

Promoting Rigorous Career and Technical Education Programs of Study

Year 2 Quantitative Analysis Report

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MPR Associates, Inc.
2150 Shattuck Avenue, Suite 800
Berkeley, CA 94704

Contact
Sandra Staklis
sstaklis@mprinc.com

Steve Klein
sklein@mprinc.com

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Introduction

The U.S. Department of Education, Office of Vocational and Adult Education (OVAE), is sponsoring the *Promoting Rigorous Career and Technical Education Programs of Study* project to assess the potential contribution that comprehensive, well-formulated programs of study can make to students' educational attainment and post-program success. The six states participating in this four-year project—Arizona, Kansas, Maryland, Montana, Utah, and Wisconsin—are working to design and implement rigorous programs of study (RPOS) that incorporate the 10 key components of effective programs identified within OVAE's Program of Study Design Framework (*Framework*).¹ Project work is focused on three local education agencies (LEAs) within each state, which include an urban, suburban, and rural school district, as well as partnering postsecondary institutions. States also are required to submit data for a quantitative assessment that explores the effect of states' program improvement efforts in participating sites on students' educational outcomes.

First-year project efforts (2010–11) focused on assisting states and LEAs in implementing and strengthening *Framework* components that were identified as missing or in need of improvement. Based on the results of a gap analysis, states prioritized program areas in need of attention and created improvement strategies to address pressing needs. States subsequently submitted baseline demographic and post-program outcome data for 12th-grade students enrolled in the participating LEAs. These first-year data were for the 2009–10 academic year (i.e., the year preceding the start of project work) to establish a baseline for comparisons with data collected in subsequent years. A baseline report used these data to describe the characteristics and outcomes of students in each state who were enrolled in career and technical education (CTE) programs that subsequently were selected for the RPOS project.² The report also assessed states' capacity to report the demographic and seven project performance measures data requested, and how the quality and comprehensiveness of the data submitted might be improved for Year 2.

Second-year project activities (2011–12) centered on strengthening states' capacity to report valid and reliable data for the quantitative outcomes assessment. The research team supported states in establishing common

¹ The *Framework* and state resources and tools for its use are available on the *Perkins* Collaborative Resource Network, which may be accessed at <http://cte.ed.gov/nationalinitiatives/rpos.cfmd>. Information on state RPOS projects can be found in Appendix A of this report.

² The first-year project report may be downloaded from <http://mprinc.com/products/search.aspx?pubID=547>.

definitions of RPOS; selecting comparison students within local sites; constructing consistent reporting measures across and within states; and implementing uniform methods for collecting data on RPOS students and comparison groups. Beginning in December 2011, the research team conducted site visits to each of the six states and participating LEAs to review student population definitions and local data collection methods. Team members reviewed up to eight student records selected at random from local administrative records as part of a set of data validation and reliability checks. Following each visit, the team shared site visit reports with state project leads and OVAE staff that described state and local reporting capacity and offered recommendations for improving state and local administrative data systems.

In spring 2012, researchers again collected data for 12th-grade RPOS concentrators and other students enrolled in participating LEAs. These 2010–11 academic year data document the characteristics and immediate post-program experiences of high school seniors who graduated in 2011. A time line of data collection activities and the extent of student participation in RPOS project activities are described below.

Project Year	Measurement Year	RPOS Population Description
2010–11	2009–10	<i>Pre-treatment:</i> Concentrators in CTE programs that were subsequently selected for RPOS inclusion
2011–12	2010–11	<i>Program Year 1:</i> Concentrators in RPOS programs during the implementation of improvement strategies
2012–13	2011–12	<i>Program Year 2:</i> Concentrators in RPOS programs who experienced one full year of improvement strategies
2013–14	2012–13	<i>Program Year 3:</i> Concentrators in RPOS programs who experienced two full years of improvement strategies

Given that first-year project activities centered on implementing strategies to improve the rigor of existing programs, it might be expected that students participating in these programs realized limited benefit. It is anticipated that data collected during the 2012–13 project year (corresponding to the third study year) will be the first to reflect the strategies implemented as part of the RPOS project, as RPOS concentrators in that year would have experienced at least one full year of enhanced program services.

The descriptive statistics included in this report document the demographics and first-year post-program performance outcomes of 12th-grade students enrolled in participating LEAs in the 2010–11 program year, with comparisons to baseline data collected for 2009–10.³ The analysis compares the characteristics of RPOS concentrators with students concentrating in other CTE programs, and all other students (i.e., those who were either CTE participants or who had enrolled in any CTE course work). It also profiles the levels of student participation across states and among LEAs within states. The report closes with recommendations for improving data collection in subsequent program years to allow for more rigorous, multivariate statistical analyses.

³ States were asked to report enrollment data for all students in grades 9–12 and demographic and outcome data for 12th-grade students. However, not all states were able to submit all of the data requested due to data limitations.

Research Questions and Overview

The quantitative assessment is intended to assess the characteristics and post-program educational experiences of students who achieve concentrator status in their state-identified RPOS. Over the course of the project, the assessment will seek to answer three primary research questions:

1. How do the *characteristics* of secondary RPOS concentrators differ from those of secondary students who either did not concentrate in a CTE program or who were CTE concentrators in other programs?
2. How do the performance *outcomes* of secondary RPOS concentrators compare with those of two groups of students:
 - Students within the LEA who were concentrators in other CTE programs, and
 - Students who did not concentrate in a CTE program (including CTE participants and non-participants)?
3. How do the outcomes that secondary RPOS concentrators achieve vary according to the presence or absence of RPOS *Framework* components within their LEA?

To begin to address the first two questions, the research team collected aggregate data on all 12th-grade students enrolled in participating LEAs within each state during the 2009–10 and 2010–11 academic years. In accordance with the comparison groups identified in the research questions, states were asked to provide data for RPOS concentrators, concentrators in other CTE programs, and for all other students.

Systematic data to inform the third study question will be collected in the 2012–13 project year, since the focus of the 2011-12 site visits was on improving state and local data collection and reporting capacity, which allowed limited time to explore states' implementation experiences. Site visits planned for the upcoming program year will be used to assess the adoption of RPOS *Framework* components and the fidelity of their implementation. States' self-ratings of the status of their RPOS implementation during the 2011–12 program year, which were reported to OVAE for grant administrative purposes, will be updated to reflect states' project activities to date to address the relationship between RPOS components and student outcomes.

Year 2 Data Collection

To support states in submitting project data, in early March 2012 the research team sent a set of table shells and instructions to the project leads in each participating state (see Appendix B). States were asked to complete the shells with data on students enrolled in the participating LEAs during the 2010–11 academic year. State data analysts were requested to adjust the data request as needed to reflect the reporting capacity of their state. The request also directed analysts to indicate any elements that were not available in their state or local data system and to provide dates indicating when these elements could be expected.

For each participating LEA, states were asked to provide the following data:

1. **Enrollment data for students in grades 9–12:** To gauge the size of the RPOS and CTE programs relative to LEA total enrollments, each state was asked to provide the total number of students enrolled in grades 9–12 in each site and the number of RPOS participants, RPOS concentrators, concentrators in other CTE programs, and other students (participants in CTE programs other than the RPOS and students who did not take any CTE courses).
2. **Demographic and background data:** States were asked to provide information on grade 12 RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the participating LEAs by gender, race, free- or reduced-price lunch status, English for speakers of other languages (ESOL) eligibility, and disability status. They also were asked to report the average attendance ratios and average scores on the most recent ESEA-reported state assessments taken by the students (administered in the 10th or the 11th grade).
3. **Outcome data:** States were asked to provide information on grade 12 RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the participating LEAs for six of the seven performance outcome measures included in the project’s request for proposals. The six measures include the following:
 - i. *Secondary school completion*—12th-grade students who earned a regular high school diploma
 - ii. *Technical skill attainment*—12th-grade CTE concentrators who attained technical skills
 - iii. *Earned postsecondary credit*—12th-grade students who earned postsecondary credit while still enrolled in high school

- iv. *Enrollment in postsecondary education*—12th-grade graduates who enrolled in postsecondary education by the fall following high school
- v. *Enrollment in related postsecondary field or major*—12th-grade RPOS and CTE program of study graduates who enrolled in a postsecondary education field or major related to their high school field of study
- vi. *Need for developmental education*—12th-grade RPOS and CTE program of study graduates who enrolled in one or more postsecondary education developmental courses by the fall following high school

A seventh measure—*postsecondary completion within two years of enrollment in postsecondary education*—will be included in the Year 3 data request to collect data for the 2009–10 baseline year graduates.

The Year 1 request for 2009–10 data included an additional request for data on students' employment and military status. Because states generally cannot require students to provide the social security numbers (SSNs) required for a match to employment and military records, SSNs for most students are not available, which limits data access. For example, in one state data on postsecondary employment was found for less than 20 percent of students, which was largely due to inaccurate or incomplete student SSNs. Although several states obtain employment data through CTE graduate follow-up surveys, these surveys often suffer from low response rates (i.e., below 85 percent) and the data are self-reported, which can undermine data accuracy. Given the lack of valid and reliable data, this measure was omitted from the 2010–11 data request for most states.⁴

While states were asked to submit aggregate student data for all students and measures by LEA, in some instances, disaggregating data by student demographic characteristics could enable readers to identify individual students.⁵ While the text of this report notes differences in student characteristics and outcomes between LEAs within states, the data presented in the tables are aggregated at the state level and cells containing demographic data representing 10 or fewer students are suppressed to protect student confidentiality.

⁴ The exceptions were Maryland, which indicated that these data would be available, and Utah, which had implemented new strategies to improve unemployment insurance wage record match rates. Neither state, however, has to date been able to produce 2010–11 data adequate for analysis for this measure.

⁵ Data security requirements vary by state and sometimes by education agency within states. A general rule is that data must be suppressed for table cells that include small numbers of individuals, typically fewer than 10 individuals. This helps ensure student privacy, since the reporting of small numbers of students might permit a reader to identify individual students within a participating site. For this project, we chose the conservative value of 10 or fewer students for data suppression. The data reported in the tables included in this report are aggregated at the state level to avoid small cell sizes.

States' Year 2 Data Submissions

The Year 1 2009–10 data submissions revealed that states had varying capacities to evaluate their RPOS programs and to collect longitudinal student data at the project's start.⁶ During the second project year, two states (Kansas and Arizona) continued to work closely with their external evaluators, and nearly all states secured the assistance of specialists to assist with data management and preparation. Even with expert help, the state longitudinal data systems (SLDSs) in several of the states remain in the planning and implementation phase, limiting states' capacity to report on several of the requested data elements.⁷

Despite these challenges, state capacity to report the requested elements improved across from project Year 1 to 2. During the Year 2 site visits, the research team met with state and local data specialists to establish consistent definitions of RPOS and other CTE concentrators across sites, explore approaches to connect secondary and postsecondary data systems, and discuss strategies to access non-state databases such as the National Student Clearinghouse (NSC). As a result of these activities and concurrent efforts made by states to improve data collection, both the number of data elements and the proportions of students for which data were reported increased. For example, Utah submitted technical skills assessment data for less than 10 percent of CTE concentrators in 2009–10, but for all CTE concentrators in 2010–11. Similarly, Wisconsin's data submission for 2009–10 was limited to students who enrolled in one of the state's technical colleges; however, the state conducted an NSC match for the 2010-11 data to access postsecondary enrollment data for secondary graduates regardless of the type of institution in which they enrolled (i.e., 2- and 4-year; public and private; in- and out-of-state).

⁶ For convenience, the sections and tables that follow describe both 2009–10 and 2010–11 concentrators in the program selected as the target of project efforts in each state as "RPOS concentrators." It should be noted, however, that the 2009–10 concentrators were enrolled in the RPOS program prior to project activities. Since the programs likely did not have all of the RPOS components in place during their program experiences, a more accurate description of the program might be pre-RPOS.

⁷ Table B-1 in Appendix B summarizes the data that each state provided for the Year 2 data submission. Missing data elements are indicated by delivery dates for the elements that states planned to submit in the coming weeks, and by "—" if the state would not be able to report the element for this reporting year. If data is submitted and judged to be of sufficient quality within a week of the final due date for this report, these data will be incorporated into the report.

Student Demographic and Background Characteristics

All of the states' submissions to date have included data for RPOS concentrators and the two comparison groups for each of the requested federally reported demographic data elements (gender, race/ethnicity, free- and reduced price lunch and English for speakers of other languages eligibility, and disability status). As proxies for student motivation and prior achievement, states are also asked to submit attendance data and students' performance or scores on the most recent ESEA-reported standardized assessments taken (generally from the 11th grade). Two states were unable to provide data on student attendance (Montana and Wisconsin), although Wisconsin is currently investigating whether these data might be available at a later date. Data on the assessments were submitted for 85 percent or more of students in three states, but not in Utah and Montana which were not able to provide test score data for 85 percent or more of the students.

Definitions of Secondary Participants and Concentrators

States define participants as students who have taken one or more classes in a CTE program or program area within the reporting year (Table 1). The definition of a concentrator, however, varies across states, and with the exception of Wisconsin, all states are using the state concentrator definition that is used for *Perkins* reporting to identify their RPOS and CTE concentrator populations.

Three states (Kansas, Montana, and Utah) define secondary concentrators as students who have earned 3 or more credits in a single CTE program area. In Arizona, a student can achieve concentrator status after earning 2 credits in a single CTE program. In Maryland, a student reaches concentrator status after completing 50 percent of the program sequence, which allows the number of courses required to reach concentrator status to differ for students in two- and three-course CTE programs. Wisconsin changed its threshold for RPOS concentration from the state definition in Year 1 (i.e., students who have completed two courses in a single CTE program and enrolled in a third) to a 3-credit definition due to a misunderstanding relating to a data request from OVAE that was issued in May 2012. This revised 3-credit definition differs from that used by the state for *Perkins* reporting purposes, and Wisconsin reverted to the state definition for the 2010–11 data submission in Year 2.

Table 1. Definition of secondary participants and concentrators in each RPOS state

State	Participant	Concentrator
Arizona	Students who have earned one or more Carnegie units in any CTE program area.	Students who have earned two or more Carnegie units in any CTE program area.
Kansas	Students who have earned one or more CTE credits in any one CTE program area.	Students who have earned three or more credits in a single CTE program area.
Maryland	Any student enrolling in at least one course which is part of an identified CTE completer program.	Any student enrolling in a course at the concentrator course level for the CTE completer program (post 50 percent of a program sequence).
Montana	Students who have earned one or more CTE credits in any one CTE program area. For RPOS, a secondary 12th-grade student who has earned one (1) or more credits in a construction course.	Students who have earned three or more credits in a single CTE program area.
Utah	Students who have earned one or more CTE credits in any one CTE program area.	Students who have earned three or more credits in a single CTE program area.
Wisconsin	Students who enrolled in one or more CTE courses in any CTE program area in the reporting year.	Students who have completed two CTE courses within a single CTE program and enrolled in a third.

SOURCE: Arizona Department of Education; Kansas State Department of Education; Maryland State Department of Education; Montana Office of Public Instruction; Utah State Office of Education; and Wisconsin Department of Public Instruction.

Recognizing the differences among states in both the RPOS program areas selected for the project and the threshold for achieving concentrator status, the descriptions of student characteristics and outcomes in the sections that follow do not allow for comparisons of student participation or outcomes across states. Accordingly, data for each state are analyzed and described separately.

Enrollments, Student Characteristics, and Outcomes

In the second project year, states were asked to provide 2010–11 enrollment information for all grade 9–12 students in each of the participating LEAs.⁸ The numbers of students in these grades vary widely across states and LEAs, ranging from 33 high school students in Kansas’s rural LEA, to 32,296 students in Maryland’s suburban site (Table 2).

⁸ Not all states were able to respond to this request. The exceptions include Arizona, which did not submit data, Montana, which submitted data for grade 12 students only (update pending), and Maryland, which submitted data for concentrators in each grade for 2010–11 only, thus excluding students who completed a CTE concentration as 11th graders (or earlier) in prior years.

Table 2. Total enrollments in grades 9–12, and the number of 9th–12th-grade students who were RPOS participants and concentrators and CTE concentrators across the RPOS project districts in each state: 2010–11

Student group	Arizona			Kansas ¹			Maryland ^{1,2}						
	Rural	Suburban	Urban	Rural-			Rural	Suburban	Urban				
				Total	Suburban	Urban							
Total students in grades 9–12	59	793	729	33	287	412	661	1,393	2,392	32,296	23,911	58,599	
RPOS participants	^	^	56	—	—	—	—	—	25	91	62	178	
RPOS concentrators	^	^	17	^	13	^	15	33	0	75	32	107	
Concentrators in other CTE programs	20	481	228	^	34	^	167	228	579	6,102	3,146	9,827	
All other students	38	306	484	^	^	403	479	882	1,788	25,103	20,703	47,594	
<i>All concentrators as percent of total enrollment</i>	^	^	33.6%	^	16.4%	^	27.5%	^	24.2%	19.1%	13.3%	17.0%	
<i>RPOS concentrators as percent of all concentrators</i>	^	^	6.9%	^	27.7%	^	8.2%	^	0.0%	1.2%	1.0%	1.1%	
<i>RPOS concentrators as percent of total enrollment</i>	^	^	2.3%	^	4.5%	^	2.3%	^	0.0%	0.2%	0.1%	0.2%	
Student group	Montana ¹			Utah			Wisconsin						
	Rural	Suburban 1	Suburban 2	Rural	Suburban ³	Urban	Rural	Suburban	Urban				
										Total	Suburban	Urban	
Total students in grades 9–12	59	793	729	1,191	2,772	842	6,036	7,507	14,385	206	1,832	2,605	4,643
RPOS participants	^	^	56	35	91	470	3,519	4,481	8,470	72	255	212	539
RPOS concentrators	^	^	17	11	35	12	29	189	230	^	^	28	54
Concentrators in other CTE programs	20	481	228	459	1,188	183	1,690	2,849	4,722	31	286	152	469
All other students	38	306	484	721	1,549	177	638	148	963	94	1,274	2,113	3,481
<i>All concentrators as percent of total enrollment</i>	^	^	33.6%	39.5%	44.1%	23.2%	28.5%	40.5%	34.4%	^	^	6.9%	11.3%
<i>RPOS concentrators as percent of all concentrators</i>	^	^	6.9%	2.3%	2.9%	6.2%	1.7%	6.2%	4.6%	^	^	15.6%	10.3%
<i>RPOS concentrators as percent of total enrollment</i>	^	^	2.3%	0.9%	1.3%	1.4%	0.5%	2.5%	1.6%	^	^	1.1%	1.2%

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Data for RPOS participants, concentrators, and concentrators in all other programs are for 12th-grade students only.

² Data include only concentrators who were enrolled in courses in the CTE program in which they achieved concentrator status during the 2010–11 academic year. For example, in the rural district, five students achieved concentrator status as 11th graders in 2009–10 (or earlier), and thus are not included among the concentrators in 2010–11.

³ Utah's suburban district is focusing project efforts on a subset of RPOS concentrators. Therefore, the number of RPOS concentrators is lower than the total number of health sciences concentrators in the district.

SOURCE: Arizona Department of Education; Kansas State Department of Education; Maryland State Department of Education; Montana Office of Public Instruction; Utah State Office of Education; and Wisconsin Department of Public Instruction.

The number of RPOS participants in each LEA ranged from fewer than 10 in some rural LEAs to as many as 4,481 students in the largest urban LEA. Similar variation was noted for the number of RPOS concentrators, which ranged from fewer than 10 to 189 students. As expected, the smallest numbers of RPOS program concentrators were found in rural LEAs (ranging from fewer than 10 to 12 students). Although Maryland has the largest LEA relative to those participating, Utah's health science programs have the most concentrators overall (about 230), followed by Maryland's Facility and Mobile Equipment Maintenance RPOS (107 concentrators). The relatively smaller LEAs in Montana (construction) and Wisconsin (manufacturing) had 35 and 54 concentrators, respectively, although Montana provided enrollment data for grade 12 only.

LEAs also varied in the proportion of the student body that concentrated in a CTE program. The lowest CTE concentration rates were found among LEAs in Wisconsin and Maryland, where concentrators ranged from less than 7 percent to about 24 percent of the student body within given sites. In contrast, concentrators accounted for between 23 and about 41 percent of LEA enrollments in Utah. CTE concentration rates also appear high in Montana, although the RPOS concentration rates are likely lower since RPOS data are limited to grade 12 students. RPOS concentrators accounted for as little as one percent of all concentrators in the Maryland urban and suburban LEAs, and between 23 to 28 percent of concentrators in Wisconsin's and Kansas's rural districts, where other CTE program offerings may be limited.

Although the enrollment data collected in Year 2 cannot be directly compared to the more limited enrollment information collected in Year 1, the evidence suggests that RPOS program enrollments changed little between years.⁹ Among the comparable data for 12th graders, the number of concentrators in both the RPOS and other CTE programs experienced small changes (increases or decreases of 20 percent or less) between the two years in each state.

⁹ Enrollment data for all students in grades 9–12 within LEAs were added to the data request in Year 2 to provide additional information on district sizes and total enrollments across all grades in RPOS and other programs. In Year 1, more limited enrollment data was collected for students in grades 11 and 12 only. Data on RPOS and other CTE concentrators was collected in both years.

Student Characteristics and Outcomes: State by State

Arizona

After a lengthy search, the Arizona RPOS project welcomed a data specialist to their state team in late May 2012. The specialist is coordinating data collection from the three districts and partnering postsecondary institutions, and also is working with the sites to access postsecondary enrollment information from the NSC. Arizona submitted data for 2009–10 and expects to submit data for 2010–11 in fall 2012, which will be analyzed for the Year 3 report. The analysis presented here reflects the data submitted for the 2009–10 academic year.

Arizona reported 454 11th- and 12th-grade RPOS concentrators (Education Professions and Early Childhood Education) in 2009–10, of which over 90 percent were female (Table 3-A). Males comprised a majority, albeit smaller, of other CTE concentrators (56 percent), while all other students were roughly evenly divided by gender. The groups' ethnic/racial compositions were similar, with the exception of Native Americans, which comprised about 12 percent of RPOS students and 5 to 6 percent of the other two groups. The relatively high Native American participation rate stems from the RPOS program's popularity in the rural district, which is located in the Navajo Nation in the northeast corner of the state. Eligibility for free or reduced-price lunch was lowest among concentrators in other CTE programs (27 percent) than the other two groups (about 35 percent), but ESOL eligibility rates and attendance ratios were similar (within a couple of percentage points) across all three groups.

Test score ranges largely overlapped across the three groups especially for the 10th grade assessments, although the low-end scores for concentrators in other CTE programs than for the other two groups. Average test scores ranged widely, however, between the three districts.¹⁰ The average 8th-grade assessment scores in the rural district trailed those of the other two districts by 100 or more points, and scores in the rural district continued to trail the other two districts by 10 to 16 points on the 10th-grade assessments. No consistent patterns were found in tests scores between the three comparison groups.

CTE concentrators, both in the RPOS and other programs, graduated with regular high school diplomas at higher rates (about 96 percent) than students who did not concentrate in a CTE program (74 percent) (Table

¹⁰ To preserve data confidentiality, district-level data are not included in the tables. Relatively large district-level variations, however, are described in the text to highlight differences that may affect program outcomes.

3-B). Technical skill assessments were available to all RPOS students, compared with 72 percent of other concentrators. However, only about one-half of RPOS and 40 percent of other CTE concentrators took assessments, and about 82 percent of each group who did so passed.

Table 3-A. Arizona: Student characteristics for 11th- and 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	454	100.0%	3,343	100.0%	3,793
Gender						
Male	8.6%	39	56.4%	1,884	50.8%	1,928
Female	91.4%	415	43.6%	1,459	49.2%	1,865
Race/ethnicity						
White	63.2%	287	65.7%	2,195	61.7%	2,339
Native Hawaiian/Pacific Islander ¹		^	0.0%	0	0.0%	0
Black or African American	2.6%	12	4.8%	161	5.9%	224
Asian		^	4.0%	135	3.1%	119
American Indian or Alaska Native	11.5%	52	5.3%	178	6.1%	230
Hispanic	21.1%	96	20.2%	674	23.2%	881
Eligible for free or reduced-price lunch ²	35.0%	159	27.1%	906	34.4%	1,306
English for speakers of other languages (ESOL) eligible	2.4%	11	0.7%	25	2.3%	86
Students with a disability	7.7%	35	8.4%	282	14.6%	555
Attendance ratio		.86–.97		.85–.97		.85–.94
Average ESEA-reported state assessment scores ^{3, 4}						
8th-grade math		301.6–544.4		338.2–554.9		307.8–488.4
8th-grade English		277.3–508.6		306.1–514		279–491.5
10th-grade math		673.7–714.1		681.4–721.8		696.7–701.2
10th-grade English		688.7–718.5		693–718.5		688.4–711

¹ 2009–10 data were reported using the Office of Management and Budget’s 1977 standard that did not include this category. The 2010–11 data will use the 1997 Office of Management and Budget Revisions.

² Data on free and reduced-price lunch submitted for suburban and urban districts only.

³ Because of the way the submitted data were aggregated, attendance and test score averages exclude RPOS participants.

⁴ Range of average scores across districts.

SOURCE: Arizona Department of Education.

Table 3-B. Arizona: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Outcome	2009–10					
	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	238	100.0%	1,766	100.0%	1,746
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	96.2%	229	96.9%	1,711	74.3%	1,297
Technical skills attainment						
Technical skills assessment available	100.0%	238	72.3%	1,276		†
Attempted a technical skills assessment (among those with an assessment available)	52.1%	124	39.5%	504		†
Passed an assessment/certification and/or received a certificate (among those who attempted an assessment)	83.1%	103	81.9%	413		†
Earned postsecondary credit in high school		—		—		—
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education ¹	71.4%	170	59.3%	1,047	77.6%	1,355
Enrolled in postsecondary education program related to their secondary POS ²		—		—		—
Need for developmental course work in postsecondary education						
Enrolled in developmental course for math		—		—		—
Enrolled in developmental course for reading		—		—		—

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

† Not applicable.

¹ Postsecondary enrollment data are from the National Student Clearinghouse (NSC). The data likely underestimate postsecondary enrollments because two large postsecondary institutions in Arizona that enroll a significant proportion of graduates from the RPOS districts, Pima and Mohave Community Colleges, do not participate in the NSC.

SOURCE: Arizona Department of Education.

RPOS concentrators enrolled in higher education at a higher rate (71 percent) than other CTE concentrators (59 percent), but at a lower rate than all other students (78 percent). Data on the outcomes *earned postsecondary credits in high school* and *need for developmental education* were not available.

Kansas

Kansas reported 33 12th-grade RPOS concentrators (the Manufacturing Production Pathway within the Manufacturing Career Cluster) in 2010–11 in its four participating districts, 17 fewer than the 55 reported in 2009–10 (Tables 4-A and 4-B). The majority of RPOS concentrators in 2010–11 were male (exact numbers suppressed to protect student confidentiality), which differed from other CTE fields, which were majority female (55 percent). The highest proportion of white students (79 percent) was found among RPOS concentrators; in contrast, white students accounted for about 70 percent of the comparison groups. Higher proportions of RPOS and CTE concentrators (58 and 53 percent, respectively) were eligible for reduced-price or free lunch than other students (40 percent).

The other demographic measures suggest that the populations of the four participating districts differ. Low percentages of RPOS and CTE concentrators were ESOL eligible (number suppressed to protect student confidentiality) compared with 14 percent of all other students, with most of the ESOL students concentrated in one suburban district. Relatively lower test scores were found for the urban district, and one of the suburban districts had lower average attendance rates than the other districts, which had attendance rates of 90 percent or higher. Disability rates, by contrast, were fairly close across the districts (about 12 percent) and each comparison group.

Table 4-A. Kansas: Student characteristics for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	55	100.0%	286	100.0%	2,598
Gender						
Male		^	45.5%	130	54.3%	1,411
Female		^	54.5%	156	45.7%	1,187
Race/ethnicity						
White	80.0%	44	53.8%	154	60.2%	1,564
Native Hawaiian/Pacific Islander	0.0%	0		^		^
Black or African American		^	18.2%	52	13.8%	358
Asian		^		^	3.2%	82
American Indian or Alaska Native	0.0%	0		^		^
Hispanic		^	17.1%	49	17.7%	460
Multi-racial		^	6.6%	19	3.2%	83
Eligible for reduced-price or free lunch	36.4%	20	52.1%	149	43.8%	1,138
English for speakers of other languages (ESOL) eligible		^		^	5.4%	140
Students with a disability	20.0%	11	10.1%	29	15.5%	402
Attendance ratio ¹		.92–.95		.92–.95		.92–.94
Average ESEA-reported state assessment scores ^{1, 2}						
8th-grade math	61–74%		62–74%		52–64%	
8th-grade reading	64–74%		71–82%		64–85%	
High school math	58–71%		48–70%		46–67%	
High school reading	57–81%		70–84%		70–93%	

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Because of the way the submitted data were aggregated, attendance and test score averages exclude RPOS participants.

² Ranges of average scores across districts. The percentage of students for which test scores were available are 82.4 percent for 8th-grade math; 82.3 percent for 8th-grade reading; 86.4 percent for high school math; and 89.0 percent for high school reading.

SOURCE: Kansas State Department of Education.

Table 4-B. Kansas: Student characteristics for 12th-grade RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2010–11

Student characteristics	2010–11					
	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	33	100.0%	228	100.0%	1,132
Gender						
Male		^	43.0%	98	52.3%	592
Female		^	54.8%	125	48.1%	545
Race ¹						
White	78.8%	26	68.9%	157	70.7%	800
Native Hawaiian/Pacific Islander	0.0%	0		^		^
Black or African American		^	26.3%	60	16.4%	186
Asian	0.0%	0		^		^
American Indian or Alaska Native		^		^	13.1%	148
Hispanic		^	19.3%	44	17.1%	194
Eligible for reduce-priced or free lunch	57.6%	19	53.1%	121	39.6%	448
English for Speakers of Other Languages (ESOL) eligible		^		^	13.9%	157
Students with a disability		^		^	13.1%	148
Attendance ratio		.877 – .943		.929 – .962		.855 – .917
Average ESEA-reported state assessment scores ²						
10th-grade math		46.4 – 72.2		51.2 – 71.4		51.0 – 68.8
10th-grade reading		70.9 – 80.9		71.8 – 85.5		70.7 – 79.4

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Students may have more than one race/ethnicity category.

² Ranges of average scores across districts. Test scores available for 85 percent or more of students, with the exception of the urban district. In the urban district, English test scores were available for 82 percent of students and math scores for 84 percent.

SOURCE: Kansas State Department of Education.

In both 2009–10 and 2010–11, RPOS and CTE concentrators graduated from secondary school with a regular high school diploma at higher rates (91 percent or higher) than all other students (about 79 percent) (Table 4-C). The technical skill assessment program in Kansas is currently being redesigned and implementation of the new system is planned for the 2012–13 school year; consequently, data for this measure are not currently available. The proportion of students earning postsecondary credits varied widely between the districts and comparison groups, and across the two years. The 12 percent rate for RPOS concentrators was the lowest among the three groups in 2010–11, down from 18 percent the previous year. Moreover, the percentage of other CTE concentrators and all other students who earned credits dropped by more than one-half between 2009–10 and 2010–11, for example, falling from 46 percent to 18 percent for CTE concentrators in other programs. The 2012–13 site visits may provide insights into the causes of the year-to-year changes.

With the exception of secondary school completion, all of the outcome data reported by Kansas is from the Kansas Higher Education Data System (KHEDS), which is maintained by the Kansas Board of Regents (KBOR). A statewide student identifier is in development in Kansas, but has yet to be implemented. As a result, KBOR conducts matches between KHEDS and the secondary data system at the Kansas State Department of Education using a number of data elements, including students' names and birthdates. The resulting match rates range, depending on the district, from about 45 to 65 percent—far lower than the 85 percent or better match rates required to conduct an unbiased analysis. Furthermore, for postsecondary enrollment, data are available only for students who enroll in state, and may not cover all private institutions. As a result, the postsecondary outcome data likely underestimate the number of students who enrolled.¹¹ The postsecondary enrollment rates for 2010–11 are lower than those found for 2009–10, and in the case of CTE concentrators and all other students, the rates dropped by more than one-half (from 52 and 40 percent, respectively, to about 18 percent each). RPOS concentrators had the highest postsecondary enrollment rate in 2010–11 (42 percent), and had the lowest proportion of enrollees who took developmental education (7 percent vs. 14 to 38 percent for the other two groups).

¹¹ The low match rates for the postsecondary data may also bias data on postsecondary credits earned in high school or developmental course taking, but determining whether the available data represent over- or underestimations would require additional information on the students excluded.

Table 4-C. Kansas: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11

Outcome	2009–10				2010–11							
	RPOS concentrators		Concentrators in other CTE programs		All other students		RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	55	100.0%	285	100.0%	1,235	100.0%	33	100.0%	228	100.0%	1,132
Secondary outcomes												
Secondary school completion												
Graduated with a regular high school diploma	96.4%	53	95.1%	271	77.8%	961	90.9%	30	96.1%	219	79.5%	900
Technical skills attainment												
Technical skills assessment available	—	—	—	—	†	†	—	—	—	—	—	†
Attempted a technical skills assessment	—	—	—	—	†	†	—	—	—	—	—	†
Passed an assessment/certification and/or received a certificate	—	—	—	—	†	†	—	—	—	—	—	†
Earned postsecondary credit in high school ¹	18.2%	10	45.6%	130	10.3%	127	12.1%	4	18.4%	42	18.4%	208
Postsecondary outcomes												
Enrollment												
Enrolled in postsecondary education ¹	54.5%	30	51.9%	148	40.1%	495	42.4%	14	18.4%	42	18.4%	208
Enrolled in postsecondary education program related to their secondary POS	—	—	—	—	†	†	—	0	—	—	—	†
Need for developmental course work in postsecondary education												
Enrolled in a developmental course for math ²	—	—	—	—	—	—	7.1%	1	33.3%	14	37.5%	78
Enrolled in a developmental course for reading ²	—	—	—	—	—	—	7.1%	1	23.8%	10	14.4%	30

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

† Not applicable.

¹ Data for the number of students who earned postsecondary credits in high school or enrolled in postsecondary education are available for 45 to 65 percent of students, depending on the district. See text for more information.

² Percentages are among those who enrolled in postsecondary education.

SOURCE: Kansas State Department of Education.

Maryland

The number of 12th-grade RPOS concentrators (the Facility and Mobile Equipment Maintenance Pathway within the Transportation, Distribution, and Logistics Career Cluster) dropped from 72 students in 2009–10 to 61 in 2010–11 (Table 5-C). Among the RPOS concentrators that were reported in 2009–10, all were male, as were about 90 percent of the RPOS concentrators reported in 2009–10 (Tables 5-A and 5-B).¹² In contrast, concentrators in other CTE programs and all other students in both years were fairly evenly divided by gender. In 2010–11, the proportions of Black or African American (61 percent) and white students (36 percent)—the two largest racial/ethnic groups among RPOS concentrators—were similar across the three comparison groups. Other student characteristics showed little difference across the two years and were similar to those of the comparison groups. For example, the percentage of students who were ESOL eligible and the percentage with a disability in each group differed by fewer than 5 percentage points and the three groups' attendance ratios ranges largely overlapped. RPOS concentrators did, however, achieve proficiency or higher on each of the assessments (grade 9 algebra and grade 10 English) at higher rates than students in the other groups.

In 2009–10, concentrators (in both RPOS and other programs) had higher graduation rates than non-concentrators, although at least 90 percent of all students graduated (Table 5-C). In 2010–11, the graduation rate of RPOS concentrators equaled that of all other students (about 87 percent) and was lower than that for concentrators in other CTE programs (93 percent).

Among CTE concentrators in 2010–11, RPOS concentrators who attempted a technical skill assessment passed at lower rates than concentrators in other CTE programs (74 vs. 85 percent, respectively). These results might be linked to the greater access to (95 vs. 42 percent) and attempted use of (33 vs. 25 percent) technical skill assessments in the RPOS versus other CTE programs. Both of these factors might result in students with a wider range of skill levels taking the exams rather than the more limited groups of students who do so in other CTE programs. More information on Maryland's technical skill assessment system, however, will need to be collected to understand how these factors might affect average score levels. In 2010–11, RPOS concentrators earned postsecondary credits during high school at less than one-half the rate (10 percent) than either concentrators in other CTE programs (26 percent) or all other students (25 percent), and this rate was less than one-half that in the previous academic year (10 vs. 22 percent, respectively).

¹² 2009–10 demographic data are for 11th and 12th graders (Table 5-A) and 2010–11 demographic data for 12th-grade students only (Table 5-B). Outcome data (Table 5-C) are for 12th graders only in both years.

Table 5-A. Maryland: Student characteristics for 11th- and 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	130	100.0%	7,162	100.0%	19,293
Gender						
Male	90.0%	117	46.6%	3,341	49.9%	9,636
Female	10.0%	13	53.4%	3,821	50.1%	9,657
Race/ethnicity						
White	51.5%	67	41.0%	2,933	36.7%	7,076
Native Hawaiian or other Pacific Islander		^	0.0%	0		^
Black or African American	44.6%	58	55.7%	3,988	58.9%	11,367
Hispanic		^	2.5%	178	2.9%	561
Asian		^	2.5%	181	3.7%	710
American Indian or Alaska Native		^		34		^
Multi-race	0.0%	0	0.4%	26	0.4%	79
Eligible for free lunch	40.0%	52	47.1%	3,373	47.7%	9,194
English for speakers of other languages (ESOL) eligible		^	0.5%	36	1.4%	267
Students with a disability	11.5%	15	11.0%	788	14.3%	2,759
Average attendance ratio (days attended/days enrolled) ¹	83–94%		87–93%		87–93%	
ESEA-reported state assessment outcomes ²						
Grade 9 algebra						
Failed	9.2%	12	17.9%	1,279	22.8%	4,181
Passed (scored at the proficient level or higher)	90.8%	118	82.1%	5,862	77.2%	14,186
Grade 10 English						
Failed	16.9%	22	22.3%	1,593	25.4%	4,641
Passed (scored at the proficient level or higher)	83.1%	108	77.7%	5,543	74.6%	13,610

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Because of the way the submitted data were aggregated, attendance data exclude RPOS participants.

² Test scores were available for more than 90 percent of students for both assessments.

SOURCE: Maryland State Department of Education.

Table 5-B. Maryland: Student characteristics for 12th-grade RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2010–11

Student characteristics	2010–11					
	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	61	100.0%	4,375	100.0%	9,448
Gender						
Male	100.0%	61	48.0%	2,099	48.0%	4,537
Female	0.0%	0	52.0%	2,276	52.0%	4,911
Race/ethnicity						
White	36.1%	22	37.0%	1,618	30.9%	2,923
Native Hawaiian or other Pacific Islander		^	0.0%	0		^
Black or African American	60.7%	37	56.8%	2,484	61.5%	5,809
Hispanic	0.0%	0	2.7%	118	2.9%	271
Asian		^	2.6%	113	3.9%	366
American Indian or Alaska Native		^	0.4%	19		^
Multi-race	0.0%	0	0.5%	23	0.5%	48
Eligible for free lunch	36.1%	22	39.5%	1,728	39.3%	3,711
English for Speakers of Other Languages (ESOL) eligible	0.0%	0	0.6%	27	1.0%	97
Students with a disability		^	11.7%	512	14.2%	1,343
Average attendance ratio (days attended/days enrolled)	83%–94%		87%–93%		87%–93%	
ESEA-reported state assessment outcomes ¹						
Grade 9 algebra						
Failed	13.1%	8	17.2%	749	21.1%	1,893
Passed (scored at the proficient level or higher)	86.9%	53	82.8%	3,598	78.9%	7,070
Grade 10 English						
Failed	13.1%	8	19.7%	857	22.9%	2,050
Passed (scored at the proficient level or higher)	86.9%	53	80.3%	3,487	77.1%	6,883

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Test scores were available for more than 90 percent of students for both assessments.

SOURCE: Maryland State Department of Education.

Table 5-C. Maryland: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11

Outcome	2009–10						2010–11													
	RPOS concentrators			Concentrators in other CTE programs			All other students			RPOS concentrators			Concentrators in other CTE programs			All other students				
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number		
Number of students	100.0%	72	100.0%	4,115	100.0%	9,474	100.0%	61	100.0%	4,375	100.0%	9,448								
Secondary outcomes																				
Secondary school completion																				
Graduated with a regular high school diploma	98.6%	71	95.4%	3,926	89.6%	8,493	86.9%	53	93.5%	4,089	86.6%	8,181								
Technical skills attainment																				
Technical skills assessment available	95.8%	69	62.2%	2,559	†	†	95.1%	58	42.4%	1,855	†	†								
Among those for whom an assessment was available, attempted a technical skills assessment	55.1%	38	26.0%	666	†	†	32.8%	19	25.4%	471	†	†								
Among those who attempted an assessment, passed an assessment/certification and/or received a certificate	63.2%	24	65.3%	435	†	†	73.7%	14	84.9%	400	†	†								
Earned postsecondary credit in high school ¹	22.2%	16	26.2%	1,077	19.4%	1,836	9.8%	6	26.4%	1,153	25.0%	2,359								
Postsecondary outcomes																				
Enrollment																				
Enrolled in postsecondary education	43.1%	31	51.9%	2,136	51.3%	4,860	1/31/13	1/31/13	1/31/13	1/31/13	1/31/13	1/31/13								
Enrolled in a postsecondary education program related to their secondary POS ²	3.2%	1	3.0%	64	†	†	1/31/13	1/31/13	1/31/13	1/31/13	1/31/13	1/31/13								

See notes at end of table.

Table 5-C. Maryland: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11—Continued

Outcome	2009–10				2010–11			
	RPOS concentrators		Concentrators in other CTE programs		RPOS concentrators		Concentrators in other CTE programs	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Need for developmental course work in postsecondary education								
Enrolled in a developmental course for English	—	—	—	—	—	—	—	—
Enrolled in a developmental course for math	—	—	—	—	—	—	—	—
Employment								
Number employed (full time or part time)	58.3%	42	45.8%	1,885	34.1%	3,227	12/15/12	12/15/12
Average wages among employed students (for the 4th quarter of 2010)	\$3,414		\$2,290		\$2,037		12/15/12	12/15/12

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

† Not applicable.

¹ Data on postsecondary credits earned in high school were available for less than 85 percent of students in both 2009–10 and 2010–11.

² Percentages are among those who enrolled in postsecondary education.

SOURCE: Maryland State Department of Education.

Unlike other states, Maryland postsecondary education outcome data lag and are not available until 1.5 years after a student graduates from high school. Maryland is, however, the only RPOS state able to report comprehensive employment outcome data. These data are reported on a similar schedule to that for postsecondary education, with a lag of about 1.5 years. Accordingly, Maryland submitted these data elements for 2009–10 in late May 2012, and reported that they would submit 2010–11 postsecondary outcome data in late 2012 or early 2013. Data on developmental education are not currently available.

In 2009–10, RPOS concentrators enrolled in higher education at a lower rate (43 percent) than both concentrators in other CTE programs and all other students, of whom just over one-half enrolled. RPOS concentrators were, however, more likely than the other two groups to be employed (58 percent vs. 46 and 34 percent, respectively); this result might be expected in a pathway such as Facility and Mobile Equipment Maintenance, which may attract students hoping to find employment immediately after graduating from high school. Among those employed, RPOS concentrators had higher wages during the 4th quarter of 2010 (\$3,414 vs. \$2,290 and \$2,037, respectively), which may be due both to higher wage pay rates among RPOS concentrators or that RPOS concentrators are more likely than students from the other groups to be employed full time (the data do not permit analyses by employment level).

Postsecondary placement data reflect unemployment insurance wage records from Maryland's Department of Labor, Licensing, and Regulation and postsecondary education information from the NSC. The percentage of graduates that these sources account for can only be accurately calculated using individual student record data, but a comparison of the data in table 5-B provides a rough estimate. For example, of the 61 grade 12 RPOS concentrators in 2010–11, 31 were enrolled in postsecondary education in the following fall and 42 were employed. Although the coverage looks to be more than 100 percent, the data likely include individuals who were both enrolled and employed and exclude those who work outside of Maryland or attended institutions not covered by the NSC.

Montana

Montana reported 33 12th-grade RPOS concentrators (the Construction Big Sky Pathway) in 2009–10 and 35 in 2010–11 (Tables 6-A and 6-B). During Year 2, Montana added an additional suburban LEA to the project, which increased the number of RPOS concentrators by two.

Table 6-A. Montana: Student characteristics for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristic	RPOS concentrators		Concentrators in other CTE programs		All other students ¹	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	33	100.0%	779	100.0%	1,003
Gender						
Male		^	50.4%	393	45.6%	457
Female		^	49.6%	386	54.4%	546
Race/ethnicity						
White	97.0%	32	88.3%	688	87.6%	879
Native Hawaiian/Pacific Islander	0.0%	0		^		^
Black or African American	0.0%	0		^		^
Asian		^	1.7%	13	1.3%	13
American Indian or Alaska Native		^	5.1%	40	5.2%	52
Data not submitted	0.0%	0	3.5%	27	3.8%	38
Eligible for free or reduced-price lunch		^	17.9%	131	16.0%	161
English for speakers of other languages (ESOL) eligible	0.0%	0	1.5%	12		^
Students with a disability	18.2%	6	8.6%	67	11.5%	115
Attendance ratio		—		—		—
Average ESEA-reported state assessment scores ¹						
10th-grade math		245.4–251.1		254.43–259.75		256.23–265.17
10th-grade English		265.3–269.2		270.79–281.67		275.05–279.98

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Average score ranges across districts; 10th-grade assessment scores are available for 94 percent of students.

NOTE: Data limited to 12th-grade students only because Montana collects data on CTE concentrators in that grade only.

SOURCE: Montana Office of Public Instruction.

Table 6-B. Montana: Student characteristics for 12th-grade RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2010–11

Student characteristic	RPOS concentrators		Concentrators in other CTE programs		All other students ¹	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	35	100.0%	1,188	100.0%	1,549
Gender						
Male		^	54.7%	650	45.4%	703
Female		^	45.3%	538	54.6%	846
Race						
White	94.3%	33	87.1%	1,035	86.1%	1,334
Native Hawaiian/Pacific Islander	0.0%	0		^		^
Black or African American	0.0%	0	1.8%	21	1.7%	26
Hispanic	0.0%	0	3.5%	41	4.0%	62
Asian	0.0%	0	1.1%	13	1.0%	15
American Indian or Alaska Native		^	6.1%	73	6.7%	104
Two or more races		^		^		^
Data not submitted	0.0%	0	0.0%	0	0.0%	0
Eligible for free or reduced-priced lunch		^	19.4%	231	19.0%	294
English for Speakers of Other Languages (ESOL) eligible		^	1.4%	17	1.0%	15
Students with a disability		^	0.9%	11	10.1%	157
Attendance ratio		—		—		—
Average ESEA-reported state assessment scores ²						
10th-grade math		254.0–263.5		254.2–270.9		257.4–268.0
10th-grade English		204.0–272.3		268.7–276.7		273.9–285.1

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Does not include RPOS participants.

² Average score ranges across districts; 10th-grade assessment scores were not available for concentrators in the rural district in 2009–10. For the remaining districts, data were available for 79 percent of students.

NOTE: Data limited to 12th-grade students only because Montana collects data on CTE concentrators in that grade only. Data for 2010–11 includes an additional suburban district that joined the project in 2010–11; data for this district were not submitted in 2009–10.

SOURCE: Montana Office of Public Instruction.

In 2010–11, more RPOS concentrators than comparison group students were white (94 percent vs. 86 and 87 percent), male (over 65 percent—exact percentage suppressed to protect student confidentiality— vs. 45 and 55 percent), or had a disability (14 percent vs. less than 1 and 10 percent). The score range for RPOS concentrators on the 10th-grade math assessment (254 to 264) was similar to that of other concentrators (254 to 271) and other students (257 to 268). However, the ranges for the 10th-grade English assessment indicate that RPOS concentrators performed at a lower level on this assessment than the other two groups.

All of the 2009–10 RPOS concentrators graduated in that year; in 2010–11, the graduation rate for this group was 91 percent, which was lower than that for concentrators in other CTE programs (95 percent) but higher than that for other students (82 percent) (Table 6-C). These graduation rates should, however, be interpreted with caution: students' graduation status is calculated at the district level and districts do not have the ability to determine whether a student dropped out or possibly transferred to another district from which they graduated. In 2009–10, about 9 percent of the 45 percent of RPOS students who had access to a technical skills assessment took and passed an assessment. Technical skills assessments were not available to RPOS concentrators in 2010–11 according to the data submitted, and just five percent of other CTE concentrators had access to an assessment. Project staff are working with the state to determine if the falloff from 2009–10 to 2010–11 was due to a data reporting issue or changes in the assessment system. Students in the RPOS districts earned postsecondary credits during high school at low rates; no RPOS concentrators did so in 2010–11 and the percentage that did so among other students was 10 percent or lower.

In 2010–11, RPOS concentrators enrolled in postsecondary education at a lower rate (23 percent) than other CTE concentrators (40 percent) or all other students (38 percent), and had higher rates of enrollment in both math and writing/English developmental courses. All of the RPOS and almost three-quarters of CTE concentrators who enrolled in a postsecondary program also enrolled in a program related to their secondary POS in 2010–11. The definition of related programs in Montana, however, is based on course descriptions and includes a wide range of programs, in contrast to the stricter 2-digit CIP code match used by other states. For example, a secondary concentrator in the construction RPOS who enrolled in a business program at the postsecondary level was considered to have enrolled in a related program.

Table 6-C. Montana: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11

Outcome	2009–10						2010–11					
	RPOS concentrators			Concentrators in other CTE programs			RPOS concentrators			Concentrators in other CTE programs		
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	33	100.0%	732	100.0%	964	100.0%	35	100.0%	1,188	100.0%	1,549
Secondary outcomes												
Secondary school completion												
Graduated with a regular high school diploma	100.0%	33	90.6%	663	84.2%	812	91.4%	32	94.8%	1,126	82.1%	1,271
Left the district	0.0%	0	5.6%	41	7.2%	69	2.9%	1	2.0%	24	8.5%	132
Technical skills attainment												
Technical skills assessment available	45.5%	15	66.0%	483	†	†	0.0%	0	4.7%	56	†	†
Among those for whom an assessment was available, attempted a technical skills assessment	9.1%	3	6.8%	33	†	†	0.0%	0	100.0%	56	†	†
Among those who attempted an assessment, passed an assessment/certification and/or received a certificate	9.1%	3	72.7%	24	†	†	0.0%	0	67.9%	38	†	†
Earned postsecondary credit in high school	—	—	—	—	—	—	0.0%	0	8.2%	98	10.3%	159
Postsecondary outcomes												
Enrollment												
Enrolled in postsecondary education	12.1%	4	37.6%	275	—	—	22.9%	8	40.0%	475	38.2%	592
Enrolled in a postsecondary education program related to their secondary POS ¹	75.0%	3	67.3%	185	—	—	100.0%	8	73.3%	348	†	†

See notes at end of table.

Table 6-C. Montana: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11—Continued

Outcome	2009–10						2010–11					
	RPOS concentrators		Concentrators in other CTE programs		Other students		RPOS concentrators		Concentrators in other CTE programs		Other students ¹	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Need for developmental course work												
Enrolled in developmental course for math ¹	0.0%	0	44.7%	123	119	37.5%	3	34.5%	164	20.4%	121	
Enrolled in developmental course for English ¹	0.0%	0	26.2%	72	71	12.5%	1	9.7%	46	6.9%	41	

— Not available.

[^] Data suppressed because of small cell size (representing 10 or fewer students).

[†] Not applicable.

¹ Percentages are among those who enrolled in postsecondary education.

NOTE: Data for 2009–10 reflects a second set of data that includes information for RPOS concentrators submitted in January 2012. Data for 2010–11 includes an additional suburban district that joined the project in 2010–11; data for this district were not submitted in 2009–10.

SOURCE: Montana Office of Public Instruction.

Utah

Utah reported 123 12th-grade RPOS (health sciences) concentrators in 2009–10, and 210 concentrators in 2010–11 (Table 7-C). Utah had some shifts in the number of students who were RPOS concentrators in the suburban and urban districts between the two years (Tables 7-A and 7-B).¹³ In the suburban district, the number of RPOS concentrators was 182 in 2009–10 and 29 in 2010–11. This district is concentrating project efforts on a subset of health science students who apply to be part of a program that offers additional counseling and opportunities to earn postsecondary credits. In the urban district, by contrast, the number of RPOS concentrators grew from 59 to 172.

In 2010–11, more than one-half (54 percent) of the RPOS concentrators reported were female versus 45 percent of concentrators in other CTE programs and 46 percent of other students. RPOS concentrators were less likely than students in other CTE programs or all other students to be white (48 percent vs. 72 and 60 percent, respectively) and more likely to be Hispanic (31 percent vs. 17 and 24 percent, respectively). RPOS students were eligible for free or reduced-price lunch at a similar rate (49 percent) to other students (47 percent), and both of these groups had higher rates than other CTE concentrators (34 percent). An awareness of district-level variations will be important in all of the project states, but particularly in Utah because of the very different populations that the large suburban and urban districts serve. For example, just 10 percent of grade 12 students in the suburban district are Hispanic versus 35 percent in the urban district. Similarly, 58 percent of the urban 12th graders were eligible for free or reduced-price lunch versus 23 percent in the suburban district.

RPOS concentrators were less likely than the comparison groups to be ESOL eligible or to have a disability. The test score data submitted by Utah for both the 2009–10 and 2010–11 academic years were limited. Although the state data analyst strove to access additional test score data during Year 2, test score data were again available for less than 85 percent of students (about 43 percent of students for English and about 68 percent for Math) and therefore cannot be used as a measure of prior academic skills.

¹³ 2009–10 demographic data are for 11th and 12th graders (Table 7-A) and 2010–11 demographic data for 12th-grade students only (Table 7-B). Outcome data (Table 7-C) are for 12th graders only in both years.

Table 7-A. Utah: Student characteristics for 11th- and 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	252	100.0%	4,296	100.0%	3,987
Gender						
Male	24.2%	61	53.8%	2,313	51.3%	2,044
Female	75.8%	191	46.2%	1,983	48.7%	1,943
Race						
White	81.3%	205	69.3%	2,979	63.4%	2,527
Native Hawaiian or other Pacific Islander		^	2.1%	89	3.1%	125
Black or African American		^	2.5%	107	3.0%	121
Asian	4.0%	10	3.0%	131	3.0%	120
American Indian or Alaska Native		^	3.5%	150	7.5%	299
Hispanic	9.5%	24	19.2%	824	19.0%	758
Unknown/ data not available		^	0.4%	16	0.9%	37
Eligible for free or reduced-price lunch	23.4%	59	34.5%	1,483	41.9%	1,670
English for speakers of other languages (ESOL) eligible	6.7%	17	16.2%	698	18.1%	722
Students with a disability		^	1.7%	73	2.2%	87
Attendance ratio ¹		.96–.99		.97–.99		.95–.98
Number scoring at proficiency or higher ²						
8th-grade pre-algebra		0		10		10
8th-grade algebra I		6		16		16
8th-grade algebra II		0		2		2
8th-grade language arts		7		74		75
11th-grade pre-algebra		4		193		194
11th-grade algebra I		22		621		510
11th-grade algebra II		4		332		300
11th-grade English score		96		1,718		1,750

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Because of the way submitted data were aggregated, attendance data excludes RPOS participants.

² The percentages of students for which test scores were available were low. For the 8th-grade assessments, math scores were available for 2 percent of students and language arts scores were available for 3 percent. The percentage of available 11th-grade scores were somewhat higher, with math scores available for 26 percent of students and English scores available for 53 percent. The data specialist working with Utah’s RPOS team attributes the low percentages to poor database match rates and gaps in the data collected, and is investigating strategies to improve future data quality. Since the percentage of students with test score data are so low, the percentages scoring at or above proficiency are not shown.

SOURCE: Utah State Office of Education.

Table 7-B. Utah: Student characteristics for 12th-grade RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2010–11

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	210	100.0%	2,386	100.0%	1,842
Gender						
Male	45.7%	96	55.2%	1,316	54.3%	1,001
Female	54.3%	114	44.8%	1,070	45.7%	841
Race						
White	48.1%	101	71.9%	1,715	59.3%	1,092
Native Hawaiian or other Pacific Islander	5.7%	12	1.9%	46	2.4%	45
Black or African American	4.8%	10	2.9%	70	2.9%	54
Hispanic	31.0%	65	16.6%	396	24.3%	447
Asian	8.6%	18	2.3%	55	2.8%	51
American Indian or Alaska Native		^	3.5%	84	7.4%	136
Two or more		^	0.8%	20	0.9%	17
Eligible for free or reduce-priced lunch	49.0%	103	33.7%	803	46.9%	863
English for Speakers of Other Languages (ESOL) eligible	55.2%	116	87.1%	2,078	70.3%	1,295
Students with a disability		^	10.6%	253	18.2%	336
Attendance ratio	†	0.99	†	.97-1.00	†	.96-.99
Number scoring at proficiency or higher						
11th-grade pre-algebra	—		—		—	
11th-grade algebra I	—		—		—	
11th-grade algebra II	—		—		—	
11th-grade English score	—		—		—	

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

† Not applicable.

SOURCE: Utah State Office of Education.

RPOS concentrators and concentrators in other CTE programs graduated from high school in 2010–11 at similar rates (about 87 percent) and at a higher rate than other students (50 percent) (Table 7-C). In 2009–10, about 72 percent of RPOS concentrators earned postsecondary credits during high school, compared with about 49 percent who did so in 2010–11. This change may reflect the lower number of students identified as RPOS students in the suburban district, which has focused on dual credit opportunities. Despite the drop in rate, RPOS concentrators still earned these credits at a higher rate than did concentrators in other programs (39 percent) or nonconcentrators (18 percent).

In 2009–10, all of the grade 12 RPOS concentrators enrolled in postsecondary education versus 87 percent of concentrators in other programs, and 45 percent of all other students. The percentage of postsecondary enrollees in each group dropped in 2010–11, although RPOS concentrators still had the highest rate among the three groups (55 percent vs. 38 percent for concentrators in other CTE programs and 24 percent for all other students). Utah changed the source of its postsecondary enrollment data in Year 2 from the state postsecondary system to the NSC, and a low NSC match rate may account for the change. Two percent or less of RPOS or other concentrators majored in a field identical to that of their secondary POS.

All three groups took developmental courses in higher education at low rates in 2010–11 (less than 12 percent), but slightly higher rates (by 2 to 8 percentage points) were found among RPOS concentrators. For example, the developmental math course-taking rate for RPOS concentrators (11 percent) was similar to that found for other students (10 percent), but 4 percentage points higher than the rate among concentrators in other programs.

Table 7-C. Utah: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11

Outcome	2009–10						2010–11					
	RPOS concentrators			Concentrators in other CTE programs			RPOS concentrators			Concentrators in other CTE programs		
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	123	100.0%	2,652	100.0%	1,445	100.0%	210	100.0%	2,386	100.0%	1,842
Secondary outcomes												
Secondary school completion												
Graduated with a regular high school diploma	93.5%	115	84.2%	2,234	63.0%	911	87.6%	184	87.0%	2,077	50.5%	930
Technical skills attainment												
Technical skills assessment available		—		—		†	100.0%	210	100.0%	2,386		†
Among those who had an assessment available, attempted a technical skills assessment		—		—		†	90.5%	190	99.9%	2,384		†
Among those who had an assessment available, passed an assessment/certification and/or received a certificate		—		—		†	74.8%	157	89.7%	2,141		†
Earned postsecondary credit in high school (dual enrollment)	71.5%	88	39.3%	1,041	21.9%	317	48.6%	102	38.9%	928	18.1%	333
Postsecondary outcomes												
Enrollment												
Enrolled in postsecondary education	100.0%	123	87.4%	2,319	45.4%	656	55.2%	116	38.4%	917	23.5%	433
Enrolled in a postsecondary education program related to their secondary POS ^{1,2}	2.4%	3	0.1%	3		†	1.7%	2	0.2%	2		†

See notes at end of table.

Table 7-C. Utah: Outcome data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11
 —Continued

Outcome	2009–10						2010–11					
	RPOS concentrators		Concentrators in other CTE programs		All other students		RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Need for developmental course work ²												
Enrolled in developmental course for math	11.4%	14	8.8%	203	5.8%	38	11.4%	14	7.4%	172	10.1%	66
Enrolled in developmental course for reading	3.3%	4	3.7%	85	2.7%	18	5.7%	7	3.1%	73	5.9%	39
Enrolled in development course for writing	1.6%	2	1.8%	41	11.6%	76	10.6%	13	1.8%	42	7.3%	48

— Not available.

[^] Data suppressed because of small cell size (representing 10 or fewer students).

[†] Not applicable.

¹ Calculated by matching secondary and postsecondary POS and major 2-digit CIP codes.

² Percentages are among those who enrolled in higher education.

SOURCE: Utah State Office of Education.

Wisconsin

Wisconsin had 197 12th-grade RPOS concentrators (the Advance Manufacturing Pathway) in 2009–10, and 43 RPOS concentrators in 2010–11 (Table 8-C).¹⁴ The demographic characteristics of RPOS students differed from those of their peers in the comparison groups. Over 60 percent (exact number suppressed to protect student confidentiality) of RPOS students were male and white, whereas the comparison groups were about 50 percent male and whites accounted for about 75 percent of each group, with Asians accounting for the majority of the remainder (Tables 8-A and 8-B). About one-third of the two comparison groups qualified for reduced-price or free lunch, compared with a lower percentage of RPOS concentrators (exact percentage suppressed to protect student confidentiality). Finally, students with disabilities comprised a lower percentage of RPOS concentrators (number suppressed to protect data confidentiality), than that found for the other two groups (9 and 15 percent).

Attendance ratios are similar across the three groups (.95 or higher), but the test score data suggest that students choosing the RPOS program have relatively stronger academic skills. Average scores for RPOS concentrators on the assessments were 3.0–3.5 (math) and 3.0–3.7 (English), compared with a range of 2.6–3.3 on both assessments for the other groups. Scores were, however, available for a lower proportion of RPOS than other students (63 vs. 96 percent, respectively); the scores reported, therefore, may not be representative of all RPOS concentrators.

¹⁴ The description of the RPOS and comparison group students in Wisconsin is limited to 2010–11; for 2009–10, Wisconsin submitted aggregated grade 9–12 student characteristic data and used a different concentrator definition, rendering the data incomparable across the two years (Table 8-A).

Table 8-A. Wisconsin: Student characteristics for 9th- through 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	642	100.0%	1,095	100.0%	2,040
Gender						
Male	93.5%	600	53.2%	582	37.9%	773
Female	6.5%	42	46.8%	513	62.1%	1,267
Race						
White	94.2%	605	82.4%	902	80.0%	1,631
Native Hawaiian or other Pacific Islander		^	0.0%	0		^
Black or African American		^		^	1.1%	22
Asian	4.7%	30	16.2%	177	17.5%	358
American Indian or Alaska Native	9.5%	4		^	0.8%	16
Hispanic	0.0%	0	0.0%	0		^
Eligible for reduced-price or free lunch	14.5%	93	14.0%	153	13.3%	271
English for speakers of other languages (ESOL) eligible	2.2%	14	14.6%	160	12.3%	251
Students with a disability	11.7%	75	9.5%	104	7.6%	156
Average attendance ratio (days attended/days enrolled)		—		—		—
ESEA-reported grade 10 state assessments						
Average math score		—		—		—
Average English score		—		—		—

— Not available.

^ Data suppressed because of small cell size (representing 10 or fewer students).

SOURCE: Wisconsin Department of Public Instruction.

In 2010–11, nearly all students in each group graduated with a regular high school diploma (95 percent or more) (Table 8-C). The data submitted for RPOS concentrators' technical skills assessment were inconsistent within sites (the numbers of RPOS concentrators overall and with access to an assessment did not correspond) and therefore are not included. A new assessment is in development for the program that will be used in all three districts, and so it may be that the inconsistent 2010–11 data that were reported may reflect the transition. All of the concentrators in other CTE programs had the opportunity to take a technical skill assessment, but only about one-third did so. The differences between RPOS and other CTE concentrators for the other remaining measures were small (2–3 percentage points). Similar percentages of RPOS and other

CTE concentrators (about 58 percent) earned postsecondary credits in high school, a rate higher than that found for other students (16 percent). About sixty percent of all three groups enrolled in postsecondary education, although the rates for RPOS concentrators and other CTE concentrators were slightly higher than the rate for all other students (67 and 65 percent vs. 60 percent).

Table 8-B. Wisconsin: Student characteristics for 12th-grade RPOS concentrators, concentrators in other CTE programs, and all other students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2010–11

Student characteristics	RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	43	100.0%	356	100.0%	838
Gender						
Male		^	54.8%	195	51.6%	432
Female		^	45.2%	161	48.4%	406
Race						
White	90.7%	39	77.5%	276	76.5%	641
Native Hawaiian or other Pacific Islander	0.0%	0	0.0%	0		^
Black or African American		^		^	2.4%	20
Hispanic	0.0%	0		^	2.1%	18
Asian		^	21.3%	76	17.8%	149
American Indian or Alaska Native	0.0%	0		^		^
Eligible for reduced-price or free lunch ¹		^	32.6%	116	33.1%	277
English for Speakers of Other Languages (ESOL) eligible	0.0%	0	14.9%	53	9.1%	76
Students with a disability		^	9.3%	33	15.2%	127
Average attendance ratio (days attended/days enrolled)		.95–.99		.96–.97		.96–.99
ESEA-reported grade 10 state assessments ²						
Average math score		3.0–3.5		2.6–3.0		2.7–2.9
Average English score		3.0–3.7		2.6–3.3		2.7–3.3

^ Data suppressed because of small cell size (representing 10 or fewer students).

¹ Data for reduced-price and free lunch available for the suburban and urban districts only.

² Test scores were available for 96 percent of students overall and 63 percent of RPOS concentrators.

SOURCE: Wisconsin Department of Public Instruction.

Table 8-C. Wisconsin: Outcomes data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11

Outcome	2009–10				2010–11							
	RPOS concentrators		Concentrators in other CTE programs		All other students		RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Number of students	100.0%	197	100.0%	316	100.0%	635	100.0%	43	100.0%	356	100.0%	838
Secondary outcomes												
Secondary school completion												
Graduated with a regular high school diploma	96.4%	190	95.3%	301	97.0%	616	95.3%	41	97.8%	348	98.9%	829
Technical skills attainment												
Number of students for whom a technical skills assessment was available	—	—	—	—	†	†	—	—	100.0%	356	—	†
Number of students who attempted a technical skill assessment	7.1%	14	4.4%	14	†	†	—	—	34.3%	122	—	†
Among those who attempted a certificate, the number of students who passed and/or received a certificate	71.4%	10	71.4%	10	†	†	—	—	90.2%	110	—	†
Earned postsecondary credit in high school ^{1,2}												
Number who earned postsecondary credits	—	—	19.6%	62	11.7%	74	58.1%	25	57.6%	205	16.1%	135
Postsecondary outcomes												
Enrollment												
Enrolled in postsecondary education	—	—	—	—	†	†	67.4%	29	65.4%	233	60.4%	506
Enrolled in a postsecondary education program related to their secondary POS ³	—	—	—	—	†	†	44.8%	13	41.6%	97	—	†

See notes at end of table.

Table 8-C. Wisconsin: Outcomes data for 12th-grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project: 2009–10 and 2010–11 — Continued

Outcome	2009–10				2010–11							
	RPOS concentrators		Concentrators in other CTE programs		All other students		RPOS concentrators		Concentrators in other CTE programs		All other students	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Among those who enrolled in postsecondary education, need for developmental course work in postsecondary education	—	—	—	—	—	—	—	—	—	—	—	—
Enrolled in a developmental course for math	—	—	—	—	—	—	—	—	—	—	—	—
Enrolled in a developmental course for reading	—	—	—	—	—	—	—	—	—	—	—	—

— Not available.

† Not applicable.

¹ In 2010–11, data on postsecondary credits earned in high school was available for 93 percent of students.

² Among those for whom data were available in each category. Data were available for all of the students in the suburban and rural districts and 86 percent of students in the urban district.

³ Percentages are among those who enrolled in postsecondary education.

SOURCE: Wisconsin Department of Public Instruction.

Year 2 Quantitative Analysis Summary

Since 2010–11 was the implementation year, data from the 2009–10 and 2010–11 academic years do not yet reflect program effects. The two years of data submitted by most of the participating states, however, do reveal some changes in RPOS program organization and enrollments. Wisconsin adjusted its definition of an RPOS student for 2010–11 to match its state concentrator definition for *Perkins*, while Montana included a new suburban site in project activities. Among the states with two years of comparable data, Kansas and Maryland experienced declines in the number of RPOS concentrators in their states from 2009–10 to 2010–11. In Montana, the number of RPOS concentrators increased by two (less than ten percent), and in Utah, by 87 (71 percent).

The enrollment changes in some states were accompanied by shifts for a number of outcome measures between the two years. Since Year 2 saw states implementing changes in their data collection approaches in response to issues identified in Year 1, greater consistency is anticipated across data submitted in Years 2 and 3. For example, the percentage of RPOS students enrolling in postsecondary education in Utah dropped from 100 percent in 2009–10 to 55 percent in 2010–11. Utah changed the postsecondary enrollment data source between 2009–10 and 2010–11, which may account for the drop. Montana reported technical skill assessments for a low percentage of RPOS students in 2009–10, but none in 2010–11. The research team will further explore these and other issues during the Year 3 site visits to determine whether observed changes reflect changes in student populations, program implementation, or challenges in data collection.

The analysis also revealed differences between the participating districts in each state that may have implications for project activities. For example, in some states, the proportion of RPOS students taking a technical skill assessment or earning postsecondary credits while in high school varied by district, suggesting that some districts may need more emphasis on these RPOS components than others. In addition, the data presented here may assist states to determine areas in need of improvement across their participating districts. In Arizona, only about one-half of RPOS students attempted a technical skills assessment in 2009–10, even though all had the opportunity to do so.¹⁵ RPOS activities during Years 3 and 4, therefore, might focus on preparing and encouraging students to take the assessments and monitoring whether the participation rate grows as project efforts develop.

¹⁵ It should be noted, however, that Arizona has yet to submit data for students who graduated in June 2011, which may hinder educators seeking to make program improvements, since they do not have timely access to data.

The addition of program evaluators in some states also may offer opportunities for more in-depth explorations of project outcomes, which may improve data quality and expand the potential for conducting a more rigorous quantitative outcomes analysis. Improved data also may allow project sites to target their efforts on some measures. For example, while the percentage of RPOS (and CTE) students earning postsecondary credits in high school was relatively high in all three of Wisconsin's participating districts (over 55 percent), the state has the potential to address related measures that are not included in the six-state study, such as the number of credits students are earning and students' grades or exam performance. As states continue to work with their project districts, the quantitative assessment and state evaluation data will support the monitoring of project outcomes and also provide information that can guide project activities.

Next Steps

The data that have been submitted begin to reveal how project implementation is changing within states, and how RPOS students compare to both other CTE concentrators and all other students in terms of characteristics and educational outcomes. In the third year, as the project matures and state teams seek to strengthen rather than to add project sites and data sources, research staff will compare enrollments and outcome data for 2011–12 to both 2009–10 and 2010–11. The 2009–10 data provide an important indication of the starting point of the programs in each state, and will offer insights into how project activities have shaped and changed the participating LEAs, particularly in conjunction with the implementation and project data slated for collection in the upcoming year.¹⁶

The 2010–11 data submissions, when compared with those submitted for 2009–10, revealed considerable volatility in student enrollments and outcomes from Year 1 to Year 2. In part, these changes reflect adjustments made as states assessed the status of their programs and revised policies to address project requirements. Utah, for example, experienced a substantial decrease in the number of RPOS concentrators in one suburban LEA due to the introduction of a new, cohort-based program focused on a subset of students enrolled in health sciences. In Montana, the number of concentrators in CTE programs other than the RPOS grew across years due to the addition of a suburban LEA, an action taken to increase the state's number of RPOS concentrators. Some of the differences in state results also relate to the adoption of new data sources for some measures, such as the use of the NSC to obtain data on postsecondary enrollment. In addition to these project-related differences, year-to-year fluctuations also may be a reflection of the small size of some LEA programs and changes in students' interests.

Given the differences in states' programs and data from Year 1 to Year 2, the summary of states' outcomes focuses on the patterns revealed in the 2010–11 data. Since states and local sites were still working to implement their program improvement strategies in 2010–11, the data for that year reflect student outcomes before full implementation of the RPOS components. In subsequent years, these data will provide an additional baseline for comparisons with concentrators who attended the implemented RPOS programs.

¹⁶ Providing for rigorous trend analysis will require that researchers gain access to student-level data for earlier years.

Additional years of data also will assist in gauging whether the observed differences will carry-over to subsequent years.

Data Collection and Analysis in Years 3 and 4

Performing a rigorous analysis of RPOS outcomes will require that the research team adopt multivariate statistical analyses to control for student characteristics and program factors that can affect student outcomes. Researchers also will need to apply methods such as propensity score matching to select appropriate comparison groups and reduce potential bias in the results. Employing such techniques will require the collection of student-level data, which to date has been restricted due to concerns over state and federal privacy laws. While the aggregate state data collected for this report offer insight into the scope of concentrator involvement in RPOS programs, analysis is limited to descriptive statistics that allow only for the observation of differences between groups.

States participating in the RPOS project have differing data collection capabilities, with some lacking centralized secondary and/or postsecondary education data systems or the ability to link information across education levels. The uneven quality of data submissions across states, and in some instances, between local sites within states, also suggests that much work remains to be done in collecting and reporting RPOS project data. While data quality may improve as state longitudinal data systems come online within states, considerable work remains to be done in identifying data elements and strategies for collecting and reporting valid and reliable data. The delay in some states' capacity to collect data also has implications for the use of information for program improvement purposes. Accordingly, research team members will continue to work with state data analysts to collect consistent data on student characteristics, as well as comparable measures of performance across states and over time. Continuing efforts also will be made to provide for the collection of student-level data in subsequent years.

In addition to conducting quantitative analyses, the research team will develop technical assistance materials to assist all states in collecting and analyzing program of study data. These efforts will be designed to align with state data reporting capacities. For example, the research team will offer strategies to assist states lacking centralized data collection systems in collecting and analyzing student and program data using descriptive statistics. For states with more advanced data systems, the assistance will focus on linking data across

education levels (and where possible with the workforce), and in providing guidelines to support the application of more advanced statistical methods.

This approach will help ensure that all states benefit from project involvement while minimizing data burden for state staff and local team members. Currently, states lacking centralized data systems are struggling to produce project data and at times are sacrificing measure validity and reliability in order to submit required information. In contrast, states with advanced SLDSs only are reporting aggregate data that fails to take full advantage of their reporting capacity. Aligning RPOS outreach efforts with states' capacities to report data will help maximize project impact, while helping to ensure that states improve the quality of their statewide CTE reporting systems even if they are unable to achieve all of the original goals of the quantitative assessment.

Appendix A

Arizona

The Arizona RPOS initiative focuses on developing an RPOS for two pathways within the Education Career Cluster: Education Professions and Early Childhood Education (ECE). These pathways prepare students for further education and careers in early childhood (pre-K to grade 8), elementary, and secondary education and related fields, and offer college credit through partnering postsecondary institutions. The Arizona Department of Education project leads selected these pathways as the focus of the RPOS grant based on consultations with OVAE and because the pre-existing, state-developed programs of study address many of the core components identified in the federal *Framework*. Three local project sites are participating in the RPOS project: Peoria Unified School District, a suburban district near Phoenix with six high schools, all of which are participating in RPOS activities; Tuba City High School, serving rural Navajo and Hopi communities in the northern part of the state; and Lake Havasu Unified School District, a suburban district in a small city in western Arizona with one high school. Each of the participating districts has developed a course articulation agreement with a single postsecondary partner: Peoria works with Estrella Mountain Community College, which is part of Maricopa Community Colleges, Tuba City works with Coconino Community College, and Lake Havasu works with Mohave Community College.

Kansas

Kansas is developing an RPOS for the Manufacturing Production Pathway within the Manufacturing Career Cluster. State RPOS project leadership selected the state-approved Manufacturing Production Pathway in part because it corresponds to the employment need within Kansas's high-growth industries. The state has selected four secondary school districts to participate in its project: Nemaha Valley School District, located in a rural area; Emporia School District, located in a large rural area; Derby Public Schools, located in a suburban area; and Wichita Public Schools, located in an urban area. Six postsecondary participants are either geographically engaged with an individual secondary RPOS site or are involved at the statewide RPOS project level. These colleges include Butler Community College, Flint Hills Technical College, Hutchinson

Community College, Manhattan Area Technical College, Wichita Area Technical College, and Fort Hays State University.

Maryland

The Maryland initiative focuses on developing an RPOS for the Facility and Mobile Equipment Maintenance Pathway within the Transportation, Distribution, and Logistics Career Cluster. The pathway prepares students for further education and careers in the automotive industry, offering college credit as part of a statewide articulation agreement for individuals who pass a set of industry certifications, perform at high levels in their technical course work, and meet a set of postsecondary institutional requirements. The pathway was selected for RPOS grant participation because Maryland State Department of Education administrators believed that the pre-existing, state-developed program of study addressed many of the core components identified in the federal *Framework*. Three local project sites are participating in the RPOS: Queen Anne's County, located in a rural area; Baltimore County, situated in a suburban setting; and Baltimore City, serving urban Baltimore. Two postsecondary partners, the Community College of Baltimore County and the Pennsylvania College of Technology are also participating—both offer statewide articulation.

Montana

Montana has chosen the Construction Pathway within the Architecture and Construction Career Cluster for its RPOS development. Participating sites at the secondary level were selected based on the quality of their construction programming and school size. The state has selected four LEAs to participate in the project: Billings Public Schools, located in an urban area; Great Falls Public Schools and Helena Public Schools, both located in suburban areas; and Townsend School District, located in a rural area. Within urban and suburban sites, multiple high schools are participating in the project. The postsecondary partner is the University of Montana, Helena College of Technology.

Utah

The Utah RPOS initiative focuses on the health sciences field. This program area spans 10 careers in four state-approved pathways that include Biotech Research and Development, Diagnostics, Health Informatics, and Therapeutic Services. These pathways prepare students for further education and careers in the health

sciences industries, and offer them the opportunity to earn industry certifications and accrue college credit in concurrent enrollment classes. The health sciences program area was selected for the RPOS grant project because most districts offer health science pathways and the research team believed that the pre-existing, state-developed pathway programs addressed many of the components identified in the OVAE *Framework*. Three local project sites are participating in the RPOS: Weber School District, situated in a suburban area near Ogden; Salt Lake City School District, serving an urban area; and San Juan School District, located in a rural area in the southeastern part of the state about three-hundred miles from Salt Lake City. Each of the local sites is working closely with a postsecondary partner. Weber works with Weber State University, Salt Lake works with Salt Lake Community College, and San Juan works with the Utah State University, College of Eastern Utah-San Juan Campus.

Wisconsin

The Wisconsin RPOS initiative focuses on the Manufacturing Production Process Development Pathway within the Manufacturing Career Cluster, also known as the Advanced Manufacturing Pathway. The pathway prepares students for further education and careers in manufacturing, offering students the possibility to earn Wisconsin Technical College System credits for one or two courses (depending on district program offerings) and eventually will allow students who perform at high levels to earn a skill certificate developed in conjunction with local industry. The state team selected the pathway because of the economic importance of manufacturing in Wisconsin and in the state's central region, where the participating districts are located. Three LEAs are participating in the project: D.C. Everest Area School District, situated in a suburb of Wausau; East and West High Schools in the Wausau School District, serving Wausau's more urban areas; and Spencer School District, located in a rural area that is about an hour's drive from Wausau. The primary postsecondary partner for all three sites is Northcentral Technical College in Wausau, although each of the LEAs also has other postsecondary partners for other CTE programs.

Appendix B

Data Collection Letter

Dear Rigorous Program of Study (RPOS) Project Participant,

Thank you for your continued help with the RPOS evaluation and guidance regarding your state's education information systems, especially during the site visits in December 2011 and January 2012. We have arrived at the second data round of data collection (academic year 2010–11) for the project and look forward to working with you in the coming weeks to collect the data we will need to continue our evaluation of the project's success.

Enclosed is a set of table shells for you to complete for each site participating in the RPOS project. We tried to customize the request to your state so please let us know about any discrepancies you find. We understand that you may also have questions about the elements and/or cell values, so we would be happy to arrange a phone call to discuss the request at a mutually convenient time.

We also understand that you may not be able to provide all of the information requested in the shells, particularly with this year's spring time line for data collection. Please note elements that are not available and indicate the time frame for when the data are expected to be ready. This information will assist us in understanding what project support you may need and in planning the evaluation work going forward.

We ask you to submit the completed shells by **Friday, April 20, 2012**. We are "on-call" to answer any questions that you may have about the data shells and to provide assistance as you prepare your submission. Please contact Sandra Staklis by e-mail (sstaklis@mprinc.com) or telephone (503-222-5467 x406).

You will notice that some of the data elements requested last year are no longer included; these were eliminated based on your feedback and information regarding data availability. Please also note the following changes in particular:

- Demographic and outcome data are requested for grade 12 students only. To collect information on the numbers of students in grades 9–12 overall and in CTE and the RPOS program(s), we added a tab called "Enrollments."

- The outcome “Enrollment in postsecondary education” is for fall 2011 enrollments.
- Please note the following guidelines as you complete the tables:
 - Enter data only for shaded cells in each table.
 - Enter ‘0’ for any cell in which you do not have any students; enter ‘n/a’ if data are unavailable.
 - Adjust worksheet rows if those included do not reflect the available data categories.
 - We have included your state’s definitions for secondary CTE participants and concentrators in the enrollment table. Please update as needed on this table or in a separate document.

Summary of State Data Submissions

Table B-1. 2010–11 demographic and background and outcome data submitted by states participating in the promoting rigorous programs of study project

Data elements	Number of states submitting complete data							
	Arizona	Kansas	Maryland ²	Montana	Utah	Wisconsin		
Demographic and background data								
Gender	9/12	✓	✓	✓	✓	✓	✓	✓
Race/ethnicity		✓	✓	✓	✓	✓	✓	✓
English for Speakers of Other Languages eligibility		✓	✓	✓	✓	✓	✓	✓
Free or reduced-price lunch eligible		✓	✓	✓	✓	✓	✓	✓
Disability status		✓	✓	✓	✓	✓	✓	✓
Attendance		✓	✓	—	✓	✓	✓	✓
Average ESEA-reported state assessment scores								
Math		✓	✓	✓	—	✓	✓	✓
English		✓	✓	✓	—	✓	✓	✓
Total number of demographic and background measures for which complete data were submitted		8	8	7	6	8	8	8
Outcome data								
Secondary school completion	9/12	✓	✓	✓	✓	✓	✓	✓
Technical skills attainment		—	✓	✓	✓	✓	✓	✓
Earned postsecondary credit during high school		✓	✓	✓	✓	✓	✓	✓
Enrollment in postsecondary education		✓	1/31/2013	✓	✓	✓	✓	✓
Major related to secondary POS		—	1/31/2013	✓	✓	✓	✓	✓
Need for developmental course work in postsecondary education		✓	—	✓	✓	—	—	—
Employment and/or military status		—	12/15/2012	—	—	—	—	—

See notes at end of table.

Table B-1. 2010–11 demographic and background and outcome data submitted by states participating in the promoting rigorous programs of study project
 —Continued

Data elements	Number of states submitting complete data					
	Arizona	Kansas	Maryland ²	Montana	Utah	Wisconsin
Total number of outcomes for which complete data were submitted		4	3	6	6	5

✓ = baseline data submitted.

— Data not available or available for less than 85 percent of students.

¹ Outcome are available later in Maryland than in other states; Maryland submitted postsecondary education and employment outcome data for 2009–10 shortly after submitting the 2010–11 data.

NOTE: A data indicates when data would be available (unknown indicates no date specified).

SOURCE: Calculations by the authors.