



Applying an on-track indicator for high school graduation: adapting the Consortium on Chicago School Research indicator for five Texas districts





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January 2011

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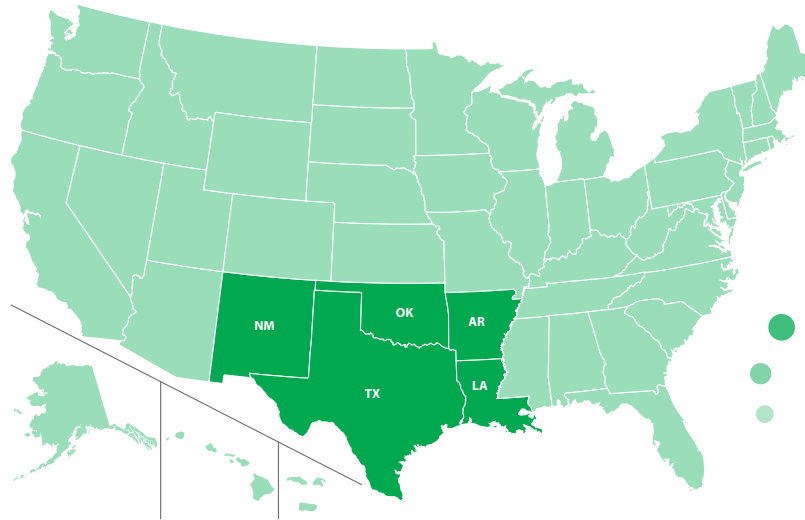
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Applying an on-track indicator for high school graduation: adapting the Consortium on Chicago School Research indicator for five Texas districts

This study uses a measure of the on-track or off-track status of students at the end of grade 9 as an indicator of whether students in five Texas districts would graduate from high school in four years. In all five districts, on-time graduation rates were higher for students who were on track at the end of grade 9 than for students who were off track, both for students overall and for all racial/ethnic groups.

Failure to graduate from high school is a widespread problem in the United States. Although reporting methods vary, one recent estimate indicates that 73.2 percent of grade 9 public school students graduate within four years (Stillwell and Hoffman 2008) and that graduation rates are lower in districts with higher proportions of minority and economically disadvantaged students (Swanson 2004, 2009). Despite variations in reporting methods, there is enough agreement across datasets to conclude “with reasonable confidence that roughly three of every 10 students in the United States are not graduating from high school on time” (Belfield and Levin 2007, p. 6).

The overall graduation rate in Texas is similar, at 72.5 percent (Stillwell and Hoffman 2008),

and state officials have made increasing the proportion of students who graduate from high school a high priority. Several initiatives have been established to identify students who may be at risk of not graduating on time (within four years of entering grade 9 for the first time), so that district and school personnel can intervene early enough to support students before they drop out or fall too far behind to graduate (Bill & Melinda Gates Foundation 2009; Texas High School Project n.d.).

These initiatives reflect research that focuses on the systematic use of indicators to identify students who may be at risk of not graduating. Researchers from the Consortium on Chicago School Research (CCSR) have developed an indicator using data from a student’s grade 9 year (Allensworth and Easton 2005). CCSR compared Chicago Public Schools students’ course performance in their first year of high school with their graduation rates four years later and classified students as on track for on-time graduation based on two criteria: earning enough credits to be promoted to grade 10 and having no more than one semester “F” in a core course (English, math, science, and social studies). Students who failed to meet either or both of these benchmarks were classified as off track. The CCSR researchers found on-track

status at the end of the first year of high school to be a more useful indicator of whether Chicago Public Schools students graduated from high school in four years than other indicators examined, such as grade 8 test scores and students' background characteristics (Allensworth and Easton 2005).

The current study applies the CCSR on-track indicator in five school districts across Texas. Participating districts were selected on the basis of prior collaboration with the researchers on another project involving early warning indicators; the districts are not representative of districts in Texas. A total of 12,662 students were examined. The CCSR criteria used to determine on-track status were modified to reflect the number of credits required for promotion to grade 10 in each participating Texas district during the 2004/05 academic year. Because graduation rates differ for specific student subgroups, such as racial/ethnic minorities and economically disadvantaged students, the study sought to determine how accurately this on-track indicator differentiates between all students who do and those who do not graduate on time and between students in specific student subgroups who do and those who do not graduate on time.

This report answers two research questions:

- How do students who are classified as on track and those who are classified as off track at the end of grade 9 differ in on-time graduation rates?
- How do students in specific subgroups who are classified as on track and those who are classified as off track at the end of grade 9 differ in on-time graduation rates?

The results of the study indicate the following:

- In all five districts, a majority of first-time grade 9 students were on track for graduation at the end of grade 9. On-track rates ranged from 61.2 percent to 86.0 percent.
- In all five districts, on-time graduation rates were higher for students who were on track at the end of grade 9 than for students who were off track. In four districts, the difference between on-time graduation rates for on-track and off-track students was 36.1–51.7 percentage points; the fifth district had a difference of 18.4 percentage points.
- Across districts, variability among racial/ethnic groups was greater for off-track graduation rates than for on-track graduation rates. For all racial/ethnic groups, the on-time graduation rate was higher for on-track students than for off-track students.

This study is a first step in helping local districts and the Texas Education Agency develop an on-track indicator that accurately differentiates at the end of grade 9 between students who do and those who do not graduate on time. Across the districts, the on-track indicator differentiated between students who do and those who do not graduate on time, as seen by the higher on-time graduation rates for on-track students. However, it did not differentiate to the same degree as the original CCSR on-track indicator study (Allensworth and Easton 2005). That study found a differential of 59 percentage points between on-time graduation rates of on-track and off-track students. (Note that the minimum number of credits required to graduate is 24 for Chicago

Public Schools and 22 for Texas schools; Chicago Public Schools n.d.; Texas Education Agency 2008d.)

Further research is needed to determine whether alternative on-track indicators would result in greater differentiation for these Texas districts. The research would be similar to the indicator development work of the CCSR in Chicago Public Schools that explored other possible variables for use in an on-track indicator (attendance data and students' grade 8 academic performance; Ponder n.d.). The research could also investigate whether different on-track indicators are needed in Texas districts with different profiles of student characteristics (for example, urban/rural districts or districts with higher/lower percentages of

students participating in free or reduced-price lunch programs) to more accurately differentiate between students who do and those who do not graduate on time, or whether a single on-track indicator could be used across Texas.

The study had several limitations. Districts were not randomly selected and are not representative of all Texas districts. The findings could differ in districts that have not been involved in previous indicator work or have different profiles of student characteristics. Also, only one version of an on-track indicator was used. The degree of differentiation could change if other versions of an on-track indicator were used.

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This study uses a measure of the on-track or off-track status of students at the end of grade 9 as an indicator of whether students in five Texas districts would graduate from high school in four years. In all five districts, on-time graduation rates were higher for students who were on track at the end of grade 9 than for students who were off track, both for students overall and for all racial/ethnic groups.

WHY THIS STUDY?

Failure to graduate from high school is a widespread problem in the United States. Although reporting methods vary,¹ recent estimates suggest that 73.2 percent of grade 9 public school students graduate within four years (Stillwell and Hoffman 2008²). Despite the variation in reporting methods, there is enough agreement across datasets that it can be concluded “with reasonable confidence that roughly three of every 10 students in the United States are not graduating from high school on time” (Belfield and Levin 2007, p. 6). Graduation rates are lower in districts with high proportions of minority and economically disadvantaged students (Swanson 2004, 2009³). This problem is exaggerated in about 10 percent of high schools with high proportions of these populations, where 60 percent or less of grade 9 students graduate within four years (Balfanz and Letgers 2004⁴). The consequences of failing to graduate from high school are far reaching, affecting earning potential (Rouse 2007), health, and incarceration rates (Muennig 2007; Cutler and Lleras-Muney 2008), as well as the tax revenue and productivity of society as a whole (Rouse 2007).

Because Texas’ overall graduation rate, 72.5 percent (Stillwell and Hoffman 2008), is comparable to the national average, and graduation rates for Texas districts with large proportions of minority and economically disadvantaged students are lower (Swanson 2004), state officials have made increasing the proportion of students who graduate from high school a high priority. In 2003, the state invested in a public-private partnership to boost graduation rates and increase the number of high school students prepared for college (Texas High School Project n.d.). More recently, the Office of the Governor, state legislators, the Texas Education Agency, and private partners have worked closely with the Bill & Melinda Gates Foundation to improve and redesign Texas high schools so that every student has access to a rigorous, engaging education (Bill & Melinda Gates Foundation 2009). A goal of these initiatives has been to help educators identify students who may be at risk of failing to

Identifying students at the end of grade 9 who may be at risk of not graduating on time allows time to intervene

graduate so that district and school personnel can intervene early.

These initiatives align with the What Works Clearinghouse *Drop-out Prevention: A Practice Guide* recommendation that “utilizing

data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out” is a “critical first step” in effective intervention (Dynarski et al. 2008, p. 12). These types of data systems are termed *early warning systems* because they attempt to identify students who may be at risk of not graduating from high school when there is still time to intervene.

Successful early warning systems track multiple variables that have been shown to relate to students’ likelihood of not graduating on time (Heppen and Therriault 2008), such as poor grades in core subjects, low attendance, failure to advance to the next grade, and disengagement in the classroom (Kennelly and Monrad 2007). Such variables are used to develop indicators⁵ that identify students who may be at risk of not graduating on time. Studies have shown that on-time graduation rates can be more highly correlated with such indicators than with standardized achievement test scores or student characteristics (Allensworth and Easton 2005; Jerald 2006; Rumberger 2004). However, in practice, any indicator will misidentify some students. This means that some students identified as on track will fail to graduate on time and that (without intervention) some students identified as off track will graduate on time. The goal is to select an indicator that minimizes these misidentifications.

The Consortium on Chicago School Research on-track indicator

An on-track indicator developed by the Consortium on Chicago School Research (CCSR) (Allensworth and Easton 2005) uses data on grade 9 students to determine whether students are on track to graduate on time. Grade 9 has been the focus of much

research (Allensworth and Easton 2005; Neild and Farley 2004) because of its importance as a transition year, when the number of course failures and behavioral problems appear to rise significantly and academic achievement declines (Smith 2006). Identifying students at the end of grade 9 who may be at risk of not graduating on time also allows time to intervene. On-time graduation—defined as earning a high school diploma within four years of entering grade 9 for the first time—has also been a focus of this line of research in the context of regulations stemming from the No Child Left Behind Act of 2001 (No Child Left Behind Act 2002).⁶

The CCSR on-track indicator identifies a student as on track for graduation at the end of grade 9 if the student meets two criteria:

- Earned enough credits to be promoted to grade 10.⁷
- Had no more than one semester “F” in a core course (English, math, science, and social studies).

A student who does not meet either or both of these criteria is classified as off track. Analysis of Chicago Public Schools data showed that 22 percent of students classified as off track at the end of grade 9 graduated from high school in four years, compared with 81 percent of their peers classified as on track (Allensworth and Easton 2005). The CCSR examined other indicators, such as grade 8 test scores and students’ background characteristics, and found on-track status at the end of the first year of high school to be the most useful indicator of Chicago Public School students at risk of not graduating in four years.

The on-track indicator has been incorporated into the Chicago Public Schools accountability system and is used by district personnel to focus resources on students at high risk of not graduating on time (Allensworth and Easton 2005, 2007). Indicators (also referred to as early warning systems for identifying possible dropouts) using different combinations of multiple variables (including one or both of

the CCSR on-track indicator variables) have been developed or adopted in Baltimore (Mac Iver et al. 2008), Boston (The Parthenon Group 2007; Pinkus 2008), Dallas (Weir 2008; Oakeley and Weir 2010), Los Angeles (Lim and Pirone 2007), Philadelphia (Neild and Balfanz 2006; Neild, Balfanz, and Herzog 2007), and Portland, Oregon (Cielo and Leveen 2007). National High School Center publications help districts and schools construct an early warning system and recommend including the on-track indicator (Heppen and Therriault 2008).

The current study

The current study investigates use of the CCSR on-track indicator⁸ with data from five school districts in Texas. These districts, which have established data systems and a strong interest in using on-track indicators, vary in grade 9 promotion policies and in student characteristics, such as race/ethnicity and socioeconomic status. Using historical data, a cohort of students was tracked from the end of grade 9 (in 2004/05) to the end of the 2007/08 academic year (the on-time graduation date for students in these cohorts). The study examines differences in on-time graduation rates between students identified as on track and those identified

as off track at the end of grade 9 overall and among specific student subgroups. The on-track indicator criteria were modified to reflect each participating district's grade 9 promotion policy during the 2004/05 academic year. This study is a first step in helping local districts and the Texas Education Agency develop an on-track indicator that accurately differentiates between students who do and those who do not graduate on time.

The current study used the on-track indicator to address two research questions for each participating district:

- How do students who are classified as on track and those who are classified as off track at the end of grade 9 differ in on-time graduation rates?
- How do students in specific subgroups who are classified as on track and those who are classified as off track at the end of grade 9 differ in on-time graduation rates?

Box 1 and appendix A describe the data sources and analysis. Appendix B describes the participating districts.

BOX 1

Study data and analysis

This box describes the participating districts, data sources, analytic sample, determination of on-track status and on-time graduation status, and the data analysis methods (see appendixes A and B for details).

Participating districts. The five participating districts were identified from previous collaboration with the researchers on a project on early warning indicators. Because the districts were not randomly sampled, the results of the study cannot be

generalized to all districts in Texas or in all Southwest Region states (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas). The five districts are in the top 8 percent of Texas districts in enrollment and are in suburban or urban areas (Texas Education Agency 2008e). The districts vary in racial/ethnic composition (Texas Education Agency 2008a). One district has a majority Black student population, one has a majority White student population, and three districts have a majority or plurality Hispanic student population (see table B1 in appendix B). One district with large Hispanic and large White

populations closely resembles the racial/ethnic composition of Texas overall. Participation in the free or reduced-price lunch program ranges from 31.7 percent to 73.5 percent (the state average is 55.3 percent), and enrollment in bilingual/English as a second language programs ranges from 1.9 percent to 27.1 percent (the state average is 15.5 percent; Texas Education Agency 2008a). Three districts were rated academically acceptable in 2008, and the other two were rated recognized (Texas Education Agency 2008a).¹ (See appendix B for details on student characteristics and achievement for these districts.)

(CONTINUED)

BOX 1 (CONTINUED)

Study data and analysis

Data sources. The study used district-provided student-level data from the 2004/05, 2005/06, 2006/07, and 2007/08 academic years. Students in grade 9 in 2004/05 are the most recent cohort for which on-time graduation could be assessed with district data. District-provided data files included student characteristics, attendance records, enrollment status, and course records. An encrypted student identifier linked student records across datasets. Appendix A describes the data elements, including missing and discrepant data. Each district defines its own codes, so the five datasets were not standardized by code or data field. This presented a challenge to ensuring that the same variables were compared across districts and suggests caution in interpreting findings.

Analytic sample. The analytic sample includes all first-time grade 9 students in 2004/05 for whom complete course and graduation data were available. First-time grade 9 students were excluded from the analytic sample if their on-track status could not be identified at the end of grade 9 (students who transferred, dropped out, or had incomplete course data), if they died, or if they were enrolled in another public school system during

2005/06–2007/08 or moved abroad. Students in this last group are considered neither graduates nor dropouts (U.S. Department of Education 2008). Table A1 in appendix A details the number of excluded students from each district.

The sample for each district varies considerably in enrollment and student characteristics. The number of students in the analytic sample ranges from 1,401 students in District A to 4,720 in District E (see table B2 in appendix B). In all districts except District D, Whites are in the minority. The proportion of students participating in free or reduced-price lunch ranges from 21.7 percent to 58.8 percent, and the proportion with an Individualized Education Program (IEP, which specifies learning goals and activities for each student receiving special education services) ranges from 6.0 percent to 13.1 percent.

Defining on-track and off-track status. On-track status was determined for each student using grade 9 course data on credits earned and semester Fs in core courses. Students were identified as on track at the end of grade 9 if they earned the required number of course credits for promotion to grade

10 according to each district's policy and had no more than one semester F in a core subject (see appendix A for details). A student who does not meet either or both of these criteria is identified as off track (see table).

Defining on-time graduation. This study classified students as on-time graduates if they received one of Texas' three main types of diplomas (minimum,² recommended, or distinguished) or completed an IEP within four years of entering grade 9 for the first time. Students who earn a General Educational Development® (GED) certificate are not classified as high school graduates (Texas Education Agency 2008c) and are therefore counted as nongraduates (see appendix A for details).

Notes

1. The Texas Education Agency's four-level accountability system for rating school and district performance (academically unacceptable, academically acceptable, recognized, and exemplary; Texas Education Agency 2008f) is based on the percentage of students who pass the state annual assessment (Texas Education Agency 2008b).
2. Chicago Public Schools require 24 credits for graduation (Chicago Public Schools n.d.); the "minimum" diploma type in Texas requires 22 credits (Texas Education Agency 2008d).

Classifying students at the end of grade 9 as on track or off track for graduation by credits earned and number of semester Fs in grade 9, 2004/05

Number of semester Fs in core courses ^a in grade 9	Earned insufficient credits for promotion to grade 10	Earned sufficient credits for promotion to grade 10
2 or more	Off track	Off track
0 or 1	Off track	On track

a. English, math, science, and social studies.

Source: Authors' analysis of data described in text.

FINDINGS

This section presents findings on the percentage of grade 9 students who were on track and off track to graduate on time, overall and by student subgroup, and on the percentage of students who graduated on time. It then presents the findings for the two research questions.

Percentage of students who are on track and off track

Overall. In each district, a majority of first-time grade 9 students in 2004/05 were on track for graduation, with on-track rates ranging from 61.2 percent to 86.0 percent (table 1).

By student subgroups. On-track rates at the end of grade 9 by gender ranged from 69.2 percent to 90.4 percent for female students and from 53.4 percent to 81.6 percent for male students (table 2).

On-track rates by race/ethnicity ranged from 55.7 percent to 82.6 percent for Black students, from 59.3 percent to 80.5 percent for Hispanic students, and from 70.9 percent to 94.7 percent for White students.

On-track rates by participation in free or reduced-price lunch ranged from 53.3 percent to 78.9 percent for participating students and from 70.1 percent to 93.5 percent for nonparticipating students. On-track rates by special education status ranged from 23.5 percent to 74.7 percent for students with an Individualized Education Program (IEP) and from 66.2 percent to 87.7 percent for students without an IEP.

Overall on-time graduation rates

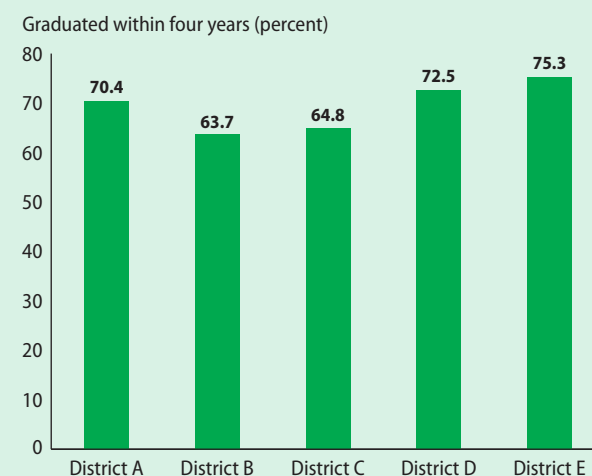
The percentage of first-time grade 9 students in the analytic sample who graduated on time in each participating district ranged from 63.7 percent to 75.3 percent (figure 1).

How do students classified as on track or off track at the end of grade 9 differ in on-time graduation rates?

In each district, a majority of first-time grade 9 students in 2004/05 classified as on track graduated on time (figure 2). On-time graduation rates ranged across districts from 69.6 percent to 84.5 percent. On-time graduation rates for off-track students

FIGURE 1

On-time graduation rates for first-time grade 9 students, 2004/05–2007/08



Note: Graduation rates were based on the students in the analytic sample (using the exclusion criteria described previously) and will not necessarily correspond to graduation rates calculated using different study samples or methods using different inclusion/exclusion criteria.

Source: Authors' analysis based on data described in text.

TABLE 1

On-track and off-track first-time grade 9 students by school district, 2004/05

Value	District A		District B		District C		District D		District E	
	On track	Off track	On track	Off track	On track	Off track	On track	Off track	On track	Off track
Percent	61.2	38.8	67.8	32.2	86.0	14.0	76.5	23.5	76.8	23.2
Number	857	544	1,110	527	1,687	275	2,251	691	3,626	1,094
Total	1,401		1,637		1,962		2,942		4,720	

Source: Authors' analysis based on data described in text.

TABLE 2

On-track and off-track first-time grade 9 students by student subgroup, 2004/05

Student subgroup	District A		District B		District C		District D		District E	
	On track	Off track	On track	Off track	On track	Off track	On track	Off track	On track	Off track
Gender										
Female										
Percent	69.2	30.8	76.5	23.5	90.4	9.6	80.7	19.3	78.9	21.1
Number	476	212	622	191	890	95	1,184	284	1,826	487
Male										
Percent	53.4	46.6	59.2	40.8	81.6	18.4	72.4	27.6	74.8	25.2
Number	381	332	488	336	797	180	1,067	407	1,800	607
Race/ethnicity										
Black										
Percent	55.7	44.3	69.1	30.9	76.8	23.2	60.6	39.4	82.6	17.4
Number	517	411	268	120	229	69	109	71	289	61
Hispanic										
Percent	59.3	40.7	66.2	33.8	80.5	19.5	61.1	38.9	71.4	28.6
Number	83	57	690	352	675	163	343	218	1,917	767
White										
Percent	75.7	24.3	70.9	29.1	94.7	5.3	82.0	18.0	84.1	15.9
Number	228	73	124	51	753	42	1,728	380	1,286	243
Other^a										
Percent	b	b	b	b	b	b	76.3	23.7	85.4	14.6
Number	b	b	b	b	b	b	71	22	134	23
Free or reduced-price lunch status										
Participating										
Percent	53.3	46.7	66.1	33.9	78.9	21.1	55.2	44.8	66.1	33.9
Number	439	385	622	319	797	213	352	286	1,228	631
Not participating										
Percent	72.4	27.6	70.1	29.9	93.5	6.5	82.4	17.6	83.8	16.2
Number	418	159	488	208	890	62	1,899	405	2,398	463
Individualized Education Program (IEP) status^c										
IEP										
Percent	23.5	76.5	59.6	40.4	74.7	25.3	42.1	57.9	62.9	37.1
Number	39	127	96	65	192	65	98	135	178	105
No IEP										
Percent	66.2	33.8	68.7	31.3	87.7	12.3	79.5	20.5	77.7	22.3
Number	818	417	1,014	462	1,495	210	2,153	556	3,448	989
Total number of students	1,401		1,637		1,962		2,942		4,720	

Note: On-track and off-track percentages are calculated separately for each student subgroup (for example, male and female).

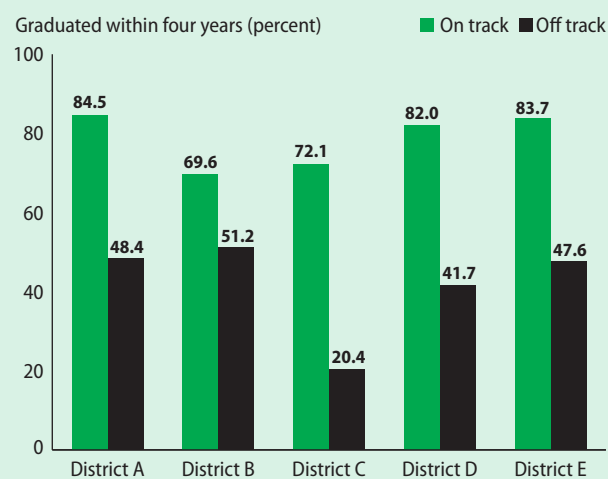
a. Includes American Indian and Asian students.

b. To protect student confidentiality, data are not reported for subgroups in which a district had fewer than 10 students classified as either on track or off track.

c. For Districts A–D, IEP status was determined by a binary IEP code in the student characteristics file. District E had no IEP code, so students were considered to have an IEP if they had a special education course indicated in their course history. Consequently, the reported number of students with an IEP in District E may be underestimated because it does not include students with an IEP who never took a special education course.

Source: Authors' analysis based on data described in text.

FIGURE 2
On-time graduation rates by on-track and off-track status, 2004/05–2007/08



Source: Authors' analysis based on data described in text.

ranged from 20.4 percent to 51.2 percent. The difference in graduation rates between on-track and off-track students ranged from 18.4 percentage points to 51.7 percentage points across districts.

How do students in specific subgroups who are classified as on track or off track at the end of grade 9 differ in on-time graduation rates?

Within each district, female and male students classified as on track at the end of grade 9 generally graduated on time at a similar rate. The on-time graduation rates were 68.0–84.7 percent for on-track female students and 21.0–52.4 percent for off-track female students and 71.7–84.2 percent for on-track male students and 20.0–50.6 percent for off-track male students (table 3).

Within all racial/ethnic groups, the on-time graduation rate was higher for on-track students than for off-track students for all districts (see table 3). Across districts, there was more variability in graduation rates within racial/ethnic groups for off-track students than for on-track students. For example, the on-time graduation rates were 65.5–88.8 percent for on-track Black students and 20.3–60.0 percent for off-track Black students, 63.0–83.2 percent for on-track Hispanic students and 20.2–48.6 percent

for off-track Hispanic students, and 73.4–85.2 percent for on-track White students and 21.4–51.0 percent for off-track White students.

Among both students participating in free or reduced-price lunch and those not participating, on-track students in each district graduated on time at a higher rate than did off-track students (see table 3). For participating students, on-time graduation rates were 61.0–86.1 percent for on-track students and 19.2–53.0 percent for off-track students. For nonparticipating students, on-time graduation rates were 76.4–86.4 percent for on-track students and 24.2–51.9 percent for off-track students.

For students with and without IEPs, on-track students in each district also graduated on time at a higher rate than did off-track students (see table 3). For students with IEPs, on-time graduation rates were 51.6–71.8 percent for on-track students and 27.7–57.5 percent for off-track students. For students without IEPs, on-time graduation rates were 69.5–85.1 percent for on-track students and 18.1–51.7 percent for off-track students. The reported number of students with IEPs may be underestimated in District E because IEP status had to be determined by course type rather than by an identification code, as it was in the other districts. Caution is required when comparing on-time graduation rates by IEP status for District E with rates for the other districts.

CONCLUSIONS

The proportion of first-time grade 9 students on track to graduate in four years ranged from 61.2 percent to 86.0 percent across the five Texas districts in this study (see table 1). The original CCSR study in Chicago Public Schools found 59 percent of students to be on track⁹ (Allensworth and Easton 2005). In all five Texas districts, on-track rates were higher for female students than for male students (see table 2), consistent with the CCSR study findings. In three districts, and consistent with the CCSR study findings,¹⁰ on-track rates at the end of grade 9 were lower for Black and Hispanic students than for White students. In

TABLE 3

On-time graduation rates of on-track and off-track students by student subgroup, 2004/05–2007/08

Student subgroup	District A		District B		District C		District D		District E	
	On track	Off track	On track	Off track	On track	Off track	On track	Off track	On track	Off track
Gender										
Female										
Percent	84.7	51.4	68.0	52.4	70.4	21.0	81.9	44.4	83.8	48.2
Number	403	109	423	100	627	20	970	126	1,531	235
Male										
Percent	84.2	46.4	71.7	50.6	73.9	20.0	82.0	39.8	83.5	47.1
Number	321	154	350	170	589	36	875	162	1,503	286
Race/ethnicity										
Black										
Percent	88.8	51.6	83.2	60.0	65.5	20.3	78.0	42.2	81.7	45.9
Number	459	212	223	72	150	14	85	30	236	28
Hispanic										
Percent	79.5	47.4	63.0	48.6	64.9	20.2	80.5	44.5	83.2	46.5
Number	66	27	435	171	438	33	276	97	1,595	357
White										
Percent	75.4	30.1	73.4	51.0	80.5	21.4	82.3	39.7	85.2	49.8
Number	172	22	91	26	606	9	1,422	151	1,096	121
Other^a										
Percent	b	b	b	b	b	b	87.3	45.4	79.8	65.2
Number	b	b	b	b	b	b	62	10	107	15
Free or reduced-price lunch status										
Participating										
Percent	86.1	53.0	64.3	50.8	61.0	19.2	72.2	37.1	78.4	44.7
Number	378	204	400	162	486	41	254	106	962	282
Not participating										
Percent	82.8	37.1	76.4	51.9	82.0	24.2	83.8	44.9	86.4	51.6
Number	346	59	373	108	730	15	1,591	182	2,072	239
Individualized Education Program (IEP) status^c										
IEP										
Percent	71.8	57.5	70.8	47.7	51.6	27.7	68.4	44.4	61.8	54.3
Number	28	73	68	31	99	18	67	60	110	57
No IEP										
Percent	85.1	45.6	69.5	51.7	74.7	18.1	82.6	41.0	84.8	46.9
Number	696	190	705	239	1,117	38	1,778	228	2,924	464

Note: On-time graduation rates for on-track and off-track students are calculated separately for each student subgroup (for example, male and female).

a. Includes American Indian and Asian students.

b. To protect student confidentiality, data are not reported for subgroups in which a district had fewer than 10 students classified as either on track or off track.

c. For Districts A–D, IEP status was determined by a binary IEP code in the student characteristics file. District E had no IEP code, so students were considered to have an IEP if they had a special education course indicated in their course history. Consequently, the reported number of students with an IEP in District E may be underestimated because it does not include students with an IEP who never took a special education course.

Source: Authors' analysis based on data described in text.

two districts, however, the percentages of on-track students were comparable for Black students and White students. On-track rates in all five districts were higher for students not participating in free or reduced-price lunch than for students who were and for students who did not have an IEP than for students who did; results for these subgroups were not reported for the CCSR study.

In each district, first-time grade 9 students on track for graduation were more likely to graduate on time than were their off-track counterparts. The difference in on-time graduation rates for on-track and off-track students ranged from 18.4 percentage points to 51.7 percentage points (see figure 2). These results indicate that the CCSR on-track indicator, as adapted, does not differentiate as strongly between students who do and those who do not graduate on time in the five Texas districts as it did in the original CCSR study, which found a 59 percentage point differential.

For all student subgroups, first-time grade 9 students on track at the end of grade 9 were more likely to graduate on time than were their off-track counterparts, but how accurately the on-track indicator differentiated between students in each subgroup who did and did not graduate on time varied across districts.

A supplemental analysis of off-track grade 9 students suggests that students with sufficient credits for promotion but who are classified as off track because they have more than one semester F in a core subject are more likely to graduate on time than are students classified as off track for having insufficient credits or for having both insufficient credits and more than one semester F (see appendix C).

LIMITATIONS OF THE STUDY AND SUGGESTIONS FOR FUTURE RESEARCH

The findings in this report should be considered in light of several limitations. Suggestions for future research and analysis are also provided.

Study limitations

Study districts were not randomly selected and are not representative of all Texas districts. Participating districts were selected on the basis of collaboration with the researchers on a previous project that involved early warning indicators. The findings could differ in districts that have not been involved in previous work on performance indicators or that have different student profiles (particularly rural districts).

Only one on-track indicator was used in this study. Other on-track indicators might differentiate more accurately.

Suggestions for future research

The districts in this study differed in important ways from one another and in how accurately the on-track indicator differentiated between students who did and those who did not graduate within four years. Further research is needed to determine whether different indicators would improve differentiation between students who do and those who do not graduate on time for a wide range of districts in Texas. Research could also examine whether districts with different student characteristics require different on-track indicators to more accurately differentiate between students who do and those who do not graduate on time.

Additionally, to explore options for different on-track indicators, research could identify other variables for potential use in on-track indicators, such as attendance patterns and grade 8 achievement (as measured by standardized test scores). These on-track indicators could then be tested to determine whether they improve differentiation between students who do and those who do not graduate within four years. One possibility would be to examine individually the two variables that make up the CCSR on-track indicator; preliminary work on this is presented in appendix C.

APPENDIX A

STUDY METHODOLOGY

This appendix describes participating districts, data sources, construction of the analytic sample, determination of on-track status and on-time graduation status, and data analysis methods.

Participating districts

Five Texas school districts participated in the study. The districts were identified on the basis of previous collaboration with the researchers on a project involving early warning indicators. Because the districts were not randomly sampled, the study results cannot be generalized to all districts in Texas or to the states served by Regional Educational Laboratory Southwest (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas). Appendix B contains demographic and student achievement information about these districts and examines how they compare with Texas overall.

Data sources

The study used district-provided data to assess how well the on-track indicator differentiates between students who do and those who do not graduate on time. Students who were in grade 9 in 2004/05 were the most recent cohort for which on-time graduation could be assessed with district data.

Each of the five participating districts provided separate files for enrollment, course data, and student characteristics for all first-time students in grade 9 in 2004/05. An encrypted student identifier linked student records across the three datasets. Enrollment records were provided for the 2004/05–2007/08 academic years, allowing researchers to track the cohort over time and determine on-time graduation status.

The enrollment files list each student's date of enrollment, date of withdrawal, reason for exiting the school, diploma type, and graduation date. The course data file lists all courses taken by a student

and the grade and credit earned. The student characteristics file contains data for gender, race/ethnicity, participation in the free or reduced-price lunch program, and Individualized Education Program (IEP) status. Course data and student characteristics were limited to the 2004/05 academic year because the study was concerned with students' course-taking behavior and characteristics in grade 9.

The data were examined for any out-of-range values, missing values, or other potential data errors. Errors were communicated to the appropriate district personnel, and the data were modified or corrected by district personnel.

Datasets were managed at the district level, with each district defining and monitoring its own codes and data fields. This lack of standardization presented challenges in ensuring that the same variables (for example, Individualized Education Program, or IEP, status) were being compared across districts, and caution is therefore required in interpreting some findings. Any study using district-level data from multiple districts will face similar challenges.

Determining the analytic sample

The analytic sample for the study includes all first-time grade 9 students during 2004/05 for whom complete course and graduation data were available. Only first-time grade 9 students are included because students who repeat grade 9 lack the number of credits required to be promoted to grade 10 and so are, by definition, already off track.

Enrollment and course data were used to construct the analytic sample. Table A1 summarizes the exclusions that were made in arriving at the final analytic sample.

Students whose on-track status could not be identified were excluded from the analysis. Because on-track status was determined by course-taking behavior calculated at the end of grade 9, students enrolled in grade 9 who did not appear in the

TABLE A1

Analytic sample exclusions

Reason for exclusion		District A	District B	District C	District D	District E
Total number of first-time grade 9 students		1,649	2,157	2,146	3,528	5,499
Step 1. Exclusion of students whose on-track status could not be identified at the end of grade 9	No course data in course history data file	23	10	7	16	2
	Missing or discrepant ^a data	0	24	0	0	13
	Dropped out or transferred during grade 9	164	318	153	424	438
Remaining sample		1,462	1,805	1,986	3,088	5,046
Step 2. Exclusion of students who died	Death at any time from 2004/05–2007/08	1	0	0	0	2
Remaining sample		1,461	1,805	1,986	3,088	5,044
Step 3. Exclusion of students with confirmed enrollment in another public school system	Enrolled in another Texas district	46	17	22	73	55
	Enrolled in a school outside Texas	14	32	2	20	12
	Leave the country	0	119	0	53	257
Total number of students in final analytic sample		1,401	1,637	1,962	2,942	4,720

a. Data were considered discrepant when, for example, a course was identified as both passed and failed for a single student and no other variable (such as credit earned) could be used to establish which value was accurate.

Source: Authors' analysis of data described in text.

course data file were excluded from the analysis. Also excluded were students with missing or discrepant course data. Students for whom missing data made it impossible to calculate on-track status were excluded from the analysis. For example, if a student's semester course data did not include grades for two core courses and the number of semester Fs in core courses could not be determined, the student was excluded. In some cases, as with missing data for the pass/fail variable, on-track status was calculated using the students' other course data. And since on-track status is calculated at the end of the second semester of grade 9, students who left the cohort before the end of grade 9 were excluded. Students left for a variety of reasons, including enrolling in another school district, leaving the country, or being schooled at home. Next, students who died were excluded.

Finally, students who enrolled in another public school system or who left the country during the 2005/06–2007/08 academic years were excluded if those reasons could be confirmed.¹¹ These students are considered neither graduates nor dropouts.

Defining on-track and off-track status

On-track status. On-track status was determined from data on each student's grade 9 course history on credits earned and semester Fs received in core courses (English, math, science, and social studies). The variables are closely linked since no credits are earned for a failed course. The number of credits required for promotion to grade 10 varied across districts for the 2004/05 cohort.

On-track indicator variable 1: credits earned. The number of credits a student accumulated during grade 9 was calculated using course data provided by each district. Each student had multiple course records in the course data file—one for each course attempted. In District E, courses are recorded in year-long increments and associated with 1.0 credit; in the other districts, courses are recorded in semester increments and associated with 0.5 credits.

Each district's policy for the 2004/05 academic year was used to determine the number of credits

for promotion to grade 10: 6 for Districts A, B, and D; 5 for Districts C and E.

On-track indicator variable 2: semester Fs. Using course data provided by each district, the number of semester Fs in core subject courses was calculated for each student. The method for identifying a semester F varied by district:

- Districts A, B, and D used a pass/fail code for courses on a semester basis. A failure in a semester course was counted as one F.
- District C used both numeric grades and pass/fail codes for courses on a semester basis. For most course records, semester Fs were assigned based on numeric grades. Under district guidelines, any numeric grade below 70 was an F. For 58 of 28,606 course records, codes of P (passing) or S (satisfactory) were used to denote that students had passed the course and a code of I (incomplete) to denote that the student had not received credit for the course. All Is were counted as Fs.
- District E used a pass/fail code. However, because core course grades appeared to be recorded by year rather than by semester basis and students received one credit per course (rather than a half credit per semester as in the other districts), an F in a year-long core course was counted as two semester Fs. When core course records appeared as two separate records in the course history data file, indicating that the student had failed one semester of the course and passed the other semester, the student was assigned one semester F.

Determining on-track status. To be classified as on track, students had to earn the number of course credits required for promotion to grade 10 according to their district's policy for 2004/05 and have no more than one semester F in a core subject. Students who did not meet one or both criteria were classified as off track. Table A2 summarizes how on-track status was determined for each district.

Off-track status. A student who does not meet either or both of the criteria used to define on-track status is identified as off track. All off-track students fall into one of three mutually exclusive categories:

- *Off-track due to insufficient credits only.* This includes students who do not earn the required number of credits for promotion to grade 10 and have no more than one semester F in a core subject.
- *Off-track due to number of semester Fs only.* This includes students who have more than one semester F in a core subject and have earned the required number of credits for promotion to grade 10.
- *Off-track due to insufficient credits and number of semester Fs.* This includes students who have not earned the required number of credits for promotion to grade 10 and have more than one semester F in a core subject area.

Defining on-time graduation

This study considers a student to be an on-time graduate if the student enrolled in grade 9 during

TABLE A2

Promotion requirements and method of identifying course failures by district

Variable	District A	District B	District C	District D	District E
Number of credits required for promotion to grade 10	6	6	5	6	5
Method of identifying course failures	Pass/fail code	Pass/fail code	Numeric grade	Pass/fail code	Pass/fail code

Source: Authors' compilation.

the 2004/05 academic year, completed high school within four years (before October 2008), and received one of the three main types of diplomas awarded in Texas (minimum,¹² recommended, or distinguished) or completed the activities and goals detailed in an IEP. The state determines the minimum number of credits required to receive each type of diploma and describes the distribution of courses across content areas (Texas Education Agency 2008d). Students who earn a General Educational Development (GED) certificate are not classified as high school graduates (Texas Education Agency 2008c) and are therefore counted as nongraduates.

Enrollment data for 2004/05–2007/08 were used to determine on-time graduation status for each student. On-time graduation was determined for first-time grade 9 students included in the analytic sample using two variables: graduation degree type code and date of graduation.

On-time graduation variable 1: graduation degree type code. A graduation degree type code indicates which degree program a student completed. Students who completed the minimum, recommended, or distinguished high school program or completed an IEP were considered graduates. The codes are defined by the Texas Education Agency (n.d.). Table A3 summarizes the degree programs and graduation degree type codes relevant to this study.

On-time graduation variable 2: graduation date. If the student did not have a graduation code, the graduation date was used to determine on-time graduation status. Less than 1 percent of cases were determined in this way.

Data analysis

Several analyses were conducted to identify the percentage of students who were on track and off track in each district and the overall graduation

TABLE A3
Degree programs and corresponding graduation type codes

Degree program	Total credits required	Selected course credit requirements	Other notes	Graduation type code	
				Special education ^a	General education ^b
Minimum High School Program	22	<ul style="list-style-type: none"> • 4 English language arts credits • 3 math credits • 2 science credits • 2.5 social studies credits 	Graduation under this plan requires the approval of the student’s parents and high school administrator	18	24
Recommended High School Program	24	<ul style="list-style-type: none"> • 4 English language arts credits • 3 math credits • 3 science credits • 3.5 social studies credits • 2 foreign language credits • 1 fine arts credit 		19	25
Distinguished Achievement Program	24	<ul style="list-style-type: none"> • 4 English language arts credits • 3 math credits • 3 science credits • 3.5 social studies credits • 3 foreign language credits • 1 fine arts credit 	Students must complete four advanced measures	20 ^c	26

a. Some graduating students who received special education services graduated with graduation type codes of 4, 5, 6, or 7, which reflect completion of an Individualized Education Program rather than a diploma type described in this table.

b. The general education codes in this table are those that apply to students entering grade 9 in 2004/05 (Texas Education Agency n.d.).

c. Although a Distinguished Achievement Program exists for students receiving special education and related services, no students in the analytic sample had such a graduation code.

Source: Texas Education Agency n.d., 2008d.

rate for each district. First, the percentage of first-time grade 9 students in 2004/05 classified as on track or off track within each district was calculated. Next, the percentage of students who were on track and those who were off track in each district was calculated for four student subgroups: gender, race/ethnicity, participation in the free or reduced-price lunch program, and IEP status. Finally, the percentage of all first-time grade 9 students (regardless of on-track status) who graduated on time for each district was calculated.

The percentage of first-time grade 9 students in 2004/05 who graduated on time was then

calculated separately for students who were on track and those who were off track at the end of grade 9 (first research question). This analysis was replicated for the four student subgroups (second research question).

In addition, to better understand how the on-track indicator performed across the five districts, the on-time graduation rates were calculated for each category of off-track students (insufficient credits only, number of semester Fs only, and both criteria). This analysis, which is supplemental to the primary research questions, is provided in appendix C.

APPENDIX B DISTRICT PROFILES

This appendix describes student characteristics and achievement for Texas statewide and for the individual districts that participated in this study. It also describes district characteristics for the analytic sample. The data are for the 2007/08 school year (when available), the expected year of on-time graduation for students in grade 9 in 2004/05.

District and state characteristics

The five districts in this study are large and densely populated (table B1). District E, the largest district in the study, was 1 of only 16 (of a total of 1,229) districts in Texas with more than 50,000 students in 2008 (Texas Education Agency 2008e). The other four districts are also among the largest in Texas. All five rank in the top 8 percent of the state in total enrollment. For example, 38 percent of districts in Texas have fewer than 500 students, and 59 percent have fewer than 1,000 (Texas Education Agency 2008e). The smallest district in this study (District A) had 19,277 students in 2008. Median enrollment at comprehensive high schools in the study districts ranged from 1,513 to 2,956 in 2008, well above the number of students in many Texas districts. All five districts in the study are in suburban or urban areas, compared with 10 percent of all districts in Texas (Texas Education Agency 2008e).

The districts vary in racial/ethnic composition. District C most closely resembles the racial/ethnic composition of Texas overall, with large Hispanic (48.7 percent) and White (34.3 percent) populations (Texas Education Agency 2008a). The majority of students in District A are Black (64.6 percent), while Districts B and E have a majority of Hispanic students (71.4 percent and 63.1 percent). District D has a majority of White students (63.4 percent).

Participation in the free or reduced-price lunch program varies across the five districts, from 31.7 percent in District D to 73.5 percent in District B (Texas Education Agency 2008a). District C, at

58.1 percent, most closely approximates the 55.3 percent statewide enrollment. Participation in bilingual/English as a second language education programs varies even more. Enrollment in four districts (A, C, D, and E) is below the statewide rate of 15.5 percent, while enrollment in District B, at 27.1 percent, is above the state average. Participation in special education shows less variability and ranges from 9.1 percent (Districts A and D) to 12.5 percent (District C), close to the 10 percent statewide rate.

Three districts met federal adequate yearly progress standards for 2008 (Districts B, D, and E) and two did not (Districts A and C; Texas Education Agency 2008a). By comparison, in 2007 (the most recent year for which data are available), 87.5 percent of Texas districts met adequate yearly progress standards (Texas Education Agency 2008f). Districts B and E were rated recognized for 2008 based on state accountability standards, and Districts A, C, and D were rated academically acceptable (Texas Education Agency 2008a). In 2008, 26.8 percent of Texas districts were rated recognized, and 66.6 percent were rated academically acceptable (Texas Education Agency 2008f).

Data were also reported for student proficiency rates for reading/English language arts and mathematics and for teacher experience (Texas Education Agency 2008a). District B's student proficiency rates of 91 percent in reading/English language arts and 82 percent in math most closely approximate the overall Texas proficiency ratings of 91 percent and 80 percent. The experience of teachers in District D is closest to the average for Texas.

Characteristics of the analytic sample by district

Enrollment and student characteristics vary considerably across districts for students in the analytic sample (table B2).¹³ The total number of students ranged from 1,401 in District A to 4,720 in District E. Except in District D, Whites constituted a minority of students. Although in three districts more than half of grade 9 students were participating in the free or reduced-price lunch program (a

TABLE B1

Select characteristics of participating school districts and all districts in Texas, 2008

Characteristic	District A	District B	District C	District D	District E	Texas
Location ^a	Other central city	Major suburban	Other central city	Other central city	Major urban	na
District enrollment	19,277	21,041	27,949	46,302	85,544	4,651,516
Median campus enrollment ^b	1,513	2,956	2,147	2,570	2,776	na
Enrollment by race/ethnicity (percent)						
Asian	3.2	1.3	1.8	3.4	3.3	3.4
Black	64.6	20.3	14.9	6.7	7.8	14.3
Hispanic	14.9	71.4	48.7	26.1	63.1	47.2
Native American	0.2	0.1	0.3	0.5	0.3	0.3
White	17.2	6.9	34.3	63.4	25.4	34.8
Enrollment by program participation (percent)						
Free or reduced-price lunch	69.1	73.5	58.1	31.7	47.4	55.3
Bilingual/English as a second language education	6.7	27.1	1.9	10.0	5.6	15.5
Special education	9.1	9.3	12.5	9.1	12.3	10.0
Student proficiency						
Met adequate yearly progress for 2007	No	Yes	No	Yes	Yes	na
District rating ^c	Academically acceptable	Recognized	Academically acceptable	Academically acceptable	Recognized	na
Met TAKS ^d reading/English language arts standard (percent)	88	91	90	95	94	91
Met TAKS ^d mathematics standard (percent)	73	82	77	89	84	80
Teacher experience (percent)						
Beginning	5.4	9.9	6.1	7.8	4.6	7.9
1–5 years	26.3	36.7	27.8	29.5	31.0	29.8
6 years or more	68.3	53.3	66.0	62.7	64.3	62.3

na is not applicable

Note: Percentages may not sum to 100 because of rounding.

a. Location classifications are based on Texas Education Agency reporting methods (Texas Education Agency 2008e). *Major urban* is “the largest school districts in the state that serve the six metropolitan areas of Houston, Dallas, San Antonio, Fort Worth, Austin, and El Paso.” *Major suburban* is “other school districts in and around the major urban areas... [that are generally] contiguous to major urban areas.” *Other central city* is “other school districts in and around the other large, but not major, Texas cities.”

b. Based only on the comprehensive high schools in each district.

c. Refers to a district’s classification in the state accountability rating system used by the Texas Education Agency to rate public schools and districts. There are four possible ratings: academically unacceptable, academically acceptable, recognized, and exemplary (Texas Education Agency 2008f).

d. TAKS, the Texas Assessment of Knowledge and Skills, is the annual assessment used in Texas to evaluate students in grades 3–11.

Source: Authors’ analysis based on data from Texas Education Agency 2008a,e.

proxy for economically disadvantaged students in this study), the proportion ranged broadly, from 21.7 percent to 58.8 percent. Districts also varied considerably in the proportion of students in the

analytic sample with an IEP (used to identify students receiving special education services), ranging from 6.0 percent to 13.1 percent. District E used a different method to identify students

TABLE B2

Distribution of grade 9 students in the study sample by student subgroup, 2004/05

Student subgroup	District A		District B		District C		District D		District E	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Gender										
Female	49.1	688	49.7	813	50.2	985	49.9	1,468	49.0	2,313
Male	50.9	713	50.3	824	49.8	977	50.1	1,474	51.0	2,407
Race/ethnicity										
Black	66.2	928	23.7	388	15.2	298	6.1	180	7.4	350
Hispanic	10.0	140	63.7	1,042	42.7	838	19.1	561	56.9	2,684
White	21.5	301	10.7	175	40.5	795	71.7	2,108	32.4	1,529
Other ^a	2.3	32	2.0	32	1.6	31	3.2	93	3.3	157
Free or reduced-price lunch status										
Participating	58.8	824	57.4	941	51.5	1,010	21.7	638	39.4	1,859
Not participating	41.2	577	42.5	696	48.5	952	78.3	2,304	60.6	2,861
Individualized Education Program (IEP) status^b										
IEP	11.8	166	9.8	161	13.1	257	7.9	233	6.0	283
No IEP	88.2	1,235	90.2	1,476	86.9	1,705	92.1	2,709	94.0	4,437
Total number of students	1,401		1,637		1,962		2,942		4,720	

Note: Percentages may not sum to 100 because of rounding.

a. Includes American Indian and Asian students.

b. For Districts A–D, IEP status was determined by a binary IEP code in the student characteristics file. District E had no IEP code, so students were considered to have an IEP if they had a special education course indicated in their course history. Consequently, the reported number of students with an IEP in District E may be underestimated because it does not include students with an IEP who never took a special education course.

Source: Authors' analysis based on data described in text.

with IEPs (a special education course listed in the student course history) than did Districts A–D (a binary code in the student demographic file). Consequently, District E data might underestimate the number of students with IEPs since students with

an IEP who never took a special education course would not be included. Thus, caution should be used when comparing students with IEPs across districts.

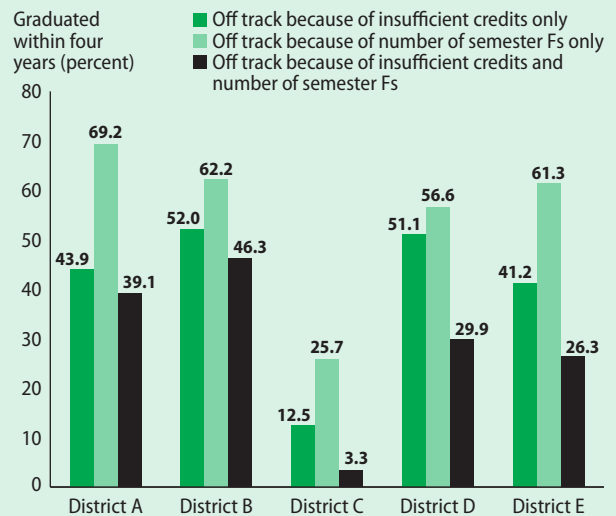
APPENDIX C OFF-TRACK ANALYSIS

Table C1 shows the percentages of grade 9 students who were off track to graduate at the end of 2004/05 by reason (insufficient credits only, number of semester Fs only, or insufficient credits and the number of semester Fs) and the percentage of students who were on track (shaded cells). For example, in District D, 76.5 percent of grade 9 students were on track at the end of 2004/05 and 23.5 percent were off track. The 23.5 percent of off-track students comprised 6.2 percent who earned insufficient credits only, 5.4 percent who earned two or more Fs only, and 11.8 percent who both earned insufficient credits and had two or more Fs.

In all districts, students who were off track because of insufficient credits only or both insufficient credits and number of semester Fs were less likely to graduate on time than students identified as off track because of insufficient credits only (figure C1). However, graduation rates among these students vary across districts. For example, in District C, 3.3 percent of students who were off track because of insufficient credits and number

FIGURE C1

On-time graduation rates by reason for off-track status, 2008



Source: Authors' analysis based on data described in text.

of semester Fs graduated on time, compared with 46.3 percent in District B. Within all five districts, students with sufficient credits for promotion but classified as off track because of the number of semester Fs were the most likely of off-track grade 9 students to graduate from high school on time.

TABLE C1

Percentage of first-time grade 9 students by number of semester Fs in core courses and number of credits earned, 2004/05

Percentage of students by number of semester Fs in core courses ^a in grade 9	District A (n 1,401)		District B (n 1,637)		District C (n 1,962)		District D (n 2,942)		District E (n 4,720)	
	Insufficient credits	Sufficient credits	Insufficient credits	Sufficient credits	Insufficient credits	Sufficient credits	Insufficient credits	Sufficient credits	Insufficient credits	Sufficient credits
Two or more	18.1	10.2	13.3	5.0	3.1	10.5	11.8	5.4	8.9	14.0
Zero or one	10.6	61.2	13.9	67.8	0.4	86.0	6.2	76.5	0.4	76.8

Note: Shaded cells show the percentage of students in each district who were on track. Percentages may not sum to 100 because of rounding. Sufficient credits are six or more for Districts A, B, and D and five or more for Districts C and E.

a. English, math, science, and social studies.

Source: Authors' analysis based on data described in text.

NOTES

1. Methods for estimating high school graduation rates typically compare the number of students who receive a diploma (graduate) with the number of students in the population for a given age or grade cohort. However, as methods define these populations differently, estimates of graduation rates vary—as indicated in subsequent endnotes—but all used data from the National Center for Education Statistics Common Core of Data.
2. Stillwell and Hoffman (2008) used the averaged freshman graduation rate method, which divides the number of graduates awarded regular diplomas by the size of the freshman class four years earlier; the freshman class size is determined using the average student enrollment data of a single cohort from grades 8, 9, and 10.
3. Swanson (2004, 2009) used the cumulative promotion index method, based on a ratio—averaged across several cohorts—of the number of grade 9 students to the number of students who graduate four years later.
4. Balfanz and Letgers (2004) used the promotion power method, which uses the ratio of the number of freshman to the number of seniors four years later.
5. An indicator may consist of one or more variables.
6. Some studies report on five-year graduation rates, but this study focuses specifically on on-time graduation rates.
7. In Chicago, students need five full course credits to be promoted from grade 9 to grade 10.
8. The term *on-track indicator* in the rest of this report refers to students being classified as on track or off track for graduation at the end of grade 9.
9. The 2005 CCSR study calculated on-track and off-track rates for several cohorts of students, but calculated on-time graduation rates only for the cohort of students who were first-time grade 9 students in 1999/2000. Therefore, for purposes of comparison, this discussion reports the on-track rate that corresponds to the 1999/2000 cohort (Allensworth and Easton 2005).
10. The on-track rates reported in the 2005 CCSR study for race/ethnicity were calculated for the cohort of students who were first-time grade 9 students in 2000/01 (Allensworth and Easton 2005).
11. Districts are required to document student withdrawals and to keep this documentation on file. For students who enroll in another Texas district, the Texas Education Agency provides confirmation to the districts (Texas Education Agency 2009). Additionally, the Texas Education Agency monitors this information and investigates anomalies.
12. Chicago Public Schools require 24 credits for graduation (Chicago Public Schools n.d.), which is higher than the 22 credits required for the “minimum” diploma type in Texas (Texas Education Agency 2008d).
13. The results of the analyses in the report are based on the final analytic sample of students for each district.

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