UNDERSTANDING THE POLICY CONTEXT OF HIGH SCHOOL EXIT EXAMS: A REVIEW OF THE LITERATURE FROM 2006 TO 2018

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Executive Summary

The Kentucky Board of Education is currently considering changes to Kentucky's high school graduation requirement policy to address concerns that Kentucky students are not graduating with the skills necessary to ensure their success after high school. A key component of this policy change would require students to pass a high school exit exam before receiving a diploma. The most recent data on high exit exam policies show that approximately one out of four states require students to pass an exit exam (Center on Education Policy, 2012). These exit exam policies have varied widely in their implementation and characteristics. Empirical evidence from studies examining exit exams demonstrates that choices made when crafting the policy and establishing the exam may greatly affect the success of the policy and should be carefully considered.

This literature review synthesizes evidence addressing characteristics of the Kentucky exit exam policy. These characteristics include (a) student outcomes of underperforming and underserved populations, (b) level of exit exam difficulty, (c) inclusion of multiple subject areas in exit exams, and (d) inclusion of alternative pathways to graduation.

Exit Exams and Outcomes for Underperforming and Underserved Students

Research evidence suggests that students at the lower end of the achievement distribution, racial/ethnic minority students, or low income students may not see distinct improvements in their outcomes due to the implementation of an exit exam. The current research suggests a possible negative correlation between exit exam policies and high school completion rates for racial/ethnic minority students and low income students. Evidence is mixed as to whether underserved students see differential effects on college attendance and wages as a result

of exit exam policies; however, exit exams are not associated with the likelihood of being employed for any student group.

Exit Exam Rigor and Student Outcomes

Research is inconclusive about the effect of minimum competency exams on high school completion rates. However, several findings from the studies reviewed suggest a weak association between more difficult exams and decreased rates of completion. Neither minimum competency exams nor more difficult exams have any effect on postsecondary outcomes including college attendance, employment, or wages; however, more difficult exams are correlated with increased incarceration rates.

Exit Exam Subject Areas and Student Outcomes

Limited evidence suggests that exam subject areas can differ in their impact on students' high school academic path and completion. While findings are mixed in this area, mathematics is often found to pose a greater barrier for students than other subjects.

Exit Exams and Alternative Pathways to Graduation

Very limited evidence suggests a correlation between states that have an exit exam and no alternative pathway with higher dropout rates. Only alternative pathways that required the use of an alternative assessment such as the ACT or AP exams show a relationship with increased dropout rates; other pathway types do not demonstrate a correlation with high school completion.

The findings from the literature review provide several implications for the implementation of the Kentucky policy.

Introduction

Approximately one out of four states in the United States require students to pass a high school exit exam to receive their diploma. High school exit exams are standardized tests meant to assess how well high school students have mastered the state's standardized curriculum (Center on Education Policy, 2012). These exams are also seen as measures of college readiness or an assessment of a student's attainment of skills necessary to succeed in a career. These assessments establish a common minimum bar within a state which students must pass in order to graduate high school, instead of relying on school- or district-varying differences in students' evaluation.

The Kentucky Board of Education (KBE) is currently considering changes to Kentucky's high school graduation requirement policy. These changes seek to address concerns that Kentucky students are not graduating with the skills necessary to ensure their success after high school. For example, in 2017, while 89.7% of students graduated high school, only 65.6% were deemed to be college and/or career ready, indicating a possible misalignment between the standards of a high school diploma and the standards necessary for college entrance or career participation.

In an effort to ensure students attain basic skills and receive a meaningful diploma that indicates their readiness for the next level, the KBE is considering the following changes to high school graduation requirements:

1. *Course flexibility*. Students will no longer be required to take Algebra II or English III and IV. Rather, to fulfill the last mathematics and English credit requirements, students will be able to take a mathematics course and two English courses that align to their chosen college/career pathway.

2. *Transition readiness requirement.* Students will be required to meet college and/or career readiness requirements in order to receive a high school diploma.
3. *Graduation assessment.* Students will be required to pass a basic skills assessment to receive their high school diploma. This assessment will test skills through the 8th grade level and will be delivered in 10th grade for the reading and mathematics portion and 11th grade for the science and social studies portion. Students will be required to reach a cut score on each assessment that is set by the KBE or follow one of two appeal routes: demonstrate proficiency on their 8th grade state assessment, or compile a portfolio demonstrating they have reached proficiency in each area.

The following literature review examines the third component of this proposal, synthesizing the most recent research on high school exit exams. We examine the literature through the lens of the proposed Kentucky high school graduation exam policy framework described above in order to gather lessons learned from implementation in other states and provide guidance as the policy is considered. Specifically, the literature review synthesizes evidence on exit exam policy areas relating to (a) achievement of underperforming and underserved populations, (b) level of difficulty of exit exams, (c) inclusion of multiple subject areas in exit exams, and (d) inclusion of alternative pathways to graduation. Guiding the literature review are the following questions:

- **Research Question 1:** What does the literature say about the influence of high school exit exams on the educational outcomes of underperforming and underserved student populations?
- **Research Question 2:** What does the literature say about the impact of exit exam rigor on student outcomes?

- **Research Question 3:** What does the literature say about the inclusion of multiple subject areas in high school exit exams?
- **Research Question 4:** What does the literature say about the influence of alternative pathways to graduation on high school exit exams?

Method

We searched education journals for articles related to exit exams using four databases: ERIC, Education Full Text, JSTOR, and Google Scholar. To limit the review to the most recent literature, we restricted searches to peer-reviewed journals, books, and working papers published from January 1, 2006, through October 15, 2018. We used several keywords and key phrases throughout our search. Among these were "exit examination," "exit exam," "exit test," "minimum competency examination," "minimum competency exam," and "minimum competency test." In addition, we combined some keywords with terms "high school," "graduation," and "secondary school" to ensure we obtained articles that focused on high school exit exams. In Google Scholar, we searched for literature that might not be published in indexed journals or proceedings. We used the "Cited by" function to identify articles that reference prior literature.

For the literature that resulted from the search, inclusion criteria were used to narrow the pool of relevant research. The inclusion criteria included studies that (1) encompassed high school graduation exam policy in the United States, (2) were empirically based, and (3) used rigorous methodologies, and (4) directly addressed at least one of the study's research questions. The final data set consisted of 11 articles.

Results

Exit Exams and Outcomes for Underperforming and Underserved Students

The primary purpose of the proposed Kentucky exit exam policy is to ensure that students graduate from high school with the basic skills they need to be successful in college and/or the workforce. The group targeted to receive the most benefits from this policy are low-performing students as well as underserved racial/ethnic minority students and low-income students. The proposed high school exit exam policy seeks to spur this improvement by motivating schools to increase instructional quality and course rigor for those students currently not seeing adequate outcomes; identifying students for increased academic supports; and motivating students to reach the established achievement bar. Understanding to what degree this has occurred in other states will assist Kentucky in crafting a policy that is more likely to reach the intended outcome.

Evidence on high school exit exams and the outcomes of underperforming students

In theory, high school exit exams have different effects on the achievement of students at the upper end of the achievement distribution compared to those at the lower end (Center on Education Policy, 2012). For example, exit exams may motivate schools to focus more on underperforming students, possibly re-allocating resources to target those students who are struggling to attain basic levels of skill. However, the most recent evidence suggests that underperforming students may not see gains in achievement with the presence of an exit exam. Reardon and Kurlaender (2009) found in their study analyzing individual-level district administrative data from four large urban California districts that 11th and 12th grade persistence rates were slightly lower for students in the lowest quartiles for whom the California High School Exit Exam (CAHSEE) was a requirement compared to those for whom it was not.

Additionally, for students in the lowest quartiles, there was no evidence that the CAHSEE requirement improved 11th grade performance on English/Language Arts tests. Students in the lower quartiles were also found to have lower graduation rates than similar students not subject to the CAHSEE requirement. Reardon, Arshan, Atteberry, and Kurlaender (2010) see comparable findings in a study of the same data set using a Regression Discontinuity Design to estimate the impact of failing on high school course-taking, achievement, persistence, and graduation. The authors found no impact of failing the exit exam on any of the outcomes for students at the margin. Readon et al. (2010) concluded that for students at the margin of passing, any discouragement effects may be less pronounced than for students at the lower end of the achievement distribution.

Grodsky, Warren, and Kalogrides (2009) found similar results when comparing student achievement across states using the National Assessment for Educational Progress (NAEP) Long-Term Trend data set, which included assessment data from a nationally representative sample of students to facilitate comparisons in achievement over time. Pooling observations of 13 and 17 year olds across states with similar exam policies for each year 1971 to 2004, Grodsky et al. (2009) found no consistent evidence to support positive or negative effects of exit exams on mathematics and reading achievement for students at any point on the achievement distribution. These findings raise questions, however, as they may be affected by the few states with more difficult exit exams that were included in the sample.

The studies above provide some evidence that high school exit exams may not lead to improved achievement for low-performing students. It is important to note, however, that these results are limited as the identification strategies may not have accounted for all confounding factors. For example, contemporaneous influences may have been present in Reardon and

Kurlaender's (2009) study. Additionally, Reardon and Kurlaender's (2009) findings are not generalizable beyond the four California districts or for states with fully implemented exit exam policies.

Evidence on high school exit exams and the outcomes of underserved students

States requiring students to pass high school exit exams often aim to ensure that all students attain basic skills prior to graduation (Center on Education Policy, 2012). Recently, a growing body of research has emerged in the literature examining the effects exit exam policies have on student subgroups. Studies have focused on student outcomes related to high school achievement, graduation/dropout rates, and various post-secondary outcomes. Grodsky et al. (2009) found no evidence that exit exams had differential effects on NAEP mathematics or reading tests across racial/ethnic or socioeconomic subgroups of students. Similarly, Reardon and Kurlaender (2009) found no significant differences in achievement or 11th and 12th grade persistence by race/ethnicity or gender.

Studies examining the effects of exit exams on high school graduation rates have been mostly state specific. In California, Reardon and Kurlaender (2009) found the state's high school exit exam to have large negative effects on graduation rates, which were disproportionately borne by racial/ethnic minority students and females. However, no significant differences were found for low-income students or English Language Learners. Ou (2009) also found negative effects for racial/ethnic minority students and low income students in New Jersey. Using a Regression Discontinuity Design, Ou (2009) found a negative effect of barely failing the first exam on leaving high school early compared to similar students who barely passed, with comparable effects seen in the estimates of retest failure. Moreover, differences in dropout probability were larger for racial/ethnic minority students and low-income students, and the

impact of failing the first Language Arts Literacy (LAL) test was particularly large for English Language Learners (Ou, 2009). Similarly, Papay, Murnane, and Willett (2010) examined the effect of failing Massachusetts' high school exit exam on four- and five-year graduation and the likelihood of dropping out for students at the margin of passing. For low-income urban students who failed the state's mathematics exit exam, Papay et al. (2010) found a decrease in the likelihood of graduating on time or in five years by eight and seven percentage points, respectively and an increase of four percentage points in the probability of dropping out in the year following initial testing compared to similar students who passed. These effects were not found for other student groups including wealthier suburban students (Papay et al., 2010).

Studies analyzing national data sets have also reached similar conclusions. Dee and Jacob (2006) found high school exit exams to be associated with increased dropout rates for urban districts and those with higher shares of minority students and students in poverty, whereas exams were associated with reductions in early grade dropout rates in lower poverty, suburban districts. A follow-up study in Minnesota found that failing an exit exam reduced the likelihood of high school completion for African American students by twice as much as for white students (Dee & Jacob, 2006). Warren, Jenkins and Kulick (2006) found comparable results in their longitudinal study of 1,428 graduating classes from all 50 states between 1975 and 2002. Using state and year fixed effects in their models, Warren et al. (2006) found exit exams to be associated with lower high school completion rates and higher rates of GED test-taking, with this association increasing as states became more racially and ethnically diverse and as poverty rates increased.

While providing some evidence regarding the effect of exit exams on high school completion, a key limitation shared by many of the studies is their inability to account for

differences in high school exit exam rigor or various state graduation requirement policies. Hemelt and Marcotte (2013) investigated this issue by differentiating states with alternative pathways to graduation and those without in an attempt to tease out differences. Using a national data set of 11,000 public school districts from 1998-2008, Hemelt and Marcotte (2013) exploited the within-district and state differences in the introduction of exit exams using difference-in-differences methods to estimate the impact of exams on dropout rates. Statistical models included grade, district, and year fixed effects as well as controls for state-level labor market conditions and covariates indicating alternative pathway types. Hemelt and Marcotte (2013) found negative effects of exit exams were particularly strong for African American students in states with no alternative pathways to graduation. Specifically, African American students saw an increase in 12th grade dropout rates by more than 50% for males and 65% for females (Hemelt & Marcotte, 2013). In states with alternative graduation pathways, African American males saw an increase in the 12th grade dropout rate; however, this effect was less than half as large as that for no-alternative states (Hemelt & Marcotte, 2013). For Hispanic students, an increase in dropout rates was seen in both alternative and no-alternative states (Hemelt & Marcotte, 2013). It should be noted, however, that in analyzing the impact of exit exams on different student populations, Hemelt and Marcotte (2013) used 2003-2008 data, which also coincided with the expansion of more rigorous exit exams.

While the exit exam proposal primarily seeks to make sure students have the basic skills they need to be successful beyond high school, a secondary effect could be to improve students' postsecondary outcomes (Center on Education Policy, 2012). In general, current research evidence is mixed as to the effect of exit exams on postsecondary indicators. Dee and Jacob (2006) found in their examination of 2000 Census data no association between exit exams and

college attendance except for Hispanic females who faced a more difficult exam. These students were more likely to enroll in college than those with a less difficult exam. Dee and Jacob (2006) also found no association between exit exams and future employment. However, more difficult exit exams were associated with a reduction in earnings of white and Hispanic students, and an increase in earnings for black students (Dee & Jacob, 2006). However, Warren, Grodsky, and Lee (2008) employed individual-level data from the 1980-2000 PUMS and 1984-2002 CPS data sets in models with state and cohort fixed effects. Warren et al. (2008) found no evidence that exit exams positively affected a student's probability of completing any postsecondary schooling, to be employed, nor did findings suggest exit exams affected a student's earnings. Results from their study were similar across racial/ethnic groups and for less and more difficult exams.

Taken together, these studies do not provide evidence of any effect on student achievement either during or after high school for underperforming or underserved students. However, studies consistently indicate potential negative effects of exit exams on high school completion for low income or racial/ethnic minority students. However, the research does suffer from several limitations. The studies employing a Regression Discontinuity Design are not generalizable to students at the extreme ends of the achievement distribution, and the state-specific studies are not generalizable to other state contexts. Thus, these results may not be the same in the Kentucky context or target the groups that are the primary focus for the proposed policy. Those studies using multiple regression strategies are also limited in their ability to account for factors impacting state exit exam implementation and student outcomes. While state poverty and unemployment covariates attempt to address these issues, other possible confounders might exist.

Summary and analysis

The evidence discussed above suggests that students at the lower end of the achievement distribution as well as racial/ethnic minority students and low income students may not see distinct improvements in their outcomes due to the implementation of an exit exam. They may in fact be at an increased risk of not completing high school. However, due to the limitations of these studies, the above findings cannot be said to be definitive for the Kentucky context. The state-specific studies are not generalizable to Kentucky, and the national studies may be unable to control for all confounding impacts. However, they are instructive for the development of Kentucky's exit exam policy as it aims to improve the performance and readiness of underperforming and underserved students. These findings suggest that special consideration of underperforming and underserved student groups is needed in policy development and greater supports may need to be provided to these students along with the implementation of the exit exam to ensure positive gains are made and any negative effects are mitigated. Steps to decrease dropout risk may need to be taken, such as ensuring students are aware of retake and alternative pathway opportunities.

Exit Exam Rigor and Student Outcomes

The proposed Kentucky graduation exam policy aims to set a floor for the minimum level of knowledge and skills students will need to be successful at the next level. This standard will be set through the exam's level of rigor and the extremity of the cut score set by the KBE. While an exam with greater rigor and/or a higher cut score beyond the minimum requirements may help to ensure students reach a high level of skill, such exams may also have unintended consequences on student outcomes. For example, setting a very high standard that students feel

they are unable to reach could result in students being discouraged from continuing in their education or may create an insurmountable barrier for some. Both effects may result in lower graduation rates or higher dropout rates. Current research in this area will help Kentucky to identify an appropriate level of exam difficulty. The studies below define a "more difficult" exam as an assessment which includes any material traditionally presented in ninth grade or above.

Evidence on high school exit exam difficulty and high school completion

Because minimum competency tests require mastery of lower level knowledge and skills than do more difficult tests, it may be presumed that less rigorous exit exams have a more limited impact on high school graduation rates or dropout rates. The evidence on this issue is inconclusive. Examining within-state differences in Minnesota, Dee and Jacob (2006) utilized district-level dropout rates from longitudinal data over nine academic years from 1995-2002 to estimate the impact of the "Basic Skills Test" (BST) on high school dropout rates. Exploiting policy variation over time and incorporating grade, district, and year fixed effects in an Ordinary Least Square (OLD) model, Dee and Jacob (2006) found the introduction of Minnesota's exit exam to be associated with a reduction of dropout rates in early grades and an increase in the dropout rate in the 12th grade. Results varied by district demographic composition, with negative effects concentrated in urban districts and those with higher rates of poverty or minority students (Dee & Jacob, 2006). Additionally, Dee and Jacob (2006) also investigated exit exam policies across the country in their study, finding both more and less difficult exams to be associated with decreases in the likelihood of completing high school, with easier exams associated with a 4% decrease in completion and more difficult exams associated with a 5.5% decrease in completion.

Conversely, Warren et al. (2006) found no association between less rigorous exit exams and high school completion or GED test-taking rates. More rigorous exams, however, were associated with a reduction in completion rates and an increase in GED test-taking rates (Warren et al., 2006). Using longitudinal data from the US Census and a difference-in-differences approach with state and graduation cohort fixed effects, Baker and Lang (2013) found less rigorous exit exams to have no effect on graduation rates, whereas more rigorous exams reduced graduation rates by about one percentage point.

In sum, the evidence regarding exit exam difficulty and graduation rates provides conflicting evidence on the association between minimum competency tests and high school completion. This may be influenced by each state's level of rigor and/or cut score: exit exam difficulty may not be comparable across states. Additionally, the evidence above suffers from limitations in the use of multiple regression models. Confounding factors may exist that influence both a state's implementation of an exit exam policy and student outcomes. Similarly, contemporaneous changes occurring in Minnesota at the time of exam implementation may affect those results.

Evidence on high school exit exam difficulty and postsecondary outcomes

In certifying a base level of knowledge and skill, exit exams provide a signal to employers that students with high school diplomas possess the necessary ability to be a productive worker. For students transitioning to college, rigorous exit exams may lead to increases in college-going. Currently, the research literature has provided limited evidence on high school exam difficulty and postsecondary outcomes. Dee and Jacob (2006) estimated the effect of more and less difficult exams on college attendance, employment rates, and wages using OLS and probit models with state and birth year fixed effects as well as state economic and

education policy covariates such as course graduation requirements. Overall, Dee and Jacob (2006) found little evidence of an effect on college attendance, employment rates, and future wages. However, the authors found a positive effect of more rigorous exit exams on college attendance for Hispanic females compared to similar students facing a less rigorous exam. Additionally, more rigorous exit exams were associated with a reduction in earnings for white and Hispanic students and an increase in earnings for African American students (Dee & Jacob, 2006).

Conversely, Warren et al. (2008) found no effect of high school exit exams at any difficulty level on college attendance, employment, or wages. Baker and Lang (2013) found similar results from their study of Census data for students who graduated between 1977 and 2001. Employing state and graduation cohort fixed effects models, Baker et al. (2013) estimated the effect of exit exams on postsecondary incarceration, employment, and wages, finding no consistent effects of exit exams of any difficulty level on wage distribution or employment. However, results did indicate that more difficult exit exams were associated with a 12.5% increase in incarceration rates (Baker & Lang, 2013).

Taken together, the studies do not point to any effect of exit exams on college attendance, employment, or wages, nor do the results vary by exam difficulty. There may be a correlation between more difficult exit exams and incarceration rates, but this evidence is very limited.

Summary and analysis

Current research does not provide definitive evidence of the impact of more or less rigorous exams on high school completion or postsecondary outcomes. Findings suggest more difficult exams may be correlated with lower rates of high school completion, but the relationship with less rigorous exams is uncertain. In addition to mixed results, the studies above

are unable to determine causal impacts and may also be influenced by the comparability of exit exam difficulty between states. While Kentucky cannot glean the effects of more or less rigorous exit exams with certainty, this evidence provides guidance for policy development. For example, exam rigor and cut score matter in determining the effects of the exams. Even with a minimum competency test that may assess lower level skills, with a higher cut score, this type of exam could pose a greater barrier for graduation. Additionally, results could differ by grade level as seen with Minnesota's "Basic Skills Test". The exam was correlated with decreased dropout rates in early grades and increased dropout rates in the 12th grade (Dee and Jacob, 2006). It may be beneficial to consider how effects might vary by grade and which type of supports are necessary at each level.

Exit Exam Subject Areas and Student Outcomes

Including multiple subject areas on high school exit exams may provide assurance of a quality education and limit any narrowing of the curriculum that may occur by just testing mathematics and English. However, this structure may also present additional challenges. With more tests to pass, students have more requirements to clear, which may increase the likelihood of students becoming discouraged or being unable to graduate, increasing dropout rates. Current evidence on this issue will help to illuminate these questions and guide consideration of exam structure in Kentucky.

Evidence on high school exit exam subjects and high school achievement

By including four subject areas on the high school exit exam over multiple years, student achievement may rise as a result of improved instruction and increased student motivation across a broader range of curriculum. One study found limited evidence of a positive relationship

between failing subject area exit exams and student achievement and mixed results on the connection between failing a particular subject of an exit exam and behavioral indicators.

Polson (2018) investigated this question using state administrative data from Texas that included 10 cohorts of students who took the state's exit exam in at least one subject in the spring of their junior year between 2003 and 2012. Employing a fuzzy Regression Discontinuity Design, Polson (2018) found that results on course-taking varied by subject area, with exit exam failure being associated with an increase in courses taken in the tested area for English, mathematics and science, an increase in AP/IB courses taken for mathematics, science and social studies, and a decrease in the likelihood of failing courses in English, mathematics, and science compared to their peers who passed. Results for high school attendance, discipline, and completion also varied by exam subject area. Failing the mathematics or science exam was associated with a higher likelihood of dropping out, whereas failing the English or social studies exam was associated with a small decrease in the likelihood of dropping out. Failing the English or science exam was associated with fewer absences, and failing the mathematics or social studies exam was associated with more absences. Failing English, mathematics, or science was associated with a small increase in days of disciplinary action served.

Polson's (2018) study provides some evidence that failing the exit exam in Texas during this period may have spurred a positive response in students' course-taking patterns and efforts. While the results were mixed by subject area regarding the exam's impact on behavioral indicators, it is interesting to note that failing the mathematics exam was consistently associated with an increase in negative behavioral patterns. It is important to note, however, that the results from Polson's (2018) study are not generalizable to students at the ends of the achievement

distribution, however, due to the use of a Regression Discontinuity Design. Additionally, results are not generalizable to the Kentucky context.

Evidence on high school exit exam subjects and high school completion

Including more tested subjects in the high school exit exam suite could make it more difficult for students to complete high school successfully because there are more requirements to meet. Additionally, some subjects may be more difficult to pass than others, posing more or less difficult barriers to graduation. The most recent studies provide mixed evidence on this question. Ou (2009) used a sharp Regression Discontinuity Design to estimate the likelihood of exiting high school after failing the initial attempt and the likelihood of dropping out after the first retest. Ou (2009) found that students who failed New Jersey's exit exams in Language Arts Literacy or mathematics were more likely to dropout of high school. This relationship was more pronounced for math, with similar results being found for students who failed the retest. Additionally, Ou (2009) found that amongst students who had failed one test, those who barely failed the other were as likely as the barely passers to stay in or drop out of high school. Thus, those who barely failed both tests showed the same probability of dropping out as those who only failed one.

Papay et al. (2010), however, explore these questions with state administrative data from Massachusetts and found contrasting results. Using a Regression Discontinuity Design, Papay et al. (2010) found no effect of failing either the English/Language Arts (ELA) or mathematics exit exams on grade retention in 10th and 11th grades. They also found no effect of failing the ELA test on the probability of on-time graduation. Although, for low income urban students who failed the mathematics exam, Papay et al. (2010) found a decrease in the likelihood of graduating on time or in five years and an increase in the probability of dropping out in the year following

initial testing. These effects were not found for other student groups including wealthier suburban students.

The studies together do not provide conclusive evidence of a consistent effect of exit exams on high school completion that differs by subject. However, the results do suggest the possibility that particular subjects such as mathematics could pose a larger barrier to particular student groups or students in general. Interestingly, the signals received by students from failing one exam in the suite could be comparable to those seen when failing multiple exams.

As with the research reviewed above, though, these studies have methodological limitations including being generalizable only to the students at the margin of passing in the respective state contexts during the time period studied. Details specific to the state tests such as content rigor and cut scores could also have influenced study results.

Summary and analysis

Current research does not provide conclusive evidence on the impact of specific exit exam subject areas and their effects on student achievement and high school completion. However, findings may suggest that different exam subjects could influence student outcomes differently, and that an exam with multiple subject areas could possibly spur positive responses in students' high school course-taking in the tested areas. These tentative results are further constrained by the use of Regression Discontinuity Designs. While there is a strong argument for the internal validity of the studies due to the use of the discontinuity for exogenous assignment, results are only generalizable to students on the margin of passing within the state during the years studied.

However, Kentucky can take valuable lessons from these findings. First, the evidence from other states suggest mathematics could pose a particularly difficult barrier to students. This

subject area was associated with negative behavioral outcomes and lower completion rates in some of the studies. This could be particularly problematic if failing the mathematics exam but passing the other three has a similar effect of failing multiple exams. It may be beneficial, then, to consider what extra supports might be needed to make sure students are able to reach the established standard for this subject area. Additionally, the research provides some evidence to support the current placement of mathematics in 10th grade as it allows students more time to receive support and retest if necessary.

Exit Exams and Alternative Pathways to Graduation

For students who are unable to pass the high school graduation exam in Kentucky, two alternative pathways to graduation are proposed. Students can either appeal to the district superintendent if they reached proficiency on the 8th grade KPREP assessment, or they can compile a portfolio that demonstrates proficiency in the required areas. The aim of this component is to ensure all students have a fair opportunity to demonstrate their skill and knowledge level.

Such alternative pathways could provide needed flexibility for students to demonstrate mastery of the knowledge and skills required for graduation. Research in this area will provide a better understanding of the potential utility of the proposed graduation pathways.

Evidence of high school exit exams alternative pathways and high school completion

Providing an alternative option to the exit exam can help to ensure all students who have achieved the necessary performance level are able to graduate. This can limit unintended consequences of students being kept from graduating due to extenuating circumstances surrounding the assessment. In addition to the availability of an alternative pathway, the specific

types of alternatives might provide more effective options than others. Limited evidence suggests that access to an alternative pathway as well as the type of pathway implemented may affect dropout rates. Hemelt and Marcotte (2013) explored this question using US Census data of 11,000 school districts nationwide from 1998 to 2008 school year. Employing a difference-in-differences approach to examine the impact of exit exams on four types of alternative pathways to graduation--performance on alternative tests like the ACT or Advanced Placement (AP) tests; alternative evidence such as grades, teacher recommendations, or portfolios; waiver mechanisms; or credentials other than a diploma such as a certificate of attendance--Hemelt and Marcotte (2013) found no effect of exit exams on dropout rates in states with alternative pathways. However, exit exams were associated with a 23% higher dropout rate for states in which there were no alternative pathways to graduation. Amongst the different types of alternative pathways, there was no evidence that any particular type increased the 12th grade dropout rate; however, there was an association between an alternative pathway that allowed students to use performance on an alternative test such as the ACT or AP scores and an increase in the dropout rates of 10th and 11th grade students (Hemelt & Marcotte, 2013).

Results from Hemelt and Marcotte's (2013) study suggest that having an alternative pathway may serve to attenuate possible dropout effects and that the use of another high school-level assessment such as the ACT or AP tests may be less effective than other options. While a national study and thus potentially demonstrating more general effects, the results did not identify differences between exit exams with different levels of rigor. In fact, the data used focus on a time-period during which exit exams became more rigorous, so results may not directly address a policy context that includes a minimum competency exam and alternative pathways.

The study was also limited in its ability to control for other contemporaneous policy changes and thus cannot identify causal impacts.

Summary and analysis

The findings of the study indicate the potential for alternative pathways to mitigate effects on dropout rates, with options such as alternative evidence, waivers, and other credentials showing a more positive association than alternative assessments. However, the methodology used was unable to tease out the effects of the pathways net of other policy changes happening at the same time. As such, it cannot be said whether the availability of alternative pathways cause particular effects on dropout rates.

The findings of this study, while only correlational in nature, provide insight for the proposed Kentucky policy. First, the results above support the inclusion of an alternative pathway for graduation in the policy proposal. Second, the use of the portfolio seems also to be a positive addition. Both features may help to mitigate any negative effects on student dropout rates. While the use of an assessment as an alternative pathway did not see favorable results in the above research, the assessments identified were largely high school level and above such as the ACT or AP exams. The Kentucky policy instead uses the 8th grade KPREP which assess lower levels of skill. As such, this aspect of the policy may be more akin to the waiver mechanism examined in the study and could provide additional benefits, although this is difficult to say given that the study did not test this directly.

Implications and Conclusions

In terms of implications for policy, this review suggests some areas of consideration for the proposed Kentucky exit exam policy.

- Research suggests a clear need to support underperforming and underserved students. District leadership should identify and provide assistance for these groups. Policymakers should also consider the inclusion of additional supports to ensure any potential negative effects of the policy are mitigated and that all student groups are able to make positive gains.
- Both district and state leadership should establish clear mechanisms to assist students in the event of exit exam failure. For example, evidence suggests that the awareness of and access to retake opportunities or alternative pathways to graduation may mitigate negative effects of the policy.
- Exit exam rigor is a key factor to the success of the policy. Ensuring stakeholders are a part of the standard setting process, which includes establishing cut scores, builds buy-in for the policy and determines an appropriate level of difficulty.
- Evidence shows the effects of exit exams on student outcomes vary by content area. Special consideration and additional supports for subject areas should be considered, particularly for mathematics.
- A broad range of evidence indicates that failure can have negative effects on student high school completion. Creating alternative pathways to graduation can help mitigate these negative outcomes.
- Considering research evidence on exit exams is specific to state context, Kentucky should have mechanisms in place to evaluate the implementation and impact of the policy.

In conclusion, this review provides a synthesis of research focused on exit exam policy and its effects on different high school and postsecondary outcomes. Findings from the most recent research on high school exit exams show potential despite documented challenges and

unintended consequences for the policy. Policymakers in Kentucky should heed the lessons learned from other states that have implemented high school exit exam policy.

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