Pushed Out or Pulled Up?
Exit Exams and Dropout Rates
in Public High Schools

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CENTER FOR CIVIC INNOVATION
AT THE MANHATTAN INSTITUTE

May 2004

EXECUTIVE SUMMARY

To ensure that students who receive high school diplomas meet basic thresholds of academic proficiency and job readiness, 24 states have adopted exit exams that students must pass to graduate. Opponents of these exams complain that they drive already-low graduation rates downward. They argue that raising the bar for graduation forces many students, minority students in particular, to drop out.

This study uses two highly respected graduation rate calculations to evaluate what effect high school exit exams have on graduation rates. The results for both graduation rate calculations show that adopting a high school exit exam has no effect on a state's graduation rate. The analyses also show that neither reducing class sizes nor increasing education spending leads to higher graduation rates.

ABOUT THE AUTHORS

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His research was cited four times in the Supreme Court's opinions in the landmark *Zelman v. Simmons-Harris* case on school vouchers. His articles have appeared in policy journals, such as *The Public Interest*, *City Journal*, and *Education Next*, in academic journals, such as *The Georgetown Public Policy Review*, *Education and Urban Society*, and *The British Journal of Political Science*, as well as in major newspapers, such as the *Wall Street Journal* and the *Washington Post*.

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ACKNOWLEDGEMENTS

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Introduction

Several states have adopted high school exit exams over the past two decades in response to concerns that the value of their high school diplomas has declined. Currently, 24 states either already require students to pass an exit exam to graduate from high school or have adopted measures to implement exit exams in the near future. States hope these tests will ensure that students who receive a diploma meet certain basic thresholds of academic proficiency.

Opponents of high school exit exams often complain that testing requirements force already-low graduation rates downward. They argue that raising the bar for graduation forces many students to drop out. Critics see it as fundamentally unfair to deny diplomas to students who have successfully completed thirteen years of schooling. They also see it as cold-hearted, considering that possessing a high school diploma is an important predictor of future life outcomes (Cameron and Heckman, 1993).

Many in the public and the media have adopted the idea that exit exams cause higher dropout rates. Typical is an account in the *Miami Herald* that introduced readers to students who had planned to attend college or enter the military but could not because they failed Florida's exit exam.[1] Reports of Florida students being denied diplomas solely because they couldn't pass the state's test led minority leaders to call for a statewide boycott until the state removed the testing requirement.[2]

Even some proponents of exit exams agree that they would lead to fewer students graduating. They argue that the tests are necessary in order to assure that high school diplomas are meaningful. If many students graduate lacking even basic proficiency, as is widely perceived to be the case, diplomas will lose their value as indicators of academic achievement. Measuring students by objective standardized test scores should ensure that students only receive diplomas if they have earned them. This should protect the value of diplomas for employers and institutions of higher learning, which use them as indicators of the possession of necessary skills.

But while it seems intuitive that raising the requirements for graduation would force graduation rates downward, the evidence on this subject is far from clear. If the students who fail the exams are students who would have failed to graduate regardless of the testing requirement, such tests would have no effect on graduation rates. Furthermore, it is also possible that the implementation of a high school exit exam could motivate schools to better serve their students. If testing causes schools to improve, it might actually increase the number of students who graduate.

This study uses two highly respected graduation rate calculations to evaluate what effect high school exit exams have had on graduation rates in states that have adopted them. The results for both graduation rate calculations show that adopting a high school exit exam has no effect on a state's graduation rate. The analyses also show that reducing class sizes and increasing education spending, reforms that many believe improve education systems, do not lead to higher graduation rates.

Previous Research

While the belief that high school exit exams cause graduation rates to decline is widespread, there is little empirical evidence supporting it. A small but growing literature has been developing on this question.

Amrein and Berliner (2002b) examined whether states that adopted exit exams have seen increased dropout rates, decreased graduation rates, or increased percentages of students pursuing a GED

instead of a high school diploma. They found that 66% of states that implemented high school exit exams were negatively impacted by the tests because their movement towards less desirable outcomes on at least one of these measures was larger than the national average. They used a method identical to that used in their earlier analysis of the effect of high-stakes testing on academic achievement (Amrein and Berliner, 2002a).

There are several problems with Amrein and Berliner's analysis that call their results into question. One is that comparing changes in graduation rates in states with testing to those made by the national average is misleading. The more obvious comparison would have been between states with and states without high-stakes tests. Another is that their analysis relies only on the dichotomous measure of whether states made gains or losses relative to the national average. Their measure fails to account for the magnitude of changes in graduation rates, dropout rates, and rates at which students seek GEDs. It would have been far more appropriate for Amrein and Berliner to use a simple linear regression model.

All of these problems with Amrein and Berliner's analysis are likely to have a substantial effect on support for their conclusions. Hanushek and Raymond (2003) noted the same set of difficulties in Amrein and Berliner's analysis of the effect of state testing on students achievement. When Hanushek and Raymond re-analyzed Amrein and Berliner's state testing data correcting for these methodological flaws, they found that the evidence supported the *opposite* conclusion from the one Amrein and Berliner had reached.

Carnoy and Loeb (2003) studied the effect of accountability testing generally on state-level graduation rates. They developed an index to measure the strength of states' accountability systems, including whether the state had a high school exit exam as well as numerous other factors. They then examined what effect the strength of a state's accountability system had on its high school retention rate. Carnoy and Loeb found no relationship between the strength of a state's accountability system and its retention rates in the high school years.

Because it only looks at accountability in general, however, Carnoy and Loeb's study does not measure the effect of exit exams in particular. In their study each state is given a score on the accountability index whether it has an exit exam or not. It is certainly possible that accountability reforms other than exit exams might have very different effects on graduation rates. Carnoy and Loeb do not claim to directly measure the effect of exit exams in particular, but this omission makes the study less relevant to the question at hand.

Neither of these previous studies measures the graduation rate in a direct way. The Carnoy and Loeb study examines rates of retention in the high school grades rather than looking directly at graduation rates. One reason they may have used this less appropriate statistic is that graduation rate calculations are notoriously unreliable (for a complete discussion of the unreliability of graduation rates see Greene and Forster 2003). Amrein and Berliner, recognizing that official graduation rates are unreliable, substitute a calculation of their own for the graduation rate. They divide the number of diplomas given in each state by the number of students in grades 9-12. This method is less accurate as a graduation rate estimator than many other available methods for estimating graduation rates. It treats students in different cohorts (the graduating class versus the four classes of students in school behind them) as though they were members of the same cohort. This leaves the method more vulnerable than other available methods to population changes across multiple years.

In their analysis of the effect of exit exams on graduation rates, Warren and Jenkins (2003) use student reports of graduation in Florida and Texas.[3] Their method relies upon the Current Population Survey (CPS), which has been administered by the U.S. Census for several decades. Both Florida and Texas went from giving no exit exam to requiring passage of an easy basic skills test to requiring that students pass a more difficult exit exam. Warren and Jenkins evaluate whether either of these changes in exit exam requirements led to higher dropout rates. They find that neither the initial adoption of an exit exam nor the adoption of a more difficult test had an effect on graduation rates in Florida or Texas.

While no graduation rate measure produces a perfect calculation, those using CPS are particularly unreliable. First, like all surveys, CPS relies on correct self-reporting by respondents. Dropping out of high school is something survey respondents are particularly likely not to report truthfully. Also, CPS does not include people in institutionalized populations, including people in prison, in its survey sample. A large percentage of the nation's high school dropouts live in such institutionalized settings, so they go unmeasured by CPS. Finally, CPS data do not allow researchers to distinguish graduates from public and private schools.

This study attempts to solve the problem of unreliable graduation rates by using two different but highly respected calculations. Neither of these methods is perfect, but both are generally considered to provide the most reliable estimates available.

Some researchers have used the National Educational Longitudinal Study (NELS) data set to evaluate whether there is a relationship between high school exit exams and gradation. NELS provides individual-level information for a large national sample of students who entered high school in 1988 and were tracked over time by the NELS study.

Reardon and Galindo (2002) use the NELS data set to evaluate the effect of 8th grade exit exams on dropout rates. They find that students who were required to pass a test to enter the 9th grade were more likely to drop out prior to entering 10th grade. By limiting their analysis to students required to pass an exam before even entering high school, however, their study might not effectively evaluate whether high school exit exams, which are often first administered in the 10th or 11th grades, lead to higher dropout rates. Also, their analysis is suspect because they rely on data from the NELS survey to determine whether students were required to pass an exit exam. Warren and Edwards (2003) contend that these data are unreliable. For instance, they point out that in their own analysis of NELS they found a large amount of variability within states in administrator reports of whether the state required an exit exam.

In his analysis of the NELS data set, Jacob (2001) found no overall relationship between exit exams and higher dropout rates. He did, however, find that students in the bottom quintile who were required

to pass an exit exam were more likely to drop out of high school than similar students who did not face a testing requirement.

Muller (1998) also examined the NELS data set and found no relationship between having to pass an exit test and dropping out of high school. However, because Muller was also interested in measuring the effect of teacher expectations on the likelihood of graduating, she restricted her analysis to students for whom there was also information from teacher surveys. This eliminated many students from her sample and could have affected her results.

Warren and Edwards (2003) also found no relationship between testing and graduation in their evaluation of the NELS data set.[4] Unlike Reardon and Galindo, Warren and Edwards relied on state reports of whether students were required to pass an exit exam. They found that having to pass an exit exam was not associated with a student's chances of dropping out or of obtaining a GED instead of a diploma.[5]

As Jacob (2001) points out, all studies using the NELS data set are only able to evaluate the effect of testing on one cohort of students. It would be better, Jacob writes, to measure the gains of different cohorts within states before and after tests were implemented. Warren and Jenkins (2003) also make this argument, writing, "we can learn a lot from NELS:88 about the effects of high school exit examinations on the high school class of 1992, but absolutely nothing about their effects on subsequent (or preceding) high school classes." While this study does not look at individual-level data, our state-level analysis is able to measure graduation rates before and after each state implemented an exit exam, drawing results from multiple cohorts rather than the single cohort tracked by NELS.

Method

This study uses a fixed-effects regression model to evaluate whether adopting a high school exit exam affects a state's graduation rate. This model allows us to measure graduation rates in each state before and after it implemented an exit exam.[6]

First we calculated graduation rates for each state from the class of 1991 to the class of 2001. We used

two distinct but highly respected methods for calculating graduation rates, one developed by Jay Greene (see Greene and Winters 2002) and the other used for national graduation rate comparisons over time by the National Center of Education Statistics (NCES).[7]

Greene's method of calculating graduation rates has emerged as one of the most widely respected of such measures. Calculations using this method have been used to report states' graduation rates in widely read and highly regarded publications (for example, see Education Week 2002 and Education Trust 2003). This method divides the number of diplomas awarded by a state in a given year by the estimated number of students who entered the ninth grade four years earlier, making adjustments for high school population changes in the ensuing four years (for a complete description and discussion of Greene's method see Greene and Forster 2003).

The second graduation rate calculation is a state-level version of the method used by NCES to evaluate the national high school graduation rate over time. For each year, we simply divided the number of diplomas awarded by public schools in a given state by the number of 17-year-olds in the state's population during that year according to the U.S. Census.[8] The graduation rates calculated using this Census method are lower than the actual public school graduation rates because students attending private schools are excluded from public-school diploma counts but are included in the measurement of the 17-year-old population. However, since our goal is to measure the change in public school graduation rates over time, as long as there is no dramatic change in the percentage of students who attend private schools in a state relative to other states, this Census method remains useful.

Of the two methods, graduation rate calculations using Greene's method are likely to be the more precise. However, it is certainly the case that neither of these methods provides a perfect calculation of the graduation rate. No method can claim such precision. Each of these methods has been proven to produce reliable estimates of the percentage of students who graduate from high school. Furthermore, if our analysis yields similar results using both methods we can have greater confidence in the findings.

Next we identified which states require students to pass an exit exam in order to receive a high school diploma.[9] For each state with an exit exam we also determined which high school graduating class was the first that had to pass a test for graduation. Table 1 lists the 18 states we identified that administered a high school exit exam during the years of our analysis, as well as the first graduating class from whom diplomas were withheld if students failed the exam.

In each of our analyses we controlled for school spending and secondary teacher-student ratio.[10] These data served as controls for reforms other than implementing an exit exam that might affect state-level graduation rates. Furthermore, while the thrust of this study is to evaluate the effect of high school exit exams on graduation rates, we were also interested in whether these other education reforms improve graduation rates.

Table 1: States with Exit Exams

First graduating class	
Alabama	1985
Florida	1979
Georgia	1995
Indiana	2000
Louisianna	1991
Maryland	1982
Minnesota	2000
Mississippi	1989
Nevada	1981
New Jersey	1985
New Mexico	1990
New York	1980*
North Carolina	1980
Ohio	1994
South Carolina	1990
Tennessee	1986
Texas	1987
Virginia	1986

*Information on the exact year New York implemented an exit exam was not available. However, we were told by an official in the New York State Department of Education that the state has given a test since at least 1980. Since this means that the state certainly gave a test for at least 10 years before 1991, it should have no effect on our analyses.

We then performed analyses using a fixed-effects regression model to examine whether adopting an exit exam has an effect on high school graduation rates. We separately used each of our two graduation rate calculations as dependent variables. This model controls for dummy variables for each state and year, which allows our analysis to follow the effects on graduation rates in each state over time. Our analysis focuses on a dummy variable indicating whether a state required an exit exam for each particular year's graduating class. By treating each state-year as an independent observation, our model can evaluate graduation rates in each state before and after an exam was implemented.

Results

Table 2 reports the analyses using both Greene's method and the Census method for calculating graduation rates. Both analyses show that implementing a high school exit exam has no significant effect on a state's graduation rate. Both analyses show a small negative coefficient (-0.764 using Greene's method and -1.11624 using the Census method), which would be associated with a small negative effect on graduation rates. But both analyses are statistically insignificant at any reasonable definition (p values equal 0.423 and 0.143, using Greene's and the Census methods, respectively).[11] This means we cannot conclude that high school exit exams actually do have an effect on graduation rates, positive or negative. If any such effect exists, it cannot be distinguished from ordinary fluctuations in graduation rates.

Table 2: Analyses

Greene Method		
	Effect Size	P-Value
Having an Exit Exam	-0.76437	0.423
Secondary teacher student ratio	-0.17283	0.133
Per-pupil spending	-1.46E+04	0.727
Census Method		
	Effect Size	P-Value
Having an Exit Exam	-1.11624	0.143
Secondary teacher student ratio	**0.33532**	**0.000**
Per-pupil spending	-4.90E+04	0.294

Statistically significant findings in bold

Both analyses also show that spending more money per pupil has no significant effect on graduation rates, but the analyses differ on whether the secondary teacher-student ratio has a significant effect. The analysis using Greene's method finds no significant relationship between secondary teacher-student ratio and graduation rates. The Census method, however, shows a statistically significant positive relationship between a higher secondary teacher-student ratio and graduation rates. This surprising finding indicates that increasing the number of students per teacher actually raises a state's graduation rate. The effect, however, is very small. Increasing the secondary student-teacher ratio by one student improves graduation rates by only 0.335 percentage points according to the Census method. Given that this finding is counterintuitive and is not robust across both of the graduation rate estimates, our conclusion is that changes in the secondary teacher-student ratio probably have no real effect on graduation rates.

Discussion

The results of our analysis might seem counterintuitive to some. It seems illogical that raising the bar of graduation would not necessarily reduce the percentage of students who receive diplomas. Critics may point to the large number of media stories about individual students who cannot pass state tests as proof that testing stops students from graduating. However, while it is certainly the case that exit exams stop at least some students from earning a diploma, there are reasons we might expect them to have no net effect on graduation rates.

First, the number of students who fail to graduate because they cannot pass exit exams might be very small. One reason this is plausible is that passing exit exams might require very low levels of proficiency. The Fordham Foundation (2004) evaluated accountability programs in 30 states on a variety of measures. Overall, the study gave a rating of "poor" to the rigor of state-mandated standardized tests. No state received the highest rating in this category measuring the difficulty of passing the exams, and only one state's requirements were high enough to be deemed "solid." In

short, exit exams may be such a low hurdle that they trip up very few students.

Another reason exit exams may stop few students from graduating is that students have several chances to pass the exams before they are finally denied a diploma. Most students who are serious about graduating high school should be able to pass such an exam if given enough tries, even if only by chance. Also, states that adopt exit exams typically go out of their way to provide extra instruction to students who have failed the test. Thus exit exam requirements may not only be a low hurdle, but students have multiple chances to jump the hurdle.

Even this small pool of students who cannot pass the exit exam may be canceled out by a similar number of students who do graduate when they otherwise wouldn't have because the test provided schools with an incentive to improve. One idea behind exit exams is that schools, wishing to save themselves the embarrassment of performing poorly on the exam, will improve the quality of instruction they provide. Schools can only improve their performance on the exams by producing more students able to pass the exams. This incentive might force schools to realign their focus toward students who were in danger of dropping out before. If the number of students positively affected by the adoption of an exit exam is similar to the number of students who cannot pass the test, we would find no relationship between exit exams and graduation rates.

Some may argue that exit exams have not caused higher dropout rates so far because the tests adopted in the early 1990s focused only on basic skills. They might suspect that more recent exams are more difficult and thus would have a negative effect on graduation rates. To address this question, we performed an analysis to examine whether the effect of exit exams on graduation rates has changed over time.

We ran a regression taking account of both the existence of an exit test and the year the test was administered. We found no relationship between the year the test was administered and graduation rates. These results indicate that current tests are having the same null effect on graduation rates as the graduation tests of the past. Furthermore, in the only such analysis of which we are aware, Warren and Jenkins (2003) found no relationship between the difficulty of exit exams and dropping out. It is possible that if exit tests become even more difficult in future years, they might begin to have a negative effect on graduation rates. But it appears that exit exams as they exist now do not have such an adverse effect.

Some proponents of exit exams might argue that adopting such a test could have a positive lagged effect on graduation rates. Graduation rates in states that adopt such exams may improve over time as the pressure becomes greater on schools to perform better on the tests. We ran regressions using each of our graduation rate calculations lagging the exit exam dummy variable from one year to ten years. That is, we ran a regression with a dummy variable indicating whether a state had had an exit exam for at least one year, then a regression controlling for whether a state had had an exit exam for at least two years, and so on. We found no robust effect of lagging the implementation of an exam.

Our findings should provide optimism to those who wish to use exit exams to provide quality control for high school diplomas. The results of our analysis show that exit exams may allow states to distribute more meaningful diplomas to the same percentage of students as before.

Some have argued that exit exams are necessary to ensure that employers continue to see diplomas as valuable in the labor market. If large numbers of people entering the labor force with diplomas prove not to possess even basic skills then they may lose their usefulness in the labor market.

Marcus Winters and Greg Forster show that this phenomenon already appears to be affecting Hispanic students. They point to U.S. Department of Labor unemployment statistics showing that recent Hispanic high school completers are just as likely as recent Hispanic dropouts to be unemployed. This is in stark contrast to the difference in employment status for white high school completers and dropouts. This evidence indicates that employers fail to see acquisition of a high school diploma as a useful indicator of basic skills for Hispanics entering the labor pool. Winters and

Forster argue that high school exit exams should bring value back to Hispanic diplomas by assuring employers that anyone with a diploma possesses at least basic proficiency.[12]

Conclusion

The results of our analysis indicate that adopting a high school exit exam has no effect on high school graduation rates. While this study is limited, it adds to the growing literature consistently showing no relationship between high school students having to pass an exit exam and high school graduation rates. However, further research on this important question is necessary before this conclusion can be considered definitive.

This study cannot directly speak to whether such exams are effective at providing quality controls on high school diplomas. Further research of a very different nature would be necessary to evaluate whether exit tests have such an effect. However, our analysis does provide evidence that if exit exams do provide quality control they do so without forcing a large number of students to drop out without a diploma. Therefore, exit exams may allow states to give more meaningful diplomas to the same percentage of students as before.

ENDNOTES

1. Robert L. Steinback, "The New College Try," *Miami Herald*, March 3, 2003.

2. Sonji Jacobs, "FCAT protest gains steam in Broward," *Miami Herald*, May 16, 2003.

3. At the time of this writing Warren and Jenkins' study is in the review process at an academic journal. Their analysis is subject to change.

4. At the time of this writing Warren and Edwards' study is in the review process at an academic journal. Their analysis is subject to change.

5. The quality of Warren and Edwards' analysis is improved because they perform several analyses in order to account for the nested nature of the NELS data.

6. We excluded Washington, D.C., from our analysis because the enrollment data necessary to perform one of our graduation rate calculations (Greene's method) are unreliable.

7. National Center for Education Statistics, Digest of Education Statistics, Table 103 (http://www.nces.ed.gov/programs/digest/d02/tables/dt103.asp).

8. The number of diplomas awarded per state was obtained from the National Center of Education Statistics' Core of Common Data (http://www.nces.ed.gov/ccd/); the 17-year-old populations for each state were obtained from the Census Population Estimates website (http://eire.census.gov/popest/archives/state/st_sasrh.php for 1990-1999 and http://eire.census.gov/popest/estimates_dataset.php for 2000-2001).

9. We used Amrein and Berliner's identification of the states that adopted high school exit exams as well as phone calls to certain states' departments of education. While we believe Amrein and Berliner's analysis to be flawed, we accept their identification of states with exit exams as accurate.

10. We calculated operating costs per student by dividing the number of students in each state, as reported in the Core of Common Data, by the total operating costs in that state, as reported by the *Digest of Education Statistics*. We calculated the secondary teacher-student ratio by dividing the number of students in grades 9-12 by the number of secondary teachers in the state, drawing data for both from the Core of Common Data.

11. The standard practice is to consider an effect statistically significant if p is less than 0.05; a p-value of less than 0.1 is sometimes accepted as a moderate level of statistical significance.

12. See Marcus A. Winters and Greg Forster, "Meaningless Diplomas Hurt Hispanic Students," *Education Week*, January 21, 2004.

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