

## How to apply an on-track indicator for high school graduation to students in your Local Education Agency

On-track indicators have emerged as one method of identifying students who are at-risk of not graduating on time early enough to intervene and improve graduation outcomes (Allensworth and Easton 2005; Heppen and Therriault 2008). A recent *IES Issues & Answers* study titled *Applying an on-track indicator for high school graduation: adapting the Consortium on Chicago School Research indicator for five Texas districts* (Hartman et al. 2011) presented an application of an on-track indicator developed in one district in Illinois to five districts in Texas. In this study, on- or off-track status for on time high school graduation was determined by using two end-of-grade 9 measures. (See appendix A for a summary.)

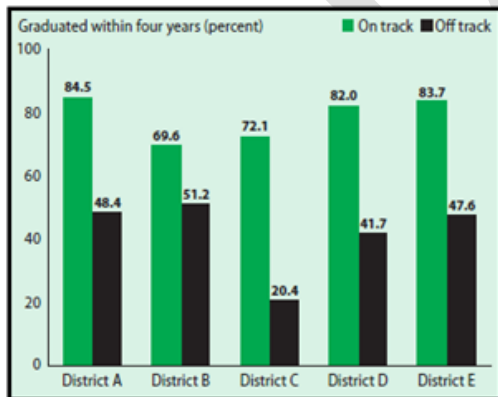
Using this indicator, students are classified as *on track* (at the end of grade 9) for on-time graduation (within 4 years of entering grade 9) based on two criteria:

- Earning enough credits to be promoted to grade 10, and
- Having no more than one semester core course failure.

Students who failed to meet one or both of these criteria are classified as *off track* (see figure 1).

The study used four years of district-provided data for a cohort of students from each of five large Texas districts. It was found that in all five districts, a majority of first-time grade 9 students were on track for graduation at the end of grade 9, but those rates varied substantially across the five districts. Findings also showed that for 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 (see figure 2).

Figure 2. On-time graduation rates by on- and off-track status



Source: Hartman et al. 2011

The *discrimination index* is used to evaluate how accurately the indicator identified students at the end of grade 9 who ultimately did and did not graduate on time. The discrimination index is calculated by subtracting the on-time graduation rate for students classified as on track from on-time graduation rate for students classified as off track. For example, figure 2 shows that, for district A, 84.5 percent of students classified as on track graduated on time, whereas 48.4 percent of students classified as off track graduated on time. Subtracting these two values yields a discrimination index of 36.1. The larger the discrimination index, the more accurately the indicator identifies students who may not graduate on time.

The purpose of this *How To* guide is to demonstrate how the on-track indicator methodology from the *IES Issues & Answers* study can be applied to estimate the percentage of students in your local education agency (LEA) who are on and off track to graduate at the end of grade 9 so they can be targeted for intervention.

This **How To** guide will show you how to:

1. Identify the appropriate data for this analysis to build your datafile.
2. Calculate on- and off-track rates for your LEA (figure 1).
3. Calculate on-time graduation rates for on- and off-track students in your LEA (figure 2).
4. Calculate the discrimination index for your LEA to evaluate how accurately the indicator identified students who ultimately did or did not graduate on time in your LEA (subtracting values in figure 2).

## Step-by-step instructions for using LEA data

To produce on-track indicator results for your LEA, follow the ten steps detailed below. These steps are organized into subsections to guide you in building your datafile (steps 1–2), calculating your on- and off-track rates (steps 3–6), calculating your on-time graduation rates (steps 7–9), and calculating your discrimination index (step 10). Several figures are provided to illustrate the process and show completed portions of the documents you will use to follow these steps. Blank versions of these documents are provided in the appendices: an on-track indicator worksheet (appendix B), calculation tables (appendix C), and findings templates (appendix D). Note that the sample district featured requires 10 semester credits (equivalent to 5 year-long credits) for promotion to grade 10.

### Steps 1 and 2: Building your datafile

Step 1

**Collect the needed data sources to build the four-year data file for a cohort of first-time grade 9 students.**

You will need to be able to track students from their first time in grade 9 through four academic years (freshman year through graduation); a unique student identifier is needed if data is collected from multiple files so that the information for each student can be linked. You will also need to have all of the data elements listed in table 1 to complete the on-track indicator analyses.

Step 1a

**Identify the academic years you will use for this analysis.**

To complete all ten steps described in this guide, you will need to select a cohort that has already graduated.

Step 1b

**Collect the necessary enrollment and course data for the identified sample of students (table 1).**

**Table 1. Enrollment and course data needed by year**

<i>Data needed</i>	<i>Year 1 (Grade 9)</i>	<i>Year 2 (Grade 10)</i>	<i>Year 3 (Grade 11)</i>	<i>Year 4 (Grade 12)</i>
<b>Unique student identifier</b>	X	X	X	X
<b>Enrollment data</b>				
Date of enrollment	X			
Date of exit	X	X	X	X
Reason for exiting the school	X	X	X	X
Graduation data <sup>a</sup>			X	X
<b>Course data</b>				
List of all courses taken by student	X			
credit earned in each course; grade data may be substituted <sup>b</sup>	X			

a. Graduation data should be collected for both Years 3 and 4 to ensure that outcomes are captured for any students who may graduate a year early, since these students would also be considered on-time graduates.

b. In case of missing credit data, grade data may be substituted. Collect both, if available, for use in the event of missing credit data.

**Step 1c**

**Identify all first-time grade 9 students for the academic year selected in Step 1a.**

This will be year 1 for the cohort. Only first-time grade 9 students should be included because students who repeat grade 9 lack the number of credits required to be promoted to grade 10 and are, by definition, already off-track. Possible methods for determining first-time grade 9 status include:

- A flag in the database indicating first-time grade 9 status.
- Grade level from previous year enrollment data (if student was in grade 8, include in the cohort; if student was in grade 9 or above, exclude from the cohort).

**Step 1d**

**Transfer the collected data to your on-track indicator calculation worksheet (a template is provided in appendix B), organized using unique student identifiers.**

Populate your on-track indicator calculation worksheet (appendix B) using this data as follows:

- The unique student identifier data element will be used to populate the first column of the worksheet.
- Three enrollment data elements—date of enrollment, date of exit, and reason for exiting the school—will be used to populate the *Exit information* columns.
- One enrollment data element—graduation data—will be used to populate the *On-time graduation status* column.
- Both course data elements—list of all courses taken by grade and credit earned in each course—will be used to populate the *Grade 9 credit accrual (semesters)* and *Grade 9 core course failures (semesters)* columns.

**Step 2**

**Determine the analytic sample that will be used for the on-track indicator calculation.**

The analytic sample for the study includes all first-time grade 9 students for whom complete course, pass/fail, and credit accumulation data are available. Students for whom complete course, pass/fail, and credit accumulation data are not available are excluded because their on- or off-track status cannot be determined.

Students who should be excluded are those who:

- Have missing course and/or credit data that prevents calculation of the number of credits earned or number of semester core course failures.
- Left the cohort (for any reason) before the end of grade 9.

Note that in some cases, missing data obstacles can be overcome. For example, if credit earned data was missing for a particular student, it is possible that other course data—such as grade earned—could be used to determine if a student received credit.

**Figure 3. Sample on-track indicator calculation worksheet (appendix B), completed steps 1 and 2**

Step 1d

Unique student identifier	Grade 9 enrollment	
	Exit information from Year 1	Included in analytic sample?
Student 1		Y
Student 2		Y
Student 3		Y
Student 4		Y
Student 5		Y
Student 6		Y
Student 7		Y
Student 8	Withdrawn to another public school	N
Student 9		Y
Student 10		Y
Student 11		Y
Student 12		Y
Student 13		Y
Student 14		Y
Student 15		Y
Student 16		Y
Student 17	Dropped out	N
Student 18		Y
Student 19		Y
Student 20		Y

Step 2

## Steps 3–6: Calculating your on- and off-track rates

### Step 3

**Determine total semester credits earned at the end of grade 9 for each student in the analytic sample (on-track indicator variable 1).**

#### Step 3a

**Calculate the number of semester credits a student accumulated during grade 9.**

State policies may differ in terms of criteria for awarding credit and in the data they collect to determine credits earned.

Credit earned could be indicated:

- Course-by-course in the data file.
- Based on pass/fail reporting.
- Based on course grades (for example, for some LEAs, grades of 70 and higher are considered passing and, therefore, credit is earned, whereas for other LEAs, grades of 60 and higher earn credit).

Note that some LEAs may record credits earned in semester increments, while other LEAs may record credits earned in year-long increments. Students whose records reflect a year-long credit will be considered as earning two semester credits.

The number of credits required for promotion might be a state or district requirement, or may need to be calculated by dividing the number of credits required for graduation by 4 (to reflect the fact that students earn credits over a four-year period).

#### Step 3b

**Determine each student's credit accrual status (variable 1).**

- If the student accumulated enough credits to be promoted to grade 10, classify the student as on-track for graduation for this variable.
- If the student did not accumulate enough credits to be promoted to grade 10, classify the student as off-track for graduation for this variable.

#### Step 3c

**Record each student's credit accrual status (variable 1; see figure 4).**

**Figure 4. Sample on-track indicator calculation worksheet (appendix B), completed step 3**

Unique student identifier	Grade 9 enrollment			On-track indicator			
	Exit information from Year 1	Included in analytic sample?	Grade 9 credit accrual (semesters)	Variable 1: Credits		Variable 2: Course	
				On	Off	Grade 9 core course	Variable 2 status
Student 1			10	✓		0	✓
Student 2			11	✓		0	✓
Student 3							
Student 4		Y	8		✓	2	✓
Student 5		Y	9		✓	0	✓
Student 6		Y	10	✓		0	✓
Student 7		Y	10	✓		0	✓
Student 8	Withdrawn to another public school	N	—	—	—	—	—
Student 9		Y	10	✓		0	✓
Student 10		Y	10	✓		0	✓
Student 11							
Student 12		Y	11	✓		0	✓
Student 13		Y	10	✓		0	✓
Student 14		Y	10	✓		0	✓
Student 15		Y	10	✓		0	✓
Student 16		Y	10	✓		1	✓
Student 17	Dropped out	N	—	—	—	—	—
Student 18		Y	10	✓		0	✓
Student 19		Y	11	✓		0	✓
Student 20		Y	5		✓	5	✓

**Step 4** Determine the number of core course (English, mathematics, science, social studies) semester failures for each student in the analytic sample (on-track indicator variable 2).

**Step 4a** Identify courses that would be considered core courses for grade 9.

Note that core courses include any type of English, mathematics, science, or social studies courses. Courses in other content areas that may be identified as “core” by the state or district are not included.

**Step 4b** For each student, identify the core courses in which they are enrolled.

**Step 4c** Determine the number of semester core course failures for each student.

- If Pass/Fail codes are used in data, use the Fail code.
- If Numeric grades are used in data, determine the cut-off for failing.
- If only year long data is available, consider a year-long failure as two semester failures.
- Courses marked as Incomplete are considered a failure.

**Step 4d** Calculate each student's core course failure status (variable 2).

- If the student has 0 or 1 semester Fs in core courses, classify the student as on-track for graduation for this variable.
- If the student has 2 or more core course semester failures, classify the student as off-track for graduation for this variable.

**Step 4e** Record each student's core course failure status (variable 2; see figure 5).

Figure 5. Sample on-track indicator calculation worksheet (appendix B), completed step 4

Unique student identifier	On-track indicator			
	Variable 1 status	Variable 2: Course failures		
		Grade 9 core course failures (semesters)	Variable 2 status	
Off	On	Off	Off	
Student 1	✓	0	✓	
Student 2	✓	0	✓	
Student 3	✓	2		✓
Student 4	✓	0	✓	
Student 5	✓	0	✓	
Student 6	✓	0	✓	
Student 7	✓	2		✓
Student 8	✓	-	-	-
Student 9	✓	0	✓	
Student 10	✓	0	✓	
Student 11	✓	0	✓	
Student 12	✓	0	✓	
Student 13	✓	0	✓	
Student 14	✓	0	✓	
Student 15	✓	0	✓	
Student 16	✓	1	✓	
Student 17	✓	-	-	-
Student 18	✓	0	✓	
Student 19	✓	0	✓	
Student 20	✓	5		✓

**Step 5**

**Determine the on-track to graduate status for each student.**

**Step 5a**

**Calculate the on-track status for each student.**

On-track students are those who are:

- On-track for both variable 1 and variable 2.

Off-track students are those who are:

- Off-track for variable 1 and on-track for variable 2.
- Off-track for variable 2 and on-track for variable 1.
- Off-track for both variables 1 and variable 2.

**Step 5b**

**Record each student's on-track status (see figure 6).**

**Figure 6. Sample on-track indicator calculation worksheet (appendix B), completed step 5**

Unique student identifier	On-track indicator						On-Track status
	Variable 1: Credits			Variable 2: Course failures			
	Grade 9 credit accrual (semesters)	Variable 1 status		Grade 9 core course failures (semesters)	Variable 2 status		
	On	Off		On	Off		
Student 1	10	✓		0	✓		On-track
Student 2	11	✓		0	✓		On-track
Student 3	8		✓	2		✓	Off-track
Student 4	9		✓	0	✓		Off-track
Student 5	10	✓		0	✓		On-track
Student 6	10	✓		0	✓		On-track
Student 7	6		✓	2		✓	Off-track
Student 8	—	—	—	—	—	—	—
Student 9	10	✓		0	✓		On-track
Student 10	10	✓		0	✓		On-track
Student 11	11	✓		0	✓		On-track
Student 12	10	✓		0	✓		On-track
Student 13	10	✓		0	✓		On-track
Student 14	10	✓		0	✓		On-track
Student 15	10	✓		0	✓		On-track
Student 16	10	✓		1	✓		On-track
Student 17	—	—	—	—	—	—	—
Student 18	10	✓		0	✓		On-track
Student 19	11	✓		0	✓		On-track
Student 20	5		✓	5		✓	Off-track

**Step 6**

**Determine the percentage of students who are on-track and off-track by reason (table D-1).**

**Step 6a**

**Calculate the number of students in the analytic sample.**

Use the *Included in the analytic sample* data column (appendix B) to determine the number of students included in the analytic sample.

**Step 6b**

**Calculate the number of students who are on- or off-track by reason.**

Use the *Variable 1* and *Variable 2* status columns (appendix B) to calculate the number of students who are:

- Off-track due to insufficient credits (variable 1) only.
- Off-track due to number of semester Fs (variable 2) only.
- Off-track due to **both** insufficient credits and number of semester Fs (variables 1 AND 2).
- On-track.

**Step 6c**

**Calculate the percentage of students who are on- or off-track by reason by dividing each category total by the total number of students in the analytic sample (see figure 7; calculation table provided in appendix C, table C1).**

**Figure 7. Sample calculation of percentage of first-time grade 9 students (analytic sample) on- or off-track by reason**

<i>Number of students:</i>			<i>Number of students in analytic sample</i>		<i>Percentage of students</i>
Off-track due to insufficient credits only	1	÷	18	=	5.5%
Off-track due to number of semester Fs only	0				0%
Off-track due to both insufficient credits and number of semester Fs	3				16.7%
On-track	14				77.8%

Step 6d

Complete appendix D, table D-1 to show the percentage of students in each of the three off-track and one on-track categories (see figure 8).

Figure 8. Percentage of first-time grade 9 students (analytic sample) on-track and off-track by reason (appendix D, table D-1)

	<i>Did not earn enough credits to be promoted to grade 10</i>	<i>Earned enough credits to be promoted to grade 10</i>
<i>2 or more core semester Fs</i>	17%	0%
<i>Less than 2 core semester Fs</i>	6%	78%

Note. Percentages may not total 100 due to rounding.

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## Steps 7–9: Calculating your on-time graduation rates

### Step 7

**Determine the final analytic sample that will be used to calculate on-time graduation rates by on- and off-track status.**

#### Step7a

**Exclude students who are no longer in the cohort by the end of grade 12 for reasons listed below.**

Students who are part of the *original* analytic sample and have an on-track status calculated are not be included in the *final* analytic sample if they are considered neither graduates nor non-graduates. These students include:

- Students who died.
- Students who have confirmed enrollment in another public school system.
- Students who have left the country.

Note that it is possible for a student who leaves school—for any reason—to re-enroll prior to graduation. Carefully review enrollment data information for students who appear to have left the cohort prior to grade 12 to ensure they are not prematurely excluded from the final analytic sample or inappropriately classified as a non-graduate.

#### Step7b

**Transfer the on-track status of each student in the final analytic sample.**

### Step 8

**Determine the on-time graduation status for each student in the final analytic sample.**

Methods of determining on-time graduation status will vary depending on data reporting methods used in your LEA or state, and may include:

- A graduate flag.
- An exit code.
- A graduation type code.

A student is considered to have graduated on-time if:

- S/he graduates in four or fewer academic years (students who graduate by the end of the summer following the students' fourth academic year are considered on-time graduates).

Consistent with federal accountability regulations, a student is not considered to have graduated on-time if:

- S/he left the LEA for known or unknown reasons and it is not confirmed that s/he is enrolled in another public school.
- S/he earns a General Education Diploma (GED).
- S/he withdraws to enroll in a homeschool program or private school.

Special education students who are graduating by completing activities under an IEP should be given special consideration as to whether or not they should be included in the on-time graduation calculation because, for these students, on-time graduation may or may not be within four academic years.

**Figure 9. Sample on-track indicator calculation worksheet (appendix B), completed steps 7–8**

Unique student identifier	Grades 10 - 12 enrollment						On-time graduation status
	Exit information from Years 2-4			Final analytic sample			
	Year 2	Year 3	Year 4	Included?	On-track status		
				On	Off		
Student 1				Y	✓		Graduate within 3 years
Student 2				Y	✓		Graduate with 4 years
Student 3		Withdrew to home school		Y		✓	Non-graduate
Student 4				Y		✓	Non-graduate
Student 5				Y	✓		Graduate within 4 years
Student 6			Returned to home country	N	—	—	Excluded from final analytic sample
Student 7				Y		✓	Graduate within 4 years
Student 8				N	—	—	Excluded from final analytic sample
Student 9				Y	✓		Graduate within 4 years
Student 10				Y	✓		Non-graduate
Student 11	Withdrew to a private school			Y	✓		Non-graduate
Student 12				Y	✓		Graduate within 4 years
Student 13		Dropped out		Y	✓		Non-graduate
Student 14				Y	✓		Graduate within 4 years
Student 15				Y	✓		Graduate within 4 years
Student 16				Y	✓		Graduate within 4 years
Student 17				N	—	—	Excluded from final analytic sample
Student 18			Withdrew to another public school	N	—	—	Excluded from final analytic sample
Student 19				Y	✓		Graduate within 4 years
Student 20				Y		✓	Non-graduate

**Step 9**

**Determine the percentage of on-track and off-track students who graduated on time (figure D-1).**

**Step 9a**

**Calculate the percentage of students who were classified as on-track and graduated on time by dividing the number of on-track students who graduated on time by the total number of on-track students (see figure 10; calculation table provided in appendix C, table C2). Adjust the total number of on-track students to reflect any on-track students excluded in step 7.**

**Figure 10. Sample calculation of on-time graduation rate for on-track students in the final analytic sample (appendix C, table C2)**

Number of students who are on-track and graduated on time	9	=	64%
Total number of on-track students in the final analytic sample	14		

**Step 9b**

**Calculate the percentage of students who were classified as off-track (all three categories) and graduated on-time by dividing the number of off-track students who graduated on time by the total number of off-track students (see figure 11; calculation table provided in appendix C, table C3). Adjust the total number of off-track students to reflect any off-track students excluded in step 7.**

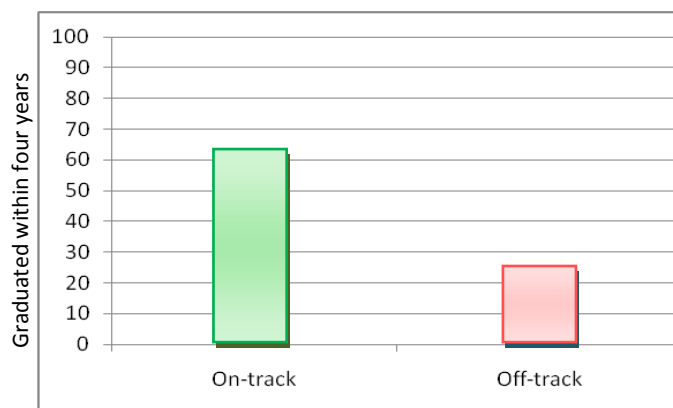
**Figure 11. Sample calculation of on-time graduation rate for off-track students in the final analytic sample (appendix C, table C3)**

Number of students who are off-track (all three categories) and graduated on time	1	=	25%
Total number of off-track students	4		

**Step 9c**

**Graph your results using appendix D, figure D-1 to show the percentage of students who graduated on-time by on-track and off-track status (see figure 12).**

**Figure 12. On- and off-track graduation rates for students in your LEA (appendix D, figure D-1)**



## Step 10: Calculating your discrimination index

### Step 10

Calculate the on-track indicator discrimination index for your district.

Subtract the on-time graduation rates for students classified as off-track from on-time graduation rate for students classified as on-track (see figure 13; calculation table provided in appendix C, table C3). The *discrimination index* is used to evaluate how accurately the indicator identified—at the end of grade 9—students who ultimately did and did not graduate on time. The larger the discrimination index, the more accurately the indicator identifies students who may not graduate on time.

**Figure 13. Sample calculation of on-track indicator discrimination index**

Percentage of students who are on-track and graduated on time	–	Percentage of students who are off-track (all three categories) and graduated on time	=	Discrimination index
64%	–	25%	=	39%

## Conclusions

The on-track for graduation indicator may be used to target students who are identified as off-track after grade 9 for intervention. These students may need support to make up lost credits and continue earning new credits to meet the credit accrual graduation requirement. Although the on-track indicator can be seen as an early warning indicator to help identify students who may be at-risk for not graduating high school on-time, no early warning indicator is error-free; students who are at risk of not graduating on time may or may not be identified by such an indicator. The discrimination index will help you to determine the accuracy of the on-track to graduate indicator within your LEA. Students classified as both on- and off-track should be followed into their sophomore year to see if they are making adequate progress to be promoted to grade 11 and are passing their core courses.

## References

- Allensworth, E.M., and Easton, J.Q. (2005). *The on-track indicator as a predictor of high school graduation*. Chicago: University of Chicago, Consortium on Chicago School Research.
- Balfanz, R., and Legters, N. (2004). *Locating the dropout crisis: which high schools produce the nation's dropouts? Where are they located? Who attends them?* Baltimore, MD: The Johns Hopkins University, Center for Research on the Education of Students Placed At Risk.
- Belfield, C., and Levin, H. (2007). The educational attainment gap: Who's affected, how much, and why it matters. In C. Belfield and H. Levin (Eds.), *The price we pay: economic and social consequences of inadequate education* (pp. 1–17). Washington, DC: Brookings.
- Bill & Melinda Gates Foundation. (2009, January 22). *Foundation invests \$22 million in research and data systems to improve student achievement* [Press Release]. Retrieved December 21, 2009, from <http://www.gatesfoundation.org/press-releases/Pages/collect-and-use-data-for-maximum-impact-on-teaching-and-learning-090122.aspx>
- Cutler, D.M., and Lleras-Muney, A. (2008). *Understanding differences in health behaviors by education*. Mimeo. Princeton, NJ: Princeton University.
- Dynarski, M., Clarke, L., Cobb, B., Finn, J., Rumberger, R., and Smink, J. (2008). *Dropout prevention: a practice guide* (NCEE 2008–4025). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved March 18, 2010, from <http://ies.ed.gov/ncee/www>
- Hartman, J., Wilkins, C., Gregory, L., Gould, L. F., and D'Souza, S. (2011). *Applying an on-track indicator for high school graduation: adapting the Consortium on Chicago School Research indicator for five Texas districts*. (Issues & Answers Report, REL 2011–No. 100). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved January 10, 2011, from <http://ies.ed.gov/ncee/edlabs>
- Heppen, J., and Therriault, S.B. (2008). *Developing early warning systems to identify potential high school dropouts*. National High School Center. Retrieved March 16, 2010, from [http://www.nationalhighschoolcenter.org/pubs/documents/IssueBrief\\_EarlyWarningSystemsGuide.pdf](http://www.nationalhighschoolcenter.org/pubs/documents/IssueBrief_EarlyWarningSystemsGuide.pdf)
- Jerald, C. (2006). *Identifying potential dropouts: key lessons for building an early warning data system* [white paper]. Washington, DC: Achieve, Inc., American Diploma Project Network. Retrieved March 22, 2010, from [http://www.achieve.org/files/FINAL-dropouts\\_0.pdf](http://www.achieve.org/files/FINAL-dropouts_0.pdf)
- Kennelly, L., and Monrad, M. (2007). *Approaches to dropout prevention: heeding early warning signs with appropriate interventions*. National High School Center. Retrieved March 18, 2010, from [http://www.nationalhighschoolcenter.org/pubs/documents/NHSC\\_ApproachesToDropoutPrevention.pdf](http://www.nationalhighschoolcenter.org/pubs/documents/NHSC_ApproachesToDropoutPrevention.pdf)
- Muennig, P. (2007). Consequences in health status and costs. In C. Belfield and H. Levin (Eds.), *The price we pay: economic and social consequences of inadequate education* (pp. 125–141). Washington DC: Brookings.
- Ponder, P. (n.d.) *Graduation pathways: using freshman year indicators*. Doing What Works. Retrieved March 31, 2010, from [http://dww.ed.gov/see/?T\\_ID=24&P\\_ID=53&c1=1254&c2=1254&c3=1254](http://dww.ed.gov/see/?T_ID=24&P_ID=53&c1=1254&c2=1254&c3=1254)
- Rouse, C.E. (2007). Consequences for the labor market. In C. Belfield and H. Levin (Eds.), *The price we pay: economic and social consequences of inadequate education* (pp. 99–124). Washington, DC: Brookings.
- Rumberger, R. (2004). Why students drop out of school. In G. Orfield (Ed.), *Dropouts in America: confronting the graduation rate crisis* (pp. 131–155). Cambridge: Harvard Education Press.
- Swanson, C.B. (2004). *Who graduates? Who doesn't? A statistical portrait of public high school graduation, class of 2001*. Washington, DC: The Urban Institute.
- Swanson, C.B. (2009). *Cities in crisis 2009: Closing the graduation gap*. Bethesda, MD: Editorial Projects in Education Research Center.
- Stillwell, R., and Hoffman, L. (2008). *Public school graduates and dropouts from the common core of data: school year 2005–06* (NCEES 2008-353rev). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Retrieved May 14, 2010, from <http://nces.ed.gov/pubs2008/2008353rev.pdf>
- Texas Education Agency. (2008). *High school graduation requirements*. Retrieved October 26, 2009, from [www.tea.state.tx.us](http://www.tea.state.tx.us)
- Texas High School Project. (n.d.). *About us*. Retrieved December 21, 2009, from [http://www.thsp.org/about\\_us/](http://www.thsp.org/about_us/)

**Appendix A: Summary of the Issues & Answers study, *Applying an on-track indicator for high school graduation: adapting the Consortium on Chicago School Research indicator for five Texas districts* (Hartman et al. 2011)**



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.

DRAFT

**Appendix B: On-track indicator calculation worksheet**

Unique student identifier	Grade 9 enrollment		On-track indicator							Grades 10 - 12 enrollment					On-time graduation status	
	Exit information from Year 1	Included in analytic sample?	Variable 1: Credits			Variable 2: Course failures				On-Track status	Exit information from Years 2-4			Final analytic sample		
			Grade 9 credit accrual (semesters)	Variable 1 status		Grade 9 core course failures (semesters)	Variable 2 status		Year 2		Year 3	Year 4	Included?	On-track status		
				On	Off		On	Off						On		Off
Student 1																
Student 2																
Student 3																
Student 4																
Student 5																
Student 6																
Student 7																
Student 8																
Student 9																
Student 10																
Student 11																
Student 12																
Student 13																
Student 14																
Student 15																
Student 16																
Student 17																
Student 18																
Student 19																
Student 20																

### Appendix C: Calculation tables

**Table C-1. Calculation of percentage of students in the analytic sample on- or off-track by reason**

<i>Number of students in the analytic sample:</i>			<i>Number of students in analytic sample</i>		<i>Percentage of students</i>
off-track due to insufficient credits only		÷		=	
off-track due to number of semester Fs only					
off-track due to both insufficient credits and number of semester Fs					
on-track					

**Table C-2. Calculation of on-time graduation rate for on-track students in the final analytic sample**

Number of students in the final analytic sample who are on-track and graduated on time		=	
Total number of on-track students in the final analytic sample			

**Table C-3. Calculation of on-time graduation rate for off-track students in the final analytic sample**

Number of students in the final analytic sample who are off-track (all three categories) and graduated on time		=	
Total number of off-track students in the final analytic sample			

**Table C-4. Calculation of on-track indicator discrimination index**

Percentage of students who are on-track and graduated on time	-	Percentage of students who are off-track (all three categories) and graduated on time	=	Discrimination index
	-		=	

**Appendix D: Template for presenting on-track to graduate indicator findings for your LEA**

**Table D-1: Percentage of students at the end of grade 9 (analytic sample) who are classified as on-track or off-track for graduation by credits earned and number of semester Fs in grade 9**

	Did not earn enough credits to be promoted to grade 10	Earned enough credits to be promoted to grade 10
2 or more core semester F's		
Less than 2 core semester F's		

**Figure D-1. On-time graduation rates for students in your LEA by on- and off-track status**

