | 0.000 | .1685612 | .5346151 |
| ever_ed | 1.253253 | .0835885 | 14.99 | 0.000 | 1.089423 | 1.417084 |
| ever_ldm | .2074682 | .1534468 | 1.35 | 0.176 | -.0932821 | .5082184 |
| ever_ldr | -.1208056 | .1436387 | -0.84 | 0.400 | -.4023322 | .160721 |
| ever_lep | -.4272581 | .2360493 | -1.81 | 0.070 | -.8899062 | .0353901 |
| diffsch_cum0304 | .3374335 | .0753027 | 4.48 | 0.000 | .189843 | .485024 |
| mathach03_num | -.3092709 | .0597029 | -5.18 | 0.000 | -.4262865 | -.1922553 |
| readach03_num | -.0622283 | .0492418 | -1.26 | 0.206 | -.1587404 | .0342839 |
| _cons | -3.882564 | .2149286 | -18.06 | 0.000 | -4.303817 | -3.461312 |

## Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.468295 | .3483194 | -1.34 | 0.179 | -1.150988 | .2143984 |
| amin | -.6374827 | .2668228 | -2.39 | 0.017 | -1.160446 | -.1145196 |
| blck | -.244961 | .0738644 | -3.32 | 0.001 | -.3897325 | -.1001895 |
| hisp | .1085511 | .2284177 | 0.48 | 0.635 | -.3391393 | .5562415 |
| mult | -.203441 | .2124538 | -0.96 | 0.338 | -.6198428 | .2129608 |
| whte | 0 | (omitted) | | | | |
| gender_num | .5121744 | .0628957 | 8.14 | 0.000 | .3889012 | .6354477 |
| ever_aigm | -.23241 | .1532302 | -1.52 | 0.129 | -.5327356 | .0679156 |
| ever_aigr | .1728951 | .1531669 | 1.13 | 0.259 | -.1273066 | .4730968 |
| ever_ec | .2834637 | .0934352 | 3.03 | 0.002 | .1003341 | .4665934 |
| ever_ed | 1.105965 | .0843628 | 13.11 | 0.000 | .9406172 | 1.271313 |
| ever_ldm | .1738644 | .154844 | 1.12 | 0.262 | -.1296243 | .477353 |
| ever_ldr | -.173937 | .1445172 | -1.20 | 0.229 | -.4571855 | .1093114 |
| ever_lep | -.3694799 | .2344025 | -1.58 | 0.115 | -.8289003 | .0899405 |
| daysabs04 | .0499899 | .0046244 | 10.81 | 0.000 | .0409261 | .0590536 |
| diffsch_cum0405 | .2816728 | .0506027 | 5.57 | 0.000 | .1824934 | .3808522 |
| mathach04_num | -.2727632 | .0604938 | -4.51 | 0.000 | -.3913288 | -.1541975 |
| readach04_num | -.2047901 | .0488891 | -4.19 | 0.000 | -.3006109 | -.1089693 |
| _cons | -3.751679 | .2291345 | -16.37 | 0.000 | -4.200774 | -3.302584 |

## Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.3747303 | .3346769 | -1.12 | 0.263 | -1.030685 | .2812244 |
| amin | -.5234613 | .2678804 | -1.95 | 0.051 | -1.048497 | .0015745 |
| blck | -.2649817 | .0742846 | -3.57 | 0.000 | -.4105769 | -.1193865 |
| hisp | .0809731 | .2262513 | 0.36 | 0.720 | -.3624712 | .5244175 |
| mult | -.2222891 | .2126253 | -1.05 | 0.296 | -.639027 | .1944489 |
| whte | 0 | (omitted) | | | | |
| gender_num | .52865 | .063097 | 8.38 | 0.000 | .4049821 | .6523179 |
| ever_aigm | -.2313082 | .15268 | -1.51 | 0.130 | -.5305555 | .0679392 |
| ever_aigr | .1867535 | .1526369 | 1.22 | 0.221 | -.1124092 | .4859163 |
| ever_ec | .2569429 | .0943183 | 2.72 | 0.006 | .0720825 | .4418033 |
| ever_ed | 1.094582 | .0845357 | 12.95 | 0.000 | .9288954 | 1.260269 |
| ever_ldm | .1594609 | .1545936 | 1.03 | 0.302 | -.143537 | .4624588 |
| ever_ldr | -.1172348 | .1438493 | -0.81 | 0.415 | -.3991742 | .1647046 |
| ever_lep | -.3573462 | .2313033 | -1.54 | 0.122 | -.8106923 | .0959998 |
| daysabs05 | .0417708 | .0043039 | 9.71 | 0.000 | .0333353 | .0502064 |
| diffsch_cum0506 | .3558949 | .0468363 | 7.60 | 0.000 | .2640975 | .4476923 |
| mathach05_num | -.3083882 | .0533979 | -5.78 | 0.000 | -.4130462 | -.2037302 |
| readach05_num | -.18239 | .0575125 | -3.17 | 0.002 | -.2951124 | -.0696676 |
| _cons | -3.978447 | .2332173 | -17.06 | 0.000 | -4.435544 | -3.521349 |

## Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.2930451 | .3368637 | -0.87 | 0.384 | -.9532859 | .3671957 |
| amin | -.6097492 | .2672194 | -2.28 | 0.022 | -1.13349 | -.0860088 |
| blck | -.3733771 | .0749941 | -4.98 | 0.000 | -.5203628 | -.2263914 |
| hisp | .0439474 | .2302738 | 0.19 | 0.849 | -.4073809 | .4952758 |
| mult | -.2428797 | .214332 | -1.13 | 0.257 | -.6629627 | .1772034 |
| whte | 0 | (omitted) | | | | |
| gender_num | .5262435 | .0636219 | 8.27 | 0.000 | .401547 | .6509401 |
| ever_aigm | .0154615 | .1567389 | 0.10 | 0.921 | -.291741 | .3226641 |
| ever_aigr | .2438752 | .1555367 | 1.57 | 0.117 | -.0609711 | .5487215 |
| ever_ec | .1654449 | .094749 | 1.75 | 0.081 | -.0202597 | .3511495 |
| ever_ed | .9577297 | .0852125 | 11.24 | 0.000 | .7907163 | 1.124743 |
| ever_ldm | .1749683 | .1574619 | 1.11 | 0.266 | -.1336514 | .483588 |
| ever_ldr | -.1550867 | .1473736 | -1.05 | 0.293 | -.4439336 | .1337601 |
| ever_lep | -.3329187 | .2353402 | -1.41 | 0.157 | -.794177 | .1283397 |
| daysabs06 | .0471975 | .0035149 | 13.43 | 0.000 | .0403084 | .0540867 |
| diffsch_cum0607 | .2468474 | .0406117 | 6.08 | 0.000 | .16725 | .3264448 |
| mathach06_num | -.5130686 | .0484781 | -10.58 | 0.000 | -.608084 | -.4180533 |
| readach06_num | -.1381347 | .0551861 | -2.50 | 0.012 | -.2462976 | -.0299719 |
| _cons | -3.781113 | .2031366 | -18.61 | 0.000 | -4.179253 | -3.382972 |

## Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.2682602 | .3377308 | -0.79 | 0.427 | -.9302004 | .3936801 |
| amin | -.6761582 | .268436 | -2.52 | 0.012 | -1.202283 | -.1500333 |
| blck | -.3916911 | .0745397 | -5.25 | 0.000 | -.5377862 | -.2455961 |
| hisp | -.0024586 | .231908 | -0.01 | 0.992 | -.45699 | .4520729 |
| mult | -.2382117 | .2142116 | -1.11 | 0.266 | -.6580587 | .1816352 |
| whte | 0 | (omitted) | | | | |
| gender_num | .5258479 | .0638571 | 8.23 | 0.000 | .4006903 | .6510054 |
| ever_aigm | -.0301666 | .1576399 | -0.19 | 0.848 | -.3391351 | .278802 |
| ever_aigr | .2969071 | .1565302 | 1.90 | 0.058 | -.0098864 | .6037006 |
| ever_ec | .1053835 | .0962256 | 1.10 | 0.273 | -.0832153 | .2939823 |
| ever_ed | .9554668 | .0858187 | 11.13 | 0.000 | .7872653 | 1.123668 |
| ever_ldm | .1680503 | .1585235 | 1.06 | 0.289 | -.1426501 | .4787507 |
| ever_ldr | -.1255804 | .1481827 | -0.85 | 0.397 | -.4160131 | .1648523 |
| ever_lep | -.3099705 | .2367774 | -1.31 | 0.190 | -.7740457 | .1541048 |
| daysabs07 | .0479633 | .0029768 | 16.11 | 0.000 | .0421288 | .0537978 |
| diffsch_cum0708 | .2465669 | .0351163 | 7.02 | 0.000 | .1777402 | .3153937 |
| mathach07_num | -.4670632 | .0465213 | -10.04 | 0.000 | -.5582433 | -.3758831 |
| readach07_num | -.2146239 | .0523922 | -4.10 | 0.000 | -.3173107 | -.1119372 |
| _cons | -3.689125 | .1999405 | -18.45 | 0.000 | -4.081001 | -3.297249 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.1574931 | .3366971 | -0.47 | 0.640 | -.8174072 | .502421 |
| amin | -.7696435 | .2690969 | -2.86 | 0.004 | -1.297064 | -.2422233 |
| blck | -.4559746 | .076341 | -5.97 | 0.000 | -.6056002 | -.306349 |
| hisp | .0193125 | .2379633 | 0.08 | 0.935 | -.4470871 | .4857121 |
| mult | -.2669623 | .2201394 | -1.21 | 0.225 | -.6984276 | .1645031 |
| whte | 0 | (omitted) | | | | |
| gender_num | .5316586 | .0642727 | 8.27 | 0.000 | .4056864 | .6576307 |
| ever_aigm | .0087086 | .1596663 | 0.05 | 0.957 | -.3042317 | .3216488 |
| ever_aigr | .3570164 | .1592149 | 2.24 | 0.025 | .0449609 | .6690719 |
| ever_ec | .0657951 | .0982841 | 0.67 | 0.503 | -.1268383 | .2584284 |
| ever_ed | .8775044 | .0863758 | 10.16 | 0.000 | .7082111 | 1.046798 |
| ever_ldm | .1890352 | .1622424 | 1.17 | 0.244 | -.128954 | .5070244 |
| ever_ldr | -.1334458 | .1507967 | -0.88 | 0.376 | -.429002 | .1621103 |
| ever_lep | -.3847434 | .2431222 | -1.58 | 0.114 | -.8612541 | .0917673 |
| daysabs08 | .0518708 | .0030018 | 17.28 | 0.000 | .0459875 | .0577541 |
| diffsch_cum0809 | .2037585 | .0355182 | 5.74 | 0.000 | .134144 | .2733729 |
| mathach08_num | -.6663827 | .0532204 | -12.52 | 0.000 | -.7706928 | -.5620726 |
| readach08_num | -.2106391 | .0474417 | -4.44 | 0.000 | -.3036231 | -.1176551 |
| _cons | -3.366398 | .1971443 | -17.08 | 0.000 | -3.752794 | -2.980003 |

## b. Initial Logistic Models – Graduate as Dependent Variable

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | .3414895 | .1175444 | 2.91 | 0.004 | .1111067 | .5718724 |
| amin | -.2622318 | .0879282 | -2.98 | 0.003 | -.4345678 | -.0898958 |
| blck | .2611322 | .0322636 | 8.09 | 0.000 | .1978966 | .3243677 |
| hisp | -.1124099 | .0929087 | -1.21 | 0.226 | -.2945076 | .0696878 |
| mult | -.1146031 | .0810974 | -1.41 | 0.158 | -.2735511 | .0443448 |
| whte | 0 | (omitted) | | | | |
| gender_num | -.0040798 | .0259524 | -0.16 | 0.875 | -.0549456 | .0467861 |
| ever_aigm | -.0162664 | .0557143 | -0.29 | 0.770 | -.1254645 | .0929316 |
| ever_aigr | -.3209435 | .0555741 | -5.78 | 0.000 | -.4298667 | -.2120202 |
| ever_ec | -.1349026 | .0453884 | -2.97 | 0.003 | -.2238623 | -.045943 |
| ever_ed | -1.101333 | .0320231 | -34.39 | 0.000 | -1.164097 | -1.038569 |
| ever_ldm | -.1922019 | .0802154 | -2.40 | 0.017 | -.3494212 | -.0349827 |
| ever_ldr | .1403862 | .0720236 | 1.95 | 0.051 | -.0007775 | .2815499 |
| ever_lep | .2573489 | .0934517 | 2.75 | 0.006 | .074187 | .4405109 |
| diffsch_cum0304 | -.2885794 | .0337329 | -8.55 | 0.000 | -.3546948 | -.2224641 |
| mathach03_num | .1152904 | .0268703 | 4.29 | 0.000 | .0626255 | .1679553 |
| readach03_num | .1312674 | .0222593 | 5.90 | 0.000 | .0876401 | .1748948 |
| _cons | 1.837191 | .095345 | 19.27 | 0.000 | 1.650319 | 2.024064 |

## Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | .1603435 | .1171172 | 1.37 | 0.171 | -.069202 | .3898891 |
| amin | -.2664486 | .0898434 | -2.97 | 0.003 | -.4425385 | -.0903587 |
| blck | .1276043 | .0331915 | 3.84 | 0.000 | .0625503 | .1926584 |
| hisp | -.17831 | .0933727 | -1.91 | 0.056 | -.3613171 | .0046972 |
| mult | -.1781466 | .0817974 | -2.18 | 0.029 | -.3384666 | -.0178266 |
| whte | 0 | (omitted) | | | | |
| gender_num | .0006626 | .0261734 | 0.03 | 0.980 | -.0506363 | .0519616 |
| ever_aigm | -.0539964 | .0561388 | -0.96 | 0.336 | -.1640264 | .0560335 |
| ever_aigr | -.3244373 | .0563428 | -5.76 | 0.000 | -.4348672 | -.2140073 |
| ever_ec | -.1065089 | .0458549 | -2.32 | 0.020 | -.1963829 | -.0166348 |
| ever_ed | -.9580757 | .0325733 | -29.41 | 0.000 | -1.021918 | -.8942331 |
| ever_ldm | -.1551852 | .0810711 | -1.91 | 0.056 | -.3140816 | .0037112 |
| ever_ldr | .1354523 | .0725107 | 1.87 | 0.062 | -.006666 | .2775705 |
| ever_lep | .1524501 | .0934885 | 1.63 | 0.103 | -.0307841 | .3356843 |
| daysabs04 | -.0730137 | .0022663 | -32.22 | 0.000 | -.0774555 | -.0685719 |
| diffsch_cum0405 | -.2675297 | .0230757 | -11.59 | 0.000 | -.3127573 | -.2223022 |
| mathach04_num | .1205788 | .0285989 | 4.22 | 0.000 | .064526 | .1766316 |
| readach04_num | .1469284 | .0226063 | 6.50 | 0.000 | .1026209 | .1912359 |
| _cons | 2.216204 | .1064566 | 20.82 | 0.000 | 2.007553 | 2.424856 |

## Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | .1079824 | .1162997 | 0.93 | 0.353 | -.1199608 | .3359256 |
| amin | -.4038223 | .0904028 | -4.47 | 0.000 | -.5810085 | -.2266361 |
| blck | .1129862 | .033568 | 3.37 | 0.001 | .0471941 | .1787783 |
| hisp | -.184252 | .0927668 | -1.99 | 0.047 | -.3660715 | -.0024324 |
| mult | -.1601953 | .082659 | -1.94 | 0.053 | -.322204 | .0018134 |
| whte | 0 | (omitted) | | | | |
| gender_num | .0052223 | .0262891 | 0.20 | 0.843 | -.0463035 | .0567481 |
| ever_aigm | -.056965 | .056447 | -1.01 | 0.313 | -.1675991 | .053669 |
| ever_aigr | -.3458705 | .0566294 | -6.11 | 0.000 | -.4568621 | -.234879 |
| ever_ec | -.0999032 | .0461715 | -2.16 | 0.030 | -.1903976 | -.0094088 |
| ever_ed | -.9447237 | .0327829 | -28.82 | 0.000 | -1.008977 | -.8804704 |
| ever_ldm | -.1232388 | .0819667 | -1.50 | 0.133 | -.2838905 | .0374129 |
| ever_ldr | .1362436 | .0729375 | 1.87 | 0.062 | -.0067113 | .2791984 |
| ever_lep | .1083061 | .0926662 | 1.17 | 0.242 | -.0733163 | .2899285 |
| daysabs05 | -.0775369 | .0022228 | -34.88 | 0.000 | -.0818935 | -.0731803 |
| diffsch_cum0506 | -.3117847 | .0215137 | -14.49 | 0.000 | -.3539507 | -.2696186 |
| mathach05_num | .1352861 | .0255241 | 5.30 | 0.000 | .0852598 | .1853124 |
| readach05_num | .1617957 | .0264597 | 6.11 | 0.000 | .1099356 | .2136558 |
| _cons | 2.429901 | .1077519 | 22.55 | 0.000 | 2.218711 | 2.64109 |

## Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | .0478664 | .1176029 | 0.41 | 0.684 | -.1826311 | .2783639 |
| amin | -.3004695 | .0905732 | -3.32 | 0.001 | -.4779898 | -.1229492 |
| blck | .1955118 | .0340469 | 5.74 | 0.000 | .128781 | .2622425 |
| hisp | -.172225 | .0941864 | -1.83 | 0.067 | -.3568269 | .012377 |
| mult | -.165022 | .0838019 | -1.97 | 0.049 | -.3292707 | -.0007733 |
| whte | 0 | (omitted) | | | | |
| gender_num | .0210748 | .0266243 | 0.79 | 0.429 | -.031108 | .0732575 |
| ever_aigm | -.2041449 | .0579467 | -3.52 | 0.000 | -.3177184 | -.0905714 |
| ever_aigr | -.3861197 | .0575823 | -6.71 | 0.000 | -.4989789 | -.2732605 |
| ever_ec | -.0326784 | .0465988 | -0.70 | 0.483 | -.1240103 | .0586535 |
| ever_ed | -.8488702 | .0332438 | -25.53 | 0.000 | -.9140268 | -.7837136 |
| ever_ldm | -.095119 | .0836283 | -1.14 | 0.255 | -.2590276 | .0687895 |
| ever_ldr | .1203318 | .0742871 | 1.62 | 0.105 | -.0252682 | .2659317 |
| ever_lep | .1090283 | .0940388 | 1.16 | 0.246 | -.0752844 | .293341 |
| daysabs06 | -.0792516 | .0020054 | -39.52 | 0.000 | -.0831821 | -.0753211 |
| diffsch_cum0607 | -.229638 | .0189128 | -12.14 | 0.000 | -.2667064 | -.1925696 |
| mathach06_num | .2660068 | .0217158 | 12.25 | 0.000 | .2234446 | .308569 |
| readach06_num | .1274495 | .0253835 | 5.02 | 0.000 | .0776987 | .1772004 |
| _cons | 2.273191 | .0920597 | 24.69 | 0.000 | 2.092757 | 2.453624 |

## Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | .0122343 | .1183339 | 0.10 | 0.918 | -.2196958 | .2441644 |
| amin | -.224322 | .0927663 | -2.42 | 0.016 | -.4061405 | -.0425035 |
| blck | .194969 | .0343488 | 5.68 | 0.000 | .1276465 | .2622915 |
| hisp | -.133495 | .0956943 | -1.40 | 0.163 | -.3210524 | .0540624 |
| mult | -.1484639 | .0854752 | -1.74 | 0.082 | -.3159923 | .0190644 |
| whte | 0 | (omitted) | | | | |
| gender_num | .0090763 | .0269571 | 0.34 | 0.736 | -.0437588 | .0619113 |
| ever_aigm | -.1749428 | .058602 | -2.99 | 0.003 | -.2898006 | -.0600849 |
| ever_aigr | -.3949508 | .0581861 | -6.79 | 0.000 | -.5089934 | -.2809081 |
| ever_ec | -.0019618 | .0476564 | -0.04 | 0.967 | -.0953666 | .0914431 |
| ever_ed | -.8252956 | .0335682 | -24.59 | 0.000 | -.891088 | -.7595032 |
| ever_ldm | -.1154213 | .0853889 | -1.35 | 0.176 | -.2827804 | .0519378 |
| ever_ldr | .1263661 | .0757901 | 1.67 | 0.095 | -.0221797 | .2749119 |
| ever_lep | .0829576 | .0954828 | 0.87 | 0.385 | -.1041852 | .2701005 |
| daysabs07 | -.0889337 | .0019115 | -46.53 | 0.000 | -.0926802 | -.0851872 |
| diffsch_cum0708 | -.216492 | .0168491 | -12.85 | 0.000 | -.2495157 | -.1834683 |
| mathach07_num | .2345995 | .0212117 | 11.06 | 0.000 | .1930253 | .2761736 |
| readach07_num | .1460548 | .0252527 | 5.78 | 0.000 | .0965604 | .1955492 |
| _cons | 2.397132 | .0935401 | 25.63 | 0.000 | 2.213797 | 2.580467 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| asian | -.0974757 | .1185919 | -0.82 | 0.411 | -.3299116 | .1349602 |
| amin | -.1886808 | .0952593 | -1.98 | 0.048 | -.3753856 | -.001976 |
| blck | .1718347 | .0351884 | 4.88 | 0.000 | .1028667 | .2408027 |
| hisp | -.2039477 | .0971493 | -2.10 | 0.036 | -.3943568 | -.0135387 |
| mult | -.1696258 | .0860095 | -1.97 | 0.049 | -.3382014 | -.0010503 |
| whte | 0 | (omitted) | | | | |
| gender_num | -.0310953 | .0272989 | -1.14 | 0.255 | -.0846001 | .0224096 |
| ever_aigm | -.1982531 | .059147 | -3.35 | 0.001 | -.314179 | -.0823272 |
| ever_aigr | -.4395233 | .0590673 | -7.44 | 0.000 | -.5552932 | -.3237535 |
| ever_ec | .0327508 | .0487364 | 0.67 | 0.502 | -.0627708 | .1282724 |
| ever_ed | -.7524814 | .0340706 | -22.09 | 0.000 | -.8192585 | -.6857042 |
| ever_ldm | -.1918563 | .087206 | -2.20 | 0.028 | -.3627768 | -.0209358 |
| ever_ldr | .1420672 | .0774938 | 1.83 | 0.067 | -.0098178 | .2939522 |
| ever_lep | .1168795 | .0970294 | 1.20 | 0.228 | -.0732945 | .3070535 |
| daysabs08 | -.1016194 | .0019505 | -52.10 | 0.000 | -.1054423 | -.0977965 |
| diffsch_cum0809 | -.1929324 | .0167905 | -11.49 | 0.000 | -.2258412 | -.1600235 |
| mathach08_num | .322858 | .0244237 | 13.22 | 0.000 | .2749884 | .3707275 |
| readach08_num | .1262538 | .0209973 | 6.01 | 0.000 | .0851 | .1674077 |
| _cons | 2.532225 | .0906097 | 27.95 | 0.000 | 2.354634 | 2.709817 |

## c. Logistic Models by Sub-Cohort – Dropout as Dependent Variable

### Black male

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .1744102 | .0896208 | 1.95 | 0.052 | -.0012434 | .3500637 |
| mathach03_num | -.3119573 | .0673076 | -4.63 | 0.000 | -.4438778 | -.1800368 |
| readach03_num | -.1892851 | .0554784 | -3.41 | 0.001 | -.2980207 | -.0805495 |
| _cons | -1.420373 | .1627364 | -8.73 | 0.000 | -1.73933 | -1.101416 |

Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0365635 | .0060106 | 6.08 | 0.000 | .0247829 | .0483441 |
| diffsch_cum0405 | .2028149 | .0622375 | 3.26 | 0.001 | .0808317 | .3247982 |
| mathach04_num | -.3079202 | .0706484 | -4.36 | 0.000 | -.4463886 | -.1694519 |
| readach04_num | -.1577054 | .0586599 | -2.69 | 0.007 | -.2726767 | -.042734 |
| _cons | -1.765576 | .2015876 | -8.76 | 0.000 | -2.160681 | -1.370472 |

Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0354902 | .0058905 | 6.02 | 0.000 | .0239451 | .0470354 |
| diffsch_cum0506 | .234652 | .060595 | 3.87 | 0.000 | .1158879 | .353416 |
| mathach05_num | -.2960163 | .0641732 | -4.61 | 0.000 | -.4217934 | -.1702391 |
| readach05_num | -.2638506 | .070459 | -3.74 | 0.000 | -.4019476 | -.1257536 |
| _cons | -1.722624 | .2219895 | -7.76 | 0.000 | -2.157715 | -1.287532 |

Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0288812 | .0043086 | 6.70 | 0.000 | .0204365 | .0373258 |
| diffsch_cum0607 | .1950394 | .0524338 | 3.72 | 0.000 | .0922711 | .2978078 |
| mathach06_num | -.4230823 | .0656246 | -6.45 | 0.000 | -.5517042 | -.2944604 |
| readach06_num | -.2670683 | .0685865 | -3.89 | 0.000 | -.4014953 | -.1326412 |
| _cons | -1.846876 | .1978966 | -9.33 | 0.000 | -2.234746 | -1.459006 |

Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0287104 | .003917 | 7.33 | 0.000 | .0210333 | .0363875 |
| diffsch_cum0708 | .2018169 | .0457812 | 4.41 | 0.000 | .1120874 | .2915464 |
| mathach07_num | -.4831674 | .0645032 | -7.49 | 0.000 | -.6095913 | -.3567435 |
| readach07_num | -.2668705 | .0652585 | -4.09 | 0.000 | -.3947748 | -.1389662 |
| _cons | -1.779121 | .2016473 | -8.82 | 0.000 | -2.174342 | -1.383899 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0317272 | .0039921 | 7.95 | 0.000 | .0239028 | .0395516 |
| diffsch_cum0809 | .1943996 | .0481179 | 4.04 | 0.000 | .1000903 | .288709 |
| mathach08_num | -.5546502 | .0772756 | -7.18 | 0.000 | -.7061075 | -.4031928 |
| readach08_num | -.2583942 | .07372 | -3.51 | 0.000 | -.4028826 | -.1139057 |
| _cons | -2.00071 | .2272421 | -8.80 | 0.000 | -2.446096 | -1.555323 |

**Black female**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .3363407 | .1104393 | 3.05 | 0.002 | .1198836 | .5527977 |
| mathach03_num | -.471105 | .088823 | -5.30 | 0.000 | -.6451949 | -.2970151 |
| readach03_num | -.2655347 | .0738146 | -3.60 | 0.000 | -.4102086 | -.1208608 |
| _cons | -1.322064 | .2170011 | -6.09 | 0.000 | -1.747379 | -.8967501 |

Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0503296 | .0077464 | 6.50 | 0.000 | .035147 | .0655123 |
| diffsch_cum0405 | .2606524 | .0800258 | 3.26 | 0.001 | .1038048 | .4175 |
| mathach04_num | -.3337898 | .0950663 | -3.51 | 0.000 | -.5201164 | -.1474633 |
| readach04_num | -.3935576 | .0765556 | -5.14 | 0.000 | -.543604 | -.2435113 |
| _cons | -1.689386 | .2736135 | -6.17 | 0.000 | -2.225659 | -1.153114 |

Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0495654 | .0076558 | 6.47 | 0.000 | .0345603 | .0645705 |
| diffsch_cum0506 | .3282933 | .0765161 | 4.29 | 0.000 | .1783245 | .4782621 |
| mathach05_num | -.4025483 | .0821834 | -4.90 | 0.000 | -.5636248 | -.2414718 |
| readach05_num | -.320339 | .0947614 | -3.38 | 0.001 | -.5060678 | -.1346102 |
| _cons | -1.984385 | .2905661 | -6.83 | 0.000 | -2.553884 | -1.414886 |

Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .050064 | .0054176 | 9.24 | 0.000 | .0394457 | .0606824 |
| diffsch_cum0607 | .1495811 | .0670479 | 2.23 | 0.026 | .0181697 | .2809925 |
| mathach06_num | -.5932981 | .0859389 | -6.90 | 0.000 | -.7617353 | -.4248609 |
| readach06_num | -.3208937 | .0930642 | -3.45 | 0.001 | -.5032961 | -.1384913 |
| _cons | -1.954982 | .2700544 | -7.24 | 0.000 | -2.484279 | -1.425685 |

Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0540421 | .0050806 | 10.64 | 0.000 | .0440843 | .0639999 |
| diffsch_cum0708 | .1894717 | .0575336 | 3.29 | 0.001 | .076708 | .3022355 |
| mathach07_num | -.5129289 | .0839753 | -6.11 | 0.000 | -.6775175 | -.3483404 |
| readach07_num | -.3404523 | .0917784 | -3.71 | 0.000 | -.5203347 | -.1605699 |
| _cons | -2.23555 | .2764448 | -8.09 | 0.000 | -2.777371 | -1.693728 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0428679 | .0046288 | 9.26 | 0.000 | .0337956 | .0519402 |
| diffsch_cum0809 | .143063 | .0590239 | 2.42 | 0.015 | .0273782 | .2587478 |
| mathach08_num | -.4526938 | .0964697 | -4.69 | 0.000 | -.641771 | -.2636167 |
| readach08_num | -.4494715 | .0897586 | -5.01 | 0.000 | -.6253951 | -.2735479 |
| _cons | -2.381851 | .2912561 | -8.18 | 0.000 | -2.952702 | -1.810999 |

**White male**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .3262762 | .0929667 | 3.51 | 0.000 | .1440648 | .5084876 |
| mathach03_num | -.5471704 | .0630544 | -8.68 | 0.000 | -.6707547 | -.4235862 |
| readach03_num | -.2254731 | .0498634 | -4.52 | 0.000 | -.3232036 | -.1277425 |
| _cons | -.6346892 | .165567 | -3.83 | 0.000 | -.9591945 | -.3101838 |

## Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0448272 | .005191 | 8.64 | 0.000 | .0346529 | .0550014 |
| diffsch_cum0405 | .3089598 | .0623566 | 4.95 | 0.000 | .1867432 | .4311764 |
| mathach04_num | -.4356163 | .0693631 | -6.28 | 0.000 | -.5715654 | -.2996672 |
| readach04_num | -.2859421 | .0513626 | -5.57 | 0.000 | -.386611 | -.1852731 |
| _cons | -1.129223 | .2121855 | -5.32 | 0.000 | -1.545099 | -.7133475 |

## Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0504258 | .0048189 | 10.46 | 0.000 | .040981 | .0598706 |
| diffsch_cum0506 | .2902442 | .0587569 | 4.94 | 0.000 | .1750827 | .4054056 |
| mathach05_num | -.435147 | .0631273 | -6.89 | 0.000 | -.5588743 | -.3114197 |
| readach05_num | -.2965375 | .0617162 | -4.80 | 0.000 | -.417499 | -.1755759 |
| _cons | -1.383001 | .2193909 | -6.30 | 0.000 | -1.812999 | -.9530024 |

## Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .050061 | .0040495 | 12.36 | 0.000 | .0421241 | .057998 |
| diffsch_cum0607 | .2146095 | .0520537 | 4.12 | 0.000 | .1125861 | .3166329 |
| mathach06_num | -.6571593 | .0538345 | -12.21 | 0.000 | -.7626729 | -.5516457 |
| readach06_num | -.1410353 | .0614768 | -2.29 | 0.022 | -.2615276 | -.020543 |
| _cons | -1.696109 | .1859076 | -9.12 | 0.000 | -2.060481 | -1.331737 |

## Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0430898 | .0037896 | 11.37 | 0.000 | .0356624 | .0505172 |
| diffsch_cum0708 | .2180848 | .0459497 | 4.75 | 0.000 | .1280251 | .3081445 |
| mathach07_num | -.632342 | .0523262 | -12.08 | 0.000 | -.7348995 | -.5297845 |
| readach07_num | -.1338157 | .0619209 | -2.16 | 0.031 | -.2551783 | -.012453 |
| _cons | -1.786918 | .1954517 | -9.14 | 0.000 | -2.169996 | -1.40384 |

## Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0456222 | .0039049 | 11.68 | 0.000 | .0379688 | .0532755 |
| diffsch_cum0809 | .1671486 | .0478714 | 3.49 | 0.000 | .0733223 | .2609748 |
| mathach08_num | -.7024795 | .0639868 | -10.98 | 0.000 | -.8278914 | -.5770676 |
| readach08_num | -.2230794 | .0567538 | -3.93 | 0.000 | -.3343149 | -.1118439 |
| _cons | -1.545794 | .2075972 | -7.45 | 0.000 | -1.952677 | -1.138911 |

## White female

### Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .4672625 | .1054689 | 4.43 | 0.000 | .2605473 | .6739777 |
| mathach03_num | -.5640184 | .0772205 | -7.30 | 0.000 | -.7153677 | -.412669 |
| readach03_num | -.2842722 | .0653076 | -4.35 | 0.000 | -.4122727 | -.1562716 |
| _cons | -.7936882 | .2030611 | -3.91 | 0.000 | -1.191681 | -.3956959 |

### Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0566506 | .005828 | 9.72 | 0.000 | .0452278 | .0680733 |
| diffsch_cum0405 | .3695221 | .0731882 | 5.05 | 0.000 | .2260758 | .5129683 |
| mathach04_num | -.3753841 | .0883334 | -4.25 | 0.000 | -.5485143 | -.2022538 |
| readach04_num | -.3797063 | .0671115 | -5.66 | 0.000 | -.5112425 | -.2481701 |
| _cons | -1.53095 | .2634374 | -5.81 | 0.000 | -2.047278 | -1.014622 |

### Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0498109 | .0058603 | 8.50 | 0.000 | .0383249 | .0612969 |
| diffsch_cum0506 | .3732252 | .0700013 | 5.33 | 0.000 | .2360252 | .5104251 |
| mathach05_num | -.3568939 | .0790015 | -4.52 | 0.000 | -.5117339 | -.2020539 |
| readach05_num | -.4583795 | .0823199 | -5.57 | 0.000 | -.6197235 | -.2970355 |
| _cons | -1.609578 | .2795995 | -5.76 | 0.000 | -2.157583 | -1.061573 |

### Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0507253 | .0048397 | 10.48 | 0.000 | .0412397 | .0602108 |
| diffsch_cum0607 | .2880853 | .0606848 | 4.75 | 0.000 | .1691453 | .4070254 |
| mathach06_num | -.6346907 | .0671127 | -9.46 | 0.000 | -.7662292 | -.5031523 |
| readach06_num | -.2025753 | .0822379 | -2.46 | 0.014 | -.3637585 | -.041392 |
| _cons | -2.047912 | .2429767 | -8.43 | 0.000 | -2.524138 | -1.571687 |

### Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0441966 | .0042817 | 10.32 | 0.000 | .0358046 | .0525886 |
| diffsch_cum0708 | .2818787 | .054517 | 5.17 | 0.000 | .1750274 | .3887301 |
| mathach07_num | -.5552083 | .0646531 | -8.59 | 0.000 | -.681926 | -.4284905 |
| readach07_num | -.2297005 | .080554 | -2.85 | 0.004 | -.3875835 | -.0718176 |
| _cons | -2.149887 | .2516483 | -8.54 | 0.000 | -2.643109 | -1.656665 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0523472 | .004185 | 12.51 | 0.000 | .0441447 | .0605497 |
| diffsch_cum0809 | .2311702 | .0561412 | 4.12 | 0.000 | .1211355 | .341205 |
| mathach08_num | -.6651568 | .0787072 | -8.45 | 0.000 | -.8194201 | -.5108935 |
| readach08_num | -.2450606 | .0677273 | -3.62 | 0.000 | -.3778036 | -.1123176 |
| _cons | -2.171788 | .255081 | -8.51 | 0.000 | -2.671738 | -1.671839 |

**Hispanic male**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .3847902 | .2174488 | 1.77 | 0.077 | -.0414017 | .8109821 |
| mathach03_num | .0263929 | .1681585 | 0.16 | 0.875 | -.3031918 | .3559775 |
| readach03_num | -.3534993 | .1261902 | -2.80 | 0.005 | -.6008275 | -.1061712 |
| _cons | -2.021825 | .432091 | -4.68 | 0.000 | -2.868707 | -1.174942 |

Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0649446 | .0137638 | 4.72 | 0.000 | .0379681 | .0919211 |
| diffsch_cum0405 | .5033746 | .1513285 | 3.33 | 0.001 | .2067763 | .7999729 |
| mathach04_num | -.1499845 | .1727861 | -0.87 | 0.385 | -.4886391 | .18867 |
| readach04_num | -.4043299 | .1282114 | -3.15 | 0.002 | -.6556196 | -.1530401 |
| _cons | -1.874114 | .5047904 | -3.71 | 0.000 | -2.863485 | -.8847435 |

Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0575463 | .0140282 | 4.10 | 0.000 | .0300515 | .085041 |
| diffsch_cum0506 | .4004102 | .1425425 | 2.81 | 0.005 | .1210321 | .6797883 |
| mathach05_num | -.2607197 | .1533522 | -1.70 | 0.089 | -.5612844 | .039845 |
| readach05_num | -.3699929 | .1494962 | -2.47 | 0.013 | -.663 | -.0769858 |
| _cons | -1.77873 | .4846631 | -3.67 | 0.000 | -2.728652 | -.8288078 |

Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0471186 | .0130692 | 3.61 | 0.000 | .0215035 | .0727337 |
| diffsch_cum0607 | .321358 | .1238256 | 2.60 | 0.009 | .0786642 | .5640518 |
| mathach06_num | -.3852902 | .1393289 | -2.77 | 0.006 | -.6583697 | -.1122106 |
| readach06_num | -.0680608 | .1525443 | -0.45 | 0.655 | -.3670421 | .2309206 |
| _cons | -2.562155 | .438505 | -5.84 | 0.000 | -3.421609 | -1.702701 |

Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0323389 | .0103651 | 3.12 | 0.002 | .0120237 | .0526541 |
| diffsch_cum0708 | .2873888 | .111533 | 2.58 | 0.010 | .0687881 | .5059896 |
| mathach07_num | -.297226 | .1398653 | -2.13 | 0.034 | -.571357 | -.0230951 |
| readach07_num | -.0727597 | .149437 | -0.49 | 0.626 | -.3656507 | .2201314 |
| _cons | -2.701245 | .4616507 | -5.85 | 0.000 | -3.606064 | -1.796427 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0317828 | .0115949 | 2.74 | 0.006 | .0090573 | .0545083 |
| diffsch_cum0809 | .1845624 | .1221752 | 1.51 | 0.131 | -.0548966 | .4240214 |
| mathach08_num | -.3815685 | .1646281 | -2.32 | 0.020 | -.7042336 | -.0589033 |
| readach08_num | -.3164675 | .1443524 | -2.19 | 0.028 | -.5993931 | -.0335419 |
| _cons | -2.076923 | .5369371 | -3.87 | 0.000 | -3.1293 | -1.024545 |

**Hispanic female**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .6586424 | .2765394 | 2.38 | 0.017 | .116635 | 1.20065 |
| mathach03_num | .0056288 | .2281584 | 0.02 | 0.980 | -.4415534 | .4528111 |
| readach03_num | -.4823026 | .1722447 | -2.80 | 0.005 | -.8198961 | -.1447092 |
| _cons | -2.201513 | .5772549 | -3.81 | 0.000 | -3.332912 | -1.070114 |

Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0215217 | .0207607 | 1.04 | 0.300 | -.0191686 | .0622119 |
| diffsch_cum0405 | .4295368 | .2003604 | 2.14 | 0.032 | .0368376 | .8222361 |
| mathach04_num | -.2580469 | .2198305 | -1.17 | 0.240 | -.6889068 | .1728129 |
| readach04_num | -.3549835 | .1807815 | -1.96 | 0.050 | -.7093086 | -.0006583 |
| _cons | -1.855293 | .6293173 | -2.95 | 0.003 | -3.088732 | -.6218537 |

Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0189793 | .0189184 | 1.00 | 0.316 | -.0181 | .0560586 |
| diffsch_cum0506 | .4683183 | .1893475 | 2.47 | 0.013 | .0972041 | .8394325 |
| mathach05_num | -.2521242 | .1980866 | -1.27 | 0.203 | -.6403668 | .1361183 |
| readach05_num | -.3811559 | .1996278 | -1.91 | 0.056 | -.7724193 | .0101074 |
| _cons | -2.164072 | .6577536 | -3.29 | 0.001 | -3.453245 | -.8748986 |

Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0205012 | .0172202 | 1.19 | 0.234 | -.0132499 | .0542522 |
| diffsch_cum0607 | .4449521 | .168652 | 2.64 | 0.008 | .1144003 | .7755039 |
| mathach06_num | -.565888 | .1882581 | -3.01 | 0.003 | -.934867 | -.1969089 |
| readach06_num | .0035878 | .2182678 | 0.02 | 0.987 | -.4242092 | .4313848 |
| _cons | -2.919233 | .644268 | -4.53 | 0.000 | -4.181975 | -1.656491 |

Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0522241 | .0122308 | 4.27 | 0.000 | .0282522 | .076196 |
| diffsch_cum0708 | .4197091 | .1399819 | 3.00 | 0.003 | .1453495 | .6940686 |
| mathach07_num | -.3350463 | .1805707 | -1.86 | 0.064 | -.6889583 | .0188657 |
| readach07_num | -.482399 | .2073402 | -2.33 | 0.020 | -.8887784 | -.0760196 |
| _cons | -2.35332 | .6104468 | -3.86 | 0.000 | -3.549774 | -1.156867 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0478175 | .0114336 | 4.18 | 0.000 | .0254082 | .0702269 |
| diffsch_cum0809 | .3773792 | .1505618 | 2.51 | 0.012 | .0822835 | .6724749 |
| mathach08_num | -.5072587 | .2252717 | -2.25 | 0.024 | -.9487831 | -.0657342 |
| readach08_num | -.2532646 | .1889666 | -1.34 | 0.180 | -.6236323 | .1171031 |
| _cons | -3.113067 | .6955157 | -4.48 | 0.000 | -4.476253 | -1.749881 |

**Economically disadvantaged**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .211294 | .0483798 | 4.37 | 0.000 | .1164712 | .3061167 |
| mathach03_num | -.2350147 | .0362221 | -6.49 | 0.000 | -.3060088 | -.1640206 |
| readach03_num | -.2039 | .0292321 | -6.98 | 0.000 | -.2611938 | -.1466062 |
| _cons | -1.571477 | .0918368 | -17.11 | 0.000 | -1.751474 | -1.39148 |

Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0374156 | .0030046 | 12.45 | 0.000 | .0315268 | .0433045 |
| diffsch_cum0405 | .1958697 | .0336449 | 5.82 | 0.000 | .1299269 | .2618125 |
| mathach04_num | -.2456898 | .0387333 | -6.34 | 0.000 | -.3216057 | -.1697739 |
| readach04_num | -.1974669 | .0307931 | -6.41 | 0.000 | -.2578203 | -.1371134 |
| _cons | -1.852225 | .1130086 | -16.39 | 0.000 | -2.073718 | -1.630732 |

Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0368859 | .0028783 | 12.82 | 0.000 | .0312446 | .0425272 |
| diffsch_cum0506 | .2171204 | .0317396 | 6.84 | 0.000 | .1549119 | .2793288 |
| mathach05_num | -.2388237 | .0347712 | -6.87 | 0.000 | -.3069739 | -.1706735 |
| readach05_num | -.2196897 | .037244 | -5.90 | 0.000 | -.2926866 | -.1466929 |
| _cons | -2.001185 | .1201331 | -16.66 | 0.000 | -2.236642 | -1.765729 |

Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0380556 | .0022761 | 16.72 | 0.000 | .0335944 | .0425167 |
| diffsch_cum0607 | .1369924 | .0278785 | 4.91 | 0.000 | .0823516 | .1916332 |
| mathach06_num | -.3727192 | .0330932 | -11.26 | 0.000 | -.4375808 | -.3078577 |
| readach06_num | -.1695066 | .0368405 | -4.60 | 0.000 | -.2417127 | -.0973005 |
| _cons | -2.117714 | .1071941 | -19.76 | 0.000 | -2.32781 | -1.907617 |

Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0366859 | .0020881 | 17.57 | 0.000 | .0325932 | .0407785 |
| diffsch_cum0708 | .1485054 | .0243456 | 6.10 | 0.000 | .1007889 | .196222 |
| mathach07_num | -.3746949 | .0322897 | -11.60 | 0.000 | -.4379815 | -.3114082 |
| readach07_num | -.1676895 | .0360393 | -4.65 | 0.000 | -.2383253 | -.0970538 |
| _cons | -2.181236 | .1112205 | -19.61 | 0.000 | -2.399225 | -1.963248 |

Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .036646 | .0020626 | 17.77 | 0.000 | .0326035 | .0406886 |
| diffsch_cum0809 | .112225 | .0254398 | 4.41 | 0.000 | .062364 | .162086 |
| mathach08_num | -.4379972 | .0389802 | -11.24 | 0.000 | -.5143971 | -.3615973 |
| readach08_num | -.1796336 | .0344958 | -5.21 | 0.000 | -.2472442 | -.112023 |
| _cons | -2.170841 | .1203386 | -18.04 | 0.000 | -2.4067 | -1.934981 |

**Not economically disadvantaged**

Third Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | .3255318 | .1374443 | 2.37 | 0.018 | .0561459 | .5949176 |
| mathach03_num | -.5175055 | .09092 | -5.69 | 0.000 | -.6957054 | -.3393057 |
| readach03_num | -.1928952 | .0776905 | -2.48 | 0.013 | -.3451657 | -.0406247 |
| _cons | -1.821147 | .2536457 | -7.18 | 0.000 | -2.318283 | -1.32401 |

## Fourth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | .0727166 | .0073442 | 9.90 | 0.000 | .0583222 | .087111 |
| diffsch_cum0405 | .1916404 | .0992378 | 1.93 | 0.053 | -.0028622 | .386143 |
| mathach04_num | -.2997255 | .1042309 | -2.88 | 0.004 | -.5040144 | -.0954366 |
| readach04_num | -.4386221 | .0759331 | -5.78 | 0.000 | -.5874481 | -.289796 |
| _cons | -2.161749 | .3139816 | -6.88 | 0.000 | -2.777142 | -1.546357 |

## Fifth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | .0749967 | .0071935 | 10.43 | 0.000 | .0608977 | .0890957 |
| diffsch_cum0506 | .2931686 | .0906423 | 3.23 | 0.001 | .115513 | .4708242 |
| mathach05_num | -.4684772 | .0912663 | -5.13 | 0.000 | -.6473557 | -.2895986 |
| readach05_num | -.3983906 | .09185 | -4.34 | 0.000 | -.5784133 | -.2183679 |
| _cons | -1.960259 | .3145555 | -6.23 | 0.000 | -2.576776 | -1.343741 |

## Sixth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | .0745538 | .0062754 | 11.88 | 0.000 | .0622541 | .0868534 |
| diffsch_cum0607 | .2246909 | .0806947 | 2.78 | 0.005 | .0665321 | .3828496 |
| mathach06_num | -.6481155 | .0734185 | -8.83 | 0.000 | -.7920131 | -.504218 |
| readach06_num | -.1578486 | .0909887 | -1.73 | 0.083 | -.3361832 | .0204861 |
| _cons | -2.68191 | .2733744 | -9.81 | 0.000 | -3.217713 | -2.146106 |

## Seventh Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | .0584791 | .0054529 | 10.72 | 0.000 | .0477917 | .0691665 |
| diffsch_cum0708 | .2384944 | .0744897 | 3.20 | 0.001 | .0924974 | .3844915 |
| mathach07_num | -.5961605 | .0717942 | -8.30 | 0.000 | -.7368746 | -.4554465 |
| readach07_num | -.2153973 | .0906802 | -2.38 | 0.018 | -.3931272 | -.0376673 |
| _cons | -2.573006 | .281198 | -9.15 | 0.000 | -3.124144 | -2.021868 |

## Eighth Grade

| dropout | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | .0771418 | .005573 | 13.84 | 0.000 | .0662189 | .0880647 |
| diffsch_cum0809 | .1822458 | .0764119 | 2.39 | 0.017 | .0324812 | .3320105 |
| mathach08_num | -.7868279 | .0865923 | -9.09 | 0.000 | -.9565456 | -.6171102 |
| readach08_num | -.2195135 | .0777845 | -2.82 | 0.005 | -.3719684 | -.0670586 |
| _cons | -2.396772 | .2899172 | -8.27 | 0.000 | -2.964999 | -1.828544 |

## d. Logistic Models by Sub-Cohort – Graduate as Dependent Variable

### Black male

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.4045431 | .0480156 | -8.43 | 0.000 | -.4986518 | -.3104343 |
| mathach03_num | .2291892 | .0365968 | 6.26 | 0.000 | .1574607 | .3009176 |
| readach03_num | .2495386 | .0297647 | 8.38 | 0.000 | .1912007 | .3078764 |
| _cons | -.4647024 | .0929308 | -5.00 | 0.000 | -.6468434 | -.2825614 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0704347 | .0040208 | -17.52 | 0.000 | -.0783153 | -.0625542 |
| diffsch_cum0405 | -.3294194 | .0341976 | -9.63 | 0.000 | -.3964455 | -.2623932 |
| mathach04_num | .2284768 | .0392712 | 5.82 | 0.000 | .1515067 | .305447 |
| readach04_num | .2406685 | .0317318 | 7.58 | 0.000 | .1784753 | .3028616 |
| _cons | -.0067095 | .115678 | -0.06 | 0.954 | -.2334342 | .2200151 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0781347 | .0041002 | -19.06 | 0.000 | -.0861709 | -.0700985 |
| diffsch_cum0506 | -.3901704 | .0336724 | -11.59 | 0.000 | -.4561671 | -.3241737 |
| mathach05_num | .2984755 | .0355933 | 8.39 | 0.000 | .228714 | .368237 |
| readach05_num | .2449332 | .0388418 | 6.31 | 0.000 | .1688047 | .3210617 |
| _cons | .1643881 | .1258339 | 1.31 | 0.191 | -.0822418 | .4110179 |

Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0770532 | .0034453 | -22.36 | 0.000 | -.083806 | -.0703004 |
| diffsch_cum0607 | -.3048052 | .0298951 | -10.20 | 0.000 | -.3633984 | -.2462119 |
| mathach06_num | .3727602 | .034843 | 10.70 | 0.000 | .3044691 | .4410513 |
| readach06_num | .2411366 | .0385845 | 6.25 | 0.000 | .1655124 | .3167608 |
| _cons | .4714287 | .1125 | 4.19 | 0.000 | .2509327 | .6919247 |

Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.0776471 | .0033285 | -23.33 | 0.000 | -.0841708 | -.0711234 |
| diffsch_cum0708 | -.3079119 | .0267384 | -11.52 | 0.000 | -.3603182 | -.2555055 |
| mathach07_num | .3178325 | .0341011 | 9.32 | 0.000 | .2509956 | .3846694 |
| readach07_num | .2875949 | .0380133 | 7.57 | 0.000 | .2130901 | .3620996 |
| _cons | .5579722 | .1174964 | 4.75 | 0.000 | .3276834 | .7882609 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.0989255 | .003817 | -25.92 | 0.000 | -.1064067 | -.0914443 |
| diffsch_cum0809 | -.2713724 | .0276989 | -9.80 | 0.000 | -.3256613 | -.2170836 |
| mathach08_num | .4577109 | .0427565 | 10.71 | 0.000 | .3739098 | .5415121 |
| readach08_num | .2356891 | .0375713 | 6.27 | 0.000 | .1620508 | .3093275 |
| _cons | .8772923 | .1293192 | 6.78 | 0.000 | .6238313 | 1.130753 |

**Black female**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.502667 | .0492039 | -10.22 | 0.000 | -.599105 | -.4062291 |
| mathach03_num | .2861114 | .039869 | 7.18 | 0.000 | .2079696 | .3642533 |
| readach03_num | .252996 | .0328409 | 7.70 | 0.000 | .188629 | .3173629 |
| _cons | -.4513501 | .1042328 | -4.33 | 0.000 | -.6556427 | -.2470575 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0797972 | .0043726 | -18.25 | 0.000 | -.0883673 | -.071227 |
| diffsch_cum0405 | -.457491 | .0353906 | -12.93 | 0.000 | -.5268554 | -.3881266 |
| mathach04_num | .2748557 | .0429665 | 6.40 | 0.000 | .1906429 | .3590684 |
| readach04_num | .3104162 | .0346569 | 8.96 | 0.000 | .2424898 | .3783425 |
| _cons | -.0959182 | .1285669 | -0.75 | 0.456 | -.3479048 | .1560683 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0914815 | .0044909 | -20.37 | 0.000 | -.1002835 | -.0826795 |
| diffsch_cum0506 | -.496205 | .0348743 | -14.23 | 0.000 | -.5645573 | -.4278526 |
| mathach05_num | .3208318 | .0375854 | 8.54 | 0.000 | .2471659 | .3944977 |
| readach05_num | .2812301 | .0427236 | 6.58 | 0.000 | .1974934 | .3649669 |
| _cons | .3435308 | .1358512 | 2.53 | 0.011 | .0772674 | .6097942 |

Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0952281 | .0039564 | -24.07 | 0.000 | -.1029826 | -.0874737 |
| diffsch_cum0607 | -.3753018 | .030508 | -12.30 | 0.000 | -.4350964 | -.3155072 |
| mathach06_num | .3721172 | .0367287 | 10.13 | 0.000 | .3001303 | .444104 |
| readach06_num | .247296 | .043739 | 5.65 | 0.000 | .161569 | .3330229 |
| _cons | .7602399 | .1279165 | 5.94 | 0.000 | .5095282 | 1.010952 |

Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.0979482 | .0037461 | -26.15 | 0.000 | -.1052904 | -.0906061 |
| diffsch_cum0708 | -.3868505 | .0266465 | -14.52 | 0.000 | -.4390767 | -.3346244 |
| mathach07_num | .2260244 | .0359 | 6.30 | 0.000 | .1556617 | .2963871 |
| readach07_num | .3215037 | .0425597 | 7.55 | 0.000 | .2380883 | .4049192 |
| _cons | 1.026911 | .1299777 | 7.90 | 0.000 | .7721592 | 1.281662 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.1030846 | .003704 | -27.83 | 0.000 | -.1103443 | -.0958249 |
| diffsch_cum0809 | -.343125 | .0271759 | -12.63 | 0.000 | -.3963888 | -.2898613 |
| mathach08_num | .3029219 | .0428087 | 7.08 | 0.000 | .2190184 | .3868254 |
| readach08_num | .2569708 | .0368961 | 6.96 | 0.000 | .1846558 | .3292858 |
| _cons | 1.585491 | .1340909 | 11.82 | 0.000 | 1.322678 | 1.848304 |

**White male**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.5309776 | .047384 | -11.21 | 0.000 | -.6238486 | -.4381066 |
| mathach03_num | .4404134 | .0330623 | 13.32 | 0.000 | .3756125 | .5052144 |
| readach03_num | .2564918 | .0259136 | 9.90 | 0.000 | .2057022 | .3072815 |
| _cons | -1.090459 | .0946721 | -11.52 | 0.000 | -1.276013 | -.9049056 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0826377 | .0030556 | -27.04 | 0.000 | -.0886265 | -.0766488 |
| diffsch_cum0405 | -.4786091 | .0331276 | -14.45 | 0.000 | -.543538 | -.4136802 |
| mathach04_num | .3871014 | .0383797 | 10.09 | 0.000 | .3118785 | .4623243 |
| readach04_num | .3208989 | .0270701 | 11.85 | 0.000 | .2678426 | .3739553 |
| _cons | -.5424205 | .1226616 | -4.42 | 0.000 | -.7828328 | -.3020082 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0864043 | .0030458 | -28.37 | 0.000 | -.0923739 | -.0804347 |
| diffsch_cum0506 | -.4425391 | .0313219 | -14.13 | 0.000 | -.5039289 | -.3811493 |
| mathach05_num | .4757604 | .0353319 | 13.47 | 0.000 | .4065112 | .5450096 |
| readach05_num | .313542 | .03275 | 9.57 | 0.000 | .249353 | .3777309 |
| _cons | -.4339527 | .1250964 | -3.47 | 0.001 | -.6791371 | -.1887684 |

Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0908288 | .0028862 | -31.47 | 0.000 | -.0964857 | -.085172 |
| diffsch_cum0607 | -.3433068 | .0283821 | -12.10 | 0.000 | -.3989347 | -.287679 |
| mathach06_num | .4894628 | .0284841 | 17.18 | 0.000 | .433635 | .5452907 |
| readach06_num | .2148999 | .0329913 | 6.51 | 0.000 | .1502381 | .2795616 |
| _cons | .320371 | .1030908 | 3.11 | 0.002 | .1183167 | .5224252 |

Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.1034228 | .0029533 | -35.02 | 0.000 | -.1092113 | -.0976344 |
| diffsch_cum0708 | -.3501235 | .0258679 | -13.54 | 0.000 | -.4008236 | -.2994234 |
| mathach07_num | .4700003 | .0282381 | 16.64 | 0.000 | .4146547 | .5253459 |
| readach07_num | .1876947 | .0344866 | 5.44 | 0.000 | .1201023 | .2552871 |
| _cons | .6651068 | .1115926 | 5.96 | 0.000 | .4463894 | .8838241 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.1159866 | .0030605 | -37.90 | 0.000 | -.1219852 | -.1099881 |
| diffsch_cum0809 | -.3038426 | .0264176 | -11.50 | 0.000 | -.3556202 | -.252065 |
| mathach08_num | .5369118 | .0339749 | 15.80 | 0.000 | .4703221 | .6035014 |
| readach08_num | .1738125 | .029278 | 5.94 | 0.000 | .1164288 | .2311963 |
| _cons | .9480375 | .1155423 | 8.21 | 0.000 | .7215787 | 1.174496 |

**White female**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.5321911 | .048037 | -11.08 | 0.000 | -.6263419 | -.4380402 |
| mathach03_num | .443163 | .0343387 | 12.91 | 0.000 | .3758604 | .5104655 |
| readach03_num | .37099 | .0297256 | 12.48 | 0.000 | .3127288 | .4292511 |
| _cons | -1.480192 | .1006811 | -14.70 | 0.000 | -1.677523 | -1.28286 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0884407 | .0032092 | -27.56 | 0.000 | -.0947307 | -.0821508 |
| diffsch_cum0405 | -.4875435 | .0342918 | -14.22 | 0.000 | -.5547541 | -.4203328 |
| mathach04_num | .3758697 | .0411129 | 9.14 | 0.000 | .2952898 | .4564495 |
| readach04_num | .4328679 | .0307907 | 14.06 | 0.000 | .3725193 | .4932165 |
| _cons | -.8462968 | .1306694 | -6.48 | 0.000 | -1.102404 | -.5901894 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0915823 | .0031579 | -29.00 | 0.000 | -.0977718 | -.0853929 |
| diffsch_cum0506 | -.4203404 | .0321687 | -13.07 | 0.000 | -.4833899 | -.3572908 |
| mathach05_num | .4188878 | .0370556 | 11.30 | 0.000 | .3462601 | .4915155 |
| readach05_num | .4877311 | .0370745 | 13.16 | 0.000 | .4150664 | .5603958 |
| _cons | -.8276279 | .1336178 | -6.19 | 0.000 | -1.089514 | -.5657418 |

Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.088849 | .0030027 | -29.59 | 0.000 | -.0947342 | -.0829639 |
| diffsch_cum0607 | -.3940514 | .028813 | -13.68 | 0.000 | -.4505239 | -.337579 |
| mathach06_num | .5278348 | .0297993 | 17.71 | 0.000 | .4694292 | .5862405 |
| readach06_num | .2932047 | .0364962 | 8.03 | 0.000 | .2216734 | .3647361 |
| _cons | -.0283162 | .1130339 | -0.25 | 0.802 | -.2498586 | .1932263 |

Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.1022924 | .0030163 | -33.91 | 0.000 | -.1082042 | -.0963806 |
| diffsch_cum0708 | -.380729 | .0265006 | -14.37 | 0.000 | -.4326692 | -.3287888 |
| mathach07_num | .4732301 | .0293001 | 16.15 | 0.000 | .415803 | .5306572 |
| readach07_num | .2860941 | .0381776 | 7.49 | 0.000 | .2112673 | .3609208 |
| _cons | .3144471 | .1223999 | 2.57 | 0.010 | .0745476 | .5543466 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.1211675 | .0031434 | -38.55 | 0.000 | -.1273285 | -.1150065 |
| diffsch_cum0809 | -.3220777 | .0270945 | -11.89 | 0.000 | -.3751821 | -.2689734 |
| mathach08_num | .508188 | .0354778 | 14.32 | 0.000 | .4386528 | .5777231 |
| readach08_num | .2949089 | .0303282 | 9.72 | 0.000 | .2354668 | .3543511 |
| _cons | .7950174 | .1208799 | 6.58 | 0.000 | .5580972 | 1.031938 |

**Hispanic male**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.3725489 | .1178071 | -3.16 | 0.002 | -.6034466 | -.1416512 |
| mathach03_num | .1477125 | .0862316 | 1.71 | 0.087 | -.0212983 | .3167234 |
| readach03_num | .2539914 | .0656587 | 3.87 | 0.000 | .1253028 | .3826801 |
| _cons | -.4778082 | .2275603 | -2.10 | 0.036 | -.9238183 | -.0317982 |

## Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0570453 | .0092288 | -6.18 | 0.000 | -.0751334 | -.0389572 |
| diffsch_cum0405 | -.3526256 | .0847075 | -4.16 | 0.000 | -.5186491 | -.186602 |
| mathach04_num | .2474162 | .0924351 | 2.68 | 0.007 | .0662468 | .4285857 |
| readach04_num | .1747043 | .0660856 | 2.64 | 0.008 | .0451788 | .3042298 |
| _cons | -.2454005 | .2764367 | -0.89 | 0.375 | -.7872064 | .2964054 |

## Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.06524 | .0092753 | -7.03 | 0.000 | -.0834193 | -.0470608 |
| diffsch_cum0506 | -.3148247 | .078581 | -4.01 | 0.000 | -.4688407 | -.1608088 |
| mathach05_num | .1185392 | .0835961 | 1.42 | 0.156 | -.0453062 | .2823846 |
| readach05_num | .4528828 | .0800673 | 5.66 | 0.000 | .2959538 | .6098117 |
| _cons | -.3715255 | .2750379 | -1.35 | 0.177 | -.91059 | .1675389 |

## Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0844309 | .008597 | -9.82 | 0.000 | -.1012807 | -.0675811 |
| diffsch_cum0607 | -.2832572 | .0725209 | -3.91 | 0.000 | -.4253956 | -.1411189 |
| mathach06_num | .3674256 | .0734834 | 5.00 | 0.000 | .2234008 | .5114504 |
| readach06_num | .1439514 | .0812347 | 1.77 | 0.076 | -.0152657 | .3031685 |
| _cons | .3172912 | .2369756 | 1.34 | 0.181 | -.1471725 | .7817548 |

## Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.0770762 | .0075361 | -10.23 | 0.000 | -.0918468 | -.0623056 |
| diffsch_cum0708 | -.2779466 | .0649465 | -4.28 | 0.000 | -.4052394 | -.1506538 |
| mathach07_num | .3258278 | .0718609 | 4.53 | 0.000 | .184983 | .4666726 |
| readach07_num | .246918 | .0788757 | 3.13 | 0.002 | .0923245 | .4015115 |
| _cons | .1223187 | .2443411 | 0.50 | 0.617 | -.356581 | .6012184 |

## Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.0806244 | .0080435 | -10.02 | 0.000 | -.0963893 | -.0648594 |
| diffsch_cum0809 | -.2567401 | .0649963 | -3.95 | 0.000 | -.3841305 | -.1293498 |
| mathach08_num | .301978 | .0843509 | 3.58 | 0.000 | .1366532 | .4673027 |
| readach08_num | .3413405 | .069717 | 4.90 | 0.000 | .2046976 | .4779833 |
| _cons | .4078435 | .2823147 | 1.44 | 0.149 | -.1454832 | .9611702 |

## Hispanic female

### Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.2125727 | .1260433 | -1.69 | 0.092 | -.4596131 | .0344676 |
| mathach03_num | .0923893 | .0914476 | 1.01 | 0.312 | -.0868448 | .2716234 |
| readach03_num | .2867382 | .0719506 | 3.99 | 0.000 | .1457176 | .4277588 |
| _cons | -.3937104 | .2435991 | -1.62 | 0.106 | -.8711559 | .0837351 |

### Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0765042 | .0091439 | -8.37 | 0.000 | -.094426 | -.0585824 |
| diffsch_cum0405 | -.1694161 | .0894612 | -1.89 | 0.058 | -.3447568 | .0059246 |
| mathach04_num | .1831057 | .0930073 | 1.97 | 0.049 | .0008148 | .3653966 |
| readach04_num | .210691 | .0752298 | 2.80 | 0.005 | .0632434 | .3581386 |
| _cons | -.0448301 | .2816466 | -0.16 | 0.874 | -.5968472 | .507187 |

### Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0713331 | .0091173 | -7.82 | 0.000 | -.0892026 | -.0534635 |
| diffsch_cum0506 | -.2792152 | .0824502 | -3.39 | 0.001 | -.4408145 | -.1176158 |
| mathach05_num | .1132835 | .0828013 | 1.37 | 0.171 | -.049004 | .275571 |
| readach05_num | .3136403 | .084166 | 3.73 | 0.000 | .148678 | .4786027 |
| _cons | .0754598 | .2903591 | 0.26 | 0.795 | -.4936336 | .6445532 |

### Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0941737 | .0088731 | -10.61 | 0.000 | -.1115647 | -.0767826 |
| diffsch_cum0607 | -.1618941 | .0755925 | -2.14 | 0.032 | -.3100527 | -.0137356 |
| mathach06_num | .2184287 | .0747387 | 2.92 | 0.003 | .0719434 | .3649139 |
| readach06_num | .3287441 | .0890423 | 3.69 | 0.000 | .1542243 | .5032639 |
| _cons | .0199162 | .2638013 | 0.08 | 0.940 | -.4971248 | .5369571 |

### Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.0921782 | .0076779 | -12.01 | 0.000 | -.1072267 | -.0771298 |
| diffsch_cum0708 | -.1792386 | .0667111 | -2.69 | 0.007 | -.30999 | -.0484872 |
| mathach07_num | .2509757 | .0743639 | 3.37 | 0.001 | .1052251 | .3967263 |
| readach07_num | .2940563 | .0891212 | 3.30 | 0.001 | .1193819 | .4687307 |
| _cons | .1333586 | .2695877 | 0.49 | 0.621 | -.3950235 | .6617408 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.0918799 | .0076357 | -12.03 | 0.000 | -.1068456 | -.0769141 |
| diffsch_cum0809 | -.177497 | .0664947 | -2.67 | 0.008 | -.3078241 | -.0471699 |
| mathach08_num | .2503598 | .0875697 | 2.86 | 0.004 | .0787263 | .4219932 |
| readach08_num | .2283831 | .0720517 | 3.17 | 0.002 | .0871644 | .3696017 |
| _cons | .7369144 | .2855314 | 2.58 | 0.010 | .1772832 | 1.296546 |

**Economically Disadvantaged**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.3576946 | .0253428 | -14.11 | 0.000 | -.4073657 | -.3080236 |
| mathach03_num | .1731848 | .0188817 | 9.17 | 0.000 | .1361773 | .2101923 |
| readach03_num | .1889598 | .0152795 | 12.37 | 0.000 | .1590124 | .2189071 |
| _cons | -.3728106 | .0502754 | -7.42 | 0.000 | -.4713486 | -.2742726 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0703626 | .0018926 | -37.18 | 0.000 | -.074072 | -.0666532 |
| diffsch_cum0405 | -.3282349 | .0178646 | -18.37 | 0.000 | -.3632489 | -.2932209 |
| mathach04_num | .1755333 | .0206509 | 8.50 | 0.000 | .1350583 | .2160084 |
| readach04_num | .2199578 | .0161583 | 13.61 | 0.000 | .1882882 | .2516274 |
| _cons | .0316973 | .0620947 | 0.51 | 0.610 | -.090006 | .1534007 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0744935 | .0018887 | -39.44 | 0.000 | -.0781952 | -.0707917 |
| diffsch_cum0506 | -.341085 | .0168786 | -20.21 | 0.000 | -.3741664 | -.3080037 |
| mathach05_num | .2385017 | .0185493 | 12.86 | 0.000 | .2021457 | .2748577 |
| readach05_num | .2318595 | .0195854 | 11.84 | 0.000 | .1934727 | .2702463 |
| _cons | .1003345 | .0651856 | 1.54 | 0.124 | -.0274269 | .228096 |

Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0789128 | .0017254 | -45.74 | 0.000 | -.0822945 | -.0755311 |
| diffsch_cum0607 | -.2705561 | .0151001 | -17.92 | 0.000 | -.3001517 | -.2409605 |
| mathach06_num | .3163698 | .0170863 | 18.52 | 0.000 | .2828813 | .3498583 |
| readach06_num | .1698061 | .019736 | 8.60 | 0.000 | .1311242 | .2084879 |
| _cons | .4755944 | .0581414 | 8.18 | 0.000 | .3616394 | .5895494 |

Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.0862632 | .0016941 | -50.92 | 0.000 | -.0895837 | -.0829428 |
| diffsch_cum0708 | -.2713837 | .0134754 | -20.14 | 0.000 | -.2977949 | -.2449724 |
| mathach07_num | .2662619 | .0168224 | 15.83 | 0.000 | .2332906 | .2992331 |
| readach07_num | .2039028 | .0197705 | 10.31 | 0.000 | .1651534 | .2426522 |
| _cons | .6498362 | .0613201 | 10.60 | 0.000 | .5296509 | .7700214 |

Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.0972204 | .0017597 | -55.25 | 0.000 | -.1006692 | -.0937715 |
| diffsch_cum0809 | -.2373607 | .0137815 | -17.22 | 0.000 | -.2643718 | -.2103495 |
| mathach08_num | .3546288 | .0204961 | 17.30 | 0.000 | .3144572 | .3948004 |
| readach08_num | .1817086 | .0173844 | 10.45 | 0.000 | .1476358 | .2157814 |
| _cons | .9055634 | .0649613 | 13.94 | 0.000 | .7782416 | 1.032885 |

**Not economically disadvantaged**

Third Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| diffsch_cum0304 | -.3829195 | .05069 | -7.55 | 0.000 | -.4822702 | -.2835689 |
| mathach03_num | .274685 | .0347656 | 7.90 | 0.000 | .2065457 | .3428244 |
| readach03_num | .2152212 | .0295163 | 7.29 | 0.000 | .1573704 | .2730721 |
| _cons | .1930029 | .1039432 | 1.86 | 0.063 | -.010722 | .3967278 |

Fourth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs04 | -.0845922 | .0032925 | -25.69 | 0.000 | -.0910454 | -.0781391 |
| diffsch_cum0405 | -.334916 | .0363775 | -9.21 | 0.000 | -.4062147 | -.2636174 |
| mathach04_num | .3299775 | .0413196 | 7.99 | 0.000 | .2489926 | .4109625 |
| readach04_num | .2614312 | .0301045 | 8.68 | 0.000 | .2024274 | .320435 |
| _cons | .3199126 | .1307298 | 2.45 | 0.014 | .0636868 | .5761383 |

Fifth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs05 | -.0942312 | .0032854 | -28.68 | 0.000 | -.1006704 | -.087792 |
| diffsch_cum0506 | -.3437606 | .0342861 | -10.03 | 0.000 | -.4109602 | -.2765611 |
| mathach05_num | .3898952 | .038021 | 10.25 | 0.000 | .3153753 | .4644151 |
| readach05_num | .2475992 | .0361793 | 6.84 | 0.000 | .176689 | .3185093 |
| _cons | .5150546 | .1340285 | 3.84 | 0.000 | .2523635 | .7777457 |

## Sixth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs06 | -.0955538 | .0031075 | -30.75 | 0.000 | -.1016444 | -.0894631 |
| diffsch_cum0607 | -.2442171 | .0311772 | -7.83 | 0.000 | -.3053234 | -.1831109 |
| mathach06_num | .3697277 | .0282373 | 13.09 | 0.000 | .3143836 | .4250719 |
| readach06_num | .1652214 | .0350061 | 4.72 | 0.000 | .0966107 | .233832 |
| _cons | 1.142935 | .1086862 | 10.52 | 0.000 | .9299137 | 1.355956 |

## Seventh Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs07 | -.1046119 | .0030491 | -34.31 | 0.000 | -.110588 | -.0986359 |
| diffsch_cum0708 | -.2694082 | .0287301 | -9.38 | 0.000 | -.3257182 | -.2130982 |
| mathach07_num | .3413299 | .0280748 | 12.16 | 0.000 | .2863044 | .3963555 |
| readach07_num | .1527385 | .0368916 | 4.14 | 0.000 | .0804324 | .2250447 |
| _cons | 1.443262 | .1184014 | 12.19 | 0.000 | 1.211199 | 1.675324 |

## Eighth Grade

| graduate | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| daysabs08 | -.1279456 | .0031822 | -40.21 | 0.000 | -.1341825 | -.1217086 |
| diffsch_cum0809 | -.2281092 | .0289887 | -7.87 | 0.000 | -.2849261 | -.1712924 |
| mathach08_num | .3856801 | .0334952 | 11.51 | 0.000 | .3200307 | .4513296 |
| readach08_num | .1299985 | .0296877 | 4.38 | 0.000 | .0718118 | .1881853 |
| _cons | 1.800914 | .1176512 | 15.31 | 0.000 | 1.570322 | 2.031506 |