Promoting Rigorous Career and Technical Education Programs of Study

RPOS Quantitative Outcomes Study: Baseline Data Collection Report

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Contents

Introduction **1**

The Quantitative Outcomes Assessment **3**
Student Populations 6
Baseline Data Collection and Analysis 7
Data Security 7
Baseline Data Elements 8
Program Size 9
Definitions of Secondary Participants and Concentrators 10
Outcome Data 11

Baseline Data by State **15**
Arizona 15
Kansas 16
Maryland 17
Montana 18
Utah 20
Wisconsin 21
State Data Summary 23

References **25**

Appendix A **27**

Introduction

In January 2010, the U.S. Department of Education, Office of Vocational and Adult Education (OVAE) released a Program of Study Design Framework (*Framework*) that defined 10 key components that are associated with effective programs of study. OVAE has sponsored the *Promoting Rigorous Career and Technical Education Programs of Study* project to assess the effect of rigorous programs of study (RPOS) that incorporate *Framework* components on students' educational achievement and post-program outcomes. This four-year effort is intended to promote and support state and local development and implementation of comprehensive, high-quality RPOS and evaluate the effects of student participation in these programs.

The six states selected to participate—Arizona, Kansas, Maryland, Montana, Utah, and Wisconsin—have identified one urban, suburban, and rural Local Education Agency (LEA) as sites for RPOS development and implementation. Where feasible, the three participating LEAs in each state are also working with a postsecondary partner. LEAs are required to implement an RPOS that incorporates most or all *Framework* components by the start of the 2011–12 academic year. First year activities (2010–11) focused on developing RPOS within each site, and implementing and/or strengthening *Framework* components identified as missing or in need of improvement.

States also committed to collect and report information on the progress of students enrolled in the state-identified RPOS. Beginning in the spring of 2011, MPR researchers worked with the RPOS project lead(s) and data specialists in each state to collect quantitative data on the background, characteristics, and outcomes of 11th and 12th grade students enrolled in each site during the 2009–10 academic year. Since these data are based on students enrolled in CTE coursework that was subsequently incorporated into an RPOS, they cannot be used to assess the effect of an RPOS on students or the outcomes that they achieve. Data can, however, be used to assess state capacity to report on student performance and outcomes, and to establish a baseline comparison for data collected in subsequent years.

This report includes a description and analysis of the 2009–10 data submitted by states in August 2011. The report includes a description of the data collected, an overview of the quality of the information provided from each state, and possible modifications that states may need to make to their data collection procedures to produce consistent data in subsequent years. Findings contained within this report also document states' current capacity to supply data on the seven outcome measures described in the Request for Proposal (RFP), along with an additional element addressing employment outcomes.

The Quantitative Outcomes Assessment

To assess how student concentration in an RPOS affects their post-program outcomes, the research team will gather data on student characteristics and outcomes in future project years. The collection and analysis of 2010–11 through 2013-14 data will address three primary research questions across the LEAs within each state:

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 seven performance *outcomes* of secondary RPOS concentrators compare with those of two groups of students:
    - Students who did not concentrate in a CTE program (including CTE participants and non-participants); and
    - Students within the LEA who were concentrators in other CTE programs?

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 address these questions, the research team will collect aggregate data on all grade 12 students enrolled in the participating districts within each state. Figure 1 links the three research questions with the data collected on student characteristics, secondary and postsecondary outcomes, and implementation levels.

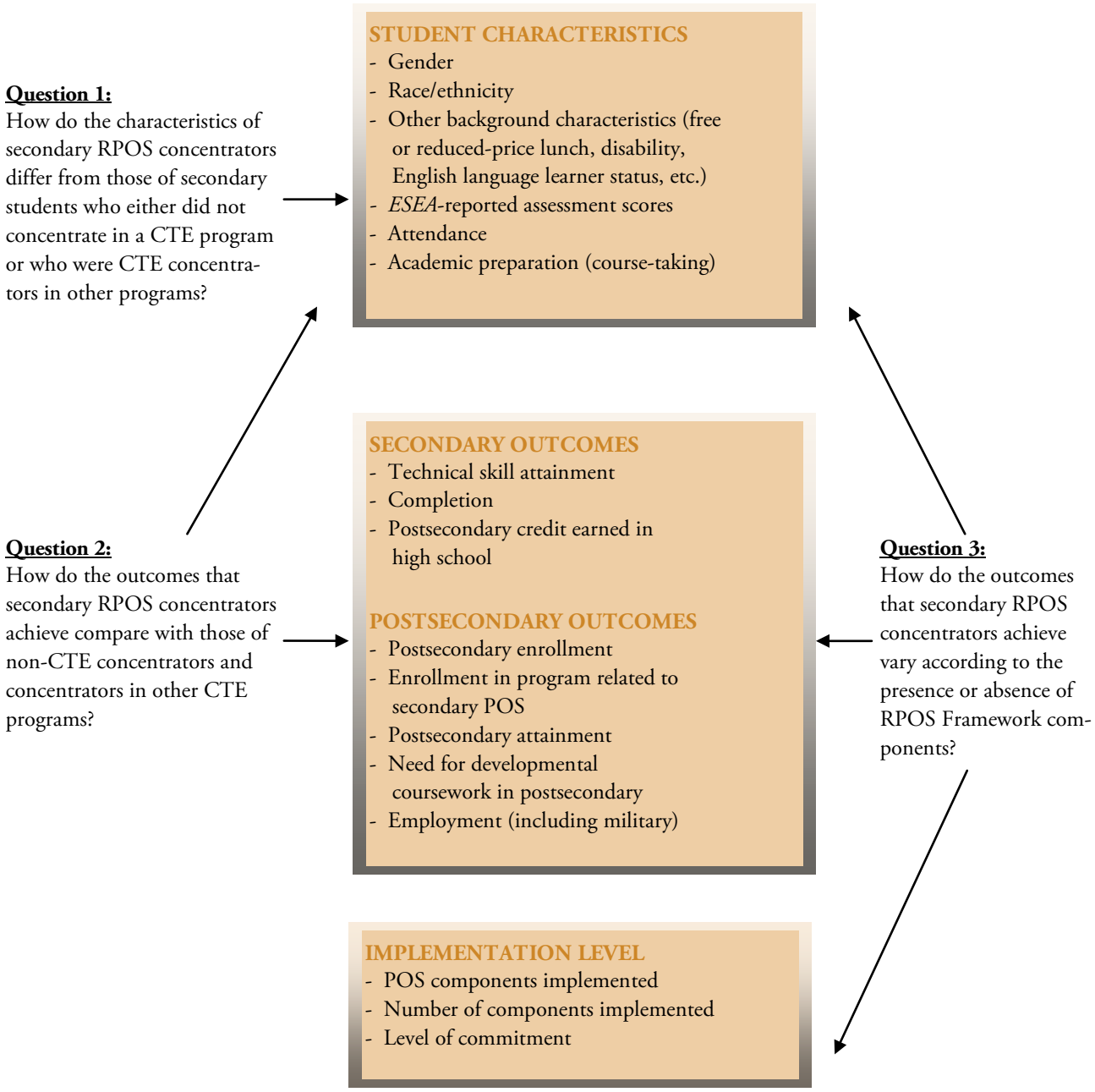
The first question will be addressed using descriptive statistics comparing the characteristics of RPOS concentrators in each state with the two comparison groups. The characteristics compared will include gender, race/ethnicity, and whether a student qualifies for free or reduced-price lunch, among others. The comparison groups will include students who are CTE concentrators in other programs and non-CTE concentrators. To the extent that data are available, the analysis will also explore how the groups differ in terms of measures of academic preparation and motivation, such as scores on standardized tests and attendance.

Figure 1: Study Overview

Comparison groups:

- RPOS concentrators
- Students not concentrating in CTE
- Other CTE concentrators

Research Questions and Data



To address the second question, multivariate analysis will be used to compare the secondary and postsecondary educational outcomes of RPOS concentrators with non-CTE concentrators and with concentrators in other CTE programs. Since a number of districts' RPOS have small enrollments, this analysis will be restricted to districts for which data on at least 15 RPOS concentrators are available. The analysis for districts with RPOS enrollments of 30 or less also will be considered exploratory, and results interpreted with caution, since findings will likely not be generalizable to other locations. The outcomes analysis will focus on the seven performance measures included in the RFP, which are based on the indicators of performance required under Sec. 113(b) (State Performance Measures) and Sec. 203(e) (Tech Prep Indicators of Performance and Accountability) of *Perkins IV*.

The analysis will control for observed differences in students' demographic and academic characteristics, such as race/ethnicity, prior test scores, and attendance, among others. If sufficient data are collected from one or more states, RPOS concentrators may also be compared with a group of non-CTE concentrators through a multivariate analysis that first controls for selection bias using a statistical technique called propensity score matching.[1] This approach allows the identification of a comparison group based on the likelihood of group membership calculated using a range of student characteristics (rather than just one or two), thereby reducing the bias associated with non-random assignment. In states and districts with low RPOS enrollments (15 or less), or for which the data elements are limited, the analysis will use descriptive statistics to explore differences between RPOS and other students' outcomes.

To the extent that detailed data on implementation levels can be collected, the final research question will be addressed through an exploratory analysis comparing outcomes across sites (within states) that exhibit different implementation levels. Variations in the data available in each state, the limited number of site, and differences between rural, suburban, and urban sites limit comparisons across states and by site location. Analyzing the quantitative and qualitative data collected together, however, may provide insights into how implementation levels and outcomes vary across sites and states, and will inform future research on RPOS.

[1] The analysis will require data on students' characteristics, prior academic achievement (such as scores on standardized tests), and transcript data (such as the highest level of math completed).

Student Populations

One goal of the analysis is to determine whether concentration in an RPOS is associated with improved student outcomes. To test this association, the analysis will include two comparison groups. First, the outcomes of RPOS concentrators will be compared with students who are not concentrating in a CTE program. Depending on the type of analysis conducted, this approach may introduce some bias, since students may choose to concentrate in a CTE program, particularly in fields such as auto technology, because they hope to enter the workforce after high school graduation and forgo or delay postsecondary education (the fourth indicator of performance included in the RFP). If so, RPOS concentrators might be expected to exhibit a lower rate of higher education enrollment than non-CTE concentrators because students in the two groups have different postsecondary goals.

To accurately estimate the effect of an RPOS on outcomes such as higher education enrollment, a comparison group of students must be identified that possess similar characteristics to those participating in an RPOS. This second comparison group of students will consist of concentrators in CTE programs that are not part of the RPOS. Comparing RPOS concentrators with other CTE concentrators will increase the likelihood that the students being compared have similar career interests and goals, and that observed differences in outcomes can be associated with programmatic factors.

It should be noted that while the analysis of student outcomes will indicate whether concentrator status in an RPOS is associated with improved student outcomes, the study will not be able to provide definitive evidence that concentrating in an RPOS caused the outcomes. Since states selected the CTE program and districts participating in the project, and students within districts chose to participate in the program, there may be factors resulting from each of these decision points that make it more likely that a student in an RPOS project will achieve successful outcomes on the selected measures.

Baseline Data Collection and Analysis

The data systems and reporting capacities of the participating states vary, particularly in connecting data on CTE students with data on postsecondary education and other outcomes. The research team conducted a baseline data collection during the first year of the project to gain an understanding of the data available from each state, as well as information on the types of students enrolled in the RPOS and an initial overview of their outcomes. To collect these data, in June 2011 the research team sent instructions for populating a set of table shells with baseline data corresponding to students that were in grades 11 and 12 in the 2009–10 academic year. Specifically, states were asked to report aggregate demographic data for 11th and 12th grade CTE participants and concentrators enrolled within the identified RPOS program area, CTE concentrators in other programs, and all other students. Outcome data were requested for 12th grade students in the following categories: concentrators in the RPOS program, concentrators in other CTE program areas, and all other students.

State data analysts were requested to provide information on a set of data elements—adjusted, as needed, to reflect their states' reporting capacity. For example, 2009–10 data on race and ethnicity were collected using the 1977 Office of Management and Budget standard categories in Montana and Arizona; data systems in other states had already incorporated the 1997 standard. The request also directed analysts to indicate any elements that were not available in their state or local data systems, and to provide dates indicating when elements could be expected (see appendices A and B for the directions sent to states and an example of the blank table shells).

Data Security

Although states were asked to submit aggregate student data, in some instances information, such as gender and race, could have been used to identify individual students within a given district. For this reason, analysts suppressed reporting if the number of cases included in a given cell represented 10 or fewer students.[2] Data for all of the districts in some states exhibited small cell sizes, as did all rural

[2] 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 10 individuals or fewer. This helps ensure student privacy, since the reporting of small numbers of students might permit a reader to personally identify a student within a participating site. For this project, we chose the conservative

districts for at least some student groups (such as RPOS students). Four of the states were able to provide links to servers that allowed for the secure transfer of these data. However, two states (Utah and Kansas) did not have this type of access available. To preserve confidentiality, these two states initially submitted their data with cells representing 10 or fewer students suppressed, and then shared with researchers an encrypted and password-protected file using an appropriate software program.

Baseline Data Elements

The baseline data collection effort details the data that each state is currently able to provide, though several states reported that additional data would become available in the coming year. For this reason, the numbers of states able to report on each project outcome may be higher in subsequent years. States are generally able to report data on students' demographic characteristics and academic background: five of six states reported that they were able were able to produce data on six or more of the eight elements requested (Table 1). Available elements are anticipated to change over time; for example, although Arizona submitted four of the data elements, state staff indicated that data on remaining elements would be available in the coming year.

Table 1 about here

All six states submitted the federally-reported demographic data elements that included students' gender, race/ethnicity, free or reduced-price lunch, and English for speakers of other languages (ESOL) and disability status (Table 1). The data submitted by Arizona did not include free or reduced-price lunch data for the rural district, but the submission indicated that these data would be available for the 2010–11 year.

In addition to the demographic data noted above, the research team also requested data for two measures of student motivation and prior achievement: attendance and performance on standardized assessments. Two states were unable to provide data on student attendance (Montana and Wisconsin), and Arizona reported that these data would be available in September 2011. Only one of the states was able to provide 8th grade assessment data for 85 percent or more of students in the participating districts, but four states were able to provide adequate data for assessments taken during

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value of 10 students or less for data suppression. The data reported in the tables included this report are aggregated at the state level to avoid small cell sizes.

high school. Data on these assessments (generally taken before grade 11) were submitted for 85 percent or higher of students in the participating districts in all of the states except Arizona and Utah. Arizona reported that these data would be available by November 2011. In Utah, where test score data were available for less than half of the students in each district, the data analyst is investigating if more complete data might be available directly from the districts for 2010–11.

Program Size

States were requested to provide enrollment information for all 11th and 12th graders, and by RPOS and CTE status for each participating district. The numbers of students in these grades in the participating districts vary widely, ranging from 61 students in Montana's rural district, to 15,363 students in Maryland's suburban district (Table 2). Among states reporting enrollments in their RPOS programs, the number of participants in each district ranged from less than 10 to 1,082, and the number of concentrators from less than 10 to 182. As expected, the smallest numbers of RPOS program concentrators were found in rural districts (ranging from less than 10 to 24), with the exception of Arizona, which had 12 concentrators in the suburban district and 24 in the rural district.

Table 2 about here

In accordance with the wide range in enrollments by district, the total number of 11th and 12th grade students enrolled across the participating districts differed across states. The highest total enrollments were reported by Maryland, which had 26, 585 11th and 12th graders enrolled in the participating districts in 2009–10 (Table 3). In contrast, Wisconsin reported 2,448 students, reflecting the relatively small enrollments of the districts participating (Montana reported lower overall enrollments, but submitted data for grade 12 only). The number concentrators in RPOS programs also differed across states, which may be due to a variety of factors in addition to district size, such as the range and type of courses offered and student interest in program offerings. The number of RPOS concentrators statewide ranged from less than 100 (17 in Wisconsin and 55 in Kansas) to 252 in Utah.[3] Utah reported the highest overall rates of student concentration in RPOS pathways, with RPOS concentrators accounting for 3 percent of all 11th and 12th grade students.

[3] Montana did not report any RPOS program enrollments for 2009-10; however, based on conversations with state staff, it appears that the state will include information for less than 100 students.

Table 3 about here

As noted earlier, a rigorous assessment of program outcomes would require RPOS programs with enrollments sufficiently large enough to permit a statistical analysis to detect differences between groups. Determining the sample size needed for analysis depends on a number of factors, including the expected strength of the program's effects on student outcomes. Based on studies of similar topics (see for example, Lekes et al.'s (2007) study of CTE pathway outcomes), an estimated target might be a minimum of about 55 to 75 RPOS concentrators per state, with a minimum 15 concentrators in each district included in the analysis.

The number of RPOS concentrators is the limiting factor for the outcomes analysis; nearly all of the participating districts (with the exception of the smallest rural districts) have adequate numbers of concentrators in other CTE programs and non-concentrators for comparison groups. While concentrator counts may potentially increase as the programs develop, in districts with fewer than 30 and in states with less than 100 RPOS concentrators overall, quantitative analysis will be exploratory and largely descriptive in approach, due to the limited statistical inferences that can be made when the groups are small.

Definitions of Secondary Participants and Concentrators

All of the states define participants as students who have taken one or more classes in a CTE program or program area within the reporting year (Table 4). The definition of a concentrator, however, varies across states. Four of the states (Kansas, Montana, Utah, and Wisconsin) 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 concentrators status after completing 50 percent of the program sequence, which allows the number or courses required to reach concentrator status to differ for students in two and three course CTE programs.

Table 4 about here

The planned outcome analysis will compare RPOS concentrators and other students within each state, so these variations will not affect the analytical approach. The results for each state, however, will reflect these differences in how student populations are defined; these differences—and other

differences in how states collect and define data elements—limit the potential for comparisons of outcomes across states.

Outcome Data

With the exception of secondary school completion, which was available for virtually all of the student groups in each district, the range and comprehensiveness of the outcome data elements submitted by each state varied. The following section provides an overview of the availability of each of the seven outcome measures and one additional measure—postsecondary employment—across the six participating states.

Table 5 about here

1. **Secondary school completion (5 states)**: Data were submitted by all states for all student groups with the exception of Arizona. Arizona submitted these data for CTE concentrators, and indicated that data for other students would be available on 10/31/11.

2. **Technical skills attainment (4 states):** Complete or partial data for this outcome were submitted by all states except for Kansas, which indicated a date when these data will be available. In Utah and Montana, technical skill attainment data were available for only a small percentage of students. In both states, the research team is working with data analysts to determine why data are so limited and, where feasible, to devise strategies for improving the comprehensiveness of these data in subsequent collections. More comprehensive data may be available directly from districts in Utah; in Montana, the data reflect low rates of student participation in technical skill assessments.

3. **Earned postsecondary credit during high school (4 states)**: Data were submitted by all states except Arizona, which provided a date when the data will be available, and Montana, where these data will be collected for the first time in 2011-12. The source and comprehensive of the data vary by state (Table 6). For example, in Kansas, Utah, and Wisconsin these data are available for all secondary students. In Maryland, these data are collected through a 12th grade exit survey with response rates that range from 93 percent in the rural district to 51 percent in the urban district. In Arizona this information will be collected through postsecondary institutions and available only for students that enroll in public 2-year institutions in Arizona. The types of postsecondary credit included in the data vary

as well. Montana will collect data on articulated credits, whereas the Utah and Kansas data systems track dual enrollment.

Table 6 about here

4. **Enrollment in postsecondary education (4 states):** As was the case for postsecondary credits earned in high school, the source and comprehensiveness of these data varied by state (Table 6). Data from Kansas and Montana were limited to students who attended in-state institutions; Maryland and Utah, in contrast, included all postsecondary enrollees attending institutions included in the National Student Clearinghouse (NSC) database, regardless of the state in which they attended. Arizona's enrollment data (available later this year) will include only students attending in-state 2-year institutions. For Wisconsin, postsecondary enrollment rates could be compared among CTE students only (RPOS and other program concentrators), although an NSC match may expand the data to all students in subsequent years. Montana is also exploring the feasibility of conducting an NSC match in coming years.

5. **Major related to secondary POS (1 state):** By definition, this measure only applies to CTE concentrators. Since students in some types of institutions and programs (such as bachelor's degree programs) do not choose a major until their second year of studies or later and may change their major over time, complete data for this element will not be available for several years. Therefore, data for this element were requested to explore the feasibility of obtaining this information, rather than to serve as a baseline for this study. Kansas, Maryland, and Arizona reported that these data would be available later this year. In Arizona—as was the case with this state's other postsecondary outcome measures—this information will be available only for students that enroll in public 2-year institution in-state. In Wisconsin, these data were collected through a CTE graduate follow-up survey, which had a statewide response rate of about 66 percent, which is below the 85 percent threshold included in the RPOS research plan. In states with the capacity to match data to the NSC (Maryland and potentially Wisconsin), this information may be available through an NSC match once the students have completed their postsecondary programs, depending on the nature of the state's NSC agreement.

States defined related majors in different ways. Montana created this element by matching K–12 CTE program names with the names of majors in the postsecondary data system. In Utah students were considered to be in a postsecondary major related to their secondary POS based on matching CIP codes; the data analyst, noted, however, that the definition could be expanded to all CIP codes within the relevant pathway. In Wisconsin, the data are self-reported by graduates. The states will need additional clarification on how POS-related majors should be determined.

6. **Need for developmental coursework in postsecondary education (3 states):** Kansas, Montana, and Utah were able to provide data for this outcome; the other four indicated that the data would be available at a later date.

7. **Postsecondary attainment (2 states):** Montana and Utah provided initial data for this outcome, while other states indicated when these data will be available. In states with the capacity to conduct an NSC match (Maryland and possibly Wisconsin) this information will be available for students who attended an institution included in the NSC database. In states that do not conduct NSC matches (Kansas, Montana, and Utah), attainment information will only be available for students who attend an in-state institution and in Arizona for students who attend an in-state 2-year institution.

8. **Postsecondary employment (0 states):** None of the states were able to provide comprehensive information on employment after secondary graduation, though Maryland indicated that labor force data would be available at a later date. In Utah, inaccurate and incomplete Social Security Numbers (SSN) for students resulted in a low match rate. Montana similarly reported that a lack of access to secondary student SSNs prevented a match with labor force data. In Arizona, Montana, and Wisconsin, these data were obtained through CTE graduate follow-up surveys, which generally have response rates of less than 85 percent.

Analysis Options

The outcome data available for each state depend on the capabilities of each state's education data system, and in particular, on analysts' capacity to link CTE, K–12, and postsecondary databases. Some states are able to currently provide all or most or the data requested; in other states these links

are developing as part of ongoing work to establish longitudinal data systems and in some cases, in response to the data requested for this project.

Based on the data provided to date, an analysis comparing the secondary completion rates of RPOS concentrator status and the two comparison groups (other CTE concentrators and non-concentrators) should be possible in nearly all of the states (and all six, should Arizona be able to provide additional data). The analysis of other outcomes, however, could be conducted for fewer states or for certain groups of students only. For example, four states (Kansas, Maryland, Montana, and Utah) provided the data necessary to conduct an analysis that compares the postsecondary enrollment rates of RPOS concentrators, concentrators in other CTE programs, and non-concentrators.

The baseline data request also explored the availability of data on employment (including salary) and/or military status. Accessing this information requires matching student records to unemployment insurance (UI) wage record data using SSNs. However, the education data systems in each state either have no or incomplete access to SSNs, and the data are therefore not available. A possible exception is Maryland, which anticipates these data to be available in January 2012. Arizona, Montana, and Wisconsin collect employment data from CTE graduates through a follow-up survey, but response rates are too low for use in a rigorous analysis (<85%).

The number of concentrators in the RPOS programs, both overall and within each district, will also shape the analysis. The analyses for states that are able to provide relatively complete student background data and that have 100 or more concentrators (Maryland and Utah) will provide the most valid and reliable results. In states with fewer concentrators and/or fewer data elements, a rigorous multivariate analysis will depend on the number of data elements submitted for 2010–11 and be limited to districts with larger numbers of RPOS concentrators (Arizona and Kansas). Finally, three states (Kansas, Montana, and Wisconsin) reported relatively small numbers of CTE concentrators. If the numbers of concentrators in these states are similar in 2010–11, outcomes will be explored though descriptive analyses that will provide limited options for generalizing findings to other settings or attributing outcomes to RPOS concentrator status.

Baseline Data by State

The following sections summarize the data submitted by states. The first section addresses the size of the RPOS programs in each state, and within the states, by district, followed by an overview of how states define CTE participants and concentrators. The remaining sections provide detailed information on each of the demographic and background and outcome data elements requested from the states, and the data submitted for each.

Arizona

Arizona was able to submit only limited demographic and outcome data in August, but provided dates indicating when the remaining data would be available. About 158 students were education training (the RPOS program) concentrators in 2009–10, a number sufficient to allow a rigorous multivariate analysis comparing the student outcomes should more data be submitted in subsequent years. The results may be less robust for the suburban district, however, which had just 12 concentrators.

The data elements for earned postsecondary credits during high school and postsecondary outcomes (including enrollment, major related to secondary POS, need for developmental coursework, and attainment) will be available only for students that enrolled in public 2-year institutions in Arizona. The data will therefore exclude outcomes for students who enrolled in 4-year institutions, a potentially significant proportion of students, depending on the 4-year institution enrollment rates of students in the participating districts.

The demographic data submitted by Arizona show that virtually all RPOS students were female, as might be expected in a teaching-related program (Table 7a). In contrast, 45 percent of other CTE concentrators and 50 percent of all other students were female. A higher percentage of RPOS than other students were American Indian or Alaska Native, and a lower percentage Hispanic. Relatively lower proportions of CTE students (both RPOS and non-RPOS) than all students were eligible for free or reduced-price lunch, were English as a second language (ESOL) students, or had a disability.

Table 7a about here

In terms of the outcomes reported, which allow comparisons between RPOS and non-RPOS CTE students only, virtually all members (98 or more percent) of both groups graduated from high school (Table 7b). A technical skills assessment was available for about 95 percent of RPOS students, compared to 67 percent of concentrators in other CTE programs, but among those with an assessment available, RPOS concentrators were somewhat less likely than concentrators in other CTE programs to take the test (72 vs. 84 percent). Pass rates for each group were similar: 87 percent for RPOS and 91 percent for non-RPOS concentrators.

Table 7b about here

Kansas

A total of 55 students were concentrators in manufacturing production (the RPOS program) in the three participating districts in 2009–10. Should the RPOS programs have as few concentrators overall, or fewer than 15 in any district (as is currently the case in rural district) in 2010–11 and beyond, the analysis of student outcomes will be limited to descriptive statistics.

The data submitted for 2009–10 included all of the demographic elements requested. Data for four of the seven of outcomes (including technical skills attainment, major related to secondary programs of study, need for developmental coursework, and postsecondary attainment) were reported as available in October 2011. Data on employment status were not available.

Nearly all (98 percent) of the RPOS concentrators in the Kansas districts in 2009-10 were male (Table 8a). In contrast, less than half (46 percent) of other CTE concentrators were male, and 54 percent of students overall. A higher percentage of RPOS concentrators than other groups were white (80 percent) and had ESOL and disability status (7 and 20 percent, respectively), but the percentage qualifying for free or reduced-price lunch was slightly lower than that of other groups. Although a comparison of state assessment results across groups would require disaggregated scores, the score ranges suggest that RPOS concentrators had higher math and lower reading scores on average than other students.

Table 8a about here

About 95 percent of RPOS and other CTE concentrators graduated with a regular high school diploma, a higher rate than found for non-CTE concentrators (78 percent). RPOS concentrators earned postsecondary credits during high school at a lower rate (18 percent) than concentrators in other programs (46 percent), but at a higher rate than non-concentrators (10 percent). Postsecondary enrollment rates were similar for RPOS and other CTE concentrators (between 50 and 55 percent) and higher for each of these groups than among non-concentrators (40 percent). Finally, a lower proportion of RPOS concentrators (20 percent) than the other two groups (32 and 28 percent) enrolled in at least one developmental course.

Table 8b about here

Maryland

In 2009–10 the three participating districts in Maryland had a total of 130 concentrators in their automotive technician programs (the RPOS program) with more than 15 concentrators in each district. These numbers and the data elements submitted would allow a multivariate analysis comparing outcomes among RPOS and non-RPOS students (both CTE concentrators and others, depending on the outcome), including secondary school completion, technical skills attainment, postsecondary credits earned in high school, and postsecondary enrollment. Data on several outcomes (postsecondary major related to secondary POS and, need for development coursework, postsecondary attainment, and employment/military status were reported as available in 2012 or later.

Data submitted included all of the demographic data elements requested with the exception of 8th grade assessment scores. The outcomes data, as noted above, included secondary school completion, technical skills attainment, whether a student earned postsecondary credit in high school, and enrollment in postsecondary education. Data on postsecondary credits earned in high school are self-reported, and may not be as accurate as the transcript-based data for this element submitted by Kansas, Utah, and Wisconsin. Postsecondary enrollment information is collected through an NSC match, which includes students that enrolled in institutions in Maryland and out-of-state, which account for an estimated 40 percent of postsecondary attendees. Maryland's education agencies began conducting matches with NSC matches data in the last year, and work to improve match rates and

data quality is ongoing. The research team is waiting for further information about the match rate for these data. Reflecting the RFP, the submission noted that data on completions would be available beginning two years following graduation for the 2010–11 high school class. These data would then be submitted for 2013 or later, depending on the degree.

The majority of RPOS students in Maryland (90 percent) were male in 2009−10, vs. about 47 percent of concentrators in other programs and half of non-concentrators. About 45 percent of RPOS concentrators were black or African American, which was a lower proportion than that found among other concentrators (56 percent) or non-concentrators (59 percent). Less than 2 percent of each of the groups were ESOL eligible, and the percentage of students with a disability in each groups differed by 3 percentage points or less. Attendance ratios were also similar across the groups. RPOS concentrators passed each of the assessments (grade 9 algebra, grade 10 English, and grade 10 or 11 science) at higher rates than students in the other groups. The highest percentages of students both failing and scoring at the advanced level on the English and science exams were found among non-concentrators, indicating that this group includes students with widely varying prior achievement.

Table 9a about here

Concentrators (in both RPOS and other programs) had higher graduation rates (95 percent or higher) than non-concentrators (90 percent). Among CTE concentrators for whom a technical skills assessment was available, a higher proportion of RPOS than other concentrators took an assessment (55 vs. 26 percent, respectively), but similar proportions of each group who attempted an assessment passed (63 and 65 percent, respectively). Finally, the rate of postsecondary enrollment for RPOS concentrators was lower (43 percent) than that of other CTE concentrators (52 percent) and non-concentrators (51 percent).

Table 9b about here

Montana

Montana did not report any 2009-10 concentrators in the construction big sky pathway (the RPOS program) in 2009–10. Data on outcomes was limited to secondary school completion, need for remedial courses, and postsecondary enrollment and attainment. Should fewer than 15 students

achieve RPOS concentrator status in each site, the outcomes analysis may be limited to CTE students an exploratory analysis based on descriptive statistics.

Montana collects data on CTE concentrators in the 12th grade only, and the demographic information submitted was for students in that year. The submission included all of the demographic data requested, with the exception of attendance and 8th grade assessment scores. As noted, the data elements on outcomes included secondary school completion, need for remedial courses, and postsecondary enrollment and attainment; data on technical skills attainment, postsecondary credit earned during high school, and major related to secondary POS appear not to be available, pending further clarification. Finally, data on postsecondary employment status are available for secondary CTE graduates only. These data are collected through a follow-up survey, for which response rates were 99 percent in the rural and suburban districts, and 66 percent in the urban district.

Since the construction pathway that will be the focus of the RPOS project in Montana did not enroll any concentrators in 2009-10, data were submitted for CTE concentrators and non-concentrators only. Concentrators had a higher proportion of male students (50 percent) than non-concentrators (46 percent), but the representation of each racial group among concentrators and non-concentrators was similar. The percentages of students eligible for free or reduced-price lunch or ESOL, or with a disability differed by less than 3 percentage points across the two groups. The ranges for 10th grade math and English scores for each group largely overlapped, suggesting similar average scores.

Table 10a about here

CTE concentrators had a higher graduation rate (91 percent) than non-concentrators (84 percent), but the proportions of each group that enrolled in postsecondary education (36 and 39 percent, respectively) were similar. Among those who enrolled in postsecondary education, CTE concentrators enrolled in developmental courses at higher rates than non-concentrators. About 44 percent of concentrators and 30 percent of nonconcentrators enrolled in developmental math, and 26 percent of concentrators and 18 percent of nonconcentrators enrolled in developmental writing/English. Although a technical skills assessment was available for just under two-thirds of CTE concentrators, only about 7 percent attempted an assessment, and of those, about 73 passed.

Table 10b about here

Utah

Utah provided all the demographic and most of the outcome data elements requested for each of the student groups. Since about 250 students were health science (the RPOS program) concentrators in 2009–10, the numbers of students and data elements available would allow a rigorous multivariate analysis comparing the outcomes of RPOS concentrators with those of other students (CTE concentrators and other students). The results may not be less robust for the rural district, however, which had just 11 concentrators.

To conduct an analysis of the all of the outcomes included in the RFP, more complete data would be needed for several of the elements submitted. Test score data were available for half or fewer of students, and the state data analyst is exploring whether more complete data would be available directly from the districts. In the coming year, the state team in Utah will take steps enhance the completeness of the data. Specifically, data on technical assessments was provided for only a small percentage of students. The match for these data was conducted using student names, which the data analyst suspects caused the data to show a low percentage of CTE students having access to or taking a technical assessment. Finally, the match rate for employment data from the Department of Workforce Services was low, and the data reported accounted for less than 10 percent of students in each district. The data analyst said that she will work with the districts to stress the importance of reporting accurate social security numbers, but as was the case in other states, it appears that complete data on this measure is unlikely to be available.

About three-quarters (76 percent) of RPOS concentrators were female vs. nearly half (46 percent) of concentrators in other programs and nonconcentrators (49 percent). RPOS concentrators had higher proportions of white (81 percent) students than the other two groups (69 and 63 percent), and a lower proportion of Hispanics (10 percent) compared to students in the other two groups (19 percent). A lower percentage of RPOS concentrators than students in the other two groups were free or reduced-price lunch eligible or ESOL eligible; in contrast, disability rates were equally low (2 percent) across all three groups. Assessment scores were available for too few students (53 percent or fewer) to allow meaningful comparisons.

Table 11a about here

About 94 percent of RPOS concentrators graduated from high school vs. about 84 percent of concentrators in other CTE programs and 63 percent of non-concentrators, although some of the difference is accounted for by the higher proportion of nonconcentrators who left their district. RPOS concentrators earned postsecondary credits at a much higher rate (72 percent) than did concentrators in other programs (39 percent) or non-concentrators (22 percent). All of the 12th grade RPOS concentrators in 2009-10 enrolled in postsecondary education vs. 87 percent of concentrators in other programs, and 45 percent of nonconcentrators. Data on majors and attainment (as noted earlier) is preliminary, but in their initial year of postsecondary education two percent or less of either group of concentrators majored in a field identical to that of their secondary POS, and 3 percent or less had earned a credential. Finally, a higher proportion of RPOS concentrators than the other two groups enrolled in a developmental course for math (11 vs. 9 and 6 percent) and a lower proportion of concentrators (either group) than non-concentrators enrolled in a developmental course for writing (2 vs. 12 percent).

Table 11b about here

Wisconsin

In 2009–10, the manufacturing programs (the RPOS program) in the participating districts enrolled from 1 to 13 concentrators, and several key outcome measures are available for CTE students only, although the project team anticipates postsecondary education data for all students to be available in the coming year through an NSC match. The low number of RPOS concentrators would support a descriptive analysis comparing secondary school completion, technical skills attainment, and earned postsecondary credit during high school of RPOS concentrators and other students (CTE concentrators in other programs and non-concentrators, depending on the outcome). The analysis of other outcomes would either not be possible or be limited to CTE concentrators (RPOS and non-RPOS).

Wisconsin provided the federally-reported demographic data elements for all students, but data on attendance and 8th grade test scores were not available. However, the data did include high school-level scores for assessments taken in the 10th grade; these scores were available for more than 85 percent of students overall. For the outcomes data, several of the outcome measures, including

enrollment in postsecondary education and postsecondary major related to secondary POS were available for CTE students only. These data are collected through a CTE graduate follow up survey that has a statewide response rate of 66 percent (response rates in the participating districts were from 74 to 79 percent). Data on other outcomes, such as the need for remedial education, were not available. However, the state team anticipates that a match with NSC data, which would provide postsecondary enrollment information for nearly all students, would be possible beginning in the fall of 2011. They also indicated that data on remedial course-taking in 2- and 4-year institutions of higher education to be available around the same time.

About 94 percent of RPOS (advanced manufacturing) concentrators in Wisconsin are male. In contrast, about one half of concentrators in other CTE programs and 54 percent of non-concentrators are male. Aside from gender, most student characteristics were similarly distributed across the groups, although because of the small number of RPOS concentrators, comparisons with this group should be interpreted with caution. The proportions of each ethnic group were within 5 percent for each group, as were the percentages eligible for reduced-price or free lunch (24 to 29 percent) and ESOL (10 to 13 percent). The exception was students with a disability, which accounted for 9 to 11 percent of students that were not RPOS concentrators, and none of the RPOS concentrators. Grade 10 test score data was available for just three of the RPOS concentrators, but the percentages scoring at proficiency or higher among concentrators in other CTE programs and non-concentrators were similar (74 percent of each group for math, and 81 and 78 percent for math, respectively).

Table 12a about here

Concentrators in CTE programs other than the RPOS program and non-CTE concentrators had similarly high graduation rates (over 95 percent). Postsecondary educational outcome data, however, were available for CTE graduates only. Furthermore, just 3 students were RPOS 12th grade concentrators in 2009-10, which is too small a group to compare with concentrators in other CTE programs.

Table 12b about here

State Data Summary

The project states are working with CTE programs in different fields, located in districts of varying size. A single comprehensive summary of the student characteristics and outcomes for all of the diverse states, districts, and CTE programs that are participating in the RPOS program is therefore not feasible. The baseline data submissions, however, do indicate how RPOS students differ from other students across the districts within each state. Depending on the approach used for the outcomes analyses, this information will allow for isolation of the effects of RPOS status on secondary and postsecondary outcomes and provide a baseline with which to compare subsequent year's student characteristics and outcomes and monitor changes.

Reflecting the diverse CTE programs and districts involved in the project, the state data summaries indicate that students in the RPOS programs were both similar to and different from concentrators in other CTE programs and non-concentrators. One example is gender. Arizona and Utah are targeting teaching and health sciences programs through their RPOS activities, and in these programs 76 to 92 percent of concentrators were female, whereas over half of the concentrators in other CTE programs were male. In Kansas and Wisconsin, which are working with manufacturing programs, males accounted for virtually all (94 percent or more) of students in the RPOS programs. Other student characteristics that might impact outcomes and that differ across the three comparison groups in some states include free or reduced-price lunch eligibility (in Arizona and Utah) and disability status (Kansas).

State-specific patterns also emerge in terms of outcomes. States that provided data on postsecondary completers generally posted high rates of graduation with a regular high school diploma for RPOS concentrator (94 percent or higher). In several states (Kansas, Maryland, and Utah), the performance of RPOS concentrators on this measure was higher than that of other students. Data on other outcome measures showed more variation, with all RPOS concentrators in Utah enrolling in postsecondary education (a higher rate than the other student groups), and 43 percent of Maryland's RPOS concentrators (a lower rate than the other student groups). These differences reflect variations in the students that the health sciences RPOS in Utah and the automotive technician RPOS in Maryland attract. These differences also point to the outcomes that will be of greatest interest in the outcomes analysis. Since all health science concentrators in the participating districts enrolled in

higher education prior to RPOS project activities, the outcomes analysis for Utah would focus on the program's effects on completion or concentrators' enrollment rate in development education in math, which were relatively higher (11 percent) than that for nonconcentrators (6 percent). In Maryland, by contrast, the outcomes analysis might explore the extent to which RPOS activities narrows the gap in postsecondary enrollment between automotive technology concentrators and other students.

References

Lekes, Natasha, Bragg, Debra D., Loeb, Jane W., Oleksiw, Catherine A., Marszalek, Jacob, Brooks-LaRaviere, Margaret, Zhu, Rongchun, Kremidas, Chloe C., Akukwe, Grace, Lee, Hyeong-Jong, Hood, Lisa K. (2007). *Career and Technical Education Pathway Programs, Academic Performance, and the Transition to College and Career*. National Research Center for Career and Technical Education.

Appendix A

The following instructions were sent to each state regarding the preparation and submission of the 2009–10 baseline data:

Dear Rigorous Program of Study (RPOS) Project participant,

Thank you for your continued help with the RPOS evaluation and for providing information about your state's educational information systems. We are now entering the data gathering phase of the project and look forward to working with you in the coming weeks to collect the data we will need to evaluate the project's success.

Enclosed is set of table shells that we are asking you to complete for each site participating in the RPOS project. These shells are based on data elements in your state educational information system, wherever possible. We understand that you will likely have questions about these elements and the cell values, as well as additional information about your state's data, so we should plan a call to discuss this request at a mutually convenient time.

We also understand that you will not be able to provide all of the information requested in the table shells; while we have tried to anticipate where elements will be unavailable, we recognize that our information may be incomplete, or that there may be other limitations of which we are not aware. Please note elements that are not available and indicate the timeframe 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 August 1, 2011. We are "on-call" to answer any questions that you may have about the data shells and to provide assistance as you develop your data submission. Please contact Sandra Staklis by e-mail (sstaklis@mprinc.com) or telephone (503-222-5467 x406).

Please keep the following guidelines in mind 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; use an asterisk (*) if you must suppress cells due to small sample sizes.
- In columns D and E on the demographic tabs, and column D on the outcome tabs, enter data only for students who were participants or concentrators in a CTE program sequence in 2009–10 that subsequently was selected as the RPOS for inclusion in the OVAE-sponsored project. While participating districts may offer other CTE programs that are programs of study or that have characteristics of an RPOS, you should only enter data in the columns for 'RPOS participants' and 'RPOS concentrators' for students who are participating in the OVAE-funded program.
- Student descriptor categories are mutually exclusive; for example, in the demographic worksheet, the sum of 'RPOS participants' + 'RPOS concentrators' + 'concentrators in other CTE programs' + 'all other students' should equal the total district enrollment for students in the given category. (Students who are not RPOS participants or concentrators, who take some CTE coursework in other CTE programs but have not meet the concentrator threshold, or who have not taken any CTE coursework should be reported in the 'all other students' category.)
- Add worksheets if you have additional districts participating in the RPOS project.
- We have included, where possible, your state's definitions for secondary CTE participants and concentrators in the demographic tables. Please include the definitions– or update as needed if included–on the first demographic table tab or in a separate document.

Table 1: Baseline 2009-10 Data Submitted by States Participating in the Promoting Rigorous Programs of Study Project

	Number of states submitting complete data	Arizona	Kansas	Maryland	Montana	Utah	Wisconsin
Demographic and background data							
Gender	6	✓	✓	✓	✓	✓	✓
Race/Ethnicity	6	✓	✓	✓	✓	✓	✓
English for Speakers of Other Languages eligibility	6	✓	✓	✓	✓	✓	✓
Free or reduce-price lunch eligible	5	Partial	✓	✓	✓	✓	✓
Disability status	6	✓	✓	✓	✓	✓	✓
Attendance	3	9/15/2011	✓	✓	Not available	✓	Not Available
Average ESEA-reported state assessment scores							
8th grade	1	Partial	✓	Not available	Not available	Partial	Not Available
High school (9th to 11th grade)	4	10/31/2011	✓	✓	✓	Partial	✓
Total number of demographic and background measures for which complete data were submitted		4	8	7	6	6	6

✓= baseline data submitted

A date indicates when data would be available (*unknown* indicates no date specified)

CTE only indicates that data were submitted for CTE concentrators only and based on a follow-up survey of high school CTE graduates with varying response rates.

Partial indicates that data were submitted for each student group requested, but generally available for 85 percent or fewer of students within each group. For Arizona, postsecondary data are available only for students that enroll in a public 2-year institution in Arizona. Wisconsin anticipates that additional postsecondary outcome data will be available through an National Student Clearinghouse (NSC) match.

Table 2: Total enrollments in grades 11 and 12, and the number of grade 11 and 12 students that are RPOS participants and concentrators and CTE concentrators across the RPOS project districts in each state, 2009-10

	Arizona			Kansas				Maryland		
Student group	**Rural**	**Suburban**	**Urban**	**Rural 1**	**Rural 2**	**Suburban**	**Urban**	**Rural**	**Suburban**	**Urban**
Total students in grades 11 and 12	363	892	5,781	597	79	928	1,386	1,156	15,363	10,066
RPOS participants	72	35	364	18	4	92	21	27	97	24
RPOS concentrators	24	12	122	2	6	15	32	16	92	22
Concentrators in other CTE programs	90	70	1,870	18	26	43	199	445	4,466	2,251
Concentrators as percent of total enrollment	**7%**	**1%**	**2%**	**0%**	**8%**	**2%**	**2%**	**1%**	**1%**	**0%**

	Montana			Utah			Wisconsin		
Student group	**Rural**	**Suburban**	**Urban**	**Rural**	**Suburban**	**Urban**	**Rural**	**Suburban**	**Urban**
Total students in grades 11 and 12	61	425	1,296	535	4,522	3,478	92	888	1,468
RPOS participants	-	-	-	54	1,082	537	1	3	13
RPOS concentrators	-	-	-	11	182	59	1	3	13
Concentrators in other CTE programs	13	116	650	187	2,488	1,621	30	104	207
RPOS c oncentrators as percent of total enrollment	**0%**	**0%**	**0%**	**2%**	**4%**	**2%**	**1%**	**0%**	**1%**

Table 3: Total enrollments in grades 11 and 12, and the number of grade 11 and 12 students that are RPOS participants and concentrators and CTE concentrators across the RPOS project districts in each state: 2009-10

Student group	Arizona	Kansas	Maryland	Montana[1]	Utah	Wisconsin
Total students in grades 11 and 12	7,036	2,990	26,585	1,782	8,535	2,448
RPOS participants	471	135	148	-	1,673	17
RPOS concentrators	158	55	130	-	252	17
Concentrators in other CTE programs	2,030	286	7,162	779	4,296	341
RPOS c oncentrators as percent of total enrollment	**2%**	**2%**	**0%**	**0%**	**3%**	**1%**

[1]Montana collects CTE concentrator data on grade 12 students only and therefore did not submit data on 11th grade students.

Table 4: 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.	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 of more CTE courses in any CTE program area in the reporting year	Students who have completed (earned secondary credit) a minimum of two CTE courses within the student's chosen pathway and are enrolled in continuing CTE education courses in that pathway for the current reporting year.

Table 5: Baseline 2009-10 Data Submitted by States Participating in the Promoting Rigorous Programs of Study Project

Data elements	Number of states submitting complete data	Arizona	Kansas	Maryland	Montana	Utah	Wisconsin
Outcome data							
Secondary school completion	5	10/31/2011; partial	✓	✓	✓	✓	✓
Technical Skills Attainment	4	✓	10/1/2011	✓	✓	Partial	✓
Earned postsecondary credit during high school	4	11/30/2011; partial	✓	✓	2011-12	✓	✓
Enrollment in postsecondary education	4	11/30/2011; partial	✓	✓	✓	✓	CTE only; partial
Major related to secondary POS	1	11/30/2011; partial	10/1/2011	1/10/2012	Partial	✓	CTE only; partial
Need for developmental coursework in postsecondary education	3	11/30/2011; partial	✓	4/10/2012	✓	✓	2012 or 2013
Postsecondary attainment	2	11/30/2011; partial	10/1/2011	4/10/13 or later, depending on degree	✓	✓	2011 (or later)
Employment and military status	0	CTE only	Not available	1/10/2012	CTE only	Partial	CTE only
Total number of outcomes for which complete data were submitted		1	4	4	5	6	3

✓= baseline data submitted

A date indicates when data would be available (*unknown* indicates no date specified)

CTE only indicates that data were submitted for CTE concentrators only and based on a follow-up survey of high school CTE graduates with varying response rates.

Partial indicates that data were submitted for each student group requested, but generally available for 85 percent or fewer of students within each group. For Arizona, postsecondary data are available only for students that enroll in a public 2-year institution in Arizona. Wisconsin anticipates that additional postsecondary outcome data will be available through an National Student Clearinghouse (NSC) match.

Kansas: need for developmental education as courses taken; data on whether students were recommended for developmental education will be available 10/1/2011.

Table 6: Data sources and student populations for the outcome data elements earned postsecondary credits in high school and postsecondary enrollment

	Earned postsecondary credits in high school		Postsecondary enrollment	
State	**Data source**	**Students included**	**Data source**	**Students included**
Arizona	Public 2-year colleges[1]	Students that enrolled in a public 2-year college in Arizona	Public 2-year colleges	Students that enrolled in public 2-year college in Arizona
Kansas	Kansas postsecondary data system	Students that enrolled in a public institution of higher education in Kansas	Kansas postsecondary data system	Students that enrolled in a public institution of higher education in Kansas
Maryland	12th grade exit survey	Students who responded to the survey (rural: 93 percent; suburban: 74.8 percent; urban: 51 percent)	National Student Clearinghouse (NSC)	Students that enrolled in any of the estimated 92 percent of higher education institutions included in the NSC
Montana	Exit survey and postsecondary data system	unclear	Exit survey and postsecondary data system	unclear
Utah	Postsecondary data system	All students	National Student Clearinghouse (NSC)	Students who enrolled in a public postsecondary institution in Utah
Wisconsin	Secondary data system	All students	CTE exit survey	CTE concentrator-completers (66 percent statewide response rate)[2]

[1] The match rate for these data are 80 percent.

[2] Reported that an NSC match should be possible for the 2010-11 data

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

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Student characteristics	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	158	100.0%	2030	100.0%	4848
Gender						
Male	7.6%	12	55.1%	1118	50.1%	2427
Female	92.4%	146	44.9%	912	49.9%	2421
Race						
White	62.7%	99	63.2%	1282	64.3%	3119
Native Hawaiian/Pacific Islander[1]		N/A		N/A		N/A
Black or African American	2.5%	4	4.9%	100	5.1%	248
Asian	1.9%	3	3.9%	80	3.3%	158
American Indian or Alaska Native	15.2%	24	5.6%	114	6.0%	292
Hispanic	17.7%	28	22.4%	454	21.3%	1031
Eligible for free or reduce-priced lunch[2]	6.3%	10	9.5%	192	30.8%	1495
English for Speakers of Other Languages (ESOL) eligible	0.6%	1	0.1%	2	8.6%	415
Students with a disability	7.0%	11	5.6%	114	12.6%	613
Attendance ratio		9/15/2011		9/15/2011		9/15/2011
Average ESEA-reported state assessment scores		10/31/2011		10/31/2011		10/31/2011

NA= Not Available

[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 district only; data for the rural district available for 2010-11

Table 7b: Arizona: Outcome data for 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	157	100.0%	2027	100.0%	1277
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	97.5%	153	98.2%	1990		10/31/2011
Number who indicated an intention to obtain GED	1.3%	2	0.6%	12		10/31/2011
Technical skills attainment						
Technical skills assessment available	94.9%	149	67.2%	1362		N/A
Attempted a technical skills assessment (among those with an assessment available)	71.8%	107	83.8%	1142		N/A
Passed an assessment/certification and/or received a certificate (among those who attempted an assessment)	86.9%	93	91.0%	1039		N/A
Earned postsecondary credit in high school		11/30/2011		11/30/2011		11/30/2011
Postsecondary outcomes						
Enrolled in postsecondary education		11/30/2011		11/30/2011		11/30/2011
Enrolled in a postsecondary education related to their secondary POS		11/30/2011		11/30/2011		N/A
Need for developmental coursework in postsecondary education						
Recommended for developmental work in math		11/30/2011		11/30/2011		11/30/2011
Recommended for developmental work in reading		11/30/2011		11/30/2011		11/30/2011
Enrolled in developmental course for math		11/30/2011		N/A		N/A
Enrolled in developmental course for reading		11/30/2011		N/A		N/A
Completion						
Earned a postsecondary credential		11/30/2011		11/30/2011		11/30/2011
Employment/miltiary[1]	39.5%	62	38.7%	785		N/A

N/A=Not Available

[1] Data are self-reported from a follow-up survey of CTE graduates. Response rates are 75 percent rural, 93 percent suburban, and 94 percent urban.

Table 8a: Kansas: 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%	55	100.0%	286	100.0%	2598
Gender						
Male	98.2%	54	45.5%	130	54.3%	1411
Female	1.8%	1	54.5%	156	45.7%	1187
Race						
White	80.0%	44	53.8%	154	60.2%	1564
Native Hawaiian/Pacific Islander	0.0%	0	0.0%	0	0.0%	1
Black or African American	1.8%	1	18.2%	52	13.8%	358
Asian	3.6%	2	2.4%	7	3.2%	82
American Indian or Alaska Native	0.0%	0	1.7%	5	1.9%	50
Hispanic	12.7%	7	17.1%	49	17.7%	460
Multi-racial	1.8%	1	6.6%	19	3.2%	83
Eligible for reduce-priced lunch	7.3%	4	10.1%	29	9.2%	238
Eligible for free lunch	29.1%	16	42.0%	120	34.6%	900
English for Speakers of Other Languages (ESOL) eligible	7.3%	4	1.4%	4	5.4%	140
Students with a disability	20.0%	11	10.1%	29	15.5%	402
Attendance ratio[1]		92 to 95%		92 to 95%		92 to 94%
Average ESEA-reported state assessment scores (range of average scores across districts)[1, 2]						
8th grade math	61 to 74 percent		62 to 74 percent		52 to 64 percent	
8th grade reading	64 to 74 percent		71 to 82 percent		64 to 85 percent	
High school math	58 to 71 percent		48 to 70 percent		46 to 67 percent	
High school reading	57 to 81 percent		70 to 84 percent		70 to 93 percent	

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

[2]The percentage of students for which test scores were available are: 82.4 percent (8th grade math); 82.3 percent (8th grade reading); 86.4 percent (high school math); 89.0 percent (high school reading).

Table 8b: Kansas: Outcome data for 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	55	100.0%	285	100.0%	1235
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	96.4%	53	95.1%	271	77.8%	961
Technical skills attainment						
Technical skills assessment available		10/1/2011		10/1/2011		10/1/2011
Attempted a technical skills assessment		10/1/2011		10/1/2011		10/1/2011
Passed an assessment/certification and/or received a certificate		10/1/2011		10/1/2011		10/1/2011
Earned postsecondary credit in high school	18.2%	10	45.6%	130	10.3%	127
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education (Information reported by degree program)	54.5%	30	51.9%	148	40.1%	495
Enrolled in a postsecondary education related to their secondary POS		10/1/2011		10/1/2011		10/1/2011
Among those who enrolled in postsecondary education, need for developmental coursework in postsecondary education						
Recommended for developmental work		10/1/2011		10/1/2011		10/1/2011
Enrolled in at least one developmental course	20.0%	6	32.4%	48	28.1%	139
Completion						
Earned a postsecondary credential		10/1/2011		10/1/2011		10/1/2011

Table 9a: Maryland: Student characteristics for 11th and 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Student characteristics	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	130	100.0%	7162	100.0%	19293
Gender						
Male	90.0%	117	46.6%	3341	49.9%	9636
Female	10.0%	13	53.4%	3821	50.1%	9657
Number of students by ethnicity						
Hispanic	2.3%	3	2.5%	178	2.9%	561
Race						
White Only	51.5%	67	41.0%	2933	36.7%	7076
Native Hawaiian or other Pacific Islander Only	0.0%	0	0.0%	0	0.0%	4
Black or African American Only	44.6%	58	55.7%	3988	58.9%	11367
Asian Only	3.8%	5	2.5%	181	3.7%	710
American Indian or Alaska Native Only		0		34		57
Multi-race	0.0%	0	0.4%	26	0.4%	79
Eligible for free lunch	40.0%	52	47.1%	3373	47.7%	9194
English for Speakers of Other Languages (ESOL) eligible	1.5%	2	0.5%	36	1.4%	267
Students with a disability	11.5%	15	11.0%	788	14.3%	2759
Average attendance ratio (days attended/days enrolled)[1]	83% to 94%		87% to 93%		87% to 93%	
ESEA-reported state assessment outcomes[2]						
Grade 9 Algebra						
Failed	9.2%	12	17.9%	1279	22.8%	4181
Passed	90.8%	118	82.1%	5862	77.2%	14186
Proficient	70.0%	91	65.9%	4708	57.3%	10517
Advanced	20.8%	27	16.2%	1154	20.0%	3669
Grade 10 English						
Failed	16.9%	22	22.3%	1593	25.4%	4641
Passed	83.1%	108	77.7%	5543	74.6%	13610
Proficient	64.6%	84	61.3%	4377	51.8%	9450
Advanced	18.5%	24	16.3%	1166	22.8%	4160
Grade 10th or 11th grade science						
Failed	10.9%	14	23.7%	1678	26.1%	4705
Passed	89.1%	115	76.3%	5396	73.9%	13299
Proficient	82.2%	106	68.4%	4837	62.5%	11246
Advanced	7.0%	9	7.9%	559	11.4%	2053

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

[2]The percentage of students for which test scores were available are: 96.4 percent (9th grade algebra); 96.0 percent (10th grade English); 96.8 percent (10th or 11th grade science).

Table 9b: Maryland: Outcome data for 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	72	100.0%	4115	100.0%	9474
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	98.6%	71	95.4%	3926	89.6%	8493
Technical skills attainment						
Technical skills assessment available	95.8%	69	62.2%	2559		N/A
Attempted a technical skills assessment (among those with an assessment available)	55.1%	38	26.0%	666		N/A
Passed an assessment/certification and/or received a certificate	63.2%	24	65.3%	435		N/A
Earned postsecondary credit in high school	22.2%	16	26.2%	1077	19.4%	1836
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education (Information reported by degree program)	43.1%	31	51.9%	2136	51.3%	4860
Enrolled in a postsecondary education related to their secondary POS		1/10/2012		1/10/2012		N/A
Among those who enrolled in postsecondary education, need for developmental coursework in postsecondary education						
Recommended for developmental work		4/10/2012		4/10/2012		4/10/2012
Enrolled in at least one developmental course		4/10/2012		4/10/2012		4/10/2012
Completion (within two years following enrollment in postsecondary education)						
Earned a postsecondary credential		4/10/2013 or later		4/10/2013 or later		4/10/2013 or later

N/A=Not Available

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

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Student characteristic	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students		0	100.0%	779	100.0%	1003
Gender						
Male		N/A	50.4%	393	45.6%	457
Female		N/A	49.6%	386	54.4%	546
Race						
White		N/A	88.3%	688	87.6%	879
Native Hawaiian/Pacific Islander		N/A	0.3%	2	0.8%	8
Black or African American		N/A	1.2%	9	1.3%	13
Asian		N/A	1.7%	13	1.3%	13
American Indian or Alaska Native		N/A	5.1%	40	5.2%	52
Data not submitted		N/A	3.5%	27	3.8%	38
Eligible for reduce-priced lunch		N/A	4.6%	36	3.6%	36
Eligible for free lunch		N/A	13.7%	107	11.3%	113
English for Speakers of Other Languages (ESOL) eligible		N/A	1.5%	12	0.6%	6
		N/A				
Students with a disability		N/A	8.6%	67	11.5%	115
Attendance ratio		N/A		N/A		N/A
Average ESEA-reported state assessment scores[1]						
8th grade math		N/A		N/A		N/A
8th grade English		N/A		N/A		N/A
10th grade math		N/A		254.43-259.75		256.23-265.17
10th grade English		N/A		270.79-281.67		275.05-279.98

N/A= Not Available

[1]10th grade assessment scores are available for 94 percent of students.

Note: These data are for 12th grade students only since Montana collects data on CTE concentrators in that grade only.

Table 10b: Montana: Outcome data for 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students		0	100.0%	779	100.0%	1003
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma		N/A	90.9%	708	84.3%	846
Left the district		N/A	5.3%	41	6.9%	69
Technical skills attainment						
Technical skills assessment available		N/A	62.4%	486		N/A
Among those for whom an assessment was available, attempted a technical skills assessment		N/A	6.8%	33		N/A
Among those who attempted an assessment, passed an assessment/certification and/or received a certificate		N/A	72.7%	24		N/A
Earned postsecondary credit in high school[1]		N/A		N/A		N/A
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education (Information reported by degree program)		N/A	35.7%	278	39.4%	395
Among those enrolled, enrolled in a postsecondary education related to their secondary POS		N/A	67.6%	188		N/A
Among those enrolled in postsecondary, need for developmental coursework in postsecondary education						
Enrolled in developmental course for math		N/A	44.2%	123	30.1%	119
Enrolled in developmental course for writing/English		N/A	25.9%	72	18.0%	71
Completion						
Among those enrolled in postsecondary, earned a postsecondary credential		N/A	0.7%	2	0.8%	3

N/A= Not available

[1]Collection of statewide data on articulated credits will begin in fall 2011.

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

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Student characteristics	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	252	100.0%	4296	100.0%	3987
Gender						
Male	24.2%	61	53.8%	2313	51.3%	2044
Female	75.8%	191	46.2%	1983	48.7%	1943
Race						
White	81.3%	205	69.3%	2979	63.4%	2527
Native Hawaiian or other Pacific Islander	2.0%	5	2.1%	89	3.1%	125
Black or African American	0.8%	2	2.5%	107	3.0%	121
Asian	4.0%	10	3.0%	131	3.0%	120
American Indian or Alaska Native	1.6%	4	3.5%	150	7.5%	299
Hispanic	9.5%	24	19.2%	824	19.0%	758
Unknown/ data not available	0.8%	2	0.4%	16	0.9%	37
Eligible for free or reduce-priced lunch[1]	23.4%	59	34.5%	1483	41.9%	1670
English for Speakers of Other Languages (ESOL) eligible	6.7%	17	16.2%	698	18.1%	722
Students with a disability	1.6%	4	1.7%	73	2.2%	87
Attendance ratio[2]	n/a	.96 to .99	n/a	.97 to .99	n/a	.95 to .98
Number scoring at proficiency or higher[3]						
8th Grade Pre-Algebra	n/a	0	n/a	10	n/a	10
8th Grade Algebra I	n/a	6	n/a	16	n/a	16
8th Grade Algebra II	n/a	0	n/a	2	n/a	2
8th Grade Language Arts	n/a	7	n/a	74	n/a	75
11th Grade Pre-Algebra	n/a	4	n/a	193	n/a	194
11th Grade Algebra I	n/a	22	n/a	621	n/a	510
11th Grade Algebra II	n/a	4	n/a	332	n/a	300
11th grade English score	n/a	96	n/a	1718	n/a	1750

[1]Data for reduced-price and free lunch eligible students are not available separately.

[2]Because of the way submitted data were aggregated, attendance data excludes RPOS participants.

[3]The percentages of students for which test scores were available were low, for the 8th grade assessments, math scores were available for 2 percent and language arts for 3 percent. 11th grade scores were somewhat higher, with math scores available for 26 percent of students, and English scores 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.

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

	RPOS concentrators		Concentrators in		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	123	100.0%	2652	100.0%	1445
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	93.5%	115	84.2%	2234	63.0%	911
Left the district	1.6%	2	4.3%	115	11.9%	172
Technical skills attainment[1]						
Technical skills assessment available	100.0%	123	100.0%	2652		N/A
Attempted a technical skills assessment	N/A	5	N/A	53		N/A
Passed an assessment/certification and/or received a certificate	N/A	3	N/A	27		N/A
Earned postsecondary credit in high school (dual enrollment)	71.5%	88	39.3%	1041	21.9%	317
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education (Information reported by degree program)	100.0%	123	87.4%	2319	45.4%	656
Of those who enrolled in postsecondary, majored in a field identical to their secondary POS[2]	2.4%	3	0.1%	3		n/a
Of those enrolled in higher education, number that…						
Enrolled in developmental course for math	11.4%	14	8.8%	203	5.8%	38
Enrolled in developmental course for reading	3.3%	4	3.7%	85	2.7%	18
Number enrolled in development course for writing	1.6%	2	1.8%	41	11.6%	76
Number that earned a postsecondary credential, certificate, or diploma attainment (information reported by degree program)						
Earned a postsecondary credential	3.3%	4	0.5%	12	0.8%	5

N/A= Not available

[1]The percentages of students for which information on technical skill attainment were available were low. The data specialist working with Utah's RPOS team attributes the data limitations to poor database match rates and is investigating strategies to improve future data quality. Since the percentage of students for these data were submitted appear to be 5 percent or less in some districts, the percentages of students who took an assessments and the percentage who passed are not shown.

[2]Calculated by matching secondary and postsecondary POS and major CIP codes, rather than by matching related programs.

Table 12a: Wisconsin: Student characteristics for 11th and 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE		All other students	
Student characteristics	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	17	100.0%	341	100.0%	2090
Gender						
Male	94.1%	16	49.6%	169	53.5%	1119
Female	5.9%	1	50.4%	172	46.5%	971
Race						
White Only	76.5%	13	81.8%	279	78.7%	1645
Native Hawaiian or other Pacific Islander Only	0.0%	0	0.0%	0	0.0%	0
Black or African American Only	5.9%	1	0.0%	0	1.5%	31
Asian Only	17.6%	3	17.0%	58	18.2%	380
American Indian or Alaska Native Only	0.0%	0	0.6%	2	0.9%	18
Hispanic	0.0%	0	0.6%	2	0.8%	16
Eligible for reduced-price or free lunch[1]	29.4%	5	27.9%	95	23.9%	500
English for Speakers of Other Languages (ESOL) eligible[2]	11.8%	2	13.2%	45	10.0%	208
Students with a disability	0.0%	0	11.4%	39	8.9%	186
Average attendance ratio (days attended/days enrolled)		N/A		N/A		N/A
ESEA-reported state assessments[3]						
Number of grade 10 math scores Proficient or above	100.0%	3	74.1%	203	73.5%	1440
Number of grade 10 reading scores Proficient or above	100.0%	3	81.4%	223	78.4%	1537

N/A= Not available

[1]Data for reduced-price and free lunch eligible students are not available separately.

[2]ESOL data available for the suburban and urban districts only.

[3]The percentage of students for which test scores were available are: 91.4 percent (10th grade math); 91.4 percent (high school reading); however, scores were not available for RPOS students in the rural and urban districts.

Table 12b: Wisconsin: Outcomes data for 12th grade students enrolled in the rural, suburban, and urban districts participating in the RPOS project, 2009-10

	RPOS concentrators		Concentrators in other CTE programs		All other students	
Outcome	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**
Number of students	100.0%	3	100.0%	252	100.0%	972
Secondary outcomes						
Secondary school completion						
Graduated with a regular high school diploma	100.0%	3	96.4%	243	98.5%	957
Technical skills attainment						
Number of students that participated in certificated learning methodology program (total across all programs)	66.7%	2	63.5%	160		N/A
Among student participating in certificated programs:						
Number of students who met the requirements of the certificated program and was or is to be awarded a certificate	50.0%	1	76.3%	122		N/A
Student is continuing in the certificated program	0.0%	0		6		N/A
Student has left the certificated program before completion	0.0%	0		5		N/A
Student completed program but did not meet the requirements for certification	50.0%	1	22.1%	27		N/A
Earned postsecondary credit in high school	33.3%	1	24.6%	62	7.6%	74
Postsecondary outcomes						
Enrollment						
Enrolled in postsecondary education (Information reported by degree program)	33.3%	1	40.9%	103		N/A
Enrolled in a postsecondary education related to the participant's secondary POS	0.0%	0	32.5%	82		N/A
Among those who enrolled in postsecondary education, need for developmental coursework in postsecondary education						
Recommended for developmental work		N/A		N/A		N/A
Enrolled in at least one developmental course		N/A		N/A		N/A
Completion (within two years following enrollment in postsecondary education)						
Earned a postsecondary credential		N/A		N/A		N/A

N/A=Not Available