Reengaging Dropouts in Colorado

Martha Abele Mac Iver
Antonia Wang

February 2011

Reengaging Dropouts in Colorado

Executive Summary

"Building a Grad Nation" (Balfanz, Bridgeland, Moore & Fox, 2010) will require reengaging high school dropouts as well as preventing them from dropping out in the first place. Systematic research on the reengagement of high school dropouts is still in the early stages, and this study seeks to increase the knowledge base in this crucial area. Several previous studies (e.g., Berliner, Barrat, Fond, & Shirk, 2008; Chuang, 1997; Ekstrom et al., 1987; Hurst, Kelly & Princiotta, 2004) have found that fewer than half (and in some cases, considerably fewer than half) of dropouts reenroll within several years of dropping out.

The purpose of this project is to investigate outcomes for Colorado's dropouts in the year following the dropout event. The project addresses two major questions:

1) What are the characteristics of students who have re-engaged in school after dropping out, compared to those who do not?
2) What are characteristics of schools and districts that are highly successful in re-engaging students who have dropped out, compared to those that are less successful?

To address these questions, we used longitudinal data provided by the Colorado Department of Education (CDE). The data followed 15,387 students who had a final code of "dropout" in 2007-08 administrative files through the 2008-09 school year.[1] Data for each student indicated whether or not the student had re-enrolled in a Colorado school, and what the final outcome was for each student in 2008-09. The data available included: students' race; sex; age at dropout; school of enrollment by year; enrollment and withdrawal data; free/reduced lunch program eligibility; special education status, English-Language-Learner status. Supplementary data was also available on districts and schools (enrollment size; student demographics; poverty measures; and urbanicity or setting type). BOCES level characteristics were not available from CDE, but several measures were calculated (number of dropouts, number of districts, percent of districts within BOCES designated within each setting type). Information on student behavioral characteristics (attendance, credit accrual, suspensions, etc.) and district efforts and programs related to reengagement of dropouts was also not available for analysis.

Overview of Analytic Methods

Our first step was to create descriptive tables showing the percentage of students with a particular characteristic who re-enrolled after dropping out of school, and the percentage of all re-enrollers who had that particular characteristic. We conducted similar analyses for a more stringent measure of positive re-engagement.

[1] Since the data only capture students whose final code of the year was a dropout code, this study does not include analyses of those students who were reengaged during the same school year as their after dropout event. Reengagement of dropouts mid-year should be reflected in lower dropout rates for these schools and districts.

Next, student demographic measures were used in hierarchical logistic regression models to determine the impact of each characteristic on a student's odds of re-enrolling or re-engaging in school the year after dropping out. District- and school-level measures were then included in models to determine whether they might help explain the variation in reenrollment and reengagement rates.

We then investigated the relative success of schools, districts, and BOCES (Boards of Cooperative Educational Services) in re-engaging dropouts. Several measures of reengagement were calculated for each school, district, and BOCES (detailed in report below).

Findings

The data file of the 2007-08 dropouts in Colorado came from a total of 154 districts, and from 581 schools within those districts.[2]

Of the 15,387 dropouts in 2007-08, roughly a third had some type of positive outcome (reenrollment or earning a GED without reenrollment) in 2008-09. This broad positive outcome is termed **reenrollment** throughout this report. Three percent were coded as "completers" (typically receiving a GED) without reenrolling in school. Roughly one in seven reenrolled but were not considered "reengaged" (typically transferred to another state or dropped out again). The proportion of students who "**reengaged**" (defined as graduated, completed without a diploma, or were still enrolled at the end of 2008-09) was 15%. Just under three percent of the dropouts returned and graduated the following year.

The following table summarizes the overall percentages of dropouts from 2007-08 who were reenrolled and positively reengaged (graduated, completed, or were still enrolled at end of the year) in the same district and the same school in 2008-09. As expected, these percentages are notably lower than the overall reenrollment and positive reengagement rates.

Reenrollment and Reengagement Rates

Reenrolled at all	32.5%	N=4996
Reengaged at all	15.3%	N=2358
Reenrolled in same BOCES	21.1%	N=3254
Reengaged in same BOCES	10.8%	N=1663
Reenrolled in same district	18.7%	N=2870
Reengaged in same district	9.0%	N=1383
Reenrolled in same school	11.1%	N=1707
Reengaged in same school	4.7%	N=728

[2] See full report for more details.

Student Level Findings

What are the characteristics of students who have re-engaged in school after dropping out (re-enrolled and graduated/completed or remained enrolled through end of the year), compared to those who do not?

These students tend to be:

- Younger (under 18)
- Not overage for grade in 2007-08
- First-time dropouts

Rates of reenrollment and reengagement are significantly lower for males than females, and for ELL students than non-ELL students. Special education students are more likely than regular education students to reengage (probably because of specific outreach to this group).

Measures of students' behavioral characteristics while in school (attendance, course failures, credits accrued etc.), which tend to be better predictors than demographic characteristics of dropout and graduation outcomes (e.g., Mac Iver, Balfanz, & Byrnes, 2009) were not available for analysis.

School, District, and BOCES Level Findings

What are the characteristics of schools, districts, and BOCES that are highly successful in reengaging students who have dropped out, compared to those that are less successful?

While this research question suggests a focus on reengagement within the same organizational unit, our analyses also included reenrollment and reengagement overall because reenrollment in the same school was relatively rare, and reenrollment in the same district and BOCES could be linked to nonmalleable factors.

Schools

Analyses indicated a significant relationship between reenrollment and school type. The relatively small number of dropouts in schools serving students through grade 8 (elementary or middle schools and the few junior high schools serving through grade 9) were significantly more likely to reenroll at all than were those from high schools (a relationship primarily associated with the age of those students). There was no significant relationship with either measure of overall reenrollment or reengagement for any of the following available variables: percent of district students eligible for free/reduced price lunch; percent of minority students; student mobility rate; school enrollment size. Overall, students who dropped out from online schools had lower rates of reenrollment and reengagement than did students from regular schools, which was probably related to their somewhat higher rates of having a prior dropout event.

Analyses that focused on reenrollment/reengagement in the same school (vs. not reenrolling/reengaging in the same school) found several significant school level factors. Students who dropped out from an alternative school had higher odds of reenrolling in the same school than those who dropped out from regular schools, though the odds of reengaging successfully was only marginally higher. In contrast to the finding for overall reenrollment, high school students had higher odds than middle/elementary school students of reenrolling in the same schools. But this relationship was not significant for reengaging (graduating or remaining enrolled all year) in the same school. Dropouts from rural district schools had lower odds than non-rural school dropouts of reenrolling/reengaging in the same school.

Given the small percentage of dropouts reenrolling in the same school, the more interesting analytical question to us was what school level characteristics were associated with reenrollment in the same school versus a different school. At the student level, 12th graders were more likely than students at other grade levels to reenroll in the same school. School level factors significantly associated with reenrollment in the same school (vs. another school) were: school type (same school reenrollment higher in high schools than middle schools and in alternative schools than regular schools) and concentration of at least three dropouts from that school in 2007-08. Controlling for having at least 3 dropouts in 2007-08 and alternative school status, enrollment size of school was not a significant predictor.

Policy Implications -- This finding suggests that a single statewide measure of reengagement based on reengagement in the same school would be highly biased against schools with few dropouts (particularly in rural areas). It is also important not to overinterpret the positive effect for alternative schools on the "same school measure" (since alternative school students are not more likely to reenroll or be successful overall).

Districts

Success in reenrolling and reengaging dropouts in the same district was related to the number of dropouts in the district and its setting. The odds of a dropout reenrolling in the same district were significantly lower in rural districts and others with low numbers of dropouts. On the other hand, dropouts in small rural districts were not significantly less likely to reengage at all, but rather tended to do so in a different district (with a relatively large percentage reenrolling in the Denver metropolitan districts). Rural districts are significantly disadvantaged by a measure of reenrollment/reengagement in the same district.

BOCES

To address the issue of statistical bias against small and rural districts in this measure, we also analyzed reenrollment/reengagement in the same BOCES unit (though more than 20 percent of dropouts were in single districts not associated with a BOCES). But there was still a negative

relationship between rural setting (percentage of districts in the BOCES that were rural) and reenrollment/reengagement in the same BOCES.

Policy Implications -- This finding suggests that a statewide measure of reengagement that does not take into consideration district enrollment size or location (urban, suburban, rural) would be highly biased against rural districts/BOCES and others with few dropouts.

Reengaging Dropouts in Colorado

"Building a Grad Nation" (Balfanz, Bridgeland, Moore & Fox, 2010) will require reengaging high school dropouts as well as preventing them from dropping out in the first place. Systematic research on the reengagement of high school dropouts is still in the early stages, and this study seeks to increase the knowledge base in this crucial area. Several previous studies (e.g., Berliner, Barrat, Fond, & Shirk, 2008; Chuang, 1997; Ekstrom et al., 1987; Hurst, Kelly & Princiotta, 2004) have found that fewer than half (and in some cases, considerably fewer than half) of dropouts reenroll within several years of dropping out.The purpose of this project was to investigate outcomes for Colorado's dropouts in the year following the dropout event. The project addresses two major questions:

1) What are the characteristics of students who have reengaged in school after dropping out, compared to those who do not?
2) What are characteristics of schools and districts that are highly successful in reengaging students who have dropped out, compared to those that are less successful?

To address these questions, we used longitudinal data provided by the Colorado Department of Education. The data followed 15,387 students who had a final code of "dropout" in 2007-08 administrative files through the 2008-09 school year.[3] Data for each student indicated whether or not the student had reenrolled in a Colorado school, and what the final outcome was for each student in 2008-09. The data available included: students' race; sex; age at dropout; school of enrollment by year; enrollment and withdrawal data; free/reduced lunch program eligibility; special education status, English-Language-Learner status.[4] Supplementary information was also available on districts (enrollment size; student demographics; poverty measures; and urbanicity). BOCES level characteristics were not available from CDE, but several measures were calculated (number of dropouts, number of districts, percent of districts within BOCES designated within each setting type). Information on student behavioral characteristics (attendance, credit accrual, suspensions, etc.) and district efforts and programs related to reengagement of dropouts was also not available for analysis.

Overview of Analytic Methods

Our first step was to create descriptive tables showing the percentage of students with a particular characteristic who reenrolled after dropping out of school, and the percentage of all

[3] Since the data only capture students whose final code of the year was a dropout code, this study does not include analyses of those students who were reengaged during the same school year as their after dropout event. Reengagement of dropouts mid-year should be reflected in lower dropout rates for these schools and districts.
[4] Other available student demographic characteristics were not included in analyses because such a small percentage of students had the characteristic (homeless, gifted and talented, migrant) or because they were too highly correlated with other measures (Title I eligible, disability).

reenrollers who had that particular characteristic. We conducted similar analyses for the more stringent measure of positive reengagement.

Next, student demographic measures were used in hierarchical logistic regression models (HLM) to determine the power of each measure in determining a student's odds of reenrolling or reengaging in school the year after dropping out. District- and school-level measures were then included in models to determine whether they might help explain the district and school-level variation in reengagement rates. We also conducted HLM analyses nesting students within the BOCES (or non-associated district) associated with their 2007-08 district.

We then investigated the relative success of schools, districts, and BOCES (Boards of Cooperative Educational Services) in reengaging dropouts. Several measures of reengagement were calculated for each school, district, and BOCES (detailed in report below). Separate files were constructed for schools, districts, and BOCES with the calculated measures together with publicly available aggregate level measures at each level of analysis. Analyses of the variation among schools, districts, and BOCES were then conducted to determine whether the variation (and relative levels of success) were associated with organizational characteristics.

Findings

The data file of the 2007-08 dropouts in Colorado came from a total of 154 districts, and from 581 schools[5] within those districts. These 154 districts included five district codes beyond the 178 regular districts in the state (including the Charter School Institute and four BOCES: Centennial, Mountain, Expeditionary, and Northwest Colorado).

Of the 15,387 dropouts in 2007-08, roughly a third (32.5%, 4996 students) had some type of positive outcome (reenrollment or earning a GED without reenrollment[6]) 2008-09. A small proportion (3.4%, 521 students) were coded as "completers" (typically receiving a GED) without reenrolling in school. Roughly one in seven (13.8%, 2117 students) reenrolled but were not considered "reengaged" (typically transferred to another state or dropped out again). The proportion of students who "reengaged" (graduated, completed without a diploma, or were still enrolled at the end of 2008-09) was 15.3% (2358 students). Just 438 students (2.8% of the full group of dropouts) returned and graduated the following year. Tables 1 and 2 summarize the variation in reenrollment and reengagement for demographic groups. A more complete summary of demographic group differences is found in figures in Appendix A.

To analyze which student level characteristics are predictive of reengagement, we conducted hierarchical linear modeling, which we describe in the next section.

[5] There were 13 districts with some dropouts having a school code of 0000 (not attached to a school). These students can be clustered and included in some analyses, but not in analyses requiring aggregate school level variables.

[6] A total of 521 dropouts, 3.4% of the total group, received a GED without reenrolling.

Table 1. Reenrollment Rates by Student Demographic Characteristic

Characteristic	% Who Reenrolled	Number of Dropouts With Characteristic	% of Dropouts with Characteristic	Number of Actual Reenrolled	% of Total Reenrolled
Male	31%	8,354	54%	2,587	52%
Female	34%	7,033	46%	2,409	48%
Native American	37%	345	2%	127	3%
Asian	31%	296	2%	92	2%
Black	35%	1,508	10%	523	10%
Hispanic	33%	7,068	46%	2,301	46%
White	32%	6,170	40%	1,953	39%
Special Ed	47%	989	6%	463	9%
Economically Disadvantaged	34%	7,048	46%	2,375	48%
English Language Learner	27%	2,101	14%	569	11%
Had prior dropout event	23%	1,874	12%	432	9%
Age under 14	34%	784	5%	266	5%
Age 14 and 15	48%	2,054	13%	989	20%
Age 16 and 17	38%	6,708	44%	2,539	51%
Age 18 or older	21%	5,841	38%	1,202	24%
Grade 7	39%	506	3%	195	4%
Grade 8	47%	551	4%	260	5%
Grade 9	39%	2,318	15%	898	18%
Grade 10	41%	2,715	18%	1,106	22%
Grade 11	38%	3,846	25%	1,462	29%
Grade 12	20%	5,451	35%	1,075	22%
All 2007-08 Dropouts	32%	15,387	100%	4,996	100%

"Reenrollment" includes 521 students who received a GED without reenrolling in a Colorado district.

Table 2. Reengagement Rates by Student Demographic Characteristics

Characteristic	% Who Reengaged	Number of Dropouts With Characteristic	% of Dropouts with Characteristic	Number of Actual Reengaged	% of Total Reengaged
Male	14%	8,354	54%	1,149	49%
Female	17%	7,033	46%	1,209	51%
Native American	15%	345	2%	53	2%
Asian	19%	296	2%	55	2%
Black	17%	1,508	10%	251	11%
Hispanic	15%	7,068	46%	1,071	45%
White	15%	6,170	40%	928	39%
Special Ed	24%	989	6%	234	10%
Economically Disadvantaged	14%	7,048	46%	1,019	43%
English Language Learner	12%	2,101	14%	262	11%
Had prior dropout event	8%	1,874	12%	144	6%
Age under 14	30%	784	5%	236	10%
Age 14 and 15	29%	2,054	13%	594	25%
Age 16 and 17	15%	6,708	44%	974	41%
Age 18 or older	9%	5,841	38%	554	23%
Grade 7	33%	506	3%	166	7%
Grade 8	38%	551	4%	209	9%
Grade 9	19%	2,318	15%	432	18%
Grade 10	17%	2,715	18%	456	19%
Grade 11	14%	3,846	25%	543	23%
Grade 12	10%	5,451	35%	552	23%
All 2007-08 Dropouts	15%	15,387	100%	2,358	100%

"Reengagement" includes those who graduated, completed, or were still enrolled at the end of 2008-09.

Student Level Predictors of Reenrollment and Reengagement

Because dropouts are nested within schools and districts throughout Colorado, we conducted hierarchical linear modeling of reenrollment and reengagement. Since more than half (55.2%, 85 districts) of the districts with dropouts had just one school with dropouts in the dataset, we conducted separate nested analyses (students within districts and students within schools) rather than seeking to nest students within both schools and districts simultaneously. Even when we nested students within the BOCES associated with their dropout district (or the district itself, for those not associated with BOCES), more than a quarter of the BOCES units had just one school with dropouts. Thus, we constructed two-level rather than three-level models.

Among the 154 districts with dropouts, 28 had just one dropout, 12 more had just two dropouts, and more than half (51.9%) had 10 or fewer dropouts. Among the 581 schools,[7] three in ten had just one or two dropouts and half had seven or fewer. There were 142 schools with 20 or more dropouts. We therefore conducted multivariate analyses of reengagement on the 59 districts with at least 20 dropouts as well as on the full sample to assess the reliability of results. Since results were virtually the same, we report just the results with the full number of districts and schools.

We ran a series of logistic regression models using hierarchical linear modeling (HLM). The first outcome variable was whether or not students had any level of reengagement in the year following the dropout event. The results from these models are presented in Table 3. The first set of results to the left side of the table represent the results for each measure <u>in separate models</u> predicting the outcome measure. Those results on the right hand side of the table are for a single model in which all measures were included. We analyzed correlations among the measures to ensure that the full model did not include variables that themselves were highly correlated, which would result in confounding of effects.

In Table 3, for each effect, an odds-ratio can be interpreted as the odds of reengagement for a student with that characteristic, as compared to an odds of reengagement of 1.0 for students without that characteristic. The strongest single indicator of reenrollment was age; students who were younger than 18 were more than two and one-half times as likely to reenroll as students 18 or older (2.59 vs. 1.0), without controlling for any other factors. Special education students were more likely to reenroll than regular education students by a factor of nearly 2 (1.85). This could be due to special outreach targeted at students with IEPs. By contrast, English learner students were less likely than non-ELL students to reenroll (by a factor of .7). Similarly, students who were overage for grade (e.g., 15 when dropping out in 8th grade, 16 when dropping out in 9th grade, etc.) were also less likely to enroll than non-overage students, as were students who had a previous record of dropping out. Females were significantly more likely to reenroll than males, but the relationship was not as strong as for age-related measures. For measures of student's race, white students provide the comparison group. Thus, without controlling for other

[7] There were thirteen districts that had a total of 161 dropouts without a school code.

characteristics, black students were more likely to reenroll than white students by a factor of about 1.2.[8] Analyses of district level variables are discussed later in the report.

Table 3: HLM Logistic Regression Results for Reenrollment

	In Separate Models		Full Model	
	Odds-Ratio	**P-Value**	**Odds-Ratio**	**P-Value**
Female	1.16	.000*	1.14	.001*
Asian	0.96	.834	1.09	.681
Hispanic	0.99	.802	1.13	.010*
Black	1.18	.009*	1.23	.001*
Native Amer.	1.13	.193	1.15	.197
F/RL	1.20	.003*	1.20	.005*
Spec. Ed.	1.85	.000*	1.83	.000*
ELL Eligible	0.70	.000*	.65	.000*
Overage for grade	0.59	.000*	.91	.009*
Previous dropout	0.58	.000*	.73	.000*
Under 18	2.59	.000*	2.40	.000*

We conducted the same analyses using "successful reengagement" (graduation, completion, or continued enrolment) as the dependent variable (Table 4). Results were similar, though significant relationships for ethnicity and F/RL status were no longer significant.

[8] Other available student demographic characteristics were not included in the models because such a small percentage of students had the characteristic (homeless, gifted and talented, migrant) or because they were too highly correlated with other measures (Title I eligible, disability).

Table 4: HLM Logistic Regression Results for Successful Reengagement

	In Separate Models		Full Model	
	Odds-Ratio	**P-Value**	**Odds-Ratio**	**P-Value**
Female	1.25	.000*	1.24	.000*
Asian	0.98	.930	1.00	.906
Hispanic	0.86	.002*	0.94	.239
Black	1.07	.109	1.00	.948
Native Amer.	1.03	.857	0.96	.830
F/RL	1.07	.173	1.10	.075
Spec. Ed.	1.43	.000*	1.42	.000*
ELL Eligible	0.63	.000*	0.65	.000*
Overage for grade	0.56	.000*	0.80	.000*
Previous dropout	0.53	.000*	0.66	.000*
Under 18	2.22	.000*	1.93	.000*

Characteristics of Districts and Schools that are More Successful at Reenrolling and Reengaging Dropouts

The second primary research question of this study was:

What are characteristics of schools and districts that are highly successful in reengaging students who have dropped out, compared to those that are less successful?

There are several different ways to conceptualize measures of school-, district-, and BOCES-level reengagement of dropouts. First, we can distinguish between simple reenrollment at all and the more stringent definition of reengagement as a positive graduation/completion outcome or continued enrollment in school at the end of the year (excluding those who reenrolled but then dropped out or had another non-completion withdrawal). Three possible rates to calculate for each of these categories are:

1) Percent of a BOCES's/district's/school's dropouts reengaged in any BOCES/district/school the following year (a measure that focuses on the outcomes for students by BOCES/district/school but underplays the organization's response to its own dropouts)
2) Percent of dropouts reengaged in same BOCES/district/school the following year (a measure that ignores the district's dropouts who reenrolled in another district, and may be biased by district size)

3) Ratio of dropouts reengaged in BOCES/district/school the following year to number of dropouts the prior year (a measure that takes into account the district's/school's outreach to others, but does not focus specifically on response to its own dropouts)

Table 5 summarizes the overall percentages of dropouts from 2007-08 who were reenrolled and positively reengaged in the same district and the same school in 2008-09.[9] As expected, these percentages are notably lower than the overall reenrollment and positive reengagement rates.

Table 5. Reenrollment and Reengagement Rates

Reenrolled at all	32.5%	N=4996
Reengaged[10] at all	15.3%	N=2358
Reenrolled in same BOCES	21.1%	N=3254
Reengaged in same BOCES	10.8%	N=1663
Reenrolled in same district	18.7%	N=2870
Reengaged in same district[11]	9.0%	N=1383
Reenrolled in same school	11.1%	N=1707
Reengaged in same school	4.7%	N=728

It is also crucial to remember that for the relatively large number of schools and districts with only one or two dropouts, the reengagement rates are highly constrained (0%, 50%, or 100%). Among the 154 districts, 28 had just one dropout, 12 more had just two dropouts, and more than half (51.9%) had 10 or fewer dropouts. Among the 581 schools, three in ten had just one or two dropouts and half had seven or fewer. There were 250 schools (43% of the total number of schools with dropouts) with more than 10 dropouts.

As further analyses (described below) indicate, there appears to be relationship between district size and reenrollment in the same district that should not be ignored when analyzing this measure.

[9] For these analyses, students were coded as reenrolling in the same district or same school if either the first or last district/school in 2008-09 (only variables provided to CSOS for this report) was the same as the final district/school in the 2007-08. Few of those who reenrolled enrolled in more than one school (12.6% of the reenrolled; 561 students) or district (6.8% of the reenrolled; 310 students). The tendency to reenroll in more than one district or school decreased somewhat as grade level rose.

[10] Graduated, completed, or were still enrolled at end of 2008-09 year.

[11] Figures for reenrollment in the same district or school include any recorded reenrollment for those with enrollment in multiple districts/schools, while reengagement in the same school includes only those students in the same district/school at the end of 2008-09 as in 2007-08.

Analyses of School, District, BOCES Effects in HLM Models

Our first step in addressing the question of how district/school characteristics are linked to reengagement of dropouts was to investigate the impact of school-, district-, and BOCES- level variables in the hierarchical linear modeling conducted. In these analyses students were nested (separately) in the 2007-08 school, district, and BOCES for each student, and analyses focused on whether there were significant relationships between organizational factors and the odds of student reengagement, controlling for student level characteristics.

We began by partitioning the proportion of the variance in the dependent variables, reenrollment and reengagement, into 1) the part that lies between students in the same district/school and 2) the part that occurs between districts/schools. These analyses found less than 10 percent of the variation occurring between districts, BOCES, or schools when reenrollment/reengagement anywhere was the dependent variable. The proportion of variation occurring between these organizational units was somewhat higher than 10 percent when we focused on reenrollment or reengagement in the same district/BOCES/school as the dependent variable.[12] Even though reengagement is primarily related to individual student characteristics rather than organizational characteristics, we proceeded with analyses to investigate whether there were any organizational factors that were significantly associated with reengagement.

School Level

Colorado's 2007-08 dropouts came from a total of 581 schools (of which 565 had aggregate level data available on the CDE website).[13] Two-thirds were high schools, and most of the middle/elementary schools had a low number of dropouts. Almost two-thirds of the schools were concentrated in the Denver metro and suburban setting. Roughly fourteen percent of the schools were classified as alternative schools.

Analyses including school level variables (separately) at Level 2 of the HLM models indicated a significant relationship between reenrollment/reengagement <u>anywhere</u> and school type. The relatively small number of dropouts in schools serving students through grade 8 (elementary or middle schools and the few junior high schools serving through grade 9) were significantly more likely to reenroll at all than were those from high schools (a relationship primarily associated with the age of those students). There was no significant relationship with either measure of overall reenrollment or reengagement for any of the following available variables: percent of district students eligible for free/reduced price lunch; percent of minority students; student mobility rate; school enrollment size. Overall, students who dropped out from online schools had slightly lower rates of reenrollment and reengagement than did students from regular

[12] See Appendix for a table of all the Intra-Class Correlation coefficients summarizing the proportion of variance lying between districts, BOCES, and schools.
[13] See Appendix for discussion of schools excluded from the analyses.

schools, which was probably related to their somewhat higher rates of having a prior dropout event. More detailed findings regarding online schools can be found in Appendix.

Analyses focused on reenrollment/reengagement in the same school (vs. not reenrolling/ reengaging in the same school) found several significant school level factors. Students who dropped out from an alternative school had higher odds of reenrolling in the same school than those who dropped out from regular schools, though the odds of reengaging successfully was only marginally higher. In contrast to the finding for overall reenrollment, high school students had higher odds than middle/elementary school students of reenrolling in the same schools. But this relationship was not significant for reengaging (graduating or remaining enrolled all year) in the same school. Dropouts from rural district schools had lower odds than non-rural school dropouts of reenrolling/reengaging in the same school. And the higher the percentage of minority students in a school, the lower the odds of a student reenrolling/reengaging (controlling for the other factors) (Table 6).

Table 6: HLM Logistic Regression Results for Reenrollment/Reengagement in Same School

	Reenrollment		**Reengagement**	
	Odds-Ratio	**P-Value**	**Odds-Ratio**	**P-Value**
Alternative School	1.61	.000	1.33	.051
High School	1.37	.008	0.77	.071
Rural district	0.42	.001	0.34	.000
% Minority	0.61	.003	0.43	.000

Reenrollment in Same School vs. Different School

Given the small percentage of dropouts reenrolling in the same school, the more interesting analytical question to us was what school level characteristics were associated with reenrollment in the same school versus a different school. Separate HLM analyses were conducted on the subsample of students who had reenrolled at all, nested within their 2007-08 school to estimate the log-odds of reenrolling in the same school (vs. reenrolling in another school). These analyses should be interpreted cautiously, since the number of students nested in particular schools is low (4757 students in 451 schools). At the student level, 12th graders were more likely than students at other grade levels to reenroll in the same school (by a factor of 1.66). Special education and ELL students were also more likely than regular students to reenroll in the same school. School level factors significantly associated with reenrollment in the same school (vs. another school) were: school type (same school reenrollment higher in high schools than middle schools and in alternative schools than regular schools) and concentration of at least three dropouts from that

school in 2007-08. Controlling for having at least 3 dropouts in 2007-08 and alternative school status, enrollment size of school was not a significant predictor (Table 7).

Table 7: HLM Logistic Regression Results for Reenrollment in Same School (vs. Other School) Among Reenrollers

	Odds-Ratio	**P-Value**
Female	0.89	.065
Asian	NS	NS
Hispanic	NS	NS
Black	NS	NS
Native Amer.	NS	NS
F/RL	NS	NS
Spec. Ed.	1.38	.001*
ELL Eligible	1.48	.002*
Age at dropout	NS	NS
Overage for grade	NS	NS
Previous dropout	NS	NS
Grade 12	1.66	.000*
SCHOOL LEVEL		
High School (vs. MS)	1.61	.009*
At least 3 dropouts	1.79	.038*
Alternative School	1.57	.008*
School Enrollment Size	NS	NS

Analysis based on 4757 students nested in 451 schools.

District Level

While the majority of dropouts came from districts in the Denver metro setting (58%) and its suburban areas (22%), the majority of districts represented were from rural (40%) and outlying town (29%) settings with relatively few dropouts.

Analyses focused on reenrollment or reengagement in any district indicated no significant relationship for any of the available district level variables: percent of district students eligible for free/reduced price lunch; percent of minority students in the district; student mobility rate; dropout rate; district type/location (metro Denver, suburban, outlying city, outlying town, rural); number of students in district; number of dropouts in the district. There was one district level variable that was marginally significant (p=.075) at Level 2 in the model including student level characteristics at Level 1: percentage of staff turnover between 2007-08 and 2008-09. A

negative relationship between staff turnover and reenrollment makes sense theoretically; students could be more likely to reengage when there are more stable relationships with adults in the school setting and perhaps more encouragement and intervention occurring. (Staff turnover could also be related to other, unmeasured variables, such as district resources, that could help to explain the observed relationship.) This relationship disappeared, however, when the number of dropouts in the district was also entered as a district level variable at Level 2.

Similar HLM analyses were conducted with reenrollment and reengagement in same district as the dependent variable. The odds of reenrollment in the same district were significantly related to the size of district (measured by total number of students and by the number of dropouts in several different ways). As one might expect, the odds of reenrollment in the same district were significantly lower for rural districts (which tended to be smaller).[14] The odds of reenrollment in the same district were also negatively related to staff turnover rate in the district, even controlling for number of dropouts (a measure of district size), though the effect was only marginally significant after excluding two outlier cases (Table 8). None of the other available district level variables was significant in these analyses of reenrollment in the same district. Similar results were found with successful reengagement in the same district as the dependent variable.

Table 8: HLM Logistic Regression Results for Reenrollment in Same District

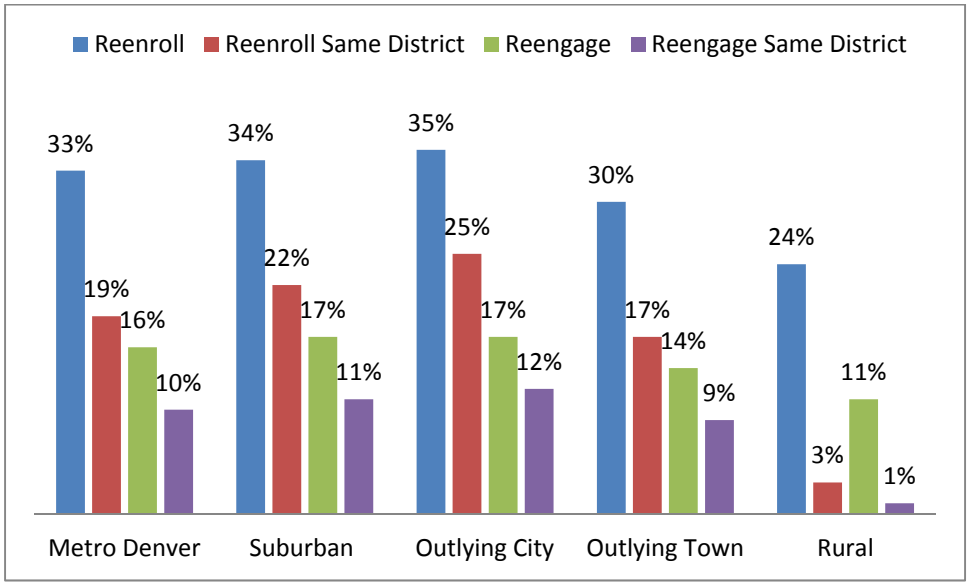
	Odds-Ratio	**P-Value**
Total students in district	1.00	.001
Number of dropouts	1.00	.012
At least 5 dropouts	1.98	.041
At least 20 dropouts	1.79	.001
Rural district	0.21	.000
Staff Turnover Rate	0.12	.073
Staff Turnover Rate, controlling for number of dropouts	0.12	.082

Analysis based on 15,387 students nested in 149 districts (with all data available). Each district level variable (except last one reported) was entered separately because of the intercorrelation of the variables.

[14] A total of 1294 dropouts in 2007-08 (8.4% of the total dropout population) came from districts designated by the state as rural. Of these, a total of 312 (24.1%) had some type of reenrollment, and two-thirds of those were successfully reengaged. About one in five of these (68 students) received a GED from a non-district program, and nearly half (139 students) completed or remained enrolled until the end of the 2008-09 year. A total of 53 rural dropouts reenrolled in an online school in 2008-09. The largest concentrations of reenrolled dropouts from rural districts were in Denver County (43), Douglas County (17), Jefferson County (16) and Adams 12 (15).

Figure 1 graphically displays the lower rates in rural districts of reenrollment/reengagement in the same district (based on student level analyses).

Figure 1. Reenrollment and Reengagement Rates by Setting



BOCES Level

Given the large number of districts with fewer than three dropouts, we also nested students within the BOCES associated with their school district to examine the relationship between BOCES level measures and the renrollment/reengagement measures. The number of dropouts associated with the 42 BOCES "units" within which dropouts could be nested ranged from 2 to 4933 (with 12 of the 42 BOCES units having fewer than 20 dropouts).[15] We conducted a series of two-level HLM models with students at Level 1 and BOCES units at Level 2. Analyses including BOCES level variables (separately) at Level 2 of the HLM models indicated no significant relationships between overall reenrollment/reengagement (in any BOCES) and any available BOCES level characteristics (number of dropouts, number of schools, number of districts, percentage of districts designated rural, whether BOCES unit was a BOCES, online district, charter district, or other district not associated with a BOCES).

Examining reenrollment in the <u>same BOCES</u> as a dependent variable, we found the same pattern of relationships as for districts. Dropouts from BOCES units with more dropouts had significantly higher odds of reenrolling in the same BOCES than did those from BOCES with

[15] Of the 42 BOCES units, 19 were BOCES, 18 were districts not associated with BOCES, 4 were online districts, and one was the charter district. About 20 percent of the dropouts were from the 23 districts not associated with a BOCES. Three-level HLM analyses (students within schools within BOCES) were not conducted because 21.4 percent of the BOCES units had only a single school with dropouts and the two levels were coterminous.

fewer dropouts. Similarly, the odds of reenrolling in the same BOCES was higher for dropouts from those BOCES with more schools and more districts with dropouts. A related factor was the rural character of the BOCES units. Students from BOCES units with a higher proportion of rural districts had lower odds of enrolling in the same BOCES (Table 9). Dropouts from the four online districts had significantly lower odds of reenrolling in the same online district (BOCES unit) than did those from other BOCES units (though they were not significantly less likely to reenroll or reengage overall than others). Results using successful reengagement in the same BOCES produced similar results.

Table 9: HLM Logistic Regression Results for Reenrollment in Same BOCES

	Odds-Ratio	**P-Value**
Number of dropouts	1.00	.012
Number of schools	1.01	.008
Number of districts	1.04	.029
% Rural districts in BOCES	0.29	.002
District not Associated with BOCES	0.84	.504
Online District	0.09	.000*
Charter District	0.31	.310
BOCES	1.67	.065

Each BOCES level variable was entered separately because of the intercorrelation of the variables and small number of BOCES units.

Analyses Based on BOCES-, District-, and School-Level Datafiles

The level 2 files constructed for the preceding HLM analyses (schools, districts, and BOCES units) included available the available aggregate level data from the CDE website (see table in Appendix). To these files we added aggregated results from the student level data file to create measures at the 2007-08 school-, district-, and BOCES-unit levels of: 1) percent of dropouts with any reenrollment in 2008-09; 2) percent of dropouts with any successful reengagement in 2008-09; 3) percent of dropouts with reenrollment in the same school/district/BOCES 2008-09; 4) percent of dropouts with successful reengagement in the same school/district/BOCES in 2008-09. We also calculated two more measures: 5) ratio of reenrolled students in 2008-09 (from any school/district/BOCES) to number of dropouts in 2007-08; and 6) ratio of successfully reengaged students (from any school/district/BOCES) in 2008-09 to number of dropouts in 2007-08. We then conducted regression analyses to explain the variation in these rates among schools, districts, and BOCES. While the HLM analyses reported above address the same issues in a more statistically appropriate way, these regression analyses focus on the rates that will be calculated for schools and districts according to Colorado legislation requirements.

Findings from these aggregate level regression analyses were virtually the same as those reported above for the four reenrollment and reengagement rates described. More detailed descriptions of the analyses can be found in Appendix.

Analyses of the calculated ratio rates of reenrolled and successfully reengaged dropouts (from anywhere) to the number of dropouts in the organization the prior year found that these measures were still generally lower for most rural districts/BOCES. The ratio rates probably do not sufficiently lower the statistical bias against rural districts, even though they are somewhat less biased. Calculated ratio rates were lower for schools with higher numbers of dropouts, but the relationship was not significant once the ratio rates were capped at 1.0 (excluding or recoding small schools with ratios greater than 1).

Electronic datafiles with each of these rates for BOCES, districts and schools are included as part of the deliverables for this project to the Colorado Department of Education.

Conclusions and Recommendations

Dropout recovery remains a major problem. Only a third of Colorado's 2007-08 dropouts actually reenrolled in school or received a GED the year following the dropout event, and fewer than one in five remained enrolled or completed high school successfully. Those who were successful generally had demographic characteristics similar to those of graduates more generally: on-age for grade with no prior dropout events, non-ELL students, and higher proportions of females than males. The fact that special education students had a significantly higher rate of reenrollment and reengagement than others is a positive sign, and probably reflects intentional outreach to this group of students (who often have higher than average dropout rates in other states). Recovery rates for students past high school age (over 18) were significantly lower than for younger students. Though behavioral characteristics were not available for analysis, we would predict that students with generally higher levels of attendance and previous course passing would be more likely than others to have higher rates of successful reengagement. This is one area for future research.

Holding districts and schools accountable for reengaging their dropouts is an important step for ensuring that all students receive the minimum credential for success in 21st century American society. At the same time, the analyses reported here indicate that rates of reenrollment or reengagement in the same school, district, or even BOCES unit may not be the most helpful measure of success. Because these rates are so influenced by number of dropouts, size of district, and type of school, it is important to report other measures (such as reengagement anywhere, and ratio of successfully reengaged students from anywhere to number of dropouts). Collecting specific information from districts about the specific actions and programs for recovering dropouts and transforming this information into usable data would also be a useful step for the Colorado Department of Education to take.

References

Balfanz, R., Bridgeland, J., Moore, L. & Fox, J. (2010). Building a grad nation: Progress and challenge in ending the high school dropout epidemic. Washington DC and Baltimore, MD: Civic Enterprises, Everyone Graduates Center at Johns Hopkins University, and America's Promise Alliance. Retrieved January 21, 2011 from www.every1graduates.org.

Berliner, B., Barrat, V., Fond, A., & Shirk, P. (2008). Reenrollment of high school dropouts in a large, urban school district (Issues & Answers Report, REL 2008-No.056). Washington DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West. Retrieved January 21, 2011 from http://ies.ed.gov/ncee/edlabs.

Chuang, H. (1997). High school youths' dropout and reenrollment behavior. *Economics of Education Review, 16*(2), 171–86.

Hurst, D., Kelly, D., and Princiotta, D. (2004). *Educational attainment of high school dropouts 8 years later* (NCES 005-026). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Mac Iver, M.A. & Balfanz, R., and Byrnes, V. (2009). *Advancing the "Colorado Graduates" agenda: Understanding the dropout problem and mobilizing to meet the graduation challenge.* Denver, CO: Colorado Children's Campaign.

Wayman, J. (2001). Factors influencing GED and diploma attainment of high school dropouts. *Education Policy Analysis Archives, 9*(4). Retrieved November 13, 2007, from http://olan.ed.asu.adu/epaa/v9n4

Wayman, J. (2002). The utility of educational resilience for studying degree attainment in school dropouts. *The Journal of Educational Research, 95*(3), 167–77.

Appendix

Data Definitions

Reenrollment – any record of reenrollment in a Colorado district or receiving a GED from a non-district program in 2008-09.

Reenrollment in the same district includes students for whom there was any 2008-09 enrollment record in the same district as the final record for 2007-08.

Reenrollment in the same school includes students for whom there was any 2008-09 school enrolment record in the same school as the final record for 2007-08.

Reengagement is defined as graduated, completed without a diploma, or were still enrolled at the end of 2008-09. While at the state level it makes sense to add to this measure those students who received a GED from a non-district program, the measure does not include those GED students since they are not linked to a Colorado district or school n 2008-09.

Reengagement in the same district includes only those students who graduated, completed without a diploma, or were still enrolled at the end of 2008-09 and whose final 2008-09 enrollment record was in the same district as the final record for 2007-08.

Reengagement in the same school includes only those students who graduated, completed without a diploma, or were still enrolled at the end of 2008-09 and whose final 2008-09 enrollment record was in the same school as the final record for 2007-08.

Reenrollment Ratio is defined as the number of 2007-08 dropouts (from anywhere) who reenroll in a district or school in 2008-09, divided by the total number of dropouts from that district or school in 2007-08.

Reengagement Ratio is defined as the number of 2007-08 dropouts (from anywhere) who successfully reengage (graduated, completed without a diploma, or were still enrolled at the end of 2008-09) in a district or school in 2008-09, divided by the total number of dropouts from that district or school in 2007-08.

Variables Used in Analyses

	STUDENT	BOCES	DISTRICT	SCHOOL
Gender	X			
Ethnicity	X		% MINORITY	% MINORITY
F/RL	X		%FRL	%FRL
ELL	X			
Special ED	X			
% Staff Turnover			X	-
% Teacher Turnover			X	-
Student mobility rate			X	X
Urbanicity		X	X	X
Number of students		X	X	X
Number of dropouts		X	X	X
Dropout rate			X	X
Type (middle vs. high)				X
Alternative vs. regular				X
Pupil-Teacher FTE Ratio[16]				X

Proportion of Variance that Lies Between Districts, BOCES, and Schools

	Reenroll at all	Reengage at all	Reenroll Same	Reengage Same
District (n=154)	3.5%	6.8%	12.5%	10.1%
BOCES (n=42)	2.9%	3.2%	20.9%	15.6%
School (N=565)	3.5%	9.1%	10.3%	9.1%

[16] Extreme values influence analytical results

Findings Regarding Online Schools

A total of 1100 dropouts (7% of the total number) came from 10 online schools in 2007-08. The majority of these came from one school, Hope Online Academy, with 681 dropouts. Dropouts from online schools tended to be younger and less disadvantaged than dropouts more generally (significantly lower rates of FRL, ESL minority status, and special education students). They were more likely than other dropouts to have a previous dropout event (16.1% vs. 11.9%). Overall, students who dropped out from online schools had lower rates of reenrollment (22.4% vs. 33.3%) and successful reengagement (10.8% vs. 15.7%) than students from regular schools. Very few (1%, 12 students) reenrolled in the same school the following year (5 students remained successfully reengaged until year's end).

When we focus on the schools that re-enrolled dropouts from anywhere in Colorado the previous year in 2008-09, a total of 14 online schools (the 10 with dropouts in 2007-08,[17] plus four additional schools) reenrolled a total of 386 students, with 189 successfully reengaged until the end of the year (an overall successful reengagement ratio of 189/1100, or .17). In comparison, regular schools reenrolled a total of 4152 dropouts (from anywhere in Colorado), with 2243 successfully reengaged (a successful reengagement ratio of 2243/14126,[18] or .16). By this measure, online schools were performing equally well to regular schools in successfully reengaging dropouts from the prior year.

[17] Hope Online Academy, which changed districts between 2007-08 and 2008-09, is included in this group of 10, and rates of reengagement in the same school include students who reengaged in the school after its district change.
[18] The 161 dropouts without a school code in 2007-08 were excluded from this calculation.

Schools Excluded from Analyses

The following schools (with a total of 873 dropouts) were not included in school level multivariate analyses because of school level aggregate data were not available for 2008-09.

School Name	Sch. Number	Number of Dropouts
CHALLENGES, CHOICES & IMAGES CHARTER SCHOOL	1606	22
CORWIN MIDDLE SCHOOL	1898	1
DURANGO SECOND CHANCE	2319	50
HOME OPTIONS SCHOOL	4077	1
HOPE ONLINE LEARNING ACADEMY CO-OP	4091	681
HORACE MANN MIDDLE SCHOOL	4094	8
MAPLETON PREPARATORY HIGH SCHOOL	311	8
MOUNTAIN VIEW JUNIOR HIGH	8540	3
PEAK ALTERNATIVE PROGRAM	6815	9
PLACE MIDDLE SCHOOL	6988	8
SHIVERS ACADEMY CHARTER SCHOOL	8940	22
	145	7
	2180	1
	2783	22
	6245	23
	8926	1
	8997	6

Summary of Regression Analyses Using Aggregate Level Files

District Level Analyses

Regression analyses of the 154 districts with dropouts in the student level file were conducted for the six dependent variables described above.

Renrolled/Reengaged in Any District

The only significant relationship that emerged from these analyses was a negative relationship between district staff turnover rates (from 2007-08 to 2008-09) and student reengagement. Both teacher turnover rate and full district staff turnover rates were used in separate analyses. (Because of missing data, we did not use principal turnover rate.) In all analyses, the lower the staff turnover rate, the higher the level of dropout reengagement.

Sensitivity analyses indicated, however, that this relationship was almost entirely driven by the 56 districts that had between 1 and 4 dropouts. When analyses were conducted on only the districts with at least 5 dropouts (and more reliable reengagement rates), the relationship was no longer significant. This finding corresponds to the HLM finding reported above. It is probably a statistical artefact related to the constraint in percentage rates of reengagement based on so few dropouts.

Renrolled/Reengaged in Same District

An important finding emerged in these analyses: rates of reenrollment in the same district are significantly lower for districts with low numbers of dropouts (measures of "fewer than 10 dropouts" and "fewer than 20 dropouts" were both significant in separate analyses). Low numbers of dropouts are highly associated with rural districts, and "rural" type also had a significant negative relationship with rates of reenrollment in the same district. These relationships were not significant in analyses using "reenrollment in any district" as the dependent variable. No other district level variables were significant predictors of percentage reenrolling in the same district. Since rates of successful reengagement in the same district were low throughout the state, the lower rates for rural districts and other districts with few dropouts e were not statistically significant on this measure.

Ratios of Reenrolled or Reengaged Students to Number of 2007-08 Dropouts

Regression analyses using the ratio measures (number of reenrolled/reengaged dropouts from anywhere to number of dropouts in the districts in 2007-08) as dependent variables indicated somewhat less bias against rural districts or others with few dropouts in 2007-08.

This finding suggests that a statewide measure of reengagement based on <u>reenrollment in the same district</u> would be highly biased against rural districts and others with few dropouts. A statewide measure of <u>reengagement in the same district</u> would be somewhat less biased against rural districts and others with few dropouts, since the rates of reengagement were relatively low in all types of districts. The ratio measure of number of successfully reengaged students in 2008-09 to number of dropouts in 2007-08 is somewhat less biased against small rural districts than the reengagement in the same district measure.

BOCES Level Analyses

Given this bias against small districts, we also conducted analyses at the BOCES level. All districts associated with the dropouts in the student level file were recoded into the associated BOCES if a district was part of a BOCES. There were dropouts from 42 "BOCES" units. The number of dropouts associated with these units ranged from 2 to 4933. Half of the BOCES units had fewer than 50 dropouts, and 12 units had fewer than 20 dropouts.
Regression analyses with reenrolled or reengaged in any BOCES as the dependent variable yielded no significant relationships with any available variables (number of dropouts, number of schools, number of districts, percentage of districts designated rural, whether BOCES unit was a BOCES, online district, charter district, or other district not associated with a BOCES). Analyses focused on reenrolled or reengaged <u>in the same BOCES</u> again found a negative relationship with rural setting: the higher the percentage of rural districts in a BOCES unit, the lower the proportion of dropouts reenrolling/reengaging in the same BOCES unit. There were no other significant relationships.

School Level Analyses

Regression analyses of the 565 schools with dropouts in the student level file and aggregate level data available on the CDE website were conducted for the six dependent variables outlined above.

<u>Renrolled/Reengaged in Any School</u>

The only significant relationship that emerged from these analyses was a relationship between school level (middle vs. high school) and student reengagement. Reenrollment and positive reengagement rates were higher at middle schools than high schools (which corresponds to the finding regarding engagement levels higher for younger students).

A superficially positive relationship between percentage of students eligible for free/reduced price lunch and rates of reengagement disappeared when school level was controlled. The average F/RL percentage is significantly higher for schools serving middle school students (47%) than high school students (33%), which is related to the tendency of eligible high school students to be less likely than younger students to formally certify their eligibility.

Renrolled/Reengaged in Same School

Overall, rates of reenrollment in the same school were low (11.1%), and rates positive reengagement were even lower (5.3%). They were also greatly influenced by the number of dropouts from the school (rates constrained to 1 or 0 for the nearly 20% of schools with just one dropout).

Findings paralleled those for reenrollment in the same district: rates of reengagement in the same school are significantly lower for schools with low numbers of dropouts (measures of "fewer than 5 dropouts" and "fewer than 10 dropouts" were both significant in separate analyses). Reenrollment in the same school was significantly higher in high schools than middle schools, but this appeared to be driven by the fact that alternative schools were almost entirely coded as high schools, and reenrollment in the same school was significantly higher for alternative schools than for regular schools.

Findings for positive reengagement in the same school were similar: higher rates were associated with being enrolled in an alternative school in 2007-08, and in schools with higher numbers of dropouts (associated with larger enrollment size overall).

Regression analyses using the ratio of students successfully reengaged (from anywhere) to the number of dropouts as the dependent variable also found a significant relationship with alternative schools. But the relationship with number of dropouts was not as marked.

This finding suggests that a statewide measure of reengagement based on reengagement in the same school would be highly biased against schools with few dropouts. It is also important not to overinterpret the positive effect for alternative schools on the "same school measure" (since alternative school students are not more likely to reenroll or be successful overall).