Adequate Yearly Progress and Dropouts:

An Analysis of Kentucky High Schools & Districts

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EXECUTIVE SUMMARY

Education accountability measures, especially since the passage of No Child Left Behind, have been assessed for a variety of factors in empirical research. A large portion of this literature finds that overall, accountability measures increase performance, but also increase the achievement gap. These findings have inspired this research to examine what other marginal groups of students have been affected by the unintended reaction to the consequence-based incentives found in minimum competency accountability programs, such as No Child Left Behind.

In particular, this research looks at how the changes in a high school or school district's Adequate Yearly Progress marks affect the dropout rate in Kentucky. This was completed by compiling two datasets from the years of 2006 - 2009, one at the school level and one at the district level. Both levels were reviewed to present a fuller picture of the changes that are occurring within the schools and districts. Each dataset was evaluated using both a fixed effects model and a between effects model, and because of the high correlation between AYP Reading and AYP Math the models were ran with both variables concurrently. Furthermore, each model was run with a non-lagged version of the AYP marks, and a lagged (t-1) version to encapsulate the changes happening in the same year, and also those carrying over into the following year's dropout rates.

The primary results from the fixed effects model were that AYP Math marks at the district level are statistically significant and positively correlated with an increase in dropout rates, but this was only true for the non-lagged version of the data. The between effects model was ambiguous at the district level, but found that at the school level that AYP Reading is statistically significant and positively correlated with an increase dropout rate average levels. This was found to be true in both the non-lagged and lagged versions of the variables. Therefore, we have two findings, at the District level; AYP Math marks matter within schools, and at the School level, AYP Reading matters between schools. Because these two AYP measures are highly correlated, this provides evidence that would support the theory that as schools and districts focus on achieving AYP, it is at the detriment of the students that are on the margin of dropping out.

Despite the modest findings in this research, due to various limitations, the policy question of how accountability measures affect dropout rates is still relevant. An analysis of the dropout data distribution uncovered a policy concern, with a distinctive upper tail of schools and districts that are performing much worse than the majority, in regards to dropout rates. This finding is worth further review by policymakers. Finally, the findings in this research uncovered a pattern between AYP marks and dropout rates that warrant attention. These findings, combined with the literature on high-stakes testing, directs the recommendation towards further review in this area, as well as potential areas for program implementation that would target the lowest achievers to prevent dropping out. In short, the primary recommendation from these results is that further research is necessary and viable to ensure that policymakers address the unintended consequences of NCLB accountability measures.

INTRODUCTION

A. ACCOUNTABILITY OVERVIEW

Since the passage of the No Child Left Behind (NCLB) reform, there has been discourse about the effectiveness of minimum competency accountability systems, with particular focus on the programs based on high stakes testing, such as NCLB. However, the initiative of accountability in education has been prevalent for many years and has been empirically reviewed for a variety of positive and negative results. By definition, accountability is a responsibility to someone for some activity. For education, the definition has developed into the notion that schools, at some level, are responsible for the achievement of students. Since the passage of NCLB, accountability has been extended to mean that achievement is measured by high-stakes testing, and there are consequences for falling below a predetermined proficient level. In particular, districts and schools are measured yearly on whether or not they are meeting a predetermined benchmark in Reading, Math and Overall test scores in order to achieve adequate yearly progress (AYP). The consequences range from corrective action plans to allowing students to choose other schools, and therefore a reduction in funding to the school or district based on head count. Because of the consequences for failing to reach these marks, there is a great deal of time and pressure focused on these test results. These consequences and pressures have lead to the widespread use of the term "high-stakes testing".

Furthermore, the effectiveness and validity of a program that ties student achievement to a single performance measure, such as testing scores, has been argued to a great extent in empirical literature. Many have suggested that the consequences tied to failing these accountability measures leads to perverse incentives for the schools and teachers. For example, some research suggests that in order to meet their accountability requirements, schools and teachers may "teach to the test", or strategically leave some kids behind by focusing on the kids

at the margin (Booher-Jennings, 2005). If there is truth to these arguments, then the children that NCLB was designed to help are in fact being hindered, and this becomes a major policy concern for those implementing NCLB programs.

On the other hand, accountability measures have shown positive impacts on student achievement across the board, and the more stringent and consequential the accountability system, the better the impact. (Carney & Loeb, 2003) However, there is also an achievement gap that is at least not shrinking, and in some cases shown to be increasing. This line of research would argue, the growing gap is due to the focus on increasing standards for the majority constituency (the average), and led to a decrease in the focus on equity. (Levin, 1975; Reback, 2008) NCLB attempts to rectify the achievement gap issue by requiring across the board gains for all students. However, the evidence of some research suggests that after implementation, NCLB has not been effective in reaching all groups as originally intended. (Fusarelli, 2004; Hanushek & Raymond, 2005; Hoerandner & Lemke; 2006, Neal et al., 2007)

B. DROPOUTS IN KENTUCKY

The contradictory findings that accountability both increases performance, while also increasing the achievement gap, begs the question as to what other groups of troubled students are being affected by accountability measures. One particular area of concern is high school dropouts. There are numerous positive externalities resulting from high school graduation, both personal and social. For example, it has been well documented that those who graduate high school earn more money throughout their lifetime. Also, an example of a social benefit comes in the form of high voter turnout. One study found that the 2000 voter turnout rate in the United States would have been 10.4% to 12.3% percentage points lower if the high school completion rate had not increased by 36.1% from 1964 to 2000. (Milligan, et al, 2004) These social benefits, such as higher voter turnout, which are not captured in the private return, are one of the

influences for pigouvian subsidies in education, in order to produce the most efficient output of educational attainment. Furthermore, NCLB addresses the problem directly in the Dropout Prevention Act section of the legislation.

Taking these threads of research, NCLB legislation and the importance both privately and socially to graduating high school, assessing dropouts under accountability measures is of great importance from a policy perspective. For this research, the focus will be the Commonwealth of Kentucky, and to assess how the state has fared in regards to the dropout rates since the implementation of NCLB. This will be done specifically by looking at how changes in both districts and schools adequate yearly progress marks are related to the changes in their dropout rates.

Despite the accountability measures being in place, dropouts are on the rise in Kentucky, with the latest data showing dropouts increasing from 2.89 in 2009 to 3.10 in 2010. As you can see in Table 1, the dropout rate fluctuates from year to year. However, when broken out by ethnicity, the rate for Black and Hispanic students is much higher than the overall dropout rate. For example, the White dropout rate increased from 2.60 in 2009 to 2.87 in 2010. While the African American dropout rate increased from 4.91 to 5.52 and the Hispanic dropout rate increased from 4.06 to 5.58. (KYDOE, 2010) Could it be that the accountability measures in Kentucky are misaligned with the goal of decreasing the achievement gap and may actually have the opposite effect, as seen in the disparity between minority and white dropout rates?

TABLE 1. DROPOUT RATES IN KENTUCKY 2006 – 2010

Year	Overall	White	Black	Hispanic
2006	3.34	3.03	5.45	6.11
2007	3.17	2.94	4.77	5.46
2008	3.29	2.87	6.14	6.07
2009	2.89	2.60	4.91	4.06
2010	3.19	2.87	5.52	5.58

Because of the lack of consistent measures for dropout rates and also a lack of public policy research on the matter, looking at dropout rates and accountability measures using statistical analysis is not an easy task. Yet, the data suggests that there is a significant policy problem with the growing numbers in dropouts and specifically in minority groups. Despite the positive effects of accountability on overall achievement, the failure to those who are on the margin of dropping out and minority groups is discouraging. Policymakers need to be aware of these downfalls so that they can be adjusted in a way that reaches all groups, as the NCLB legislation originally intended.

Of further concern are the unique characteristics of the Kentucky education system. The progressive set of educational reforms passed in the 1990's called the Kentucky Educational and Reform Act (KERA), make assessing the Kentucky educational system distinctive. KERA was mandated as a result of the Rose v. Council (1989) decision by the Kentucky Supreme Court that invalidated the way Kentucky schools were publically financed, as well as, finding the entire system to be unconstitutional. The legislators were charged with developing an entirely new public school system in Kentucky. Their main focus was on curriculum, governance and financing. The resulting legislation had a careful focus on equalizing spending and performance between schools. KERA also developed a reward based incentive system for the attainment of pre-determined goals. (Hoyt, 1997)

KERA is still in place today and plays a role in how educational achievement is measured in Kentucky. NCLB is also an incentive based program, where the focus is on consequences, rather than rewards like KERA, for failing to achieve adequate yearly progress. These varying incentives are crucial to understanding policy concerns when dealing with Kentucky's education system. One of the problems with incentive based systems is the potential for perverse

outcomes. As Steven Kerr discussed in 1975, "…numerous examples exist of reward systems that are fouled up in that behaviors that are rewarded are those which the rewarder is trying to discourage, while the behavior he desires is not being rewarded at all." (Kerr, 1975) Therefore, if the incentives of KERA and NCLB are fouled up, as Kerr says, they lead to gaming the system to reach the goals set up by system. For this research, we will focus on NCLB and if adequate yearly progress may be producing these perverse outcomes by focusing on the short term goals of achieving the targets of NCLB and not the long-term success of the students. However, it will be important to bear in mind the underlying incentives of KERA that are playing a role in the Kentucky public education system.

RELEVANT THEORY AND LITERATURE

One of the main goals of the NCLB reform was to decrease the achievement gap between students and make education more equitable. This requirement means that graduation from high school is imperative. It appears there is an abundant literature on the equity and distributional effects of NCLB, but a small portion of this actually focuses on dropout rates. The hope will be to draw some conclusions from the equity discussion and how this could lead to further research opportunities on dropout rates. Finally, we will spend the last section looking at what other factors play a role in dropout rates. This exercise will allow us to attribute the various effects on dropout rates, and perhaps discover an underlying rationale that was not addressed in the accountability program design.

A. HISTORY OF ACCOUNTABILITY

Accountability and education policy are analogous with current policy; however, there have been a series of movements over the past few decades that have pushed the focus of education policy from looking at inputs to focusing on outcomes. In 1966, the Coleman Report

found that schools play a much smaller role than previously considered in determining student learning, and outside forces, such as socioeconomic status, are more important to determining student outcomes. (Coleman, 1966) Soon after, there was a blossoming of educational research based on economic production functions, pioneered by Eric Hanushek in 1979. (Hanushek, 1979) The determination that you could focus on the outcome of choice as a function of the various inputs, such as student factors, school factors, and teacher factors, opened a new venue to explore education policies. At a point, there was a shift in the temper of the argument, especially in the late 1970's after the time of social permissiveness had grown significantly. This led to the publishing of *A Nation at Risk* (NAR) in 1983, where the focus of education policy transitioned to increasing standards. (NCEE, 1983) This focus on academic content, expectations, and time retracted the focus from equity. In turn, NAR created a trade-off that many policymakers still fail to address; an increase in standards, specifically higher graduation requirements, leads to increasing dropout rates. (Jacob, B 2001).

Perhaps one of the original works on accountability in education is the conceptual framework developed by Henry Levin. Levin points out, if we view accountability as an indicator of performance, then "there is a tacit assumption that there is unanimity on the objectives of education and that the information thus provided will be useful to all of the constituencies with educational concerns." (Levin, 1974) If this assumption holds true, then performance based educational accountability programs are assuming that all groups within a school are of the same constituency. However, within the majority of schools there is a wide variety of constituencies. Therefore, because NCLB is designed to measure performance, it would focus on one particular constituency, the average student. This focus on the average constituency leaves behind the lowest and highest achieving students.

There is further research looking at achievement gaps during the 1990's, prior to the introduction of NCLB. Lee and Wong, (2004) look at whether performance driven educational accountability policy, enhances or hinders equity. They do this by comparing various state policies using the following tools; F-33 - School District Financial Survey, SASS – 1988 and 2000 Schools and Staff Survey, and NAEP – National Assessment of Education Progress, and determine that "states did not address racial and socioeconomic disparities in school resources and failed to narrow the achievement gaps among racial and socioeconomic groups." (Lee & Wong, 2004) This lack of focus on equity is confirmed in the study by Ladd in 1999 with a review of the Dallas accountability system as it compared to other Texas school districts. She used an advanced methodology using regression based value added scores, to measure school effectiveness, and found that accountability resulted in large gains for whites, smaller gains for Hispanics, and no gains for African–Americans. (Ladd, 1999) Thus, during this time frame the literature found that the achievement gap was at least not shrinking due to accountability measures.

Despite the lingering issues of equity and stagnant achievement gaps, there is a great deal of evidence that accountability measures have a positive impact on the outcomes of students. (Hanushek & Raymond, (2005), Carnoy & Loeb, (2002), and Jacob, (2003)) Hanushek & Raymond also find that attaching consequences to performance is crucial to maintaining this achievement, but do not give a recommendation on the appropriate type of sanction or reward system. Carney & Loeb do a comparison of states by developing a 5-point scale of accountability based on data from the Consortium for Policy Research on Education (CPRE 2003) that summarizes state policies based on the strength of their accountability polices. They found that states with more stringent accountability systems in the 1990's saw larger gains in

student performance, including this positive relationship for all ethnic groups. (Carney & Loeb, 2003)

In short, the literature provides evidence for two general conclusions. First and foremost, accountability overall has shown to have positive impacts on student achievement across the board, and the more stringent and consequential the system, the better the impact. However, there is also an achievement gap that is at least not shrinking, and in some cases shown to be increasing. Some would argue that the focus on increasing standards for the majority constituency (the average) has led to a decrease in focus on equity. However, the implementation of NCLB puts a specific focus on bringing up all levels of student achievement. In the next section, we will review what the literature has to say regarding the effectiveness of NCLB on decreasing the achievement gap, and specifically look at dropout rates as a measurement of this gap.

B. NO CHILD LEFT BEHIND

The No Child Left Behind Act of 2001 begins with the following, "To close the achievement gap with accountability, flexibility, and choice, so that no child is left behind." Furthermore, NCLB puts a particular focus on dropout rates as a key indicator of success. Part H of NCLB, the "Dropout Prevention Act" states its goals as: (1) challenge all children to attain their highest academic potential; and (2) ensure that all students have substantial and ongoing opportunities to attain their highest academic potential through school-wide programs proven effective in school dropout prevention and reentry. (NCLB Act of 2001) Therefore, since dropout prevention is a crucial part of NCLB legislation, it is imperative to dig into the literature to assess if high stakes testing accountability is producing the desired results.

As before with the accountability overview section, there is not much dispute that

NCLB does have a positive effect on student achievement, although the level varies greatly. (Springer, 2007 & 2008; Jacob, 2003; Hanushek & Raymond, 2005) Also, the trend of a growing achievement gap is still evident under NCLB. (Fusarelli, 2004; Hanushek & Raymond, 2005; Hoerandner & Lemke; 2006, Neal et al., 2007) In general these studies found that the design of NCLB based on minimum competency tests and simplification of the defined achievement gap has lead to a focus on the marginal constituency, with little to no achievement increase for the lowest performers. Furthermore, the argument has taken a turn from looking at the effectiveness of the program to trying to discover the mechanisms that schools use to reach these new required levels. There is evidence that schools and teachers respond, albeit rationally, to these pressures strategically. (Jacob, 2003; Booher-Jennings, 2005; Diamond & Spillane, 2004; Reback, 2007) Jacob finds that the accountability policies did place more students in special education, but this had no effect on the proportion of students who took the tests. More strikingly, he found that there was a significant increase in students who were held back a grade the year before they would be taking the exam. "Retention rates in these grades increased approximately 130% under the accountability policy" (Jacob, 2001) Booher-Jennings also found in a case-study of the Texas accountability system, that teachers were responding strategically, through a variety of different mechanisms, and what she has labeled as "Educational Triage." The main result of her findings, is that the teachers were responding to the incentives to achieve a certain performance level by focusing on "bubble kids", those at the margin of passing, and strategically removing those that could not perform at the desired level. (Booher-Jennings, 2005) This idea of educational triage is furthered in the research by Reback in 2008, by focusing on the design of NCLB using a singular measure, test scores based on a minimum competency level, as an incentive for short term focus on marginal students, to the detriment of those on the tails. The

theme of this strand of literature takes issue with the main purposes of NCLB legislation. As Reback puts it, "an accountability system should only create disproportionate incentives concerning achievement gains if the intention is to help some students more than others and to boost performance in some subjects by more than others." (Reback, 2008)

On the other hand, Springer has found the highest correlation between NCLB accountability programs and student achievement. First, he takes on the idea that schools perform "Educational Triage", and finds that "No evidence of failing schools systematically targeting students near the state-defined performance threshold was found" (Springer, 2007). In his 2008 research, he finds that test score gains by below-proficient students in failing schools are positively correlated with NCLB's threat of sanctions. Meaning that the threat of sanctions incentivizes better performance of low achievers in failing schools. Furthermore, these gains do not occur at the expense of high-performing students in failing schools. He estimates these results using the educational production function "in which test score gains are a function of the incentives schools have to focus instruction on below-proficient students." (Springer, 2008) His results are distinctive compared to the majority of research on this subject. Nonetheless, it does open the possibility that not all schools are responding in a strategic manner to the high stakes accountability measures.

Overall, there are differing results as to the magnitude that schools respond strategically to the incentives set out in NCLB, specifically the focus on marginal students and the leaving behind of children for which the program was designed. However, there appears to be more evidence in the literature that schools and teachers do act strategically under the pressure of minimum competency and high stakes testing.

C. DROPOUT RATES

What we do know from the literature is that there appears to be a positive correlation between increased high stakes measures, such as graduation exit exams, and dropout rates in the lowest achieving students. (McDill, et. al, 1985, 1986; Jacob, 2001; Glen, 2006) Jacob specifically finds a significant increase in his 2001 study, "…graduation tests have no appreciable effect on the probability of dropping out for the average student, they seem to increase the dropout rate amount of the lowest achieving students, who are as much as 25% more likely to dropout." (Jacob, 2001)

Despite this, there is only a small amount of literature directly addressing dropout rates and accountability. Perhaps one of the main reasons is the lack of a consistent measure of dropouts between states and missing information due to inadequate tracking of dropouts. (Rumberger, 1987; Heckman & LaFontaine, 2010; Swanson, 2003) As Heckman reports "many estimates of the effects of policies on high school graduation that are reported in literature are based on poorly constructed graduation estimators that produce inflated levels and inaccurate time trends." (Heckman & LaFontaine, 2010) This inability to consistently measure dropouts leads to some significant issues both empirically and for analytical purposes. For example, a major issue, that is a result of this lack of consensus, is the inability to assess the trends in the dropout rate. (Rumberger, 1987) There are several reasons that are cited for these variances, such as the different determining measures of the cohort, or including GED completers. (Rumberger, 1987; Heckman & LaFontaine, 2010) The underlying issue with using GED recipients in the calculation of those who graduate is that even though GED recipients are believed to have the same cognitive abilities of those who graduate, they have on average the economic and social outcomes of dropouts. (Cameron & Heckman 1993; Heckman & LaFontaine, 2006)

Furthermore, minorities disproportionately use the GED program, in fact, black male high school completers are twice as likely as white males to possess a GED certificate, where a substantial portion of these are completed in the prison system. (Cameron & Heckman, 1993, Heckman & LaFontaine, 2010) To extrapolate, this means that the statistics for minorities, specifically black males, graduating from high school could be severely overstated if GED holders are counted as completers.

There are numerous other factors that play a role in dropping out; some can be manipulated through policy interventions and, quite frankly, some are not easily addressed. (Rumberger, 1987) For example, a review of the statistics in 1998 showed that children living in families with incomes in the lowest 20% of all family incomes were four times as likely to drop out of high school as their peers. (Kaufman et al., 1998) Furthermore, the literature has found that this is true no matter what particular factors are used to measure socioeconomic status. (Kolstad & Owings, 1986; Rumberger 1983) Other strands of literature review more factors than those attributable to the student alone and include peer relationships and school-related factors. (Rumbarger, 1987) Another variable that has been shown to play a role in dropping out is student mobility. It has been found that "students that made even one non-promotional school change between the eighth and twelfth grades were twice as likely to not complete high school as students who did not change schools." (Rumberger & Lawson, 1998)

In addition, sociologists have found that there are trends in student behavior that develop as early as the first grade that can predict whether a student will be at a higher risk for dropping out. (Ensminger & Slusarcick, 1992; Alexander, K. et al. 1997; Jimerson, S. et al. 2000) Therefore, an awareness of the behaviors that could lead students down this path and developing early intervention that could head-off the dropout path could prove very efficient in

the long run. Early intervention has been shown to have high benefit cost ratios and rates of return, especially for disadvantaged children. (Heckman, 2006)

As said before, there is no typical student that drops out of high school, and there are a plethora of factors that can play a role in dropping out. Also, since we are now in a world of accountability, it is important to think of how these factors are changed or unchanged. It is going to be crucial to take into account these outside forces when trying to delineate what the actual effects of accountability have been on dropouts, as well as, to look at the design of accountability and determine if and how it lacks the ability to address the issues that cause students to drop out.

Accountability and dropout rates are important areas for educational research and policymakers. Although dropout rates have significantly dropped from fifty years ago, they are still relevant because they have become stagnant, and in some cases began to spread again. (Cameron & Heckman, 1993) With the widening achievement gap, compounded with the effects that high stakes testing can have on increasing dropouts in the lowest achievers, much more research is needed to determine the effects of accountability pressures on dropouts.

RESEARCH DESIGN

A. DATA

Data for this analysis were compiled using two primary sources. First, records were gathered on dropouts at both the high school level and also aggregated to the district level from the Kentucky Department of Education. Secondly, demographic statistics and further data were gathered from the U.S. Dept of Education Common Core of Data, provided by the National Center for Education Statistics.

As defined by the National Center for Educational Statistics (NCES), and adopted by the Kentucky Board of Education (KBE), a dropout is an individual who meets the following

criteria:

1) Was enrolled in school at some time during the previous school year, and was not enrolled before October 1 of the current school year.
2) Has not graduated from high school or completed a state or district approved educational program, such as a GED or certificate of completion/attainment pursuant to an Individualized Education Program (IEP).

This definition does not include students that have transferred to another public school district, private school, or state or district approved education program; temporarily absent due to suspension; or deceased. (KY Dept. of Ed., 2011) Although this data is collected from school administrators, and therefore limited by human error, this definition provides specific instruction for indicating which student is a dropout. Overall, using this standard definition of a dropout should eliminate the majority of these interpretation issues and not affect the findings.

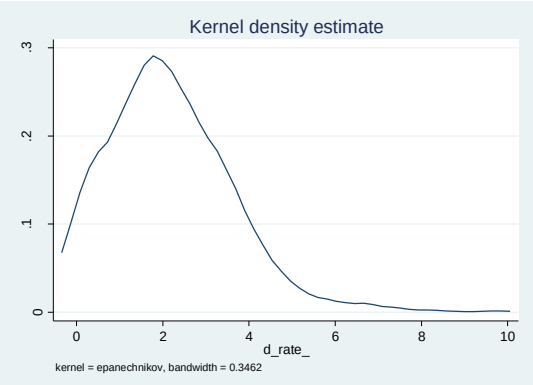
Data regarding the Adequate Yearly Progress (AYP) for each high school and school district was also provided by the Kentucky Department of Education, which gathers it for No Child Left Behind (NCLB) reporting. Specifically, Adequate Yearly Progress is a term used by NCLB to describe the minimum improvement that a school district must make each year. In Kentucky, it is measured at the school and district levels by measuring growth in the percentage of students scoring proficient or above in reading and mathematics and assessing improvement on one "other academic indicator" while testing at least 95 percent of enrolled students and student subpopulations of sufficient size. For high schools in Kentucky, this other academic indicator is defined as either the graduation rate must meet the state goal of 86.75% or graduation rate must have increased by 2% when compared to the prior year. (KY Dept. of Ed., 2012). Therefore, there are three specific measures for AYP: Reading, Math and Overall.

Kentucky has approximately 645,000 students in elementary, middle and high schools. The public schools system is divided into 174 school districts, with a combination of county and independent districts. However, five of the independent school districts only provide schooling through the eighth grade. For the review of high school dropouts in Kentucky, these five districts were not included in the district level assessment. Therefore, the data included 169 school districts that provide education through the 12th grade. A panel of data was built of the 169 Kentucky school districts for the four school years of 2006 thru 2009.

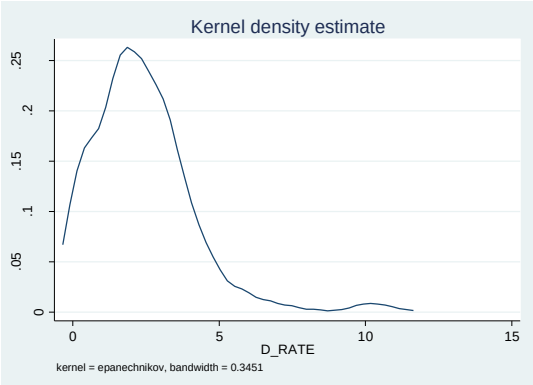
Furthermore, a school level panel of data was built that included 216 public high schools for the four school years of 2006 thru 2009. Despite adding quite a few observations, this data is limited by the fact that approximately 140 school districts in Kentucky only have one high school. Therefore, the high school data and district data are identical in those cases.

The variable of interest is the dropout rate of high school students at the high school and district level. The dropout rate in Kentucky is defined as the number of dropouts divided by the fall membership rate (Growth Factor Report). The distribution (See Graph 1 & 2) of dropout rates for both the district and school level is approximately normal with an upper tail. The policy implications of these distributions will be discussed in the recommendations.

Graph 1. District Level Dropout Data



Graph 2. School Level Dropout Data



The explanatory variables used to explain the variance in dropout rates at the school and district level are whether or not a district met the Adequate Yearly Progress marks in Reading and Math. AYP is denoted with a "Yes" for those that achieved the mark and "No" for the schools and districts that failed to meet the criteria. Dummy variables were created to signify a No mark with a 1, and a Yes mark with a 0. These variables were specifically chosen because of their association with accountability measures, and their latent relationship to the dropout rate.

Schools are rated on three AYP categories, but the Overall category contains an "other academic indicator", which includes graduation rate targets. Since our variable of interest is dropout rates, this measure may cause interpretation issues if included in the model. Furthermore, when the variables are tested using the tetrachoric correlation test, AYP Overall is found to be perfectly correlated with both Reading and Math. The tetrachoric method was used in favor to the standard Pearson correlation test because of the binary nature of dummy variables. As a result, Overall AYP has not been included in this model. Furthermore, using an f-test, AYP marks in Reading and Math were found to be highly correlated with a Prob F> 0.0001, meaning that using both variables in the model concurrently provided the most accurate representation of their relationship.

AYP was also generated with a one-year lag to attempt to capture prior impacts on dropout rates. The assumption of using a lagged AYP is that the change in AYP of the previous year would be the change that mattered to the current year dropout rate. Therefore, the lagged AYP looks at the previous year to separate the influence on the dropout rate from year to year, allowing the change to be accurately credited to the previous years change in AYP. However, a couple of issues arise when using lagged variables. First, when lagging the variables (t-1) you drop the entire first year of observations, making the sample size smaller. Second, and more

importantly, if AYP is autocorrelated, then using a lagged variable increases the chance of multicollinearity, making causal inferences difficult.

Beyond these three explanatory variables, several more control variables are included in the analysis to assess the various characteristics of the districts, teachers and student demographics. These specific characteristics are drawn from the education production function, which focuses on the outcome of choice as a function of the various inputs, such as student, teacher, and district factors. These variables vary slightly for the district and school level data due to availability and practicality.

For the District level data see Table 2. District level student demographics include the percentage breakdown of ethnicity, gender, and income level (as indicated by the percentage of students receiving free/reduced lunch). Because it was the largest group, percent of White students were left out, and percent of females were also left out as comparison groups. Teacher related controls include average teacher salary as an indicator for teacher experience. Also included is a variable for student to teacher ratio to capture variances in the districts class sizes, and also expenses per student.

TABLE 2. DISTRICT LEVEL VARIABLES

Variable	Description
Dropout Rates	Dropout Rate at the district level
AYP Reading	One year Lagged value AYP in Reading at District Level (1 = NO; 0=YES)
AYP Math	One year Lagged value AYP in Math at District Level (1 = NO; 0=YES)
Percent Male	Percent of total district enrollment that were Male
Percent Black	Percent of total district enrollment that were Black
Percent Hispanic	Percent of total district enrollment that were Hispanic
Percent of Free/Reduced Lunch	Percent of total district enrollment that participated in free & reduced lunch programs (Poverty)
Expenses per Student	Expenses per student divided by total district expenditures
Average Teacher Salary	Average teacher salary divided by total district expenditures (Experience)
Pupil to Teacher Ratio	Pupil to teacher Ratio – number of students per teacher

The school level data included many of the same demographics, such as, ethnicity, gender and free and reduced lunch participation for student related characteristics. Also, percent

of white students and female students were left out as base groups. Student to teacher ratio is used as measure of the school characteristics. Teacher related controls include average years of experience, and percentage of teachers that have received Master's degree (see table 3).

TABLE 3. SCHOOL LEVEL VARIABLES

Variable	Description
Dropout Rate	Dropout Rate at the district level
AYP Reading	One year Lagged value AYP in Reading at School Level (1 = NO; 0=YES)
AYP Math	One year Lagged value AYP in Math at School Level (1 = NO; 0=YES)
Percent Male	Percent of total school enrollment that were Male
Percent Black	Percent of total school enrollment that were Black
Percent Hispanic	Percent of total school enrollment that were Hispanic
Percent Free/Reduced Lunch	Percent of total school enrollment that participated in free & reduced lunch programs (Poverty)
Pupil to Teacher Ratio	Pupil to teacher Ratio - number of students per teacher
Average Years Experience	Average years of teacher experience at the school
Percent of Teachers w/Masters	Percent of Teachers with a Masters degree

B. RESEARCH MODEL

The purpose of this research is to determine the relationship between whether or not a school makes AYP marks in Reading and Math and the dropout rates at the school and district levels. The various other factors, such as school, teacher and student characteristics are included to reduce the potential of random error, and isolate the effect of the explanatory variables. Due to the nature of the panel data, which includes multiple observations collected over time, a time trend regression is necessary.

The fixed effects model is the first method of time trend estimation used for this research. This model measures the changes that occur within each school and district over time. Controlling for the explanatory characteristics of each school and district that are generally constant over time, it allows for the isolation of variables that effect dropout rates, by looking at the attributes that change over time. Therefore, it can be determined if the changes that occurred within a school or within a district over this time period explains the changes in dropout rates.

Research Question #1 – Fixed Effects:

i. *Do the changes in AYP within each district affect the changes in dropout rates at the district level?*

ii. *Do the changes in AYP within each school affect the changes in dropout rates at the school level?*

By using the fixed effect regression model the fixed characteristics of each school and district can be assessed. The model sweeps out all variation that does not change over time, which means that all time-invariant omitted variables, including the immeasurable characteristics of the schools and districts, are fully controlled for. Furthermore, the fixed effects model allows for general heteroscedasticity (robust estimation) and correlations within school districts (clustering). This model is illustrated by the equation:

$$Y_{it} = A + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \alpha_i + \varepsilon_{it}$$

In the above equation the Y represents the dropout rate of the school or district *i* at time *t*. The X's represent the explanatory variables, AYP in Reading and Math, as well as the various other control variables. Random error is indicated by the variable ε_{it}. At this point the model appears to be a multiple regression, however the fixed effects model includes the distinctive variable, α_i. This variable includes the unique individual school and district effects, such as the unobservable school and district environment characteristics.

Research Question #2 – Between Effects:

i. *Do the differences in AYP between each district affect the average changes in dropout rates at the district level?*

ii. *Do the differences in AYP between each school affect the average changes in dropout rates at the school level?*

A between effects model was also used to estimate how the differences between the schools and districts AYP marks affected dropout rates. The between estimator is used to

estimate the effects of explanatory variables fixed within units in panel data models. Therefore, this model was used to recover any hidden effects of the variables that may have been eliminated because they did not vary over observations of the same unit within the individual schools or districts. Using the between effects estimator allows for the isolation of effects in the variables that remain constant over time. The model is illustrated by the following equation:

$$Y_{it} = A + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon_{it}$$

As before, the Y represents the dropout rate of school or district *i* at time *t.* The X's represent the explanatory variables, AYP in Reading and Math, along with the control variables. Random error is indicated by the variable ε_{it}.

The following tables show the descriptive statistics for the variables of the models described above. Below are the district level summary table (Table 4) and the school level summary table (Table 5).

TABLE 4. DISTRICT LEVEL SUMMARY STATISTICS

Variable	Observations	Mean	Std. Dev.	Min	Max
Dropout Rates	676	2.169882	1.456427	0	9.71
AYP Reading	676	.4230769	.4944132	0	1
AYP Math	676	.3579882	.4797636	0	1
Percent Male	676	.5050637	.0191645	.4259776	.5678571
Percent Black	676	.0540036	.0840219	0	.524362
Percent Hispanic	676	.0166736	.0230493	0	.215611
Percent of Free/Reduced	676	.5431342	.1490671	.0179923	.8953229
Expenses per Student	676	.0000559	.0001056	4.98e-07	.0015225
Average Teacher Salary	676	.0027327	.0024618	.0000513	.0166403
Pupil to Teacher Ratio	676	15.12308	1.49251	9.2	19.3

TABLE 5. SCHOOL LEVEL SUMMARY STATISTICS

Variable	Observations	Mean	Std. Dev.	Min	Max
Dropout Rate	864	2.413773	1.784128	0	11.3
AYP Reading	799	.3642053	.481508	0	1
AYP Math	799	.36045056	.4892629	0	1
Percent Male	859	.5071767	.0303593	.3387589	.7
Percent Black	859	.0833866	.1287535	0	.831579
Percent Hispanic	859	.0148906	.0205674	0	.1764706
Percent Free/Reduced Lunch	856	.4638097	.1727463	0	.9948718
Pupil to Teacher Ratio	857	16.70945	2.297564	7	27
Average Years Experience	856	11.56133	1.866908	5.9	17
Percent Teacher w/ Masters	864	.4657697	.1043999	0	.75

ANALYSIS AND FINDINGS

The models were run with both fixed effects and between effects and there were differences found between the two results. Based on the hypothesis that the changes in a school or districts Adequate Yearly Progress marks in Reading and Math had a relationship with dropout rates, I was able to find some statistically significant results for the changes that were happening within the each school or district. (See Tables 6 and 7) Furthermore, the between effects model produced some statistically significant results signifying that the average levels of change in AYP marks in Reading and Math are related to the average level of change in dropout rates between schools (See Tables 8 and 9). Also, the models were run with non-lagged and lagged (t-1) AYP marks. The following is a discussion of these results, and the possible reasons for the differing results between the different models.

A. FIXED EFFECTS

As stated previously, the fixed effects model did provide some statistically significant results. However, these results were only found when using the non-lagged version of AYP in Reading and Math. The difference between the two measures is based on the assumption that the changes in previous years AYP marks are affecting the changes in current year dropout rates.

Using the non-lagged version of the data does not apply this assumption, and is therefore attributing the current year AYP to the current year dropout rates. Both situations are plausible, as the current pressures of reaching AYP marks may affect dropout rates in the current year, as well as the actions of the school or district to reach AYP in the previous year may lag into the following year's dropout rates.

Another technical issue when dealing with fixed effects is the potential lack of variance in AYP marks within each school or district over the four-year period that was included in the data set. For example, if a school or district received NO all four years for AYP in reading, the fixed effects model would not tell us how the dropout rate is affected by a change in AYP Reading because there were no changes within that school or district. For example, 69 districts showed no variation in Reading, and 65 showed no variation in Math over the four-year period. Furthermore, by using the lagged variable (t-1) you are reducing the sample size by one year of observations, creating a higher number of districts and schools that would not contribute to the findings due to a lack of variation.

The interpretation of these results would be that a 1 unit change in AYP would result in a change to the dropout rate equal to the coefficient. In other words, because we used dummy variables to represent NO and YES, if a school or districts AYP mark changed from a 1 = NO to a 0 = YES, then you would expect a change in the dropout rate by the coefficient. Therefore, a positive coefficient would mean that a change from NO to YES would increase the dropout rates, and decrease with a negative coefficient.

TABLE 6. FIXED EFFECTS – DISTRICT LEVEL REGRESSION RESULTS

VARIABLE	Non –Lagged		Lagged (t-1)	
	Coefficient	Standard Error	Coefficient	Standard Error
AYP Reading	-0.0854	0.1281	-0.2219	0.1609
AYP Math	0.2288*	0.1253	0.2200	0.1549
Percent Male	-7.2641**	3.5392	1.6725	7.2756
Percent Black	-2.7438	6.9220	-0.0857	9.8397
Percent Hispanic	-38.6454***	8.2716	-32.3941	12.9629
Percent of Free/Reduced	0.0496	1.1169	1.6369	1.4937
Expenses per Student	-881.9927	937.46707	-904.0766	1287.04
Average Teacher Salary	2.7356	206.2844	-161.7053	290.7116
Pupil to Teacher Ratio	0.0400	0.0709	-0.0638	0.1059

***p-value<0.01, **p-value <0.05 *p-value <0.10. Standard Error is Robust.

At the District Level, there were a couple of findings that were unexpected, as well as one that supports the theme of this research. First, both of the variables for Male and Hispanic have negative coefficients, meaning that the changes within the district are actually reducing the dropout rates for these two groups. This is contrary to much of the typical findings on male populations and minority populations. Furthermore, I found that the non-lagged changes in AYP Math marks for the current year have a statistically significant relationship with dropout rates in the current year. Specifically, the data suggests that with a p-value between 0.05 and 0.10, as districts move from no to yes in AYP Math it increases the dropout rate by 0.2288.

Although AYP marks in Reading did not produce statistically significant results that does not necessarily negate their usefulness in measuring these changes. Since AYP Reading and AYP Math are highly correlated, the conclusion can be drawn that for districts the non-lagged changes in AYP marks do matter to the changes in dropout rates within the district. However, from the data, it appears that AYP Math is the more influential variable on the changes in dropout rates. Finally, at the District level there are no statistically significant results for the lagged variables, meaning that changes that were happening in the previous year to AYP marks

are not showing changes to the dropout rate for the current year.

These results seem counterintuitive at first, because one would expect that as a district does better on performance overall, that they would also be retaining students. However, the findings support the theory that the increased pressures of accountability measures play a role in the dropout rates. This could be a product of different actions within districts. For example, if some districts choose to focus on achieving higher marks on test, it may be at the detriment of those who are in need of special attention to prevent dropping out. This is only one of the plausible scenarios from the literature that result in the marginalization of the lowest achievers when placed under stringent accountability measures.

TABLE 7. FIXED EFFECTS – SCHOOL LEVEL REGRESSION RESULTS

VARIABLE	Non - Lagged		Lagged (t-1)	
	Coefficient	Standard Error	Coefficient	Standard Error
AYP Reading	0.0552	0.0865	-0.01429	0.0854
AYP Math	0.1479	0.0910	0.0852	0.0902
Percent Male	-1.4458	2.4302	-3.0806	2.7904
Percent Black	-2.4192	3.4441	-3.8305	3.8156
Percent Hispanic	0.6423	6.0283	3.5791	6.4091
Percent Free/Reduced Lunch	-1.9513**	0.7880	-1.2719	0.8046
Pupil to Teacher Ratio	0.0014	0.0302	0.0280	0.0294
Average Years Experience	0.0232	0.4235	0.0384	0.0442
Percent of Teachers w/Masters	0.1497	0.6339	0.1574	1.0156

***p-value<0.01, **p-value <0.05 *p-value <0.10. Standard Error is Robust.

From a school level, there were fewer findings that were statistically significant. In fact, the only variable that was significant was the percent of free/reduced lunch students in each school. Free/reduced lunch is a proxy for poverty, so this result was expected, as poverty is cited numerous times as a predictor of dropping out. However, this result only showed up in the non-lagged version of the data as well, suggesting that dropout rates within schools are a result of changes that are happening in the current year, and not the previous year.

B. BETWEEN EFFECTS

Similar to the fixed effects results, the between effects model also provided statistically significant results. One of the primary problems with a fixed effects model is the elimination of explanatory variables which do not vary over observations of the same unit. For example, as shown previously, more than a third of the data showed no variance at the District level. Therefore, the between effects model was used to recover any hidden effects of the explanatory variables that may have been eliminated. This model analyzes the means of each variable across time for each case. In other words, it compares the average levels of changes between the groups AYP marks, either schools or districts, and the average level of changes in the dropout rates.

At the district level, using the between effects model produces some interesting results (see Table 8). The non-lagged variables of interest, AYP Reading and AYP Math both are statistically significant with a p-value of 0.10 or less. However, the coefficients of the two are opposite, which is unexpected. Moreover, for average levels of AYP Reading, the non-lagged and lagged versions have different coefficient signs. This would indicate that the changes in AYP Reading in the current year decrease dropout rates; while over time, the pressures of the changes lag into the next year's average level of dropout rates between schools.

Once again, the AYP Math marks appear to have a higher influence than Reading on the dropout rate with a p-value <0.05. One possible reason could be that the pressures with Math testing could be more representative of the difficulty levels that push students to dropout, but determining such a cause is not possible with this data. Furthermore, the lack of lagged results in Math would also indicate that the effects of AYP Math changes happen within the same school year, and do not reach into the next school year. The interpretations of these results are the following:

1) Between districts, a non-lagged change in AYP Reading average levels from NO to YES would result in a 0.7399 decrease in the average level of the dropout rate between schools.

2) Between districts, a non-lagged change in AYP Math average levels from NO to YES would result in a 0.8498 increase in the average level of the dropout rate between schools.

3) Between districts, a lagged change in AYP Reading average levels from NO to YES would result in a 0.2120 increase in the average level of the dropout rate between schools.

TABLE 8. BETWEEN EFFECTS – DISTRICT LEVEL REGRESSION RESULTS

VARIABLE	Non –Lagged		Lagged (t-1)	
	Coefficient	Standard Error	Coefficient	Standard Error
AYP Reading	-0.7399*	0.4069	.08796**	0.3776
AYP Math	0.8498**	0.1273	0.2120	0.4076
Percent Male	-9.4289	5.8511	-6.6064	6.1861
Percent Black	-1.2438	1.0616	-1.2904	1.1310
Percent Hispanic	2.2541	3.7425	1.1365	3.8164
Percent of Free/Reduced	2.1313***	0.6687	1.8851***	0.7166
Expenses per Student	-707.0661	1173.896	-1400.777	953.6457
Average Teacher Salary	-92.2856**	40.7199	-89.1409**	41.6952
Pupil to Teacher Ratio	-0.0764	0.0717	-0.07396	0.0755

***p-value<0.01, **p-value <0.05 *p-value <0.10. Standard Error is Robust.

Poverty also plays a role in dropout rates in both the lagged and non-lagged versions of the model, as shown with the results of the percent of free and reduced lunch participants. A one-unit change in the percent of free and reduced lunch participants results in an approximate 2 percent increase in the dropout rate. As before, this result was expected, because a great deal of dropout literature focuses on the socioeconomic status as a primary factor in predicting dropouts.

At the school level, the results of the between effects analysis are distinctively different (See Table 9). Of note, the school level data does not produce any statistically significant results for changes in the level of AYP Math marks between schools in neither the lagged nor the non-lagged review of the data. This is an interesting finding, since AYP Math marks are more significant at the district level. Since it was found earlier that AYP Reading and AYP Math have

a strong relationship, this is telling us that AYP does matter, just at the school level AYP Reading is more influential and at the district level AYP Math is more influential.

TABLE 9. BETWEEN EFFECTS – SCHOOL LEVEL REGRESSION RESULTS

VARIABLE	Non –Lagged		Lagged (t-1)	
	Coefficient	Standard Error	Coefficient	Standard Error
AYP Reading	1.6733***	0.4191	1.6623***	0.4701
AYP Math	0.5794	0.3766	0.3092	0.3880
Percent Male	12.8981***	3.6491	12.7440***	3.9351
Percent Black	2.6271***	0.9168	3.0461***	1.0375
Percent Hispanic	-0.6802	2.5171	-1.6324	5.9342
Percent Free/Reduced Lunch	2.0701***	0.6911	2.4723***	0.8244
Pupil to Teacher Ratio	0.0045	0.5094	0.0099	0.8542
Average Years Experience	-0.0979*	0.0549	-0.1160*	0.0607
Percent of Teachers w/Masters	-0.1177	1.1563	0.0662	1.2151

***p-value<0.01, **p-value <0.05 *p-value <0.10. Standard Error is Robust.

On the flip side, AYP Reading is statistically significant with a p-value <0.01, both non-lagged and lagged. This indicates that at the school level, that average changes in AYP Reading marks are influential in the average changes of dropout rates between schools. Also, because results were found in both the non-lagged and lagged versions of the model, the changes in AYP reading at the school level have affects in both the current year and the following years dropout rates.

Furthermore, there are findings with the percent of male and percent of black students at the school level that did not appear in the district level. With each change in the percent of male students between schools, there is a 12.8981 increase in the dropout rate. With Black students a one-unit change increases the dropout rates by 2.6271. These results were more in line with expectations, as much of the empirical research finds that male students and minority students are more likely to dropout. The results of the AYP Reading variables can be interpreted as the following:

1) Between districts, a non-lagged change in AYP Reading average levels from NO to

YES would result in a 1.6733 increase in the average level of the dropout rate between schools.

1) Between districts, a lagged change in AYP Reading average levels from NO to YES would result in a 1.6623 in the average level of the dropout rate between schools.

The results on the AYP Reading marks indicate that as a school moves from NO to YES, that there is a positive relationship with dropout rates. Once again, indicating that pressures from attaining AYP accountability measures are related to an increase in dropout rates, when looking at the average level of changes between schools.

DISCUSSION

A. LIMITATIONS

Despite finding some results using the fixed and between effects estimations, there are some noteworthy limitations to this study. It would be difficult to suggest that any of these results are causal in nature; therefore additional research is needed to guide policy. There are several particular reasons that limited this study both statistically and theoretically.

First, the data itself created issues in determining if there was a fixed effect within the schools. Because the explanatory variables did not vary greatly over the four-year period, it was unfeasible to find many results for the changes within schools. An attempt to remedy this problem was made by doing an analysis at both the district and school level. But, the lack of school districts with more than one high school did not produce enough observations to drastically affect the results. These data limitations could be cured by increasing the years of the data or looking at other measures related to accountability that vary more over time. Unfortunately, both of these treatments were unable to be performed for this research due to time limitations and data availability.

Furthermore, as pointed out earlier, there is a notable gap in policy research regarding

dropouts. Although dropouts show up in much of the legislation and public discussion of education, it is a difficult policy question to address. However, difficulty does not make it less important than other factors. There are significant immeasurable variables that determine who is going to be a dropout. As found in this study and many others, due to the complex nature of a dropout, answering a policy question including dropouts is immensely difficult. Once again, all the more reason to expand and push the boundaries of policy research in order to capture more of what makes a student dropout.

B. RECOMMENDATIONS

Despite the limitations previously discussed, the original questions raised in this research remain important from a policy perspective. Accountability measures have been shown to increase the achievement gap, and high stakes measures to increase the dropout rates. There are still students who are dropping out and forfeiting both private and social returns at an alarming rate in Kentucky. Consequently, the question of how the pressures to achieve accountability measures, in order to avoid impending consequences, are affecting dropouts is still an important policy question.

My primary recommendation is to encourage more research on accountability measures and dropout rates. First, an in-depth analysis of the mechanics of a dropout can ensure that the majority of the measurable characteristics are accounted for. Also, research can be expanded by looking at other variables related to accountability measures, such as performance on standardized tests, or the consequences that are imposed on the schools and districts, and their relationships with dropout rates. Ideally, the research would also include a larger time frame and explanatory variables that fluctuate more than AYP over time, in order to increase the variance

of the variables. Even though there is a need for more in depth research, there are some recommendations that can be specified.

To recall, in the data section, the dropout rate distributions of the district and schools level data were shown in two graphs. They have an approximately normal distribution with an upper tail. This upper tail is of particular concern from a policy perspective. My recommendation would be for an analysis to be done comparing both the district level data and school level data, matching schools and districts, to first determine if there are particular schools and districts that are repeat offenders on the upper tail list. Also, to determine if there is a geographic area that has particularly high recurring dropout rates. Then analyze these schools and districts to determine if the factors at play are due to random causes or an underlying systemic problem. This analysis would be separate from looking at accountability measures, nevertheless one of the primary concerns of this research are dropout rates, so exposing any systemic problem that could lower dropout rates is beneficial from a policy perspective.

For accountability measures, the varying results at the district and school level lead to a variety of potential areas for policy improvements. Throughout the analysis there are findings at both the school level and district level. The findings give us potential focus areas for both levels, as discussed below. However, the fixed effects model results, which are the primary model of this research, were more significant at the district level. Therefore, my primary policy recommendations would be better realized at the district level.

Overall, for changes that are happening within schools, the fixed effects, and the data suggests that AYP changes matter more at the district level than the school level. Moreover, these changes appeared to have an immediate impact in the current year on dropout rates instead of a lagged effect. My recommendation for this particular policy issue would be a review of the

districts actions in the years that AYP Math changed from No to Yes. With the goal of determining any inputs that could be producing perverse incentives within the district and therefore leading to the increase in dropouts.

Furthermore, the primary question is what about Math in particular is making it more influential in the fixed affects model? Determining this exact reason is not possible with this data, but extrapolating from the literature leads to the idea that Math is a better approximation of the high stakes nature of minimum competency tests. And it has been shown that there is a negative response by the lowest achieving students in dropout rates when high stakes testing is involved. (Jacob, 2001) Therefore, a policy recommendation would be to develop a system within school districts for the lowest achieving students to relieve some of the pressures from high-stakes math testing, and therefore lower their risk of dropping out. This could be carried out in a variety of ways, such as targeted dropout prevention or specific training in math skills for the lowest achieving students.

The Between effects models were more ambiguous at the district level, but did provide us with a look at average level changes between schools. At the school level, the average levels of change in AYP reading are the more influential variable on dropout rates. I would suggest similar actions in reviewing how schools are strategically acting to produce these AYP Reading marks, to ensure that the inputs are not producing perverse incentives in regards to dropouts. Despite these findings, the between effects model does not provide as clear of a picture as the fixed effects model, but it is important to know that AYP marks are tied to dropout rates for changes within schools, and also for average levels between schools.

Overall, there were findings for both AYP Reading and AYP Math and their effect on dropout rates. These varied within districts and between schools, and there was discussion on

why each particular AYP may matter at the different level. However, because these two indicators are highly correlated, these results are more likely an indication of a relationship between these accountability measures and dropout rates, regardless of which subject. Discovering this underlying pattern in itself is significant since dropout rates are notoriously difficult to examine. Learning this relationship entices the discussion of how can we continue to further the research and understand the implications of these relationships.

In short, there are some findings that suggest pressures created within and between schools and districts to reach AYP marks are affecting the dropout rates. However, the underlying causes behind these changes are still yet to be fully determined. The literature suggests that accountability measures put additional pressure on lowest performing students, and the lowest performing students are often those who dropout. However, making this causal link is not possible with the findings in this research. Overall, the policy issues brought forth in this research confirm that there is something going on between AYP and dropout rates, and this leads to the overwhelming conclusion that further research is necessary to guide policy recommendations, so that no child is left behind.

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