

# Research Brief: Chronic Absenteeism

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*This research brief focuses on Chronic Absenteeism (CA) in Utah public schools. We address:*

- *The students who are most likely to be chronically absent*
- *A demographic profile of chronically absent students*
- *Patterns in chronic absenteeism over time*
- *Relationships between chronic absenteeism and lower standardized test scores*
- *Relationships between chronic absenteeism and dropping out*
- *The extent to which grade point average (GPA) mediates the relationship between chronic absenteeism and dropping out*

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**A** student is chronically absent if he or she misses school 10 percent of the time, or more, for any reason, according to Attendance Works. (Attendance Works is a national initiative that promotes awareness of attendance issues. See <http://www.attendanceworks.org/>) Researchers have identified chronic absenteeism as a persistent problem related to poor academic performance and potential behavioral and developmental issues. There is general agreement among researchers that being chronically absent places students at risk of negative academic consequences (Chang & Romero, 2008; Moonie, Sterling, Figgs, & Castro, 2008).

A small but growing body of research based on chronic absenteeism data has emerged. Recent research indicates that:

- Chronic absenteeism in kindergarten can be negatively correlated with academic

### What is chronic absenteeism?

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performance in the first grade (Chang & Romero, 2008).

- Chronic absenteeism can have pronounced negative impacts on students of poverty (Ready, 2010).
- Chronic absenteeism is often higher in urban, as compared to rural, schools (Sheldon & Epstein, 2004).
- Chronic absenteeism can be an early predictor of dropping out of high school (Mac Iver & Mac Iver, 2010).
- Chronic absenteeism can reduce the likelihood of post-secondary enrollment (Balfanz & Byrnes, 2012).

Although *No Child Left Behind* compels states to report attendance, there are no mandates to report chronic absenteeism. As a result, most states and local education agencies report attendance rates to meet reporting requirements (Balfanz & Byrnes, 2012). Unfortunately, reporting average attendance rates can obscure the number of chronically absent students. For example, a school with 500 students and a 94 percent attendance rate could have from zero to 250 chronically absent students, depending on how the absences are distributed. A primary consequence of only reporting or attending to attendance rates is that supports and services for students who are chronically absent may be limited.

Utah provides a more specific example. Overall, students enrolled in Utah public schools attended approximately 95 percent of the days for which they were enrolled. A 95 percent average attendance rate seems encouraging. However, the 95 percent average attendance rate obscures the fact that 13.5 percent of all Utah students were chronically absent during that same year. As is generally the case, reporting only attendance averages does not consider the number of students who were chronically absent.

Encouragingly, six states—Georgia, Florida, Maryland, Nebraska, Oregon and Rhode Island—now collect and report chronic absenteeism rates. For the 2010-2011 academic year, those six states reported chronic absenteeism rates ranging from a low of 6% to a high of 23% of students chronically absent statewide (Balfanz & Byrnes, 2012).

This study expands the existing research cited above on chronic absenteeism by including Utah in the growing number of states that have analyzed their chronic absenteeism data. This research brief also extends the body of research on chronic absenteeism by statistically examining Grade Point Average (GPA) as a mediating variable in the relationship between chronic absenteeism and dropping out.

## Characteristics of Chronically Absent Students

In order to study the effects of chronic absenteeism in Utah, we constructed two data sets for this report. One was cross-sectional and included all Utah public school students enrolled in the 2010-2011 school year.<sup>1</sup> The other was longitudinal and followed the class of 2010 for five years, from their 8<sup>th</sup> grade year in 2006 through their graduation year in 2010.<sup>2</sup>

We used the cross-sectional data set to examine relationships between chronic absenteeism and three categories of student variables: predictor variables, covariates, and outcome variables. Predictor variables, covariates, and outcome variables were identified from the literature and were defined, and used, as follows:

1. ***Characteristics that predict chronic absenteeism:*** We used *Low Income, Special Education, English Proficiency and Racial Minority* as variables to predict chronic absenteeism because their values were known at the beginning of the year, prior to the occurrence of the absences. These variables were recorded at the beginning of the academic year and were not changed over the course of the year.
2. ***Characteristics that co-occur with chronic absenteeism:*** Other variables could have been recoded, or updated, during the year. We used *Mobility and Homelessness* as covariates. These two variables could not be considered as either predictor nor outcome variables because there was no way of knowing whether any given student was first chronically absent and then mobile or first mobile and then chronically absent (or if the two events co-occurred).
3. ***Characteristics that are outcomes of chronic absenteeism:*** Finally, some

variables were measured at the end of the year. We used *Reading on Grade Level*, *CRT Scores*, *Cumulative GPA* and *Dropping Out* as outcome variables because they were measured after the absences occurred and could have been affected by student attendance (but not vice-versa).

### Predictors of Chronic Absenteeism

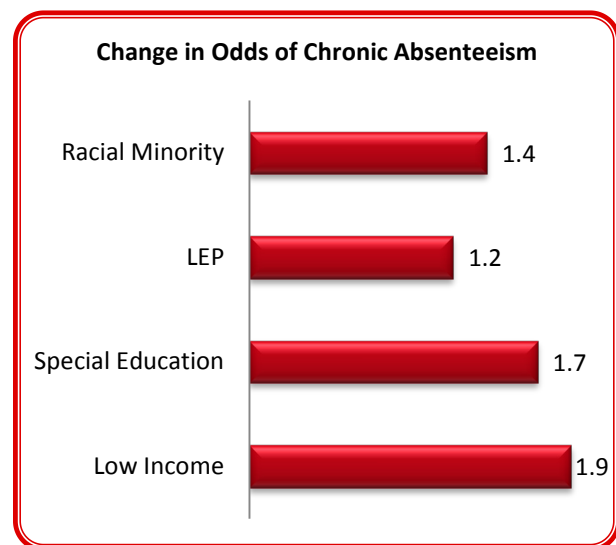
Chronic absenteeism was predicted by the four variables identified as predictor variables (i.e., Low Income, Special Education, English Proficiency and Racial Minority). Results are reported as change in odds ratios: a commonly reported effect size for research with “yes or no” outcomes (in this case chronically absent or not).<sup>3</sup> In general, a change in odds of one indicates the exact same outcome for members and non-members of the group being analyzed. Odds ratios greater than one indicate that members of the group being analyzed have odds of the outcome (in this case odds of being chronically absenteeism) that are increased that many times compared to non-members of that group. For example, the change in odds statistic related to low income is 1.9. This indicates that a student who received free or reduced lunch was 90 percent (1.9 times) more likely to be chronically absent than a student who does not receive free or reduced lunch.

Figure 1 shows the change in odds, or likelihood, of being chronically absent given membership in each of the predictor categories (i.e., Race, English Proficiency, SES, and Special Education) compared with non-membership in those categories. Notably, sex is not reported. This is

*A student who received free or reduced lunch was 90 percent more likely to be chronically absent than a student who did not receive free or reduced lunch.*

because both Utah boys and girls were chronically absent at the exact same rate: 13.5 percent. Other studies have shown the same lack of effect for gender (e.g., Atwood and Croll, 2006). Figure 2 shows the change in odds associated with membership in any of the seven race categories reported by the Utah State Office of Education (USOE).

Figure 1. Increased Odds of Chronic Absence Given Membership in a Predictor Group

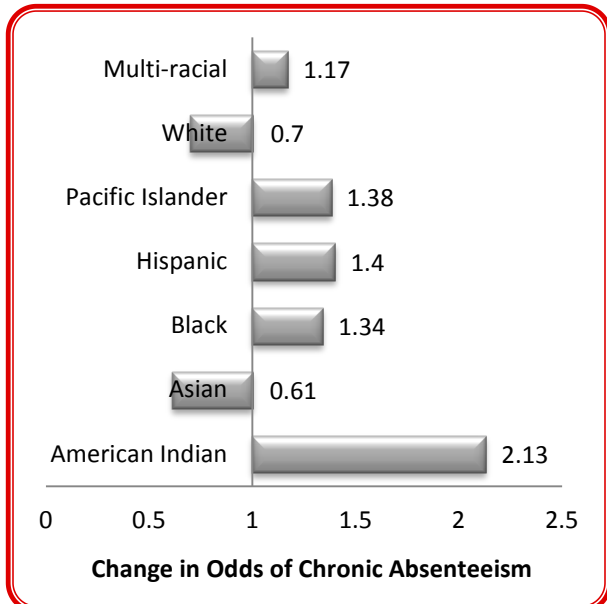


These results show the odds of being chronically absent associated with each of the predictor variables (i.e., income, special education, English Language Learner, and Race). Students from all of the groups represented in Figure 1 (i.e., racial minority, LEP, special education and low income) had significantly higher odds of being chronically absent than their peer students not categorized into those groups. The increased odds of chronic absence were highest for students from low income homes (about 90 percent higher than for students not from low income homes). There was a small difference (about a 20 percent increase in odds) between students identified as not yet English proficient and their English proficient peers.

## Covariates and Chronic Absenteeism

The covariates, Mobility (measured as a student having been unenrolled from at least one Utah school and re-enrolled into another during the course of a school year) and Homelessness were considered in the same way as the predictor variables were (i.e., change in odds). As seen in Figure 3, the change in odds of being chronically absent were quite a bit higher for the covariates (i.e., mobility and homelessness) than for the demographic predictors used in the previous section.

**Figure 2. Change in Odds of Chronic Absence Given Membership in Any of the USOE Racial Categories**

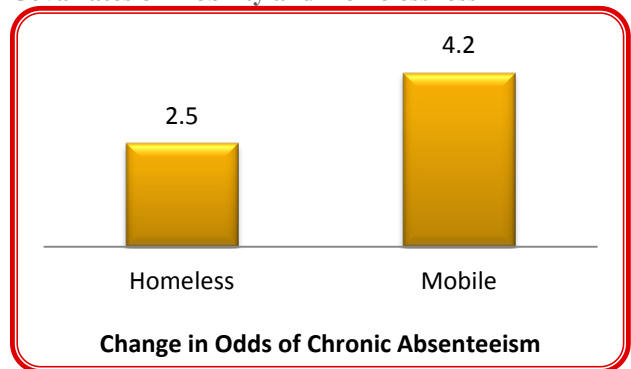


Note. These results are presented on a grid that centers on one. One indicates no change in odds, or a 1:1 ratio. Values less than one indicate that membership in those racial categories reduced, rather than increased, the likelihood of a student being chronically absent.

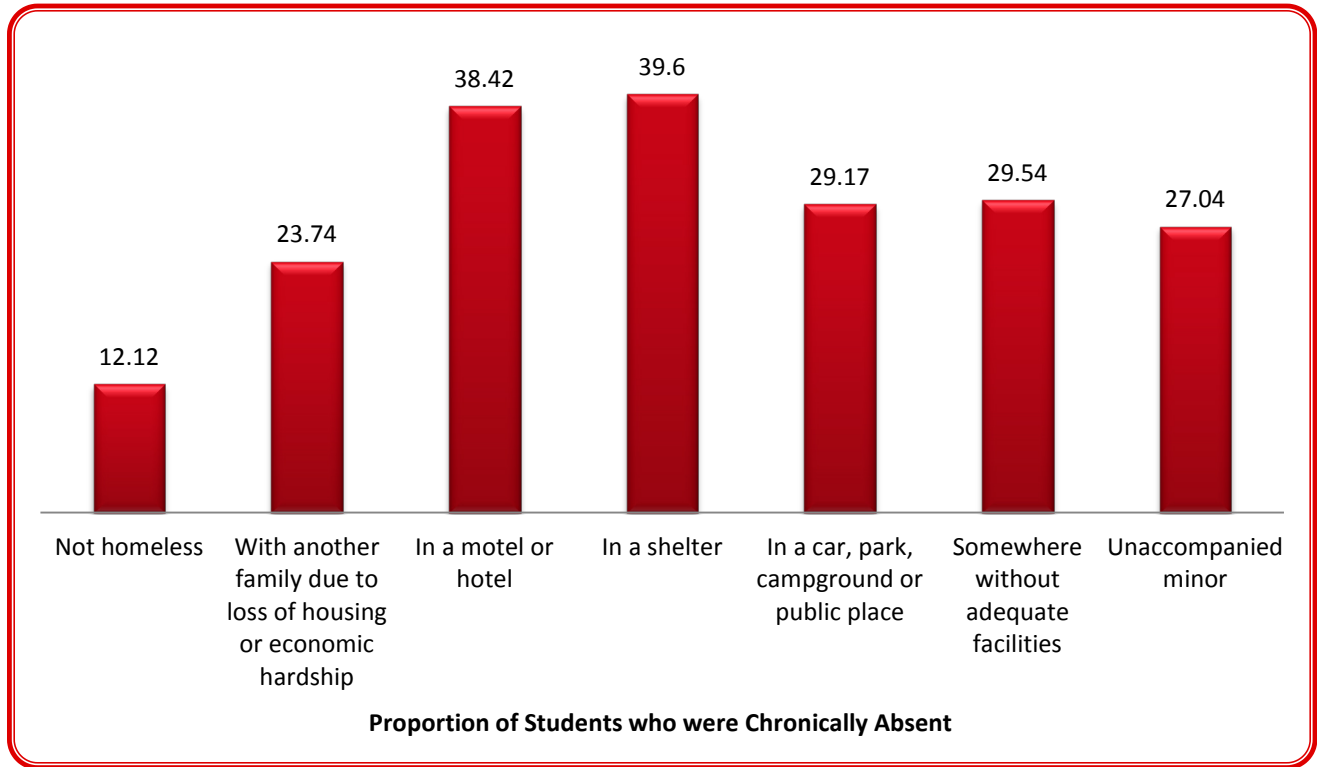
Mobile students who moved in and out of schools were four times more likely than non-mobile students to be chronically absent. Students who were homeless during the 2010-2011 school year were two and a half times more likely to be chronically absent than students who were not homeless.

The relationship between homelessness and absenteeism is an issue that has been addressed nationally by the McKinney-Vento act. The McKinney-Vento Act (established in 1987 and reauthorized in 2001) requires states to implement measures to eliminate school enrollment barriers (e.g., residency requirements, documentation and immunization records, guardianship issues, and lack of uniforms or appropriate clothing for dress codes) faced by homeless students (U.S. Department of Education, 2002, U.S. Department of Education, 2004). In 2001, research in New York Schools that used attendance rates, not chronic absenteeism rates as the outcome variable demonstrated that homeless students were no more likely to be absent from school than students who were from low-income homes but were not homeless (Buckner, Bassuk & Weinreb, 2001). In comparison, we found in our analysis that students who were categorized as homeless were 80 percent more likely to be chronically absent than their low income peers who were not homeless. Figure 4 shows the proportion of chronically absent students from the six homeless categories reported by the USOE. Because of the small numbers of students in some of these categories, the results for the homelessness categories are presented as percentages, not the change in odds statistic reported in the other tables.

**Figure 3. Change in Odds Associated with the Covariates of Mobility and Homelessness**



**Figure 4. Proportion of Students from Each Homelessness Category who were Chronically Absent**



Note. These categories of homelessness are used and reported by the USOE in their annual Point-in-Time count (USOE, 2011). The USOE and the U.S. Department of Education differ slightly in their definitions of homelessness, with the USOE counting as homeless the families or children living with another family due to hardship.

**Outcome Variables**

All four variables identified as outcome variables were predicted by chronic absenteeism. The outcomes variables were Reading Proficiency (grades 1-3), CRT scores (grades 3-12), Cumulative GPA scores (grades 9-12), and Dropout (Any grade). All outcomes correlated significantly with chronic absenteeism and in all cases negative outcomes were associated with chronic absenteeism. Table 1 shows the 2011 academic outcome variables and the effect that chronic absenteeism had on those variables.

*Students who were homeless during the 2010-2011 school year were two and a half times more likely to be chronically absent than students who were not homeless.*

**Table 1. Relationship between Chronic Absenteeism and Academic Outcome Variables**

Outcome	Effect of Chronic Absence
Reading on grade level	Odds of being below grade level were 1.7 times higher
CRT Language	Decreased 3.798 points, on average
CRT Math	Decreased 5.861 points, on average
CRT Science	Decreased 4.850 points, on average
Cumulative GPA	Decreased .854 points, on average
Dropout	Odds of dropping out were 7.4 times higher

Note. Dropout statistics in this table are based the longitudinal data set and estimated using survival analysis. All other statistics are based on the cross-sectional data set and estimated through simple logistic regression.

These outcomes showed the pervasive negative academic influence of chronic absence across all grade levels and in all tested subjects. The strong relationship between chronic absenteeism and dropping out of school is discussed in detail in a latter section of this brief.

## Who are the Chronically Absent Students?

When working to prevent chronic absences, it is important to understand who is at risk of becoming chronically absent. Moreover, when developing strategies to help students who are already chronically absent, it is important to understand the characteristics of those students, regardless of risk. The purpose of this section is to describe the demographic characteristics of students who were chronically absent in 2011. Over-representation of the more chronically absent groups changes the profile from that of the general population. Yet, with the exception of students from low-income homes, the groups representing the vast number of students (i.e., students who were white, English proficient, non-mobile, and not receiving special education

*A student who was chronically absent in any year, starting in the 8th grade, was 7.4 times more likely to drop out of school than a student who was not chronically absent during any of those years.*

services) are the majority of the chronically absent students. This may seem counter-intuitive that the groups with the lowest risk for chronic absenteeism, as demonstrated earlier, make up the majority of chronically absent students. However, because of differences in the number of students who are in the groups, this is possible. For example, while only 5.3% of the students who were chronically absent were homeless, students in homeless situations were more than twice as likely to be chronically absent than their peers who were not homeless. This is because so few Utah students were homeless (2.6 percent in 2011). Figure 5 shows the percentage of chronically absent students from each of six demographic categories.

*Although over-representation of the more chronically absent subgroups changes the profile from that of the general population, it is important to note that, with the exception of students from low-income homes, the majority groups (i.e., students who were white, English proficient, non-mobile, and not receiving special education services) represented the majority of the chronically absent students.*

Figure 5. Percentage of Chronically Absent Students from Different Demographic Categories

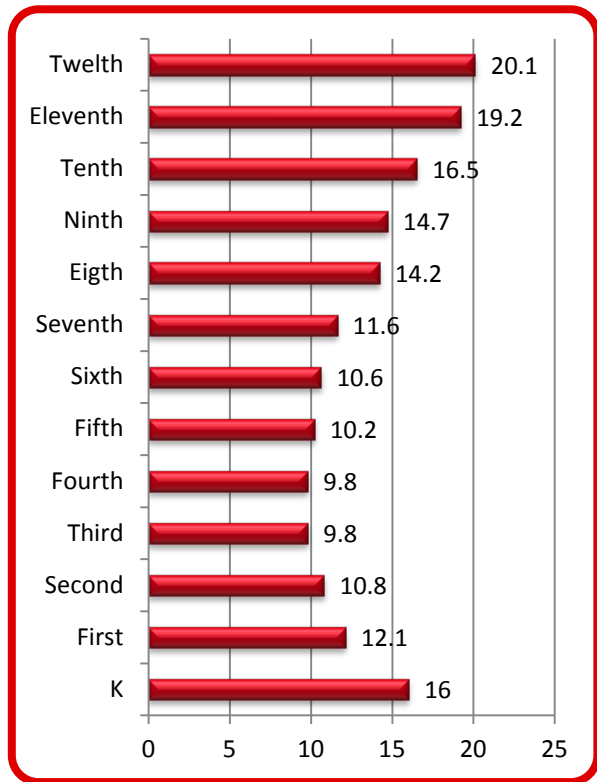


## Chronic Absenteeism Across School Years

### Grade Level in School

When we looked at the percent of chronically absent students by school year, we found that kindergarten and first grade students tended to be chronically absent more often than their older elementary school peers (i.e., second through sixth graders). Once in junior high school, the chronic absenteeism rates began to rise, increasing each year to a peak of 20.1 percent of students chronically absent during their senior year (See Figure 6). This is the exact pattern of absence reported in a recent study conducted in Oregon (ECONorthwest, 2011) and fits the general pattern seen across the country (Balfanz and Byrnes, 2012) and internationally (Attwood and Croll, 2006).

Figure 6. Proportion of Chronically Absent Students by Year in School



### Repeated Chronic Absenteeism

Other research has shown that high truancy rates (truancy rates include only unexcused absences, whereas chronic absence rates include both excused and unexcused absences) in one year of school significantly predicted high truancy rates in another year of school (Attwood and Croll, 2006, Sheldon and Epstein, 2004). This pattern was seen in the analysis of Utah data, using chronic absenteeism instead of truancy, as well. Of the 35,508 students in our longitudinal data set, 9,847 (27.7 percent) were chronically absent at least one year between the 8<sup>th</sup> and 12<sup>th</sup> grades. Of those 9,847 students who were chronically absent at least once, 5,015 (51 percent of the chronically absent students and 14 percent of all students) were chronically absent in more than one year.

This shows that chronic absenteeism is not an isolated event usually. To explore this relationship more thoroughly, we ran a series of logistic regressions that used chronic absenteeism in one year to predict chronic absenteeism in the subsequent year. Results showed that the likelihood of being chronically absent in any school year increased anywhere from 8 to 17 times (depending on the year) if the student had been chronically absent in the previous school year. These results are presented in Table 2.

*On average, being chronically absent in one grade increased the odds of being chronically absent in the next grade by nearly thirteen times*



**Table 2. The Increase in Odds of Being Chronically Absent in One Grade, Given Chronic Absenteeism in the Previous Grade**

Being Chronically Absent in Grade	Odds of Being Chronically Absent in Grade 9	Odds of Being Chronically Absent in Grade 10	Odds of Being Chronically Absent in Grade 11	Odds of Being Chronically Absent in Grade 12
8	17.3 times			
9		13.3 times		
10			12.6 times	
11				8.1 times

Our findings show that if a student was chronically absent in one school year, his or her chances of being chronically absent in the next year increased thirteen-fold, on average. There was an interesting trend in these results, wherein the ability to predict subsequent chronic absenteeism was greater in the earlier grades (i.e., eighth and ninth) than it was in the later grades (i.e., tenth through twelfth). Our ability to predict subsequent absenteeism based on absenteeism in earlier grades is an important finding because, as the next section of this report will show, the negative impacts of chronic absenteeism are cumulative. In future research, we hope to examine this relationship in elementary school and middle school students.

### **Chronic Absenteeism and Dropout Over Time**

Chronic absenteeism and dropout may co-occur. Students who dropout during the school year may be chronically absent as a part of the dropping-out process. That is, they gradually attend class less and less until they “officially” drop out. In these cases, when dropout and chronic absence co-occur, it is not appropriate to think of chronic absence as a predictor and dropout as an outcome.

In a previous analysis presented in the outcome variables section, we did not make a distinction between when the chronic absenteeism occurred in relationship to when students dropped out. However, given our understanding that chronic

absenteeism and dropping out may co-occur, it becomes important to consider how chronic absence in one year might predict dropping out *in a future year*. Our previous analysis showed that a student who was chronically absent in any year, starting in the 8<sup>th</sup> grade, was 7.4 times more likely to drop out of school than a student who was not chronically absent during any of those years. However, that analysis did not necessarily help us predict dropping out in future years based on chronic absence in previous years. Therefore, to control for the expected chronic absenteeism in the dropout year, we ran the analysis again but excluded attendance data from the last year that the student attended school. Using the new predictor (i.e., chronic absence in the years prior to dropout), we were able to look at the odds of a chronically absent student dropping out of school *in a future school year*. The results showed that students who were chronically absent were 5.5 times more likely to dropout in a future year than their non-chronically absent peers.

We analyzed the relationship between chronic absenteeism and dropping out in a future year by specifying hazard functions for students who were and were not chronically absent.<sup>4</sup> The hazard functions are illustrated in Figure 7, in which the probability of a student dropping out in any grade is plotted for both students who were, and students who were not, chronically absent in a year prior to the final year.

**Figure 7. Probabilities of Dropout at Each School Year for Students who Were and Were Not Chronically Absent**

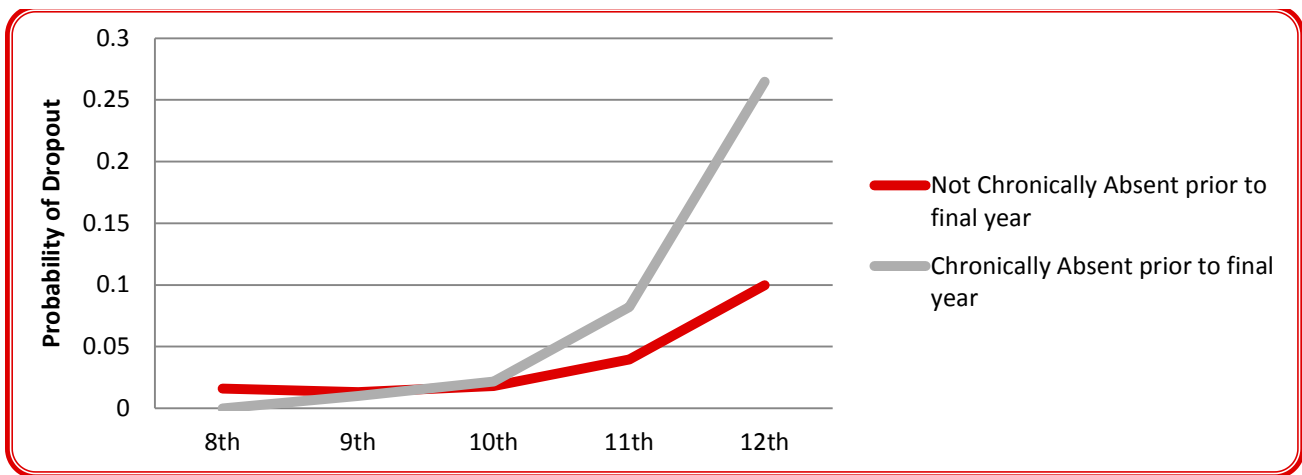


Figure 7 illustrates several important findings. First, there was an exponential increase in the risk of dropping out as students approach their scheduled graduation. The data also showed (Figure 7) the difference in dropout outcomes for students who were and were not chronically absent. Importantly, we found that more than 25 percent of the seniors who had been chronically absent at some point between their 8<sup>th</sup> grade and junior year dropped out of high school.

The difference between the first analysis--with chronic absence in the dropout year included—and the second analysis with chronic absence in the dropout year excluded was significantly different with change in odds ratios of 7.4 and 5.5 respectively. Although the decrease in odds from 7.4 to 5.5 was significant, the drop in odds was not so great as to suggest that the relationship between chronic absenteeism and dropout could be accounted for by absences in that final year. Using only absenteeism prior to the final year was still a better predictor for dropping out than any of the demographic variables of Race, English Proficiency, Low Income, or Special Education (with change in odds ratios of 2.7, 4.7, 2.9, and 1.5, respectively).

## The Chronic Absenteeism—Dropout Relationship

From our study and results reported nationally (Mac Iver and Mac Iver, 2010; Sheldon & Epstein, 2004), it is apparent that chronic absenteeism is a strong and early predictor of dropping out of school. In this section, we provide an overview of the relationship between chronic absenteeism and dropping out by using our longitudinal data set to answer four questions:

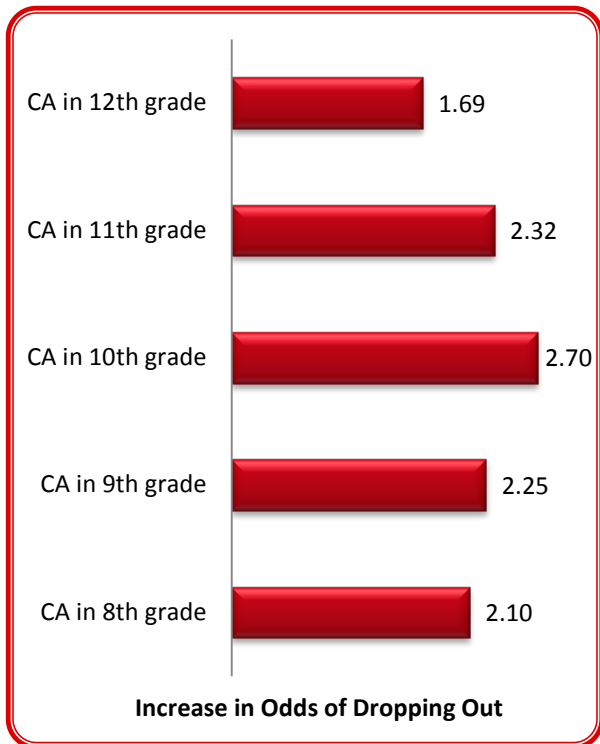
- How early does chronic absenteeism predict dropout?
- What are the cumulative effects of chronic absenteeism?
- How well does chronic absenteeism predict dropout independently and in conjunction with other risk factors?
- What is the relationship between chronic absenteeism, GPA, and dropout?

### How Early Does Chronic Absenteeism Predict Dropout?

To look at chronic absenteeism as an early indicator of dropout, we used chronic absenteeism at each year to predict whether a student dropped

out. Using multiple predictors in a single regression allowed us to look at the independent effects that being chronically absent in any particular year had on dropping out. The change in odds statistics are represented in Figure 8. The results showed that for each year that a student was chronically absent, his or her odds of dropping out approximately doubled. As these are independent effects, the results for each year can be thought of as the effect that being absent in that school year would have if the student was not chronically absent during any other school year. For example, the eighth grade result of 2.1 can be thought of a student being more than twice as likely to drop out if he or she had been chronically absent in the eighth grade but not chronically absent in any subsequent year.

**Figure 8. The Change in Odds of Dropping Out Associated with Chronic Absenteeism in Each School Year**



These results show the increased likelihood of dropping out if a student was chronically absent in that particular grade, but not chronically absent in any other grade. The lower statistic in the twelfth

grade is a phenomenon that we saw across analyses (e.g., see Table 6). That is, chronic absence in the twelfth grade was not as strongly related to other predictors and outcomes as it was in other grades. This anomaly is possibly accounted for by the overall increase in absenteeism during the senior year, even in the most successful students.<sup>5</sup>

A noteworthy limitation in this analysis is that it is restrained by the availability of longitudinal data. At this point, we could only go back as far as 2006 (the eighth grade for students scheduled to graduate in 2010) to use chronic absenteeism as a variable for predicting dropout. As more data become available, we intend to explore the chronic absenteeism-dropout relationships with absenteeism data from earlier grade levels.

### What are the Cumulative Effects of Chronic Absenteeism?

What may be implicit from the previous section is that the risks associated with chronic absenteeism are cumulative. When the number of years that a student was chronically absent was used to predict dropping out, we found that for each year a student was chronically absent, the odds of dropping went up 2.21 times, on average. The actual proportions of Utah students who dropped out, given the number of years they were chronically absent, is presented in Table 3.

**Table 3. Proportion of Students Dropping Out by Number of Years the Student was Chronically Absent**

Number of Years Chronically Absent	Percent Who Dropped Out
0	10.3%
1	36.4%
2	51.8%
3	58.7%
4	61.3%
5	Not Reported (<1% )

This portrayal of cumulative risk is important for two reasons. First, it shows a significant increase in risk of dropping out after only one year of chronic absenteeism. Second, after two years or more of being chronically absent, the student is more likely than not to drop out of school.

### How Well Does Chronic Absenteeism Predict Dropout in Conjunction With Other Risk Factors?

To understand which variables should be used to best identify students likely to dropout, we ran three binary logistic regression models predicting dropout from different factors.<sup>6</sup>

- Model 1 used the number of years that a student was chronically absent as the sole predictor of dropping out.
- Model 2 used both the number of years that a student was chronically absent and whether the student had a GPA above or below 1.8 as predictors of dropout.<sup>7</sup>
- Model 3 used years chronically absent, having a GPA above or below 1.8 and all of the predictor variables described in the first section of this brief (i.e., Low Income, Special Education, English Proficiency and Racial Minority) as predictors of dropout.

The results of all three models are presented in Table 4, which reports the proportion of dropouts identified by each model.

*More than 25 percent of the seniors who had been chronically absent at some point between their 8<sup>th</sup> grade and junior year dropped out of high school.*

**Table 4. Percent of Dropouts Identified Through Three Different Models.**

Predictors Used	Model 1	Model 2	Model 3
Chronic Absence	x	x	x
GPA		x	x
Demographics			x
Percent of dropouts identified	20.6%	59.4%	54.6%

Note. Using only the demographic variables (i.e., Low Income, Special Education, English Proficiency, and Racial Minority) in a model allowed for the identification of 6.8 percent of dropouts.

It is clear from the results that the second model, which uses GPA and Chronic Absence as predictors was an efficient model. We were not able to identify any additional students as likely to dropout by adding the demographic predictors. Interestingly, some students who eventually did drop out were identified as likely to drop out using the second model but identified as not likely to drop out using the third model.

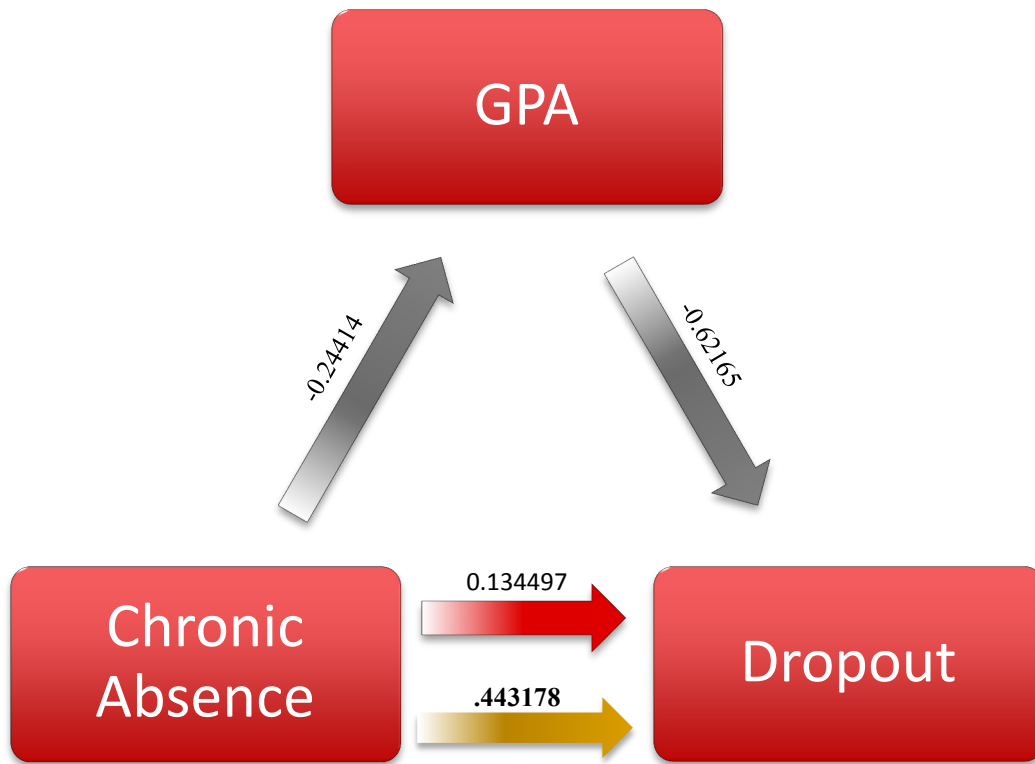
### What is the Relationship between Chronic Absenteeism, GPA, and Dropout?

The previous analysis showed both GPA and chronic absenteeism to be strong predictors of dropout. To date, the inter-correlations between all three variables (chronic absenteeism, GPA and dropout) have been insufficiently considered. To understand these relationships, we considered GPA as a mediator of the relationship between chronic absenteeism and dropout. This is defensible because the GPA variable was cumulative GPA, which necessarily came after the chronic absences and before the dropout. The gray arrows in Figure 9 illustrate the mediated relationship in which chronic absenteeism predicted GPA, which in turn predicted Dropout. Results from the analysis showed the mediation to be significant and indicated that GPA partially mediated the relationship between chronic absenteeism and GPA.

As shown in Figure 9, the simple correlation between chronic absence and dropout (represented by the gold arrow) was  $r = .44$ .<sup>8</sup> This represented a medium sized positive relationship between chronic absenteeism and the likelihood of dropping out (i.e., students who were chronically absent were more likely to dropout). After the mediated relationship was accounted for, the unmediated correlation between chronic absenteeism and dropout (represented by the red

arrow) was reduced by 70 percent to a much smaller but still significant correlation:  $r = .13$ . This result can be interpreted as indicating that 70 percent of the relationship between chronic absenteeism and dropping out can be accounted for by the indirect effects (i.e., chronic absence influences grades, which, in turn, influence dropping out) and 30 percent of the relationship between chronic absenteeism and dropping out is completely independent of GPA.

**Figure 9. Direct and Indirect Effects of Chronic Absenteeism on Dropping Out**



NOTE: In this figure, the gold arrow represents the simple correlation between chronic absence and dropout. The gray arrows represent the indirect or mediated effects in which higher chronic absence predicted lower GPA, and then the lower GPA predicted a higher likelihood of dropping out. The red arrow represents the direct or unmediated effect in which the relationship between higher chronic absence and higher likelihood of dropping out is independent of GPA.

## Conclusion

The findings from this study raise important considerations for policymakers and practitioners alike. First, this research emphasizes the need for early identification of students who are chronically absent. Qualified school personnel, such as school counselors, can mitigate the long-term effects of chronic absenteeism through early identification and intervention. Early identification provides time to respond to students who are chronically absent before their absences impact their persistence or completion of high school. Knowing when, and for whom, chronic absence is likely to occur allows for specifically targeted interventions.

Next, this exploratory study has identified chronic absenteeism as predicting dropout as early as the eighth grade. As more years of data become available, we will be able to look back even further and, presumably, predict dropout from earlier grades. Knowing more about the causal process (e.g., the magnitude of the indirect effect of chronic absence on dropout as mediated by GPA) will allow for stronger and more targeted preventions and interventions. The mediation model presented here may be thought of as an early inroad to modeling the causal agents that result in students dropping out. As more variables become available the model will become more sophisticated and, potentially, able to identify students at-risk for dropping out much earlier. This also offers a wider range of opportunities for prevention and intervention programs and services. In the meantime, however, this research highlights the need to consider attendance policies, and how students may be encouraged (or deterred) from making up their school work when absent as this impacts their grade point average or credits earned.

Finally, our analysis demonstrated that most students who dropped out (78 percent) did so in

either their junior or senior year. Specifically, 22 percent of the students dropped out in their junior year and 56 percent of the students dropped out in their senior year. Thus, again, this research confirms that the process of dropping out is protracted. Although the literature shows that disengagement that results in being pushed out or dropping out of school begins in the earlier grades (e.g., Belfanz, Herzog, and Mac Iver, 2007). Similar to studies nationally, most Utah students who ultimately dropout persist in their education through to the later grades (juniors or seniors). Thus, careful attention is needed to the experiences of these students, the early indicators, and the factors leading to their pushout or departure from school prior to graduation.

*For each year that a student is chronically absent, his or her odds of dropping out approximately double.*

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## Footnotes

<sup>1</sup>For the analyses describing student level covariates and the profile of absenteeism we used a cross-sectional dataset that included all students who were enrolled in a Utah public school for at least 20 days (one month) during the 2010-11 school year. Students who attended more than one school during the school year (4.9 percent) were only counted once, using the data from the school they attended for the most days. The final data set contained 587,402 K-12 students from the state of Utah. All data were obtained from the Utah State Office of Education and were made available to the UEPC one of the partners in the Utah Data Alliance. At no point in this analysis were individual students identified nor will individual students' identity be shared.

<sup>2</sup>For the analyses that focused on the relationship between chronic absenteeism and dropout rates, we used a longitudinal dataset that followed a cohort of 39,141 Utah students who were enrolled in the seventh grade in 2005 and were scheduled for graduation in 2010. There were concerns about the validity of data for seventh grade students who exited during their seventh grade year. We did not see the same problems in the data from other grades so we eliminated from the study the 1794 students who did not continue into 8<sup>th</sup> grade. The remaining sample consisted of 37,347 students. Of these students, 75.9 percent (28,339) went on to completed high school or remained enrolled into the 2011 school year, 19.2 percent (7169) did not finish high school, and 4.9 percent (1839) transferred out of public education with no further information available concerning them. We excluded from this study the 4.9 percent of students who transferred out of public education as there is no way of knowing if they graduated or not. Once the data for students who transferred were excluded, 35,508 students were included in the final data set, which accounted for 91 percent of the population.

<sup>3</sup> Here we provide a more complete explanation of how change of odds ratios work. For illustration purposes of how the change in odds ratio works, consider family income level as a predictor of chronic absence. We found that 17 percent of the students who qualified for free or reduced lunch (a general measure of family income status) were chronically

absent and that 9.7 percent of the students who did not qualify were chronically absent. This resulted in .21 to 1 odds of being chronically absent for the students receiving free and reduced lunch and .11 to 1 odds of being chronically for students the students who did not. This difference, reported as a change in odds ratio, shows that the odds of a student identified as low income being chronically absent were 1.9 times greater than the odds of a student not categorized as low income. This means that a student who received free and reduced lunch was 90 percent more likely to be chronically absent than a student who did not receive free or reduced lunch.

<sup>4</sup>A hazard analysis is a common method of assessing risk over time, particularly when the number of at-risk units changes over time (as it does in this analysis). Hazard is the conditional probability that any student would drop out in a given year, provided he or she had not dropped out in any previous year. For example, there were 33,685 students from our sample cohort still enrolled in 2009 (their junior year) and 1569 of them dropped out that year. Dividing the number of students who were enrolled by the number of students who dropped out ( $1569/33685 = .0466$ ) showed that about 4.7 percent of the students who were enrolled that year dropping out that year so the hazard (risk of dropping out) in 2009 was .047. Hazard was plotted over five years of data collection for both students who had been and students who had not been chronically absent, resulting in hazard functions for each group.

<sup>5</sup>This anomaly is informally referred to as "senioritis."

<sup>6</sup>Regression models predicted the log odds  $\{\text{logit}(P) = \ln(P/P-1)\}$  of being chronically absence from each predictor variable in the model yeilding the following equations:

Model 1:  $\text{logit}(P)=a + b1(\text{Years Chronically absent})$

Model 2:  $\text{logit}(P) = a + b1(\text{Years chronically absent}) + b2 (\text{GPA cut score})$

Model 3:  $\text{logit}(P) = a + b1(\text{Years chronically absent}) + b2 (\text{GPA cut score}) + b3(\text{Low Income}) + b4(\text{Special Education}) + b5(\text{English Proficient}) + b6 (\text{Racial Minority})$



Where GPA cut score, Low Income, Special Education, English Proficiency, and Racial Minority are all dicotomous variables coded so that 1 equals the at-risk group (i.e., Cumulative GPA below 1.8, eligible for free or reduced lunch at any time during data collection, eligible for special education services at any time during data collection, eligible for ELL services at any time during data collection, and non-white).

<sup>7</sup>The cut score of 1.8 was determined through a regression process to be the “tipping point” at which students were best classified as likely to graduate or likely to drop out.

<sup>8</sup>The correlation coefficient,  $r$ , measures the direction and magnitude of the relationship between two variables. The correlation coefficients reported here, .44 and .13 are both positive (students who are chronically absent are more likely to dropout) and represent medium and small relationships, respectively. The simple relationship between CA and dropout is .44—that is the relationship observed by directly comparing chronic absence status with dropout status. The mediated relationship is .13—that is the relationship between CA and *dropout after GPA has been statistically accounted for*.

We wish to acknowledge our partnership with the Utah Afterschool Network with whom we have collaborated through the award of a technical assistance grant from the C.S. Mott Foundation and our appreciation to Dr. Hedy Chang for her review of this brief. Together we work to increase attention to the value of afterschool and out-of-school time opportunities to reduce chronic absence.



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This report uses data made available through a Data Share Agreement between the USOE and the UEPC. In addition, the UEPC maintains access to data as a member of the Utah Data Alliance, a partnership of the Utah State Office of Education, the Utah System of Higher Education, the Utah College of Applied Technology, the Utah Department of Workforce Services, the Utah Education Policy Center, and the Utah Education Network. The views expressed are those of the authors and not necessarily the USOE or the Utah Data Alliance partners.